U.S. Department of the Interior
Bureau of Land Management
Elko Field Office
Elko, Nevada

April 2002

FINAL Environmental Impact Statement Newmont Mining Corporation's South Operations Area Project Amendment

Appendix E
Public Comment Letters and Responses

SOAPA FEIS

APPENDIX E

PUBLIC COMMENT LETTERS AND RESPONSES

April 2002

RESPONSES TO PUBLIC COMMENTS ON SOAPA DEIS

All letters that were received during the public comment period were read and evaluated to identify substantive comments on pertinent issues in the DEIS. Each letter was numbered and comments within the letter were identified with a letter of the alphabet. Responses were then prepared according to this number-alphabet system. The letters, comments, and corresponding responses are presented in this appendix.

Many comments were received that addressed the Cumulative Impact Analysis document that was distributed with the DEIS. Responses were prepared for those comments, but the CIA document itself is not going to be revised.

Letter	Number	Author (affiliation)
	1	Jonina Arazi
	2	Anne Birdwhistell
	3	Bill Clymer (Citizen's for Victor, CO)
	4	Susan Czopek
	5	Ken Dawdy
	6	Brenda Johnson (attached USGS comment letter of James F. Devine)
	7	Fred E. Dexter, Jr.
	8	Julie Dudley (Nevada Wildlife Federation's Endangered Species Alliance)
	9	Henry Egghart
	10	Katie Fite (Committee for Idaho's High Desert)
	11	Stan Haye
	12	John E. Hiatt (Red Rock Audubon Society)
	13	Victoria Locke King
	14	David Kliegman (Okanogan Highlands Alliance)
	15	Shanna Langdon (Project Underground)
	16	Corey Lee Lewis
	17	Jonathan Machen
	18	C. Madsen
	19	Anne Martin (American Lands Alliance)
	20	Rebecca Mirsky
	21	Tony Patton
	22	George Poston
	23	Peggy Pierce
	24	Christopher Sewall (Western Shoshone Defense Project)
	25	Roy Al. Rendahl and Farrah Reizana
	26	Terri Robertson
	27	Thom and Jette Seal
	28	Ray Shreder
	29	Catherine P. Smith
	30	David von Seggern
	31	Diane Riley (Idaho Department of Environmental Quality - Air Quality)
	32	Dan Randolph (Mineral Policy Center)
	33	Tom Myers, Ph.D. (Great Basin Mine Watch)
	34	Michael A. Andrews
	35	U.S. Army Corps of Engineers
	36	Kaitlin Backlund (Citizen Alert)
	37	Linda Bingaman (Mayor, City of Carlin)
	38	Howard Booth
	39	George R.E. Boucher (Elko Board of County Commissioners)
	40	Helen Dave (Te-Moak Tribe of Western Shoshone)
	41	Richard L. Davis
	42	Trevor Elenbaas

43 Heather K. Elliott (Nevada State Clearinghouse)
Deptartment of Transportation
Division of Water Resources
Bureau of Health Protection Services
Bureau of Mines and Geology
State Historic Preservation Office
Natural Heritage Program.
44 Heather K. Elliot (Nevada State Clearinghouse)
Division of Wildlife
45 Bill Elquist (Lander County Board of Commissioners)
46 Dennis Erwin (Newmont Mining Corporation)
47 Jane Feldman (Sierra Club - Toiyabe Chapter)
48 Jeremy Garncarz
49 Richie D. Haddock (Barrick Goldstrike Mines, Inc.)
50 Frieda Hill
51 Harvey Hill
52 Donald A. Molde, M.D.
53 Pat Mulcahy
54 Reva Munroe (spelling may be in error)
55 Maie and Myrl Nygren
56 Carrie Dann (Western Shoshone Defense Project)
57 Marjorie Sill
58 Rita Stitzel
59 Christine Stones (Ely Shoshone Tribe)
60 Rose Strickland (Sierra Club - Toiyabe Chapter)
61 Mike Tangreen
62 Lois E. Whitney (Western Shoshone Advocate)
63 Deanna M. Wieman (U.S. Environmental Protection Agency)
64 Robert D. Williams (U.S. Fish and Wildlife Service)
65 Ursula Wilson-Booth
66 Gordon Mountford
67 Mike Ayers
68 Mark Dubois
69 Kevin Sur
70 Pat Mulcahy
71 Department of Health & Human Services
72 Battle Mountain Band Council
73 Humboldt River Basin Water Authority
74 Henry Egghart

Letter 1

"Jo" <diegojo1@san.rr.com> on 10/31/2000 11:15:14 PM

To: <Roger_Congdon@nv.blm.gov>
cc:

Subject: Mine/Nevada

Tell the BLM that the proposed Gold Quarry mine expansion is the **most**
a **degrading mine ever proposed for Nevada** and possibly for the nation. It is unacceptable to allow the
groundwater to be depleted so that as many as 200 springs will dry and to allow at least seven streams to
b dry. It is
unacceptable to produce a toxic pit lake that will evaporate millions of
c gallons a year forever in the driest state in the country. Tell the BLM that their pit lake model is wrong and
has been shown to be wrong by the increasing acidity at Pinson.
Thank-You!
Jonina Arazi

Response to Letter 1

1a. Comment noted. The comment appears to discuss total cumulative effects as described in the Cumulative Impact Analysis (CIA) document. The cumulative analysis of three major mining projects (CIA, Chapter 3) indicated that as many as 182 springs or seeps could potentially be affected. The cumulative analysis predicted baseflow reduction in five streams (or certain reaches of these streams): Maggie, Marys, Susie, Rock, and Boulder Creeks. The CIA also predicted that the Humboldt River could experience reduced baseflow after mining ceases.

Analyses in the DEIS for this specific project predicted that only five springs could experience reduced or lost base flow. Spring flow will be monitored and any lost spring flow resulting from SOAPA dewatering would be mitigated as disclosed in the Final Mitigation Plan. Four creeks, middle and lower Marys Creek, lower Fish Creek, a portion of upper Lynn Creek and lower Maggie Creek may experience reduced or eliminated baseflows, but not the entire stream as a result of the SOAPA expansion. It must be noted that when the analyses indicate that baseflows could be reduced or eliminated, it does not mean the stream would be completely dry for the long term. Instead, it means that the dry condition in the fall of the year could be extended for a longer period of time before stream flow returns in the winter or spring. The potential effects that result from dewatering would be mitigated by flow augmentation, habitat enhancement, and other off-site mitigation measures. The text in Chapter 4, Water Resources of the FEIS has been changed accordingly.

1b. Comment noted. Analyses in the DEIS state that pit lake chemistry would generally have good water quality with some exceptions. The pit lake geochemical modeling was rerun in 2001 (Geomega, 2001) using the detailed Carlin Trend model (Hydrologic Consultants Inc., of Colorado, 2001). The new prediction shows better water quality than the original 1997 model. In the updated model, during the first years of pit refilling, 75 percent of the inflowing groundwater would pass through the limestone in the base of the pit and, thus, have a large buffering capacity to neutralize acidic inflows from the siltstones. In the mature lake (after 250 years), some elements may exceed aquatic life standards (cadmium, molybdenum, and selenium), but would not be expected to be harmful to waterfowl or terrestrial mammals for three reasons: 1) water quality generally would be good, not exceeding drinking water and rarely aquatic life standards (and any exceedances are predicted to be small); 2) the pit lake would be bermed and/or fenced to discourage access; and 3) the steep slopes of the pit walls would also discourage access to the water surface that would be approximately 275 feet below ground level. The lake is not expected to be a drinking water source. The revised model predicts the pit lake will evaporate approximately 994 acre-feet per year (Hydrologic Consultants Inc., of Colorado, 2001), but this evaporation is accepted as an unavoidable, residual effect.

1c. Conditions at the Pinson pit are not applicable to the Gold Quarry pit, because it is not buffered by limestone. The modeling effort for pit water quality is considered appropriate. See response 33z. A monitoring station in the pit is being considered as part of the mitigation plan, and if implemented, would allow observation of any trend in increasing or decreasing chemical parameters.

Letter 2

birdwhia@loki.stockton.edu on 10/30/2000 03:37:23 PM

Please respond to birdwhia@loki.stockton.edu

To: Roger_Congdon@nv.blm.gov
cc:

Subject: stop the gold mine expansion

Please stop the proposed Gold Quarry Mine expansion!

a | This is the most degrading mine ever proposed for Nevada and possibly for the nation. It is unacceptable to allow the groundwater to be depleted so that as many as 200 springs will dry and to allow at least seven streams to
b | dry. It is unacceptable to produce a toxic pit lake that will evaporate millions of gallons a year forever in the driest state in the country.
c | Your pit lake model is wrong and has been shown to be wrong by the increasing acidity at Pinson.

Think of the future generations whose environment you will be destroying.

Please:
d | 1. require Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

e | 2. require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake. Indicate that a minimum of $50,000,000 will be needed and reference the billion dollars pledged at the Iron Mountain Mine in CA or the $127,000,000 pledged by Molycorp in New Mexico.

f | 3. require Newmont to mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

This land belongs to all Americans--not this one company!

Anne Birdwhistell

This message has been Molly Mailed. -- http://www.MollyMail.com

Response to Letter 2

2a. See response 1a.

2b. See response 1b.

2c. See response 1c.

2d. In 2001, Hydrologic Consultants Inc., of Colorado remodeled the potential for injection in the Maggie Creek Basin using the recalibrated groundwater model, approved by the BLM. This modeling showed greater recycling of groundwater into the Gold Quarry pit than was modeled for the 1993 SOAP EIS. As a result, injection as an alternative was again rejected.

Infiltration of excess water into the shallow alluvial system in Maggie Creek Basin was also eliminated from detailed study in 1993. The alluvium in Maggie Creek Basin has limited capacity for infiltration due to low permeability of the alluvium and a high water table. Limited infiltration of mine water has occurred at Maggie Creek Ranch Reservoir (1993 DEIS at 2_60), further reducing the capacity of the alluvium to store excess water.

2e. Final bond amounts will be determined as a condition of the final decision which is published in the Record of Decision. In 1997, Newmont submitted its Plan of Operations for this project that included a Reclamation Plan Amendment. That plan identified incremental reclamation costs of $72,025,000. Newmont committed to placing a bond in that amount pending the Record of Decision.

2f. Analyses in the DEIS predict minimal impacts to the Humboldt River and tributaries. However, Newmont has completed mitigation of many acres of riparian areas along numerous streams throughout the Maggie Creek Basin. The DEIS predicts minimal impacts to wetlands and riparian areas. Considerable mitigation has already occurred and is documented in Appendix A. Potential impacts that were predicted in 1993 have failed to materialize, and finally, any dewatering impacts that do become evident will be mitigated according to the Final Mitigation Plan - Appendix A of the FEIS.

Letter 2 Continued

Response to Letter 2

In 1993, Newmont committed to implementing a major program of wetland and riparian area enhancement and overall watershed restoration. The activities were to enhance 1982.8 acres of riparian habitat, over 40,000 acres of upland watershed, and 82 miles of stream channel. The mitigation program consisted of five elements: 1) the Maggie Creek Watershed Restoration Project; 2) the Susie Creek Riparian Enhancement Project; 3) the Marys River Riparian Project; 4) the Sand Dunes Springs Riparian Study Preserve; and 5) the Seep and Spring Enhancement and Flow Augmentation Program. Most of the elements of the mitigation program were completed by 1996 and those not completed are on-going, as is the monitoring of all installations. The Maggie Creek Watershed Restoration Project included water development and fencing, an innovative grazing management program, a program of woody species planting on stream banks, and creation of a conservation easement for some privately-owned areas. The Watershed Restoration Project was designed to enhance 1982.8 acres to mitigate the 1,038 acres potentially affected along Maggie Creek and smaller areas along five other creeks. Limited fencing has occurred along Susie Creek to mitigate the 262.9 acres of potentially affected riparian areas in that drainage. Three stock watering wells were developed by Newmont to enhance Marys River riparian areas by keeping cattle in other areas of the grazing allotment and allowing improvement of approximately 1,400 acres of riparian habitat. The Sand Dunes Springs Riparian Study Preserve has enhanced approximately 1,260 acres by controlling flows into the wetlands and excluding cattle grazing. The Spring and Seep Enhancement Program is in place. To date, none of the springs or seeps have required augmentation of flow or other mitigation.

The success of these mitigation programs is documented in Appendix A of the Draft EIS. All mitigation measures committed to in 1993 are still in effect. Some have been modified through consultation between Newmont and BLM. The mitigation plan has been updated as part of this NEPA process and the final Mitigation Plan - Appendix A of the FEIS.

Letter 3

soapsoiscomments.do
c

Had been having some trouble getting these to you . . .
---------- Forwarded by Roger Congdon/ELFO/NV/BLM/DOI on 11/02/2000 04:14 PM ----------

Bill Clymer <cfv@juno.com> on 10/31/2000 11:21:17 AM

To: Roger_Congdon@nv.blm.gov
cc:

Subject: AMEND THE GOLD QUARRY MINE EXPANSION

We Demand:

a 1. That the BLM require Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

b 2. That the BLM require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake. Indicate that a minimum of $50,000,000 will be needed and reference the billion dollars pledged at the Iron Mountain Mine in CA or the $127,000,000 pledged by Molycorp in New Mexico.

c 3. That Newmont mitigate the losses of habitat by restoring many miles of
the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs
dry.

Bill Clymer, President
Citizens for Victor!
208 Victor Ave . Victor, Co. PO 142 80860
< CFV@juno.com>
719 266-1362/ 719 689-2292

Response to Letter 3

3a. See response 2d.

3b. See response 2e.

3c. See response 2f.

Letter 4

"Susan Czopek" <washozo@pyramid.net> on 10/30/2000 12:46:51 PM

Please respond to <washozo@pyramid.net>

To: <roger_congdon@nv.blm.gov>
cc:

Subject: Gold Quarry Mine Expansion

Dear Mr. Congdon,

Please count me among the Nevada residents who OPPOSE the Gold Quarry Mine expansion project northwest of Elko.

a Because of the long-term effects to the water resources and those effects on habitat and people, this project should not go forward. According to state-wide water experts, this state is already drawing down the water table to an unsustainable degree. This project will prove to be not only an embarrasment, but a travesty.

Thank you,

Susan Czopek
4420 S. Jumbo Way
Washoe Valley, NV 89704

Response to Letter 4

4a. The DEIS evaluated the potential effects of the SOAPA on water and other resources, as well as potential mitigation measures. See response 2f.

Letter 5

"ken dawdy" <kendawdy@hotmail.com> on 10/30/2000 10:16:52 AM

To: Roger_Congdon@nv.blm.gov
cc:

Subject: Gold Quarry Mine Expansion in Nevada

a | As now proposed, the proposed expansion of the Gold Quarry Mine has extreme potential for the land that you are given responsibility.
b | To minimize this, at least the following needs to be implemented: 1) Require Newmont Mining Co. to keep dewatering water in the Maggie Creek Basin. The numerous springs that depend on it can't be allowed to dry up. 2)Require
c | them to post a sizable bond for remediation of toxic water. 3)Require mitigation of loses of habitat by restoring many miles of the Humbolt River.

Sincerely Ken Dawdy
16579 Cowell St.
San Leandro, Ca. 94578

Response to Letter 5

5a. See response 2d.
5b. See response 2e.
5c. See response 2f.

Letter 6

bjjohnso@usgs.gov on 10/30/2000 10:21:29 AM

To: Roger_Congdon@nv.blm.gov
cc: jburton@usgs.gov, phelm@usgs.gov, periley@usgs.gov, cpuente@usgs.gov

Subject: Final Comments

Attached are comments from the USGS for Draft Environmental Impact Statement for the Newmont Mining Corporation's South Operations Area Project Amendment. Please let me know if you have any problems with the attachment. Thanks.

Brenda Johnson

(See attached file: Newmont SOAPA.doc)

- Newmont SOAPA.doc

Response to Letter 6

Letter 6 Continued

1

In Reply Refer To:
Mail Stop 423

October 30, 2000

MEMORANDUM

To: Manager, Elko Field Office
Bureau of Land Management

From: James F. Devine SIGNED
Senior Advisor for Science Applications

Subject: Review of the Draft Environmental Impact Statement for the Newmont Mining Corporation's South Operations Area Project Amendment.

The U.S. Geological Survey has reviewed the subject Draft Environmental Impact Statement (EIS) and offers the following comments.

Page 3-1, GEOLOGY AND MINERALS, Geologic Setting:

a "Because BLM's original EIS (1993) is not available," this section needs to be expanded to summarize the age of the rocks and tectonic setting of the site. A basic geologic map with all the units and their map descriptions should be included. Specifically, the units that are mentioned in Geologic Hazards (sinkhole) and Acid Rock Drainage sections should be included on a geologic map.

Page 3-24, Surface Water Quality:

b Conductivity of total dissolved solids is a much more useful measurement than "hardness" and thus should be included in the water quality analysis. Also, the range and mean of dissolved solids, in addition to total dissolved solids, should be included.

c It is somewhat unusual that there is little variation in chemistry during low and high flow regimes. Data and a reference are needed to support this assertion.

Page 3-26, Table 3-8; page 3-27, Table 3-9; page 3-28, Table 3-10; and page 3-50, Table 3-19:

d The detection limits for "bdl" need to be included, and the tables should include alkalinity.

Response to Letter 6

6a. Copies of the original EIS (Draft, Final, and Mitigation Plan) are available upon request. It was always the intent to tier off the original EIS in order to avoid, where possible, repeating information that was presented in the 1993 document.

6b. Alkalinity and conductivity data were added to Tables 3-8, 3-9, 3-14, and 3-19 in the FEIS. The range and mean for total dissolved solids is presented in Tables 3-8, 3-9, 3-14, and 3-19.

6c. The information was in the original EIS (BLM, 1993, Page 3-28).

6d. Alkalinity data and detection limits have been added to the water quality analysis (Tables 3-8, 3-9, 3-14, and 3-19) in the FEIS. Table 3-10 contains water temperature data and does not include alkalinity or detection limits.

Letter 6 Continued

Page 3-48, first paragraph, Groundwater Quality:

e In contradiction to the statement, "Groundwater from all hydrostratigraphic units is of the calcium-carbonate or sodium carbonate type," Table 3-19 shows bicarbonate for most of the pH values. Clarification is needed.

Thank you for the opportunity to review and comment on this Draft EIS.

Copy to: Office of Environmental Policy Compliance

Response to Letter 6

6e. The references on page 3-48 of the DEIS were changed in Chapter 3, Groundwater Hydrology - Groundwater Quality of the FEIS to read "Groundwater from all hydrostratigraphic units is of the calcium-bicarbonate or sodium-bicarbonate type."

Letter 7

"Fred E. Dexter, Jr." <time-energy@worldnet.att.net> on 10/24/2000 07:27:23 AM

To: <Roger_Congdon@nv.blm.gov>
cc:

Subject: Gold Mine

Mr. Congdon - I own a PLASTICS manufacturing company. I am not a tree hugging "greenie'. However, I also am not an idiot.

a The environmental destruction proposed by the Newmont Gold Quarry mine and their lack of responsibility for the long tern effect is tantamount to a subsidy by Nevada for the permanent destruction of an entire eco-region in our state.

This is not a jobs or strategic mineral issue. It is a stockholder issue of profit for investors who never will even visit Nevada.

b If approved, Newmont must be obligated to keep all of their dewatering water in the Maggie Creek Basin to help replenish the water table / system.

c Newmont must post a 100 year bond to remediate any toxic water effects. THIS WILL PLACE AN EMPHASIS ON THE BOND ISSUING COMPANY TO INSURE COMPLIANCE AND TO A CERTAIN DEGREE RELIEVE NEVADA OF THE NEED TO CONTINUALLY MONITOR.

Please stop releasing our lands for private for-profit development without adequate and realistic guarantees that secondary long term damage will not occur.

Thank-you, Fred E. Dexter, PO Box 60877, Boulder City, NV 89006

Response to Letter 7

7a. In 1993, the BLM required Newmont to implement an extensive mitigation plan. The mitigation plan has been modified to address additional potential impacts from SOAPA. Newmont will be required to implement the revised Mitigation Plan in the event the proposed expansion is approved. See response 2f. The state of Nevada and the counties of Elko and Eureka will receive millions of dollars from net proceeds of minerals taxes, property taxes, sales and use taxes, permit fees, and other sources of revenue.

7b. See response 2d.

7c. See responses 1b and 2e.

Letter 8

Julie Dudley <Julie@INNERWESTADV.com> on 10/31/2000 05:09:33 PM

To: "'Roger_Congdon@nv.blm.gov'" <Roger_Congdon@nv.blm.gov>
cc:

Subject: LETTER - Gold Quarry Expansion

Oct. 31, 2000

Mr. Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

Re: Gold Quarry Mine Expansion

Dear Mr. Congdon,

a I was appalled when I learned that as many as 200 springs and seven streams will dry up if the BLM allows Newmont's Gold Quarry Mine to be expanded. These water sources are vital to all kinds of wildlife.

b And the damage doesn't stop there. With Newmont's proposed toxic pit lake, millions of gallons of water will evaporate each year. What makes this proposal even more unacceptable is that Nevada is the most arid state in the nation. It just doesn't make sense.

c Thousands of acres of wildlife habitat will be permanently destroyed by the expansion of Newmont's Gold Quarry Mine. Reclamation does not restore the lost deer migratory routes and sage grouse leks. Sage grouse numbers are in decline and their existence in this area should be an important factor in your decision whether or not to allow expansion of this mine.

The BLM should require:

d • Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

e • Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake.

f • Newmont mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at

Response to Letter 8

8a. See response 1a.

8b. See response 1b.

8c. While we agree that reclamation does not restore wildlife habitat to its exact pre-mining condition, it is not accurate to say that the wildlife habitat will be permanently destroyed. The entire site, except for the pit area, will be reclaimed and revegetated, and will provide wildlife habitat in the future. Of the 2,041 acres available in the mitigation bank, resulting from previous off-site rehabilitation of mule deer transitional range credited to Newmont, would be applied proportionally as mitigation for mule deer habitat permanently lost to the pit expansion of 139 acres. For mule deer mitigation routes, appropriate off-site mitigation measures would be implemented approximately 20 miles north of the project area boundary. These measures would include removal of approximately 3.5 miles of woven wire fence on public and private lands, and reconstruction of the same fence to standards that facilitate big game movement. These measures would facilitate mule deer migration for the same affected herds that use existing migration routes adjacent to the project area boundary. The DEIS (page 4-81) points out that no sage grouse leks would be affected, and that appropriate mitigation measures would be implemented to mitigate potential effects on sage grouse populations.

8d. See response 2d.

8e. See response 2e.

8f. See response 2f.

Letter 8 Continued

the site are lowered and the stream or springs dry.

Please consider these points when making your decision. Thanks for your time and attention to this matter.

Sincerely,

Julie Dudley
Chair, Nevada Wildlife Federation's Endangered Species Alliance
Vice Chair, Northwest Nevada Sage Grouse Working Group

Please let me know what you are going to do about this issue:

Julie Dudley
664 Ironwood Rd.
Reno, NV 89510

Response to Letter 8

Letter 9

Henry Egghart <hegghart@nvbell.net> on 10/20/2000 03:40:36 PM

To: Roger_Congdon@nv.blm.gov
cc:

Subject: Conitions on MIne Expansion

Dear Mr. Congdon:

I am writing to urge you to, at a minimum, impose the following conditions onany mine expansion or new mining in the Tuscarora Mountains and in other areas:

a 1. require Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

b 2. require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake.

c 3. require that Newmont mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

Thank you for your attention.

Henry Egghart
Reno

Response to Letter 9

9a. See response 2d.

9b. See response 2e.

9c. See response 2f.

Letter 10

kfite@juno.com on 10/31/2000 08:49:18 AM

To: Roger_Congdon@nv.blm.gov, idwp@idahowatersheds.org, pmarc@juno.com, robert_abbey@nv.blm.gov, lawfund@rmci.net, tom@greatbasinminewatch.org, ktfite@earthlink.net

cc:

Subject: Gold Quarry Mine Expansion

October 31, 2000

Dear Mr. Congdon,

a The Committee for Idaho's High Desert strongly opposes the expansion of the Gold Quarry Mine. It is not in the public interest, and will lead to widespread environmental harm. The action will affect soils, wildlife, fish, rare and threatened species, vegetation, water quality, water, air, recreational experiences and wild land values over a broad area. These impacts are not adequately addressed in the EIS. Appropriate monitoring and mitigation are not included. Analyses of short, mid and long-term effects is inadequate.

b The direct, indirect and cumulative impacts of mining, grazing, ORV use and other activities on lands in northern Nevada have never been adequately assessed.

c The ancient RMP is woefully out-dated, and no actions can legitimately be tiered to it.

d From our experience in grazing matters involving Elko BLM, we believe this office is incapable of making unbiased decisions. We ask that BLM at a higher level be responsible for this EIS.

e The EIS and associated documents failed to consider and fully assess a reasonable range of alternatives.

f The EIS fails to adequately assess and reveal the impacts of the groundwater depletion that will result if this mine development goes forward. As many as 200 springs and seven streams will dry up. The resultant toxic pit will evaporate millions of gallons of water a year. The evaporated water itself will contain toxic compounds that will be released into the air.

g

h

i The pit model is wrong, and can not be used as the basis for this analysis. BLM must require that Newmont Gold keep all of the dewatering water in the Maggie Creek Basin. Newmont Gold must post a bond to remediate toxic water and toxic air, and to replace water. A minimum of a $50,000,000 dollars is needed. BLM must require that Newmont mitigate habitat losses by restoring watersheds throughout northern Nevada. Many of these watersheds are currently devastated by livestock and mining abuses.

j

k

l

m Following review of the Elko BLM's current NEPALOG, CIHD requested information on this mine, the EIS and other documents and a series of related projects (including land exchanges) over a month ago. To date, we have received none of this information. We believe that this information is necessary to enable us to understand the scope of the proposal and extent of environmental impacts. We are also afraid that BLM may purposefully be masking related actions until after the EIS comment

Response to Letter 10

10a. The DEIS discloses the potential effects on soils, wildlife, fish, rare and threatened species, vegetation, water quality, water, air, recreational experiences and wild land values at an appropriate level of analyses for the decision maker(s). Mitigation and monitoring measures are presented for each resource discussed and were formulated to address the specific issues identified in Chapter 1. The level of impact analyses was determined for each resource area by identifying issues and concerns brought forth from the public scoping process and providing sufficient analyses to address potential effects on each issue or concern.

10b. Chapter 4 of the DEIS analyzes the direct and indirect effects of the Proposed Action. An EIS document is mandated to look at cumulative effects of the Proposed Action, other known activities in the area, and other reasonably foreseeable activities, but it also puts a boundary around a cumulative effects study area. While this EIS did not look at all of northern Nevada, it did look at multiple resources in the entire Carlin Trend area and the Cumulative Impact Analysis evaluated six major watersheds tributary to the Humboldt River. The Cumulative Impact Analysis was conducted for three major projects, SOAPA, Betze, and Leeville, which covered an area roughly 50 miles by 60 miles. This analysis is considered one of the more extensive cumulative impact analyses in recent EIS literature.

10c. The proposed mining action is in conformance with the RMP and with BLM policy.

10d. The existing BLM delegation of authority is adequate.

10e. A reasonable range of alternatives was evaluated in the DEIS and no additional alternatives were identified as a result of comments on the DEIS.

10f. See response 1a.

10g. See response 1b.

10h. No toxic compounds will be released into the air from the pit lake.

10i. See response 1c.

10j. See response 2d.

10k. See responses 1b and 2e.

10l. See response 2f.

10m. The requested documents were provided.

Letter 10 Continued

m

period is over.

We request an extension of the comment period until we have time to adequately review relevant info --- which your office has failed to provide to us in a timely manner.

Please respond to our request in writing.

What good is a NEPALOG, if the public can not receive the info that is on it? This thwarts NEPA. As I communicated to both you and Mgr. Hankins yesterday, we only learned about the closing of the EIS comment period from an "alert" e-mail we first read yesterday.

Sincerely,

Katie Fite
Committee for Idaho's High Desert
PO Box 2863
Boise, ID 83701
208-385-7588

cc: Great Basin Mine Watch, Tom Myers
Land and Water Fund, Laird Lucas
Idaho Watersheds Project, Jon Marvel
BLM Director Abbey

Response to Letter 10

10m. The requested documents were provided.

Letter 11

"Stan Haye" <adit@ridgenet.net> on 10/29/2000 02:48:31 AM

To: Roger_Congdon@nv.blm.gov
cc: adit@ridgenet.net

Subject: Gold Quarry Mine Expansion

Dear BLM,

Apparently, in Nevada, gold is more precious than water, or it is where Newmont is concerned. To correct this error, please consider the following:

a 1. Newmont must not be allowed to dry up springs and streams. These are public property, and Newmont must not be allowed to destroy them. Any water Newmont pumps must stay in the Maggie Creek basin.

b 2. No pit lake should be allowed to form. This would not only be toxic to wildlife, it would waste a lot of water by casusing evapcration. To ensure that this does not happen, Newmont must be required to pcst a bond of at least $50 million dollars to be held for at least 100 years. Much larger bonds have been required in other areas, such as Molycorp in New Mexico and Iron Mountain in California.

d 3. Any damage to habitat must be mitigated by Newmont by restoring large parts of the Humboldt River.

In the driest state in the country, gold must not be allowed to be more precious than water.

Sincerely,

Stqan Haye
230 Larkspur
Ridgecrest, CA 93555

Response to Letter 11

11a. See responses 1a and 2d.

11b. See response 1b.

11c. See response 2e.

11d. See response 2f.

Letter 12

---------- Forwarded by Roger Congdon/ELFO/NV/BLM/DOI on 10/31/2000 10:20 AM ----------

"Hermi/John Hiatt" <hjhiatt@anv.net> on 10/31/2000 09:46:27 AM

To: <roger_congdon@nv.blm.gov>
cc: "Hermi/John Hiatt" <hjhiatt@anv.net>

Subject: Gold Quarry Mine

October 31, 2000

Mr. Roger Congdon, Project Lead

Elko Field Office, Bureau of Land Management

3900 East Idaho Street

Elko, NV 89801

RE: GOLD QUARRY MINE EXPANSION

Dear Sirs,

I strongly oppose expansion plans for the Gold Quarry Mine unless the water problems associated with de-watering at the site can be solved. The de-watering proposed for this site will degrade water resources in the Maggie Creek Basin for decades if not centuries. If the expansion is approved the following conditions should be imposed as a minimum requirement:

a All de-watering water must be retained with the Maggie Creek Basin. Export of water out of the basin must be prohibited.

b Newmont post a bond of sufficient magnitude and duration of a potentially toxic pit lake. They should be required to backfill the pit to a level that will prevent formation of a pit lake. The bond should run at least 50 years and be large enough to cover costs of remediation 30-50 years from now (assume 3% annum rate of inflation).

c Newmont should be required to mitigate all loss of riparian habitat associated with this mining operation. In Nevada, the driest state in the country, riparian areas are the key to survival of most wildlife.

Sincerely,

John E. Hiatt

Conservation Chair, Red Rock Audubon Society

1

Response to Letter 12

12a. See response 2d.

12b. See response 2e.

12c. See response 2f.

Letter 13

"Victoria Locke-King" <kai5757@lvcm.com> on 10/31/2000 02:29:04 PM

To: <Roger_Congdon@nv.blm.gov>
cc:

Subject: Newmont

Mr. Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

The economic benefits of mining in northeast Nevada will last a few decades; the degradation will continue for centuries.

The proposed Gold Quarry mine expansion is the most degrading mine ever proposed for Nevada and possibly for the nation. It is unacceptable to allow the groundwater to be depleted so that as many as 200 springs will dry and to allow at least seven streams to dry. It is unacceptable to produce a toxic pit lake that will evaporate millions of gallons a year forever in the driest state in the country. Your pit lake model is wrong and has been shown to be wrong by the increasing acidity at Pinson.

I Demand:

a 1. That the BLM require Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

b 2. That the BLM require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake. Indicate that a minimum of $50,000,000 will be needed and reference the billion dollars pledged at the Iron Mountain Mine in CA or the $127,000,000 pledged by Molycorp in New Mexico.

c 3. That Newmont mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

Victoria Locke King
3061 French Creek Ct
LV NV, 89156

Response to Letter 13

13a. See response 2d.

13b. See responses 1b and 2e.

13c. See response 2f.

Letter 14

OCT-30-2000 09:55 AM OKANOGAN.HIGHLANDS.ALL 509 485 3361 P.01

CONCERNED • INFORMED • EMPOWERED

Okanogan Highlands Alliance

P.O. Box 163 Tonasket WA 98855

Pure Water is more Precious than Gold!

October 30, 2000

Mr. Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

via fax: 775-753-0200

Re: Gold Quarry Mine Expansion

a The proposed Gold Quarry mine expansion is the **most degrading mine ever proposed for Nevada** and possibly for the nation. It is unacceptable to allow the groundwater to be depleted so that as many as 200 springs will dry and to
b allow at least seven streams to dry. It is unacceptable to produce a toxic pit lake that will evaporate millions of gallons a year forever in the driest state in
c the country. The pit lake model is wrong and has been shown that acidity would increase at Pinson.

d 1. The BLM should require Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

e 2. The BLM should require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake. Indicate that a minimum of $50,000,000 will be needed and reference the billion dollars pledged at the Iron Mountain Mine in CA or the $127,000,000 pledged by Molycorp in New Mexico.

f 3. Newmont should mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

Sincerely,

David Kliegman,
Director, Okanogan Highlands Alliance

Response to Letter 14

14a. See response 1a.

14b. See response 1b.

14c. See response 1c.

14d. See response 2d.

14e. See responses 1b and 2e.

14f. See response 2f.

Letter 15

Oct-30-00 03:47P Project Underground +1 510 705 8983 P.02

project [redacted]

Supporting communities threatened by the mining and oil industries

October 30, 2000

Mr. Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

Dear Mr. Congdon,

a | I am writing to you about the Gold Quarry mine expansion. The expansion is the most degrading mine ever proposed for Nevada and possibly for the nation. It is
b | unacceptable to allow the groundwater of Nevada to be depleted to the point that as many as 200 springs will dry up and at least seven streams will dry up. It is completely unacceptable to allow the mine to produce a toxic pit lake that will evaporate millions of
c | gallons a year forever in the driest state in the country. It is unacceptable to allow 8000 acres (the total size of Gold Quarry) at one mine and at least 30,000 acres of the Tuscarora Mountains (over the past 15 years and for the next 10 years) to be destroyed just to produce gold, 80 percent of which goes to make jewelry, a non-essential
d | commodity. Reclamation can never restore the lost deer migratory routes and sage grouse leks which are crucial to the ecosystem of the area.

e | I urge the BLM to insist that Newmont Mining keeps all of its dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically
f | essential springs and seeps depends on it. It is also imperative that the BLM require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake, and that Newmont
g | mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

I urge you to take these demands into consideration and to protect the people and ecosystems of Nevada.

Yours Sincerely,

Shanna Langdon
Mining Campaign Coordinator

1916A Martin Luther King Jr. Way
Berkeley, CA 94704
510.705.8981
fax 510.705.8983

project_underground@moles.org
http://www.moles.org

Response to Letter 15

15a. See response 1a.

15b. See response 1b.

15c. All of the affected lands along the Carlin Trend will be restored and reclaimed, with the exception of open pits that are not back-filled (approximately 6,500 acres), DEIS at page 5-7. We recognize that the lands will be reclaimed to somewhat different conditions but they will continue to provide grazing, wildlife habitat, and dispersed recreation. Additionally, there would be considerable off-site mitigation for wetland and riparian areas, and seeded areas for grazing and wildlife habitat. A definition of "disturbed" was added to footnote 1 of Table 5-1, Chapter 5 of the FEIS that reads: "Disturbed" includes all areas used for mining, processing and ancillary facilities (roads, ponds, berms, buildings, utilities, etc.)."

15d. See response 8c.

15e. See response 2d.

15f. See responses 1b and 2e.

15g. See response 2f.

Letter 16

COREY LEE LEWIS <corey@unr.nevada.edu> on 10/30/2000 02:36:33 PM

To: Roger_Congdon@nv.blm.gov
cc:

Subject: Gold Quarry Mine Expansion

Roger Congdon

I am writing to offer my strongest recommendation against the proposed Gold Quarry Mine Expansion near Elko, and to ask that you support both the ecological and economic integrity of the region through your opposition of the proposal.

a As a field studies instructor for the University of Nevada, Reno, I have often taken my environmental studies classes into the Jarbidge wilderness and the BLM environs surrounding Elko. This biologically diverse country is also defined by its aridity. The result of draining aquifers and lowering water tables will be nothing short of a biological holocaust for this region's native wildlife. As stewards of the public land the BLM should consider what is necessary for preserving the integrity of the ecosystems which it manages. Please use your position to protect and preserve our natural heritage for future generations.

Sincerely,

Corey Lewis
University of Nevada, Reno

Response to Letter 16

16a. All identified impacts will be appropriately mitigated. The potential for success of mitigation is demonstrated by the success of the current mitigation plan as described in Appendix A of the FEIS. See response 2f.

Letter 17

Jonathan Machen <jon@dimensional.com> on 10/30/2000 09:04:56 AM

To: Roger_Congdon@nv.blm.gov
cc:

Subject: re: Newmont mining

To Roger Congnon:
I urge that:

a 1. That the BLM require Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

b 2. That the BLM require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake. A minimum of $50,000,000 will be needed and reference the billion dollars pledged at the Iron Mountain Mine in CA or the $127,000,000 pledged by Molycorp in New Mexico.

c 3. That Newmont mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

Thanks
Jonathan Machen

Response to Letter 17

17a. See response 2d.

17b. See responses 1b and 2e.

17c. See response 2f.

Letter 18

Bobbackpac@aol.com on 10/30/2000 08:38:46 AM

To: Roger_Congdon@nv.blm.gov
cc:

Subject: Gold Quarry Mine Expansion

a Dear Mr. Congdon: Please require Newmount Mining to keep all of their dewatering water in the Maggie Creek Basin, and that they also post a bond to remediate any toxic water in the pit lake as was done at the Iron Mountain Mine in California. Thank you for your consideration. Respectfully, Robert C. Madsen, Pleasanton, CA

Response to Letter 18

18a. See responses 1b, 2d and 2e.

Letter 19

"Anne Martin" <annem@americanlands.org> on 10/31/2000 09:37:57 AM

Please respond to <annem@americanlands.org>

To: <Roger_Congdon@nv.blm.gov>
cc:

Subject: Comments on Gold Quarry mine

October 31, 2000

Mr. Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

Dear Mr. Congdon,

a I am writing to you about the Gold Quarry SOAPA mine expansion. The expansion is one of the most degrading mines ever proposed for Nevada and possibly for the nation. It is unacceptable to allow the groundwater of Nevada to be depleted to the point that as many as 200 springs will dry up and at least seven streams to significantly dry. It is completely

b unacceptable to allow the mine to produce a toxic pit lake that will evaporate millions of gallons a year forever in the driest state in the country. There is so much pyrite in the pit walls that it is inconceivable that the lake will be as clean as suggested in the DEIS. It is unacceptable

c to allow 8000 acres (the total size of Gold Quarry) at one mine and at least 30,000 acres of the Tuscarora Mountains (over the past 15 years and for the next 10 years) to be destroyed just to produce gold, 80 percent of which

d goes to make jewelry, a non-essential commodity. Reclamation can never restore the lost deer migratory routes and sage grouse leks which are crucial to the ecosystem of the area.

e We urge the BLM to insist that Newmont Mining keeps all of its dewatering water in the Maggie Creek basin. To not do so would substantially mean the mine is causing undue degradation. The future of the riparian systems of many streams and hundreds of ecologically essential springs and seeps

f depends on it. It is also imperative that the BLM require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake, and that

g Newmont mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

I urge you to take these demands into consideration and to protect the people and ecosystems of Nevada.

Yours Sincerely,
Anne Martin, Field Director
American Lands Alliance
P.O. Box 8664
Reno, NV 89507
Annem@americanlands.org

Response to Letter 19

19a. See response 1a.

19b. See responses 1b and 2e.

19c. See response 15c.

19d. See response 8c.

19e. See response 2d.

19f. See responses 1b and 2e.

19g. See response 2f.

Letter 20

Rebecca Mirsky <rmirsky@uswest.net> on 10/30/2000 08:25:04 AM

To: Roger_Congdon@nv.blm.gov
cc:

Subject: Mine Expansion Comments

Dear Mr. Congdon:

I'm writing to request that the conditions for expansion of the Gold Quarry Mine be amended. The proposed Gold Quarry mine expansion is among the most degrading
plans ever proposed for a Nevada mine and possibly for the nation. There is sufficient cause to believe that individual and cumulative mining in the Carlin Trend has reached the point of undue and unnecessary degradation. Without very significant mitigation, neither this mine expansion nor any other project that contributes to the cumulative impacts currently devastating the water resources of the Tuscarora Mountains and Maggie Creek basin should be permitted. The plan for the Gold Quarry Mine expansion permits an unacceptable level of groundwater depletion and in addition, allows a toxic pit lake that will evaporate millions of gallons a year indefinitely in the driest state in the country. The pit lake model has already been demonstrated to be flawed as shown by the increasing acidity at Pinson.

a

b

c

At what point does the potential for environmental impact outweigh the benefits received from mining? I understand that in the case of the Gold Quarry expansion being considered, the project proposal will disturb 839 acres of public and 553 acres of private land, respectively. Of the public land, only 9 acres will go for actually mining a valuable mineral in the Gold Quarry Mine. It is unbelievable that Newmont Gold actually expects to use 830 acres of public land to mine gold from what is essentially private land and a private mine. The BLM clearly needs to analyze this issue in the draft EIS.

d

I also urge the BLM to conduct the following measures:

1. Require Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

e

2. Require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in
the river if lost to the pit lake. One estimate indicates that a minimum of $50,000,000
will be needed - note that a billion dollars has been pledged at the Iron Mountain
Mine in CA and $127,000,000 was pledged by Molycorp in New Mexico.

f

3. Require Newmont to mitigate loss of habitat by restoring impacted portions along the Humboldt River. Such mitigation will become impossible if groundwater levels at the site are lowered and streams or springs allowed dry up.

g

There are many other concerns too numerous to mention, but which I believe are very well stated in comments submitted by the Great Basin Mine Watch, and I request that the BLM issue a new draft EIS which addresses those comments and proposed alternative.

Sincerely,

Rebecca Mirsky, PhD, PE
1114 N. 21st Street
Boise, ID 83702

Response to Letter 20

20a. See response 2f.

20b. See response 1b.

20c. See response 1c.

20d. The DEIS does evaluate the relative potential impact on private and public lands and impacts will be appropriately mitigated. See response 33g.

20e. See response 2d.

20f. See responses 1b and 2e.

20g. See response 2f.

Letter 21

"Tony Patton" <tonyp@apllabs.com> on 10/24/2000 08:11:49 AM

Please respond to <tonyp@apllabs.com>

To: <Roger_Congdon@nv.blm.gov>
cc:

Subject: Gold Quarry Mine

Mr. Congdon,

a Could you please explain the benefits of this new gold mine expansion in the Tuscarora Mountains?

b Is it destroying the environment like the Sierra Club has claimed?

I thought I should hear both sides of the story.

Thank you,

Tony Patton

Response to Letter 21

21a. The benefits of the Gold Quarry mine expansion are primarily social and economic. Jobs for approximately 1,000 workers at the South Operations area would be extended for 10 years. Revenues to governmental agencies in the form of proceeds of net minerals taxes ($3.8 million per year), property taxes (more than $3.6 million per year to the counties), and sales and use taxes ($13.8 million per year to the State) would continue to be collected by Eureka and Elko counties, and the State of Nevada. Additionally, the project would continue to contribute to the local economy through sales taxes generated from employee spending. Sales taxes would likely be distributed among Elko County, Salt Lake City, Twin Falls, and Reno, where local residents frequently purchase major items. Also, it is assumed that wages paid in the mining industry would induce additional jobs in other economic sectors, DEIS at 4-113. Finally, Newmont stockholders would also see financial benefits.

21b. The project would have direct and indirect and cumulative impacts. Impacts would be both short- and long-term as evaluated in the DEIS. Mitigation measures have been proposed to address potential impacts.

Letter 22

"George Poston" <GPOS1@nevada.newmont.com> on 10/30/2000 03:18:37 PM

To: <Roger_Congdon@nv.blm.gov>
cc:

Subject: Comments on Draft EIS for Newmont's South Operations Area Project Amendment

Howdy Roger. I would agree with the following letter. Back filling a pit, especially with the current price of gold, is not economic. Suggestions of such a practice are generally aimed at preventing the mining, and not in touch with reality (economic or otherwise).

Thanks for your attention,
George
.....

USDOI-BLM
3900 East Idaho St.
Elko, Nevada 89801
http://www.nv.blm.gov

Public Comment on Draft Environmental Impact Statement (DEIS) for Newmont Mining Co. South Operations Area Project Amendment Due October 31, 2000.

We would like to comment on the above DEIS in reply to letter 1793.4/3809, N16-81-009P.

We support Newmont's PROPOSED ACTION.

The proposed action would provide for the environmental sound expansion of the mining at Newmont's Gold Quarry Mine, north of Carlin Nevada. The mine offers the rural Nevada population with good paying jobs, which supports a healthy tax base for the US Government, the State of Nevada, and both Elko and Eureka County as well as the local schools.

a We hereby reject the BLM proposed alternative of backfilling any open pit mine (Mac Pit) as being completely unnecessary, expensive, with no positive improved environmental effect, except potential visual effects from the air by an airplane. "The Mac Pit backfill alternative would not increase the visual impact of structures in the proposed action." The Mac Pit is ½ mile uphill from the larger Gold Quarry Pit and represents an impractical, uneconomical, and environmental extreme approach by the BLM that is not based on sound science. The BLM's proposed alternative is not supported by the US Congress as established by Public Law 91-631,The Mining and Minerals Policy Act of 1970 which states:

"The Congress declares that it is the continuing policy of the Federal Government in the national interest to foster and encourage private enterprise in (1) the development of economically sound and stable domestic mining, minerals, metal and mineral reclamation industries." 30 U.S.C. 21a.

Domestic production of precious metals is vital to the US balance of trade and is essential to the local economy. The BLM's preferred alternative, Backfilling the Mac Pit, will deal an economic blow to the project that very well may result in many good jobs being lost. The proposed action by Newmont Mining Co. is crucial to the continued economic livelihood of Elko and Eureka County. The BLM adoption of their preferred alternative could put miners out of work! The statement made by the BLM that "Impacts on the economic resources in the study area with these alternatives would be the same as under

Response to Letter 22

22a. In the DEIS the preferred alternative was the Proposed Action with backfilling of the Mac pit. However, based on public comment and additional analysis of alternatives, the Proposed Action was selected. This change was made in Chapter 2, Agency Preferred Alternative of the FEIS.

Letter 22 Continued

b
c

the Proposed Action." This is not true! The BLM did not economically evaluate the increased cost of transporting waste rock uphill to backfill the Mac Pit. Great socioeconomic impacts could occur from the BLM adopting the preferred alternative, which is not addressed in the DEIS. With current low gold prices, Newmont's proposed project is on the economic borderline. The BLM uses socioeconomic data that is 3 to 4 years old. Thus, the BLM prefers to potentially shut down a mine to save the impact on only 6 acres, (BLM Preferred Alternative vs. Newmont's Proposed Action) which is 0.078 % of the total surface disturbance.

Due to the lack of current, sound, scientific socioeconomic data presented by the BLM to support their Preferred Alternative, and the potential costs, tipping the project to uneconomical, with the loss of jobs, we strongly recommend Newmont's Proposed Action.

Thank You

.....

Response to Letter 22

22b. The comment is correct that the DEIS did not provide a quantification of the cost of transporting waste rock uphill to backfill the Mac pit. Calculations were made of the additional truck costs of backfilling the Mac pit in comparison to hauling the same waste rock to the North Waste Rock Disposal Facility. The haul profile for backfilling was 40,000 feet in length compared to 13,600 feet to the North WRDF, and 85 percent of the trip was climbing or descending a 10 percent grade compared to 29.4 percent of the trip to the North WRDF. This haul profile resulted in 58.7 million ton-miles more than hauling to the North WRDF and this translates to 22,199 extra hours of truck operation. The cost of the truck hauling alone was calculated at approximately $2.5 million. When considering the total cost involving driver salaries, plant administration, utilities, and other costs of doing business, the total cost would be approximately $6.5 million.

22c. The socioeconomic data vary in age. The EIS was started in 1997, but used 1999 as the most recent year when certain kinds of data were available. These data are considered representative.

Letter 23

Mcp1348@aol.com on 10/28/2000 11:04:40 AM

To: Roger_Congdon@nv.blm.gov
cc:

Subject: Gold Quarry Mine Expansion

Dear Mr. Congdon,
What I have read about the proposed Gold Quarry mine expansion appalls me. It is unacceptable to allow, through the depletion of ground water, this level of environmental degradation. It is unacceptable to allow the destruction of 30,000 acres of the Tuscarora Mountains to be destroyed for the mining of gold.

a You must require Newmont Mining to keep all of their dewatering water in the Maggie Creek Basin. You must require Newmont Mining to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake. You must, also, require that Newmont Mining mitigate the losses of habitat by restoring many miles of the Humbolt River.

b

c

Your web page asserts that you manage public land in an environmentally responsible way. Please live up to that ideal in this case.
Sincerely,
Peggy Pierce

Response to Letter 23

23a. See response 2d.

23b. See responses 1b and 2e.

23c. See response 2f.

Letter 24

WESTERN SHOSHONE DEFENSE PROJECT
P.O. Box 211308, Crescent Valley, Nevada 89821
phone: 775-468-0230, fax: 775-468-0237, email: wsdp@igc.org

October 26th, 2000

Helen Hankins, District Manager
Elko Field Office, BLM
3900 East Idaho Street
Elko, Nevada 89801

Re: Newmont South Operations Area DEIS comment period

Dear Mrs Hankins,

a We are writing to request an extension of time to comment on the Newmont Mining Corporation South Operations Area Project Amendment DEIS. The current comment deadline is October 31st, and we would like an extension until November 14th. The Betze Project Draft Supplemental EIS has a comment deadline of November 14th, and both this document and the Newmont DEIS are tied to a third lengthy document entitled Cumulative Impact Analysis of Dewatering and Water Management Operations for the Betze Project, South Operations Project Amendment, and Leeville Project. Because of the related cumulative impacts of these projects we hope you will see fit to grant us this extension. The additional time will allow for a more substantive reply from our organization. Thank you for your consideration.

Sincerely,

Christopher Sewall
staff, WSDP

Response to Letter 24

24a. The BLM has explained to the Western Shoshone that they were not bound by the time frames of the NEPA comment period. The National Historic Preservation Act mandates that the federal government consult directly with tribal governments. BLM's manual H-8160-1 provides further guidance regarding BLM's role in completing Native American Consultation. No time frames are specified in these documents for completing consultation with tribal and band governments, as well as interested native groups. Thus, the Western Shoshone were informed that consultation was ongoing, and any comments from them would be accepted and considered by BLM beyond the NEPA comment period as consultation continued. Refer to Table 3-31a in Chapter 3 of the FEIS for chronology of Native American consultation efforts.

Letter 25

"Roy Al. Rendahl" <royrendahl@macconnect.com> on 10/24/2000 11:13:01 AM

To: Roger_Congdon@nv.blm.gov
cc:

Subject: Re: Gold Quarry Mine Expansion

Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

Dear Mr Congdon,

a The proposed Gold Quarry mine expansion is the most degrading mine ever proposed for Nevada and possibly for the nation. It is unacceptable to allow the groundwater to be depleted so that as many as 200 springs will
b dry and to allow at least seven streams to dry. It is unacceptable to produce a toxic pit lake that will evaporate millions of gallons a year forever in the driest state in the country. It is
c unacceptable to allow 8000 acres (the total size of Gold Quarry) at one mine and at least 30,000 acres of the Tuscarora Mountains (over the past 15 years and for the next 10 years) to be destroyed just to produce a
d commodity, gold, that is not needed. Reclamation does not restore the lost deer migratory routes and sage grouse leks.

Sincerely,

Roy Al. Rendahl and Farrah Reizana
1020 E Desert Inn Rd #803
Las Vegas NV 89109

702-614-9113
rar

 - royrendahl.vcf

Response to Letter 25

25a. See response 1a.

25b. See response 1b.

25c. See response 15c.

25d. See response 8c.

Letter 26

TRober9567@aol.com on 10/29/2000 12:19:09 PM

To: roger_congdon@nv.blm.gov
cc:

Subject: GOLD QUARRY MINE EXPANSION

Please require the following to happen:

a 1. That the BLM require Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

b 2. That the BLM require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake. Indicate that a minimum of $50,000,000 will be needed and reference the billion dollars pledged at the Iron Mountain Mine in CA or the $127,000,000 pledged by Molycorp in New Mexico.

c 3. That Newmont mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

Terri Robertson
6135 E. Carey Ave.
LV NV 89156
702-459-7613

Response to Letter 26

26a. See response 2d.

26b. See responses 1b and 2e.

26c. See response 2f.

Letter 27

Thom and Jette Seal
P.O. Box 547
Prairie City, OR 97869
October 27, 2000

USDOI-BLM
3900 East Idaho St.
Elko, Nevada 89801
http://www.nv.blm.gov

Public Comment on Draft Environmental Impact Statement (DEIS) for Newmont Mining Co. South Operations Area Project Amendment Due October 31, 2000.

We would like to comment on the above DEIS in reply to letter 1793.4/3809, N16-81-009P.

We support Newmont's PROPOSED ACTION.

The proposed action would provide for the environmental sound expansion of the mining at Newmont's Gold Quarry Mine, north of Carlin Nevada. The mine offers the rural Nevada population with good paying jobs, which supports a healthy tax base for the US Government, the State of Nevada, and both Elko and Eureka County as well as the local schools.

a We hereby reject the BLM proposed alternative of backfilling any open pit mine (Mac Pit) as being completely unnecessary, expensive, with no positive improved environmental effect, except potential visual effects from the air by an airplane. "The Mac Pit backfill alternative would not increase the visual impact of structures in the proposed action." The Mac Pit is 2.2 miles uphill from the larger Gold Quarry Pit and represents an impractical, uneconomical, and environmental extreme approach by the BLM that is not based on sound science. The BLM's proposed alternative is not supported by the US Congress as established by Public Law 91-631,The Mining and Minerals Policy Act of 1970 which states:

"The Congress declares that it is the continuing policy of the Federal Government in the national interest to foster and encourage private enterprise in (1) the development of economically sound and stable domestic mining, minerals, metal and mineral reclamation industries." 30 U.S.C. 21a.

Domestic production of precious metals is vital to the US balance of trade and is essential to the local economy. The BLM's preferred alternative, Backfilling the Mac Pit, will deal an economic blow to the project that very well may result in many good jobs being lost. The proposed action by Newmont Mining Co. is crucial to the continued economic livelihood of Elko and Eureka County. The BLM

b adoption of their preferred alternative could put miners out of work! The statement made by the BLM that "Impacts on the economic resources in the study area with these alternatives would be the same as under the Proposed Action." This is not true! The BLM did not economically evaluate the increased cost of transporting waste rock uphill to backfill the Mac Pit. Great socioeconomic impacts could occur from the BLM adopting the preferred alternative, which is not addressed in the DEIS. With current low gold prices,

c Newmont's proposed project is on the economic borderline. The BLM uses socioeconomic data that is 3 to 4 years old. Thus, the BLM prefers to potentially shut down a mine to save the impact on only 6 acres, (BLM Preferred Alternative vs. Newmont's Proposed Action) which is 0.078 % of the total surface disturbance.

Due to the lack of current, sound, scientific socioeconomic data presented by the BLM to support their Preferred Alternative, and the potential costs, tipping the project to uneconomical, with the loss of jobs, we strongly recommend Newmont's Proposed Action.

Thank You

Thom Seal & Jette Seal

Thom and Jette Seal

Response to Letter 27

27a. See response 22a.

27b. See response 22b.

27c. See response 22c.

Letter 28

"Ray Shreder" <rayjshreder@hotmail.com> on 10/24/2000 03:12:02 PM

To: Roger_Congdon@nv.blm.gov
cc:

Subject:

Re: Newmont Mining

a 1. Keep all of their dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

b 2. Require to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake.

c 3. Mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

Thank You

Response to Letter 28

28a. See response 2d.

28b. See responses 1b and 2e.

28c. See response 2f.

Letter 29

"Catherine P. Smith" <smithcp@unr.edu> on 10/29/2000 04:35:50 PM

To: Roger_Congdon@nv.blm.gov
cc:

Subject: Gold Quarry Mine Expansion Comments

October 29, 2000

Mr. Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

Re: Comments on Gold Quarry Mine Expansion

a As proposed, this expansion is extremely destructive because it depletes groundwater in an already dry region and substitutes a toxic pit lake for many, many springs and a number of streams in the area as well.

b Contrary to the BLM's model, the water in the pit lake will become increasingly acidic, making it useless to the flora and fauna that presently depend on springs and streams in the area. This is clear from the experience with increasing acidity at Pinson.

I urge the BLM to require the following:

c 1. Newmont Mining must be required to keep all of their dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

d 2. Newmont to post a minimum $50,000,000 bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake. There are precedents for requiring a bond of this size: one billion dollars pledged at the Iron Mountain Mine in CA and $127,000,000 pledged by Molycorp in New Mexico.

e 3. Newmont must mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

Thank you for your consideration.

Catherine P. Smith
3565 Rosalinda Dr.
Reno, NV 89503
smithcp@unr.edu

Response to Letter 29

29a. See responses 1a and b.

29b. See response 1c.

29c. See response 2d.

29d. See responses 1b and 2e.

29e. See response 2f.

Letter 30

Vonseg@aol.com on 10/25/2000 07:32:59 PM

To: Roger.Congdon@nv.blm.gov
cc:

Subject: No Subject

Mr. Roger Congdon, BLM:

I am writing because I have become aware of a proposed expansion of the Gold Quarry Mine in northeast Nevada near Tuscarora. To grant the request as stated is, to me, a violation of the public trust. The 1872 Mining Law has been abused to great lengths to despoil the public land, but I believe that this present request stretches it to new lengths. Where in that law does it allow hundreds of square miles of the public's natural resources to be dedicated to one company? This expansion project will draw down the water table over a vast region many times that on which the claim is actually made. The loss of springs out to tens of miles is simply unacceptable, and I would hope, illegal. This is not what the 1872 MIning Law framers had in mind. The scenic and hydrological resources that the expansion proposal will ruin extend far beyond the mine. The case is more onerous based on the fact that many future generations, not just our own, will be deprived of these resources.

a

b

If the target of the mining were some scarce, strategic mineral needed for defense or manufacturing, then there might be reason. We are, however, dealing with a metal which is used mostely for ornament and for financial stockpiles. To devastate large areas of our natural public lands for this purpose is unacceptable and, in my view, immoral. I expect the BLM to be stewards of the public lands, not overly generous providers to commercial extractive ventures.

c

I ask that you deny the expansion permit on the grounds of "public trust". This is a doctrine that has been upheld in court. If that is not feasible, then I ask that Newmont post a bond to cover all damages to hydrologic components of the public land. I also ask that you disallow any interbasin exchange of water in their mining activities.

d

e

David von Seggern
401 College Dr. #127
Reno NV 89503

Response to Letter 30

30a. The 1872 Mining Law provides that all valuable mineral deposits on federal lands shall be free and open to exploration and purchase under the local customs or rules of mining. The 1872 Law also authorized the use and occupancy of federal lands for mining and milling purposes.

30b. Potential impacts to scenic and hydrological resources will be appropriately mitigated. See responses 1a and 2f.

30c. The BLM has management responsibility of the surface resources according to various federal laws and the agency regulations for mining on public lands (43 Code of Federal Regulations, Part 3809, Surface Management Regulations). If mining companies comply with all the regulations of local, state, and federal agencies, then they can conduct mining according to a Plan of Operations that must be approved by the BLM.

30d. See response 2e.

30e. An exchange of water between basins is not part of the proposed action. The Nevada Department of Water Resources has the regulatory authority for inter-basin transfers of state waters.

Letter 31

"DIANE RILEY" <DRILEY@DEQ.STATE.ID.US> on 10/30/2000 12:46:54 PM

To: Roger_Congdon@nv.blm.gov
cc:

Subject: comments on South Operations Area Project DEIS

Attached are my comments (word files).

Diane Riley
Department of Environmental Quality
1410 N Hilton
Boise, ID 83706
(208) 373-0214 (phone)
(208) 373-0154 (FAX)
driley@deq.state.id.us

 - congdon.doc

 - enclosure.doc

Response to Letter 31

Letter 31 Continued

October 30, 2000

Roger Congdon
Bureau of Land Management
Elko Field Office
3900 E. Idaho Street
Elko, NV 89801

Dear Mr. Congdon:

This letter is in response to the Federal Register (Vol. 65, No. 171; September 1, 2000) Notice of Availability of the South Operations Area Project Amendment Draft Environmental Impact Statement (DEIS). The mine expansion would disturb up to 1,392 acres of vegetation. It is unclear how the cleared vegetation will be disposed. If prescribed fire is utilized, I have the following comments.

a

Prescribed fire must be done in conjunction with protecting human health and welfare. Prescribed fires need to be conducted consistent with the Federal Clean Air Act, and any associated federal, state, and local policies and regulations. Proper smoke management, however, is still the responsibility of the burner even when all existing requirements and programs are followed. An air quality analysis should include: an estimate of maximum number of acres to be burned in a day, acres per burn unit, maximum duration of burns, and maximum daily and burn unit PM_{10} and $PM_{2.5}$ emissions; smoke sensitive areas; predominant meteorological patterns; smoke monitoring procedures; emission and smoke impact reduction techniques; public notification process; mitigation actions during smoke intrusion episodes; alternatives to burning considered and used; and coordination with other burn activity. The Forest Service NEPA guidance for prescribed fire projects is a useful document for developing air quality analyses (www.fs.fed.us/r1/gallatin/air/guidance/index.shtml). The enclosure provides additional information on air quality issues.

We support a coordinated effort between state, interstate, federal, tribal, and local agencies. All prescribed fire activities must include careful consideration of air quality impacts and requirements. We look forward to working with you as you develop the Final EIS and at the individual project level as well. Thank you for the opportunity to comment and if you have any questions, please contact me by phone at (208)373-0214, by e-mail at driley@deq.state.id.us, or at the Department of Environmental Quality.

Sincerely,

Diane Riley
Air Quality Analyst
Air Quality Management Unit

DR

Enclosure

cc: COF
Prescribed Fire Correspondence File

Response to Letter 31

31a. Prescribed fire will not be utilized to dispose of cleared vegetation.

Letter 32

MINERAL POLICY CENTER

Protecting Communities and the Environment

Southwest Circuit Rider

P.O. Box 2414
Durango, Colorado
81301

Telephone: 970.382.0421
Fax: 970.382.0114
Email: mpc_sw@frontier.net
Website: www.mineralpolicy.org

October, 29 2000

Mr. Roger Congdon, Project Lead
Elko Field Office
Bureau of Land Management
3900 East Idaho St.
Elko, NV 89801

Re: South Operations Area Project Amendment Draft EIS

Dear Mr. Congdon:

These are the comments of Mineral Policy Center on the Draft EIS for Newmont Mining Corporation's South Operations Area Project Amendment (DEIS and SOAPA). Mineral Policy Center is a non-profit membership organization that focuses on reducing the environmental damage, economic burden on the public, and social and cultural dislocation caused by mining in the United States, and around the world. As this is the first Draft EIS of the three large mine projects focused on in the Cumulative Impact Analysis of Dewatering and Water Management Operations for the Betze Project, South Operations Area Project Amendment, and Leeville Project, (CIA) these comments also address our concerns and questions with that document. References are to the DEIS unless specified. We are very thankful for the opportunity to comment on these documents, and appreciated the amount of staff time by the BLM that they represent.

As northeast Nevada is one of the largest gold producing regions of the world, and the South Operations Area Project Amendment is one of three very large gold mines under review within a very concentrated area, the project is of extreme importance for determining the standards to which modern mining is to be held. We encourage the BLM to recognize the historic nature of the current batch of mining related decisions before the agency, and to fully exercise its public interest powers to ensure that the legacy of these decisions is one of which the agency can be proud.

General Comments:

a 1) Due to the complexity, size, and importance of the current DEIS (and CIA), the sixty day comment period is not nearly sufficient for full and competent response. The documents concern the whole hydrological future for the middle and lower Humbolt River basin for over 100 years, they present a very complex modeling exercise upon which the future of numerous species may hinge, the economic and ecological future of northeast Nevada for at least three generations is dependent upon the decisions that will be in part be based upon the analysis presented in these documents. With such a huge public interest at hand, and such technically complex issues covered, a sixty day comment period is woefully inadequate. We ask that the BLM extend the comment period, and ask understanding that these comments were prepared without sufficient time to fully analyze the documents reviewed.

b 2) Mineral Policy Center encourages the BLM to expand the area of the Cumulative Impact Analysis to include the whole of the current gold rush in the region. We are aware of the following large gold mine proposals being officially considered by the BLM or National Forest in the region at the current time:

a) Newmont Mining Corporation's South Operations Area Project Amendment
b) Barrick Goldstrike Mines Inc.'s Betze Project
c) Newmont Gold Company's Leeville Project

Response to Letter 32

32a. The BLM considers 60 days to be adequate because this Plan of Operations is an expansion of an existing project.

32b. The BLM defined the Carlin Trend as the cumulative impact analysis area and considered it a reasonable study area. Given the nature and location of projects listed as "d, e, and f" in the letter, those projects are not judged to contribute to air, water, or other effects observed on the Carlin Trend. At the time the BLM commissioned the Cumulative Impact Assessment (CIA) (1998), it identified all the known or reasonably foreseeable projects, see DEIS at 5-1.

Letter 32 Continued

d) Battle Mountain Gold Company's Phoenix Project
e) Cortez Gold's South Pipeline Project
f) Glamis Gold's Marigold Project

There are numerous large operating gold mines in the region that must also be fully considered in a regional comprehensive impact analysis. The extent and concentration of large gold mines in northeast Nevada must be looked at a single "field scale" operation to fully comprehend and manage the potential human and environmental impacts of the current and planned actions.

b

In addition to the existing and planned projects, there are also many large gold mines in the region that are in or are approaching closure, as well as those that have been left by bankrupt companies for the public to manage. The extent of the gold mining industry's footprint in the region during the past fifteen years, as well as for the coming 20 - 120 years, is unquestionable. It is high time the BLM take a lead in fully and publicly analyzing the reasonable and potential outcomes of this 40 year frenzy of gold mining in the region.

c

3) Since the SOAPA DEIS is one of three NEPA analyses utilizing the CIA as a central component, the Final EIS for the SOAPA and any Record of Decision based upon it, must be able to rest fully upon the assumption that all three of the CIA - related projects will be approved. There is at present no other manner for a member of the public to address the cumulative impact of the current gold rush in the Humbolt River basin, therefore each project must bear the burden of the whole industry's weight in the region.

d

4) The current DEIS for the SOAPA is inadequate to meet the needs of the public and public-servant decision makers in deciding whether or not to support the SOAPA proposed actions. The DEIS leaves too many large issues unresolved, exposes too many large uncertainties, and demonstrates too little assurance that large and long-term public and environmental harms will not occur. We urge the BLM to substantially rewrite the DEIS in order to more fully explicate the potential for and extent of possible consequences to the human and natural environment from the proposed actions. As it is currently presented, the SOAPA must be denied due to unresolved and enormous potential to severely degrade the ecology of a region.

e

5) The SOAPA as explored in the DEIS must be denied due to undue **and** unnecessary degradation as defined under FLPMA and BLM regulations (CFR 3809). The extent and duration of effects is unprecedented and by the extent of impact not "usual" or "customary", the putting a whole region at risk is clearly undue. The SOAPA is also unnecessary due to the possibilities of reinjection and / or underground mining as discussed by Dr. Tom Myers in his comments from Great Basin Mine Watch.

Specific Comments:

The following comments are not necessarily in order of importance. That said, the following are the primary issues which are inadequately examined in the DEIS.

- effects of dewatering period groundwater drawdown and surface discharge, including loss of springs and seeps, potential sinkholes, and increased flow in the Humbolt River.
- effects of post-mining groundwater cone of depression recharge; including loss of springs and seeps, and loss or reduction in flows in area surface waters.
- pit lake hydrology, geochemistry, and biology.
- social effects of a 30 - 50 year "boom - bust" economy on the region.
- effects of the current proposal (alone, and as a component of the larger regional development) on the region's wildlife, TES species, and general ecology.
- cultural consequences of the current proposal (alone, and as a component of the larger regional development).

Response to Letter 32

32b. The BLM defined the Carlin Trend as the cumulative impact analysis area and considered it a reasonable study area. Given the nature and location of projects listed as "d, e, and f" in the letter, those projects are not judged to contribute to air, water, or other effects observed on the Carlin Trend. At the time the BLM commissioned the Cumulative Impact Assessment (CIA) (1998), it identified all the known or reasonably foreseeable projects, see DEIS at 5-1.

32c. The Cumulative Impact Analysis is based on what is reasonably foreseeable. In any case, there will be three Records of Decision issued, each of which will be based on a separate EIS that evaluates the impacts of each project and the cumulative impacts.

32d. In response to comments, the DEIS has been revised in certain aspects. The DEIS and the FEIS, as tiered to the 1993 EIS, adequately evaluate the potential impacts of the proposed action.

32e. Based on the analyses in the DEIS, the proposed project, as mitigated, will not cause unnecessary or undue degradation. For additional discussion of the reinjection and underground mining alternatives, see responses 33p through 33s.

Letter 32 Continued

- effects of the release of toxic, hazardous, and harmful elements and compounds to the land, air and water from the proposed operations.
- potential for and consequences of financial failure of the proposed project, or related components of the regional development.
- the alternative selection is totally insufficient for a project of this magnitude.
- degree of uncertainty with regard to the above effects, and how this uncertainty is handled in the analysis as well as in any decisions based upon the analysis.
- compliance with federal laws and regulations.
- completeness of the DEIS.

Each of these issues is explored more fully below.

f Throughout this review we have relied heavily upon the critique of the DEIS and the CIA by Dr. Tom Myers of Great Basin Mine Watch, including the attachments to his letter (Review of Groundwater Model, Flow Through in Deep Carbonate, and Test of the Modeling of the Carlin Formation by Tom Myers, Ph.D., Center for Science in Public Participation). Mineral Policy Center hereby incorporates all components of this letter and its attachments into our comments.

g Effects of Dewatering and Discharge during Mining and Effects of Post-Mining Groundwater Recharge

We rely on and incorporate the comments of Great Basin Mine Watch for these issues. We would just like to reinforce the severity of potential impacts:

- potential loss of nearly 200 springs and seeps in a semi-arid ecosystem
- reduction of stream flows over a 50 mile radius for over a century
- increases in toxic constituents to the Humbolt River to above statutory limits

h An additional issue we wish to emphasize is the inadequate discussion in the DEIS of the impacts of reductions in area stream baseflows. The DEIS does not explain what the implications are of such reductions. An example is the lack of adequate discussion of the natural variation in flow, i.e. the number of years in which baseflow is less than "normal". There must be a full explanation as to the number of years in which various impacted stream segments would be dry under the predicted model.

The potential for surface flows to run into sinkholes and effectively be removed from the surface water system (a reasonable possibility in a karst system), is never discussed.

i MPC urges the BLM to require that all the water pumped by Newmont be kept within the Maggie Creek basin. This will reduce the time required for recharge of the basin, lessen the impacts to the stream as well as springs and seeps, and has not been shown to be infeasible.

j If observed drawdown isopleths differ from those predicted, all dewatering must cease until the model is recalibrated or revised and a more accurate prediction can be made. Any revisions of the modeling must be in the form of a supplemental NEPA analysis, with full public participation. Again, the scale of this project is totally unprecedented as far as regional impacts and if decisions are made upon what becomes obviously false predictions, the decisions must be changed to reflect the reality on the ground.

k Pit Lake:

We rely on and incorporate the comments of Great Basin Mine Watch for pit lake issues.

l Social Effects

The DEIS totally fails to recognize the boom - bust nature of a mining economy. There is an assumption that the population of Elko County will continue to rise for the next half century, while there is a high likelihood that the current mining boom will not last beyond 30 years. The impacts to the local

Response to Letter 32

32f. Comments noted.

32g. The three bullet items listed in this comment are not specific to the DEIS, but rather they reflect cumulative effects disclosed in the DEIS at 5-1. See responses 1a and 32c. Discharges to the Humboldt River are permitted by NDEP, and it is illegal for the mine to discharge toxic constituents above statutory levels.

32h. The streams identified in the DEIS have reaches with a known history to go dry naturally. Some streams may experience loss of flow which would extend the period that they go dry, for up to one month. The identification of impacts on two stream reaches that are naturally dry was presented in the text of the discussion of the various streams, DEIS at 4-9. Additionally, more flow information was available in the 1993 EIS. The potential for sinkholes was discussed, DEIS at 4-2 and illustrated in Figure 4-0 on page 4-3. All known sinkholes were also discussed.

32i. See response 2d.

32j. This issue falls in the area of the uncertainty of modeling. However, as stated in the DEIS, if monitoring shows impacts in excess of those predicted, they would also be addressed and mitigated according to the final Mitigation Plan. See response 33yy.

32k. See responses to Letter 33.

32l. The DEIS does address the potential economic effects of the closure of the SOAPA expansion (DEIS at top of 4-112). The comment is correct that the US Bureau of the Census and Elko County both project continued population growth in the area. However, that population growth is not affected by the SOAPA expansion, as Newmont will not hire additional workers for the project. Employment in DEIS at 4-112.

Letter 32 Continued

economy of a downturn in mining activity must be included. What will the mining companies leave behind in the towns and counties when they go on to other areas?

m There is no discussion of the social or economic impacts of a failure of the mitigation efforts to offset junior water rights affected by reduced stream flows, to offset spring and seep loss to the ecology of the region, or of the potential impacts of toxic constituent buildup in the Humbolt River or soils irrigated by them.

Wildlife, TES Species, and General Ecology

n The DEIS assumes the predictions made by the hydrologic models will be accurate and can be relied upon during all the discussions of the impacts to wildlife, TES species, riparian and wetland areas, and the general ecology of the region. This assumption is overly optimistic and must be tempered by a conservative approach to impact analysis and mitigation planning. With this in mind we suggest the following requirements be made:

o
- Newmont be required to conduct an extensive wetland and riparian restoration project along the main stem of the Humbolt River. This effort could be modeled after the Maggie Creek restoration project already in place. This should be required to offset the loss of habitat due to reduced stream flows, seeps and springs.

p
- The use of guzzlers to offset spring or seep flow be minimized. Guzzlers are not effective in meeting the ecological functions of springs or seeps for anything other than large mammal drinking water. The full functions of all springs and seeps must be maintained.

q
- Intensive monitoring of changes in area vegetation be conducted to follow changes from riparian and wetland vegetation types, deep rooted plants which may be intercepting groundwater, and other changes that may arise from the lowering of the groundwater. If changes are noted they must be mitigated. Change toward a more xeric plant community in the region will have long-term consequences for the general ecological functioning of the region. We note that the DEIS generally assumes that the flux over 100 years in water table levels will not have lasting effects. While this may be true in a very general and very long term way (multiple hundreds of years), it is not a safe assumption as changes to more xeric conditions can reverberate throughout an area's ecology in a myriad of ways.

  In general, the discussions of long-term ecological changes are inadequate for a proposal which will affect the basic hydrology of an area for over 100 years. Again, the uncertainties inherent in these consequences is not reflected in the discussion, nor are adequate monitoring and mitigation plans included. These weaknesses in the DEIS must be rectified.

r
- All discharge waters released to the Humbolt River system must be treated so as to eliminate the threats to avian and wildlife health posed by metal or other constituent concentrations in the system, including the Humbolt Wildlife Management Area. The requirement that all discharges meet state standards is obvious, but clearly not sufficient to reduce the impacts to the long-term health of the environment. When an impact as great as the accumulation to toxic levels of contaminants is predicted, as it is here, there must be a requirement that this be handled effectively.

Cultural Consequences

s Mineral Policy Center defers on cultural issues to the Western Shoshone Defense Project. We do, however, stress the huge impact that the traditional lands of the Western Shoshone have borne, and will continue to bear, from modern mining. The DEIS discounts Environmental Justice issues as not being relevant, we strongly disagree. The extent of lands, springs and seeps, and changes in wildlife patterns due to the mining in northeast Nevada is an unequal burden on the Western Shoshone.

Response to Letter 32

32m. There is no discussion of the potential failure of mitigation on junior water rights because Newmont has significant senior water rights, more than enough to accommodate junior water rights, and has committed to make them available when necessary. Newmont has also committed to provide supplemental or new water sources to augment or replace stream reaches and springs and seeps that may be lost to dewatering effects. The DEIS does not predict any effects on water quality in the Humboldt River. The proposed mitigation measures in the existing Mitigation Plan are considered reasonable and feasible. See response 2f for discussion of springs and seeps.

32n. The DEIS takes the approach that the groundwater models are conservative and predictive, but that there are limitations to modeling complex phenomena such as dewatering effects on groundwater. That is why the DEIS frequently mentions the uncertainty of the modeling effort, as the comment letter has already pointed out. These models are, however, generally accepted in the scientific community as the best predictive tools available for projecting the hydrologic impacts of dewatering. The conservative nature of the models means that the predicted effects should be the worst case observed, and therefore, the actual case should be less than predicted. The validity of this assumption is given credence by the fact that the 1993 EIS predicted the reduction or loss of 25 springs or seeps, but as of the Spring of 1999, no significant effects on monitored spring flows due to dewatering have been observed, DEIS at 4-27.

32o. See response 2f.

32p. The comment on use of guzzlers is noted. Instead of guzzlers, the spring enhancement option has typically been conducted, and will be continued (appendices A and B of the DEIS).

32q. Vegetation monitoring is included as part of the monitoring along streams and at spring and seep sites. Further, the mitigation and monitoring plans presented in the DEIS are considered appropriate, but the Final Mitigation Plan may include additional measures.

32r. Newmont's proposed discharges into Maggie Creek will meet Nevada water quality standards without treatment. The potential for mineral constituent concentration build-up in Rye Patch reservoir and the Humboldt and Carson sinks is considered a result of irrigation drainage, hydrogeologic setting, historic mining activities, and drought, CIA at 3-88. Analysis in the CIA of concentrations in the Humboldt Sink influent suggests that the additional loads to the Humboldt Sink associated with mining discharges would not pose additional risk to wildlife using the sink, CIA at page 5-32.

Letter 32 Continued

Response to Letter 32

32s. The five criteria that were used in analyzing potential effects on environmental justice included the proportionality of minority groups in the Carlin census tract (Tract 9516) compared with the Elko census tract (Tract 9507), the proportionality of persons with incomes below the poverty level in the two census tracts, local residency of the potentially affected class or group of people (defined as residences physically located near the project), the presence of traditional cultural properties (disclosed in the DEIS at 3-98), and the presence of traditional cultural concerns (disclosed in the DEIS at 3-96 and analyzed at 4-109).

The Carlin census tract contains a higher percentage of both whites and blacks than does the Elko tract. All other minorities (American Indian, Eskimo, Aleut, Asian or Pacific Islander, or Other, and Hispanic Origin) have percentages of the population in the Carlin tract that are less than half the percentages in the Elko tract. American Indians represent 1.2 percent of the population in the Carlin tract and 2.7 percent of the population in the Elko tract. The residences of the potentially affected minorities in the Carlin census tract are not close to the SOAPA project site, and no environmental effects are anticipated.

Among the persons for whom poverty status was determined in 1989, 6.6 percent in the Carlin census tract have incomes below poverty level and 7.7 percent have incomes below poverty in the Elko census tract. The SOAPA project will not affect persons with incomes below the poverty level in a disproportionate manner. (Census information was taken from the website http://www.census.gov Summary Social, Economic, and Housing Characteristics, Table 1. Selected Social Characteristics: 1990, and Population Profile - 1990 Census of Population and Housing).

No traditional cultural properties have been identified that would be subject to environmental effects from the SOAPA project. Land, springs, seeps, and surface waters that play a role in the traditional world view of the Newe/Western Shoshone may experience localized disruption. Mitigation measures for potentially affected water features, and reclamation and revegetation of the land, including important native plants, will minimize any disruption. Through the consultation process with Tribal representatives, the BLM is further evaluating effects on Native American religious and cultural concerns, and measures will be taken to ensure protection of traditional cultural properties.

Letter 32 Continued

Toxic, Hazardous, and Harmful Releases

The DEIS is inadequate in its discussion of toxic releases, potential for and mitigation of AMD, and effects of toxic material disposal.

t The DEIS does not contain the information on toxic releases from the SOAP currently, as reflected in the EPA Toxic Release Inventory. The TRI data for the SOAP show large amounts of Arsenic releases to the air (13,200 lbs.), waters (1,300 lbs.) and "other" releases (20,000,000) to unspecified areas, not including land. For Mercury the total releases to air, water and other (not including land) of over 120,000 lbs. These are just two examples. There must be a full discussion of the manner of release, the impacts, and the cumulative releases in NE Nevada due to mining.

u Table 2-3 shows the current Hazardous Waste Streams, which later are assumed to be similar for SOAPA. This table shows a tremendous amount of toxic incineration at Laidlaw/Grassy Mt. There is no discussion of the potential impacts of this. If the amounts of materials was small, there could be an assumption that these issues are outside the scope of the EIS, but when the amounts are over 275,000 lbs. per year, they clearly are a real and important component of the proposed actions, and must be considered in the EIS.

v We again urge that all water releases be treated to reduce to insignificant any long-term toxic accumulations in the Humbolt River or Sink, as well as any impacts on the uses of these waters.

w We concur with Great Basin Mine Watch that the AMD risk and prevention discussion is too weak, and that does not allow the public to feel confident that the site will not become a problem for acid and heavy metal loading to surface waters. The DEIS does not give any real assurance that AMD will not occur, indeed it admits that some is already occurring (DEIS 3-3). Merely referencing that the operator will monitor rock types, segregated, and encapsulate in inadequate. Complete discussion of AMD potentials, tonnage, and resulting waste rock pile configurations with calculations as to AMD neutralization must be included. While segregation and encapsulation are good techniques for reducing AMD potential, they do not in any manner ensure success. Also, the "low permeability cap" (DEIS 3-5) must be explained in greater detail. The overall soils suggested for revegetation is not of enough quantity to allow much depth, so how, in detail, will the cap be constructed, and what is the predicted infiltration through the cap?

x The need for an NDPES permit must be discussed. MPC does not understand how a project of this scale could not need a NPDES permit beyond a general nation-wide one. Are the BLM and Newmont truly saying that there will be no discharge potential to surface waters?

Potential for and Consequences of Financial Failure

y In light of the high number of gold mining companies that have gone bankrupt and left the burden of reclamation to the public in the recent past, it is a potential impact to the human environment that is totally missing from the DEIS. There are numerous mitigation measures which rely upon Newmont's continued presence, such as the use of senior water rights to met the impacted needs of junior water right holders. The DEIS must analyze the potential for and consequences of the financial failure of Newmont Mining Corporation, as well as discuss the measures taken to insure adequate public risk minimization.

z The full bonding amounts and mechanisms must be discussed. We strongly urge the BLM to set a bond of $200 million plus, but do not believe any figure less than $100 million can be at all justified. As predicted effects are shown to be accurate, and mitigation and minimization of impacts are shown to be successful, the reductions in uncertainty can cause the reduction in bond amounts. The bond must be held until the full recovery of the water table is complete and all impacts are successfully managed. It has been shown that sums in this range are reasonable for even much smaller mine sites (Summitville, CO - 160 million plus; Molycorp Questa mine, NM - 129 million for mine site water treatment only; Iron Mountain, CA - 200 million plus).

Alternatives Analyzed

The discussion of alternatives eliminated from analysis is totally inadequate.

Response to Letter 32

32t. The EPA Toxic Release Inventory data were added to Chapter 2 of the FEIS, along with the manner of release. The cumulative releases of the three projects analyzed in the CIA are presented in Chapter 5 of the CIA. The numbers have been revised according to a correction in Newmont's TRI spreadsheet calculations. Actual point source emissions to air are 50 pounds per year. It must be noted that the amounts cited in the comment as released to the air and water are not regulated by any of Newmont's existing permits. There are no direct mercury emissions to soil or water. The identified emissions to air would indirectly affect soil and water.

In the TRI Waste Quantity Facility Report, it was not determined what was being referred to in the comment as "Other" releases of 20,000,000 pounds. In addition, the 120,000 pounds of mercury cited in the comment are inherent in the rock placed in the waste rock disposal facilities, where it will remain isolated from the environment.

32u. The Safety Kleen/Grassy Mountain/Aragonite facility (formerly owned by Laidlaw) is an EPA-permitted disposal site. As such, disposal of wastes from Newmont are an inconsequential portion of the total waste disposed of at the site and will be consistent with regulatory requirements established for that site. Also, these disposal activities are merely a continuation of what is currently happening at SOAP. These impacts of the Safety Kleen operations were already evaluated in a NEPA document as part of permitting for that facility. No additional impacts are projected to occur under the Proposed Action or alternatives.

32v. See responses 32g and r.

32w. The discussion of controls for potential acid rock drainage presented in the DEIS is a summary of a document prepared by Newmont and submitted to the NDEP and BLM entitled "Refractory Stockpile and Waste Rock Dump Design, Construction and Monitoring." The document was summarized rather than presenting extensive detail because it is the approved method that Newmont has been using for the past several years. The analyses presented in the DEIS on pages 4-2 through 4-5 are considered appropriate to address this issue. Refer to Chapter 2, Closure and Reclamation of the FEIS.

32x. The project is currently, and will continue to be, in compliance with its three major water quality permits. 1) A nationwide stormwater discharge permit has been established by EPA for the South Operations Area Project. Precipitation on ancillary facilities is diverted to sedimentation ponds. 2) A NPDES permit has been issued by the Bureau of Water Pollution Control (NDEP) for discharge of dewatering water. 3) A Water Pollution Control permit has been issued by the Bureau of Mining Regulation and Reclamation (NDEP). All processing facilities are designed as zero-discharge facilities. All precipitation on processing facilities is diverted to process ponds or the tailing facility which do not have discharges to the environment. Any discharges from these various facilities are illegal. Refer to Chapter 2, Closure and Reclamation of the FEIS.

Letter 32 Continued

Response to Letter 32

32y. Newmont Mining Corporation is a multi-national company with extensive assets. See response 2e.

32z. See response 2e.

Letter 32 Continued

aa The rationale used to dismiss the underground mining alternative is directly contradicted by a statement on Newmont's WEB page: "At Gold Quarry, we are defining a high-grade target at the Chukar Footwall. This is only 150 feet from the pit highwall and could become the first underground mine at Gold Quarry." - Wayne W. Murdy, President, Newmont Mining Corporation.

For a discussion of the alternate water disposal alternatives, we incorporate Great Basin Mine Watch's comments.

bb The dismissal of the Tusc and Gold Quarry backfill options based on fuel usage, while dealing with a proposal of this scale is totally unacceptable. A more complete analysis of these options must be included. The Gold Quarry backfill option would have the benefits of removing the pit lake (an alternative of backfilling to pre-mining groundwater levels is a must). If the only concern is fuel use, this must be balanced against the benefits accrued to the public of the alternative.

Uncertainty

cc The DEIS does not meet the requirements of NEPA in its handling of the uncertainties and unknown consequences of the proposed actions. NEPA requires the analysis of potential consequences to the human and natural environment. In the DEIS there are many references to the unreliability of modeling to predict effects, mitigation to address effects, and other uncertainties:

- DEIS 4-15: "As with all groundwater models, MINEDW is a predictive tool, the effectiveness of which is a function of the hydrogeologic data utilized. .... Supplemental USGS regional information was incorporated into the numerical mode in areas, such as boundary regions, that lack detailed hydrogeologic data. **Prediction of groundwater drawdown and baseflow impacts must be considered with the understanding that actual conditions may deviate from the predictions."** (emphasis added).
- DEIS 4-15, 16: "Several things cause the apparent discrepancy between the monitoring and modeled drawdown contours. .... **It should also be noted that modeling results are theoretical approximations and need to be verified with monitoring data."** (emphasis added).
- DEIS 4-24: In reference to the impacts on springs and seeps in the Marys Mountain block area, "[G]round water flow is assumed to be complex across this area."
- DEIS 4-34: "The magnitude of changes in river baseflow that would occur and the length of stream that would be affected below Palisade are difficult to predict because of complex river dynamics, including inflow, outflow, bank storage, evapotranspiration, and irrigation withdrawls."
- DEIS 4-65: **"Given the uncertainty of hydrologic modeling** and the uncertainty of effects on lower reaches of a stream when headwaters may be dewatered, indirect effects may still occur on the lower reaches of Simon Creek." (emphasis added).
- DEIS 4-77: **"Given the uncertainty of the potential loss of the surface expression of springs or seeps due to groundwater drawdown, it is also uncertain whether mitigations would be successful."** (emphasis added).
- **Perhaps most disturbing is Figure 4-3 which shows the predicted maximum extent of the 10ft drawdown as well as the current monitoring 10ft drawdown isopleth. This clearly shows that the current situation is in direct conflict with the predictions.**
- DEIS 5-11: "the actual magnitude and extent of impacts to perennial streams is uncertain."

dd Despite these references the DEIS does not adequately address the issue of modeling uncertainty. The DEIS does not give an adequate evaluation of the models used to predict the large and long-term effects of the SOAPA. While the model is discussed in detail in the HCI report, the DEIS must include an evaluation of the basic assumptions used, the sensitivity of the model to these assumptions, and conformance of the model with existing conditions. Non of these are nearly adequately covered.

Response to Letter 32

32aa. The Chukar Footwall deposit has very different characteristics than the deposit proposed to be mined under the Proposed Action. Because of its much higher grade, it may be amendable to underground mining. Such mining would occur completely on private lands, and is not dependent on the proposed mine pit expansion evaluated in the DEIS. Nevertheless, based upon analyses of exploration data by Newmont since the issuance of the DEIS, it now appears that mining the Chukar Footwall may be a reasonably foreseeable action, and the FEIS has been amended to reflect this (Table 5-1). Mining the Chukar Footwall would not create any additional cumulative impacts, since there would be no additional dewatering or any new surface disturbance associated with that limited underground mining activity.

32bb. Dismissal of the backfilling options was not made solely on the basis of fuel usage. The Tusc pit backfill required the longest horizontal haul and the longest vertical haul and was eliminated as the most inefficient of all the backfill options. The Gold Quarry pit backfill would essentially extend mining operations at the site for approximately 13 years, as earthmoving equipment moved approximately 526 million tons of waste rock back into the pit. While the extension of jobs could be considered a benefit, balanced against it would be the fuel consumed (and the combustion products emitted to the air) particulate matter emitted to the air, and postponement of reclamation and revegetation by 13 years or more. The Gold Quarry backfill was eliminated after considering all these reasons.

32cc. See response 32n. The modeling effort is conservative in nature and recognizes that uncertainties will still exist. Many of the references presented in the bullet items in the comment serve to point out the difficulties of modeling complex geological conditions. Groundwater modeling is the best available predictive tool for projecting impacts to groundwater. Figures 4-3 and 4-4 in Chapter 4 of the FEIS were revised.

32dd. The models are adequately evaluated in the source documents referenced in the DEIS. In addition, the source codes were thoroughly reviewed under contract with Sandia National Laboratories. Presenting detailed discussions in the DEIS of model assumptions, sensitivity of the model to the assumptions, and other workings of the model was considered too esoteric for all but a few of the readers of the DEIS. Those readers should consult the source documents. NEPA guidance states that EISs must be written for the lay public.

Letter 32 Continued

ee

An example of the failure of the DEIS to explain and explore model assumptions is the use of the Humbolt river as a hydrologic barrier at all levels of the groundwater system. While this is clearly a reasonable assumption for the upper levels, for the deeper groundwater system this is not justified in the DEIS. If this assumption is wrong, the Humbolt could not only be exposed to outflow to the north but also the south during the recharge period.

We note the many uncertainties and questionable assumptions as pointed out in Dr. Tom Myers' submittals (again, included by reference here).

ff

At its core, the DEIS is hugely dependent upon the accuracy of the predictions made by the models. The document repeatedly refers to specific stream segments as being impacted or not. In addition, and of extreme importance, is the assumption that all springs above 6000ft will not be affected. If this assumption is wrong, and Tom Myers opens several credible questions with regard to it, the overall effect of the SOAPA could be much greater than discussed. Lastly, but of course not least, if the predictions of baseflow decreases are inaccurate, the effects could be enormous and beyond the very questionable mitigation abilities of Newmont to meet

The DEIS does not deal adequately with the implications of the many uncertain impacts of the SOAPA, nor does it discuss how the BLM will address the potential for effects that differ from those discussed. In other words, an example is if the actual effects on springs above 6000ft is greatly more than predicted, how would the BLM respond, what would the implications to the regions ecology be, and what recourse would the public have? While there is uncertainty in all actions, and a certain amount of risk must be accepted, the level of possible unpredicted harm due to model errors or weaknesses is so huge as to warrant a greater level of discussion.

It is customary for a NEPA document to discuss the base assumptions made, and how they are either conservative in approach or not. This DEIS does not do this. The model and the assumptions used must be explained and defended in order to grant any degree of believability to the public. As it is we are just told that the 10ft isopleth will extend to various distances, and last for various periods of time with no real justification of these statements.

gg

Due to the inherent uncertainties of modeling a system as complex as the groundwater system under the SOAPA proposal, as well as the known discrepancies or weaknesses in the model (see Tom Myers' discussion), the BLM must have an adequate mitigation plan that will give a greater level of confidence to the public that unforeseen damage will not occur. This plan must be presented in full and in detail for public comment. The BLM must also secure some financial surety for dealing with the complex of ground and surface water impacts that may occur, if these impacts are shown to be in line with the predictions of the model, then these additional surety funds may be released. It is also interesting to note that until a detailed mitigation plan is presented, no reasonable surety amount can be determined.

hh

Compliance with Federal Laws and Regulations

The DEIS does not demonstrate that the proposed actions in any manner comply with the Mining Law of 1872, the Federal Land Policy Management Act of 1976, or the Mining and Mineral Policy Act of 1970. While the DEIS does name these laws as needing to be complied with (DEIS 1-3), it does not indicate how the proposed actions do so. A complete and detailed discussion of the legal merits of the proposal must be included in the FEIS or a revised DEIS. As it is, the DEIS simply implies, without even addressing the issue, that there are valid mine claims to the SOAPA lands. Without a complete demonstration of valid mine claims, any reliance on the 1872 Mining Law is arbitrary and capricious.

In order to comply with the Mining Law of 1872, a mine proponent must have valid mine claims for the project area. For the claims to be valid they must either be lode or placer claims which possess economically viable mineral deposits, or adjacent mill-site claims. The DEIS does not explain the nature or extent of Newmont's mine claims in the area. If the proposed actions are based upon mine claims held under the 1872 Mining Law, the EIS must discuss the type, number, and locations of these claims.

Response to Letter 32

32ee. The Humboldt River is not modeled as a hydrological barrier to groundwater flow at all levels. Varied flux boundaries were used in sub-watertable layers.

32ff. See responses 32n, q, and cc. A conservative model is the best predictive tool available for assessing impacts to groundwater. A plan has been developed to monitor surface and groundwater resources and extensive monitoring is in place to provide information. A mitigation plan is also in place to mitigate project related impacts. Newmont is committed to mitigate negative impacts to streams and springs that result from their mining operations.

Several studies support the separation into perched mountain springs and regional water table springs. Two recent studies investigated source and age of water for springs in the Carlin Trend area (Maurer et al., 1996; and Plume, 1994). Tritium levels were measured on eight springs. High tritium levels indicate that water was recently recharged from the atmosphere. Springs with high tritium levels are commonly associated with the higher perched mountain domain springs. Four springs at or below 5,000 feet elevation had tritium levels below detection limits, and are therefore associated with a deeper aquifer where water has been in storage much longer (including Newmont monitored springs No. 40 and 52). The remaining springs ranging in elevation from 4,930 feet elevation to 6,030 feet elevation had tritium levels indicating that the recharge water was younger than 60 years (including Newmont monitored springs No. 2, 34, and 60). This indicates that springs between 5,000 and 6,000 feet are associated with perched mountain aquifers and that an elevation of 6,000 feet is a conservative division between the higher perched springs and the lower water table springs. The assumption that springs above an elevation of 6,000 feet result from perched groundwater is also discussed in the DEIS on page 4-27. While the DEIS takes the stand that the cutoff is conservative, and the predicted case should be the worst case observed, monitoring will continue to be conducted for springs above as well as below 6,000 feet.

32gg. Potential mitigation measures, including continuation and expansion of the existing Mitigation Plan were evaluated in the DEIS. The Mitigation Plan adopted in 1993 has proven effective (see Appendix A). That plan will form the basis for the Final Mitigation Plan to be adopted by the BLM and which is included as Appendix A of the FEIS.

32hh. The BLM has evaluated the proposed action to satisfy its obligations under the federal mining laws and the Federal Land Policy & Management Act (FLPMA). Pursuant to its 3809 regulations, promulgated under FLPMA, the BLM is requiring appropriate mitigation measures to ensure the project will not cause unnecessary or undue degradation of the public lands. A comprehensive mitigation plan has been included as part of the FEIS. For further discussion of compliance with the federal mining laws, see response 33o.

Letter 32 Continued

hh

If the proposed actions are not based on claims under the 1872 Mining Law, then the general provisions for surface use of the Federal Land Policy Management Act must be complied with.

The existence and type of any mining claims being utilized to justify the SOAPA is of critical public importance since only 9 of the 839 public land acres being considered are to be mined (DEIS 2-18). The other 830 acres of public land are of very questionable claim. Federal law does not allow the use of lode claims to be used solely to support the mining of other lode claims, therefore if these 830 acres are being held as lode claims they must either be mined directly (after a showing of economic viability), or their use would be illegal. If these acres are held as mill-site claims, there must be a equal number of mined lode claims that are to be mined, which mathematically is impossible (even for the complete South Area Operations).

The presumption of valid claims has been directly denied by the Interior Board of Land Appeals. In Great Basin Mine Watch, 146 IBLA 248 (1998) the IBLA stated:

> Initially, however, we wish to comment on a statement made by BLM in its Answer to appellant's SOR [Statement of Reasons]. In response to a suggestion by GBMW [appellants] that BLM should have either returned the mining plan of operations to Cortez [plan applicant] unapproved or required Cortez to supplement its filings, BLM declared:
>
> > Since returning the plan of operations and demanding Cortez provide information on the South Pipeline is not provided for in its regulations, further discussion (returning the plan) by the BLM on this issue is not warranted. In addition, the Mining Law of 1872, as amended and the 43 CFR 3809 regulations provide mining proponents on Public lands the right to mine. As long as the BLM ensures compliance with its 43 CFR 3809 regulations and "undue or unnecessary degradation" is prohibited, the BLM must process and permit a plan of operations filed by a proponent.
>
> (Answer at 10.) In our view, this declaration both overstates the rights of "mining proponents" and understates the authority of the BLM.
>
> **First of all, the mere filing of a plan of operations by a holder of a mining claim invests no rights in the claimant to have any plan of operations approved. Rights to mine under the general mining laws are derivative of a discovery of a valuable mineral deposit and, absent such a discovery, denial of a plan of operations is entirely appropriate.** This, in fact, was the express holding in Southwest Resource Council, 96 IBLA 105, 123-23 (sic.), 94 I.D. 56, 67 (1987). See also Robert L. Mendenhall, 127 IBLA 73 (1993); Southern Utah Wilderness Alliance, 125 IBLA 175, 188-89, 100 I.D. 15, 22 (1993).
>
> Moreover, in determining whether a discovery exists, the costs of compliance with all applicable Federal and State laws (including environmental laws) are properly considered in determining whether or not the mineral deposit is presently marketable at a profit, i.e. whether the mineral deposit can be deemed to be a valuable mineral deposit within the meaning of the mining laws. See, e.g., United States v. Pittsburgh Pacific Co., 30 IBLA 388, 405, 84 I.D. 282, 290 (1977), aff'd sub nom. South Dakota v. Andrus, 614 F.2d 1190 (8th Cir.), cert. denied 449 U.S. 822 (1980); United States v. Kosanke Sand Corp. (On Reconsideration), 12 IBLA 282, 298-99, 80 I.D. 538, 546-47 (1973). If the costs of compliance render the mineral development of a claim uneconomic, the claim, itself, is invalid and any plan of operations therefor is properly rejected. Under no circumstances can compliance be waived merely because failing to do so would make mining of the claim unprofitable. Claim validity is determined by the ability of the claimant to show a profit can

Response to Letter 32

32hh. The BLM has evaluated the proposed action to satisfy its obligations under the federal mining laws and the Federal Land Policy & Management Act (FLPMA). Pursuant to its 3809 regulations, promulgated under FLPMA, the BLM is requiring appropriate mitigation measures to ensure the project will not cause unnecessary or undue degradation of the public lands. A comprehensive mitigation plan has been included as part of the FEIS. For further discussion of compliance with the federal mining laws, see response 33o.

Letter 32 Continued

be made after accounting for the costs of compliance with all applicable laws, and, where a claimant is unable to do so, BLM must, indeed, reject the plan of operations and take affirmative steps to invalidate the claim by filing a mining contest.

Great Basin Mine Watch, 146 IBLA 248, 256 (1998)(underline emphasis in original, bold emphasis added).

Completeness of the DEIS:

ii There are numerous and significant areas of incompleteness within the DEIS. Chief among these are the many mitigation plans proposed but not discussed. While it says that the FEIS will include these components, that does not met the requirements under NEPA to allow public evaluation of the plans. Due to this alone, the DEIS must be rewritten and submitted to the public for comment prior to the issuing of a Final EIS.

jj Another area of incompleteness is the consultation with the Western Shoshone regarding the TCPs and other issues of concern (4-110). Again, this must be completed and submitted for public comment prior to issuing a Final EIS.

Conclusions:

The SOAPA proposal is as damaging a mine proposal as the USA has ever seen. The severity of impacts in both time and space is unprecedented. As currently proposed, the project must be denied. Allowance of sever and unknown degradation of a region's basic hydrology for a period of over 100 years for private profit is untenable. The 1872 Mining Law does not justify such action.

The DEIS contains many critical weaknesses and near omissions and must be substantially rewritten and given to the public with sufficient time for adequate review.

Mineral Policy Center thanks the BLM for considering these comments. If you have any questions or comments please contact Dan Randolph.

Respectfully,

Dan Randolph
Southwest Circuit Rider

Response to Letter 32

32ii. See response 32gg.

32jj. Typically, consultation with Native American communities is a multi-step process. Final consultation included the State Historic Preservation Office. The public can comment on the consultation as presented in the EIS. Additionally, consultation will be completed with the State Historic Preservation Office on effects of the project on traditional cultural properties prior to completion of the FEIS. See response 32s.

Letter 33

October 30, 2000

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Re: South Operations Area Project Amendment

Dear Mr. Congdon:

Thank you for this opportunity to review the Gold Quarry Expansion DEIS and Cumulative Impacts Analysis for dewatering in the Humboldt River. Initially, we want to express a disappointment that the BLM has allowed just 60 days for the public to review such a complex set of documents. BLM should have released the cumulative study when it was available. Also, the timing of the release of the Betze-Post SEIS cannot be a coincidence. After years of preparation, the BLM cannot expect the public to provide as detailed, well-thought set of comments as they would have with more time and if documents had not been issued simultaneously. Therefore, we reserve the right to submit additional and supplementary comments in the future. **a**

We also express our opinion that overall this DEIS is inadequate. It does not cover many issues, such as TRI, mercury emissions, changes in PM emissions, waste rock seepage, viable alternatives, etc, which will be discussed in detail below. Also, the technical editing of many sections was just plain terrible. This will be pointed out below. The Betze-Post SEIS, available for comment at the same time, is much more detailed and complete, and the only federal action it involves is a short pipeline. For the reason that Barrick's document was far superior, we suspect that pressure from Newmont to get the document released led to the sloppiness. But, ultimately the BLM is responsible for the quality. We expect that the EPA will issue an unsatisfactory rating for this DEIS. For these reasons, **we request that the BLM revise this EIS and reissue it in draft form for a second public review.** **b**

Our initial impression and primary argument of this entire set of comments is that, both individually and cumulatively, **mining in the Carlin Trend has reached the point of "undue degradation" and future mining cannot be approved without very significant mitigation**. Neither this mine expansion nor any other project that contributes to the cumulative impacts that continues to devastate the water resources of the Tuscarora Mountains and the Maggie Creek basin should be permitted. Approval would violate the Federal Land Policy and Management Act's (FLPMA's) requirement to "prevent undue degradation." Further, because mitigation that would limit many of the impacts is possible (and will be proposed and discussed below), the degradation is also "unnecessary" and cannot be approved under FLPMA. **c**

In addition to considering severe environmental concerns that are not adequately addressed, the BLM must also include in the revised draft EIS an examination of additional alternatives which will be described below. This includes an alternative involving an open pit with

Every truth passes through three stages before it is recognized. In the first, it is ridiculed. In the second, it is opposed. In the third, it is regarded as self-evident. Schopenhauer

Response to Letter 33

33a. See response 32a.

33b. The FEIS includes additional information that addresses comments on the DEIS. The BLM does not consider issuing a second DEIS necessary (40 CFR 1502.9).

33c. The BLM will not issue a Record of Decision that violates FLPMA.

Letter 33 Continued

improved water management, including reinjection, along with waste rock dump limits and pit backfill. An additional alternative is that of underground mining which we believe will substantially reduce the impacts from this proposal as it stands.

These comments include comments on the DEIS, Cumulative Impacts Analysis (CIA), the Gold Quarry Groundwater model (GWMODEL), and the pit lake model (Geomega). Our specific comments follow:

The Amendment Violates the Requirement to "Prevent Unnecessary or Undue Degradation"

The mine, as proposed, and cumulative impacts in the Carlin Trend represent *undue and unnecessary degradation* and may not be permitted. The only way the Gold Quarry Expansion can go forward is with significant mitigation of the dewatering which includes reinfiltration into the Tertiary formations and reinjection into bedrock.

The degradation caused by this and any future mine that dewaters in the Carlin Trend is undue for the following reasons, at a minimum:

1. There are seven streams that will have substantial amounts of flow lost to the drawdown. This violates the Clean Water Act which does not allow a project to eliminate or degrade a beneficial use in a stream. Under FLPMA and BLM 43 CFR 3809 regulations, the BLM cannot approve a mining plan of operations that will violate water quality standards. Since the maintenance of all beneficial uses is a water quality standard, the failure to fully maintain all uses cannot be authorized.

d It also violates state of Nevada water quality standards for aquatic resources that require habitats be maintained.

2. There are almost 200 springs and seeps potentially affected by the drawdown. Dried riparian areas and seeps cannot be adequately mitigated.

3. Cumulatively, there are over 30,000 acres of disturbance in the Tuscarora Mountains. Mines have disrupted migratory routes for many species, eliminated nesting areas for sensitive species, destroyed sage grouse breeding areas (leks), and dried springs. While some reclamation will occur, the final product is never a replacement for undisturbed natural ecosystems. Reclamation of waste rock, tailings and cyanide heaps is simply a cover over a toxic dump. "Reclamation is like putting lipstick on a corpse."

4. There is a substantial likelihood that the pit lakes will violate water quality standards. The Gold Quarry pit lake will be a through flow system which means that poor water will degrade the downgradient groundwater.

5. The BLM and NDEP must assure that no seepage from tailings or waste rock will reach Maggie Creek or other surface water, now or in the future. Failure to do so violates the Clear Water Act (CWA) and contributes to the undue degradation.

All of these reasons will be expanded upon below. BLM's regulations describe unnecessary or undue degradation as follows:

e Unnecessary or undue degradation means surface disturbance greater than what would normally result when an activity is being accomplished by a prudent operator in **usual, customary, and**

Response to Letter 33

33d. The SOAPA project is not expected to violate the Clean Water Act or Nevada water quality laws. SOAPA, with appropriate mitigation, would not cause undue or unnecessary degradation. Items 1 through 5 will be discussed later in the response text. See responses 33e, f, v, hh, iii, ppp.

33e. The SOAPA project is considered usual and customary when comparing it to other mines producing finely disseminated gold, and with copper mines in the U.S. and around the world. These mines typically remove large volumes of earth materials from a pit that often extends below the local water table. Dewatering is necessary to mine the ore body. Potential dewatering effects due to SOAPA may extend up to 18 miles from the mine; cumulative effects may extend up to 35 miles from the mine. The potential drawdown of groundwater in the area is not considered unnecessary or undue because it is a replaceable and reversible effect in the long-term, and it will be mitigated in the short-term.

Letter 33 Continued

proficient operations of similar character and taking into consideration the effects of operations on other resources and land uses, including those **resources and uses outside the area of operations**. Failure to initiate and complete **reasonable mitigation measures**, including **reclamation of disturbed areas or creation of a nuisance** may constitute unnecessary or undue degradation. **Failure to comply with applicable environmental protection statutes and regulations thereunder will constitute unnecessary or undue degradation**.

e

43 CFR § 3809.0-5(k), emphases added.[1]

It is necessary to take this definition apart to understand it. It cannot be argued that the operation resembles "usual, customary, and proficient operations of a similar character" because in no place outside of the Carlin Trend has such dewatering ever occurred. There are no operations of a similar character anywhere in the United States on land subject to the BLM's regulations, thus there is no other area for comparison. More than any mine ever approved, this mine affects "resources and uses outside the area of operations" by causing and contributing to groundwater degradation as much as 50 miles from the mine. Newmont does not even consider "reasonable mitigation measures" which include reinjection and reinfiltration upstream in the Maggie Creek basin. (See the extensive discussion below.) The project now certainly causes unnecessary degradation. The likely violation of various environmental laws, such as the likelihood of degrading Nevada's groundwater is a "[f]ailure to comply with applicable environmental protection statutes and regulations thereunder will constitute unnecessary or undue degradation".

It is not possible to mitigate decreased flows in a river or spring; it is only possible to replace the water with an existing water right if the loss occurs at the right location. Newmont owns senior water rights that can replace flows in the river lost to induced seepage once dewatering water is no longer discharged into the river. The accuracy and uncertainty around these predictions will be discussed below. However, riparian areas and aquatic resources do not have water rights. Because there is likely a wide band around the predictions for flow loss from the rivers (although it is not presented nor even acknowledged, again, see the discussion below), it is possible that the flow losses will exceed the predicted values. This exceedence could be substantial.

f

The same holds for springs. It may be impossible to mitigate the loss of a spring. Piping water from somewhere else would cause more degradation and would not maintain the character of the spring[2]. Drilling a well near the site to provide water would just exacerbate the problem. Guzzlers disturb land and use only runoff from precipitation; they would not adequately replace a spring. Thus, the impacts of losing springs are unmitigable and represent undue degradation.

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[1] It should also be noted that the BLM's revised 3809 regulations will be issued in the coming month(s). The eventual decision whether to approve the Plan of Operations for this Project must comply with any new definition of "unnecessary or undue degradation," as well as other requirements. See U.S. BLM, Final EIS, Surface Management Regulations for Locateable Mineral Operations," October 2000.

[2] Some of the springs in the Independence Range or the Tuscarora Mountains, within the drawdown cone but not near current activities would be the most difficult just to get water to. If the loss of flow occurs suddenly, as would be the case if the water table just dips below the groundwater, it could be months before monitoring actually detected the dried spring. If miles of piping were required, the BLM would probably need to complete an EA. Associated vegetation could be lost; planting never restores vegetative communities that existed prior to the disturbance.

3

Response to Letter 33

33e. The SOAPA project is considered usual and customary when comparing it to other mines producing finely disseminated gold, and with copper mines in the U.S. and around the world. These mines typically remove large volumes of earth materials from a pit that often extends below the local water table. Dewatering is necessary to mine the ore body. Potential dewatering effects due to SOAPA may extend up to 18 miles from the mine; cumulative effects may extend up to 35 miles from the mine. The potential drawdown of groundwater in the area is not considered unnecessary or undue because it is a replaceable and reversible effect in the long-term, and it will be mitigated in the short-term.

33f. Replacing or augmenting water in springs and streams is considered mitigation and thus prevents undue degradation. The groundwater model for the DEIS is considered conservative for its predictions for flow loss from streams. The predicted values are considered representative of the potential effects on surface and groundwater.

BLM concurs that guzzlers may not always be appropriate mitigation measures. However, the use of guzzlers will still be considered as one of several possible mitigation measures during development of the final Mitigation Plan.

Letter 33 Continued

g

BLM's regulations, implementing the "unnecessary or undue degradation" standard for hardrock mining, require BLM to "tak[e] into consideration the effects of operations on other resources and land uses, including those resource and land uses outside the area of operations." 43 CFR § 3809.0-5(k) (emphasis added). *See* Kendall's Concerned Area Residents, 129 IBLA 130, 139-140 (1994). The BLM is clearly not "considering the effects of operations on other resources" when it allows such poorly defined impacts up to fifty miles from the Carlin Trend mines. This includes the predicted cumulative impacts of a 10-foot drawdown.

h

It is not necessary that the proposed activities have such an impact. It is very possible to reinfiltrate and reinject upgradient from the mine much of the water that Newmont discharges to Maggie Creek and unto the Humboldt River where most is an irretrievable loss to the system. See below the section on alternatives, including the need to fully consider the reinfiltration alternative.

The BLM's regulatory policy acknowledges the (questionable) right of a mining proponent to his project. "This statutory right carries with it the responsibility to assure that operations include adequate and responsible measures to prevent unnecessary or undue degradation of the Federal lands and to provide for reasonable reclamation." 43 CFR § 3809.0-6.

Failure to Protect and Maintain Beneficial Uses of Water

Cumulatively, mines in the Tuscarora Mountains will eliminate portions of streams in the region. The Gold Quarry Mine will primarily be the cause. The first five columns in the following table is from HCI's cumulative impacts groundwater analysis[3].

i

Stream	Q (cfs)	Cum	GQ	PBML[1]	Loss1 (%)	Q10(cfs)	Loss2 (%)
Susie Creek	0.7	0.7	0.7	0.1	100		
Marys Creek	2.7	1.8	1.7	0.3	63	2.1	81
Upper Maggie Ck	5.0	0.9	0.6	0.5	12	0.0	100
Lower Maggie Ck	1.3	1.3	1.3	1.3	100	0.0	100
Boulder Ck	1.6	0.1	0.0	0.1	6.2		
Rock Ck	6.2	1.5	0.0	1.5	0.0		
Humboldt R at Dunphy	19.9	5.0	4.9	2.0	25	8.5	58

Q: average flow rate reported by HCI (1999)
Cum: total depletion caused by mining in the Carlin Trend
GQ: depletion caused by Gold Quarry and SOAP amendment
PBML: depletion caused by the Betze-Post, Meikle and Leeville mines, if approved
Loss: The total percent of Q that would be lost due to Gold Quarry
Q10: baseflow observed during the lowest ten percent of years, based on data in HCI[4]
Loss2: Depletion caused by Gold Quarry to Q10.

[3]Hydrologic Consultants Inc., 1999. Prediction of Potential Hydrologic Impacts of Dewatering Operations Along North Carlin Trend, HCI-878. May, 1999. Table 2. This report analyzed the cumulative and individual impacts from different mines in the Tuscarora Mountains. We have been told that this report was released prematurely, but we also point out that the Cumulative Impacts Analysis references it. Also, the report is based on the version of the groundwater model used for the DEIS and CIA; if there is anything wrong with the analysis in this report, there is also something wrong with the groundwater modeling in the DEIS. Therefore, we conclude that these numbers are still correct.

[4]Id.

Response to Letter 33

33g. The disclosed potential effects in the DEIS include effects in areas and resources outside the area of operations, using the best information and analytical tools available.

33h. See response 2d.

33i. The average flow rates shown in the table are the average baseflow rates, i.e. flow rates during the month of October, when flow is historically low. Thus, the impact on streams, was examined during one of the driest months. Portions of streams will not be "eliminated", they may dry up during the dry season, however, streams will continue to flow during the high-flow season. Historically (pre-mining) area streams have periodically gone dry.

The flow rate of 5 cfs reported in the Hydrologic Consultants Inc., of Colorado report is for upper Maggie Creek, some miles above Maggie Creek Canyon (see Figure 1 in Hydrologic Consultants Inc., of Colorado, 1999 for approximate location). This flow rate is stated as average baseflow in Maurer et al. (1996). The dewatering losses for Upper Maggie Creek are also estimated for this location. The flow rates reported in the comment by GBMW are flow rates for Maggie Creek at Maggie Creek Canyon, as measured by the USGS, downstream from the above site. Again, the flows are the mean flows for the month of October. And as is stated, Maggie Creek at the Canyon was dry in October 1992 and 1994. Maggie Creek has frequently dried up during the fall in dry years, before and during mining operations. While Gold Quarry dewatering may add to the frequency of Upper Maggie Creek drying up, this would not be a new occurrence. Lower Maggie Creek was also historically dry at times in the fall during pre-mining years.

Letter 33 Continued

i

HCI[5] reports flows for Upper Maggie Creek that are difficult to reproduce. In the groundwater analysis, they report a mean flow of 3.8 and median of 4.4 cfs. Thus, the average from 1988 to 1997 is 3.4 cfs with two averages being 0.0 and one being 0.9 cfs. Three out of eight observations are less than 1.0 cfs and the cumulative effect of mining will be to dry the stream up and during two of eight years, Gold Quarry alone would dry it up. During the third year, Gold Quarry is responsible for a 66% decrease. Lower Maggie Creek was dry in October during 1990-92 while the following two years had positive flows. Later in the period of record, very high flows reflect Newmont's dewatering discharge.

j

Figures in the DEIS shows the time period for which the impacts will occur. DEIS 4-28-39. The drying of Susie Creek will last from 2025 through 2060 with drying exceeding 50% for at least a century[6]. DEIS at 4-33. The decreases in lower Maggie Creek begin immediately after dewatering ceases (and Newmont ceases discharging to the creek) with recovery requiring till after 2100. DEIS at 4-32. The loss in the upper Maggie Creek will last for at least 50 years. DEIS at 4-31. The maximum impacts at Marys Creek last for 25 years with decreases up to 50% of the maximum lasting for an additional 50 years.

k

All of the figures just cited, however, have a major problem: the historic baseline is the average discussed above. The baseline implies a constant baseflow when in many years the actual baseflow is much lower and the impacts of the Gold Quarry expansion are much more extensive.

HCI used just 8 years to predict the average at the Dunphy gage. Although the mean is 19.9 cfs, two years were less than 10 cfs, suggesting that 40 percent of the time, Gold Quarry will decrease the flows by more than 50%.

l

The State of Nevada control point for the Humboldt River is Palisade. NAC 445A.204. "The limits of this table apply from the control point at Palisade Gage upstream to the Osino control point." Id. The beneficial uses include "[w]ater contact recreation, wildlife propagation, aquatic life (warm water fishery), irrigation, stock watering, municipal or domestic supply and industrial supply." Id. The relevant standards for beneficial uses follow.

> 1. The following standards are intended to protect both existing and designated beneficial uses and must not be used to prohibit the use of the water as authorized under Title 48 of NRS:
> (a) Watering of livestock. The water must be suitable for the watering of livestock without treatment.
> (b) Irrigation. The water must be suitable for irrigation without treatment.
> (c) Aquatic life. **The water must be suitable as a habitat for fish and other aquatic life existing in a body of water**. This does not preclude the reestablishment of other fish or aquatic life.
> (d) Recreation involving contact with the water. There must be no evidence of manmade pollution, floating debris, sludge accumulation or similar pollutants.
> (e) Recreation not involving contact with the water. The water must be free from:
> (1) Visible floating, suspended or settled solids arising from man's activities;
> (2) Sludge banks;
> (3) Slime infestation;
> (4) Heavy growth of attached plants, blooms or high concentrations of plankton, discoloration or excessive acidity or alkalinity that leads to corrosion of boats and docks;

[5] Id.

[6] Statements about the length of time that depletions will reduce are based on the duration determined from hydrographs in the figures.

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Response to Letter 33

33i. The average flow rates shown in the table are the average baseflow rates, i.e. flow rates during the month of October, when flow is historically low. Thus, the impact on streams, was examined during one of the driest months. Portions of streams will not be "eliminated", they may dry up during the dry season, however, streams will continue to flow during the high-flow season. Historically (pre-mining) area streams have periodically gone dry.

The flow rate of 5 cfs reported in the Hydrologic Consultants Inc., of Colorado report is for upper Maggie Creek, some miles above Maggie Creek Canyon (see Figure 1 in Hydrologic Consultants Inc., of Colorado, 1999 for approximate location). This flow rate is stated as average baseflow in Maurer et al. (1996). The dewatering losses for Upper Maggie Creek are also estimated for this location. The flow rates reported in the comment by GBMW are flow rates for Maggie Creek at Maggie Creek Canyon, as measured by the USGS, downstream from the above site. Again, the flows are the mean flows for the month of October. And as is stated, Maggie Creek at the Canyon was dry in October 1992 and 1994. Maggie Creek has frequently dried up during the fall in dry years, before and during mining operations. While Gold Quarry dewatering may add to the frequency of Upper Maggie Creek drying up, this would not be a new occurrence. Lower Maggie Creek was also historically dry at times in the fall during pre-mining years.

33j. Flow decreases should be compared to the decrease permitted under the 1993 EIS. Lower Susie Creek has average baseflows of less than 1 cfs and is naturally dry during late summer and fall. Mining will not significantly alter the nature of Susie Creek. See response 1a.

33k. In some (wet) years, the impact of the dewatering may be much less than stated. It is considered correct to use averages in groundwater modeling efforts. See response 1a.

33l. The stream flow rates will be decreased by varying amounts, depending on the natural flow rate for a given month and year. Newmont is committed to maintain beneficial uses, and the water table will recover over time.

Letter 33 Continued

(5) Surfactants that foam when the water is agitated or aerated; and
(6) Excessive water temperatures.
(f) Municipal or domestic supply. The water must be capable of being treated by conventional methods of water treatment in order to comply with Nevada's drinking water standards.
(g) Industrial supply. The water must be treatable to provide a quality of water which is suitable for the intended use.
(h) Propagation of wildlife. **The water must be suitable for the propagation of wildlife and waterfowl without treatment**.
(i) Waters of extraordinary ecological or aesthetic value. The unique ecological or aesthetic value of the water must be maintained.
(j) Enhancement of water quality. The water must support natural enhancement or improvement of water quality in any water which is downstream.

NAC 445A.122, emphases added.

Assuming the measurements provided for Dunphy pertain to this reach, excessive water loss precludes the water use for aquatic resource and propagation of wildlife beneficial uses. Because some of the loss to the Humboldt River stems from the decreased flows in Maggie Creek, the sum of the lost flows will be seen from the confluence of the Humboldt with Susie Creek to the point in Boulder Flat that seepage from the irrigation recharge mounding begins to increase flows in the Humboldt River.

Decreasing flow rates in a stream by amounts varying from 50 to 100%, including the complete dessication of streams for several months, violates Nevada state water law. The standards on the previous page apply at least to all streams which are listed in NAC 445A.123 to NAC445A.127. Maggie Creek, its' tributaries and the Humboldt River are listed.

Because NAC 445A.121 extends standards to other waters, which would include Susie and Rock Creek, it is possible that dewatering them is also illegal. This is especially true because dewatering causes massive temperature increases which violate NAC 445A.121(4). Temperature increases occur because the surface area of the stream decreases much less than the flow rate. Sunlight heating the surface therefore inputs as much radiation to a smaller water volume.

Complete drying of a stream eliminates all habitat. This occurs on portions of Maggie and Susie Creeks during many years. On average, Gold Quarry will decrease flows in Marys Creek by up to 60%; during the driest years it will be decreased by 81%. The consequent habitat decrease will violate the beneficial use requirements of the creek and must not be allowed by the BLM.

Thus, the evidence is undisputed that all or portions of streams will be eliminated due to the operations currently under review by the BLM. Under FLPMA, the 3809 regulations, and the Clean Water Act, these operations cannot be approved. All mining operations "shall comply with applicable Federal and State water quality standards...." 43 CFR § 3809.2-2(b).

Moreover, under BLM regulations "[f]ailure to comply with applicable environmental protection statutes and regulations thereunder will constitute unnecessary or undue degradation." 43 CFR § 3809.0-5(k). Failure to prevent "unnecessary or undue degradation" mandates rejection of a mining plan of operations. "If there is unnecessary or undue degradation, it must be mitigated. See 43 CFR 3809.2-1(b). If unnecessary or undue degradation cannot be prevented by mitigating measures, BLM is required to deny approval of the plan. 43 CFR 3809.0-3(b)." Kendall's Concerned Area Residents, 129 IBLA 130 (1994).

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Response to Letter 33

33l. The stream flow rates will be decreased by varying amounts, depending on the natural flow rate for a given month and year. Newmont is committed to maintain beneficial uses, and the water table will recover over time.

Response to Comments

Letter 33 Continued

The elimination of any waters due to mining operations violates the water quality standards for those stream reaches and thus could not be permitted. The goal of the Clean Water Act (CWA) is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). "The word 'integrity'. . . refers to a condition in which the natural structure and function of ecosystems [are] maintained." H.R. Rep. No. 92-911, at 76 (1972); see also Minnehaha Creek Watershed Dist. v. Hoffman, 597 F.2d 617, 625 (8th Cir. 1979). The legislative history of the Clean Water Act, in turn, defines "natural" as "that condition in existence before the activities of man invoked perturbations which prevented the system from returning to its original state of equilibrium." H.R. Rep. No. 92-911, at 76. "Any change induced by man which overtaxes the ability of nature to restore conditions to 'natural' or 'original' is an unacceptable perturbation." H.R. Rep. No. 92-911, at 77.

According to Congress, a primary goal of the CWA is to maintain the natural structure of streams. Such an interpretation is supported by case authority which holds that the "Clean Water Act should be construed broadly to encompass deleterious environmental effects of projects." Riverside Irrigation Dist. v. Andrews, 568 F. Supp. 583, 588 (D. Colo. 1983), aff'd 758 F.2d 508 (10th Cir. 1983). Dewatering a live stream violates the natural structure of the stream. As one recent case stated:

> The Clean Water Act (CWA) was "a bold and sweeping legislative initiative," United States v. Commonwealth of P.R., 721 F.2d 832, 834 (1st Cir. 1983), enacted to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. §1251(a)(1994). "This objective incorporated a broad, systematic view of the goal of maintaining and improving water quality: as the House report on the legislation put it, `the word "integrity" ... refers to a condition in which the natural structure and function of ecosystems [are] maintained.'" United States v. Riverside Bayview Homes, Inc., 474 U.S. 121, 132, 106 S.Ct. 455, 462 (1985) (quoting H.R.Rep. No. 92-911, at 76 (1972) U.S. Code Cong. & Admin.News 1972, at 3744).

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Dubois v. U.S. Department of Agriculture, 102 F.3d 1273, 1294 (1st Cir. 1996). In this case, it is clear that the elimination of streams and stream reaches noted above does not "maintain the natural structure and function of the ecosystem" in that watershed.

Under the CWA, states must adopt water quality standards for all water bodies within the state. 33 U.S.C. § 1313.

> These standards include three components: (1) designated uses for each body of water, such as recreational, agricultural, or industrial uses; (2) specific limits on the levels of pollutants necessary to protect those designated uses; and (3) an antidegradation policy designed to protect existing uses and preserve the present condition of the waters.

National Wildlife Fed'n v. Browner, 127 F.3d 1126, 1127 (D.C. Cir. 1997) (citing 40 C.F.R. §§ 131.10 - 131.12).

"A water quality standard defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses." 40 C.F.R. § 131.2. EPA implementing regulations define designated uses of water as "those uses specified in water quality standards for each water body or segment whether or not they are being attained." 40 C.F.R. § 131.3(f). The minimal designated use for a water body is the "fishable/swimmable" designation.

Response to Letter 33

33m. The comment misconstrues the scope of the Clean Water Act (CWA), which is directed at protecting water quality through the regulation of pollutant discharges into waters of the United States. The CWA expressly defers to the States' authority to allocate quantities of water. 33 U.S.C. 1251(g). Newmont has obtained the necessary permits and authorizations from the Nevada State Engineer's Office for the water that it plans to pump in connection with its dewatering operations. A water pollution control permit issued by the Nevada Division of Environmental Protection will regulate discharges of pollutants to waters of the State. No violations of the CWA are anticipated.

The comment also overstates the potential impacts by suggesting that certain streams would be "eliminated" or "dewatered". The comment refers to potential reductions in baseflow as a result of mine dewatering. Baseflow is defined as the streamflow occurring in the late fall or early winter when flow is primarily the result of groundwater contributions, and not precipitation or runoff. If a stream goes dry for part of the year, it has a baseflow of zero. As discussed in the DEIS, mine dewatering may either reduce the baseflow or extend the period during which zero baseflow already occurs in certain stream segments In any such affected stream segment, stream flows would resume with winter or spring precipitation each year, and thus, streams would not be "eliminated" as a result of dewatering. These temporary reductions in baseflow would also not "eliminate all habitat" even in stream reaches that experience zero baseflow, since streams are repopulated from existing seeds, aestivating organisms and aquatic life from upstream reaches when flows increase each year.

Letter 33 Continued

See 33 U.S.C. § 1251(a)(2).

As noted above, many waters that will be severely degraded or outright dried-up by the operations are classified for beneficial uses by the State of Nevada. The U.S. Supreme Court has squarely held that:

> The text [of the CWA] makes it plain that water quality standards contain two components. We think the language of § 303 is most naturally read to require that a project be consistent with *both* components, namely, the designated uses *and* the water quality criteria. **Accordingly, under the literal terms of the statute, a project that does not comply with a designated use of the water does not comply with the applicable water quality standards.**

PUD No. 1 of Jefferson County v. Washington Department of Ecology, 511 U.S. 700, 714-715, 114 S.Ct. 1900 (1994)(italics emphasis in original, bold emphasis added).

The dewatering also violates state and federal antidegradation regulations. According to federal regulation, applicable antidegradation policies "shall, at a minimum, be consistent with . . . [e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." 40 C.F.R. § 131.12(a)(1). Under this regulation, "'**no activity is allowable . . . which could partially or completely eliminate any existing use.**'" PUD No. 1, 511 U.S. at 718-19, 114 S.Ct. at 1912 (emphasis added)(citing EPA, Questions and Answers on Antidegradation 3 (Aug. 1985)). Therefore, the antidegradation policy must be implemented in a manner consistent with the existing uses of all streams. Any activity which would even *partially* eliminate those uses is not permitted.

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Under the CWA, the minimum designated use for navigable water is the "fishable/swimmable" designation, which "provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water." 33 U.S.C. § 1251(a)(2). But the protection is not limited to streams which support fish: A water body composed of solely plants and invertebrates is also protected under the antidegradation policy. Bragg v. Robertson, 72 F. Supp.2d 642, 662 n.38 (S.D. W. Va. 1999) (citing EPA, Water Quality Standards Handbook § 4.4). Under federal regulations, limited degradation is permitted only where (1) the quality of the water exceeds levels necessary to support the fishable/swimmable use designation, and (2) the quality of water necessary to protect all existing uses is maintained. 40 C.F.R. § 131.12(a)(2).

By dewatering the streams, which by their very nature could not then support aquatic life, the operations would violate the stream standards and antidegradation policy. The quality and quantity of water necessary to protect existing aquatic life and other designated uses must be maintained. See 40 C.F.R. § 131.12(a)(2). Because dewatering all or portions of these streams would essentially turn the relevant portions of live streams into dead streams, incapable of supporting plants, fish and other wildlife, the operations cannot be authorized.

Furthermore, in light of the likelihood that the operations cannot comply with state water quality standards, the BLM Plan of Operations (PoO) approval decision would violate Section 313 of the Clean Water Act. Section 313 requires compliance with "all Federal, State, interstate, and local requirements" for the discharge or runoff of pollutants on federal land. 33 U.S.C. § 1323. This section places a duty on federal agencies to comply with federal CWA requirements, in addition to state water quality standards. Additionally, CWA § 313 applies to both point source and nonpoint source discharges on federal land. See, e.g., Oregon Natural Desert Assoc. v. Dombeck, 172 F.3d 1092, 1098 (9th Cir. 1998) ("§ 1323 ... directs federal agencies 'engaged in any activity which may result in the discharge or runoff of pollutants' to comply with

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Response to Letter 33

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Letter 33 Continued

applicable water quality standards. 33 U.S.C. § 1323(a).").

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Impacts of Discharges: The SOAPA indicates that groundwater released into Maggie Creek does not need to be treated, since the combined discharged water does not exceed the water quality standards established by the NPDES system. DEIS at 4-44. This statement is different than saying that no impacts will occur. What are the water quality measurements in the Creek and in the discharged water? Are arsenic or TDS amounts increased over what exists naturally in Maggie Creek? Does the total amount of contaminants discharged add a significant amount to the total loads in the Humboldt River downstream?

The BLM Cannot Approve the Plan Without Assurance That It Complies With the Mining Law

The BLM has improperly failed to consider in the DEIS whether the mining proponent has appropriate and adequate mining claims for this proposed action or any of the alternatives. A mine plan on public land is predicated on the validity and proper use of lode claims and the proper number and area of millsite claims. As is the policy of the Department of Interior as delineated by the Solicitor and decided by the Department at Crown Jewel in Washington state, the BLM must consider these issues as a part of the plan approval process.

The proposed operation will use roughly 839 new acres of public land for its open pit and ancillary facilities such as waste rock dumping, heap leaching, and support facilities. This amount of public land disturbance would be in addition to the current 2,047 acres. DEIS at S-2. The DEIS incorrectly assumes that the company has a right to develop these public lands, stating that there is a "statutory right of mining claim holders to develop federal mineral resources under the Mining Law of 1872." DEIS at 1-3.

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Under federal law, such a "right" only exists if the claims are valid and if the proposed uses of valid claims are legal. In this case, the BLM has failed to ascertain whether these conditions are met. It appears that the BLM never really questioned whether this assumption of "statutory rights" was supported by any evidence in the record. Such decisionmaking is practically the definition of an "arbitrary and capricious" action that cannot stand.

Under federal law, the BLM cannot approve a mining plan of operations where the facilities are proposed on lands in excess of those rights granted by the 1872 Mining Law. In this case, substantial increases in public land use and disturbance is proposed. DEIS at 2-18 (Table 2-6, Proposed Surface Disturbance). For these acres, facilities appear to be located on lode claims whose validity BLM has never investigated or whose use likely violates the Mining Law.

As the IBLA recently noted: "A mining claimant's rights as against the United States are acquired only under the General Mining Law, and unless and until the claimant meets the requirements under those laws, no rights can be asserted against the United States." Ronald A. Pene, 147 IBLA 153, 157 (1999). The IBLA continued: "**It is axiomatic that operations may not legally proceed on invalid claims**." Id. at 158 (emphasis added) (citations omitted).

The IBLA recently dealt with this issue, specifically rejecting the BLM's assumption that a mining claimant had an unreviewable "right to mine." Great Basin Mine Watch, 146 IBLA 248 (1998). The importance of the Board's ruling bears repeating in full:

> Initially, however, we wish to comment on a statement made by BLM in its Answer to

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Response to Letter 33

33n. Newmont has been discharging water into Maggie Creek under a Nevada Department of Conservation and Natural Resources, Division of Environmental Protection permit (NV0022268). The mine discharge has been generally within its permit limitations; no significant non-compliance has been found. This supports the assumption that future mine discharge would not impact water quality in the river. Significant non-compliance of an NPDES permit is defined by criteria that include: 1) exceedance of a 30-day average limit any four out of six months; 2) exceedance of a 30-day average limit by a factor of 1.4 or greater for any two out of six months; or 3) judgment of significant impact to human health or the environment by Nevada Bureau of Water Pollution Control Staff (Livak, 1999). A table was added to the FEIS (Table 2-1a) to present a summary of the discharge water quality and the NPDES permit limitations. The discharge should not exceed the permit limitations, or the value in Maggie Creek (at location b, three meters upstream of the outfall location), whichever is greater. Average values of TSS, turbidity, cadmium, iron, mercury, manganese, and selenium are lower or equal in the discharge water than in either the receiving water of Maggie Creek just upstream of the outfall, or the Humboldt River Control point at Palisade. TDS values are just slightly higher in the discharge waters than in Maggie Creek or the Humboldt River. Arsenic concentrations are higher in the discharge waters than in Maggie Creek or the Humboldt River, but are still below the permit limit. Arsenic concentrations increased at the mouth of Maggie Creek (MAG-1) after discharge into Maggie Creek started in 1994, but are still well below the most stringent water quality standard. Arsenic concentrations remained unchanged at the water quality control point at Palisade.

33o. The BLM has sufficiently analyzed the SOAPA Project with respect to compliance with the 1872 Mining Law and the USDI Solicitor's Opinion of November 7, 1997. The comment correctly states that a "full formal validity examination on every claim" is not required prior to approval of a mining plan of operations under the BLM's 3809 regulations. As the comment acknowledges, the federal mining laws do grant the public certain rights to use public lands for mining purposes. In addition, the federal mining laws and the Federal Land Policy and Management Act, grant the BLM authority to approve and manage mining-related activities on public lands that have not been withdrawn from mining. The public lands included within the SOAPA plan of operations boundary have not been withdrawn from mining activities. The SOAPA Project does comply with the law governing the ratio between the number of millsites and lode claims. The proposed Plan of Operations was submitted prior to the Solicitor's November 7, 1997 millsite opinion and is not subject to that opinion per Section 337 of the Department of the Interior Appropriations Bill for Fiscal Year 2000 and BLM Instruction Memorandum No. 2001-174. In addition, BLM Instruction Memoranda Nos. 98-154 and 2001-076 provide that, in the absence of any unacceptable conflicts with other resources, there is no need to further evaluate the lode to millsite claims ratio for any plan of operations on lands open to the federal mining laws. See response 20d.

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appellant's SOR [Statement of Reasons]. In response to a suggestion by GBMW [appellants] that BLM should have either returned the mining plan of operations to Cortez [plan applicant] unapproved or required Cortez to supplement its filings, BLM declared:

> Since returning the plan of operations and demanding Cortez provide information on the South Pipeline is not provided for in its regulations, further discussion (returning the plan) by the BLM on this issue is not warranted. In addition, the Mining Law of 1872, as amended and the 43 CFR 3809 regulations provide mining proponents on Public lands the right to mine. As long as the BLM ensures compliance with its 43 CFR 3809 regulations and "undue or unnecessary degradation" is prohibited, the BLM must process and permit a plan of operations filed by a proponent.

(Answer at 10.) In our view, this declaration both overstates the rights of "mining proponents" and understates the authority of the BLM.

First of all, the mere filing of a plan of operations by a holder of a mining claim invests no rights in the claimant to have any plan of operations approved. Rights to mine under the general mining laws are derivative of a discovery of a valuable mineral deposit and, absent such a discovery, denial of a plan of operations is entirely appropriate. This, in fact, was the express holding in Southwest Resource Council, 96 IBLA 105, 123-23 (sic.), 94 I.D. 56, 67 (1987). See also Robert L. Mendenhall, 127 IBLA 73 (1993); Southern Utah Wilderness Alliance, 125 IBLA 175, 188-89, 100 I.D. 15, 22 (1993).

Moreover, in determining whether a discovery exists, the costs of compliance with all applicable Federal and State laws (including environmental laws) are properly considered in determining whether or not the mineral deposit is presently marketable at a profit, i.e. whether the mineral deposit can be deemed to be a valuable mineral deposit within the meaning of the mining laws. See, e.g., United States v. Pittsburgh Pacific Co., 30 IBLA 388, 405, 84 I.D. 282, 290 (1977), aff'd sub nom. South Dakota v. Andrus, 614 F.2d 1190 (8th Cir.), cert. denied 449 U.S. 822 (1980); United States v. Kosanke Sand Corp. (On Reconsideration), 12 IBLA 282, 298-99, 80 I.D. 538, 546-47 (1973). If the costs of compliance render the mineral development of a claim uneconomic, the claim, itself, is invalid and any plan of operations therefore is properly rejected. Under no circumstances can compliance be waived merely because failing to do so would make mining of the claim unprofitable. Claim validity is determined by the ability of the claimant to show a profit can be made after accounting for the costs of compliance with all applicable laws, and, where a claimant is unable to do so, BLM must, indeed, reject the plan of operations and take affirmative steps to invalidate the claim by filing a mining contest.

Finally, insofar as BLM has determined that it lacks adequate information on any relevant aspect of a plan of operations, BLM not only has the authority to require the filing of supplemental information, it has the obligation to do so. We emphatically reject any suggestion that BLM must limit its consideration of any aspect of a plan of operations to the information or data that a claimant chooses to provide.

Great Basin Mine Watch, 146 IBLA 248, 256 (1998)(underline emphasis in original, bold emphasis added).

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The Interior Department's March 25, 1999, *Crown Jewel Mine Decision* confirms these points.[7] In that case, Assistant Interior Secretary Baca and Solicitor Leshy denied a proposed mine plan of operations based on conclusions that most of the millsite claims were invalid and many of the mining claims were likely invalid. In addition, the plan was rejected due to inappropriate use of lode claims for non-extractive uses. This denial occurred despite the fact that the same agencies had previously issued (over two years earlier) a Record of Decision for a Final EIS for the Mine. The agencies noted that: "No rights of any kind attach to invalid mining claims or mill sites." *Crown Jewel Mine Decision* at 1-2 (quoting Cameron v. United States, 252 U.S. 450, 460 (1920)).

BLM based its review of the Newmont's South Operations Area Project on the mining law regulations at 36 CFR Part 3809. However, those regulations only apply to "operations authorized by the mining laws." 36 CFR § 3809.0-1.[8] Due to BLM's failure to review the claims issues, it has no evidence as to which activities are "authorized by the mining laws." In this case, the record lacks specific evidence that all claims and uses are legal. Under the Board's holding in Great Basin Mine Watch, the proper BLM action should be to request this information from the applicant and determine if all activities are authorized by the Mining Law. Without this information, the BLM cannot rationally assume that all operations comply with the Mining Law and properly regulated under the Part 3809 regulations.

o It is a fundamental tenet of administrative law that agency decisions made without supporting evidence are invalid. In order to meet the "arbitrary and capricious" test under the APA, the BLM must have "articulated a rational connection between the facts found and the choice made." Bowman Transp. Inc. v. Arkansas Best Freight System, 419 U.S. 281, 285-86 (1974). An agency decision must always have a rational basis that is both stated in the written decision and demonstrated in the administrative record accompanying the decision. Kanawha & Hocking Coal & Coke Co., 112 IBLA 365, 368 (1990). The decision must be made in a "careful and systematic manner." Edward L. Johnson, 93 IBLA 391, 399 (1986). The record must demonstrate a "reasoned analysis of the factors involved, made in due regard for the public interest." Alvin R. Platz, 114 IBLA 8, 15-16 (1990). The BLM's failure to review the claims issues, while at the same time maintaining that the Project enjoys a "statutory right" to use public land, fails to make any "rational connection" in a "careful and systematic manner" as required by law.

It must be stressed that the requirement to determine whether operations are authorized by the Mining Law need not entail a full formal validity examination on every claim. As the *Crown Jewel Mine Decision* demonstrates, the Interior Department has the authority, indeed the duty, to reject plans of operations based on Mining Law concerns regardless of whether it has conducted a formal validity review. *Decision* at 2, n. 4 (rejecting plan even though "BLM and USFS have not determined the validity of any of [the applicant's] lode claims or mill sites").

In addition, in a recent pleading filed in federal court in a lawsuit related to the Crown Jewel Mine, the Interior,

[7] Letter from Sylvia Baca, Acting Assistant Secretary, Land and Minerals Management, Department of the Interior, John D. Leshy, Solicitor, Department of the Interior, James R. Lyons, Under Secretary, Natural Resources and Environment, Department of Agriculture, and Charles R. Rawls, General Counsel, Department of Agriculture to Greg Etter, Vice President and General Counsel, Battle Mountain Gold Company (March 25, 1999).

[8] This has recently been confirmed by the Board. *See*, Alanco Environmental Resources Corporation, 145 IBLA 289, 298 (1998)(applicability of Part 3809 regulations limited to valid claims); United States v. Rocky Connor, 139 IBLA 361 (1997)(affirming trespass decision under special use regulations, 36 CFR Part 2920, for occupancy on invalid placer claim); William H. Snavely, 136 IBLA 350 (1996)(affirming trespass decision under Part 2920 for occupancy on invalid mining claims and mill sites).

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Agriculture, and Justice Departments reiterated this position. Although the following quote is taken from a motion by the federal government to dismiss the case on ripeness grounds (since the state of Washington has recently denied permits for the mine), the government affirmed the view that plans of operations are predicated on a review of the claims issues. In summarizing the reasons for the rejection of the Crown Jewel mine plan, the Departments stated:

> Applying Interior's 1997 Opinion, the Forest Service and BLM decided in 1999 that any decision to approve the plan of operations as it was then configured would violate the Mining Law because many of BMG's proposed 117 mill sites exceeded the Mining Law's five-acre limit, specified above. ... In vacating the ROD, BLM and the Forest Service reiterated that they had not yet determined, and were not determining, "the validity of any of BMG's lode claims or mill sites." Id. at 2 n.4, 2-3.
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> The Forest Service and BLM also identified 22 unpatented lode claims that BMG "does not intend to mine." Because the Mining Law does not permit lode claims to be used solely to support mining on other lode claims, Interior also stated that these 22 lode claims "likely are invalid." Id. at 2-3.

Federal Defendants' Motion to Dismiss on Grounds of Lack of Ripeness and Supporting Memorandum of Law, at 10-11 (July 20, 2000, Civ. No. 99-1598-JE, Okanogan Highlands Alliance, et al v. U.S. Department of Interior, et al, D. Oregon)

o In the case of the Gold Quarry expansion being considered here, the project proposal will disturb 839 acres of public and 553 acres of private land, respectively. **Of the public land, only 9 acres will go for actually mining a valuable mineral in the Gold Quarry Mine.** DEIS at 2-18. Remarkably, Newmont here expects to use 830 acres of public land to mill gold from what is essentially private land and a private mine. The Mining Law does not provide for this type of use. The BLM clearly needs to analyze this issue in the revised DEIS.

Note that the existing disturbance shows that only 375 acres of public land have been used for mining a valuable mineral (the sum of the pit area for Gold Quarry, Tusc, and Mac mines) while 1672 acres of public land have been used for ancillary facilities. There is no way that a combination of 20 acre lode claims and 5 acre millsite claims could have been assembled to give the proper, and legal, ratio as required by the Mining Law. The total 1019 acres of mine could not qualify for 1672 acres of ancillary facilities on public land. The ancillary facilities should have been built with the appropriate special use regulations with the public receiving a fair payment for the use of its land. Such operations could also only be permitted in they were in the public interest, a much stricter standard than the one assumed under a "statutory right" to use public land. See 43 CFR Part 2920; see also Flynn, "*The 1872 Mining Law As An Impediment To Mineral Development On The Public Lands: A 19th Century Law Meets The Realities Of Modern Mining,*" 34 LAND AND WATER LAW REVIEW, 301 (1999).

At a minimum, the BLM should inform the applicant that the Plan of Operations cannot be approved lacking such critical information regarding compliance with federal mining law. As you may know, the Forest Service Regional Office in Portland, Oregon, recently affirmed the decision of the Siskiyou National Forest to reject a proposed mining plan of operations due to the informational incompleteness of the proposal. The Forest Service stated that "[a]ll information on the record about the value of the minerals within the proposed mine sites indicates that production costs far exceed potential revenue. The proponent has not provided credible evidence to refute this information." October 6, 2000, Appeal Decision of Linda Goodman, Deputy Regional Forester, re: NICORE mine proposal, at 2. The agency specifically stated that "aspects of [claim] validity" was central to its decision to deny the proposed plan. Id. at 4.

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Letter 33 Continued

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In addition, the Forest Service in New Mexico recently informed a mining plan applicant that the agency could not approve a plan if the uses of lode claims were strictly for ancillary uses such as waste rock dumping. See May 26, 2000, Letter to Governor Red Eagle Rael of the Picuris Pueblo (describing Forest Service decision to reject mining plan of Oglebay Norton Speciality Minerals, Inc. due to issues "as they relate to the appropriate use of lode claims."). That appears to be the case here since the plan proposes dumping, processing and other ancillary uses on mining claims not proposed for actual mining.

Failure to Adequately Review and Consider Alternatives Under NEPA

The DEIS must be revised to fully review and consider all reasonable alternatives. NEPA is an action-forcing statute. Its sweeping commitment is to "prevent or eliminate damage to the environment and biosphere by focusing government and public attention on the environmental effects of proposed agency action." Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 371 (1989). It requires the federal agency to ensure "that the agency will inform the public that it has indeed considered environmental concerns in its decision making process." Baltimore Gas & Elec. Co. v. Natural Resources Defense Council, 462 U.S. 87, 97 (1983).

The consideration of alternatives is "the heart of the environmental impact statement." 40 C.F.R. § 1502.14 (1998). It is "absolutely essential to the NEPA process that the decisionmaker be provided with a detailed and careful analysis of the relative environmental merits and demerits of the proposed action and possible alternatives, a requirement that we have characterized as 'the linchpin of the entire impact statement.'" Natural Resources Defense Council v. Callaway, 524 F.2d 79, 92 (2d Cir. 1975). Moreover, "[t]he existence of a viable but unexamined alternative renders an environmental impact statement inadequate." Resources Ltd. v. Robertson, 35 F.3d 1300, 1307 (9th Cir. 1993) (quoting Idaho Conservation League v. Mumma, 956 F.2d 1508, 1519 (9th Cir. 1992)).

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The following alternatives must be fully reviewed and the inadequacies in the alternatives review must be corrected in the revised DEIS:

Reinfiltration and Reinjection Alternatives: Water that Newmont pumps for dewatering and does not use for milling purposes should be reinfiltrated or reinjected into aquifers within the Maggie Creek basin. Reinfiltration basins could be established in the Carlin formation, both above and below the main canyon. This would create mounds that would continue to flow into Maggie Creek long after dewatering ceases. The ground surface slopes steeply from the stream up to the mountain front, therefore there is likely available volume for storing water. Considering just a 5 by 10 mile section of the valley and assuming that it has just 100 feet of storage with 0.2 specific yield before reaching the existing water table, there is volume to mound 640,000 acre-feet of water.

Because most of the groundwater deficit will be in the bedrock, primarily carbonate aquifers, reinjection directly into the bedrock system is also necessary. Injection wells should be installed in the bedrock along the mountain fronts to avoid the thick Carlin formation and even in the mountains where the carbonate is near the surface. The locations would be determined after significant study but should consider the travel time so that dewatering does not recirculate the water. For example, a 1000 foot drawdown over a five mile distance is a 0.037 gradient. If the conductivity is 1 ft/d, the Darcy velocity would be just 0.037. Thus it would be 1900 years before injected water begins to be recirculated. (Note that we recognize that faults, fractures and karstlike conduits may speed the process for individual water particles. However, if the overall flow system is so affected by these features, the groundwater model, based on assumptions of porous media, is completely useless.)

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33p. The DEIS does review a range of alternatives as required by NEPA. The DEIS tiered off the 1993 DEIS which reviewed a wide range of alternatives in detail. This DEIS summarized those alternatives and considered their possible application to this proposed action. The alternatives analyzed in detail in this EIS were defined, in part, using the criterion of proximity to existing facilities. Only two new major facilities are proposed: the Non-property Leach Pad Expansion, and the Property Leach Pad 2. All other facilities in the proposed action are expansions of existing facilities. Therefore, the on-the-ground alternatives were somewhat constrained. See response 2d which addresses reinfiltration and reinjection.

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Based on a cursory groundwater model developed by Dr. Tom Myers working for the Center for Science in Public Participation, the following analysis considers the water balance and fluxes due to dewatering for both the proposed alternative and with the proposed mitigation. Attached to this letter as Attachment 3 is a complete description of the model and this analysis.

Groundwater Model Analysis of Alternatives: Considered alternatives were injection into the bedrock surrounding the Maggie Creek and Susie Creek basins and infiltration into the surface aquifers in the same basins from 1999 through 2011. The alternatives are compared with the status que scenario of merely removing the water from the ground and discharging to rivers, which is assumed to be lost to the basin.

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Infiltration basins were scattered along Maggie and Susie Creeks. 39,500 af/y or 4,717,000 ft^3/d were returned to the basins. The hydraulic conductivity of the Tertiary formation is low, therefore the mounds did not spread laterally quickly. Flow to Maggie Creek at the beginning of the transient runs was 7.6 cfs; in the without mitigation scenario, it dropped to 7.2 cfs. Susie Creek had a constant 1.9 cfs. Because the potential infiltration basins lie close to Maggie and Susie Creeks, mounding may increase discharge to the streams (they both gain flow from the groundwater in their upper reaches) and lose some of the benefits of the reinfiltration. By 2011, the increase in flow to Maggie Creek and Susie Creeks is just 0.45 and 0.32 cfs, respectively. On Maggie Creek, the increase due to infiltration offsets the decrease due to dewatering. On Susie Creek, the increase raised the flow rates above the pre-mining levels. Presumably, if more water were infiltrated, the mounds would expand further and more flow to the streams would occur. Possibly, the recharge of this scenario represents an upper limit.

Injection was completed with 16 injection wells along Maggie and Susie Creek. For the first 3 years, 1999-2001, each injected 337000 ft^3/d (total 45,000 af/y) while during the last 8 years each injected 448,000 ft^3/d (total 60,000 af/y). Injection caused widespread mounds to form in the bedrock aquifers. Compared to the infiltration mounds, these mounds are extensive and reflect the much lower storage coefficient in a confined aquifer. The potentiometric surface increased up to 300 feet in layer 2 while in layer 1 the increase was less 20 feet. Both of these were in the bedrock of the Independence Range bounding the Susie Creek and Maggie Creek basins. The injection causes an increase in vertical flow from the second to the first layer by just 740,000 ft^3/d or 10% of the injected water. The increase in flow to the streams from injection into layer 2 is less than 0.1 cfs. Presumably, this reflects the low vertical flow from layer 2 to 1 suggesting that more water will be reserved to make up future losses.

During these dewatering scenarios, the impact on the Humboldt River was minimal. Flux to the river began to decrease at the end of the time period with a drop from 8.7 to 7.5 cfs. Most of the decrease occurred in the upper most reach. Neither scenario changed the fluxes to the Humboldt River presumably because the mounds had not yet reached the river.

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From 2011 into the future for 200 years, the model simulated drawdown cone recovery. Without mitigation, most of the flow returns from layer 1 even though the pumpage from 1998 through 2011 removed equal amounts from each layer. Injection increased the flow from layer 2 into the pit lake, but it was not substantial. Infiltration increased the rate to the pit from layer 1 by about 20%. Total pit inflow is 95, 85, and 96% from the top layer for the without mitigation, injection, and infiltration alternatives. Note that pit inflow included both the Betze-Post and Gold Quarry pit lakes.

Without mitigation, flows to Maggie Creek require long time periods to recover. Middle Maggie Creek shows the largest effect from mine dewatering and recovers over the entire 200 years. It goes from losing about 0.7 cfs to gaining 2.1 cfs. Flux to upper Maggie Creek doubles over the 200 year period while that

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33q. See response 2d.

33r. See response 2d.

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to lower Maggie Creek barely increases. Susie Creek also has very minor increases in flux to it. With injection, recovery time on middle Maggie Creek is quicker with flux ultimately returning to a gain of 2.5 cfs or 20% more than without mitigation. Flux to upper Maggie Creek also recovers quicker, but the long-term average flux is approximately the same. Lower Maggie Creek has an approximate 5% increase in flux to it over the long term. Susie Creek has only slight improvements. With infiltration, fluxes increase faster, although on Maggie Creek the ultimate rate is approximately the same. The biggest change is on Susie Creek which almost immediately increases by 0.2 cfs.

The analysis just described proves that Newmont can keep their dewatering water in the basin and mostly avoid the negative and illegal impacts of drying surface waters discussed above. The ultimate choice of mitigation scenario is not straightforward. **The BLM must return this DEIS to the applicant with instructions to adequately consider alternatives which will keep the water in the basin.** Considering just flux to the streams, the infiltration scenario appears to preserve the most water. However, there is probably also a combination of mitigations that would be best. The best choice probably combines both injection and infiltration basin. Future analysis must include the ability of the bedrock to accept injected water. Treated as a porous media in the model, the aquifers accept water and the mounds expand as predicted. If the aquifer is highly fractured or karstic, injection may be less appropriate. Without a study, it is impossible to make conclusions in this regard.

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We recognize that the document provides a cursory discussion of both reinfiltration basins and reinjection. The analysis just provided suggests that these alternatives together may keep substantial portions of the dewatered water in the basin. The very cursory analysis just presented and the fact that the BLM claims recharge from irrigation in the Boulder Valley is good suggests that the decision is arbitrary when it claims "[t]he alternative was eliminated from detailed analysis because the Maggie Creek basin has inadequate capacity for disposal of a significant amount of excess water". The analysis above shows there is adequate capacity. If other mines (e.g., Barrick) can pipe the water to its irrigation pivots, Newmont can pipe some into the upper Maggie Creek basin.

Underground Mining Alternative: The BLM has inappropriately failed to consider the underground mining alternative. While acknowledging that underground mining "typically only becomes practical when extracting deep, high-grade ore", the document does not discuss how much high grade ore exists. Newmont acknowledges that underground mining may be preferable at this site.

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> "At Gold Quarry, we are defining a high-grade target at the Chukar Footwall. This is only 150 feet from the pit highwall and could become the first underground mine at Gold Quarry. We've drilled 26 holes and are modeling the data for inclusion in minearlized (sic) material at year-end. ... Illustrations are included in your handout books." WayneW. Murdy, President Newmont Mining Corporation, Merrill Lynch Canada Mining Conference Toronto - September 12, 2000. From Newmont's WEB page.

If the environmental impact reduction and the profitability of the mine increases warrant such a mine, Newmont should construct an underground facility. The BLM should consider the costs and benefits of such an alternative. Clearly, an underground facility would require much less dewatering. Grouting around the mine shaft and the much smaller diameter when compared with an open pit mine could significantly minimize the amount of dewatering. There would be no additional volume of open pit created which would also significantly reduce the impacts associated with a drawdown cone expanding until 2111.

Ancillary Facilities on Private Land: The BLM also failed to consider the alternative of moving ancillary

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33r. See response 2d.

33s. See response 32aa. The underground mining alternative is addressed in the DEIS on page 2-41.

33t. Placing ancillary facilities on private land would essentially mean placement on section 17 or 19, T33N R52E so that the new facilities could be connected with existing ancillary facilities. Connections would then have to cross public lands in section 18 of the same township. The end result would be a greater amount of surface disturbance. This alternative was not considered for detailed evaluation because of the increased disturbance. See responses 32hh and 33o.

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facilities off federal lands to comply with the Mining Law. As discussed above, there may be serious questions regarding the ability of Newmont to use (and the BLM to allow their use) lode claims for ancillary facilities. Rejection of these alternatives based on an assumption of mining claim validity and use legality would violate NEPA and the APA because such an assumption is not supported in the record.

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Overall, recharging dewatering water, minimizing the size of waste rock dumps through both backfill and lift sizing, and keeping ancillary facilities off public lands is an alternative that the BLM should consider in a revised DEIS. Another acceptable alternative is the underground mine as discussed above. These may be the only alternatives that adequately prevent unnecessary or undue degradation.

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Other Alternatives: The treatment of the alternatives for water disposal is disappointingly vague as well. DEIS at 2-41,42. For example, the document too cursorily drops consideration of recharge into the Maggie Creek basin. A combination of reinjection into the bedrock and infiltration into the alluvium is quite feasible.

We concur with the decision to not consider the use of excess water for irrigation or the construction of a reservoir. Consumptive use by irrigation is still water lost from the basin just as much as water pumped into Maggie Creek. Reservoirs come with significant additional environmental impacts.

v

Reliance on state regulations and state documents in the DEIS.

There are many places in the DEIS where major issues are glossed over with references to state regulation. For example, regarding the extremely important issue of isolating the acid producing rock, the document merely claims the waste rock dumps "are designed to accommodate potential acid generating waste rock" with design guidelines presented in "Newmont's Refractory Ore Stockpile and Waste Rock Dump Design, Construction, and Monitoring Plan, as submitted to the NDEP and BLM." DEIS at 2-23. A similar comment is included in the section on Waste Rock Disposal Areas in the Reclamation section. DEIS at 2-30, 32. The reference is made again in Chapter 3 where the document discusses existing AMD. DEIS at 3-3,5. "Potentially acid generating waste rock that is identified would be segregated, encapsulated, and monitored in accordance with Newmont's Refractory Stockpile and Waste Rock Dump Design, Construction, and Monitoring Plan." DEIS at 3-5, note the slight difference in title in the two quotes. The BLM should not be discussing what Newmont "would do" in the section on Affected Environment which supposedly describes existing conditions – not the plan of action or what Newmont would do in the future to minimize impacts. That is the purpose of Chapter 4. The seven steps for controlling AMD on page 3-5 were also discussed under the plan of action in Chapter 2, where they should be. Then, contrary to convention in previous chapters, the discussion of AMD in Chapter 4 does not have a section heading. DEIS at 4-4. This is an example of how confusing is the presentation of the DEIS. The DEIS layout limits the quality of any review because the reviewer must spend significant time just figuring out where things are written about.

w

"New process ponds for the refractory leach facility would be made safe for wildlife according to NDOW regulations". DEIS at 2-25. There is not even a reference to the regulations. This suggests a "trust us" approach to NEPA analysis. The document should include a cross-section showing how waste would be isolated from the environment. It should also explain the techniques that NDOW requires for protecting wildlife from process ponds.

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The discussion on waste rock is also very confusing. The reference cited above comes from the General Project Overview. DEIS at 2-14 -26. The next section is Resource Monitoring. DEIS at 2-26-27. This

Response to Letter 33

33t. Placing ancillary facilities on private land would essentially mean placement on section 17 or 19, T33N R52E so that the new facilities could be connected with existing ancillary facilities. Connections would then have to cross public lands in section 18 of the same township. The end result would be a greater amount of surface disturbance. This alternative was not considered for detailed evaluation because of the increased disturbance. See responses 32hh and 33o.

33u. The treatment of alternative methods of water disposal are tiered to the evaluation of water disposal options presented in the 1993 EIS (1993 EIS at 2-59). See response 2d.

33v. The use of references to state regulations is to indicate to the reader that the processes being described are in place, that design and construction have been approved, that monitoring of operations has been and continues to be conducted, and that additional discussion of the Refractory Ore Stockpile and Waste Rock Dump Design, Construction, and Monitoring Plan is not needed. The discussion is placed in Chapter 3 because it reflects existing conditions, since 1993.

33w. In the DEIS at page 2-24, nineteen lines previous to the quotation in the comment, the same statement is made and is followed by the procedure Newmont currently uses to make the ponds safe for wildlife. The procedure is to maintain all solutions with potentially harmful constituents at concentrations below levels considered lethal to wildlife. The governing statute and Nevada Division of Wildlife (NDOW) regulations allow permittees more than one option to make ponds safe for wildlife, and this is the one chosen by Newmont (NRS 502.390; NAC 502.480).

33x. The sentence on page 2-27 of the DEIS that starts "The procedure for controlling..." should be the start of a new paragraph. This error was corrected Chapter 2, Water Resources - Potentially Acid-Producing Rock in the FEIS.

Letter 33 Continued

x

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Pit Lakes

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Pit Lake Water Quality. We are surprised that Newmont has used a method for estimating the pit lake water quality that is almost certainly wrong and underestimates with contaminant load in the pit lake. DEIS at 4-44. When the 1993 pit lake model for Gold Quarry was released, it was a new view of pit lake modeling. Since that time, the conceptual framework has been shown to be inadequate. The model used for Gold Quarry only uses surface effects and ignores the major contribution from oxidation processes which occur deeper in the walls (up to km) due to air being brought into the rock as groundwater is withdrawn. As the dewatering wells are cycled, air is pumped in and out of the rock as groundwater rebounds slightly. This increases the amount of air (and oxidation) in the rock during the time the pit is being dewatered.

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Response to Letter 33

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33y. The work related to predicting the water quality of the Gold Quarry Pit Lake was performed by a firm (Geomega, 1997 and 2001) with reputable professionals at the forefront of research in this field. The work is very high quality, and is based on state-of-the-art, widely used, and accepted science for pit lake prognosis that is documented in peer-reviewed literature.

The methodology for estimating pit lake water quality in the Gold Quarry EIS has been documented in the peer-reviewed literature (Miller et al. 1996, Davis and Eary 1997, and Fennemore et al. 1998) and is generally accepted as an appropriate model for predicting pit lake water quality. Claims that this methodology is inadequate are often included in comments on mining EISs, but have never been substantiated via the same peer-review scrutiny that the predictive methodology has passed. Further, the hypothetical pumping of air claimed by the comment has never been tested, let alone proven.

Unlike many EIS comments, this set of comments proposes an alternative methodology for assessing sulfide oxidation (see 33cc). In response, the appropriateness of the accepted methodology vis-a-vis the alternative methodology is discussed in detail in 33cc.

Dewatering wells intentionally lower the water table in the vicinity of the mine. Previously saturated pore-space fills with air, but the air does not necessarily contain atmospheric concentrations of oxygen because oxygen is consumed by geochemical processes in the aquifer.

Letter 33 Continued

x

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33z. Regarding the predicted sulfate concentration in the pit lake: The predicted concentrations of sulfate in the pit lake range from 113 mg/l at year 1 to 156 mg/l at year 250 (Geomega, 1997). The pit lake model was rerun in 2001 (Geomega, 2001). The updated model predicted better water quality with ultimate sulfate concentrations of 144 mg/l. These concentrations are not unreasonable, considering the proportions of the various sources of pit water, including water chemically modified by the products and by-products of sulfide oxidation in rocks of the pit walls.

The results of field oxidation tests that were employed for the pit lake water quality modeling may be more reliable indicators of the effects of sulfide oxidation than results from humidity cell tests. Humidity cell tests have been found to overestimate pyrite oxidation rates in arid environments by more than a factor of two (Fennemore et al., 1998). Nevertheless, the results of the field oxidation tests are conservative, because solutes were leached by low ionic strength, neutral precipitation rather than by well-buffered alkaline groundwater that will enter the pit. Use of these results for the modeling effectively overestimates contributions of acid and solutes from the weathered rock.

The discharge of groundwater through the wall rock units comprising the ultimate pit surface will be the primary source of water to the pit. Concentrations of sulfate in background groundwater are 63 mg/l in Rodeo Creek Siltstone (well GQTW-4) and 59 mg/l in Popovich Limestone (well MC-2).

The ultimate pit surface will consist of about 30 percent acid-generating rocks. Approximately 75 percent of the long-term inflow to the pit is derived from rocks with positive net carbonate values (NCV), indicating a continuous supply of good quality, alkaline groundwater. Groundwater passing through non acid-generating rocks will contribute little sulfate load to the pit lake. The results of both humidity cell and field oxidation tests confirm the low sulfate in leachates of positive NCV rocks. The field oxidation tests indicate that maximum measured concentrations in the first pore volume are 150 mg/l, declining rapidly to background groundwater concentrations. The average of the maximum concentrations (first pore volume) among the tests is about 100 mg/l.

Approximately 90 percent of the ultimate pit lake level will be attained by year 30 (stated incorrectly as year 11 on page 6-4 of the report by Geomega, 1997b), indicating that much of the pit wall will be submerged and isolated from further oxidation in a relatively short period of time. Groundwater passing through the submerged rock will leach the soluble products resulting from oxidation of sulfides. After generally several, perhaps even up to ten or more pore volumes of groundwater have passed through the oxidation rind, the leaching process will be essentially complete. Experience with predictive studies of large volume pit lakes shows that the volume of modified groundwater in the pit will be small relative to background groundwater. Furthermore, the leachable solute concentrations decrease dramatically after the first couple of pore volumes pass through the rock. Pits that fill quickly, as will the Gold Quarry Pit, will be rapidly dominated by background groundwater.

Letter 33 Continued

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33z. continued.

Assuming that the average sulfate concentration of the initial inflowing groundwater from non acid-generating rocks is 100 mg/l, the water balance indicates that 75 percent of the water filling the pit would have a concentration of 100 mg/l or less. Higher concentration inflow waters from acid-generating rocks would be diluted by this dominant component. The proportion of high concentration inflow waters in the pit lake will be very small, because concentrations of leachate decrease dramatically after the initial pore volumes. The acid-generating rocks, as well as the non acid-generating rocks, will be depleted of their soluble products after a relatively small number of pore volumes (relative to the number of pore volumes that will follow) of groundwater have passed through them. Background groundwater with concentrations cited above would then pass through these rocks into the pit.

While empirical measurements of pit wall minerology and water quality in existing pit lakes are useful in understanding the mechanisms controlling solute concentrations, there are other controls pertinent to future water quality such as direction of groundwater flow, pit infilling rate, groundwater PCO_2, redox conditions, iron speciation, lake hydrodynamics, and evapoconcentration. The influence of these other controls is evident in the empirical water quality data as solute concentrations in pit lakes with similar pit wall mineralogy vary by orders of magnitude (Figure 1 after Shevenell 1999).

Comparison of predicted Gold Quarry pit water quality to the observed Mag pit water quality (Pinson) is inappropriate because the two pits have disparate pit wall mineralogies, geochemical characteristics, and groundwater flow regimes. In the Mag pit, lime was added to mitigate acid generation because of a net shortage in acid-neutralizing material, especially at the pit bottom. In contrast, the predominant lithologic unit in the Gold Quarry pit is the Popovich Limestone that forms the western wall and bottom of the pit lake (Geomega 1997; Figure 2-6). Less than 25 percent of the Gold Quarry pit surface has the potential to generate acidity. It is important to recognize that "non-acid-generating" rocks and "acid-neutralizing" rocks are geochemically distinct. Therefore, the fundamental difference between the two pits is that the Gold Quarry pit has much more neutralizing capacity than the Mag Pit.

Groundwater in the South Operations Area is also very alkaline (bicarbonate alkalinity >200 mg/l) and contains relatively low concentrations of dissolved sulfate (~120 mg/l in the sulfide-bearing lithologies and <60 mg/l in the limestone). Therefore, infilling groundwater has further neutralizing capacity for mitigating acid-generation.

Groundwater inflow to the Gold Quarry pit is predominantly (>75%) through the limestone units, with <20% of flow through units with the potential to generate acidity. Hence, the bulk of the groundwater entering the pit is alkaline with little (<60 mg/l) sulfate in solution. Furthermore, sulfate concentrations of a seep through the sulfide-bearing Rodeo Creek Siltstone lithology on the eastern portion of the pit are relatively low (82 mg/l), indicating that oxidation reactions are not currently resulting in significant sulfate loading to local groundwater and pit water. Therefore, the presence of potentially acid-generating lithologic units in the pit wall do not presuppose the formation of an acidic or sulfate-rich pit lake.

Letter 33 Continued

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Response to Letter 33

33z. continued.

Regarding the statement that: " The BLM is better off simply indicating that no pit lake model has been shown to predict contaminant loads,..." the contrary, a prospective pit lake water quality model based on peer-reviewed methodology and site-specific data collection, and validated by bench-scale testing (Geomega 1997b; Section 6.3) and field monitoring data was accepted. This model is technically appropriate for the BLM's prospective uses. Uncertainty in the model analyses has been quantified via sensitivity analyses (Geomega 1997b; Section 4.5 and Appendix F and Geomega, 2001). Further, the five-year review process mandates updated pit lake chemical prediction during mining to incorporate new information.

Finally, the notion that a bond should be required for lime addition to a pit lake hosted primarily in limestone, is fatuous. The pH of water in the proposed pit should not be acidic and therefore, lime addition would be unnecessary.

33aa. The regional groundwater flow model has evolved, however the fundamental pit infilling predictions have remained essentially the same. Hydrologic Consultants Inc., of Colorado revised the Gold Quarry groundwater flow model and pit lake water balance in 2001 (Hydrologic Consultants Inc., of Colorado, 2001). Geomega updated the pit lake model using this model (Geomega, 2001). The fundamental hydraulic results of the current model used to predict pit infilling include:

1. The pit lake is predicted to outflow at 70 percent recovery at about 0.6 cfs and 3.0 cfs at 100 percent recovery. The outflow will remain within the Paleozoic rocks and not flow into the Carlin Formation or surface waters.

2. The majority of the water entering the lake still originates from the limestone, as the predicted hydraulic conductivities are greater than the siltstone.

The pit lake water quality is predicted to meet drinking water standards and be better than background groundwater quality (Geomega, 2001). Pit lake outflow is not expected to degrade waters of the state.

Letter 33 Continued

bb

lake hydrology therefore could be significantly wrong.

What is the final volume of the pit lake? This is essential information that the BLM leaves out of the DEIS.

cc

The major problem with the pit lake model is the modeling of pyrite oxidation. As indicated above, there is a problem with the assumption that pyrite will only be oxidized in a thin skin around the pit rather than throughout the aquifers that are dewatered by this project. We begin with a discussion of the hydrology.

When an unconfined aquifer is dewatered, the aquifer does not immediately desaturate but the level of atmospheric pressure lowers so that the remaining water is no longer free draining. The water remaining above this water table is held by surface tension or "capillary action". The height of this capillary zone depends on the diameter of the connected pores: the smaller the pores, the higher the capillary zone. As the water table drops, gravity forces overcome the capillary forces. "Thus, if the pressure potential of the water in a capillary, pore, etc. tends to become lower than the air-entry value, because of gravity or any other reason, the adhesive and cohesive forces are no longer able to hold on to the water and the capillary will empty to the extent necessary to keep the pressure potential of the water at the air-water interface at the air-entry value." Koorevar, et al[10] at 68. It is referred to as an air-entry value because as gravity overcomes the capillary forces, air rushes in to replace the water.

Note that a confined aquifer becomes unconfined if the pressure lowers the potentiometric surface beneath the confining layer. The relative storage coefficients, specific yield and storativity, differ by orders of magnitude. Any confined aquifer that intersects the pit by definition has become unconfined. Thus, most of the pumping at Gold Quarry comes from unconfined sources.

Because after being dewatered, the soil and rock remains wet, just not saturated, and the air now contacts all of the rock which contains pyrite, oxidation may occur throughout the dewatered aquifer: not just in a rind near the pit. In order for this to not be true, the rest of the pore spaces dewatered by the pumping must remain in a vacuum.. It therefore seems obvious that the total amount of oxygen available for oxidation is that from a volume of air equal to the amount of water pumped minus the volume of the capillary zone and the volume of any water removed from an aquifer that remains truly confined. As discussed above, that is a fairly small volume. Therefore, the volume of available oxygen is that which comes from a volume of air equivalent to the dewatering pumpage.

Please explain what is wrong with our interpretation in the previous three paragraphs.

dd

Discussions in Geomega indicate that the model for pyrite oxidation assumes that as air enters the volume containing pyrite, the oxygen is used. The discussion on oxygen diffusion, which we assume to be limiting the oxygen reaching the pyrite, does not discuss what it actually means but rather indicates only the method of calibrating the model. Geomega at 4-10. We presume that, while a vacuum is not created in pore spaces behind the skin due to air not getting there, the oxygen is totally used up if this model is correct. The more pyrite in the rock next to the pit, the more oxidation. Unfortunately, the sensitivity analysis is either presented wrong or refutes this assumption. It shows that with twice as much pyrite the oxidized thickness will be about 25% more than the baseline. Geomega at 4-14, Figure 4-5. If the oxygen in the air is used up, how can a higher pyrite density lead to a thicker skin? Conversely, with less pyrite and the fact that air will fill the pore spaces behind the skin, the oxidized layer should be thicker because the air

[10]Koorevaar, P., G. Menelik and C. Dirksen, 1983. Elements of Soil Physics. Elsevier, Amsterdam. Hereinafter Koorevaar, et al.

Response to Letter 33

33bb. The ultimate pit lake will have a surface area of approximately 400 acres, with a depth of 1,400 feet. At its ultimate dimensions, the volume of water in the pit lake will be approximately 60 billion gallons (Geomega, 2001).

33cc. Before addressing the interpretation presented in the comments, it is worth noting that pyrite oxidation and solute generation according to any paradigm are only important to pit lake chemistry if groundwater flow flushes solutes from the subsurface into the pit lake. Regardless of paradigm, this is not the case for the Gold Quarry pit lake, where pit inflows are predominantly from limestone units where significant pyrite oxidation and solute generation does not occur. Therefore, in the case of Gold Quarry pit water quality, the comment and the following response are mostly academic.

The error in the proposed interpretation is that air is not equivalent to oxygen. Air devoid of oxygen will not result in pyrite oxidation, i.e., the reaction

$$FeS_2 + \frac{15}{4}O_2 + \frac{1}{2}H_2O = Fe^{+3} + 2SO_4^- + H^+$$

will not occur.

The proposed paradigm discusses the interaction of fluid and gas phases in a dewatered aquifer. The paradigm imprecisely refers to the gas phase as "air" up until the final three sentences, then makes the leap from "air" to "oxygen" without proper consideration. The solecism in the proposed paradigm is that it tracks air migration, rather than oxygen migration.

Oxygen is removed from air by a number of biotic and abiotic processes including, biotic respiration, organic oxidation, ammonia oxidation, and, of course, pyrite oxidation. Oxygen is in short supply in deep subsurface environments, primarily because saturated conditions limit migration of O_2 from the atmosphere into the subsurface. Oxygen reaching the subsurface is often readily consumed by reactions, and thus does not transport far into the subsurface. This phenomenon is evident in oxygen profiles taken in recently deposited sulfide-bearing mine wastes, where pyrite oxidation in the surficial zone keeps oxygen from migrating into the subsurface (Helgen and Byrns 2000; Figure 5). Therefore, air migration and oxygen migration in the subsurface are not equivalent.

Letter 33 Continued

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Note that a confined aquifer becomes unconfined if the pressure lowers the potentiometric surface beneath the confining layer. The relative storage coefficients, specific yield and storativity, differ by orders of magnitude. Any confined aquifer that intersects the pit by definition has become unconfined. Thus, most of the pumping at Gold Quarry comes from unconfined sources.

Because after being dewatered, the soil and rock remains wet, just not saturated, and the air now contacts all of the rock which contains pyrite, oxidation may occur throughout the dewatered aquifer: not just in a rind near the pit. In order for this to not be true, the rest of the pore spaces dewatered by the pumping must remain in a vacuum.. It therefore seems obvious that the total amount of oxygen available for oxidation is that from a volume of air equal to the amount of water pumped minus the volume of the capillary zone and the volume of any water removed from an aquifer that remains truly confined. As discussed above, that is a fairly small volume. Therefore, the volume of available oxygen is that which comes from a volume of air equivalent to the dewatering pumpage.

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33cc. continued.

One factor not considered in the proposed paradigm is that ore deposits are very localized phenomena, and hence, pyrite and elevated metal concentrations are not distributed throughout the cone of depression. In fact, pit walls often have lower pyrite contents than the excavated materials and generate little sulfate and metals when leached.

Finally, at the Lone Tree project, where pit walls contain more sulfide minerals than Gold Quarry, wells adjacent to the pit surface (Helgen and Byrns 2000, Figure 2) experience fluctuations in sulfate concentrations in response to changes in water level, while water quality in distal monitoring wells (still within the drawdown cone-of-depression) show no such fluctuations (Helgen and Byrns 2000, Figures 3 through 9). If pyrite oxidation were occurring throughout the entire aquifer, it would be apparent in groundwater quality throughout the entire cone-of-depression.

This discussion explains the errors implicit in the comment's hypothesis and provides data elucidating the lack of reactivity distal to the pit.

The following discussion also directly refutes the comment's hypothesis: The comment asserts that Newmont's method for estimating pit lake water quality is certainly wrong, and that it underestimates contaminant load in the pit lake. The comment claims that the conceptual framework for modeling the pit lake water quality has been shown to be inadequate. The comment statements and following arguments about oxidation are based upon an unsupported concept that was summarized in an abstract (Miller, 2000) and presented orally at the Workshop on the Characterization, Modeling, Remediation, and Monitoring of Pit Lakes in Reno, Nevada, April 4-6, 2000. The author and presenter of the concept is a member of Great Basin Mine Watch.

The Miller abstract states that the alternative model "...assumes that air penetrates the pore spaces as the groundwater table is lowered, in some cases by several hundred meters to kilometers, and oxygen reacts with minerals (i.e., sulfides) present in the unoxidized zones in the entire cone of depression". When mining and pumping are discontinued, the recovering water table flushes a substantial portion of the oxidation products into the pit lake". The abstract states that "the resulting pit lake will contain increased levels of solutes, compared to that predicted by the present models". The abstract also offers these important explicit admissions: "Conclusive data to support this alternative model are not available", and "limited data are available from dewatering examples that have lowered the water table for a lengthy period of time, followed by water table recovery and the observation of substantial increases in sulfate concentrations in the groundwater". These qualifiers of the alternative model should moderate the comment's claims of wrong methodology and inadequate conceptual framework for pit lake water quality modeling.

Letter 33 Continued

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lake hydrology therefore could be significantly wrong.

What is the final volume of the pit lake? This is essential information that the BLM leaves out of the DEIS.

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Because after being dewatered, the soil and rock remains wet, just not saturated, and the air now contacts all of the rock which contains pyrite, oxidation may occur throughout the dewatered aquifer: not just in a rind near the pit. In order for this to not be true, the rest of the pore spaces dewatered by the pumping must remain in a vacuum.. It therefore seems obvious that the total amount of oxygen available for oxidation is that from a volume of air equal to the amount of water pumped minus the volume of the capillary zone and the volume of any water removed from an aquifer that remains truly confined. As discussed above, that is a fairly small volume. Therefore, the volume of available oxygen is that which comes from a volume of air equivalent to the dewatering pumpage.

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33cc. continued.

Experts in the audience at the presentation also offered arguments against the alternative model. These arguments are summarized, as follows:

The amount of sulfide available for oxidation is grossly overstated in the alternative model, because rock fractures control the movement of air. Complete and pervasive oxidation of the dewatered rocks cannot be expected.

Oxygen is very reactive, it is consumed quickly, and the products of oxidation include other gases, diminishing the amount of potential oxygen ingress. This argument can be augmented by considering that the acid produced from sulfide oxidation can react with carbonates, producing CO_2.

Other gases would already be present in the dewatered formations, diminishing the amount of air ingress. This argument is supported by the fact that the partial pressure of CO_2 in groundwater is greater than atmospheric (e.g., Langmuir, 1997). Exsolution of CO_2 from groundwater as the rocks are dewatered would limit the potential air ingress.

The consensus from the participants after the presentation was that the Davis-Ritchie Model of pyrite oxidation is still considered a valid approach for use with pit lake water quality modeling. Geomega has modified the Davis-Ritchie Model for application to arid environments.

33dd. As commonly presented in the pyrite oxidation literature (Davis and Ritchie 1986), the diffusion discussion is separated into two items:

1) movement of atmospheric oxygen into pore spaces (Geomega 1997b; Section 4.3.7), and
2) pyrite-consumption limited oxygen diffusion into the sulfide-bearing rock matrix (Geomega 1997b; Section 4.3.8).

In porous media, the rate of oxygen migration in the subsurface gas phase is related to the rate of oxygen diffusion in air at 77°F and under 1 atmosphere of pressure. However, as stated in the report "to model oxygen transport in the macrofractures, the macro-pore space was conservatively assumed to contain atmospheric oxygen at all times." Therefore, the model assumed an effectively infinite, instantaneous delivery of oxygen to pyrite exposed via the pit wall fracture network.

Letter 33 Continued

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Response to Letter 33

33dd. continued.

The second diffusion parameter quantifies the rate at which oxygen migrates from pore space through rock matrix to react with sulfide minerals. This parameter represents the physical and geochemical property of the rock which can be determined by measuring the rate of sulfate generation in geochemical field or laboratory tests. Rock types with relatively high diffusion rates (e.g., the CSR and SSR samples in Table 4-4; Geomega 1997b) allow more rapid reaction between oxygen and pyrite than other rock types (e.g., OC and OS) due to the physical properties of the rock (e.g., bulk density, quartz encapsulation of pyrite, etc.). These rates are determined by calibrating the oxygen model to measured sulfate concentrations.

Despite the request for clarification on the quantification of oxygen diffusion, the comment reached the correct result in its presumption that there is not, in fact, a vacuum behind the oxidized rind, but instead that the gas-phase there is oxygen-depleted due to contact and reaction with the intervening pyrite. The double pyrite content and half-pyrite content labels have been reversed in the legend of Figure 4-5 (Geomega 1997b), and the higher pyrite content should result in a smaller oxidized thickness (shown but improperly labeled in Figure 4-5) and the lower pyrite content should result in a larger oxidized thickness.

Letter 33 Continued

contains its oxygen further into the pit wall.

ee In addition, even if the diffusion processes described in the previous paragraph are correct, Geomega has neglected the role of natural fractures and faults in transmitting air (oxygen). They assume that fractures immediately fill with air and from these fractures air oxygen diffuses into the available pore spaces. Geomega ignored any fractures beyond five feet in from the pit wall. Geomega at 4-7. In other words, they assume that the only air passages are fractures created by blasting the pit walls, thereby unrealistically limiting the oxidation to a narrow rind around the pit. Note that the reference for the fractal pattern "Kozak, 1996" does not match the only reference in the reference section to Kozak. Also note that the reference does not contain the title of the article.

ff The humidity cell tests and field oxidation tests form the basis for the calibration of the reactivity models. It would be useful to discuss how the contact time or flow velocity through the sample compares with that in nature. Slow moving groundwater could have a much increased contact time and therefore a higher content of oxidation products. Also, how does the volume of the tests represent the volume in the oxidized skin? How does the contact time differ? Our observation is that after the water table and capillary water drops below a zone, as described above, the soil will remain moist. More than a few feet in from the pit wall or below the ground surface, the soil will remain moist and the humidity high for a very long time. The humidity will not drop as simulated by pumping dry air into the humidity cell. Geomega at 3-7,8. The field oxidation study is even more unrealistic. It would apply only to a very thin layer near the pit wall and only due to precipitation. In reality, some precipitation will seep into the pit walls, cause oxidation and then evaporate. Leaching into the pit will be from groundwater seeping into the pit lake. All of the oxidation products will leach at once and flow into pit. The field test will have brief periods of oxidation and leaching with precipitation.

gg Modeling of the pit wall runoff appears to be incorrect. It assumes that all rain hitting the pit will overland flow into the lake. Not true. Some will enter the pit lake by infiltrating into the wall, flowing through the rock, leaching contaminants, and emerging as groundwater. That which does run off may cause significant erosion of sediments into the lake. This was not accounted for at all. Geomega should consider the erosion from a 100-year storm into the lake and the chemical reactions that it might causes.

hh A corollary to this, not discussed by Geomega, is inputs to the lake caused by pit wall failures.

ii The discussion of relative contributions to the pit lake bulk chemistry are also wrong. "After approximately 25 years, bulk chemistry inputs are dominated by the background groundwater chemistry with minor contributions from wall rock runoff." Geomega at 5-9. This cannot be true. Even if "[g]roundwater flow through the pit wall below the lake water surface, flushes solutes from the oxidation rind within 25 years of refilling" (sic), the length of time that varying portions of the surface has been under water will vary with the time since the water level reached a specific point. Background groundwater chemistry will not dominate until well after the pit is at least 90% full.

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Response to Letter 33

33ee. The comment incorrectly interprets the assumptions made regarding transmission of oxygen by faults and fractures. Geomega (1997b) Section 4.3.1 discusses fractures caused by blasting because these fractures increase the wall rock porosity beyond that associated with ambient faults and fractures, i.e.,

$$N_b(x) = D_{frac}(x) + N_p$$

where

N_p is the ambient porosity of the rock,

$D_{frac}(x)$ is the porosity caused by blasting fractures, and

$N_b(x)$ is the net of the blasting induced porosity and the ambient porosity.

The porosity of natural fractures and faults is accounted for in the ambient rock porosity term (N_p). Geomega did not "...ignore any fractures beyond five feet in from the pit wall..." but, as stated at 4-7, assumed that "the typical distance at which wall rock was no longer fractured by blasting was approximately four to five feet."

This construct does not unrealistically limit oxidation to a narrow rind. On the contrary, it realistically promotes oxidation in the blast-fractured zone by increasing the porosity by approximately an order of magnitude.

The text cites Kozak 1996 as the reference for the fractal dimension of wall rock. This citation appears on the sixth page of the reference section. The title of the citation is "A Modified Number-based Method for Estimating Fragmentation Fractal Dimensions of Soils".

Letter 33 Continued

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Response to Letter 33

33ff. This comment blends two distinct physical processes, i.e.,

- the generation of potential solutes by oxidation reactions, and
- the leaching of the solutes generated by recovering groundwater.

Humidity Cell Tests

The humidity cell test and field oxidation test methodologies focus on the generation of potential solutes as a function of exposure time. Humidity cells receive dry air in order to reduce saturation in the sample being tested, although in practice these cells never actually dry completely during the three day dry air cycle. Nevertheless, oxidation reactions in saturated and near-saturated samples will slow because oxygen migration through interstitial water is more than four orders of magnitude slower than oxygen migration in air. The rate of oxygen migration as a function of moisture content is

$$D_1 = D_g^a \frac{(f_b - q)^{3.3}}{f_b^2}$$

As moisture content (2) approaches the porosity (N_b) the diffusion rate slows. By cycling dry and moist air, humidity cells maintain conditions where there is sufficient moisture for oxidation reactions to occur but not excess moisture to inhibit oxygen migration to sulfide minerals in the sample. In this manner, humidity cell tests conservatively over-estimate the mass of potential solutes generated by sulfide oxidation reactions.

Field Oxidation Tests

Field oxidation tests operate on the same principal as humidity cell tests except that moisture contents are maintained at site-specific ambient conditions for the wall rock surface rather than maintained at an elevated moisture content. These tests are representative of wall rock oxidation reactions because most sulfide oxidation reactions occur in the blast fractured wall rock where atmospheric oxygen is readily available and the porosity is an order of magnitude greater than the ambient rock porosity (see response 33ee).

Application to Pit Lakes

After quantifying the mass of solutes available by the humidity cell and field oxidation tests, leaching of solutes into the pit by recovering groundwater flow is calculated by distributing the mass of oxidized solutes over the volume of water flowing into the pit according to lithology-specific chemical release functions (CRFs; see Geomega Sections 3.3 and 5.2.3). The CRFs empirically quantify the mass of solutes per liter of water per pore volume of oxidized rock (Appendix C), based on both the humidity cell and field oxidation test results. These CRFs reflect leaching mechanisms where the bulk of solutes generated are leached over a period of time before the loading rate decreases as the mass of leachable solutes is exhausted by successive flushing. The CRFs conserve mass of solutes generated and add the entire mass generated over a period of time dictated by the volume of flow.

Letter 33 Continued

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33ff. continued.

This approach does not explicitly address kinetic effects related to flow velocity, however, it does preserve the total mass loading into the pit lake. The effect of slow moving groundwater suggested by the comment is speculative because there is no expectation that kinetic lags will significantly influence pit water quality. However, if fast flow were to leach a smaller mass of solutes relative to slow flow, the current model over-predicts early time mass loading to the pit lake resulting in a conservative estimate of pit lake solute concentrations.

33gg. Geomega (1997b) states (at page 5-3) that some fraction of precipitation on the pit walls will evaporate or infiltrate through benches before entering the pit lake. The assumption that all precipitation runs off to the pit lake maximizes the mass of solute loading to the pit water. The fraction of solute-bearing runoff lost to evaporation and infiltration is conservatively neglected because the volume of runoff versus evaporation and infiltration is highly dependent on the storm size, storm duration, temperature, wind speed, humidity, and other factors. There is high variability in these factors from year to year compared to relatively low variability in the volume of precipitation incident on the pit wall. Because 100 percent runoff maximizes the mass of solutes loaded to the pit lake, this approach was conservatively retained rather than incorporating the uncertainty of evaporation and runoff volume estimates into the water quality prediction.

The solute load associated with runoff was calculated by adding groundwater solute concentrations to leached solute concentrations. This over-estimates the mass of solutes in runoff because solute concentrations in actual precipitation are near zero while groundwater concentrations may be considerably greater (Geomega Table 1-2). The groundwater concentrations were used in lieu of precipitation concentrations to account for sediment transport in the runoff. Groundwater contains solutes because it is equilibrium with aquifer materials. This relationship is a good approximation of the equilibrium between sediment and precipitation because the sediment is representative of the aquifer materials under ambient conditions. Leachate results are subsequently added to account for oxidation reactions.

Geomega (1997b and 2001) superimposes the pit lake water levels on the pit wall geochemistry. After 190 years, the pit lake reaches an elevation (~5,075 feet amsl) where the exposed pit wall consists primarily of Carlin Formation alluvium and Popovich Limestone (see Geomega (2001), Figure 3-1). Materials in these formations are non-acid-generating to acid-neutralizing and release relatively small masses of solutes when leached.

Conservative accounting for pit wall leaching by runoff is described above. Solute loading from sediment derived from the pit wall has already been accounted for in the runoff chemistry. The non-acid-generating nature of the pit wall above the water table indicates that, once leached, the sediment material will not act as an ongoing source of solutes. The model accounts for freshly exposed materials in the pit wall by subjecting them to the same leaching processes as their progenitors back to a depth of ~6 meters in the pit wall.

Letter 33 Continued

contains its oxygen further into the pit wall.

ee In addition, even if the diffusion processes described in the previous paragraph are correct, Geomega has neglected the role of natural fractures and faults in transmitting air (oxygen). They assume that fractures immediately fill with air and from these fractures air oxygen diffuses into the available pore spaces. Geomega ignored any fractures beyond five feet in from the pit wall. Geomega at 4-7. In other words, they assume that the only air passages are fractures created by blasting the pit walls, thereby unrealistically limiting the oxidation to a narrow rind around the pit. Note that the reference for the fractal pattern "Kozak, 1996" does not match the only reference in the reference section to Kozak. Also note that the reference does not contain the title of the article.

ff The humidity cell tests and field oxidation tests form the basis for the calibration of the reactivity models. It would be useful to discuss how the contact time or flow velocity through the sample compares with that in nature. Slow moving groundwater could have a much increased contact time and therefore a higher content of oxidation products. Also, how does the volume of the tests represent the volume in the oxidized skin? How does the contact time differ? Our observation is that after the water table and capillary water drops below a zone, as described above, the soil will remain moist. More than a few feet in from the pit wall or below the ground surface, the soil will remain moist and the humidity high for a very long time. The humidity will not drop as simulated by pumping dry air into the humidity cell. Geomega at 3-7,8. The field oxidation study is even more unrealistic. It would apply only to a very thin layer near the pit wall and only due to precipitation. In reality, some precipitation will seep into the pit walls, cause oxidation and then evaporate. Leaching into the pit will be from groundwater seeping into the pit lake. All of the oxidation products will leach at once and flow into pit. The field test will have brief periods of oxidation and leaching with precipitation.

gg Modeling of the pit wall runoff appears to be incorrect. It assumes that all rain hitting the pit will overland flow into the lake. Not true. Some will enter the pit lake by infiltrating into the wall, flowing through the rock, leaching contaminants, and emerging as groundwater. That which does run off may cause significant erosion of sediments into the lake. This was not accounted for at all. Geomega should consider the erosion from a 100-year storm into the lake and the chemical reactions that it might causes.

hh A corollary to this, not discussed by Geomega, is inputs to the lake caused by pit wall failures.

ii The discussion of relative contributions to the pit lake bulk chemistry are also wrong. "After approximately 25 years, bulk chemistry inputs are dominated by the background groundwater chemistry with minor contributions from wall rock runoff." Geomega at 5-9. This cannot be true. Even if "[g]roundwater flow through the pit wall below the lake water surface, flushes solutes from the oxidation rind within 25 years of refilling" (sic), the length of time that varying portions of the surface has been under water will vary with the time since the water level reached a specific point. Background groundwater chemistry will not dominate until well after the pit is at least 90% full.

jj It is not possible for the pit lake to be a terminal groundwater sink. Geomega at 7-5. The final pit lake will be just 8 feet below the premining groundwater level. But the water table through the area was not flat. Maps in the groundwater model show a drop in water level across the pit. Any discussion of preexisting water level is an average of levels around the pit lake. On one side it is higher than the final pit lake level; on the other side it is below the final level. Unless the preexisting level was flat in all of the aquifers that intersect the pit, it is not possible for the pit lake to be a sink when evaporation draws it down just 8 feet.

19

Response to Letter 33

33gg. continued.

Contrary to the comment, by defining the solute loading due to runoff as the sum of groundwater and leachate concentrations, the pit lake model implicitly accounts for releases from Gold Quarry pit wall sediment. Inclusion of the 100-year storm event, per the comment's suggestion, is not necessary. The model already includes runoff of 9.5 inches a year into the pit lake, a quantity greater than the ~3 inches associated with the 100-year storm event.

Finally, it is worth noting that the above runoff discussion is largely academic for the Gold Quarry pit lake. Under site-specific arid conditions, runoff accounts for <1% of pit inflows with the vast majority of pit inflow originating from groundwater. Furthermore, as the pit refills, most runoff comes from the alluvial and oxide material high on the pit walls (Geomega (2001), Figure 3-1). The solute loads generated by these materials are relatively small compared to mineralized pit bottom materials inundated by groundwater flow.

33hh. Again, pit wall failures contributing solutes to the pit lake will originate in the alluvial and oxide materials high on the pit walls. These materials release relatively small masses of solutes. Leaching of solute from material above the water table is very conservatively estimated in the model to account for this possibility.

33ii. The pit is predicted to be about 90 percent full after approximately 30 years (Hydrologic Consultants Inc., of Colorado, 2001, Figure 2). After about 25 years, the chemical releases from most of the pit surface have asymptotically approached background groundwater levels (Geomega, 2001).

33jj. The revised Gold Quarry Amendment, Pit Lake Water Balance Predictions (Hydrologic Consultants Inc., of Colorado, 2001) predicts hydraulic gradients in the aquifers intersecting the pit surface are locally toward the southeast. The document shows that pit lake outflow will begin to occur at a recovery stage of 70 percent, and increase to 3.2 cfs at 100 percent recovery. The outflow will report to the Paleozoic bedrock, not to the Carlin Formation, or surface waters (Hydrologic Consultants Inc., of Colorado, 2001). The pit lake water quality is predicted to meet drinking water standards and be better than background groundwater quality (Geomega, 2001). Pit lake outflow is not expected to degrade waters of the state.

Letter 33 Continued

Acid Mine Drainage (AMD)

kk

Newmont clearly does not expect to have acid generation in the waste rock dumps for the expansion, although they recognize that a large amount of acid generating rock will be mined. They also did not expect to have acid generation at the nearby Rain Mine. With the quantity of acid generating rock being mined for this expansion, acid generation and subsequent seepage at some of the sites is almost certain. How are these seeps going to handled? Are these seeps going to bonded appropriately? A minimum $5-$10 million bond should be put in place for these contingencies.

ll

Waste rock dumps, tailings facilities and heaps, if they will discharge seepage to the surface environment, require a NPDES permit. While Newmont has a permit for discharging to Maggie Creek, it does not have one for the discharge of seepage from these facilities. The document predicts that 15 gpm will discharge from the tailings facility in perpetuity. DEIS at 4-54. Waste rock dumps, which have a higher conductivity because their rock size is larger, will also have seepage. As the infiltrating water reaches the ground surface, it will flow laterally and form seeps at the base of the waste rock dump. This requires an NPDES permit if it has the chance of reaching surface water. The BLM has a responsibility to determine whether this is the case at any point on this project. If they do not and seepage actually occurs, the BLM will have violated NEPA in the plan approval. The relevent decision declares that gravity flow from or through a spoil pile of discard overburden may fit the statutory definition of a point source and if the mining activity led to the pollutant being added to the flow, there may be a violation of the Clean Water Act. Sierra Club v. Abston Const. Co., Inc. 620 F.2d 41.

> A point source of pollution may also be present where miners design spoil piles from **discarded overburden** such that, during periods of precipitation, erosion of spoil pile walls **results in discharges into a navigable body of water by means of ditches, gullies and similar conveyances**, even if the miners have done nothing beyond the **mere collection of rock** and other materials. **The ultimate question is whether pollutants were discharged from "discernible,** confined, and discrete conveyance[s]" either by gravitation or nongravitational means. Nothing in the Act relieves miners from liability simply because the operators **did not actually construct those conveyances**, so long as they reasonably likely to be the means by which pollutants are ultimately deposited into a navigable body of water. Conveyances of pollution formed either as a result of natural erosion or by material means, and which constitute a component of a mine drainage system, may fit the statutory definition and thereby subject the operators to liability under the Act. Id. at 45, emphases added.

Clearly, a waste rock dump is a collection of overburden. Precipitation may cause discharges through or from the waste rock dump to reach a navigable body of water. The BLM is responsible for assuring that adequate protections are in place and that Newmont obtains a discharge permit, even a zero discharge permit, for these facilities. If seepage does occur, and the presence of seepage through the tailings impoundment suggests that seepage will also occur through a waste rock dump, and it reaches a navigable water body, there will have been a violation. This is especially important because of the potential for seepage through AMD producing rock (even though it will be encapsulated). DEIS at 2-30.

The issue of discharge permits for waste rock seepage has long been settled in the courts but Nevada and the BLM have not followed precedents.

Response to Letter 33

33kk. The comment presumes that the presence of PAG material in waste rock disposal facilities will necessarily result in acid mine drainage. This is not the case because material handling and closure plans are designed to mitigate acidic drainage by placing acid-generating materials with acid-neutralizing materials and/or placement of revegetated covers that preclude infiltration through the waste rock.

The best way to assess the potential for acidic drainage is inspection of the existing waste rock disposal facilities which contain potentially acid-generating material. Inspection shows that these waste rock disposal facilities do not have associated acidic drainage. This is a zero-discharge facility designed according to the guidelines of the NDEP (DEIS at 2-22). Final closure measures would be defined in consultation with the NDEP and BLM. Newmont has committed to provide a bond of $72 million for reclamation of the Proposed Action.

33ll. The comment groups waste rock dumps, heap leach pads, and tailings impoundments as comparable entities when considering seepage discharges. However, these mine facilities have very distinct seepage characteristics. Waste rock facilities are constructed from unsaturated, run-of-mine material. Any seepage from waste rock occurs only when meteoric precipitation has infiltrated through the waste rock. Arid conditions in the western U.S. often mitigate infiltration through the waste rock through evapotranspiration losses, especially from closed and revegetated dumps.

Heap leach facilities are also constructed from unsaturated, crushed material, usually placed on an impermeable liner. Water is subsequently intentionally infiltrated into leach pad materials both during the leaching process and subsequently in the closure rinsing process. Thus, the level of saturation in the leach pad materials is anthropogenically increased compared to waste rock. The infiltrated solutions that drain from the leach pads over a period of time are collected and disposed in a manner that prevents degradation of groundwater and surface water quality.

Mill tailings are deposited in impoundments as fine-grained particles in a saturated slurry. The solution present in the tailings drains slowly from the material due to the relatively fine-grained nature of the material. Depending on the efficacy of the impoundment closure, meteoric precipitation may infiltrate through the tailings resulting in indefinite seepage or seepage may eventually abate as evapotranspiration removes moisture from the surface of the closed impoundment.

Letter 33 Continued

Acid Mine Drainage (AMD)

kk

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The issue of discharge permits for waste rock seepage has long been settled in the courts but Nevada and the BLM have not followed precedents.

Response to Letter 33

33ll. continued.

The claim that the "size of material suggests that snowmelt or rainfall will rapidly seep through the waste rock" is unsubstantiated and, in this case, false. Run-of-mine particle sizes characteristic of waste rock were directly measured via sieve analyses to determine the grain size. The waste rock consisted of many gravel-size particles in a matrix of sands and finer-grained materials. The typical saturated hydraulic conductivity of this medium is on the order of three feet per day. However, in the unsaturated zone, hydraulic conductivity is secondary to pore pressure, with infiltration impeded by capillary forces under dry conditions. Therefore, in arid Nevada, infiltration only occurs during periods of heavy precipitation or snowmelt, with infiltration depth limited by the saturated hydraulic conductivity and the entrainment of water within the previously dry pore spaces. Under the arid site conditions, moisture entrained within the material at the surface of the waste rock is typically lost to evaporation prior to infiltration through the pile. Therefore, in situ collection vessels inserted to depths greater than four feet in an analogous waste rock dump at the Pipeline Project did not recover infiltrating fluids.

In addition to in situ measurements and numerical modeling, infiltration through waste rock and seepage has been monitored by direct observation of existing waste rock dumps. Already in place, existing waste rock dumps have not exhibited any surficial seepage. Therefore, snowmelt and rainfall clearly do not "rapidly seep through the waste rock."

The assertion that waste rock infiltration "will flow laterally and form seeps" is also unsubstantiated. Significant infiltration and/or lateral flow are not expected to occur from the proposed waste rock dump. Because the proposed dump is not expected to emit a flow, the assertion that the waste rock dump is subject to point source discharge requirements is irrelevant.

Letter 33 Continued

Groundwater

mm This section presents detailed comments on the groundwater analysis as presented in the DEIS. Attached to these comments is detailed review of the groundwater model prepared by HCI for the BLM. The summary is that all predictions made with the HCI model are very uncertain. All aspects of the model, from the location of the boundaries to the basal clay layer to the uncertainties around the calibration lead one to believe that the model is very uncertain. BLM managers and the public are led to believe that the massive predictions of drawdown and drying streams and rivers are precise. Because a calibration tends toward the mean solution of the model, the chance that the drawdown extent or the river fluxes will exceed the predicted values equals the chance that it will be less than the prediction. In our opinion, because the boundaries limit the drawdown as can be seen in the way the maximum ten-foot drawdown resembles the domain boundary, it is more likely that the model underpredicts than overpredicts the impacts.

nn The technical editing of the Groundwater Hydrology section leads one to question the quality of analysis that went into this EIS. For example, in the description on six hydrostratigraphic units on page 3-38, there are sentences out of place. After listing five rock types, a new paragraph begins to discuss the quartzite that underlies the primary water bearing units in the basin. The sentence about siltstones being structurally separated from the carbonates should be in the preceding paragraph.

oo Also, why is there a discussion of "ninety four water wells" currently being monitored by Newmont in the middle of a short section on floodplains? DEIS at 3-52. It seems substantially out of place.

pp Also, there needs to be more discussion about this "structural separation". Id. Faults do not necessarily create a barrier. The implications of this statement require more explanation. If this separation leads to isolated groundwater or situations where pumping in one formation do not affect the flow in another, this separation may lead to assumptions that affect the project impacts in this DEIS.

qq The major concern that GBMW has with this project is the dewatering. In the past, Newmont has dewatered at rates ranging from 22,000 to 28,000 af/y. DEIS at 3-48. This project will deepen the pit by more than 350 feet. DEIS at 2-21. Flow to the pit is directly proportional to the gradient in the drawdown cone. Depending on the rate that the additional 350 feet of drawdown occurs, the gradient could increase by about 35%. This estimate is based on the current pit being about 1000 feet below the preexisting groundwater level. If hydraulic conditions are the same, the 28,000 af/y would increase to about 38,000 af/y which is about 24,000 gpm. However, the flow rate also depends on the conductivity in the bedrock. Because the pit will intersect more bedrock which has a higher conductivity than the Carlin formation, the flow rate could increase more. Finally, as the pit deepens, there is a great deal of uncertainty in the dewatering rates. The BLM should provide a more detailed discussion at some point as to why Newmont predicts the rates will be the same.

rr The documents assume that springs above elevation 6000 feet result from perched groundwater rather than from regional groundwater and that they are therefore isolated from potential effects of dewatering. If this is true, the entire groundwater model is wrong. For example, the steady state calibration has water levels as high as 7800 feet. GWMODEL at Figure 19. If the springs above 6000 feet are isolated from the aquifers being modeled, then the calibration is so wrong as to be laughable and certainly unusable for this analysis.

ss Tritium tests are also claimed to indicate when springs may be perched. While we agree that perched water tables consisting of water recharged within the past 60 years will have elevated levels of tritium, there is

Response to Letter 33

33mm. The groundwater model used for analyses in the DEIS can be considered a state-of-the-art model, using accepted techniques to predict groundwater impacts from mining activities. The model results are not precise, however, they are the best predictions available. Because predicted dewatering rates are high (conservative), model results are conservative, and it is more likely that the model overpredicts rather than underpredicts the impacts.

33nn. The paragraph (on DEIS page 3-38) is confusing because the first of the six units (younger basin-fill alluvium) is not numbered. The numbered units actually represent units 2 through 6. The FEIS was revised to number all six units. Then the subject paragraph was combined with the paragraph that followed.

33oo. The three sentences concerning monitoring wells were moved from the Flood Plains section to the Hydrologic Monitoring Program section in Chapter 3 of the FEIS.

33pp. This separation or barrier to flow between the siliciclastics and the underlying carbonates is also supported by data from monitoring wells in the vicinity of the Leeville deposit and the Carlin mine. In the conceptual hydrogeologic model for the groundwater model, the Roberts Mountain Thrust is represented as a barrier to groundwater flow at the base of the siliciclastics. (Hydrologic Consultants Inc., of Colorado, 1999). Thus, potential implications of this separation are included in the groundwater model predictions.

33qq. The aquifer around the pit is not infinite; rather it is bounded by faults. Dewatering a bounded aquifer allows the dewatering rates to decrease with time while maintaining a constant drawdown and also allows increasing the drawdown with a constant pumping rate. The semi-bounded nature of the aquifer is shown by the current decrease in pumping rates to keep the pit dewatered. Gold Quarry pit inflow is not a direct function of hydraulic gradient and conductivity as in an ideal aquifer.

Letter 33 Continued

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Response to Letter 33

33rr. Various studies show that there is little evidence of connectivity between the carbonate aquifer being dewatered by the Gold Quarry mining operations and the high springs (>6,000 feet elevation) located in the Tuscarora Mountains including Mary's Mountain. Oxygen isotope data for springs 18, 21, 28, and 34 (Cherry Spring), all of which are springs on Mary's Mountain, are presented in all Spring and Fall Spring Surveys for Maggie Creek Basin/Gold Quarry. The report is prepared by Newmont's Hydrology Department. Figure 2 of the 'Spring' reports plots these data against the meteoric line. All four springs on Mary's Mountain have notably lighter deuterium/hydrogen ratios than those at lower elevation, indicative of a higher-elevation recharge source. These are consistent with Desert Research Institute's work in the Northern Tuscarora Mountains (DRI, 1998).

Water temperatures in operational dewatering wells at Gold Quarry, completed in carbonate rocks, range from 28.3 to 33.6 degrees Celsius. Well CS-2, near Cherry Spring, has a temperature range of 12.3 to 18.1 degrees Celsius (Maggie Creek Basin Monitoring Plan, third quarter 1999) indicating two different aquifers.

The pre-dewatering operations head at Cherry Spring (CS-1) was 5,988 feet. At the end of 1998 the water level in CS-1 was 5,990. The pre-dewatering head at Gold Quarry was 5,100 feet and at the end of 1998 it was 4,442 feet (Maggie Creek Basin Monitoring Plan, fourth quarter 1998). The pre-dewatering head difference was 888 feet at the end of 1998, a difference of 1,548 feet No impact to flow at Cherry Spring has been documented (Newmont Spring Survey, 1999). As identified in the May 1993 Draft EIS for Newmont's SOAP, the Tuscarora Fault is located on the east side of Mary's Mountain and it functions as a hydrologic boundary between Gold Quarry and the springs (at higher groundwater elevations) west of it.

Identification of hydrogeologic units on the Carlin Trend (Stone et al, 1991, Maurer et al, 1996, Hydrologic Consultants Inc., of Colorado, 1999) is well established. The geologic units mapped on Mary's Mountain include the upper plate rocks of the Vinini Formation overlying younger, volcanic rocks. The upper plate, or western assemblage occurs in the upper elevations of both the northern Tuscarora Mountains and Mary's Mountains (Maggie Creek Basin Monitoring Plan, fourth quarter 1998). Measured heads in the western assemblage are higher than the underlying carbonate rocks and they exhibit a distinctly different distribution. In the central (higher elevation) portions of the Tuscarora Mountains the groundwater gradient is downward, near the mountain block bounding faults (e.g. The Tuscarora Fault) gradients are upward. The source of recharge is likely higher in the mountains. This is typical for fault bounded mountain aquifer systems in the Great Basin. The carbonate rocks have a much lower head than the western assemblage and exhibit a horizontal gradient (Maggie Creek Basin Monitoring Plan, fourth quarter 1998).

33ss. See response 32ff. Tritium data for springs in the Gold Quarry Area is presented in Plume (1995) and DRI, (1998). The cutoff of 6,000 feet is given as an approximate boundary and monitoring will continue to be conducted for springs above as well as below 6,000 feet. Newmont will mitigate negative impacts on springs resulting from dewatering activities.

Letter 33 Continued

ss another possible explanation for the presence of tritium. That is that a spring has a mixture of waters. Because most of the bedrock types have outcrops in the mountains and have significant fracture zones, it is possible that recharge in these outcrops mixes with older groundwater. The DEIS should provide information about the tritium tests and concentrations among springs, including some known to be young water as well as deep groundwater. Then, provide data on the springs so that potential mixtures can be assessed.

tt Discussion of the alluvium indicates that it is "recharged by precipitation and snowmelt, by stream flow losses, and by discharge from the bedrock groundwater system." DEIS at 3-39. This recharge from bedrock comes both laterally and from below. There is an intimate connection with streams as indicated by the statement that "groundwater systems are interdependent" with a substantial interchange of water to and from the stream and aquifer. Quantitative information would be much more valuable, especially as regards the bedrock recharge. The section on tertiary sediments, the Carlin Formation, requires the same qualitative and recommended quantitative discussion. It is the primary fill material in the Maggie Creek basin and a detailed understanding of the water balance in the formation is essential. Is there a connection between the Carlin Formation and the bedrock at any point or does the "basal layer of clay" completely surround the formation? Id. A quantitative discussion of the water balance would be illustrative. Does the discharge from the Carlin formation through ET and flow to Maggie Creek balance with the expected recharge from direct precipitation and streamflow loss? If not, there must be some recharge from the bedrock and therefore a connection with the bedrock that will be affected by dewatering in the bedrock[11].

uu The pumping tests in the Carlin formation resulted in hydraulic conductivity values that exceed the calibrated values by up to 42 times. Compare Table 3-16 in the DEIS with Table 6 in GWMODEL[12]. This discrepancy requires some discussion because the long-term response due to dewatering will vary significantly among these different conductivities[13]. Also, the values presented for storativity are clearly a storage coefficient. Note the depth of pumping. While there is no information about the screening of the pumping wells, we assume that the layer pumped from was well below the free surface of the aquifer. For short pumping periods, the stress does not propagate to the surface and the response to the test is that of a confined aquifer. This is especially true for an aquifer with high vertical anisotropy, which we suspect exists here because of the sedimentary nature of the deposition and as noted in Table 6 of GWMODEL. There should be additional discussion about vertical conductivity because it affects the rate at which recharge and infiltration moves into the aquifer and controls whether mounding occurs. The groundwater mounds caused by the extra infiltration from Maggie Creek indicate there is a lower vertical conductivity along with the high preexisting water table.

vv Descriptions of flow in the various layers should include a map of the potentiometric surface in that aquifer for the premining condition. The statement that "groundwater flow in [the carbonate unit] was generally to the southwest, whereas groundwater moves primarily to the southeast in the four overlying hydrostratigraphic units" would be emphasized with maps of the prepumping contours to supplement the 1998 contours to show how dewatering has affected each aquifer. It would also help the reviewer to understand the quality of the subsequent prediction of future impacts. If the regional flow in the carbonate is to the southwest and most of the dewatering in the carbonate, what is the impact downgradient of the study area.

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[11] See our detailed analysis of the groundwater model attached to this letter.

[12] Id.

[13] See our discussion elsewhere that compares the various problems with the way this formation was modeled.

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Response to Letter 33

33tt. Plume (1995) provides a water budget for Upper and Lower Maggie Creek Basins. The water balance does not differentiate flux between different hydrogeologic formations. A water budget considering separate hydrogeologic formations is impossible to obtain or verify. A water budget could not be used to prove or disprove connections with the bedrock.

33uu. The Carlin Trend Model values of hydraulic conductivity for the Carlin Formation were developed through model calibration, and are reasonable based on typical published values for similar formations. The modeled hydraulic conductivity of the Carlin Formation is an order of magnitude (and more) lower than some site specific data indicate (Plume, 1995). The site-specific data were generated from five aquifer tests at three wells. Two of the wells are reportedly production wells, at which four of the tests were conducted. The test data on hydraulic conductivity was from highly permeable zones in the Carlin Formation, in which wells were completed for the purpose of producing water. The Carlin Formation consists of semi-consolidated, old alluvial sediments that are clay and silt rich, and contain volcanic rocks.

Pumping tests do not, in general, give information on vertical conductivities; these have to be inferred from the geologic setting. The discussion of vertical conductivity in the DEIS is considered adequate.

33vv. The verbal description of the pre-mining groundwater flow is considered adequate for this DEIS. Pre-mining potentiometric surface maps are presented in the quarterly Maggie Creek Basin Monitoring Plan reports. These reports are available at the BLM's Nevada State Office and Elko Field Office.

Letter 33 Continued

We have several major problems with the groundwater model analysis that will be reviewed here. Attached to this letter is a detailed review of the groundwater model (Attachment 1).

ww The first problem is that the calibrated conductivity values on a regional scale are too low. Geologically, it is hard to understand why the carbonate at the mines has such high values (over 20 ft/d) while the regional carbonates are only 1 ft/d. The Gray/Challenger fault separates high conductivity carbonates near the mine. GWMODEL at Figure 15. The contrast with the siliclastics is more interesting; at the Gold Quarry pit, the conductivity varies from 45 to 65 ft/d while regionally it varies from 0.025 to 0.05 ft/d. Id. This transition occurs over the vertical Challenger fault. Id, cross-section D-D'. It is likely that the high conductivity at the mine was necessary for model convergence with the high pumping values observed in dewatering wells at the mine. In other words, the wells pump from the high conductivity siliclastics while the fault constrains the zone where the water is drawn from.

xx The transient calibration, with all of its problems, moderately resembles the regional groundwater table in 1998 because the faults have constrained it in a northwest-southeast shape. Neither model, Newmont's nor Barrick's, uses conductivity values that vary in the horizontal plane. Without faults, that is the only way that directional drawdown could occur. The zones of high conductivity and faults near combine with the high conductivity carbonates in upper Boulder Flat (100 ft/d) combine to control the drawdown in the observed northwest-southeast trend. This is also the zone of most observation wells. The regional carbonates have not been sufficiently stressed by dewatering. As dewatering stresses the regional aquifer, drawdown will propagate. It is important to recognize that the regional aquifer has not really been stressed yet. Because of this lack of stress and the unique calibration in the northwest-southeast trend, it is likely that this model prediction for stress propagation in the regional siliclastics and carbonate is little more than guesswork.

yy However, the ultimate model predictions reported in the EIS documents and the observed water levels do not match well. Compare the predicted 10 foot drawdown contour with the proposed project (Figure 4-3, DEIS) with current observed water levels (Figure 3-13 in the CIR). The existing water levels show a distinct northwest-southeast trend (Figure 3-13, CIR). However, the model predicts that the 10-foot drawdown will extend far to the northeast. The model should be examined to understand why that occurs. Figure 4-3 (DEIS) shows the problem by itself. The monitored 10-foot drawdown extends further to the southeast than the ultimate predicted 10-foot drawdown cone. This is another indicator of major problem with the predictions and the ultimate conceptualization of the groundwater model used for this EIS.

In fact, the groundwater model developed as a part of these comments and discussed above under the GBMW alternative had the same problem. It was based on the HCI model used for this EIS; in the transient runs from 1990 to 1998, a drawdown developed to the northeast from both the Gold Quarry and Betze-Post mines.

zz **Basal Clay Layer**: The BLM relies on the basal clay layer between the Carlin formation and the underlying bedrock to assume that there will be no impact from dewatering the underlying aquifer on the Carlin formation through which Maggie Creek flows. The claim is basically that the basal clay layer isolates the overlying formation from the dewatering stresses in the bedrock. The groundwater model has a 100 foot thick layer of clay that underlies this formation which essentially prevents the modeling from transmitting the stress into the Carlin formation. The assumption that this clay layer exists stems from several wells that have penetrated it and the lack of drawdown in the Carlin formation. A perfectly continuous clay layer, without embedded gravel or holes, extending under both the lower and upper Maggie

23

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33ww. Generally, faulting near the pit area is observed to be greater than on a regional scale. This increases the average conductivity of the 'porous medium' modeled formation.

The hydraulic conductivity of the carbonate rocks along the Carlin Trend has been enhanced by fracturing, dissolution and hydrothermal activity. The increased hydraulic conductivity is evidenced by the flat, elongated drawdown cones from dewatering the Gold Quarry and Post/Betze pits. Monitoring wells installed in the carbonates at the southern end of Little Boulder valley and east of the Carlin mine indicate drawdowns on the order of three to four feet per month from mine dewatering. This amount of drawdown four to six miles from pumping in the Boulder Flat Area (i.e. dewatering for Post/Betze-Meikle) is further evidence of the relatively high hydraulic conductivity of the carbonate rocks along the Carlin Trend (Hydrologic Consultants Inc., of Colorado, 1999).

Siliciclastic rocks in the Gold Quarry pit have been silicified and highly fractured and exhibit significantly higher hydraulic conductivities than the siliciclastic rocks occurring elsewhere in the area. Data from aquifer tests indicate that the hydraulic conductivity of the siltstone unit in the Gold Quarry pit is in the range of 20 to 100 ft/day (Hydrologic Consultants Inc., of Colorado, 1999).

33xx. The aquifer has been stressed significantly through pumping by Newmont and Barrick. While the stresses have not yet reached their maximum predicted magnitude, the stresses are large enough to allow calibration of the model.

33yy. The text in the "Impacts on Groundwater Levels" and Figures 4-3 and 4-4 in Chapter 4 of the FEIS have been modified to better illustrate current and predicted conditions in the water table and deep aquifers.

33zz. The comment about documentation of the nature and extent of the clay layer at the base of the Tertiary sediments places too much emphasis on this layer with respect to predicting impacts to the Carlin Formation and streams. The modeled clay layer must be understood in the context of the geology of the Carlin Formation. The layer in the model and the calibrated low hydraulic conductivity account for the combined effects of numerous low permeability layers within the Carlin Formation that cannot be explicitly incorporated at the scale of the model due to numerical limitations and, consequently, the required simplifications for a regional model. The Carlin Formation is represented in the model as one layer. The actual stratification of the formation results in a net effect of very limited transmission of water from the Carlin Formation to the underlying siliciclastics. Plume (1995) does not talk about a connection between basin fill aquifer and bedrock aquifer, the quote mentions an upward gradient within the basin fill aquifer, as all three wells indicating the upward gradient are completed within the Carlin Formation.

Letter 33 Continued

Creek basins would be very unusual. In light of a quote from Plume about connections between basin fill aquifers and deeper bedrock aquifers, this situation would be very unusual.

> "Second, heads at the three flowing wells, which are completed to different depths, indicate an upward gradient for ground-water flow in the area adjacent to the west side of the unnamed hills. The heads indicate that an upward gradient extends from depths of at least 1,000 ft to as shallow as 160 ft.... this baseflow is thought to be sustained by ground-water discharge to the stream channel resulting from the upward movement of ground water"[14]

zz

As a part of reviewing the groundwater model and this assumption, we contracted for a modeling study of the Carlin formation and basal layer (Attachment 2). We did this because the assumption of the existence of a basal clay layer effectively sealing the Carlin formation from the effects of drawdown in the underlying bedrock may be the most important assumption in the model. If it is wrong, it will have major implications for the future. The summary of the model exercise is that various scenarios for modeling the clay layer between the Carlin formation and deeper bedrock could explain the current lack of drawdown in the Carlin formation. These scenarios include different conductivities, small layers of clay embedded in the clay, and holes through the clay. A lower conductivity pervasive clay layer could have not transmitted stress, yet, but after 20 years or more it would begin to do so and after dewatering ceases and Newmont stops discharging to Maggie Creek, the stress may propagate to the Maggie Creek. The clay layer could also be thinner in some places and the stress could just now being reaching the Carlin formation and will be seen in a few years. The same could apply for small discontinuities in the clay layer. Any of these scenarios could result in water level drops in the Carlin formation which lead to a decrease in flow in Maggie Creek.

The only way the BLM should allow Newmont to continue with this assumption is to have substantial proof. This proof should include numerous wells spread uniformly across the Maggie Creek basin showing the layer. The proof should also include the results from variably completed observation wells in the layer. These wells would be completed above, below and within the clay layer to show that a substantial difference in heads exists and that it is not propagating through the clay. To be acceptable, **this data must be included in the revised DEIS.**

aaa

Flow Through in Deep Carbonate: The lower layers of the groundwater model, and the primary aquifer being dewatered by Newmont and Barrick, is the limestone, siltaceous, and carbonate aquifer known as Deep Carbonate. In assuming that the topographic basin divides are no flow boundaries, HCI assumed no through flow in the Deep Carbonate aquifer system. Some of this assumption is based on a literature review. "Both Maurer et al.[15] and Plume[16] have assumed that there is no throughflow in the carbonate aquifer, in contradiction to the interpretation presented by Prudic et al.[17] and Harrill et al. (1988)" (HCI, page 21, footnotes added for clarification). However, review of the references raises questions about the assumption.

[14]Plume, R.W., 1995. Water Resources and Potential Efects of Ground-Water Development in Maggie, Marys, and Susie Creek Basins, Elko and Eureka Counties, Nevada. U.S. Geological Survey Water Resources Investigations Report 94-4222. Carson City.

[15]Maurer, D.K., R.W. Plume, J.M. Thomas, and A.K. Johnson, 1996. Water Resources and Effects of Changes in Ground-Water Use Along the Carlin Trend, North-Central Nevada, U.S. Geological Survey Water Resources Investigations Report 96-4134. Carson City.

[16]Note 12.

[17]Prudic, D.E., J.R. Harrill, and T.J. Burbey, 1993. Conceptual Evaluation of Regional Ground-Water Flow in the Carbonate-Rock Province of the Great Basin, Nevada, Utah, and Adjacent States. U.S. Geological Survey Open-File Report 93-170. Carson City, NV.

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33zz. The comment about documentation of the nature and extent of the clay layer at the base of the Tertiary sediments places too much emphasis on this layer with respect to predicting impacts to the Carlin Formation and streams. The modeled clay layer must be understood in the context of the geology of the Carlin Formation. The layer in the model and the calibrated low hydraulic conductivity account for the combined effects of numerous low permeability layers within the Carlin Formation that cannot be explicitly incorporated at the scale of the model due to numerical limitations and, consequently, the required simplifications for a regional model. The Carlin Formation is represented in the model as one layer. The actual stratification of the formation results in a net effect of very limited transmission of water from the Carlin Formation to the underlying siliciclastics. Plume (1995) does not talk about a connection between basin fill aquifer and bedrock aquifer, the quote mentions an upward gradient within the basin fill aquifer, as all three wells indicating the upward gradient are completed within the Carlin Formation.

33aaa. Deep interbasin flow through the carbonate aquifer north of the Humboldt River is a controversial topic, even among experts at the USGS. The model report (page 22) cites several literature references that support the model assumption of no groundwater inflow from areas beyond the hydrologic study area. Furthermore, field data demonstrate the compartmentalization, or discontinuity, of groundwater flow in the carbonate aquifer within the hydrologic study area. The conceptual model for the hydrologic study area that was chosen for the numerical model excludes any potential natural groundwater inflow from the carbonate aquifer beyond the model boundaries. Further support for use of a no flow boundary is provided on Page 22 of the HCI (1999).

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Plume[18] does not discuss throughflow in the subsection titled "Carbonate Rocks and Clastic Sedimentary Rocks"[19]. The section "Groundwater"[20] focuses primarily on shallow wells and presents groundwater contours and flow arrows for the shallow aquifer. This aquifer has groundwater divides coinciding with topographic divides. Plume also notes that there is a upward vertical gradient.

> "Second, heads at the three flowing wells, which are completed to different depths, indicate an upward gradient for ground-water flow in the area adjacent to the west side of the unnamed hills. The heads indicate that an upward gradient extends from depths of at least 1,000 ft to as shallow as 160 ft.... this baseflow is thought to be sustained by ground-water discharge to the stream channel resulting from the upward movement of ground water"[21].

This suggests that the water at depth does not result from the basin's recharge. In the section "Recharge", Plume indicates that underflow from adjacent basins is "probably negligible because water levels are much lower in basins to the west, and in basins to the east, directions of groundwater flow are toward the south and east"[22]. The reference is to a study of the Humboldt River which focuses on alluvial aquifers.

aaa

In a geochemical interpretation of flow paths, Plume[23] described one path as resulting from deep carbonate flow to the alluvium. In this description, Plume implies that there is a difference in geochemistry between deep carbonate water and the alluvium near the surface.
However, he explained chemical differences as resulting from the deep carbonate flow to have been recharge in the nearby Tuscarora Mountains. The flow in the well at the downstream end of this flowpath is relatively young based on the tritium testing which further indicates that this flow path is a short circuit through the carbonate. Water from the deeper wells had undetectable tritium amounts indicating that it is more than 60 years old. Some of Plume's conclusions based on geochemistry and tritium is that Maggie Creek flow originated from recharge in the surrounding mountains. An implication is that little connection exists with the deeper carbonate waters.

Maurer et al state that "data do not conclusively indicate the presence of a large regional flow system in carbonate rocks near the study area. Instead, deep ground-water flow could be restricted to several isolated systems where the horizontal distance from recharge area to discharge area is relatively short"[24].
Ironically, most of the preceding argument is for flow patterns that match conclusions of Prudic et al who concluded that throughflow did exist. For example, Maurer et al indicate "that temperatures and altitudes of head are consistent with southern and southwestern directions of deep ground-water flow" and that "geysers...also lie in the general direction of deep ground-water flow from the study area"[25]. They also argue that "recharge in the basin can account for both thermal and nonthermal ground-water discharge and that circulation depths of thermal fluids exceed 16,000 ft"[26]. The deep circulation of recharge would explain how the wells yield water more than 60 years old.

[18]Note 12.
[19]Note 12, page 15.
[20]Note 12, page 37-40.
[21]Note 12, page 38.
[22]Note 12, page 40, reference omitted.
[23]Note 12, page 52.
[24]Note 12, page 40.
[25]Id.
[26]Id.

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33aaa. Deep interbasin flow through the carbonate aquifer north of the Humboldt River is a controversial topic, even among experts at the USGS. The model report (page 22) cites several literature references that support the model assumption of no groundwater inflow from areas beyond the hydrologic study area. Furthermore, field data demonstrate the compartmentalization, or discontinuity, of groundwater flow in the carbonate aquifer within the hydrologic study area. The conceptual model for the hydrologic study area that was chosen for the numerical model excludes any potential natural groundwater inflow from the carbonate aquifer beyond the model boundaries. Further support for use of a no flow boundary is provided on Page 22 of the HCI (1999).

Letter 33 Continued

The conclusion must be that conceptual model used by HCI that no throughflow in the deep carbonate aquifer exists is uncertain. This is a necessary place for future analysis.

aaa However, what are the implications of not modeling throughflow? The boundaries would be variable flux with a steady state head set at some point away from the model domain. This would be a large source of water to the model. Steady state calibration must establish a reasonable flow-through. Then, comparison of transient dewatering boundary fluxes with the steady state fluxes would help to determine whether dewatering has an effect beyond model domain.

Soils and Reclamation

bbb It is important that Newmont save all available topsoil for reclamation. We question why the "depth to bedrock, steepness of slopes, and presence of a clay pan or cemented horizon" affects the usefulness of salvaged soils, however. DEIS at 3-55,57. If Newmont scrapes the topsoil off of the surface before piling its heap material or waste rock on top of it, why does it matter how deep the bedrock is? Also, if it is flat enough to disturb with waste rock, tailings or heap facilities, clearly it is not too steep to scrape, remove and store the topsoil.

How much soil has been stockpiled to date? This is a reasonable item to discuss in Chapter 3.

The reclamation plan calls for spreading only 6 inches over reclaimed surfaces. DEIS at 4-57. This leads to a tabulation that sufficient soil is available for reclamation. DEIS at 4-58. Since this plan was written in 1993, it should be updated to reflect current state of the art for soil depth. Also, much additional soil should be added to the heaps, tailings and waste rock dumps if adequate water balance barriers will be created. See the discussion of water balance barriers below.

Heap Leach Closure

ccc The DEIS discusses the leach pad closure in only a very superficial manner, similar to what was written in the previous South Operations EIS several years ago. Since that time, the concerns about heap leach closure have become much more acute, and the BLM needs to clearly indicate how they will close these heaps. It is insufficient to simply indicate that "Rinsate would be recirculated through the ore until the criteria of less than 0.2 mg/L WAD cyanide level and pH of 6-9 are achieved". DEIS at 2-33 to 2-34. Heap closure is clearly one of the major environmental impacts of major mines in Nevada. The lack of discussion of how the rinsate will be handled over the very long period of time (decades and beyond) required for meteoric water to rinse the heaps clean. "Detoxification and neutralization are required to reduce the weak acid dissociable (WAD) cyanide concentration level to less than 0.2 mg/L, and to reduce the pH to between 6 and 9, as required by NAC 445A.430, *in addition to meeting drinking water standards established for the state"* . DEIS at 2-33, emphasis added. Does this mean that the heap will be rinsed to drinking water standards. If so, those standards should be reported in the EIS as closure standards for heap drainage. Does this also include the proposed standard for arsenic which will probably be lower than 0.01 mg/L? The language is ambiguous and needs to be tightened up. **The BLM must not allow this project to go forward with the potential for these very large heaps to release hazardous waste.**

A currently popular method is to infiltrate heap draindown after detoxification and seepage into the soils beneath the site. At present, the BLM has approved release of heap fluids that exceed the technical water quality standards for hazardous waste at both the Candalaria mine and the Wind Mountain Mine. The

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33aaa. Deep interbasin flow through the carbonate aquifer north of the Humboldt River is a controversial topic, even among experts at the USGS. The model report (page 22) cites several literature references that support the model assumption of no groundwater inflow from areas beyond the hydrologic study area. Furthermore, field data demonstrate the compartmentalization, or discontinuity, of groundwater flow in the carbonate aquifer within the hydrologic study area. The conceptual model for the hydrologic study area that was chosen for the numerical model excludes any potential natural groundwater inflow from the carbonate aquifer beyond the model boundaries. Further support for use of a no flow boundary is provided on Page 22 of the HCI (1999).

33bbb. Depth to bedrock, steepness of slopes and a claypan do not affect the usefulness of topsoil, they affect the ability to salvage it. The subject sentence was changed to omit the phrase "...depth to bedrock, steepness of slopes, and presence of a clay pan or cemented horizon" in Chapter 3, Soils of the FEIS. Newmont salvages all available topsoil that it can, wherever it can. As described in the current Reclamation Plan (Appendix D of the Plan of Operations), Newmont will spread topsoil at depths ranging from 6 to 12 inches over graded areas being reclaimed. To date, Newmont has salvaged and stockpiled approximately 2.5 million cubic yards of topsoil in seven soil stockpiles (this information was added to the end of the Soils section in Chapter 3 of the FEIS).

33ccc. The leach heaps would have water actively applied to them by the leach solution application system and would not rely on meteoric water. Not all leach facilities would be closed at the same time. As a facility is being closed, its drainage would be diverted to other facilities that were still active. Only the rinsate of the last facility to be closed would be of concern. Rinsate leaving the final leach heap would be monitored to determine when appropriate levels of weak acid dissociable (WAD) cyanide and pH are achieved. The paragraph has been changed in Chapter 2, Leach Pads.

Closure will be conducted according to BLM Instruction Memorandum NV-2000-066. Current technology has advanced to the point that achieving closure is not just a function of rinsing the heaps, but is a combination of actions. Following draindown, each leach heap will be ready for closure (final shaping, capping the leach facilities to prevent long-term recharge, regrading the diversion and process channels, soil application, and revegetation to consume water from the cap). If rinsate discharge does not meet the permit standards, it would have to be treated. The closure procedure is presented in detail in the Reclamation Plan (Appendix D of the Plan of Operations). It is estimated that this process may take up to three years. Additionally, changes in technology and in the standards for discharge waters may occur in the next 10 years prior to closure, but that does not affect the decision to be made on this project now.

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BLM and State evaluate the proposal based on whether it has the potential to degrade groundwater. Generally, they consider that a high depth to groundwater will protect it. This mine offers a unique problem; at the time mining ceases, depth to groundwater may be as much as a 1000 feet. But, it will recover with time and any seepage still moving downward or any contaminants attenuated in soon-to-be-saturated soil will degrade the groundwater in the future.

For this reason, we are pleased to see no suggestions that leachate will be discharged to the ground. DEIS 4-53,54. Long-term evaporation is an acceptable disposal procedure. "All rinsate (sic), residual liquor, and rain/snowmelt would be collected from the spent oxide heaps following completion of detoxification and neutralization procedures for disposal through **evaporation**. DEIS at 4-53, emphasis added. "At [the end of rinsing], all rinse water would be collected and disposed through **evaporation**." DEIS at 4-54, emphasis added. However, evaporation presents its own problems which were not discussed in the DEIS.

ddd

1. Evaporation leads to a sludge in the bottom of the pond? How will this be disposed? Please address this and how the Resource Conservation and Recovery Act will be followed.

2. Evaporation requires ponds. While not discussed, we doubt that the current process ponds provide sufficient surface area for the evaporation. Please discuss how the evaporation will occur and whether it will require additional land disturbance that should be considered in this DEIS.

3. Evaporation is also a consumptive use. The proposal appears to use evaporation to dispose of heap seepage in perpetuity. While we support this plan, it is necessary to discuss the amount of consumptive use of water that is proposed and whether Newmont has or will acquire the water rights for this use. They may need to transfer a point of use from one or more of their existing rights.

Heaps should be sealed with water balance barriers. They can reduce the long-term infiltration through the heaps and hence the seepage to be accommodated into the future. A water balance barrier is designed so that infiltration is retained and evapotranspired back to the atmosphere. If there is substantial clay available, the barrier may have very low permeability. Two feet of clay can hold up to several inches of water. The selected plants should not have roots that go below two feet to avoid toxicity. If clay is not available, then a thicker layer is necessary so that the more rapid infiltration cannot reach the heap material[27]. Or, Newmont should import clay if necessary.

The SOAPA indicates that the Refractory Leach Facility expansion will be encapsulated on closure. DEIS at 2-34. Caps that will be acceptable on the cyanide heaps will not be sufficient for the RLF. No cap has been shown to be completely impervious, and the rock in these heaps will almost certainly be acid generating. How will these fluids be managed (*in perpetuity)* that pass through these heaps

Air Quality

eee

It is unclear why predicted values due to the project appear in Chapter 3 covering the affected environment, but the BLM calculated the predicted concentration of PM_{10} incorrectly. Table 3-4, DEIS at 3-11. "Based on the modeled results, the maximum PM_{10} ambient air concentrations outside of the permit boundary would be 59.3 $\mu g/m^3$ for a 24-hour permit and 6.2 $\mu g/m^3$ for the annual average." DEIS at 3-10. But, the monitoring data shows that the annual average has varied from 17 to 27 $\mu g/m^3$. It is not mathematically

[27]We recognize that in extremely wet years, some water will still reach the heaps. If this occurs rarely, the water will essentially be bound to the heap material which will remain essentially unsaturated.

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33ddd. 1. Restoration and reclamation of ponds is described on page 2-34 of the DEIS.

2. Rinsate will be applied at a rate similar to leach solution, i.e., at a rate slow enough to prevent surface runoff from the leach heaps, but fast enough to keep the heap saturated. Evaporation facilities have no calculated volume because evaporation is a function of sequencing fluids through the heap and launders. Completing evaporation is a time process, not a storage process, and is monitored by the quality of water coming off the leach pad.

3. Newmont does not plan on importing materials such as clay. The Carlin Formation materials from the pit will be used to cap final waster rock storage facilities. The Carlin Formation has a high clay content that makes it suitable for impermeable caps.

33eee. The air quality values in Table 3-4 were predicted in 1993 for the time period 1996-1998 as part of the permitting process for the proposed action. Those values are presented to reflect existing conditions at the project boundary line in the time period 1996-1998. Presenting monitored and predicted values as a percent of the standard is intended to show that the emissions are well below the allowable standard and not in any risk of exceeding the standard. The actual values are seldom exactly the same as modeled, however, both results are well below EPA standards (National Register Bulletin 38, 1995).

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possible to add the emissions from this project to a higher annual average and get a lower value as the BLM does when it reports the annual average as 6.2 µg/m³. Note that "Predicted Ambient Air Concentration" presented in Table 3-4 is presented as a percentage of NAAQS. The project is required to prevent air quality from degrading below (or concentrations going above) certain standards.

eee

(a) The level of the national primary and secondary *24-hour* ambient air quality standards for particulate matter is 150 micrograms per cubic meter (*ug*/m³), **24-hour average concentration**. The standards are attained when the expected number of days per calendar year with a 24-hour concentration above 150 *ug*/m³, ... is equal to or less than one.

(b) The level of the national primary and secondary *annual* standards for particulate matter is 50 micrograms per cubic meter (*ug*/m³), **annual arithmetic mean**. The standards are attained when the expected annual arithmetic mean concentration, ... is less than or equal to 50 *ug*/m³.

fff

40 CFR §50.6 (emphases added). It is clear that the regulations require the project to maintain the ambient concentration below 50 *ug*/m³. The regulations also clearly show that the 24-hour standard is calculated using data representative of a 24-hour period. Section (a) of the regulations, the 24-hour standard, specifically requires the use of the "24-hour average concentration." Table 3-4 reported a 24 hour maximum to be just 59.29 *ug*/m³ when Table 3-3 shows that at least three years had maximum ambient values that exceed the predicted value. The BLM needs to find the ambient condition that is annually equaled or exceeded one day or fewer. To this, the regulations require that the maximum predicted concentration due to the operations be added. This may not exceed 150 *ug*/m³. The BLM must correct this analysis.

The addition of daily maximum baseline and daily maximum new emissions is the standard BLM emissions calculation for mining EISs. For example, the BLM's Final EIS for the Zortman and Landusky Mines issued in March of 1996, EIS Number BLM/MT/PL-005+1990, Lewiston, Montana District Office, calculates the PM_{10} emissions from the mining operation by using those two numbers. In that FEIS, the BLM detailed the projected emissions for each alternative. Table 4.6.2 in that FEIS specifies that the maximum numbers were used to calculate projected project emissions. The Zortman FEIS stated for a number of alternatives that "mitigations would have to be applied to bring the emissions below standard." Zortman FEIS at 4-171, 4-173, and 4-174. Indeed, based on the exceedence of the 24-hour PM_{10} standard for one of the alternatives, the BLM stated: "Because emissions from the Pony Gulch development would cause cumulative emissions concentrations to exceed air quality standards, Alternative 7 precludes mining of the Pony Gulch deposit while mining and reclamation is underway at the Zortman Mine site." Zortman FEIS at 4-174.

ggg

This DEIS is disappointingly paltry with its data presentation. In a recent FEIS completed by the Battle Mountain District (South Pipeline Project, FEIS, NV64-93-001P(96-2A), NV063-EIS98-014), there is a detailed description of the modeling Specifically, that FEIS lists all of the potential PM10 sources at the mine and presents prediction of concentrations using isopleths showing concentrations around the project area ((Table 4.5.4, South Pipeline FEIS at 4-94-98, Figure 4.5.3 and 4.5.4 at 4-100-101). Additional isopleth maps were shown for other pollutants. In comparison, the Gold Quarry DEIS is completely deficient.

hhh

In addition to problems with PM_{10}, the DEIS fails to analyze $PM_{2.5}$ emissions at all. The federal $PM_{2.5}$ standards are 65 *ug*/m³ (24-hour) and 15 *ug*/m³ (annual). 40 CFR § 50.7. $PM_{2.5}$ is particulate matter released by mine activities such as equipment emissions and fugitive dust.

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Response to Letter 33

33eee. The air quality values in Table 3-4 were predicted in 1993 for the time period 1996-1998 as part of the permitting process for the proposed action. Those values are presented to reflect existing conditions at the project boundary line in the time period 1996-1998. Presenting monitored and predicted values as a percent of the standard is intended to show that the emissions are well below the allowable standard and not in any risk of exceeding the standard. The actual values are seldom exactly the same as modeled, however, both results are well below EPA standards (National Register Bulletin 38, 1995).

33fff. Additional analyses were not conducted because air emissions were previously analyzed twice; once in 1993 and again when the operating permit was obtained. Emission sources are unchanged for this proposed action. All previous analyses indicated that potential emissions were a very small fraction of the allowable ambient standard, with the exception of the 24-hour PM_{10} standard, where emissions were predicted to be less than 40 percent of the allowable standard. In addition, the five years of monitoring data presented in the DEIS contained no occasions when the 24-hour PM_{10} standard was exceeded.

33ggg. Air quality models are very standardized and are considered conventional practice to address potential emissions impacts. Presenting a description of the modeling is considered excessive for the lay reader of an EIS. Isopleth maps are very useful to illustrate areas or locations where emission violations might occur. Since no emission violations are expected for this project, isopleth maps were not included.

33hhh. On May 14, 1999, the U.S. Court of Appeals for the D.C. Circuit issued an opinion in which the Court vacated the revised PM_{10} NAAQS and remanded the $PM_{2.5}$ NAAQS. Until the appeals process is exhausted, EPA does not intend to issue final guidance of the standards affected by the Court's decision. (Federal Register, April 24, 2000). Until promulgated as a final rule, $PM_{2.5}$ need not be addressed.

Letter 33 Continued

hhh

$PM_{2.5}$ was added as a criteria pollutant to the EPA regulations in 1997. Under NEPA, the BLM must ascertain the predicted level of emissions of criteria pollutants. Under FLPMA and the part 3809 regulations, BLM must be assured that the project will not violate any standards. Unfortunately, the public has no idea whether the Gold Quarry Project can meet these standards -- let alone what the level of emissions would be.

iii

Where is monitoring location for the data in Table 3-3? It is not possible to access the completeness of this information without knowing the location. What is the frequency of sampling? Accurate assessment the comments presented above in this section require a detailed understanding of the sampling.

jjj

Toxic Release Inventory

The table following this section presents the TRI report for the Gold Quarry operation during 1998. Newmont reported similar releases in 1999 but we do not yet have this in tabular form. The document is seriously deficient in that it does not present this information nor does it discuss the fate of any of the toxic chemicals reported in the inventory.

Newmont released 107,129,060 pounds (53,564 tons) of toxic chemicals to the land surface; presumably, this is to the tailings impoundment and waste rock. This is just for one year. This mine has been operating for about 12 years; if Newmont discharges the same amount to the land surface during each of those years, there will be 1,285,000,000 (643,000 tons) of toxic chemicals on the land surface. These are hazardous chemicals that are no longer locked up underground but are not sitting on the ground surface where meteoric water can seep through, leaching the chemicals and potentially get into the water of northern Nevada. This material will leach to the environment for centuries. But, there is no question that some of it will be released from the tailings impoundments and waste rock dumps.

More importantly, there were 173,790 pounds released to the air. This includes 118,000 pounds of ammonia, 13,200 pounds of arsenic, 500 pounds of arsenic, and 3800 pounds of zinc. The BLM must examine the fate of these chemicals in the Maggie Creek watershed and the airshed. Also, the BLM must determine whether these emissions to the air require regulation as hazardous under the Clean Air Act. Ten tons per year is the limit for one pollutant; 25 tons per year is the aggregate. Does Newmont exceed this; will they exceed this in the future?

These requests for analysis of the fate of these chemicals is very serious. These are some of the most toxic substances known. Arsenic and mercury are among the most toxic substances released from mines. High levels of inorganic arsenic can be fatal. Arsenic damages many tissues including nerves, stomach and intestines, and skin. Breathing high levels causes sore throats and irritated lungs. Lower exposures may cause nausea, vomiting, and diarrhea, decreased production of red and white blood cells, abnormal heart rhythm, blood vessel damage, a "pins and needles" sensation in hands and feet, painful and profuse diarrhea, shock, coma, convulsions and death, irritation, inflammation, ulceration of mucous membranes and skin, and kidney damage. Mercury in all forms is deleterious to the nervous system. Exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, and developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing, and memory problems. Because the environmental fate of mercury cyanide is not well understood, it is possible that releases to leachfields will create very high local concentrations of mercury in the soils that may represent significant exposure pathways to wildlife. To not take all possible steps to avoid the release of these substances is irresponsible.

kkk

Response to Letter 33

33hhh. On May 14, 1999, the U.S. Court of Appeals for the D.C. Circuit issued an opinion in which the Court vacated the revised PM_{10} NAAQS and remanded the $PM_{2.5}$ NAAQS. Until the appeals process is exhausted, EPA does not intend to issue final guidance of the standards affected by the Court's decision. (Federal Register, April 24, 2000). Until promulgated as a final rule, $PM_{2.5}$ need not be addressed.

33iii. Details on the monitoring program were not included because they are part of the public record available from NDEP; Maggie Creek Basin Monitoring Plan Report.

33jjj. Toxics Release Inventory (TRI) information for calendar year 1999 has been added to Chapter 2 of the FEIS under its own heading. With the exceptions of ammonia, chlorine, hydrogen cyanide, and propylene, all the items listed are naturally occurring elements or compounds in the earth's crust. Typically, the largest volumes reported to TRI are for Other Disposals, i.e., those compounds bound in the rock that reports to the waste rock disposal facilities. The closure procedures for the waste rock facilities will stabilize, cover, and revegetated the facilities and prevent leaching of these compounds into the environment. The next largest volume of releases are those reporting to the tailing impoundment, where they will be isolated from the environment. After closure, ultimate drying, and final reclamation, the tailing impoundment will not leach materials into the environment.

There are 13 kinds of hazardous air pollutants (HAPs) emitted from project facilities. Most of them are emitted in quantities less than the 2,000 pounds per year limit that require controls. Discussion of HAPs was added into the Air Resources section of Chapters 3, 4, and 5 of the FEIS. Of the 13 species of HAPs, three are emitted in amounts greater than 2,000 pounds per year; arsenic compounds, hydrogen cyanide, and manganese compounds. Over 99 percent of the emissions of these three species are from non-point sources. Arsenic and manganese compounds are associated with fugitive dust. Cyanide compounds are also from non-point sources, but are primarily from aerial application of leaching solutions. Newmont has controls in place to minimize these emissions (watering of roads, work areas, conveyor transfer points; and using drip systems rather than sprinklers to apply leach solutions), and is continuing to increase the efficiency of those controls.

33kkk. The proposed action does not include any leach fields, so the potential impact to soils would not occur.

Response to Letter 33

Letter 33 Continued

A:Total Releases	5.1 Fugitive air emissions	5.2 Stack emissions	5.3 Maggie Creek	5.5 Disposal to Land on-site	5.5.1A RCRA Subtitle C Landfills	5.5.1B Other Landfills	5.5.2 Land Trtmnt/application farming	5.5.3 Surface Impoundment	5.5.4 Other Disposals
Ammonia	118,000	260	0		na	0	0	45,000	0
Antimony comp.	270	10	15		na	0	2	530,000	1,100,000
Arsenic compounds	13,000	200	1,300		n	0	200	29,000,000	20,000,000
cadmium comp.	51	25	66		na	0	0	330,000	230,000
chlorine	5	0	na		na	na	na	0	na
Chromium	0	84	0		na	270	0	390,000	0
Colbalt comp.	62	9	0		na	92	0	710,000	270,000
Copper comp.	690	1	0		na	3	0	810,000	2,900,000
Cyanide compounds	0	0	0		na	0	0	7,500	0
Hydrogen Cyanide	27,000	180	na		na	na	na	na	na
Lead comp.	67	22	0		na	3	0	370,000	300,000
Manganese comp.	4,600	32	170		na	140	13	3,400,000	19,000,000
Mercury comp.	29	460	0		na	0	0	110,000	120,000
Nickel comp.	520	36	0		na	180	0	1,100,000	2,200,000
Nitrate compounds	0	0	5,400		na	0	180	110,000	0
Propylene	3,700	0	na		na	na	na	na	na
Selenium	25	9	65		na	0	3	39,000	120,000

30

Response to Letter 33

Letter 33 Continued

comp. Silver	12	0	0	na	0	0	560	47,000
comp. Sulfuric acid	0	34	na	na	0	na	na	na
Thallium comp.	650	0	0	na	0	0	190,000	2,700,000
Zinc comp.	3,800	40	72	na	59	240	5,000,000	16,000,000

31

Letter 33 Continued

Riparian Areas

lll The acreage provided of current riparian areas do not add up. "Approximately 2,136 acres of riparian areas are present within the 1993 study area." DEIS at 3-60. "The most extensive riparian zones are associated with Maggie Creek (1,335 acres). All other streams have less than 40 acres each of associated riparian vegetation." Id. It appears that unless there are at least 15 other streams with "less than 40 acres" of riparian vegetation, the numbers do not add to 2136. Or is this just another case of poor editing?

mmm What are B1 and B2 benches? The document describes the B1 bench as "above the streamside type on stream-deposited terraces and below the overall high water mark". DEIS at 3-61. What does it mean to be above the streamside type? What is the overall high water mark? Usually, hydrologists talk of an active channel, a geomorphic flood plain or a water level associated with a given return interval flow. The term high water mark is hydrologically and geomorphically meaningless.

nnn The chapter 3 section on Riparian Areas has another discussion that is out of place. The statement about "[a]n additional 23 springs sites..." should be moved to the section on Spring/Seep Wetlands. DEIS at 3-61.

ooo There is no description of required Section 404 permits for the filled "Waters of the US". DEIS at 4-64. Because it exceeds 0.5 acres, the Nationwide Permit is not appropriate for this project. Please add a discussion about the required permits. Also, please list the drainages and the disturbed area for each. A map similar to Figure 2-2 showing facilities and drainages would be useful.

ppp The BLM discusses how "successful mitigation" would reverse riparian area degradation. This is unlikely because it is difficult to replicate the hydrology under a riparian area. For example, streams that intersect the water table, whether a gaining or losing reach, have a riparian area that depends on the high water table more than it depends on flow in the river. If the water table drops beneath stream bottom, just maintaining flow in the river will not maintain the riparian zone. Thus, it is likely that drawdown will result in irreversible riparian area degradation. If a riparian area converts to upland vegetation, it is likely that subsequent flood flows will cause incision that lowers the stream bed forming terraces where floodplains once existed. Because the stream bed will be lowered, recovering groundwater will not be able to recover the streamside vegetation.

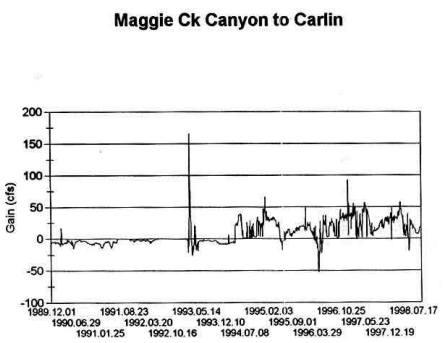

Figure 1: Flow increases from the Maggie Creek canyon to the confluence with the Humboldt River. The hydrograph was determined taking the difference between recorded flows at USGS gaging stations.

qqq **Discharges to Maggie Creek**: There is an acknowledgment that Newmont discharges to Maggie Creek, but there is little detailed discussion. Prior

32

Response to Letter 33

33lll. Additional information from the 1993 EIS has been added in a new sentence in Chapter 3, Riparian Areas of the FEIS that reads "Other streams with larger riparian areas include lower Susie Creek (263 ac), Jack and Little Jack creeks (214 ac), and Coyote and Spring creeks (133 ac)."

33mmm. The terminology being questioned is a combination of vegetation type and physical land form. It was defined by JBR (1993). From the water's edge, the first vegetation type encountered is Streamside, followed by B1 bench (farther away and above the water), followed by B2 bench (even farther away and above the B1 bench.) The full descriptions are presented in Table 3-22 of the 1993 EIS.

33nnn. The sentence in question belongs where it is because there are riparian areas associated with most springs and seeps, and the discussion is about the Maggie Creek Watershed Restoration Program that is designed to enhance water sources and their associated riparian areas.

33ooo. Necessary 404 permits will be obtained prior to the discharge of dredged or fill material into any features that constitute waters of the U.S. under current law and this requirement has been added to the section Riparian, Wetlands, and Waters of the U.S. in Chapter 4 of the FEIS.

33ppp. Healthy riparian zones are established along losing reaches of area streams. The BLM's plan to supplement stream flows will adequately protect these areas (BLM, 1993). Also, in response to the comment, the word "reverse" was changed to "offset" in Chapter 4, Riparian, Wetlands, and Waters of the U.S. - Irreversible and Irretrievable Commitment of Resources of the FEIS.

33qqq. Information on riparian communities is presented in Appendix A of the DEIS. Since dewatering discharges have started, the vegetative communities have responded with additional growth, but it is considered a short-term enhancement as a result of discharge water. The potential effects from cessation of dewatering discharge after 2011 will likely mean the vegetative communities will revert to pre-mining conditions.

Letter 33 Continued

qqq

to dewatering discharge, Maggie Creek lost 3.2 cfs from the canyon to the Humboldt River (Figure 1). With dewatering, it gains 19.8 cfs (Figure 1). These losses are averages calculated without removing the spikes caused by obvious local storm inflows. The total contribution of Newmont to the discharge into the Humboldt River between April 25, 1994 and September 30, 1998 is 23 cfs (actually a little less due to several isolated flood inflows).

There is no analysis in the DEIS of how this increased flow has affected the habitat in the Lower Maggie Creek. Has additional riparian habitat been created? Has the pool:riffle sequence changed? What will happen when the flow ceases in 2011.

Sediment and Erosion

rrr

Some of the analysis of erosion in Maggie Creek is based on a faulty premise. It is not possible for the bankfull capacity of Maggie Creek to be 80 cfs when the average monthly flow during April and May before mining was 100 cfs. DEIS at 4-29. The definition of "bankfull capacity" is the flood flow rate that just remains inside the active channel of the stream. While it does not have a return flow, the active channel generally corresponds with the average annual flood flow. The annual flood flow is a peak discharge reached once a year. It always exceeds any average monthly flow. Studies have shown it to be about a 2.0 to 2.33 year return interval event, not a 1.5 year event. DEIS at 4-43.

It is not proper to determine the bankfull flood from a flood frequency curve. Bankfull floods are determined in the field from a stage discharge curve at a site or a backwater calculation to determine the flow rate that just fits in the surveyed channel. (It is this measurement, when compared with independently determined flood frequency values for a stream, that lead to the conclusion of active channels having a return period of 2.0 to 2.33 years.)

Wildlife

sss

The discussion about mule deer provides an excellent description of and arguments why the deer need a transition zone. DEIS at 3-65. They migrate directly through the project area. The revised DEIS should include some quantitative discussions. How many deer actually migrate through the area?

ttt

Regarding bats, are there any old shafts in the project area? Was there a survey done for shafts and were these shafts surveyed for the presence of bats? Will the expansion build facilities on or excavate any existing shafts that contain potential bat habitat? If so, how will the loss of habitat be mitigated?

uuu

The statement "[h]unting on public lands within and adjacent to the [project] has been adversely impacted from past and existing permitted mining operation, which have displaced wildlife from disturbed areas" shows how mines have impacts far beyond their disturbed area. DEIS at 3-82. Please quantify the size of area that has less hunting. Consider the entire area affected by the mine when considering the impacts on wildlife, not just the directly disturbed area.

Visual Resources

vvv

When were the visual resource ratings for the project area developed? The reference given is to a handbook document describing what the VRMs are and not to the decision document that established the ratings for the area. DEIS at 3-84. It is hard to believe that watershed with as scenic as with as many natural values

33

Response to Letter 33

33qqq. Information on riparian communities is presented in Appendix A of the DEIS. Since dewatering discharges have started, the vegetative communities have responded with additional growth, but it is considered a short-term enhancement as a result of discharge water. The potential effects from cessation of dewatering discharge after 2011 will likely mean the vegetative communities will revert to pre-mining conditions.

33rrr. The distinction that needs to be made here is that the 100 cfs value is taken from the mouth of Maggie Creek, while the 80 cfs value is taken at the mouth of Maggie Creek Canyon, approximately seven miles upstream. This distinction was added to Chapter 4, Impacts on Baseflow of the FEIS. The DEIS does not identify the bankfull flood. The comment on return interval has been noted.

33sss. Transitional habitat for mule deer is illustrated in Figure 3-11 and that figure was revised in Chapter 3 of the FEIS, DEIS at 3-66. The NDOW determines deer populations by conducting post-hunting season counts during late fall and winter when deer are on their winter range. Mule deer populations over-wintering along the Humboldt River in the study area vary annually from several hundred to two to three thousand. Migration routes are highly variable and numerous, and change in reaction to weather and forage availability. Not all migration routes pass close to the SOAPA project area. Some fences can serve to inhibit deer movement, and altering those fences as part of the mitigation plan could possibly improve migration.

33ttt. Old mine shafts do occur in the region and are used by bats (1993 EIS at 3-75). No mine shafts occur in any areas proposed for disturbance by the proposed action and no bat habitat would be lost.

33uuu. The observed reduction in hunting in the areas adjacent SOAPA cannot be quantified, but rather is a general statement derived from NDOW personnel comments indicating fewer hunting permits for big game being issued in various unit groups in NDOW Management Area 6. Potential effects on deer were evaluated over a large area, not just areas potentially experiencing direct effects. Hunting is not allowed on the project area for safety reasons.

33vvv. Visual resource management class boundaries were established by the Land and Resource Management Plan dated 1987. Essentially all of the Maggie Creek watershed is Class III or IV, with the exception of an approximately two-mile wide band on the north side of Interstate 80 which is Class II, DEIS at 3-87. A visual resource rating is based on an evaluation of the visual resources all through the area based on observation from both within and without. Each visual rating class then has restrictions established on what activities are allowed in order to protect the identified visual resources.

Letter 33 Continued

vvv as Maggie Creek would have received a IV rating if not for the knowledge that it was going to be ripped apart by mining. DEIS at 3-87.

Does a visual resource rating for an area refer to what is seen from within the area or to what may occur to the land in the area and thus be seen from outside the area?

Noise

www The existing overall noise at the mine site creates about 107 dBA 50 feet from operating mining equipment. DEIS at 3-89. If the exposure limit is 90 dBA as established by OSHA, Newmont is violating OSHA noise standards with this excessive level of noise. The revised DEIS should more thoroughly discuss this.

Land Use and Access

The BLM is required to discuss in NEPA documents all information pertinent to the existing condition and proposed project. For this reason, it is required then that the BLM discuss the proposed land exchange at the site. Such a transfer is of immense proportions and must be considered as part of the Gold Quarry expansion. Negligence to do so undermines the public trust and creates an aura of secrecy contrary to the intent of NEPA. Transfer of these lands to Newmont would effectively eliminate Federal regulation of Newmont's operations. This would render this NEPA process as effectively moot. Mitigation required by the BLM and implemented as a result of the NEPA process could be meaningless after these lands leave Federal jurisdiction.

The land exchange is also not discussed under the cumulative impacts analysis. NEPA requires that agencies undertake a complete cumulative impacts analysis when preparing an EIS. "The EIS is, by its very nature, a cumulative impacts document." Resources Limited, Inc. v. Robertson, 35 F.3d 1300, 1305 xxx (9th Cir. 1994). NEPA regulations define "cumulative impact" as:

> The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. 40 CFR §1508.7 (emphasis added).

A published land exchange proposal is certainly a "reasonably foreseeable future action." As such, the BLM's failure to review the cumulative impacts from this and the other actions noted in this appeal violates NEPA.

Potential impacts to the public from such an exchange are immense. They include reduced or eliminated access to areas that the public currently is accustomed to using. The link to this project and this DEIS is that if this project is denied, there will be no desire for the land exchange.

Native American Issues

yyy The project as proposed infringes on the practice of Native American religions and counters the stated policy of the U.S. Congress. In the American Indian Religious Freedom Act (AIRFA), Congress stated that "[i]t shall be the policy of the United States to protect and preserve for American Indians their inherent freedom to believe, express, and exercise the traditional religions." 42 USC § 1996 (1982). The DEIS

Response to Letter 33

33vvv. Visual resource management class boundaries were established by the Land and Resource Management Plan dated 1987. Essentially all of the Maggie Creek watershed is Class III or IV, with the exception of an approximately two-mile wide band on the north side of Interstate 80 which is Class II, DEIS at 3-87. A visual resource rating is based on an evaluation of the visual resources all through the area based on observation from both within and without. Each visual rating class then has restrictions established on what activities are allowed in order to protect the identified visual resources.

33www. The Mine Safety and Health Administration (MSHA) standard is 90 dBA for an eight-hour period. This could mean some time in quieter areas along with time in even noisier areas. MSHA allows workers in areas with noise levels greater than 90 dBA, but requires hearing protection or other mitigation measures for those workers if they are going to have an overall exposure of 90 dBA for eight hours. Newmont maintains their workplace in compliance with MSHA regulations.

33xxx. An environmental assessment is being prepared to analyze the potential effects of the proposed land exchange. Because some of the lands are within the analysis area of SOAPA, and Newmont's activities on those lands would be the same as those currently taking place, there would not be any difference in potential impacts from those discussed in the DEIS. The only difference would be in land ownership changes. Therefore, the land exchange was not considered an issue that needed to be addressed in the DEIS.

33yyy. The BLM has determined that SOAPA will have no effect to either of the two Traditional Cultural Properties. In a letter dated June 15, 2001, the State Historic Preservation Office concurred with BLM's determination.

Letter 33 Continued

lists various Native religious concerns. (1) Ground-disturbing activities disrupt the flow of spiritual power. "Maintaining access to undisturbed concentration of Puha and continuing relationships with the spirits is integral to spiritual life." DEIS at 3-97.

> "Dewatering efforts, with the resultant reduction or loss of flow to springs, could alter the distribution or disposition of spirits associated with water. Maintaining a relationship with these spirits is integral to spiritual life. Spring water is also used as a sacrament, medicinally, for drinking, in prayer, etc. In addition, some springs are a source of sacred white clay, and burials often take place near these springs." Id.

yyy

Both of these concerns violate AIRFA because there are alternatives. The CIA even predicts that Rock Creek will be significantly dried even though the BLM identifies it as Traditional Cultural Property. DEIS at 3-98. BLM could select an underground mining alternative to minimize the ground-disturbing activities associated with this project and they could select the reinfiltration/reinjection alternatives proposed above to minimize the effect of dewatering. BLM could implement Congress' stated policy with minor changes to the proposed plan of operations. In Lyng v. Northwest Indian Cemetery Protective Association (108. S. Ct. 1319), the Court ruled against Native attempts to stop a road from being built because the Forest Service planned ameliorative measures that were "adequately solicitous to fulfill the requirements of the Act. This means they moved the road to avoid interference with the traditional religious uses. In this Gold Quarry expansion, the **BLM is not proposing any mitigation or ameliorative measures** that will protect the Native religious sites.

The project will also violate the free exercise clause of the first amendment of the constitution because maintenance of spiritual power is clearly central to Native religions. It is not acceptable for the BLM to violate the centrality of any religion, especially when there are viable and substantial alternatives that will protect the sites.

The project also violates the first amendment because of the alternatives.

Please explain the criteria and provide citations for the identification of two Traditional Cultural Properties. DEIS at 3-98. Is it linked to the potential impact or to the significance of the site? How did the BLM survey the site?

Socioeconomic Factors

zzz

The expectation that Elko will continue to grow and reach a population of 64,467 is based on a false premise. Most demography merely assumes that past trends will continue. With a mining based economy, these assumptions are fallacious. First, development of a limited resource cannot continue unabated. Thus, the assumption that the base of the economy of the region will continue to grow is fallacious. Second, mining employment has actually dropped since 1995 by about 25% according to the 1999 Mineral reports of the NV Division of Minerals. Based on the vacancies in Elko, the population has at least temporarily stabilized.

Who would fight fires at SOAPA? Is it the volunteer fire department at Carlin? This could be a job beyond their capability. Does Newmont donate funds to the fire department to improve their response time and capabilities?

Response to Letter 33

33yyy. The BLM has determined that SOAPA will have no effect to either of the two Traditional Cultural Properties. In a letter dated June 15, 2001, the State Historic Preservation Office concurred with BLM's determination.

33zzz. For comments in the first paragraph, See response 32l.

Newmont has its own fire brigade of men and equipment on-site to provide initial response to fire. Newmont cooperates with, but does not contribute to the Carlin fire department.

Comment noted.

Letter 33 Continued

zzz

The breakdown of revenue expenditure being Elko and Eureka county is very interesting. DEIS at 3-112. Why does Elko County spend 41% of its budget on public safety while Eureka County spends only 16%? Is it because most miners, while working in Eureka County, live in Elko and Elko County where they cause trouble out of proportion to their share of the population?

It is also interesting that the assessed valuation of net proceeds of mines has dropped so precipitously in Eureka County between 1995 and 1998. DEIS at 3-113. Please explain the reason for this. We are not aware of any significant closures that can explain an almost 45% drop in value. It also shows just how poor these resource are for the counties that depend on them.

Minor Comments

aaaa

The discussion of the cooling system indicates that water must be cooled to within 2° C of the ambient Maggie Creek water, but then incorrectly converts this to 35.6° F. It should be 3.6° F. DEIS at 4-43-44.

The section on Potentially Acid Producing Rock should delineate the amounts of each type of rock that have been removed to date. DEIS at 2-11. This would provide the public with an understanding of what may be found in the future. Also, other sections within Chapter 2 provide quantification of the amounts being discussed; to be complete, this section should as well.

Additional Mitigation Recommendations

1. Newmont should be required to completely remove all noxious weeds from the project area whether they occur in a disturbed site or not. DEIS at 3-59.

2. Newmont should be required to keep all of the dewatering water in the basin. See the alternative proposed above.

Response to Letter 33

33zzz. For comments in the first paragraph, See response 32l.

Newmont has its own fire brigade of men and equipment on-site to provide initial response to fire. Newmont cooperates with, but does not contribute to the Carlin fire department.

Comment noted.

33aaaa. The Fahrenheit temperature was corrected in Chapter 4, Impacts on Water Temperature in the FEIS.

Between 1993 and 2000, approximately 117 million tons of non-APR waste rock and 34 million tons of APR waste rock were generated at Gold Quarry.

The suggested mitigation of removing all noxious weeds is considered impractical. Total removal is difficult on smaller sites let alone a large site. Requiring that Newmont have a weed control plan in place with specific steps to be taken to control weeds is considered appropriate.

Letter 33 Continued

Comments on the Cumulative Impact Analysis

General Comments

bbbb **Boundaries of the Analysis**: The hydrogeologic boundaries considered for the analysis limit the impacts to the south. Section C-C' (Figure 2-3, CIR at 2-4) shows typical flow patterns for alluvium underlain by bedrock: in the alluvium, the flow is from high points to low points while in the bedrock, flow is in one direction. Here, flow continues south in the Carbonate aquifer; setting the boundary at the Humboldt River ignores this boundary.

cccc Also, the report appears to ignore pumping for the Meikle Mine. The discussion indicates that the groundwater level will be maintained at 3600 feet until 2010 "in the area of the Betze-Post Pit and Meikle Mine". CIA at 1-8. We understand that Meikle will require maintenance pumping until at least 2018. While some, if not all, of its current dewatering needs are met by Goldstrike, its longer life will require additional pumping. The cumulative impact report is faulty if it does not include this additional analysis.

Monitoring Programs:

dddd We appreciate that springs are being monitored for impacts from dewatering. However, annual monitoring may be insufficient for various reasons. First, it will require a minimum of four years to detect a statistically significant trend. And that would occur only if there was a decrease or increase in flow or contaminant concentration each year.

For the Gold Quarry Mine, there is a committment to monitor water resources "after cessation of mining activities in the South Operations area." CIA at 1-12. What will be the source of funds for this? Unlike discussed in the section for Barrick, there are no established trust funds. We request that Newmont show their dedication to protecting the environment into the future by a establishing a similar fund.

eeee **Sinkhole Development**: We generally agree with the approach used by the BLM in assessing sinkhole development. However, the science of predicting sinkholes is in its infancy, although with aquifer depletion around the world, it is an impact which will likely require much more research. In addition to the total depth of drawdown and thickness and type of overburden, the BLM should consider the rate of drawdown and the rate of recovery. If sinkholes depend on drawdown through a the top of the carbonate layer, it is irrelevant whether the total drawdown reaches 1000 feet below the surface. Rapid flow will dissolve more fluid pathways and caverns than slow flow. The BLM should add a factor of rate of head change which could be a change in water level per year.

The BLM should provide a map of depth to the carbonate rock. In determining the areas susceptible to sinkhole development, the BLM considers the drawdown and the depth of carbonate rock. CIA at 2-15. Drawdown maps are provided; maps of the depth are not provided.

ffff **Springs**: The description of spring locations and data is useful, although it downplays the potential impacts by emphasizing that the flows are quite small. CIA at 3-14-17. In the desert, these flows are very important. The data is not presented in such a way that it is possible to assess the impact that may occur.

gggg **Impacts to Regional Water Balance**: One of the best ways to consider the impacts of dewatering and pit lake creation is to consider the water balance. The CIA compares the water balance as fluxes in 1998,

Response to Letter 33

33bbbb. See response 33aaa.

33cccc. Information on pumping from the Meikle Mine was provided on page 3-48 of the CIA. The cumulative analyses do include pumping from the Meikle Mine.

33dddd. Newmont plans on monitoring for five years following cessation of mining. Therefore, annual monitoring during ten years of operations and five years afterwards would provide 15 data points at each station and should allow detection of trends. If there is no increase or decrease in flow or contaminant concentration each year, we would consider that a desirable trend. Newmont would fund the monitoring effort through their reclamation bond, presently established at $72 million.

33eeee. The use of monitoring head change annually has been noted. A map of depths to carbonate rocks was not considered necessary because the parameters of susceptibility to sinkhole development were presented in the text (including depth of rocks) (CIA at 2-14) thus making Figure 2-7, of the DEIS, a rough map of depths of carbonate rocks.

33ffff. The potential impacts to springs are disclosed appropriately starting on page 3-51 of the CIA. Please also see page 5-17 of the CIA for impacts on wildlife from dewatering.

33gggg. The years chosen for discussion in the CIA illustrate a representative range of years for the analysis and were not selected to ignore any particular period. The following years were chosen for the water balance: The year for the EIS analysis (1998), the last year of mining (2011), 50 years and 100 years after the end of mining (2061 and 2111). Potential impacts are greatest when groundwater removal is highest. Removal can be greatest from pit lake seepage or pumping – there is no difference in effect on the basin budget, whether the water is removed by pumping or by flowing into the pit. In 1998, 100,300 acre-feet were pumped by Barrick. This amount meets or exceeds the maximum inflow rates into the pit after mining ends. Thus, the maximum potential impacts on the regional water balance can be estimated from the year 1998 impacts. This is also true for the Gold Quarry pit and the water budget for Maggie Creek basin.

More detailed information on the modeling is available in the Barrick hydrologic modeling reports, Radian 1997a and 1997b.

Letter 33 Continued

2011, 2061 and 2111. CIA at 3-67-71. Unfortunately, the chosen years and method of comparison truly downplays the potential impacts.

gggg The chosen years essentially ignore the huge seepage amounts into the pit lakes. Tables 3-18 and 19 show pit lake seepage fluxes from 2200 to 3700 for the two pit lakes to be formed. The dates, 2061 and 2111 are long after the lakes will be substantially full[28]. The Betze-Post pit lake will contain about 570,000 acre-feet of water. Between 2011 and 2061, when the model shows that only 3500 af/y will enter the lake (CIR at 3-68), up to 570 kaf will have entered the lake. For example, if the lake is at 500,000 af in 2061 (88% full), the average seepage to the lake will have been 10,000 af/y. This ignores the fact that early during the refill, the rate will probably be much higher than 10,000 af/y. A similar argument holds for Gold Quarry which in 2061 will have recovered to within about 50 feet of the eventual long-term level. DEIS at 4-45.

hhhh The document should discuss the impact of long-term pit lake evaporation. The post-recovery rates shown in the tables are due to evaporation from the pit lake surface. The most telling factors not discussed are that Betze-Post will evaporate 2900/11200 or 26% of the long-term recharge. The similar rate reported for Gold Quarry is 9%. **These deficits will occur to the basin forever.**

iiii Table 3-18 shows that very high amounts of irrigation recharge and injection occur in the Boulder Flat basin. CIA at 3-68. This recharge is from the irrigation of dewatering water. It appears to partially offset the extreme amounts of Barrick's dewatering pumpage. However, the recharge is downstream of the deficit and will have little effect in recovering the deficit and filling the pit lake. In Boulder Flat, the irrigation occurs downstream from the pit and drawdown cone caused by the dewatering. Figure 3-13 shows this unequivocally. The mounds created in Boulder Flat are south and west of the Post Fault and will never flow toward the mine even with the gradient across the fault. Also, increased ET due to the new wetland areas, including open water surfaces, is not addressed. CIA at 4-11. That there is so much new wetland formed due to the mounding of irrigated with dewatering water indicates that most available storage is full and that much of the future recharge will be evapotranspired.

A similar issue occurs in the Maggie Creek basin; much of the mound caused by infiltrating water from Maggie Creek occurs southeast of the deficit. The mound also occurs in a different aquifer, the Carlin formation (a point not sufficiently discussed in the document). Being in a different aquifer, the deficit will continue to draw flow from upstream in the regional carbonate aquifer.

jjjj The document should provide long-term water budget amounts broken out in several periods. We suggest that the BLM use the present through 2011, 2011 to 2061, and 2061 to 2111. Rather than an instantaneous rate from the groundwater model, a cumulative volume would provide the public with a more accurate presentation of the created deficit. Table 5 is insufficient because it merely provides the steady state values with no comparison of independently measured or estimated conditions.

kkkk While I suspect it is partially due to roundoff error, there should be an explanation for why the 2111 pit lake seepage into Betze-Post exceeds the 2061 seepage. Assuming that the pit is fuller in 2111, the gradient should be less than in 2061 leading to a lower seepage rate. In fact, it should be approaching the post-recovery level at this point. Does this represent an error in the modeling? The reason could also be that more of the water is coming from a more conductive zone.

[28]Pit lakes will never fill to the premining groundwater levels because evaporation from the open pit water surface will cause the pit lake to continue to act like a large well.

38

Response to Letter 33

33hhhh. Comment noted. The pit lake evaporation numbers are factored into the pit lake seepage value in Tables 3-18 and 3-19 in the CIA. The pit lake seepage values reflect the ground water inflow required to counter pit lake evaporation at steady state. See page 3-71 of the CIA.

33iiii. Irrigation occurs in the Boulder Flat basin where there is a need and use for irrigated water. If the intention were to irrigate upstream of the drawdown cone, irrigation would occur on relatively steep hillsides, not amenable to irrigation.

The mound in Maggie Creek basin is in the Carlin formation, whereas water is withdrawn from the lower carbonate aquifer. The mound is caused by infiltrating water from Maggie Creek and Maggie Creek reservoir. Infiltration is a consequence of water storage in the reservoir and water discharge in Maggie Creek, but is not the actual goal of either action. Please see response 2d, as to why infiltration of large amounts of water in Maggie Creek basin, whether up gradient or down gradient of the pit is not a useful alternative to the discharge of water.

33jjjj. The CIA is a technical document prepared for three mining projects. The BLM does not anticipate revising this document in response to public comment. It is not clear which Table 5 is referred to in the comment. Tables 3-18 and 3-19 give annual budgets.

33kkkk. The pit lake seepage values in the tables (3-18 to 3-20) represent flow from the ground water system into the pit lake to counter pit lake evaporation at steady state. The pit lake water balance for the year 2061 includes an inflow of 3,500 af, precipitation of 500 af and evaporation of 1,400 af (Radian, 1997a and 1997b). Table 1-1 in the CIA shows that evaporation is the primary element of flux out of the Post-Betze Pit. The seepage value difference between years 2061 and 2111 reflects increased seepage due to the pit lake coming in contact with the carbonate aquifer, increasing conductance and the increased evaporative pumping caused by the larger area of the pit lake. These factors outweigh the affect of decreased hydraulic gradient in the system (phone communication between J. Frank of HydroGeo and J. Zhan of Barrick, September 24, 2001).

Letter 33 Continued

llll The other problem is that in 1998 for mining conditions, there is a 20500 af/y flux to surface water streams under "other" while the without mining conditions are only 6900 af/y. CIA at 3-68. The amount in 2011 is only 4600 af/y. If this is due to mounding causing discharge to surface streams, it should still be occurring in 2011. This requires some explanation. Also, this discharge to surface streams is directly linked to the recharge of dewatering water. The amount being lost in this way decreases the supposed benefit from all of the recharge.

mmmm It is also important to mention that the mounding has caused significant increases in ET from natural vegetation. In the Boulder Flat, about 4000 af/y are lost to ET due to the increased groundwater levels.

nnnn The bottom line in the tables show the amount of water removed from the basin due to pumpage. It is the difference between inflow and outflow. Compared to premining conditions, it primarily represents changes in flux caused by imposing the pumping stress on the system. However, it ignores the creation of a 570,000 af pit lake at Betze-Post and a 170,000 af pit lake at Gold Quarry. These pit lakes are essentially an increase in the total water storage in the basin. However, because of the steep gradient toward the pits, this storage must (will) be filled as soon as possible after dewatering ceases. It represents a deficit on the basin that the BLM appears to have ignored.

oooo The category, subsurface inflow, reveals the impact that dewatering may have on adjoining basins. Subsurface inflow increases as the water level in the basin decreases which increases the gradient from adjoining basins into the studied basin. These increases which are as much as double in the Maggie Creek basin show how dewatering impacts affect basins beyond those affected directly by dewatering.

pppp **Reinjection in the Rhyolite Formation in Boulder Valley**: There should be a discussion of water quality issues associated with reinjection of water into previously dry rhyolite. While this may be a good idea for the water balance, there may be water quality ramifications. Please provide monitoring data for the water around these reinjection wells.

qqqq **Changes in Flows in the Humboldt River: Changing flows in the Humboldt River after mining ceases due to refill of deficits created by dewatering has long been an issue to *Great Basin Mine Watch*. The basinwide deficit must be made up from somewhere. The source of the water determines the extent of environmental impacts in the future after mining ceases. The great uncertainty surrounding the source of the water remains a major issue herein.

The CIA suggests that the maximum decrease in flow at three gages is only 8 cfs. Over 50 years, that is less than 300,000 acre-feet. The deficit created in just the Carlin Trend is about 2,700,000 af; the deficit created near Lone Tree is near 1,000,000 af. This 8.1% seems to be a very small percentage of the total deficit.

rrrr Except for what it represents to the future water balance in the basin, increased flows during dewatering are not a large concern. This represents a benefit to the ranching community in the basin. Extra water flowing in the river is, however, water that is not stored in the basin to fill the huge drawdown cones and pit lakes being created. Contaminants in the extra water that reaches the sink is a concern addressed below.

ssss The section ignores seepage to the river. The high mounding caused by irrigation in both the lower end of Maggie Creek and Boulder Flat likely cause a temporary seepage to the river. This is another loss to the basin of the dewatering water. Allowing this discharge without a NPDES permit also violates federal Clean Water Act law.

39

Response to Letter 33

33llll. The stream-river discharge of 20,500 acre-feet in 1998 is related to increased discharge to streams (especially from Sand Dune, Knob, and Green springs) due to infiltration from ponds and reservoirs and to a lesser extent to infiltration from irrigation. Infiltration of dewatering water and irrigation will end in 2018, and thus the increased outflow to springs.

33mmmm. Comment noted. This loss is not permanent, as shown in Table 3-18. In the post recovery period, evapotranspiration will be reduced by approximately 4000 acre feet per year, offsetting the increased evapotranspiration during groundwater mounding.

33nnnn. Tables 3-18 and 3-19 show the amounts of ground water removed from the basin for the years1998 and 2011 (during mining activities) as the change in ground water storage. Similarily, the increase in total storage in the ground water in the basin is shown for the years 2061 and 2111. Water in the pit lakes is not included as increase in the ground water storage in the basin, since this water is considered surface water. Flow into the pit lakes is shown as seepage for the years 2061 and 2111, and is considered water removed from ground water storage in the basin. Please see also response gggg (1).

33oooo. Comment noted.

33pppp. Reinjection into the rhyolite formation in Boulder Valley is permitted by NDEP. Barrick received Underground Injection Control Permit number NEV 93209 on May 8, 1995. This permit requires quarterly water quality sampling at monitor wells IMW-4, IMW-5, NA-29, NA-32, and NA-34. At no time were the terms set in the permit exceeded. See also Barrick (1999a).

33qqqq. According to the CIA (page 3-67) the combined pumping from Goldstrike, Gold Quarry, and Leeville mines would be approximately 2,000,000 ac-ft. Approximately 800,000 ac-ft would be returned to the groundwater in the basin of origin. This leaves a deficit of 1,200,000 ac-ft. This "deficit" figure includes beneficial use, such as irrigation and mining and milling. The comment concerning eyewitness accounts of seepage would not be seepage from mounding in Boulder Valley (Barrick, 1999a). Groundwater elevations adjacent to the Humboldt River have not changed from pre mining conditions.

33rrrr. Comment noted.

33ssss. Currently, no seepage into the Humboldt River can be observed in the Maggie Creek Basin. Newmont is complying with NPDES requirements and is not violating the Clean Water Act.

Letter 33 Continued

ssss

Seepage into the Humboldt River caused by recharging through irrigation or from seepage in the TS Ranch reservoir would be an unauthorized discharge. Congress "did mean to limit discharges of pollutants that could affect surface waters of the United States." McClellan Ecological Seepage v. Weinberger, 707 F. Supp. 1182, 1196. In its ruling, the Court allowed the appellants to "establish (through discovery) that the groundwater is naturally connected to surface waters that constitute navigable waters under the Clean Water Act." Id. Eye witnesses have reported to *Great Basin Mine Watch* that seepage from the river banks on the north side of the Humboldt in Boulder Flat is currently occurring. It appears that McClelland is relevant to this situation and that the BLM must require Barrick to obtain a NPDES permit for this discharge. The existing NPDES permit for Barrick allows for surface discharge at various points but does not include seepage. Because of the potential for the seepage to leach salts, selenium and other contaminants, there should be extensive water quality monitoring occurring in the Humboldt River. Monitoring should also occur to document the existence and amount of seepage.

tttt

Impacts to Humboldt River surface water rights: The document discussion minimizes the potential impact by discussing decreases as an annual average and not as an impact during the late summer when irrigation demands are at their maximum and supplies are at their minimum. CIA at 3-87. It would be interesting and useful in this section to discuss the proportion of water rights in the two decrees (for rights above Rye Patch). During late July and August, what proportion of the water rights are usually served? During wet, normal and dry years? How will a decrease of 8 cfs affect this proportion?

uuuu

Because Newmont can allegedly replace all affected water rights, the document should specify the quantity and location of their rights. They should also discuss the loss rates to be applied to these rights. If the affected water rights owner is downstream of the point that water is lost from the river, the replacement water will suffer a loss. This loss rate should be specified in the document. Is there an arrangement with the appropriate governing authority (the Water Master or State Engineer) to implement this swap? Will Newmont put up a bond to assure the proper transfer will occur if they are no longer onsite? How will rights holders be accommodated if Newmont goes bankrupt? Most bankruptcy courts require the sale of anything of value; it is likely that this would include water rights. Mere statements that Newmont will replace the water are unsatisfactory for the owners of rights which may be affected.

vvvv

Impacts to Groundwater Rights: Rights to use groundwater may be impacted when dewatering or the subsequent pit lake formation causes the background water level in the well to be decreased. This increases the pumping costs to the well owner. The CIA primarily just lists potentially affected water rights; there is very little discussion provided in the CIA regarding this issue. CIA at 3-63. The most important factor left out of this analysis is the quantity of water rights that will be affected. We briefly consider two of the basins and other ramifications herein.

Based on Table A-1, in the Maggie Creek area, there are 2715 afa of certificated water rights. In the Boulder Flat basin, there are almost 23,000 afa of certificated rights. Water applied for could add very substantial amounts to these totals. These rights are for irrigation, stock water or mining other than Barrick and Newmont. If the water levels are lowered such that it is too expensive to pump, there will be a decrease in ranching output from the region. The socioeconomic analysis merely states that a decrease in production could occur but attempts no quantification. CIA at 9-2 The county and local economy has no estimate of the long-term decrease which could be caused by lowered water levels. The BLM has actual estimates of drawdown at each well; it should estimate the actual costs associated with the expected drawdown.

Response to Letter 33

33ssss. Currently, no seepage into the Humboldt River can be observed in the Maggie Creek Basin. Newmont is complying with NPDES requirements and is not violating the Clean Water Act.

33tttt. Based on the variability of the Humboldt River flow data, the number of variables involved (including industrial, domestic, and agricultural uses), and resulting precision of the modeling, the discussion of the impacts to water rights was deemed adequate for this analysis. Newmont has always committed to augment low flows in the river, using senior water rights that the company owns or controls (BLM, 1993b) to mitigate the potential impacts to junior water rights.

33uuuu. The current mitigation plan (BLM, 1993b) outlines Newmont's commitment to supplement impacts to water rights. The BLM is currently updating Newmont's monitoring and mitigation plan.

33vvvv. Comment noted. It should be noted that many of the certificated water rights are currently not being used. Also, Newmont or Barrick owned companies own several of the certificated water rights. Newmont has committed to use senior water rights to mitigate any mine related impacts.

Letter 33 Continued

VVVV

The total certificated rights in the Boulder Flat basin substantially exceed natural recharge (Table 3-3, CIA at 3-13). The groundwater pumpage for dewatering (which approaches 100 kaf/y, Table 3-18, CIA at 3-68) suggests that there will be substantial problems with the groundwater rights as the drawdown expands. Also, the State Engineer has approved irrigation rights that far exceed the natural recharge rights.

WWWW

Sediment Transport and River Morphology: The description of factors controlling sediment discharge at a point is misleading. CIR at 3-34. It should acknowledge the difference between suspended sediment and bedload transport. This is important because the controls are significantly different. Watershed conditions primarily affect the suspended load. Bedload transport is a function of shear of the flow which is a function of hydraulic radius and bed slope. Bedload transport increases with width, decreasing depth and channel gradient if all else is constant. It also determines the shape of the channel which is why we mention it here. The more frequently the threshold stress is exceeded, the more frequently the channel shape may change.

Several factors could explain the decreasing sinuosity. Unfortunately, the length of time used for comparison, the lack of consistency among reaches and the varying meteorological events in the period render interpretation almost impossible. The high flows of 1983 and 1984 could have straightened the stream by cutting off meanders.

The river channel could change as a result of the increased base flow. Rivers and streams tend to form a low-flow channel that corresponds with the flow that occurs for many months each year[29]. If riparian vegetation becomes established, the new baseflow channel could exist semi-permanently. If it narrows the current channel by cutting off or filling meander scars or decreasing the baseflow width/depth ratio, the riparian vegetation may become established and be able to survive the eventual loss of dewatering water. This would be a net beneficial result of the dewatering. However, in the long-run, the new riparian vegetation could increase losses to ET. Also, the increased vegetation could increase the resistance to flood flows and increase the area of inundation. Discussion of these impacts should be added to section 4.3. CIA at 4-17.

XXXX

Flows to the Humboldt Sink:
seriously analyze the flow predictions into the sink

Discussion Points

1. Model underestimates impacts, especially to the south and on the humboldt river
2. The model shows tremendous impacts to stream flow , 3-61
3. Water balance shows that the hydrology will be disturbed for 100 years.
4. Not one drop of the infiltration remains in the basin in such a way as to be fill up the deficit.
5. Reinjection upstream.

[29]Myers, T.J. and S. Swanson, 1997. Variation of pool properties with stream type and ungulate damage in central Nevada, USA. *Journal of Hydrology* 201:62-81; Myers, T.J. and S. Swanson, 1997. Precision of channel width and pool area measurements. *Journal of the American Water Resources Association* 33:647-659. Myers, T.J. and S. Swanson, 1996. Long-term aquatic habitat restoration: Mahogany Creek, NV as a case study. *Water Resources Bulletin* 32:241-252. These studies documented this low-flow channel, which forms within the active channel which is normally considered the channel which forms based on the average annual flood event.

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Response to Letter 33

33vvvv. Comment noted. It should be noted that many of the certificated water rights are currently not being used. Also, Newmont or Barrick owned companies own several of the certificated water rights. Newmont has committed to use senior water rights to mitigate any mine related impacts.

33wwww. Comment noted.

33xxxx. Comment noted.

Letter 33 Continued

Contaminant Loading in the Lower River: With annual increases ranging to 400% depending on contaminant, the increase in contaminant loading is alarming. CIA 3-88-98.[30] However, the BLM has failed to do any significant analysis of this increased loading.

For example, below the Rye Patch gage, there will be substantially increased concentrations of TDS, flouride, arsenic and other metals. CIA 3-92-96. However, there is no estimate of how this might affect the irrigated agriculture below Rye Patch. The BLM should present soil analysis from the fields to show whether the soils can support additional salt or arsenic loading or will this be the beginning of the end for irrigated agriculture in Lovelock.

Second, a similar analysis should be done for the Humboldt Sink. How much of an increase in soil loading will these additional loads cause? Will this present a risk to wildlife or migratory birds using the wetlands? The only analysis in the CIA discusses concentrations in the water in the lake but not in the soils. CIA at 5-32.

yyyy

Finally, does the loading caused by the mine water discharges cause water quality standards on the lower Humboldt River to be exceeded? As the river flows to its end, its flow volume decreases. The higher flows have a much wider surface area which causes much increased evaporation loss. The increased surface area at Rye Patch also increases the evaporation rate. The discharges reported with the water quality data show a 29% decrease between Carlin and Rye Patch. CIA at 3-45. This explains part, but not all, of the increased concentration in various contaminants. For example, average arsenic concentrations have more than quadrupled while TDS has almost doubled. Clearly, there are both additional natural sources and evapo-concentration occurring between the gages. Some of the reactive metals, such as iron, have decreased.

The CIA correctly recognizes that contaminant loads for conservative substances are a function of the total loading added to the river. It is unclear whether the load calculations include the natural increases due to inflow discussed in the previous paragraph. Concentration at a point depends on the actual flow rate in the river. Most of the dewatering loading enters at Maggie Creek or Lone Tree. These loads come with up to 100,000 gpm of additional water. CIA at 3-74. The concentration in the river after mixing is the total load divided by the volume of water in the river. As discussed then, the flow rate decreases while load will remain about the same. Of course, irrigation diversions will lead to some attenuation in plant and the soils, but the return flow will also have picked up additional loading.

It is not clear whether the CIA adequately considers all of these processes. It is clear that it makes no estimate of concentration at the lower gage and there is no discussion of whether the river water quality standards will be affected. For example:

1. The average for arsenic is 31 µg/l for the period 1970 through 1991[31] while the standard is 50 µg/l. The increases between 2000 and 2007 range from 80 to 100%. CIA at 3-26. This indicates that concentrations will approach 50 µg/l for eight years which clearly violates water quality

[30]Figure 3-29 (CIR at 3-98) is misleading because it considers a time period that both begins before and ends after most of the discharge to the river. The figure suggests that many contaminants are only increased by around a 25% is a function of the long baseline period considered. The primary problem is that the pumpage for Leeville, from 2011 to 2018, into the river is slight compared with the pumpage from 1994 through 2011. The extra time just increases the base against with the loading due to mining is compared.

[31]All of the discussed averages were included in Table 3-14. CIA at 3-45.

Response to Letter 33

33yyyy. The mining companies will operate under NPDES permits that specify discharge water quality limitations. The state is responsible for setting these limitations.

Letter 33 Continued

standards.[32] Noting that the maximum levels exceed the standard, it is clear that arsenic concentrations will exceed the standard much more often.

2. The boron standard is 750 µg/l for irrigation while the average and maximum is 471 and 580 µg/l, respectively. Dewatering increases boron loading by up to 120% from 1998 through 2007. This means that concentrations with dewatering should approach 1000 µg/l which exceeds the standard.

3. Average TDS already exceeds primary drinking water standards. With the additional loading caused by mine dewatering projected to increase by 30%, TDS concentrations will increase this violation.

yyyy

4. Flouride may become the contaminant of worst violation. Currently, flouride concentrations are just under the irrigation standard of 1.0 mg/l. CIA at 3-45. Flouride loading will increase by as much as 400% which will cause concentrations at Rye Patch to violate both irrigation and livestock watering standards.

This suggests that dewatering is and will continue to cause violations of water quality standards in the Humboldt River below Rye Patch. This clearly has negative impacts on irrigated agriculture and the wetland ecosystems in the Humboldt sink. The BLM clearly cannot approve additional dewatering discharges to the Humboldt River because they will continue and increase the magnitude of the violation. To do so would be to approve undue degradation. Thus, the only way dewatering discharge to the Humboldt River can be allowed to continue is to require that the contaminants of concern, including flouride, boron and arsenic be removed from the discharges.

zzzz

There is no analysis of observed concentrations since 1991. Why is this? Are the data no longer being collected? We checked the WEB page of the Humboldt River project being managed by the Geological Survey and found water quality data only for upstream stations near the mines. There is no discussion of observed contaminant concentration changes since the commencement of dewatering.

aaaaa

Aside from the dewatering drawdown and flow decreases near the Carlin Trend, the massive contaminant loading and consequent concentration increases represent a major impact from dewatering. The lack of analysis of current concentrations as well as soil contaminant concentrations represents a major deficiency in the analysis. The BLM has the authority to require the collection of additional data if it feels the data is necessary. As the IBLA has ruled, "insofar as BLM has determined that it lacks adequate information on any relevant aspect of a plan of operations, BLM not only has the authority to require the filing of supplemental information, it has the obligation to do so. We emphatically reject any suggestion that BLM must limit its consideration of any aspect of a plan of operations to the information or data which a claimant chooses to provide." Great Basin Mine Watch, et al., 148 IBLA 248, 256. To do an adequate job in this cumulative impact analysis, the BLM must collect additional data and better analyze the concentrations.

bbbbb

Impacts to Riparian Areas: The analysis of impacts to riparian areas appears to consider only riparian areas lying within the 10-foot drawdown zone. CIA at 4-14. If this is true, it ignores the fact that rivers and streams are flux boundaries in the groundwater model with specified heads. Small head changes near the stream can significantly change the gradient driving flow from the stream. If the groundwater remains

[32]In all of the examples, we have estimated the decrease in flow rate from dewatering to be about 50%.

Response to Letter 33

33yyyy. The mining companies will operate under NPDES permits that specify discharge water quality limitations. The state is responsible for setting these limitations.

33zzzz. The CIA used the best available data for the analysis as listed in the text. Additional data was not collected for the project. The CIA team did not select the water quality parameters. Seiler and Tuttle (1996) collected the Humboldt Sink water quality data.

33aaaaa. All discharge waters meet NPDES standards. The BLM has determined that the available data for the analysis was adequate and does not feel it is necessary to collect additional data.

33bbbbb. Comment noted. The Cumulative Impacts Analysis document also considers baseflow reductions outside the 10 foot drawdown isopleth, down the Humboldt River to the Humboldt Sink.

Letter 33 Continued

bbbbb connected to the stream but with a steeper gradient, the flux from the stream into the aquifer will increase. These impacts occur with no head change at the creek. For this reason, the document underestimates impacts to riparian areas.

Thank you for considering our comments. We look forward to receiving a revised DEIS with an analysis of the proposed mitigation.

Sincerely,

Tom Myers, Ph.D.
Director

Enclosures

cc:
Roger Flynn, Western Mining Action Project

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Response to Letter 33

33bbbbb. Comment noted. The Cumulative Impacts Analysis document also considers baseflow reductions outside the 10 foot drawdown isopleth, down the Humboldt River to the Humboldt Sink.

Letter 33 Continued

Attachment 1
Review of Groundwater Model

Prepared by Tom Myers
Center for Science in Public Participation
Reno, NV

This review of the groundwater model is in two parts. First, we reviewed the utility of the code. This was necessary because Newmont chose to a proprietary model developed by HCI rather than use publically available code. The BLM contracted with scientists at the Sandia National Laboratory to review the code as it is used in the Carlin Trend. The first section of this review focuses the SNL review as pertains to the Carlin Trend model. The second section is a review of the Carlin Trend model itself.

Utility of the Code

Newmont has used HCI as dewatering consultant for many years. HCI developed the model MINEDW to simulate groundwater movement around a mine. Specifically, the model was designed to simulate seepage into a pit lake. Because MINEDW is proprietary the BLM required an independent third party review of the code to be certain that it solves the groundwater flow equations correctly and that it handles the boundary conditions correctly. Sandia National Labs (SNL) was contracted by the BLM to perform a code review on MINEDW.

CCCCC

SNL (1998) concluded that the mathematical model used by HCI is appropriate for the intended use on the Carlin Trend and that the code uses acceptable finite element techniques to solve the equations of the mathematical model. Tests of the code with various analytic and MODFLOW solutions of basic situations resulted in satisfactory comparisons. However, the code should not be used when recharge is applied to multiple unsaturated layers.

However, there is more to SNL (1998) that sheds doubt on the Carlin Trend models than is discussed in the summary and recommendations.

Errors could be caused by extreme heterogeneity[1]. The tests only considered situations of conductivity changing by two orders of magnitude while HCI (1999) has adjoining elements that change by up to _____.

The contrived problem analyzed by HCI for SNL in the report has a variety of problems.

1. The southern river boundary allows ground-water underflow. This does not simulate the situation at Carlin because of the fault bounded basin through which the Humboldt River flows. Unfortunately, this does model the river as HCI did in the Carlin Trend model. This issue is discussed below.

2. The contrived problem tests three different grid and node spacings. The problem with this is that the HCI model mixes fine spacing with very coarse spacing, sometimes with very little distance between the two. The figures in SNL show distinct differences among spacings.

[1]"Code users are cautioned that the treatment of relative hydraulic condcutivity in MINEDW could lead to additional error in the presence of extreme heterogeneity or ecessively largetime steps". (SNL, 1998 page 12)

Response to Letter 33

33ccccc. Attachment 1 - Review of Carlin Trend Model (CTM)

Boundaries

The discussion about boundary conditions in the June 1999 report on the CTM indicates that the steady-state simulations implement no-flow boundaries in all layers on the west, north, and east sides of the model domain, and constant head boundaries in all layers along the Humboldt River. The constant head nodes beneath layer 1 are set to a higher value of head than at the upper nodes of layer 1 from Carlin Tunnels to Palisades to simulate a vertically upward hydraulic gradient. The transient simulations implement variable flux boundaries in layers 2 through 6 around the entire model domain. The constant head boundary along the Humboldt River and the no flow boundaries elsewhere were retained in layer 1 for the transient simulations. The fixed (via constant heads) upward gradient between lower and upper nodes in layer 1 at the Humboldt River was removed during the transient simulations. The boundary conditions for the model were confirmed in discussions with the modeler.

Excerpts and literature references from the model report (pages 19 and 20), supporting interbasin flow through the deep carbonate aquifer north of the Humboldt River, were cited as evidence that the model boundaries are incorrectly conceptualized and that they may lead to faulty flow directions in the model. Deep interbasin flow through the carbonate aquifer north of the Humboldt River is a controversial topic, even among experts at the U.S.G.S. The model report (page 22) cites several literature references that support the model assumption of no groundwater inflow from areas beyond the hydrologic study area (HSA). Furthermore, Hydrologic Consultants, Inc. (Hydrologic Consultants Inc., of Colorado) and Newmont maintain that field data demonstrate the compartmentalization, or discontinuity, of groundwater flow in the carbonate aquifer within the HSA. The conceptual model for the HSA that was chosen for the numerical model excludes any potential natural groundwater inflow from the carbonate aquifer beyond the model boundaries. Further support for use of a no flow boundary is provided on Page 22 of the HCI (1999).

Letter 33 Continued

Interpreting the effect of these differences when the grids are spaced very closely may be difficult. This is discussed in more detail in the next section.

SNL Problems with Node Spacing: As a part of the review, SNL had HCI prepare three scenarios of a contrived model, designed to be similar to the Carlin Trend model, that tested different node spacings compared to different MODFLOW cell sizes. The model domain is 90,000 feet square; element and grid cell spacing for MINEDW and MODFLOW is homogeneous across the domain except where the triangular shape of elements near the boundary decreases. The number of elements and cells depends on the number of layers. For the coarse grid, the MODFLOW cells are 10,000 feet square while the elements are triangular and exactly half the size of the cell. There are five layers for this mesh. The medium mesh has cells sizes exactly half as large as the coarse mesh. The MODFLOW cell sizes are 5000 feet square and the element triangles are half the size of the square. There are 8 layers for this mesh. The fine mesh halves the cell and element size to 2500 feet square. There are 11 layers for this mesh.

Steady State Solution: For the coarse mesh, MINEDW yields a steady state solution for the free phreatic surface that averages about 15 feet above that calculated by MODFLOW with a range to in excess of 30 feet (SNL, Figure A9). Similar differences occur at deeper levels for steady state (SNL, Figures A10 and A11). At the south end of the figures near the constant head boundary, the contours become perpendicular to the boundary. This illustrates the strong influence the constant head boundary has on the head in the cells/elements near the boundary. The shape of the water table near the constant head boundary (river) causes a steeper gradient for MINEDW which explains the 5% higher flow to this boundary for the coarse grid. **(does this coincide with model predictions on the coarse grid portions?)** The finer discretization yields much closer agreements between the two model codes.

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The finite element mesh of the Carlin Trend model has regions with element size exceeding that of the SNL test. The largest elements occur in the Susie and Maggie Creek areas, including the area along the Humboldt River (constant head boundary on the south side). It suggests that the steady state calibration could be off by up to 30 feet[2].

Another issue not considered by SNL is the effect of rapid changes in element size. The Carlin Trend finite element mesh (HCI, 1999, Figure 8) decreases from dimensions of two miles or more to less than a quarter mile in just two miles. This occurs in the transitions from the Susie and Maggie Creek areas to the Post/Betze and Gold Quarry areas. It also occurs from the Rock Creek and Willow Creek valley areas to the north end of the Post/Betze area. Finite difference models, such as MODFLOW, recommend that the cell dimensions not be decreased by more than 50% from one cell to the next (Anderson and Woessner, 1992, page 64). This will be discussed more in the sections below devoted specifically to the Carlin Trend model.

Transient Solution: The test case provided a single well located in the middle of the domain coinciding with the mountain range dividing the basins. The well pumps 12.5 cfs for 20 years and then not at all for 60 years. Contours of the freewater surface, heads at various levels, and the coinciding drawdowns, along with hydrographs at three target points were plotted after 20 years of pumpage and 60 years of recovery.

Drawdown for the MODFLOW test exceeded that for MINEDW in the coarse mesh by up to 30 feet for the free surface (SNL, Figures A12 through A26). Away from the well, 15000 feet south of the well, the free surface predicted by MINEDW shows a bump where the level is about 65 above the MODFLOW

[2]Actually, it could be higher if coarser grids would cause an even larger disagreement because the 10,000 foot elements in the test are much smaller than those in the actual model.

2

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33ccccc continued.

Model output provided by Hydrologic Consultants Inc., of Colorado indicates that the changes in flux at the constant head nodes representing the Humboldt River during transient simulations are very small (<< 1 cfs at each node). All nodes, except one, representing the gaining reach of the river discharge less groundwater (to the river), but there is no conversion to a losing reach during the transient simulation. A single node converts from discharging to the river to supplying a very small amount of water (< 0.01 cfs) to the aquifer for a period of time, apparently during the period of maximum stress on the aquifer, subsequently returning to the discharging state. The ten-foot drawdown isopleth is closest to this naturally gaining reach of the river, indicating that the maximum effects of aquifer stress on the river occur along this reach. Changes in constant head fluxes during the transient simulation along naturally losing reaches would be very much less than those documented for the gaining reach. It is clear from this analysis that the constant head nodes representing the Humboldt River are not limiting the expansion of the cone of depression for the transient simulations that were performed. These results indicate that it is unnecessary to represent the river with a variable flux boundary under the stresses that were simulated.

Moving the model boundary south of the Humboldt River would not increase the accuracy of the predictions. Additional uncertainty would be introduced within the model domain due to a paucity of data south of the river.

The variable flux boundary in MINEDW was discussed with Hydrologic Consultants Inc., of Colorado, and the documentation of the algorithm was reviewed. The variable flux boundary in MINEDW, implemented in layers 2 through 6 beneath the Humboldt River during transient simulations, is dissimilar to the MODFLOW variable flux boundary (general head). Although MODFLOW general head boundaries can be misused, the basic principal of the variable flux boundary is sound. The MODFLOW variable flux boundary can permit significant drawdown to occur at the model domain boundary, if properly conceptualized and implemented. The MINEDW variable flux boundary is superior to the MODFLOW algorithm, because it does not rely on explicitly setting an external head. The external head in the MODFLOW algorithm introduces an additional uncertainty, because it must be set at a value and distance representing zero drawdown. Fluxes in the MINEDW boundary are proportional to the drawdown that occurs at the boundary, not relative to an uncertain external head. The flux under steady state conditions is set at each of the variable flux boundary nodes as initial conditions for the transient simulations. Head changes at the boundary beneath the river are not “limited” a priori by use of the MINEDW variable flux boundary.

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prediction (SNL, Figure A12). Again, MINEDW may overpredict the recovery amount and rate of recovery (SNL, Figure A24 and A26). Drawdown at the well is similar for each well (SNL, Figure 25). Predictions improve markedly for finer mesh sizes. We conclude that MINEDW underpredicts drawdown away from the well when compared to MODFLOW. These are the points where the finite element mesh is very coarse and also the area most affected in the future by the dewatering in the area. It is also the area in which the BLM is predicting the maximum extent of impacts on which it may base the final decision.

The fact that finer meshes yielded better agreement between the models may be a function of the increased number of layers. The Carlin Trend model has up to eight layers (some layers "pinch out") which is less than tested by SNL. As stated in SNL (page A9), "[t]he goal of increasing vertical discretization is to refine the calculation of head." Perhaps the improved agreement is due to increased layers as much as to the finer discretization. This lowers the reliability of the final results of the SNL review.

Review of the Carlin Trend Model (CTM)

Once the concerns with the MINEDW code are overcome, there are three primary problems with the Carlin Trend conceptual model. These are boundaries, faults and the basal clay layer underlying the Carlin formation.

Boundaries: The boundaries of the CTM coincide with topographic divides on the east, north and west and the river on the south. These assumptions leave much to be desired. The following paragraphs illustrate our concerns.

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There are two primary groundwater flow systems in the model, the shallow unconfined system and the deep, confined system in the carbonate and volcanic rocks[3]. HCI(1999) emphasizes that they do not function as a single unit and that flow directions and rates are likely to be different[4]. They also cite two U.S. Geological Survey references indicating that the deeper system covers many basins and that flow is regional[5]. The conceptual model boundaries do not adequately reflect this information and may in fact lead to faulty flow directions in the model.

Chapter 3 (HCI, 1999) indicates that boundaries

> "have been selected to coincide with natural hydrologic boundaries to limit the amount of ground-water and surface-water flow that naturally enters and exits the [model]. The topographic divides along the edges of the [model] have been assumed to be no-flow divides for both surface and ground water. The exception is the southern boundary along the Humboldt River which is simulated as a constant head boundary and allows ground-water to flow into or out of the [model].[6]

[3]HCI, 1999, page 19. The "deep, generally confined system" occurs primarily in carbonate and volcanic rocks.

[4]Id.

[5]"Unlike the shallow ground-water flow system, the deeper system is not limited to a single hydrologic basin." Id. "[T]he middle Humboldt River basin north of the Humboldt River, (sic) is underlain by a single extensive ground-water flow system where ground-water divides typicaly do not coincide with topographic divides." (HCI, 1999, pages 19-20) See Plume and Ponce (1999). Also, "Harrill and Prudic (1998)...also cite evidence for interbasin flow in the carbonate aquifer system." (HCI, 1999, page 20).

[6]HCI (1999), page 22, emphases added.

3

Response to Letter 33

33ccccc continued.

Given the uncertainty in geologic and hydrologic conditions south of the Humboldt River, the variable flux boundaries implemented during the transient simulations are acceptable. Drawdown contours in hydrostratigraphic units below the river that may intersect the boundary can be projected south of the river.

GBMW's discussion of the underestimation of river fluxes at the top of page 5 is incorrect and inconsistent with previous statements about flux from the river. The current boundaries could overestimate fluxes (but don't for these transient simulations; see discussion above) from the river due to the use of constant head cells in layer 1 during the transient simulations. River seepage is not dependent upon head north or south of the river, but rather head beneath the river. Actual seepage does not increase without limit when the head drops beneath a river. Also, variable flux boundaries in layers 2 through 6 can permit drawdown beneath the river in these layers while implicitly simulating drawdown south of the river.

The no-flow conditions on the western, northern, and eastern boundaries that were implemented for the steady state calibration represent *divergent* groundwater divides beneath mountain ranges. The boundaries are correct. The conceptual model of no underflow in the carbonate aquifer that was chosen for the numerical model precludes the use of any other boundary conditions for this aquifer in the steady state simulation.

The implementation of variable flux boundary conditions around the entire model domain in layers 2 through 6 during the transient simulations resulted in a combined maximum inflow of about 5cfs (Hydrologic Consultants Inc., of Colorado). This rate is very small, indicating that model boundaries are little impacted, and that the stress demands are satisfied primarily from storage losses and recharge within the model domain. Even the small inflow at the boundaries does not prevent expansion of the cone of depression (drawdown at the boundaries) for the transient simulations with the use of the MINEDW variable flux boundaries.

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First, HCI needs to verify whether these boundaries are the same for both steady state and transient simulations. Figure 17 and Chapter 4[7] indicates that variable flux boundaries are used variously in the transient simulations. The following comments assume that the east, north and west boundaries are no-flow during steady state conditions and variable flux during the transient calibration and production runs.

Second, the assumption of no flow boundaries in the carbonate layer disagrees with most people's understanding of the regional carbonate system. This concerns the selection of the eastern boundary to be no flow in steady state[8]. This assumption creates two problems. First, the only source of water to the carbonate in the model will be recharge within the basin. In the steady state simulation, HCI applies recharge on the surface which then moves vertically downward to the carbonate and then laterally into the rest of the unit. Part of the justification provided by HCI is that the flow direction specified by Harill and Prudic (1998) (toward south-southwest) will parallel the boundary. That the flow would be perpendicular to the boundary in the model contradicts the flow conditions that HCI attempts to emulate in the model and that established by the USGS[9]. The model does not simulate the actual flow directions in the steady state condition. If the flow direction in the carbonate near Carlin actually is to the south-southwest, it must originate somewhere in the regional carbonate aquifer and flow into the model domain.

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During the steady state calibration, the constant head boundary on the south side at the river in layers 2 through 6 is appropriate because it allows for flow to leave the model domain. But the river boundary as a constant head is very close to the Gold Quarry mine and inappropriate for analyzing the dewatering pumpage during transient pumpage. The problem with modeling the river as a constant head during transient conditions is that a constant head boundary is essentially an unlimited source of water. There is no limit to the flow that may be drawn from the boundary; very small changes in head north of the river would pull all of the water needed for the water balance in the arbitrarily defined model domain. A constant head boundary tends to maintain the boundary at steady levels. This, along with the arbitrary location of the variable flux boundary in layers 2 through 6, limits the extent of the ten-foot drawdown isopleth. The river should be modeled as a variable flux boundary during transient simulations.

The boundary of the domain should be moved further south because there is no physical reason to choose the Humboldt River. While it manifests as a boundary on the top layer, there is no manifestation of the river in lower aquifers (layers). The problem is that variable flux boundaries limit head changes that could occur in the aquifers beneath the river. It has been explained to CSPP that the type of boundary used by MINEDW allows the head to go up or down depending on the need. Our experience with similar boundaries in the MODFLOW model suggests that a variable flux model allows little change in the head at the boundaries; substantial head changes in the domain near the boundary changes the gradient across the boundary which increases flow across the boundary. (Note that HCI does not provide the parameters used in the boundary nor does it provide the model flows across any of the boundaries, except the rivers.) Thus, head changes could draw flow from an imaginary reservoir south of the river. There is a fault block mountain just a few miles south of the river. If this is essentially a no-flow boundary or an aquifer with little contact with the alluvium beneath the river, it is possible that the variable flux boundary provides more flow than is reasonable or would be actually observed in Nature.

[7]HCI (1999), page 53.
[8]Note 6.
[9]As cited by HCI (1999), page 22. "Harrill and Prudic (1998) show generalized flow directions in the carbonate aquifer to be south-southwest in the vicinity of Carlin". As set up in this model, the flow will be to the west, at least along the boundary. The extent of the motion westward will depend on aquifer properties. HCI should provide a map showing the direction of flow in each layer for the steady state model.

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33ccccc continued.

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Also, the boundaries prevent the simulation of drawdown south of the river which may underestimate the river flux. The model allows flow from the river to go only north. This model cannot simulate drawdown south of the river because of the boundaries discussed in the previous paragraph. If mine dewatering or pit lake inflow actually lowered the head levels south of the river, then water would flow from the river in both directions. This model has been designed with the assumption that drawdown can not extend under the river in any layer which means that the model probably underestimates the flow from the river.

After arguing that flow in the deep, bedrock aquifers do not coincide with basin boundaries and stating that there is little data on which to determine the boundary type[10], HCI assumes there is no flow across the northern or western model boundaries[11]. This creates the same problem discussed above with vertical flow movement in the layers near the boundary and flow perpendicular to the boundary for a distance extending from the boundary that depends on the aquifer properties.

The only way the boundaries as modeled by HCI have any credibility is to present a table showing the flow across each boundary during steady state and transient conditions. The hydrologic budget shown in Table 5 is not sufficient. Compare the fluxes caused by dewatering with those observed or assumed during the steady state conditions. (By assumed, setting certain boundaries as no-flow assumes that flow is zero.) The presentation should include fluxes for the steady state calibration, transient calibration, simulation of dewatering through 2010 and simulation of recovery from 2010 through 2110. Significant differences will show that the boundaries are too close the pumping. If the applied stresses cause flow to cross the boundary, it could be that the boundaries artificially limit the extent of the drawdown cone.

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Aquifer Units: Potentially, the biggest problem associated with the aquifer units is the pervasive basal clay layer at the base of the Tertiary sediments in the Maggie, Susie, and Marys Creek areas (commonly known as the Carlin formation). The modeling of this layer prevents the propagation of stress from bedrock to the Tertiary sediments which in turn prevents the dewatering of Maggie Creek. See the discussion below and the attached analysis of the sensitivity of this assumption. Therefore, the documentation of this extremely important layer requires more than the personal communication[12]. HCI should include a detailed discussion of the evidence for the clay layer that includes well logs and piezometric data showing that dewatering of the bedrock has not affected the Tertiary sediments. This information is important enough that it should be included in the DEIS as well as the GWMODEL.

Additional information is needed to justify the assumed low hydraulic conductivity for the Carlin formation. An unattributed statement in HCI (1999), "[a]n associated low hydraulic conductivity for the Tertiary sediments east of the Tuscarora Mountains and the basal clay layer are incorporated into the conceptual hydrogeologic model."[13] This differs from statements of the USGS. Based on aquifer tests, Plume stated

[10]"There are few data to support or refute the assumptions of no-flow boundaries on the northern and western boundaries of the HSA." (HCI, 1999, page 22)

[11]Consequently, HCI has assumed that there is no flow, **under pre-mining conditions**, into or out of the HSA on its northern and western boundaries." Id., emphasis added. That the statement specifies "pre-mining conditions" is important because it means the model uses unstressed conditions (steady state) to assume a limit to the propagation of stress under transient, dewatering conditions.

[12]The BLM accepts the following statement in HCI (1999). "East of the Tuscarora Mountains, inthe Maggie, Susie, and Marys Creek Areas, the Tertiary sediments tend to be clay- and silt-rich; and there is a pervasive basal clay layer (P. Pettit, NGC, pers. Commun., 1997)." Because the predictions of limited impacts to Maggie Creek depend on this assumption, the BLM must demand better documentation.

[13]HCI, 1999, page 25.

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33ccccc continued.

Aquifer Units

GBMW's point about documentation of the nature and extent of the clay layer at the base of the Tertiary sediments places too much emphasis on this layer with respect to predicting impacts to the Carlin Formation and streams. The modeled clay layer must be understood in the context of the geology of the Carlin Formation. The layer in the model and the calibrated low hydraulic conductivity account for the combined effects of numerous low permeability layers within the Carlin Formation that cannot be explicitly incorporated at the scale of the model due to numerical limitations and, consequently, the required simplifications for a regional model. The Carlin Formation is represented in the model as one layer. The actual stratification of the formation results in a net effect of very limited transmission of water from the Carlin Formation to the underlying siliciclastics.

It appears that the modeled hydraulic conductivity of the Carlin Formation is an order of magnitude (and more) lower than some site specific data indicate (Plume, 1995). The site-specific data were generated from five aquifer tests at three wells. Two of the wells are reportedly production wells, at which four of the tests were conducted. It seems, therefore, that the test data on hydraulic conductivity may be from anomalous zones in the Carlin Formation, in which wells were completed for the purpose of producing water. The Carlin Formation consists of semi-consolidated, old alluvial sediments that are clay and silt rich, and contain volcanic rocks. The CTM values of hydraulic conductivity for the Carlin Formation, developed through model calibration, are reasonable based on typical published values for these strata.

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that "[h]ydraulic conductivity ranges from 2 to 7 ft/d; mean and median values are 4 ft/d."[14] The BLM cannot allow Newmont and HCI to assume away this high conductivity estimates, based on field tests, with a mere statement in the groundwater model report.

Dewatering has occurred in the region for about 10 years. The report should include information about how much water is withdrawn from each aquifer layer. It should also include a table showing the wells in the model and that the water withdrawn from the model layers actually corresponds with the water actually removed from different aquifer units. Even if the total model dewatering pumpage is close to actual, if it is not from the same aquifer units, the model does not simulate reality. This should be added to section 4.9 which discusses the pumping and nodes. The requested table would enable the reviewer to assess whether the model removes the water from the proper layers.

Use of Faults: In general, faults are a very important feature that control flow throughout the model area. It is very important that their use be justified. It is also important that their extent, both laterally and vertically, be justified. The modelers should discuss the sensitivity of their assumptions. For example, the modelers presume that the Post Fault is a barrier at depth to flow from the northeast in the Carbonate unit even though there is no proof based on piezometric data[15] and there is no offset in the formation[16]. It seems very possible that drawdown occurs to the northeast of the Carlin Trend in the carbonate but not in the overlying, and monitored, siliclastics.

cccccc

There are at least two potential pitfalls resulting from this assumption. Dewatering may actually be decreasing the pressure in the aquifer beneath the siliclastics; delayed stress propagation between aquifer units could begin to dewater the overlying layer from which many springs and streams get their surface water. This may not become manifest for years until the pit begins filling with water.

The second problem is that the stress could propagate across the model fault by the time pit lake infilling occurs and provide a close convenient source of water to refill the lake in the model that does not exist in reality. In experimenting with groundwater modeling of flow through faults, this reviewer has noted the sensitivity of results to the details of the model. Because there is a severe drop in head through a fault does not assure that no flow occurs. To the contrary, it is possible that the fault provides a conduit for vertical flow. If the transmissivity of the fault, which may have an effective flow area only a few feet thick, is high because of a high conductivity, flow may essentially "plunge". This would occur if the fault caused an offset where the conductivity on the downgradient side is low whereby the fault becomes the easier flow path. Then at the lower level downgradient of the fault, a higher conductivity allows the water to continue its downgradient movement. The fault only appears to be a flow impediment when it actually is a conduit. In other words, the fault could in the model prevent flow that will actually occur in Nature. Faults may constrain the stress and decrease the extent of the predictions in the model.

A corollary is that flow from upstream of the fault (northeast of the Carlin Trend) could flow around the fault and reach the unit being dewatered at the deficit is being filled thereby decreasing the maximum predicted extent of dewatering. The primary flow direction could be northwest along the fault and around the north end into the large drawdown cone being created by the dewatering (and simulated by the model). This nearby source would decrease the deficit and limit the maximum extent of the ten-foot drawdown isopleth.

[14]Plume, 1995, page 18.

[15]"The carbonate rocks are very deep east of the Post fault, and there are no monitoring wells installed in them". (HCI, 1999, page 31).

[16]Section A-A', Figure 14, shows the Post fault separating units of equal conductivity carbonate rock.

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33ccccc continued.

Use of Faults

Sensitivity analysis of fault hydrologic conductivity is useful for determining the importance of a conceptualized fault to the modeled flow system. Sensitivity analysis of modeled features is commonly carried out during calibration. According to Hydrologic Consultants Inc., of Colorado, modeling the Post Fault as a deep barrier to flow was required for calibration, implying the sensitivity of the model response to the presence of the barrier. The absence of specific data to confirm modeled features to which the results are sensitive does not imply they do not exist. The sensitivity, on the contrary, lends support to their existence. Furthermore, the elongation of the drawdown cone in the carbonates in the direction of the fault trajectory supports the modeled barrier.

The absence of the surface expression of the Siphon Fault is not an argument against its existence. The presence of Tertiary rocks on the west side of the range next to older siliciclastic rocks to the east is reasonable evidence of a range-bounding fault, down to the west. Conceptually, it is easy to visualize the presence of a low conductivity barrier to flow between these two consolidated formations, because faulting can generate barriers to flow in unconsolidated sediments.

The intent of the discussion of the fault north of Leeville was to explain that the fault is a barrier to flow, because the rate of drawdown has not decreased during a period of constant discharge, indicative of a limited supply of water. There is no conceptual problem with this logic.

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HCI claims the Siphon fault is a barrier between the TS Ranch and the Post/Betze pit but acknowledges that there is not surface expression[17]. Figure 9, showing the hydrogeology of layer 1, shows the fault separating siliciclastics and tertiary deposits. At least for the top model layer, more proof is needed to justify its use. Different conductivities for the two formations could explain observed head drops. This is a problem because it could limit the propagation of dewatering stress into the Boulder Flat[18].

The discussion of the Leeville/Four Corners faults is confusing. A flow barrier was added to the Carlin Trend boundary north of Leeville in carbonate rocks based on the following drawdown discussion:

> Drawdown in the carbonate rocks at Leeville has been relatively constant over the past few years even though ground-water flow toward the two existing dewatering centers...has also been relatively constant. The constant drawdown with relatively constant dewatering pumping suggests that the carbonate rocks at Leeville are part of a highly bounded system. In a non-bounded aquifer, the rate of drawdown decreases with time when a constant discharge is applied.[19]

This suggests that water levels are constant while in a bounded aquifer the water level should go down at a constant or increasing rate. (The constant rate of drawdown with constant pumping reflects a bounded system because the boundary will limit flow to the pumps. In an unbounded system, the expanding drawdown cone draws flow from much larger areas decreasing the near-well drawdown.) There may be a misprint in this section.

ccccc **Evapotranspiration**: The report suggests that areas of ET in the model are significant, especially in the areas of significant agricultural usage[20]. However, the model report refers to rates from greasewood, grasses, shrubs, cattails and hydrophytes, not from irrigated areas. Typically, in our models, we have used a net recharge from irrigated areas because there is always more than consumptive use applied to a field. There is no discussion of recharge from irrigation in the Recharge section. Please explain how ET and recharge from agricultural areas was modeled.

Regarding greasewood, the report indicates that 50 to 55 percent of the annual ET rate of 14.5 to 17.5 inches to be from the groundwater system[21]. Greasewood primarily occurs in low elevation, low precipitation zones. Where does the nongroundwater system ET come from? Especially during showers, some of the annual precipitation runs off and becomes unavailable for use by the greasewood.

The calculation that only 50-55% of greasewood ET results from groundwater would also apply to other phreatophytes. Discussion regarding the other plants do not include a breakdown between groundwater and direct surface water as a source of the ET water. Please clarify this and explain.

The method used to estimate hydrophyte ET may overestimate the amount. As described[22], the method uses a ratio of hydrophyte ET to open water surface evaporation. Our experience with similar research

[17]HCI, 1999, page 31.

[18]It could also prevent water stored in Boulder Flat as a result of irrigation induced recharge from flowing in to replenish the drawdown.

[19]HCI, 1999, page 32.

[20]HCI, 1999, page 35.

[21]HCI, 1999, page 35.

[22]HCI, 1999, page 36. The method utilizes an observed direct correlation between hydrophyte ET (ETh) and open water evaporation. However, the citation to Crundwell (1986) is not easily accessible even though the source appears to be a peer-reviewed journal.

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Evapotranspiration

Evapotranspiration from vegetation is very difficult to quantify in any model. A sensitivity analysis is run in order to define how sensitive a model is to changes in evapotranspiration. The sensitivity analysis for the Hydrologic Consultants Inc., of Colorado (1999) model shows that the model is not sensitive to increasing the evapotranspiration rates, but very sensitive to decreasing the rates.

Section 3.9 of Hydrologic Consultants Inc., of Colorado's modeling report (Hydrologic Consultants Inc., of Colorado, 1999) discusses the simulation of recharge from irrigation water to the groundwater system. Recharge from irrigation was applied in Boulder Flat following a standard practice where it is assumed that 30 percent of the water distributed to irrigation is returned to the groundwater system. A significant area of Boulder Valley is under irrigation and complete water records are kept, making it a logical area to apply the recharge of water pumped for mine dewatering.

Robinson (1970) conducted a four-year study of evapotranspiration of woody phreatophytes in the Humboldt River Valley near Winnemucca, Nevada. The U.S. Geological Survey conducted the study in an area very near the hydrologic study area, therefore, the data were considered adequate for modeling purposes. On pages D31-32, Robinson (1970) states: "The data obtained in the evapotranspiration tank studies at the Winnemucca test site indicate that during 1963-67, average water use by greasewood ranged from 1.21 to 1.45 acre-feet per acre in tanks 1 and 2, of which 50 to 55 percent was supplied by groundwater." Rainfall and soil moisture comprised the remainder of the water lost by evapotranspiration. Soil moisture is derived from winter precipitation. Robinson's (1970) study implies that the rate of groundwater lost by greasewood evapotranspiration could range from 7.26 to 9.57 inches per year. Hydrologic Consultants Inc., of Colorado assumed an average value of 8.4 inches.

Most of the greasewood evapotranspiration was simulated to occur in Boulder Valley where the elevation is above 4,500 ft and annual precipitation is greater than 8 inches. This area is rather flat and little surface runoff is expected to occur. Assuming that 3 percent of precipitation becomes groundwater recharge, leaves nearly 8 inches available for "non-groundwater evapotranspiration." The amount of precipitation and evapotranspiration are in agreement with Robinson's study and the assumptions made for the Carlin Trend model.

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articles is that they apply to hot desert climates more than the cold deserts in the study area. For example, the longer hot periods in southerly climates leads to many more months of ET as well as warmer open water temperatures. How this affects the ratio and the prediction of ET from the study area must be discussed.

Surface Water and Spring Flow: This comment section will just discuss the analysis of surface flows and gaining/losing reaches. The broader question, how will the streams and springs be affected by dewatering, will be addressed below.

The nonparametric method of determining the most common October baseflow is interesting. Before rejecting normality and log-normality[23], it is important to perform the appropriate tests. Aa chi-square test for normality should be performed before using the dominant cluster mode method.

The dominant cluster mode method essentially uses the mean of the most common, or dominant cluster, of flows. Of interest here for determining the baseflow is the mean October flow[24]. It is necessary to realize that certain thresholds may exist that would cause even this baseflow estimate to be off for certain years. Baseflow predominately reflects groundwater contribution. During dry years, irrigation pumpage may lower the water table such that a draft from the river/stream will be occurring in October. In other words, dry years and especially long drought periods have groundwater/surface water relations substantially different from normal or wet years.

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Also necessary to understand is that this estimate is the base from which the effects of mine dewatering will be subtracted. Many years have baseflow less than, some substantially less than, the predicted mean. Based on the discussion in the previous paragraph, it is reasonable to conclude that dewatering could change the groundwater levels, and the threshold, such that more years will fall into much lower flow periods. In other words, it is inappropriate to subtract a loss due to dewatering from an average baseflow the loss due to dewatering will not be constant from year to year. The loss will likely be greater during dry years and more "normal" years will actually become dry years.

To estimate how often the dewatering impacts will be subtracted from below normal flows, the following table[25], shows the number of years and percent of time that the baseflow is less than dominant cluster years.

River	Yrs	Total Yrs	Percent
Humboldt R at Carlin	12	51	24
Maggie Cr at Carlin	2	12	17
Humboldt R at Palisade	12	87	14
Pine Cr at Palisade	4	14	29
Rock Cr nr Battle Mountain	7	50	14

[23]HCI, 1999, pag 37.

[24]We agree with the use of the mean October flow as baseflow because it occurs after the irrigation season. The modeler should analyze the October daily flows for outliers in that local runoff could artificially increase the average. Perhaps, the dominant cluster mode analysis should be applied to the daily flows to obtain a better estimate of the October flow.

[25]Based on analyses in HCI, 1999, Appendix B.

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33ccccc continued.

Evapotranspiration Con't.

Most studies do not include a breakdown of the source of water consumed by evapotranspiration (i.e., groundwater, precipitation, or soil moisture). Therefore, the percentage of groundwater versus other water was not specifically stated for all plant types. The amount of evapotranspiration that occurs in an area is dependent upon many variables such as species of plant, cover density, plant size, stage of maturity, tolerance to salts in the soil and water, temperature, wind movement, humidity, solar radiation, rainfall, and length of growing season. These features vary in time and space. In a regional study these components are averaged to result in a reasonable estimate of potential evapotranspiration rates. The evaporation rates used in the Carlin Trend model are based on peer-reviewed studies, most of which were conducted in the Humboldt River basin (Dylla et al., 1972; Robinson, 1970).

Crundwell (1986) examined several types of climates in his study including a steppe. Additionally, there have been studies conducted in northern Utah and northern Colorado that yield similar evapotranspiration rates to those used in the Carlin Trend model. Christiansen (1970) cites a study performed by the U.S. Bureau of Reclamation where evapotranspiration values for cattails were estimated to be 60.42 inches per year. Parshall (1937) reported evapotranspiration losses for cattails growing in soil tanks at an experimental station at Fort Collins, Colorado to be 52.5 to 77 inches per year. He noted that evapotranspiration losses under actual conditions could be less. The evapotranspiration values cited in these studies with climates similar to the hydrologic study area are in the same range as the 54.4 inches per year used in the Carlin Trend model.

Surface Water and Spring Flow

The average flow rates shown in the table are the average baseflow rates, i.e. flow rates during the month of October, when flow is historically low. In some (wet) years the impact of the dewatering may be much less than stated, in some (dry) years the impact of the dewatering may be more. Thus, it is considered correct to use the average base flow to estimate the impacts of dewatering.

Lower Maggie Creek has frequently dried up during the fall in dry years, before and during mining operations. While Gold quarry dewatering may add to the frequency of Upper Maggie Creek drying up, this would not be a new occurrence.

Letter 33 Continued

From 10 to 30 percent of the time the actual flow in the stream or river is so far below the average that it is not considered as a part of the average. During these years, the impacts due to dewatering will be much greater than the average.

Carlin Spring is also a concern. It is the primary source of water to Mary's Creek which is also the water supply for Carlin. Because of fault blocking, the model predicts very little impact to this spring. The report should document the source of water to the spring. The baseflow from the spring exceeds the predicted recharge[26]. The extra flow comes from somewhere and the document should address this. NGC should perform geochemical analysis to determine its source formation.

Grid Size: The grid layout of the Carlin Trend model is very complicated. In general, numerical problems will be decreased if standard shaped elements and transitions between sizes are used. SNL found errors in the large grid sizes which are used over 70% of the CT model, but they did not address transitions. Anderson and Woessner (1992, pages 67-68, italics in original, emphases added) state:

> In designing a finite element grid for isotropic materials, each element should be constructed so that its *aspect ratio* (the ratio of maximum to minimum element dimensions) is **close to unity**. This requirement is similar to the factor of 1.5 used in expanding finite difference grids and is **necessary to minimize numerical errors**. For example, numerical errors can be minimized by exclusive use of equilateral triangular elements. **Experience has shown that aspect ratios greater than five should be avoided.** Furthermore, a **transition region** should be used to **change element sizes gradually**... When dealing with anisotropic materials, the shape of the elements should be considered in the equivalent transformed isotropic domain and designed so that the aspect ratio in the isotropic domain does not exceed five.

CCCCC

The Carlin Trend finite element mesh (HCI, 1999, Figure 8) decreases from dimensions of two miles or more to less than a quarter mile in just two miles. This occurs in the transitions from the Susie and Maggie Creek areas to the Post/Betze and Gold Quarry areas. It also occurs from the Rock Creek and Willow Creek valley areas to the north end of the Post/Betze area. These are not "gradual" transitions. Additionally, there are many elements with aspect ratios exceeding 5. Particular problems occur with the modeling of faults which are simply long, narrow elements with very low conductivity adjacent to regular elements with higher conductivity.

HCI should change the element shape so as not to be irregular potentially resulting in numerical problems or prove that numerical problems do not exist. They could do this by performing water balances for small areas around the rapid transition zones and showing that the error is less than a few percent. The experience of this reviewer with finite difference models is that numerical difficulties often manifest as localized water balance problems even in models that overall are well calibrated. To justify the use of this grid, HCI should consider the water balance for specific regions of the model where there are rapid transitions or strangely shaped elements. This is very important near the faults which are model as regular elements with low conductivity. These may cause complex water balance problems that must be discussed in their report.

[26]HCI, 1999, page 42. "Baseflow from the ground-water system amounts to approximately 2.7 cfs." Table 1 shows recharge in the "Marys Creek Area" is 2 cfs.

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33ccccc continued.

Grid Size

GBMW's points about the finite element grid are incorrect, for an ideal grid. The complicated grid is probably more the result of the model's original outgrowth from the Gold Quarry Model and evolution with additional information, rather than lack of good design techniques. The highly irregular-shaped elements, however, are in the minority, and most of these elements are used to define faults, which represent a small percentage of the model domain. There are some areas of grid cell size variations that are not very gradual, but there *are* transitional elements, and these areas also represent small percentages of the model domain. There are many examples of grids with irregular elements, including high aspect ratios locally for faults, in the Anderson and Woessner (1992) book. The mathematical errors resulting from the deviations from an ideal grid are insignificant relative to the level of accuracy that can be expected from such a large regional model.

Letter 33 Continued

Calibration

Calibration is the attempt of the modeler to adjust a models parameters so that the model simulations resemble the observed reality. In groundwater, it is typical to compare water levels and fluxes. Note that we agree with the statement that it is more important to simulate water level changes than exact water levels[27]. This is especially true in the transient calibration.

Steady State: The steady state calibration has improved from the first version of this model that CSPP reviewed during 1999. The original version had residuals exceeding 600 feet. The current calibration has decreased the residuals to less than 200 feet. The statistics of the calibration are reasonably good except that the mean absolute error is 32.8 feet. Also, stating the percentage that the highest absolute residual is of the range of measured heads is misleading. The true error range is the difference of the biggest negative and positive residuals. From -166 to 139, the range is 305 feet and the percent that that range is of the range in measured heads is 13.9%.

Several trends can be observed. The first is that the highest negative and positive residuals occur in wells east of the Betze-Post mine. Over about 8000 feet, the residual at NA37A (-166.2) increased to NA36D (139.7). As the residual goes from very negative to very positive in a down gradient direction, it suggests that hydraulic conductivity between these wells is modeled to be much lower than observed. This comment is supported by the overall change between NA38, NA37A, B and C and between NA36D and S.

CCCCC The model overpredicted levels at S4 by 135.6 ft. This suggests either that recharge in the mountains is too high or that the hydraulic conductivity is too low.

HCI claims that "[t]he goal of steady state calibration is to match heads and fluxes by the numerical model to actual conditions"[28]. However, other than a mention of applying recharge as "the long-term average"[29] and predicting flow and ET in the list of "physical limitations, there is no discussion of the simulated fluxes. The reviewer has no idea of how well the model actually simulated the ET in Boulder Flat or the discharges from major springs. There should be a table provided that compares the estimated or measured flows with the simulated fluxes.

This is doubly important because HCI downplays the importance of calibrating for the flux from a spring.

> There is virtually no way to precisely calculate such discharge (spring) and interflows because of the small-scale factors involved and the variation in those factors (e.g., the size of the "outlet" of a spring or the bed conditions of a stream). In a numerical model, the discharge from a spring is numerically distributed across a large area that might not represent the actual area of discharge of a spring.[30]

Calibrating for spring flow is not problem in MODFLOW. Using a drain boundary, the modeler can calibrate for spring flow by adjusting the conductance. Just because HCI chooses to use proprietary model that apparently is not as flexible as MODFLOW, they should not be dismissed from modeling this important flux. They further downplay the importance of modeling springs. "Furthermore, the reported

[27]HCI, 1999, page 62.
[28]HCI, 1999, page 58.
[29]HCI, 1999, page 59.
[30]HCI, 1999, page 63.

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33ccccc continued.

Calibration

Steady State

The mean absolute error of 32.8 feet is actually relatively small for a regional model. The maximum acceptable value of a calibration criterion depends on the magnitude of the change in heads over the problem domain. Comparing the range of error, however, to the range in measured heads is also misleading. Comparison of some average measure of error to the range of measured heads is more meaningful. If the ratio of the RMS to the total head loss in the system is small, the errors are only a small part of the overall model response (Anderson and Woessner, 1992). This ratio, expressed as a percentage, is only 2.3 percent.

There are some areas where calibration residuals are less desirable than others, possibly due to measured water levels that have low reliability, but these areas are relatively insignificant with respect to the regional scale of the model and the objectives of its use. Detailed modeling in the vicinity of the Betze-Post Mine, for example, would be expected to result in improved residuals in the area highlighted by GBMW. Detailed modeling, however, is not an objective of the regional modeling.

Recharge was applied and distributed to the model as calculated with the Maxey-Eakin method, and as such, it was not a calibration variable.

Table 7 and page 55 address simulated versus measured gains and losses along the Humboldt River, and Table 4 compares simulated and measured streamflows in major tributaries. The Carlin Spring contributes essentially all the water flow in Mary's Creek. The simulated streamflow for Mary's Creek is similar to the estimate of streamflow.

The major springs within the HSA were simulated, an acceptable approach for a regional model. The discharge at Carlin and Niagara Springs was simulated with the RIVERS subroutine. The model, therefore, uses a boundary condition for springs that incorporates a conductance term.

The simulated discharge at Sand Dune, Green, and Knob Springs appears to be supported by an adequate explanation of the differences between the estimated and simulated flows. The cause for the discrepancy is subjective, and GBMW is not necessarily correct. In fact, modeled water levels are actually a little bit lower than measured water levels in this area, indicating that the storage coefficient is not too low.

Letter 33 Continued

flows of springs and minor streams are often highly variable, making calibration targets questionable."[31] The typical method is to calibrate to an average flux. This is why it is important to present the water balance for the steady state calibration; it allows the reviewer to consider whether the model is reasonable. Even though we agree with their statement that comparing changes in discharges to a simulated baseline[32] is reasonable, it is not possible to determine the reasonableness of this model without knowing whether they have even simulated an appropriate magnitude. For example, if the average discharge from spring is 0.25 cfs, it is probably reasonable to simulate the flow from 0.15 to 0.4 cfs.

HCI does suggest that modeling of the spring discharges in Boulder Flat is accurate and has an acceptable precision. "During the transient calibration, discharge from the three springs was simulated and compared to reported flow values... There is a good correlation between simulated and measured flows in early time. The discrepancy in later time is probably due to increased storage and evapotranspiration losses as wetlands developed and expanded."[33] We disagree. Figure 18 shows the computed values significantly overestimate the measured spring flow during calibration. HCI should adjust the parameters in their drain modeling routine to limit the flow. This is important because of how it affects the local water balance. Water levels in the area were simulated reasonably well; the fact that the model discharges too much water from the springs indicates that the storage coefficients for the region are probably wrong. In this case, the specific yield is probably underestimated because the aquifer can hold less water for a unit change in water level.

CCCCC

Transient Calibration: HCI completes its transient calibration with comparisons solely of head level changes with no consideration given to fluxes. Because the transient simulation includes 8 years of dewatering pumping, the reviewer would benefit from a discussion of whether and the amount of any induced fluxes on any boundaries, including the rivers.

The transient calibrations in the carbonate aquifer near the Gold Quarry mine shows changes in observations that are not simulated in the model. In some cases, such as GQP-45 and GQP-40, the rate of observed change fluctuates causing both negative and positive residuals at differing times in the analysis. Observed conditions in the well responds quicker to changes than the model simulation. This is likely due to the karst nature of the aquifer; as a solution chamber or pathway is dewatered, levels in the area quickly drop (or recover). The model treats the aquifer more as a porous media which does not respond as quickly.

The few observation in the siliclastic do not change as fast, probably because it is a porous media. The rapid simulated change in well T-1 suggests that stress propagates to the northwest faster than in the actual aquifer. It raises the question of whether the model accurately simulates dewatering from each aquifer.

HCI should include discussion of which aquifers (geologic media) are dewatered at what rates. This should be compared to the rates simulated in the model. Thus, we ask for a table of actual dewatering and model dewatering by geologic formation. The different dewatering responses in different formations suggest that the model may not be accurately simulating the dewatering withdrawals.

The response of well WW-6 is troubling. The observed values show significant changes in the Carlin formation. Levels have dropped several tens of feet. The simulation shows a flat line which means that stress has not yet reached the Carlin formation. It is one of only two wells in the Carlin formation. The

[31] Id.
[32] Id.
[33] HCI, 1999, page 56.

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33ccccc continued.

Transient Calibration

The transient calibration of the groundwater model is a good approximation of actual conditions. It should also be considered that the groundwater model was compared with a different model prepared for Barrick, and it was shown that the groundwater model showed larger impacts than the other model. Even though the model may not be perfect, it generally errs on the conservative side and is a good conservative tool to predict impacts.

Monitoring well WW-6 is not one of only two wells in the model that are screened in the Carlin Formation. Wells GQP-57, NS-2A, NS-3C, SC-1, SC-2, G-66, MYC-1, MYC-2, MYC_4, MG-1, MG-2, MG-3, MG-4, USGS-3, USGS-4, USGS-5, NMC-2, SIC-1, CV_10, MK-1, MK-2, PCHEM, MAG-A, MAG-B, MAG-C, MAG-D, JKC-1, JKC-3, JKC-4, COY-1, COY-2, and WW-9 are also screened in the Carlin Formation or alluvium. Well WW-6 is located next to a potable water supply that which pumps a relatively small volume of water. Pumping from the potable water well is responsible for the variation in head observed at WW-6. Originally the pumping stress from the potable water well was not included in the model calibration. Recently that stress was added to the latest calibration of the model and the variation in head at WW-6 was replicated. The small additional stress did not change predicted pumping rates at the Gold Quarry mine and did not change the size of the predicted maximum 10-ft drawdown isopleth.

Letter 33 Continued

model effectively isolates the formation from dewatering with a basal clay layer; this well shows that impacts are actually occurring and the model is not simulating them.

The model fails to simulate observed changes in the carbonate in the Marys Mountain Area in GQP-51. The response in GQP-49, upgradient from GQP-51, suggests the simulated stress has not reached the area while the actual stress has. However, that GQP-32A has not changed at all while the model simulates a change indicates there are more aquifer layers than modeled.

The siliclastic well, ML-9, shows a substantial change in observed in late 1996 that is not observed in the model. It indicates that stresses can move very quickly suggesting that impacts to certain portions of the aquifer could occur quickly.

Transient calibration shows clearly that the model does not propogate stresses as fast as has been observed. But the lack of observed or simulated changes in many wells indicates a larger problem; much of the model domain has not been stressed. Future simulations will depend on conditions calibrated in an area that have never been stressed and for which there is actually very little knowledge of how they will respond.

Because the heads are poorly calibrated and the water balance is not even provided, the solution provided is clearly not unique. It also indicates that a significant uncertainty exists in any model predictions.

Predictive Simulations

CCCCC **Pit Lake Infilling**: The document should provide discussion about which aquifer layers yield water to the forming pit lakes (Dee, Bootstrap, Tar,Post/Betze, Genesis, and Gold Quarry)[34]. Combined with a table regarding dewatering requested above, this would show whether the pit lake water comes from the same layers as removed from the model. It would also provide information on the source of water for the pit lake.

Also, it is essential to show the rate that the model simulates pit lake formation at all of the mines. How do these simulaitons compare with previous estimates? How does the estimate for Betze-Post compare with the model prepared by MacDonald and Associates? Because these lakes are major deficits in the model, it is essential that they be accurately simulated if the recovery of the drawdown is to be accurate. Section 4.10 provides a completely unsatisfactory description.

Sensitivity Analysis: HCI presents a sensitivity analysis where it alters individually various aquifer units by 0.1 or 10 times the calibrated value. In some cases, this leads to a very significant differences in water levels. For example, decreasing the hydraulic conductivity to 0.1Kh in the high conductivity carbonate unit changes the drawdown by up to 200 feet[35]. The presented results for vertical conductivity show very little sensitivity[36]. However, it would be useful to analyze the sensitivity in the surface alluvial layers. Similar comments apply to the sensitivity to changes in specific yield.

Importantly, the model is very sensitive to recharge rate, especially at the Gold Quarry mine. This is important because the method of modeling recharge in the HCI model is questionable. Questionable because it follows the Maxey_Eakin methodology by recharging at the point that precipitation or snowmelt

[34]HCI, 1999, page 59.
[35]HCI, 1999, Figure 22A.
[36]HCI, 1999, Figure 22B.

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Predictive Simulations

The required information about which aquifers yield water to the pit lakes is contained in Geomega (1997b). Recharge has been applied as is customary in current groundwater models.

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occurs. Much of the recharge in a basin may actually occur in stream beds after precipitation or snowmelt runsoff. The amounts could be correct in the model, but the location could be significantly wrong. How this affects the predictions depends on the aquifer units into which the recharge actually occurs. Recharge at high elevations in the mountains would follow a long flow path to the deeper bedrock aquifers and finally to the pits. Recharge at low elevations, say where the streams discharge from the mountains, would provide a better source to the streams. This could be important if pit lake creation begins to take water from the rivers and streams.

Summary

CCCCC All predictions made with the HCI model are very uncertain. All aspects of the model, from the location ofthe boundaries to the basal clay layer to the uncertainties around the calibration lead one to believe that the model is very uncertain. BLM managers and the public are led to believe that the massive predictions of drawdown and drying streams and rivers are precise. Because a calibration tends toward the mean solution of the model, the chance that the drawdown extent or the river fluxes will exceed the predicted values equals the chance that it will be less than the prediction. In our opinion, because the boundaries limit the drawdown as can be seen in the way the maximum ten-foot drawdown resembles the domain boundary, it is more likely that the model underpredicts than overpredicts the impacts.

References

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Plume, R.W., 1995. Water Resources and Potential Effects of Ground-Water Development in Maggie, Marys, and Susie Creek Basins, Elko and Eureka Counties, Nevada. U.S. Geological survey Water-Resource Investigations Report 94-4222. Carson City, NV

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Attachment 2

Test of the Modeling of the Carlin Formation

Tom Myers

The Carlin formation is the tertiary alluvium in the Maggie Creek valley. It is underlain by siliclastic and carbonate rocks which are being dewatered for mining activities. Piezometers indicate that heads in the bedrock have lowered substantially while heads in the overlying alluvium have been barely affected. A direct connection between formations would draw water from the alluvium into the bedrock which would eventually impact the heads in the alluvium.

Newmont identified a pervasive clay layer between the formations. This would prevent or slow the rate that head drops propagate into the alluvium. Newmont's groundwater model includes a 100-foot thick clay layer with hydraulic conductivity equal to 0.00001 ft/day. This would prevent the propagation of head drops for thousands of years if the dewatering stress continued.

However, there is no measurement of conductivity and no justification for the extremely low model conductivity in this formation other than its existence and the fact the monitoring wells above and below the layer do not show similar movements. They do not consider that levels in the Carlin formation above the basal clay layer have been affected by infiltration of excess dewatering water from Maggie Creek The transient calibration would be just as accurate if the conductivity was low enough to prevent impacts in the alluvium for just 15 years, the length of time that no impact has been observed in the aquifer. The current calibration prevents any impact from occurring throughout predictive phase of the analysis.

This appendix documents the sensitivity of HCI's analysis of the Carlin Formation and surrounding aquifers. A simple, multilayer model was created that allowed simple testing of the assumptions in Newmont's model.

Model Structure

The Carlin Formation was analyzed with a simplified rectangular 15 layer model. The surface elevation was 4000 msl. The top three layers were alluvium (K=50 ft/day) and collectively were 1950 feet thick. This hydraulic conductivity was higher than used by Newmont's model. Newmont had residuals of several tens of feet throughout this formation in a zone where very little impact from pumping has been observed. A potential cause of these residuals is that the modeled conductivity is too low which prevents water from draining. Also, alluvium typically has high conductivity. Thus the higher conductivity used herein may be more accurate. The next eleven layers representing the clay were each four feet thick with the bottom layer's bottom elevation 2006 and K=0.00001 ft/day in the initial runs. The bottom layer was 2006 feet thick (K = 10 ft/day). Layer thickness was chosen to facilitate observation of the heads and depressurization of the aquifers.

The horizontal scale was about 30,000 feet in the east-west direction and 26,000 feet in the north-south direction. This is the same magnitude as the Carlin formation in the lower Maggie Creek basin. Finite difference scale discretization varied from 50 feet near the stress location on the west side to 1000 feet near the boundaries.

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33ddddd. Attachment 2 - Test of the Modeling of the Carlin Formation

The apparent primary objective of the tests by GBMW is to evaluate the sensitivity of the heads in the Carlin Formation to variations in the leakance between the Carlin Formation and the underlying siliciclastic rocks.

The Hydrologic Consultants Inc., of Colorado report does not indicate the thickness of the basal clay layer beneath the Carlin Formation. The assertion that the model contains a 100-foot thick clay layer that would prevent the propagation of head drops for thousands of years under the current dewatering stresses is unsupported.

The hydraulic conductivity of the clay layer in the Hydrologic Consultants Inc., of Colorado model, 0.00001 ft/day (4.0×10^{-9} cm/sec), is at the low end of the range of measured values for clay that are cited in the literature. It may, therefore, seem obvious that sensitivity analysis of the effect on the model's behavior of variations in the hydraulic conductivity of this layer is essential to address the issue of uncertainty. The uncertainty stems from the absence of field data to support the modeled hydraulic conductivity. Unfortunately, the simplifications required for a regional model and incorporated in the test model have resulted in placing too much emphasis on this layer with respect to impacts to the Carlin Formation and streams.

The modeled (Hydrologic Consultants Inc., of Colorado) clay layer must be understood in the context of the geology of the Carlin Formation. The layer in the model and the calibrated low hydraulic conductivity account for the combined effects of numerous low permeability layers within the Carlin Formation that cannot be explicitly incorporated at the scale of the model due to numerical limitations. The Carlin Formation is represented in the model as one layer. The actual stratification of the formation results in a net effect of very limited transmission of water from the Carlin Formation to the underlying siliciclastics. The bulk vertical hydraulic conductivity is the weighted harmonic mean of the sequence of layers.

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Drawdown due to pumping was modeled as a transient general head boundary (GHB) where the head decreased from 4000 to 2900 feet in 100 foot/year increments. The lower level was maintained for 50 years. This emulates the process of drawdown and long-term mining at Gold Quarry several miles northwest of the Carlin Formation. The long period with water levels at 2900' allows the model to test how heads change and depressurization develops over time. The GHB was in the deepest layer (the bedrock) on the west side and was ten 50-foot cells wide.

Maggie Creek and/or the Humboldt River was modeled with the River package using a conductance of 300,000 ft^2/day. Estimated flows are not actual estimates of changes to Maggie Creek but are baseline comparisons to compare among modeling methods. This test assumes a groundwater connection which may not occur at all points on Maggie Creek, but probably does occur in the Humboldt River.

Recharge was applied to the surface of the alluvium at the rate of 0.5 inches per year.

Model Runs

Transient analyses simulated the impacts of dewatering around the mine with time. The starting head elevation for all runs was 4000 feet in all layers. Thus, the steady, pre-stress conditions assumed no vertical movement between layers at the beginning of the simulation. In this situation, all recharge would run to the river. This is unrealistic, but provides a good starting point for the analysis as envisioned here.

The model ran for twelve stress periods. The first eleven were 365 days long with 20 time steps and a multiplier of 1.2. During each step, the GHB head dropped 100 feet ranging from 4000 to 2900 feet. The twelfth stress period was 50 years (18650 days) with 50 time steps and the same multiplier. The GHB remained at 2900 feet for this period. This allowed assessment of the propagation of drawdown through the layers.

A target was established in most layers approximately 1700 feet from the GHB boundary. Targets monitor the head level in each layer and, collectively, the targets illustrate the development of gradients among the layers.

Results of the Baseline Run

Figure 1 shows the changing potentiometric surface in most layers. Clearly, the lower layer, with K=10 ft/d, depressurizes quickly and almost reaches 2900' by the end of the scenario. This reflects the expanding dewatering cone into the bedrock beneath the Carlin formation. The lower clay layers also draw down substantially, but the upper layers barely change at all. The upper layer 4 actually increases initially as recharge infiltrates into it before lowering to only 3999 (Figure 2). There is only a one-foot drawdown in the uppermost clay layer after 61 years of stress. The top layer shows a modest (less than 0.5 foot) increase in head due to mounding recharge.

Because there is no drawdown in the upper layers there is no change in flux to the river (Figure 3). The GHB flux increases to 1,000,000 ft^3/day after 4500 days. This is the time that the GHB reaches the maximum depth. After that, the flux decreases as the cone expands and the gradient at the GHB decreases. Total recharge equals about 89,000 ft^3/day; flux to the river fluctuates around this value. Recharge does not go to satisfying the GHB demand.

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Model Structure

The simple model constructed by GBMW uses questionable values of hydraulic conductivity as baseline" assumptions. Furthermore, there is no documentation of vertical hydraulic conductivities, the controlling parameter in leakance calculations, so critical to the analysis of the test model. Also, the absence of vertical discretization of the bottom layer does not represent the hydrogeology of the system underlying the clay layer.

The baseline value of hydraulic conductivity for the layers representing the Carlin Formation is two and three orders of magnitude greater than the Hydrologic Consultants Inc., of Colorado model values. Furthermore, the assigned hydraulic conductivity of 50 ft/day (1.8×10^{-2} cm/sec) is conspicuously too high for semi-consolidated, old alluvial sediments that are clay and silt rich, and contain volcanic rocks. It is also unclear why the bottom layer was assigned a value of hydraulic conductivity that is 3 orders of magnitude greater than the Hydrologic Consultants Inc., of Colorado model value for siliciclastics, and an order of magnitude greater than most of the carbonate rocks in the Hydrologic Consultants Inc., of Colorado model. The Hydrologic Consultants Inc., of Colorado value for the siliciclastic rocks appears to be more representative of consolidated rocks consisting predominantly of siltstone and shale. The test model assignment of 10 ft/day (3.5×10^{-3} cm/sec) for the bottom layer may be too high as a bulk hydraulic conductivity for carbonate rocks.

The bottom layer incorrectly lumps the siliciclastic and carbonate rocks as one hydrostratigraphic unit. Furthermore, there is evidence that the Roberts Mountain Thrust, separating the siliciclastic rocks from underlying carbonate rocks, is a barrier to flow, as simulated in the Hydrologic Consultants Inc., of Colorado model. Although there is a localized area around Gold Quarry where high conductivity carbonates underlie the clay layer, throughout most of the Maggie Creek Basin the vertical section consists of Carlin Formation overlying the clay layer which overlies siliciclastic rocks above carbonate rocks of more typical hydraulic conductivity.

The modeled thickness of the clay layer is 44 feet. This thickness contrasts sharply with the purported 100-foot thickness in the Hydrologic Consultants Inc., of Colorado model.

All of these deviations from the Hydrologic Consultants Inc., of Colorado model defy the intended logic of testing the sensitivity of the model to variations in the properties of the clay. They also collectively create model conditions that would exaggerate dewatering (and the rate of) of the section beneath the clay layer and the impacts to the Carlin Formation.

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Storage releases satisfy most of the GHB demand which almost mirrors the GHB flows (Figure 3). Initially, most the storage release is in the lower layer but eventually flow to layer 15 equals about half of the GHB flux at the point where maximum stress is reached. As indicated by the increase in flow to the lower layer by the end of the model run, most GHB flux is from upper layers (Figure 3). Based on the fact that recharge just cycles to the river, this is mostly releases from the clay layers. This is also reflected in the changes occurring in the potentiometric surface of the lower clay layers.

Sensitivity of Model Assumptions

The purpose of this analysis is to estimate the accuracy of the prediction above. I accomplished this with a sensitivity analysis. Sensitivity analysis is a test whereby the response of one output value is monitored while one or more parameters are varied. "The purpose of a sensitivity analysis is to quantify the uncertainty in the calibrated model caused by uncertainty in the estimates of aquifer parameters, stresses, and boundary conditions" (Anderson and Woesner, 1992, page 246). Quoting further, "we even have uncertainty about the very geometry of the system we are trying to analyze. The uncertainties of lithology, stratigraphy, and structure introduce a level of complexity to ... hydrogeological analysis ... unknown in other ...disciplines" (Freeze et al., 1990, quoted in Anderson and Woesner, 1992, page 246).

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In this model it is most important to compare changes in river flux and head with changes in the hydraulic conductivity of the clay layer. Also important to test are the assumptions of lithology including whether the clay layer is continuous. A third type of uncertainty is the boundary condition on the east. The current boundary on the east is no-flow. Will the response of the model change if a GHB is used to simulate a deep carbonate flow-through. Finally, the clay layer underlies the Carlin formation but to the east the bedrock outcrops onto the surface. Newmont applies recharge to these layers. Adding these layers and recharge to the original scenario herein allows testing of this assumption.

Changes in Hydraulic Conductivity

The concerns are with the potential for increased hydraulic conductivity, therefore only tests of increased conductivity were completed. Scenarios analyzed included 2×, 4×, 6×, 10×, and 100× the original clay layer conductivity.

Increasing the clay layer conductivity increases the GHB flux (Figure 4). At the point that the maximum stress (GHB reaches 2900' after 11 years) begins the range in flux is only about 1,100,000 ft^3/day. The flux decreases quicker for low conductivity values. Flux remains higher than 2,750,000 ft^3/d for the 100×Kh value analysis. The tendency to higher fluxes as clay layer conductivity increases drives increased flow through the layers (Figure 5). After the complete 61 year run, a steady flux of 2,800,000 ft3/d was occurring through all layers for the 100*Kh scenario. For the other scenarios, the vertical flux was still becoming established. None of the upper layers had established vertical flux in excess of recharge by 61 years; flux for the original condition was essentially 0. This indicates that many years could pass before dewatering of the lower layer affects the upper layer. More importantly, only a two orders of magnitude change will cause a complete change in vertical flux over a 61 year period.

Releases from storage are more complicated (Figure 6). With clay layer conductivity increasing to 10*Kh, initial storage releases increase from 1,600,000 to 2,500,000 ft^3/d after 11 years. For the 100*Kh scenario, storage releases are initially high, but rapidly drop. This reflects the propagation of a gradient through the layers and the contribution of recharge to the vertical flux between layers. Thus, the amount of

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The horizontal discretization seems appropriate. Implementation of a transient general head boundary in the deep layer to represent drawdown in the bedrock at Gold Quarry, distal from a vertical sequence of Carlin, underlying clay layer, and underlying bedrock is also acceptable. There is no description of the general head boundary parameters (i.e., development of conductance value), however, other than the change in head.

The description of the model structure indicates that it is intended to simulate drawdown and long-term mining at Gold Quarry, several miles northwest of the Carlin Formation. The problem with this intent is that the vertical section several miles southeast of Gold Quarry is typical of the section throughout the Maggie Creek Basin, not the anomalous section at Gold Quarry. The objective of the test model, therefore, highlights the importance of the above criticism of the hydraulic conductivities of the test model and the vertical discretization of the bottom layer.

Citing the conductance of the model river bed without providing the values of the parameters that comprise the conductance leaves the reader with no means to assess whether the conductance is reasonable. If it is unreasonably high, the changes in river leakage due to drawdown under the various scenarios may be exaggerated.

The applied vertical recharge rate is reasonable, but the model does not permit inflows from beyond the model domain. This condition results in exaggerated drawdown, directly in the lower layer and indirectly in the Carlin Formation due to the high vertical gradients. In reality, water would be released from storage over a much broader area than the test model domain, and would flow into the area of the domain.

Model Runs

The transient simulations apparently begin from a set of initial conditions that does not incorporate recharge as a stress. The only source of water in the model is recharge. The recharge was first applied during the transient simulations, resulting in mounding within layer 1. The initial conditions for a transient simulation that includes natural recharge must be established with recharge applied during a steady state simulation. The initial conditions for these simulations, therefore, do not represent steady, pre-stress conditions.

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water released from storage decreases as the vertical gradient allows water to be drawn from the river (Figure 7).

River flux is much higher for 10× and 100× Kh, but even the 2×Kh scenario causes substantial changes to the river flux (Figure 7). Only for the original Kh, 0.00001 ft/d, does river flux remain unchanged. More than 7000 days (19 years) are required until a breakthrough occurs where impacts to the river occur for all scenarios up to 10× Kh.

Flow into the lower layer peaks at the time that the maximum stress is applied and begins to fall thereafter (Figure 8). The rate of fall is highest for the original conductivity because the drawdown cone expands, the gradient to the GHB decrease and the total flux to the GHB also decreases. There is a sharp increase in vertical flux at the lower layers for the original conductivity at 4209 days (Figure 9). As time advances, flow to the lower layer decreases, but vertical flow begins in higher clay layers.

As clay layer conductivity increases, the flow to layer 15 as a function of the maximum increases. In other words, increased conductivity allows increased vertical flux. The highest conductivity has only a 200,000 ft^3/d decrease from the 3,000,000 ft^3/d peak. This reflects the decreased extent of the drawdown cone in layer 15 which allows the gradient to remain steep. Thus, increased clay conductivity decreases the areal extent of dewatering layer 15 but increases the impact to the surface layers. While the long-term flux from upper layers is potentially high, the initial flux is very low and may not be detected.

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Figures 11 through 23 illustrate the development of drawdown in many of the layers for the different tested clay layer conductivities. Layers 1, 3 and 4 have essentially no drawdown for the original conductivity (figure 11-13). This means that little head change occurred in the top 1954 feet of the model. But slight increases in the conductivity lead to small head drops. The head dropped 3 feet for a clay layer conductivity increase of 6 times (Figure 11) while the river flux increased substantially (Figure 7). Small changes in the clay layer conductivity could lead to small changes in upper layer head and large changes in river flux.

Increasing the clay conductivity allows rapid propagation of effects through the layers. This decreases the total head drop in most of the layers (Figure 11-23). For the lowest layer, there is a complete reversal; for all measurements, the head is higher for increased conductivity (Figure 23). This reversal can be observed in layer 15 (Figure 23) which shows the switch occurring in the first 3000 days. For layers 12-14, heads with the highest conductivity substantially differ from those for the other conductivities.

In summary, if a thick clay layer exists under the Carlin formation and if there is no through flow or significant mountain recharge, the relative drawdown through the aquifers is very sensitive to the assumed clay conductivity. An increase from 0.00001 to 0.001 ft/d completely changed the system. However, most of the changes were not obvious for several years after the stress began.

Changes in the Layer Assumptions

Most clay layers are not continuous as assumed by Newmont and tested above. Rather there are usually gravel lenses and sometimes even holes in the layer. There is an infinite number of possibilities that could be tested when considering lithological uncertainties. For this analysis, three assumptions will be tested. First, Scenario 1 models layers 5 and 13 as gravel with K=50 ft/d. Scenario 2 models layers 5, 7, 9, 11, and 13 as gravel. These assumptions continue the continuous, homogeneous, aquifer as assumed above. Scenario 3 models a small gravel-filled "hole" in the aquifer with dimensions of 1000 by 1200 feet.

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Results of the Baseline Run

The text discusses storage releases, but storage coefficients are not documented for review. The statement indicating that storage releases from the clay layers satisfy the general head boundary flux, based on the observation that the river flux is unchanged, suggests a problem with assigned storage. Clay should not be able to supply the storage release to meet the demand of the general head boundary flux. Assuming the clay layers do have a reasonable assigned storage coefficient, a more likely explanation is that storage is being released from the lower layers representing the Carlin Formation. This storage value may be questionably high, considering the nature of the sediments comprising the Carlin Formation.

Sensitivity of Model Assumptions

Sensitivity analysis for this test model cannot result in demonstrating accuracy of the results of the baseline run. Sensitivity analysis can establish the parameters to which the model is most sensitive. If the model values of the parameters to which the model is very sensitive are supported by field data, the model uncertainty is reduced through the sensitivity analysis. There are no field data for the clay layer. Furthermore, the test model is not calibrated.

Changes in Hydraulic Conductivity

The point is that the clay layer may not have hydraulic conductivity as high as modeled by Hydrologic Consultants Inc., of Colorado, and effects of drawdown in the Carlin Formation may occur sooner than predicted. The test model simulates a reasonable potential value of hydraulic conductivity of the basal clay at the two orders-of-magnitude increase, but this value does not account for the limited vertical leakance due to the stratification *within* the Carlin Formation.

The statements about river flux must be considered in the context of the suspect assumptions of the model (hydraulic conductivity, layers, etc.).

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For most of the model run, scenarios 1 and 2 had a less than 5% effect on the flow to the GHB boundary (Figure 24). The lack of difference between scenario 1 and 2 as opposed to both of their differences from the original scenario suggests that the mere presence of gravel in the clay layer increases flow from the system, especially in later years. Scenario 3 almost doubled the flow from the system. However, the "hole" in the clay layer in this scenario is quite large which suggests that this scenario is an upper limit to the impacts of a hole. However, the increased flows (for any scenario) do not really begin until day 4000.

Scenario 3 releases about two-thirds as much water from storage as the original scenario because the hole allows more water to be drawn from the upper layers. Recharge moves through the system faster and, even though ten times as much water is released from storage for a unit drop in head, the from the upper layer (Sy=0.1, S=0.01). However, adding gravel layers increases the amount removed from storage presumably because the clay layer now drains easier. Previously, most storage changes had occurred in the clay layer.

Initially, flow to layer 15 (Figure 26) is about one-half the flow to the GHB (Figure 24). In the long run, scenario 3 has almost reached steady state with flow to layer 15 equaling flow from the system. Flow to layer 15 lags flow from the system in the two gravel layer scenarios by about 25%. The hole allows steady state to be reached sooner with increased flow from upper layers but less drawdown in lower layers.

Adding gravel layers to the clay layer had essentially no effect on flux from the river. The increased flow through the hole causes almost a 150,000 ft^3/day loss to the river (Figure 27).

The river flux changes reflect the head changes in layers 1 and 3 (Figures 28 and 29). There was little change from the original caused by adding gravel layers to the clay layer, but the hole allowed the head to drop more than 4 feet. This caused the gradient reversal near the river to change. The head change resembled the effects caused by increasing the hydraulic gradient to 6× to 10×Kh in the first sensitivity analysis (Figures 14 and 15).

As in the sensitivity analyses changing the clay conductivity, Scenario 3 caused decreased drawdown in the various layers. In layer 4, the drawdown at the target was less than for Scenario 2 (Figure 30). In layers 10 and 14, the Scenario 3 drawdown was even less than for Scenarios 1 and 2. As it becomes easier for water to move through the clay layer, the drawdown due to the mine becomes less.

In layer 15 just after the maximum drawdown is reached, contours indicate a relative gradient from 3660 at the hole to 2900 near the GHB (Figure 34). A divide forms between the hole and GHB in layer 14 (Figure 35). Water drains through the layers near the GHB, but more flows through the hole. In layer 14, flow through the hole is 56,400 ft3/d, while flow through the top of the layer is 80300 and through the bottom is 138,000 ft3/d. The difference is due to a 57000 ft^3/d release from storage. By layer 13, a slight gradient to the GHB still exists, but the hole causes a massive drawdown (Figure 36). Flow through the hole is 56400 ft3/d while through the top of the layer flow is 61,900 ft3/d and 80,300 ft3/d through the bottom of the layer. Flow through the upper layers and the hole are equal at 55,400 ft3/d.

The rapidly changing flow balance among the lower layers illustrates the gradients that changing the GHB head causes in the clay. The actual flow through the clay layer depends very much on the exact shape and homogeneity of the layer. Many scenarios show that long-term effects could exist that are not yet observed.

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There is something wrong with the explanation of diminishing flux to the lower layer through time. The flux to the GHB would decrease as the drawdown cone expands, gradients in the lower layer decrease, and storage is depleted in the lower layer. These conditions do not decrease the vertical flux. The flux to the lower layer decreases after the maximum stress is applied because vertical gradients through the overlying layers diminish (relax) through time. The higher conductivity cases increase vertical fluxes (not gradients), as expected, but the diminished decrease in vertical flux through time with increasing conductivity is due to the lower initial vertical gradients. There is less change in the vertical gradients through time with higher conductivity. The decreased extent of the drawdown cone in layer 15 (due to higher leakance) may permit the gradient to the GHB in layer 15 to remain higher than lower conductivity cases, resulting in more flux to the GHB. It would not, however, increase the vertical gradients. The higher impact to the surface layers is due to the higher conductivity of the clay layer. The initial flux from the upper layers must also be higher than the low conductivity cases, contrary to the statement in the text, and as shown in Figure 8.

Increasing the clay conductivity, allowing "rapid propagation of effects through the layers", *increases*, not decreases, the total head *drop* in most of the layers (except 15). This rapid propagation is the reason initial vertical gradients are lower for higher conductivity
cases.

The summary of observations for this test model is correct, but not necessarily applicable to actual conditions due to the assumptions inherent in the model.

Changes in Layer Assumptions

See paragraphs 3 and 4 at the beginning of this response. The results of stratigraphic changes in the clay layer in the test model, as well as changes in the hydraulic conductivity of an assumed homogeneous clay layer, place too much emphasis on the properties of the simulated clay layer. The thickness, conductivity, and continuity of the actual basal clay layer probably have less influence on the behavior of the Carlin Formation heads than the combined effects of the internal stratification. The results of the simulations are interesting, but should not be extrapolated directly to the real world.

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Summary

The various scenarios for modeling the clay layer between the Carlin formation and deeper bedrock suggest that many scenarios exist that could explain the current lack of drawdown in the Carlin formation. These scenarios include different conductivities, small layers of clay embedded in the clay, and holes through the clay. A perfectly continuous clay layer, without embedded gravel or holes, extending under both the lower and upper Maggie Creek basins would be very unusual. In light of the quote from Plume about connections between basin fill aquifers and deeper bedrock aquifers, this situation would be very unusual. This analysis just emphasizes the uncertainty in the model rather than make certain predictions.

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The analysis of drawdown in the layers for Scenario 3 cannot be compared to the sensitivity analyses for the clay conductivity (see comment above). There is less drawdown in the clay layers because there is less vertical gradient, without increasing the conductivity of the layer. The water deficit in the bottom layer is accommodated by flux through the “hole” from the Carlin Formation layers. The net result is prevention of development of strong vertical gradients.

Summary

This test model fails to account for the internal stratigraphic layering which will limit leakance through the Carlin Formation. The scenarios simulated by the test model do not adequately explain the current lack of drawdown in the Carlin Formation, and the long-term effects that are predicted are not necessarily applicable to the real world.

A perfectly continuous basal clay layer is not required to explain the observations of head in the Carlin Formation. The results of the test model analyses do not augment uncertainty in the Hydrologic Consultants Inc., of Colorado model.

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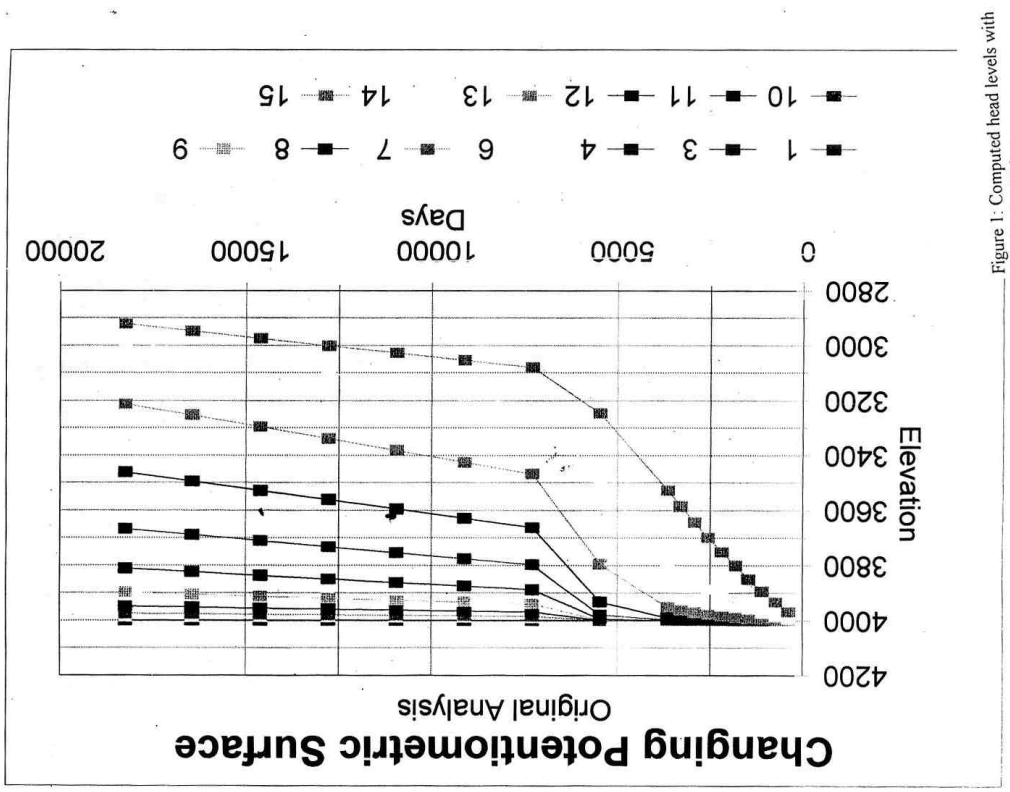

Figure 1: Computed head levels with time for the 15 layers.

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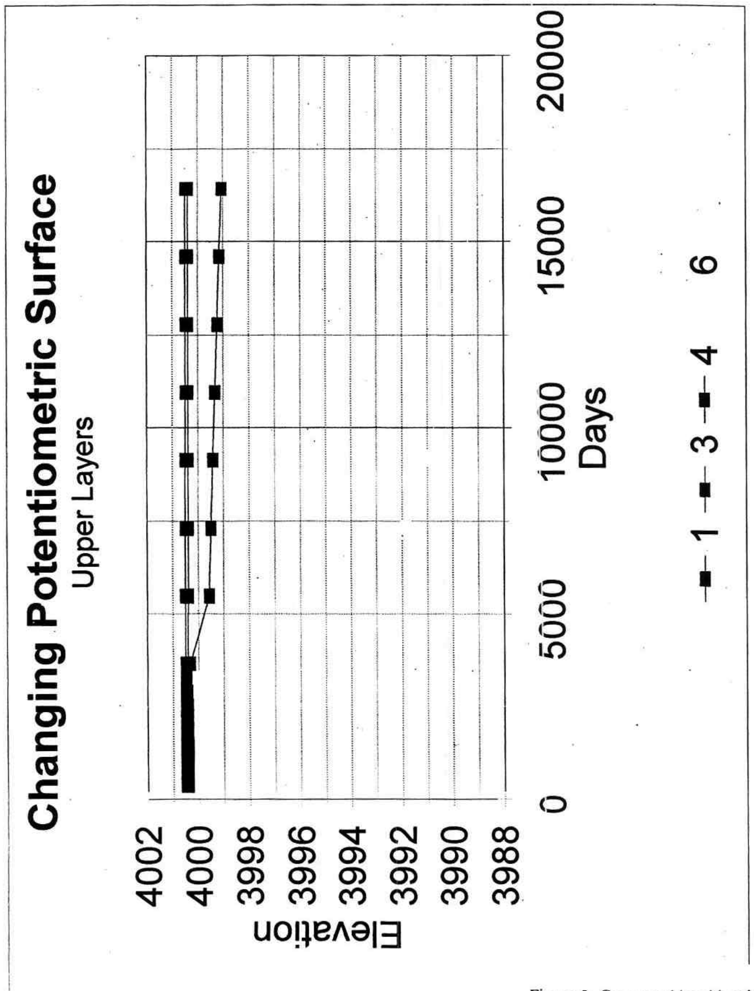

Figure 2: Computed head levels with time for the top 6 layers.

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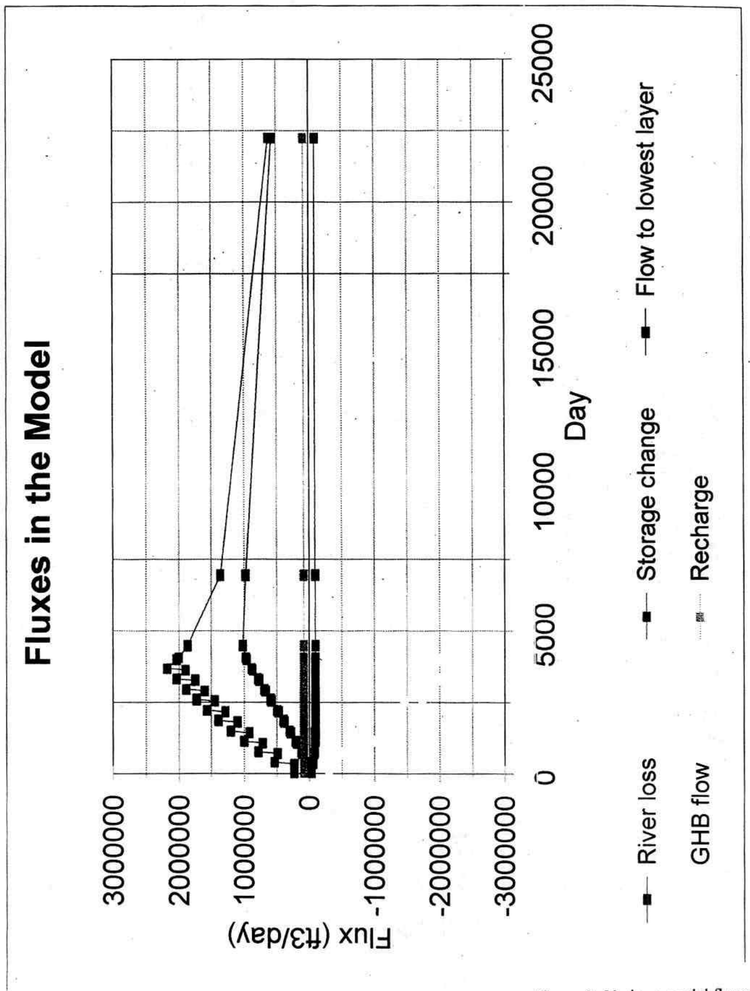

Figure 3: Various model fluxes with time.

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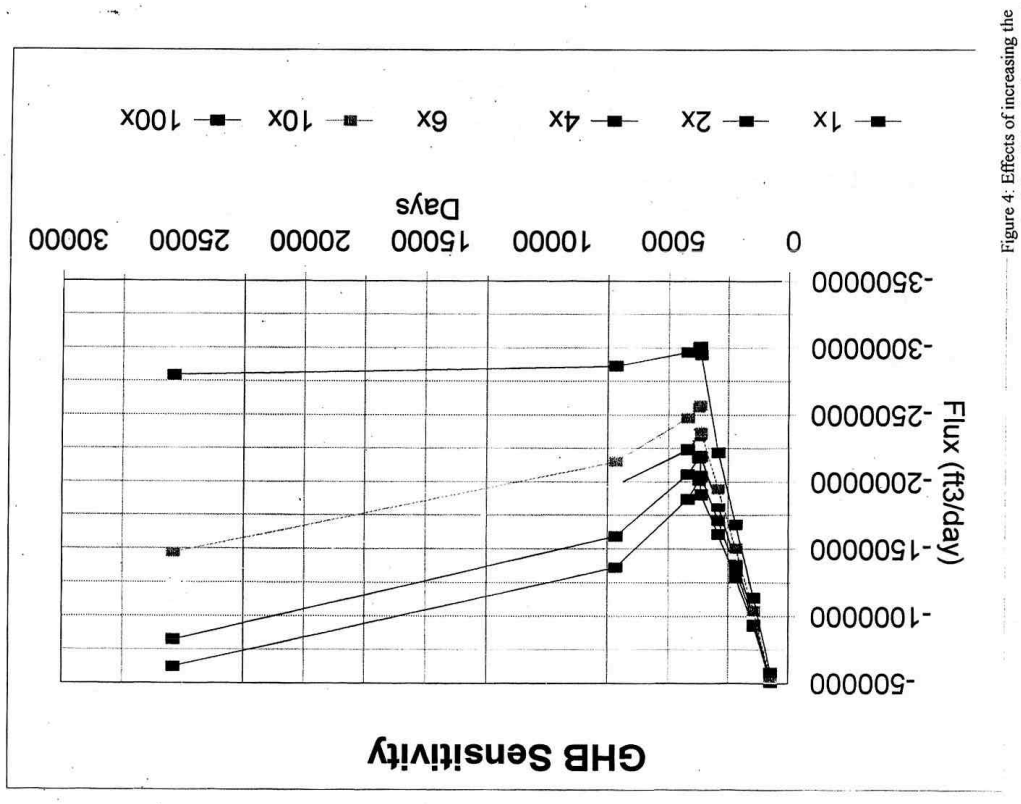

Figure 4: Effects of increasing the conductivity of the clay by amounts shown in the legend on the flow to the GHB

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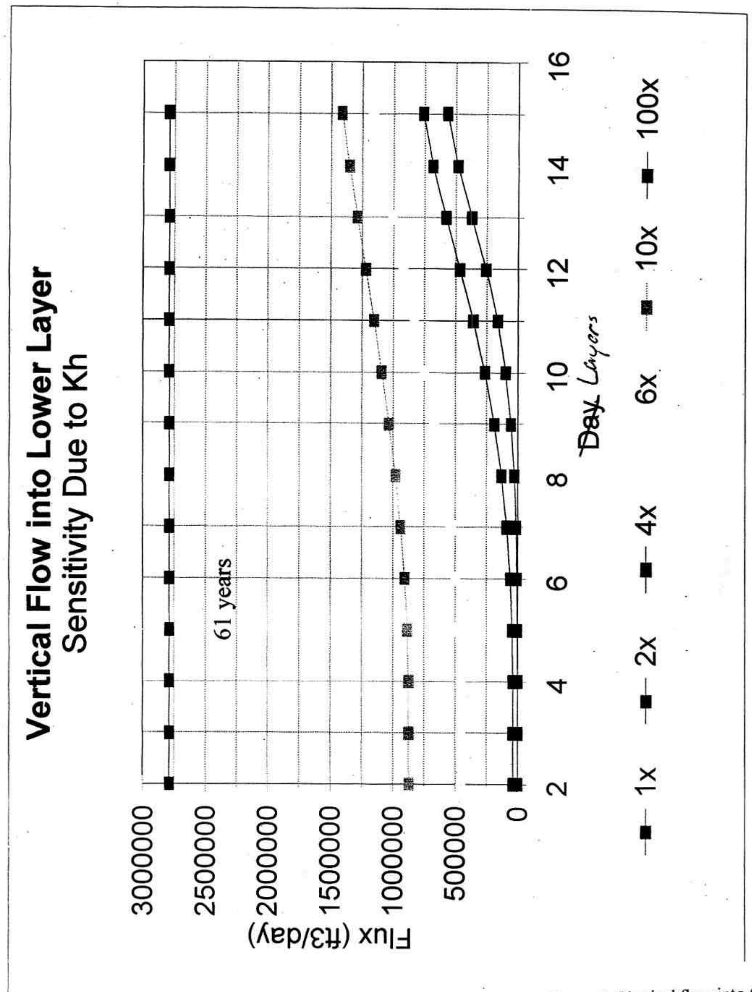

Figure 5: Vertical flow into the next lower layer due to changing the clay layer conductivity as shown in the legend.

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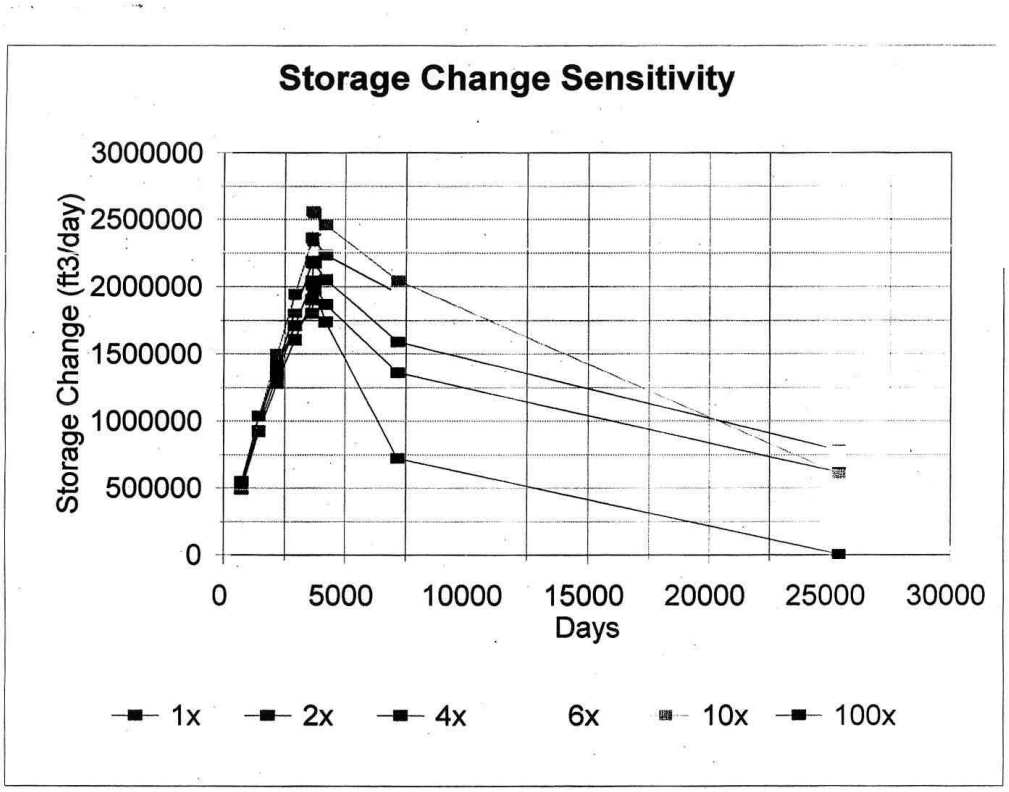

Figure 6: Change in total model storage for changes in clay layer conductivity as shown in the legend.

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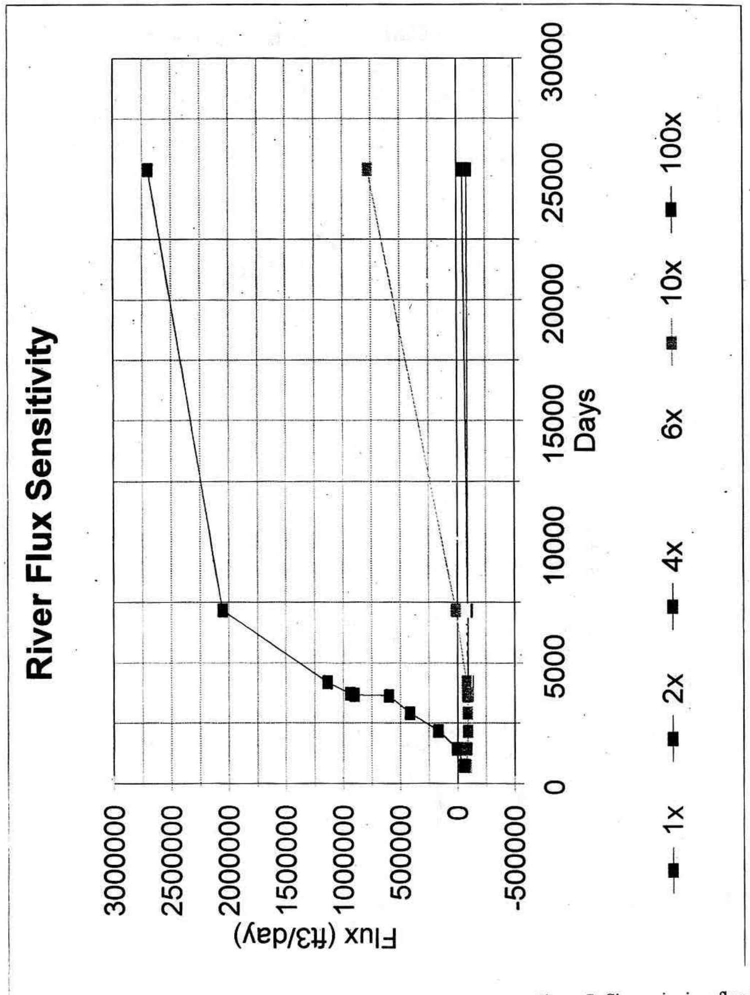

Figure 7: Change in river flux for changes in clay layer conductivity as shown in the legend.

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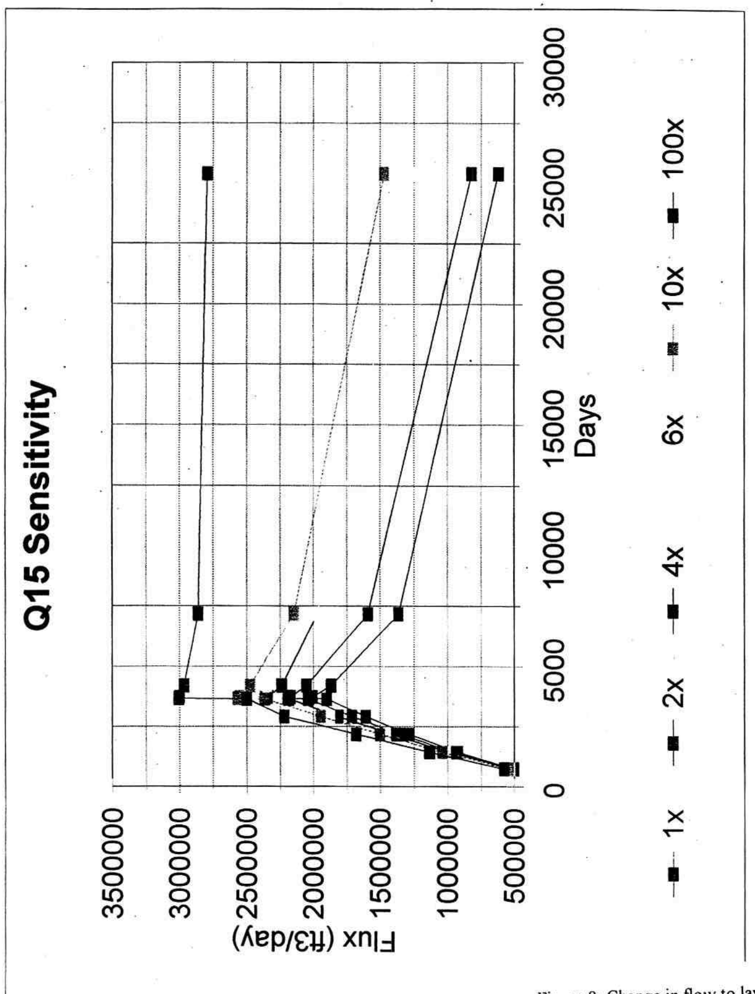

Figure 8: Change in flow to layer 15 for changes in clay layer conductivity as shown in the legend.

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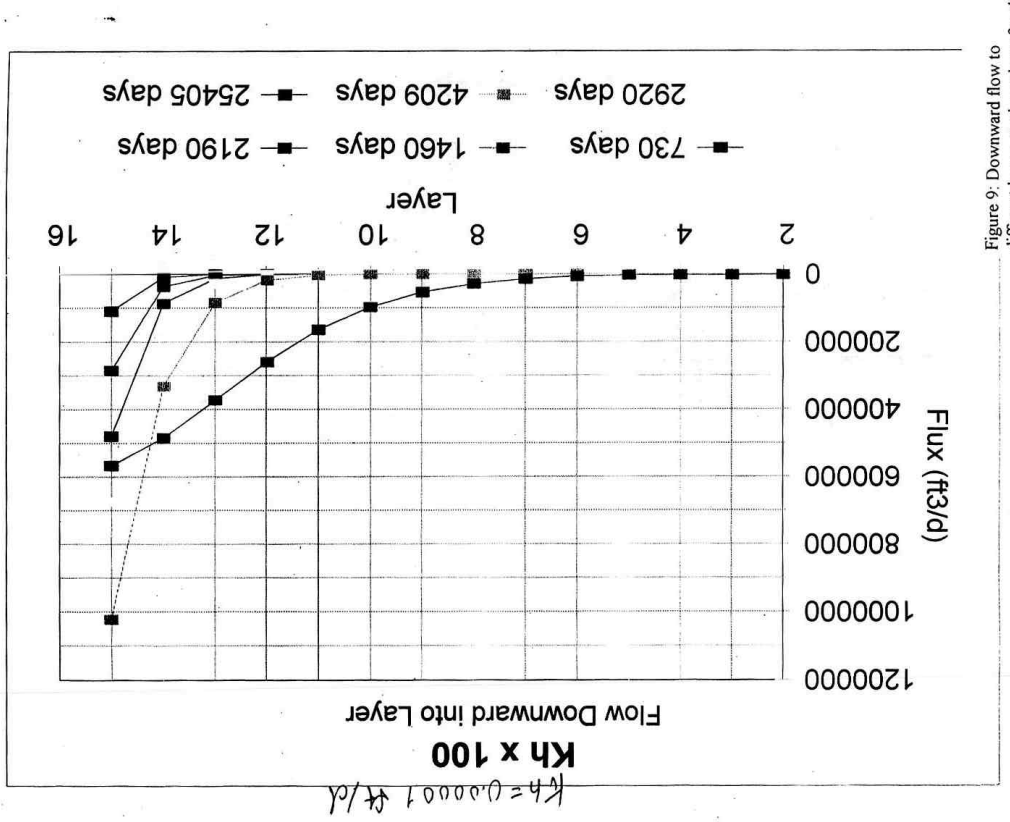

Figure 9: Downward flow to different layers at given times for the original conditions.

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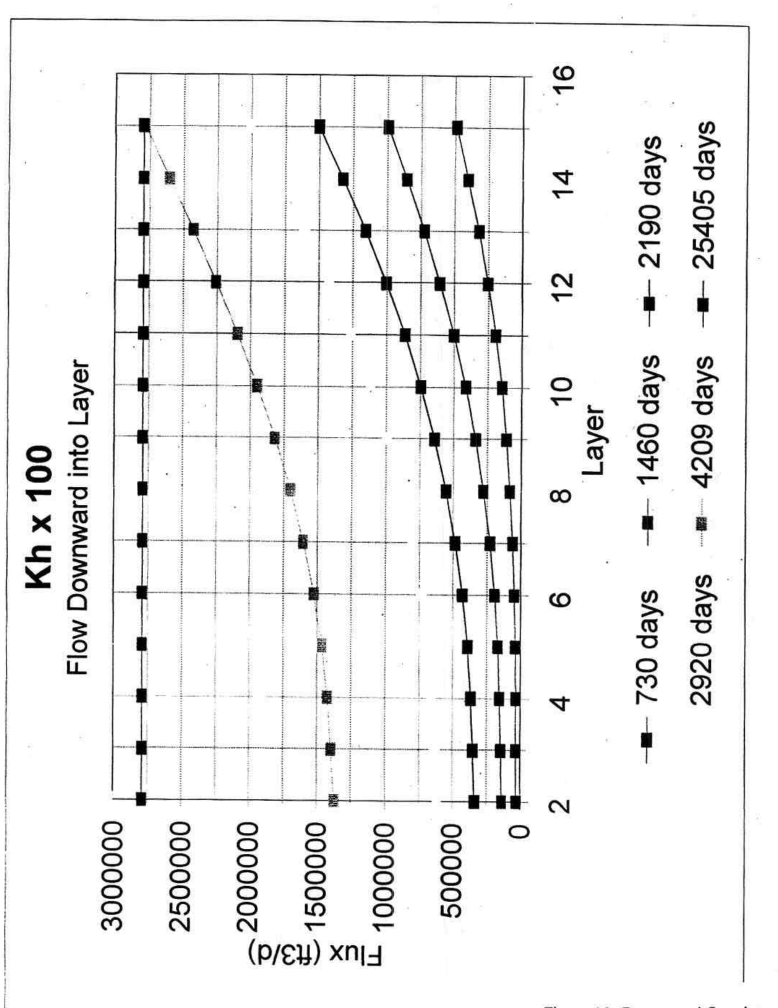

Figure 10: Downward flow into specified layer at different times.

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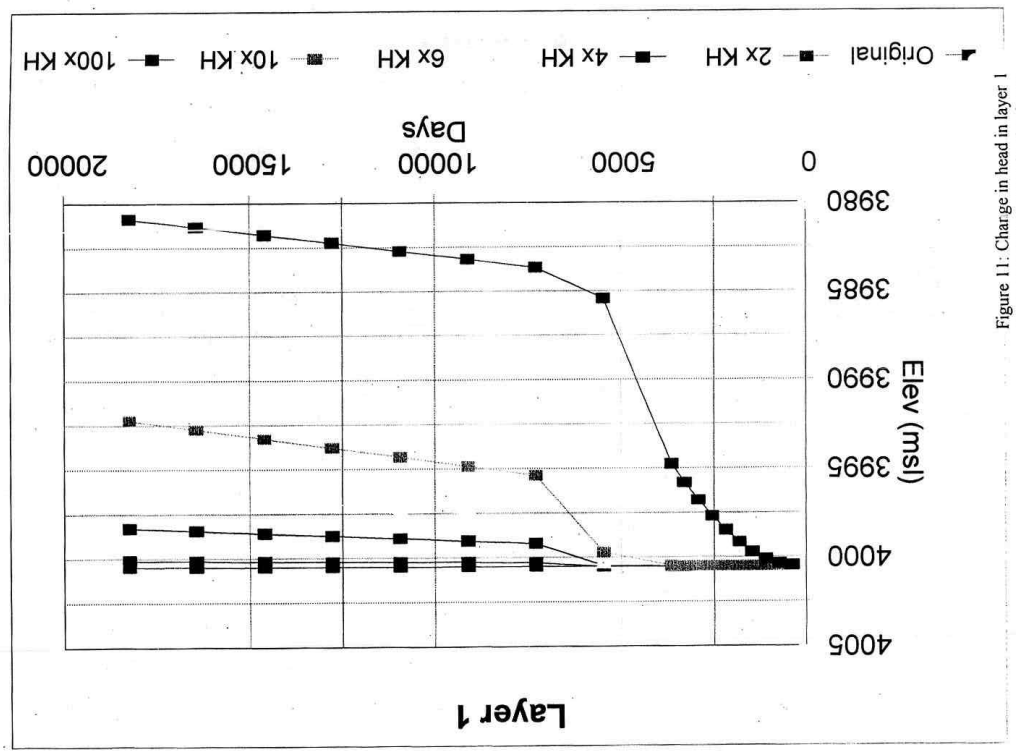

Figure 11: Change in head in layer 1 for the labeled changes in clay layer conductivity.

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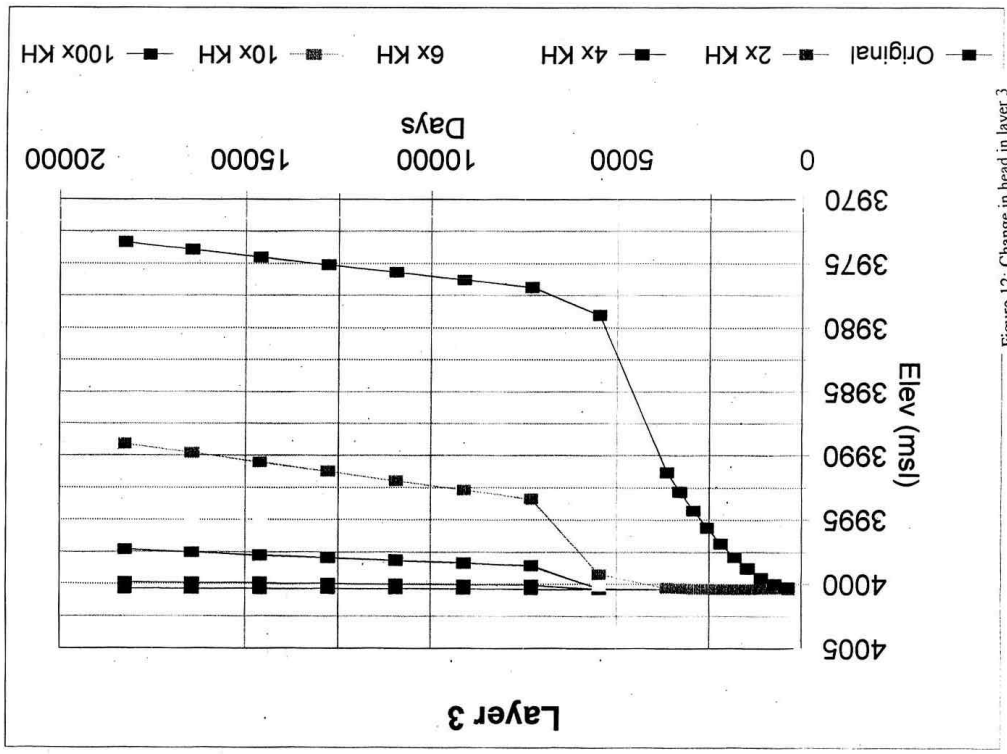

Figure 12: Change in head in layer 3 for the labeled changes in clay layer conductivity.

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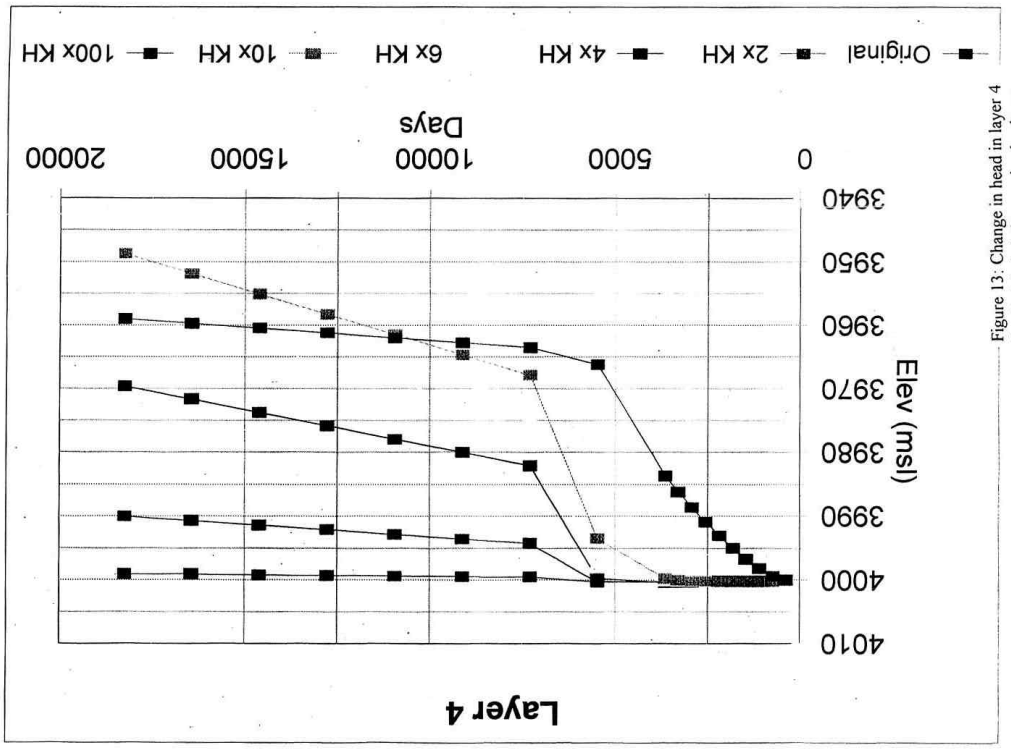

Figure 13: Change in head in layer 4 for the labeled changes in clay layer conductivity.

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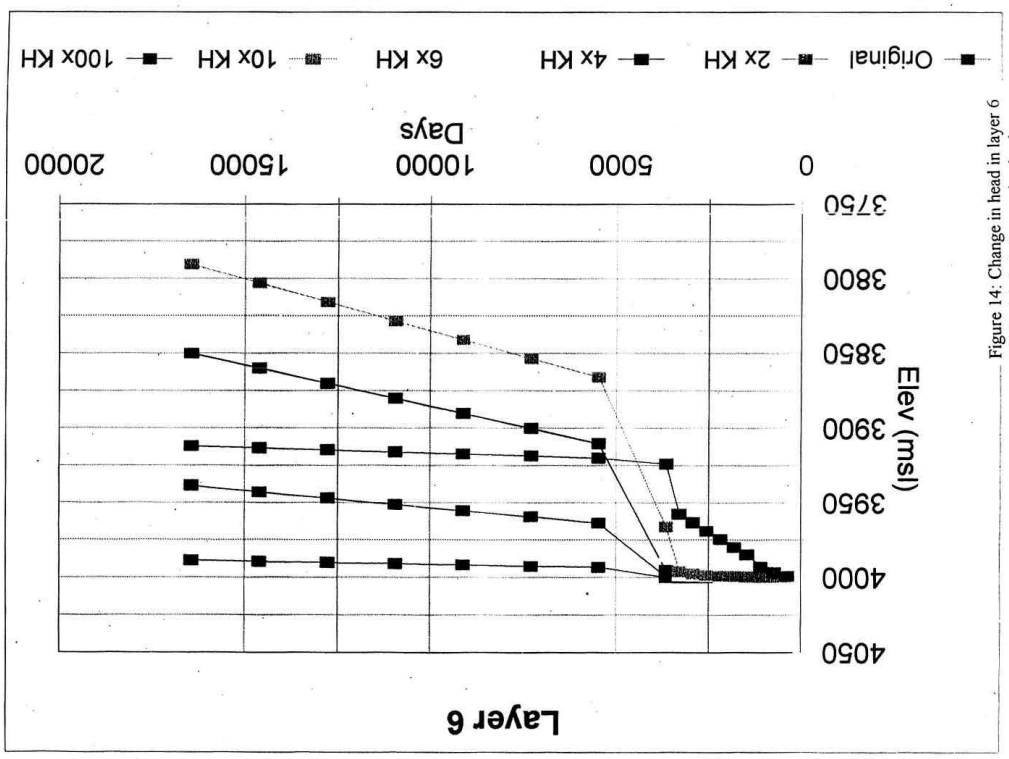

Figure 14: Change in head in layer 6 for the labeled changes in clay layer conductivity.

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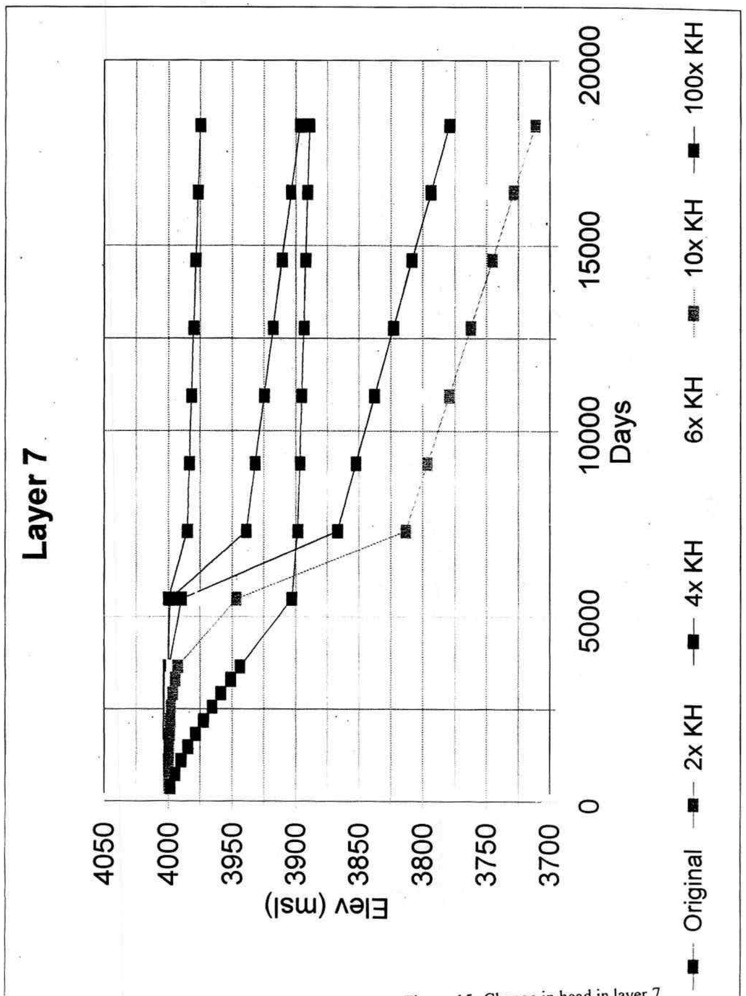

Figure 15: Change in head in layer 7 for the labeled changes in clay layer conductivity.

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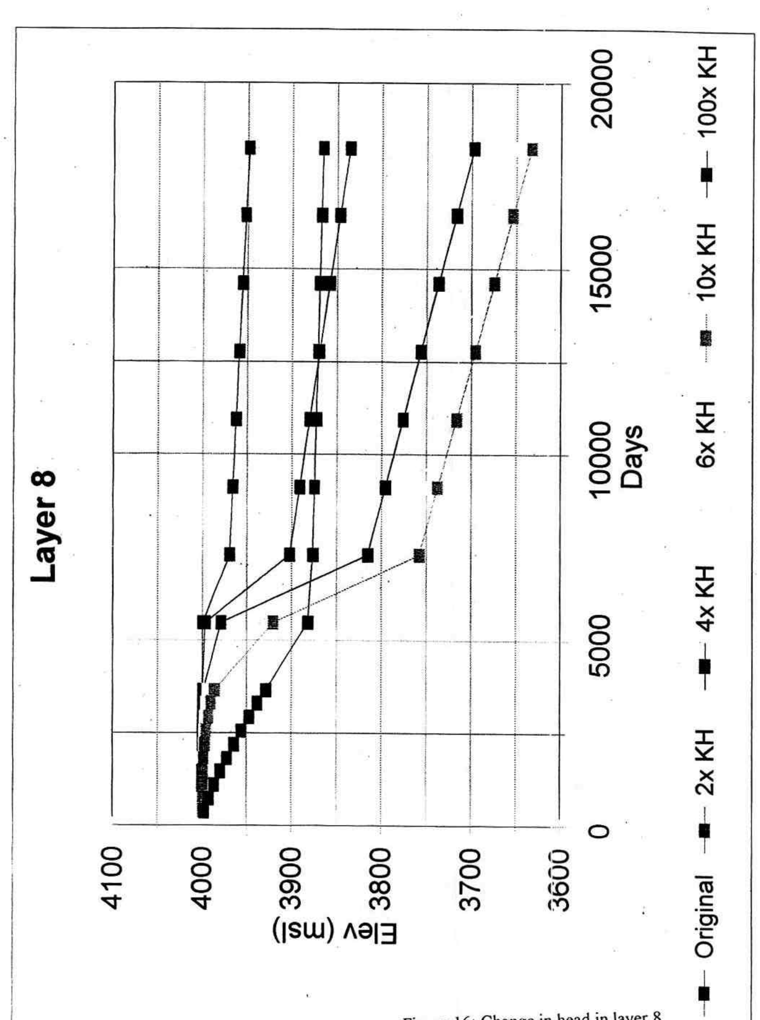

Figure 16: Change in head in layer 8 for the labeled changes in clay layer conductivity.

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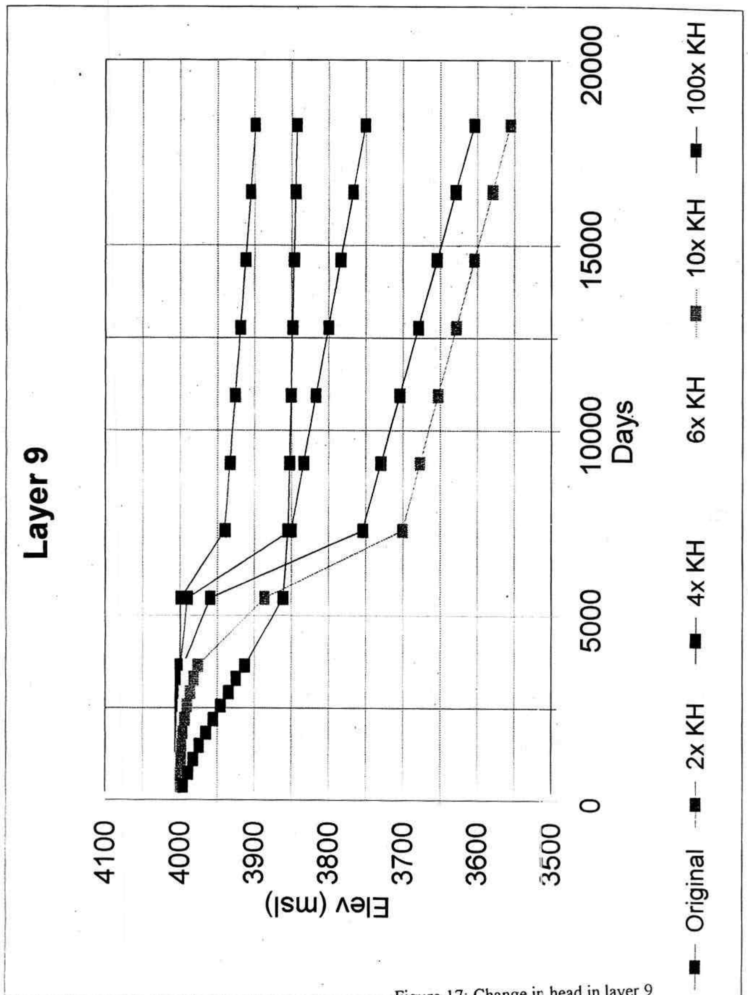

Figure 17: Change in head in layer 9 for the labeled changes in clay layer conductivity.

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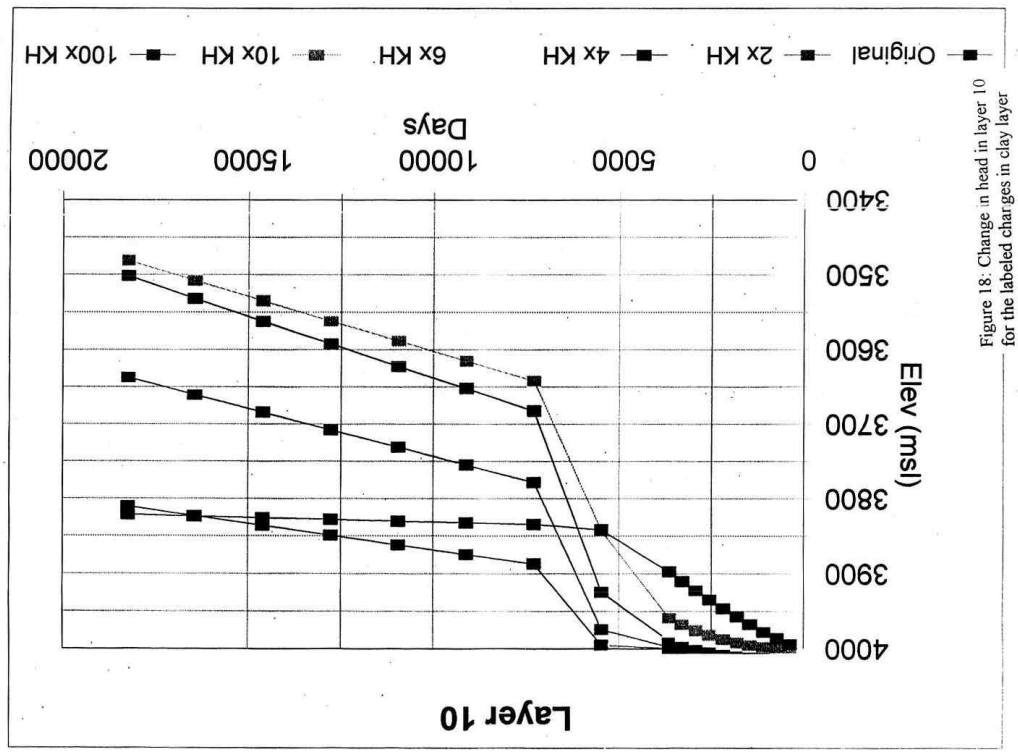

Figure 18: Change in head in layer 10 for the labeled changes in clay layer conductivity.

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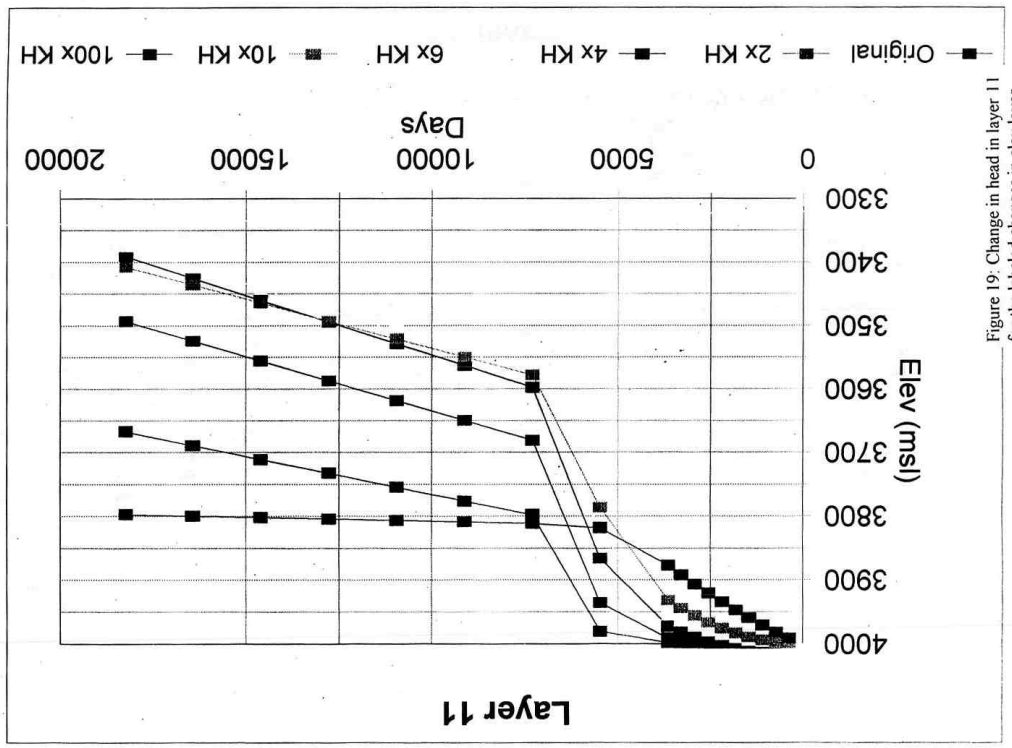

Figure 19: Change in head in layer 11 for the labeled changes in clay layer conductivity.

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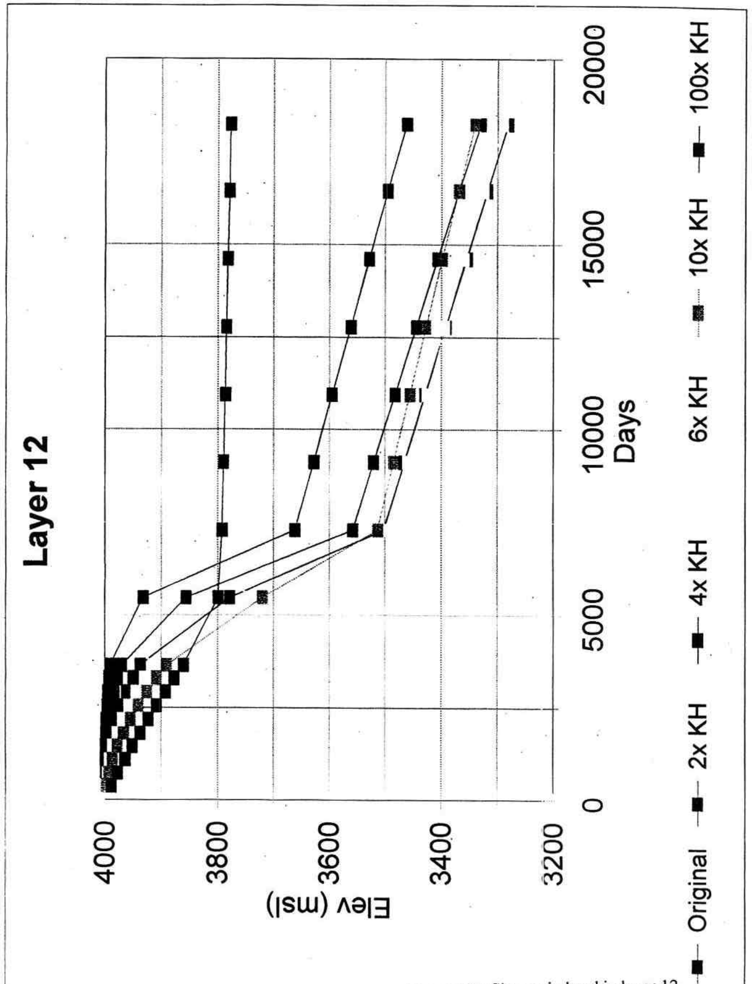

Figure 20: Change in head in layer 12 for the labeled changes in clay layer conductivity.

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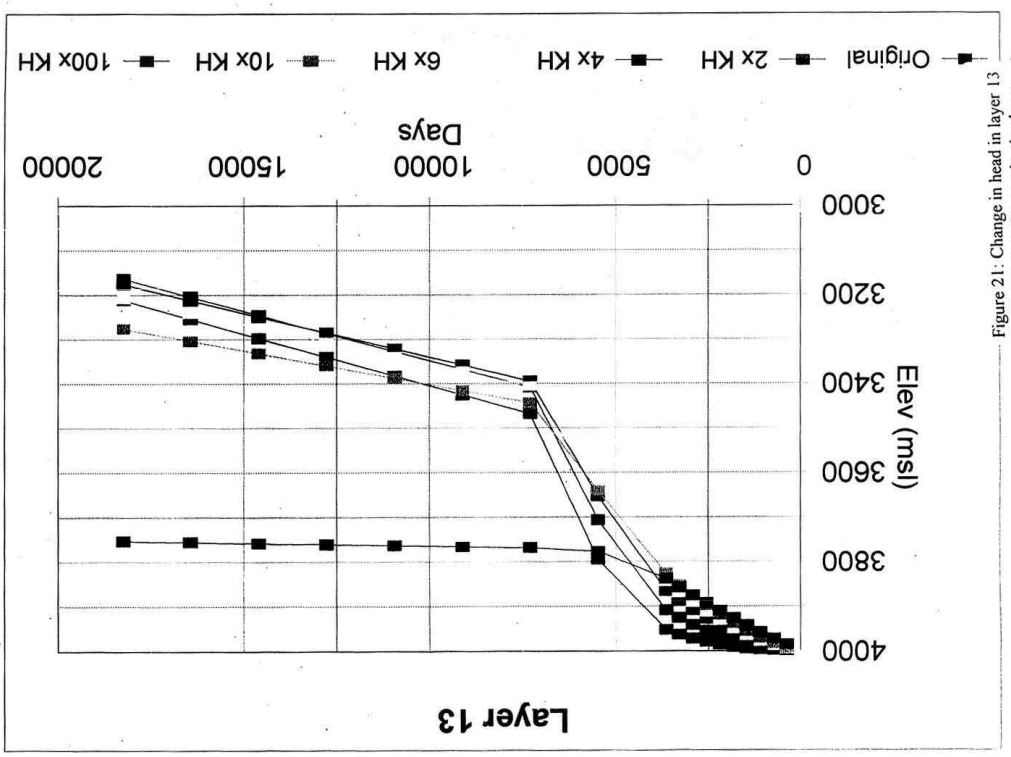

Figure 21: Change in head in layer 13 for the labeled changes in clay layer conductivity.

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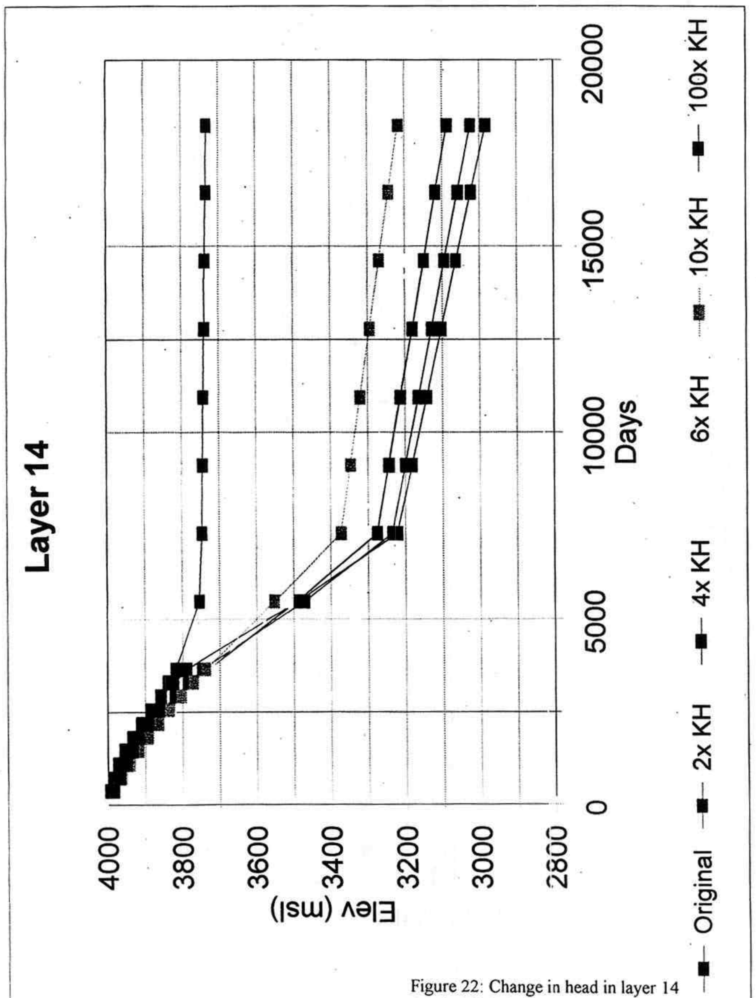

Figure 22: Change in head in layer 14 for the labeled changes in clay layer conductivity.

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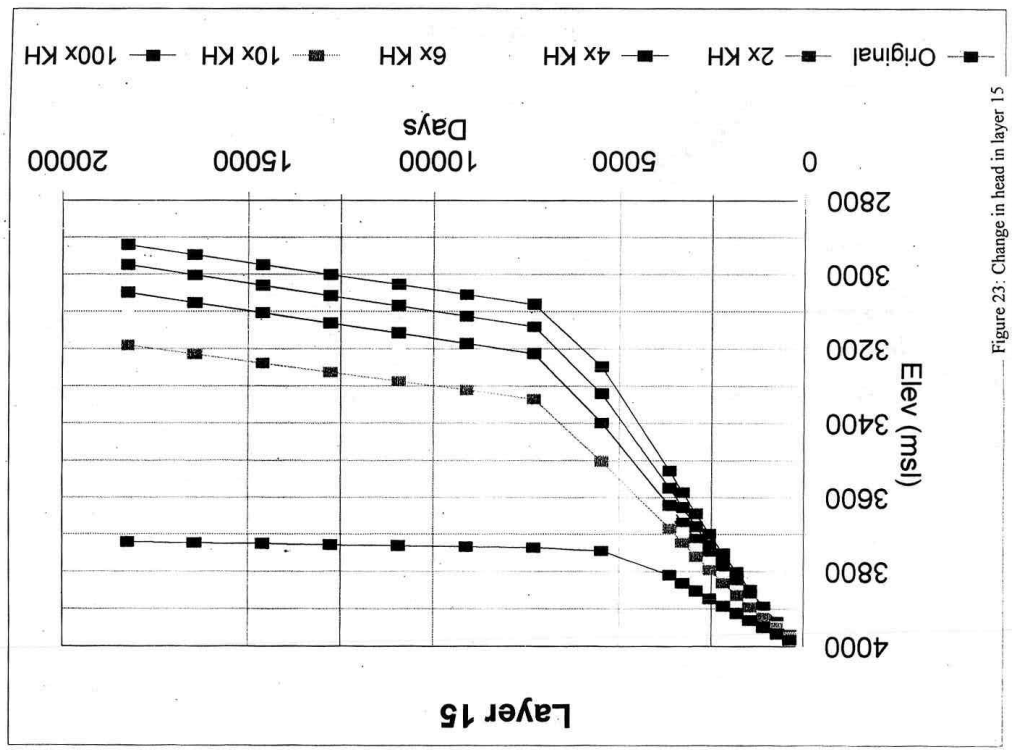

Figure 23: Change in head in layer 15 for the labeled changes in clay layer conductivity.

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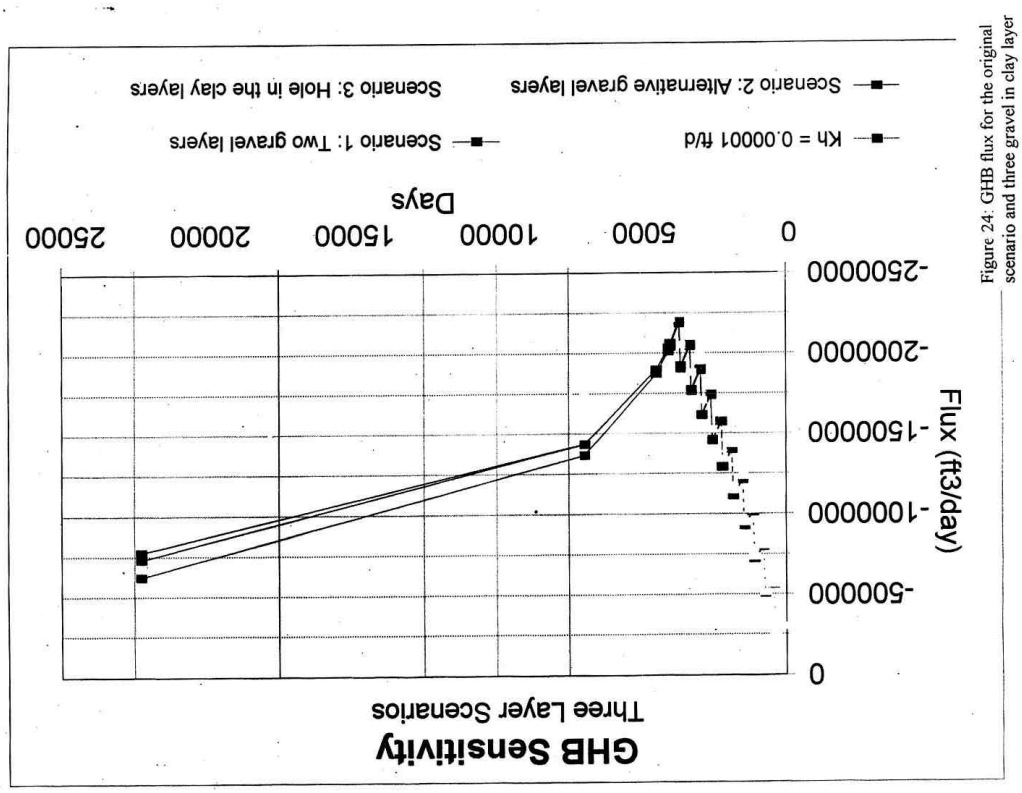

Figure 24: GHB flux for the original scenario and three gravel in clay layer scenarios.

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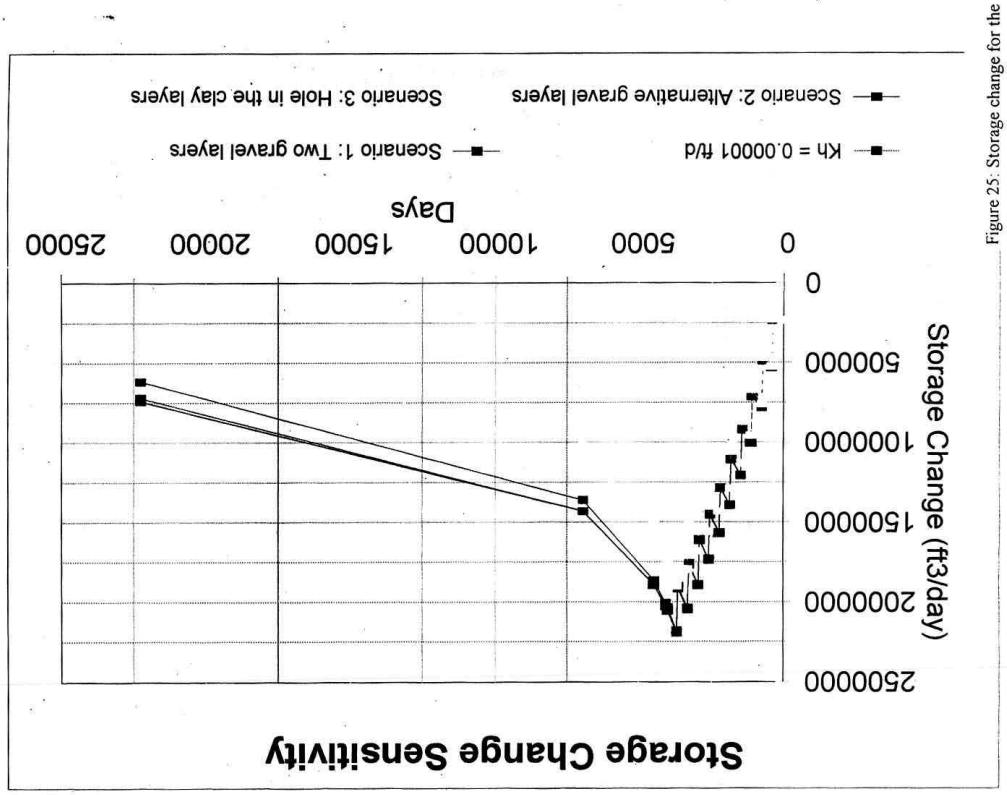

Figure 25: Storage change for the original scenario and three gravel in clay layer scenarios.

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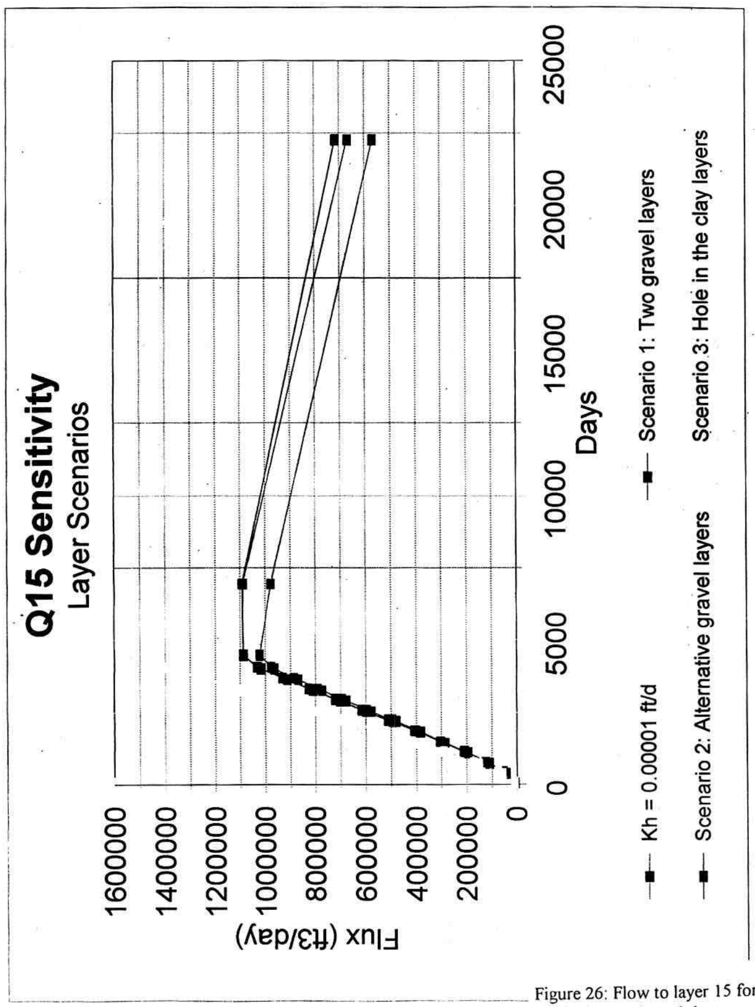

Figure 26: Flow to layer 15 for the original scenario and three gravel in clay layer scenarios.

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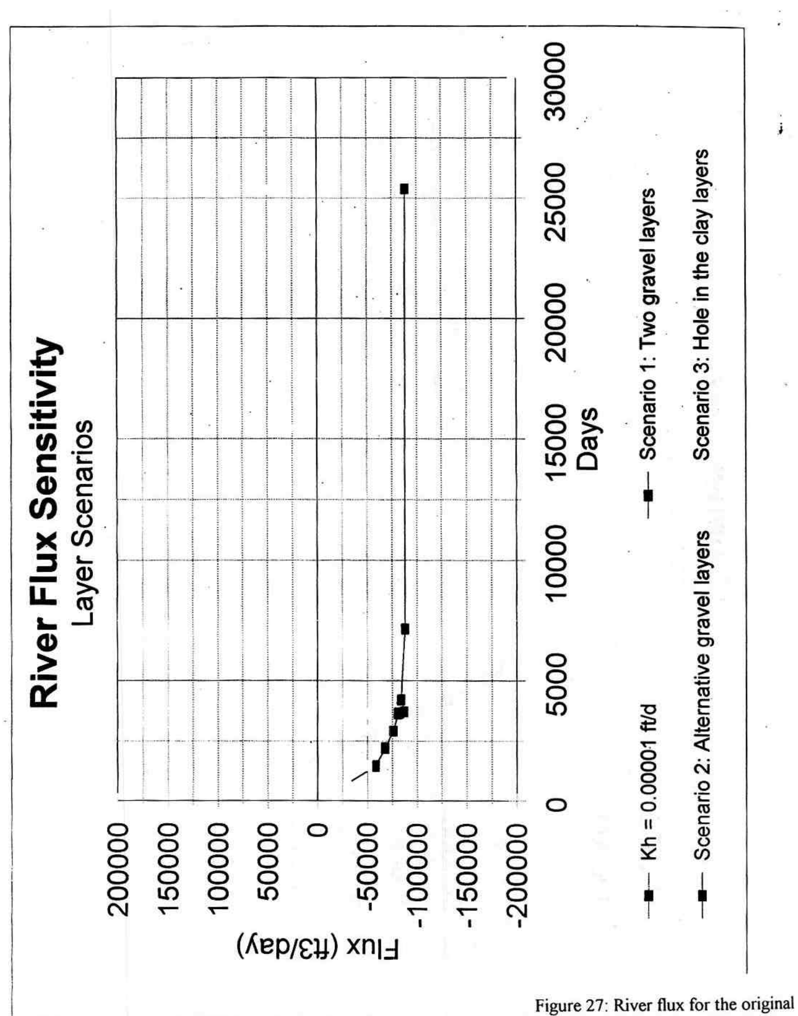

Figure 27: River flux for the original scenario and three gravel in clay layer scenarios.

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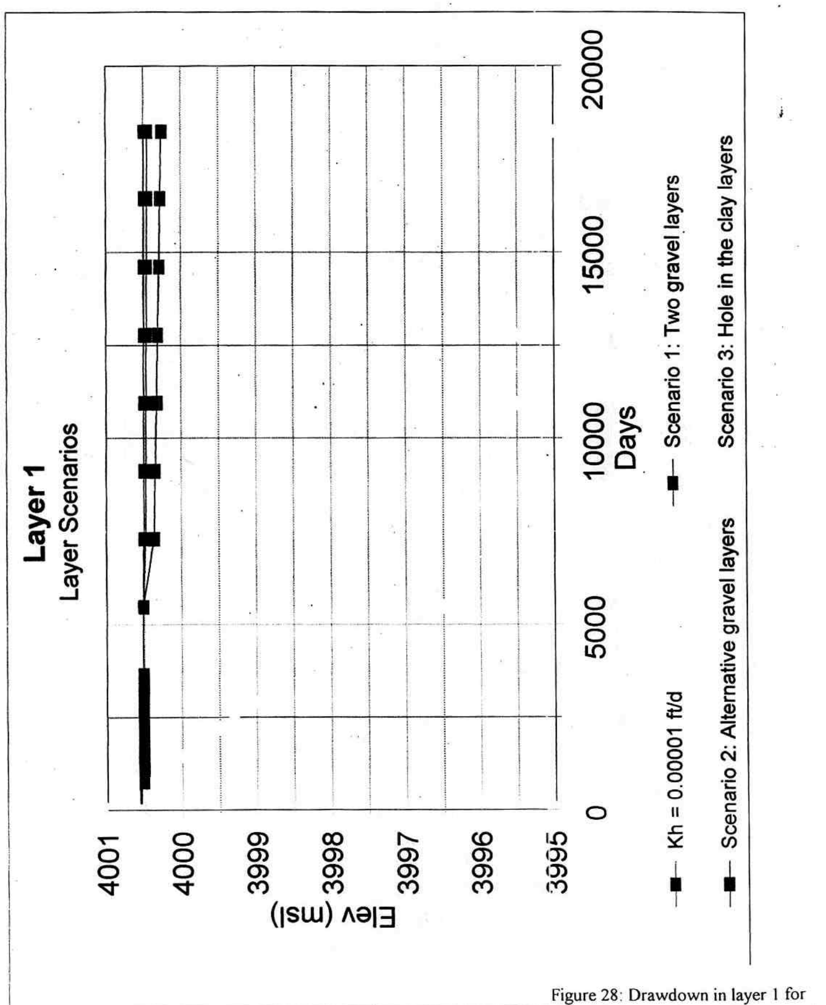

Figure 28: Drawdown in layer 1 for the original scenario and three gravel in clay layer scenarios.

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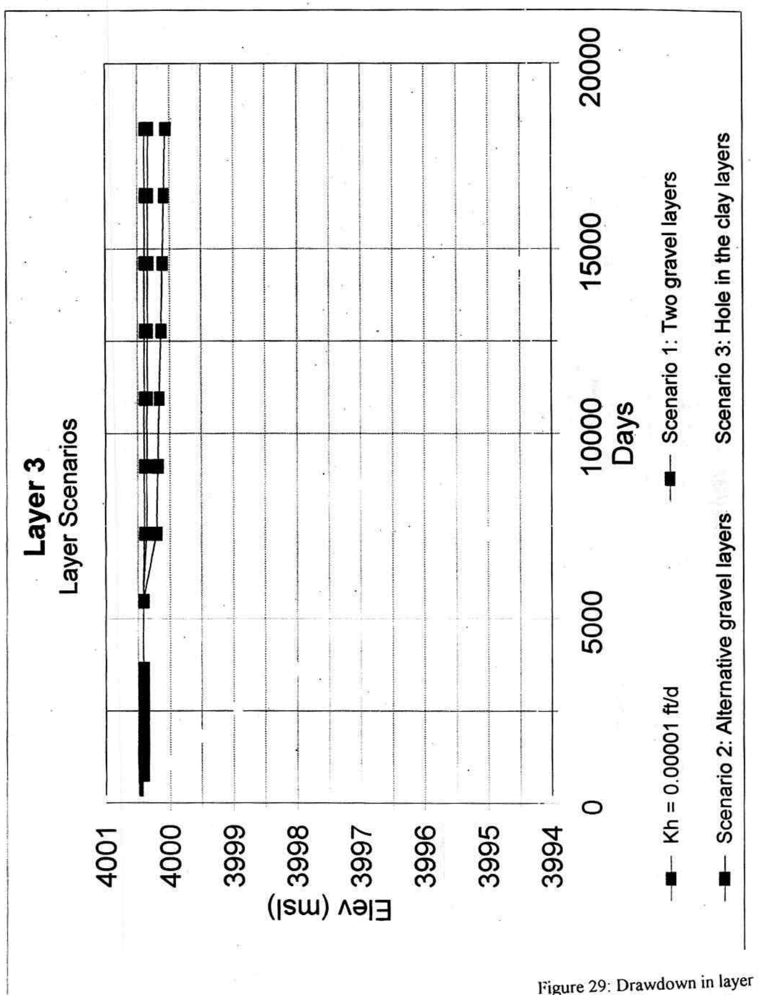

Figure 29: Drawdown in layer 3 for the original scenario and three gravel in clay layer scenarios.

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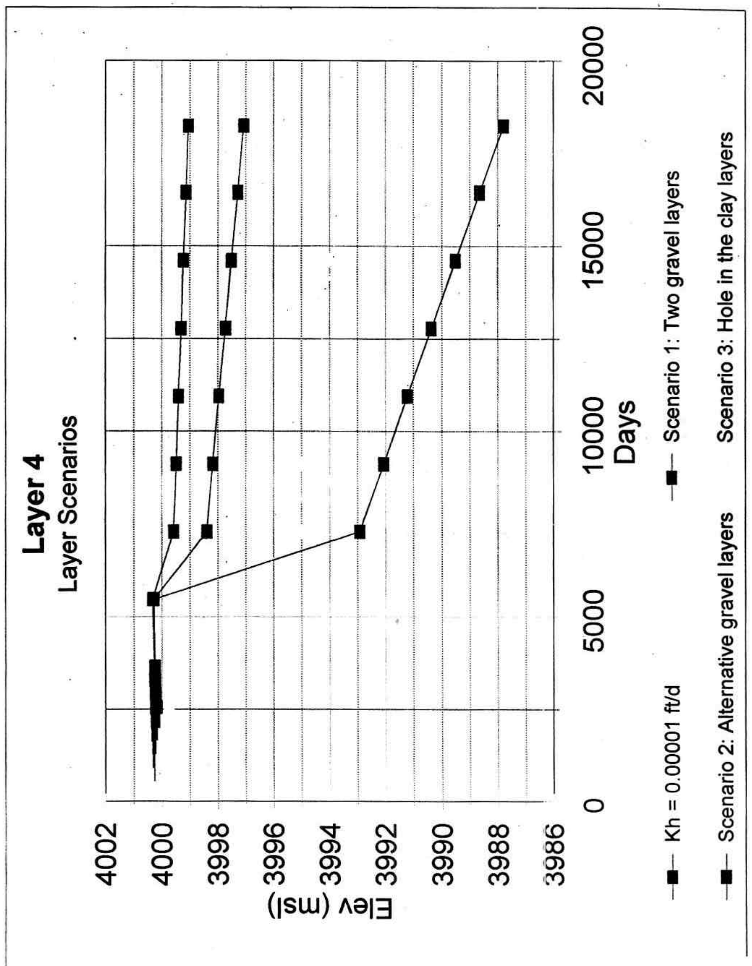

Figure 30: Drawdown in layer 4 for the original scenario and three gravel in clay layer scenarios.

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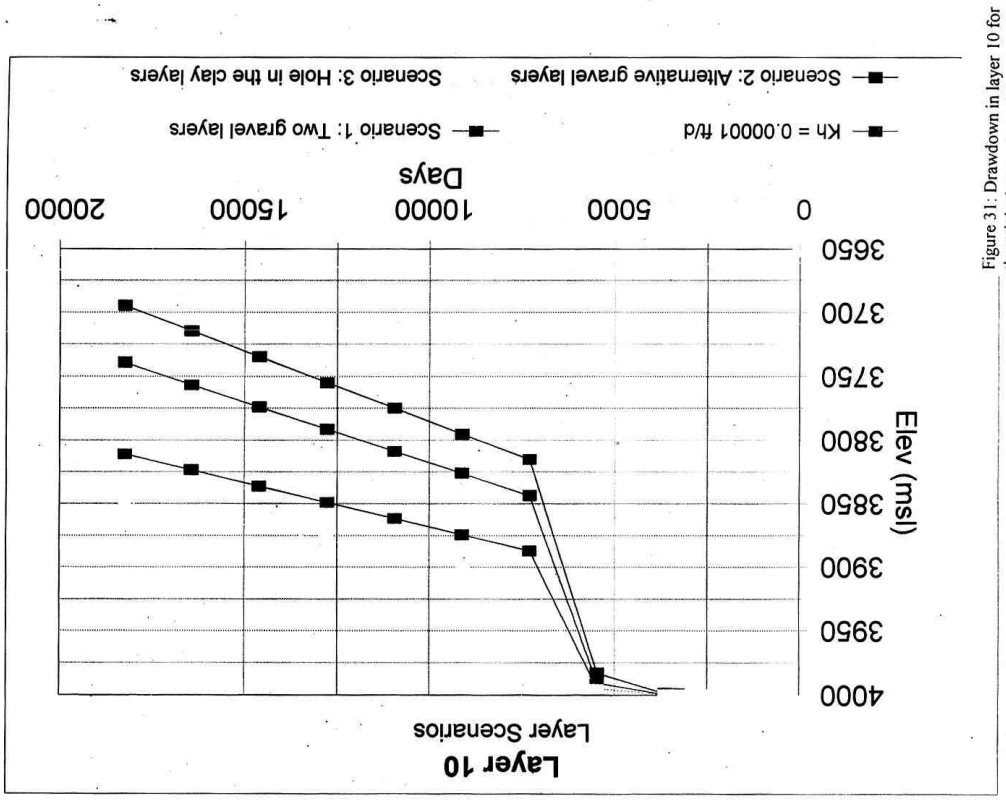

Figure 31: Drawdown in layer 10 for the original scenario and three gravel in clay layer scenarios.

Letter 33 Continued

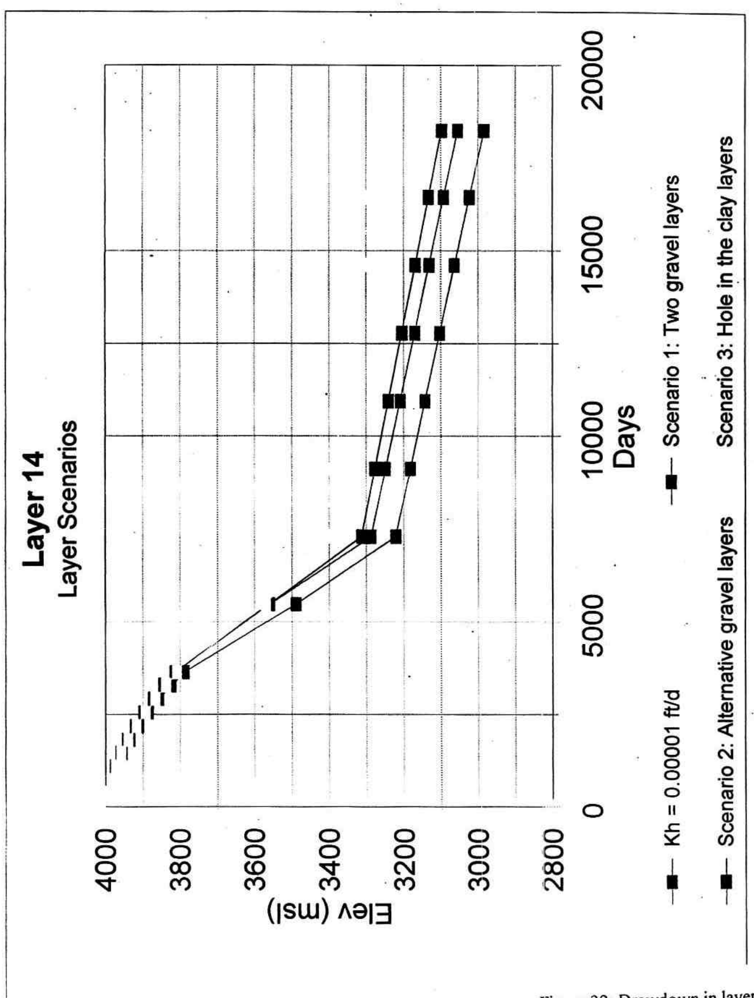

Figure 32: Drawdown in layer 14 for the original scenario and three gravel in clay layer scenarios.

Response to Letter 33

Response to Letter 33

Letter 33 Continued

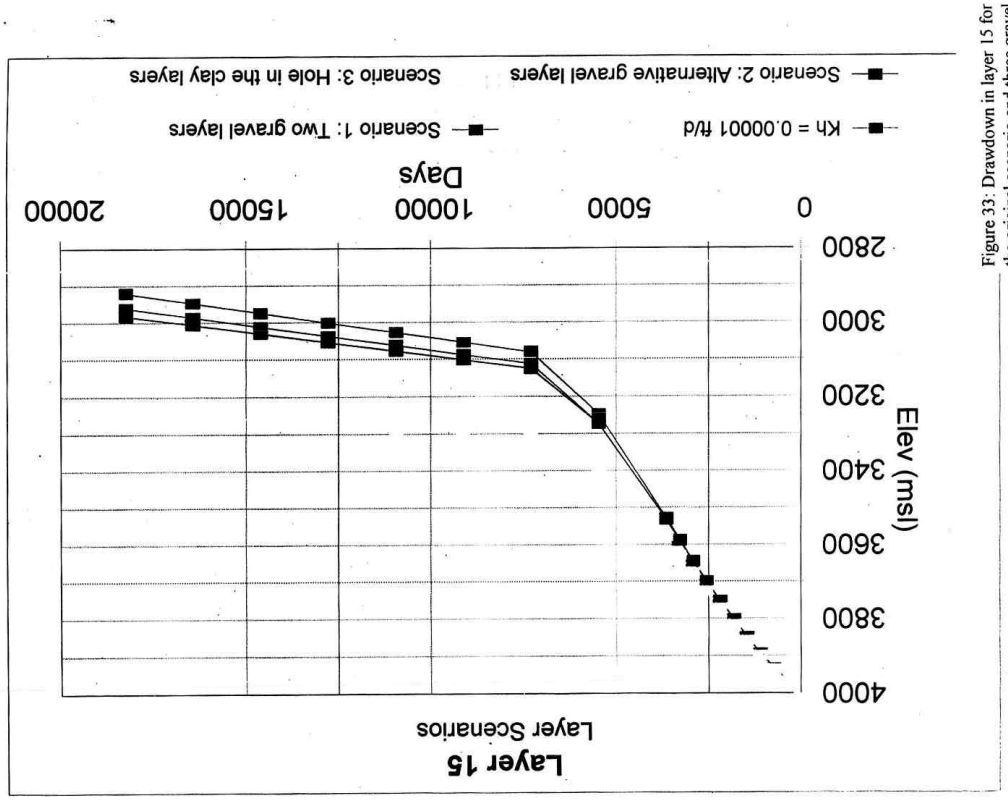

Figure 33: Drawdown in layer 15 for the original scenario and three gravel in clay layer scenarios.

Letter 33 Continued

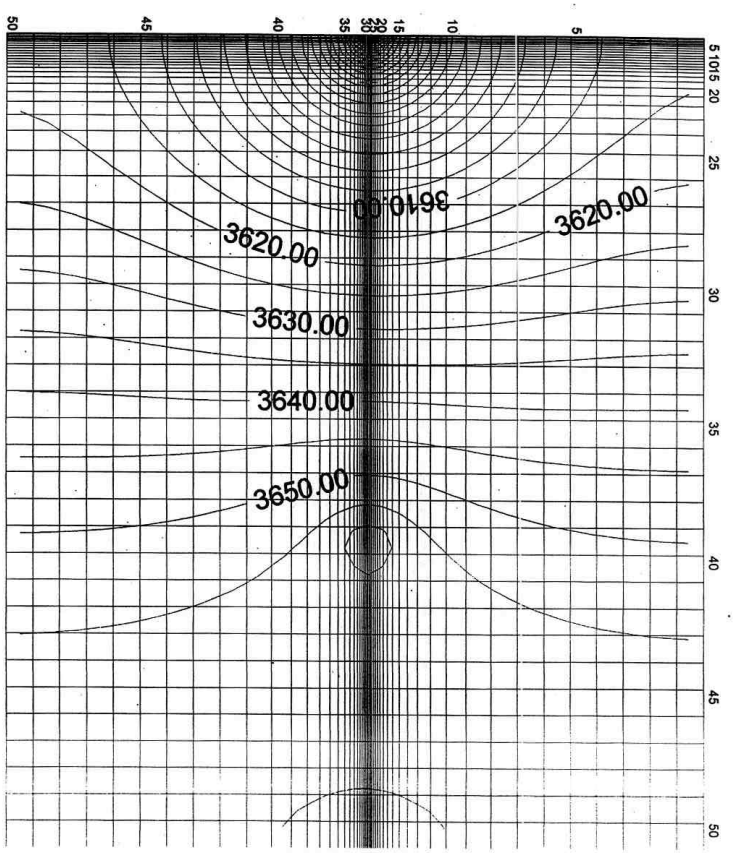

Figure 34: Groundwater contours for layer 15 for scenario 3 after 61 years.

Response to Letter 33

Letter 33 Continued

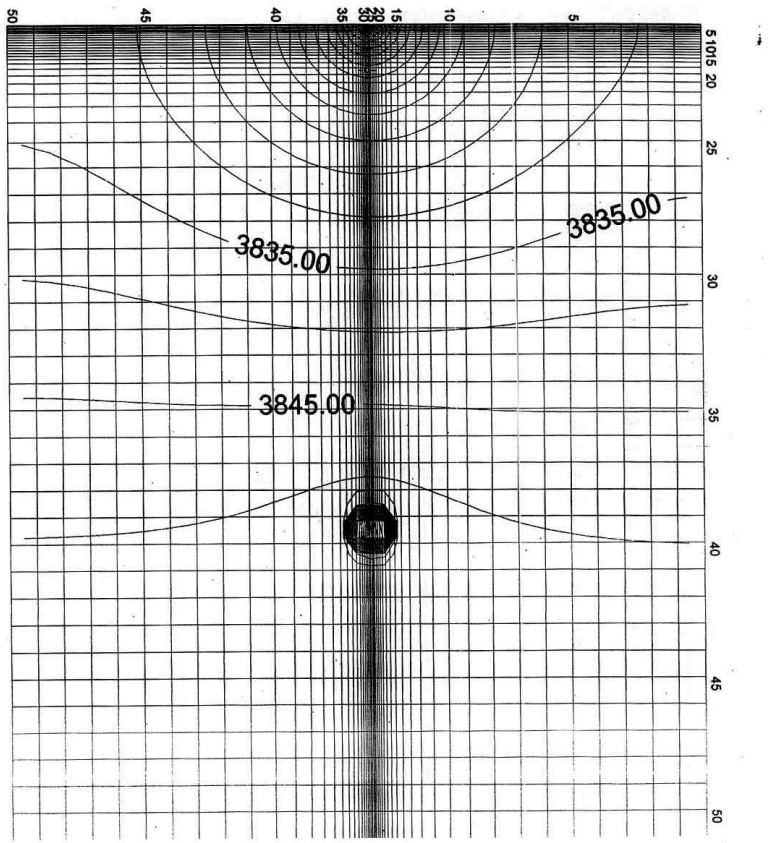

Figure 35: Groundwater contours for layer 14 for scenario 3 after 61 years

Response to Letter 33

Letter 33 Continued

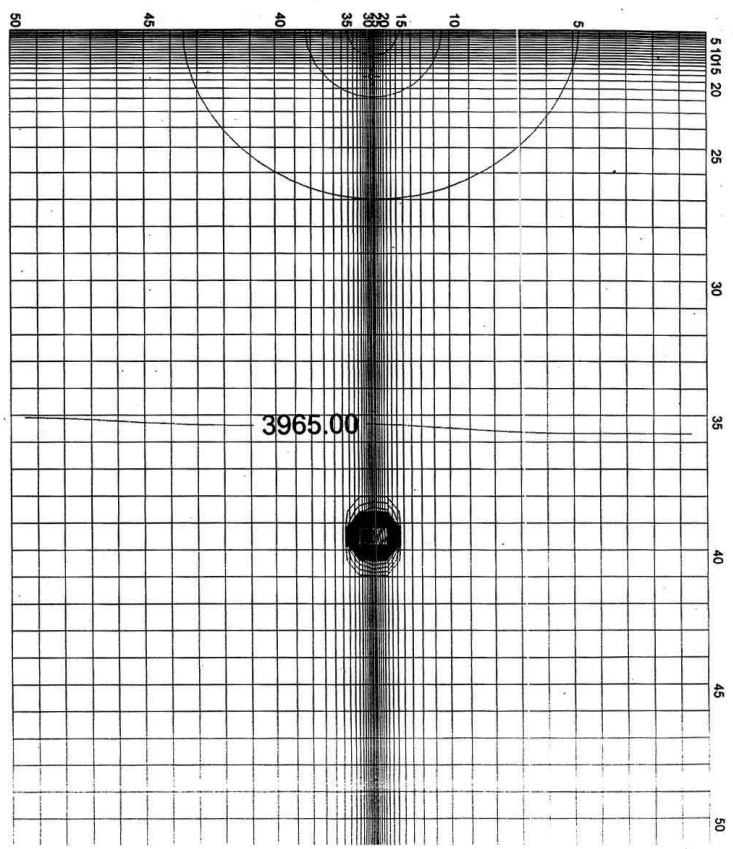

Figure 36: Groundwater contours for layer 13 for scenario 3 after 61 years

Response to Letter 33

Letter 33 Continued

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Attachment 3

Alternative Modeling of the Gold Quarry Mine
Documentation of the Model
Comparison of Mitigation Scenarios,
and
Analysis of Assumptions

Prepared by

Tom Myers, Ph.D.
Center for Science in Public Participation
October 27, 2000

A groundwater model, based on Newmont's model, was coded using MODFLOW (GWVistas 2.0 GUI) to test assumptions in Newmont's model and to test the feasibility reinfiltrating and reinjecting water into Maggie or Susie Creek basins. The model created herein is not as precise in its structural modeling of the aquifers in that it ignores some of the detailed aquifers near the mines. It also does not perfectly simulate the surface elevations. In no way do we claim that this model is as good as the model prepared by HCI for Newmont. It merely provides a basis for asking questions.

The boundary locations are not exactly the same either. On the south, the model extends several miles south of the Humboldt River with geology based on USGS studies.

Grid and Layers

The grid follows the standard telescoping rules for MODFLOW with a detailed mesh at complicated areas or in pumping areas near the mines and a less detailed mesh far from the mines. It has eight layers. The first layer top elevation roughly simulates the ground surface. The bottom elevation of the first layer is 4400 ft msl. The following seven layers have a constant thickness. The third and sixth layers were included to simulate the basal clay layer under the Carlin formation and are just 100 feet thick. The bottom elevation is 0 ft msl.

The hydraulic property zones emulate those of HCI with the exception that the details near the mines are not included. The values are similar, but were altered slightly during the calibration.

Faults were also included. These were based on the map in the Cumulative Impacts Analysis. MODFLOW has a WALL routine which allows the user to parameterize the wall according to thickness and hydraulic conductivity. Rather than establishing an element as HCI does with MINEDW, MODFLOW changes the conductivity on the side of the cell that has the fault which therefore has no physical size in the model.

Boundaries

General head boundaries surround the model domain. These are similar to variable flux boundaries as used by HCI. GHBs allow the user to set a water level, saturated thickness, conductivity and distance to water

Response to Letter 33

33eeeee. Attachment 3 - Alternative Modeling of the Gold Quarry Mine, Documentation of the Model, Comparison of Mitigation Scenarios, and Analysis of Assumptions

The Center for Science in Public Participation (CSPP) used MODFLOW to create a groundwater model to test the feasibility of re-infiltrating and reinjecting water into the Maggie and Susie Creek basins. However, the CSPP model documentation is inadequate so that it is not possible to comprehensively evaluate the technical validity of the model. There are no figures, plots, or tables showing the model construction, model zone properties, or the location or values of assigned boundary conditions. There is no documentation of the steady state heads or the transient calibration. The only model result that is documented is the water balance for the model at steady state. This documentation is also incomplete. Predicted flow for general head boundaries (GHB) is listed, but the location and input values for the boundaries are not given.

The information provided by CSPP was reviewed and the results of that review are summarized below.

Grid and Layers

The third and sixth layers of the CSPP model were said to simulate the basal clay of the Carlin Formation. It is unclear how both layers can represent the basal clay, which is only one unit.

There is no explanation as to how similar the values of hydraulic conductivity in the CSPP model are to the HCI values and why the values were altered.

The explanation of the WALL routine is somewhat misleading. MODFLOW does not change the conductivity of the side of a cell, but rather changes the K_{xx} or K_{yy} of that particular cell, based on which side of the cell is chosen to be the wall. Then the harmonic mean of the hydraulic conductivity of the wall and the rest of the element are calculated and used as the hydraulic conductivity for that cell.

Boundaries

The table of steady state flow does not, as stated in the text, specify the general location of the GHB nodes.

Letter 33 Continued

level. This distance allows the head at the boundary to vary with stresses within the model. Most of the GHBs are in each layer. The water levels at each boundary are set to resemble expected values based on HCI and various USGS studies. The table of steady state flows below specifies the general location of each GHB boundary.

Maggie Creek, Susie Creek, Rock Creek, Boulder Creek and the Humboldt River were simulated with RIVER boundaries. Each has a 1 foot thick "skin" with a 0.1 ft/d hydraulic conductivity. The stream width varied from 8 ft for Susie Creek, 20 ft for lower Maggie Creek, and 100 feet for the Humboldt River. The table of steady state flows below specifies the river reach for each stream.

Calibration

Calibration consisted of matching the water surface to the steady state water surface in HCI (1999). Except for water levels in the mountains, this model emulated the HCI model. Our model had much lower levels in the mountains which seems reasonable because of the observed presence of perched water in the mountains (see discussions in the DEIS) which would not be a part of this model. Also, see the discussion regarding the high levels in the HCI model in our review of that model.

The following table shows the water balance for flows in the steady state model.

Type	Number	Region	Flow (af/y)
Recharge			74010
ET			-60223
GHB	11		-1011
	12		-19
	13		4536
	14		-11662
	15		-5163
	16		-2105
	21		-20022
	22		15574
	23		6326
	25		-242
	26		-7249
	27		13819
	28		4493
River	1	Humboldt R above Maggie Cr	-1492
	2	HR below Maggie Cr & above Canyon	-1043
	3	HR through Canyon	1129
	4	HR above Beowawe	-4125
	5	HR through Whirlwind Valley	-2722
	6	HR through Boulder Flat	15342
	7	Lower Boulder Creek	6790
	8	Rock Creek at mouth	-529
	10	Rock Creek	-13740
	12	Maggie Creek, upper region	-786
	13	Maggie Creek, mid region	-944
	14	Maggie Creek, lower region	-5452
	15	Susie Creek	-1410

Response to Letter 33

33eeeee continued.

Calibration

There is no documentation of the water surface predicted by the CSPP model to assess how well its predicted water surface matched the predicted water surface of the HCI model. Both models cover an area containing at least three mountain ranges, and, without further support, the simulated presence of much lower heads in the mountains is not a reasonable calibration. Most groundwater in the mountains is part of the regional ground-water system, with only small volumes of the total recharge flowing to local springs and seeps.

It is unclear how the recharge in the CSPP model was calculated and distributed. The recharge in the CSPP model is only about 74 percent of that applied to the HCI model, even though the CSPP model is stated to cover a larger area than the HCI model (i.e. an area extending several miles south of the Humboldt River).

With no detail given about the exact location and spacing of nodes assigned as GHB and RIVER nodes it is difficult to assess the steady state flow values given for the CSPP model. Lower Maggie Creek is observed to be a losing reach, but the CSPP model predicts a gain of 7.5 cfs in that reach. Using historic gaging data, HCI calculated that the average flow of Maggie Creek at Carlin is 1.3 cfs, and the HCI model predicted a flow of 1.8 cfs in the lowest reach of Maggie Creek. It is unclear why the CSPP model predicts flow in lower Maggie Creek to be about 9.9 cfs, (the sum of all three listed reaches), over five times that predicted in the HCI model.

Transient Simulation

Attachment 3 states, "The scenario provided a transient calibration and the initial head levels for future analysis." As stated earlier, no documentation of the transient calibration is provided. Attachment 3 also states that the carbonates were assigned a hydraulic conductivity of 3 ft/day in the north-south direction and 1 ft/day in the east west direction. A large portion of the carbonate rock within the Carlin Trend has been demonstrated to have hydraulic conductivities ranging from 30 to 100 ft/day, based on pumping test analysis and the HCI model calibration. Attachment 3 states that the 1-3 ft/day hydraulic conductivity was necessary to simulate the observed drawdown for 1998. Attachment 3 does not state where this "observed drawdown" is located. It would be impossible for the CSPP model to simulate the observed drawdown at all the carbonate monitoring wells used in the HCI transient calibration using hydraulic conductivities one or two orders of magnitude lower than those used in the HCI model. The HCI model has a very good calibration in nearly all carbonate monitoring wells, especially those located within the Carlin Trend, by using higher hydraulic conductivities for the carbonate rocks.

Letter 33 Continued

Error 2080

River and stream flows in a steady state model represent contributions to the river or losses from the river during base flow periods. The net flow is from the Humboldt River into the model domain equaling 7089 af/y or 9.8 cfs. This is probably a little low compared to the measured losses in the area. However, any measured losses would include substantial loss to riparian vegetation and evaporation from the river surface; this model ignores these losses. The reaches where the model loses flow to the river, the negative flows, reflect high groundwater in reaches 1 and 2 and the lower bedrock forcing water to the surface reach 4. The major losing reach is at Boulder Flat which certainly agrees with expectations in that an alluvial river in a broad valley should lose water to the groundwater.

The total flows to Maggie and Susie Creeks are 9.92 and 1.95 cfs, respectively. These values compare favorably with the recorded estimated baseflows (HCI, 1999). Baseflows in Rock Creek reflect the gaining conditions in the Rock Creek canyon while the large loss in the lower, Boulder Creek reach, reflects the losses expected when a stream exits a canyon into the alluvium.

Transient Simulation: The model was run from 1990 through 1998 using observed pumpage at Gold Quarry and the Post-Betze mine. This scenario provided a transient calibration and the initial head levels for the future analysis. Note that the dewatering wells are not the same as in the HCI model because we did not have details on the well locations and because the detailed geology at the mines was not simulated. This is justified because the tests performed with and the scenarios analyzed with this model depend more on regional geology[1]. The hydraulic conductivities were the same as for HCI, except that the carbonates 3 ft/d K in the north-south direction and 1 ft/d K in the east-west direction. This was necessary, even with the faults, to simulate the observed drawdown in 1998. The observed drawdown has a distinct northwest-southeast trend to it.

It was also run for the same time period using the DRAIN routine to lower water levels at the mine without specifying the pumpage. At Betze-Post, just 304,456 af were pumped during the eight year period; at Gold Quarry, only 118,522 af were pumped. At this rate, the drawdown cone lowered the levels at the mines sufficiently to keep the pits dry but did not create the extensive drawdown shown in the Cumulative Impacts Analysis. While this ignores the detailed hydrogeology at the mines which did include some very high conductivity zones, it suggests that too much water has been pumped at the mines. Although, we do not intend to make that claim because we have not spent near the money on the model that Newmont did.

Talk about hits on flows in Maggie Creek and Humboldt River from 1990-98 due to pumping.

Alternatives Analysis

This analysis considers alternatives to discharging dewatering water into the river for the period 1999 through 2011[2]. These alternatives were injection into the bedrock surrounding the Maggie Creek and Susie Creek basins and infiltration into the surface aquifers in the same basins. The alternatives are compared

[1]The HCI model requires detail at the mines because it was used to predict dewatering rates for operations at the mine. Its detailed geology at the mines blends into a coarse digitization of geology beyond the mines. We accept the magnitudes of pumping as observed and predicted by HCI.

[2]Of course, 1999 has already passed. It was used as the starting date for these analyses to coincide with the analyses provided in the DEIS and HCI (1999).

Response to Letter 33

33eeeee continued.

The second paragraph under the heading of Transient Simulation gives an indication of how poorly the CSPP model is able to simulate conditions at the Gold Quarry and Post/Betze mines. In the previous paragraph CSPP states that they performed a calibration using the observed pumpage at the Gold Quarry and Post/Betze mines and they allude to simulating the observed drawdown. In this paragraph they claim to have used the DRAIN routine to lower water levels at the mines without specifying pumpage (i.e. the same water levels they claim to have matched during calibration while specifying pumpage). Since CSPP used hydraulic conductivities to simulate the carbonate rocks that are one to two orders of magnitude lower than observed, their model predicts that the mines could be dewatered using a fraction of the actual water pumped, and not produce the observed extensive drawdown cone. The CSPP model is not well calibrated since it predicts observed water levels at the mines, but does not predict the extent of the observed drawdown produced by mine dewatering. The suggestion that too much water has been pumped at the mines is unfounded and incorrect.

Alternatives Analysis

CSPP simulated infiltration of water pumped at Gold Quarry over an area of approximately 46.5 square miles. The surface disturbance of an area this large is of itself a deterrent for suggesting that such an operation be undertaken.

In response to these comments, HCI conducted an injection study (HCI, March 2001) using their numerical groundwater model. The study concluded that injecting water into the carbonate aquifer is not feasible. Simulated injection into the carbonate rocks within a reasonable distance from the Gold Quarry mine nearly doubled the predicted dewatering requirement for the mine. The hydraulic conductivity of the carbonate rocks simulated in the CSPP model was too low, which produced misleading results as to the feasibility of injection. See response 2d.

Letter 33 Continued

with the status que scenario of merely removing the water from the ground.

Infiltration basins were scattered along Maggie and Susie Creeks. For the model, because of the lack of data on where would be the opportune location for placing rapid infiltration basins (RIBs), reinfiltration was modeled using 0.003636 ft/d over 29780 acres. 39,500 af/y or 4,717,000 ft^3/d were returned to the basins.

The hydraulic conductivity of the Tertiary formation is low, therefore the mounds did not spread laterally quickly. Recharge of 39,500 af/y decreased the storage depletion by 78% from the total depletion (553,000 af) that would have occurred by 2011. Flow to Maggie Creek at the beginning of the transient runs was 7.6 cfs; in the without mitigation scenario, it dropped to 7.2 cfs. Susie Creek had a constant 1.9 cfs. Because the potential infiltration basins lie close to Maggie and Susie Creeks, mounding may increase discharge to the streams (they both gain flow from the groundwater in their upper reaches) and lose some of the benefits of the reinfiltration. By 2011, the increase in flow to Maggie Creek and Susie Creeks is just 0.45 and 0.32 cfs, respectively. On Maggie Creek, the increase due to infiltration offsets the decrease due to dewatering. On Susie Creek, the increase raised the flow rates above the pre-mining levels. Presumably, if more water were infiltrated, the mounds would expand further and more flow to the streams would occur. Possibly, the recharge of this scenario represents an upper limit.

Injection was completed with 16 injection wells along Maggie and Susie Creek. For the first 3 years, 1999-2001, each injected 337000 ft^3/d (total 45,000 af/y) while during the last 8 years each injected 448,000 ft^3/d (total 60,000 af/y).

Injection caused widespread mounds to form in the bedrock aquifers. Compared to the infiltration mounds, these mounds are extensive and reflect the much lower storage coefficient in a confined aquifer. The potentiometric surface increased up to 300 feet in layer 2 while in layer 1 the increase was less 20 feet. Both of these were in the bedrock of the Independence Range bounding the Susie Creek and Maggie Creek basins. The injection causes an increase in vertical flow from the second to the first layer by just 740,000 ft^3/d or 10% of the injected water. The increase in flow to the streams from injection into layer 2 is less than 0.1 cfs. Presumably, this reflects the low vertical flow from layer 2 to 1.

During this scenarios, the impact on the Humboldt River was minimal. Flux to the river began to decrease at the end of the time period with a drop from 8.7 to 7.5 cfs. Most of the decrease occurred in the upper most reach. Neither scenario changed the fluxes to the Humboldt River presumably because the mounds had not yet reached the river.

Savings Into the Future

From 2011 into the future for 200 years, we ran the model to simulate refilling of the drawdown cones existing in 2011 and the pit lakes. For the pit lakes, we set storage coefficients equal to 1.0 and the conductivity equal to 1000 ft/d to simulate a lake, or an open pore space which is what a pit lake actually is.

The Gold Quarry pit lake was within 30 feet of its final level within 120 years. The Betze-Post pit lake required about 180 years to reach to within 30 feet of its final level. This refill time matches closely that predicted by the two companies. However, there was almost no difference in refill time among mitigation scenarios. The difference was in where the flow came from, or rather, where less of it came from, the streams and rivers.

Response to Letter 33

Letter 33 Continued

Figures 1 through 3 show the rate of pit lake inflow by layer. Without mitigation, most of the flow returns from layer 1 even though the pumpage from 1998 through 2011 removed equal amounts from each layer. A probable reason is that the storage coefficent is specific yield; the pressure in the lower layers causes a vertical flow upward into layer 1. During the first year, upward flow was 7811828 ft^3/d for the no mitigation alternative and 6630252 during the steady state analysis. The steady state rate is high because the primary discharge from the steady state model is to ET; the additional 9900 af/y is to the pit lake. Injection increased the flow from layer 2 into the pit lake, but it was not substantial (Figure 2). Infiltration increased the rate to the pit from layer 1 by about 20% (Figure 3). Total pit inflow is 95, 85, and 96% from the top layer for the without mitigation, injection, and infiltration alternatives.

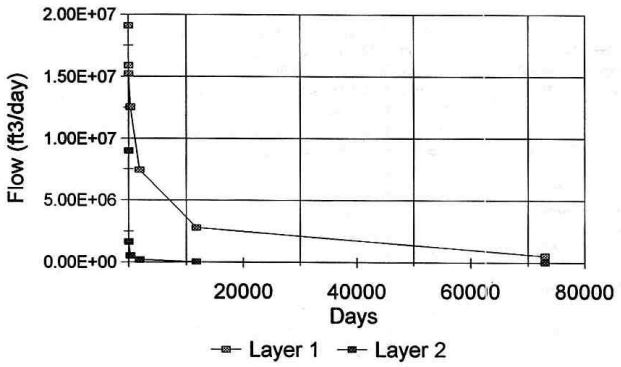


Figure 1: Pit lake inflow by layer for the scenario without mitigation.

Response to Letter 33

Letter 33 Continued

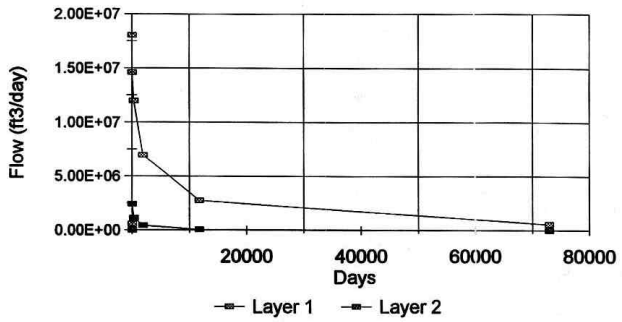


Figure 2: Pit lake inflow by layer for the scenario with injection into the second model layer.

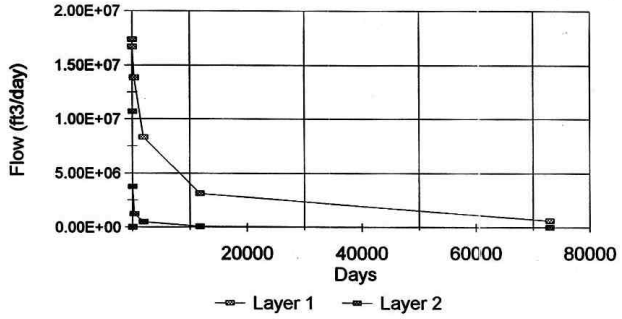


Figure 3: Pit lake inflow by layer for the infiltration scenario.

Response to Letter 33

Letter 33 Continued

Without mitigation, flows to Maggie Creek require long time periods to recover. Middle Maggie Creek shows the largest effect from mine dewatering and recovers over the entire 200 years. It goes from losing about 0.7 cfs to gaining 2.1 cfs[3]. Flux to upper Maggie Creek doubles over the 200 year period while that to lower Maggie Creek barely increases. Susie Creek also has very minor increases in flux to it. With injection, recovery time on middle Maggie Creek is quicker with flux ultimately returning to a gain of 2.5 cfs or 20% more than without mitigation. Flux to upper Maggie Creek also recovers quicker, but the long-term average flux is approximately the same. Lower Maggie Creek has an approximate 5% increase in flux to it over the long term. Susie Creek has only slight improvements. With infiltration, fluxes increase faster, although on Maggie Creek the ultimate rate is approximately the same. The biggest change is on Susie Creek which almost immediately increases by 0.2 cfs.

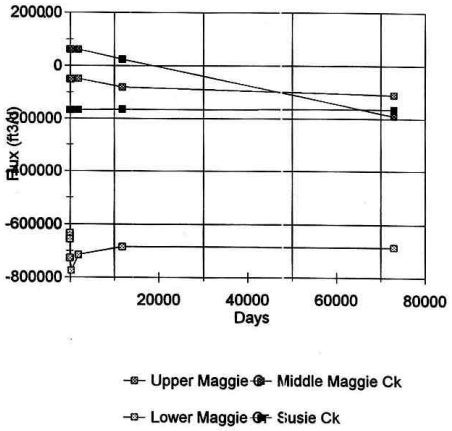


Figure 4: Flux to various streams during recovery for the without mitigation scenario.

[3]In this model, this reach gains because of the low conductivity bedrock which surfaces (layer 1) in this reach and acts as a dam to downgradient flow in lower layers.

Response to Letter 33

Letter 33 Continued

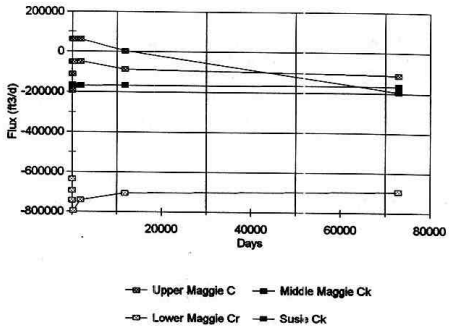


Figure 5: Stream fluxes during recovery for the injection scenario.

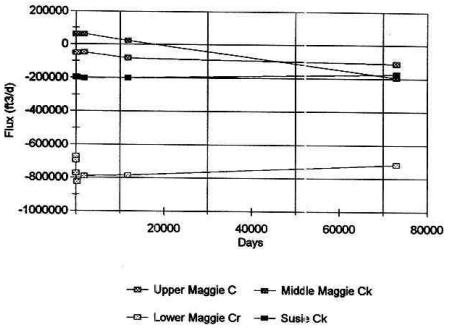


Figure 6: Stream fluxes during recovery for the infiltration alternative.

Response to Letter 33

Letter 33 Continued

Conclusion

The ultimate choice of mitigation scenario is not straightforward. This analysis does not consider the 200 springs that may dry up or the extent of the 10-foot drawdown. There was insufficient time to complete that analysis for this scenario and it will probably be completed for the final EIS if these scenarios are not adequately considered in that document. Considering just flux to the streams, the infiltration scenario appears to preserve the most water. However, there is probably also a combination of mitigations that would be best.

Also, the analysis proves that mitigation will improve the long-term hydrologic conditions in the region. It is unacceptable to approve this mine expansion without at least considering mitigation which keeps the water in the basin.

Future analysis must include the ability of the bedrock to accept injected water. Treated as a porous media in the model, the aquifers accept water and the mounds expand as predicted. If the aquifer is highly fractured or karstic, injection may be less appropriate. Without a study, it is impossible to make conclusions in this regard.

Response to Letter 33

Letter 34

October 26, 2000

Roger Congdon, Project Lead
Bureau of Land Management
Elko Field Office
3900 East Idaho Street
Elko, Nevada 89801

RE: Gold Quarry Mine Expansion

Dear Mr. Congdon:

I support the recommendations of Great Basin Mine Watch regarding the proposed Gold Quarry Mine Expansion:

a | 1. BLM should require Newmont to keep all dewatering water within the Magpie Creek Basin.

b | 2. BLM should require a sufficient bond be posted by Newmont for an unspecified term or until there is no longer any toxic water flow or seepage from their mining operations.

c | 3. BLM should require off-site mitigation in the form of riparian restoration along the Humboldt.

As a former BLM employee, I would like to see the agency become proactive in protecting a public resource base that belongs to our grandchildren and their children, rather than continually hiding behind the excuses of the archaic 1872 Mining Law.

Sincerely,

Michael A. Andrews
1837 Alpine Street
Carson City, NV 89703

cc: Bob Abbey, State Director
Sen. Harry Reid

Response to Letter 34

34a. See response 2d.

34b. See responses 2e and 1b.

34c. See response 2f.

Letter 35

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

REPLY TO ATTENTION OF

October 4, 2000

ELKO DISTRICT

DM		
ADM		
PLAN/NEPA		
LAW ENF		
NON-REN	✓	✓
RENEWABLE		
S. S.		
FIRE		

CF CODE:
X = ACTION

Regulatory Branch (199300700)

Mr. Roger Congdon, Project Lead
Elko Field Office
Bureau of Land Management
3900 East Idaho Street
Elko, Nv 89801

Dear Mr. Congdon:

I am responding to your request for comments to the Draft Environmental Impact Statement (DEIS) for Newmont Mining Corporation's South Operations Area Project Amendment prepared by your office September 2000.

The Corps of Engineers jurisdiction within the study areas is under the authority of Section 404 of the Clean Water Act for the discharge of dredged or fill material into waters of the United States. Waters of the United States include, but are not limited to, the following: perennial and intermittent streams, lakes, ponds, as well as wetlands in marshes, wet meadows, and hill side seeps. Project features that would occur from development within the study areas that result in the discharge of fill material into waters of the United States will require Department of the Army authorization prior to initiating work.

a The DEIS states, "Construction of facilities in Section 18 would impact 0.98 acres of waters of the United States...". Due to the amount of impact a standard permit will be required. Our permit requires that measures be taken to first avoid, and second, to minimize effects of the discharge (fill and excavation activities) to waters of the United States. Every effort should be made to avoid project features which require the discharge of fill into waters of the United States, which include not only wetlands, but also ephemeral channels. In the event it can be clearly demonstrated there are no practicable alternatives to filling these waters of the United States, appropriate mitigation should be developed to compensate for the lost functions of the channels. A description of the waters of the United States, including functions, and the proposed impacts should be included in the Final Environmental Impact Statement.

Response to Letter 35

35a. If required, Newmont will obtain a Section 404 permit as required by the Clean Water Act. In the FEIS, Chapter 3, SOAPA Wetlands and Chapter 4, Riparian, Wetlands, and Waters of the U.S. Areas have been revised to address the potential impact of recent judicial decisions on the jurisdictional delineation.

Letter 35 Continued

If you have any questions, please write to our Nevada Field Office, C. Clifton Young Federal Building, 300 Booth Street, Room 2103, Reno, Nevada 89509, telephone (775) 784-5304, FAX (775) 784-5306. We appreciate the opportunity to be included in your review process.

Sincerely,

Nancy Kang

Nancy Kang
Chief, Nevada Regulatory Office

Response to Letter 35

Letter 36

10/31/2000 04:40 7753487707 PLAN PAGE 02/02

POB 17173
Las Vegas, NV 89114
(702) 796-5662
Fax 796-4886

POB 5339
Reno, NV 89513
(702) 827-4200
Fax 827-4259

Mr. Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

Dear Mr. Congdon,

I am writing on behalf of the membership of Citizen Alert to express our concern regarding the proposed Gold Quarry mine expansion. While the local economy in the region currently depends on mining, encouraging further dependence on a failing industry through this proposed expansion is disingenuous to long-term residents. Future generations will suffer the consequences of a markedly reduced and potentially contaminated ground water supply. In addition, eco-tourism is a growing economic draw for the region. With the possible desiccation of over 200 natural springs, hunting and fishing activities could be compromised. **a** **b** **c**

We recommend the following:

1. The BLM require Newmont Mining to keep all of their de-watering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it. **d**

2. The BLM require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake. A minimum of $50,000,000 will be needed as has been indicated by the billion dollars pledged at the Iron Mountain Mine in CA or the $127,000,000 pledged by Molycorp in New Mexico. **e**

Thank you for your attention,

Kaitlin Backlund, Executive Director

Full citizen participation in the democratic decisions affecting our lives.
http://www.citizenalert.org

Response to Letter 36

36a. Comment noted.

36b. It is not anticipated that the quality of groundwater would be degraded, only that the water table would be lowered. The process of dewatering does not introduce contaminants into the groundwater. As the groundwater recovers, it is expected that the same or similar water quality would be present, and the pit water is expected to meet drinking water standards.

36c. See response 1a. The DEIS does disclose that potential loss of water sources could have effects on area wildlife populations. It also discloses that project lands in the South Operations Area have been closed to hunting since 1993, so the expansion project would not represent any further restrictions. Another element of the Mitigation Plan was a conservation easement on private land along Maggie Creek. The public access easement has been signed but not yet implemented. Text has been changed in Chapter 4, Recreation - Potential Mitigation and Monitoring of the FEIS. The Maggie Creek conservation easement grants conditional uses to the public on private lands. The conservation easement will terminate when the terms of this agreement have been met. At the termination of the agreement, all uses of the land will revert back to the private land owner. The Maggie Creek Conservation Easement has been recorded with the Eureka County Recorder's Office book 338, pages 476-495..

36d. See response 2d.

36e. See responses 1b and 2e.

Letter 37

CITY OF CARLIN
101 South Eighth Street
P.O. Box 787
Carlin, Nevada 89822
(775) 754-6354
(775) 754-6912 FAX
carlinnv@sierra.net

October 31, 2000

Bureau of Land Management
Elko Field Office
3900 Idaho Street
Elko, NV 89801

Attn: Mr. Roger Congdon, EIS Coordinator

Re: Draft Environmental Impact Statement (DEIS)
Newmont Mining Corporation's
South Operations Area Project Amendment

Dear Mr. Congdon:

The City of Carlin, Nevada, would like to take this opportunity to comment on the Draft Environmental Impact Statement recently prepared for Newmont Mining Corporation's South Operations Area Project Amendment.

a First of all, the City of Carlin is fully supportive of Newmont Mining Corporation's on-going projects in the area. As you know, these operations provide a continuing, positive, economical impact to our area. Newmont has been a good neighbor to the City of Carlin for a number of years, and it is our expectation that this will continue to be the case.

b We are very concerned, however, with the potential impacts of the proposed project to the City of Carlin domestic water supply system. As identified in the DEIS, the City of Carlin derives its water from two (2) sources. These sources consist of the Arthur and S.P. Springs (identified as the City of Carlin "Cold" Springs in the DEIS) and an underground well.

The DEIS, on page 4-8, states that "The Carlin "Cold" Spring system used by the town of Carlin as a water supply source is predicted to have a significant reduction in baseflow." In addition, on page 4-28, the DEIS states that "Flows at the Carlin "Cold" Springs (Carlin Water Supply source) would be reduced by about 1.7 cfs gradually during the dewatering period." This is the primary source of water for the residents of Carlin and a 1.7 cfs reduction in flow would be a major detriment to the City of Carlin Water Supply System.

Response to Letter 37

37a. Comment noted.

37b. Newmont made a commitment in 1993 to replace water in the Carlin wells that was lost or reduced due to mine dewatering. That commitment was stated in Appendix A - Mitigation Plan to the 1993 EIS. The commitment is still in place and Newmont has reiterated this commitment in direct communications with the City of Carlin.

Letter 37 Continued

Bureau of Land Management
Elko Field Office

October 31, 2000

page 2

b

The underground well, located north of the main portion of the City of Carlin, is used as a backup source during the fall, winter and spring and is absolutely necessary during the summer, when it is used to keep pace with summer demands. On page 4-20 of the DEIS, it is stated that the maximum groundwater drawdown in this well would be less than 20 feet and that the use of this well should not be significantly impacted. If, in fact, an additional drawdown of 20 feet does occur, this well will be impacted, if only in reduced pumping capacity or increased power consumption costs.

It is stated on page 4-28 of the DEIS that Newmont would mitigate documented lost flows, either by replacement of flow or provision of substitute water sources at nearby locations. As it seems very likely that the City of Carlin will be subject to significant impacts from the proposed project, we would like a detailed explanation of proposed mitigation efforts along with evidence that these efforts will satisfy the needs of our Water Supply System.

Thank you very much for this opportunity to present our comments on this project.

Sincerely,
City of Carlin, Nevada

Linda Bingaman
Linda Bingaman, Mayor

cc William Kohbarger, City Manager
Thomas C. Ballew, City Engineer
Cherie Aiazzi, City Clerk

Response to Letter 37

37b. Newmont made a commitment in 1993 to replace water in the Carlin wells that was lost or reduced due to mine dewatering. That commitment was stated in Appendix A - Mitigation Plan to the 1993 EIS. The commitment is still in place and Newmont has reiterated this commitment in direct communications with the City of Carlin.

Letter 38

10/30/00 MON 15:10 FAX 7022932164 MAILBOXES ETC. 001

1518 Sandra Drive
Boulder City, NV 89005
October 30, 2000

Mr. Roger Congdon, Project Leader
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

Re: Gold Quarry Mine Expansion

Dear Mr. Congdon:

I want you to know that I am opposed to a BLM approval of Newmont Mining's proposed expansion of the Gold Quarry Mine.

I am opposed to the mining of gold, an almost totally nonessential commodity, at the expense of the environment. The impacts of mining affect people negatively through serious environmental degradation, now and into the foreseeable future, long after the mines close and the mine-related jobs have gone away. All this happens for the purpose of lining corporate pockets over the short haul.

a | The Gold Quarry mine expansion proposal represents the worst possible example of these unacceptably degrading environmental consequences of
b | gold mining. Such consequences in this proposal include the huge toxic pit lake that would wastefully evaporate scarce water, water stolen from as
c | many as 200 springs and at least 7 streams within a 50 mile radius of the pit, as well as leading to the surface ravishment of 30,000 surface acres of the once pristine Tuscarora Mountains.

The proposed expansion should be categorically denied. If this cannot be done under current law, then the environmental consequences need to be avoided or mitigated to the maximum extent possible. This should include requiring Newmont Mining to:

d | 1. Keep all pit-pumped water within the Maggie Creek basin in order to help maintain the existence of ecologically essential springs and seeps.

1

Response to Letter 38

38a. See response 1b.

38b. See response 1a.

38c. See response 15c.

38d. See response 2d.

Letter 38 Continued

e 2. Post a sufficiently large bond, to be held for at least 100 years, to remediate toxic water in the pit lake and to replace any water lost to it.

f 3. Help mitigate unavoidable permanent losses of habitat (due to the impossibility of restoring wetlands or riparian areas once groundwater levels at such sites are lowered to the point streams or springs go dry) through restoration of an appropriately great number of miles of the Humboldt River.

Please take the above measures to adequately fulfill the BLM's responsibilities to the environment and to future generations of Nevadans.

Sincerely,

Howard Booth

Howard Booth

Response to Letter 38

38e. See responses 2e and 1b.

38f. See response 2f.

Letter 39

COMMISSIONERS

ANTHONY L. LESPERANCE
NOLAN W. LLOYD
MIKE NANNINI
BRAD ROBERTS
ROBERTA K. SKELTON

GEORGE R.E. BOUCHER
ELKO COUNTY MANAGER
(775) 738-5398 OFFICE
(775) 753-8535 FAX
elkocojw@rabbitbrush.com

Board of County Commissioners
COUNTY OF ELKO
569 COURT STREET • ELKO, NEVADA 89801

ELKO DISTRICT		
DM		
ADM		
PLAN/NEPA		
LAW ENF		
NON-REN	√	
RENEWABLE		
S. S.		
FIRE		
CF CODE:		
X = ACTION		

October 6, 2000

Bureau of Land Management
Elko Field Office
3900 E. Idaho Street
Elko, Nevada 89801-4611

Helen Hankins
District Manager

RE: **1793.4/3809**
N16-81-009P

Dear Ms. Hankins:

The Board of County Commissioners have been briefed and involved in subjective discussion relating to the Draft Environmental Impact Statement (DEIS) for Newmont Mining Corporation's South Operations Area Project Amendment.

Perhaps the greatest interest possessed by the Board was that related to ground water and the effects that may be contributed to dewatering activity. The Draft Statement and separate Cumulative Impact Analysis indicates the earlier projected impacts to be much less. Also, various springs and seeps apparently have not been affected.

a Based on an overall favorable report, the Board of County Commissioners at their regular October 4, 2000 meeting went on record supporting the proposed South Operations Area Project Amendment.

Sincerely yours,

ROBERTA K. SKELTON
Chairman

George R.E. Boucher

GEORGE R.E. BOUCHER
Elko County Manager

GREB/jw

Response to Letter 39

39a. Comment noted.

Letter 40

TE-MOAK TRIBE OF WESTERN SHOSHONE

525 Sunset Street - Elko, Nevada 89801
(702) 738-9251
FAX (702) 738-2345

October 30, 2000

Helen Hankins, District Manager
Bureau of Land Management
Elko District
3900 Idaho Street
Elko, NV 89801

RE: de-watering on the Carlin Trend

Dear Ms. Hankins,

Water has a significance importance to the Western Shoshone Indians. Water is a source of life for all living things for the humans, animals and plants. The Western Shoshone have been stewards to the land and have not taken but what they can use.

By pumping the water out of the earth will have a great impact to our natural resources, cultural and spiritual sites. The Te-Moak Tribal Council passed a resolution in June 2000 to protect the Rock Creek Area.

a The de-watering will affect Rock Creek, Tosawihi Chert Quarry as well as all living things. As a matter of record I believe that the de-watering is having an impact on the Western Shoshone life and their future generation as well at the animals, plant life and our medicine.

As a Western Shoshone I am concerned and know what affects the de-watering is having on our natural resources, cultural, spiritual sites and I am opposed to what is currently taking place.

Respectfully Submitted,

Helen Dave

Helen Dave, Environmental Coordinator
Te-Moak Tribe of Western Shoshone Indians of Nevada

Cc: file

Response to Letter 40

40a. See response 33yyy.

Letter 41

Comment Form
SOAPA Draft EIS

Phone:775-934-5758
Fax: 775-754-2948

Richard L. Davis
Oak St. Rentals
P. O. Box 1648
Carlin NV. 89822

I have two apartments in South Carlin Nevada that have basements that are being Severly damaged by Newmont Mine dewatering. I have discussed this with Richard Moorhead and Paul Pettet of Newmont. Enclosed is a letter from me informing them of the problem and their respose after they looked at the problem on 8-2-00.

These two buildings were built in the early 1900's one with a full basement one with a small basement, both had coal fired heating systems and the coal was stored right on the floor for fifty years or more.

Natural gas was installed in the late 1960's and sometime after that a natural gas heating system was installed in one of the basements. It was installed right onto the floor where there would be 6-10" of water right now if I did not pump it out.

I am sure that the original builders did not store the coal in several inches of water, and I am sure they did not install a new natural gas heating system in the water.

As I read the environmental impact statement for Newmont's dewatering plan I can see dozens and dozens of facts that would indicate that they are causing the higher water table in my basements and now they are asking to greatly increase their flow into Maggie Creek.

a

The fact that they are pumping millions of gallons of water into Maggie Creek and much of it if not most of it is not reaching the Humbolt River ought to indicate that they are likely raising the water table under the lower part of Carlin and keeping that aquifer charged all year.

b

Their Maggie Creek Ranch reservior is leaking millions of gallons of water that they don't know where it goes but the water table has risen 45 feet in some areas.

a

It seems obvious to me that my problem is from mine dewatering and has been getting worse every year. Now they are asking to double or triple the flow into Maggie Creek.

This problem must be studied and mitigated before they are allowed to pump any more water into Maggie Creek.

Sincerely,

Richard L. Davis

Elko Field Office
3900 Idaho St.
Elko, NV 89801

Response to Letter 41

41a. Newmont is not requesting any change in their proposed operating plans concerning the rate of discharge into Maggie Creek. In the 1993 EIS, Newmont requested a discharge rate of up to 42,000 gpm (Figure 4-2 in the DEIS). In this EIS, Newmont is estimating that the discharge rate for the next 11 years will not exceed 25,000 gpm, DEIS at 2-22. This rate is approximately 71 percent of the previously approved rate. The rate of dewatering discharge into Maggie Creek is one of the major issues being evaluated by the DEIS.

41b. The DEIS does state that water level monitoring directly south of the reservoir has shown increases in water levels up to 45 feet. However, Figure 4-4 shows that Carlin (six miles to the south) is near or outside the area where groundwater levels have not shown any increase, DEIS at 4-19. There is no evidence that Newmont Mining Corporation operations have affected the shallow groundwater system in this area.

Letter 41 Continued

Newmont Mining Corporation

Land Department
555 Fifth Street
Elko, Nevada 89801
(775) 778-2810
Fax (775) 778-2871

August 31, 2000

Mr. Richard Davis
P.O. Box 1648
Carlin, Nevada 89822

Re: Oak Street Apartments

Dear Mr. Davis:

I apologize for the length of time it has taken for us to respond to your letter. We have reviewed your claim that Newmont's dewatering program has contributed to a rising water table that has infiltrated the basements of your two apartment buildings. Our hydrology staff has reviewed the relevant hydrologic data and we do not believe that our dewatering has had any effect on the water table in the South Carlin area. Ground water levels in the Carlin Formation and alluvial gravel's adjacent to Maggie Creek near Carlin have remained constant thoughout the past five years and discharges to the Humboldt River via Maggie Creek during spring runoff have resulted in a maximum river height increase of 0.05 ft, during the very small 1994 runoff.

The following table documents the maximum mean daily flow in the Humboldt River, the corresponding gage height measured at the Palisades gage located downstream of Carlin, Gold Quarry's average discharge during the month the maximum mean daily flow was recorded and the calculated increase of the measured gage height at Palisades.

Date	Mean Daily flow (cfs)	Gage Height	Ave Discharge (cfs)	Increase in Gage
May 19, 1994	971	4.07 ft	28	0.05 ft
June 8, 1995	5,760	8.67	6.5	0.01 ft
May 20, 1996	2,620	6.07	18.6	0.02 ft
June 14, 1997	3,410	6.78	36	0.03 ft
June 12, 1998	3,280	6.67	15	0.01 ft
June 6, 1999	2,670	6.12	6	0.01 ft
May 31, 2000	1,260	4.52	10.7	0.02 ft

Response to Letter 41

Letter 41 Continued

By way of comparison, if the Humboldt River was currently running at 31 cfs and Newmont was discharging 4.4 cfs, the gage height at Palisades would measure 1.02 ft. Without Newmont's discharge, the gage height would be 0.06 ft lower. As Paul Pettit discussed with you at our meeting on August 2nd, alluvial water levels adjacent to the river (and your property) will rise and fall with the stage of the river. The river stage has varied 7.65 feet over the past six years, which would result in near river alluvial water level fluctuations. The preceding analysis is somewhat conservative since part of the discharged water infiltrates into the ground as it travels down Maggie Creek.

The attached hydrograph shows the water elevations Newmont has measured near Carlin. These piezometers are completed in gravels adjacent to Maggie Creek, the Carlin Formation, and the underlying Paleozoic bedrock. Locations of the piezometers are shown on the attached map. Water levels have been fairly constant over the past five years.

It is quite possible that during the drought of the late 1980's and early 1990's the basements in question were dry as the Humboldt River was very low during this period. We believe that the basements have flooded during high-water periods in the past and will do so in the future, regardless of Newmont's dewatering activities at Gold Quarry.

Yours truly,

Richard J. Moorhead
Manager of Lands, U.S.

Enclosures

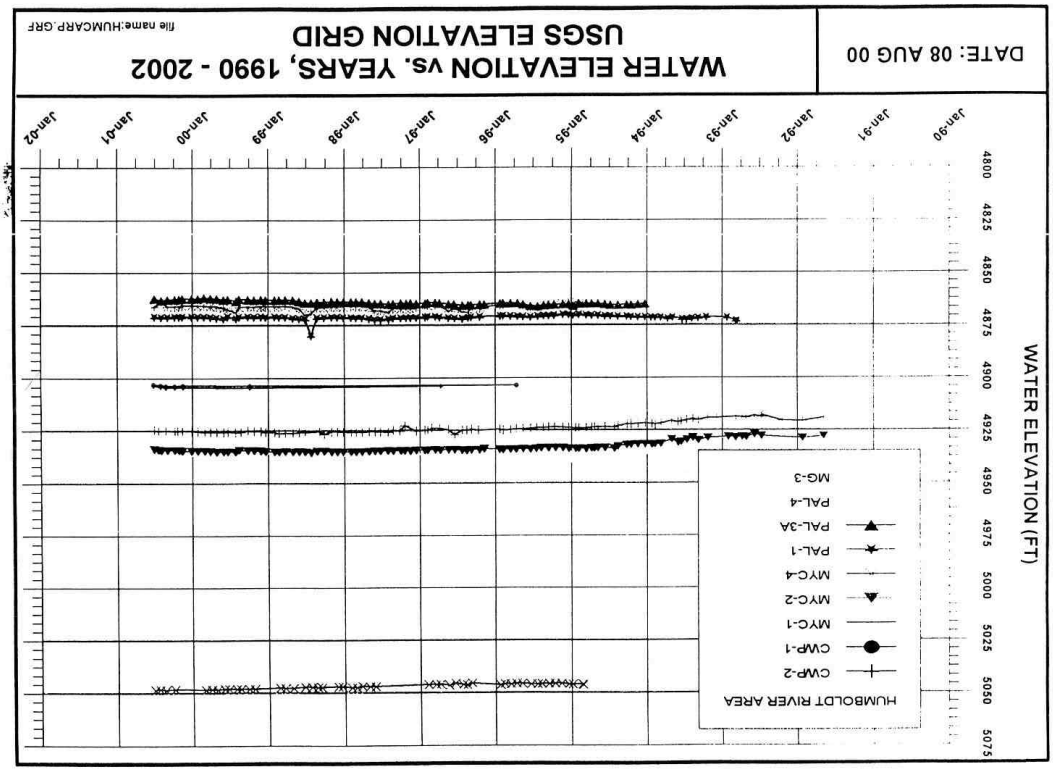
cc: J. Mullin/D. Faley/P. Pettit

Response to Letter 41

Response to Letter 41

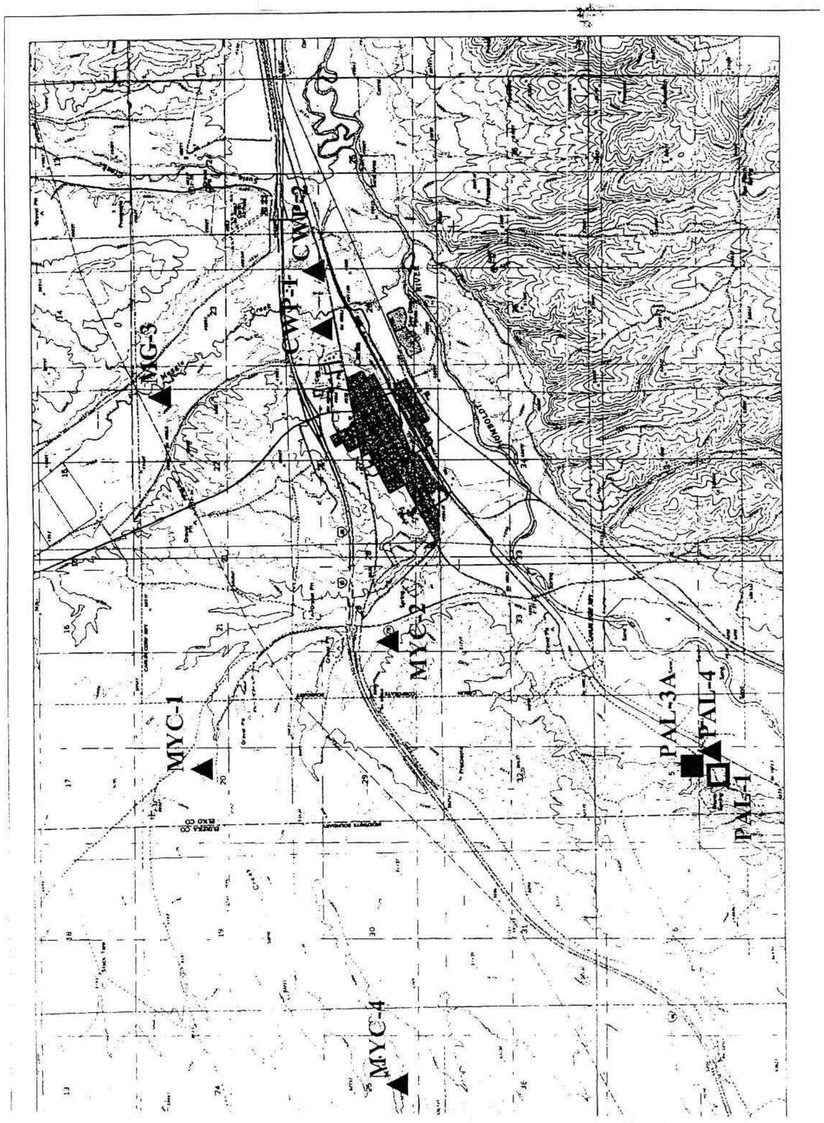
Letter 41 Continued

Attachment To Letter 41



Letter 41 Continued

Attachment To Letter 41



Response to Letter 41

Letter 41 Continued

Attachment To Letter 41

Oak Street Apartments

R.L. Davis
P.O. Box 1648
Carlin, NV 89822

Fax 775-754-2948
Phone 775-934-5758

July 10, 2000

RE: Water damage to the basement of Oak Street Apartments

To whom it may concern,

I am writing this letter to make you aware of a problem I have with the substantial amounts of water coming into my basement in the very southern area of Carlin, near the Humbolt River. This problem has been getting worse each year.

I am sure this problem is caused by your de-watering program, raising the ground water table around the Humbolt River.

1. Water comes into our basement at such a rate that it has to be pump out nearly full time.

2. The apartment's heating equipment is housed in the basement and the water has damaged this equipment.

3. The water that has come into contact with any wood or metal structuring in the basement has begun to deteriorate and has damaged the entire building's structural integrity.

I would like to discuss this problem with you I can be reached at 934-5758 Tuesday, Wednesday, and Thursday.

Thank You,

Richard Davis

Richard Davis

Response to Letter 41

Letter 42

1410 Clover Hills Drive
Elko, NV 89801

October 16, 2000

Roger Congdon, Project Lead
Elko Field Office
Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

Dear Mr. Congdon:

I would like to comment upon the Draft Environmental Impact Statement for Newmont Mining Corporation's South Operations Area Project Amendment. I feel that the project would be of immense benefit to the area, but that some considerations need to be made before final approval.

a First of all, I strongly recommend approval of Newmont's plan to expand their South Operations Area. This will extend the mine life approximately 10 years, providing great stimulus to the area, both socially and economically, without increasing the impacts to groundwater, air quality, or other facets of the environment. Without this expansion, the South Operations Area is essentially depleted, and mining operations would cease in 2001. The communities and economies of Carlin, Elko, Spring Creek, and beyond would all feel the impact, and the localities would also suffer from a decrease in tax revenue individuals and Newmont.

b Secondly, I **do not** agree with the agency's preferred alternative of backfilling the Mac pit, because the benefit of additional grazing land will not outweigh its cost. Any backfill will sterilize a known and proven gold resource - page 4-4 states a loss of 70,000 to 80,000 ounces. These are ounces that could be mined in the future utilizing existing equipment and infrastructure at Newmont's operations. Forcing the company to bury this resource and replace the ounces through other gold deposits would require an entirely new system of infrastructure to be constructed, possibly at the expense of currently undisturbed ground.

Also, the incremental haul required to backfill the pit is not justifiable. The hauls stated on page 4-7 would double the distance assuming an east pit exit and almost triple the distance assuming a southwest pit exit. In addition, an elevation gain of 400 to 700 feet would be required, with the uppermost portions of the backfill being hauled up a steep and winding road system to match the pre-mining topography. Over the course of mining the 8.2 million tons (2% of the reported 408 million tons of waste), this uphill, double-length haul and the dozer support required for the uphill dumping would generate

Response to Letter 42

42a. Comment noted.

42b. See responses 22a and b.

Letter 42 Continued

increased diesel emissions, increased costs for the company, and reduced production rates. Furthermore, because the Mac pit is situated in the general vicinity of the Tusc pit, the logic that eliminated the backfilling of Tusc from consideration should also be applied to the Mac pit (details on page 2-42).

b

The only benefits to be claimed from backfilling will be aesthetic or from an increase in grazing lands. Page 4-103 states that backfilling the pit would not generate any visual benefits and that placing the waste on the other waste facilities would not be noticeable either. Generating 40 acres of grazing lands on the sides and top of fairly steep terrain in the middle of the Elko Land and Livestock's allotment would doubtfully have any significant impacts given the expanse of land holdings they currently have in the area.

The alternative of modifying the waste dump designs to accommodate this waste is a much better solution. The dump footprints could easily be reduced to generate grazing acreage similar to the Mac backfill option, as this seems to be the driving factor. In doing this, the two waste dumps would only increase in height by 50 feet (page 4-103). Given the steepness and height of the surrounding terrain as Maggie Creek approaches the Maggie Creek Canyon, the modified waste dumps should blend in well. Additionally, dump design modifications would eliminate some of the required diversion channel (page 2-40), again saving money and unnecessary disturbance to land and waterflow.

c

The final point of contention I have with the proposed action is the required use of a landscape architect during final reclamation of the project (page 4-104). I realize that this is covered under the previous EIS, but I feel that this should be amended given the nature of the work involved. Reclamation of a waste dump is a very large-scale project best left to in-house personnel familiar with mining and who have previous reclamation experience. There are numerous Professional Engineers employed at Newmont's South Operations Area who could design and manage a more efficient and aesthetic waste dump plan than a degreed landscape architect used to dealing with much smaller projects.

I appreciate being given the chance to comment on the Newmont Mining Corporation's South Operations Area Project Amendment. I hope that the BLM will approve the expansion for the numerous benefits it provides with very little impact over the status quo. Additionally, I hope that further thought and analysis will be given to the Mac backfill alternative as I believe that there are more economic and environmentally friendly ways to achieve the same benefits.

Signed,

Trevor Elenbaas

Response to Letter 42

42b. See responses 22a and b.

42c. The writer is correct. Concurrent reclamation at Gold Quarry and other mines in the area demonstrates that qualified mine personnel can design a reclaimed waste dump that blends with surrounding topography. The requirement for a landscape architect will be dropped in the final Mitigation Plan.

Letter 43

KENNY C. GUINN
Governor

STATE OF NEVADA

JOHN P. COMEAUX
Director

DEPARTMENT OF ADMINISTRATION
209 E. Musser Street, Room 200
Carson City, Nevada 89701-4298
Fax (775) 684-0260
(775) 684-0209

October 24, 2000

Mr. Roger Congdon, Project Lead
Elko Field Office
Bureau of Land Management
3900 East Idaho Street
Elko NV 89801

Re: SAI NV # E2001-028

Project: DEIS for Newmont Mining Corporation's South Operations Area Project Amendment

Dear Mr. Congdon:

Enclosed are the comments from the Nevada Department of Transportation, Division of Water Resources, Bureaus of Health Protection Services and Mines and Geology, the Nevada State Historic Prevervation Office, and the Natural Heritage Program concerning the above referenced report. These comments constitute the State Clearinghouse review of this proposal as per Executive Order 12372. Please address these comments or concerns in your final decision. If you have questions, please contact me at 684-0209.

Sincerely,

Heather K. Elliott

Heather K. Elliott
Nevada State Clearinghouse/SPOC

Response to Letter 43

Letter 43 Continued

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
1263 S. Stewart Street
Carson City, Nevada 89712

KENNY C. GUINN
Governor

TOM STEPHENS, P.E., *Director*

September 19, 2000

In Reply Refer to:

RECEIVED

HEATHER ELLIOTT PLANNER
NEVADA STATE CLEARINGHOUSE
BUDGET DIVISION
209 EAST MUSSER ROOM 204
CARSON CITY NV 89710

PSD 7.01

Dear Ms. Elliott:

The Nevada Department of Transportation has reviewed the project titled: DEIS Newmont Mining Operations South SAI#E2001-028.

Based on the information submitted, we have the following comments on the proposed project.

The District III Department of Transportation Office received booklets concerning these projects just recently and has not been able to make a thorough review. The Department has some concern, after a brief review, that impacts to the Department's roadways were not evaluated.

a Potential impacts that should be reviewed, but are not limited to, include traffic volumes, hours of peak operations, ore hauling to other mine sites, slow-moving vehicles, over weight loads, and mud/debris carried onto the roadway. Generally, these documents need to address the impact to public highways and how those impacts should be mitigated.

We would like to reserve additional comments until after a thorough review.

Thank you for the opportunity to review this project.

Sincerely,

Thomas J. Fronapfel

Thomas J. Fronapfel, P.E.
Assistant Director - Planning

TJF:TM:dg

Response to Letter 43

43a. The proposed action would not cause any changes in traffic patterns from the existing conditions. There would not be any major construction and no change in number of employees. Existing conditions of traffic volumes, hours of peak operations, ore hauling, other truck traffic, and access to Nevada Highway 766 would remain the same. Since Highway 766 is a public road serving several mining operations along the Carlin Trend, it is expected that taxes paid on gasoline and diesel fuel and vehicle licenses would continue to be used to address potential impacts to the highway.

Letter 43 Continued

NEVADA STATE CLEARINGHOUSE
Department of Administration
Budget and Planning Division
209 East Musser Street., Room 200
Carson City, Nevada 89701-4298
(775) 684-0209
fax (775) 684-0260

RECEIVED
SEP 27
DEPT OF CONSERVATION & NATURAL RESOURCES
DIRECTOR'S OFFICE

DATE: September 5, 2000

Governor's Office	Legislative Counsel Bureau	Conservation-Natural Resources
Agency for Nuclear Projects	Information Technology	Director's Office
Agriculture	Emp. Training & Rehab Research Div.	State Lands
Business & Industry	PUC	Environmental Protection
Energy	Transportation	Forestry
Minerals	UNR Bureau of Mines	Wildlife
Economic Development	UNR Library	Region 1
Tourism	UNLV Library	Region 2
Fire Marshal	Historic Preservation	Region 3
Human Resources	Emergency Management	Conservation Districts
Aging Services	Office of the Attorney General	State Parks
Health Division	Washington Office	Water Resources
Indian Commission	Nevada Assoc. of Counties	Water Planning
Colorado River Commission	Nevada League of Cities	Natural Heritage
		Wild Horse Commission

Nevada SAI # E2001-028
Project: DEIS for Newmont Mining Corporation's South Operations Area Project Amendment
NOTE: BLM indicates it sent directly to: NDOM, LANDS, NDOW #2, NNHP, SHPO, NDWP, NDF & NDOT. Clear has extra copies if you did not receive yours.

__Yes __No Send more information on this project as it becomes available.

CLEARINGHOUSE NOTES:
Enclosed, for your review and comment, is a copy of the above mentioned project. Please evaluate it with respect to its effect on your plans and programs; the importance of its contribution to state and/or local areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than ~~October 23, 2000~~. Use the space below for short comments. If significant comments are provided, please use agency letterhead and include the Nevada SAI number and comment due date for our reference. Questions? Heather Elliott, 684-0209.

THIS SECTION TO BE COMPLETED BY REVIEW AGENCY:

___No comment on this project	___Conference desired (See below)
___Proposal supported as written	___Conditional support (See below)
___Additional information below	___Disapproval (Explain below)

AGENCY COMMENTS:

b Any water used on the described Project for consumption or dewatering operations should be provided by under permit issued by the State Engineer's Office. All waters of the state belong to the public and may be appropriated for beneficial use pursuant to the provisions of chapters 533 and 534 of the Nevada Revised Statutes and not otherwise. Any water wells or boreholes that may be placed on the lands are the ultimate responsibility of the owner of the property and must be plugged and abandoned as required in Chapter 534 of the Nevada Administrative Code. If artesian water is located in any well or borehole it shall be controlled as required in NRS 534.060(3)

Signature CARL BARRICK s:\shardat\clearclear.doc | WATER RESOURCES Agency | 9/27/00 Date

Response to Letter 43

43b. All necessary permits for water used on the project and for dewatering have been and will be obtained by Newmont. The Nevada Administrative Code will be followed for controlling, abandoning, and plugging boreholes.

Letter 43 Continued

NEVADA STATE CLEARINGHOUSE

RECEIVED
SEP 2 1 2000
DEPARTMENT OF ADMINISTRATION
DIRECTOR'S OFFICE

Department of Administration
Budget and Planning Division
209 East Musser Street., Room 200
Carson City, Nevada 89701-4298
(775) 684-0209
fax (775) 684-0260

DATE: September 5, 2000

Governor's Office	Legislative Counsel Bureau	Conservation-Natural Resources
Agency for Nuclear Projects	Information Technology	Director's Office
Agriculture	Emp. Training & Rehab Research Div.	State Lands
Business & Industry	PUC	Environmental Protection
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Human Resources	Emergency Management	Conservation Districts
Aging Services	Office of the Attorney General	State Parks
Health Division	Washington Office	Water Resources
Indian Commission	Nevada Assoc. of Counties	Water Planning
Colorado River Commission	Nevada League of Cities	Natural Heritage
		Wild Horse Commission

Nevada SAI # E2001-028
Project: DEIS for Newmont Mining Corporation's South Operations Area Project Amendment
NOTE: BLM indicates it sent directly to: NDOM, LANDS, NDOW #2, NNHP, SHPO, NDWP, NDF & NDOT. Clear has extra copies if you did not receive yours.

__Yes __No Send more information on this project as it becomes available.

CLEARINGHOUSE NOTES:
Enclosed, for your review and comment, is a copy of the above mentioned project. Please evaluate it with respect to its effect on your plans and programs, the importance of its contribution to state and/or local areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than **October 23, 2000**. Use the space below for short comments. If significant comments are provided, please use agency letterhead and include the Nevada SAI number and comment due date for our reference. Questions? Heather Elliott, 684-0209.

THIS SECTION TO BE COMPLETED BY REVIEW AGENCY:

___No comment on this project
✓ Proposal supported as written
___Additional information below
___Conference desired (See below)
___Conditional support (See below)
___Disapproval (Explain below)

AGENCY COMMENTS:

RECEIVED
SEP 0 6 2000
SERVICES

SEP 0 6 2000

C Any construction of new public water systems (PWS), expansion of PWS, and operation of PWS must be in accordance with applicable Nevada Revised Statutes and Administrative Code.

Signature

s:\shardat\clear\clear.doc

BHPS
Agency

9-19-00
Date

Response to Letter 43

43c. Comment noted.

Letter 43 Continued

NEVADA BUREAU OF MINES AND GEOLOGY

UNIVERSITY OF NEVADA RENO

Mail Stop 178
Reno, Nevada 89557-0088
Telephone: (775) 784-6691
FAX: (775) 784-1709

Nevada SAI #E2001-028
DRAFT Environmental Impact Statement, Newmont Mining Corporation's South Operations Area Project Amendment

Review by: **Lisa Shevenell, PhD**
Research Hydrogeologist
Nevada Bureau of Mines and Geology

The summary, Chapters 1 and 2, and portions of the document related to water resources were reviewed by Lisa Shevenell (Nevada Bureau of Mines and Geology). This EIS documents potential impacts if the proposed SOAPA were to be approved. Specific comments follow (some of which are very minor), and most concern clarification or explanation of some confusion related to the manner of reporting of data or results, or minor inconsistencies.

d **Page S-5** indicates the Gold Quarry pit will be 850 feet deep under the proposed action. On page 4-44, the document indicates the pit lake will be ≈1370 feet deep. This apparent contradiction should be addressed.

e **Pages 2-11, 2-26:** The authors indicate that surface water will be diverted around the pits at the end of mining. Based on limited, anecdotal evidence (e.g., at Sleeper, and Tuscarora's Dexter pit lake), influx of surface water or rapid filling of a pit lake may be beneficial from a water quality perspective.

f **Page 2-37**, and elsewhere: It is stated that is may be beneficial to backfill the Mac pit, although this would cover gold resources (page 4-4, 70,000 to 80,000 ounces). It was not clear if this pit is sufficiently deep to penetrate the water table, and how water quality might be impacted by backfilling (whether the bottom reaches the water table or not).

g **Page 2-37**. The paragraph beginning "Backfilling of waste rock..." is repeated on this same page.

h **Pages 3-2, 3-3:** "A" sinkhole is mentioned that developed in 1996, but three sinkholes are shown on Fig. 3-0.

i **Table 3-11:** The DO concentrations are listed as µg/L, and they should be mg/L.

j **Page 3-35:** They discuss spring 52 and indicate it is a warm spring (20°C), but elsewhere non-thermal springs are classified as those with measured temperatures of 3 to 26°C.

k **Page 3-36 list:** Item 4 should also include spring numbers so that it can be determined which ones fall into this group.

Several comments relate to the comparison of the 1993 and 1999 groundwater flow models, and predicted areas of impact.

Response to Letter 43

43d. The proposed final pit would be approximately 1,805 feet deep, 350 feet deeper than previously permitted. The pit lake would be approximately 1,370 feet deep. The sentence on page S-5 of the Summary in the FEIS was changed to read "The Gold Quarry pit would fill with groundwater to an ultimate depth of about 1,370 feet."

43e. Rapid filling of a pit lake might indeed be beneficial from a water quality perspective, however, water running down the pit walls would increase the solute loading of the water. A beneficial effect could only be achieved if the surface runoff water would be directed to the bottom of the pit, without running down the walls. Basically, there is very little surface water available for diversion into the pit.

43f. The Mac pit does not penetrate the pre-mining water table level. See responses 22a and 22b.

43g. The repeated paragraph beginning with "Backfilling the waste rock..." was deleted from Chapter 2, Alternatives Considered in Detail of the FEIS.

43h. Sinkhole #3 is the only sinkhole discussed in this DEIS. Information on sinkholes #1 and 2 is presented in the Betze SEIS and in the CIA document, as those features are outside the study area for the SOAPA.

43i. This error under Class A Specifications in Table 3-11 was corrected from ug/L to mg/L in Chapter 3 of the FEIS.

43j The term "warm" was used to indicate the spring was at the high end of the temperature range for non-thermal springs. The phrase "... is a warm spring with..." was replaced with the word "has" in Chapter 3, Spring and Seep Surveys of the FEIS.

43k. Item 4 in Chapter 3, Spring and Seep Surveys of the FEIS was changed to read "Springs (24, 40, and 43)..."

Letter 43 Continued

l

Page 4-9: It needs to be explained why the larger drawdown area from the 1999 model, compared to the 1993 flow model, impacts fewer linear miles of stream reaches. Fig. 4-1 shows the three new stream reaches (in red) that are predicted to be impacted by the proposed action, but does not illustrate which of the formerly predicted stream reaches are no longer considered to be impacted in the 1999 model. There are areas other than those in red that are now incorporated within the 1999 predicted 10 ft drawdown contour that are not highlighted in red. A brief explanation why these areas are not expected to be impacted should be included. Tables showing 1993 predicted impacts, incremental 1999 predicted impacts, and total impacts should be included to evaluate the proposed action. This comment applies to other impacts such as springs and seeps, water rights, etc.

m

n

Page 4-17, Fig. 4-3: Current water level monitoring shows 10 feet of drawdown in the area NNW of the mine that are not predicted with the 1999 model. What is the reason for the southward dip in the predicted 10 ft contour near Maggie Creek in the 1999 model? This area was modeled as an area within the 10 ft drawdown contour in the 1993 model. A brief explanation for the differences in the models is needed. Part of the differences could result because the 1993 model assumed higher dewatering rates than the 1999 model, however, the 1993 model better predicts the current drawdown configuration than the 1999 model in this area. Also, is the difference between the currently observed drawdowns and the 1999 model predictions a result of the 1999 model not having incorporated the effects of Barrick's dewatering?

o

Page 4-16: The report suggests that after dewatering stops in 2011, the cone of depression would diminish as the pit fills. Based on several other pit lake models, including the BLM's cumulative impact analysis of this area, the drawdown cone is expected to expand for some years following cessation of pumping as water continues to be drawn from storage to flow toward the dewatered aquifer.

p

Page 4-20: This page states there are 11 known wells located within the maximum 10 ft drawdown contour. Again, there are many more wells than this depicted in Fig 4-5. Are there only 11 additional wells to be impacted by the proposed action? How many of the other wells were predicted to be impacted by the current mining?

q

Page 4-20: Carlin's water supply well (62) is located within the 10 ft contour. The EIS states that the predicted drawdown in this area is <20 ft and this well "should not be significantly impacted." Have any water level declines attributable to current dewatering been measured at this well? How might a 20 ft water level decline impact the use of this well?

r

Page 4-21: This comment may refer to confusion alluded to in the comment for page 4-9. On Fig. 4.-5, many wells are located within the 10 ft drawdown contour, yet they are not predicted to be impacted, even though some are very close to the SOAPA (e.g., 36, 111, 112, 113, 115, 120). Are these not shown to be impacted because they were already predicted to have been impacted by the 1993 model? If so, a table comparing the models would be helpful to show the total predicted impact, and the amount of incremental impact predicted by the proposed action.

Page 4-25, Fig. 4-6: This is another area of confusion similar to comments for pages 4-9 and 4-20 and -21 above. Many springs are located within the 10 ft drawdown in both models, but page 4-28 indicates that only five springs are predicted to be impacted by the increased cone of depression of the SOAPA. There are many springs in the 1999 predicted 10 ft drawdown contour that are not in the 1993 predicted 10 ft contour, but these springs are not listed as impacted. An explanation is required for this result. It is also stated that springs located closest to the project area have the greatest probability of being impacted, yet these areas are not highlighted on Fig. 4-6. If these springs are predicted to be impacted (or have been) by the current mining activities, this should be more clearly depicted on the figure, and/or in a table.

Response to Letter 43

43l. Those streams located to the west of Marys Mountain, the middle Marys Creek area, and upper Maggie Creek, that are shown on Figure 4-1 to be inside the 1993 cone of depression, but outside the 1999 cone of depression, are significantly longer than the added streams highlighted in red. Streams that were added were either perennial, or had perennial stream reaches associated with them. For example, the intermittent reach of Fish Creek is included because there is a perennial spring, below 6000 feet associated with it. Also, see responses 1a and 33i.

43m. Comparison of impacts was included in the EIS in Table 4-7 with impacts associated with the existing operations described as the No Action Alternative and projected impacts described as the Proposed Action. In the future we will consider more tabulation of data.

43n. The current version of the model reflects 10 years of data gathering (HCI, 1999). The current drawdown is not represented by the 1993 model because they reflect conditions, actual and anticipated, in the carbonate and water table aquifers, respectively. Currently, there is no significant drawdown in the water table aquifer. Barrick's dewatering was not incorporated into either the 1993 or the 1999 model. For that scenario, see the Cumulative Impacts document (BLM, 2000).

43o. A sequence of time shots of the cone of depression for the cumulative impacts scenario is shown for both the Barrick and the Newmont models (BLM, 2000). Each shows growth of the cone of depression following dewatering. Also, see response 33yy. The text on page 4-15 of this FEIS states, "After year 2011, the cone of depression would diminish as the pit fills with water and groundwater levels rise." This paragraph actually refers to vertical, rather than horizontal recovery. See the new text on the same page.

43p. The 11 wells are in addition to those predicted to be impacted in the 1993 EIS.

43q. Carlin's water supply well has not experienced any decline related to dewatering to date. This well is approximately 600 feet deep in an area where the depth to the water table is about 100 feet, and is an excellent producing well. Newmont would substitute senior water rights, if necessary, to cover any deficit. See response 37b.

43r. The impacts listed in Chapter 4 are incremental. They do not include impacts previously addressed in the 1993 EIS.

Letter 43 Continued

s **Page 4-28:** This section states that Newmont will replace flow by drilling wells at or near impacted springs that become dry. This practice could result in additional, local drawdown such that the impacted spring may never return to its natural flow conditions.

t **Page 4-39:** It is stated that Newmont will mitigate water rights losses with their senior water rights, and that they have more water rights than the maximum potential baseflow impacts. It should be stated over what period of time this agreement is to be in force, and from what area these waters will be withdrawn. How might the use of the Newmont water change the water balance in the basins studied and modeled in this EIS, and will those waters be available following mining if the water is to come from the studied basins? It should be demonstrated that Newmont has sufficient water rights to replace those lost due to dewatering.

u **Page 4-51:** A reference should be added for the Fennemore-Neller-Davis model for oxidation of pyrite.

v **Page 4-52, Table 4-4:** The table compares predicted Gold Quarry water quality to Kimbley and Yerington pit lake waters, which are in different types of deposits (porphyry-Cu, -Mo). It would be more appropriate to compare Gold Quarry with lakes in more similar geologic settings (Carlin-type deposits): Big Springs, former Cortez and Getchell pit lakes.

w **Page 4-55:** This summarizes mitigation measures to be taken if different waters are impacted and includes replacing wells, water sources, or baseflow losses, replacing lost spring/seep flows, and augmenting of flows in Maggie, Mary's and Susie Creeks. Are there enough Newmont water rights to accommodate all of these uses?

x **Page 4-118, Table 4-7.** Similar to other areas, the table is somewhat confusing as it does not include cumulative impacts. It states that 16 wells are impacted with no action, and 11 are impacted with the proposed action. A total impact column should be added.

10/13/2000

Response to Letter 43

43s. There are many springs shown within the incremental impact zone in Figure 4-6. However, most of them are above 6000 feet elevation. Page 4-23 of this FEIS states that "Generally, perched springs located within the mountain domain areas would not be affected by mine dewatering."

43t. See the 1993 Mitigation Plan. In any case where augmentation is being seriously considered in order to substitute for flow lost due to mine dewatering, consultation would occur between the mine, BLM, and the Fish and Wildlife Service to determine if it is appropriate or desirable to augment flow.

43u. The Fennemore, et al, 1997 reference was utilized in the analysis of the mine pit lake (Geomega, 1997). This information is discussed in Chapter 4 of the FEIS.

43v. These lakes were selected as representative pit lakes which were non acid at the time the pit lake study was published and could show the range of expected chemistries (Geomega, 1997). They were not selected as a validation tool for the Gold Quarry pit lake.

43w. Newmont has sufficient water rights to mitigate the mentioned water losses, with the exception of Susie Creek. For this, new water rights would have to be applied for, as Susie Creek is in a different basin.

43x. No column was included for total impacts because this section does not analyze for cumulative impacts. See Chapter 5 of the FEIS and the Cumulative Impact Analysis (BLM 2000).

Letter 43 Continued

NEVADA STATE CLEARINGHOUSE
Department of Administration
Budget and Planning Division
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(775) 684-0209
fax (775) 684-0260

DATE: September 5, 2000

Governor's Office	Legislative Counsel Bureau	Conservation-Natural Resources
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		Wild Horse Commission

Nevada SAI # E2001-028
Project: DEIS for Newmont Mining Corporation's South Operations Area Project Amendment
NOTE: BLM indicates it sent directly to: NDOM, LANDS, NDOW #2, NNHP, SHPO, NDWP, NDF & NDOT. Clear has extra copies if you did not receive yours.

✓ Yes ___ No Send more information on this project as it becomes available.

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Please submit your comments no later than October 23, 2000. Use the space below for short comments. If significant comments are provided, please use agency letterhead and include the Nevada SAI number and comment due date for our reference. Questions? Heather Elliott, 684-0209.

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___No comment on this project
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✓ Additional information below
___Conference desired (See below)
___Conditional support (See below)
___Disapproval (Explain below)

y AGENCY COMMENTS:
The Nevada State Historic Preservation Office (SHPO) reviewed the subject document. The SHPO supports the proposed document. The SHPO notes that our agency name is incorrect in the table on page 1-4.

Rebecca Lynn Palmer
October 20, 2000

Signature s:\shardar\clear\clear.doc Agency Date

Response to Letter 43

43y. Comment noted. The agency was connected in Table 1-1, Chapter 1 of the FEIS.

Letter 43 Continued

Heather Elliott

From: "James D. Morefield" <jdmore@govmail.state.nv.us>
To: "'Elliott, Heather'" <helliott@govmail.state.nv.us>
Sent: Monday, October 23, 2000 4:34 PM
Subject: E2001-028 Newmont South Operations DEIS

This is the Nevada Natural Heritage Program's response to the Nevada State Clearinghouse item referenced below. Please contact us if this response is needed in hard-copy or another format. Otherwise hard-copy will be retained in our files according to our Records Retention Schedule.

NEVADA SAI#: E2001-028
PROJECT: Draft EIS - Newmont Mining Corp. South Operations Area Project Amendment
COMMENTS DUE: 23 October 2000
Send more information on the project as it becomes available: YES
Check-offs: Additional information below

AGENCY COMMENTS:

z On page 3-78 of the DEIS, the information regarding Lewis buckwheat is outdated. A 1996 status report prepared for the U.S. Fish and Wildlife Service, and sent to appropriate BLM and Forest Service offices as well, documented Lewis buckwheat at elevations between 6470 and 9720 feet in Elko and northern Eureka counties. This report also contained more refined habitat information. Based on this information, the potential presence of Lewis buckwheat in the project area should be re-analyzed, and if necessary assessed through field surveys by qualified biologists at a time of year appropriate to detecting the plant. The referenced report is available on-line at:
http://www.state.nv.us/nvnhp/reports.htm

(signed) James D. Morefield, Biologist III/Botanist
Nevada Natural Heritage Program
23 October 2000

James D. Morefield, Botanist
Nevada Natural Heritage Program
Department of Conservation and Natural Resources
1550 East College Parkway, suite 145
Carson City NV 89706-7921 U.S.A.

http://www.state.nv.us/nvnhp/
email: jdmore@govmail.state.nv.us
tel: (775) 687-4245

Response to Letter 43

43z. The paragraph expanded into three paragraphs in Chapter 3, Lewis Buckwheat of the FEIS to include additional information by Mr. Morefield.

Letter 44

KENNY C. GUINN
Governor

STATE OF NEVADA

JOHN P. COMEAUX
Director

DEPARTMENT OF ADMINISTRATION
209 E. Musser Street, Room 200
Carson City, Nevada 89701-4298
Fax (775) 684-0260
(775) 684-0222

October 26, 2000

Re: SAI NV #E2001-028

Project: DEIS Newmont South Operations Area Project Amendment

Roger Congdon, Project Lead
Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

Dear Mr. Congdon:

Enclosed is an additional comment from the Nevada Division of Wildlife that was received after our previous letter to you. Please incorporate this comment into your decision making process. If you have any questions, please contact me at (775) 684-0209.

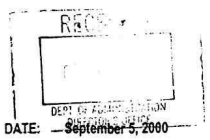
Sincerely,

Heather K. Elliott
Nevada State Clearinghouse/SPOC

Enclosure

Response to Letter 44

Letter 44 Continued



NEVADA STATE CLEARINGHOUSE
Department of Administration
Budget and Planning Division
209 East Musser Street., Room 200
Carson City, Nevada 89701-4298
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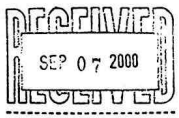

DATE: ~~September 5, 2000~~

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___Disapproval (Explain below)

AGENCY COMMENTS:

Signature s:\shardat\clear clear.doc Agency Date

Response to Letter 44

Letter 44 Continued

KENNY C. GUINN
Governor

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WILDLIFE
1100 Valley Road
P.O. Box 10678
Reno, Nevada 89520-0022
(775) 688-1500 • Fax (775) 688-1595

PETER G. MORROS
Director
Department of Conservation and Natural Resources

TERRY R. CRAWFORTH
Administrator

October 11, 2000

Heather Elliott
Nevada State Clearinghouse
Department of Administration
Budget and Planning Division
209 East Musser Street, Room 200
Carson City, NV 89701-4298

RE: SAI # E2001-028, Draft Environmental Impact Statement, South Operations Area Project Amendment, Newmont Gold Company - BLM

Dear Ms. Elliott:

a We appreciate the opportunity to provide comments on the subject document. On page 2-15, in Table 2-4, Concentrations of Trace Elements in Mill Tailing, several of the constituents are very high. The arsenic and selenium concentrations are at toxic levels. Antimony, chromium, copper and lead are also at problematic levels. Though these concentrations are found in the solids, we have some concern should waterfowl and shorebirds ingest the tailings solids.

b On page 2-25, under the heading Refractory Leach Facility, the document indicates Newmont will use technique which maintain solutions at concentrations below levels lethal to wildlife. What is the chemistry of the leach solutions? What techniques will be used to ensure these solutions are not lethal to wildlife?

c On Page 3-14, under the heading Perennial Reaches in Upper Maggie Creek, the first sentence discusses the base flows in upper Maggie Creek. The first half of the sentence discusses how the base flows reaugmented. The final part of the sentence states the stream flows are lost to the water table. These are two separate thoughts and the sentence would be more readable if it as broken into two sentences, the first discussing augmentation to flows in Maggie Creek and the second sentence discussing how the flow is lost to the ground water table.

d In the same paragraph, the text moves from discussing Maggie Creek flows to discussing streams outside the Maggie Creek basin. This discussion should be broken out into a new paragraph under a different heading or the heading of this section should be changed to include all of the streams discussed.

Response to Letter 44

44a. It is well known that waterfowl and shorebirds sometimes ingest solids as part of their normal feeding pattern. However, direct observations indicate that bird use of the tailing pond and beaches is minimal and is used more for resting than for feeding. It is surmised that there are few food sources in the tailing pond.

44b. The proposed action was for a leave-in-place refractory leach heap. Newmont has gained considerable experience with bio-leaching and , as a result, has modified the refractory leaching procedures. Newmont now practices what they call "biomilling", where refractory ore is treated with bioorganisms for approximately three months on a saturated heap leach, but without any leach solutions leaving the pad, then the ore is taken to Mill #5 for conventional milling. As a result of this change in procedure, there are no refractory leach solutions available for contact by wildlife.

44c. The first sentence was ended after "...groundwater system." The next sentence was started with "Some stream reaches may..." These changes were made in Chapter 3, Perennial Reaches in Upper Maggie Creek Basin of the FEIS.

44d. To keep the discussion restricted to Maggie Creek Basin, the last sentence of the paragraph was deleted in Chapter 3, Perennial Reaches in Upper Maggie Creek Basin of the FEIS.

Letter 44 Continued

Heather Elliott
October 11, 2000
Page 2

e On page 3-16, in the fourth paragraph the document states "Peak flows recorded at the Palisade gage for 1983 and 1984 were 6,380 cfs and 7,820 cfs respectively." Why is this information included in the document at this location? Are these the highest peak flows ever recorded? If so, then the document should indicated that.

f On page 3-52, under the heading Floodplains, the document has a sentence starting with "Ninety four wells are currently monitored by Newmont...". What has this information got to do with floodplains?

g On page 3-58, in the second full paragraph, a sentence starts "The loamy 8-10 inch precipitation...". The next two lines have been pasted into this section inadvertantly. The part starting with "plan to create..." and ending with "Refractory Leach Facility" should be removed.

h On page 3-66, Figure 3-11, Crucial Range For Wildlife, the antelope winter range should be more clearly identified. The present map does not adequately show this crucial habitat very well.

i On page 3-67, in the forth full paragraph, the document discusses the other wildlife species common to the South Operations Area. We would recommend chukar be added to the list.

j On page 3-68, under the heading Bald Eagle, the document refers to the bald eagle as a winter migrant and visitor. The correct term would be winter resident. Bald eagles do migrate through northern Nevada during the spring and fall migration, however up to 60 eagles have been documented wintering in northern Nevada. They forage along the Humboldt River and the surrounding valleys during the winter period.

k On page 3-76, under the heading Golden Eagle, the last sentence in the text indicates golden eagles are likely to be present in the project area. According to a survey done by Newmont in October, 1991, at least three active nest were located in the vicinity of the South Operations Area. We would suggest that golden eagles are present in the project area.

l On the same page, under the heading Osprey, the document indicates that osprey have a low chance of occurring in the project area. Osprey have been documented along the Humboldt River as close as Dunphy.

m On page 4-8, in the last paragraph, the document states "Affected streams would include middle and lower Maggie and Susie Creeks and lower Marys Creek." In Figure 4-1, on the next page, there is no indication of impacts to lower Maggie or Susie Creeks. Why is there a discrepancy between the Figure and the text?

Response to Letter 44

44e. The information is presented here because it is pertinent to the headings Surface Water Quantity - Humboldt River. The sentence was rewritten in Chapter 3, Surface Water Quantity - Humboldt River of the FEIS to indicate the high flows were the peak flows in recent years. The information is presented so the reader can compare flood flows with the average monthly flows presented two paragraphs earlier.

44f. See response 33oo.

44g. The line of text indicated in the comment has been deleted from Chapter 3, Vegetation of the FEIS.

44h. The pattern for pronghorn winter range was inadvertently omitted from Figure 3-11 in Chapter 3 of the DEIS. The pattern has been added and the figure reprinted in the FEIS.

44i. The word "chukar" has been added to the first sentence of the last paragraph in Chapter 3, Terrestrial Wildlife of the FEIS.

44j. The first sentence under Bald Eagle, in Chapter 3 of the FEIS, was changed to read "resident" and a citation for the letter of comment was added to the references in the FEIS.

44k. In the subject sentence and Table 3-26, the words "likely to be" have been deleted in Chapter 3, Golden Eagle of the FEIS.

44l. The last sentence of the Osprey paragraph in Chapter 3 of the FEIS has been deleted and the second sentence in the comment has been inserted in its place.

44m. To correct this discrepancy in the FEIS, the references to lower Maggie Creek and Susie Creek were deleted from the text in Chapter 4, Water Resources. Even though the lower reach of lower Maggie Creek lies between the two drawdown contours, it was not identified as a potentially impacted reach because it is already affected by Newmont's discharge, and after dewatering ceases, it will return to more normal conditions that include drying up during dry years. Susie Creek may also be affected, but those potential effects were identified in 1993 and the proposed action would not change or increase the potential effects. See response 1a.

Letter 44 Continued

Heather Elliott
October 11, 2000
Page 3

n | On page 4-28, the first full paragraph discusses the mitigation of documented lost flows in the springs and seeps. This whole paragraph is also discussed in the mitigation section at the end of the discussion on surface water impacts. It would seem that the discussion should be included in the mitigation section and not in the impacts discussion. There are no other resources where the mitigation is included in the discussion of impacts.

o | On page 4-44, the document discusses the regulatory requirement to keep the water temperature in Maggie Creek within 2° of the Humboldt. The 35.6°F noted in parentheses is an error. Delta two degrees Celsius would be quite a bit less than 35.6°F. We believe the number should read 3.6°F.

p | On page 4-57, under the heading Proposed Action, the document indicates topsoil will be respread to a 6-inch depth over the recontoured disturbances. Six inches of topsoil may not be enough to allow suitable vegetation to meet the post mine land use of wildlife habitat. We would recommend Newmont utilize at least 12 inches of growth medium at a minimum.

q | On page 4-61, under the heading Proposed Action, in the first paragraph, the document discusses the impacts to vegetative resources. The last several sentences in this paragraph refer to grazing and stocking rates. This information should be discussed in the Grazing section or if it is being suggested as a mitigation, it should be included in the mitigation section.

r | On the same page, in the next paragraph, the document states it is not anticipated the revegetation process would restore the species diversity and composition of the preexisting plant community thus these values would be permanently impacted. The next sentence states the natural restoration of these values could occur over time. If the impact is permanent, how will the values be restored over time?

s | On page 4-64, under the heading Proposed Action, in the second paragraph the document discusses the impacts to riparian areas on Maggie, Marys and Fish Creeks. The document states the proposed action would potentially impact riparian and wetland areas along these three creeks. On the top of page 4-66, under the heading Fish Creek, the document indicates the riparian vegetation would not be substantially affected. These two statements seem to contradict each other. Will there be impacts to the riparian vegetation on Fish Creek?

t | On page 4-67, Figure 4-18 displays the Predicted Impacted Riparian Areas. The Figure does not show Fish Creek as one of the streams with riparian habitat that may be impacted. This is contrary to what is displayed on Figure 4-1, Predicted Impacted Stream Reaches, where Fish Creek is shown being impacted. Is the document trying to say the reach will be impacted but the vegetation will not? This does not seem accurate.

Response to Letter 44

44n. Essentially, we agree with the comment. However, the text on page 4-28 of the DEIS provides more detail than does the Mitigation section at the end of the discussion, and since springs and seeps are a major issue of concern, no change was made in the FEIS.

44o. See response 33aaaa.

44p. Newmont has modified their Reclamation Plan to indicate a range of topsoil depths would be used. The range would be from 0 to 12 inches. This reflects the fact that certain areas can be reclaimed without soil added , while other areas will be spread with 12 inches in order to enhance the revegetation potential.

44q. The last four sentences in the second paragraph of the Vegetation section in Chapter 4 are essentially redundant with the discussion under Grazing Resources. Therefore, the last four sentences were deleted from the FEIS.

44r. The use of the term "permanent" was an overstatement. The last phrase of the sentence was changed in Chapter 4, Vegetation - Direct and Indirect Impacts, Proposed Action of the FEIS to read ".., and thus these two values would be impacted for the long-term."

44s. The analysis on page 4-64 is based on the analysis of potentially affected springs, DEIS at 4-24 through 4-28). The analysis of springs indicated that a spring on lower Fish Creek could potentially be affected. If it was affected, then flows and riparian areas downstream could also be affected, even though most of Fish Creek is considered spring-fed in the Independence Mountain Spring Domain. The apparent contradiction was eliminated by changing the text in the Fish Creek paragraph in Chapter 4, Riparian, Wetlands, and Waters of the U.S. Areas of the FEIS to read "...but a spring in the lower reach could be potentially dewatered. If so, then riparian areas along the lower reaches could experience some effects from reduced flow."

44t. In Chapter 4 of the FEIS, Figure 4-18 was modified to show predicted impacts along lower Fish Creek, as per the previous response.

Letter 44 Continued

u On page 4-69, under the heading of Terrestrial Wildlife, the document discusses the impacts to wildlife. We feel the heading is misleading. Avian, reptilian and amphibian wildlife are also discussed in this section. The heading would be more accurate if it simply stated "Wildlife"

v On the same page, under the heading of Terrestrial Wildlife, the last three sentences discuss grazing. This information does not belong in this section. It should be discussed in the Grazing Section or the relationship to terrestrial wildlife better explained.

w On the same page, under the heading of Proposed Action, in the first paragraph, the document states "Terrestrial wildlife is currently acclimated to the existing facilities and is rarely observed near any active facilities." First, we believe there are more than one wildlife in the vicinity of the active facilities. Secondly, we believe that wildlife are frequently seen in and around the facilities. Mule deer have been noted at the 9 way intersection often enough that Newmont has installed a drinking water source in Chukar Gulch to try and move them away from the active intersection. Coyotes have been noted foraging around the mine site during Division mine inspections. Rodents and rabbits are mortality victims at the tails pond occasionally.

x On page 4-70, in the second paragraph the document indicates SOAPA would have a direct effect on wildlife through exposure to cyanide at the tailings pond, launders and transfer canals. The heap leach pads and process ponds are also locations for wildlife to come in contact with cyanide. This is why these sites are regulated by the Division under the Industrial Artificial Pond Permit system.

y On the same page, in the next paragraph the document discusses the use of the pit lake by wildlife. The document states the lack of vegetation would limit the significant use by wildlife. We disagree with this statement. We think this pit lake, as well as many others, will be utilized extensively by wildlife in the future.

z On the same page, the next paragraph that starts with "Since chukar, Hungarian partridge ..." would make for better flow in the document if it were to be moved to a location after the next paragraph which discusses the impacts to these species from the loss of free water.

aa On page 4-71, the second paragraph indicates the liquids in the tailings pond have a WAD cyanide concentration of less than 25 mg/l. This is not an accurate statement. Recent data from Newmont showed the WAD cyanide in the tailings pond for the month of September, 2000 to be above 25 mg/l from the 16th through the 28th. Newmont is making a greater effort to reduce the concentration to less than 25 mg/l.

Response to Letter 44

44u. The heading "Terrestrial Wildlife" was used throughout the document to distinguish land-based fauna from the "Aquatic Habitat and Fisheries" section. We recognize that avian, reptilian, and amphibian fauna utilize both terrestrial and aquatic sites, but we chose not to change headings throughout the document.

44v. Text under TERRESTRIAL WILDLIFE in Chapter 4 of the FEIS was changed in the following manner to address this comment: The third from last sentence in the paragraph was changed to read "... also affect wildlife." The last two sentences were deleted.

44w. We concur. The sentence in question was changed in Chapter 4, Terrestrial Wildlife - Direct and Indirect Impacts, Proposed Action of the FEIS by placing a period after "facilities" and deleting the remainder of the sentence.

44x. The sentence in question was changed in Chapter 4, Terrestrial Wildlife - Direct and Indirect Impacts, Proposed Action of the FEIS to read "...solutions in the tailing facility, launders, transfer canals, leach pads, and process ponds."

44y. In response to the comment, the last sentence in the paragraph in Chapter 4, Terrestrial Wildlife - Direct and Indirect Impacts, Proposed Action of the FEIS, was changed by placing a period after "pit lake" and deleting the remainder of the sentence. A new sentence was added to read: "Since pit lake water quality is predicted to meet aquatic life standards, or be close to those standards, no effect on wildlife that access the pit lake would be expected."

44z. The paragraph in question was moved in Chapter 4, Terrestrial Wildlife - Direct and Indirect Impacts, Proposed Action of the FEIS to follow the paragraph that starts "Some chukar upland habitat..."

44aa. The sentence in question was changed in Chapter 4, Terrestrial Wildlife - Direct and Indirect Impacts, Proposed Action of the FEIS to read "The process is designed to maintain these liquids with a WAD cyanide concentration of less than 25 mg/l." The long paragraph was then split into two paragraphs; the second paragraph starting with "The pit lake is predicted..."

Letter 44 Continued

Heather Elliott
October 11, 2000
Page 5

In the same paragraph, a new paragraph should start with the sentence "The pit lake is predicted....". This information pertains to the pit lake and not the process facilities.

bb On the same page, in the next paragraph the document states that the peak discharge will be less than 30,000 gpm. The next sentence states " This is more than 12,000 gpm than was identified in the original EIS." We believe the sentence should state "This is **less** than 12,000 gpm...".

cc On page 4-72, under the heading Potential Mitigation and Monitoring, the fourth bullet discusses the Dunphy Hill Winter Range restoration project. The document states the project was completed in 1998. While the reseeding portion of the project has been completed, the commitment to manage the area for mule deer winter range protection and improvement is ongoing. This facet of the mitigation is vital for the long term success of the restoration of the Area 6 mule deer herd.

dd On page 4-73, the second bullet discusses mitigation for sage grouse. The Division should be included in any discussions regarding additional measures to mitigate for sage grouse.

ee On the same page the third bullet discusses the potential mitigation measure to establish a monitoring site on the pit lake for the long term to evaluate the effects of the pit lake water quality on wildlife. We think this is an excellent idea. We would encourage Newmont and the Bureau of Land Management to make this commitment to protecting wildlife.

ff On page 4-74, under the heading Residual Effects, the document indicates the reclaimed habitat would be less diverse and have slightly less ground cover than prior to mining. Is this statement accurate? We feel there are numerous locations at Gold Quarry where the reclaimed mine disturbance has at least the same amount of cover if not more that the surrounding undisturbed habitat. With the lack of grazing on the mining disturbances and with the type of reclamation Newmont has demonstrated they can accomplish, we would expect this site to have higher habitat values than the grazed lands adjacent to the mine site in the near term.

gg On page 4-82 and 4-83, under the heading Potential Mitigation and Monitoring, first, third, fourth and eighth bullets discuss potential mitigation projects for Lahontan cutthroat trout. We strongly agree with all four of these mitigation projects. We would like to see these projects become mitigation for the impacts of the dewatering on fisheries habitat in the project vicinity.

hh On page 4-90, under the heading Potential Mitigation and Monitoring, the document discusses a mitigation for recreation. The mitigation is a public access easement along Maggie Creek. This easement was to be put in place as a consequence of the 1993 expansion at the South Area. The easement is to terminate in 2042 when the dewatering impacts or the flow augmentations cease. We are concerned about an access for public, once it is established, being eliminated. This should be addressed in this section.

Response to Letter 44

44bb. The sentence was corrected in Chapter 4, Terrestrial Wildlife - Direct and Indirect Impacts, Proposed Action of the FEIS to read "This rate is more than 12,000 gpm lower than was analyzed in the original EIS."

44cc. The last sentence of the fourth bullet item in Chapter 4, Terrestrial Wildlife - Potential Mitigation and Monitoring of the FEIS was changed to read "Management of the area and observations..."

44dd. Comment noted. The Division was included in discussions of sage grouse mitigation measures.

44ee. Comment noted.

44ff. The statement in question is not accurate. For an area to be released from the reclamation bond, it will have to demonstrate the same percentage cover as an adjacent undisturbed area. The first sentence in the second paragraph in Chapter 4, Terrestrial Wildlife - Residual Effects of the FEIS was changed to delete the phrase "and have slightly less ground cover."

44gg. Comment noted.

44hh. The public access easement has been signed but not yet implemented. The Maggie Creek Conservation Easement grants conditional uses to the public on private lands. The conservation easement will terminate when the terms of the agreement have been met. At the termination of the agreement, all uses of the land will revert back to the private landowner. Any access after that time will be at the discretion of the private landowner. The Maggie Creek conservation easement has been recorded with the Eureka County Recorder's Office, Book 338, pages 476-495.

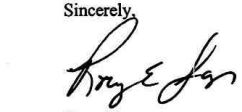
Letter 44 Continued

ii

On page 5-17, under the heading Predicted Dewatering Effects, the last sentence in the first paragraph indicates the dewatering may effect the potential for a meta-population of LCT in the Maggie Creek basin. This sentence is repeated on the same page, two paragraphs down. We would recommend the sentence in the first paragraph be edited out.

If there is a need for additional information on the comments noted above, please contact Rory Lamp at our Elko office.

Sincerely,



For Steve Foree
Supervising Habitat Biologist
1375 Mountain City Highway
Elko, NV 89801
(775) 738-5332

RL/rl
cc: Habitat Bureau
John Mudge, Newmont Gold Company
Region II
File

Response to Letter 44

44ii. The last sentence in the first paragraph in Chapter 5, Threatened, Endangered, Candidate, and Sensitive Species -Predicted Dewatering Effects of the FEIS, was changed by placing a period after "viceroy (butterfly)", and deleting the remainder of the sentence.

Letter 45

Lander County
Board of Commissioners

October 9, 2000

Mr. Roger Congdon, EIS Coordinator
Bureau of Land Management
3900 Idaho Street
Elko, NV 89801

Re: Newmont's draft EIS for SOAPA

Dear Mr. Congdon:

The Lander County Board of Commissioners appreciates this opportunity to comment on the Draft Environmental Impact Statement for Newmont Mining Corporation's South Operations Area Project Amendment.

a

Mining in general, and this project in particular, has a positive impact on the local economy of northeast Nevada. Property and net proceeds taxes have benefited the citizens of this area, funding many public works projects. Continued contributions to local governments through sales taxes generated by Newmont's employees and company spending also contribute to county revenues. Clearly, continued mining at Gold Quarry is in the public interest.

The citizens of Lander County, as represented by this Board, share the BLM's concern that the water resources of this area be properly managed and protected. To date, ongoing mining and dewatering operations at Gold Quarry have not impacted the 25 springs and seven water rights that were identified in 1993 as potentially at risk. Newmont has implemented a comprehensive monitoring and mitigation plan that will protect the water resources of the area. The Board of Commissioners is satisfied that no significant impact to water resources will occur as a result of this proposed action.

b

The Agency preferred alternative, backfilling the Mac Pit, deserves comment. The DEIS states that "Hauling to the Mac pit would involve a trip with greater vertical distance but less horizontal distance than haulage to the Gold Quarry North and South WRDFs". While this may be true, the DEIS does not mention that hauling uphill costs up to four times the amount of a level haul. The uphill haul will result in higher air emissions from the haulage equipment and considerably more fuel will be consumed. The DEIS also does not consider the lost economic potential of the site as gold resources will be buried by the backfill and future mining may be rendered uneconomic, regardless of higher future gold prices. This alternative would have negative socioeconomic impacts including the loss of property and net proceed taxes and lost payroll and sales tax.

The Board of Lander County Commissioners recommends that the BLM promptly issue a Record of Decision approving Newmont's plan without any changes.

Sincerely,

Bill Elquist, Chair
Lander County Board of Commissioners

315 South Humboldt Street ⋖⋗ Battle Mountain NV 89820
Phone: (775) 635-2885 ⋖⋗ Fax: (775) 635-5332

Response to Letter 45

45a. Comment noted.

45b. See responses 22a and b.

Letter 46

NEWMONT MINING CORPORATION
427 Ridge Street, Suite C
Reno, Nevada 89501
(775)-784-8184 phone
(775)-784-8185 fax

Mr. Roger Congdon
EIS Coordinator
Elko Field Office
Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

October 31, 2000

Dear Mr. Congdon,

Thank you for allowing us to comment on the draft SOAPA Environmental Impact Statement. We believe that the Draft SOAPA EIS is a well written document and generally agree with the associated conclusions, but we are submitting the following comments. There does appear to be some confusion on the writers' behalf between modeled groundwater reduction projections and surface water drawdown contours. In addition, we do not believe the text supports the inclusion of the backfilling of the Mac Pit with the proposed action. In fact, the text states that the new waste disposal footprints and heights will be insignificant while the haulage profile (and fuel consumption and fugitive emissions) will be higher. Not mentioned, but there as well, is the loss of potential mineralized resource.

In addition, it is important to note that this project represents primarily an extension to the SOAP, a project evaluated, consulted on and mitigated for, and that there is no potential for additional impacts beyond those previously evaluated. Below are our specific comments:

Response to Letter 46

Letter 46 Continued

a Page S-6. The Summary states that incremental reductions or elimination of base flow "would" decrease habitat quality for fish and other aquatic organisms in fish in Maggie Creeks. This is inconsistent with the analysis on page 4-30, which states that there will be no new impacts in Maggie Creek beyond those previously evaluated for the original POO. The summary should be revised to reflect this conclusion, (gee also comments for pages 4-30,4-64,4-118 for similar discrepancies concerning impacts to Maggie Creek.)

b Page S-7.The Summary states that Lahontan cutthroat trout "could" he indirectly affected by the proposed amendment. Given the substantial habitat improvement that resulted from implementation of the 1993 Mitigation Plan, and the fact that no additional dewatering impacts are projected for the proposed SOAP Amendment, impacts to LCT or LCT habitat from the proposed action are not projected. Consequently, the Summary should be revised to point out that adverse impacts to LCT are unlikely, and that beneficial effects have occurred and are likely to continue.

c Page 2-37. In the second column, "Proposed Action with Backfilling of the Mac Pit", there appear to be no significant reasons for this action. In addition to the potential loss of mineralization, no significant change in waste rock footprints, additional fuel consumption and increased fugitive emissions, the net gain is 40 acres of grazing land and wildlife habitat, also insignificant.

d Page 3-10. In the first paragraph, construction activities are blamed for the high PM10 reading. These readings and the others over the past ten years (during our air monitoring) were caused by wildfires and should be noted.

e Page 3-14. We are nor aware of any basis for the statement that flows in Maggie Creek Canyon have already been impacted by dewatering.

f Page 4-15. The second column discusses how the monitored 10-foot drawdown contour is outside the modeled contour line. The writers are confusing modeled deep groundwater projections with surface water monitoring reports.

g Page 4-17. In figure 4-3 on this page, the "current monitoring" shown is for the bedrock while the projected 10' isopleth represents drawdown in the upper lithologic layer. This figure needs to be corrected to show current drawdown only in the upper layer.

h Page 4-30. Figure 4-8 appears to be inconsistent with the text on page 4-30,

Response to Letter 46

46a. The Summary on page S-6 was changed in the FEIS so the first sentence under Aquatic Habitat and Fisheries reads "Potential incremental reductions or elimination of baseflow associated with dewatering could decrease habitat quality for fish and other aquatic organisms in lower reaches of Fish and Marys creeks." Similar changes have been made in the other sections of Chapter 4 that were referenced in the comment.

46b. The paragraph in the Summary was rewritten in the FEIS to indicate there would be no direct impacts to LCT. While the 1993 EIS did predict potential effects on the LCT, current analysis does not, based on the facts that 1) future dewatering discharges would not exceed 25,000 gpm instead of the previously approved 43,000 gpm, 2) the Maggie Creek Watershed Restoration Project has been in place for seven years and has improved significant amounts of habitat, and 3) the groundwater model indicates that fewer miles of Maggie Creek would be affected by drawdown in the future than was predicted in 1993.

46c. See responses 22a and b.

46d. In Chapter 3, Air Quality of the FEIS, the sentence that starts "Both the 24-hour..." has been changed to read "...by operations and wildfires in the area."

46e. The statement was in reference to the development of a sinkhole in Maggie Creek Canyon as presented on page 5-2 of the DEIS. However, the statement on page 3-14 did not explain that the effect on Maggie Creek flow as a result of the sinkhole has been fully mitigated by the restoration program (grouting and filling) conducted by Newmont. After providing the above explanation, Newmont has withdrawn the comment.

46f. See response 33yy. The text in Chapter 4, Impacts on Groundwater Levels of the FEIS has been revised in response to the comment.

46g. Figure 4-3 in Chapter 4 of the FEIS has been corrected.

46h. Figure 4-8 is based on the groundwater model, which assumes a baseflow of 1q.3 cfs. Studies by Plume (1994) and Maurer et al. (1996) indicate that the baseflow in Maggie Creek is zero. The text was changed in Chapter 4, Water Resources - Direct and Indirect Impacts - Proposed Action - Impacts to Baseflow, of the FEIS.

Letter 46 Continued

h which references that Figure. Figure 4-8 indicates that in lower Maggie Creek, historic base flow was one or 2 cfs, and that after dewatering, that base flow will be reduced to zero. On page 4-30, the third paragraph states that Maggie Creek was historically dry during base flow conditions, and that upon cessation of dewatering, those base flow conditions would return under both the original plan and the proposed amendment.

i Page 4-55. The DEIS mischaracterizes Newmont's mitigation commitments, by stating that Newmont would augment "any flow reductions" in Maggie, Mary's or Susie Creeks or their tributaries. The 1993 Mitigation Plan specifies that Newmont will augment flows for certain flow depletions in certain stream reaches only. See 1993 Mitigation Plan, pp. 32-34.

j Page 4-64. The last paragraph incorrectly states that the proposed action would potentially impact riparian and wetlands areas along Maggie, Mary's and lower Fish Creeks. As discussed above, there are no additional stream flow reductions projected for Maggie Creek, beyond what was previously projected for the current plan. Moreover, implementation of the Maggie Creek Watershed Restoration Plan has ensured that there will actually be improvements to riparian and wetland habitat along Maggie Creek. The same incorrect statement that SOAPA may indirectly impact riparian and wetland areas along Maggie Creek appears on page 4-65 at the top of the second column.

k Page 4-118. Table 4-7 appears to incorrectly summarize impacts to surface waters in stating that Maggie Creek will have reduced base flows compared to those projected under the current plan.

l Page 4-121. Table 4-7 incorrectly summarizes potential impacts to LCT habitat. The text states that under the "no action" alternative, LCT habitat "would be affected by temporary reductions in base flow in portions of Maggie Creek and potential habitat in Susie Creek resulting from the currently approved dewatering program." That is false. To the contrary, implementation of the original Gold Quarry Plan with the 1993 Mitigation Plan has dramatically improved habitat for the LCT. No adverse impacts to the LCT were projected in 1993, nor are any predicted today. The text correctly points out that the proposed action will not have any potential impacts to LCT habitat beyond those that were projected for the original Gold Quarry Plan in 1993, but is wrong in suggesting that impacts were projected under the original Plan.

Response to Letter 46

46h. Figure 4-8 is based on the groundwater model, which assumes a baseflow of 1q.3 cfs. Studies by Plume (1994) and Maurer et al. (1996) indicate that the baseflow in Maggie Creek is zero. The text was changed in Chapter 4, Water Resources - Direct and Indirect Impacts - Proposed Action - Impacts to Baseflow, of the FEIS.

46i. The text of the FEIS in Chapter 4, Water Resources - Potential Mitigation and Monitoring has been modified to reflect Newmont's 1993 mitigation commitments.

46j. See response 46a.

46k. The first text box in Chapter 4's Table 4-7 for Surface Water Quantity was revised in the FEIS. The first sentence was deleted and replaced with the following: "A continuation of current effects predicted in 1993, until the year 2011."

46l. The comment is correct that the 1993 EIS predicted no adverse effect on LCT. 1993 EIS at 4-89 and 4-137. In the FEIS, the text box under Threatened, Endangered, Candidate and BLM-Sensitive Species - No Action, was revised as follows: The first sentence was changed to read "Lahontan cutthroat trout would not be adversely affected." and the remainder of the sentence deleted. A new second sentence was added to read "Implementation of the 1993 Mitigation Plan, especially the Maggie Creek Watershed Restoration Project (Appendix A) continues to improve LCT habitat in Maggie Creek."

Letter 46 Continued

m Page 5-7. On table 5-2, the acreage for total pit disturbance for SOAPA needs to be corrected The table currently shows disturbance of 1973 acres whereas the total acres will actually be 1158 (see page 2-19, Table 2-7).

n Page 5-8. The first full paragraph in the second column states that several springs located near the Gold Strike Mine both inside and outside the current 10-foot drawdown, area have dried up or shown a reduction in flow. We are not aware of any springs outside the 10-foot drawdown area that have dried up or shown a reduction in flow.

o Page 5-17, fourth paragraph. In this paragraph, comments from the U.S. Fish and Wildlife are used to state that due to water reductions at lower elevations coupled with some potential catastrophic event such as fire or drought, trout populations in small streams that are tributary to Maggie Creek and that are above 6000' elevation may be lost. We do not see how this is a cumulative impact nor that cumulative impacts factor in potential, catastrophic events. It also would seem that a catastrophic event could affect the upper elevation, trout areas, regardless of potential impacts to water at lower elevations. One should also note the existing commitment to supplement any stream flow that is lost at the confluence of Maggie Creek and two of its tributaries, Coyote and Little Jack Creek.

p Page 5-14. The text at the bottom of the first column suggests that Newmont has committed to monitoring and providing replacement flows at all springs within the cumulative drawdown cone. This is an over simplified generalization. Newmont only agreed to augment flow at seeps within the Gold Quarry drawdown cone as projected in 1993.

q Page 5-14. The last paragraph states that riparian vegetation along the Humboldt River may be adversely affected. However, the Cumulative Impact Assessment ("CIA") concludes that there is a "low probability" of this occurring. CIA, p. 4-16.

r Page 5-15. The text at the top of the second column incorrectly suggests that "potential acid rock drainage may develop with resulting possible contamination of the food chain for wildlife." The three projects evaluated in the CIA have all been designed to prevent the generation and release of any acid rock drainage. Consequently, any potential impact to wildlife from acid rock drainage is extremely unlikely.

Response to Letter 46

46m. Table 5-2 was revised in the FEIS as follows: The four numbers on line 14A (for SOAP) were changed to read "0, 1019, 139, and 1158." The four numbers on the line for "Total Disturbance Acres" were changed to read "215, 3656, 1788, and 5659."

46n. The statement was taken directly from the Cumulative Impact Analysis. The sentence in question was revised in the FEIS by adding the reference "(BLM 2000b)" at the end of the sentence to direct the reader to the CIA document.

46o. The comment is correct that catastrophes are not usually analyzed as cumulative effects. It is also reasonable to assume that catastrophes could potentially eliminate the LCT populations in small streams even if dewatering effects were totally absent. The comment also fails to note the habitat improvements that have occurred through implementation of the Maggie Creek Watershed Restoration Project (DEIS Appendix A). Therefore the discussion of catastrophes has been eliminated in the FEIS by deleting the second and third sentences of this paragraph. The citation for "Williams, 1999" then follows the first sentence.

46p. In Chapter 5, Wetland and Riparian Areas - Predicted Dewatering Effects of the FEIS, the last 3 sentences of the paragraph were deleted and a new sentence was added to indicate that drawdown from dewatering is not expected to compromise the Maggie Creek Watershed Restoration Program

46q. The statement in the comment is taken from the CIA, section 4.2.5 Humboldt River, which is part of section 4.2 Impacts from Mine Dewatering and Localized Water Management Activities. CIA at page 4-15. The text in the DEIS is taken from the CIA, section 4.3 Impacts to the Humboldt River. CIA at 4-17. Since there is no real contradiction between these sections, no changes were made in the FEIS.

46r. The text in the DEIS fails to recognize that all listed facilities are permitted as zero-discharge facilities by the Nevada Department of Environmental Protection. The text also fails to note the degree of monitoring that will continue post-closure to ensure that if ARD develops, it will not become a threat to the environment. Therefore, the fourth sentence of the second paragraph in Chapter 5, Terrestrial Wildlife - Predicted Dewatering Effects of the FEIS, was deleted.

Letter 46 Continued

s

Page 5-17. The summary of potential cumulative impacts to Lahontan cutthroat trout mischaracterizes the analysis presented in the CIA. The DEIS fails to point out that, given hydrologic conditions (perched aquifers), and habitat improvement and mitigation measures incorporated into the proposed projects, any adverse impacts to LCT or its habitat are extremely unlikely. To the contrary, it is likely that, as a result of habitat improvement measures that have been and will be undertaken by the mining companies, there will be a substantial improvement to LCT habitat as a result of the cumulative effects of implementing the three projects.

t

Page 5-20. In the fourth paragraph, "could" should replace "would" throughout the paragraph. Impacts to surface waters at the two traditional cultural properties is highly unlikely due to the large distance from the dewatering centers to these areas. These areas are on the extreme outer edge of the area that could be impacted. Therefore the use of "would" impact is not appropriate. In addition, it is inappropriate to discuss mitigation because mitigation is dealt with as part of potential impacts from individual projects, not cumulative projects.

Sincerely,

Dennis Erwin
Manager, Environmental Affairs
Newmont Mining Corporation

Response to Letter 46

46s. The two paragraphs on page 5-17 of the DEIS that deal with the LCT, were rewritten in Chapter 5 of the FEIS as follows:

Mine dewatering also could affect habitat for the Lahontan cutthroat trout. Surface flows could be reduced in spring-fed portions of lower Little Jack/Jack, Beaver, and Maggie creeks, which have been documented to support Lahontan cutthroat trout. However, the majority of LCT habitat in Little Jack, Coyote, and Beaver creeks would not be affected because their upper reaches are not connected to the regional aquifer. Flow reductions also were predicted for Susie Creek, which is considered a potential recovery site for this species.

The U.S. Fish and Wildlife Service has commented that some of the dewatering impacts to Lahontan cutthroat trout may occur decades or more after mine dewatering ceases (Williams, 1999). Potential reduction in baseflows in Maggie Creek Basin may affect but are not likely to adversely affect Lahontan cutthroat trout. The Maggie Creek Watershed Restoration Program has significantly improved stream and riparian habitats since 1993, and further improvement is expected. The program was designed to enhance 1,982 acres of riparian habitat and 82 miles of stream channel in the Maggie Creek basin. In light of the relatively small amount of habitat potentially affected, the demonstrated habitat improvement (the Maggie Creek Watershed Restoration Project includes all the streams containing LCT habitat except Beaver Creek), and the committed mitigation measures, potential effects on LCT habitat are considered unlikely.

46t. Generally, all use of "would" was changed to "could" in the first paragraph in Chapter 5, Native American Religious Concerns of the FEIS. However, the first use of "would" on line 7 was not changed, as it is a result of Western Shoshone beliefs. The last use of "would" in the next to last sentence became moot because the entire sentence was deleted as inappropriate. The last sentence was also deleted to omit the reference to mitigation of cumulative effects.

Letter 47

SIERRA CLUB - *Toiyabe Chapter*

Southern Nevada Group
P.O. Box 19777, Las Vegas,, Nevada 89132

Mr. Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801
Re: Gold Quarry Mine Expansion

October 24, 2000

Dear Mr. Congdon,

The proposed expansion to the Newmont Gold Quarry mine is the most degrading mine ever proposed for Nevada and possibly for the nation.

a It is unacceptable to allow the groundwater to be depleted so that as many as 200 springs will dry and at least seven streams will dry.

b It is unacceptable to produce a toxic pit lake that will evaporate millions of gallons a year forever in the driest state in the country.

c It is unacceptable to allow 8000 acres at the mine itself and at least 30,000 acres of the Tuscarora Mountains (over the past 15 years and for the next 10 years) to be destroyed just to produce a commodity, gold, that is not needed.

d It is impossible for reclamation to restore the lost deer migratory routes and sage grouse leks.

The best thing for the environment in Nevada and for the people who live in Nevada is not to have gold mines at all.

The least that we can do is require the following things to be done

e 1. Newmont Mining must keep all of their dewatering water in the Maggie Creek basin. The future of the riparian systems and of hundreds of ecologically essential springs and seeps depends on this.

f 2. Newmont must post a bond of adequate size, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake.

g 3. Newmont must mitigate the irreplaceable loss of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if ground water levels at the site are lowered and the stream or springs dry.

Please do your best to keep Nevada healthy for today and for tomorrow.

Sincerely,

Jane Feldman
Co-Chair
Conservation Committee of the Southern Nevada Group

To explore, enjoy, and protect the wild places of the earth . . .

Response to Letter 47

47a. See response 1a.

47b. See response 1b.

47c. See response 15c.

47d. See response 8c.

47e. See response 2d.

47f. See response 2e and 1b.

47g. See response 2f.

Letter 48

Mr. Congdon,

I am writing to express my concern about the proposed Gold Quarry mine expansion. The proposed expansion is the **most degrading mine ever proposed for Nevada** and possibly for the nation. It is unacceptable to allow the groundwater to be depleted so that as many as 200 springs will dry and to allow at least seven streams to dry. It is unacceptable to produce a toxic pit lake that will evaporate millions of gallons a year forever in the driest state in the country. Tell the BLM that their pit lake model is wrong and has been shown to be wrong by the increasing acidity at Pinson.

a

I recommend the following:

b 1. That the BLM require Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

c 2. That the BLM require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake. Indicate that a minimum of $50,000,000 will be needed and reference the billion dollars pledged at the Iron Mountain Mine in CA or the $127,000,000 pledged by Molycorp in New Mexico.

d 3. That Newmont mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

Sincerely,

Jeremy Garncarz
702-650-6542

Response to Letter 48

48a. See responses 1a, b, and c.

48b. See response 2d.

48c. See response 1b and 2e.

48d. See response 2f.

Letter 49

BARRICK

Barrick Goldstrike Mines Inc.
136 E. South Temple, Suite 1050
Salt Lake City, UT 84111

October 30, 2000

Mr. Roger Congdon, EIS Coordinator
Elko Field Office
USDI, Bureau of Land Management
3900 Idaho St.
Elko, NV 89801

Dear Mr. Congdon:

Barrick Goldstrike Mines Inc., ("Barrick") is submitting these comments regarding the Draft Environmental Impact Statement, Newmont Mining Corporation's South Operations Area Project Amendment (September, 2000) ("DEIS").

a In various places the DEIS contains statements that seem to confuse the distinction between predicted drawdown from a specific mining operation with "cumulative impacts" as defined in the DEIS and the supporting Cumulative Impact Analysis. For example, this confusion seems to be present in the DEIS discussions regarding drawdown in the Susie Creek and Lower Maggie Creek area. Barrick does not believe that dewatering operations at Goldstrike will result in drawdown in the Lower Maggie Creek and Susie Creek areas. Barrick would request that the text be reviewed and clarified as necessary to avoid confusion between "cumulative impacts" and predicted drawdown from specific operations.

If you have any questions, please contact me at (801) 539-0660.

Very truly yours,

Richie D. Haddock
Senior Counsel

RDH:mgf

Response to Letter 49

49a. See responses 33yy and 46e.

Letter 50

Oct-25-00 12:04P P.01

October 25, 2000

Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, Nevada 89801

FAX (775) 753-0255

Dear Mr. Congdon:

I am writing this in regard to the proposed Gold Quarry mine expansion to let you know how very strongly I **disapprove** it! This would probably be the most damaging mining project ever in Nevada. I would like to request that the BLM require Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. It is my understanding that the riparian system and hundreds of critical springs and seeps depend on Newmont Mining keeping all dewatering water in the Maggie Creek basin. I would also ask that you require Newmont Mining be required to post a bond to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake. Also, please require Newmont to mitigate the loss of habitat by restoring many miles of the Humboldt River. Wetland and riparian areas cannot be restored if groundwater levels are lowered and streams or springs are dried up.

a
b
c

We must protect Nevada's wildlife habitat! Mining interests, as well as cattle ranching, have already exploited far too much of Nevada. I was born in Nevada sixty years ago and it is truly heartbreaking to see how trashed many of our wild places have become. When you stop to really consider the value of gold you realize that it doesn't feed, house or warm any of us. It only allows a very few to become wealthy at the expense of wildlife and all of us who treasure the few wild places left.

We must vigorously protect our environment and wildlife habitat if Nevada is to maintain a healthy environment! There is no greater sin in the Universe than to destroy the environment and I hope we never have to suffer the consequences of failing to provide checks on the greedy.

Sincerely,

Frieda Hill
P. O. Box 1073
Fernley, Nevada 89408

(775) 575-2637

Response to Letter 50

50a. See response 1a.

50b. See responses 1b and 2e.

50c. See response 2f.

Letter 51

USDOI-BLM
3900 East Idaho St.
Elko, Nevada 89801
http://www.nv.blm.gov

Public Comment on Draft Environmental Impact Statement (DEIS) for Newmont Mining Co. South Operations Area Project Amendment Due October 31, 2000.

We would like to comment on the above DEIS in reply to letter 1793.4/3809, N16-81-009P.

We support Newmont's PROPOSED ACTION.

The proposed action would provide for the environmental sound expansion of the mining at Newmont's Gold Quarry Mine, north of Carlin Nevada. The mine offers the rural Nevada population with good paying jobs, which supports a healthy tax base for the US Government, the State of Nevada, and both Elko and Eureka County as well as the local schools.

a We hereby reject the BLM proposed alternative of backfilling any open pit mine (Mac Pit) as being completely unnecessary, expensive, with no positive improved environmental effect, except potential visual effects from the air by an airplane. "The Mac Pit backfill alternative would not increase the visual impact of structures in the proposed action." The Mac Pit is ½ mile uphill from the larger Gold Quarry Pit and represents an impractical, uneconomical, and environmental extreme approach by the BLM that is not based on sound science. The BLM's proposed alternative is not supported by the US Congress as established by Public Law 91-631,The Mining and Minerals Policy Act of 1970 which states:

"The Congress declares that it is the continuing policy of the Federal Government in the national interest to foster and encourage private enterprise in (1) the development of economically sound and stable domestic mining, minerals, metal and mineral reclamation industries." 30 U.S.C. 21a

Domestic production of precious metals is vital to the US balance of trade and is essential to the local economy. The BLM's preferred alternative, Backfilling the Mac Pit, will deal an economic blow to the project that very well may result in many good jobs being lost. The proposed action by Newmont Mining Co. is crucial to the continued economic livelihood of Elko and Eureka County. The BLM adoption of their preferred alternative could put miners out of work! The statement made by the BLM that "Impacts on the economic resources in the study area with these alternatives would be the same as under the Proposed Action." This is not true! The BLM did not economically evaluate the increased cost of

b transporting waste rock uphill to backfill the Mac Pit. Also the Mac Pit still contains mineralization which could be mined at higher gold prices. Great socioeconomic impacts could occur from the BLM adopting the preferred alternative, which is not addressed in the DEIS. With current low gold prices, Newmont's proposed project is on the economic borderline. The BLM uses socioeconomic data that is 3 to 4 years old.

c Thus, the BLM prefers to potentially shut down a mine to save the impact on only 6 acres, (BLM Preferred Alternative vs. Newmont's Proposed Action) which is 0.078 % of the total surface disturbance.

Due to the lack of current, sound, scientific socioeconomic data presented by the BLM to support their Preferred Alternative, and the potential costs, tipping the project to uneconomical, with the loss of jobs, we strongly recommend Newmont's Proposed Action.

Thank You

Harvey Hill

Response to Letter 51

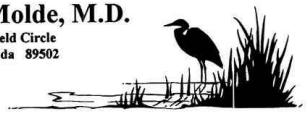
51a. In the DEIS the preferred alternative was the Proposed Action with backfilling of the Mac pit. However, based on public comment and additional analysis of alternatives, the Proposed Action was selected.

51b. See response 22b.

51c. The socioeconomic data vary in age. The EIS was started in 1997, but we used 1999 as the most recent year when certain kinds of data were available. These data are considered representative.

Letter 52

Donald A. Molde, M.D.
3290 Penfield Circle
Reno, Nevada 89502



October 27, 2000

Mr. Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, Nevada 89801

Regarding: Gold Quarry Mine Expansion

Dear Mr. Congdon

I have long been concerned about the residuals and outright environmental damage that Nevada has sustained due to mining activity. I remember, years ago, that it was a nice outing to go to the Tuscarora Mountains. Now, it is a depressing event, to be avoided.

Now, the specter of dewatering of streams, springs, and aquifers presents an even more impressive way for mining to leave a legacy of damage and destruction for Nevadans and all citizens of this country who are stakeholders in the public lands. The proposed Gold Quarry mine expansion appears to be a worst case example of this situation, and should not be allowed.

I would urge you to take a dim view of this project, and consider the following:

a - The BLM should require Newmont Mining to keep all of its dewatering in the Maggie Creek basin. To do otherwise, places the future of riparian areas elsewhere in jeopardy;

b - Newmont Mining should be required to post a long-term bond, for decades, to allow for remedial action to clean up toxic water accumulations, and to replace water in areas where it has been lost to the pit lake;

c - Newmont Mining should take some action to mitigate loss of habitat by restoring miles of the Humboldt River. If wetlands or a significant riparian area are lost to dewatering, it won't be possible to restore those areas.

Sincerely
Donald A. Molde, M.D.

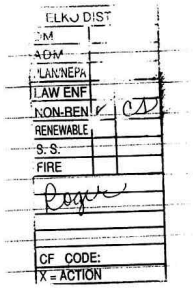
Response to Letter 52

52a. See response 2d.

52b. See response 1b and 2e.

52c. See response 2f.

Letter 53



P.O. Box 477
Hawthorne, Nevada
October 29, 2000

BLM CRE: Gold Quarry Mine Expansion
Mr. Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, Nevada 89801

The Gold Quarry mine expansion is the most degrading mine ever proposed for Nevada and possibly for the nation. It is unacceptable

a to allow the groundwater to be depleted so that as many as 200 springs will dry and to allow at least seven streams to

b dry up killing their riparian areas. It is unacceptable to produce a toxic pit lake that will evaporate millions of gallons of water a year forever in the driest state in the U.S. It is unacceptable

c to allow 5,000 acres at one mine and at least 30,000 acres of the Tuscarora Mountains to be destroyed just to produce a commodity, gold, that is not needed. Reclamation does not restore the land.

Request the following:

d That the BLM require Newmont Mining to keep all of their dewatering water in the Maggie Creek Basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

Response to Letter 53

53a. See response 2a.

53b. See response 2b.

53c. See response 15c.

53d. See response 2d.

Letter 53 Continued

e That the BLM require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake.

f That Newmont mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or spring is dry.

Thank You

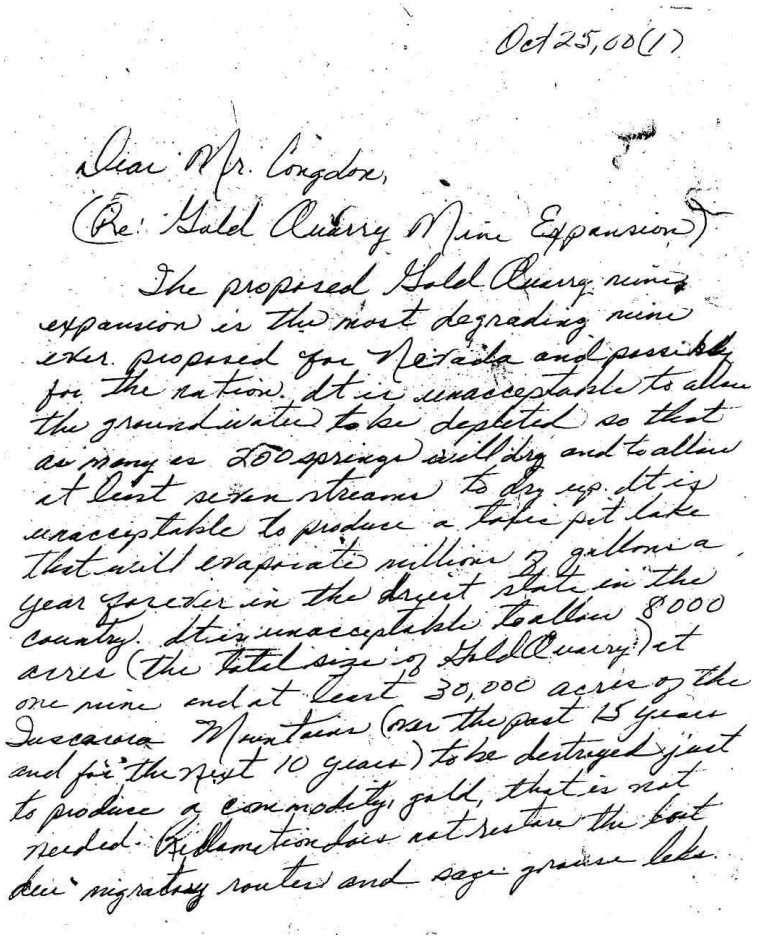
Pat Mulcahy

Response to Letter 53

53e. See response 1b and 2e.

53f. See response 2f.

Letter 54



Oct 25, 00 (1)

Dear Mr. Congdon,

(Re: Gold Quarry Mine Expansion)

The proposed Gold Quarry mine expansion is the most degrading mine ever proposed for Nevada and possibly for the nation. It is unacceptable to allow the groundwater to be depleted so that as many as 200 springs will dry and to allow at least seven streams to dry up. It is unacceptable to produce a toxic pit lake that will evaporate million 2 gallons a year forever in the driest state in the country. It is unacceptable to allow 8000 acres (the total size of Gold Quarry) at one mine and at least 30,000 acres of the Sarcavia Mountains (over the past 15 years and for the next 10 years) to be destroyed just to produce a commodity, gold, that is not needed. Reclamation does not restore the lost rare migratory routes and sage grouse leks.

a

b

c

d

Response to Letter 54

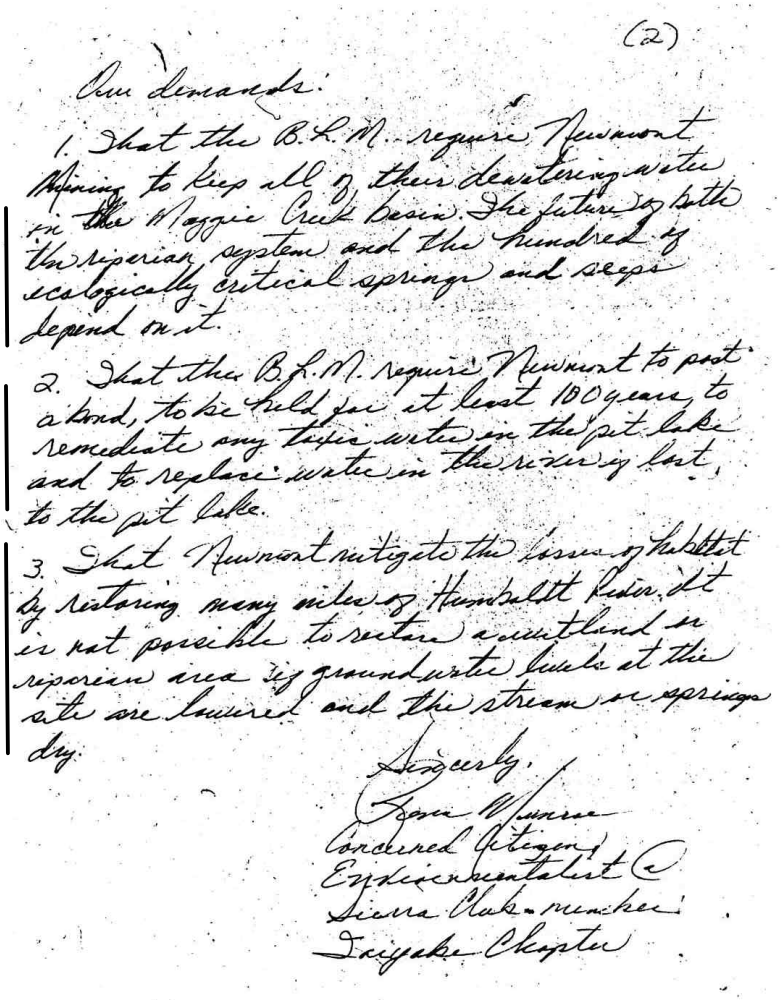
54a. See response 2a.

54b. See responses 1b and 2e.

54c. See response 15c.

54d. See response 8c.

Letter 54 Continued



(2)

Our demands:

e 1. That the B.L.M. require Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. The future of both the riparian system and the hundred of ecologically critical springs and seeps depend on it.

f 2. That the B.L.M. require Newmont to post a bond, to be held for at least 100 years to remediate any toxic water in the pit lake and to replace water in the river if lost, to the pit lake.

g 3. That Newmont mitigate the loss of habitat by restoring many miles of Humboldt River. If it is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

Sincerely,

Sam Wunsch
Concerned Citizen,
Environmentalist &
Sierra Club member
Toiyabe Chapter

Response to Letter 54

54e. See response 2d.

54f. See response 1b and 2e.

54g. See response 2f.

Letter 55

28 October 2000

Mr. Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, NV 89801

Dear Mr. Congdon:

We demand that:

a 1. The BLM require Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. The future of both the riparian system and the hundreds of ecologically critical springs and seeps depend on it.

b 2. The BLM require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake.

c 3. Newmont mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

d Because the proposed GOLD QUARRY MINE EXPANSION is the most degrading mine ever proposed for Nevada and possibly for the nation, it is unacceptable to allow the groundwater to be depleted so that as many as 200 springs will dry and to allow
e at least seven streams to dry up. It is unacceptable to produce a toxic pit lake that will evaporate millions of gallons a year forever in the driest state in the country. It is unacceptable to allow 8000 acres (the total size of Gold Quarry)
f at one mine and at least 30,000 acres of the Tuscarora Mountains (over the past 15 years and for the next 10 years) to be destroyed just to produce a commodity,
g gold that is not needed. Reclamation does not restore the lost deer migratory routes and sage grouse leks.

h Imagine it's the year 2010 and all of the mines in the Tuscarora Mountains northwest of Elko are closing after having removed 3 million acre-feet of water from the ground just to keep the pits dry. The water table's been lowered up to 1600 feet and lakes are forming in the open pits. Thousands of workers have been laid off and the mining companies have safely removed their billions in profits to Toronto and Denver. Then's when the real impact of mining begins. Within a 100 years, aquifers over 50 miles from the mines in the Tuscarora Mountains will be dessicated to fill the pits. The economic benefits of mining in northeast Nevada will last a few decades; the degradation will continue for centuries.

PLEASE SAVE OUR STATE FROM SUCH DEGRADATION!

Sincerely yours,

Maie Nygren
Ms. Maie Nygren
6800 Mission Road
Fallon, NV 89406

Myrl Nygren
Ms. Myrl Nygren
6800 Mission Road
Fallon, NV 89406

Response to Letter 55

55a. See response 2d.

55b. See response 1b and 2e.

55c. See response 2f.

55d. See response 2a.

55e. See response 2b.

55f. See response 15c.

55g. See response 8c.

55h. As presented in Chapter 5, Table 5-1 of the DEIS, there are 12 working mines on the Carlin Trend, three in the process of closure, three formal proposals for new mines, three projects considered reasonably foreseeable, and several exploration targets. This means that mines will be opening and closing simultaneously for many years. All the mines are on different schedules so there would not be mass closings and mass layoffs of workers. It is already the case that mine workers move from one mine to another when there are shutdowns or even temporary closures. The deepest drawdowns of the water table would, of course, be nearest the pits, and drawdowns 50 miles away would be on the order of ten feet or less. It is doubtful that springs or seeps out at the periphery of the predicted drawdown contours would all be significantly affected. See response 32n.

Letter 56

WESTERN SHOSHONE DEFENSE PROJECT
P.O. Box 211308, Crescent Valley, Nevada 89821
phone: 775-468-0230, fax: 775-468-0237, email: wsdp@igc.org

2000 OCT 31 PM 4:58

October 31st, 2000

Mr. Roger Congdon
Elko Field Office
Bureau of Land Management
3900 East Idaho St.
Elko, Nevada 89801

Re: South Operations Area Project Amendment Draft EIS

Dear Mr. Congdon,

These are the comments of the Western Shoshone Defense Project (WSDP) on the **Draft EIS for Newmont Mining Corporations South Operations Area Project Amendment**.(SOAPA) They also refer to the **Cumulative Impact Analysis of Dewatering and Water Management Operations for the Betze Project, South Operations Area Project Amendment, and Leeville Project**,(CIA) a supporting document to the previously mentioned DEIS. The WSDP is a Western Shoshone directed non-profit organization committed to the preservation of Western Shoshone rights and lands for present and future generations based upon cultural and spiritual traditions. We are extremely concerned with the predicted impacts this project will have on water resources, wildlife habitats, and cultural sites important to the Western Shoshone people. Our examination of the DEIS and its supporting Cumulative Impact Study leads us to believe that you have failed to accurately assess the resources potentially impacted, the methods of analysis are flawed or non-existent, mitigation is insufficient, and you have failed to respect current U.S. law and policy concerning the impacts of this project on values and resources necessary for the survival of the Western Shoshone. It is our opinion that both the DEIS and the Cumulative Impact Analysis need to be redone, in order to comply with NEPA and honor the Treaty based relationship with the Western Shoshone (as well as the Federal government's self-proclaimed trust responsibility to Indian people.)

Inadequate Comment Period

a The first point we would like to make concerns the time period for comment. We have been left with three full sized documents with no more then ten weeks to analyze all three. Within this time period there were known prior commitments for the Tribes, including participation in a Carson City Native American Mining Symposium which BLM staff participated in, as well as a week long Native American/EPA conference in San Francisco which most of the tribal environmental staff had to go to. Considering the extent of possible impacts , both physically and temporally, it is obvious that cumulative

Response to Letter 56

56a. See response 24a.

Letter 56 Continued

a

impact of these projects is without precedent. Impacts will happen 100+ years into the future over a several hundred square mile area. We were told this winter by the Elko BLM during informational meetings that these EIS's would be released March 2000, but this was constantly set back until September. Yet despite the BLM's ability to alter and amend its own deadline as it saw fit, it was totally unwilling to grant a two week extension to prepare these comments. This two week extension requested by several Tribal representatives as well as our organization would have allowed us to submit comments at the same time on both the SOAPA DEIS and the Betze Supplemental EIS, which are both tied to the cumulative impact analysis. This was a reasonable request. However the Elko BLM has seen fit to deny the comment extension in a most arbitrary and capricious manner, which calls into question its commitment to work with the Western Shoshone and honestly incorporate their concerns into the final analysis. It also suggests that the BLM is working on a tight schedule demanded by the project proponent, rather then taking the time necessary to solicit and evaluate the public interest issues involved

b

Problems with CIA

A house built on an unstable foundation is destined to fall apart. **Cumulative Impact Analysis of Dewatering...** provides the foundation for analysis presented in both the **SOAPA DEIS** and the **Betze Supplemental EIS.** Because of the information left out, misrepresented, or inadequately analyzed the Cumulative Impact Analysis has compromised the accuracy of all the EIS's it is used to support. We are particularly concerned with the lack of data for the western portion of the impact area, specifically the Rock Creek watershed, including Antelope Creek. Figure 3-6(CIA) marks locations for identified springs but does not indicate any springs along the lower portion of Rock Creek, where the creek flows perennially through Rock Creek canyon/gorge. As almost all other perennial reaches indicated throughout the impact area have associated springs feeding them, why has this been left out for the reach here? There are at least several significant springs along this portion of Rock Creek. When Western Shoshone representatives were given a presentation at a BLM/Western Shoshone information meeting by Barrick and/or Newmont representatives a similar if not identical map was presented with the same lack of springs. This discrepancy was pointed out then and we are very disappointed that it has not been addressed in this document. A hot spring located on Rock Creek above its confluence with Willow Creek has also been left out.

The discussion of the hydrology around the Rock Creek basin is confusing and difficult to comprehend.
While some data suggests that Rock Creek does not gain flow while passing through the Sheep Creek Mountains, other more recent data suggests it gains flow in this stretch. (CIA 3-20-21)The water balance discussion indicates that inflow increases with mine dewatering, yet other data suggests a reduction of base flow from 6.4 cfs to 4.8cfs, a significant decrease.(CIA3-72) Figure 2-3(CIA) indicates groundwater flow in a southeast direction across the Sheep Creek range, as well as indicating groundwater flow in a southwest direction along the front of the Sheep Creek Mountains. Figure 3-13(CIA) indicates both the cone of depression and the groundwater mound crossing through the

2

Response to Letter 56

56a. See response 24a.

56b. The CIA document is a technical report submitted in support of the three EIS documents prepared or being prepared for the three mining projects. As such, BLM does not anticipate revising the CIA in response to public comments. If an error in fact in the CIA was directly carried into the SOAPA EIS, then the Final SOAPA EIS would have been revised. Since much of the comment deals with possible errors and omissions on the west side of the cumulative study area where little impact from this project is likely, no changes will be made in the Final SOAPA EIS.

Letter 56 Continued

Sheep Creek Mountains, across what are faults which we were previously lead to believe would act as hydrological barriers. This leaves no clear understanding of what is happening hydrologically in this area.

Other holes in the data for the Rock Creek basin exist. It is not clear if the water owned by Lander County for the previously proposed Rock Creek Dam and Reservoir is included in the water rights discussion.(CIA 3-65) Geologic, hydrologic, and cultural information was gathered over several decades for this project which fortunately never came to fruition largely due to significant Native American opposition. How and where has this information been incorporated into the CIA? Surveys for aquatic resources, especially fish seem to limited to the upper reaches of Rock Creek, again ignoring the perennial portion through the canyon/gorge area. (CIA 6-3) Regarding Antelope Creek, the CIA states that Antelope Creek is perennial in its upper reaches, yet the nearest monitoring point is located beyond this stretch, in fact even beyond the point where the creek flows in a wet year. (CIA 3-20) This makes no sense from a monitoring standpoint.

Purpose and Need

c It would be helpful for the public to see quantified the actual usage of gold. What are the predominant uses and how do they compare to each other? How much gold is used every year and how much gold do we have in storage to meet these needs. This information would provide a more meaningful understanding of the purpose and need for this project.

Water Quality

d No long term closure plan for the tailings, heap leach, and waste rock dump is presented in the CIA or SOAPA. Precipitation will likely result in the discharge of fluids from these facilities long after the mine site is reclaimed. These fluids will most likely exceed drinking water standards and contain hazardous substances. No detailed plan is provided on how this will treated or prevented in the future. The location of these facilities

e upstream of Carlin threatens the drinking water source for the city hundreds of years into the future. On long does Newmont's commitment to provide potable drinking water

f to the city last? Why is acid mine drainage (AMD) at the refractory ore stockpile not measured?(SOAPA 3-3) Would not this information be useful for predicting long-term AMD potential, providing concrete data to test modeling assumptions?

g Modeling for the pit lake indicates it will exceed drinking water standards for several constituents in the future. No discussion is include on how this would be prevented. This creation of an impoundment that has the potential to degrade water quality violates Nevada State law. It is not clear from the limited discussion of modeling of pit lake chemistry whether the added surface area created by fracturing in the blasting and mining process (thereby increasing the amount of material available for reaction) has been accounted for. Another related problem, is the potential of AMD/ oxidation in fractured/fissured bedrock adjacent to the pit after water levels begin to rise following the cessation of mining activity. The close proximity of tailings and waste dumps to the pit, and the potential of contaminated runoff from these facilities to run into the future pit

3

Response to Letter 56

56c. The predominant uses of gold are for (1) fabrication (jewelry, coinage, electronics), and (2) investments (coinage, bullion). On an annual basis, fabrication and investment demand typically consume more gold than is newly refined each year. In 1999, demand was 106 percent of production. That year, the excess demand was supplied by sales from various national central banks of nearly 8.2 million ounces. Fabrication demand in 1999 was 101.1 million ounces and investment demand was 11.8 million ounces. Newmont's North American operations produced a little over 3.0 million ounces in 1999. Source: Engineering and Mining Journal, January, 2000, page 17, and January 2001, page 38.

56d. See responses 32w and 32x.

56e. The mitigation terms are provided in detail in Appendix A - Mitigation Plan of the 1993 DEIS. The 1993 Mitigation Plan will be updated as Appendix A of this FEIS. Newmont would offset any impacts upon the Carlin Cold Springs from dewatering activities by use of Well No. 1, located in the northwest portion of Carlin. That well was drilled in 1988 to act as a back-up potable water source. The language used to determine the length of time mitigation would be provided is based on providing that mitigation until the water level in the affected well returns to within 10 feet of its pre-impact level (as determined by Newmont and BLM based on then-existing monitoring data), or until the BLM determines that mitigation is no longer necessary, whichever is sooner. 1993 Mitigation Plan at pages 25 and 29.

56f. Acid mine drainage from the refractory stockpile is not considered significant in volume, and is totally captured and put into the process water system. The refractory stockpile ultimately will be consumed and the acid mine drainage will cease. Therefore, measurement would serve no purpose.

56g. See responses 33y, z, aa, bb, cc, dd, ee, ff, gg, hh, ii, and jj.

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lake has not been addressed. How would this effect predictions of water quality in the pit lake?

Air Quality

h There is no discussion of the amount and impact of mercury emissions released by the mining operation. Significant releases do occur as indicated in the TRI data for SOAPA. It is unconscionable that this fact has been ignored in both the CIA and the SOAPA.

Modelling Issues

i The computer models used to predict dewatering impacts are very speculative. They are most accurate immediately adjacent to the mine, an as distance increases from the mine information regarding underground structure and hydrology decreases, limiting the accuracy of the model. The model in the areas of cultural concern is based on a very

j limited understanding of the characteristics of the area. The BLM has known since at least 1983 through communications with traditional cultural practitioners and Western Shoshone leadership that these areas and the waters around them are very important. They also have been told in May 1999 that the models should be improved to better understand the hydrological impacts in the areas of concern (Letter from WSDP to BLM May 19th, 1999) Unfortunately the BLM has failed to incorporate any of these comments and suggestions in the preparation of the models or monitoring plans. In fact the letter isn't even referenced in the CIA or SOAPA. We have our doubts about the accuracy of models created by the project proponent to accurately reflect the potential impacts of dewatering. There appears to be a willful lack of data concerning the hydrological characteristics around the sites of importance to the Western Shoshone.

k There is no discussion about potential weather changes resulting from global warming. How is it that it is all right to use computer models to predict dewatering impacts but we cannot incorporate the current science and modeling to account for weather changes?

l "Changes in the water table less than 10ft were generally not considered because these changes would probably be indistinguishable from natural seasonal variation and annual fluctuations in ground water levels." (CIA 3-50) We are provided with no information backing up this assertion, do groundwater levels in the area of impact truly fluctuate that much? We will defer to the more technical comments provided by Great Basin Minewatch in regards to the problems with the modeling.

Monitoring and Mitigation

m Most of the potential impacts from these projects rely on mine initiated mitigation to minimize the negative effects. However there is little data or evidence to back up the suggested effectiveness of these mitigations. The SOAPA states that "Successful mitigation of springs and streams generally is unproven technology; should mitigation fail, residual effects would result." (SOAPA 4-56). 118 acres of wetland were supposedly created at the Carlin Tunnels.(SOAPA 3-62) Does this former gravel pit truly function ecologically as a wetland area? Does it provide the same habitat and hydrological benefits as a natural wetland. No information is provided to assess the

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56h. See response 32t. Newmont's mercury compound emissions consist of 29 pounds per year to the air from non-point sources, 50 pounds to the air from the roaster stack, 110,000 pounds to the tailing impoundment, 120,000 pounds to the leach heaps, 400 pounds to a refining company out-of-state, 48 pounds to a waste recovery company out-of-state, and 48,000 pounds recycled on-site (recovered as liquid mercury for sale). Please note that all these releases are allowable releases and, with the exception of releases to air, do not represent exposure to people. When the Draft EIS was printed and submitted to the public, the EPA had not yet developed mercury emission standards, so there are no air permit limitations at present.

56i. See response 33mm.

56j. The BLM is well aware of the importance of the Traditional Cultural Properties. Groundwater is monitored on a regular basis at many wells between the Carlin Trend mines and these properties. Modeling is a tool we use to plan future monitoring needs, and the model itself can only be improved when the monitoring network begins to show the effects of drawdown from pumping. It is possible to go into areas previously unstressed by mine pumping, drill several new wells and conduct pumping tests which would reveal previously unknown hydraulic characteristics. However, on the scale of this model domain, this would only yield information over a limited area for each pump test and would create a significant amount of surface disturbance. The May 19, 1999 letter referred to in the comment indicated that "...drilling is often thought of as a very intrusive and disturbing activity when conducted near sites of cultural importance." In the final analysis, it is the monitoring well network, or measures that will prevent impacts to areas of cultural importance. See responses 32cc, dd, ee, ff, gg, 33cccc, and dddd.

56k. The controversial subject of global warming is beyond the scope of this EIS.

56l. The assertion mentioned in the comment is one of the input parameters for the groundwater model that is fully explained in the model source documents (Hydrologic Consultants Inc., of Colorado, 1999). See responses 32cc, dd, and ff.

56m. The wetland created near the Carlin Tunnels is functioning as a wetland but is still a work in progress. It was constructed as off-site mitigation for a Section 404 Permit. There is no real information on how well it functions as a wetland, but it is serving as habitat for avifauna.

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n effectiveness of this mitigation. I have never seen much if any wildlife at this site, probably because of its close proximity to Interstate 80. Often monitoring is described under mitigation, yet case law surrounding NEPA makes it clear that monitoring is not mitigation.

o "Offsite mitigation has been provided by Newmont for vegetation lost from the pit area for both the existing operations and SOAPA by seeding areas at Bob's flat and Dunphy Hills." (SOAPA 4-62) Little information is provided to evaluate the effectiveness of this mitigation. What was seeded, did it take, it is having a beneficial effect on wildlife? Where is the evidence? What happens when reclaimed areas burn? Whose responsibility is it for revegation of a reclaimed area after it has burned, especially considering the difficult (expensive) nature of reclaiming mining disturbed areas. No information is provided to suggest that off site mitigation has resulted in increased wildlife levels to replace losses resulting form mining.

p The 1993 SOAPA mitigation plan is frequently referred to in both the CIA and the SOAPA DEIS to demonstrate the effectiveness of ongoing mitigation. Yet we have only one monitoring analysis to evaluate the effectiveness of this project, and this analysis is 3 years old. While riparian conditions have apparently improved , biological standards were not achieved in approximately half the areas monitored. Subsequent monitoring analysis described as forthcoming in this report appear to not have been completed. (SOAPA Appendix)

q The CIA claims that "Newmonts mitigation plan to augment low flows should minimize longterm effects effects from reduced baseflow in the river, thereby minimizing the impacts to wildlife and their associated habitats." (CIA 5-24) Yet the CIA also claims that "the potential reduction of riparian vegetation during this period cannot be quantified." These statements contradict one another. What is even more problematic is the fact that the Humboldt river is already over-appropriated. (CAI 3-87) So how can Newmont use its senior water rights to replace or augment lost flows when the river already is over appropriated? If there is not enough water around for current legal users. how will there be any to replace lost waters when there is even less water during and after dewatering? Does Newmont possess enough senior water rights to replace all expected losses as a result of dewatering? How do Newmont's water rights along the river help augment or mitigate losses to springs and creeks far away from the river?

r One of the distinguishing features of both the Rock Creek and Tosawihi Quarry sites is the presence of natural springs which have spiritual and medicinal significance to traditional Western Shoshone. The potential of dewatering, occurring along the Carlin Trend, to impact these springs resulted in the initiation of consultation with the Western Shoshone. The drying up of any of these springs due to dewatering would fundamentally degrade the integrity of these sites. It is therefore imperative that the BLM implement monitoring and mitigation to prevent this from happening. Approval of mine plans without culturally and environmentally appropriate monitoring and mitigation would represent a failure on the part of the BLM to honor its trust responsibilities and other obligations under Federal law.

5

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56n. The comment is correct. Mitigation and Monitoring is only a format heading for the EIS document and is not intended to treat monitoring as mitigation.

56o. Reclamation of a burned area would be the responsibility of the BLM and operator, with some differences depending on whether the operator's bond had been released. A burned area is not always rehabilitated, but can sometimes result in a different and beneficial habitat. Information on wildlife levels (mule deer) is gathered by the NDOW on an annual basis after the fall hunting season when the herds have moved to their winter range. These reseeding efforts have been successful,. Monitoring by NDOW has documented that various shrub species utilized by deer as forage have been established. Both deer and antelope have been documented using the reseeded areas. For example, more than 600 deer were observed in the Dunphy Hills during NDOW's annual 1998 spring survey. Fawn survival rates in the Dunphy Hills have also been higher than at other areas in the vicinity.

56p. The land involved in the Maggie Creek Watershed Restoration Project is public land, and the BLM considers improvement in meeting biological standards as proof of the effectiveness of the mitigation. Although not all biological standards have been met, of greater importance is the demonstrated recovery, both numerically and with photographs, of both grazed and ungrazed pastures within the restoration project area. Monitoring continues and Appendix A of the FEIS contains the 1999 monitoring analysis.

56q. Both statements indicate that potential effects on habitats are expected; some will be mitigated, but others are difficult to quantify. Newmont does possess enough senior water rights to be able to augment projected reductions in the Humboldt River, as the reductions are expected to be small and Newmont's water rights are significant. Newmont's water rights would not be used to mitigate springs and creeks. Mitigation of potential reductions or losses in those features due to dewatering would be mitigated by supplementing flows via water transfers, new wells, or other methods described in the Mitigation Plan.

56r. See response 33yyy.

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Claims have been made by the BLM and both Barrick and Newmont that faults along the Sheep Creek range serve as hydrologic barriers which will limit the extent of dewatering impacts on the proposed TCPs. Based upon an examination of existing reports and data we dispute that assertion. **USGS Water-Resources Investigations Report 96-4134 "Water Resources and Effects of Changes in Ground-Water Use Along the Carlin Trend, North-Central Nevada"** indicates that these faults are not barriers to flow, but water in fact flows through them from Rock Creek Valley into Boulder Valley. The Sheep Creek Mountains themselves are of volcanic origin and are more permeable to water then other bedrock types. This USGS noted the creation of a groundwater mound (elevated groundwater levels) which is a result of water reinfiltrating through the bottom of the TS reservoir. This water mound extends *through* the Sheep Creek mountains, across the faults, into Rock Creek Valley. This suggests a significant degree of connectivity. If water will rise through these supposed barriers, what is to prevent it from declining through the same barriers. The Boulder Valley Monitoring Report Second Quarter 1998 from Barrick confirms the existence of the groundwater mound as it extends through the Sheep Creek Mountains into Rock Creek Valley.

r

The computer models used to predict dewatering rates and impacts are most accurate in the immediate vicinity of the mining operation. As distance increases from that point, so does the accuracy of the model. The same USGS report notes that data points are sparse in the northeastern portions of Rock Creek Valley, indicating that any model predictions for this area would be based on very limited data input. Because of this we recommend that a far more extensive water monitoring program be put in place for areas surrounding the proposed TCP's. The creation of a more detailed hydrologic framework for the area will involve the drilling of more monitoring wells. These additional data points will provide for more accurate evaluation of the impacts of dewatering on these areas. However we would caution the BLM that drilling is often thought of as a very intrusive and disturbing activity when conducted near sites of cultural importance. The location and construction of new monitoring wells would have to be done with the participation and cooperation of involved Western Shoshone groups. It is unlikely that drilling within either sacred site would be acceptable.

The creation of a monitoring framework which can provide accurate and timely information on the impacts of dewatering is the first step in protecting Rock Creek and the Quarries. It is especially important that the monitoring system be able to detect changes in the water table long before these changes impact the sites. This would allow the implementation of mitigation before the site(s) is impacted. If change is detected at the same time the springs are impacted it is already too late.

Commonly used mitigative practices such as providing supplemental waters if springs should dry will not work in relation to the proposed TCP's. The significance of these waters is partly due to the fact that they are natural springs. Drilling a well, and installing a solar pump at these sites in lieu of the natural spring is something akin to putting it on artificial life support. You will have already dried up the natural source. Water supplementation may mitigate the loss of that water to wildlife (and not entirely because

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56r. See response 33yyy.

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a trough or well does not provide the same range of habitat and ecological functions that a natural spring does), but it cannot replace the religious and medicinal properties represented by the original springs. That is why it is necessary that the BLM develop alternative mitigation strategies to prevent the springs from drying up in the first place.

r Mitigation that could protect these sites would have to involve modification of the dewatering schedules or mine plans of operations. We are not experts in this field, but the creation of infiltration wells and/or fields could do much to limit the extent of dewatering impacts. Pit backfilling if environmentally appropriate could help reduce impacts from the water deficit created by pit refilling. Some mining companies in Canada have used artificial barriers created underground either by freezing or with grout to reduce the amount of groundwater pumping necessary for mine development. Mitigation plans should have been included in both the CIA and SOAPA to permit proper evaluation by the public and tribes. Failure to include this important information in the DEIS is another indication suggesting that Newmont has exerted pressure on the BLM to expedite the NEPA process for this project.

We feel the mining companies have demonstrated enormous technical capabilities in extracting the gold, is it not too much to expect that these same capabilities be used to limit the extent of the damage they are causing. Even with gold prices at a twenty year low, we note that Newmont and Barrick continue to be profitable companies. In 1998 Peter Munk, chairman of Barrick, took home $35.5 million through his pay package. How do you think that compares with the $26 million you have tried to give us for our entire territory? We do not feel the short term benefits of extracting gold should outweigh the long term values associated with Rock Creek and Tosawihi Quarry.

Lack of Meaningful Alternatives

The selection and evaluation of alternatives to the proposed action are, without a doubt, the most critical aspects of the environmental review process codified by Congress in the National Environmental Policy Act. (NEPA). The CEQ Guidelines state quite unequivocally, that this "section is the heart of the environmental impact statement." (40 CFR 1502.14). In order to live up to NEPA's mandate the decision-maker, as well as the public, must be presented with "the environmental impacts of the proposal and the alternatives in comparative form", thus "sharply defining the issues and providing a clear basis for choice". (Id.). Under NEPA, agencies are directed to, inter alia :

(a) Rigorously explore and objectively evaluate *all reasonable alternatives*, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
(b) Devote substantial treatment to *each alternative* considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
(c) Include *reasonable* alternatives not within the jurisdiction of the lead agency....

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56r. See response 33yyy.

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(Id.). Agencies are mandated under NEPA to follow these procedures in order to sharply define the issues and provide a sound basis for the decision-maker to choose among the available options. Without strict adherence to the duties mandated, the environmental review process is left impotent and emasculated.

s This DEIS fails to adequately evaluate, or even characterize, alternatives to the significant impacts occasioned by the groundwater cone of depression. These adverse impacts include, but are not limited to; impairment of traditional Western Shoshone cultural and religious practices, loss of riparian habitat critical to the Lahontan cutthroat trout and the California floater, groundwater loss to local communities, continued squandering of the water resources of the Tuscarora Mountains and Maggie Creek basin, violations of the Clean Water Act as well as the Nevada Water Pollution Control Act.

t Under the heading "Water Disposal Alternatives", we are initially mislead by the manner in which the alternatives are characterized. For example, the first alternative is characterized as "Reinjection of *all excess water*" (emphasis added). We are told that this alternative has been eliminated from detailed analysis because it is "technically infeasible". Likewise, the second alternative is characterized as "Infiltration of *all excess water*"(emphasis added). We are told that this alternative was also eliminated because of its "inadequate capacity". From what we have seen in this DEIS, these two alternatives have not been considered in tandem. Since neither alternative seems sufficient in isolation, perhaps it would be both technologically feasible as well as adequate to combine both approaches. A percentage of the "excess water" could be reinjected into the bedrock and a percentage could be infiltrated into the alluvium. Regarding the underground mine alternative, it is rejected because the ore grade is low, however we understand that the ore being mined by SOAPA is of a higher grade. All of these rejections were based on data presented seven years ago for a different EIS. Where is the current data to back up the rejection of these alternatives?

1872 Mining Law

u The BLM has improperly failed to consider in the DEIS whether the mining proponent has appropriate and adequate mining claims for this proposed action or any of the alternatives. A mine plan on public land is predicated on the validity and proper use of lode claims and the proper number and area of millsite claims. As is the policy of the Department of Interior as delineated by the Solicitor and decided by the Department at Crown Jewel in Washington state, the BLM must consider these issues as a part of the plan approval process.

The proposed operation will use roughly 839 new acres of public land for its open pit and ancillary facilities such as waste rock dumping, heap leaching, and support facilities. This amount of public land disturbance would be in addition to the current 2,047 acres. DEIS at S-2. The DEIS incorrectly assumes that the company has a right to develop these public lands, stating that there is a "statutory right of mining claim holders to develop federal mineral resources under the Mining Law of 1872." DEIS at 1-3.

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56s. The DEIS presents a summary of the analysis of alternatives from the 1993 EIS, then presents analysis of new alternatives formulated for the SOAPA project, DEIS at 2-41 and 2-36, respectively. See responses 2d, 2e, 32aa, and 33m, n, o, and r.

56t. The suggested alternative of using injection and infiltration in combination was rejected because it would also be expected to cause significant recycling of water into the mine pit with potential pit wall instability concerns. Infiltrating an even smaller portion of the discharge water into the alluvium was not considered cost effective. Underground mining was addressed in response 32aa.

56u See responses 32hh, and 33o.

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Under federal law, such a "right" **only** exists if the claims are valid and if the proposed uses of valid claims are legal. In this case, the BLM has failed to ascertain whether these conditions are met. It appears that the BLM never really questioned whether this assumption of "statutory rights" was supported by any evidence in the record. Such decisionmaking is practically the definition of an "arbitrary and capricious" action that cannot stand.

Under federal law, the BLM cannot approve a mining plan of operations where the facilities are proposed on lands in excess of those rights granted by the 1872 Mining Law. In this case, substantial increases in public land use and disturbance is proposed. DEIS at 2-18 (Table 2-6, Proposed Surface Disturbance). For these acres, facilities appear to be located on lode claims whose validity BLM has never investigated or whose use likely violates the Mining Law.

As the IBLA recently noted: "A mining claimant's rights as against the United States are acquired only under the General Mining Law, and unless and until the claimant meets the requirements under those laws, no rights can be asserted against the United States." Ronald A. Pene, 147 IBLA 153, 157 (1999). The IBLA continued: "**It is axiomatic that operations may not legally proceed on invalid claims.**" Id. at 158 (emphasis added) (citations omitted).

u The IBLA recently dealt with this issue, specifically rejecting the BLM's assumption that a mining claimant had an unreviewable "right to mine." Great Basin Mine Watch, 146 IBLA 248 (1998). The importance of the Board's ruling bears repeating in full:

> Initially, however, we wish to comment on a statement made by BLM in its Answer to appellant's SOR [Statement of Reasons]. In response to a suggestion by GBMW [appellants] that BLM should have either returned the mining plan of operations to Cortez [plan applicant] unapproved or required Cortez to supplement its filings, BLM declared:
>
> > Since returning the plan of operations and demanding Cortez provide information on the South Pipeline is not provided for in its regulations, further discussion (returning the plan) by the BLM on this issue is not warranted. In addition, the Mining Law of 1872, as amended and the 43 CFR 3809 regulations provide mining proponents on Public lands the right to mine. As long as the BLM ensures compliance with its 43 CFR 3809 regulations and "undue or unnecessary degradation" is prohibited, the BLM must process and permit a plan of operations filed by a proponent.
>
> (Answer at 10.) In our view, this declaration both overstates the rights of "mining proponents" and understates the authority of the BLM.
>
> **First of all, the mere filing of a plan of operations by a holder of a mining claim invests no rights in the claimant to have any plan of**

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56u. See responses 32hh, and 33o.

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u

operations approved. Rights to mine under the general mining laws are derivative of a discovery of a valuable mineral deposit and, absent such a discovery, denial of a plan of operations is entirely appropriate. This, in fact, was the express holding in Southwest Resource Council, 96 IBLA 105, 123-23 (sic.), 94 I.D. 56, 67 (1987). See also Robert L. Mendenhall, 127 IBLA 73 (1993); Southern Utah Wilderness Alliance, 125 IBLA 175, 188-89, 100 I.D. 15, 22 (1993).

Moreover, in determining whether a discovery exists, the costs of compliance with all applicable Federal and State laws (including environmental laws) are properly considered in determining whether or not the mineral deposit is presently marketable at a profit, i.e. whether the mineral deposit can be deemed to be a valuable mineral deposit within the meaning of the mining laws. See, e.g., United States v. Pittsburgh Pacific Co., 30 IBLA 388, 405, 84 I.D. 282, 290 (1977), aff'd sub nom. South Dakota v. Andrus, 614 F.2d 1190 (8th Cir.), cert. denied 449 U.S. 822 (1980); United States v. Kosanke Sand Corp. (On Reconsideration), 12 IBLA 282, 298-99, 80 I.D. 538, 546-47 (1973). If the costs of compliance render the mineral development of a claim uneconomic, the claim, itself, is invalid and any plan of operations therefore is properly rejected. Under no circumstances can compliance be waived merely because failing to do so would make mining of the claim unprofitable. Claim validity is determined by the ability of the claimant to show a profit can be made after accounting for the costs of compliance with all applicable laws, and, where a claimant is unable to do so, BLM must, indeed, reject the plan of operations and take affirmative steps to invalidate the claim by filing a mining contest.

Finally, insofar as BLM has determined that it lacks adequate information on any relevant aspect of a plan of operations, BLM not only has the authority to require the filing of supplemental information, it has the obligation to do so. We emphatically reject any suggestion that BLM must limit its consideration of any aspect of a plan of operations to the information or data that a claimant chooses to provide.

Great Basin Mine Watch, 146 IBLA 248, 256 (1998)(underline emphasis in original, bold emphasis added).

The Interior Department's March 25, 1999, *Crown Jewel Mine Decision* confirms these points.[1] In that case, Assistant Interior Secretary Baca and Solicitor Leshy denied a

[1] Letter from Sylvia Baca, Acting Assistant Secretary, Land and Minerals Management, Department of the Interior, John D. Leshy, Solicitor, Department of the Interior, James R. Lyons, Under Secretary, Natural Resources and Environment, Department of Agriculture, and Charles R. Rawls, General Counsel, Department of Agriculture to Greg Etter, Vice President and General Counsel, Battle Mountain Gold Company (March 25, 1999).

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56u. See responses 32hh, and 33o.

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proposed mine plan of operations based on conclusions that most of the millsite claims were invalid and many of the mining claims were likely invalid. In addition, the plan was rejected due to inappropriate use of lode claims for non-extractive uses. This denial occurred despite the fact that the same agencies had previously issued (over two years earlier) a Record of Decision for a Final EIS for the Mine. The agencies noted that: "No rights of any kind attach to invalid mining claims or mill sites." *Crown Jewel Mine Decision* at 1-2 (quoting Cameron v. United States, 252 U.S. 450, 460 (1920)).

BLM based its review of the Newmont's South Operations Area Project on the mining law regulations at 36 CFR Part 3809. However, those regulations only apply to "operations authorized by the mining laws." 36 CFR § 3809.0-1.[2] Due to BLM's failure to review the claims issues, it has no evidence as to which activities are "authorized by the mining laws." In this case, the record lacks specific evidence that all claims and uses are legal. Under the Board's holding in Great Basin Mine Watch, the proper BLM action should be to request this information from the applicant and determine if all activities are authorized by the Mining Law. Without this information, the BLM cannot rationally assume that all operations comply with the Mining Law and properly regulated under the Part 3809 regulations.

u

It is a fundamental tenet of administrative law that agency decisions made without supporting evidence are invalid. In order to meet the "arbitrary and capricious" test under the APA, the BLM must have "articulated a rational connection between the facts found and the choice made." Bowman Transp. Inc. v. Arkansas Best Freight System, 419 U.S. 281, 285-86 (1974). An agency decision must always have a rational basis that is both stated in the written decision and demonstrated in the administrative record accompanying the decision. Kanawha & Hocking Coal & Coke Co., 112 IBLA 365, 368 (1990). The decision must be made in a "careful and systematic manner." Edward L. Johnson, 93 IBLA 391, 399 (1986). The record must demonstrate a "reasoned analysis of the factors involved, made in due regard for the public interest." Alvin R. Platz, 114 IBLA 8, 15-16 (1990). The BLM's failure to review the claims issues, while at the same time maintaining that the Project enjoys a "statutory right" to use public land, fails to make any "rational connection" in a "careful and systematic manner" as required by law.

It must be stressed that the requirement to determine whether operations are authorized by the Mining Law need not entail a full formal validity examination on every claim. As the *Crown Jewel Mine Decision* demonstrates, the Interior Department has the authority, indeed the duty, to reject plans of operations based on Mining Law concerns regardless of whether it has conducted a formal validity review. *Decision* at 2, n. 4 (rejecting plan even though "BLM and USFS have not determined the validity of any of [the applicant's] lode claims or mill sites").

[2] This has recently been confirmed by the Board. *See*, Alanco Environmental Resources Corporation, 145 IBLA 289, 298 (1998)(applicability of Part 3809 regulations limited to valid claims); United States v. Rocky Connor, 139 IBLA 361 (1997)(affirming trespass decision under special use regulations, 36 CFR Part 2920, for occupancy on invalid placer claim); William H. Snavely, 136 IBLA 350 (1996)(affirming trespass decision under Part 2920 for occupancy on invalid mining claims and mill sites).

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56u. See responses 32hh, and 33o.

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In addition, in a recent pleading filed in federal court in a lawsuit related to the Crown Jewel Mine, the Interior, Agriculture, and Justice Departments reiterated this position. Although the following quote is taken from a motion by the federal government to dismiss the case on ripeness grounds (since the state of Washington has recently denied permits for the mine), the government affirmed the view that plans of operations are predicated on a review of the claims issues. In summarizing the reasons for the rejection of the Crown Jewel mine plan, the Departments stated:

> Applying Interior's 1997 Opinion, the Forest Service and BLM decided in 1999 that any decision to approve the plan of operations as it was then configured would violate the Mining Law because many of BMG's proposed 117 mill sites exceeded the Mining Law's five-acre limit, specified above. ... In vacating the ROD, BLM and the Forest Service reiterated that they had not yet determined, and were not determining, "the validity of any of BMG's lode claims or mill sites." Id. at 2 n.4, 2-3.
>
> The Forest Service and BLM also identified 22 unpatented lode claims that BMG "does not intend to mine." Because the Mining Law does not permit lode claims to be used solely to support mining on other lode claims, Interior also stated that these 22 lode claims "likely are invalid." Id. at 2-3.

u Federal Defendants' Motion to Dismiss on Grounds of Lack of Ripeness and Supporting Memorandum of Law, at 10-11 (July 20, 2000, Civ. No. 99-1598-JE, Okanogan Highlands Alliance, et al v. U.S. Department of Interior, et al, D. Oregon)

In the case of the Gold Quarry expansion being considered here, the project proposal will disturb 839 acres of public and 553 acres of private land, respectively. Of the public land, **only 9 acres will go for actually mining a valuable mineral in the Gold Quarry Mine**. DEIS at 2-18. Remarkably, Newmont here expects to use 830 acres of public land to mill gold from what is essentially private land and a private mine. The Mining Law does not provide for this type of use. The BLM clearly needs to analyze this issue in the revised DEIS.

Note that the existing disturbance shows that only 375 acres of public land have been used for mining a valuable mineral (the sum of the pit area for Gold Quarry, Tusc, and Mac mines) while 1672 acres of public land have been used for ancillary facilities. There is no way that a combination of 20 acre lode claims and 5 acre millsite claims could have been assembled to give the proper, and legal, ratio as required by the Mining Law. The total 1019 acres of mine could not qualify for 1672 acres of ancillary facilities on public land. The ancillary facilities should have been built with the appropriate special use regulations with the public receiving a fair payment for the use of its land. Such operations could also only be permitted in they were in the public interest, a much stricter standard than the one assumed under a "statutory right" to use public land. See 43 CFR Part 2920; see also Flynn, "*The 1872 Mining Law As An Impediment To Mineral Development On The Public Lands: A 19th Century Law Meets The Realities Of Modern Mining*," 34 LAND AND WATER LAW REVIEW, 301 (1999).

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56u. See responses 32hh, and 33o.

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At a minimum, the BLM should inform the applicant that the Plan of Operations cannot be approved lacking such critical information regarding compliance with federal mining law. As you may know, the Forest Service Regional Office in Portland, Oregon, recently affirmed the decision of the Siskiyou National Forest to reject a proposed mining plan of operations due to the informational incompleteness of the proposal. The Forest Service stated that "[a]ll information on the record about the value of the minerals within the proposed mine sites indicates that production costs far exceed potential revenue. The proponent has not provided credible evidence to refute this information." October 6, 2000, Appeal Decision of Linda Goodman, Deputy Regional Forester, re: NICORE mine proposal, at 2. The agency specifically stated that "aspects of [claim] validity" was central to its decision to deny the proposed plan. Id. at 4.

In addition, the Forest Service in New Mexico recently informed a mining plan applicant that the agency could not approve a plan if the uses of lode claims were strictly for ancillary uses such as waste rock dumping. See May 26, 2000, Letter to Governor Red Eagle Rael of the Picuris Pueblo (describing Forest Service decision to reject mining plan of Oglebay Norton Speciality Minerals, Inc. due to issues "as they relate to the appropriate use of lode claims."). That appears to be the case here since the plan proposes dumping, processing and other ancillary uses on mining claims not proposed for actual mining.

Cultural Resource Protection

We wish to remind the BLM of the three main federal statutes, and implementing regulations, that establish the framework for historic preservation and cultural resource management in Indian country and in areas currently outside of tribal jurisdiction where tribes have religious and cultural interests. **The National Historic Preservation Act** (NHPA), (16. U.S.C. §§ 470-470w-6), the **Archaeological Resources Protection Act** (ARPA), (16 U.S.C. §§ 470aa-470*ll*), and **the Native American Graves Protection and Repatriation Act** (NAGPRA), (25 U.S.C. §§ 3001-3013) may all play a role in this decision-making process. Additionally, the BLM must also keep in mind, the various Executive Orders and policy pronouncements concerning tribal-federal interactions including, but not limited to; the **President's Memorandum on Government-to Government Relations**; **American Indian Religious Freedom Act of 1978** (codified in part at 42 U.S.C. § 1996), and **Executive Order 13007 Indian Sacred Sites.**

v

The BLM has not fulfilled it responsibilities to consult under the law and has made unilateral determinations of significance without Native American input. The analysis of Native American religious concerns presented in the SOAPA is fundamentally flawed. The SOAPA claims that certain cultural properties are not eligible as TCP's. There is no evidence that Tribal representatives were consulted about this determination.(SOAPA 4-109) SOAPA indicates "survey's" were completed regarding human remains found in the area and no associated funerary objects, unassociated funerary objects, sacred objects, or objects of cultural patrimony were identified." (SOAPA 4-110) Surveys cannot identify these items! A traditional cultural practitioner or knowledgeable Native person is

Response to Letter 56

56u. See responses 32hh, and 33o.

56v. The BLM began consulting with the Western Shoshone on the SOAPA project on May 22, 1997. The BLM has been specifically consulting with Western Shoshone on the effects of mine dewatering on Western Shoshone traditional practices since October 1, 1998. The Rock Creek and Tosawihi Quarries Traditional Cultural Properties were designated under direct consultation with the Western Shoshone community.

The only human remains the BLM is aware of in the area were recovered from the James Creek Shelter in the late 1980s. The shelter was mitigated (excavated) in order to retrieve the information the shelter held about the prehistory of the area, as the mining operations at that time were scheduled to destroy the site. The shelter was scientifically excavated and a report was made available in 1990 entitled "The Archaeology of James Creek Shelter," published by the University of Utah Press. The human remains recovered from James Creek Shelter are archived at the Nevada State Museum.

The current proposed mining expansion is not scheduled to impact any archaeological sites determined eligible for the National Register. The BLM determines the eligibility of individual archaeological sites based on information provided by the Western Shoshone community and the criteria set forth by the National Park Service, as provided by law and regulation.

Letter 56 Continued

necessary to identify these objects. No evidence is provided that this was done. Where are the bones now and how are they being stored? What has the BLM done to comply with the requirements of NAGPRA? "Data recovery plans will be prepared in consultation with the BLM and Nevada SHPO to mitigate the adverse impacts to the informational potential of these sites." (SOAPA 3-96) This process must include Western Shoshone participation. ""However any future proposed disturbance would be offset by mitigation measures approved by the BLM after consultation with the Western Shoshone and Nevada SHPO."(SOAPA 5-20) All evidence presented indicates that it would be extremely difficult to mitigate damage to cultural sites after the damage has occurred. This is a completely unfounded assertion. What evidence does the BLM have of any mitigation offsetting disturbance to cultural sites? This is even more insulting considering that proposed mitigation plans and/or alternatives that might prevent damage to important sites have not even been examined.

v The archaeological sites are our cultural sites, our history. They tell the story of our relationship to this place. It is our story written on the land. The items were left for a reason, and they should remain there undisturbed by man. We want them to remain there so future generations of Shoshone can come here and see for themselves the remains of those who came before them. We do not want to see these sites dug up to make way for a mine. When a mine comes, the archaeologists come and survey all these things and if they are in the way they dig them up and remove them. Mitigation I am told. Your mitigation is meaningless to me, because they are important where they are, out on the land, not in some box somewhere in the basement of a museum. When this happens you are kidnapping our history, appropriating it so that its relevance and importance is determined by a select group of "experts," experts who are not Shoshone, who have no accountability to us. By removing artifacts you are erasing our mark from this land, perhaps the "final solution." I want to see these remains preserved in place. If they are studied, do it with the participation and consent of the Western Shoshone people. We want to see the studies, we want to know what you learned from the things you find. We have much difficulty in obtaining this type of information from the BLM.

Environmental Justice

w The treatment of environmental justice in the CIA and SOAPA is appalling and completely inadequate. We would recommend training for all BLM staff on this subject. It is clear form the limited information presented in the CIA and SOAPA that environmental impacts resulting from the dewatering would disproportionately impact Western Shoshone people because of the unique and historical relationship they have maintained with the areas, waters, and creatures impacted.

Treaty Relationship and The Trust Responsibility

x The Supreme Court has recognized the undisputed existence of a general trust relationship between the United States and the Indian people. Northwest Sea Farms v. U. S. Army Corps of Engineers, 931 F.Supp. 1515 (W.D.Wash. 1996) (quoting United States v. Mitchell, (*Mitchell II*) 463 U.S. 206, 225, 103 S.Ct. 2961, 2972, 77 L.Ed.2d 580

Response to Letter 56

56v. The BLM began consulting with the Western Shoshone on the SOAPA project on May 22, 1997. The BLM has been specifically consulting with Western Shoshone on the effects of mine dewatering on Western Shoshone traditional practices since October 1, 1998. The Rock Creek and Tosawihi Quarries Traditional Cultural Properties were designated under direct consultation with the Western Shoshone community.

The only human remains the BLM is aware of in the area were recovered from the James Creek Shelter in the late 1980s. The shelter was mitigated (excavated) in order to retrieve the information the shelter held about the prehistory of the area, as the mining operations at that time were scheduled to destroy the site. The shelter was scientifically excavated and a report was made available in 1990 entitled "The Archaeology of James Creek Shelter," published by the University of Utah Press. The human remains recovered from James Creek Shelter are archived at the Nevada State Museum.

The current proposed mining expansion is not scheduled to impact any archaeological sites determined eligible for the National Register. The BLM determines the eligibility of individual archaeological sites based on information provided by the Western Shoshone community and the criteria set forth by the National Park Service, as provided by law and regulation.

56w. See response 32s.

56x. BLM has not breached any trust obligations to Native American tribes, and has completed extensive consultations with potentially affected tribes. The Western Shoshone and the federal government are currently negotiating in regards to the Ruby Valley Treaty.

Letter 56 Continued

(1983). This obligation has been interpreted to impose a fiduciary duty owed in conducting any Federal government action which relates to Indian Tribes. Nance v. Environmental Protection Agency, 645 F.2d 701, 711 (9th Cir.), cert. denied, 454 U.S. 1081, 102 S.Ct. 635, 70 L.Ed.2d 615 (1981). In a leading case, the United States Supreme Court stated: [U]nder a humane and self-imposed policy ... [the federal government] has charged itself with moral obligations of the highest responsibility and trust. Its conduct, as disclosed in the acts of those who represent it in dealings with the Indians, should therefore be judged by the most exacting fiduciary standards. Seminole Nation v. United States, 316 U.S. 286, 296-97 (1942). Lane v. Pueblo of Santa Rosa, 249 U.S. 110 (1919), may also prove useful. There the Supreme Court enjoined the Secretary of the Interior from disposing of tribal lands under the general public land laws. The Court held that the plenary power of Congress to regulate Indian lands for the benefit and protection of its wards certainly ... would not justify ... treating the lands of the Indians as public lands of the United States, and disposing of the same under the Public Land Laws. That, the Court observed, would not be an exercise of the guardianship, but an act of confiscation. Id. at 113.

x The BLM has failed to fulfill the federal government's trust responsibility with respect to the Western Shoshone. The BLM has general trust responsibilities, in addition to any specific responsibility imposed by a statute, treaty, or executive order. See F. Cohen, Handbook of Federal Indian Law, Ch. 3, C2c (Michie, 1982 ed.); Pyramid Lake Paiute Tribe v. Morton, 354 F.Supp. 252, 256-57 (D.D.C. 1972). These obligations have been likened to the fiduciary obligations that exist between a trustee and a beneficiary. See, e.g., Seminole Nation v. United States, 316 U.S. 286 (1942). This relationship imposes strict fiduciary standards of conduct on federal executive agencies in their dealings with Indian tribes. Northern Cheyenne Tribe v. Hodel, 12 Indian L. Rep. (AM.INDIAN LAW. TRAINING PROGRAM) 3065, 3070 (D.Mont. May 28, 1985).

The existence of such a relationship between the Western Shoshone and the United States was first recognized in the 1863 *Treaty of Ruby Valley*. This was a treaty of peace intended to accommodate the western movement of citizens of the United States and to protect Western Shoshone rights. It was not a treaty of cession. From the time of its proclamation in 1869 to the present, the *Treaty of Ruby Valley* has been in full force and effect, part of the supreme law of this country under its constitution and laws. The United States has consistently violated the obligations inhering to such a relationship practically since its inception. Approval of the SOAPA, as presented in this DEIS, will violate the federal government's trust responsibility.

We feel your description of the history of Western Shoshone history grossly ignores and distorts some fundamental facts. The issues with interpretation of the Treaty is not merely a Western Shoshone issue it as an issue equally important to the U.S. government and the general public. The Treaty was signed after a terror campaign conducted by Colonel Patrick Edward Connor and the California Volunteers resulting in the deaths of many innocent men, women, and children of our people. That is why we say the Treaty was signed in blood. Many of the inhabitants of the "study area" were forcibly removed under armed guard to a reservation in Duck Valley. Shoshone inhabiting the Carlin

Response to Letter 56

56x. BLM has not breached any trust obligations to Native American tribes, and has completed extensive consultations with potentially affected tribes. The Western Shoshone and the federal government are currently negotiating in regards to the Ruby Valley Treaty.

Letter 56 Continued

Farms reservation in the study area were forced to move after white settlers realized the agricultural value of those lands. You have no right or evidence to suggest that "few if any any Western Shoshone continue to pursue a partial or wholly traditional lifeway." My family tries to live as traditional a life as we can, but the Federal government has made it very difficult to do so. Traditions adapt and change to survive. We are survivors.

X The Treaty is an agreement between sovereign nations. It is a symbol of the kind of long term promises the U.S. makes. You have not honored this Treaty. The long term promises being made in these EIS documents should be considered in the context of the Treaty., another long term promise. It is apparent that the Treaty has been ignored when it wasn't convenient to recognize it, is the fate of the promises and "mitigation " offered here?

As we have stated many times the Western Shoshone have never surrendered their land. This land is recognized as Western Shoshone land through the Treaty of Ruby Valley, which is a legal agreement between nations, an agreement in full force and effect. While we recognize that we agreed in the Treaty to permit mines, we do not believe this grants anyone the right to destroy or degrade the waters or destroy the lands and resources necessary for our survival. The Treaty was an agreement of "Peace and Friendship" and not cessation. It implies give and take on both nations part, although up to this day it is mostly the Shoshone who have given, and the white man who has taken.

This is all we have had time to comment on. There is much more, but unfortunatley the BLM doesn't seem to have time to hear the truth. We sincerely hope you take these comments to heart.

Carrie Dann
citizen, Western Shoshone Nation
director, WSDP

Response to Letter 56

56x. BLM has not breached any trust obligations to Native American tribes, and has completed extensive consultations with potentially affected tribes. The Western Shoshone and the federal government are currently negotiating in regards to the Ruby Valley Treaty.

Letter 57

FROM : MARGE PHONE NO. : 702 322 2867 Oct. 30 2000 09:41AM P1

720 Brookfield Drive
Reno, Nevada 89503
October 30, 2000

Roger Congdon, Project Leader
Elko Field Office, BLM
3900 Idaho Street
Elko, Nevada 89801

Dear Mr. Congdon: Re: Proposed Gold Quarry Mine Expansion

As a Nevada citizen who is apprehensive about environmental pollution and its effects on native wildlife and other values, I am extremely concerned about the possible effects of this mine expansion on Elko County. I understand that this enormous proposed
a expansion could have the effect of depleting the ground water to
b such a point that as many as 200 springs and 7 streams could dry up, a loss that would be devastating to wildlife in this arid state. The toxic pit lake that would be formed would be huge.

I therefore request the BLM to require Newmont to keep all
c dewatering water in the Maggie Creek Basin in order to reduce the impacts of such expansion. I also request that Newmont be required
d to post a bond for at least 50 million dollars (to be held for 100
e years) to clean up the toxic water in the pit lake and to replace water in the Humboldt River that would be lost to the pit lake. Newmoant should also mitigate the loss of habitat in the Maggie Creek basin by restoring many miles of wildlife habitat along the Humboldt River.

It is extremely important that mining operations not be allowed to degrade the environment of our state to such an extent that the land and its waters can never recover. As the caretaker for the public lands, the BLM has the responsibility to see that this does not happen.

Sincerely,

Marjorie Sill

Marjorie Sill

Response to Letter 57

57a. See response 1a.

57b. See response 1b.

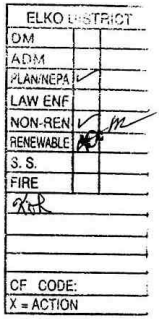
57c. See response 2d.

57d. See response 1b and 2e.

57e. See response 2f.

Letter 58

2000 OCT -6 AM 7:30



September 26, 2000

Elko Field Office
3900 Idaho St.
Elko, NV 89801

I would like to thank you for the opportunity to express my opinion with regard to the Environmental Impact Statements regarding the dewatering and water management operation for the mines north of Carlin.

I overwhelmed with the magnitude of the material compiled in your September 2000 Drafts. You certainly covered a wide variety of relevant topics, and the depth of your evaluation was very impressive.

The reason I decided to comment on this project is that we have the Palisade Ranch south of Carlin, and I still feel we could be adversely affected by mine dewatering. We lease the Palisade Allotment south of I-80 from the Nevada Land and Resource Company LLC, and the Bureau of Land Management. As I researched your information on our grazing allotment, I felt that you may have been somewhat presumptuous as to whether or not some of our springs would be affected. Several of the springs had been classified as seeps. I really don't know how you distinguished between the springs and seeps, but I do know that we are certainly dependent upon all of these water sources.

a

We have several dams and troughs that were not specifically located in your EIS, and our general season of use was dated incorrectly. I realize that these facts may not be of any major significance, but I want to make sure that the discrepancies are documented. I feel that if they are, and there are any future problems, you may be more inclined to reconcile our differences.

b

I realize there has been a significant decrease in the amount of water being removed from the mines, however, I feel very strongly that if at all possible the water that is being removed should not go to the Carson Sinks. If an upstream reservoir were affordable that would be an option. Another solution might be the recharging of the aquifer by infiltration.

c

Response to Letter 58

58a. Generally, the level of detail on the maps in the DEIS did not allow the distinction between springs and seeps, i.e., all water sources were identified as springs.

58b. Your comment on allotment improvements (page 4 of the letter) has been noted. The number of animals and season of use for the Palisade allotment was changed in Table 3-27 in Chapter 3 of the FEIS.

58c. See response 2d. Use of a reservoir in the Maggie Creek Basin (specifically, East Cottonwood Creek as the best of the candidate sites) was evaluated in the 1993 EIS as a possible mitigation measure, 1993 EIS at 2-61. It was not considered feasible because it could only accommodate 10,000 acre-feet of the projected 500,000 acre-feet, it would create impacts to the environment by its construction and operations, and the conveyance system from Gold Quarry and operational pumping costs were much greater than for a discharge system.

Letter 58 Continued

d

In the early nineties, before any of the mine dewatering was a reality, I went to the Newmont Mine to discuss my concerns with regard to dewatering. I suggested the possibility of reinfiltrating the water in to the numerous drainages in our allotment by using pipelines to carry the water and then to allow the water to run the natural course down the mountains. The only reason I specifically suggested these tributaries was because of my familiarity with the area, and because of what I felt was the inevitable impact on our own water availability. I realize there are various other tributaries in other adjacent allotments that also have equal potential.

As can easily be visualized on Figure 3-1, page 3-3, there are several tributaries to Mary's Creek that are just a few miles from the Gold Quarry Pit. Considering the close proximity to the mine, infiltrating the water by this somewhat natural system seems like a very viable alternative. It could keep the water in this region, it could activate the seeps and springs, and it could rejuvenate the ground water table. In conjunction with the recharging water being transported to these tributaries and seeps, water would also be provided to benefit the wildlife and livestock in that area.

e

On page 8-4 you said, "Ground water draw down resulting from mine-related dewatering activities may affect various water sources used by livestock..." You went on to say that if stock water availability is reduced, livestock water sources could be available for a shorter period during the grazing season and could result in the reduction of the permitted active grazing use within a grazing allotment. This seems like a very unfair statement. If the feed is available, I feel that the mines responsible for the lack of water, should be committed to provide it.

On page 9-1 you mentioned that the city of Carlin and the communities of Palisade and Dunphy might have lowered water levels in wells, reduced flow in springs, reduced stream flow, and development of sinkholes. You went on to say on page 9-2, that if the springs that support the domestic water supply to the City of Carlin were impacted, "Newmont would replace the drinking water supply for the City of Carlin to offset any impacts to the Carlin Cold Spring from dewatering activities." I agree that it would only be fair for Newmont to guarantee the water supply to Carlin, but I also feel that Newmont should guarantee the stock water to any user of allotments with springs or seeps impacted by the mine dewatering.

Response to Letter 58

58d. The alternative of discharging to numerous, small surface drainages rather than Maggie Creek was not considered feasible due to the complexity and cost of constructing and maintaining a network of pipelines, the cumulatively significant amounts of surface disturbance for the pipeline system, and sizing the pipelines to be able to accommodate the large volume of discharge water, but yet keeping the individual discharges small enough to avoid erosion in the natural drainages.

58e. The statements represent what would likely happen if no mitigation measures were proposed. The DEIS states that the Mitigation Plan that Newmont has committed to includes the augmentation or replacement of water sources that are reduced or lost as a result of dewatering. 1993 EIS Appendix A, and SOAPA DEIS at 4-55.

Letter 58 Continued

p.3

In the early eighties, I applied for stock watering right to most of the springs in the Palisade Allotment. We do have water rights on a few, but the applications I filed were protested by the U.S. Bureau of Land Management. The sources were examined by the Nevada Division of Water Resources, and they were all found to be tributaries to the Humboldt River. They stated that the Humboldt River stream system was fully appropriated during the irrigation season, but maintained that "under the Humboldt River decree any holder of a decreed irrigation right is entitled to stock water." I interpreted this to mean that our cattle were guaranteed stock water under that entitlement.

Again, thank you for providing me the opportunity to express my own personal opinion. I realize that mining is big business, and that it does positively affect the economy of our state, but a hundred years is a long time for a cone of draw down to continue to expand. And 230 years is an eternity for a final recovery. I certainly hope we are not "undermining" the future of our descendants.

Respectfully submitted,

Rita Stitzel

Rita Stitzel, Palisade Ranch

Response to Letter 58

Letter 58 Continued

p.4

Addendum: The springs located in the Palisade Allotment include, but are not limited to the following:

Freeway Spring
Emigrant Springs (3 troughs)
Horse Springs (2)
Fuzzy Spring
Tire Spring (+dam)
Healy's Spring
Airplane Springs (numerous)
Pig Pond Spring
Old Palisade Spring
Willy Billy Spring
Split Rock Spring
Barth Spring
Goat Spring
Buck Rake Jack Springs (numerous)
Starvation Springs (2)
Tyrol Spring
Juniper Spring
Palisade Spring
Johnson's Spring
Cam's Spring
Cross-over Springs
Palisade Ranch Domestic Water Spring
+ several "seeps"

Response to Letter 58

Letter 59

Oct 31 00 03:28p kathy 775-289-6150 p.1

ELY SHOSHONE TRIBE

16 SHOSHONE CIRCLE FAX (775) 289-3156 ELY, NEVADA 89301
(775) 289-3013

October 31, 2000

Ms. Helen Hankins, Field Manager
BLM - Elko District Office
3900 E. Idaho Street
Elko, Nevada 89801-4611

Re: 3809 (NV-013)
Newmont Mining Corporation
South Operations Area Project Amendment DEIS

Dear Ms. Hankins:

The Ely Shoshone Tribe (EST) received your letter dated October 27, 2000 denying our request for an extension on the comment period.

Therefore, the EST goes on record to comment on the Newmont Mining Corporation South Operations Area Project Amendment Draft Environmental Impact Statement (DEIS).

a The EST is very concerned since dewatering has the potential to impact waters in the vicinity of Rock Creek and Tosawihi quarries, known sites of continuing importance to Western Shoshone traditional cultural practitioners. The impact of mining not only affect this generation, but also those generations still yet to come.

Please include our comment in the final EIS. Thank you.

Sincerely,

ELY SHOSHONE TRIBE

Christine Stones

Christine Stones
Vice Chairperson

Response to Letter 59

59a. See response 33yyy.

Letter 60

Rose Strickland; Voice (775) 329-6118; Fax (775) 329-0503 10/30/00 5:20 PM 1/1

TOIYABE CHAPTER OF THE SIERRA CLUB POBox 8096 Reno, NV 89507

Oct. 30, 2000

Roger Congdon
BLM/Elko Field Office
3900 E. Idaho St.
Elko, NV 89801

VIA FAX

Dear Mr. Congdon,

Thank you for sending the Sierra Club a copy of the draft EIS on the expansion of the Gold Quarry Mine on public lands in the Elko District. We find the environmental impacts expected from the mine expansion to be staggering. The BLM should not be approving any proposal on the public lands which would deplete groundwater and dry up dozens of springs and streams. We question the model which you use for assessing water quality impacts and ask you to reassess potential increases in acidity of the pit lake, similar to the increasing toxicity at Pinson.

a
b

If the BLM cannot reject the mine expansion, then the mitigation proposed by BLM is woefully inadequate. It is not right that future generations will have to pay the enormous environmental costs from the proposed mine expansion, long after the mines shut down and the mining profits have disappeared from Nevada. We strongly urge the BLM to require additional mitigation for this environmentally disastrous proposal:

c 1. a $50,000,000 bond to remediate any toxic water in the pit lake.
d 2. Newmount Mining to keep all of its dewatering water in Maggie Creek to reduce the negative impacts on the riparian systems.
e 3. Newmount Mining to restore a substantial portion of the Humboldt River riparian area and wetlands to mitigate for losses of wildlife habitat from dewatering.

Thank you for considering our comments.

Sincerely,
/s/
Rose Strickland
Public Lands Committee

Response to Letter 60

60a. See response 1a.

60b. See response 1c.

60c. See response 1b and 2e.

60d. See response 2d.

60e. See response 2f.

Letter 61

October 30, 2000

To Whom It May Concern;

I am writing this letter in support of the dewatering project proposed by the local mines.
I have been a resident as well as a mine employee for 13 years. I live in Carlin and have built my life around the mining industry. This means that I have other interests besides my mining profession.

a I have concerns about the dewatering as it will affect my business as a land owner. I have two wells that support three families that I rent to and I cannot afford to lose that income.

I went to the seminar in Elko and was pleased that questions were allowed to be asked and answered. I found it to be informative and helpful to my decisions.

b I do however, believe that the mines need to give support to those with wells, by that I mean working with the city to bring city water to those that rely upon their wells.

It is my belief that during the reclamation process any man made lake would benefit the environment as proven in the past, as well as to provide recreation to tourists that we are so desperate to attract and give enjoyment to local residents.
We also need to look into the geothermal resources that are available here. These resources could be an asset to future projects for the mines and the city of Carlin combined.
Carlin relies upon the mines for its economy and as a whole we cannot afford to lose them but yet we need to work together to benefit us all.

Sincerely,
Mike Tangreen

Response to Letter 61

61a. See responses 20a, 56e, and 58e.

61b. The mitigation measures required for the project involve dealing directly with any water source affected by dewatering. If wells are affected, Newmont would augment or replace that water source directly. Consulting with Carlin to extend city water to replace an affected well source might be feasible in certain cases, but only when city water was close by. All mitigation implementation would be done on a case by case basis. See response 37a.

Letter 62

2-3'-200 7:26PM FRO

WESTERN SHOSHONE ADVOCATE

1728 Redwood Street, Elko, Nevada 89801
Telephone and Fax. 775-753-3794

October 31, 2000

Helen Hankins, Field Manager
U. S. Department of the Interior
Bureau of Land Management
Elko Field Office
3900 East Idaho Street
Elko, Nevada 89801

RE: **COMMENTS- Newmont Mining Corporation South Operations Area Project Amendment DEIS**

Dear Mrs. Hankins:

As a Western Shoshone Citizen, I comment **against the** Newmont Mining Corporation South Operations Area Project Amendment DEIS. This area is well identified and used by the Western Shoshone and we know it to be the area of **ROCK CREEK.**

I continue with my people in expression of our inherited right as Western Shoshone for this and other areas. We have practiced the expression of our spirituality through cleansing and healing, which has been continuous since time immemorial.

Since time immemorial, this site flourished with an abundance of vegetation, fish and other wildlife. It gave to the many Shoshone that which they sought in the preservation of their spirituality and for centuries it stayed pristine from encroachment and development because it was not easily accessible.

It remained pristine because Shoshone People had no desire to take from its uniqueness. They recognized its significance and respected its reverence and used without leaving evidence of their presence. Though normal changes to the environment may have slightly altered its appearance, no human had made such changes to be considered destructive as those who have caused it to be reduced through water usage and impregnating it with chemicals and other toxins.

Western Shoshone of all ages continue to use Rock Creek despite its current condition. As they alone recognize its significance and gather numerous times each year to express their inherited spirituality for all elements, including the water of the Rock Creek Basin.

Response to Letter 62

Letter 62 Continued

Now we are confronted again and are threatened by the insensitive efforts by the mining industry that another sacred site will be desecrated and I make this comment in protection of **Rock Creek.** We do not intend to leave its fate in the hands of the BLM and we inform you that **Rock Creek**, belongs to the Native Americans and its future generations and we plead that you reconsider your actions and leave this sacred site to us.

We as Western Shoshone are the caretakers of our territory, and we ask as you to assist us in the protection of **Rock Creek for its cultural and spiritual significance.** Further, the Newmont Mining Corporation should not be allowed to mine this area, because you have witnessed, as the Department of the Interior that it's use has been significant to the **Indeginous Peoples-the Western Shoshone and their Paiute neighbors.**

a

Be advised further, that the Te-Moak Tribe of the Western Shoshone Indians of Nevada during their meeting of June 7, 2000 passed a **Tribal Resolution- 00'TM-27 in total support and protection for Rock Creek. Furthermore that this Tribe recognizes the continuous use of this sacred site by its many members and relatives.**

Least the Western Shoshone should have to say any more but to ask you to protect and preserve the **Rock Creek Basin area from further destruction.**

Respectfully,

Lois E. Whitney,
Western Shoshone Advocate

62

SENDING REPORT

Oct. 31 2000 08:31PM

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Response to Letter 62

62a See responses 40a and 33yyy.

Letter 63

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

OCT 26 2000

Helen Hankins
Bureau of Land Management
Elko Field Office
3900 East Idaho Street
Elko, NV 89801-4611

Dear Ms. Hankins:

The U.S. Environmental Protection Agency (EPA) has reviewed the **Draft Environmental Impact Statement (DEIS) for the Newmont Mining Corporation's South Operations Area Project Amendment, Eureka and Elko counties, Nevada**. Our review and comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementation Regulations at 40 CFR 1500-1508, and Section 309 of the Clean Air Act.

The DEIS evaluates alternatives for expanding gold mining operations at Newmont's South Operations Area. The proposed action involves additional mining to approximately 350 feet below the currently approved operating level of the Gold Quarry open pit, continued dewatering of the mine and discharge of up to 30,000 gallons per minute into Maggie Creek, expansion of waste rock disposal facilities and leach facilities, and construction of associated ancillary facilities. Alternative 1 includes backfilling of the Mac open pit. Alternative 2 modifies the gold Quarry South Waste Rock Disposal Facility to result in less surface disturbance. The No Action Alternative is also analyzed. The BLM preferred alternative is Alternative 1, the proposed action with backfilling the Mac pit.

We have rated this DEIS as EO-2 -- Environmental Objections-Insufficient Information (See enclosed "Summary of Rating Definitions and Follow Up Actions"). Our rating is based on our objections to the project as proposed because of its apparent significant impacts to water and air quality. We do not believe the Plan of Operation requires sufficient measures to ensure against acid rock drainage, contaminated pit lake water, or mercury emissions to the air. Additional information is necessary in the Final Environmental Impact Statement (FEIS) regarding site geochemistry; direct and cumulative impacts to air and water quality, waters of the U.S., and wildlife; air and water quality monitoring; waste rock disposal; and reclamation and bonding. Our detailed comments are enclosed.

In addition, we have reviewed BLM's "*Cumulative Impacts Analysis of Dewatering and Water Management Operations for the Betze Project, South Operations Area Project*

Response to Letter 63

Letter 63 Continued

Amendment, and Leeville Project" (April, 2000). Our enclosed comments also address this report.

We appreciate the opportunity to review this DEIS. Jeanne Geselbracht, EPA's principal reviewer on this project will contact you to arrange for a session to discuss our comments. Meanwhile, should you have any questions, please contact David Farrel, Chief, Federal Activities Office at (415) 744-1584, or have your staff contact Ms. Geselbracht at (415) 744-1576. As a reminder, when it is officially filed with EPA HQs, office please send two copies of the FEIS to this office (Mailcode CMD-2).

Sincerely,

Deanna M. Wieman, Deputy Director
Cross-Media Division

Enclosures

cc: Dave Gaskin, Nevada Division of Environmental Protection
Nancy Kang, U.S. Army Corps of Engineers - Reno
Stan Wiemeyer, U.S. Fish and Wildlife Service - Reno
Laura Berglund, U.S. Fish and Wildlife Service - Winnemucca

Response to Letter 63

Letter 63 Continued

SUMMARY OF EPA RATING DEFINITIONS

This rating system was developed as a means to summarize EPA's level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the EIS.

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

ADEQUACY OF THE IMPACT STATEMENT

Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

Response to Letter 63

Letter 63 Continued

EPA DETAILED COMMENTS
DEIS, NEWMONT SOUTH OPERATIONS AMENDMENT

Hazardous Air Pollutants

Mercury is a persistent bioaccumulative toxic substance that has been receiving increased attention over the past three years. EPA is becoming increasingly concerned about even small releases of mercury to the atmosphere. Pristine lakes in Wisconsin and remote areas of the Florida Everglades are finding mercury levels in fish above Federal standards for fish consumption. Studies have revealed this mercury is from atmospheric deposition from mercury emissions that are thousands of miles away. EPA now considers mercury air emissions over ten pounds as a significant enough concern that, starting this year, such emissions must be reported by a mining company in its annual TRI submitted to EPA.

Recent 1998 TRI information submitted by Nevada gold heap leach mining companies has revealed that these mines can be significant sources of mercury point source air emissions from autoclaves, roasters, stripping units, electrowinning units, retorts, refining furnaces, and carbon regeneration kilns.

a According to the Toxic Release Inventory (TRI) for 1998, Newmont's South Operations (the South Operations) emitted 460 pounds of mercury to air. Table 2-3 in the DEIS indicates that 71,440 pounds of mercury-containing waste would be disposed of in a hazardous waste landfill or incinerated. However, the DEIS does not estimate mercury emissions to air, soil, or water resources. The FEIS should estimate releases of mercury and other hazardous air pollutants (HAPs) from the proposed project, and identify all sources of HAPs at the mine, and discuss how all HAPs would be controlled to reduce their emissions as much as possible.

b

c EPA has not yet developed mercury emission standards for mines, so there are no air permit limitations at present. However, it is important for the NEPA document for a heap leach gold mining operation to disclose potentially harmful air emissions whether they are regulated or not. Since EPA and others have only recently become aware of how mercury is transported through the atmosphere and how much mercury is emitted from gold heap leach mines in Nevada, it is understandable that previous gold heap leach facility EISs have not highlighted mercury emissions.

However, given the current levels of concern about mercury emissions to the atmosphere, it is important that the FEIS and future gold heap leach facility EISs present a much more complete description of the existing and future sources of mercury emissions to the atmosphere. The following modifications should be made to the FEIS:

- Chapter 4, "Air Quality" should include a section to specifically quantify existing and future mercury emissions to air.

1

Response to Letter 63

63a. See response 32t. There are no direct mercury emissions to soil or water. The identified emissions to air would indirectly impact soil and water. Samples of water and soils taken in the Maggie Creek Basin do not detect the presence of mercury. The State of Nevada (NDEP) has no permit limitations for mercury. Monitoring for mercury in Nevada is optional.

63b. See response 33jjj.

63c. 40 CFR 61.52 (October 1975, as amended in October 2000) establishes atmospheric emission limits for mercury ore processing facilities. The standard is 2,300 grams of mercury per 24-hour period (1,850 pounds per year), which is larger than the 1998 TRI reported mercury emissions for Newmont's South Operations.

A section on TRI, which summarizes mercury emissions, was added to the FEIS in Chapter 2. Additional analyses were added in the impact section for Air Resources in Chapter 4.

Letter 63 Continued

- **d** The FEIS should list major processing equipment, including any autoclave or roaster, stripping units, electrowinning units, retorts, refining furnaces, and carbon regeneration kilns. Illustrations depicting the processing circuits would be helpful. The FEIS should list in detail and depict all sources of mercury, the unit processes that generate this material, and the equipment included in the system to condense, capture, and/or treat mercury and reduce mercury emissions. A description of this equipment should be included in the FEIS with a discussion on how these measures are effective in removing mercury and making it unavailable for release into the environment. It should also note how any condensed or captured mercury is recycled, sold, or disposed.

- **e** Table 2-3 on page 2-13 indicates that Mill 6 generates 42,000 pounds per year of mercury refining retort residues, 4,000 pounds per year of mercury solids, and 25,640 pounds per year of mercury/palladium catalyst. The FEIS should discuss possible ways to recycle or reclaim this material rather than landfilling or incinerating it.

- **f** BLM may want to verify the information in Table 2-3 that states 42,000 pounds of mercuric/mercurous chloride is from refining retort residues from Mill 6. It is more likely that this residue is from the mercuric/mercurous chloride unit that is part of the air pollution equipment on the roaster.

- **g** Chapter 4, "Air Quality" should discuss in general terms national studies showing that atmospheric deposition of mercury is of environmental concern and describe the likely fate and transport of mercury air emissions from the Newmont South Operations. This discussion need not be in great detail or based on site specific modeling studies, but merely acknowledge what is known nationally about the problems of atmospheric deposition of mercury and how it is affecting this country's water bodies.

- **h** The FEIS should indicate the cumulative amount of mercury that is annually emitted to the air from all mining operations within the cumulative impact area depicted in Figure 5-1 of the DEIS, as well as the cumulative amount of mercury that is annually emitted to the air from gold mines in northern Nevada.

- **i** The FEIS should include a comparison of these cumulative mercury emissions to the total annual (mercury) air emissions in the United States. Table ES-3 in "EPA's 1997 Mercury Study Report, Volume II" lists the national mercury emission rates by industrial category. It shows a total of 155 tons per year of mercury from point sources. Unfortunately, mercury air emissions from Nevada gold mines were not included in this inventory. The FEIS for Newmont is therefore an appropriate document to bring mercury air emissions from gold mines into perspective.

- **j** We recommend that monitoring be conducted to determine mercury emissions from site facilities. The FEIS should describe the monitoring that would be conducted, including locations and reporting requirements.

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63d. The listed facilities were constructed as part of the original SOAP, and are not proposed to be modified as part of the Proposed Action. However, those facilities will continue to create the impacts that were identified in 1993 for an extended period of time (until 2012). The control measures on Mill 6 and other sources (baghouse, mercury recovery plant, acid recovery plant) have high efficiency ratings and meet permit requirements. The air permits containing documentation of the control devices and their efficiency are available from NDEP. The amount of mercury recovered for sale off-site varies from year to year, but was approximately 48,000 pounds for the year 1998.

63e. As discussed previously, 48,000 pounds of mercury were recovered for sale in 1998. All waste streams at SOAPA are managed according to EPA regulations. Newmont is currently maximizing byproduct recovery from their processes using best available control technology. At this time, additional control/recovery measures are not technically feasible.

63f. We concur with the comment and Table 2-3 in Chapter 2 of the FEIS was changed to reflect this.

63g. Atmospheric emissions of mercury at the national level is beyond the scope of this EIS. Emissions from SOAPA would be dispersed to a degree that substantial environmental impacts are not anticipated. Most mercury condenses or adsorbs quickly and does not disperse over great distances. It is not detectable in soil and water monitoring samples in the Maggie Creek Basin.

63h. An approximation of mercury emissions to the air from all the mines along the Carlin Trend would be between 2,000 and 3,000 pounds per year, based on TRI information. This estimate is dominated by the processing mills at Newmont's South Operations Area, the Barrick Goldstrike mine, and Newmont's Rain mine. Other large mines without mills would have fugitive emissions only. Emissions from mining operations in Nevada are only a small percentage of mercury emissions from the mining industry. There is no regulatory requirement for monitoring mercury emissions.

63i. Annual totals of mercury emissions, by themselves, do not have much significance, especially without a regulatory requirement to measure against. We believe EPA's concern is the location of those releases in relation to annual weather patterns and the Nevada population centers. This kind of research is considered beyond the scope of this EIS. See response 56h.

63j. The BLM will defer to the NDEP to determine appropriate monitoring measures for mercury emissions from this facility through its existing regulatory oversight of emissions from SOAPA.

Letter 63 Continued

The FEIS should include the preceeding information so that decision makers are able to know existing and future impacts of mercury emissions from this facility. The absence of air emission permit standards for mercury does not preclude the need to inform decision makers and the public about the quantity and fate of mercury emitted from this facility. Having such information in hand may assist the BLM in determining whether mitigation measures for air mercury emissions should be required of this facility.

j For instance, should other mining companies in Nevada be operating with effective pollution control equipment not being used at the South Operations, BLM could ask that such equipment be installed at the South Operations in order to reduce or mitigate potential adverse environmental impacts from mercury emissions. Pollution prevention opportunities should also be explored pursuant to the Pollution Prevention Act of 1990. Pollution prevention opportunities may include processes such as adding chemicals to the barren leach solution that will selectively keep mercury in the heap leach pile while allowing gold to leach out. They may also include recycling of the captured mercury rather than disposal in the Laidlaw/Grassy Mt. Hazardous waste landfill, as identified in Table 2-3 ("Hazardous Waste Streams").

Other Air Quality Impacts

k The DEIS (p. 4-6) states that fugitive PM10 (particulates smaller than ten microns) emissions could cause a maximum increase of ambient air concentrations by 17.5 percent to 105 ug/m^3 for a 24-hour period and 27 ug/m^3 for the annual average. The DEIS (p. 4-7) goes on to say that PM10 levels would be temporarily elevated during the enlargement of the Gold Quarry pit, construction of haul roads; enlargement of the Gold Quarry North, Gold Quarry South, and James Creek WRDFs; and construction and enlargement of the Property leach Pad 2, Non-Property Leach Pad, and Refractory Leach Pad. Emissions from enlargement of these facilities, particularly the pit, would not be temporary. It is unclear whether the 105 ug/m^3 (24-hour) and 27 ug/m^3 (annual) emissions projections include emissions from these facilities during construction and enlargement. Furthermore, it is stated on page 3-10 of the DEIS that the highest 24-hour concentration for PM10 was 133 ug/m^3 in 1994. The extra fugitive dust in that case was caused by construction activities. The FEIS should estimate air emissions for all criteria pollutants from *all* mine operations during construction and enlargement of new facilities.

l The DEIS (p. 2-24) indicates that the South Area Leach facility would be loaded either by truck or conveyor. We recommend that conveyors be used to reduce emissions of criteria pollutants, particularly PM10. The conveyor should be covered at all water crossings.

Waste Rock Disposal

m EPA is extremely concerned about the potential for acid rock drainage at the Newmont South Operations. As excavation deepens the pit, sulfidic material will comprise more of the waste rock, and less waste rock may be available to neutralize this material by encapsulation or

Response to Letter 63

63k. We concur that the enlargement of facilities would not be temporary, and in the FEIS, Chapter 4, Air Resources that paragraph was rewritten to read: "The monitoring of PM_{10} showed elevated levels during 1994, which were attributed to area wild fires. PM_{10} levels would be expected to remain similar to existing levels or be slightly elevated. Construction and enlargement of the Property leach pad 2, Non-Property leach pad, Refractory leach pad, and relocation of the James Creek tailing facility would likely change the local pattern of fugitive dust, but is not expected to increase the existing levels by more than 17.5 percent."

The values of 105 µg/m^3 and 27 µg/m^3 do include emissions from the facilities listed in the comment. To provide clarification, the phrase "during expanded operations" was inserted after "fugitive dust emissions" in the fourth sentence of that paragraph. The statement on page 3-10 of the DEIS that construction caused increased concentrations of dust was in error. See response 46d. The last sentence in the paragraph at the top of page 3-10 was changed in the FEIS to read "...average in 1994 reflect the fugitive dust caused by operations activities and by wildfires in the area." Finally, the fact that the projected air emissions concentrations of all criteria pollutants are less than ten percent of allowable levels, means that specific numerical values (page 4-6) would not add anything to the readers understanding that air emissions are low. Text has also been changed accordingly in Chapter 4, Air Resources.

63l. Comment noted.

63m. It is not the case that all newly mined potentially acid-generating material can only be neutralized by newly mined waste rock with neutralizing potential. The existing waste rock disposal facilities (WRDFs) are currently designed with repositories for potentially acid-generating material. These repositories were designed in advance of mining with a good prediction of the volume of potentially acid-generating material to be mined during the pit expansion. See responses 32w and 33kk. We have noted the EPA recommendation for ANP:AGP ratio, and Newmont's Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan does provide for the total segregation and encapsulation of sulfide wastes with non-acid producing waste material in internal areas of waste dumps control of surface water flows to prevent infiltration, and placement of a low-permeability cap over the final encapsulation cell, followed by reclamation and revegetation.

Our interpretation of Figure 4-17 indicates that the bulk of the pit expansion would occur along the arc of the southeastern side of the pit from due south to a little north of due east. The bulk of the expansion area is Tertiary Carlin Formation followed by smaller amounts of oxidized siliceous rock followed by very small amounts (relatively speaking) of carbonaceous siliceous refractory rock. Of these three rock types, only the carbonaceous siliceous refractory rock is potentially acid-generating.

Letter 63 Continued

admixing. Newmont's *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan* (October 27, 1995) indicates that waste dump designs incorporating encapsulation methods must consider significant quantities of sulfide waste near the end of the mine life (p. B-4). However, the DEIS does not address this serious problem. It indicates only that potentially acid generating (PAG) waste would be encapsulated with non-acid-generating material. The waste rock plan also indicates that neutral or neutralized oxide material will be used to encapsulate the potentially acid generating (PAG) waste. Neither of these documents contains a commitment to ensure that the ratio of acid neutralizing potential (ANP) to acid generating potential (AGP) is adequate to prevent acid generation. In order to be effective as a buffer against the acid generating potential of the PAG waste, the encapsulating material must have a sufficient neutralizing potential. EPA recommends a ANP:AGP of at least 3:1. It does not appear, however, that sufficient neutralizing material will be available to ensure prevention of acid generation, particularly toward the end of mine life. According to Figures 4-16 and 4-17, it appears that the proposed setback excavation would occur on the eastern side of the pit, much of which is either sulfidic siliceous refractory rock or carbonaceous siliceous refractory rock. Both of these rock types are potentially acid generating (DEIS, p. 4-44). **m**

The FEIS should include a summary of the geochemistry studies conducted to determine the acid generating potential of the waste rock piles. This should include static and kinetic test results for representative samples of each rock type, sampling type and frequency, the geochemical model used, volume estimates for each rock type that will be placed in the WRDFs, and volumetric calculations of ANP:AGP. In addition, we question the representativeness of biannual sampling of waste rock. What is the confidence level of biannual sampling of this rock? We recommend more frequent sampling. Furthermore, neutralizing waste rock may need to be stockpiled for purposes of strategic placement. The FEIS should specify, in detail, the requirements and source for the neutralizing material necessary in the waste rock dumps. We respectfully request a copy of the geochemistry report. **n**

The FEIS should also discuss the geochemical requirements for waste rock that would be backfilled into the Mac pit, whether there would a pit lake (and if so, its elevation), and describe the interaction between pit or meteoric waters and the waste rock. **o**

The DEIS (p. 2-11) states that monitoring of waste rock with acid-producing potential is required by NDEP. Newmont's 1995 waste rock plan indicates that waste rock dumps are inspected following heavy spring snow melt or a precipitation event with the potential for runoff. Has this runoff ever been sampled for contaminant concentrations? We recommend that runoff samples be collected after such events in order to determine trends in the waste rock dumps while mining is still taking place in case necessary changes to the waste rock plan become apparent. The FEIS should provide any such monitoring data collected to date for waste rock. **p**

The FEIS should describe procedures that will be required for water quality monitoring and reporting as well as monitoring the functioning of the waste rock dumps in controlling contact

Response to Letter 63

63m. It is not the case that all newly mined potentially acid-generating material can only be neutralized by newly mined waste rock with neutralizing potential. The existing waste rock disposal facilities (WRDFs) are currently designed with repositories for potentially acid-generating material. These repositories were designed in advance of mining with a good prediction of the volume of potentially acid-generating material to be mined during the pit expansion. See responses 32w and 33kk. We have noted the EPA recommendation for ANP:AGP ratio, and Newmont's Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan does provide for the total segregation and encapsulation of sulfide wastes with non-acid producing waste material in internal areas of waste dumps control of surface water flows to prevent infiltration, and placement of a low-permeability cap over the final encapsulation cell, followed by reclamation and revegetation.

Our interpretation of Figure 4-17 indicates that the bulk of the pit expansion would occur along the arc of the southeastern side of the pit from due south to a little north of due east. The bulk of the expansion area is Tertiary Carlin Formation followed by smaller amounts of oxidized siliceous rock followed by very small amounts (relatively speaking) of carbonaceous siliceous refractory rock. Of these three rock types, only the carbonaceous siliceous refractory rock is potentially acid-generating.

63n. Waste rock is sampled at least daily (grab samples are taken from each waste polygon outlined and determined according to statistical analysis). Daily grab samples are composited and the weighted average is measured biannually. This procedure has been added in the FEIS, Chapter 4, Geology and Minerals section. As part of the FEIS and Record of Decision, a Final Mitigation Plan is being prepared which will include an updated version of the Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan to reflect the proposed action. The plan also will be submitted to the NDEP.

63o. No lake would form in the Mac pit as it would be backfilled to the surface and natural drainage provided, so there should be no interaction between backfilled materials and meteoric waters. There is considerable limestone in the Mac pit walls that would provide significant buffering capacity for any infiltration of meteoric waters. The floor of the Mac pit is above the water table, as evidenced by final mining operations in the pit being dry.

63p. The integrity of the facilities is routinely checked for the following conditions; flow from the facility, unusual ponding in the collection ditches, precipitates or staining on or down stream of the waste rock disposal facilities, or slope failures and exposure of potentially acid-generating wastes. Potentially acid generating facilities do not create any runoff, as the facilities are contained. Runoff from other facilities is dealt with according to Newmont's storm water permit. This monitoring summary has been included in Chapter 2, Existing Resource Monitoring of the FEIS. The recommendations for sampling have been noted. The existing sampling program is described in detail in Appendix A of the 1993 EIS, and that monitoring, sampling, and reporting is required by the NDEP. The NDEP has the responsibility to determine whether monitoring, sampling, and reporting procedures are appropriate.

Letter 63 Continued

between waste rock and surface or meteoric water (e.g., maintenance of run on/runoff channels, underdrains, and collection areas at base of dumps; ponding on top of dump; etc.).

It is also unclear wether a low permeability cap with "the most economic materials available that inhibit moisture penetration into the dumps, such as clay or alluvium" (p. B-5) would actually provide an adequate barrier to fluid migration. The FEIS should specify the requirements and source for the low permeability caps for the dumps.

q We are concerned that the DEIS does not identify or discuss the potential impacts should the waste rock dumps generate acid drainage. For example, the Gold Quarry North Waste Rock Disposal Facility is almost adjacent to Maggie Creek. The FEIS should discuss the potential impacts to surface water and groundwater resources should the waste rock dumps generate acid either in the short- or long-term and identify measures that would be taken to rectify this. The FEIS should indicate whether the bond adequately covers such contingencies during or after closure.

According to the DEIS (p. 4-54), cyanide concentrations in the tailings would be lower than the regulatory limit after a seven-year dewatering closure process. Closure of the tailings would involve collection of the seepage in the seepage collection pond and treatment to meet a weak acid dissociable (WAD) cyanide limit of 0.2 mg/L and a pH of 6-9. The DEIS also states that seepage of 15 gallons per minute would continue to discharge from the tailings after they are dewatered, and that cyanide concentrations in this seepage would be less than the regulatory limit. The FEIS should discuss measures that would be required should cyanide concentrations fail to meet the 0.2 mg/L standard after dewatering (i.e., the residual phase), and should also discuss measures that could be taken to reduce cyanide concentrations in tailings prior to disposal in the tailings impoundment.

r The FEIS should project how cyanide and other constituents listed in Table 2-4 would react under pH conditions from 6 to 9, or pH conditions less than 6. The FEIS should also provide acid-base accounting for the tailings, describe the neutralizing capacity of the oxidized tailings, and discuss whether measures should be taken for strategic location of tailings to prevent acid generation. According to Table 2-4, the pH of the tailings is currently 8.55. Is the pH expected to change over time? What are the projected concentrations for each parameter listed in Table 2-4 after seven years and after 30 years? Newmont should be required to monitor the tailings over time before closure is completed to determine trends for pH, sulfate, and other constituents that could provide warning signs for potential long-term problems.

The FEIS should discuss how capture of all seepage from the tailings impoundment would be assured. It is questionable that the residual seepage would meet water quality standards, and it is unclear from the DEIS how contaminated or uncontaminated residual effluent would be disposed. The FEIS should describe how residual effluent would be treated and disposed. How would it be monitored? We recommend that BLM require a long-term care plan for the tailings, with a bond amount sufficient to cover such potential problems.

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63q. Closure will be conducted according to the approved Reclamation Plan (Appendix D of the Plan of Operations) and the Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan (Appendix B of the Plan of Operations). Additionally, a specific Closure Plan is required by the NDEP two years prior to actual closure. The design of the waste rock dumps, as described in the referenced documents, is considered appropriate and state-of-the-art. The low permeability cap is considered an adequate barrier to fluid migration based on the following: the area is one of high evaporation, locally available clay and alluvium can be compacted to provide adequate levels of impermeability, and the capped surface will be sloped to promote drainage. The capped surface will be revegetated and the vegetation will serve to remove moisture from the capping layer. Facilities are specifically designed to avoid acid rock drainage and will be monitored over the 10-year life of the project, and beyond, to see how the facilities perform. If acid rock drainage were to develop, it would have to be treated before it could enter natural drainages. Contingency plans would be developed jointly between BLM and Newmont. If acid rock drainage developed after closure and reclamation, but prior to bond release, the NDEP would direct Newmont to conduct remediation.

63r. The tailing impoundment is an existing, permitted facility that is being operated in compliance with NDEP regulations. NDEP regulations prohibit any discharge that would degrade waters of the State. Discharge to the tailings facility is run through a cyanide destruction circuit, using caros acid, to bring cyanide concentrations to within regulatory limitations and near neutral pH, as specified in the Water Pollution Control Permit. The Water Pollution Control Permit specifies that the liquid portion must be analyzed for water quality parameters and the solid portion subjected to the Meteoric Water Mobility Procedure (a leach test) and acid-base accounting. The tailings stream must be tested quarterly. The tailings are not expected to become acidic because the tailings are oxidized by the processing circuit.

The engineered seepage collection system is functioning properly and effluent is currently recycled into the processing circuit. After mining operations and reclamation the seepage is anticipated to be minimal. Any treatment and disposal of residual effluent, if necessary, would be addressed in the Closure Plan that will be submitted to NDEP two years prior to closure.

Groundwater quality is monitored through a system of wells adjacent to the tailings facility.

Letter 63 Continued

Heap Leach Facilities

s In June, 1997, the Phase II, Non-Property Heap Leach pad at Gold Quarry failed, which resulted in discharges of cyanide to waters of the US. The failure occurred at the clay liner/ HDPE liner interface because the weight of the material on the slope exceeded the friction at the interface. Newmont must ensure an adequate factor of safety for expansions of all leach pads and make sure quality control is maintained by the constructors of the liner (e.g., ensuring an adequate moisture content and compaction in the clay liner). The geotechnical tests showed 60 percent of the density/moisture sample results fell outside of the allowable specifications. Newmont must ensure oversight of its contractors at all of its facilities, including the Gold Quarry facility to prevent geotechnical failures and discharges such as the one which occurred in June, 1997.

t The DEIS (2-33) indicates that the refractory leach facility was designed for removal of spent ore. Where would this spent ore be placed for closure? Would strategic location of this ore be required to prevent acid generation? How would the leach pad be closed?

Water Quality

u Effluent Monitoring Data: Newmont Mining is permitted to discharge groundwater to Maggie Creek under NPDES Permit No. NV0022268. As a condition of its NPDES permit, Newmont Mining is required to monitor its effluent prior to discharge in Maggie Creek. The DEIS does not contain data from Newmont South Operation's monitoring program. Evaluation of monitoring data is essential to characterize pollutants in the effluent, identify impacts to receiving waters, and determine compliance with applicable water quality criteria. A detailed analysis of existing monitoring data from Newmont's discharge should be included in the EIS, with particular attention to the items listed above.

v Bioaccumulative Pollutants: Bioaccumulative pollutants such as mercury and selenium are problematic because they are highly toxic and accumulate in sediments and the tissues of resident biota. The DEIS does not evaluate bioaccumulative pollutant levels in mine discharges, stream sediments, or resident populations. Other studies have indicated that mines may constitute a significant source of bioaccumulative pollutants, depending on local geology and other factors. The FEIS should evaluate existing information on bioaccumulative pollutant levels in mine effluent, receiving waters, and resident populations and calculate mass loadings from the South Operations facility.

An increase in dewatering at the South Operations facility may increase mercury and selenium loading to the Humboldt Sink. The FEIS should evaluate potential impacts to biota in the Humboldt Sink resulting from this loading increase. To evaluate the effects of bioaccumulative pollutants, the mitigation and monitoring program should be expanded to include quarterly water column and sediment monitoring of Maggie Creek and the Humboldt River for bioaccumulative

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63s. Comments noted.

63t. Initial plans were to use thiosulfate to treat refractory ore on a leach pad, then move the treated ore to another pad for conventional cyanide leaching. Only the last loading of refractory ore would remain in place on the pad. Closure would then be the same as for cyanide leach pads. Now, however, with the practice of biomilling (see response 44b), the ore goes through the mill and the spent ore (tailing) reports to the tailing impoundment. Closure of the refractory ore leach pad will be addressed in the Closure Plan.

63u. Table 2-1a presenting the water quality of Newmont's discharge water was added to Chapter 2 of the FEIS.

63v. The water quality table mentioned in the previous comment was used to identify bioaccumulative pollutants in the discharge. See response 33n. Table 3-8, in Chapter 3 of the FEIS, presents the water quality of the receiving waters. A new paragraph comparing Maggie Creek water quality with Newmont's discharge water quality was added in the FEIS as the last paragraph of the Surface Water Quality section in Chapter 3. Text concerning bioaccumulants in the river was added to the FEIS in Chapter 4 - Impacts on Surface Water Quality. Suggestions for expanded monitoring are noted. Further, as pointed out in Letter 33, monitoring is not considered mitigation.

Letter 63 Continued

pollutants. Annual or bi-annual macro-invertebrate bioassessments and fish tissue analyses should be conducted for upstream and downstream reference sites on Maggie Creek and the Humboldt River.

Ambient Water Quality Data: Tables 3-8 and 3-9 of the DEIS contain ambient water quality data from Maggie Creek, Humboldt River, Jack Creek, Simon Creek, Marys Creek, and Susie Creek. Two major deficiencies are noted in Table 3-8: the table does not specify which concentration units are used; and it does not contain data on copper and zinc concentrations. Although Nevada water quality standards are included in Tables 3-11 and 3-12, the DEIS does not evaluate (1) whether water quality parameters in receiving waters meet applicable criteria, or (2) whether the discharge would cause or contribute to violations of water quality standards. If data in Table 3-8 are presented in units of mg/l, the table indicates that pollutant concentrations at several monitoring locations may exceed Nevada water quality standards. Specific pollutants of concern include arsenic, cadmium, chromium, lead, mercury, selenium, and silver. Because they are critical to evaluate the impacts of the proposed project, these issues should be addressed in the FEIS.

W

The DEIS indicates that Maggie Creek and the Humboldt River exceed drinking water standards for cadmium, chromium, iron, lead, manganese, and silver. However, the document does not indicate whether pollutant concentrations in the water body exceed the applicable water quality criteria for aquatic life, a designated beneficial use of the water bodies in question. Several metals criteria (e.g. cadmium, chromium, copper, lead, nickel, and silver, chromium and lead) must be calculated based on in-stream hardness. Using a long-term average hardness for all of the monitoring sites on Maggie Creek and the Humboldt River, the data in Tables 3-8 and 3-9 should be compared to acute (Criterion Maximum Concentration, CMC) and chronic (Criterion Continuous Concentration, CCC) water quality criteria for aquatic life to determine whether receiving waters meet these water quality criteria. The FEIS should include this information.

Receiving Water Impairment: Table 3-8 indicates that water quality in Maggie Creek and the Humboldt River may be impaired due to metals contamination. Based on this information, the State of Nevada may consider listing Maggie Creek and Humboldt River as impaired under Clean Water Act Section 303(d). Under this provision, the State of Nevada would be required to develop a total maximum daily load (TMDL) for each of the pollutants which exceed applicable water quality criteria.

X

Receiving water impairment should be considered in the FEIS and the NPDES permitting process. EPA regulations at 40 CFR 122.44(a)(1) state that each NPDES permit shall include "any requirements in addition to or more stringent than promulgated effluent limitations guidelines necessary to achieve water quality standards established under Section 303 of the Clean Water Act." If Maggie Creek and the Humboldt River do not meet surface water quality standards, any discharge containing concentrations of pollutants listed as impaired may contribute to the continuing impairment of the water body.

Response to Letter 63

63w. Table 3-8 has values in mg/l, and the units were added to the header of the table in Chapter 3 of the FEIS. Units and values for copper and zinc were also added to Tables 3-8 and 3-9 in Chapter 3 of the FEIS. Both tables present existing water quality conditions and some of them may exceed Nevada water quality standards. The number of measured values above the strictest water quality standard was added to the tables. A discussion of the discharge water quality was added as the last paragraph in Chapter 3, Surface Water Quality of the FEIS. See response 33n.

63x. Comments noted. See response 33n.

Letter 63 Continued

x To conform with EPA regulations at 40 CFR 122.44(a)(1)(ii), discharges from the South Operations facility should meet surface water quality criteria at the point of discharge with no allowance of a mixing zone. The FEIS should also consider whether a mass-loading offset should be required for metals of concern. Such an offset would involve reducing the discharge of metals from a source other than the effluent discharge to effectively reduce the overall mass-loading from the mine to zero.

y Nevada Water Quality Criteria: Table 3-12, which contains Nevada water quality criteria, should be revised as follows: (1) water quality criteria for aquatic life should be expressed as µg/l, and (2) the in-stream hardness used to calculate the criteria for hardness-dependent metals should be stated. The hardness-based criteria for cadmium, copper, chromium, lead, nickel, and zinc must be based on the best available estimate of in-stream hardness. As shown in Table 3-8, hardness data are available for each of the monitoring sites in Maggie Creek and the Humboldt River.

z Groundwater Quality Data: Table 3-19 contains groundwater quality data from a number of monitoring wells in the South Operations study area. This groundwater will be discharged as part of future dewatering activities at the Newmont facility. Although water quality in the wells varies, it is uncertain how each well will affect the overall concentration of metals in the effluent. The DEIS states that the wells have shown exceedences of drinking water standards for arsenic, iron, and manganese. Because groundwater will be discharged to surface waters, it will also have to meet applicable water quality criteria for aquatic life. Table 3-19 does not specify concentration units for the respective values. The FEIS also should indicate which of the wells would be used for dewatering.

aa Pit Water Quality: The DEIS (p.4-51) states that the Gold Quarry pit lake would exceed drinking water or aquatic life water quality standards for antimony, manganese, mercury, and selenium. However, there is no discussion of either the potential ecological risks posed or commitments to mitigation measures should they be deemed necessary. Furthermore, the DEIS states that measurements of methylated mercury and inorganic mercury in three Nevada pit lakes (Anaconda, Aurora, and Boss pits) show that methyl-mercury is typically below detection levels. Although methyl-mercury did not show up in the water column, however, it was found at elevated levels in macroinvertebrates in the Yerington pit. It is our understanding that Nevada BLM conducts screening ecological risk assessments when pit lakes are predicted to exceed water quality standards. The FEIS should include the ecological risk assessment or an explanation why one was deemed unnecessary here. The FEIS should also discuss mitigation measures that could be implemented if necessary, as well as the necessary bond amount to cover this contingency.

bb Process Solutions: The DEIS indicates that Newmont maintains the process solutions in ponds below contaminant levels lethal to wildlife. We do not believe this is an adequate standard, as it does not account for sublethal effects. We recommend that all process ponds be netted or covered with plastic balls.

Response to Letter 63

63x. Comments noted. See response 33n.

63y. Table 3-12 was revised in Chapter 3 of the FEIS. Aquatic life standards were labeled in units of micrograms per liter, and the following hardness statement was added: "Hardness values of 175 mg/l were used to calculate the criteria for hardness-dependent metals in Maggie Creek and the Humboldt River."

63z. Groundwater Quality Data. The groundwater is discharged and monitored under a NPDES Permit. A discussion on discharge water quality has been added to the text. See response 33n. As the combined discharge water quality is monitored, differentiating the contribution of different wells is not necessary. Table 3-19 has been corrected in the FEIS; concentration units and aquatic life standards have been added, dewatering wells have been marked, and the units of mg/l were added to the header.

63aa. There are four reasons BLM did not conduct an ecological risk analysis: 1) Geomega conducted extensive modeling and bench scale testing that concluded that "...the pit lake chemogenetic pathway will result in a consistently benign water quality indicating that there will be no degradation of downgradient water and obviating the necessity to undertake an ecological risk analysis in this case" (Geomega, 1997, page ES-2); 2) Pit water quality is not expected to exceed aquatic life standards (or exceedances would be small); 3) Access to the pit will be inhibited by fences, berms, blockage of the haul roads, and by the steep slopes that may be 300 feet in height above the water level; and 4) The pit is not expected to be a source of drinking water. See response 33w.

63bb. Comment noted.

Letter 63 Continued

Waters of the United States

According to the DEIS (p. 4-64), the proposed construction of facilities would involve the discharge of fill materials into approximately one acre of waters of the United States in Section 18. However, there is no discussion of the functions and values of these waters that would be destroyed. Therefore, it is unclear how the proposed new and expanded leach pads would affect these waters or how they might be avoided. The FEIS should include a detailed analysis of the specific impacts to these waters under each alternative.

cc

The proposed project will require an authorizing permit from U.S. Army Corps of Engineers (Corps) pursuant to Section 404 of the Clean Water Act (CWA). The new Nationwide Permit 44 for Mining Activities, which was published by the Corps in the March 9, 2000, Federal Register (65 FR 12818) and became effective on June 5, 2000, limits impacts to waters of the U.S. to 0.5 acre. Because the proposed work would impact 0.98 acres, the project will require an individual permit from the Corps.

All permits requiring permits under Section 404 of the CWA must comply with the Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials (40 CFR 230), promulgated pursuant to Section 404(b)(1) of the Clean Water Act ("404(b)(1) Guidelines"). The DEIS does not demonstrate compliance with EPA's 404(b)(1) Guidelines. The following comments provide the rationale for our conclusion.

Project Purpose - The proposed project's purpose is to mine gold. For the purposes of determining compliance with 40 CFR 230.10(a), EPA Region 9 considers that the term "overall project purpose" means the basic project purpose plus consideration of costs and technical and logistical feasibility. Pursuant to 40 CFR 230, any permitted discharge into waters of the U.S. must be the least environmentally damaging practicable alternative available to achieve the project purpose.

dd

Geographic Scope of the Alternatives Analysis - The geographic scope proposed by the applicant is too narrow for the purposes of the alternatives analysis. In defining the project purpose as mining gold, the analysis should include all areas that would be reasonable to consider in this particular industry. The Proposed Action involves construction of the expanded and new leach pads in Section 18. However, neither of the two action alternatives considered in the DEIS includes alternative sites for the leach pads in order to avoid filling waters of the U.S. there. It is unclear, therefore, whether other on-site and off-site alternatives may be available that are less environmentally damaging than the Proposed Action. The FEIS should consider whether the expanded and/or new leach pads proposed in section 18 could be located elsewhere on-site or off-site.

ee

Avoidance, Minimization, and Mitigation - EPA's 404(b)(1) Guidelines are written hierarchically to ensure that efforts are first made to achieve the objective of the CWA to eliminate discharges of pollutants into the nation's waters. Discharges that can be avoided through implementation of

Response to Letter 63

63cc. In Chapter 3, Riparian, Wetlands, and Waters of the U.S. - Spring/Seep Wetlands, functions and values of the waters were added to the FEIS. Newmont will comply with the Clean Water Act and will obtain a Section 404 permit if required. Comments on permit requirements noted.

63dd. See response 33p. Newmont received prior approval for facilities that are currently under construction. Prior approval essentially means the facility is an existing facility.

63ee. See response 63cc.

a practicable alternative must be avoided. Discharges that cannot be avoided must be minimized to the extent practicable. Compensatory mitigation should only be used to offset unavoidable impacts that remain.

Determination of Practicability - There is insufficient information in the alternatives analysis to determine practicability of alternatives that could avoid filling waters of the U.S. The 404(b)(1) Guidelines define practicable as available and capable of being done taking into account cost, existing technology, and logistics [40 CFR 230.10(a)(2)]. For example, in determining practicability, a project alternative that achieves a smaller return on investment than the applicant's preferred alternative may be considered practicable for the purposes of 404 permitting, even though that alternative may not be financially acceptable to a particular applicant. In addition, it is important to note that "sunk costs" associated with one site cannot be assigned to an alternative. In evaluating alternatives under the Guidelines, these "sunk costs" cannot be added to the costs of developing a less damaging design or site.

ee Mitigation- If unavoidable fill in waters of the U.S. can be demonstrated, the FEIS should discuss how potential impacts would be minimized and mitigated. This discussion should include: (a) type of mitigation (e.g., conservation easements, habitat creation, etc.); (b) relation of mitigation areas to project site; (c) acreage and habitat type of waters of the U.S. that would be created or restored; (d) water sources to maintain the mitigation area; (e) revegetation plans including the numbers and age of each species to be planted; (f) maintenance and monitoring plans, including performance standards to determine mitigation success; (g) the size and location of mitigation zones; (h) the parties that would be ultimately responsible for the plan's success; and (i) contingency plans that would be enacted if the original plan fails. Mitigation should be implemented in advance of the impacts to avoid habitat losses due to the lag time between the occurrence of the impact and successful mitigation.

In conclusion, a much more detailed analysis is required in order to determine compliance under EPA's 404(b)(1) Guidelines. This includes, but is not limited to, an increase in the geographic scope of the alternatives; a more thorough assessment of the direct and indirect impacts to the environment for each of the alternatives; comparisons of the costs and profits associated with ongoing gold operations; comparisons of costs and profits associated with the alternatives proposed in the DEIS; and mitigation measures that would be used to offset unavoidable impacts. This information should be included in the FEIS.

Cumulative Impacts

ff EPA has reviewed the BLM's "*Cumulative Impacts Analysis of Dewatering and Water Management Operations for the Betze Project, South Operations Area Project Amendment, and Leeville Project*" (April, 2000). We commend BLM for its decision to prepare this analysis, as these mines have and will continue to have an enormous impact on the hydrology, hydrogeology, and water quality, as well as vegetation and wildlife, of some areas of the Humboldt River basin. EPA is very concerned that safe yield will be exceeded by dewatering activities in the impact area.

63ee. See response 63cc.

63ff. Comment noted.

Letter 63 Continued

ff About 30 percent of the groundwater pumped will be removed from the hydrologic system, and it is stated that the regional water balance will be out of equilibrium. It is unclear that the resulting ecological disruption will be appropriately mitigated. Furthermore, the analysis lacks some important information, discussed below, which should be addressed in a follow-up or supplemental analysis. These issues should also be addressed comprehensively within each of the individual EISs for the cumulative impact area.

gg The cumulative impact of mine dewatering activities to surface water quality in the Humboldt River and Humboldt Sink was limited to arsenic, copper, zinc, fluoride, boron, and total dissolved solids (TDS). In terms of cumulative impacts, the three metals of most concern, cadmium, mercury and selenium, were not included in the analysis. Figure 3-29 in the analysis estimates the potential increase in pollutant loading at the Rye Patch Gage. The text states that this estimate is based on very limited pre-mine data. Due to the lack of data points and information on bioaccumulative metals, this analysis is not sufficient to determine the potential impacts of the dewatering operations on aquatic organisms and terrestrial wildlife.

hh The cumulative impact analysis lacks adequate water quality, sediment, macro-invertebrate and fish tissue data. Concentrations of selenium that are acutely toxic to nesting waterfowl can accumulate quickly in closed systems such as the Humboldt Sink. The additional mine dewatering discharges to the agricultural run-off flowing to the Humboldt Sink increase the risk that metals such as cadmium and selenium could reach levels acutely toxic to wildlife. Biological samples from fish and wildlife using the Humboldt sink area should also be analyzed on a regular basis to determine if the uptake of bioaccumulative metals is increasing. At the very minimum, the operation of these dewatering facilities should incorporate a long-term monitoring plan to assess the cumulative impact of increasing cadmium, mercury and selenium loadings in the Humboldt Sink. Any monitoring plan to determine long term cumulative impacts should incorporate water and sediment chemistry, fish tissue analysis and macroinvertebrate bioassessments for monitoring points both above and below the mine operations and the Humboldt Sink.

ii The cumulative impacts to groundwater quality from dewatering and discharge to groundwater do not appear to be addressed. Infiltration ponds, groundwater injection and the use of pumped water for irrigation are proposed or already being used to dispose of pumped water, and the possibility of groundwater degradation from these activities needs to be explored. There should be some comparison of the quality of the receiving formation to the injected or infiltrated water.

jj In addition, karst related sinkholes are already documented and more are predicted. The impacts of these as new subsurface ingress factors are not explored. The FEIS should discuss how this will affect new conveyances between surface contamination and groundwater.

kk Figure 7-3 in the analysis illustrates the drawdown area as overlapping a substantial area of the Lahontan cutthroat trout (LCT) habitat, especially on Little Jack and Coyote Creeks. Thus the shape of the drawdown area could be modified (thereby protecting an endangered species habitat) by injecting water into the proper aquifer and maintaining this injection until the surrounding area

Response to Letter 63

63ff. Comment noted.

63gg. See response 33zzzz.

63hh. See response 33zzzz. The BLM is not considering to require additional monitoring of the Humboldt Sink since the discharge water from the mining projects meets NPDES discharge water quality standards (phone conversation between R. Congdon of the BLM and J. Frank of HydroGeo, September 24, 2001).

63ii. An analysis of cumulative impacts to groundwater quality was not part of the scope of this document. The potential impacts to groundwater quality are discussed in the individual EIS documents. These analyses indicate that no significant impacts to groundwater quality are expected. The lack of baseline and current groundwater quality data in areas outside the mine properties prevents a meaningful regional analysis of potential cumulative effects to ground water quality as presented for the Humboldt River.

63jj. Surface water quality is equal or better than the shallow ground water quality and no impacts to ground water quality are anticipated as a result of karst related sinkholes.

63kk. This area will be carefully monitored and if an impact become present appropriate mitigation will be implemented that may include supplementing flows or other measures depending on the situation.

Letter 63 Continued

kk rebounds after dewatering has stopped. This injection would have reasonable costs while preventing unnecessary and undue degradation. For example, instead of injecting water and creating a mound in the aquifer downgradient of the pit and creating a cone of depression that is dewatering perennial creeks as shown in figure 3-13, the mining company should inject this water upgradient of the cone of depression and protect upstream springs and perennial stretches.

ll The three mining companies must be ready to mitigate for seeps that are affected beyond the boundaries of the 10 foot drawdown area. Notwithstanding the difficulty of modeling areas that may be dewatered less than 10 feet, there must be a plan to create hydrologic barriers such as injection wells that will stop dewatering from progressing toward sensitive habitat as the potential is realized by monitoring. This plan must cover all areas affected, regardless of the model.

In section 1-3, both Gold Quarry and Lone Tree provide for a seep and spring enhancement and augmentation program if there are impacts. Barrick should commit to the same program as part of its expansion. Barrick has committed (page 1-11) to accelerated revegetation of areas adversely affected by groundwater pumping. How will these plants survive if they are not matched with a water augmentation program?

Reclamation and Bonding

The DEIS (p. 4-54) states that if rinsing the leach heap does not meet State of Nevada standards, additional neutralization techniques would be used. The FEIS should describe these techniques and indicate whether the bond covers such contingencies. Other Nevada mines have been unable to reduce contaminant levels to these standards and are proposing to discharge to the ground. The FEIS should discuss the conditions under which BLM and NDEP would allow such a discharge. If this is a possibility at the Newmont South Operations, we strongly urge BLM to require the closure bond to cover this contingency.

mm We were unable to find any information in the DEIS on the bond amounts for the current and proposed operations at Newmont South Operations. The re-opening of the Plan of Operations (POO) should include a reassessment of the adequacy of the financial assurances. The FEIS should identify the bond amounts for each closure and reclamation activity at all of the Newmont South Operations facilities by the end of the project. EPA is aware of several mines that are closing in Nevada which will need long-term operations and maintenance for treatment and/or disposal of water from heap leach pads, tailings, or other mine facilities. The FEIS should also discuss whether long-term operations and maintenance may be necessary *after* closure of the South Operations facilities, and indicate the bond amounts for these as well. We do not believe it is reasonable to delay setting bond amounts for long-term operations until close to closure. EPA strongly recommends that BLM require establishment of funds to cover all potential long-term operations and maintenance activities at the time the POO is issued, while the company still has a strong interest in the property.

Response to Letter 63

63kk. This area will be carefully monitored and if an impact become present appropriate mitigation will be implemented that may include supplementing flows or other measures depending on the situation.

63ll Mitigation is dealt with in the respective Mitigation Plans.

63mm. Addressing other techniques for final closure will be an iterative process with NDEP and BLM, if it is necessary. Bond amounts are identified in the Plan of Operations (see response 2e). The BLM may revise the final bond for post-closure monitoring.

Letter 63 Continued

mm

Furthermore, the financial assurance necessary to fund post-closure activities must be kept current as conditions change at the mine. BLM and NDEP should ensure that the form of the financial assurance does not depend on the continued financial health of the mining company or its parent corporation. The FEIS should describe the types of bonds held for this site. We strongly recommend that corporate guarantees no longer be accepted at any mine sites. We recommend that a financial trust be created to support long-term operations and maintenance.

In addition to determining the actual cost of reclamation, the bond calculation should consider the extra expense of taking over reclamation at a critical time during operations. Typically, bonds are calculated assuming an orderly closure at the end of mine life. It can be much more expensive to take over reclamation and other environmental protection activities in the middle of active operations, such as when the water balance is high and surplus water must be treated, or when environmental or reclamation measures have not been successful in controlling pollution and must be redone.

Pollution Prevention

nn

Pursuant to the Pollution Prevention Act of 1990, pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner. There are significant opportunities for industry to reduce or prevent pollution at the source through cost-effective changes in production, operation, and raw materials use. Such changes offer mining companies substantial savings in reduced raw material, pollution control, and liability costs as well as help protect the environment and reduce risks to worker health and safety. Examples of pollution prevention techniques may include processes to bind metals such as mercury in leach heaps or extract them from the pregnant solution in order to prevent or reduce emissions both from processing facilities during operations and from leach heaps during and after closure. New pollution prevention techniques are being developed that have promising applications to the mining industry. We recommend that BLM and Newmont actively pursue better pollution prevention techniques to prevent or reduce pollution at the South Operations site.

Response to Letter 63

63mm. Addressing other techniques for final closure will be an iterative process with NDEP and BLM, if it is necessary. Bond amounts are identified in the Plan of Operations (see response 2e). The BLM may revise the final bond for post-closure monitoring.

63nn. Comment noted. Appropriate pollution prevention measures are incorporated into the existing facilities. As technology improves, new pollution prevention measures would be incorporated into the standard operating procedures.

Letter 64

United States Department of the Interior

FISH AND WILDLIFE SERVICE

NEVADA FISH AND WILDLIFE OFFICE
1340 FINANCIAL BOULEVARD, SUITE 234
RENO, NEVADA 98502-7147

IN REPLY REFER TO
October 27, 2000
File No. EC 32.7
BLM 6-4

Memorandum

To: Field Manager, Bureau of Land Management, Elko Field Office, Elko, Nevada (Attn: Roger Congdon, EIS Coordinator)

From: Field Supervisor, Nevada Fish and Wildlife Office, Reno, Nevada

Subject: Draft Environmental Impact Statement - Newmont Mining Corporation South Operations Area Project Amendment

We have reviewed the Draft Environmental Impact Statement (DEIS) for the Newmont Mining Corporation South Operations Area Project Amendment. This DEIS analyzes impacts associated with a proposal to continue and expand gold mining operations on the South Operations Area Project in northeastern Nevada. The proposed action includes: 1) additional mining to approximately 350 feet below the currently approved operating level of the Gold Quarry open pit mine; 2) continuing to dewater the mine and discharge groundwater directly into Maggie Creek six miles above the confluence with the Humboldt River; 3) expand waste rock disposal facilities and leach facilities, and 4) construct associated ancillary facilities. The following comments and recommendations are provided for your consideration.

GENERAL COMMENTS

The expansion of this large mine has the potential to adversely impact the environment beyond that authorized in relation to ongoing operations. Therefore, it is extremely important that mitigation and monitoring activities be carefully considered to prevent and offset adverse impacts. Specific recommendations on this subject are provided below with our Specific Comments. We ask to be included in any discussions and decisions on monitoring and mitigation where our trust resources may be potentially impacted.

Response to Letter 64

Letter 64 Continued

a In particular, the DEIS did not provide adequate information comparing current groundwater levels with the current model predictions. We recommend that the document include monitoring data on current groundwater levels in comparison to the predictions of those levels based on the current model. If the model does not accurately predict current levels, future predictions become suspect. Until we see this comparative information we cannot comment with any confidence or agree on future impacts that are determined using groundwater model predictions. If the model is inaccurate, far greater impacts on streams containing Lahontan cutthroat trout (LCT) may occur than those predicted in this DEIS.

SPECIFIC COMMENTS

CHAPTER 1. PURPOSE AND NEED

b Authorizing Actions, Table 1-1, page 1-4. The correct Regulatory Agency entry for National Pollutant Discharge Elimination System Permit should be the Nevada Division of Environmental Protection (NDEP), Bureau of Water Pollution Control. The next to last entry in the first column, Authorizing Action, should be corrected to read Endangered Species Act.

CHAPTER 2. PROPOSED ACTION, INCLUDING ALTERNATIVES

c Proposed Action, General Project Overview, South Area Leach Facilities, page 2-24. Information in the second paragraph indicates that solutions in ponds will be maintained at concentrations below levels considered lethal to wildlife. We agree that this should be done to avoid bird mortality and prosecution under the Migratory Bird Treaty Act. However, this does not protect birds from possible sublethal effects. We recommend that exclusion devices (e.g., fences and netting or floating balls) be used to prevent access by migratory birds and bats.

Proposed Action, General Project Overview, Refractory Leach Facility, page 2-25. Please see the above comment regarding bird exclusion devices also in relation to this facility.

d Proposed Action, Resource Monitoring, Water Resources, page 2-26. The second paragraph indicates that a cooperative monitoring program would be established for Barrick and Newmont to evaluate potential impacts to streams north of the South Operations Area that are tributary to Maggie Creek. Flow reductions could occur in this area which may have an adverse impact on LCT, a threatened species. Therefore, it is imperative that the Fish and Wildlife Service (Service) be included in discussions that will be held and in decisions that will be made regarding the establishment of this monitoring program.

Response to Letter 64

64a. The match of the model to current conditions is achieved during the calibration phase. The calibration results are described in Hydrologic Consultants Inc., of Colorado, 1999. Please note that as of the date of the calibration (December 1998) no drawdown was visible in the Carlin formation. All drawdowns measured occurred in the bedrock formations. The computer model was calibrated to these drawdowns. The Carlin formation was modeled according to the best understanding of its properties. The 10-foot drawdown contour, shown on several figures, is the drawdown in the uppermost water bearing aquifer, which is in the Carlin Formation, with some exceptions. Therefore current drawdowns in the bedrock should not be compared to the maximum 10-foot drawdown contour. Figure 4-3 in the DEIS (which erroneously showed the 10-foot drawdown contour for the water table aquifer together with the current drawdown in the bedrock) was corrected in the FEIS. See response 33cccc for discussion on model calibration.

64b. These changes were made in Table 1-1 in Chapter 1 of the FEIS.

64c. The NDOW has primacy on this matter because the controls are subject to permitting under the Artificial Industrial Pond Permit regulations.

64d. The U.S. Fish and Wildlife Service was included in development of the monitoring program.

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Field Manager

File No. EC 32.7
BLM 6-4

e Proposed Action, Resource Monitoring, Potentially Acid-Producing Rock, page 2-26. No mention is made of long-term monitoring of potentially acid generating waste to determine if the methods described, including encapsulation, will be successful in preventing acidic runoff. The location of the waste rock dumps in proximity to Maggie Creek increases the need for adequate monitoring. Therefore, we recommend the development of a contingency fund for long-term monitoring and possible remediation of these potential sources of acidic drainage.

Proposed Action, Closure and Reclamation, Revegetation, page 2-29. Information in the third paragraph indicates that organic amendments may be used to enhance reclamation success. Organic amendments may encourage establishment of non-native vegetation. The noxious weed control program may be adequate in prevention of large-scale problems of this type for the short-term. We are also concerned that invasions of non-natives may continue to occur after reclamation is deemed complete, requiring longer-term monitoring.

f Project Alternatives, Proposed Action with Backfilling of the Mac Pit, page 2-37. An additional benefit of filling this pit might be the reduced risk of accidents (e.g., falls into the pit) by humans and wildlife.

CHAPTER 3. AFFECTED ENVIRONMENT FOR PROPOSED ACTION AND ALTERNATIVES

g Water Resources, Surface Water Hydrology, page 3-11. This section mentions Rye Patch Reservoir as a major surface water body on the Humboldt River. Does the capacity cited include the adjacent Upper and Lower Pitt Taylor Reservoirs?

h Water Resources, Surface Water Hydrology, Surface Water Quality, page 3-24. We do not believe that the waters discussed are commonly used as a source of drinking water; however, they do contain aquatic life. Therefore, it would be appropriate to indicate which constituents (e.g., metals and trace elements) exceed aquatic life standards.

Information is needed on the water quality of Newmont's discharge to Maggie Creek in relation to water quality standards and existing water quality in Maggie Creek and the Humboldt River upstream of the confluence with Maggie Creek. This information is critical for the analysis of consequences of the proposed action.

i Water Resources, Surface Water Hydrology, Surface Water Quality, Table 3-8, page 3-25. We recommend the following changes to Table 3-8 for increased clarity and to reduce sources of confusion. First, the units of measurement should be given below each constituent (e.g., within its box). Second, footnote 3 indicates that the concentrations reported are standards; however, we assume that this is incorrect and that the concentrations reported in the table are actual

3

Response to Letter 64

64e. See response 63q.

64f. The potential benefit was added to Chapter 2, Proposed Action with Backfilling of the Mac Pit of the FEIS, with the statement: "Another possible benefit of backfilling the Mac pit would be a reduced risk of accidental falls by humans and wildlife."

64g. The text in Chapter3, Surface Water Hydrology of the DEIS was revised in the FEIS to indicate the volume of Rye Patch (150,000 ac-ft.) and Pitt-Taylor (44,300 ac-ft.).

64h. We concur. Discussion of aquatic life standards have been added in Chapter 3, Surface Water Quality of the FEIS. Water quality of the discharge was added to the FEIS in Table 2-1a.

64i. Table 3-8 was revised as per suggestions, as was Table 3-9, in Chapter 3 of the FEIS.

Letter 64 Continued

monitored values. If we are correct, we recommend deletion of the footnote. Third, footnote 4 implies that standards are being calculated. If standards are presented, which we believe to not be the case, then they should be clearly labeled. However, we recommend that the standards should be left where they are currently presented (i.e., Table 3-12).

i Table 3-9 causes the same types of confusion as Table 3-8 and should be modified as indicated above. Both Tables 3-8 and 3-9 should clearly indicate whether concentrations are for filtered or unfiltered water. We assume that the concentrations are for unfiltered water because of the heading Total Concentration Ranges. An addition to a footnote could correct this. Some aquatic life standards apply only to the dissolved fraction (based on filtered samples). This information should be provided to the reader in the accompanying text. We believe that the units of measurement for hardness in footnote 4 of Table 3-9 should be mg/L instead of μg/L.

j Water Resources, Surface Water Hydrology, Water Quality Standards, Table 3-12, page 3-31.
The following corrections are needed in this table. First, dashes should be inserted in the columns for Irrigation, Stock Water, and Wildlife Propagation for antimony. Second, there are no aquatic life standards for boron; these were dropped several years ago. Third, the decimal places for the aquatic life standards for cadmium, copper, lead, nickel, silver, and zinc should be moved three places to the left for these calculated values to place them in the same units (i.e., mg/L) as the other concentrations. It should also be noted that these concentrations are for the dissolved fraction only. A footnote should also indicate the hardness value used in calculating these values. If a hardness value of 175 mg/L was used (assumed, based on information provided elsewhere in the DEIS) in the calculations, some of the concentrations appear to be slightly lower than the values that we obtained. Fourth, the aquatic life standard for molybdenum is 0.019, not 0.19 mg/L. Lastly, please indicate the purpose of the parentheses around the concentration for the primary drinking water standard for copper.

k Water Resources, Surface Water Hydrology, Water Quality Standards, Table 3-13, page 3-32.
For accuracy, additional information should be presented in this table. First, after the standard for temperature, insert "(single value)." The information for nitrates is misleading as there are separate standards for nitrogen species. The actual standards are: Nitrate (single value) $\leq$ 10; nitrite (single value) $\leq$ 1; ammonia (un-ionized) $\leq$ 0.02. The standard for color should be "no adverse effects", not "no effects". The sign "$\geq$" should be deleted before the standard for turbidity. Also, standards for sulfate, fecal coliform, and *E. coli* could have been included.

l Water Resources, Surface Water Hydrology, Water Quality Standards, Table 3-14, page 3-37.
The title for Table 3-14 is the same as that for Table 3-9 and appears to be in error; information is reported for water quality in springs, not the creeks listed in the title. It would be helpful and more appropriate to report aquatic life standards in addition to or in place of drinking water standards because of the presence of aquatic life in these streams and the likely lack of their use

Response to Letter 64

64i. Table 3-8 was revised as per suggestions, as was Table 3-9, in Chapter 3 of the FEIS.

64j. Table 3-12 was revised in the FEIS as per suggestions.

64k. Table 3-13 was revised in the FEIS as per suggestions.

64l. Table 3-14 was revised in the FEIS as per suggestions.

Letter 64 Continued

l as drinking water. Also, modifications to some footnotes are needed. The printing of footnotes in this and some other tables has been compressed leading to overlap of some letters, making reading difficult. In footnote 1, delete 0.47 at the end. In relation to footnote 2, it would be better to place the units of measurement in the column headings for clarity. Also, delete min= maximum; max=maximum. The number 3 in reference to footnote 3 should be placed after "Drinking Water" in the left column and removed from the top of the table for clarity. It appears that footnote 4 is related to total suspended solids (TSS) and turbidity (Turb) results from Spring 44 instead of all results for Ag, Cd, and Pb.

m Water Resources, Surface Water Hydrology, Surface Water Use, page 3-36. In the first sentence, the Division of Water Resources is under the Nevada Department of Conservation and Natural Resources, not NDEP.

n Water Resources, Groundwater Hydrology, Groundwater Quantity, Table 3-18, page 3-48. General information on types of use under "Miscellaneous" would be helpful. This could be provided in a footnote.

o Water Resources, Groundwater Hydrology, Groundwater Quality, Table 3-19, pages 3-49 and 3-50. The maximum value for a number of constituents for many sites is lower than the average value which should not be possible; please correct these as needed. It would be helpful if the units of measurement were placed in the column headings instead of in a footnote. In footnote 2, something appears to be missing in the first part of the second sentence. Also, nickel is not reported in the table and may be removed from the footnote. Footnote 3 may be deleted because standards do not appear to be reported in this table.

p Water Resources, Hydrologic Monitoring Program, page 3-52. The last sentence of this section indicates that "Hydrologic monitoring by Newmont will continue for a period of time to be established by an agreement between the BLM and Newmont." The Service should be consulted on this decision because of potential impacts to our trust resources, including Lahontan cutthroat trout.

q Threatened, Endangered, Candidate and Sensitive Species, page 3-68. The first sentence of this section describes candidate species as "species proposed for federal listing". This is incorrect. Candidate species are species under review by the Service for possible federal listing. The term "proposed" has specific meaning in the implementing regulations for the Endangered Species Act and does not apply to candidate species.

r Threatened, Endangered, Candidate and Sensitive Species, Lahontan Cutthroat Trout, page 3-72. The discussion of fish migration barriers on Coyote, Little Jack, and Beaver Creeks states that perched culverts on the Maggie Creek Road prevent movement of LCT between these tributaries

Response to Letter 64

64l. Table 3-14 was revised in the FEIS as per suggestions.

64m. The change was made in Chapter 3, Water Resources - Surface Water Hydrology/Surface Water Use of the FEIS.

64n. Miscellaneous uses were added to the footnote in Table 3-18 in the FEIS.

64o. Table 3-19 was revised in the FEIS as per suggestions.

64p. Recommendation noted. The last sentence in Chapter 3, Hydrologic Monitoring Plan was changed to read "... following closure.", because this is stated elsewhere in the EIS.

64q. The sentence in Chapter 3, Threatened, Endangered, Candidate, and Sensitive Species of the FEIS was changed to read " ...species under review for possible listing...".

64r. Additional changes were made to the Lahontan Cutthroat Trout section in Chapter 3, Threatened, Endangered, Candidate, and Sensitive Species of the FEIS as per suggestions. Plans have been made to remove selected culverts, and this information was also added.

Letter 64 Continued

r and Maggie Creek. LCT found in Maggie Creek are characterized as "outwash victims". Information we have obtained from Nevada Division of Wildlife (NDOW) and BLM indicates that this is an overly pessimistic assessment of the connectivity of these tributary streams to Maggie Creek. The perched culverts definitely inhibit movement of LCT from Maggie Creek into the tributaries, but some movement does occur. Based on information available at the time, the LCT Recovery Plan (U.S. Fish and Wildlife Service 1995) characterized the Maggie Creek subbasin as having metapopulation potential which includes all LCT streams within the area during normal and above normal water years. More recent information has confirmed this characterization.

s Social and Economic Resources, Public Finance, page 3-113. Please note two incomplete sentences in the second column of this page.

CHAPTER 4.. CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

t Geology and Minerals, Potential Mitigation and Monitoring, page 4-4. Additional information should be provided in the Final Environmental Impact Statement (FEIS) on the length of monitoring of potential acid rock drainage following completion of mining. The National Academy of Sciences (NAS) report on "Hardrock Mining on Federal Lands" (1999) states that "...acid drainage may take years to form or become a water quality concern." Therefore, long-term monitoring of waste rock drainage is essential.

u Air Resources, Potential Mitigation and Monitoring, page 4-7. Mines are now required to report mercury emissions to the air from sources such as retorts, roasters, and smelting of ore as part of the Toxic Release Inventory. The media reported significant estimated mercury emissions from several mines in Nevada, including Newmont. We know of no current standards for mercury emissions from stacks at mines. The proposed action would result in an increase in the period of emissions from continued mining. Mercury is highly toxic, especially in its organic (i.e., methyl) form, readily bioaccumulates in the food chain, and may result in adverse impacts to biota from accumulation in downwind areas. Therefore, these potential direct impacts should be analyzed in the FEIS. Mercury monitoring should include air quality and residues in soils and biota downwind of the mine. Comparative data should be collected from upwind and background areas. Monitoring should continue until cessation of gold recovery from ore at the mine. Mitigation should include better recovery of mercury emissions from stacks.

v Water Resources, page 4-8. The third paragraph of this section indicates that "No impacts on surface water quality are allowed by Newmont's current discharge permit. Currently discharged untreated water does not exceed National Pollutant Discharge Elimination System (NPDES) water quality standards." The latter sentence may be true; however, the DEIS provides no hard data in support of this statement. The first sentence may not be strictly true because even though

Response to Letter 64

64r. Additional changes were made to the Lahontan Cutthroat Trout section in Chapter 3, Threatened, Endangered, Candidate, and Sensitive Species of the FEIS as per suggestions. Plans have been made to remove selected culverts, and this information was also added.

64s. The sentences have been corrected in Chapter 3, Public Finance of the FEIS.

64t. See response 64e.

64u. Mercury emissions to air result from fugitive dust, ore and waste rock handling, and ore processing. Fugitive emissions of mercury are estimated at 29 pounds per year. Point source emissions of mercury are estimated at 50 pounds per year. These atmospheric emissions indirectly affect soils and water. Sampling in soils and water in the Maggie Creek Basin have not detected mercury. Text has been changed accordingly in Chapter 4, Air Resources of the FEIS.

64v. Additional data are presented in the FEIS - Chapter 2, in Table 2-1a, water quality values for Newmont's discharge. See response 33n. NPDES permitting is based on non-degradation considerations.

Letter 64 Continued

standards may be met, the concentrations of some constituents in the discharge might be higher than ambient conditions and loads of contaminants in the basin are higher now than prior to mine dewatering discharges.

w Information in the text and Figure 4-1 should clearly indicate when the maximum effects on the 10 foot drawdown contour will occur. In Figure 4-1, 1999 and 1993 only refer to when the predictions were made, not when they would occur, and therefore are misleading.

x Water Resources, Direct and Indirect Impacts, Proposed Action, Impacts on Wells, page 4-20. The first sentence of the third paragraph should be modified to indicate that more than 11 wells (give exact number based on information in Figure 4-5) are located with in the maximum 10-foot drawdown contour and that 11 wells are likely to be impacted.

y In Table 4-1, footnote numbers should be placed with their respective column headings for clarity. For footnote 1, NP does not appear in "SWL" column. In footnote 5, DOM, IND, ENV, QM, REC, and OTH are not used in the text of the table under the "Use" column, and IRR appears twice.

z Water Resources, Direct and Indirect Impacts, Proposed Action, Impacts on Springs and Seeps, Table 4-2, page 4-29. Elevation data are missing.

aa Water Resources, Direct and Indirect Impacts, Proposed Action, Impacts on Surface Water Quality, page 4-44. We have noted from information provided elsewhere in the DEIS that the pit lake surface is predicted to be near 5091 feet in elevation. This is about 10 feet higher in elevation than Maggie Creek nearby. Therefore, there may be a potential for flow of water from the pit lake to the alluvium of Maggie Creek. The predicted quality of pit lake water is presumed to be inferior to ambient conditions in the creek. Therefore, please discuss the potential for this event, the need for future monitoring of water quality in Maggie Creek after filling of the pit lake, and the possible need for development of a contingency fund for long-term monitoring costs.

bb Infiltration of water from Maggie Creek Ranch Reservoir to groundwater and its eventual seepage to the surface waters of Maggie Creek might have the potential to dissolve metals and trace elements from sub-surface strata, thereby impacting the water quality of the creek. Is there any evidence that this has occurred?

cc Water Resources, Direct and Indirect Impacts, Proposed Action, Impacts from Mine Pit Water Recovery, page 4-51. On page 4-11 the text states that "Ultimate quality of mine pit water is predicted to be similar to or better than existing groundwater in the ore zone..." The NAS (1999) report expressed concern regarding pit water prediction models. A diversity of views on pit lake

Response to Letter 64

64w. The predicted impact does not occur at one specific time, but is the maximum impact at any time, i.e., the maximum extent may be reached at a different time to the north of the mine than to the south of the mine. The last sentence of the first paragraph in Chapter 4, Water Resources of the FEIS was changed to read "Maximum drawdown would be expected around 2011 and flows from impacted springs, seeps, and streams would begin to recover as the water table approaches pre-mining levels." No change was made to Figure 4-1.

64x. The first sentence of the third paragraph in Chapter 4, Impacts to Wells of the FEIS was revised to clarify that 11 wells would be newly impacted, as they are located between the 1993 contour and the 1999 contour.

64y. Table 4-1 in Chapter 4 of the FEIS was revised as per the comment.

64z. Existing spring surveys do not contain elevations of springs and the column was deleted from Table 4-2 in Chapter 4 of the FEIS.

64aa. See responses 33y, z, and aa.

64bb. Water from Maggie Creek Ranch Reservoir has infiltrated into the groundwater, as is evidenced by the rise in groundwater levels, and as monitored in wells 29-7 and 29-8. Seepage to the surface waters of Maggie Creek is possible, however, this is not a water quality concern for two reasons: First, water quality in lower Maggie Creek after 1994 is influenced by discharge water more than by additional seepage. Infiltration from Maggie Creek Ranch Reservoir will end after mining, concurrently with the end of discharge into Maggie Creek. Any impacts from seepage are likely to be minor compared to impacts from direct discharge. Secondly, impacts from seepage on the water quality are unlikely since monitoring wells 29-7 and 29-8 have not shown any rise in trace elements like arsenic, boron, or selenium. The largest increase in water levels occurred during the year 1994. Both wells exhibit increased TDS for the period after 1994, as compared to the years 1992 and 1993. The TDS increased from approximately 350 mg/l (before 1994) to approximately 450 mg/l (after 1994) in both wells. Levels of trace elements (antimony, boron, selenium) remained unchanged, but arsenic decreased after 1994 (e.g. from around 0.02 mg/l to less than 0.015 mg/l in well 29-8). Actual water quality of seepage of groundwater to Maggie Creek has not been monitored.

64cc. Modeling comments noted. An ecological risk assessment will not be conducted because no need has been demonstrated. See responses 33y, z, aa and 63aa. Mercury monitoring comments noted.

Letter 64 Continued

water quality modeling was also presented at the Workshop on the Characterization, Modeling, Remediation, and Monitoring of Pit Lakes organized by the U.S. Environmental Protection Agency (2000). Therefore, we believe that pit lake water quality monitoring is essential and are pleased to note that this and additional monitoring at the pit lake is proposed in a later section (see page 4-73). We would appreciate the opportunity to be involved in the development of the monitoring plan.

Aquatic life standards in the pit lake may be exceeded for antimony, manganese, mercury, and selenium. This suggests that concentrations of these constituents may be high enough for significant bioaccumulation and/or biomagnification of these elements in the food chain of the pit lake. A wealth of information has shown that mercury and selenium can accumulate in food chains and can be highly toxic to fish and wildlife at elevated concentrations. This reinforces the need for proper long-term monitoring of not only pit lake water quality, but the development of aquatic communities in the lake, concentrations of metals and trace elements in the food chain, and wildlife use of the lake. An ecological risk assessment should have been conducted for the pit lake with regard to potential exposure of wildlife, including migratory birds, to elevated concentrations of metals and trace elements.

cc

Information on this page indicates that methyl-mercury is typically below detection levels in three Nevada pit lakes. We agree with these findings. However, elevated concentrations of mercury (i.e., 0.3743 μg/g total mercury and 0.3515 μg/g methyl-mercury, both on a wet weight basis) were found in a sample of aquatic macroinvertebrates from one of these sites, the Anaconda pit lake. The detection limit for methyl-mercury for water at this pit lake was 0.0000335 μg/L; methyl-mercury was not detected. This indicates that monitoring of pit lake water quality for methyl-mercury may not adequately predict accumulation in aquatic organisms. Total mercury was detected in two unfiltered samples of water from the Anaconda pit lake at low concentrations (i.e., 0.00212 and 0.00252 μg/L).

Water Resources, Potential Mitigation and Monitoring, page 4-55. If water is replaced at springs and streams, it must be of equal or better quality, including major and minor constituents, than that originally present.

We recommend that mitigation for evaporation from the pit lake should also be required. This could be accomplished by the purchase of water rights and their donation to the Nevada Division of Wildlife for the purpose of providing habitat for wetland dependent species in the Humboldt River Basin.

dd

Inadequate information was presented on monitoring of groundwater downgradient of tailings impoundments and heap leach facilities. Long-term monitoring in these areas is essential to detect potential releases of metals and trace elements, especially because of their proximity to

Response to Letter 64

64cc. Modeling comments noted. An ecological risk assessment will not be conducted because no need has been demonstrated. See responses 33y, z, aa and 63aa. Mercury monitoring comments noted.

64dd. Recommendations are noted. See response 33f. Monitoring of groundwater downgradient of the tailing impoundment and waste rock disposal facilities would be conducted as it is currently. Newmont has committed to monitoring following closure of these facilities.

Letter 64 Continued

Field Manager

File No. EC 32.7
BLM 6-4

Maggie Creek.

The Service has been conducting a cooperative monitoring study to determine the possible effects of dewatering discharges to the Humboldt River. This has included the collection of biota samples for metal and trace element analyses. Barrick Goldstrike Mines Inc. has been required to contribute to this study. We believe that it is appropriate to require Newmont to also contribute to this study if it is extended beyond 2000.

dd

We believe that Newmont should continue to contribute to the cost of a BLM staff hydrologist for a period extending several years post-mining (e.g., 2020), so that BLM can provide adequate oversight of monitoring of ground water levels continuing into the period of recovery. This should not be considered mitigation because it does nothing to lessen adverse effects to the environment.

Noxious Weeds, Potential Mitigation and Monitoring, page 4-64. We are concerned that there may be a potential for increased susceptibility of weed invasion even after reclamation of disturbed areas is complete. Therefore, there should be a contingency for longer-term mitigation. Also, riparian areas that are impacted by reduced flows in springs, seeps, and streams may be susceptible to weed invasions when drying of these areas occurs. Monitoring and mitigation of these potential effects should be required.

ee

Terrestrial Wildlife, Potential Mitigation and Monitoring, page 4-72. The second bullet under this section indicates there is a potential for the dewatering to "compromise" the Maggie Creek Watershed Restoration Project. If negative impacts were to occur to this area, additional mitigation measures should be implemented.

ff

We strongly support the next to last mitigation/monitoring measure which involves establishment of a monitoring site at the pit lake. We would appreciate the opportunity to work with Newmont and BLM on planning the monitoring that should be conducted, which should include constituents (e.g., metals and trace elements to be monitored, matrices (e.g., types of samples, such as water and biota) to be analyzed, methods of assessing development of aquatic communities, and surveys of wildlife use. Frequency of monitoring should also be determined, but with flexibility based on changing conditions and previous monitoring data. We support the establishment of a contingency fund to cover future costs of this monitoring.

Aquatic Habitat and Fisheries, Potential Mitigation and Monitoring, page 4-76. It appears that additional monitoring wells and monitoring of surface flows may be needed to the north of current monitoring to determine impacts in the vicinity of Beaver Creek. Additional monitoring also may be needed on the east side of Maggie Creek. There is currently no monitoring coverage in these areas.

gg

9

Response to Letter 64

64dd. Recommendations are noted. See response 33f. Monitoring of groundwater downgradient of the tailing impoundment and waste rock disposal facilities would be conducted as it is currently. Newmont has committed to monitoring following closure of these facilities.

64ee. Comments noted.

64ff. The sentence in question was misplaced. The potential for compromise would not be a result of SOAPA, but rather a potential cumulative effect. The sentence was removed from Chapter 4, Terrestrial Wildlife and inserted in Chapter 5, Wetlands and Riparian Areas. Mitigation recommendations noted.

64gg. We question the need for monitoring north to Beaver Creek (as no effects are predicted by SOAPA). However, as Beaver Creek is included in the CIA affected area, expanded monitoring will be discussed as part of the three Records of Decision to be issued by BLM. Monitoring east of Maggie Creek will be discussed while developing the Final Mitigation Plan for SOAPA.

Letter 64 Continued

hh

Threatened, Endangered, Candidate and Sensitive Species, Direct and Indirect Impacts, page 4-77. Based on comments made in this section regarding bald eagle and LCT, the Service anticipates section 7 consultation under the Endangered Species Act, as amended, will be necessary. The document states bald eagles may be exposed to increased concentrations of metals and trace elements in the prey base due to the proposed action. The document also states that no direct impacts will occur to LCT and the indirect effects remain as they were analyzed in the 1993 document. However, the proposed action will increase the cone of depression, extend the area of impact, extend the period of dewatering, and increase the amount of groundwater removed from the immediate area by the dewatering system. As a result, the Service believes further section 7 consultation is appropriate.

Threatened, Endangered, Candidate and Sensitive Species, Potential Mitigation and Monitoring, pages 4-82 through 4-84. We strongly support the potential mitigation to replace the perched culverts on the Maggie Creek Road with structures designed for fish passage. This action would improve movement of LCT between Maggie Creek and tributary streams, thus improving the metapopulation potential within the subbasin.

We support Newmont's commitment to provide baseflow augmentation if the need arises. Water used for augmentation should be of the same or better quality, including major and minor constituents, as the original water.

ii

In the last potential mitigation bullet regarding Spring Creek, NDOW plans to reintroduce LCT to the stream would be part of the State's Species Management Plan, not the Recovery Plan for LCT.

We are concerned with the construction of overhangs and alcoves on the pit walls. If wildlife using the pit lake accumulate elevated concentrations of metals and trace elements, the raptors using this site would have the potential to receive elevated exposures. If feasible, it may be appropriate to delay this construction until information is available on actual concentrations of metals and trace elements in the lake and food chain organisms.

jj

Recreation, page 4-89. No information is provided on potential impacts to public health if a fishery is established (probably clandestinely) in the pit lake. Consumption of fish containing potentially excessive contaminant burdens could present risks to human health.

kk

Wastes - Solid or Hazardous, Direct and Indirect Impacts, Proposed Action, page 4-114. The FEIS should clearly state that the proposed action would result in more spills than the no action alternative due to the increased period of active mine life. We recommend that mercury emissions be included here unless they are to be covered adequately elsewhere in the FEIS.

Response to Letter 64

64hh. A Biological Assessment was prepared as part of the consultation process. The potential effects on eagles and LCT listed in the comment are a result of cumulative impacts and not SOAPA alone, so the BLM anticipates section 7 consultation with all three mine projects.

64ii. Comments noted. In Chapter 4, Threatened, Endangered, Candidate, and Sensitive Species - Potential Mitigation and Monitoring of the FEIS, "Recovery Plan" was replaced with "Nevada Species Management Plan."

64jj. Use of the pit lake by people and a clandestine fishery are speculative (although likely). See response 63aa. The possible presence of a risk from mercury in fish is not anticipated because too many variables are present to indicate a "catchable" fishery would develop in the pit lake.

64kk. The suggested statement was added to Chapter 4, Wastes - Solid or Hazardous of the FEIS. See responses 63aa and 64jj concerning mercury.

Letter 64 Continued

Field Manager

File No. EC 32.7
BLM 6-4

ll Comparison of Impacts, Table 4-7, page 4-118. For the heading Water Resources - Surface Water Quantity, the effects will continue beyond the periods of dewatering for both the Impacts of Proposed Action and the No Action alternatives.

CHAPTER 5. CUMULATIVE EFFECTS ANALYSIS

mm Impacts Summary, Air Resources, page 5-2. The cumulative impacts of mercury emissions from all mines, even though currently unregulated, need to be analyzed.

nn Water Resources and Geochemistry, Impacts from Mine Dewatering and Localized Water Management Activities, Impacts to Date, page 5-8. In the third paragraph it would be helpful (in a few words) to provide more specifics on the nature of the changes in flow and vegetation in Brush Creek without making the reader refer to the cumulative effects report.

oo Threatened, Endangered, Candidate, and Sensitive Species, Predicted Dewatering Effects, page 5-16. In the sixth line change white-ibis to white-faced ibis.

pp Recreation, page 5-19. In the second paragraph, recreational pressures would likely extend beyond 2011 because of the multiple long-term mining projects in the area.

CHAPTER 6. CONSULTATION, COORDINATION, AND PREPARATION

qq List of Preparers and Reviewers, Cooperating Agencies, page 6-5. Please change Stan Weimeyer to Stanley Wiemeyer (note correct spelling). The contributions of the Service should, in addition to TECS Species, include Fish and Wildlife, and Environmental Contaminants.

CHAPTER 7. REFERENCES, GLOSSARY, LIST OF ABBREVIATIONS, AND INDEX

rr References, page 7-13. Williams, 1999 was cited on page 5-17 but is not listed here.

ss Glossary, page 7-14. We suggest that you include the following definitions in this section.

Bioaccumulation - A process by which chemicals are taken up by organisms from water or sediment directly or through consumption of food containing the chemicals.

Periphyton - Organisms, both plant and animal, attached or clinging to stems and leaves of rooted plants or other surfaces projecting above the bottom of a water body.

Metapopulation - A population comprised of a set of populations linked by migration, allowing for recolonization of unoccupied habitat patches after local extinction events.

On page 7-21, as part of the definition for pH, it would be helpful to indicate that a pH of 1 is highly acidic and a pH of 14 is highly basic or alkaline.

11

Response to Letter 64

64ll. Table 4-7 in Chapter 4 of the FEIS was revised to indicate dewatering would continue until 2011 and recovery would occur over the following decades.

64mm. See response 63h.

64nn. Brush Creek was not specifically addressed in the SOAPA EIS because it is outside the 10-foot drawdown contour, nor was it specifically modeled by Barrick or others during preparation of the CIA document. Brush Creek is only mentioned in general terms in the CIA at page 3-56. Similarly, vegetation along Brush Creek was not addressed in any of the subject documents. No new information was added to the FEIS.

64oo. The change (white-ibis to white-faced ibis) was made in Chapter 5, Threatened, Endangered, Candidate, and Sensitive Species of the FEIS.

64pp. The sentence was revised in Chapter 5, Recreation of the FEIS to indicate a longer term of effect from continued mining activities.

64qq. The name change and additions were made in Chapter 6, List of Preparers and Reviewers - Coordinating Agencies of the FEIS.

64rr. The following reference was added to Chapter 7, References of the FEIS: Williams, R.D., 1999. Letter from Nevada Fish and Wildlife Office to Manager, Nonrenewable Resources, Elko Field Office, BLM, December 2, 1999. Subject : Preliminary Draft Environmental Impact Statement - Newmont Mining Company's South Operations Area Project Amendment.

64ss. The three definitions for bioaccumulation, periphyton, and metapopulation were added, and the definition of pH was expanded in Chapter 7, Glossary of the FEIS.

Letter 64 Continued

Field Manager

File No. EC 32.7
BLM 6-4

We appreciate the opportunity to provide comments on this DEIS. If you have questions or need clarification on our comments, please contact Stanley Wiemeyer at (775) 861-6326 in relation to general comments and environmental contaminants issues, and Laura Berglund at (775) 623-1526 or Marcy Haworth at (775) 861-6323 in relation to LCT and threatened and endangered species issues.

Robert D. Williams

cc:
Administrator, Nevada Division of Wildlife, Reno, Nevada
Administrator, Nevada Division of Environmental Protection, Carson City, Nevada
State Director, Bureau of Land Management, Reno, Nevada
Chief, U.S. Army Corp of Engineers, Reno, Nevada
Chief, Office of Federal Activities, Environmental Protection Agency (CMD-2), San Francisco, California (Attn: Jeanne Geselbracht)
Assistant Regional Director, Ecological Services, Fish and Wildlife Service, Portland, Oregon (Attn: Don Steffeck)
Operations Manager, CA/NV Operations Office, Fish and Wildlife Service, Sacramento, California

Response to Letter 64

Letter 64 Continued

Field Manager

File No. EC 32.7
BLM 6-4

References

National Academy of Sciences. 1999. Hardrock Mining on Federal Lands. National Academy Press, Washington, D.C. 247 pp.

U.S. Environmental Protection Agency. 2000. Workshop on the characterization, modeling, remediation, and monitoring of pit lakes. April 4-6, 2000. Reno, Nevada.

U.S. Fish and Wildlife Service. 1995. Lahontan cutthroat trout, *Oncorhynchus clarki henshawi*, Recovery Plan. Portland, Oregon. 147 pp.

Response to Letter 64

Letter 65

Ursula Wilson-Booth
1518 Sandra Drive
Boulder City, Nv. 89005

October 27, 2000

Mr. Roger Congdon, Project Lead
Elko Field Office, BLM
3900 East Idaho Street
Elko, NV 89801

Re: GOLD QUARRY MINE EXPANSION

Dear Sir:

a In this letter, I wish to voice my outrage at the planned expansion of the Gold Quarry Mine, which will destroy yet another 8000 acres of land and even more Tuscarora mountain terrain over the next 10 years. At a time, when gold no longer is a vital commodity, groundwater depletion, the killing of streams and riparian areas and the production of toxic pit lakes need to be guarded against at all cost. Economic benefits to our state from mining are marginal compared to the devastation and degradation of the land, which will continue for centuries.

b 1. To assure riparian health and ecologically essential springs, Newmont Mining should keep dewatering water in the Maggie Creek basin.

c 2. BLM must require to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake.

d 3. Losses of habitat should be mitigated by Newmont by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

I trust, that with citizens input, plans for this expansion can be made more bearable for the future health of the land. Thank you for the opportunity to comment.

Sincerely,

Ursula Wilson-Booth

Response to Letter 65

65a. Comment noted.

65b. See response 2d.

65c. See responses 1b and 2e.

65d. See response 2f.

Letter 66

Comment Form

SOAPA Draft EIS

a

1) THE OPTION OF BACKFILLING THE MAC PIT COULD POTENTIALLY KILL THE PROJECT BECAUSE OFF THE ADDED INCREMENTAL WASTE HAULAGE COST.

2) WHY BACKFILL A PIT THAT WILL REMAIN ABOVE THE WATER TABLE.

Submit written comments to:
Elko Field Office
3900 Idaho St.
Elko, NV 89801

GORDON MOUNTFORD DR
2758 SHADOW RIDGE
ELKO, NV
89801

Response to Letter 66

66a. See response 22a.

Letter 67

Comment Form

SOAPA Draft EIS

a I think Newmont should get permission to expand the pit. It would keep the company in better operating condition & help keep valuable jobs in the area. The environmental impact would be minimal and the mine already exists. I can't see where the impact would be enough to stop the expansion.

Mike Ayers
613 Shady brook
Spring Creek

Submit written comments to:
Elko Field Office
3900 Idaho St.
Elko, NV 89801

Response to Letter 67

67a. Comment noted.

Letter 68

TO: BLM, Elko Field Office
Attn: Roger Congdon, EIS Coordinator
3900 Idaho St., Elko, NV 89801

October 6, 2000

FROM: Mark DuBois
3435 Enfield Ave
Elko, NV 89801

RE: Comments on the DEIS, Newmont Mining Corporation's South Operations Area Project Amendment

a I am writing this letter in complete support of the September 1, 2000 Draft EIS for Newmont's South Operations Area Project Amendment. I believe the impacts of this project have been sufficiently studied and that the substantial benefits to the surrounding communities far outweigh the minimal environmental impacts. Please accept this letter as a strong vote for approval of this project.

b I believe that either the proposed action is superior to the agency-preferred alternative or the alternative has not been sufficiently analyzed. The benefit of a (possible) additional 40 acres of habitat or grazing land from backfilling the Mac Pit is not directly compared with the costs of (possible) loss of resources, the loss of (possible) habitat for the ferruginous hawk, and the (probable) increased air pollution resulting from the extra haul distance. At a time of increased fuel prices, there may be additional economic considerations. Also not discussed were the possible impacts of not putting the waste onto waste-rock facilities designed to minimize environmental impacts (e.g., to ground water) and placing the waste in a pit – that is not similarly designed. Additional comments and requested clarifications are noted below.

c 1. Page 2-15, Table 2-4: Molybdenum is misspelled, Thallium is listed twice with two different concentrations and is misspelled in one listing. Chlorine (a gas) should be changed to chloride.

d 2. The border of Table 3-2, p. 3-8 obscures some of the data.

e 3. Unclear – p. 3-14, Barrick dewatering (possibly in Boulder Flat area) may have impacted flow in Maggie Creek Canyon.

f 4. Page 3-19, Figure 3-3: There is no Thomas et al., 1994 in the references. I could not find any Maggie Creek data in the Appendix. In Appendix A, the first part: 1999 Progress Report for the SOAP Mitigation Plan Implementation appears to be identical to the second part (all 26 pages): Riparian Monitoring Analysis SOAP Mitigation Plan Maggie Creek Watershed Restoration Project. Also, from known and discussed flows for Maggie Creek, it does not appear reasonable that Susie Creek has greater flows at all %'s than Maggie Creek.

Response to Letter 68

68a. Comment noted.

68b. Comment noted.

68c. Table 2-4 has been revised in Chapter 2 of the FEIS to correct the misspelling of molybdenum, the listing of "Thalium" was corrected to read "Thulium", and chlorine has been changed to chloride.

68d. Table 3-2 has been revised in Chapter 3 of the FEIS to show all data.

68e. The reference to Barrick dewatering that may have impacted flow in Maggie Creek Canyon has been removed from Chapter 3, Surface Water Quantity - Perennial Reaches in Upper Maggie Creek Basin of the FEIS.

68f. Thomas et al. (1994) has been added to the References section of the FEIS. The reference to "data in Appendix" in the footnote of Figure 3-3 refers to the appendix in Thomas et al. and not the appendix of the FEIS. Repeated pages in Appendix A of the DEIS was a printer error. The discussion of Maggie and Susie creeks in Chapter 3, Surface Water Quantity presents flow data that indicate Susie Creek does have higher flows for average annual conditions. Refer to Figure 3-3 which depicts Susie Creek as having the higher peak discharge rate.

Letter 68 Continued

g | 5. The word data is plural. On page 3-23, it should be used as …data indicate (not indicates)… and…. flow data show (not shows)… The word is used correctly on page 3-24, …flow data are not available…

h | 6. Page 3-24: Newmont currently monitors surface water on the Humboldt River at two sites only (HUM-1 and HUM-5). This should be three sites, including the Battle Mountain gage.

i | 7. Table 3-8, pages 3-25 and 3-26: Note 3 states that all concentrations are primary drinking water standards. Note 4 states that Ag, Cd, and Pb concentrations were calculated. I believe that all these values were actual lab-determined values.

j | 8. Table 3-9, page 3-27: Same as comment 8.

k | 9. Table 3-12, page 3-31: For the sources, NAC 445.117 has been replaced by NAC445A.119 and NAC 445.1339 has been replaced by NAC 445A.144. Boron does not have an Aquatic Life standard. The Aquatic Life standard for Molybdenum should be 0.019.

l | 10. Page 3-35 and Table 3-14: Minimum values for Spring 1 for TDS and Mn were not well below drinking-water standards. The title for Table 3-14 is incorrect.

m | 11. Page 3-36: …eight springs are monitored quarterly for field parameters…to establish baseline conditions. Baseline has been established (from 10 years of monitoring). Spring monitoring could be reduced to an annual baseflow event without loss of important or meaningful data.

n | 12. Page 3-38: Ground water does not leave the basin by discharge into…Maggie, Marys, and Susie Creeks… It leaves by the Humboldt River.

o | 13. Page 3-52: Again…eight springs are monitored quarterly, 25 springs are sampled semi-annually…. NO springs are sampled.

p | 14. Page 4-72: …the same as the Proposed Action, expect… should be changed to …the same as the Proposed Action, except…

I appreciate this opportunity to comment on the DEIS. Thank you.

Sincerely,

Response to Letter 68

68g. The verbs in the subject sentences in Chapter 3, Surface Water Quantity - James, Soap, Simon, Cottonwood, Jack, Little Jack, Coyote, Springs, Haskell, Beaver, Fish, and Taylor creeks have been changed to agree with the use of the word "data".

68h. Text has been added in Chapter 3, Surface Water Quality to reflect the monitoring done by the USGS at the Battle Mountain gage.

68i. In Chapter 3, Table 3-8 did not contain any drinking water standards in the DEIS and has been revised to include drinking water standards in the FEIS. Values for Ag, Cd, and Pb concentrations have to be calculated because they vary as hardness varies. New footnotes have been added to address these changes.

68j. See response 68i; the same changes were made for Table 3-9.

68k. On Table 3-12 in Chapter 3 of the FEIS, the source references have been updated as suggested; the aquatic life standard for boron has been deleted; and the aquatic life standard for molybdenum has been revised.

68l. The statement in Chapter 3, Spring and Seep Surveys was revised as suggested The title for Table 3-14 has been corrected in the FEIS.

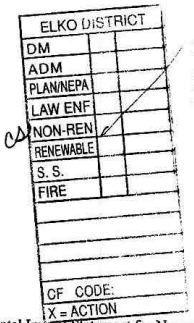
68m. Comment noted.

68n. The statement in Chapter 3, Groundwater Hydrology has been revised to indicate that the groundwater leaves the basin through evapotranspiration and through the Humboldt River.

68o. The statement in Chapter 3, Hydrologic Monitoring Program has been modified to indicate that the 25 springs are "monitored" not "sampled".

68p. In Chapter 4, Modified Waste Rock Disposal Facilities, the word "expect" has been changed to "except".

Letter 69



Kevin S
3506 Valley Ridge Ave
Elko, Nevada 89801
(702) 738-4104

September 19, 2000

Roger Congdon, Project Lead
Elko Field Office
Bureau of Land Management
3900 East Idaho St.
Elko, Nevada 89801

Dear Sirs,

I would like to comment on the draft Environmental Impact Statement for Newmont Mining Corporations South Operations Area Project Amendment.

a 1. Newmont Mining Corporation has a proven track record as a responsible and competent operator of the Carlin operations.

b 2. Mining is the best and most productive use of the land area under consideration in the E.I.S. Newmont Mining provides thousands of high paying jobs to area residents. Mining payrolls provide the backbone of the Northern Nevada economy.

c 3. Newmont Mining has the right to explore, extract and process minerals found on public lands under the General Mining Law of 1872 and preceding common law as well as subsequent case law.

d 4. Back filling the MAC pit is not an efficient use of energy. Hauling waste rock from the pit exit at the 5400 elevation to the MAC pit at the 6100 elevation would require huge amounts of truck fuel and produce additional air emissions for very little real benefit. It is an unnecessary long and steep haul. It would be better to block access to the MAC pit and put more effort into reclamation in the lower and more accessible regions of the project.

e 5. Section 4-104 calls for the use of a landscape architect to design final dump configurations. This is a waste of effort and could result in the environmental integrity of the dump being compromised for dubious aesthetic values. Newmont Mining Company should not be required to hire additional staff for dubious aesthetic values.

Sincerely

Kevin Sur

Response to Letter 69

69a. Comment noted.

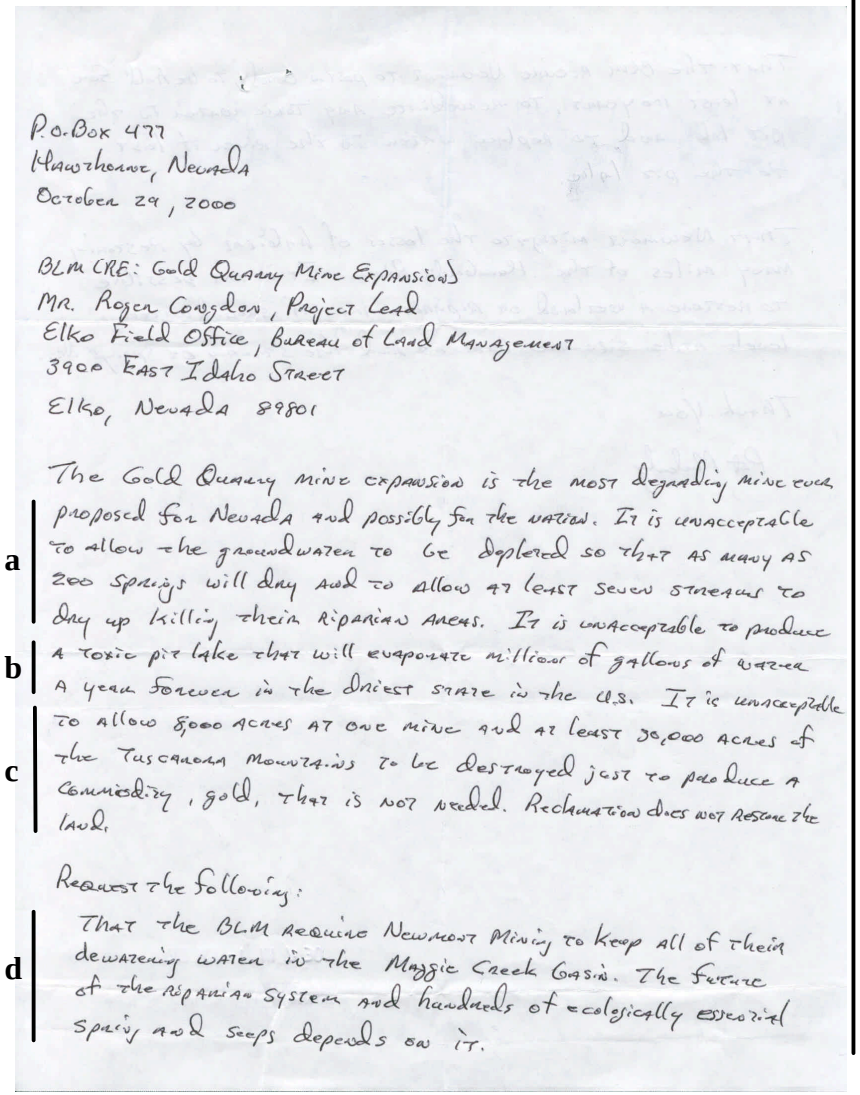
69b. Comment noted.

69c. See responses 30a and 33o.

69d. See Response 22a.

69e. While developing the Final Mitigation Plan, it was decided not to require the use of a landscape architect. The text was deleted in Chapter 4, Visual Resources - Potential Mitigation and Monitoring of the FEIS.

Letter 70



P.O. Box 477
Hawthorne, Nevada
October 29, 2000

BLM CRE: Gold Quarry Mine Expansion
MR. Roger Congdon, Project Lead
Elko Field Office, Bureau of Land Management
3900 East Idaho Street
Elko, Nevada 89801

The Gold Quarry mine expansion is the most degrading mine ever proposed for Nevada and possibly for the nation. It is unacceptable to allow the groundwater to be depleted so that as many as 200 springs will dry and to allow at least seven streams to dry up killing their riparian areas. It is unacceptable to produce a toxic pit lake that will evaporate millions of gallons of water a year forever in the driest state in the U.S. It is unacceptable to allow 8000 acres at one mine and at least 30,000 acres of the Tuscarora Mountains to be destroyed just to produce a commodity, gold, that is not needed. Reclamation does not restore the land.

a

b

c

Request the following:

That the BLM require Newmont Mining to keep all of their dewatering water in the Maggie Creek Basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

d

Response to Letter 70

70a. See response 1a.

70b. See response 1b.

70c. See response 15c.

70d. See response 2d.

Letter 70 Continued

e That the BLM require Newmont to post a Bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the River if lost to the pit lake.

f That Newmont mitigate the losses of habitat by Restoring many miles of the Humboldt River. It is not possible to restore a wetland or Riparian Area if ground water levels at the site are lowered and the stream or Springs dry.

Thank You

Pat Mulcahy

Response to Letter 70

70e. See response 2e.

70f. See response 2f.

Letter 71

DEPARTMENT OF HEALTH & HUMAN SERVICES — Public Health Service

Centers for Disease Control
and Prevention (CDC)
Atlanta GA 30341-3724

October 27, 2000

Bureau of Land Management
Elko Field Office
ATT: Roger Congdon, EIS Coordinator
3900 Idaho St.
Elko, NV 89801

Dear Mr. Congdon:

We have completed our review of the Draft Environmental Impact Statement (DEIS) for the Newmont Mining Corporation, South Operations Area Project Amendment. We are responding on behalf of the U.S. Public Health Service, Department of Health and Human Services.

Generally, we believe this DEIS has addressed our potential concerns. The potential impacts described regarding the dewatering operation is a shared concern, particularly with regard to impacts on the quality and quantity of drinking water supplies, and safety issues with potential sinkholes. We note that although mitigation measures would likely be the same as those specified in the 1993 plan, a revised Mitigation and Monitoring Plan is being developed for this expanded project and will be included in the Final EIS for review. These measures, including assurances that replacement wells or other water source of equivalent yield and quality will be provided, implementation of best available technologies for any groundwater quality problems, and careful monitoring for sinkhole potential, should serve to minimize potential adverse impacts upon public health and safety if properly implemented. **a**

Thank you for the opportunity to review and comment on this DEIS. Please send us a copy of the Final DEIS, and any future environmental impact statements which may indicate potential public health impact and are developed under the National Environmental Policy Act (NEPA).

Sincerely,

Kenneth W. Holt

Kenneth W. Holt, MSEH
National Center for Environmental Health (F16)
4770 Buford Hwy., NE

Response to Letter 71

71a. Many of the same mitigation measures specified in the 1993 plan have been included, however, additional measures have been added that address effects of dewatering and potential sinkhole development. Please see the revised Mitigation and Monitoring Plan that is included in the FEIS.

Letter 72

BATTLE MOUNTAIN BAND COUNCIL
37 MOUNTAIN VIEW DRIVE
BATTLE MOUNTAIN NV 89820
(775) 635-2004
FAX 635-8016

October 31, 2000

Mrs. Helen Hankins
Bureau of Land Management
Elko, NV 89801

SUBJECT: COMMENTS DUE OCT 31, 2000

Dear Mrs. Hankins:

a Several Western Shoshone entities have requested an extension but it is BLM's contention that this date is irrevocably firm. On such an important issue which will affect a large 100-150 mile radius and Western Shoshone people into future centuries, this is hardly enough time to consult with other tribal members but nevertheless, BLM's arbitrary decision not to extend this deadline is your choice.

b The traditional areas of Rock Creek and Tosawihi will be affected by the dewatering. The cumulative impacts are far and wide. As we have reiterated time and again, these are the homelands and aboriginal territories of the Western Shoshone. We have a kinship with the land and the destruction of the land and the springs, especially, are steps to genocide for the traditional Western Shoshone people. As you know, the Crescent Valley area has yield some burials for repatriation and subsequent reburial. The effects of dewatering will be devastating to the Western Shoshone who have lived in these areas for centuries, upon centuries. To sever, destroy or alter, is akin to our destruction as well.

c When springs are impacted, and we all are well aware of the studies which verify these, the general population will be impacted, also. When springs are lessen or dried up, the "churches" of the Western Shoshone will no longer be available for worship places as these are some of our "churches." For the mainstream, their churches are built out of wood and sometimes, mortar—ours are built out of the landscape.

d However, when water is lessened and the mines are allowed to waste billions of gallons in one day, we are sadden but as other recorded historical documents, so our protests, too, must be recorded to these careless and irresponsible acts of dewatering.

Sincerely,

Bernice Lalo,
Tribal Environmental Coordinator

Response to Letter 72

72a. See response 24a.

72b. See response 33yyy.

72c. See response 33yyy. No sacred sites were determined to be in the direct impact zone.

72d. As described in the Cumulative Impact Assessment, a mine dewatering is currently running at approximately 40,000 gpm or 60 million gallons per day, significantly less than billions of gallons per day. Additional responses to cumulative impact comments are presented in responses 33gggg through 33kkkk.

Letter 73

Humboldt River Basin Water Authority
c/o Intertech Services Corporation
P.O. Box 2008
Carson City, Nevada 89702
(775) 883-2051

Elko County
Eureka County
Humboldt County
Lander County
Pershing County

October 10, 2000

Mr. Rodger Congdon
Elko Field Office
Bureau of Land Management
3900 East Idaho Street
Elko, Nevada 89801

RE: Comments to Draft Environmental Impact Statements for the Betze Project and the South Operations Area Project Amendment and Related Cumulative Impact Analysis of Dewatering and Water Management Operations for the Betze Project and South Operations Area Project Amendment, and Leeville Project

Dear Mr. Congdon:

a At their September 22, 2000 meeting, the Board of Directors of the Humboldt River Basin Water Authority elected to indicate in writing the Authority's opinion that the Barrick Goldstrike Mine Inc.'s Betze Project and the Newmont Gold Company's South Pipeline Project, as analyzed within each respective DEIS and the related cumulative impact analysis, can be developed and operated in a manner consistent with the protection of existing water rights and water quality within the Humboldt River Basin. The Authority believes that proposed uses and management of groundwater by the Barrick Goldstrike Mine Inc.'s Betze Project and the Newmont Gold Company's South Pipeline Project are important to the economy of the region and represent a use of public land and water resources which is in the public interest. This conclusion by the Authority follows extensive review of the each Draft Environmental Impact Statement and the Cumulative Impact Analysis of Dewatering and Water Management Operations for the Betze Project and South Operations Area Project Amendment, and Leeville Project.

b The Authority notes that mine dewatering as described within the Cumulative Impact Analysis of Dewatering and Water Management Operations for the Betze Project and South Operations Area Project Amendment, and Leeville Project will impact base flows of the Humboldt River system. As a consequence, some holders of water rights may be impacted in the future. The DEIS reference cumulative impact analysis notes that such impacts will be mitigated through conjunctive use of groundwater to supplement surface water flows. The

Response to Letter 73

73a. Comment noted.

73b. Mitigation for predicted reductions in baseflow in the Humboldt River are described within Appendix A (Mitigation Plan) of the Final Environmental Impact Statement for Newmont Gold Company's South Operations Area Project dated November 1993. In part, this plan states "Newmont will mitigate potential impacts to irrigation-season flows and water rights holders on the upper and lower Humboldt River by foregoing the use of certain senior irrigation rights controlled by Newmont of the TS Ranch." The decreed rights to be used and the mechanisms for calculating the loss of irrigation-season flow to be mitigated are described within the 1993 Mitigation Plan.

Pumping groundwater to supplement flows in the Humboldt River or the transfer of groundwater rights to the BLM or any other agency of the federal government is not planned. Dedication of groundwater rights to the county of origin, the State of Nevada or the Humboldt River Basin Water Authority is not planned nor is it part of the 1993 Mitigation Plan.

Letter 73 Continued

b Authority encourages the Bureau of Land Management to ensure that adequate institutional mechanisms are in place to guarantee that supplemental water is available when needed and that any impacts (ie. agricultural production forgone) to counties wherein groundwater will be taken are mitigated. The Authority does not support dedication of senior groundwater rights to the Bureau of Land Management or any other agency of the federal government as a means to guarantee the availability of supplemental water. Rather, dedication of needed groundwater should be to the county of origin, the State of Nevada, or the Authority. Long-term arrangements to provide, maintain, and operate the infrastructure necessary to pump dedicated groundwater and deliver said water to the Humboldt system must also be in place.

Should you have any questions regarding this matter, please do not hesitate to contact me.

Sincerely,

Mike L. Baughman, Ph.D.
Contract Executive Director

cc: Directors and Alternates, Humboldt River Basin Water Authority

Response to Letter 73

Letter 74

JAN-16-02 13:04 FROM:BLM NONRENEWABLE ID:7027530385 PAGE 3/5

Henry Egghart <hegghart@nvbell.net> on 10/20/2000 03:40:36 PM

To: Roger_Congdon@nv.blm.gov
cc:

Subject: Conitions on Mine Expansion

Dear Mr. Congdon:

I am writing to urge you to, at a minimum, impose the following conditions onany mine expansion or new mining in the Tuscarora Mountains and in other areas:

a 1. require Newmont Mining to keep all of their dewatering water in the Maggie Creek basin. The future of the riparian system and hundreds of ecologically essential springs and seeps depends on it.

b 2. require Newmont to post a bond, to be held for at least 100 years, to remediate any toxic water in the pit lake and to replace water in the river if lost to the pit lake.

c 3. require that Newmont mitigate the losses of habitat by restoring many miles of the Humboldt River. It is not possible to restore a wetland or riparian area if groundwater levels at the site are lowered and the stream or springs dry.

Thank you for your attention.

Henry Egghart
Reno

Response to Letter 74

74a. See response 2d.

74b. See response 2e.

74c. See response 2f.

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