WASTEROCK STABILITY EVALUATION AND INITIAL CHARACTERIZATION
for
BIG SEAM AND RED INK MAID MINING CLAIM
Placer County, California

Prepared for:

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Project No. 2890-01
November 1, 2006

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CONSULTING ENGINEERS • GEOLOGISTS

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Mr. Richard Sykora
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Foresthill, California 95631

Reference: ***Big Seam and Red Ink Maid Mining Claim***
Placer County, California

Subject: ***Wasterock Stability Evaluation and Initial Characterization***

Dear Mr. Sykora:

This report presents the results of our stability evaluation and initial characterization of the wasterock at the Big Seam and Red Ink Maid mining claim in Placer County, California.

The findings presented in this report are based on our observation of site conditions, the results of laboratory testing, engineering stability analysis, and our experience in the area. Our opinion is that the existing wasterock stockpiles 1 through 4 do not present a significant threat to water quality at locations downslope from the site. However, wasterock stockpiles 1 through 4 do not possess a sufficient factor of safety with regard to stability to warrant continued wasterock placement at these locations. We anticipate that the upcoming rainy seasons may reveal additional settlement and internal displacement within wasterock stockpile 4, although the large scale failure of the stockpile appears to be unlikely.

This report summarizes our analytical and geotechnical laboratory test results, our engineering stability analysis, and our conclusions regarding the wasterock stockpiles onsite. Please contact us if you have any questions regarding our observations or the conclusions presented in this report.

Sincerely,

HOLDREGE & KULL

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1 INTRODUCTION

At the request of Mr. Richard Sykora, Holdrege & Kull (H&K) performed an evaluation of the existing wasterock stockpiles at the Big Seam and Red Ink Maid Mining Claim in Placer County, California. The purpose of our services was to provide an initial characterization of the wasterock through analytical testing of representative samples collected from the site, and to perform a stability analysis of the existing stockpile configurations. The characterization of the wasterock was requested by the California Regional Water Quality Control Board in a letter to Mr. Sykora dated July 7, 2006. The evaluation was performed in general accordance with our August 3, 2006 work plan for the project, which is included as Appendix A of this report. Analytical laboratory test reports for samples collected from the wasterock stockpiles, as well as background samples, are presented in Appendix D.

1.1 DESCRIPTION

The Big Seam and Red Ink Maid mining claim is located approximately 2 miles east of the community of Foresthill in Placer County, California. Access to the mine is provided by Mosquito Ridge Road. The mine site is located on the north side of the Middle Fork of the American River Canyon, at an approximate elevation of 2,000 feet mean sea level (MSL). According to the USGS topographic map of the area (Foresthill Quadrangle, 7½ Minute Series, photorevised 1973) the steeply sloping Mad Canyon drainage is the closest downgradient water course to the mine site, located approximately 1,000 feet south and 600 feet below the site. Mad Canyon is depicted as flowing into the Middle Fork of the American River at a location near the California and Virginia Placer Mines, approximately 3,000 feet south-southwest of the project site.

Five wasterock dump sites are associated with the mine. The wasterock locations are depicted on the sample location map, included as Figure 2. A summary of the wasterock stockpiles is presented in Section 2.1.

1.2 PURPOSE

The purpose of our services was to provide a stability analysis of the existing wasterock stockpiles, and to characterize the existing wasterock with regard to its potential to impact water quality at downgradient locations. In addition, we used the results of our stability analysis and geotechnical testing to provide conclusions regarding the proposed future placement of wasterock at stockpile location 5.

1.3 SCOPE OF SERVICES

To prepare this report, we performed the following scope of services:

- We reviewed the following documents:
    - US Forest Service (September 20, 2004). *Conditions of Approval for "Plan of Operations", Appendix A.*
    - Department of Conservation, Office of Mine Reclamation (September 14, 2005). *Review of Proposed Reclamation Plan for the Red Ink Maid Mine (01-31-0020) - Summary Table*.
    - Watters, Robert J., Ph.D., P.E. (June 26, 1990). *Stability Assessment and Appraisal for Mine Waste Dumps.*
    - Voss, Jim (January 30, 1997). *Waste Rock Dump Slump at Red Ink Maid Mine*.
    - Review of H&K letter reports dated December 7, 2005 and May 12, 2006, and a work plan for soil sampling dated August 3, 2006.
    - Girty, G.H., Gurrola, L.D., Taylor, G.W., Richards, M.J., and Girty, M.S., 1991, *Pre-upper Devonian Land and Black Oak Springs Sequences, Shoofly Complex, Northern Sierra Nevada California: Trench Deposits Composed of Continental Detritus.*
    - Snow, C.A., and Scherer, H., 2005, *Terranes of the Sierra Nevada Metamorphic Belt, a Critical Review.*
- We performed a limited site investigation to observe the existing slope configurations and collect representative samples of the wasterock for geotechnical and analytical laboratory testing.

- We also collected soil samples from locations upslope from the existing stockpiles for use as background samples.

- We performed geotechnical laboratory tests on the wasterock samples in an effort to establish engineering material properties to facilitate a stability analysis of the stockpiles.

- We performed a stability analysis of the general wasterock slope configurations. We also performed a focused slope stability analysis of wasterock stockpile 4, which showed recent displacement and internal slumping during the winter of 2006. Our analysis was based on laboratory test results and observations of the stockpiles, as well as our experience with subsurface soil conditions in the area.

- We performed analytical laboratory testing on representative wasterock samples and background soil samples to facilitate characterization of the material.

- Based on observations made during our subsurface investigation, the results of geotechnical and analytical laboratory testing, and our stability analysis, we prepared this report.

2 SITE INVESTIGATION

We performed a site investigation to characterize the existing surface conditions onsite and to collect samples of the wasterock for geotechnical and analytical laboratory testing. Our site investigation included a literature review and field observations as described below.

2.1 LITERATURE REVIEW

As a part of our investigation, we reviewed documents pertaining to the site, including geologic maps and literature. The following sections summarize the results of our literature review.

2.1.1 Engineering Geology Reports

Our review of project documents included previously prepared letter reports by consultants and representatives of regulatory agencies in an effort to gain a more thorough understanding of the project site. The following paragraphs summarize our understanding of site, based on our review of previously prepared reports as well as our conversations with agency representatives and the project owner.

Wasterock stockpile 1 is located just south of the existing mine portal. The gradient of the existing south to southwest facing slope is approximately 60%. This site was used for wasterock placement from approximately 1987 to 1989. We understand that fine grained, oxidized wasterock material was broadcast over the larger wasterock in this area. This practice resulted in the initial stages of "armoring" of the slope surface and vegetative growth over the wasterock. We understand that the eastern portion of stockpile 1, directly adjacent to wasterock stockpile 2, had an erosion failure in 1990 as a result of concentrated surface water flow directed over the slope during a significant storm event. The surface water was derived from runoff on the access road and the portal area. Robert Watters, Ph.D., P.E., assessed the stability of this site in June 1990. His June 26, 1990 report recommended surface water drainage improvements to prevent surface water from discharging over the slope face.

As a part of the surface water drainage improvements, a berm was constructed between the access road and top of the wasterock slope. Surface water is collected in a low area and discharged downslope of the wasterock in a PVC pipe. The drainage system appeared to be functioning at the time of our site visits.

Wasterock stockpile 2 is located just east of wasterock stockpile 1. The gradient of the existing south facing slope is approximately 55%. This location and wasterock stockpile 3 were used from approximately 1990 to 1993. A failure occurred near the toe of the wasterock during the heavy rains of late 1996 and early 1997. Jim Voss, a Forest Service geologist, investigated the failure on January 13, 1997. He determined in his report dated January 30, 1997 that the failure likely occurred in the colluvium underlying the wasterock. The failure was exacerbated by the failure of a surface water drainage pipe which extended through stockpile 3, located just upslope of stockpile 2. The drainage pipe has been sealed since the failure.

During our site visits, we did not observe evidence of recent movement of either stockpile 2 or stockpile 3. The perimeters of both stockpiles are beginning to revegetate, although this process will likely be slow due to the size of the wasterock fragments exposed at the surface. After the landslide occurred, additional wasterock material was placed at the top of stockpile 3 (referenced by the mine operators as the "Bridge") under the direction of the Forest Service to fill in the failure scar at the head scarp. Prior to additional wasterock placement, the mine operators observed that the failure did not extend to bedrock and that colluvium was still visible at the base of the failure.

We understand that slope failure at stockpile 4 occurred in late March 2006 following a month of unusually heavy precipitation. The Foresthill area received approximately 90 inches of rain during the winter and spring, which was well above average. The failure involved approximately half of the access road in the uppermost portion of the wasterock site. The failure resulted in vertical and slight lateral displacement of the soil berm. Slide debris was substantially contained in a more gently sloping area within the lower portions of the stockpile. Other significant slope failures occurred in the Foresthill area (including Foresthill Road) and throughout the Sierra Nevada foothills as a result of the above average precipitation.

Wasterock site 5 is proposed to be used once mining operations resume. The gradient of the base of the proposed site is much flatter than the surrounding areas, on the order of 20 to 25%. The proposed site is located within an historic hydraulicly mined area. The native slope gradient immediately downslope of the hydraulicly mined area increases dramatically, on the order of 80 to 100%. No wasterock disposal is proposed in this steep area. While the base of the hydraulicly mined area supports moderate vegetation (mostly manzanita and other brush and small trees), colluvial development is minor to non-existent.

2.1.2 Soil Survey

We reviewed the *Soil Survey of Tahoe National Forest, California,* prepared by the USDA Forest Service (2002) for information about on-site soil conditions. The on-site soil is classified as Deadwood-Rock outcrop-Hurlbut complex on 30 to 75 percent slopes, and is typically found at elevations between 2,000 and 6,000 feet above mean sea level. The soil unit generally consists of 50 percent Deadwood soil, 25 percent metasedimentary rock outcrop, and 15 percent Hurlbut soil. Typical vegetation in the Deadwood-Rock outcrop-Hurlbut complex is live oak and mixed conifer.

The soil survey describes the Deadwood soil series as shallow, excessively drained, with rapid run-off and a high hazard of erosion. Permeability is described as moderately rapid to slow. Deadwood soil is derived from weathering of metasedimentary rock. A typical Deadwood soil profile consists of a 3-inch layer of dark gray very gravelly sandy loam, underlain by light yellowish brown extremely gravelly sandy loam. Resistant metasedimentary rock is typically encountered at a depth of 13 inches, although the depth to bedrock may range from 10 to 20 inches. The soil profile typically contains 20 to 70 percent rock fragments.

Hurlbut soil series is described in the survey as moderately deep, well drained soil derived from weathering of the underlying metasedimentary rock. Permeability is described as moderate, with medium to rapid run-off, and moderate to high hazard of erosion. The typical Hurlbut profile consists of a 4-inch layer of reddish yellow gravelly loam, underlain by reddish yellow silt loam and reddish yellow silt loam. The soil series contains up to 30 percent gravel, with larger fragments in the upper horizons. Weathered metasedimentary rock is typically encountered at 27 inches, although the range of depth to bedrock ranges from 20 to 40 inches.

2.1.3 Geologic Setting

The property is located in the Sierra Nevada geomorphic province. The Sierra Nevada province is an elongate, north-west trending structural block that is tilted upward to form a steep scarp above the adjacent Basin and Range province to the east. The western slope of the Sierra Nevada dips gently westward, and extends beneath sediment of the Great Valley province. Sediment within the Great Valley is derived from continual uplift and erosion of the Sierra Nevada.

We reviewed the 1:100,000-scale Geologic Map of Placer County (Loyd, 1995), for information about site and regional geology. The site is underlain by mid to late Devonian age, metamorphosed quartzose and feldspathic sandstone, siltstone, and shale designated as the Lang sequence of the Shoo-Fly formation. The Lang sequence sediment was originally deposited as turbidites or submarine fans in a submarine trench/slope setting near the western edge of the North American paleocontinent (based on continental detritus within the marine sediment). The massive beds of sandstone, siltstone and shale were subsequently tilted and folded during accretion of the subduction complex (Girty et al, 1991) and development of successive volcanic arc sequences (Snow and Scherer, 2005).

We reviewed the 2002 Interactive Fault Parameters Map on the California Geological Survey website, published by the California Department of Conservation Division of Mines and Geology, for information about regional faults and fault activity. The site is mapped within the Foothills Fault System. The Foothills Fault System is designated as an areal, Type C seismic source with low seismicity and a low rate of recurrence.

We reviewed Special Publication 43, *Fault Rupture Hazard Zones in California* (1997), which describes active faults and fault zones (activity within 11,000 years), as part of the Alquist-Priolo Earthquake Fault Zoning Act. The map and document indicate the site is not located within an Alquist-Priolo active fault zone.

2.2 FIELD OBSERVATION AND SAMPLING

Representatives of H&K visited the project site on August 29, 2006 to observe the existing stockpile configurations and collect bulk soil samples for analytical and geotechnical laboratory testing. During our site visit, a representative from the California Regional Water Quality Control Board (RWQCB) was also onsite to observe the sampling.

A senior geologist from H&K collected bulk samples of the wasterock. The bulk wasterock samples were collected from three locations within existing wasterock stockpiles. In addition to the wasterock samples, we collected two samples of apparent colluvial soil at locations upslope from the wasterock stockpiles which were thought to represent background soil conditions. The approximate sample locations are depicted on Figure 2.

Samples were obtained in general accordance with accepted industry-standard protocol for collection and handling of environmental samples. Disposable latex gloves were used when handling samples and cleaning sampling equipment. Sampling equipment potentially coming into contact with soil to be sampled was cleaned between uses with disposable cleaning wipes, or disposable sampling tools were used.

The sampling process included clearing away the top six to eight inches of surface material at the selected sample locations to expose underlying material that had not been recently disturbed by surface or near-surface effects such as winnowing away of fine material by wind or the surface effects of rainfall. An additional one to two inches of material was removed using a clean, disposable trowel to reduce the inclusion of surface material in the sample. Samples were then collected and placed into laboratory-supplied glass jars with Teflon-lined lids. The samples were sealed, labeled, and placed into a refrigerated container for transport to the analytical laboratory under chain-of-custody documentation.

3 LABORATORY TESTING

Geotechnical and analytical laboratory tests were performed on samples collected from the site. Laboratory testing is summarized in the following sections.

3.1 ANALYTICAL LABORATORY TESTING

Samples were collected from wasterock stockpiles at the site on August 29, 2006 to evaluate the concentrations of constituents of potential concern (COPCs) and potential leachate that could be generated from the stockpile material by natural processes. Samples were collected from three stockpiles (SP-1, SP-3, and SP-4) and from two locations (BG-1 and BG-2) believed to be representative of background conditions.

Samples were analyzed for the presence of 17 metals listed in Title 22 of the California Code of Regulations. Arsenic in SP-1 was further evaluated by analyzing the soluble fraction, acid-base accounting (ABA), and pH. Deionized water was used for solubility testing based on ABA results, and solubility analysis was requested with the lowest feasible reporting limit. Results of analyses and reporting limits are listed in Table 1.

The wasterock observed in the stockpiles includes a gradation of material sizes from fine-grained soil to small boulder-sized angular rock fragments. Observation and sieve analysis results of the wasterock indicate that gravel and cobble-sized fragments represent a majority of the wasterock mass. Although sand and smaller grained material represents only about 25 percent of wasterock, the samples submitted for chemical analysis did not contain significant gravel or coarser material. The samples submitted for chemical analysis possess a greater surface-area to mass ratio than the wasterock, and therefore our opinion is that the measured constituent concentrations are likely higher than would be expected for the wasterock in its full gradation. Thus, the use of the analytical results likely allows a more conservative evaluation of potential environmental concerns.

3.2 GEOTECHNICAL LABORATORY TESTING

We performed laboratory tests on portions of the bulk wasterock samples collected from the site to determine engineering material properties and to facilitate slope stability analysis. We performed the following laboratory tests:

- Direct Shear Strength
- Sieve Analysis

Direct shear testing was performed on wasterock specimens derived from bulk samples SP-2 and SP-4 which were collected from stockpile 2 and stockpile 4, respectively. The purpose of the direct shear testing was to establish a lower bound internal friction angle for the wasterock by shearing sand and smaller sized soil particles in a loose state. The specimens were prepared by taking a portion of the sample passing the No. 8 sieve (approximately corresponding to coarse sand and smaller material) and placing in a 2½-inch diameter shear ring. The specimens were then saturated and confined in the loose state under the applied normal load. Moisture/density determinations were made on sieved, relatively loose direct shear specimens of relatively small volume. Thus, the moisture content and dry density results reported should not be considered to represent field conditions for the wasterock. The direct shear results are summarized in Table 3.2.1 below. Graphical direct shear results are presented in Appendix C.

Table 3.2.1 - Summary of Moisture/Density and Direct Shear Testing					
Wasterock Stockpile	Sample No.	Dry Density (pcf)	Moisture Content (%)	Shear Friction Angle (degree)	Cohesion (psf)
2	SP-2	97.4	16.0	43.1	140
4	SP-4	95.0	18.1	44.7	110

Sieve analyses were also performed on portions of bulk samples SP-2 and SP-4 to provide a grain size description of the wasterock. The sieve analyses generally revealed that the samples were coarse grained, with 3.9 percent of sample SP-2 and 5.5 percent of sample SP-4 passing the No. 200 sieve. Based on the grain size distribution, we classified the sample SP-2 as GW, a well graded gravel and SP-4 as GP, a poorly graded gravel-sand mixture.

The sampling equipment and procedure resulted in cobble and boulder-sized rock fragments being omitted and not reported in the sieve analysis results. We anticipate that the inclusion of all particle sizes present on site would likely result in the wasterock being classified as a well graded gravel with common cobble- and boulder-sized fragments.

4 GEOTECHNICAL ENGINEERING REVIEW

Our geotechnical engineering services on the project included a stability analysis of the existing wasterock stockpiles, as described in the following sections.

4.1 STABILITY ANALYSIS

We performed a computer-assisted slope stability analysis to evaluate the existing stockpile configurations. The slope models used were based on our observations of the wasterock configurations, as well as our laboratory test results and assumptions regarding native soil and seasonal saturation conditions. Our analysis was performed using Stabl6™ software utilizing the Janbu and Bishop's simplified methods of slices, as well as simplified calculations based on infinite slope approaches to evaluate the stability of the predominantly granular wasterock placed on the native slopes. In addition, we performed a detailed analysis of the measured slope geometry at wasterock stockpile 4, which showed signs of internal instability during the previous rainy season.

The stability of a slope is evaluated by calculating its "factor of safety". The factor of safety is a ratio obtained by dividing the resisting forces (i.e., the shear strength of the material comprising the slope) by the driving forces (resulting from the slope gradient, the weight of the material, groundwater, and surcharge loading). If the factor of safety is greater than 1, the slope is theoretically stable. A factor of safety equal to or less than 1 means the slope is theoretically unstable.

Required factors of safety are selected in an effort to address uncertainties in the conditions as well as the anticipated consequences of slope instability. Higher design factors of safety are often appropriate where slope instability would threaten a critical facility or create a hazard to health and safety. In some cases a more thorough investigation of subsurface conditions, including extensive laboratory testing to reliably establish lower bound shear strength and accurately identify material properties, allows the use of lower factors of safety. In general, we use minimum required factors of safety of 1.5 to account for variability in groundwater, subsurface soil and rock conditions, and laboratory test results when analyzing slopes associated with critical facilities, inhabited structures, and other locations where the consequences of a slope failure would be high. Factors of safety as low as 1.2 are often employed for slopes of relatively low risk and where conditions can be readily observed and confirmed by laboratory testing such as cut slopes for driveways and rural roads. In addition, the use of lower factors of safety may be justified for existing slopes where information regarding past performance is available. One reason for this is that the degree of uncertainty regarding shear strength and piezometric levels can be reduced through back analysis.

Furthermore, reduced factors of safety are often used when the stability analysis considers short term seismic loading, rapid change in groundwater elevation, or other events of relatively short duration or infrequent occurrence.

Our slope stability analysis was based on a wide variety of assumptions and variables, including:

1. Strength data variables - The strength data used in our analysis was based on several assumptions. Based on our laboratory testing, the wasterock was modeled as cohesionless and possessing an internal friction angle of 43 degrees, which we considered to be the lower bound resulting from our direct shear testing. The strength properties of the underlying colluvium, however, was estimated with consideration of the native slope gradients, our experience with soil and rock conditions in the area, and the results of back calculations of the past slope instability in wasterock stockpile 4. No direct shear testing was performed on the colluvium and underlying weathered rock onsite. Our opinion is that because of the variably weathered, altered nature of the subsurface soil and weathered rock, laboratory testing often indicates higher strength results than exist in the overall material due to the presence of fracture zones, areas subjected to long-term water intrusion, and previously disturbed or sheared surfaces.

2. We considered various subsurface water conditions with the expectation that unusually heavy rainfall events coupled with the permeable nature of the stockpile surfaces may result in short-term saturation of the lower portion of the wasterock and underlying colluvium. Subsurface water acts to reduce stability of the slope by increasing forces such as the weight of the overlying soil that drive failure, while reducing the shear strength available to resist failure.

3. We did not consider seismic loading (frequently modeled as a horizontal acceleration) in the analysis of the stockpiles.

Table 4.1.1 summarizes the stability analyses that we performed on the existing slope. Graphical results of the analysis trials are presented in Appendix E.

Table 4.1.1 - Summary of Stockpile 4 Stability Analyses			
	Failure Surface		Calculated Factor of
A	Random	Initial stability analysis considering slope composed entirely of wasterock. Resulting	1.53
B	Circular	Same as Trial A, except considering a circular failure surface. Resulting failure	1.51
C	Circular	Model revised to include lower strength, saturated colluvium and weathered rock	1.45
D	Random	Same as Trial C, but considering a deep seated failure using randomly generated	1.38
E	Block	Same profile as C, but search limited to shallow failure surfaces near wasterock	1.11
F	Block	Same as E, but lower piezometric surface by 2 feet in wasterock stockpile.	1.23
G	Block	Same as E, but lower piezometric surface by 3 feet in wasterock stockpile.	1.29

Because of the relatively high factors of safety resulting from trials A and B, our opinion was that the slumping observed in stockpile 4 was likely attributable to a failure within the underlying colluvium rather than a failure within the relatively high friction, predominantly granular wasterock. The slope model was then modified to include an underlying colluvial soil layer and the presence of weathered rock. We assumed that saturation of the colluvial soil and the lowermost portions of the stockpile would occur during extreme precipitation events. The high calculated factors of safety in trials C and D indicated that the critical failure surface is likely limited to the colluvial soil layer, and is not likely to extend into the underlying weathered rock. Trials E, F, and G reveal that the stability of the wasterock stockpile and underlying colluvium is primarily sensitive to elevation of the piezometric surface. Lowering the presumed worst case piezometric surface by 3 feet at locations within the downslope portion of the stockpile increased the calculated factor of safety from 1.11 to 1.29.

The results of our analyses indicate that the most likely future failure mode for wasterock stockpile 4 would be a translational slide within the underlying colluvial soil layer during a period of unusually intense rainfall or as a result of surface water being directed into the stockpile mass. The depth of the slide is expected to be limited to the depth of the stockpile and underlying colluvial layer.

Our observations and a review of soil survey literature indicate there is significant variability in the thickness of the colluvial soil onsite. The past instability observed within stockpile 4 may be associated with the failure of a small area or pocket of deep colluvium beneath the stockpile, and may not represent an extensive condition underlying the entire stockpile. Our opinion is that the presence of bedrock ledges, areas of thin colluvium, and topographic irregularities in the underlying native slope are factors which reduce the likelihood of large-scale failure of the stockpile.

In addition to our focused stability analysis of stockpile 4, we considered the potential for instability of the slopes of stockpiles 1 through 3 onsite using a simplified infinite slope analysis of the predominantly coarse grained material. During our soil sampling and site observations, we measured wasterock slope angles ranging from 37 degrees to 39 degrees at stockpiles 1, 2, and 3. Considering the laboratory derived lower bound friction angle of 43 degrees, we estimate the factors of safety for the stockpile slopes to range from 1.15 to 1.23. The actual factors of safety may be somewhat higher due to the presence of cobble and boulder-sized rock fragments which are expected to not only increase the effective internal friction angle but may also serve as slope armoring and provide minor buttressing in the lower portions of the slope.

4.2 CONCLUSIONS REGARDING STABILITY ANALYSIS

The following conclusions are our professional opinions based on our field observations, laboratory test results, and our experience in the area.

- Our opinion is that the recent instability observed in wasterock stockpile 4 represents a translational failure within colluvium underlying a portion of the wasterock. Although the failure was likely initiated within the lower strength colluvium, the resulting displacement likely resulted in the displacement of portions of the overlying wasterock. The stability of the stockpile is highly dependent on the elevation of the piezometric surface during periods of intense rainfall.

- Our opinion is that the presence of bedrock ledges, areas of thin colluvium accumulation, and topographic irregularities in the underlying native slope are factors which reduce the likelihood of large-scale failure of the stockpiles. Future slope instability, if observed, would likely be limited to relatively small internal displacement or slumping within the stockpiles.

- Our stability analysis indicates that, although the calculated factors of safety are less than 1.5, wasterock stockpile 4 appears to possess an acceptable factor of safety provided the elevation of the piezometric surface can be maintained near the colluvium/wasterock contact. The surface water drainage conditions above the stockpile should be reviewed periodically to confirm that concentrated surface water flows from the access road and areas above are not directed toward the stockpile.

- The implementation of reclamation measures in this area, including the placement of soil on the wasterock surface and promoting vegetation, is expected to further reduce infiltration into the wasterock, potentially increasing the factor of safety during intense storm events.

- General approaches to increase the factor of safety for a given slope include attempting to increase stabilizing forces (e.g., through the use of subsurface retaining structures or the construction of a buttressing fill) and reduce driving forces (e.g., overexcavating potentially unstable material and regrading the slope to gentler configurations). However, because of the large dimensions of any retaining wall construction or regrading scheme and the steeply sloping nature of the site, we anticipate that these approaches will not be feasible from a construction or economic standpoint.

- The California Code of Regulations (CCR), Section 3704 (d) requires that all permanent piles or dumps of mine wasterock and overburden shall not exceed 2:1, horizontal to vertical (H:V), unless a site specific geologic and engineering analysis demonstrates that the slope will have a factor of safety that is suitable for the end use. The existing native slopes exceed 2:1 (on the order of 1.7:1, H:V), making it impossible to comply with the 2:1 slope requirement. Wasterock removal would be difficult to achieve without significant grading to provide access for heavy equipment. A new access road from Mosquito Ridge Road (crossing currently undisturbed portions of the property) would likely be necessary and several new road cuts would be required to provide adequate access to the lower reaches of each wasterock site. Our opinion is that the grading required to remove wasterock at the site would result in significant worker safety issues, additional erosion control concerns, and increased potential for slope failure.

- Our opinion is that the existing wasterock sites substantially comply with CCR Section 3704 (e) in that the mine waste dumps do "generally conform with the surrounding topography." In addition, the wasterock slope gradients appear similar to fill slopes for Mosquito Ridge Road which provides access to the site.

- We recommend regrading as necessary at the top of wasterock stockpile 4 to ensure that surface water drainage is not directed into the wasterock stockpile. We anticipate that surface water, if present above the stockpile, could be directed away from the stockpile toward the native slopes to the east. Redirection of surface water can typically be performed by the placement of soil berms or the excavation of shallow v-ditches above the wasterock stockpiles. Surface water onsite must not be directed toward or over the wasterock slope faces.

- We do not recommend disturbing the existing wasterock sites. Excavating into the existing wasterock may cause localized oversteepening of the wasterock, resulting in shallow failures and possible small volume debris flows. Excavating or otherwise disturbing the existing wasterock could result in a safety hazard to the personnel performing the work. In addition, the existing topographic irregularities present in stockpile 4, for example, may facilitate eventual soil accumulation and revegetation.

- Our opinion is that the stability conditions at stockpiles 1 through 4 do not warrant the placement of additional wasterock at these locations. We understand that placement of wasterock at stockpile 5 is proposed once mining operations onsite resume. Prior to the placement of additional wasterock at stockpile 5, the base of the former hydraulicly mined area should be cleared of significant vegetation. The construction of a gabion wall or similar structure at this location would increase the potential stockpile volume at this location. If a gabion wall is to be constructed at the toe of wasterock stockpile 5, the wall should be designed by a registered engineer; construction of the wall should be observed by representatives of the engineer that designs the wall. In addition, we recommend that, in an effort to attain an appropriate factor of safety, the wasterock stockpile utilize a finished slope gradient of 36 degrees or less. H&K can prepare wall design and a wasterock sequencing/reclamation plan for proposed stockpile 5, if requested.

5 WASTEROCK CHARACTERIZATION

Our scope of services included an initial characterization of the wasterock to evaluate the concentrations of constituents of potential concern and the potential leachate that could be generated from the stockpile material.

5.1 HYDROGEOLOGIC SETTING

The site is located in a steeply sloping canyon within the Middle Fork of the American River drainage. The ground surface is characterized by bedrock outcrops and relatively thin soil/colluvium cover. The nearest perennial surface water, as indicated on the USGS Foresthill Quadrangle topographic map, is located approximately 1,000 feet to the south and 600 vertical feet below the site in the Mad Canyon drainage, which joins the Middle Fork of the American River about 2,200 feet further south. The site is approximately 16.5 air miles from the confluence of the Middle Fork and North Fork of the American River, about 21 air miles from where the American River enters Folsom Lake, and 49 air miles from the confluence of the American River and Sacramento River.

A mine portal designated as the 300 level is located immediately upslope of the wasterock stockpiles. The portal extends horizontally into the slope, away from the Mad Canyon drainage. According to the mine operator, no groundwater nor significant seepage was encountered in the portal within 450 feet horizontally from the portal entrance.

5.2 ANALYTICAL LABORATORY TEST RESULTS

As described in the previous laboratory testing section of this report, wasterock samples were analyzed for the presence of 17 metals listed in Title 22 of the California Code of Regulations. Results of analyses are summarized in Table 1. Arsenic in SP-1 was further evaluated by analyzing the soluble fraction, acid-base accounting (ABA), and pH.

Analyzed metals were generally within the range of concentrations anticipated for soils from the region. Arsenic concentrations in two samples, BG-2 (43.5 milligrams per kilogram (mg/kg)) and SP-1-1 (24.8 and 33.1 mg/kg) are notable in that they are slightly higher than typical background concentrations for non-mineralized soil. Additional analyses of samples from location SP-1 relative to arsenic indicated the following:

- Soluble arsenic was detected at a concentration of 8.1 micrograms per liter (μg/L), as determined by the California Waste Extraction Test using deionized water extractant solution (WET-DI).
- The sample pH was 8.3.
- The ratio of acid neutralization potential to acid generating potential (NP:AGP) is 17.7, indicating that the mine waste material in SP-1 is acid-neutralizing.

5.3 EVALUATION OF RISK TO WATER QUALITY

5.3.1 Basis for Evaluation

H&K's evaluation of risk to water quality is based on our review of the following documents:

- California Regional Water Quality Control Board (RWQCB) (June 1989). *The Designated Level Methodology* (DLM).

- RWQCB (August 2003). *A Compilation of Water Quality Goals* (Water Quality Goals).

- RWQCB (September 15, 1998). *Fourth Edition of the Water Quality Control Plan for the Sacramento and San Joaquin River Basins* (Basin Plan).

- California State Water Resources Control Board (October 28, 1968). *Resolution No. 68-16* (Antidegradation Policy).

As stated in the Basin Plan, the beneficial uses of any water body generally apply to its tributaries. The site is located approximately 1,000 feet north of the Mad Canyon drainage, which is a tributary to the Middle Fork of the American River, which flows to the Sacramento River. Beneficial uses that could apply to surface water at the site include domestic, agricultural and industrial water supply, recreation and aesthetic enjoyment, and preservation of fish, wildlife and other aquatic resources or preserves. Beneficial uses that could apply to groundwater at the site include domestic, agricultural and industrial water supply. Per the Basin Plan, at a minimum, surface water shall not contain chemical constituents in excess of the Maximum Contaminant Levels (MCLs) for drinking water.

The DLM outlines a process for evaluating site specific conditions to determine if surface water or groundwater is threatened by soluble constituents of concern. The DLM allows for the assumption of attenuation of contaminant concentrations between the impacted soil and groundwater or surface water, provided that specific parameters and assumptions are defined. Simplified attenuation factors are used to develop soluble designated levels (SDLs) and conservatively evaluate the environmental fate of the soluble arsenic detected in the wasterock.

5.3.2 Rationale for Development of Soluble Designated Levels

H&K's rationale for selecting the simplified environmental attenuation factor for surface water and groundwater is based on review of the characteristics listed in Figure 10 of the DLM, and is summarized below.

Factors related to groundwater include depth, net recharge, characteristics of the vadose zone, pollutant characteristics, and total pollutant load.

- According to the mine operator, groundwater is not encountered in the mine portal within 450 horizontal feet from the portal entrance, which is located immediately upslope of the wasterock.

- Net recharge at the site through infiltration is expected to be limited by the steeply sloping terrain and underlying bedrock.

- The vadose zone is generally characterized by rock outcrop and shallow bedrock overlain by sandy loam and silty loam.

- The arsenic is not degradable or reactive with other constituents, but may be subject to attenuation in the shallow soil. ABA results indicate the wasterock is acid neutralizing.

- Based on the coarse composition of the stockpiles and the small soluble fraction, the total pollutant load is small.

Factors related to surface water include distance from drainage courses, topography, pollutant characteristics, initial dilution upon reaching surface water, and total pollutant load.

- The nearest perennial surface water drainage is located approximately 1,000 feet to the south and 600 vertical feet below the site.

- Topography is steep, which may limit surface water infiltration but also reduces attenuation between the stockpiles and the drainage course.

- Arsenic is subject to attenuation in soil, depending on factors such as the clay-sized particle fraction.

- Initial dilution would be large, as the surface water flow in the drainage is orders of magnitude larger than the overland surface water flow during a storm event from the stockpile area towards the drainage.

- Total pollutant load is small, as discussed above for groundwater.

H&K elected to employ an environmental attenuation factor of 100 for assessing potential impact to surface water and groundwater.

Water quality goals of various agencies for arsenic are listed in Table 2. The most conservative water quality goals listed for arsenic (e.g., the California Public Health Goal, 0.004 µg/L) are lower than the practical quantitation or reporting limit for laboratory analysis. Using the laboratory reporting limit (2.0 µg/L) as a water quality goal, and attenuation factor of 100 in equation 4 of the DLM yields an SDL of 20 µg/L. For comparison, the least conservative listed water quality goal (the California MCL for drinking water, 50 µg/L), and attenuation factor of 100 yields a water quality goal of 500 µg/L. The soluble arsenic concentration reported in the sample from SP-1 (8.1 µg/) is less than both calculated SDLs.

5.4 CONCLUSIONS REGARDING WASTEROCK CHARACTERIZATION

Evaluation of chemical data indicates that, of the metals analyzed, only arsenic is present at concentrations above anticipated background values for non-mineralized native soil in the area, and only in background location BG-2 and wasterock stockpile SP-1.

The arsenic concentrations detected at these areas are believed to originate from naturally mineralized conditions. The values reported for total arsenic and soluble arsenic in SP-1 samples likely represent a high concentration bias because samples submitted for analysis do not include the coarse fraction of the stockpiles. The sand and finer grain-sized samples are expected to exhibit higher concentrations of soluble constituents than the wasterock as a whole, which is composed predominantly of gravel and cobble-sized rock fragments.

The acid neutralizing potential of the wasterock suggests that generation of acid leachate from the wasterock stockpiles is unlikely. Furthermore, the soluble arsenic concentration detected in SP-1 is lower than the SDLs developed specifically for the site, despite the fine-grained sample bias. Based on evaluation of the data obtained from this initial characterization, our opinion is that the mine waste stockpiles do not present a significant risk to water quality, and the wasterock is appropriate for consideration as Group C mining waste under the California Code of Regulations (CCR) Title 27.

Our opinion is that the wasterock stockpiles satisfy the general and specific conditions of the General Waiver (RWQCB Resolution No. R5-2003-008). H&K requests formal notice that Resolution No. R5-2003-008 is applicable and requirements for the waste discharge are waived.

6 LIMITATIONS

The following limitations apply to the findings, conclusions and recommendations presented in this report:

1. Our professional services were performed consistent with the generally accepted geotechnical engineering principles and practices employed in northern California. No warranty is expressed or implied.

2. These services were performed consistent with our agreement with our client. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of our services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report. This report is solely for the use of our client unless noted otherwise. Any reliance on this report by a third party is at the party's sole risk.

3. If changes are made to the nature or design of the project as described in this report, then the conclusions and recommendations presented in this report should be considered invalid by all parties. Only our firm can determine the validity of the conclusions and recommendations presented in this report. Therefore, we should be retained to review all project changes and prepare written responses with regards to their impacts on our conclusions and recommendations. However, we may require additional fieldwork and laboratory testing to develop any modifications to our recommendations. Costs to review project changes and perform additional fieldwork and laboratory testing necessary to modify our recommendations is beyond the scope of services presented in this report. Any additional work

will be performed only after receipt of an approved scope of services, budget, and written authorization to proceed.

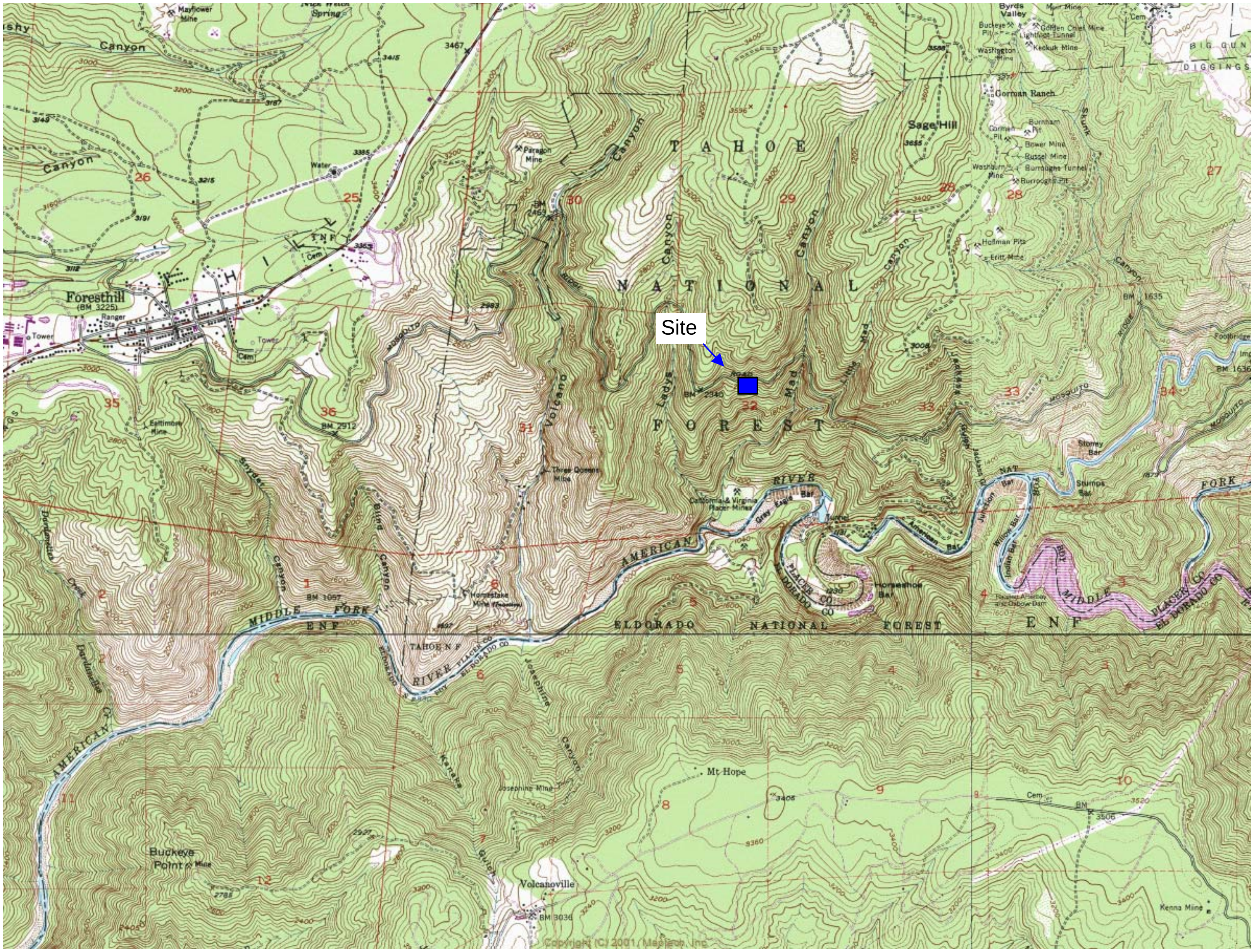
4. The analyses, conclusions and recommendations presented in this report are based on site conditions as they existed at the time we performed our field observations. However, the actual subsurface conditions may differ. Therefore, if the subsurface conditions encountered are different than those described in this report, then we should be notified immediately so that we can review these differences and, if necessary, modify our conclusions and recommendations.

5. The elevation or depth to groundwater underlying the project site may differ with time and location.

6. The sample location map shows approximate sample locations as determined by pacing distances from identifiable site features and the use of a hand-held global positioning unit. Therefore, the boring locations should not be relied upon as being exact nor located with surveying methods.

7. The findings of this report are valid as of the present date. However, changes in the conditions of the property can occur with the passage of time. The changes may be due to natural processes or to the works of man, on the project site or adjacent properties. In addition, changes in applicable or appropriate standards can occur, whether they result from legislation or the broadening of knowledge. Therefore, the recommendations presented in this report should not be relied upon after a period of two years from the issue date without our review.

FIGURES



SOURCE: MAPTECH, Terrain Navigator Pro, ver. 6.0 - USGS 7.5 minute topographic map, Foresthill, California quadrangle, photorevised 1973.

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TOPOGRAPHIC VICINITY MAP

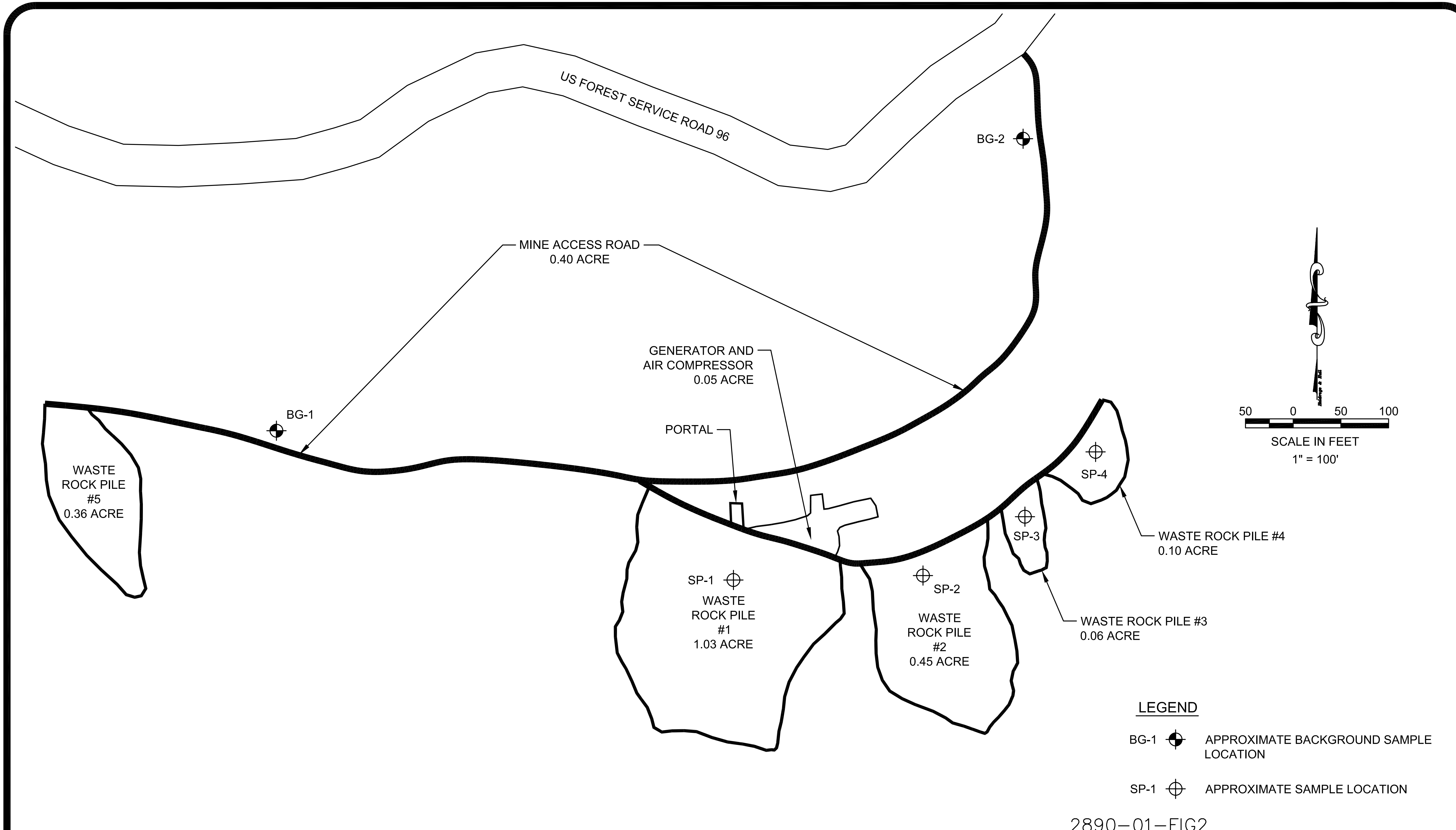
Big Seam and Red Ink Maid Mine Site

Placer County, California

PROJECT NO. 2890-01

FIGURE 1

NOVEMBER 2006



2890–01–FIG2

HOLDREGE & KULL CONSULTING ENGINEERS • GEOLOGISTS 792 SEARLS AVENUE NEVADA CITY, CA 95959 (530) 478–1305 FAX 478–1019	APPROXIMATE SAMPLE LOCATION MAP BIG SEAM AND RED INK MAID MINING CLAIM FORESTHILL, CALIFORNIA	DRAWN BY: DFD CHECKED BY: REF PROJECT NO.: 2890–01 DATE: NOVEMBER 2006 FIGURE NO.: 2

TABLES

Table 1 - Analytical Laboratory Results
August 29, 2006 Sampling Event
Red Ink/Big Seam Mine
Placer County, California

Analyte	Test Method	Units	Sample Location					Reporting Limit
			SP-1-1	SP-3-1	SP-4-1	BG-1	BG-2	
Antimony	EPA 6010B	mg/kg	2.3	ND	ND	ND	8.9	*1.0*
Arsenic	EPA 6010B	mg/kg	33.1	6.1	5.4	4.6	43.5	*1.0*
Arsenic	EPA 6010B	mg/kg	24.8	na	na	na	na	*1.0*
Barium	EPA 6010B	mg/kg	107	64.7	42.3	104	280	*2.0*
Beryllium	EPA 6010B	mg/kg	ND	ND	ND	ND	ND	*0.5*
Cadmium	EPA 6010B	mg/kg	ND	ND	ND	ND	ND	*1.0*
Chromium	EPA 6010B	mg/kg	50.3	29.4	27.3	57.5	53.4	*1.0*
Cobalt	EPA 6010B	mg/kg	18.2	11.7	10.8	20.8	11.7	*5.0*
Copper	EPA 6010B	mg/kg	115	55.1	36.5	76.1	142	*2.0*
Lead	EPA 6010B	mg/kg	20.4	10.2	9.6	12.9	42.6	*1.0*
Mercury	EPA 7471	mg/kg	ND	ND	0.012	0.015	0.075	*0.010*
Molybdenum	EPA 6010B	mg/kg	ND	ND	ND	ND	19.7	*1.0*
Nickel	EPA 6010B	mg/kg	25.6	21.5	21.6	27.7	35.3	*1.0*
Selenium	EPA 6010B	mg/kg	ND	ND	ND	ND	ND	*2.0*
Silver	EPA 6010B	mg/kg	3.6	ND	ND	ND	ND	*2.0*
Thallium	EPA 6010B	mg/kg	ND	ND	ND	ND	ND	*2.0*
Vanadium	EPA 6010B	mg/kg	24.4	15.1	12.4	45.9	47.4	*2.0*
Zinc	EPA 6010B	mg/kg	75.7	56.8	64.2	45.9	77.1	*2.0*
Soluble Arsenic	WET-DI	µg/L	8.1	na	na	na	na	*2.0*
Acid Generation Potential - Sulfide	Sobek et al	tons/1000 tons	0.6	na	na	na	na	*0.3*
Acid Generation Potential - Total	Sobek et al	tons/1000 tons	1.3	na	na	na	na	*0.3*
Neutralization Potential	Sobek et al	tons/1000 tons	23	na	na	na	na	*1.0*
pH	SW-846	pH units	8.31	na	na	na	na	*n/a*

Notes:
mg/kg = milligrams per kilogram
µg/L = micrograms per liter
ND = Not detected at laboratory reporting limit
na = Not analyzed
WET-DI = Waste Extraction Test using deionized water extractant
n/a = Not applicable

Table 2 - Benchmark Water Quality Concentrations

Red Ink/Big Seam Mine

Placer County, California

Analyte	DHS MCL[1] (µg/L)	USEPA MCL[2] (µg/L)	PHG[3] (µg/L)	IRIS RfD[4] (µg/L)	SNARL[5] (µg/L)	Cal/EPA[6] (µg/L)	IRIS Risk[7] (µg/L)	Prop 65[8] (µg/L)
Arsenic	50	10	0.004	2.1	NL	0.023	0.02	5

Notes:

1 = Primary Maximum Contaminant Level established by California Department of Health Services
2 = Primary MCL established by US Environmental Protection Agency
3 = Public Health Goal (California Office of Environmental Health Hazard Assessment (OEHHA))
4 = Integrated Risk Information System (IRIS) reference dose as a drinking water level
5 = Suggested No-Adverse-Response Level (USEPA)
6 = California EPA Cancer Potency Factor as a Drinking Water Level
7 = IRIS One-in-a-Million Incremental Cancer Risk Estimate for Drinking Water
8 = California Proposition 65 Safe Harbor Level (OEHHA) as a Drinking Water level, No Significant Risk Level (one-in-100,000 Cancer Risk)
µg/L = micrograms per liter
NL = not listed

APPENDIX A SOIL SAMPLING WORK PLAN

HK HOLDREGE & KULL
CONSULTING ENGINEERS • GEOLOGISTS

Project No. 2890-01
August 3, 2006

H&K FILE COPY
Delivered on:
Picked up on:
Mailed on: 8/3/06
Overnited on:
Logged in on: 8/4/06

California Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, California 95670-6114

Attention: Mr. Jeff Huggins

Reference: ***Red Ink and Big Seam Mining Claims***
Mosquito Ridge Road
Placer County, California

Subject: ***Soil Sampling Work Plan for Mine Waste Rock***

Dear Mr. Huggins,

On behalf of our client, Mr. Richard Sykora, Holdrege & Kull (H&K) proposes to perform soil sampling to provide information on the physical and chemical characteristics of mine waste present at the above referenced site. The waste characterization was required in your letter dated July 7, 2006 to Mr. Sykora.

Soil Sampling

H&K proposes to obtain three discrete mine waste samples and two background soil samples in undisturbed areas of the property. Figure 1 shows the approximate proposed soil sample locations. Background soil samples will be obtained from relatively undisturbed, native soil near the ground surface (0 to 6 inches). Mine waste soil samples will be obtained from Waste Rock Sites #1, #3, and #4. Representative samples will be obtained 6 to 12 inches below the surface in the mine waste. Additional bulk samples will be obtained of the waste rock for grain size analysis to determine the physical characteristics of the material.

Soil Sampling Procedure

The Regional Water Quality Control Board (RWQCB) will be notified at least 48 hours prior to sampling activities. A site specific health and safety plan will be presented to RWQCB personnel for review prior to sampling.

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Soil samples will be obtained using either a slide-actuated hand sampler equipped with 2-inch diameter, 6-inch long brass tubes; by advancing the tube manually into soft soil/waste rock; or by using hand tools to transfer to plastic bags or glass jars. Samples will be immediately capped and labeled. Clean sampling equipment will be used for each sampling event or will be washed/wiped between sampling events with moist towelettes and rinsed with water as necessary. Samples will be placed in a chilled ice chest following sample collection for transport to the analytical laboratory. Chain of custody documentation will be maintained.

Sample Analysis

All soil samples will be analyzed for Title 22 metals by EPA Method 6010B/7471A.

Based on the results of Title 22 metals analysis, one sample will be analyzed for acid-base accounting (ABA), including acid generation potential and neutralization potential (Sobek et. al.) and pH (SW-846 9045A).

ABA results will be used to determine the appropriate extractant solution for solubility testing based on the RWQCB's Designated Level Methodology (DLM) guidelines. The waste rock samples will be analyzed for soluble constituents of potential concern (COPCs) following review of the Title 22 metals results. The COPCs will be analyzed by:

- Title 22 Waste Extraction Test (WET) procedure using a deionized (DI) water or citrate extractant as warranted.

Three representative bulk samples of the waste rock will be returned to H&K's soil laboratory and analyzed for grain size using the ASTM D422 test method.

Waste Characterization Report

After laboratory analyses have been completed, H&K will prepare a waste characterization report to present to the RWQCB for review.

Please contact us with any comments or questions.

Sincerely,

HOLDREGE & KULL

REGISTERED PROFESSIONAL ENGINEER
THOMAS J. HOLDREGE
No. 54208
Exp. 12/07
CIVIL
STATE OF CALIFORNIA

Tom Holdrege, C.E. 54208

attachments: Figure 1

copies: 3 to Richard Sykora
1 to Placer County Planning Department/ Attn. Crystal Jacobsen

F:\1 Projects\2890 Big Seam-Red Ink Mine\Red Ink Soil Sampling Plan.wpd

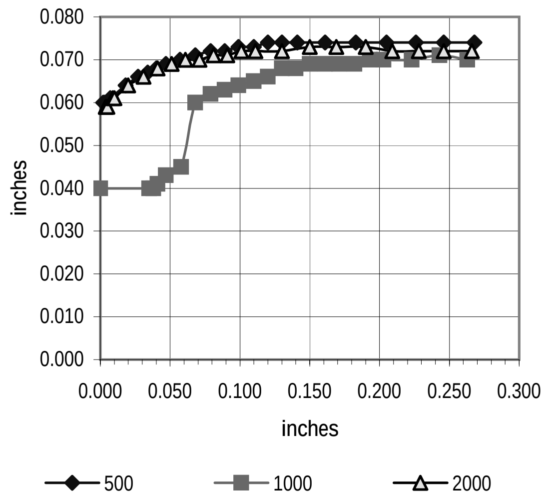
APPENDIX B IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT

(included with permission of ASFE, Copyright 2004)

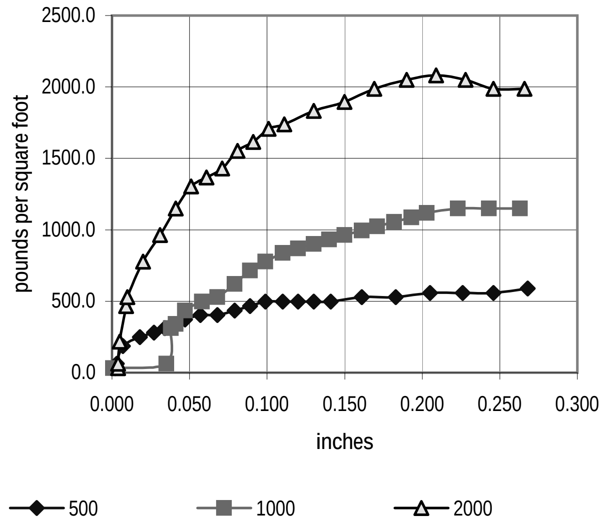
APPENDIX C GEOTECHNICAL LABORATORY TEST REPORTS

DIRECT SHEAR
TEST RESULTS

Shear Strain vs. Normal Strain



Shear Strain vs. Shear Stress



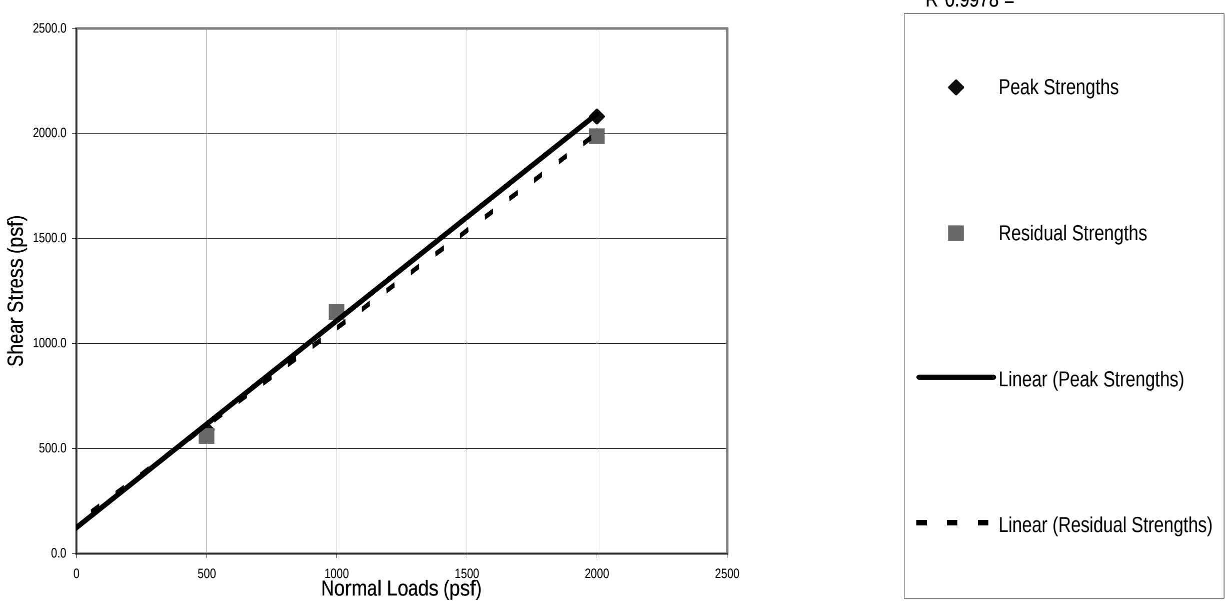
Normal Load (psf)

Normal Load (psf)

y = 0.9357x + 140
$R^2$0.9919 =

Mohr-Coulomb Failure Envelope

y = 0.9847x + 124.2
$R^2$0.9978 =



SHEAR STRENGTH TEST RESULTS		
PARAMETERS	PEAK STRENGTH:	RESIDUAL STRENGTH:
FRICTION ANGLE, (Degree)	44.6	43.1
COHESION, (psf)	124.2	140.0

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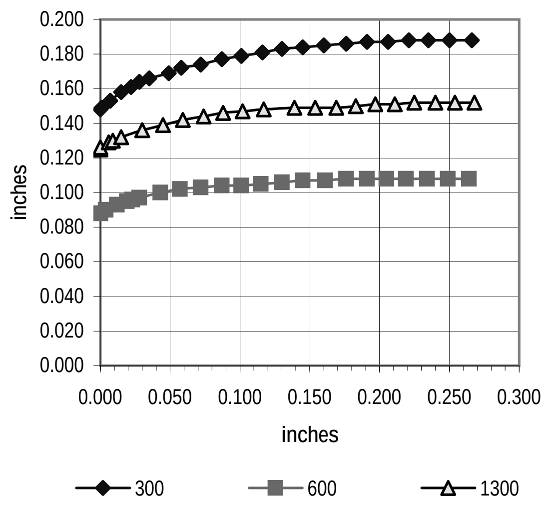
PROJECT NAME:	Big Seam and Red Ink Mine		
PROJECT NO.:	2890-01	DATE:	9/5/2006
BORING / TRENCH NO.:	N/I	**LAB NO.**	6-696
SAMPLE NO.:	SP-2	**SAMPLE DEPTH (ft.):**	N/I
DESCRIPTION:	Light Olive Brown (2.5Y 5/6) Well Graded Gravel with Sand		

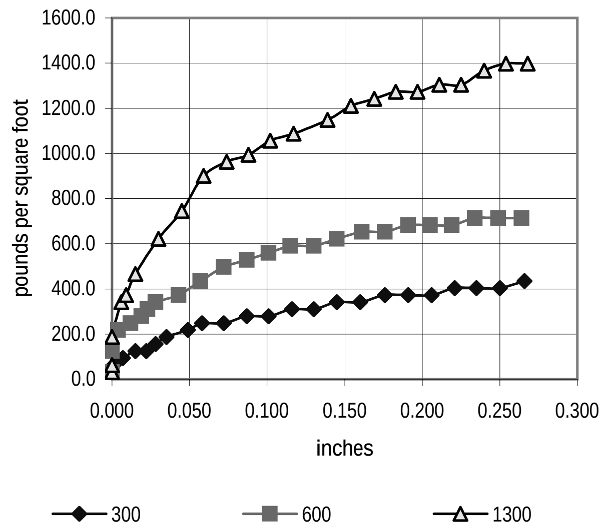
DIRECT SHEAR

TEST RESULTS

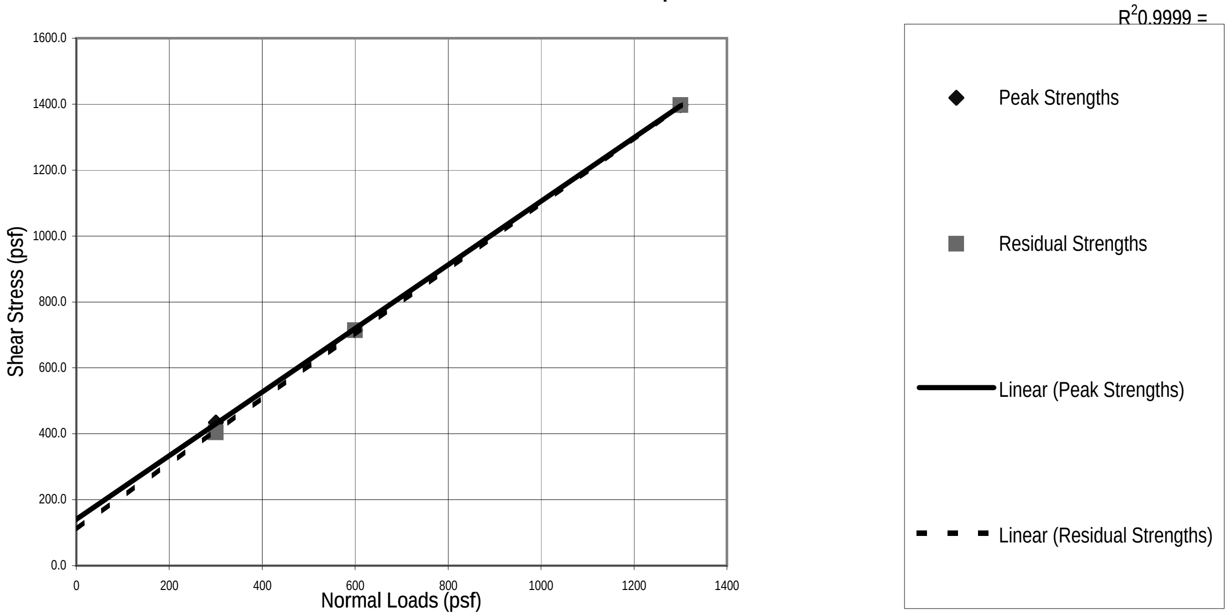
Shear Strain vs. Normal Strain



Shear Strain vs. Shear Stress



Mohr-Coulomb Failure Envelope



SHEAR STRENGTH TEST RESULTS		
PARAMETERS	PEAK STRENGTH:	RESIDUAL STRENGTH:
FRICTION ANGLE, (Degree)	44.0	44.7
COHESION, (psf)	141.0	112.0

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NEVADA CITY, CA 95959
(530) 478-1305 FAX 478-1019

PROJECT NAME:	Big Seam and Red Ink Mine		
PROJECT NO.:	2890-01	DATE:	9/6/2006
BORING / TRENCH NO.:	N/I	**LAB NO.**	6-696
SAMPLE NO.:	SP-4	**SAMPLE DEPTH (ft.):**	N/I
DESCRIPTION:	Light Olive Brown (2.5Y 5/6) Poorly Graded Gravel with Silt and Sand		

Particle Size Distribution

ASTM D422

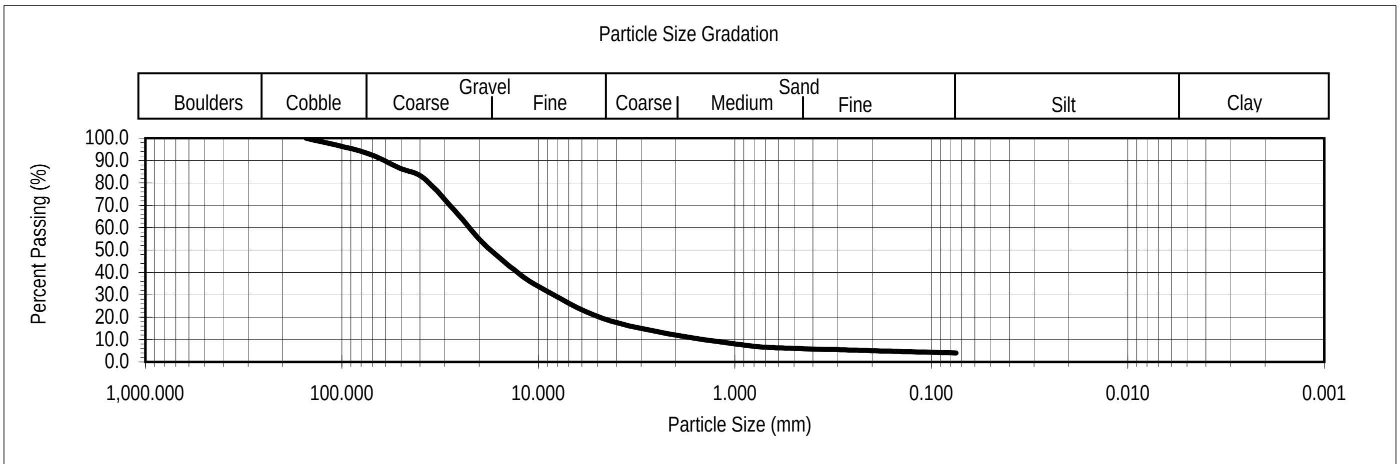
Project No.: **2890-01** Project Name: **Big Seam and Red Ink Mine** Date: **9/6/2006**
Sample No.: **SP-2** Boring/Trench: **N/I** Depth, (ft.): **N/I** Tested By: **BLP**
Description: **Light Olive Brown (2.5Y 5/6) Well Graded Gravel with Sand** Checked By: **MLH**
Sample Location: Lab. No.: **6-696**

Sieve Size (U.S. Standard)	Particle Diameter: Inches (in.)	Particle Diameter: Millimeter (mm)	Dry Weight on Sieve: Retained On Sieve (gm)	Dry Weight on Sieve: Accumulated On Sieve (gm)	Dry Weight on Sieve: Passing Sieve (gm)	Percent Passing (%)
6 Inch	6.0000	152.4		0.0	5,983.6	100.0
3 Inch	3.0000	76.2	387.32	387.3	5,596.3	93.5
2 Inch	2.0000	50.8	418.09	805.4	5,178.2	86.5
1.5 Inch	1.5000	38.1	272.30	1,077.7	4,905.9	82.0
1.0 Inch	1.0000	25.4	985.10	2,062.8	3,920.8	65.5
3/4 Inch	0.7500	19.1	751.10	2,813.9	3,169.7	53.0
1/2 Inch	0.5000	12.7	783.40	3,597.3	2,386.3	39.9
3/8 Inch	0.3750	9.5	432.90	4,030.2	1,953.4	32.6
#4	0.1870	4.7500	778.20	4,808.4	1,175.2	19.6
#10	0.0787	2.0000	460.33	5,268.7	714.9	11.9
#20	0.0335	0.8500	279.25	5,548.0	435.7	7.3
#30	0.0236	0.6000	59.69	5,607.7	376.0	6.3
#60	0.0098	0.2500	57.56	5,665.2	318.4	5.3
#100	0.0059	0.1500	40.28	5,705.5	278.1	4.6
#200	0.0030	0.0750	41.98	5,747.5	236.1	3.9

Cc = 1.89

Cu = 14.38

Hydrometer



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Particle Size Distribution
CTM-202

Project No.: **2890-01** Project Name: **Big Seam and Red Ink Mine** Date: **9/6/2006**
Sample No.: **SP-4** Boring/Trench: **N/I** Depth, (ft.): **N/I** Tested By: **BLP**
Description: **Light Olive Brown (2.5Y 5/6) Poorly Graded Gravel with Silt and Sanc** Checked By: **MLH**
Sample Location: Lab. No.: **6-696**

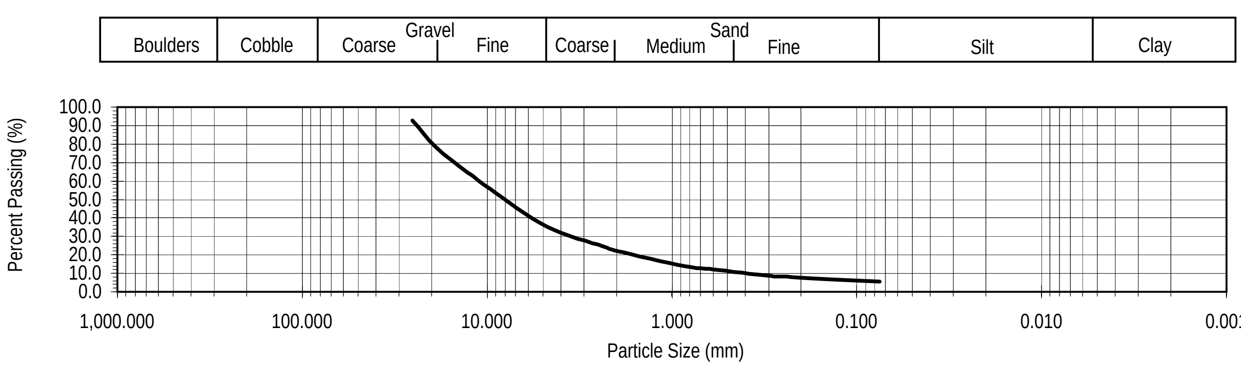
Sieve Size (U.S. Standard)	Particle Diameter Inches (in.)	Particle Diameter Millimeter (mm)	Dry Weight on Sieve Retained On Sieve (gm)	Dry Weight on Sieve Accumulated On Sieve (gm)	Dry Weight on Sieve Passing Sieve (gm)	Percent Passing (%)
0						0.0
0						0.0
0						0.0
0						0.0
1.0 Inch	1.0000	25.4	292.08	292.1	3,666.9	92.6
3/4 Inch	0.7500	19.1	553.57	845.7	3,113.3	78.6
1/2 Inch	0.5000	12.7	566.38	1,412.0	2,546.9	64.3
3/8 Inch	0.3750	9.5	349.95	1,762.0	2,197.0	55.5
#4	0.1870	4.7500	799.60	2,561.6	1,397.4	35.3
#8	0.0925	2.3495	429.06	2,990.6	968.3	24.5
#10	0.0787	2.0000	86.71	3,077.4	881.6	22.3
#20	0.0335	0.8500	330.09	3,407.4	551.5	13.9
#30	0.0236	0.6000	76.51	3,483.9	475.0	12.0
#50	0.0118	0.3000	127.04	3,611.0	347.9	8.8
#60	0.0098	0.2500	24.07	3,635.1	323.9	8.2
#100	0.0059	0.1500	54.12	3,689.2	269.8	6.8
#200	0.0030	0.0750	52.86	3,742.0	216.9	5.5

Cc = 4.01

Cu = 40.00

Hydrometer

Particle Size Gradation



(530) 478-1305 - Fax (530) 478-1019 - 792 Searls Ave.- Nevada City, CA 95959 - A California Corporation

APPENDIX D ANALYTICAL LABORATORY TEST REPORTS

EXCELCHEM
Environmental Labs

1135 W Sunset Boulevard
Suite A
Rocklin, CA 95765
Phone# 916-543-4445
Fax# 916-543-4449

ELAP Certificate No. : 2119

19 September 2006

Rob Fingerson

Holdrege & Kull-Nevada City

792 Searls Avenue

Nevada City, CA 95959

RE: Red Ink / Big Seam

Workorder number:0609022

Enclosed are the results of analyses for samples received by the laboratory on 09/07/06 10:00. All Quality Control results are within acceptable limits except where noted as a case narrative. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

____

John Somers, Lab Director

Excelchem Environmental Labs

Holdrege & Kull-Nevada City	Project:	Red Ink / Big Seam	
792 Searls Avenue	Project Number:	2890-01	Date Reported:
Nevada City, CA 95959	Project Manager:	Rob Fingerson	09/19/06 15:12

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SP-1-1	0609022-01	Soil	08/29/06 12:15	09/07/06 10:00
SP-3-1	0609022-02	Soil	08/29/06 11:53	09/07/06 10:00
SP-4-1	0609022-03	Soil	08/29/06 11:32	09/07/06 10:00
BG-1	0609022-04	Soil	08/29/06 13:28	09/07/06 10:00
BG-2	0609022-05	Soil	08/29/06 12:52	09/07/06 10:00

Excelchem Environmental Lab.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Excelchem Environmental Labs

Holdrege & Kull-Nevada City
792 Searls Avenue
Nevada City, CA 95959

Project: Red Ink / Big Seam
Project Number: 2890-01
Project Manager: Rob Fingerson

Date Reported: 09/19/06 15:12

SP-1-1
0609022-01 (Soil)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
METALS BY 6000/7000 SERIES								
Antimony	**2.3**	1.0	mg/kg	API0100	09/14/06	09/19/06	EPA 6010B	
Arsenic	**33.1**	1.0	"	"	"	09/19/06	"	
Barium	**107**	2.0	"	"	"	09/19/06	"	
Beryllium	ND	0.5	"	"	"	"	"	
Cadmium	ND	1.0	"	"	"	09/19/06	"	
Chromium	**50.3**	1.0	"	"	"	"	"	
Cobalt	**18.2**	5.0	"	"	"	"	"	
Copper	**115**	2.0	"	"	"	"	"	
Lead	**20.4**	1.0	"	"	"	09/19/06	"	
Mercury	ND	0.010	"	API0098	09/14/06	09/18/06	EPA 7471A	
Molybdenum	ND	1.0	"	API0100	09/14/06	09/19/06	EPA 6010B	
Nickel	**25.6**	1.0	"	"	"	"	"	
Selenium	ND	2.0	"	"	"	"	"	
Silver	**3.6**	2.0	"	"	"	09/19/06	"	
Thallium	ND	2.0	"	"	"	"	"	
Vanadium	**24.4**	2.0	"	"	"	"	"	
Zinc	**75.7**	2.0	"	"	"	"	"	

Excelchem Environmental Lab.

Laboratory Representative

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Excelchem Environmental Labs

Holdrege & Kull-Nevada City	Project:	Red Ink / Big Seam	
792 Searls Avenue	Project Number:	2890-01	Date Reported:
Nevada City, CA 95959	Project Manager:	Rob Fingerson	09/19/06 15:12

SP-3-1

0609022-02 (Soil)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
METALS BY 6000/7000 SERIES								
Antimony	ND	1.0	mg/kg	API0100	09/14/06	09/19/06	EPA 6010B	
Arsenic	**6.1**	1.0	"	"	"	"	"	
Barium	**64.7**	2.0	"	"	"	09/19/06	"	
Beryllium	ND	0.5	"	"	"	"	"	
Cadmium	ND	1.0	"	"	"	09/19/06	"	
Chromium	**29.4**	1.0	"	"	"	"	"	
Cobalt	**11.7**	5.0	"	"	"	09/19/06	"	
Copper	**55.1**	2.0	"	"	"	"	"	
Lead	**10.2**	1.0	"	"	"	"	"	
Mercury	ND	0.010	"	API0098	09/14/06	09/18/06	EPA 7471A	
Molybdenum	ND	1.0	"	API0100	09/14/06	09/19/06	EPA 6010B	
Nickel	**21.5**	1.0	"	"	"	09/19/06	"	
Selenium	ND	2.0	"	"	"	"	"	
Silver	ND	2.0	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	
Vanadium	**15.1**	2.0	"	"	"	"	"	
Zinc	**56.8**	2.0	"	"	"	09/19/06	"	

Excelchem Environmental Labs

Holdrege & Kull-Nevada City	Project:	Red Ink / Big Seam	
792 Searls Avenue	Project Number:	2890-01	Date Reported:
Nevada City, CA 95959	Project Manager:	Rob Fingerson	09/19/06 15:12

SP-4-1
0609022-03 (Soil)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
METALS BY 6000/7000 SERIES								
Antimony	ND	1.0	mg/kg	API0100	09/14/06	09/19/06	EPA 6010B	
Arsenic	**5.4**	1.0	"	"	"	"	"	
Barium	**42.3**	2.0	"	"	"	09/19/06	"	
Beryllium	ND	0.5	"	"	"	09/19/06	"	
Cadmium	ND	1.0	"	"	"	09/19/06	"	
Chromium	**27.3**	1.0	"	"	"	"	"	
Cobalt	**10.8**	5.0	"	"	"	"	"	
Copper	**36.5**	2.0	"	"	"	"	"	
Lead	**9.6**	1.0	"	"	"	"	"	
Mercury	**0.012**	0.010	"	API0098	09/14/06	09/18/06	EPA 7471A	
Molybdenum	ND	1.0	"	API0100	09/14/06	09/19/06	EPA 6010B	
Nickel	**21.6**	1.0	"	"	"	"	"	
Selenium	ND	2.0	"	"	"	"	"	
Silver	ND	2.0	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	09/19/06	"	
Vanadium	**12.4**	2.0	"	"	"	"	"	
Zinc	**64.2**	2.0	"	"	"	"	"	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Environmental Labs

Holdrege & Kull-Nevada City 792 Searls Avenue Nevada City, CA 95959	Project: Red Ink / Big Seam Project Number: 2890-01 Project Manager: Rob Fingerson	Date Reported: 09/19/06 15:12

BG-1

0609022-04 (Soil)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
METALS BY 6000/7000 SERIES								
Antimony	ND	1.0	mg/kg	API0100	09/14/06	09/19/06	EPA 6010B	
Arsenic	**4.6**	1.0	"	"	"	"	"	
Barium	**104**	2.0	"	"	"	09/19/06	"	
Beryllium	ND	0.5	"	"	"	"	"	
Cadmium	ND	1.0	"	"	"	09/19/06	"	
Chromium	**57.5**	1.0	"	"	"	"	"	
Cobalt	**20.8**	5.0	"	"	"	"	"	
Copper	**76.1**	2.0	"	"	"	09/19/06	"	
Lead	**12.9**	1.0	"	"	"	"	"	
Mercury	**0.015**	0.010	"	API0098	09/14/06	09/18/06	EPA 7471A	
Molybdenum	ND	1.0	"	API0100	09/14/06	09/19/06	EPA 6010B	
Nickel	**27.7**	1.0	"	"	"	"	"	
Selenium	ND	2.0	"	"	"	09/19/06	"	
Silver	ND	2.0	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	
Vanadium	**45.9**	2.0	"	"	"	"	"	
Zinc	**45.9**	2.0	"	"	"	09/19/06	"	

Excelchem Environmental Lab.

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Laboratory Representative

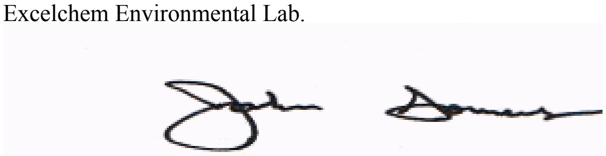
Excelchem Environmental Labs

Holdrege & Kull-Nevada City	Project:	Red Ink / Big Seam	
792 Searls Avenue	Project Number:	2890-01	Date Reported:
Nevada City, CA 95959	Project Manager:	Rob Fingerson	09/19/06 15:12

BG-2
0609022-05 (Soil)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
METALS BY 6000/7000 SERIES								
Antimony	**8.9**	1.0	mg/kg	API0100	09/14/06	09/19/06	EPA 6010B	
Arsenic	**43.5**	1.0	"	"	"	"	"	
Barium	**280**	2.0	"	"	"	09/19/06	"	
Beryllium	ND	0.5	"	"	"	09/19/06	"	
Cadmium	ND	1.0	"	"	"	"	"	
Chromium	**54.3**	1.0	"	"	"	09/19/06	"	
Cobalt	**11.7**	5.0	"	"	"	"	"	
Copper	**142**	2.0	"	"	"	"	"	
Lead	**42.6**	1.0	"	"	"	"	"	
Mercury	**0.075**	0.010	"	API0098	09/14/06	09/18/06	EPA 7471A	
Molybdenum	**19.7**	1.0	"	API0100	09/14/06	09/19/06	EPA 6010B	
Nickel	**35.3**	1.0	"	"	"	"	"	
Selenium	ND	2.0	"	"	"	"	"	
Silver	ND	2.0	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	09/19/06	"	
Vanadium	**47.4**	2.0	"	"	"	"	"	
Zinc	**77.1**	2.0	"	"	"	"	"	

Excelchem Environmental Lab.



Laboratory Representative

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Holdrege & Kull-Nevada City	Project:	Red Ink / Big Seam	
792 Searls Avenue	Project Number:	2890-01	Date Reported:
Nevada City, CA 95959	Project Manager:	Rob Fingerson	09/19/06 15:12

METALS BY 6000/7000 SERIES - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch API0098 - EPA 7471A										
Blank (API0098-BLK1)				Prepared: 09/14/06 Analyzed: 09/18/06						
Mercury	ND	0.010	mg/kg							
LCS (API0098-BS1)				Prepared: 09/14/06 Analyzed: 09/18/06						
Mercury	0.446	0.010	mg/kg	0.400		112	80-120			
LCS Dup (API0098-BSD1)				Prepared: 09/14/06 Analyzed: 09/18/06						
Mercury	0.411	0.010	mg/kg	0.400		103	80-120	8.17	20	
Matrix Spike (API0098-MS1)	**Source: 0609022-01**			Prepared: 09/14/06 Analyzed: 09/18/06						
Mercury	0.474	0.010	mg/kg	0.400	0.009	116	75-125			
Matrix Spike Dup (API0098-MSD1)	**Source: 0609022-01**			Prepared: 09/14/06 Analyzed: 09/18/06						
Mercury	0.454	0.010	mg/kg	0.400	0.009	111	75-125	4.31	20	
Batch API0100 - EPA 6010B										
Blank (API0100-BLK1)				Prepared: 09/14/06 Analyzed: 09/19/06						
Antimony	ND	1.0	mg/kg							
Arsenic	ND	1.0	"							
Barium	ND	2.0	"							
Beryllium	ND	0.5	"							
Cadmium	ND	1.0	"							
Chromium	ND	1.0	"							
Cobalt	ND	5.0	"							
Copper	ND	2.0	"							
Lead	ND	1.0	"							
Molybdenum	ND	1.0	"							
Nickel	ND	1.0	"							
Selenium	ND	2.0	"							
Silver	ND	2.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	2.0	"							
Zinc	ND	2.0	"							

Excelchem Environmental Lab.

Laboratory Representative

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Holdrege & Kull-Nevada City
792 Searls Avenue
Nevada City, CA 95959

Project: Red Ink / Big Seam
Project Number: 2890-01
Project Manager: Rob Fingerson

Date Reported: 09/19/06 15:12

METALS BY 6000/7000 SERIES - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch API0100 - EPA 6010B										
LCS (API0100-BS1)				Prepared: 09/14/06 Analyzed: 09/19/06						
Antimony	109	1.0	mg/kg	100		109	80-120			
Arsenic	100	1.0	"	100		100	80-120			
Barium	144	2.0	"	100		144	80-120			QR-04
Beryllium	117	0.5	"	100		117	80-120			
Cadmium	112	1.0	"	100		112	80-120			
Chromium	126	1.0	"	100		126	80-120			QR-04
Cobalt	123	5.0	"	100		123	80-120			QR-04
Copper	112	2.0	"	100		112	80-120			
Lead	112	1.0	"	100		112	80-120			
Molybdenum	120	1.0	"	100		120	80-120			
Nickel	116	1.0	"	100		116	80-120			
Selenium	101	2.0	"	100		101	80-120			
Silver	114	2.0	"	100		114	80-120			
Thallium	120	2.0	"	100		120	80-120			
Vanadium	130	2.0	"	100		130	80-120			QR-04
Zinc	108	2.0	"	100		108	80-120			
LCS Dup (API0100-BSD1)				Prepared: 09/14/06 Analyzed: 09/19/06						
Antimony	110	1.0	mg/kg	100		110	80-120	0.913	25	
Arsenic	101	1.0	"	100		101	80-120	0.995	25	
Barium	144	2.0	"	100		144	80-120	0.00	25	QR-04
Beryllium	118	0.5	"	100		118	80-120	0.851	25	
Cadmium	113	1.0	"	100		113	80-120	0.889	25	
Chromium	129	1.0	"	100		129	80-120	2.35	25	QR-04
Cobalt	126	5.0	"	100		126	80-120	2.41	25	QR-04
Copper	114	2.0	"	100		114	80-120	1.77	25	
Lead	114	1.0	"	100		114	80-120	1.77	25	
Molybdenum	122	1.0	"	100		122	80-120	1.65	25	QR-04
Nickel	119	1.0	"	100		119	80-120	2.55	25	
Selenium	101	2.0	"	100		101	80-120	0.00	25	
Silver	116	2.0	"	100		116	80-120	1.74	25	
Thallium	119	2.0	"	100		119	80-120	0.837	25	
Vanadium	130	2.0	"	100		130	80-120	0.00	25	QR-04
Zinc	109	2.0	"	100		109	80-120	0.922	25	

Excelchem Environmental Labs

Holdrege & Kull-Nevada City	Project:	Red Ink / Big Seam	
792 Searls Avenue	Project Number:	2890-01	Date Reported:
Nevada City, CA 95959	Project Manager:	Rob Fingerson	09/19/06 15:12

METALS BY 6000/7000 SERIES - Quality Control

Batch API0100 - EPA 6010B

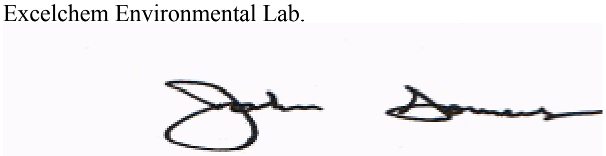
Matrix Spike (API0100-MS1) **Source: 0609022-01** Prepared: 09/14/06 Analyzed: 09/19/06

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	95.0	1.0	mg/kg	100	2.3	92.7	75-125			
Arsenic	152	1.0	"	100	33.1	119	75-125			
Barium	252	2.0	"	100	107	145	75-125			QR-04
Beryllium	117	0.5	"	100	ND	117	75-125			
Cadmium	107	1.0	"	100	0.3	107	75-125			
Chromium	163	1.0	"	100	50.3	113	75-125			
Cobalt	140	5.0	"	100	18.2	122	75-125			
Copper	220	2.0	"	100	115	105	75-125			
Lead	125	1.0	"	100	20.4	105	75-125			
Molybdenum	109	1.0	"	100	ND	109	75-125			
Nickel	141	1.0	"	100	25.6	115	75-125			
Selenium	93.8	2.0	"	100	ND	93.8	75-125			
Silver	116	2.0	"	100	3.6	112	75-125			
Thallium	114	2.0	"	100	0.4	114	75-125			
Vanadium	143	2.0	"	100	24.4	119	75-125			
Zinc	169	2.0	"	100	75.7	93.3	75-125			

Matrix Spike Dup (API0100-MSD1) **Source: 0609022-01** Prepared: 09/14/06 Analyzed: 09/19/06

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	100	1.0	mg/kg	100	2.3	97.7	75-125	5.13	25	
Arsenic	140	1.0	"	100	33.1	107	75-125	8.22	25	
Barium	225	2.0	"	100	107	118	75-125	11.3	25	
Beryllium	116	0.5	"	100	ND	116	75-125	0.858	25	
Cadmium	111	1.0	"	100	0.3	111	75-125	3.67	25	
Chromium	163	1.0	"	100	50.3	113	75-125	0.00	25	
Cobalt	141	5.0	"	100	18.2	123	75-125	0.712	25	
Copper	217	2.0	"	100	115	102	75-125	1.37	25	
Lead	124	1.0	"	100	20.4	104	75-125	0.803	25	
Molybdenum	114	1.0	"	100	ND	114	75-125	4.48	25	
Nickel	177	1.0	"	100	25.6	151	75-125	22.6	25	QM-07
Selenium	96.5	2.0	"	100	ND	96.5	75-125	2.84	25	
Silver	117	2.0	"	100	3.6	113	75-125	0.858	25	
Thallium	118	2.0	"	100	0.4	118	75-125	3.45	25	
Vanadium	142	2.0	"	100	24.4	118	75-125	0.702	25	
Zinc	161	2.0	"	100	75.7	85.3	75-125	4.85	25	

Excelchem Environmental Lab.



Laboratory Representative

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Holdrege & Kull-Nevada City	Project:	Red Ink / Big Seam	
792 Searls Avenue	Project Number:	2890-01	Date Reported:
Nevada City, CA 95959	Project Manager:	Rob Fingerson	09/19/06 15:12

Notes and Definitions

QR-04 The LCS percent recovery is outside of Control Chart Limits for this analyte. QA/QC is accepted based on MS/MSD recoveries.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

ND - Analyte not detected at reporting limit.

NR - Not reported

Excelchem Environmental Labs

Holdrege & Kull-Nevada City	Project:	Red Ink / Big Seam	
792 Searls Avenue	Project Number:	2890-01	Date Reported:
Nevada City, CA 95959	Project Manager:	Rob Fingerson	09/19/06 15:12

Excelchem Environmental Labs
1135 W. Sunset Blvd. Unit A
Rocklin, CA 95765
Ph: 916-773-3664 Fx: 916-773-4784

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Rob Fingerson
Phone #: 530-478-1305
Company/Address: Holdrege & Kull 792 Searles Ave Nevada City, CA 95959
Fax #:
Project Number/P.O#: 2890-01
Project Name: Red Ink/Big Seam
Project Location: Foresthill
Sampler Signature: [signature]

Electronic Data Deliverables Request:
Email Address: Email Results to Larry Friend LFriend@[illegible]

ANALYSIS REQUEST — Page 1 of 1

Sample ID	Date	Time	VOA	SLEEVE	GLASS	PLASTIC	Summa or Tedlar	HCl	HNO3	ICE/Refrig.	NONE	WATER	SOIL	AIR	BTEX - TPH as Gasoline (602/8020/8015)	TPH as Diesel (8015m)	TPH as Oil (8015m)	Total Oil & Grease (SM-18th 5520/1664)	Pesticides (608/8081A) - PCBs (8082)	Organophosphorus Pesticide (8141)	Chlorinated Herbicides (8151)	Semi VOC Full List (8270C)	VOC Full list (8260B)	MTBE (8020/8260B) circle the method	Methanol (8015M) Ethanol (8260)	5 Oxygenates (8260B)	Lead Scavengers DCA/EDB (8260B)	Tphg/BTEX/5 Oxygenates (8260B)	Metals - Title 22 metals	Metals -	Metals -	Nitrate, Nitrite, Ammonia, Kjeldahl	Chloride, Sulfate, Sulfide, ph, conductance	Requested TAT: 12h/24h/48h/72h/wk	LAB USE ONLY
SP-1-1	8/29/06	1215			X					X			X																X						-01
SP-3-1	8/29/06	1153			X					X			X																X						-02
SP-4-1	8/29/06	1132			X					X			X																X						-03
BG-1	8/29/06	1328			X					X			X																X						-04
BG-2	8/29/06	1252			X					X			X																X						-05

Requested TAT: wk (circled)
Lab use only: Bin S-2; Due Date: 9-14-06; Work Order: C609022

Relinquished by: [signature] Date: 9-7-06 Time: 10:00 Received by: [signature]
Relinquished by: Date: Time: Received by Laboratory: [signature]

Remarks/Condition of Sample: Hold all samples for subsequent additional Analyses

Bill To:

[redacted]

EXCELCHEM
Environmental Labs

1135 W Sunset Boulevard
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ELAP Certificate No. : 2119

09 October 2006

Rob Fingerson

Holdrege & Kull-Nevada City

792 Searls Avenue

Nevada City, CA 95959

RE: Red Ink / Big Seam

Workorder number:0609076

Enclosed are the results of analyses for samples received by the laboratory on 09/21/06 09:30. All Quality Control results are within acceptable limits except where noted as a case narrative. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

____

John Somers, Lab Director

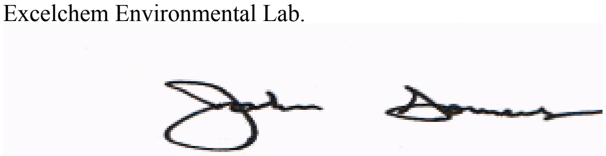
Excelchem Environmental Labs

Holdrege & Kull-Nevada City	Project:	Red Ink / Big Seam	
792 Searls Avenue	Project Number:	2890-01	Date Reported:
Nevada City, CA 95959	Project Manager:	Rob Fingerson	10/09/06 11:18

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SP-1-1	0609076-01	Soil	08/29/06 12:15	09/21/06 09:30

Excelchem Environmental Lab.



Laboratory Representative

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Excelchem Environmental Labs

Holdrege & Kull-Nevada City	Project:	Red Ink / Big Seam	
792 Searls Avenue	Project Number:	2890-01	Date Reported:
Nevada City, CA 95959	Project Manager:	Rob Fingerson	10/09/06 11:18

SP-1-1
0609076-01 (Soil)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
SW-846 9045A								
pH-Temperature	**20**		C	[none]	10/03/06	10/03/06	SW-846 9045A	
Sobek et al								
AcidGeneration Potential Sulfide	**0.6**	0.3	tons/1000 tons	[none]	09/28/06	09/28/06	Sobek et al	
AcidGeneration Potential Total	**1.3**	0.3	"	"	"	"	"	
Neutralization Potential	**23**	1	"	"	"	"	"	
SW-846 9045A PH								
pH-Saturated paste	**8.31**		pH Units	[none]	10/03/06	10/03/06	SW-846 9045A PH	
LECO								
Sulfur Residual-LECO Furnace	ND	0.01	%	[none]	09/28/06	09/28/06	LECO	
Sulfur Sulfate-LECO Furnace	**0.02**	0.01	"	"	"	"	"	
Sulfur Sulfide-LECO Furnace	**0.02**	0.01	"	"	"	"	"	
Sulfur Total-LECO Furnace	**0.04**	0.01	"	"	"	"	"	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Environmental Labs

Holdrege & Kull-Nevada City	Project:	Red Ink / Big Seam	
792 Searls Avenue	Project Number:	2890-01	Date Reported:
Nevada City, CA 95959	Project Manager:	Rob Fingerson	10/09/06 11:18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Excelchem Environmental Lab.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Notes and Definitions

ND - Analyte not detected at reporting limit.

NR - Not reported

Excelchem
Environmental Labs

1135 W. Sunset Blvd. Unit A
Rocklin, CA. 95765
Ph: 916-773-3664 Fx: 916-773-4784

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Rob Fingerson
Phone #: 530-478-1305
Company/Address: Holdrege & Kull, 792 Searles Ave, Nevada City, CA 95959
Fax #:
Project Number/P.O#: 2890-01
Project Name: RedInk/Big Seam
Project Location: Foresthill
Sampler Signature: [signature]

Electronic Data Deliverables Request:
Email Address: email results to LFriend@handk.net

ANALYSIS REQUEST

Page 1 of 1

Requested TAT: 12hr/24hr/48hr/72hr/1wk (1wk circled)

Sample ID	Sampling Date	Sampling Time	Container: VOA	Container: SLEEVE	Container: ~~N~~ GLASS Jar	Container: PLASTIC	Container: Summa or Tedlar	Method Preserved: HCl	Method Preserved: HNO3	Method Preserved: ICE /refridg	Method Preserved: NONE	Method Preserved:	Matrix: WATER	Matrix: SOIL	Matrix: AIR	BTEX - TPH as Gasoline (602/8020/8015)	TPH as Diesel (8015m)	TPH as Oil (8015m)	Total Oil & Grease (SM-18th 5520)1664	Pesticides (608/8081A) - PCBs (8082)	Organophoshorous Pesticide (8141)	Chlorinated Herbicides (8151)	Semi VOC Full List (8270C)	VOC Full list (8260B)	MTBE (8020/8260B) circle the method	Methanol (8015M) Ethanol (8260)	5 Oxygenates (8260B)	Lead Scavengers DCA/EDB (8260B)	Tphg/BTEX/5 Oxygenates (8260B)	Metals = (Wet/Total)	Metals = (Wet/Total)	Metals = (Wet/Total)	Nitrate, Nitrite, Ammonia, Kjeldahl	Chloride, Sulfate, Sulfide, ph, conductance	DI - WET			Requested TAT	LAB USE ONLY: Bin#, Due Date, Work Order
SP-1-1	8/29/06	1215			X					X				X																					X				

Relinquished by:	Date	Time	Received by:

Relinquished by:	Date	Time	Received by Laboratory:

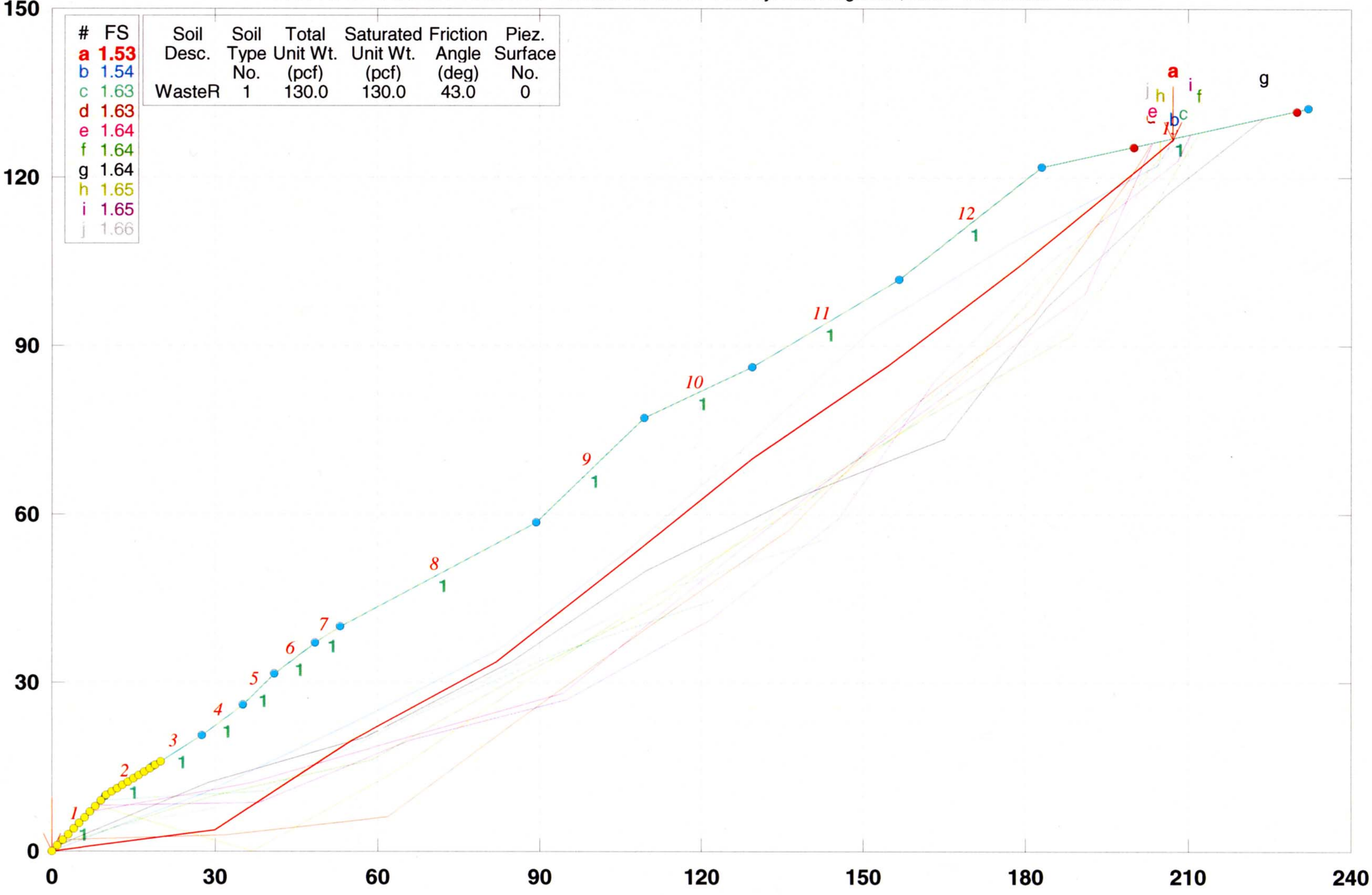
Remarks/Condition of Sample: sample already in lab custody, lab ID# 0609022-01
use reporting limit of 2 ug/l

Bill To:

APPENDIX E GRAPHICAL SUMMARY OF STABILITY ANALYSIS

Wasterock Stockpile 4 Big Seam and Red Ink

F:\1PROJE~1\2890BI~1\ANALYS~1\BIGSEAM4.PL2 Run By: Rob Fingerson, H&K 10/26/2006 9:31AM



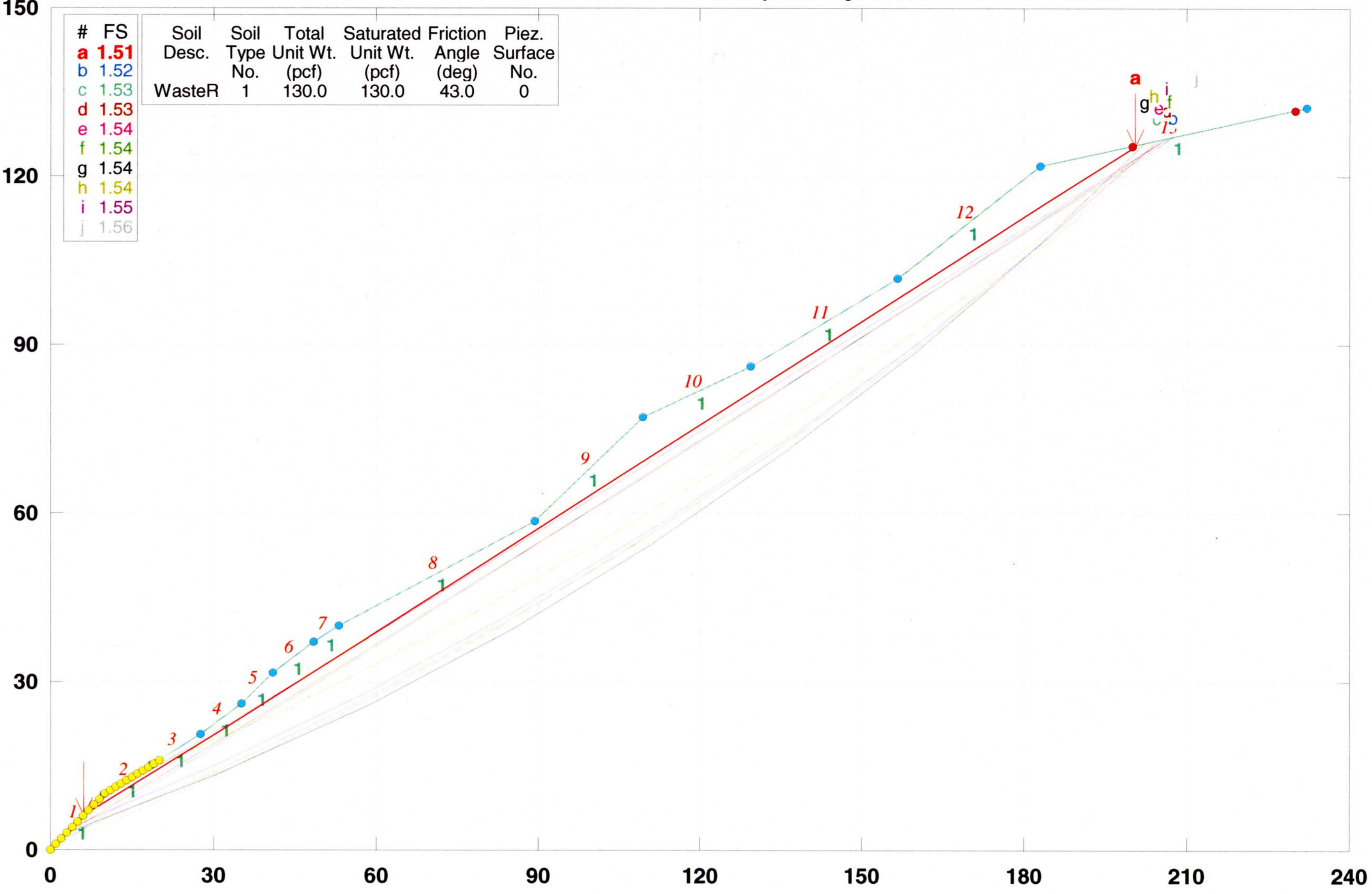
STABL6H FSmin=1.53

Safety Factors Are Calculated By The Modified Janbu Method

STED

Wasterock Stockpile 4 Big Seam and Red Ink

F:\1PROJE~1\2890BI~1\ANALYS~1\BIGSEAM4.PL2 Run By: Rob Fingerson, H&K 10/26/2006 9:23AM



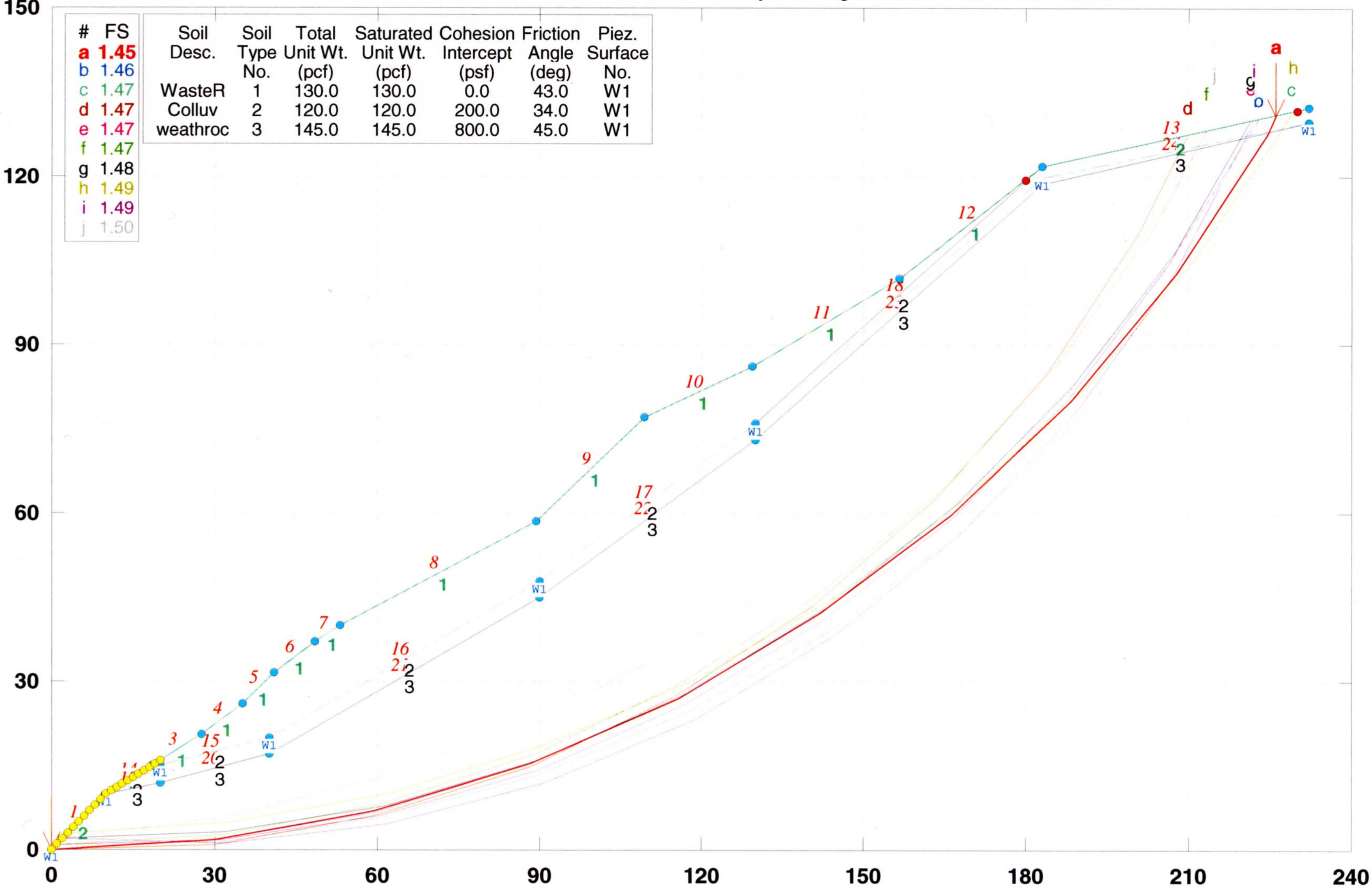
STABL6H FSmin=1.51

Safety Factors Are Calculated By The Modified Bishop Method

STED

Wasterock Stockpile 4 Big Seam and Red Ink

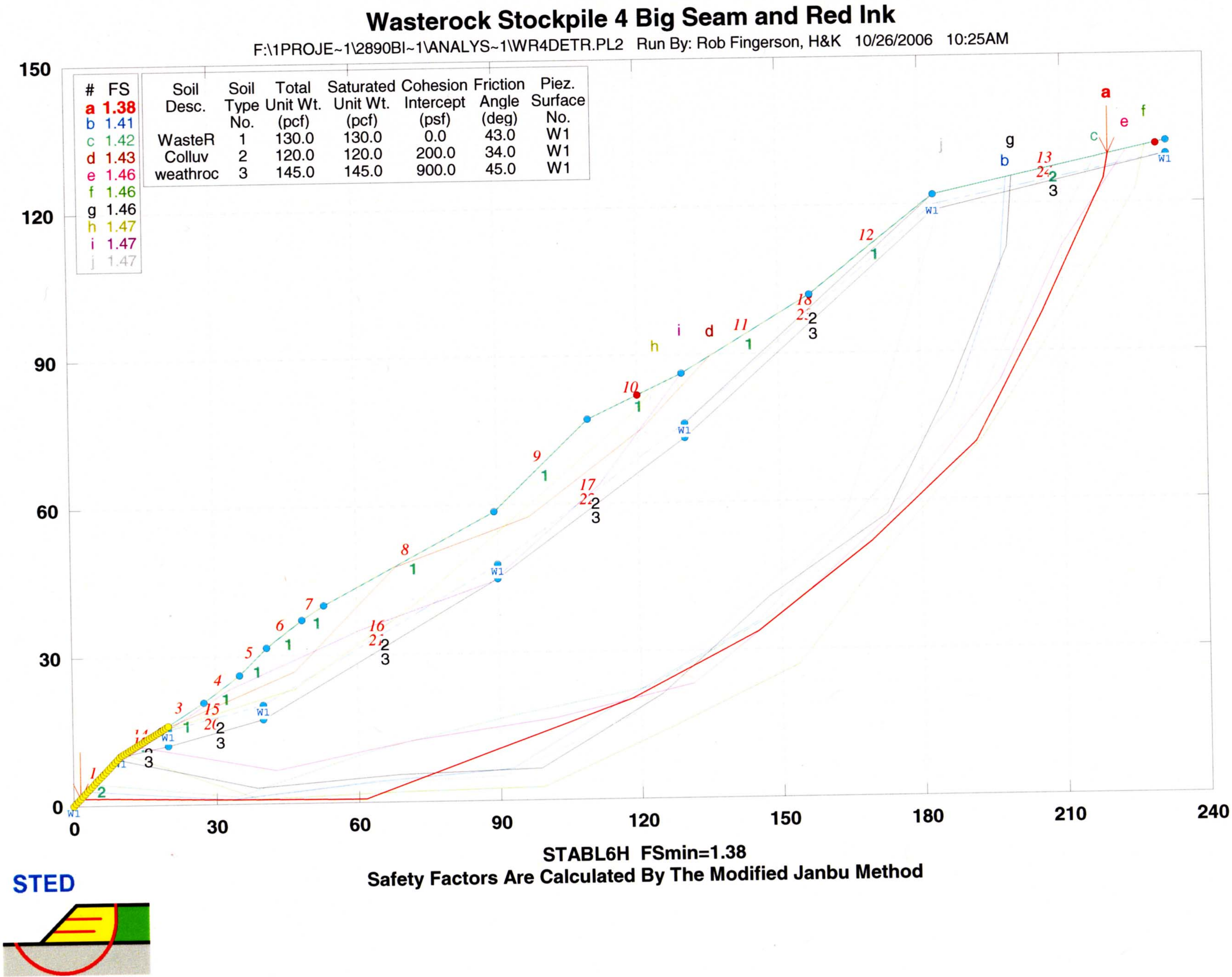
F:\1PROJE~1\2890BI~1\ANALYS~1\WR4DETC.PL2 Run By: Rob Fingerson, H&K 10/26/2006 10:03AM



STABL6H FSmin=1.45

Safety Factors Are Calculated By The Modified Bishop Method

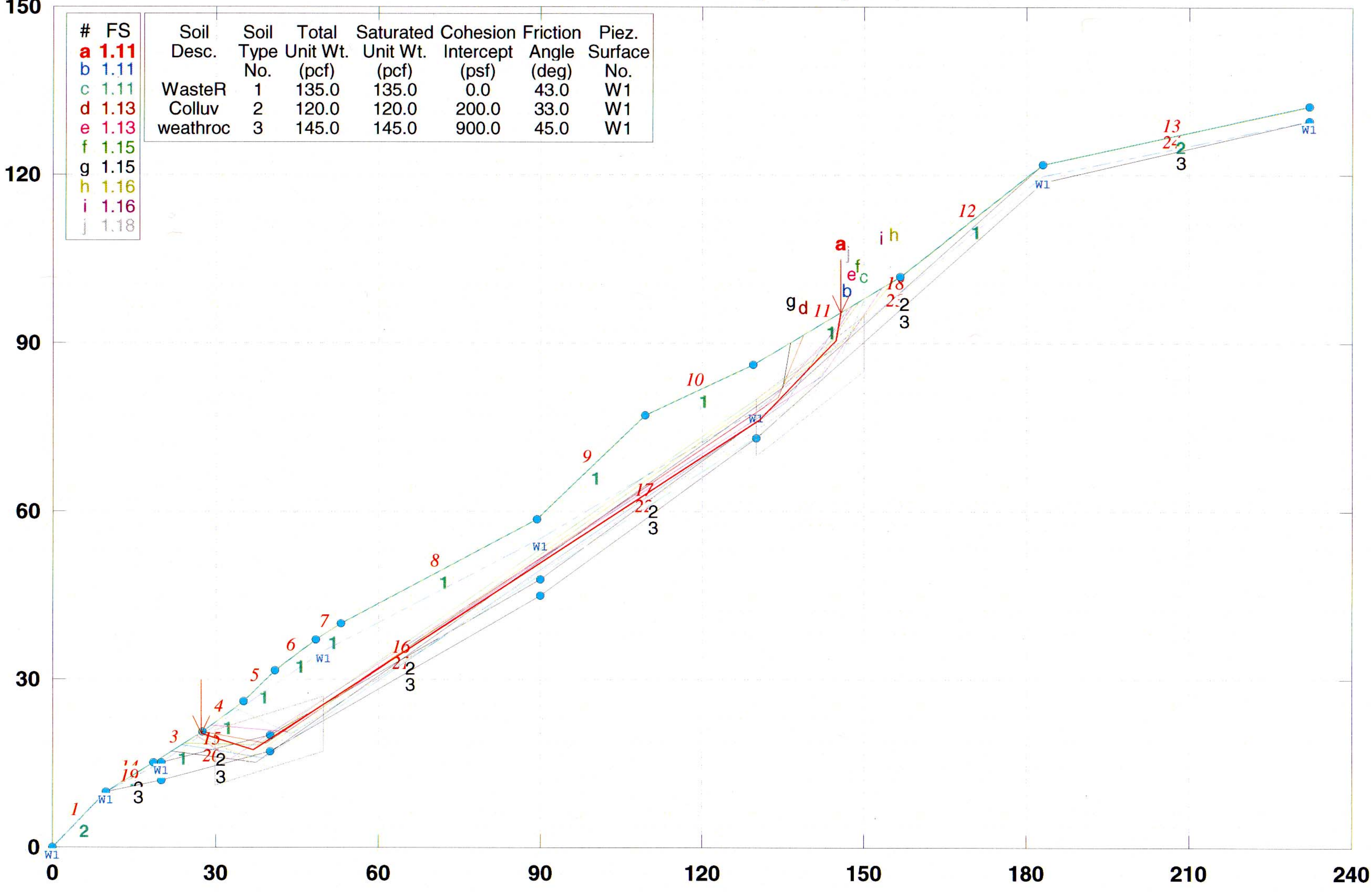
STED



Wasterock Stockpile 4 Big Seam and Red Ink
F:\1PROJE~1\2890BI~1\ANALYS~1\WR4DETR.PL2 Run By: Rob Fingerson, H&K 10/26/2006 10:25AM
FS
a 1.38
b 1.41
c 1.42
d 1.43
e 1.46
f 1.46
g 1.46
h 1.47
i 1.47
j 1.47
Soil Desc. | Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit Wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Piez. Surface No.
WasteR 1 130.0 130.0 0.0 43.0 W1
Colluv 2 120.0 120.0 200.0 34.0 W1
weathroc 3 145.0 145.0 900.0 45.0 W1
STABL6H FSmin=1.38
Safety Factors Are Calculated By The Modified Janbu Method
STED

Wasterock Stockpile 4 Big Seam and Red Ink

F:\1PROJE~1\2890BI~1\ANALYS~1\WR4DETB.PL2 Run By: Rob Fingerson, H&K 10/26/2006 10:39AM

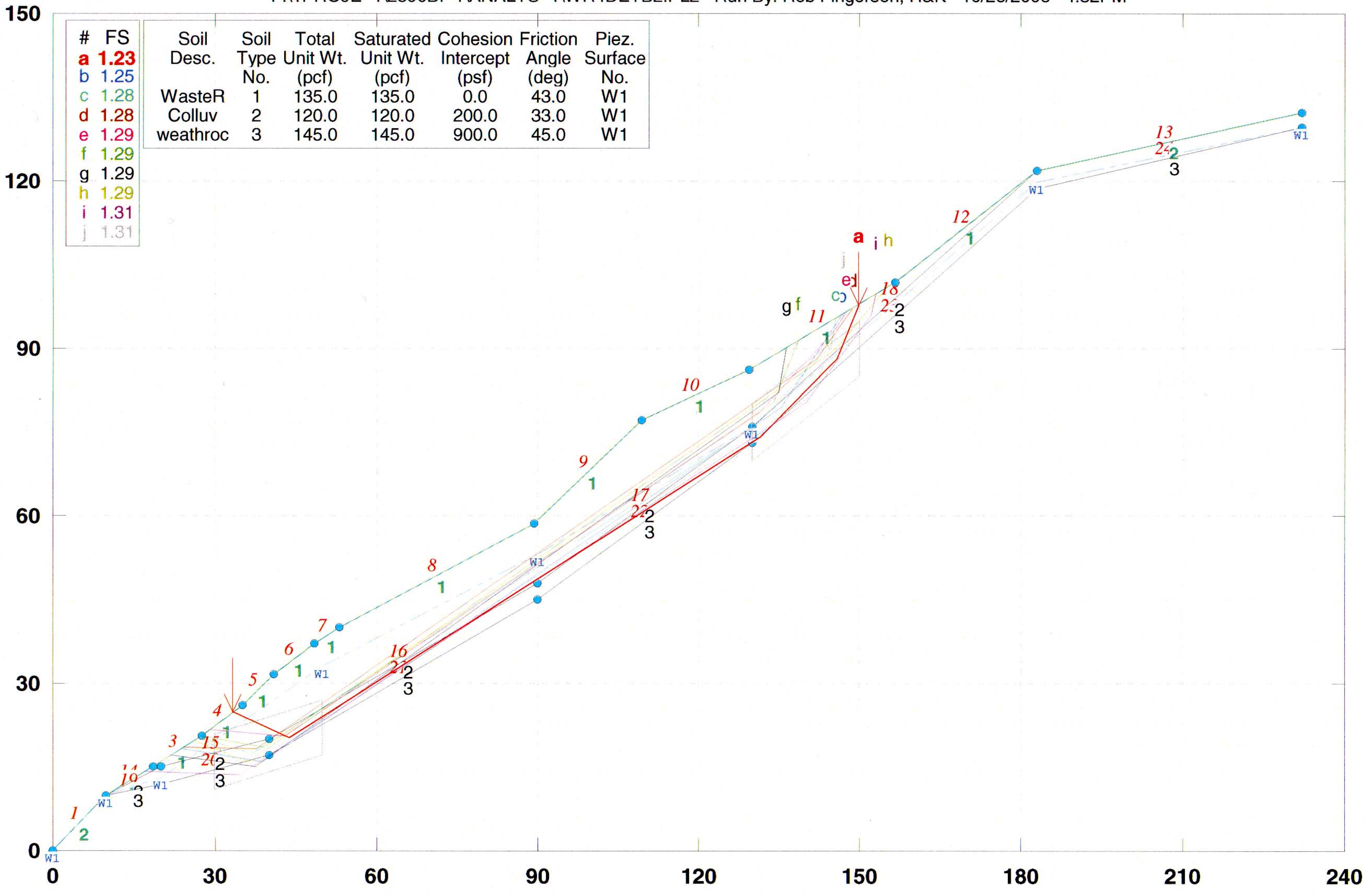


STABL6H FSmin=1.11
Safety Factors Are Calculated By The Modified Janbu Method

STED

Wasterock Stockpile 4 Big Seam and Red Ink

F:\1PROJE~1\2890BI~1\ANALYS~1\WR4DETB2.PL2 Run By: Rob Fingerson, H&K 10/26/2006 4:32PM



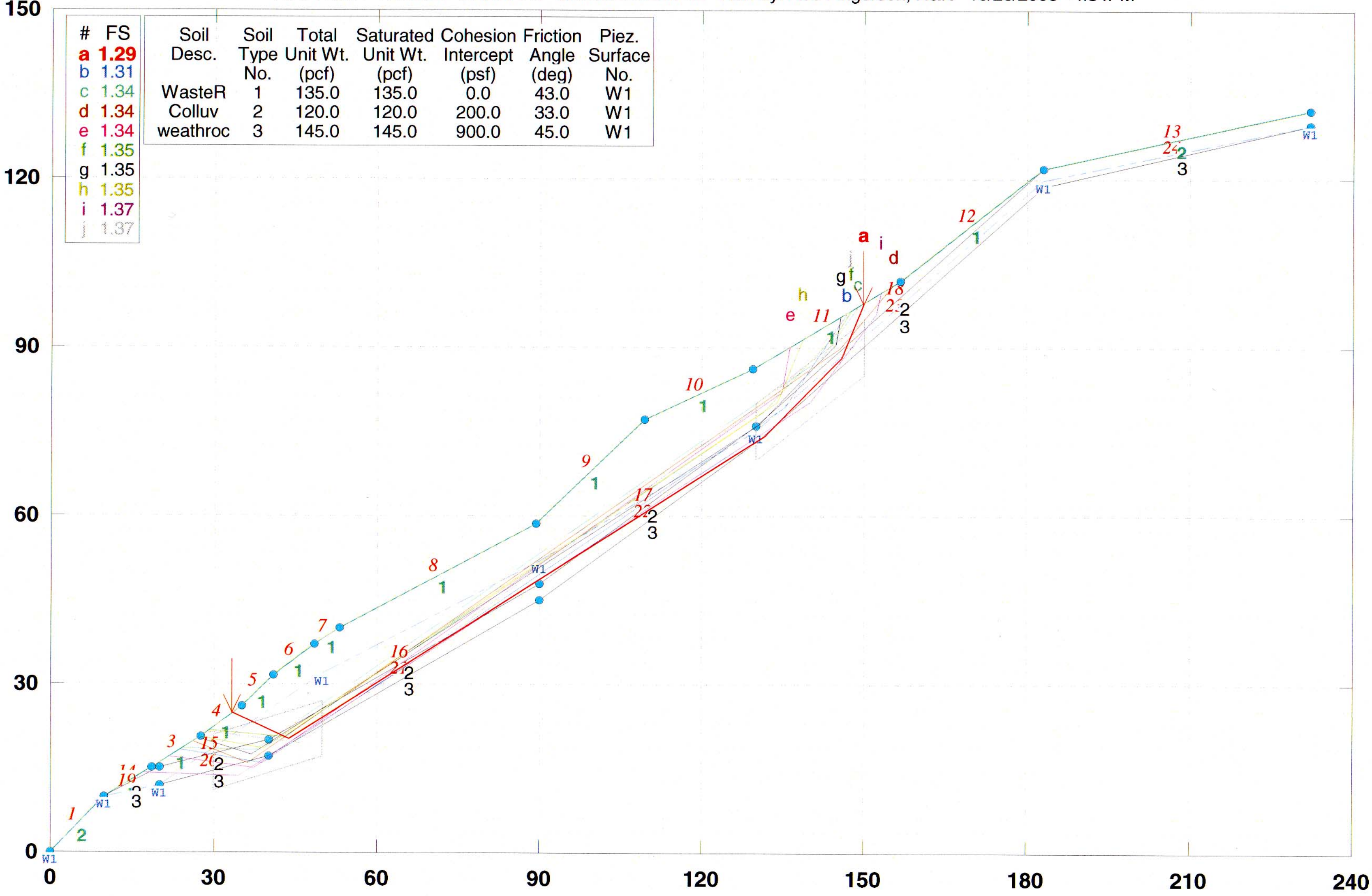
STABL6H FSmin=1.23

Safety Factors Are Calculated By The Modified Janbu Method

STED

Wasterock Stockpile 4 Big Seam and Red Ink

F:\1PROJE~1\2890BI~1\ANALYS~1\WR4DETB3.PL2 Run By: Rob Fingerson, H&K 10/26/2006 4:34PM



#	FS
a	1.29
b	1.31
c	1.34
d	1.34
e	1.34
f	1.35
g	1.35
h	1.35
i	1.37
j	1.37

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
WasteR	1	135.0	135.0	0.0	43.0	W1
Colluv	2	120.0	120.0	200.0	33.0	W1
weathroc	3	145.0	145.0	900.0	45.0	W1

STABL6H FSmin=1.29

Safety Factors Are Calculated By The Modified Janbu Method

STED