

# FINAL CLOSURE & RECLAMATION PLAN

## **BLAZON No.1 MINE**

CARBON COUNTY, UTAH

NORTH AMERICAN EQUITIES, n.v. 1401 17th STREET, SUITE 1510 DENVER, COLORADO 80202

Prepared By

**ACZ** inc

Steamboat Springs, Colorado

**May 1985**

FINAL CLOSURE AND RECLAMATION PLAN  
BLAZON NO. 1 MINE, CARBON COUNTY, UTAH  
LIST OF EXHIBITS  
VOLUME 2

RECEIVED

JAN 22 1986

DIVISION OF OIL  
GAS & MINING

<u>EXHIBIT NO.</u>	<u>TITLE</u>
10	AUGUST 8, 1985 LETTER FROM ALAN W. SMITH OF NAE TO LOWELL P. BRAXTON OF UDOGM IN RESPONSE TO QUESTIONS CONTAINED IN BRAXTON LETTER OF JULY 25, 1985 REQUESTING ADDITIONAL INFORMATION.
11	SEPTEMBER 6, 1985 LETTER FROM ALAN W. SMITH OF NAE TO LOWELL P. BRAXTON IN RESPONSE TO AUGUST 28, 1985 QUESTIONS FROM UTAH DIVISION OF OIL, GAS & MINING FINAL RECLAMATION OF BLAZON NO. 1 MINE
12	SEPTEMBER 28, 1985 LETTER FROM ALAN W. SMITH OF NAE TO LOWELL P. BRAXTON OF UDOGM REGARDING THE RECLAMATION OF THE TOPSOIL BORROW AREA; CONTAINING A CERTIFIED COPY OF THE SEDIMENT POND CROSS SECTION; AND THE DETERMINATION OF THE HEIGHT OF BERM A AND LOWER PAD AREA
14	OCTOBER 3, 1985 LETTER FROM ALAN W. SMITH OF NAE TO LOWELL P. BRAXTON OF UDOGM ANSWERING VERBAL QUESTIONS REGARDING TIMINING AND DENSITY OF SEEDING, DISTRIBUTION OF TOPSOIL AND SIZE OF THE DITCH ALONG THE ROAD TO THE TRANSFORMER PAD AREA
15	OCTOBER 17, 1985 FROM ALAN W. SMITH OF NAE TO LOWELL P. BRAXTON OF UDOGM ENCLOSING LABORATORY RESULTS TAKEN FROM NORTH AMERICAN EQUITIES PROPERTY
16	OCTOBER 29, 1985 FROM ALAN W. SMITH OF NAE TO LOWELL P. BRAXTON OF UDOGM REQUESTING REDUCTION OF POST-RECLAMATION BOND RELEASE PERIOD

FINAL CLOSURE AND RECLAMATION PLAN  
BLAZON NO. 1 MINE, CARBON COUNTY, UTAH  
LIST OF MAPS  
VOLUME 2

<u>MAP NO.</u>	<u>TITLE</u>
1	BLAZON NO. 1 MINE SURFACE OWNERSHIP, 10/3/83
2	BLAZON NO. 1 MINE COAL OWNERSHIP, DATED 9/83
3	BLAZON NO. 1 MINE PREMINING & POSTMINING LAND USE, DATED 9/83
4	BLAZON NO. 1 MINE VEGETATION, DATED 2/84
6	BLAZON NO. 1 PREMINING TOPOGRAPHY, DATED 10/5/83
16	SECONDARY ROAD DESIGN, DATED 2/84
17	BLAZON NO. 1 MINE SOILS, DATED 2/84

EXHIBIT 10

AUGUST 8, 1985 LETTER FROM ALAN W. SMITH OF NAE TO LOWELL P. BRAXTON OF UDOGM IN RESPONSE TO QUESTIONS CONTAINED IN BRAXTON LETTER OF JULY 25, 1985 REQUESTING ADDITIONAL INFORMATION.

THIS EXHIBIT CONSISTS OF OFFICIAL CORRESPONDENCE BETWEEN NAE AND UDOGM. SOME OF THE INFORMATION CONTAINED IN THIS EXHIBIT HAS BEEN SUPERSEDED BY LATER CORRESPONDENCE. THE SUPERSEDED INFORMATION HAS BEEN CROSSED OUT TO AVOID CONFUSION.

NORTH  
AMERICAN  
EQUITIES, n.v.

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August 8, 1985

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Mr. Lowell P. Braxton, Administrator  
Mineral Resource Development and  
Reclamation Program  
Utah Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

Re: Response to July 25, 1985 Technical Review Questions  
Final Reclamation of Blazon No. 1 Mine

Dear Mr. Braxton:

We are in receipt of your letter of July 25, 1985. We have worked diligently over the past week to respond to all of your questions and concerns.

It is hoped that the responses included with this letter will resolve any unanswered questions or deficiencies that your staff has identified. We also hope that you and your staff will move with great diligence to approve our plan for reclamation as the field season of 1985 is drawing to an end. Without your immediate attention to this letter and prompt approval of our reclamation plan, we may not be in a position to complete reclamation work this season. North American Equities ("NAE") would be disappointed and frustrated if we are unable to proceed with reclamation of the five (5) acres involved with the Blazon No. 1 Mine by the end of this field season.

In order to expedite your review of our response, we have included questions from your July 25, 1985 letter prior to our responses. Our responses are attached.

Thank you for your attention to this matter. If you have any questions, please contact me.

Sincerely,

NORTH AMERICAN EQUITIES

*Alan W. Smith* /ig

Alan W. Smith  
President

UMC 784.13 Reclamation Plan: General Requirements - RH, DC/RS

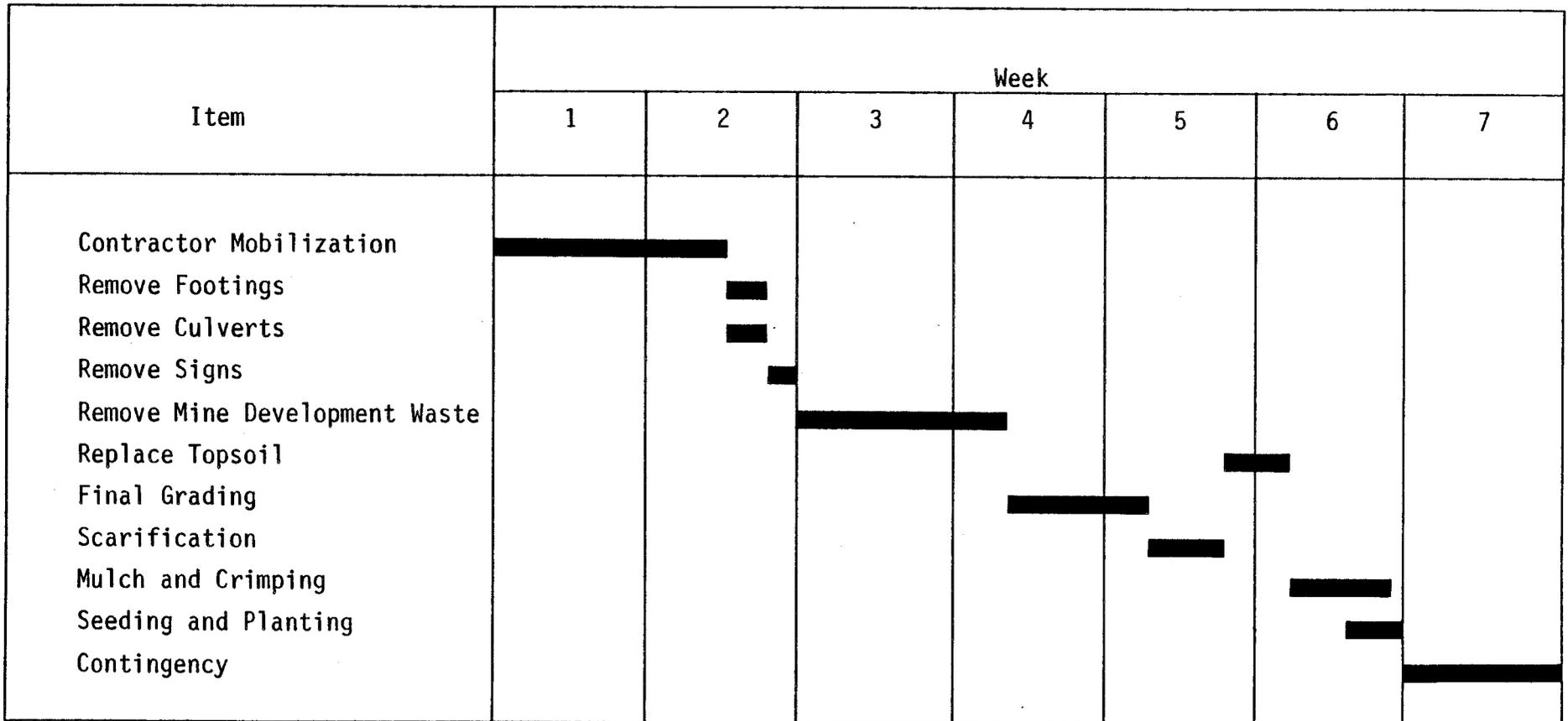
(b)(1) The applicant has not provided a schedule for the reclamation of the lands within the proposed permit area. The reclamation plan requires a detailed timetable of each major step in the reclamation plan. This can be accomplished by providing a bar chart on a weekly schedule for the reclamation construction. Timing can be accomplished by notifying the Division within 30 days of commencement of the reclamation construction work.

Response: North American Equities ("NAE") had previously submitted a reclamation schedule to the Utah Division of Oil, Gas and Mining ("UDOGM") in Exhibit 4 and on page 32 of the previously submitted Reclamation Plan dated May 29, 1985. Exhibit 4 is March 23, 1985 letter from Alan Smith of NAE to Ron Daniels of UDOGM regarding permanent closure of the Blazon No. 1 Mine.

In order to further clarify the reclamation schedule, NAE has attached Figure 1, Reclamation Schedule, to provide UDOGM with a more specific schedule. We have hesitated to put exact dates on the schedule as we are unsure as to the timing of approval by UDOGM; however, we have blocked out reclamation activities by week. In addition, we plan to begin immediate reclamation work upon approval by UDOGM.

Given the shortness of the remaining 1985 field season, we do not feel that the 30 day notice to UDOGM of the commencement of reclamation construction work is appropriate. Reclamation work should begin immediately after approval by UDOGM and, hopefully, within the next few weeks.

Figure 1  
RECLAMATION SCHEDULE



(b)(2) The applicant has not provided a detailed estimate of the cost of the reclamation of the operations. A detailed cost estimate of the reclamation of the operations is required with supporting calculations for the estimates. Supporting calculations shall include estimated quantities required for demolition and cleanup, coal spoils regrading and removal, general earthwork and grading, and revegetation. Productivity estimates shall be used to determine the size of the equipment and the number of hours required in order to perform the various tasks. Cost estimates should be derived from the Blue Book Rental Rate book and the Means Cost Data book as needed. These references are used as the standard by the Division in determining reclamation costs.

Response: NAE has completed a detailed cost of reclamation for the Blazon No. 1 Mine to the post-mining land use for future commercial and industrial activities, as set forth in the reclamation plan submitted to UDOGM on May 29, 1985. A total reclamation cost of approximately \$14,995.26 has been estimated, and the detailed backup calculations and assumptions are attached with this letter.

(b)(3) The applicant has provided a plan for backfilling and grading with contour maps and sections that show the anticipated final surface configuration of the permit area. However, the applicant shall address the following concerns in order to comply:

~~Response: NAE has responded to all the concerns of UDOGM in the responses below.~~

UMC 784.13 Reclamation Plan: General Requirements - LK

(b)(5)(i) Page 13 does not indicate that Mr. Otani wants the sediment ponds left. A reclamation plan of these structures or a demonstration that the requirements of UMC 817.49 are met must be supplied.

~~Response: Mr. Jack Otani indicated on page 13 of his desire for the sediment ponds; however, he also stated that leaving the sediment ponds would be left up to NAE. NAE does not particularly have a preference as to whether the ponds should be left or reclaimed; however, based on possible long-term concerns by UDOGM, NAE will plan to remove the ponds by leveling and grading. Topsoil will be placed over the ponds and the area will be seeded and mulched.~~

~~If UDOGM would like the ponds to remain for some reason, then UDOGM should notify NAE in writing of such a request.~~

- (b)(5)(ii) Seed mix needs to be revised. In addition to low seeding rate, the mix includes several introduced species that the applicant has not provided justification for their use (see UMC 817.112).

Attached, I have noted on the proposed seed mix several changes which would make it acceptable (grasses and forbs only). The proposed woody plant seeding rates are extremely low and are not expected to provide the 2677 woody plants per acre (reference area stocking) and will need to be increased greatly. This could be done by adding additional species, supplementing the seeding with transplants, or greatly increasing the seeding rate.

~~Response: NAE has no problem with the revised seed mixture as proposed by UDOGM. We have revised Table 1, Proposed Seeding Mixture, of the Mining and Reclamation Plan submitted to UDOGM on May 29, 1985. The revised table is included.~~

~~Because the area is to be returned for future commercial and industrial uses, NAE believes that the purpose of revegetation is for erosion control as set forth in UMC 817.116(b)(3)(ii). Because of this alteration in the~~

~~post-mining land use, there is no necessity for woody plants, and the comparison with the reference area is, therefore, no longer valid.~~

~~The purpose of revegetation at the Blazon No. 1 Mine is for erosion control. In addition, the area to be seeded is extremely small, only 1.5 acres, and would provide no practical value for wildlife.~~

(b)(5)(iii) On page 28, it states "chisel plowing or disking the area along the contour if possible". Does the "if possible" refer to doing these tasks, or to doing them on the contour. Please clarify.

~~Response: The "if possible" refers to safety constraints. As safety dictates, the operator will not perform chisel plowing on the contour if he might be confronted with a rollover situation.~~

~~On steeper areas, no erosion problem is expected since the areas will be mulched and protected from erosion by netting.~~

Page 29 refers to broadcast seeding after mulch is applied and anchored. This is not acceptable. For best results, broadcast seeding should take place prior to mulching.

~~Response: NAE has no problems broadcast seeding prior to mulching. Therefore, please accept broadcast seeding prior to mulching as a change in the planned reclamation activities.~~

(b)(5)(iv) The use of jute netting to anchor mulch on steep slopes (as proposed on page 32) does not provide favorable results. Mulch should either be anchored using a chemical tackifier or a nylon netting.

~~Response: It is the opinion of UDOGM that jute netting does not provide favorable results in anchoring mulch on steep slopes; therefore, NAE will plan to use nylon netting on the steeper slopes (Area E as shown on Map 2 of the Reclamation Plan, submitted May 29, 1985).~~

- (b)(5)(vi) The measures proposed to determine success of revegetation are not acceptable. While the applicant has apparently quoted UMC 817.116(b)(3)(ii), this standard would apply only to the 3.5 acres proposed to be used by Mr. Otani. The remaining 1.5 acres to be reseeded must meet the appropriate standards for fish and wildlife habitat (i.e., comparison with reference area or other approved standard at the appropriate statistical confidence levels).

The applicant must provide a detailed monitoring plan to monitor reclaimed areas throughout the 10 year liability period. This plan should include the various parameters to be monitored, sampling methodology and timing (year(s) and season).

If the area that is proposed for Mr. Otani's use is not used immediately, it should be seeded with a cover crop (i.e., yellow sweetclover and barley or wildrye) this fall.

~~Response: NAE believes that the UDOGM request for monitoring is excessive. The entire site is being returned for future industrial and commercial uses. Common sense dictates that the 1.5 acres being seeded will have no practical value as fish and wildlife habitat given the planned post-mining use of the area by Mr. Jack Otani. Besides, Section 817.116 (b)(3)(ii) allows revegetation activities on areas for future commercial and industrial uses to be established for erosion control.~~

784.14 Reclamation Plan: Protection of Hydrologic Balance - DC/RS

- (a)(1)/(3) The applicant needs to submit a plan of the measures (primarily interim sediment control) to be taken to ensure the quality and quantity of surface and groundwater during reclamation activities. These measures may include (but not limited to), silt fences, straw bales, proximity to stream, timing of reclamation activities.

~~Response: NAE will undertake reclamation as soon as this plan is approved by UDOGM and, hopefully, during the late summer and/or early fall of 1985. This time of the year is generally a dry period, so any reclamation construction activities will occur during a dry time. Subsequently, straw mulch will be used on many areas to be reseeded around the site. NAE does not believe that any exotic measures such as silt fences or straw bales are necessary given the extremely small size of the site. However, if problems are encountered during reclamation, NAE will contact UDOGM to ensure that no excessive siltation or sedimentation problems occur.~~

UMC 784.14 Reclamation Plan: Protection of Hydrologic Balance and UMC 817.52 Hydrologic Balance: Surface and Groundwater Monitoring - DC/RS

- (b)(3) The applicant must submit a monitoring plan (including collection, recording, and reporting of water quality and quantity data) for the reclamation phase and post-mining phase in accordance with the UDOGM water monitoring guidelines (enclosed). The applicant must sample Mud Creek at stations upstream and downstream from all construction activities. The applicant must sample on a weekly basis for Settleable Solids (SS) and Total Suspended Solids (TSS) and submit monthly to the Division all data.

Response: NAE believes that there is no need for future monitoring and the request of UDOGM is excessive given the planned post-mining use and the small acreages involved (less than five (5) acres).

NAE plans to undertake reclamation activity during the dry part of the year, presumably the late summer or early fall of 1985, if UDOGM approves the plan. Consequently, no siltation or sedimentation will be expected during reclamation activities.

The area is to be returned for industrial and commercial use. Immediately following reseeding, the area is to be turned over to Mr. Jack Otani for his specific uses and purposes. NAE does not feel it should be responsible for any of Mr. Otani's uses of the site once reseeding has occurred.

Over the past several years, NAE has spent thousands of dollars conducting water quality monitoring above and below the site. Throughout all this monitoring, no water quality problems have ever been encountered. It is only common sense that the natural spring runoff of the general area will contain high settleable solids and TSS. Any possible sediment contributions from the reclaimed site will be minor when compared to the overall watershed of Mud Creek. Therefore, UDOGM should expect that water quality in Mud Creek will conform with all previous analyses, that is, high TSS during springtime flows. No sampling program needs to be undertaken to know what seasonal variations may be in this area given the enormous amount of data available from previous sampling. With proper reclamation, no adverse impacts will occur to the water of Mud Creek.

UMC 784.15 Reclamation Plan: Post-mining Land Use - RH

In general, the existing location of facilities used for mining operations are suitable for the proposed post-mining land use. However, the Division recommends that the following changes be made or considered as part of the reclamation plan. Item numbers are referenced to Map 2, Reclamation Plan.

1. Item 30) - Main transformer pole. It is recommended that the transformer pole be moved to the lower bench area adjacent to the building. This would provide for a more aesthetic appearance of the site and ease in maintenance of the utility in comparison with its present location on the hillside above the lower pad. No services or equipment remain which would require power above the lower pad.

~~Response: Mr. Otani has seen no problem with the present location of the main transformer pole. Conversely, placing the main transformer pole on the lower bench would require substantial guide-wiring given the fill material in this area. In addition, NAE still requires access above the portal bench because of the location of the water supply tanks. Likewise, NAE does not believe that the aesthetics are a question to the surface owner or Mr. Otani. Therefore, NAE does not plan to change the location of the main transformer pole as it would be an unnecessary expense to achieve the same end results.~~

2. Item 7) - Substation access road. With the power pole transformer moved to the lower bench, no future use of the substation access road is apparent and it should be reclaimed

~~Response: For reasons mentioned in Item 30 above, NAE will not remove the substation access road. This road is less~~

~~than 100 feet long and is a direct connection to an access road to the water storage tanks that will remain in place. This road has been previously seeded and natural vegetation invasion is occurring on the road. NAE does not plan to disturb this road other than removing the substation found at the site. Mr. Otani will use this road when maintenance is required on the main transformer pole.~~

3. Item 34) - Water main. Problems with the water main may occur during re-establishment of the drainage channel. Contingencies should be made for the relocation of the water main in the event that the line is disturbed or damaged during construction. The reclamation plan should also address what measures will be taken to protect the water line from exposure by erosion of the drainage channel.

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Response: The water main was buried beneath the surface prior to any deposition of underground development waste in the drainage channel. Therefore, it is anticipated that no problems will occur during the reclamation work to the water main.

In the unlikely event that damage should occur to the water main during reclamation, then the damaged pipe will be removed and a new pipe spliced in its place.

4. Item 14) - Culvert D - 24" diameter CMP. Removal of the upper half of the culvert will require design of a headwall facility to carry the water under the lower pad. In the event that the culvert cannot be designed to handle the 100-year, 24-hour event, it is recommended that the culvert be completely removed and that open channel flow be established. Consideration during design of the headwall for the culvert should also taken into consideration the tendency for mud and debris flows in the ephemeral channel. The reclamation plan should consider what maintenance

requirements will have to be met by the landowner in order to prevent a blocked culvert from such an event. UMC 817.133(c)(6) requires that the proposed use will neither present an actual or probable hazard to public health or safety.

~~Response: As shown in Exhibit 8 of the Blazon No. 1 Mine Permit Application Package, Culvert D must contain peak flow from a 100-year, 24-hour event of 4.05 cfs. From the corrugated metal pipe nomograph completed by the U.S. Bureau of Public Roads, Figure B-9 of "Design of Small Dams", the 24" CMP will pass approximately 11 cfs without overtopping the culvert. Therefore, NAE does not propose removal of the culvert but plans to install riprap material at the inlet and outlet to minimize erosion of the headwall and discharge area during high peak flows. In addition, any maintenance required after reclamation, including unplugging and cleaning, can easily be performed by the land owner.~~

5. Item 12) - Culvert B - 84" diameter CMP. The pre-existing mine plan indicates that the culverts in Mud Creek were designed for the 50-year, 24-hour event. In the event that the culvert is not adequately sized for the 100-year, 24-hour event or cannot be designed to meet the peak flow, NAE should consider removal of this culvert. Removal would allow for re-establishment of open channel flow from the ephemeral channel currently diverted by culvert "D". Additionally, the possibility of relocating culvert "B" next to culvert "C" which in tandem may provide the required discharge capacity should be investigated.

~~Response: NAE does not propose removal of Culvert B. As shown in Exhibit 8 of the Blazon No. 1 Mine Permit Application Package, Culvert B has been designed to pass the peak flow from a 100-year, 24-hour event. The peak flow was estimated at 64 cfs. Without overtopping the culvert, the~~

~~capacity of a 84 inch diameter CMP is 260 cfs as shown on the culvert nomograph Figure B-9 "Design of Small Dams". Due to the capacity of Culvert B, it is not necessary to include Culvert C in tandem to pass the peak flow from a 100-year, 24-hour event.~~

UMC 817.13 Casing and Sealing of Exposed Underground Openings - DD

North American Equities shall discuss the current status of all exploration boreholes, whether permanently sealed or not. A time table shall be submitted outlining a schedule for each exploration borehole to be sealed.

Unless transfer of water well under UMC 817.53 is approved, North American Equities shall submit a schedule for sealing the existing well.

North American Equities will be required to seal the fan portal entry in accordance with UMC 817.50.

Response: All exploration bore holes in the area have been previously, permanently sealed.

NAE plans to transfer the water well to Mr. Jack Otani. A letter sent to the Utah State Engineer to obtain such transfer is attached.

No water has ever been discharged from the fan portal entry of the Blazon No. 1 Mine. As explained in the May 29, 1985 reclamation plan submittal to UDOGM, NAE plans to remove the fan and associated equipment and backfill over the fan portal entry. No future drainage problems from this portal are anticipated or expected.

UMC 817.24 Topsoil Redistribution - RH

The applicant needs to detail how topsoil will be placed uniformly and in a manner so as to prevent slippage on slopes steeper than equipment used will allow. Chisel plowing or disking along the contour is impractical for slopes exceeding 2:1.

~~Response: As explained on page 27 of the May 29, 1985 Reclamation Plan, NAE plans to scarify all graded areas to provide a good bonding surface for replacement of topsoil. In addition, as explained on page 27, those areas too steep for scarification will be left in a roughened condition to promote bonding of the topsoil material.~~

~~NAE plans to redistribute topsoil utilizing a bulldozer. The topsoil will be hauled to the appropriate replacement area by trucks (after being loaded by front-end loaders) and spread over the re-graded scarified or roughened area using the bulldozer.~~

~~NAE anticipates no problem with slippage on slopes. Uniform distribution can be achieved using a qualified bulldozer operator.~~

UMC 817.43 Hydrologic Balance: Diversion and Conveyance of Overland Flow, Shallow Groundwater Flow, and Ephemeral Streams DC/RS

- (b) The applicant needs to provide calculations that show the disturbed drainage diversions (items #19 and #20 on Map 2 of the Reclamation Plan) are capable of passing the 10-year, 24-hour precipitation event.

~~Response: As shown in Exhibit 8 of the Blazon No. 1 Mine Permit Application Package, Ditches A and B have been designed to pass the peak flow from a 100-year, 24-hour event. Ditch A has a freeboard of 1.0 feet while Ditch B~~

~~has a freeboard of 1.65 feet. These designs exceed the size to pass the flow from the 10-year, 24-hour event.~~

UMC 817.44 Hydrologic Balance: Stream Channel Diversions - DC/RS

- (b)(2) The applicant needs to provide calculations and designs which demonstrate all permanent diversions (items #12, #13, #14 and the Mud Creek channel on Map 2 of the Reclamation Plan) are capable of passing the 100-year, 24-hour precipitation event. The applicant must submit plans demonstrating channel stability at this flow.

~~Response: As shown in Exhibit 8 of the Blazon No. 1 Mine Permit Application Package, Culverts A, B, and C have been designed to pass the peak flow from a 100-year, 24-hour precipitation event.~~

~~Mud Creek drainage channel is not a permanent diversion. NAE, during its operations, has not reconstructed or directed the stream channel. Rather, NAE placed culverts at three (3) locations to facilitate access. Therefore, NAE does not plan to alter the configuration of Mud Creek during reclamation. The channel will remain in its original state.~~

- (c) The applicant must submit plans for the removal of culvert A (item #11 on Map 2 of the Reclamation Plan). Stream channel diversions shall be removed when no longer needed to achieve the purpose for which they are authorized.

~~Response: When Culvert A is no longer needed following topsoil and reseeding of the portal bench area, this culvert will be removed using a combination of a bulldozer and a front-end loader. The bulldozer will uncover material on either side of the culvert. The culvert will either be pushed to the front-end loader or pulled by the bulldozer. The culvert will be smashed and hauled from the property.~~

UMC 817.46 Hydrologic Balance: Sedimentation Ponds - DC/RS

(u) In order for the Division to approve the retention of the upper and lower sediment pond cells (items #17 and #18 on Map 2 of the Reclamation Plan) the applicant must address all the requirements for permanent impoundments of Section UMC 817.49 and 817.56. If the sediment ponds are to be reclaimed, the applicant must submit plans demonstrating that the ponds shall not be removed until:

1. The disturbed area has been restored;
2. The revegetation requirements of Sections UMC 817.117 are met, and
3. The drainage entering the pond has met the applicable state and federal water quality requirements for the receiving stream.

Response: Given the concerns of UDOGM regarding the two (2) small sediment pond cells found at the site (items #17 and #18 on Map 2 of the Reclamation Plan), NAE will plan to remove these ponds as part of reclamation work. Given the small size of the area, these ponds will be removed and the sites reclaimed as part of the 1985 field work. Once the area has been topsoiled, seeded and mulched, there should be no problem with drainage entering Mud Creek. Given the small size of the area (less than five (5) acres), in comparison with the total watershed of Mud Creek, no water quality problems should be anticipated from the site following reclamation.

Reclamation of the pond system at some point in the future would not really gain any overall effective water quality control, conversely, increased silt loads could be expected if reclamation is performed on the site in several years.

UMC 817.53 Transfer of Wells - DD

Transfer of the water well for now is contingent upon the State's acceptance of the application. Upon transfer, Jack Otani shall provide a letter that indicates he will assume liability for damages to persons or property from the well, and plug the well when necessary or prior to abandonment.

North American Equities shall submit a letter accepting secondary liability for the transferee's obligations.

~~Response: As stated earlier, NAE has filed for a transfer of the water well to Mr. Jack Otani. No damage to persons or property is expected from the well whether or not it is plugged, however, if the State Engineer will not transfer the water well, then NAE will work with UDOGM to develop an acceptable plan for plugging the well.~~

UMC 817.71 Disposal of Excess Spoil and Underground Development Waste - LK

The applicant must provide a reclamation plan and demonstrate that reclamation is feasible for the disposal area (Old Clear Creek Strip Pit).

~~Response: As stated on page 24 of the May 29, 1985 Reclamation Plan, NAE plans to remove 3,000 cubic yards of underground development waste to the abandoned strip pit located north of the Blazon No. 1 Mine. It is the understanding of NAE that this abandoned strip pit will undergo reclamation activities in the future funded by the Abandoned Mine Land Reclamation Program. NAE is not familiar with the reclamation plans for this site, but it appears from observation that one of the largest constraints with reclamation of the site is backfill material. Therefore, NAE simply believes that it will be helping the~~

~~Abandoned Mine Land Reclamation Program by providing some additional fill material. Given that NAE does not fully understand the reclamation plans for the Old Clear Creek strip pit, NAE is not in a position to determine feasibility of reclamation for the disposal area.~~

UMC 817.97 Protection of Fish, Wildlife, and Related Environmental Values - LK

- (d)(4) The applicant has not provided plans to restore the critical wildlife habitat which was disturbed by the operation.
- (5) Plans to restore the riparian areas must be submitted, including the removal of unnecessary culverts.
- (11) Since the applicant is proposing to change the pre-mine land use of wildlife habitat to industrial, plans to establish greenbelts or shelter belts through the "proposed industrial area" must be provided.

~~Response: NAE does not plan to restore the critical wildlife habitat; rather, as stated in the May 29, 1985 Reclamation Plan, NAE plans to return the area to a future land use for commercial and industrial activities.~~

~~Only Culvert A will be removed from Mud Creek. Culverts B and C will remain as part of the post-mining land use. Culvert A is less than 30 feet in length so no major portion of Mud Creek will be disturbed during reclamation. Conversely, the area where Culvert A is now located will be rippedraped, seeded, and mulched.~~

~~Because of the extremely small size of the site, less than five (5) acres, NAE believes that it is excessive to require establishment of greenbelts or other shelter belts in the area. Common sense dictates that the 1.5 acres to be reseeded will provide no practical wildlife habitat.~~

UMC 817.101 Backfilling and Grading - RH

- (b)(1) The applicant has addressed the stability requirements under this section dealing with the mass stability of the area. The applicant should note that the long-term static factor of safety is 1.5 rather than 1.3 as stated in the reclamation plan on page 27. Calculations in Exhibit 8 indicate that the slopes are stable for circular failure with a static factor of safety greater than 1.5. However, these calculations do not consider the possibility of surface failure not the increased likelihood for rill and gully erosion of the slopes prior to establishment of vegetative cover. Investigation into the sections provided by Blazon indicate that the slope can be reduced to as low as 2:1 in most areas without increasing the projection of the downslope. The original surface is at a slope of 1.6"1. It is maintained by the Division that the maximum slope that should be maintained on the fill of the slopes be 1.6:1. Where possible, the slopes should be reduced to 2:1 in order to minimize the potential for rill and gully erosion and enhance the chance for vegetation success.

~~Response: Based on information set forth in Exhibit 8 of the May 29, 1985 Reclamation Plan, NAE believes that the slope in question will be stable on a long-term basis. NAE does not believe that the slope needs to be reduced.~~

~~In addition, because the slope will be seeded, mulched, and covered with a nylon netting, the possibility of surface failure or the likelihood of rill and gully erosion on the slopes, will be minimized or prevented. Once vegetation is established on the slope, there should be no likelihood of surface failure or rill and gully erosion.~~

UMC 817.133 Post-Mining Land Uses - LK

The legal owner of record is Calvin K. and Milton E. Jacob - not Jack Otani. In order to approve the land use change, the landowner of record must request such in writing and demonstrate that the criteria of UMC 817.133(c) are met.

~~Response: NAE will respond to this question under separate cover.~~

NORTH AMERICAN EQUITIES  
RECLAMATION BOND ESTIMATE

I. CONTRACTOR MOBILIZATION

Estimate - \$2,000.00

Sub-Total                   \$ 2,000.00

II. REMOVAL OF STRUCTURES/FACILITIES

The following structures/facilities as identified in the Blazon No. 1 Mine Final Closure and Reclamation Plan have/will be sold by NAE and removed from the Blazon No. 1 Mine at no cost to NAE.

- Coal loading bin
- Mine fan (sold)
- Electrical substation
- Storage shed (sold)
- Diesel fuel tank
- Run-of-mine conveyors
- Conveyor structure

Sub-Total                   \$           0

III. REMOVAL OF FOOTINGS AND FOUNDATIONS

The footings and foundations from the following structures will be broken up and disposed of in the portal backfill:

- Coal loading bin
- Underground waste chute
- Conveyor transfer point
- Conveyor structure
- Mine fan
- Diesel fuel tank

Parameters

- 100 cu yd of material to be broken and removed (loose)
- Use 980 Cat loader
- Tram 1,200 feet to portal backfill
- 55 min per hour



V. REMOVAL OF SIGNS AND MARKERS

- Assume 8 hours labor @ \$12.00/hr

Sub-Total \$ 96.00

VI. REMOVAL OF MINE DEVELOPMENT WASTE

Volume to be removed:

- 1,000 cu-yd hauled and placed at portal backfill
- 3,190 cu-yd hauled and placed at abandoned strip mine

A. Haul to portal backfill and covering of coal seams

Parameters:

- 1,000 cu-yd
- Pushed to loader by D-7 Cat
- Loaded on trucks by 980C loader
- Hauled by 12 cu-yd trucks

Productivity - Truck

Truck cycle time

Load 3 cycles @ 0.52 min/cycle	- 1.56 minutes
Haul (loader) 1,200 ft @ 8 mph	- 1.70
Dump	- 0.50
Return assume 8 mph	- <u>1.70</u>
Total	5.46 minutes

$$(55 \text{ min/hr}) / (5.46 \text{ min/cycle}) = 10.07 \text{ cy/hr}$$

$$(10.07 \text{ cy/hr}) \times (12 \text{ cu-yd/cy}) = 120.8 \text{ cu-yd/hr}$$

$$(1,000 \text{ cu-yd}) / (120.8 \text{ cu-yd/hr}) = 8.3 \text{ hr}$$

Productivity - Loader/dozer

- Assume to work same hours as truck

Cost from Cost Reference Guide

$$\text{Truck} - (\$48.76/\text{hr}) (8.3 \text{ hr}) = \$ 404.71$$

$$\text{Loader} - (\$85.91/\text{hr}) (8.3 \text{ hr}) = 713.05$$

$$\text{D7} - (\$68.73/\text{hr}) (8.3 \text{ hr}) = \underline{570.46}$$

Total \$1,688.22

B. Haul to abandoned strip mine

Parameters:

- 3,190 cu-yd
- Pushed to loader by D-7 Cat
- Loaded on trucks by 980C loader
- Use two (2) 12 cu-yd trucks

Productivity

Truck cycle time

Load 3 cycles @ 0.52 min/cycle	- 1.56 minutes
Haul (loader) 1,580 ft @ 15 mph	- 1.10
Dump	- 0.50
Return assume 20 mph	- <u>0.70</u>
Total	3.86 minutes

$$(55 \text{ min/hr}) / (3.86 \text{ min/cycle}) = 14.25 \text{ cy/hr}$$

$$\text{Two (2) trucks} \times (14.25 \text{ cy/hr}) = 28.4 \text{ cy/hr}$$

$$(28.5 \text{ cy/hr}) \times (12 \text{ cu-yd/cy}) = 342 \text{ cu-yd/hr}$$

$$(3,190 \text{ cu-yd}) / (342 \text{ cu-yd/hr}) = 9.33 \text{ hr}$$

Cost from Cost Reference Guide

$$\text{Two (2) Trucks @ } 9.33/\text{hr} = (18.66 \text{ hr}) (\$48.76/\text{hr}) =$$

\$ 909.86

$$\text{Loader } (\$9.33/\text{hr}) (\$85.91/\text{hr}) = 801.54$$

$$\text{D7 } (9.33/\text{hr}) (\$68.73/\text{hr}) = \underline{641.25}$$

Total \$2,352.65

Sub-Total

\$ 4,040.87

VII. TOPSOIL REPLACEMENT

Parameters 1410

- 14 10 cu-yd
- Average haul 750 feet
- Grade less than 4%
- Use 980C Cat loader
- Use two (2) 12 cu-yd trucks
- Spread with D-7 dozer

Productivity

Truck cycle time

Load 3 cycles @ 0.52 min/cycle	- 1.56 minutes
Haul (loader) 750 ft @ 8 mph	- 1.07
Dump	- 0.50
Return assume 8 mph	- <u>1.07</u>
Total	4.20 minutes

$(55 \text{ min/hr}) / (4.20 \text{ min/cy})$	= 13.1 cy/hr
Two (2) trucks	= 26.2 cy/hr
$(26.2 \text{ cy/hr}) \times (12 \text{ cu-yd/cy})$	= 314.4 cu-yd/hr
$(1,410 \text{ cu-yd}) / (314.4 \text{ cu-yd/hr})$	= 4.48 hr

Cost from Cost Reference Guide

Two (2) Trucks (8.96 hrs) x (\$48.76/hr)	= \$ 436.89
Loader (4.48 hrs) x (\$85.91/hr)	= 384.88
D7 (4.48 hrs) x (\$68.73/hr)	= <u>307.91</u>
Total	\$1,129.68

Sub-Total \$ 1,129.68

VIII. FINAL GRADING

A. Backfill Area and Area E

Parameters

- Assume 8 hrs work
- D-7 Cat dozer

Cost

$$(8 \text{ hrs}) \times (\$68.73/\text{hr}) = \$549.84$$

B. Fine Grading of Topsoil Areas

Parameters

- 1.5 acres to be graded
- 12G grader
- Assume grader worked during topsoil placement
- Use 8 hours

Cost from Cost Reference Guide

$$(8 \text{ hrs}) \times (\$52.40/\text{hr}) = \$419.20$$

Sub-Total \$ 969.04

IX. SCARIFICATION

Parameters

- 1.5 acres
- Use plow mounted behind D-7
- Assume will need to be done twice

Productivity

$$(3.0 \text{ ac}) / (0.5 \text{ ac/hr}) = 6 \text{ hours}$$

Cost

$$(6 \text{ hrs}) \times (\$68.73/\text{hr}) = \$412.38$$

Sub-Total \$ 412.38

X. MULCH AND CRIMPING

Parameters

- 1.5 acres
- Cost-use 139.50/ac

Sub-Total \$ 209.25

XI. EXCELSIOR BLANKET (Netting)

Parameters

- 0.75 acres
- Wood fiber, degradable blanket

Cost from Native Plants, Salt Lake City, Utah

Labor - \$21/hr @ 25 hr/ac

Netting - \$2,468/ac

$$(0.75 \text{ ac}) [(\$21/\text{hr})(25 \text{ hr}/\text{ac})] + (0.75 \text{ ac}) (\$2,468/\text{ac}) \\ = \$2,244.75$$

Sub-Total \$ 2,244.75

XII. SEEDING AND PLANTING

Parameters

- 1.5 acres
- Broadcast methods
- Cost from Native Plants, Salt Lake City, Utah (see Table 1)

Cost

Seed - (1.5 ac) x (\$398.91/ac) = \$598.37

Labor - (2 hrs) x (\$18.00/hr) = 36.00

Sub-Total \$ 634.37

XIII. VEGETATION MONITORING

- Two (2) site visits per year/Two (2) years
- Assume reseeding 25% of area
- Soil sampling

Cost

Four (4) visits @ \$500/visit (includes record keeping) =  
\$2,000

Reseeding

Use 25% of XII = \$158.59

Soil sampling - cost from Bookcliffs Labs, Steamboat Springs,  
Colorado

Six (6) samples @ \$26.50/sample = \$159.00

1 hour labor (sample collection) @ \$8.00/hr = \$8.00

Sub-Total \$ 2,325.59

XIV. MISCELLANEOUS

- Riprap placed at outflow of culverts
- 100 cy-yd (+ 6", - 24")

(100 cu-yd) x (\$5.75 cu-yd) = \$575.00

Sub-Total \$ 575.00

Table 1  
PROPOSED SEED MIXTURE - Part 1

Species	Lbs Pure Live Seed/Acre	Cost/Lb	Total Cost
Grasses:			
<u>Agropyron riparium</u> streambank wheatgrass	4.0	5.00	\$ 20.00
<u>Agropyron trachycaulum</u> slender wheatgrass	4.0	1.25	5.00
<u>Bromus marginatus</u> mountain brome	5.0	4.00	20.00
<u>Poa cambyi</u> camby bluegrass	3.0	1.55	4.65
<u>Poa pratensis</u> Kentucky bluegrass	0.25	5.54	1.39
Sub-Total	16.25		\$ 51.04
Forbs:			
<u>Achillea millefolium</u> western yarrow	0.15	30.00	\$ 4.50
<u>Hedysarum boreale</u> sweet vetch	1.0	6.50	6.50
<u>Linum lewesii</u> blue flax	2.0	9.00	18.00
<u>Medicago sativa var Ladak</u> Ladak alfalfa	1.0	1.27	1.27
<u>Osmorhiza occidentalis</u> sweet anise	1.0	18.00	18.00
<u>Melilotus officinalis</u> yellow sweetclover	2.0	0.45	0.90
Sub-Total	7.15		\$ 49.17

Table 1  
PROPOSED SEED MIXTURE - Part 2

Species	Lbs Pure Live Seed/Acre	Cost/Lb	Total Cost
Woody Plants:			
<u>Pseudotsuga menziesii</u> Douglas fir	2.0	17.50	\$ 35.00
<u>Ribes spp.</u> currant	2.0	42.00	84.00
<u>Rosa woodsii</u> woods rose	2.0	22.35	44.70
<u>Symphoricarpos spp.</u> snowberry	3.0	45.00	135.00
Sub-Total	9.0		<u>\$298.70</u>
TOTAL	32.40		\$398.91

EXHIBIT 11

SEPTEMBER 6, 1985 LETTER FROM ALAN W. SMITH OF  
NAE TO LOWELL P. BRAXTON IN RESPONSE TO AUGUST  
28, 1985 QUESTIONS FROM UTAH DIVISION OF OIL,  
GAS & MINING FINAL RECLAMATION OF BLAZON NO. 1  
MINE

THIS EXHIBIT CONSISTS OF OFFICIAL CORRESPONDENCE BETWEEN NAE AND UDOGM.  
SOME OF THE INFORMATION CONTAINED IN THIS EXHIBIT HAS BEEN SUPERSEDED BY  
LATER CORRESPONDENCE. THE SUPERSEDED INFORMATION HAS BEEN CROSSED OUT  
TO AVOID CONFUSION.

NORTH  
AMERICAN  
EQUITIES, n.v.

September 6, 1985

HAND DELIVERED

Mr. Lowell P. Braxton  
Administrator  
Mineral Resource Development  
and Reclamation Program  
Utah Division of Oil, Gas & Mining  
355 W. North Temple  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

Re: Response to August 28, 1985 Questions From  
Utah Division of Oil, Gas & Mining  
Final Reclamation of Blazon No. 1 Mine

Dear Mr. Braxton:

We are in receipt of your letter of August 28, 1985. Because of the importance attached to the reclamation of the Blazon No. 1 site, we have worked diligently over the past week to respond to all your questions and concerns.

Because of our concerns regarding reclaiming the site prior to the end of the field season (which could be any time after the end of September), we have decided to come directly to your office in Salt Lake City on Tuesday, September 10, 1985 to resolve all questions and concerns of UDOGM with regard to the plan. It is our intent at this meeting to resolve all concerns such that you and your staff can approve the plan. We are anxious to begin reclamation of the site during the week of September 15, thus allowing us sufficient time to adequately perform reclamation work at the site.

We are extremely concerned regarding the long-term monitoring requirements for the site. It is essential that the Division of Oil, Gas & Mining ("UDOGM") and North American Equities ("NAE") have certain workable legal and technical standards by which to monitor the reclamation work for eventual bond release. Therefore, it is in the best interest of both parties that some concurrence be made on actual monitoring requirements. However, we are hopeful that a final

Mr. Lowell P. Braxton  
September 6, 1985

Page Two

agreement regarding monitoring between your staff and us will not hold up the actual reclamation work. Therefore, we would like to request that UDOGM approve the reclamation plan, if necessary, without the final approval of monitoring. If there are still questions regarding monitoring, we would like to have it stipulated as part of your approval that we work out the exact monitoring requirements within the next sixty (60) to ninety (90) days.

With regard to the questions regarding the underground development waste, we hope that the Office of Surface Mining ("OSM") will render an approval by September 10, 1985. We have contacted Bob Hagen of OSM in Albuquerque, New Mexico, and he has assured us that an opinion and decision will be granted by that date. If no decision is granted or if OSM does not allow placement of the underground development waste in the Old Clear Creek Strip Pit, NAE will plan to utilize as much of the underground development waste material as possible on the portal bench and commit to haul the remaining waste off site for use as fill material.

Lastly, we must re-emphasize the importance attached to reclamation of the Blazon No. 1 site during this field season. We hope that our good faith effort in responding rapidly to your questions and concerns has been noted by your agency. It is also hoped that any unanswered questions or deficiencies that your staff has with regard to our actual reclamation plan can be resolved at a meeting on Tuesday, September 10, 1985.

Thank you for your attention to our responses. We look forward to resolving all remaining concerns.

Sincerely,

NORTH AMERICAN EQUITIES NV

Alan W. Smith  
President

RESPONSES TO AUGUST 28, 1985 QUESTIONS FROM  
UTAH DIVISION OF OIL, GAS & MINING

NORTH AMERICAN EQUITIES, LTD  
BLAZON NO. 1 MINE  
CARBON COUNTY, UTAH

September 10, 1985

UMC 784.13 Reclamation Plan: General Requirements  
Refer to comments under UMC 817.101

RESPONSE: See response under UMC 817.101.

UMC 784.13(b)(5), 817.97(d), 817.111, 817.116-.117 Revegetation

1. A shrub planting plan to establish a minimum of 2410 shrubs per acre (90% of 2677 reference area stocking). This may be done by direct seeding, using transplants, or a combination of both. This plan must identify the species and the amounts of seeds and/or seedlings per acre to be used, a schedule for seeding and/or planting and an estimated cost for bonding.

RESPONSE:

(Addendum to Text on Page 29 of the Reclamation Plan)

NAE will plan to plant shrubs and woody plants as shown on Table 1, Proposed Woody Plant Seed Mixture. Seeding of the woody plant species will occur in ~~late September or October.~~ *springtime.*

2. A commitment to use the established reference area as the standard for determination of reclamation success ( as per UMC 817.116) for cover, production and woody plant density.

RESPONSE:

(Addendum to Text on Page 29 of the Reclamation Plan)

NAE is concerned that the previously established reference area does not adequately portray the conditions found in the steep areas to be reclaimed in the forthcoming 1985 reclamation work. As you know, the reclamation plans submitted under the withdrawn permanent program permit application called for complete reclamation work at the site. Presently, NAE plans to restore the site for commercial/industrial uses and will only seed certain steeper slopes. Nonetheless, NAE will attempt to utilize the reference area previously established as a means for determination of reclamation success.

Given the above potential conflicts in reference area conditions versus reseeded steep slope areas, NAE would like the flexibility in the future to work with UDOGM with regard to reclamation success. This might include a slight variance from the conditions found in the reference area.

UMC 784.13 Reclamation Plan - General Requirements

The applicant states that approximately 1410 cubic yards of topsoil are available for redistribution and that 10 to 15 inches of topsoil will be placed on the reclamation areas. The applicant then states in the Postmining Topography Revegetation map that area D will receive six inches of topsoil and eludes that area E was not to receive any topsoil. The applicant now states that the topsoil will be placed over the sediment ponds. A detailed volume of soils redistributed to the reclaimed area must be developed. The volume of any substitute materials must be included in the soil mass volume tabulation. If the soil depth is not uniform in the distribution depth, please discuss the rationale. What will be the minimum soil depth?

RESPONSE:

(Addendum to Text on Page 28 of the Reclamation Plan)

NAE will not immediately reclaim the sedimentation ponds, thus no topsoil will be necessary for these sites. The plan for the sediment ponds is to leave them until certain water quality standards are met and then simply convert them to catchment basins for use by Jack Otani in the future. Therefore, no soil will be needed upon removal of the ponds, and the approved seed mixture will be applied to the site at that time.

Included in the reclamation plan, 1410 cubic yards of soil are available for redistribution. This means that approximately 10 to 15 inches of topsoil can be placed throughout the area. The minimum soil depth, where soil is replaced, will be 10 inches. Because of the steepness of the outslope found in area E, no soil will be placed on this slope. However, area E will be left in a roughened condition, fertilized, and netting placed over the top. Likewise, in area D only about half of the site will receive topsoil. The remaining area is too steep and will involve the face-up area at the site. Thus, approximately 13 inches or (10 to 15 inches) will be placed on the flatter slopes of area D. The following indicates the amount of topsoil to be replaced in the various areas as shown on the Postmining Topography Reclamation Map (Map 3):

- Area A 3.15 acres - no topsoil
- Area B 0.05 acres - 100 cubic yards topsoil at approximately 15 inches
- Area C 0.25 acres - 500 cubic yards topsoil at approximately 15 inches
- Area D 0.45 acres with only .23 acres receiving topsoil - 400 cubic yards topsoil at approximately 13 inches
- Area E 0.5 acres - no topsoil, area is too steep

784.14 Reclamation Plan: Protection of Hydrologic Balance

The applicant must submit a plan of the sediment control measures to be taken to insure the quality and quantity of the surface and groundwater during reclamation activities. The Division requires a plan of control measures to be used in the event that siltation or sedimentation problems occur. A plan must be submitted detailing the methods to be used to prevent any sedimentation impacts to the existing water resources.

RESPONSE:

(Addendum to Text on Page 17 of the Reclamation Plan)

All runoff during reclamation work from Areas B, C, D and E and the existing pad area (surface facilities area) will be routed into existing sedimentation ponds (#17 & #18 on Map #3).

Straw bale dikes will be used in Area F to control erosion. These straw bales will be placed prior to construction along the downslope (outslope) side of the road to culvert A's location and beyond as shown on Map #3. These straw bales will be maintained until requirements of UMC 817.111-117 are met or until the Division determines that the potential for erosion is minimized and grants approval that sediment control is no longer necessary.

Area F 0.25 acres - 410 cubic yards topsoil at approximately 12 inches

NAE will attempt to spread topsoil in a uniform fashion with topsoil varying in thickness from approximately 10 to 15 inches. It is not the intent of NAE to replace topsoil in an uneven fashion. NAE simply plans to utilize the available topsoil and spread it in an even fashion across those areas designated to receive topsoil which will amount to approximately 10 to 15 inches of topsoil being placed on those areas where topsoil replacement is planned.

UMC 817.22 Topsoil Removal

- (e)(1)(i) The applicant states that a soil substitute medium will be taken from the upper outslope of area E. The substituted material should be equal to or more suitable for sustaining vegetation than is the available topsoil. This determination will be based on the analysis of pH, organic matter (%), cation exchange capacity, saturation percentage, alkalinity, total nitrogen, available phosphorus, sodium absorption ratio, potassium, calcium, magnesium, electrical conductivity, and texture class.

RESPONSE:

(Addendum to Text on Page 27 of the Reclamation Plan)

Existing material found on the outslope of the portal bench will be utilized during reclamation, as this slope is too steep to adequately spread topsoil on. Once grading work is complete on the portal bench area, including the outslope from the portal bench (area E), two soil samples will be taken and analyzed for the above parameters. Based on this analysis and the analyses for certain fertility parameters, NAE will contact UDOGM with regard to fertilization, type and quantity.

- (e)(1)(ii)(b) The applicant must submit laboratory data that substantiates that the substitute material is the best available medium for reclamation. The applicant must state the volume of substitute material that will be used.

RESPONSE:

Planned work on the portal cut-slope area is the only available medium for reclamation. As stated above, NAE does not plan to obtain a separate source of material for use in the portal face-up. Simply the material found on the outslope area will be used as "substitute" material.

- (e)(1)(ii)(c) The laboratory must use standard methods of analysis. The methods of analysis must be indicated.

## UMC 817.101 Backfilling and Grading

The applicant has not adequately responded to the comments concerning backfilling and grading. Postmining contours of the area are virtually unchanged from those seen currently on the site at present. The portal bench area will be highly visible and will not meet the requirements for Approximate Original Contours. The applicant shall submit a new contour map showing a more suitable relief of the area with slopes not exceeding those found on the site during premining conditions. Where possible, the slopes shall be reduced to a minimum to enhance vegetation growth and to reduce erosion during establishment of vegetative cover.

### RESPONSE:

(Addendum to Text on Page 25 of the Reclamation Plan)

#### Procedures for Backfilling & Grading of Portal Bench & Above

1. Utilize underground development waste to cover the portals with a minimum of four feet above the coal seam. Place in lifts of one to two feet and compact as much as possible. A dozer and/or a frontend loader will be utilized. (Place or mark the four foot line above the coal seam with orange paint or other visible means.) ✓
2. Use backhoe to reach downslope of portal bench and pull back material as far as possible. The backhoe will place material on the underground development waste and a dozer will spread the material in one to two foot lifts and will work the slope to an approximate two foot (horizontal) to one foot (vertical) slope. ✓  
With inclinometer, NAE will visually site a line on the portal face-up area to establish crest of the 2:1 slope.  
NAE will make sure that this material is placed on cut material from the original portal development work.  
It should be noted that the complete backfilling or total elimination of the portal face-up area is not possible.
3. In those areas where some failure has occurred above the portal entries, NAE will try to maintain a 2:1 slope to completely cover the collapsed area. In "brow" or open area beneath the competent sandstone above the entry, NAE will cover and dress the area with a backhoe or dozer to eliminate voids even if subject slope slightly exceeds 2:1. ✓
4. Topsoil will be spread on the 2:1 slope. ✓
5. Appropriate revegetation measures will be performed (see Page 17 of the Reclamation Plan). ✓

#### Area E

6. The upper portion of the portal outslope will be pulled back by backhoe and left in roughened condition at approximately 1.6 (horizontal) to ✓

UMC 817.101 Backfilling and Grading (continued)

1 (vertical) slope. The crest and toe of this area will blend into the overall slope. Some topsoil will be allowed to drift downward on the slope, as possible.

7. The middle part of the portal outslope will be left as it is now existing. Necessary reclamation functions will be performed, e.g. fertilizing, seeding, mulching and netting.

8. On the lower portion of the portal outslope where it has been oversteepened by cutting, these areas will be dressed and graded with a dozer to a 1.6 (horizontal) to 1 (vertical) slope. This will eliminate or minimize the potential for toe erosion. This area will be revegetated as set forth in the Reclamation Plan for Area E.

Area F

~~9. This area will be ripped or scarified and topsoil will be replaced. Re-vegetation will be undertaken as per the Reclamation Plan for Area F.~~

UMC 817.106 Regrading or Stabilizing Rills and Gullies

The applicant must commit in writing to regrade and seed areas of rills and gullies that are deeper than nine inches.

RESPONSE:

(Addendum to Text on Page 25 of the Reclamation Plan)

On the reseeded areas, NAE will work with UDOGM to stabilize and seed any areas where rills and gullies deeper than nine inches form.

UMC 817.133 Post Mining Land Uses

The legal owner of record is Calvin K. and Milton E. Jacob - not Jack Otani. In order to approve the land use change the landowner of record must request such in writing and demonstrate that the criteria of UMC 817.133(c) are met.

RESPONSE:

~~On September 10, 1985, the UDOGM was able to verify with the Carbon County Clerk and Recorder that Jack Otani is indeed the owner of record of the mine site.~~

UMC 817.11 Signs and Markers

NAE will retain and maintain all signs and markers until after the release of all bonds for the permit area. These signs shall include identification signs displayed at each point of access, perimeter markers of the disturbed areas and stream buffer zone markers in areas where reclamation is within 100 feet of Mudd Creek.

UMC 817.95 Air Resources Protection

NAE will plan and employ fugitive dust control measures during reclamation work including, where necessary:

1. Periodic watering of roads
2. Prompt revegetation of regraded lands

UMC 817.99 Slides and Other Damage

NAE will notify the Division by the fastest available means of any slides in the reclaimed area which may have a potential adverse effect on public property, health, safety or the environment.

UMC 784.13(b)(5), 817.97(d), 817.111, 817.116-.117 Revegetation  
(continued)

3. A detailed monitoring plan to monitor reclaimed areas throughout the 10-year liability period. This plan is to include the various parameters to be monitored, sampling methodology and timing (year(s) and season [this should include sampling for bond release the last 2 years of the liability period]).

RESPONSE:

NAE will plan to monitor the reseeded area as follows:

1st year - NAE will perform a reconnaissance survey on the reseeded site.

2nd year - NAE will monitor the reseeded area for cover and density.

3rd year - Same as 2nd year

5th year - Same as 3rd year

9th year - NAE will monitor the reference area and the reseeded area for density, cover and productivity.

10th year - Same as 9th year.

Transects will be randomly located within the reference area and the reseeded area. Sample size will be dependent upon the number needed to attain statistical adequacy using at least minimum sample size as presented in UDOGM guidelines. This revegetation monitoring will provide valuable site specific information, especially in the event it becomes apparent that some future modification to the success criteria will be required.

EXHIBIT 12

SEPTEMBER 25, 1985 LETTER FROM ALAN W. SMITH OF  
NAE TO LOWELL P. BRAXTON OF UDOGM IN ANSWER TO  
BRAXTON LETTER OF AUGUST 28, 1985, REQUESTING  
ADDITIONAL INFORMATION AND CALCULATIONS

THIS EXHIBIT CONSISTS OF OFFICIAL CORRESPONDENCE BETWEEN NAE AND UDOGM.  
SOME OF THE INFORMATION CONTAINED IN THIS EXHIBIT HAS BEEN SUPERSEDED BY  
LATER CORRESPONDENCE. THE SUPERSEDED INFORMATION HAS BEEN CROSSED OUT  
TO AVOID CONFUSION.

NORTH  
AMERICAN  
EQUITIES, n.v.

September 25, 1985

Mr. Lowell P. Braxton  
Administrator  
Mineral Resource Development & Reclamation Program  
Utah Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

Re: Final Response to August 28, 1985 Question From  
Utah Division of Oil, Gas & Mining

Dear Mr. Braxton:

In reply to your letter of August 28, 1985, North American Equities, NV ("NAE") is submitting the enclosed responses and calculations concerning the reclamation for the Blazon No. 1 mine surface area.

These responses and calculations have been completed to the best of NAE's ability with close communication between NAE, ACZ INC., and Division of Oil, Gas & Mining personnel. In view of the fact that the construction season in the Blazon No. 1 area is rapidly drawing to a close for this year, NAE is becoming particularly concerned that an approval be issued for reclamation of the Blazon No. 1 Mine as soon as possible.

In addition to the responses and calculations attached to this letter, copies of Map 2, Reclamation Plan, and Map 3, Postmining Topography/Revegetation are included. These maps have been revised to reflect the necessary changes in the Blazon No. 1 Mine Reclamation Plan to answer the the Division of Oil, Gas & Mining questions.

Also included are maps previously requested by the Division of Oil, Gas & Mining. The additional maps enclosed with this letter are:

- Map 1 - Blazon No. 1 Mine Surface Ownership, Dated 10/3/83
- Map 2 - Blazon No. 1 Mine Coal Ownership, Dated 9/83
- Map 3 - Blazon No. 1 Mine Premining & Postmining Land Use, Dated 9/83
- Map 4 - Blazon No. 1 Mine Vegetation, Dated 2/84
- Map 6 - Blazon No. 1 Premining Topography, Dated 10/5/83
- Map 16 - Secondary Road Design, Dated 2/84
- Map 17 - Blazon No. 1 Mine Soils, Dated 2/84

Mr. Lowell P. Braxton  
September 26, 1985

Page Two

We have included copies of two overburden analysis reports dated October 5, 1983 and February 25, 1984 from Bookcliffs Commercial Laboratories. These analyses were verbally requested by Ms. Susan Linner and Mr. Jim Leatherwood of your office.

North American Equities believes that the enclosed responses, maps, calculations, and analyses answers all the questions submitted by the Division of Oil, Gas & Mining. If you have any questions concerning the enclosed material, please contact Mr. Conrad Parrish of ACZ INC. at (303) 879-6260 for clarification. North American Equities appreciates your expeditious handling of this matter to allow us to complete reclamation this season.

Sincerely,

NORTH AMERICAN EQUITIES, NV

*Conrad Parrish for Alan*  
Alan W. Smith *W. Smith*  
President

Enclosures

RESPONSES TO AUGUST 28, 1985 QUESTIONS FROM  
UTAH DIVISION OF OIL, GAS & MINING

NORTH AMERICAN EQUITIES NV  
BLAZON NO. 1 MINE  
CARBON COUNTY, UTAH

September 17, 1985

UMC 784.13 Reclamation Plan: General Requirements  
Refer to comments under UMC 817.101

RESPONSE: See response under UMC 817.101.

UMC 784.13(b)(5), 817.97(d), 817.111, 817.116-.117 Revegetation

1. A shrub planting plan to establish a minimum of 2410 shrubs per acre (90% of 2677 reference area stocking). This may be done by direct seeding, using transplants, or a combination of both. This plan must identify the species and the amounts of seeds and/or seedlings per acre to be used, a schedule for seeding and/or planting and an estimated cost for bonding.

RESPONSE: NAE will plan to plant shrubs and woody plants as shown on Table 1, Proposed Woody Plant Seed Mixture. Seeding of woody plants will occur in springtime.

The establishment of 2410 shrubs per acre seems to be excessive. Revegetation rates for woody plant species are planned to adequately support the use of the area following reclamation by wildlife. Therefore, NAE proposes a revegetation standard of 1000 woody plant stems per acre based upon research addressing wildlife forage requirements on reclaimed lands (Mathews, 1983). While this standard represents a variance from the 90% stocking level referred to by UDOGM, it adequately addresses the regulatory intent of equivalent and productive postmining land use. Likewise, it is our understanding that

Table 1  
PROPOSED WOODY PLANT SEED MIXTURE

Species	Pounds Pure Live Seed/Acre
Shrubs and Trees:	
Acer glabrum (Rocky Mountain Maple)	3.0
Amelanchier alnifolia (Serviceberry)	2.5
Artemisia tridentata ssp raseyana (Mountain Big Sagebrush)	0.1
Mahonia repens (Oregon grape)	2.0
Pseudotsuga menziesii (Douglas fir)	1.0
Ribes cereum (Wax currant)	1.0
Rosa woodsii (Woods rose)	1.5
Sambucus cerulea (Blue Elderberry)	1.0
Symphoricarpos oreophilus (Snowberry)	<u>2.0</u>
	14.1
Transplants along stream:	
Salix spp. (Willow)	150 cuttings
Cornus stolonifera (Red-osier dogwood)	50 plants
Prunus virginiana (Chokecherry)	50 plants
Populus tremuloides (Aspen)	150 seedlings

~~Susan Linnear of UDOGM reviewed this concept in September of 1983 and indicated that a stocking density of 1,000 woody stems per acre would be acceptable given the limited areal disturbance. It should be noted that even less acreage will be reseeded at this time than what was previously planned.~~

~~Seeding of the woody plant species will occur in late September or October. Additional details regarding seeding have been discussed in detail in the previously submitted reclamation plan. The cost for the woody plant seeds is estimated at \$820.00 per acre.~~

2. A commitment to use the established reference area as the standard for determination of reclamation success (as per UMC 817.116) for cover, production and woody plant density.

RESPONSE: NAE is concerned that the previously established reference area does not adequately portray the conditions found in the steep areas to be reclaimed in the forthcoming 1985 reclamation work. As you know, the reclamation plans submitted under the withdrawn permanent program permit application called for complete reclamation work at the site. Presently, NAE plans to restore the site for commercial/industrial uses and will only seed certain steeper slopes. Nonetheless, NAE will attempt to utilize the reference area previously established as a means for determination of reclamation success.

Given the above potential conflicts in reference area conditions versus reseeded steep slope areas, NAE would like the flexibility in the future to work with UDOGM with regard to reclamation success. This might include a slight variance from the conditions found in the reference area.

3. A detailed monitoring plan to monitor reclaimed areas throughout the 10-year liability period. This plan is to include the various parameters to be monitored, sampling methodology and timing (year(s) and season [this should include sampling for bond release the last 2 years of the liability period]).

RESPONSE: NAE will plan to monitor the reseeded area as follows:  
1st year - NAE will perform a reconnaissance survey on the reseeded site.  
2nd year - NAE will monitor the reseeded area for cover and density.  
3rd year - Same as 2nd year.  
5th year - Same as 3rd year.  
9th year - NAE will monitor the reference area and the reseeded area for density, cover and productivity.  
10th year - Same as 9th year.

Transects will be randomly located within the reference area and the reseeded area. Sample size will be dependent upon the number needed to attain statistical adequacy using at least minimum sample size as presented in UDOGM guidelines. This revegetation monitoring will provide valuable site specific information, especially in the event it becomes apparent that some future modification to the success criteria will be required.

~~NAE reserves the right to review the available data on rainfall in the area. If rainfall data indicates that the proper liability period is 5 years, NAE will revise this monitoring plan to be consistent with the liability period.~~

#### UMC 784.13 Reclamation Plan - General Requirements

The applicant states that approximately 1410 cubic yards of topsoil are available for redistribution and that 10 to 15 inches of topsoil will be placed on the reclamation areas. The applicant then states in the Postmining Topography Revegetation map that area D will receive six inches of topsoil and eludes that area E was not to receive any topsoil. The applicant now states that the topsoil will be placed over the sediment ponds. A detailed volume of soils redistributed to the reclaimed area must be developed. The volume of any substitute materials must be included in the soil mass volume tabulation. If the soil depth is not uniform in the distribution depth, please discuss the rational. What will be the minimum soil depth?

RESPONSE: NAE will not immediately reclaim the sedimentation ponds, thus no topsoil will be necessary for these sites. The plan for the sediment ponds is to leave them until certain water quality standards are met and then simply convert them to catchment basins for use by Jack Otani in the future. Therefore, no soil will be needed upon removal of the ponds and the approved seed mixture will be applied to the site at that time.

Included in the reclamation plan, 290 cubic yards of soil are available for redistribution. This means that approximately 6 inches of topsoil can be placed throughout the area. Placing of 6 inches of topsoil will require borrowing 280 cubic yards. The minimum soil depth, where soil is replaced, will be 6 inches. Because of the steepness of the outslope found in area E, no soil will be placed on this slope. However, area E will be left in a roughened condition, fertilized, and netting placed over the top. Likewise, in area D, only about half of the site will receive topsoil. The remaining area is too steep and will involve the face-up area at the site. Thus, approximately 6 inches will be placed on the flatter slopes of area D. The following indicates the amount of topsoil to be replaced in the various areas as shown on the Postmining Topography Reclamation Map (Map 3):

Area A 3.15 acres - no topsoil

Area B 0.05 acres - No topsoil will be placed in this area. The area will be rounded, scarified and revegetated

Area C 0.25 acres - 200 cubic yards topsoil at approximately 6 inches

Area D 0.45 acres with only regraded portions receiving topsoil - 360 cubic yards topsoil at approximately 6 inches

Area E 0.5 acres - no topsoil, area is too steep

~~Area F 0.25 acres - No topsoil. The area will be rounded, scarified and revegetated.~~

~~NAE will attempt to spread topsoil in a uniform fashion. It is not the intent of NAE to replace topsoil in an uneven fashion.~~

#### 784.14 Reclamation Plan: Protection of Hydrologic Balance

The applicant must submit a plan of the sediment control measures to be taken to insure the quality and quantity of the surface and groundwater during reclamation activities. The Division requires a plan of control measures to be used in the event that siltation or sedimentation problems occur. A plan must be submitted detailing the methods to be used to prevent any sedimentation impacts to the existing water resources.

RESPONSE: (Addendum to text on page 17 of the Reclamation Plan)

All runoff during reclamation work from Areas B, C, D, and E and the existing pad area (surface facilities area) will be routed into existing sedimentation ponds (#17 and #18 on Map 3).

Straw bale dikes will be used in Area F to control erosion. These straw bales will be placed prior to construction along the downslope (outslope) side of the road to culvert A's location and beyond as shown on Map 3. Sediment fences will be used in area F and area D as shown on Map No. 2. These straw bales and sediment fences will be maintained until requirements of UMC 817.111-117 are met or until the Division determines that the potential for erosion is minimized and grants approval that sediment control is no longer necessary, whichever comes first.

The applicant must submit a monitoring plan for the reclamation phase and post-mining phase in accordance with the DOGM water monitoring guidelines. Continued evaluation of the water monitoring data by the Division will determine the duration of the monitoring program. The

Division may approve termination of the monitoring program prior to bond release upon demonstration that mining activities have not or will not impact the existing water resources in the area.

RESPONSE: NAE will continue water monitoring at the site during June and September of each year for the duration of the bonding period. However, NAE would like to revise its existing monitoring program to include only a site above and below the mine. The proposed monitoring sites are sites B1 and B3. In addition, NAE will monitor any discharge from the sedimentation ponds found at the site per the requirements of the NPDES permit in force.

NAE proposes to reduce the parameters to be tested. Table 2, Proposed Water Quality Parameter List, indicates the parameters that NAE proposes to test for the duration of the bond period. The UDOGM should accept this request as a formal request to modify the existing monitoring program presently undertaken by NAE.

In order to demonstrate the requirements of 817.464, NAE will install and maintain a single stage sampler at the location shown on Map 3. Samples will be collected monthly during the snow-free months for the last 12 months prior to bond release. The sampler will be installed to delineate between the 10-year, 24-hour event and larger event. All water quality monitoring data will be submitted to DOGM on a monthly basis.

NAE proposes to take one (1) water sample weekly during the reclamation period. The sample will be taken in Mudd Creek, downstream of the reclamation activity. Parameters tested will be Total Suspended Solids and Settleable Solids. Reclamation water sample data will be submitted to DOGM on a monthly basis.

UMC 784.15 Reclamation Plan: Postmining Land Use

The calculations presented in Exhibit 8 for the requested peak flow values are incorrect. The Division has calculated the values for drainage area A and C as follows:

Table 2  
PROPOSED WATER QUALITY PARAMETER LIST

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Field Measurements:

- Water Levels or Flow
- pH
- Specific Conductivity (umhos/cm)
- Temperature (°C)

Laboratory Measurements: (mg/l)

- Total Dissolved Solids
  - Total Hardness (as CaCO<sub>3</sub>)
  - Carbonate (CO<sub>3</sub><sup>-2</sup>)
  - Bicarbonate (HCO<sub>3</sub><sup>-</sup>)
  - Calcium (Ca)
  - Chloride (CL<sup>-</sup>)
  - Dissolved Iron (Fe)
  - Magnesium (Mg)
  - Manganese (Mn)
  - Potassium (K)
  - Sodium (Na)
  - Sulfate (SO<sub>4</sub><sup>-2</sup>)
-

Drainage area A:

100 yr-24 hr peak flow:                    1063.9 cfs

Drainage area C:

100 yr-24 hr peak flow:                    137.7 cfs

These values differ significantly from the values presented by NAE. It appears that incorrect values for the rainfall intensity (i) and the correction coefficient (c) were used in the calculation using the rational formula. The requirements of 817.44 require permanent diversions to be designed for the 100 yr-24 hr precipitation event. The Division will require that plans be submitted demonstrating the capacity of culverts A (if to be left), B, C, and D to pass this event or plans to be submitted for their removal. NAE may contact the Division for details of the above calculations for submittal or submit modified calculations for the 100 yr-24 hr event.

RESPONSE: NAE has calculated the peak flows per the attached calculations. The design event has been determined to be the 50-year, 24-hour precipitation event based on the fact that no channel diversion exists. Culverts B and C are capable of passing the design event as demonstrated in the attached calculations. Culverts B and C will be left in place. The existing culvert D will be supplemented by the installation of a parallel culvert identified as Culvert D'. Culvert D' will be a 42" diameter corrugated metal pipe. Design calculations for Culvert D' can be found Figure 1, Culvert D' Calculations.

The calculations for Culvert D indicate that a 42" culvert with headwall will carry the required 36 cfs remaining after the 24" diameter culvert discharges the 26 cfs.

The discharge from Culvert D will require that extra care be taken in the channel of Mudd Creek to ensure that excess erosion does not take place due to the culvert discharge. Calculations for discharge velocity from Culvert D indicate that riprap reinforcement in the area of the culvert discharge will be adequate if riprap with a  $D_{50}$  of 24" is

installed in this area. Figure 2, Culvert D' Outlet Details shows the configuration of the riprap to be installed in the Mudd Creek channel at the outlet of the 42" diameter culvert.

In order to comply with 817.44, the development waste stockpile (area 24 on Map 2) will be removed to the original ground surface. The area will be regraded with the channel equivalent to the undisturbed channel above the disturbed area. The area will be reseeded per the revegetation plan. Straw bales will be installed through the length of the restored channel area as needed to provide temporary sediment control.

#### Culvert A

Culvert A will be removed. The channel configuration in the area of the removed Culvert A will be as shown on the Figure 3, Culvert A Channel Restoration. The channel configuration determined for the restored channel in the vicinity of Culvert A was determined from Figure 4, Culvert A Channel Calculations.

Figure 1.  
CULVERT D' CALCULATIONS

Hydrologic input parameters

Area = 135 ac  
CN = 64 (Ref CN for Mudd Creek)  
 $T_c = .2923$  hrs  
Hydrologic length = 4700'  
Avg slope = 69.5  
50-yr, 24-hr event = 3.29 in  
Storm = SCS Type 2  
AMC Condition II

Existing 24" culvert with H/D = 2  
= 26 cfs from culvert nomograph

Required flow = 129-26 = 123 cfs

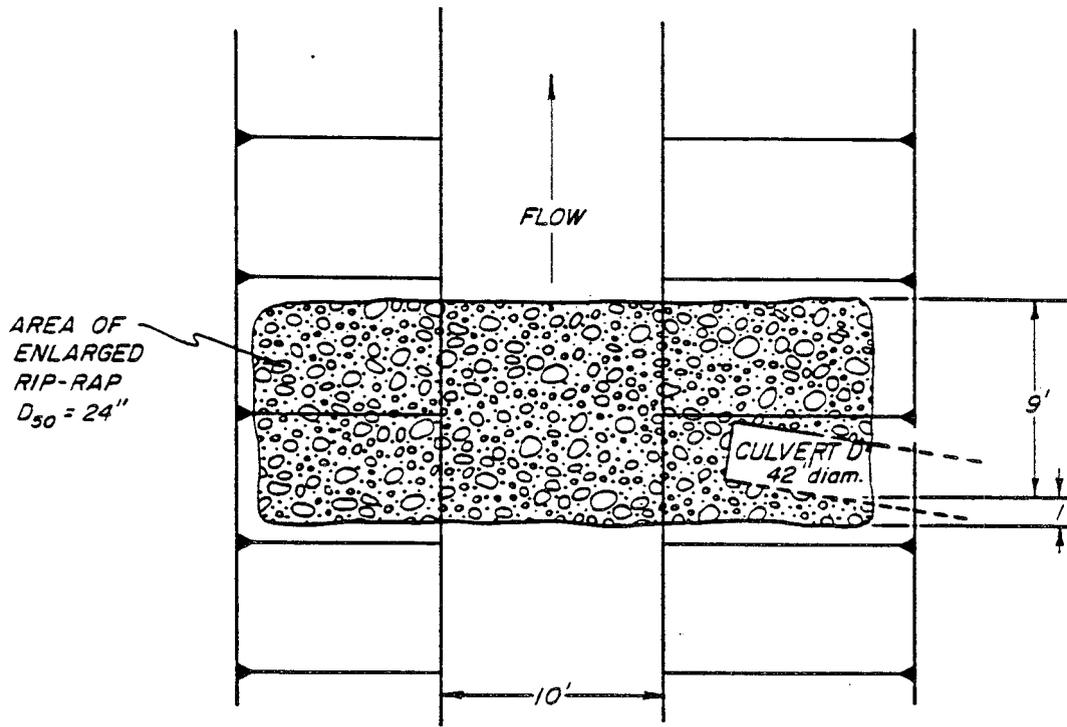
Use H/D = 2

42" culvert next to 24" culvert will carry required flow, from  
culvert nomograph

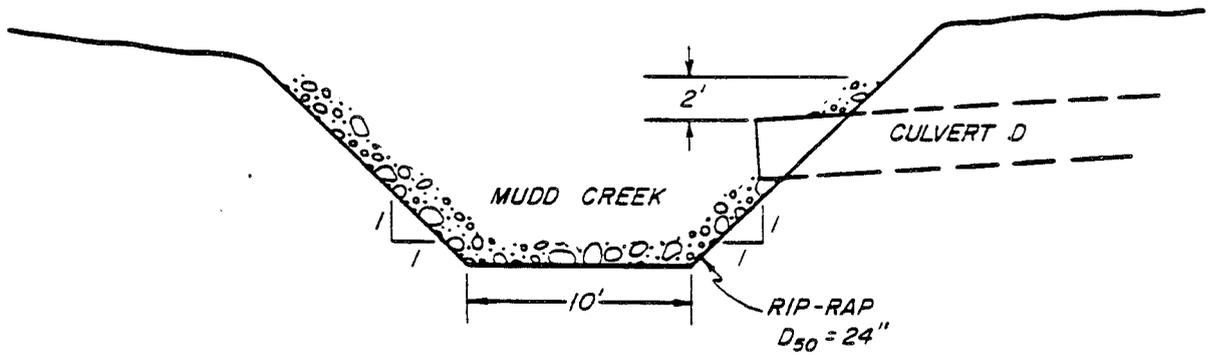
Discharge Velocity, 42" culvert

$V = Q/A = 126/9.62 = 13.0$  ft/sec

Riprap  $D_{50} = 24"$  for small area around culvert discharge



PLAN VIEW  
NO SCALE



CROSS SECTION  
NO SCALE

CULVERT D' OUTLET DETAILS

FIGURE 2



Figure 3

Culvert A Channel Calculations

$$\text{Channel Slope} = 0.035 = 3.5\%$$

$$n = .035$$

$$Q = 480 \text{ cfs}$$

$$D = (Qn/K s^{1/2})^{.375}$$

$$\text{Use } K = 11.1$$

$$D = 2.25 \text{ ft}$$

Velocity check

$$V = (1.49/n) R^{.667} s^{.5}$$

$$R = \frac{a}{wp} = \frac{41.3}{23.1} = 1.78$$

$$V = 11.7 \text{ ft/sec}$$

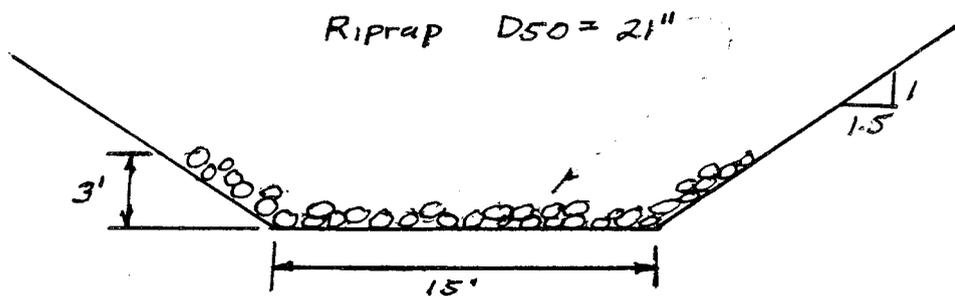
Riprap Sizing

$$\text{With } V = 11.7$$

$$\text{Riprap } D_{50} = 21''$$



Figure 4  
Culvert A Channel Restoration



Channel Section

Channel Slope = 3.5%

UMC 817.22 Topsoil Removal

(e)(1)(i) The applicant states that a soil substitute medium will be taken from the upper outslope of area E. The substituted material should be equal to or more suitable for sustaining vegetation than is the available topsoil. This determination will be based on the analysis of pH, organic matter (%), cation exchange capacity, saturation percentage, alkalinity, total nitrogen, available phosphorus, sodium absorption ratio, potassium, calcium, magnesium, electrical conductivity, and texture class.

RESPONSE: Existing material found on the outslope of the portal bench will be utilized during reclamation, as this slope is too steep to adequately spread topsoil on. Once grading work is complete on the portal bench area, including the outslope from the portal bench (area E), two soil samples will be taken and analyzed for the above parameters. Based on this analysis and the analyses for certain fertility parameters, NAE will contact UDOGM with regard to fertilization, type, and quantity.

(e)(1)(ii)(b)

The applicant must submit laboratory data that substantiates that the substitute material is the best available medium for reclamation. The applicant must state the volume of substitute material that will be used.

RESPONSE: Planned work on the portal cut-slope area is the only available medium for reclamation. As stated above, NAE does not plan to obtain a separate source of material for use in the portal face-up. Simply the material found on the outslope area will be used as "substitute" material.

(e)(1)(ii)(b)

The applicant must submit laboratory data that substantiate that the substitute material is the best available medium for

reclamation. The applicant must state the volume of substitute material that will be used.

RESPONSE: As mentioned above, the material on the outslope will be used as "substitute" material, as it the only available medium for reclamation on this area. The area itself is quite small; therefore, the amount of material is relatively small.

The planned reclamation calls for utilizing a backhoe to pull back as much material as possible from beneath the portal bench. This material will be used to cover development waste placed on the portal which will conversely be covered with topsoil. In performing this operating, the outslope from the portal bench will be left in somewhat roughened condition with slope changes for erosion control.

(e)(1)(ii)(c)

The laboratory must use standard methods of analysis. The methods of analysis must be indicated.

RESPONSE: NAE plans to use Bookcliffs Commercial Laboratories in Steamboat Springs, Colorado, for analytical work. This laboratory uses standard methods of analysis on all samples. All analyses performed by this lab are according to EPA, USGS, OSM, or other approved analytical standards. Attached as Table 3, Soil Analysis is the methods of analyses for the above parameters.

UMC 817.25 Topsoil: Nutrients and Soil Amendments

The applicant states that the soil will be tested for nitrate - nitrogen and phosphorus. The test must be for total nitrogen and available phosphorus. Other analysis must include pH, calcium, magnesium, sodium, sodium adsorption ratio, electrical conductivity, texture and saturation percentage. These tests must be done by a Division approved laboratory. The laboratory must use standard methods of analysis. The methods of analysis along with nutrient recommendations must be indicated.

Table 3  
SOIL ANALYSIS

Parameter	Method	Reference
Saturation %	Method 27a Saturation Percentage from Oven Drying	1
pH	Method 21a pH Reading of Saturated Soil Paste	1
EC	Method 4b Direct Indicating Bridge	1
Calcium	Method 3a Saturation Extract Analysis by ICP	1
Magnesium	Method 3a Saturation Extract Analysis by ICP	1
Sodium	Method 3a Saturation Extract Analysis by ICP	1
SAR	Calculation	
Texture	Method 43-S Hydrometer Method of Particle-Size Analysis	2
Nitrogen, Total	Method 83-3 Regular Macro-Kjeldhal Method	2
Phosphorus, Available	NH <sub>4</sub> HCO <sub>3</sub> -DTPA Extraction Procedure-Analysis by Automated Colorimetric	3
Potassium, available	NH <sub>4</sub> HCO <sub>3</sub> -DTPA Extraction Procedure-Analysis by Automated Colorimetric	3
Organic Matter	Method 24 Organic Matter	1
Cation Exchange Capacity	Method 19 Cation Exchange Capacity	1
Alkalinity - Lime %	Method 23c Alkaline-Earth Carbonates from Acid Neutralization	1

1 USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils" 1969

2 ASA Monograph No. 9 Methods of Soil Analysis, 1965

3 Soltanpour, P.M. "Soil Test Methods Used at Colorado State University" 1981

RESPONSE: NAE will test topsoil for total nitrogen and available phosphorus, rather than nitrate-nitrogen and phosphorus. NAE will also conduct tests for pH, calcium, magnesium, sodium, sodium adsorption ratio, electrical conductivity, texture, and saturation percentage. These tests will be completed by Bookcliffs Commercial Laboratories in Steamboat Springs, Colorado; this laboratory is a division-approved laboratory. Bookcliffs Commercial Laboratories will use standard methods of analyses as shown in Table 3, Soil Analysis.

As explained on page 28 and 29 of the Reclamation Plan submitted to the Division on May 29, 1985, following grading activities, a sample program will be initiated. Based on the results of this sampling program, NAE will submitted recommended fertilizer application rates to UDOGM.

UMC 817.43 Hydrologic Balance: Diversion and Conveyance of Overland Flow, Shallow Ground Water Flow, and Ephemeral Streams

Review could not be completed for Ditches A and B. The drainage area for ditch B has not been delineated on map 11, and subsequently the Division can not determine a time of concentration value or the watershed area draining to this ditch. Exhibit 8 depicts ditch A (map 11) to be the mud creek channel and the supporting calculations for the peak flow value in that exhibit appear to be for that drainage area (area A). The application must depict clearly the area draining to these diversions and their exact locations before review can proceed. It is probable that the peak flow calculations presented in exhibit 8 for these diversions are incorrect. Refer to above 785.14 comments.

RESPONSE: Peak flow calculations indicate that Ditch B will be required to pass 5.2 cfs during the 10 year, 24 hour precipitation event. Based on this 5.2 cfs, Ditch B has been designed per Figure 5, Ditch B Design Calculations. The drainage area for Ditch B is shown on the following page.

Design calculations on this ditch have resulted in a ditch design as shown on Figure 6, Ditch B Design. The design of Ditch B requires that

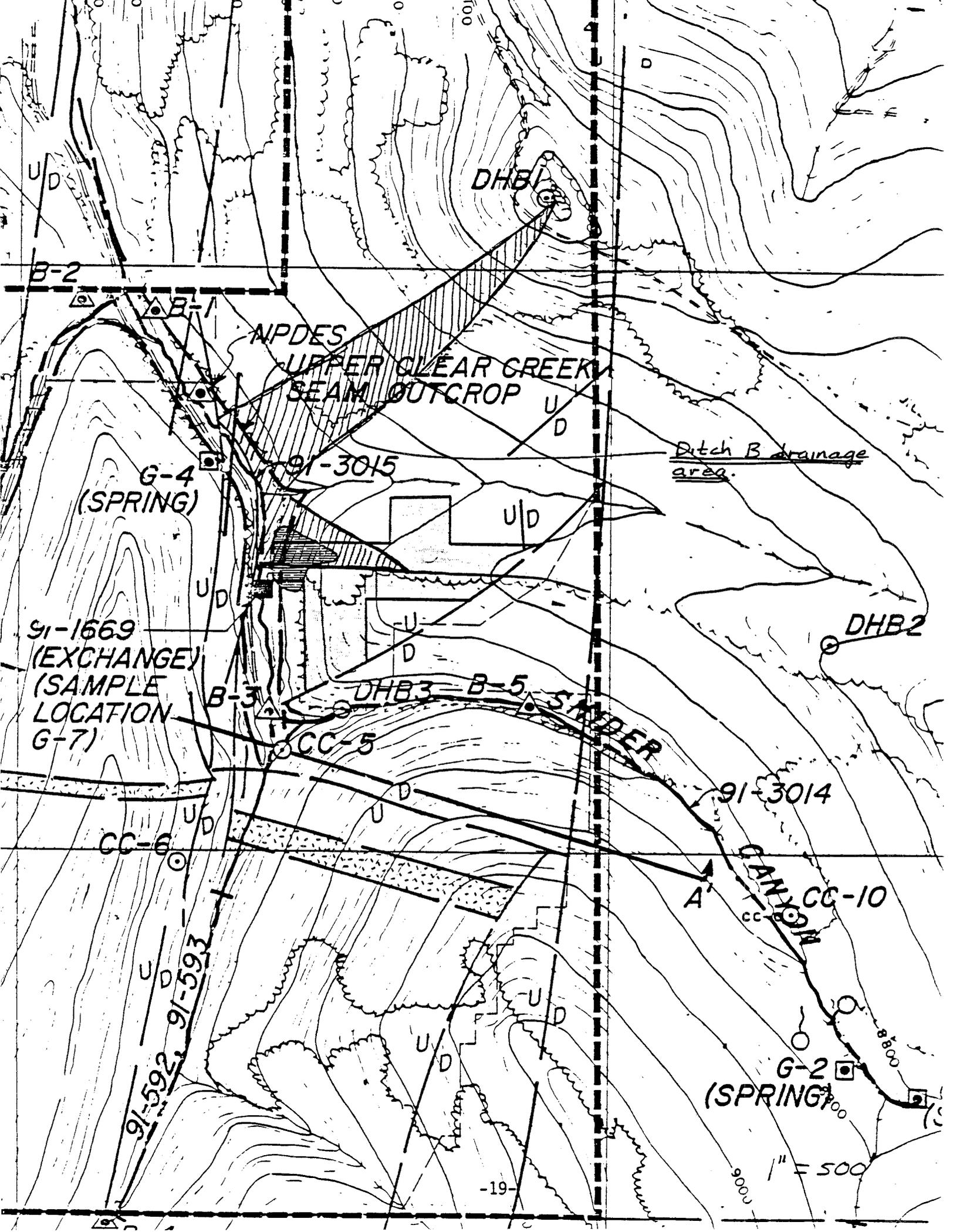


Figure 5  
DITCH B DESIGN CALCULATIONS

Slope - Upper  $20/170 = 0.118$

Lower  $10/530 = 0.019$

Ditch sizing - minimum slope section, 2' bottom width, 2H:1V side slopes

$$D = (Qn/KS^{\frac{1}{2}})^{0.375}$$

$$Q = 5.2 \text{ cfs}$$

$$n = 0.022$$

$$K = 8.50$$

$$S = 0.019$$

$$D = 0.42 \text{ ft}$$

Velocity check, maximum slope section

$$D = 0.24'$$

$$V = (1.49/n)R^{0.667} S^{0.5}$$

where

$$n = 0.022$$

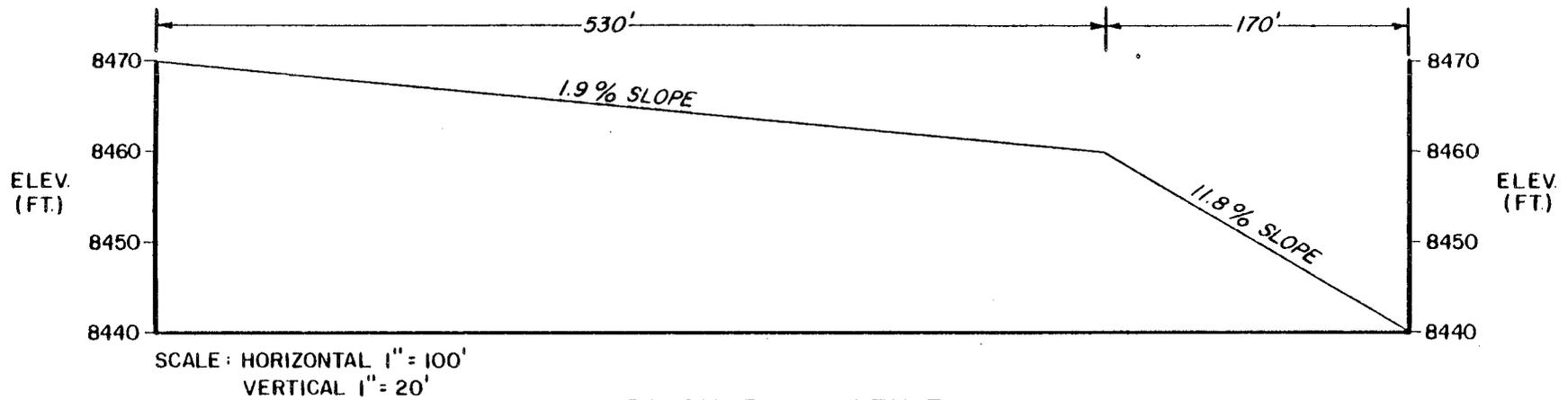
$$R = 0.201$$

$$S = 0.118$$

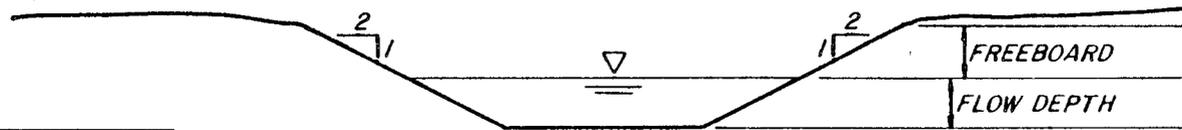
$$V = 8.0 \text{ ft/sec}$$

$$P/r = 17$$

Riprap  $d_{50} = 8"$



DITCH B - PROFILE



DITCH B - CROSS SECTION

NO SCALE

Slope	Flow Depth	Freeboard
1.9%	0.42 ft.	0.58 ft.
11.8%	0.24 ft.	0.76 ft.

DITCH B DESIGN

FIGURE 6

riprap with a  $d_{50}$  of 8" be installed in the last 170 feet of this ditch.

The applicant needs to provide calculations demonstrating that the Mud Creek channel and flood plain is capable of passing the 100 yr-24 hour precipitation event. Additionally, the applicant must address UMC 817.44(d)(1-3) under stream channel diversions or present evidence that Mud Creek has not been altered. The Division files contain inspection memos dated September 18, 1980 and October 20, 1980 that indicate the channel was diverted and rip rapped by Blazon Company. Please clarify.

RESPONSE: NAE does not believe there will be a problem in the Mud Creek channel and floodplain and its ability to pass the 100 year, 24 hour precipitation event. The valley in the area of the Blazon operation is quite wide and should have not problem handling a 100 year, 24 hour precipitation event.

NAE does not believe that the Mud Creek channel has been altered. Three culverts (A, B, and C) have been placed in the Mudd Creek channel to facilitate access to the actual mining site; however, NAE does not believe that the stream channel was altered in any substantial way.

NAE has completed calculations to demonstrate that the Mudd Creek channel, as it currently exists, is capable of passing the 50-year, 24-hour precipitation event. Please see the attached calculations for Mudd Creek.

The applicant must include plans for the reclamation of the channel bank after the removal of the culvert. These plans must include recontouring of the bank and design for rip rap protection. The applicant must also state when the culvert will be removed. Figure 1 in the August 8, 1985 correspondence from NAE indicates the culvert will be removed prior to any grading or seeding. The response to UMC 817.44(c) on page 14 indicates that the culvert will be removed following topsoil and reseeding of the portal bench area. The applicant must also include what time of year the culvert will be removed.

RESPONSE: NAE plans to remove Culvert A as shown on the Reclamation Plan Map (Map 2). This culvert is approximately 25 feet in length. NAE plans to gain access across culvert A to the portal for reclamation work. After reclamation work is completed on the portal area, NAE plans to remove culvert A. Thus, culvert A will be removed during the late fall of 1985 following topsoiling and reseeding of the portal bench area. Culvert A channel reclamation is shown on Figure 4, Culvert A Channel Restoration.

UMC 827.46 Hydrologic Balance: Sedimentation Ponds

UMC 817.46(u) and 817.42(a)(2) both require that sedimentation ponds shall be left onsite until the above requirements are met. The applicant must submit plans and a commitment to meet the requirements of these two regulations before approval can be granted.

RESPONSE: At the request of UDOGM, NAE will plan to leave the sediment ponds onsite until above water quality and revegetation standards are met. After release of bond, the culvert spillways will be removed from the ponds. The spillway excavations will be regraded and revegetated following removal of the culverts. Calculations and designs for the sediment ponds are attached.

UMC 817.71 Disposal of Excess Spoil and Underground Development Waste

The Division has requested a variance from OSM which would allow this action (use of a portion of underground development for disposal in the Old Clear Creek Strip Pit). As of today, OSM has not responded to this request. Therefore, this issue will be resolved at a later date.

RESPONSE: It is apparent that approval from OSM to dispose of the underground development waste in the old Clear Creek strip will not be forthcoming. The following alternate plan has been developed for the disposal of the underground development waste.

As much underground development waste as possible will be disposed of on the portal bench. Calculations indicate that all of the waste can be disposed of on the portal bench. Disposal of the waste material on the portal bench will be in accordance with Figure 7, Typical Section Reclaimed Mine Bench. Care will be taken during the placement of underground development waste material on the mine bench to ensure that waste material is placed only on the cut portion of the mine bench and no waste material will be placed on the fill portion of the mine bench.

Underground development waste material which cannot be disposed of on the mine bench will be hauled to the alternate waste disposal location shown on Map 2. Disposal of underground development waste material at the alternate waste disposal location will be in accordance with the pile geometry shown on Figure 7, Typical Section Reclaimed Mine Bench. The primary constraints on this section are that slopes of the final contoured surface will not exceed 2H:1V. The area will be covered with a total of 4 feet combined topsoil and cover material. Following placement of the topsoil and cover material, the area will be contoured and revegetated.

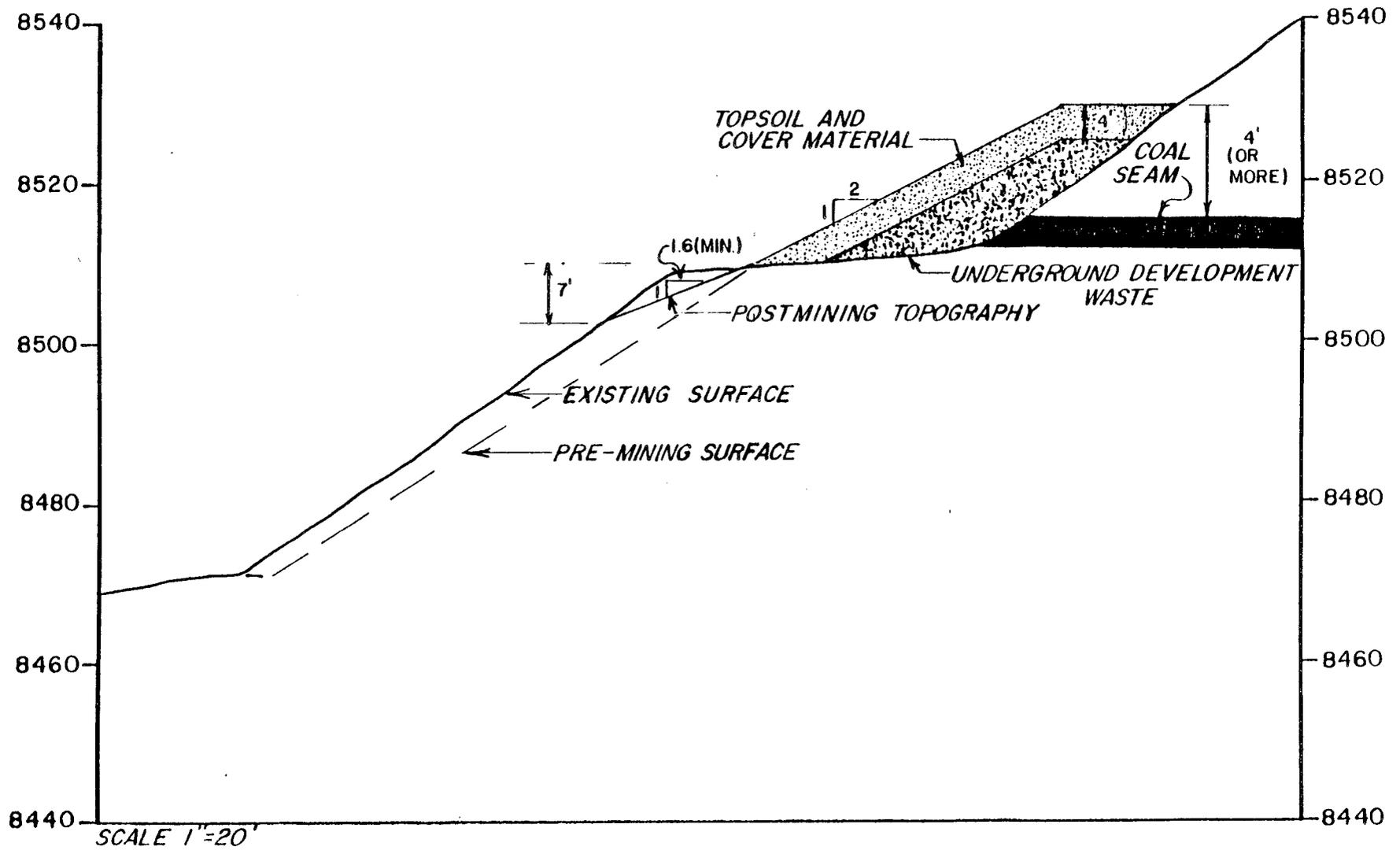
#### UMC 817.101 Backfilling and Grading

The applicant has not adequately responded to the comments concerning backfilling and grading. Postmining contours of the area are virtually unchanged from those seen currently on the site at present. The portal bench area will be highly visible and will not meet the requirements for Approximate Original Contours. The applicant shall submit a new contour map showing a more suitable relief of the area with slopes not exceeding those found on the site during premining conditions. Where possible, the slopes shall be reduced to a minimum to enhance vegetation growth and to reduce erosion during establishment of vegetative cover.

RESPONSE: (Addendum to text on page 25 of the Reclamation Plan)

Procedures for Backfilling and Grading of Portal Bench and Above

1. Utilize underground development waste to cover the portals with a minimum of four feet (4') above the coal seam as shown on Figure 7, Typical Section Reclaimed Mine Bench. Place in lifts of one (1) to



TYPICAL SECTION RECLAIMED MINE BENCH

FIGURE 7

two (2) feet and compact as much as possible. A dozer and/or a front-end loader will be utilized.

2. Use backhoe to reach downslope of portal bench and pull back material as far as possible. The backhoe will place material on the underground development waste and a dozer will spread the material in one (1) to two (2) foot lifts and will work the slope to an approximate two foot (2') (horizontal) to one foot (1') (vertical) slope.

With inclinometer, NAE will visually site a line on the portal face-up area to establish crest of the 2:1 slope. NAE will make sure that this material is placed on cut material from the original portal development work. It should be noted that the complete backfilling or total elimination of the portal face-up area is not possible.

3. In those areas where some failure has occurred above the portal entries, NAE will try to maintain a 2:1 slope to completely cover the collapsed area. In "brow" or open area beneath the competent sandstone above the entry, NAE will cover and dress the area with a backhoe or dozer to eliminate voids even if subject slope slightly exceeds 2:1.
4. Topsoil will be spread on the 2:1 slope.
5. Appropriate revegetation measures will be performed (see page 17 of the Reclamation Plan).

#### Area E

6. The upper portion of the portal outslope will be pulled back by backhoe and left in roughened condition at approximately 1.6 (horizontal) to 1 (vertical) slope. The crest and toe of this area will blend into the overall slope. Approximately 6 inches of topsoil will be placed on this area, if possible.

7. The middle part of the portal outslope will be left as it is now existing. Necessary reclamation functions will be performed, e.g. fertilizing, seeding, mulching, and netting.
8. On the lower portion of the portal outslope where it has been oversteepened by cutting, these areas will be dressed and graded with a dozer to a 1.6 (horizontal) to 1 (vertical) slope as shown on Figure 9, Typical Section Lower Bench Toe Stabilization.

Area F

9. This area will be regraded and ripped or scarified. Revegetation will be undertaken as per the Reclamation Plan for Area F.

UMC 817.106 Regrading or Stabilizing Rills and Gullies

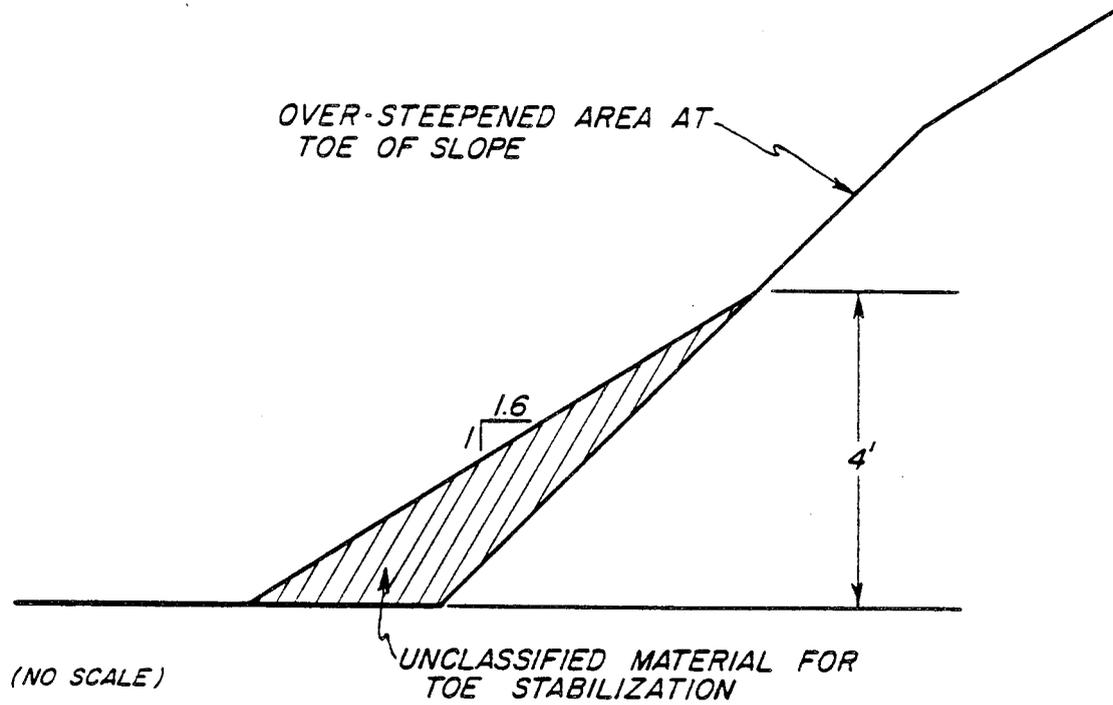
The applicant must commit in writing to regrade and seed areas of rills and gullies that are deeper than nine inches.

RESPONSE: On the reseeded areas, NAE will work with UDOGM to stabilize and seed any areas where rills and gullies deeper than nine (9) inches form.

UMC 817.133 Post Mining Land Uses

The legal owner of record is Calvin K. and Milton E. Jacob - not Jack Otani. In order to approve the land use change the landowner of record must request such in writing and demonstrate that the criteria of UMC 817.133(c) are met.

~~RESPONSE: If Jack Otani has not completed his land title registration by the time the Division reviews this application, NAE requests that the Division authorize reclamation of the reclaimed area to proceed. Approval of the alternate postmining land use would be withheld until the transfer of title to Jack Otani is complete.~~



TYPICAL SECTION  
LOWER BENCH TOE STABILIZATION

FIGURE 9

#### UMC 817.11 Signs and Markers

NAE will retain and maintain all signs and markers until after the release of all bonds for the permit area. These signs shall include identification signs displayed at each point of access, perimeter markers of the disturbed areas, and stream buffer zone markers in areas where reclamation is within 100 feet of Mudd Creek.

#### UMC 817.95 Air Resources Protection

NAE will plan and employ fugitive dust control measures during reclamation work including, where necessary:

1. Periodic watering of roads
2. Prompt revegetation of regraded lands

#### UMC 817.99 Slides and Other Damage

NAE will notify the Division by the fastest available means of any slides in the reclaimed area which may have a potential adverse effect on public property, health, safety or the environment.



**A C I INC.**

**STEAMBOAT SPRINGS, CO**

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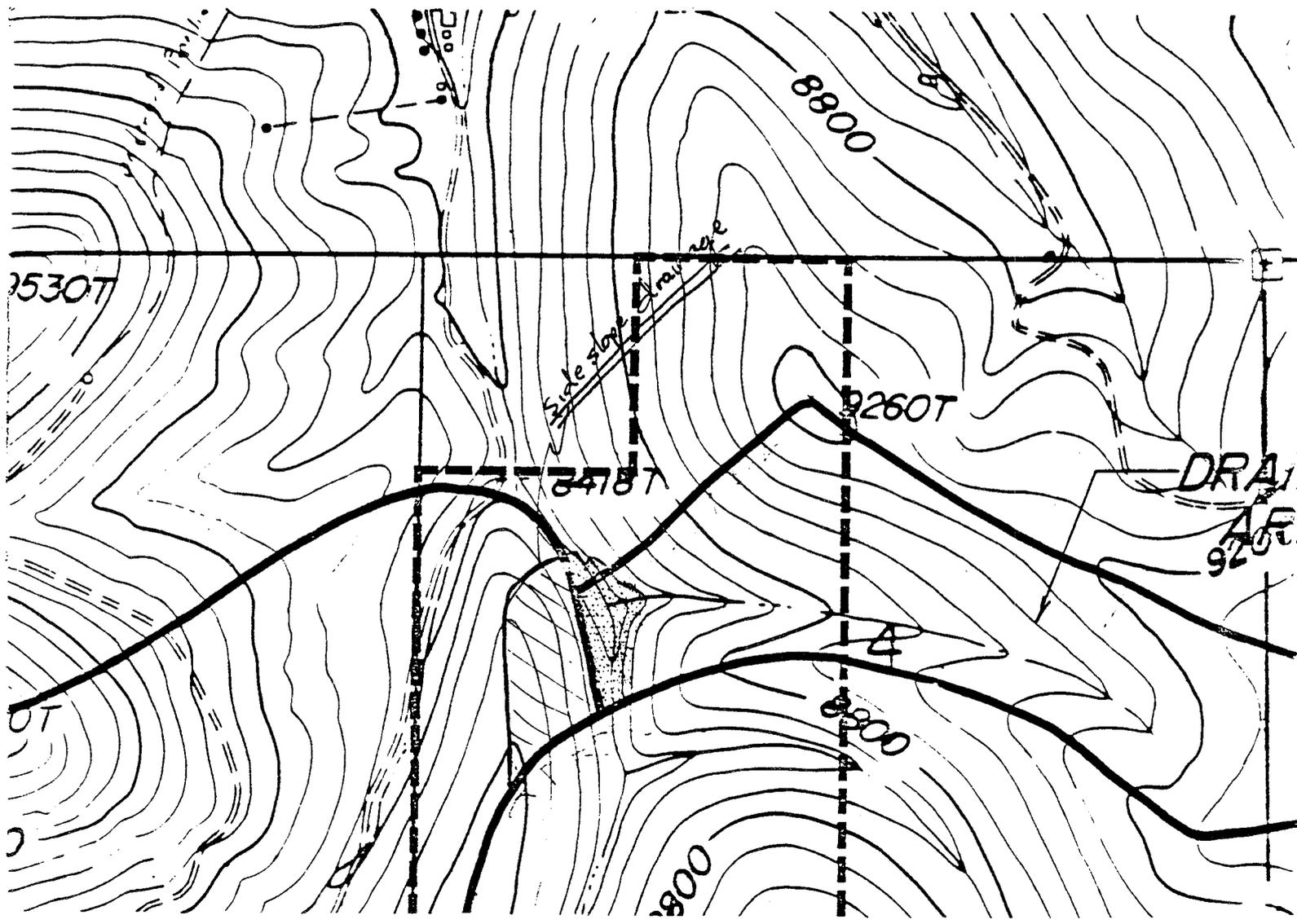
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DATE

*Misc. Hydrology & Hydraulics*

Road Culvert Drainage Area.

R. 7 E.



R. 7 E.



## Road Culvert Calculations

$$\text{Area Per Map} = 15 \text{ ac}$$

$$\text{Hydraulic Length} = 700'$$

$$\text{Drainage Height} = 240'$$

$$LC_{25} = 1000$$

$$LC_{50} = 950$$

$$LC_{25} = 600$$

$$\text{Ave Slope} = 23.4\%$$

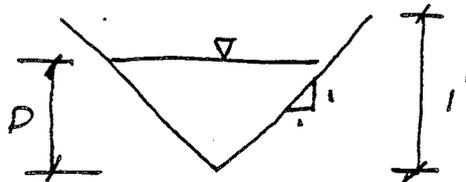
$$Q_{\text{max}} = 3.11 \quad \text{using CN} = 64, \text{ precipitation} = 2.45 \text{ in.}$$

3 culverts are distributed along road

$$\text{therefore } Q_{\text{each}} = 1.04 \text{ cfs}$$

24" existing culverts are capable of carrying 11 cfs  $\Rightarrow$  culverts are oversized

## Ditch



$$D = 0.7'$$

$$n = .035$$

$$\text{slope} = 3.5\%$$

$$V = 3.15 \text{ ft/sec}$$

$$Q = 1.54$$

The ditch is capable of carrying the 1.04 cfs



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DATE 9/21/85

## Mudd Creek Peak Flows, 50 year, 24 hour event

### Inputs

Precipitation = 3.29 inches  
Drainage Area = 2131 acres  
Average Slope = 37.79 %  
AMC = 2  
Hydraulic Length = 14,400 ft  
Time of Concentration = .98 hours  
Curve Number' = 64

Peak flow = 479 cfs

1 Curve number determined from Table 11-10 Rangeland Hydrology by F.A. Branson, G.F. Gifford, K.G. Renard and R.F. Hadley. Input parameters were:

Cover = 77 %  
Soil Group = C  
Cover type = Forest



## Mudd Creek Flow

## Typical Section

$$\text{Depth} = D = ((Qn) / KS^{1/2})^{.375}$$

where

$$Q = 479 \text{ cfs}$$

$$n = .045$$

$$K = 5.09$$

$$S = 0.049$$

$$D = 3.0'$$

$$\text{Velocity} = V = (1.49/n) R^{.667} S^{.5}$$

where

$$n = .045$$

$$R = 2.11$$

$$S = 0.049$$

$$V = 12.1 \text{ ft/sec}$$

Riprap Sizing

$$D_{50} = 12 (118 QS^{2.17} R/P)^{.4}$$

where

$$Q = 479 \text{ cfs}$$

$$S = 0.049$$

$$R = 2.11 \text{ ft}$$

$$P = 18.5 \text{ ft}$$

$$D_{50} = 29 \text{ inches}$$



## Mudd Creek Flow, Worst Case

$$V = (1.49/n) R^{.667} S^{1/2}$$

Where

$$n = .045$$

$$R = 2.28 \quad (A = 36.68, p = 16.06)$$

$$S = 5.2\%$$

$$V = 13.08 \text{ ft/sec}$$

## Riprap Sizing

$$D_{50} = 12 (118 Q S^{2.17} R/p)^{.4}$$

$$D_{50} = 33.6 \text{ inches}$$



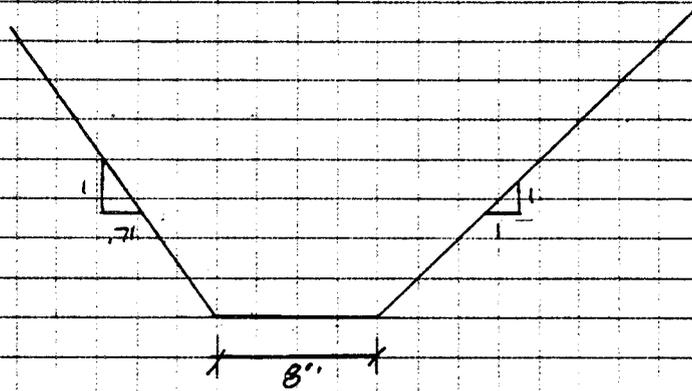
### Mudd Creek Channel Work

1. Check channel to insure that it is adequately riprapped to a depth of 3.3 ft
2. Check critical section at sediment pond outslope to insure that the channel is adequately riprapped to a depth of 3.2 ft
3. Repair or supplement any riprap found to be deficient.



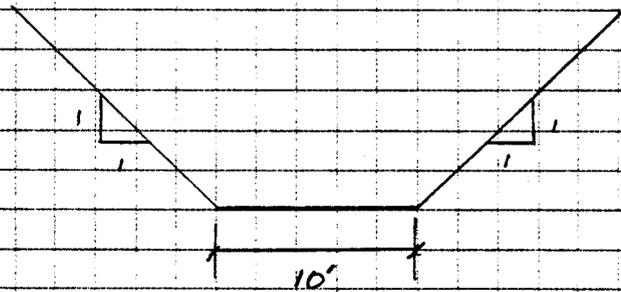
# Mudd Creek Cross Sections

Worst Case



Total Channel Side Slope = 1.9H:1V

Typical Section



Culverts B & C

Peak flow, 50 year, 24 hour event = 479 cfs

Culvert diameter = 80"

Culvert Headwall = 65"

H/D = 1.81

Culvert nomograph indicates that this culvert will pass the design flow.

The headwalls and outlets of these culverts will be examined for stability of existing protection measures.

The culvert protection will be enhanced or repaired if inspection shows deficiencies.

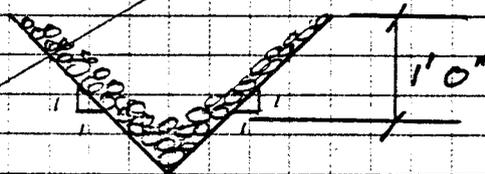


### Transformer Access Road -

(No. 6 on Map 2 Reclamation Plan)

This road will be dressed and the ditch re-established on the cut side of the road.

The ditch will be lined with 3" drain rock. A typical cross section of the ditch is shown below.



TRANSFORMER ROAD Typical Ditch Section



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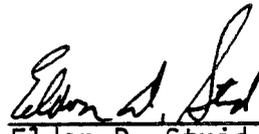
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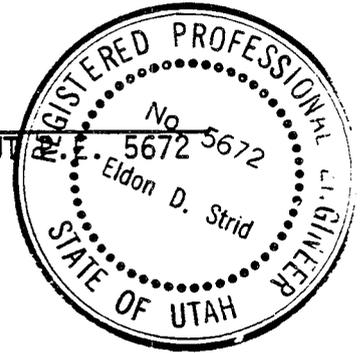
*SEDIMENT PONDS*

PROFESSIONAL ENGINEER'S CERTIFICATION

I, ELDON D. STRID, certify that this sediment pond design was prepared under my supervision and all the information presented hereon is true and correct to the best of my knowledge and information.

9/25/85  
Date

  
Eldon D. Strid, UT





## Sediment Pond Calculations

Drainage	Area (ft <sup>2</sup> )	PC	CN	Height	Length	Tc
1. Undisturbed/Recl.	439,740	10.06	64	630	1700	.05
2 Un reclaimed	57860	1.34	90	30	540	.05
Total	497,600	11.4				

$$T_c = .0018 L^{.77} (L/H)^{.385}$$

For runoff volume calculation see attached calculations

$$\text{Volume} = .38 \text{ ac-ft}$$

## Watershed Slopes

	Area 1	Area 2
LE25	450	100
LC50	300	150
LC75	200	70
slope (%)	44.8	4
slope (°)	24.1	2.3

Watershed	R	K	LS'	CP <sup>2</sup>	Delivery <sup>3</sup>	Annual Yield
1	.26	.28	51	.032	.7	8.3
2	.26	.28	.81	1.30	1	7.7

$$1. LS = \left( \frac{L}{72.6} \right)^m (65.02 \sin^2 \theta + 4.54 \sin \theta + 0.065)$$

2. from attached table 4

3. from Sediment Delivery Ratios (attached)



## Sediment Calculations

Watershed	Annual Yield	Acres	Total Yield
1	8.3	10.06	83.5
2	7.7	1.34	10.3
	TOTAL		93.8 Tons/year

$$93.8 \text{ Tons per year} \times \frac{2000 \text{ lb}}{\text{Ton}} \times \frac{\text{ft}^3}{100 \text{ lb}} \times \frac{\text{ac-ft}}{43560 \text{ ft}^3} = 0.04 \text{ ac-ft}$$

## Sediment Pond Volume

Runoff Volume 0.38 ac-ft

Sediment Volume 0.04 ac-ft

Total pond volume 0.42 ac-ft



Sediment Pond Runoff Volume Calculations 10 yr, 24  
hour storm

Undisturbed and Reclaimed Areas

$$Q = (P - 0.25)^2 / (P + .85)$$

Where

$$P = 2.45 \text{ inches}$$

$$S = (1000 / CN) - 10$$

$$CN = 64$$

$$Q = 0.25 \text{ inches}$$

$$(0.25 \text{ in} \times 10.06 \text{ ac}) / 12 = .21 \text{ ac-ft}$$

Un-reclaimed Areas

Where

$$P = 2.45 \text{ inches}$$

$$CN = 90$$

$$Q = 1.49 \text{ inches}$$

$$(1.49 \text{ in} \times 1.34 \text{ ac}) / 12 = .17 \text{ ac-ft}$$

$$\text{Total Runoff} = 0.38 \text{ ac-ft}$$

Note: The unreclaimed area was determined based on the area shown on the following page.

The undisturbed/reclaimed was determined by subtracting the unreclaimed area from the Ditch B drainage area previously determined.

Inreclaimed  
Area

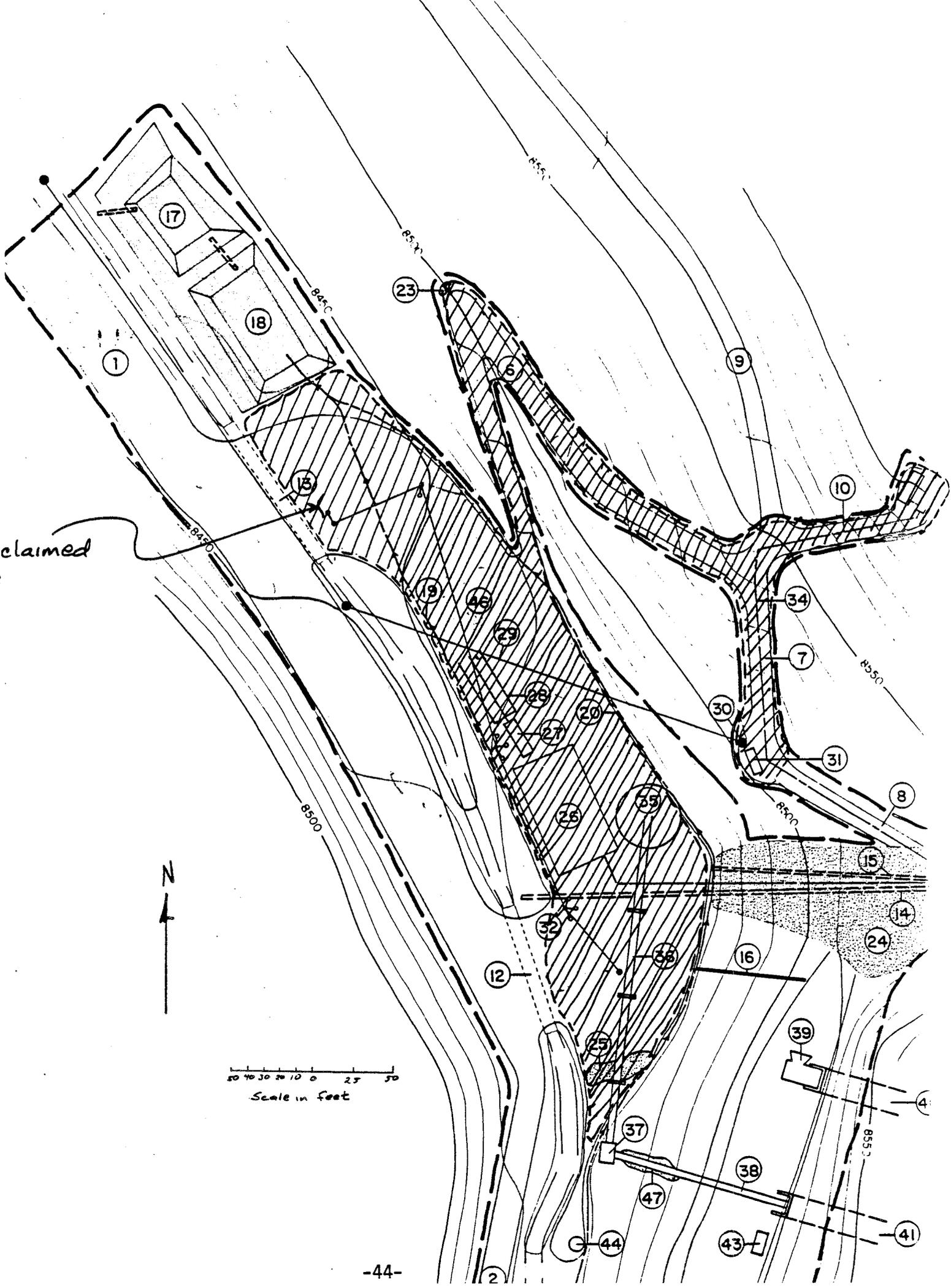


Table 4

Factor C for permanent pasture, range, and idle land<sup>1</sup>

Vegetative canopy		Cover that contacts the soil surface						
Type and height <sup>2</sup>	Percent cover <sup>3</sup>	Type <sup>4</sup>	Percent ground cover					
			0	20	40	60	80	
No appreciable canopy		G	0.45	0.20	0.10	0.047	0.013	0.003
		W	.45	.24	.15	.091	.043	.011
Tall weeds or short brush with average drop fall height of 20 in	25	G	.36	.17	.09	.038	.013	.003
		W	.36	.20	.13	.083	.041	.011
	50	G	.26	.13	.07	.035	.012	.003
		W	.26	.16	.11	.076	.039	.011
	75	G	.17	.10	.06	.032	.011	.003
		W	.17	.12	.09	.068	.038	.011
Appreciable brush or bushes, with average drop fall height of 6½ ft	25	G	.40	.18	.09	.040	.013	.003
		W	.40	.22	.14	.087	.042	.011
	50	G	.34	.16	.08	.038	.012	.003
		W	.34	.19	.13	.082	.041	.011
	75	G	.28	.14	.08	.036	.012	.003
		W	.28	.17	.12	.078	.040	.011
Trees, but no appreciable low brush. Average drop fall height of 13 ft	25	G	.42	.19	.10	.041	.013	.003
		W	.42	.23	.14	.089	.042	.011
	50	G	.39	.18	.09	.040	.013	.003
		W	.39	.21	.14	.087	.042	.011
	75	G	.36	.17	.09	.039	.012	.003
		W	.36	.20	.13	.084	.041	.011

<sup>1</sup> The listed C values assume that the vegetation and mulch are randomly distributed over the entire area

<sup>2</sup> Canopy height is measured as the average fall height of water drops falling from the canopy to the ground. Canopy effect is inversely proportional to drop fall height and is negligible if fall height exceeds 33 ft

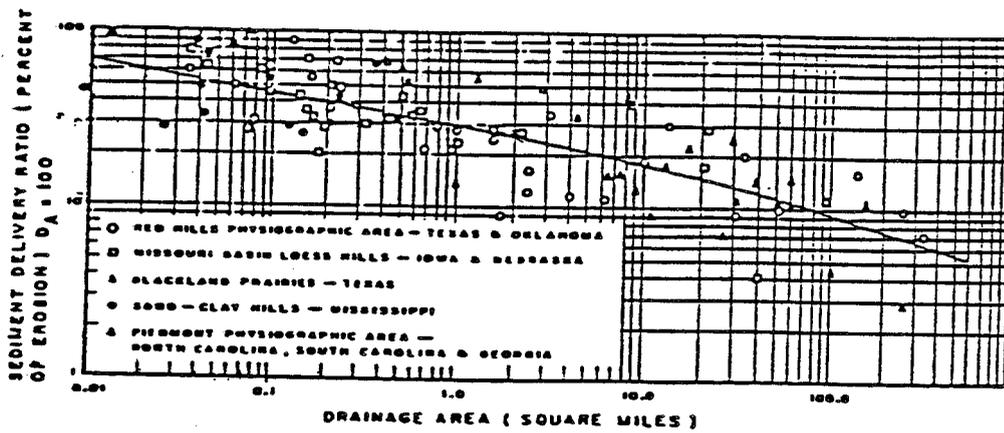
Portion of total-area surface that would be hidden from view by canopy in a vertical projection (a bird's-eye view)

<sup>3</sup> G: cover at surface is grass, grasslike plants, decaying compacted duff, or litter at least 2 in deep

W: cover at surface is mostly broadleaf herbaceous plants (as weeds with little lateral-root network near the surface) or undecayed residues or both.

# Sediment Delivery Ratios

2/11/02  
2/24/00  
for [unclear]



Sediment-delivery ratio versus size of drainage area,  $D_A$ . Where possible, site specific data should be used. (Boyce, 1975)



### Sediment Pond Calculations

Upper pond capacity at a stage of 4.5 ft

$$= .22 \text{ ac-ft}$$

Lower pond capacity at a stage of 7.5 ft

$$= .19$$

Total pond capacity = 0.41 ac-ft

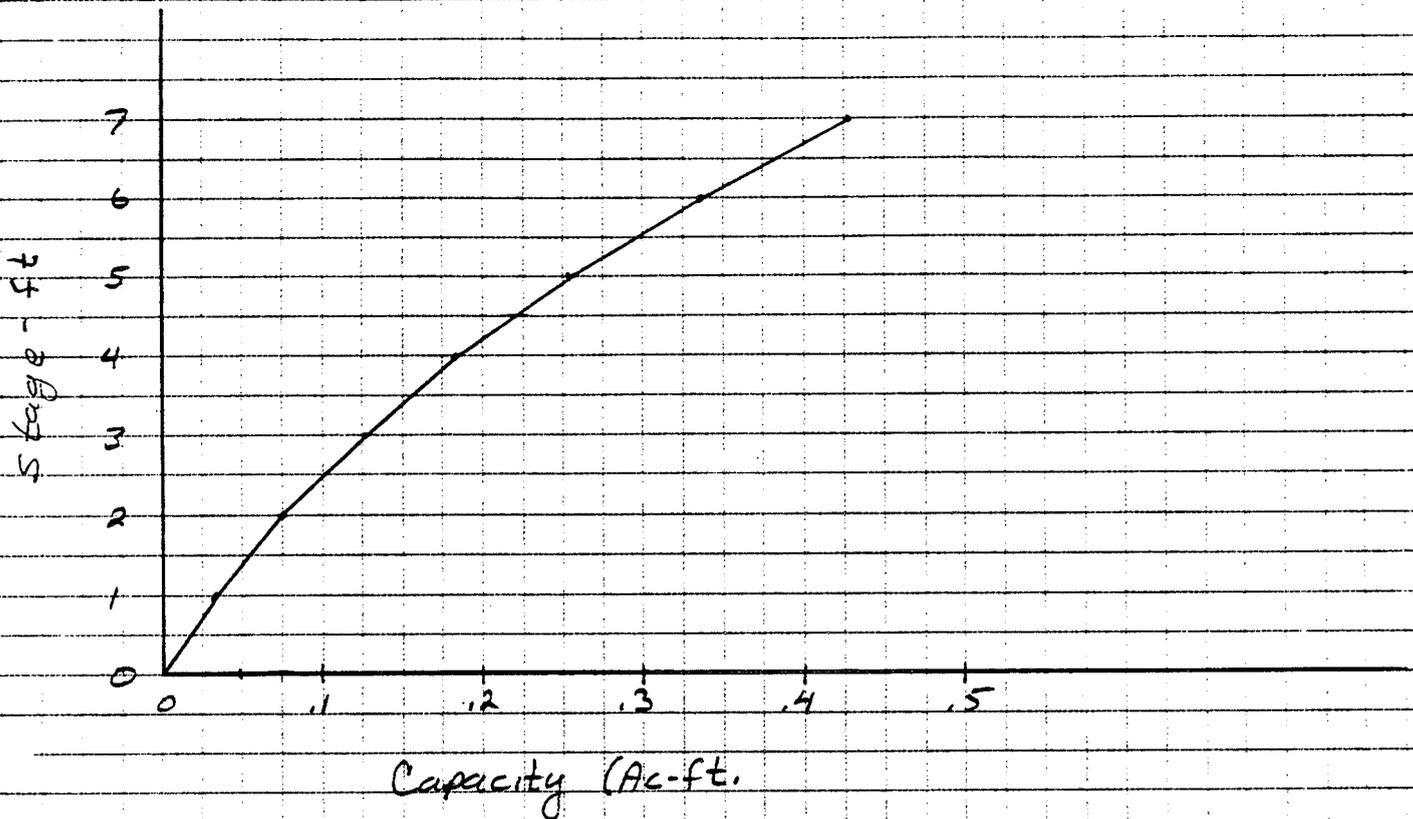
The ten year, 24 hour precipitation event plus one year sediment accumulation is 0.42 ac-ft

therefore the ponds are adequate to contain

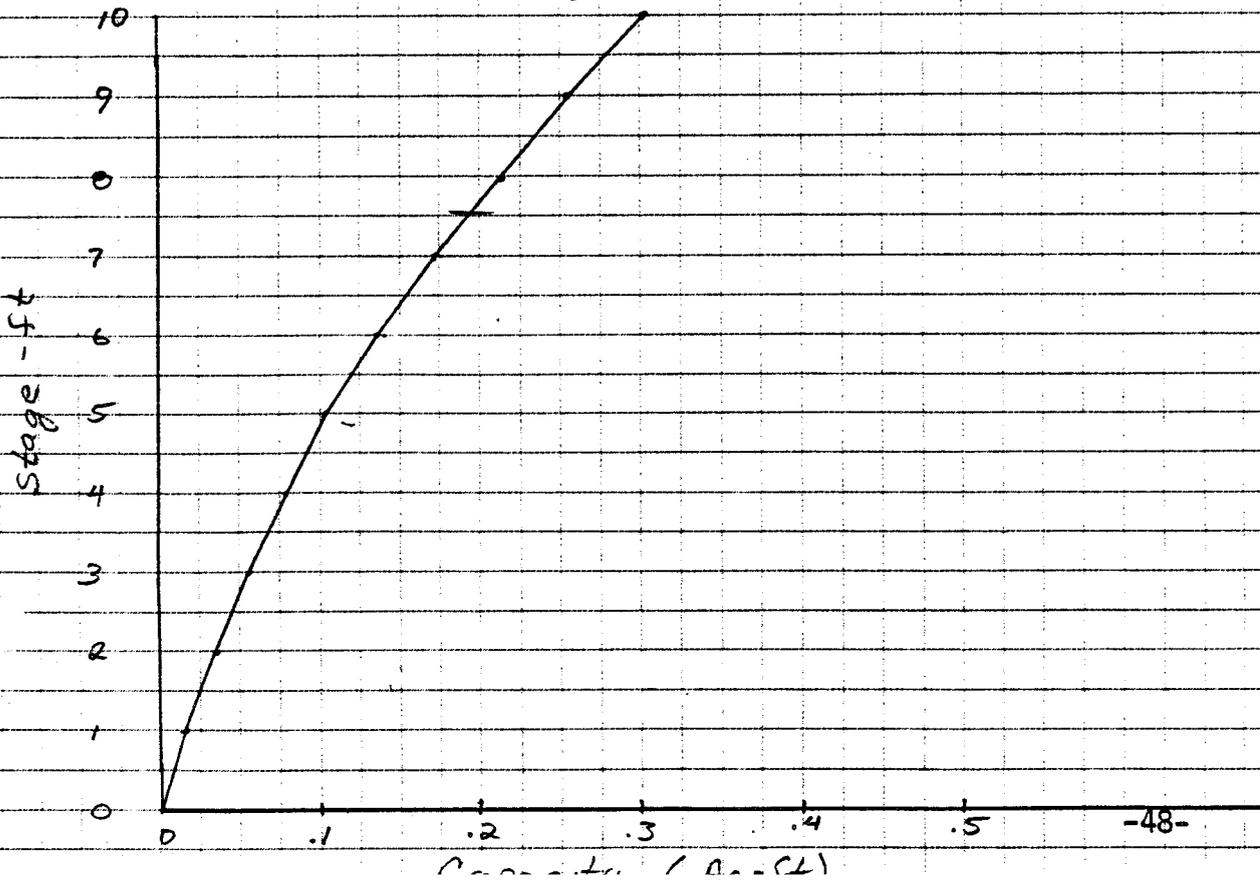
the 10 year, 24 hour precipitation events.



### UPPER POND STAGE STORAGE



### Lower Pond Stage Storage



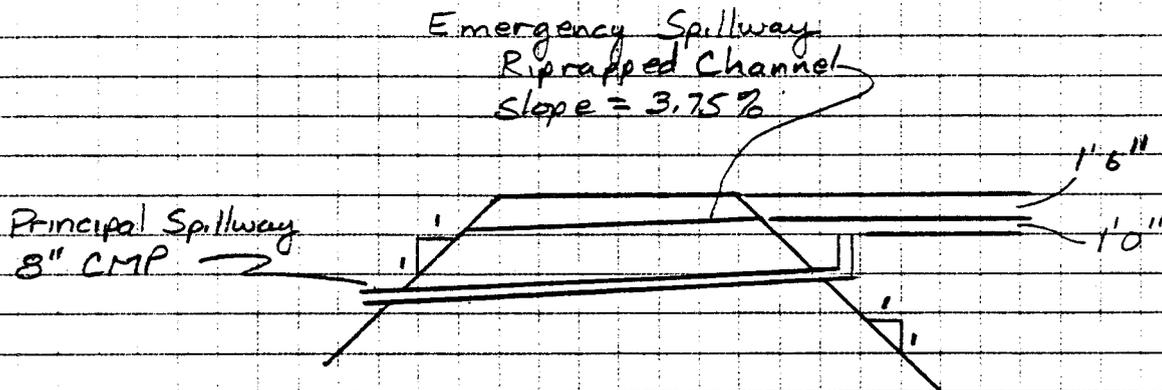


Upper Pond Storage Capacity

Level	Area	Ave.	Cum. Volume
0	.028		
1	.037	.032	.032
2	.047	.042	.074
3	.056	.052	.126
4	.066	.061	.187
5	.075	.070	.257
6	.085	.08	.337
7	.094	.09	.427

Lower Pond Storage Capacity

Level	Area	Ave	Cum. Volume
0	.012		
1	.015	.014	.014
2	.019	.017	.031
3	.023	.021	.052
4	.027	.025	.077
5	.030	.028	.105
6	.034	.032	.137
7	.038	.036	.173
8	.042	.040	.213
9	.046	.044	.257
10	.040	.048	.205



### Typical Pond Embankment

### Principal Spillway Capacity (8" $\phi$ CMP)

$$Q = C' a \sqrt{2gh}$$

where

$$C' = 0.6$$

$$a = .35 \text{ ft}^2$$

$$g = 32.2 \text{ ft/sec}^2$$

$$h = 1'$$

$$Q = 1.7 \text{ cfs}$$

### Emergency Spillway

$$Q = 7.2 - 1.7 \text{ cfs} = 5.5 \text{ cfs}$$

$$V = (1.49/n) R^{.667} S^{.5}$$

where  $n = 0.035$

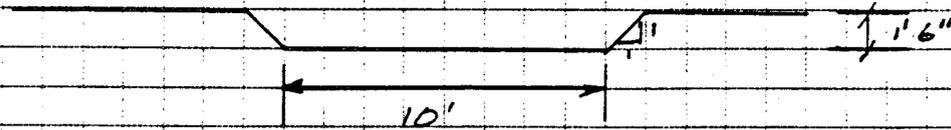
$$R = 0.24$$

$$S = 0.0375$$

$$V = 2.83 \text{ ft/sec}$$

$$\text{Depth} = 2.5 \text{ inches}$$

$$Q = 6.0 \text{ cfs}$$



### Emergency Spillway Cross Section

Depth of flow = 0.21' (25yr, 24 hour storm)

Freeboard = 1.29' (25yr, 24 hour storm)

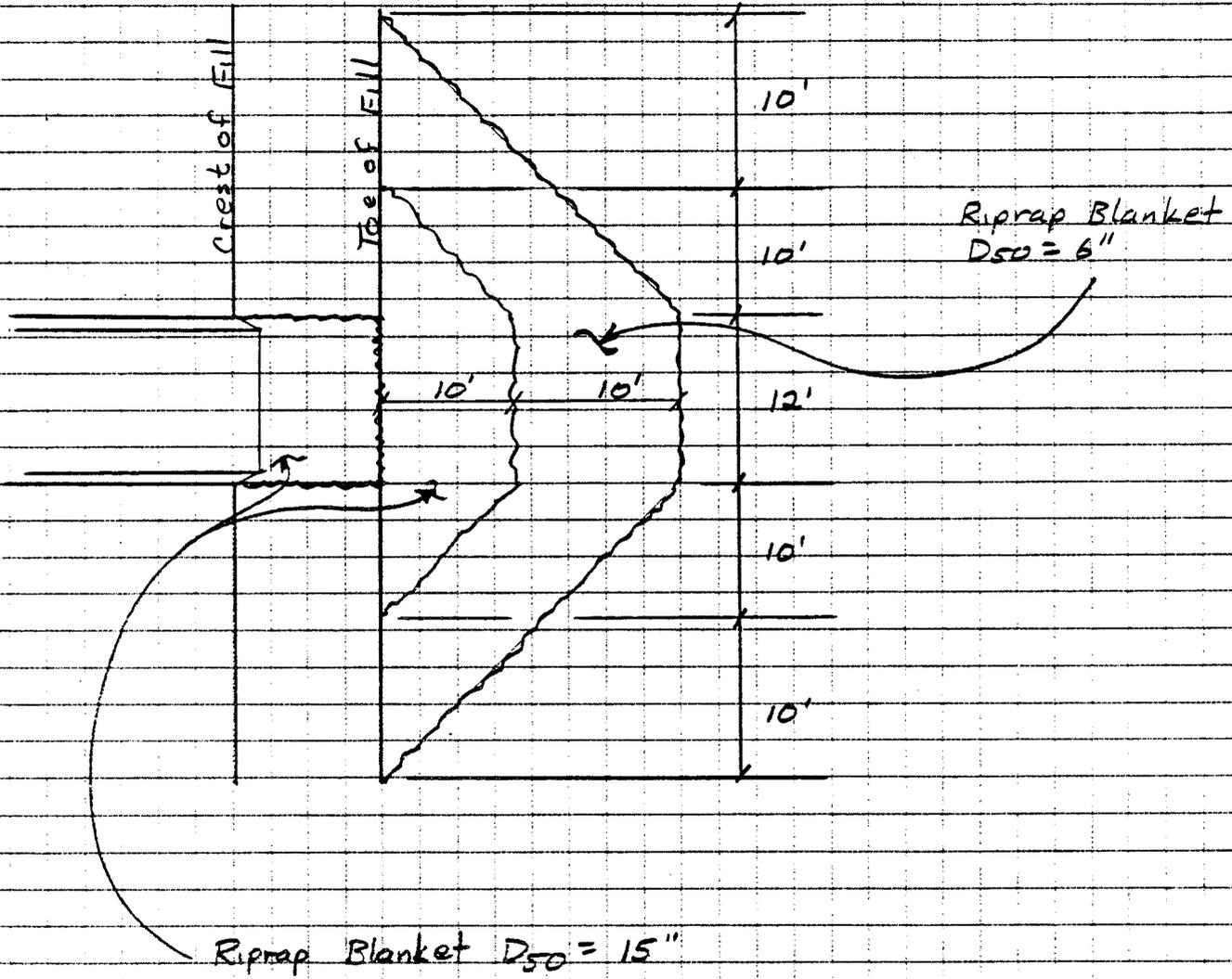
Flow Velocity = 2.8 ft/sec

With these flow velocities, riprap protection of the channel is not required and energy dissipaters are not needed.

1. In order to minimize the potential for sediment contribution to mud creek, a riprap blanket with  $D_{50} = 15''$  will be provided down stream of the lower pond spillway to the first grade break.
2. The spillway from the upper pond to the lower pond will be re-constructed to meet the lines and dimensions shown here.
3. A riprap blanket w/  $D_{50} = 15''$  will be provided from the discharge of the lower pond principal spillway to the first grade break.
4. An energy dissipating apron will be installed at the grade break at the lower pond emergency spillway outflow. The apron will conform to the dimensions shown on the following page.



# Lower Pond Outflow Energy Dissipater





## Principal Spillway Energy Dissipator

$$Q = 1.7 \text{ cfs}$$

Provide 5' wide riprap blanket

$$\text{slope} = 1$$

$$V = 1.49/n R^{2/3} S^{1/2}$$

$$n = .035$$

$$V = 6.5 \text{ ft/sec}$$

Riprap Size

$$D_{50} = 12 (118 Q S_b^{17/6} r/p)^{2/5}$$

where

$$Q = 1.7$$

$$S_b = 1$$

$$r = .051$$

$$p = 5.09$$

$$D_{50} = 15 \text{ inch}$$

\*\*\*\*\*

WATERSHED IDENTIFICATION CODE

NAE BLAZON NO. 1 MINE SEDIMENT POND FLOW CALCULATION

\*\*\*\*\*

\*\*\*\*\*INPUT VALUES\*\*\*\*\*

STORM DURATION = 24.00 HOURS
PRECIPITATION DEPTH = 2.92 INCHES

1

\*\*\*\*\*
JUNCTION 1, BRANCH 1, STRUCTURE 1
\*\*\*\*\*

\*\*\* HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS \*\*\*

Table with 8 columns: WATER SHED, AREA ACRES, CURVE NUMBER, TC HR, TT HR, ROUTING COEFFICIENTS K-HRS, X, UNIT HYDRO. Rows 1 and 2.

\*\*\* COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS \*\*\*

Table with 3 columns: WATERSHED, PEAK FLOW (CFS), RUNOFF (INCHES). Rows 1 and 2.

NOTE: SEDIMENT DOES NOT INCLUDE POSSIBLE DEPOSITION BY DELIVERY RATIO

\*\*\*\*\* SUMMARY TABLE FOR TOTAL WATERSHED \*\*\*\*\*

RUNOFF VOLUME = .5774 ACRE-FT
PEAK DISCHARGE = 7.1952 CFS
AREA = 11.4000 ACRES
TIME OF PEAK DISCHARGE = 12.00 HRS

\*\*\*\*\*
NULL STRUCTURE
\*\*\*\*\*



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DATE

*Topsoil & U.G. Development Waste  
Calculations*



## Underground Development Waste Disposal

Estimated Volume of Waste 4000 cu yd

Estimate space available on Portal Bench 6924 cu yd

Volume required for cover material @ 4' thickness 2859 cu yd

Volume remaining for waste material 4065 cu yd

Since the estimate of 4000 cubic yards for underground development waste is thought to be conservatively high, the waste material will probably all fit on the portal bench.

In the event that a portion of the waste material does not fit on the portal bench, an area on the lower bench has been designated to receive the waste. The area designated to receive waste is shown on Map 2 attached.

Cover material will be obtained by removing 3.5 feet of fill material from the face of the slope between the lower and upper bench areas. The area is 0.5 acres.

Topsoil Requirements

Area C 0.25 ac @ .5 ft = 202 cu yd

Area D 0.45 ac @ .5 ft = 363 cu yd

TOTAL Topsoil Required 565 cu yd

Topsoil Sources

Topsoil Stockpile 287 cu yd

Topsoil Borrow Area 278 cu yd

TOTAL Topsoil 565 cu yd



Calibration of planimeter

$$1" \text{ sq} = \begin{matrix} 006.9 \\ 006.8 \end{matrix}$$

Section	Planimeter	In <sup>2</sup>	ft <sup>2</sup>	Ave. Thick	Vol
A	0	0	0		
B	5.3	.779	77.9	38.9	20 77
C	8.6	1.26	126.0	102	20 20
D	8.0	1.18	118.0	122	20 244
E	5.7	.834	83.4	101	20 202
F	0	0	0	41.7	11.5 48
					775

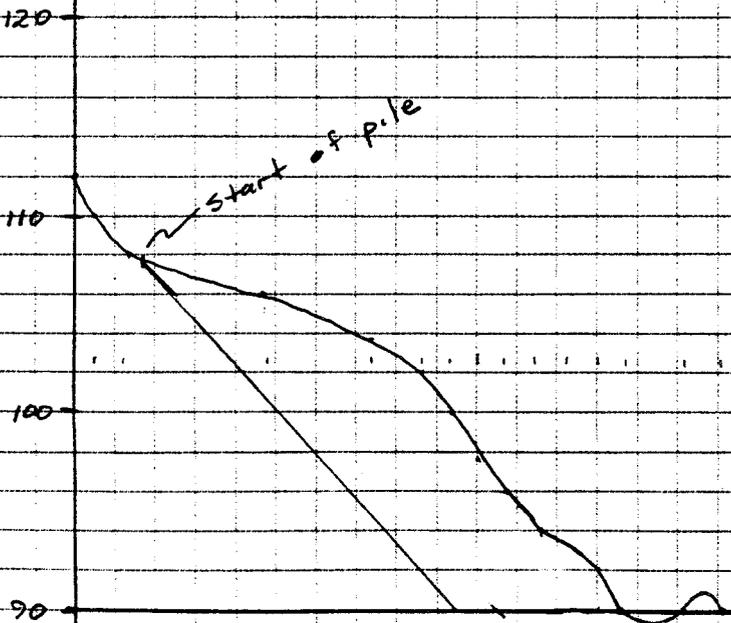
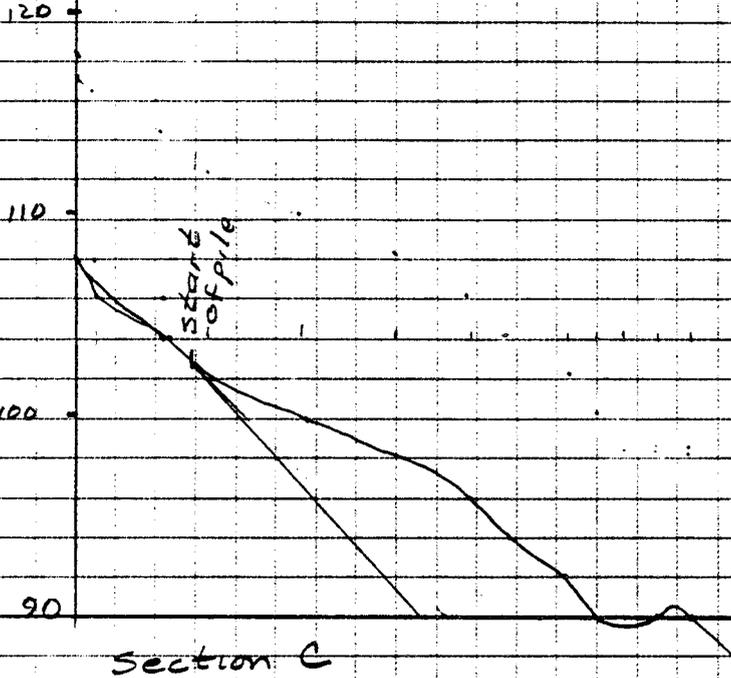
Topsoil volume =  $\frac{1159}{27} = 287 \text{ yd}^3$



Section B Topsoil Stockpile

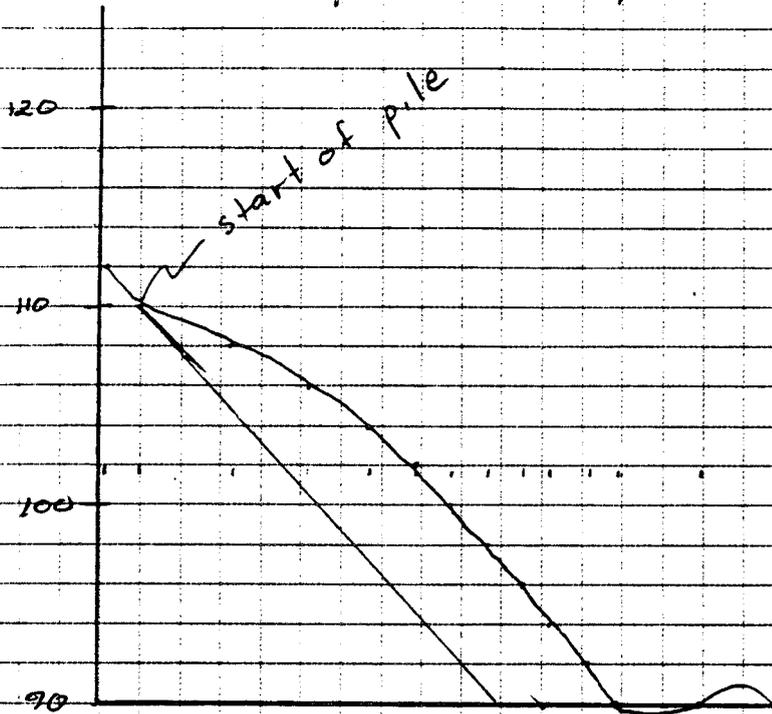
1" = 10'

Note All Topsoil Stockpile Sections refer to Topsoil Stockpile and Borrow Area sketch.

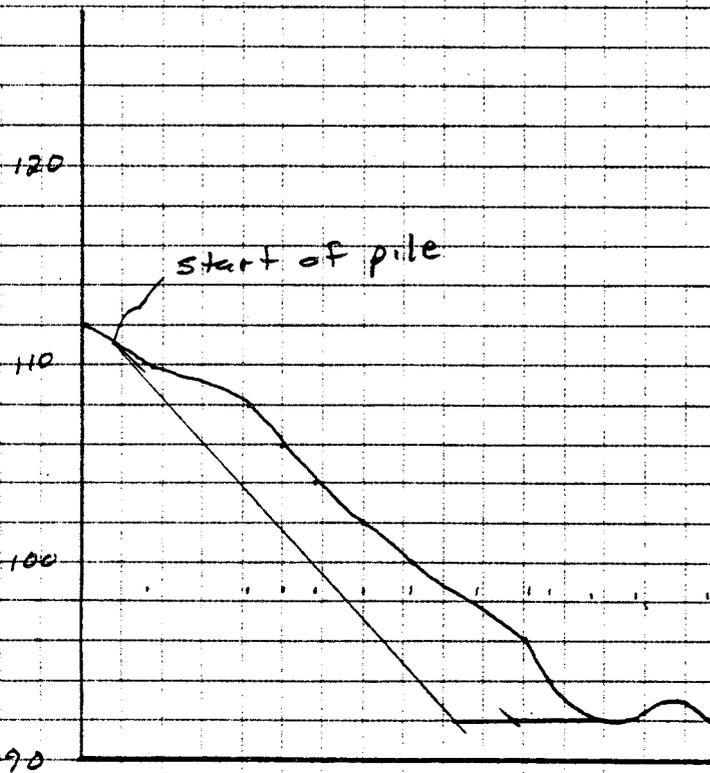




Section D Topsoil Stockpile



Section E Topsoil Stockpile





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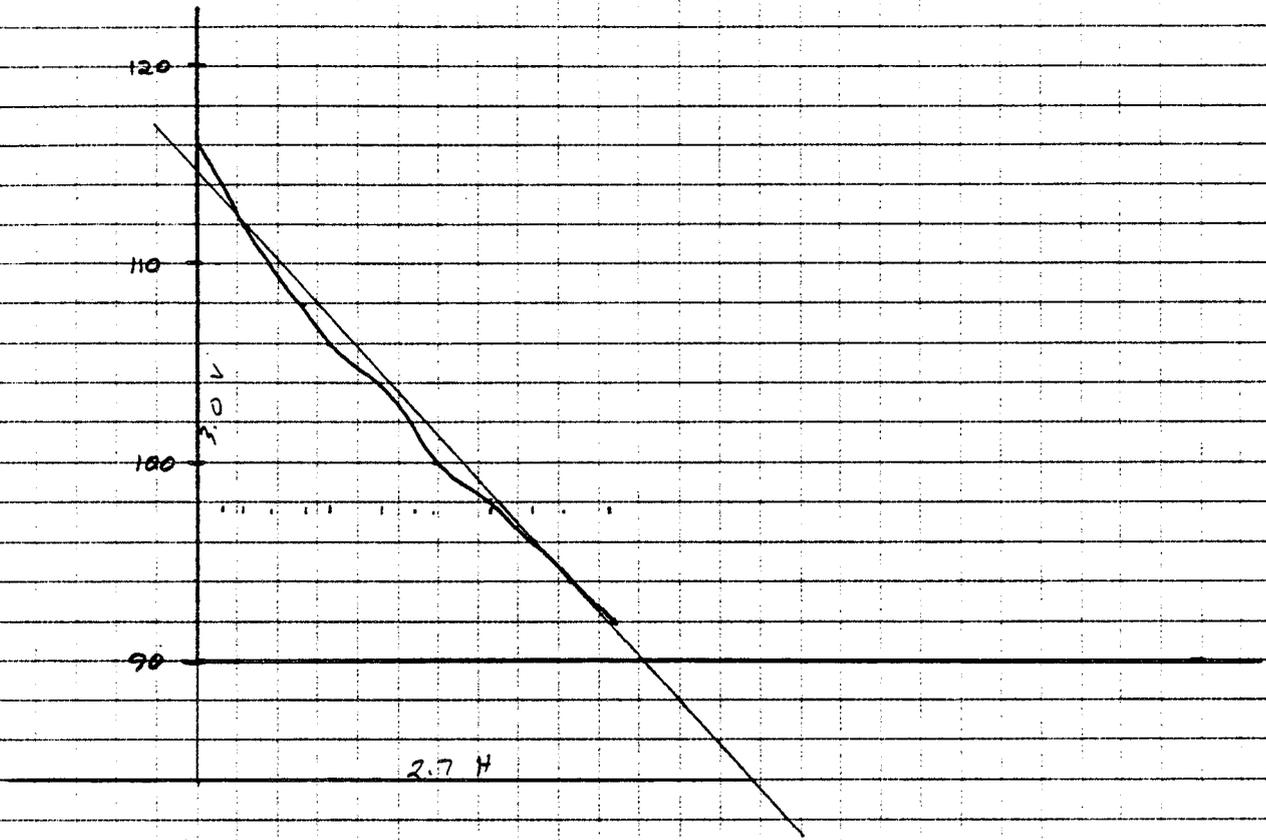
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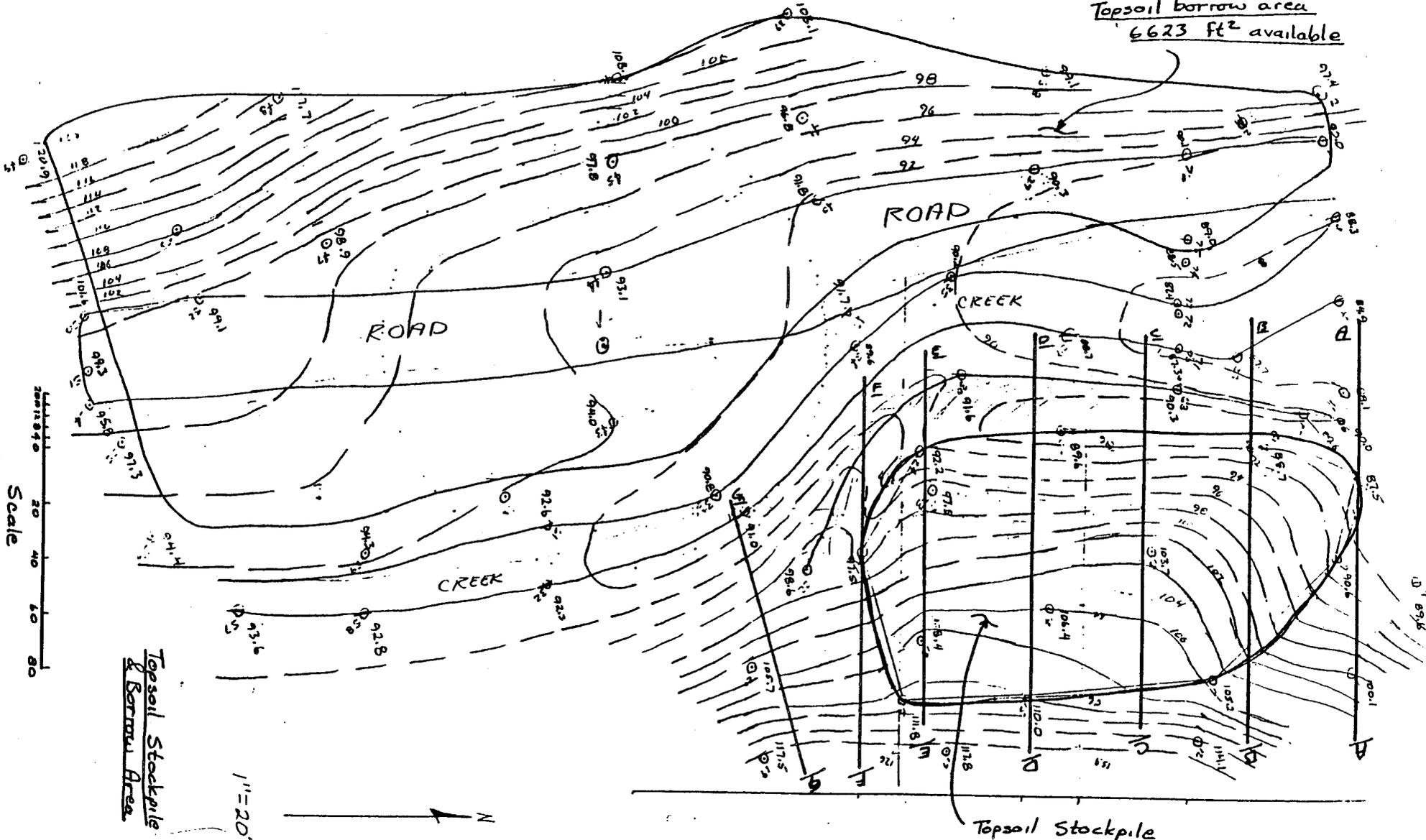
DATE 9/19/85

# Topsail Area Section G



use slope = .9H:1V

Topsoil borrow area  
6623 Ft<sup>2</sup> available



Topsoil Stockpile  
& Borrow Area

1" = 20'

Topsoil Stockpile



## TOTAL VOLUME

Section	Area	Ave	Thickness	Volume
E	0	136	50	6800
F	272	448	50	22,400
G	623	822	50	41,100
H	1021	852	50	42,600
I	682	695	50	34,750
J	708	570	50	28,500
K	432	216	50	10,800
L	0			
TOTAL				186,950 ÷ 27 = 6924 1/3

## Cover Volume @ 4'

E	0	81	50	4050
F	162	230	50	11,500
G	298	327	50	16,350
H	356	320	50	16,000
I	284	266	50	13,300
J	248	222	50	11,100
K	196	98	50	4,900
L	0			
				77,200 ÷ 27 = 2859 1/3

Assume 2.5' cover

$$\text{Volume} = 2859 \times \frac{2.5}{4} = 1786 2/3$$

-62-

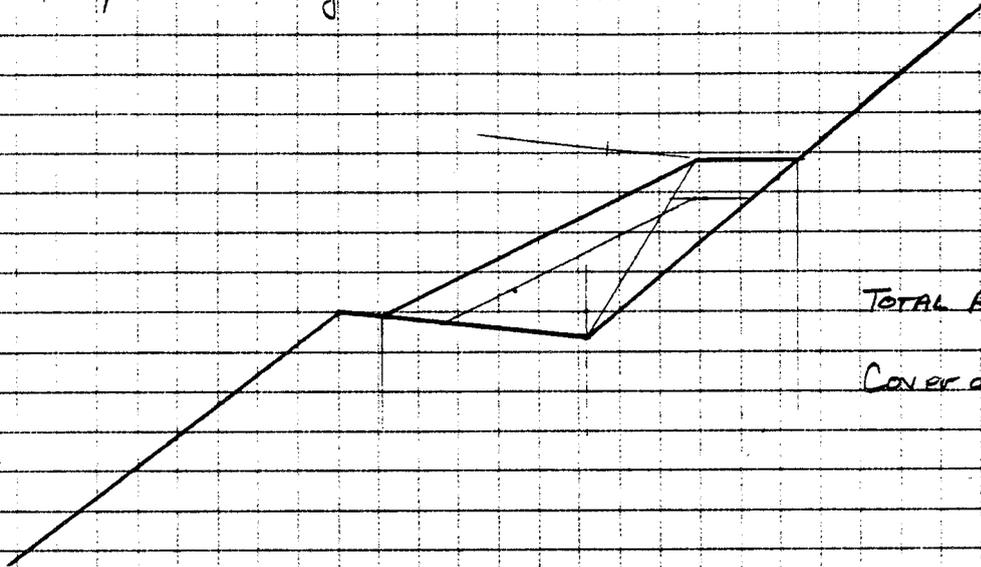
Topsoil Needed

$$\text{Volume} = 1786 \times \frac{5}{4} = 2232 1/2$$



Section FF' 1"=20'

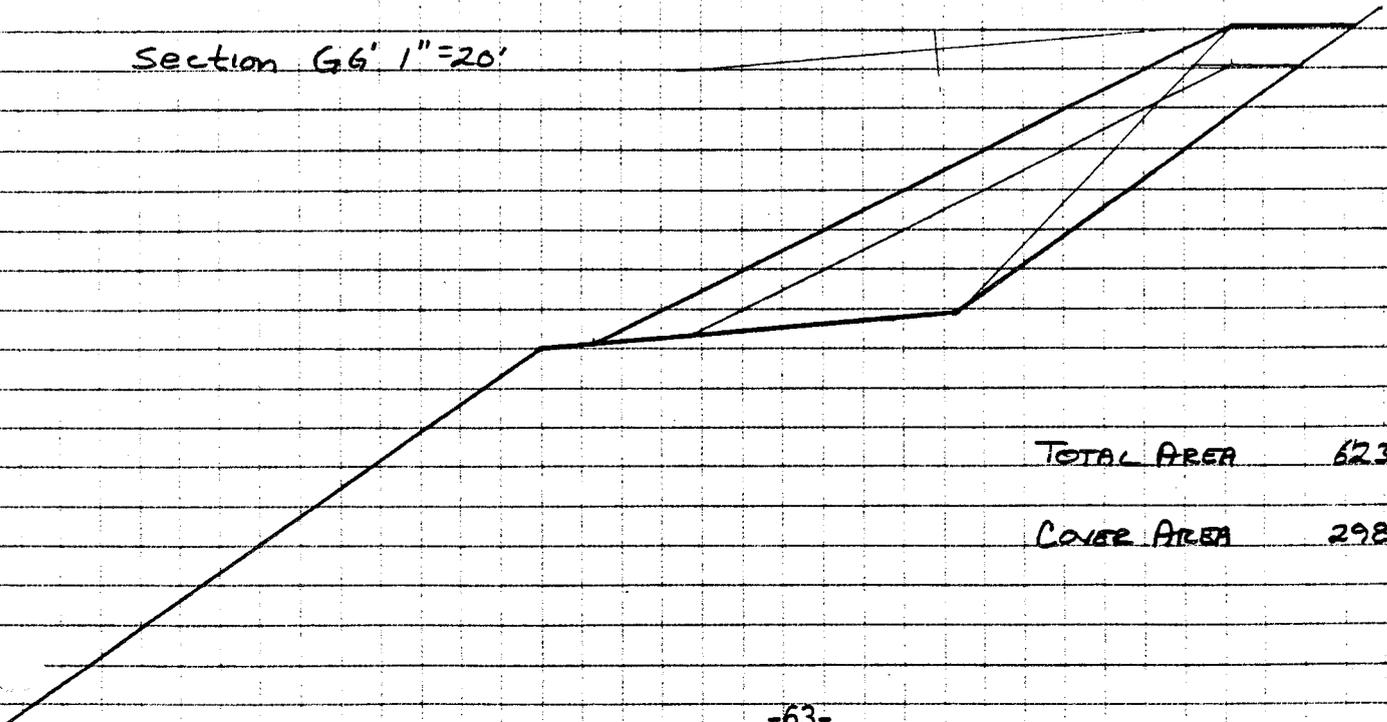
NOTE: All development waste sections Per Map 1 Surveyed Sections Locations, Map 4, Surveyed Sections A-A' thru J-J' and Map 5, Surveyed Sections K-K' thru R-R'



TOTAL AREA 272 ft<sup>2</sup>

COVER AREA 162 ft<sup>2</sup>

Section GG' 1"=20'



TOTAL AREA 623 ft<sup>2</sup>

COVER AREA 298 ft<sup>2</sup>



A C I INC.

STEAMBOAT SPRINGS, CO

ITEM NO.

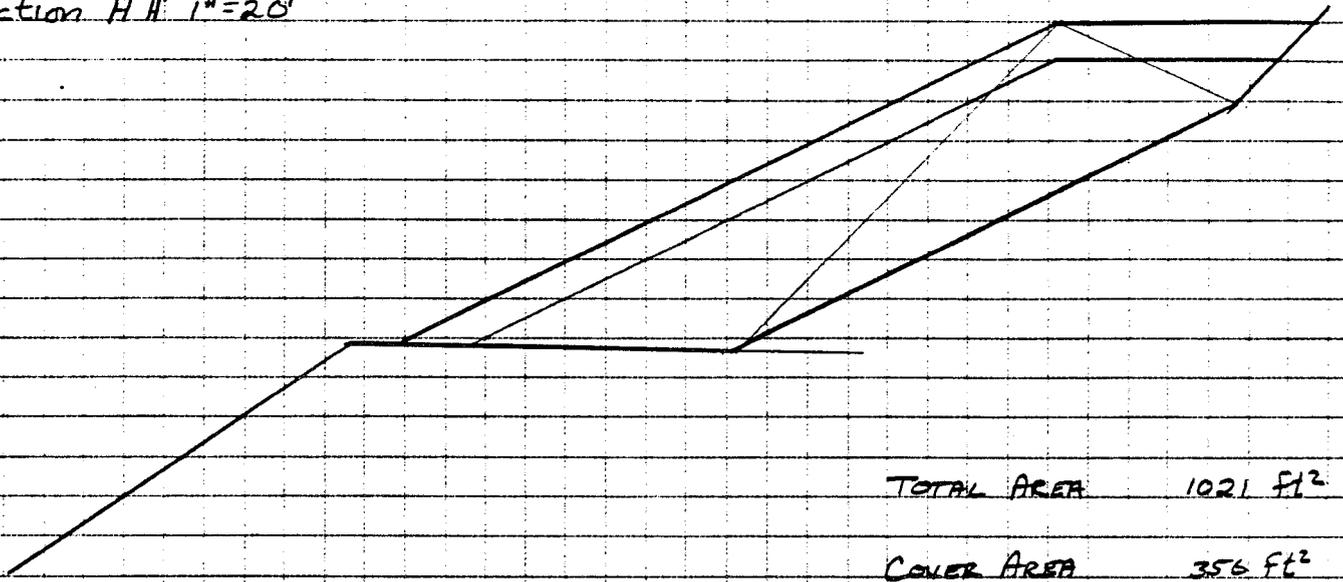
JOB NAE

EST. BY CIP

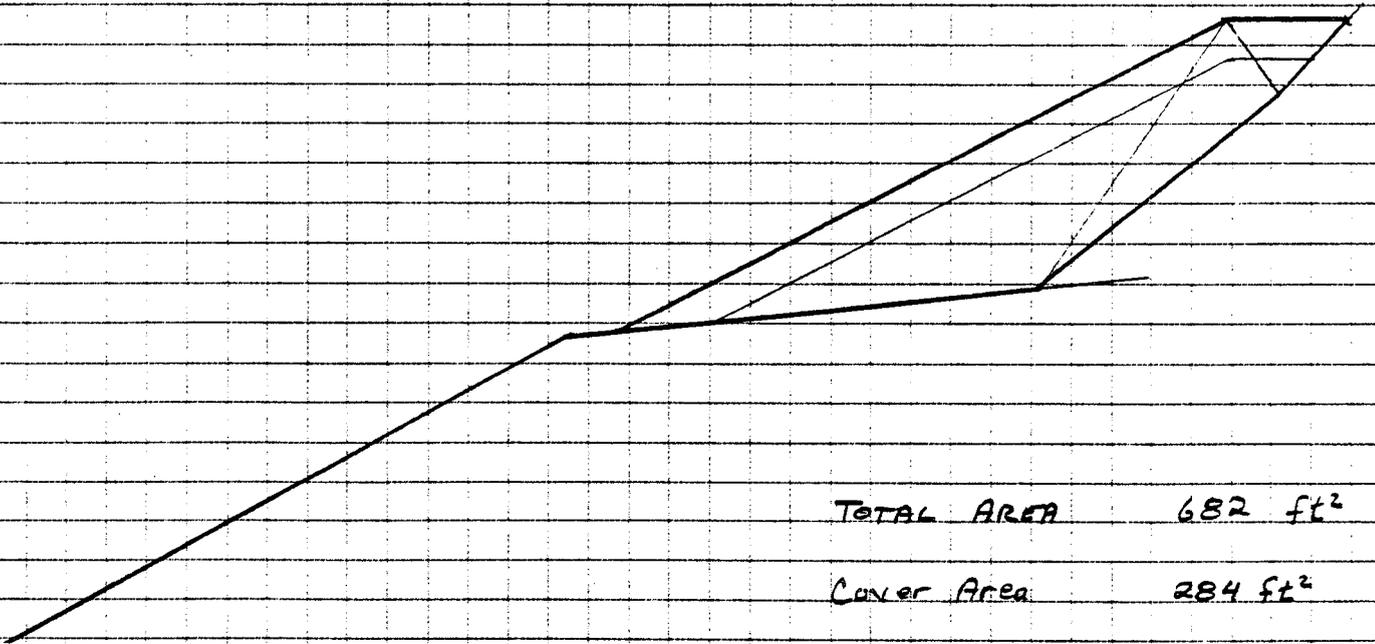
SHEET \_\_\_\_\_ OF \_\_\_\_\_ PAGE \_\_\_\_\_

DATE 9/21/85

Section H H' 1"=20'



Section I I' 1"=20'





ACZ INC.

STEAMBOAT SPRINGS, CO

ITEM NO.

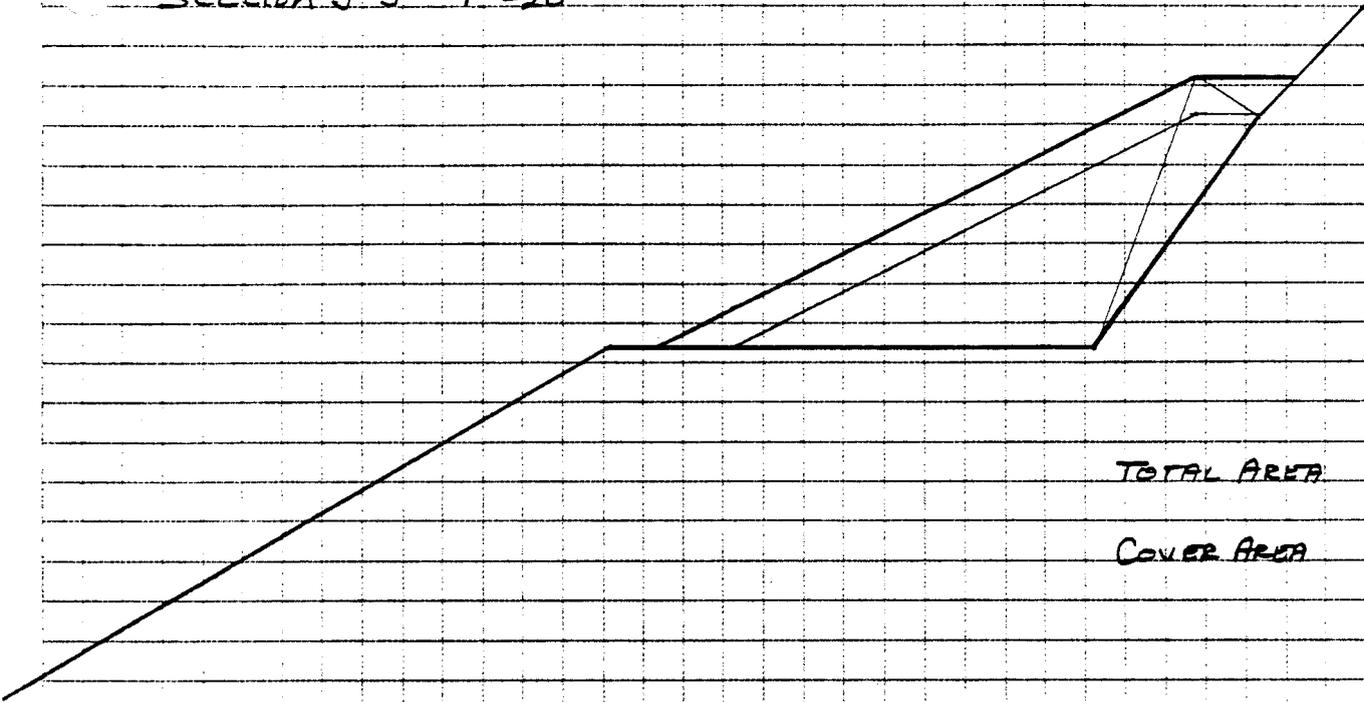
JOB NAE

EST. BY CH

SHEET \_\_\_\_\_ OF \_\_\_\_\_ PAGE \_\_\_\_\_

DATE 9/21/85

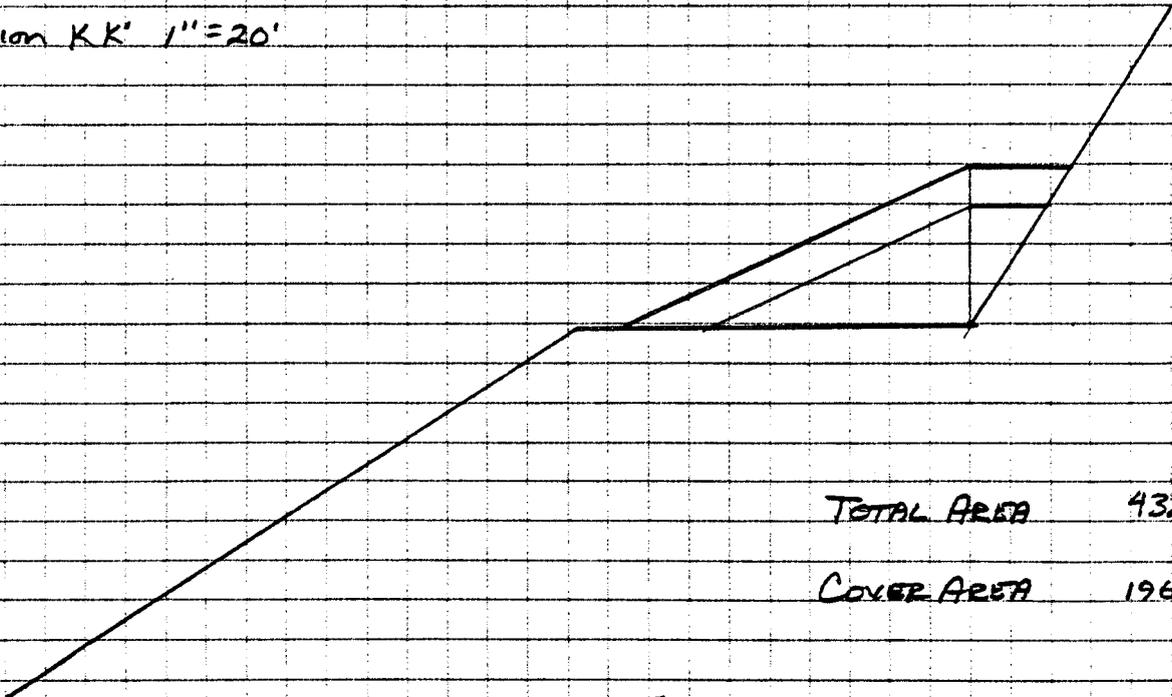
Section J-J' 1"=20'



TOTAL AREA 708 ft<sup>2</sup>

COVER AREA 248 ft<sup>2</sup>

Section K-K' 1"=20'



TOTAL AREA 432 ft<sup>2</sup>

COVER AREA 196 ft<sup>2</sup>

Date: February 25, 1984

BOOKCLIFFS COMMERCIAL LABORATORIES  
OVERBURDEN REPORT

Client: North American Equities  
Address: 1401 Seventeenth Street, Suite 1510  
Denver, Colorado 80202

Date Received: 2/22/83

Attn: Mr. Alan Smith

---

Sample I.D.	Lab No.	Sample Date	Pyritic Sulfur %	Organic Sulfur %	Sulfate Sulfur %	Total Sulfur %
Blazen #1 Development Waste	84-0574-0B	9/22/84	0.20	0.18	<0.01	0.38
Above Coal Seam	84-0575-0B	Unknown	0.07	0.03	<0.01	0.10
Below Coal Seam	84-0576-0B	Unknown	0.04	<0.01	<0.01	0.04

*Ralph V. Poulsen*

Ralph V. Poulsen, Director

**BOOKCLIFFS**  
COMMERCIAL LABORATORIES



BOOKCLIFFS COMMERCIAL LABORATORIES  
OVERBURDEN ANALYSIS REPORT

Client: North American Equities  
Address: 1401 Seventeenth Street, Suite 1510  
Denver, Colorado 80202  
Attn: Mr. Alan Smith

Date Received: 83-3864-OB 9/28/83  
83-3897-OB 9/29/83  
83-3898-OB 9/29/83

Sample I.D.	Sample Date	Lab. No.	pH	Conductivity <sup>1</sup>	Saturation %	Calcium meq/l	Magnesium meq/l	Sodium meq/l	SAR
Blazon #1 Mine, Development Waste	9/22/83	83-3864-OB*	7.3	0.6	46	4.0	2.2	0.7	
Above Coal Seam OB	Unknown	83-3897-OB	7.3	0.4	52	3.2	0.4	0.9	
Below Coal Seam OB	Unknown	83-3898-OB	7.2	0.4	55	2.3	0.6	0.6	

<sup>1</sup> mmhos/cm @ 25°C

\* Sample contained a large amount of coal

*Ralph V. Poulsen*

Ralph V. Poulsen, Director



Date: October 5, 1983

BOOKCLIFFS COMMERCIAL LABORATORIES  
OVERBURDEN ANALYSIS REPORT

Client: North American Equities  
Address: 1401 Seventeenth Street, Suite 1510  
Denver, Colorado 80202  
Attn: Mr. Alan Smith

Date Received: 83-3864-OB 9/28/83  
83-3897-OB 9/29/83  
83-3898-OB 9/29/83

Sample I.D.	Sample Date	Lab. No.	Boron ppm	Total Sulfur %	Sulfate Sulfur %	Acid-Base Potential <sup>1</sup>	Neutralization Potential (as CaCO <sub>3</sub> ) %	Sand %	Silt %	Clay %
Blazon #1 Mine Development Waste	9/22/83	83-3864-OB	1.5	0.38	<0.01	-7	0.6	55	17	28
Above Coal Seam OB	Unknown	83-3897-OB	1.5	0.09	<0.01	-1	0.2	15	41	44
Below Coal Seam OB	Unknown	83-3898-OB	0.3	0.03	<0.01	14	1.5	10	48	42

<sup>1</sup> Tons CaCO<sub>3</sub>/1000 Tons

*Ralph V. Poulsen*

Ralph V. Poulsen, Director

**BOOKCLIFFS**  
COMMERCIAL LABORATORIES



EXHIBIT 13

SEPTEMBER 28, 1985 LETTER FROM ALAN W. SMITH OF  
NAE TO LOWELL P. BRAXTON OF UDOGM REGARDING THE  
RECLAMATION OF THE TOPSOIL BORROW AREA;  
CONTAINING A CERTIFIED COPY OF THE SEDIMENT  
POND CROSS SECTION; AND THE DETERMINATION OF  
THE HEIGHT OF BERM A AND LOWER PAD AREA

THIS EXHIBIT CONSISTS OF OFFICIAL CORRESPONDENCE BETWEEN NAE AND UDOGM.  
SOME OF THE INFORMATION CONTAINED IN THIS EXHIBIT HAS BEEN SUPERSEDED BY  
LATER CORRESPONDENCE. THE SUPERSEDED INFORMATION HAS BEEN CROSSED OUT  
TO AVOID CONFUSION.

September 28, 1985

Mr. Lowell P. Braxton  
Administrator  
Mineral Resource Development & Reclamation Program  
Utah Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

Re: Reclamation of the Blazon No. 1 Mine

Dear Lowell:

This letter was prepared in response to a telephone conversation between Susan Linner of your office and Conrad Parrish of ACZ INC. During that conversation, Ms. Linner detailed some minor points which need to be addressed before DOGM grants permission to reclaim the Blazon No. 1 Mine. This letter is to clarify those points.

~~The topsoil borrow area outlined on Map 2, Reclamation Plan, and Map, Mining Topography/Revegetation (enclosed) will be recontoured and revegetated following borrow activities. It should be noted by the Division that this entire borrow area will probably not be disturbed during reclamation. The borrow area shown on the maps is the maximum extent of the borrow area. Only enough of the area will be disturbed to allow the borrowing of sufficient topsoil to complete reclamation activities at the Blazon No. 1 Mine.~~

~~The topsoil borrow area comprises 0.28 acres. This raises the total acres to be seeded to 1.78 acres. The topsoil borrow area will be seeded with the seed mixture of grass and forbs only. No woody plant species will be planted in the topsoil borrow area. The borrow area is on a relatively flat area of ground which presently contains no woody plant species; therefore, none will be replaced.~~

Any non-coal solid waste generated as a result of reclamation activities at the Blazon No. 1 Mine will be hauled to an approved landfill.

Enclosed with this letter are copies of revised Map 2, Reclamation Plan, Map 3, Postmining Topography/Revegetation, ~~revised sketch of the topsoil stockpile and borrow area,~~ a certified copy of the sediment pond cross sections, and a brief write-up of the logic used in determining the height of berm A and lower pad area.

Mr. Lowell P. Braxton  
September 30, 1985

Page Two

It is our understanding that these items complete the list of items required per the DOGM review of our application to reclaim the Blazon No. 1 Mine. We look forward to a quick reply from the DOGM concerning permission to proceed with reclamation.

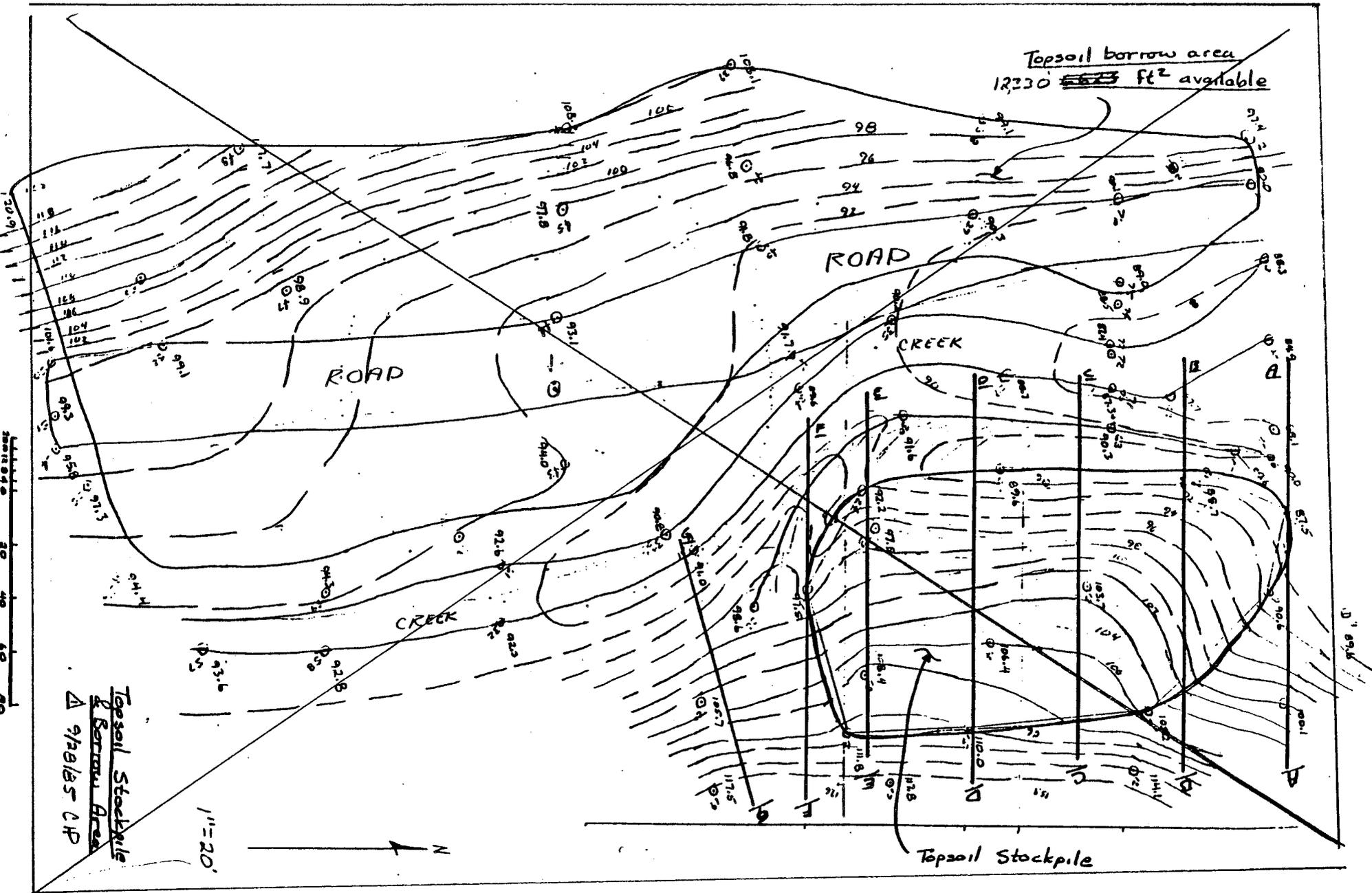
Sincerely,

NORTH AMERICAN EQUITIES, NV

*Alan Smith / C/P*

Alan W. Smith  
President

Encls.



Topsoil Stockpile  
& Borrow Area  
Δ 9/20/85 CJP

1" = 20'



Topsoil borrow area  
12330 ~~663~~ ft<sup>2</sup> available

ROAD

CREEK

ROAD

CREEK

Topsoil Stockpile

## NAE BERM A

BERM A contains runoff from the lower pad area which is an area which slopes gently in the direction of the sediment ponds.

Design event = 10yr 24 hour Storm = 2.45"

Berm Height = 9"

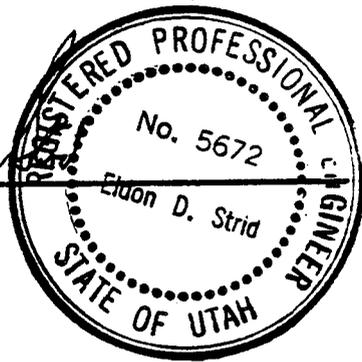
Since the pad area is relatively flat normal to the berm, the berm is more than sufficient to contain a storm which will drop 2.45 inches of precipitation in 24 hours.

PROFESSIONAL ENGINEER'S CERTIFICATION

I, ELDON D. STRID, certify that this sediment pond design was prepared under my supervision and all the information presented hereon is true and correct to the best of my knowledge and information.

7/28/85

Eldon D. Strid



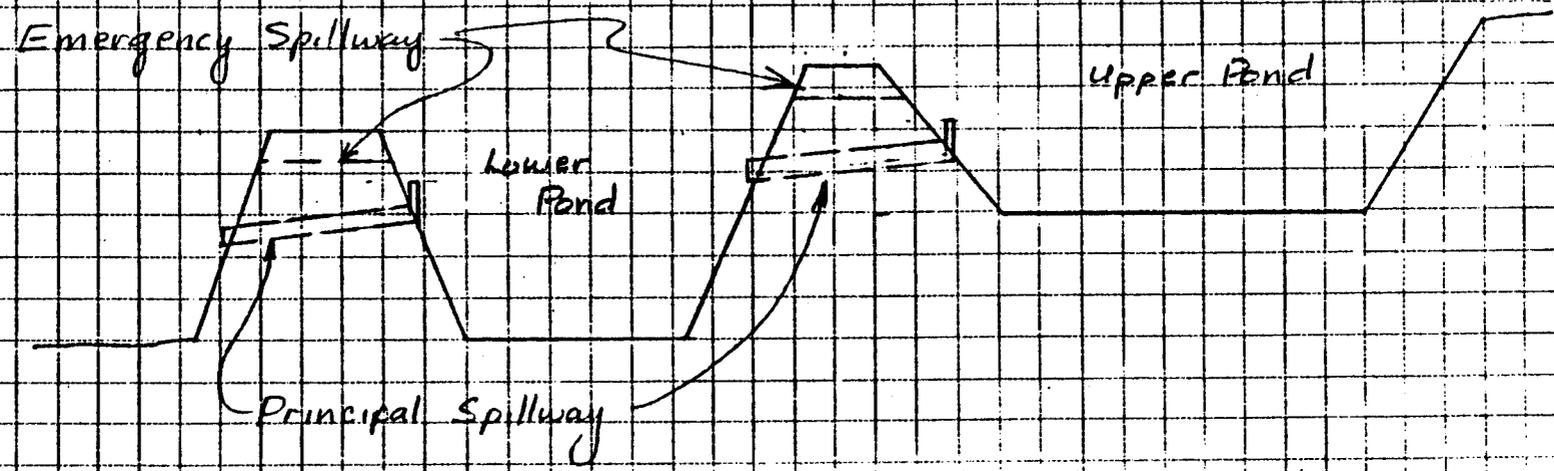


# NAE BLAZON NO 1 MINE SEDIMENT POND CROSS SECTION

8445

8435

8425



Horizontal Scale 1" = 30'

Reference Section A-A', Map 2, Reclamation Plan

EXHIBIT 14

OCTOBER 3, 1985 LETTER FROM ALAN W. SMITH OF  
NAE TO LOWELL P. BRAXTON OF UDOGM ANSWERING  
VERBAL QUESTIONS REGARDING TIMING AND DENSITY  
OF SEEDING, DISTRIBUTION OF TOPSOIL AND SIZE OF  
THE DITCH ALONG THE ROAD TO THE TRANSFORMER PAD  
AREA

THIS EXHIBIT CONSISTS OF OFFICIAL CORRESPONDENCE BETWEEN NAE AND UDOGM.  
SOME OF THE INFORMATION CONTAINED IN THIS EXHIBIT HAS BEEN SUPERSEDED BY  
LATER CORRESPONDENCE. THE SUPERSEDED INFORMATION HAS BEEN CROSSED OUT  
TO AVOID CONFUSION.

NORTH  
AMERICAN  
EQUITIES, n.v.

October 3, 1985

Mr. Lowell P. Braxton  
Administrator  
Mineral Resources Development  
and Reclamation Program  
Utah Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

Re: Final Responses to Questions on  
Blazon No. 1 Mine Reclamation

Dear Mr. Braxton:

This letter is in response to telephone conversations held between members of the Division of Oil, Gas & Mining (DOGGM) staff and ACZ INC. personnel. It is our understanding that during these telephone conversations of the last two (2) days, ACZ INC. received the final comments from DOGM staff members on the Blazon No. 1 Mine Reclamation. Our responses to these verbal DOGM questions are as follows.

The Utah DOGM has requested clarification on the timing of the planting of seedlings for reclamation. Seedlings will be planted during the spring months of the year. The seedlings to be planted are the seedlings noted in the response letter dated September 25, 1985 from North American Equities NV (NAE) to the Utah DOGM.

The Utah DOGM has requested clarification of the density of seeding of woody plants. NAE has submitted to the Utah DOGM a seed mix designed to provide 2,410 woody plant stems per acre. NAE will strive to attain the 2,410 shrubs per acre density on the reclaimed surfaces that are seeded with woody plant species.

NAE is concerned that the previously established reference area does not adequately portray the conditions found in the steep areas to be reclaimed in the 1985 reclamation work. Presently, NAE plans to restore the site for commercial/industrial uses and will only seed certain steeper slopes. Nonetheless, NAE will attempt to utilize the reference area previously established as a means for determination of reclamation success.

Mr. Lowell P. Braxton  
October 3, 1985

Page Two

Given the above potential conflicts in reference area conditions versus re-seeded steep slope areas, NAE would like the flexibility in the future to work with the Utah DOGM with regard to reclamation success. This might include a slight variation from the conditions found in the reference area.

The Utah DOGM has requested a clarification on the use of topsoil in reclamation. NAE will use only the topsoil currently found in the topsoil stockpile area. No topsoil will be borrowed during the course of reclamation activities. Distribution of the topsoil from the topsoil stockpile area shall be prioritized as follows:

- Six inches (6") of topsoil material will be spread over the reclaimed area underneath the current underground development waste pile. This area is known as the Little Snyder Canyon drainage.
- Topsoil will be spread to a thickness of six inches (6") over the topsoil substitute material covering the final underground development waste stockpile.
- Topsoil will be spread in these areas to a thickness of six inches (6") until all topsoil in the current topsoil stockpile is consumed.
- Remaining areas will be covered with the topsoil substitute material found on the site.

Attached is a brief description of the methods used to determine the size of the ditch along side the road to the transformer pad area.

I hope that these comments satisfy the requirements of Utah DOGM. NAE appreciates Utah DOGM giving immediate attention to these responses. We look forward to a speedy approval of the reclamation plan so that work can proceed this construction season before the onset of bad weather.

Sincerely,

NORTH AMERICAN EQUITIES NV

*Alan W. Smith / CTP*

Alan W. Smith  
President

\*\*\*\*\*

WATERSHED IDENTIFICATION CODE

NAE ROAD DITCH CALCULATIONS

\*\*\*\*\*

\*\*\*\*\*INPUT VALUES\*\*\*\*\*

STORM DURATION = 24.00 HOURS
PRECIPITATION DEPTH = 2.45 INCHES

\*\*\*\*\*
JUNCTION 1, BRANCH 1, STRUCTURE 1
\*\*\*\*\*

\*\*\* HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS \*\*\*

Table with 8 columns: WATERSHED, AREA ACRES, CURVE NUMBER, TC HR, TT HR, ROUTING COEFFICIENTS K-HRS, X, UNIT HYDRO. Row 1: 1, 4.27, 64.00, .080, .000, .000, .00, .0

\*\*\* COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS \*\*\*

Table with 3 columns: WATERSHED, PEAK FLOW (CFS), RUNOFF (INCHES). Row 1: 1, 1.04, .25

NOTE: SEDIMENT DOES NOT INCLUDE POSSIBLE DEPOSITION BY DELIVERY RATIO 2

\*\*\*\*\* SUMMARY TABLE FOR TOTAL WATERSHED \*\*\*\*\*

RUNOFF VOLUME = .0899 ACRE-FT
PEAK DISCHARGE = 1.0418 CFS
AREA = 4.2700 ACRES
TIME OF PEAK DISCHARGE = 12.00 HRS

\*\*\*\*\*
NULL STRUCTURE
\*\*\*\*\*



ACZ INC.

STEAMBOAT SPRINGS, CO

ITEM NO.

JOB NAE

EST. BY CH

SHEET \_\_\_\_\_ OF \_\_\_\_\_ PAGE \_\_\_\_\_

DATE 10/3/85

## Road Drainage Calculations

Hydrology

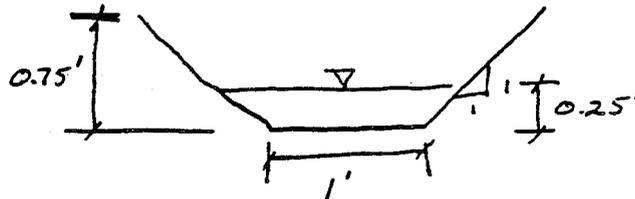
Drainage Area 4.27 ac  
 Drainage Height 680'  
 Hydraulic length 1400'

$$T_c = (.0078 L^{.77} (L/H)^{.385}) / 60 = 0.08 \text{ hrs}$$

Peak Flow = 1.04 cfs from attached Sediment II calculations

Hydraulics

## Revised Ditch Section



$$\text{Slope} = 0.083 = 8.3\%$$

$$V = (1.49/n) R^{.667} S^{.5}$$

$$V = 3.96 \text{ ft/sec}$$

where

$$d = 0.25'$$

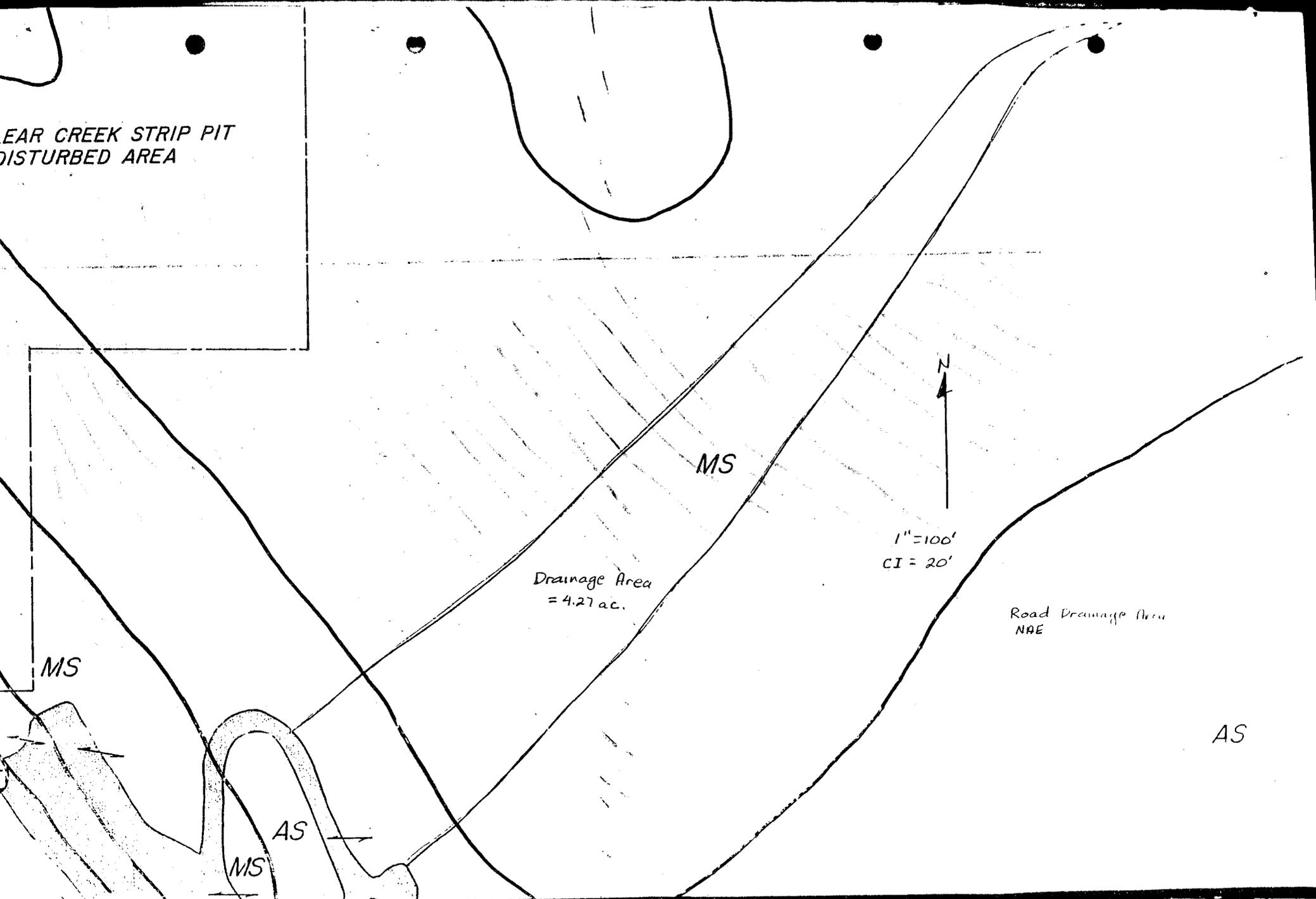
$$A = 0.31 \text{ ft}^2$$

$$R = 0.183$$

$$wp = 1.71$$

Velocity is less than 4 ft/sec therefore no channel protection is required.

EAR CREEK STRIP PIT  
DISTURBED AREA



MS

MS

Drainage Area  
= 4.27 ac.

1"=100'  
CI = 20'

Road Drainage Area  
NAE

AS

AS

MS

EXHIBIT 15

OCTOBER 17, 1985 LETTER FROM ALAN W. SMITH OF  
NAE TO LOWELL P. BRAXTON OF UDOGM ENCLOSING  
LABORATORY RESULTS TAKEN FROM NORTH AMERICAN  
EQUITIES PROPERTY

THIS EXHIBIT CONSISTS OF OFFICIAL CORRESPONDENCE BETWEEN NAE AND UDOGM.  
SOME OF THE INFORMATION CONTAINED IN THIS EXHIBIT HAS BEEN SUPERSEDED BY  
LATER CORRESPONDENCE. THE SUPERSEDED INFORMATION HAS BEEN CROSSED OUT  
TO AVOID CONFUSION.

NORTH  
AMERICAN  
EQUITIES, n.v.

October 17, 1985

Mr. Lowell P. Braxton  
Administrator  
Utah Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

Re: North American Equities Overburden Samples

Dear Lowell:

Enclosed please find laboratory results for four (4) samples taken at the North American Equities property. The first three (3) samples represent underground development waste material. The fourth sample represents material on the face of the portal bench area.

Based on these sample results North American Equities is hereby requesting that the cover material over the underground development waste be reduced from 4 feet in thickness to 1 foot in thickness. We appreciate your prompt response to this request as North American Equities is currently engaged in finding a contractor to complete the reclamation work this construction season.

Very truly yours,

NORTH AMERICAN EQUITIES

*Conrad Parrish for*  
*Alan W. Smith*  
Alan W. Smith

AWS/wv  
Enclosures

Date: October 9, 1985

BOOKCLIFFS COMMERCIAL LABORATORIES  
OVERBURDEN ANALYSIS REPORT

Client: North American Equities  
Address: 1401 17th Street, Suite 1510  
Denver, CO 80202

Sample Date: Unknown  
Date Received: September 23, 1985

Attn: Mr. Alan Smith

---

Sample I.D.	Lab No.	pH <sup>1</sup>	E.C. <sup>1</sup> (mmhos/cm @ 25°C)	Calcium <sup>1</sup> meq/l	Magnesium <sup>1</sup> meq/l	Sodium <sup>1</sup> meq/l	SAR
Number 1	85-0065-OB	7.0	1.22	9.36	3.95	0.82	0.32
Number 2	85-0066-OB	7.0	1.09	9.53	3.70	0.40	0.16
Number 3	85-0067-OB	7.8	2.17	4.94	2.63	15.7	8.07
Number 4	85-0068-OB	7.6	0.60	4.61	1.98	0.60	0.33

---

<sup>1</sup> Saturated Paste Extraction

*Ralph V. Poulsen*

---

Ralph V. Poulsen, Director

Date: October 9, 1985

BOOKCLIFFS COMMERCIAL LABORATORIES  
OVERBURDEN ANALYSIS REPORT

Client: North American Equities  
Address: 1401 17th Street, Suite 1510  
Denver, CO 80202

Sample Date: Unknown  
Date Received: September 23, 1985

Attn: Mr. Alan Smith

Sample I.D.	Lab No.	Boron <sup>2</sup> ppm	Selenium <sup>2</sup> ppm	Arsenic <sup>3</sup> ppm	Total Sulfur %	Neutralization Potential (as CaCO <sub>3</sub> %)	Acid-Base Potential (Tons CaCO <sub>3</sub> / 1000 Tons)
Number 1	85-0065-0B	0.5	-0.01	0.07	0.43	0.7	-6
Number 2	85-0066-0B	0.4	-0.01	0.05	0.44	0.8	-6
Number 3	85-0067-0B	0.3	0.02	0.12	0.42	1.2	-1
Number 4	85-0068-0B	0.1	-0.01	0.02	0.04	4.0	39

<sup>2</sup> Hot Water Extraction

<sup>3</sup> AB-DTPA Extraction

*Ralph V. Poulsen*

Ralph V. Poulsen, Director

Date: October 9, 1985

BOOKCLIFFS COMMERCIAL LABORATORIES  
OVERBURDEN ANALYSIS REPORT

Client: North American Equities  
Address: 1401 17th Street, Suite 1510  
Denver, CO 80202

Sample Date: Unknown  
Date Received: September 23, 1985

Attn: Mr. Alan Smith

---

Sample I.D.	Lab No.	Combustible				Texture	VFS
		Solids %	Sand %	Silt %	Clay %		
Number 1	85-0065-OB	49	--Sample contains large amounts of coal--			16	
Number 2	85-0066-OB	44	--Sample contains large amounts of coal--			14	
Number 3	85-0067-OB	40	--Sample contains large amounts of coal--			17	
Number 4	85-0068-OB	9	30	46	24	L	20

*Ralph V. Poulsen*

---

Ralph V. Poulsen, Director

EXHIBIT 16

OCTOBER 29, 1985 LETTER FROM ALAN W. SMITH OF  
NAE TO LOWELL P. BRAXTON OF UDOGM REQUESTING  
REDUCTION OF POST-RECLAMATION BOND RELEASE  
PERIOD

THIS EXHIBIT CONSISTS OF OFFICIAL CORRESPONDENCE BETWEEN NAE AND UDOGM.  
SOME OF THE INFORMATION CONTAINED IN THIS EXHIBIT HAS BEEN SUPERSEDED BY  
LATER CORRESPONDENCE. THE SUPERSEDED INFORMATION HAS BEEN CROSSED OUT  
TO AVOID CONFUSION.

NORTH  
AMERICAN  
EQUITIES, n.v.

October 29, 1985

Mr. Lowell P. Braxton  
Administrator  
Utah Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

Re: Post-Reclamation Liability Period for the Blazon No. 1 Mine

Dear Lowell:

North American Equities NV ("NAE") would like to formally request that the post-reclamation bond release period be reduced from ten (10) years to five (5) years at the Blazon No. 1 Mine. Our research indicates that the climatological station at Clear Creek, Utah has recorded an average annual precipitation in excess of 30 inches. This is in excess of the 26 inches of precipitation required for reduction of post-reclamation bond liability as stated in UMC 805.13.

The reference we used to determine the rainfall amount at Clear Creek, Utah is Hydrologic Atlas of Utah, Roland W. Jeppson et. al., Utah Water Research Laboratory, Utah Agricultural Experiment Station, Utah State University, in cooperation with the Division of Water Resources, Utah Department of Natural Resources, November, 1968.

NAE appreciates your consideration of this request. We look forward to hearing from you concerning your determination of this request and our earlier request to reduce the cover material over the underground waste disposal area to one (1) foot.

Very truly yours,

NORTH AMERICAN EQUITIES

*Alan W. Smith* / by *Alan Czarnowsky*

Alan W. Smith

AWS:ski  
cc: Alan W. Czarnowsky - ACZ Inc.

FINAL CLOSURE AND RECLAMATION PLAN  
BLAZON NO. 1 MINE, CARBON COUNTY, UTAH  
LIST OF MAPS  
VOLUME 2

<u>MAP NO.</u>	<u>TITLE</u>
1	BLAZON NO. 1 MINE SURFACE OWNERSHIP, 10/3/83
2	BLAZON NO. 1 MINE COAL OWNERSHIP, DATED 9/83
3	BLAZON NO. 1 MINE PREMINING & POSTMINING LAND USE, DATED 9/83
4	BLAZON NO. 1 MINE VEGETATION, DATED 2/84
6	BLAZON NO. 1 PREMINING TOPOGRAPHY, DATED 10/5/83
16	SECONDARY ROAD DESIGN, DATED 2/84
17	BLAZON NO. 1 MINE SOILS, DATED 2/84