

COPY

BEFORE THE WASHINGTON DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF GEOLOGY AND EARTH RESOURCES

In the Matter of

The Surface Mine of:

EMERGENCY ORDER TO  
SUSPEND SURFACE MINING

Simmons & Son Hauling

Reclamation Permit No. 70-012365

The Washington Department of Natural Resources (DNR) issues this Emergency Order to Suspend Surface Mining based on the following Findings of Fact and Conclusions of Law:

**FINDINGS OF FACT**

1. Simmons & Son Hauling is the holder of Reclamation Permit Number 70-012365 (Reclamation Permit or Permit) issued under chapter 78.44 RCW. The surface mine (Simmons Pit) that is the subject of the permit is located in Section 2, Township 15 N, Range 15 E WM in Yakima County. The Simmons Pit is significantly buried and modified by the 80+acre Nile Landslide, near Nile, Washington.

2. As the owner of a mine exceeding three acres, Simmons & Son Hauling is regulated by DNR under the Surface Mining Act, RCW 78.44. Regulated mines may only operate under authority of a reclamation permit. A primary purpose of the Act is to ensure that surface mines are reclaimed to a condition that is suitable for its approved subsequent use. One component of reclamation is slope stability. Thus, the Act requires reclamation planning to ensure that final reclaimed slopes will be suitably stable for their approved subsequent use.

3. Under RCW 78.44, especially RCW 78.44.081, RCW 78.44.091, RCW 78.44.131, and RCW 78.44.141, reclamation permits and accompanying reclamation plans are required to contain detailed information regarding the characteristics of the mine site prior to mining and regarding the site's conditions after the site is reclaimed for its approved subsequent use. Maps

showing the contours of the pre-mined slope, elevations, and cross sections are to be included as part of any permit. The permit must identify the three dimensional permit boundary limits along the vertical and horizontal axis. Further, permits must identify the type of material to be mined and the method of mining (cutting to final slope or cutting and backfilling). DNR may require additional information regarding slope stability. RCW 78.44.091(1)(k). Only insignificant deviations may occur from an approved reclamation plan without prior written approval by DNR. RCW 78.44.091. Understanding the slope stability of a site is necessary to ensure that a site can be mined and reclaimed appropriately for the approved subsequent use.

3. The Reclamation Permit for the Simmons Pit, which includes a reclamation plan, was issued by DNR in 1994. A copy of the Reclamation Permit is attached as Exhibit A. Pasture or forest land is the approved subsequent use. The Permit describes the pre-mining condition of the Simmons Pit as a talus slope, varying in elevation from 2600 feet at the top of the permit boundary to 1960 feet at the base of the permit boundary. The mine site included a mined slope face and a 2.8 acre working floor. Simmons & Son Hauling described their method of mining as cut to slope. Upon final reclamation, the site was to be restored to a stable hillside with slopes not to exceed 2 horizontal :1 vertical.

4. The Reclamation Permit does not contain slope stability studies related to an active landslide.

5. The Reclamation Permit does not identify a method of mining in contemplation of mining on an active landslide so as to best ensure that reclamation contours and stable slopes are established upon reclamation.

6. When establishing the revegetation, drainage, slope angle and other requirements in the Reclamation Permit so as to reestablish a stable slope, the Reclamation Permit Application and DNR did not contemplate that mining and reclamation would be occurring on an active landslide.

7. Reclamation planning for surface mining and reclamation on an active landslide is significantly different than for mining a stable slope.

8. On October 11, 2009, a massive landslide occurred near the town of Nile, burying a significant portion of the Simmons Pit. This is one of the largest landslides in the recorded history of Washington. An aerial photo of the landslide is attached as Exhibit B and a photo of the landslide from across the valley is attached as Exhibit C. Approximately 80+ acres (approximately ½ mile long and ¼ mile wide) have been affected as the land slipped from its position downhill, burying much of the Simmons Pit and its machinery, portions of Highway 410, two or more houses, and a significant portion of the Naches River causing its relocation. The depths of the recently repositioned landslide materials vary from approximately 50 to 60 feet covering Highway 410 to several hundred feet higher up slope. The stability of the Nile Landslide area continues to be assessed by the Washington Department of Transportation to determine safety conditions for their workers around and on the slide.

9. On October 28, 2009, DNR inspected the Simmons Pit. DNR's representatives John Bromley and Isabelle Sarikhan conducted a meeting at the Simmons Pit with Ernie and Cory Simmons, Alan De Atley, and Ivan Urnovitz, Mine Safety and Health Administration Inspector. DNR observed and learned the following:

Landslide debris was cleared from the southeastern area of the toe (base) of the Niles Landslide in preparation of continued mining. Additional heavy equipment tracks were observed on the landslide above. Mr. De Atley, representing the Simmons, stated that Simmons considers their existing DNR permit valid and that they are going to mine. Exhibit D is a photo showing radial cracks immediately beneath the area to be mined as described by Mr. De Atley.

10. DNR issued the current 50 acre Surface Mine Reclamation permit for the Simmons Pit in 1994. The Nile Landslide has altered over 49 acres of the 50 acre permit area. Significant changes to site conditions at the Simmons Pit from the approved 1994 Reclamation Permit include slope shape, slope stability, and the position of the slope. The maps and cross sections that are contained within the Reclamation Permit no longer represent the site's conditions due to the significant change in topography caused by the Nile Landslide. Areas represented in the permit on maps and cross sections representing the flat mine floor are now

buried under slide material. The permit's contour maps show slopes that are significantly different than the site's current conditions. The current slopes are now down dropped, uplifted, or moved from their original position. Less than one acre of the Simmons Pit's pre-landslide pit floor remains unburied. *See* Exhibit B and the photo of the remaining pit floor of the Simmons Pit, attached as Exhibit E.

11. DNR knows that the engineering properties of the soil strength characteristics have changed for the newly created slope at the Simmons Pit, knows that the factor of safety regarding slope stability in its current condition has changed, and knows that these changes were caused by the Nile Landslide.

12. The significant changes related to the site's current condition make it impossible for DNR to determine whether minimum reclamation standards of RCW 78.44 can be satisfied without further geotechnical analysis.

13. The Reclamation Permit's described method of mining for establishing reclamation and the designed reclamation prior to the October 11<sup>th</sup> Nile Landslide are no longer relevant to the Simmons Pit due to the landslide. Surface mining and reclaiming the Simmons Pit under its current conditions have not been analyzed or authorized under the Surface Mining Act. The changed site conditions caused by the Nile Landslide make it impossible to conduct reclamation at the Simmons Pit without significant deviations from the existing plan.

14. The Nile Landslide poses an unstable condition, which must be assessed through an appropriate geotechnical study before mining activities are allowed to occur. The Nile Landslide has many characteristics that show it to be in an unstable (metastable) condition. The head scarp and minor (intermediate) scarps continue to ravel: rocks rolling down hill. The current toe of the landslide is overly steep. *See* Exhibit E. Significant signs of deformation and strain are evidenced by cracks, fissures, uplift, and fold features seen in and around the Simmons Pit not covered by the landslide debris field. Photos of these features are attached as Exhibits F, G, and H. The proposed access to the Simmons Pit is over a closed portion of Highway 410 which has been damaged by

folding and cracking as a result of the landslide. A photo showing some of the impacts to Highway 410 is attached as Exhibit I.

15. There are many public and environmental resources that could be buried if the Nile Landslide is reinitiated. At least eight remaining homes are within 1,000 feet of the Nile Landslide debris field and are within the affected area. These homes are within danger if the Nile Landslide is reinitiated. Portions of Highway 410 located below the landslide area are still being used to access homes. The rerouted Naches River bed is below the landslide area. People live and work near the Nile Landslide area and could be within the path of a reinitiated landslide.

16. Mining companies normally do not propose mining on active landslides. Mining in these areas are inherently dangerous and pose a tremendous challenge to re-establish a stable slope upon final reclamation.

17. Mining into the Nile Landslide has an increased risk for causing another landslide. The entire permit area of the Simmons Pit is within the Nile Landslide or its affected area. Mining anywhere along an active landslide poses increased risks of reinitiating the landslide due to the removal of the structural support for materials above the mined area. Re-initiation of the Landslide would likely cause further damage to nearby property and the environment. This would also likely increase the soft sediment deformation in the valley floor impacting repair work to the Naches River and the temporary detour roadway.

18. Mining into the “toe” (base) of the Nile Landslide has a heightened potential for reinitiating a landslide that could cause the burial, cracking, movement, or other effects damaging adjacent land, homes, ground and surface waters, including the Naches River. Mining in the manner that was occurring before October 11<sup>th</sup> would likely cause a slope failure. Further, excavating a significant portion of the Nile Landslide toe will cause a slope failure. The toe of a landslide is a term that describes the terminal end of the landslide, essentially where the landslide has stopped. It represents an area where the landslide’s kinetic energy has reached some form of equilibrium. The toe may appear stable and not move under static conditions after a landslide. How permanent the toe stability is depends on many factors that can only be answered after a thorough

slope stability investigation has been conducted. The toe provides resistance or “restraining force” and acts as a buttress to hold the bulk of the landslide body (upslope materials) or “driving force” in place. When driving force exceeds restraining force an unstable condition and potentially a landslide occurs. By excavating portions of the toe, the restraining force is reduced. Excavation of the toe or slope failures at the Simmons Pit may re-initiate the Nile Landslide.

19. Simmons & Son Hauling’s Reclamation Permit does not take into account the active Nile Landslide and does not attempt to ensure slope stability upon final reclamation in consideration of actual site conditions. A new or reinitiated landslide could enlarge the current 80+acre footprint of the Nile Landslide debris field and would cause more land to slide downhill, possibly affect the 34 acres of weakened and deformed lands that are adjacent to the landslide or to previously unaffected houses, Highway 410, or ground or surface waters, including the Naches River. The chance of this happening increases, if surface mining occurs without fully studying the slope’s current stability, identifying whether or where surface mining may occur without impacting the long term reclamation of the site, and identifying the appropriate means of surface mining and reclaiming the site. Considering the impact of the Nile Landslide and that the mine site is on the Nile landslide, mining at the site without appropriate planning and permitting poses an immediate danger to the public health, safety or welfare, or the environment.

20. An emergency suspension of all the Simmons Pit surface mining is required to minimize or avoid the immediate danger posed by mining. A professional geotechnical/engineering report that is acceptable to DNR is necessary prior to mining to ensure that mining towards reclamation will not reinitiate another landslide. A complete revised Reclamation Permit application that addresses slope stability for the approved pasture or forest land approved subsequent use, along with maps and cross sections that represent current site contours if approved would provide authority to operate under the changed conditions.

21. Any Findings of Fact found to be Conclusions of Law shall be deemed as such.

## CONCLUSIONS OF LAW

1. Under RCW 78.44.200, DNR may issue an Emergency Order to Suspend Surface Mining when a miner or permit holder is conducting surface mining in any manner not authorized by RCW 78.44, WAC 332-18, the approved reclamation plan, or the reclamation permit and that activity has caused a situation involving an immediate danger to the public health, safety, welfare, or environment.

2. The Reclamation Permit did not contemplate surface mining or reclamation on top of an active landslide. If allowed, surface mining and reclamation at the site will now be occurring on an active landslide. The approved maps and cross sections used in the 1994 plans to determine the validity and adequacy of Reclamation Permit 70-012365 are no longer representative of the site's conditions due to the significant change in topography and engineering properties of soils caused by the Nile Landslide. Simmons is not currently authorized under its Reclamation Permit, including its reclamation plan, or RCW 78.44 to conduct surface mining and reclamation on the active Nile Landslide.

3. The current site conditions at the Simmons Pit significantly deviate from the approved reclamation plan. Continued mining and reclamation at the current site cannot be conducted without continuing to significantly deviate from the approved plan, which is not permissible under RCW 78.44.091 without DNR's express written approval. Further reclamation permitting, planning, and slope stability monitoring must be conducted for the site's current conditions to establish appropriate mining and reclamation strategies to reestablish a stable slope upon the completion of mining.

4. Because of the conditions described in Findings of Fact Nos. 1 through 21, Simmons & Son Hauling is no longer able to conduct surface mining under authority of RCW 78.44 or its approved Reclamation Permit, including its reclamation plan.

5. A reinitiated landslide at the Nile Landslide site could bury additional houses, property, roadway, and previously unaffected portions of the Naches River. Mining into the active Nile Landslide increases the chances for this to happen. This poses an immediate danger to the public's health, safety, welfare, and environment.

6. This Emergency Order to Suspend is necessary to avoid the reinitiation of the Nile Landslide from surface mining.

7. The conditions described in Findings of Fact Nos. 1 through 21 are sufficient grounds for emergency action under RCW 78.44.200.

8. RCW 78.44.250 authorizes DNR to assess civil penalties when a miner or permit holder has failed to comply with a DNR order.

9. Any Conclusions of Law found to be Findings of Fact shall be deemed as such.

## **ORDER**

Based upon the foregoing Findings of Fact and Conclusions of Law, it is hereby **ORDERED:**

1. That Simmons & Son Hauling must, regardless of appeal, immediately suspend all surface mining and reclamation activities at the Simmons Pit, except as expressly allowed in writing by DNR. This Emergency Order to Suspend Surface Mining shall remain effective until Simmons & Son Hauling submits an acceptable reclamation plan based on an approved geotechnical study; only activities consistent with this approved plan may proceed.

2. **Imposition of Fines:** DNR will impose a fine of \$1,000.00 for each day that you fail to comply with this Order. This amount is based on RCW 78.44.250, WAC 332-18-05004 and WAC 332-18-05005. DNR may increase the per-day amount based on the severity of your

violation and your compliance history as provided in WAC 332-18-05005. If you violate this Order, DNR will add any accrued daily fines and provide a Notice of Civil Penalties approximately every thirty (30) days. As an illustration, your base civil penalty for thirty (30) days of noncompliance will be \$30,000.00.

### **Notice of Further Consequences for Noncompliance**

In addition to civil penalties, DNR may issue a Suspension of your Reclamation Permit under RCW 78.44.210 if you fail to comply with this Order. Further, the Attorney General may take the necessary legal action to enjoin, or otherwise cause to be stopped, surface mining in violation of this Order.

### **NOTICE OF APPEAL RIGHTS**

If you disagree with this Order, you may appeal it by applying for a hearing to DNR. If you decide to apply for a hearing, you must specify the factual basis for your appeal in writing. **You must file your written application for a hearing with DNR at the following address within thirty (30) days of DNR's "service" of this Order** ("Service" includes depositing in U.S. Mail or personal service. RCW 34.05.010(19). "Filing" occurs when the Department *receives* the necessary document. *See* RCW 34.05.010(6).):

ATTN: Regulatory Programs Manager  
Division of Geology and Earth Resources  
Department of Natural Resources  
P.O. Box 47007  
Olympia, WA 98504-7007

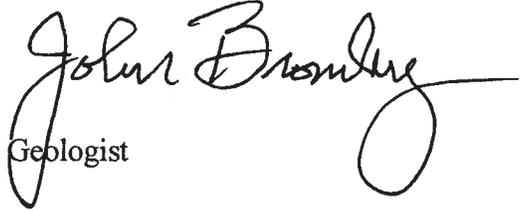
Upon *receiving* your appeal, DNR will arrange for an administrative hearing. The provisions of RCW 34.05.479, RCW 34.05.413 through RCW 34.05.476, and WAC 332-08-005 through WAC 332-08-405 will apply to that hearing.

If DNR does not *receive* your appeal within thirty (30) days of DNR's "service" of this Order, this document will become DNR's final order.

DATED this 4th day of November, 2009.

DEPARTMENT OF NATURAL RESOURCES

By John Bromley



Title Assistant State Geologist

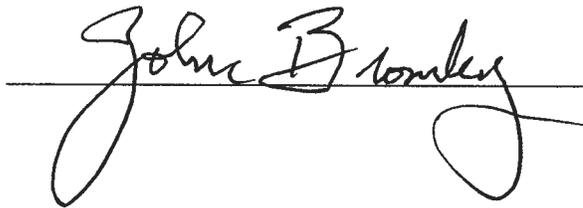
I certify that I served this *Emergency Order to Suspend Surface Mining* upon the miner or permit holder to whom it is issued by:

Personally handing it to the miner or permit holder; or

Sending it to the permit holder by certified mail on 4th day of November, 2009.

Certified mail number 70060100000229207404.

SIGNED this 4th day of November, 2009.





WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**

**SURFACE MINING  
RECLAMATION  
PERMIT  
(Form SM-9)**

Permit holder: Alfred L. Simmons  
Mailing address: 8963 Highway 410  
Naches, WA 98937

Pursuant to RCW 78.44, a Reclamation Permit is hereby granted to the above-named permit holder to engage in surface mining on the property described in the application and material on file under this permit. The total area to be disturbed by surface mining, including the deposition of surface-mining refuse, shall be in accordance with the reclamation plan filed with and approved by the Department of Natural Resources under this permit, and in accordance with the conditions and descriptions set forth in Exhibit "A" attached hereto and made a part hereof, and RCW 78.44.

**TERM OF PERMIT**

This permit shall be in effect from the date of issuance and shall remain in effect so long thereafter as the permit holder pays the annual basic fee for each site, complies with the Surface Mining Act and the rules promulgated thereunder, complies with the reclamation plan, and maintains a performance security as required by the Act.

**CHANGE OR MODIFICATION OF RECLAMATION PLAN**

The permit holder shall obtain written approval from the Department prior to any change or departure from the approved reclamation plan.

**PERFORMANCE SECURITY**

A performance security shall be submitted to and approved by the Department prior to commencement of surface mining. The permit holder may submit a cash deposit, assignment of a savings account or certificate of deposit, bank letter of credit, negotiable securities, assignments of interest in real property within the state, or a corporate surety bond in the amount specified. The amount of the performance security shall be subject to adjustment according to RCW 78.44.

**TRANSFER OF PERMIT**

The transfer of this permit to another permit holder shall not be made unless approved in writing by the Department. A transfer shall not be approved unless the successor permit holder assumes all duties of the former permit holder to complete the reclamation of the land and the Department approves the successor permit holder's performance security.

**PENALTIES**

The Department may suspend surface mining or impose civil penalties if the permit holder conducts surface mining in any manner not authorized by RCW 78.44, the rules adopted thereunder, the approved reclamation plan, or this permit.

Revised this 13 day of December, 1994

Signature Lorraine Powell  
Name (type or print) Lorraine Powell  
Title Regional Geologist  
Region Southeast Region

SE 1/4 Sec 2, T 15 N, R 15E  
SW 1/4 Sec 2, T 15 N, R 15E  
1/4 Sec, T, N, R  
1/4 Sec, T, N, R  
1/4 Sec, T, N, R

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Permit area 50 acres

**GEOLOGY AND EARTH RESOURCES**

Reclamation Permit No.  
12365

**EXHIBIT A**

**Additional Conditions of the Permit**

Surface Mine Reclamation Permit # 70-012365

- 1) This surface mining permit applies to the following property: a 50 acre portion of a 143.5 acre parcel located on the northeast side of SR 410 in the SE 1/4 and the SW 1/4 of Section 2 and Township 15 North, Range 15 East, W.M., Yakima County. Permit corners shall be located and marked for the duration of the permit.
- 2) All mining and reclamation shall comply with the rules and regulations pursuant to Chapter 78.44 RCW and Chapter 332-18 WAC.
- 3) All mining and reclamation shall comply with the reclamation plan, dated October 27, 1994 and approved by the department on November 30, 1994. Any significant variation from the plan shall be approved, in writing, by the department.
- 4) Reclamation activities shall, to the extent feasible, be conducted simultaneously with the surface mining. In any case, reclamation including revegetation with grasses and legumes shall be completed within 2 years of cessation of mining within any mine segment.
- 5) Reclamation setbacks will be equal to the height of the working face. A permanent set back of 30 feet will be maintained.

Reclamation setbacks of a minimum of 150 feet (the height of the working face) shall be maintained, interior of the mandated permanent setbacks, on the sides of the permit during mining. Destruction of these reclamation setbacks shall be allowed at reclamation. Setbacks shall be located and marked as mining approaches those setbacks in any mine segment. Setback markers shall be maintained until reclamation along that mine segment commences.

- 6) Reject fines and scalpings shall be saved and stockpiled separately and shall be maintained on-site for use in final reclamation.
- 7) The department shall be notified and shall approve any material imported from off-site for use in reclamation.

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- 8) Suitable measures shall be taken to prevent contamination, by petroleum products and other pollutants, of materials to be used for reclamation including the pit floor and any staging area.
- 9) As presented in the reclamation plan, no off-site discharge of runoff shall occur at reclamation; any runoff that does not percolate shall be directed towards an established storm water detention basin. Post-mining drainage swales shall be created on the pit floor to direct runoff into the basin; measures to protect drainage swales from erosion and to slow runoff may be required.
- 10) Filling with fines may occur to enhance the variability of the pit floor.
- 11) Reclaimed slopes shall vary between 2 and 3 horizontal to 1 vertical except where slopes greater than 2 horizontal to 1 vertical are needed to blend with adjacent topography. Reclaimed slopes shall not be straight or planar but rather reclaimed slopes shall be sinuous and variable; right-angles shall be rounded. Reclaimed slopes must be stable.
- 12) The pit floor and any other compacted area shall be ripped to allow for better drainage and rooting conditions prior to placement of reject fines on the pit floor. Efforts shall be taken to avoid soil compaction during re-distribution. Fines shall be left roughly graded and, if possible, final equipment tracks shall be oriented perpendicular to the slope.
- 13) The site shall be aggressively revegetated as appropriate for the approved subsequent use of the permit area and as presented in the reclamation plan. Revegetation shall commence during the first proper growing season after pit floor creation and reject fines have been re-distributed. Species suitable for site conditions shall be utilized to assure reasonable survival rates. Grasses and legumes shall be followed by tree planting. Natural revegetation shall not be deemed satisfactory unless approved, in writing, by the department. Noxious weeds shall not be considered acceptable vegetation. Any variation from the revegetation plan shall be approved, in writing, by the department.

William O. Boyum  
WILLIAM O. BOYUM, Manager  
Southeast Region

Dec 14, 1994  
Date

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**STANDARD  
RECLAMATION PLAN  
(Form SM-8A)**

**DO I NEED TO FILE A RECLAMATION PLAN?**

The Surface Mining Act (RCW 78.44), as amended in 1993, requires you to file a reclamation plan for:

☛ **Mines more than three acres in size**

You must file a reclamation plan for mines in which three or more acres (including highwalls, pit floors, stockpiled areas, side-cast areas, and processing-plant sites) will be or have been disturbed by mining.

A disturbed area is any place where operations in preparation for or during surface mining physically disrupt, cover, compact, move, or otherwise alter the characteristics of soil, bedrock, or topography that existed prior to such operations. Disturbed areas may include, but are not limited to: working faces, excavated water bodies, pit floors, processing plant sites, stockpile sites, spoil-pile sites, and equipment staging areas.

Disturbed areas do not include mine access roads unless these roads have characteristics of topography, drainage, slope stability, or ownership that make reclamation necessary.

☛ **Mines with working faces higher than 30 feet and steeper than 45°**

You must file a reclamation plan for mines with working faces that are both higher than 30 feet and steeper than 1 foot horizontal to 1 foot vertical (45°), unless there is a pre-existing natural hazard in the area.

*Note: Lands that have already been reclaimed to the standards given in RCW 78.44 should not be included when calculating the disturbed-area or face-height thresholds.*

This form will help you by providing a checklist of the information required. Even so, it is not uncommon for applicants to have to modify their original plan before it is acceptable to the Department.

*Note: This form is also available on disk.*

*Note: When signed by the applicant and approved by the Department of Natural Resources, this document and the associated maps, cross sections, and other attachments will be the approved reclamation plan for this permit that the permit holder must follow for the mine site. Variation from the approved reclamation plan may require that a new plan be submitted to the Department for approval.*

*Please answer all questions legibly in ink and sign.*

NAME OF APPLICANT/PERMIT HOLDER(S) <i>(Type or print in ink.)</i> This will be the name(s) on the permit and performance security.  Alfred L. Simmons	NAME OF MINE Simmons Pit				
	Street address and milepost of surface mine  Mile Post 108 SR 410 8963 State Rt. 410 Nile, WA 98937				
MAILING ADDRESS  8963 State Rt. 410 Naches, WA 98937  Telephone (509) 658-2971	Distance (miles) 11	Direction from West	Nearest community Naches		
	COUNTY <u>Yakima</u> No attachments will be accepted. Legal description of permit area:				
SURFACE OWNERSHIP Give names and addresses of all individuals with possessory interest in land. <i>(Continue on another sheet if more space is needed.)</i>  <div style="text-align: center;"> <p><b>RECEIVED</b></p> <p>DEC 16 1994</p> <p><b>GEOLOGY AND EARTH RESOURCES</b></p> </div>	1/4	1/4	Section	Township	Range
	S 1/2	SE	2	15N	15E
	S 1/2	SW	2	15N	15E
MINING AREA TO BE DISTURBED (Include all acreage to be disturbed by mining, reclamation setbacks, and associated activities during the life of the mine.)  In the following 36 months <span style="float: right;">3 to 4</span> acres  Total during the life of the mine (This should be the same number as on Form SM-2.) <span style="float: right;">50</span> acres					



# PLANNING FOR RECLAMATION

Reclamation of a site must meet or exceed the minimum reclamation standards required by the Washington State Surface Mining Act (RCW 78.44). The primary purpose of the Act is to insure that segmental reclamation occurs promptly and properly for all permitted mines. Each requirement of the reclamation law may not fit every mine. The law provides some latitude for variance. If you have a good reclamation idea or a unique operating problem, see the reclamation officer at your Department of Natural Resources Region office.

## WHAT IS A RECLAMATION PLAN?

A reclamation plan can be thought of as both a financial planning document and a contract that defines the topography, drainage, and vegetation of the site after reclamation is complete. This plan describes the permit holder's strategy to achieve acceptable reclamation at the lowest possible cost and establishes an economic limit of production for each site based on the area available for mining and the grade of the deposit. It also identifies and addresses mitigation of potential environmental impacts, such as gulying of impermeable clays, for which the permit holder is liable; establishes a segmental sequence of mining and reclamation that will avoid unnecessary earth moving; and identifies equipment needed.

The plan should provide a schedule for initiating reclamation as soon as possible on parts of the site where surface mining has been completed. Reclamation activities, to the extent feasible, should be conducted simultaneously with surface mining, and, in any case, reclamation must be completed on

any segment within two years of abandonment of mining on that segment (except as provided for in a segmental reclamation agreement).

A reclamation plan should be simple, practical, and easy to implement. It should be flexible, taking into account the potential for unanticipated changes in the geology and the market that will affect reclamation. The plan should have provisions for quality reclamation even if mining to depletion never occurs.

Form SM-8A and the required maps and cross sections are adequate documentation for most mines. In some instances, separate reports, such as an expanded checklist, a hydrogeologic evaluation, or an environmental impact statement, may be necessary.

When signed by the applicant/permit holder(s) and landowner(s) and approved by the Department of Natural Resources (DNR), this document and the associated maps, cross sections, and other attachments will be considered the approved reclamation plan for this permit, which the permit holder must follow for the mine site. Significant variations from the approved reclamation plan require that a new reclamation plan be submitted for approval. Managers and senior equipment operators must be familiar with the reclamation obligations to which the permit holder has committed.

The checklist below will help you be sure that nothing is forgotten. Neatness counts! If a plan is not neat and legible and in ink, it will be rejected.

## CHECKLIST OF MINIMUM RECLAMATION STANDARDS

### GENERAL INSTRUCTIONS

Please check the appropriate boxes and fill in the blanks below. Where required, please explain in the space provided. If the question does not apply to your mine, please write in "NA" for "not applicable" to let us know you have read the question. If additional space is needed, write "(Continued)" in the blank and restate the question and continue your answer on a separate sheet, or write "See attached report" in the blank and attach a report. Any unanswered questions may result in this form being returned to you unapproved.

### MINE TYPE

- Type of mine:  pit  quarry
- Material(s) to be mined:  sand and gravel  rock or stone  clay  metal  limestone  silica
- other \_\_\_\_\_
- Deposit type:  glacial  river flood plain (alluvial)  river channel deposits  talus  bedrock  unknown
- lode  other \_\_\_\_\_

### HYDROLOGY

- Water table depth is 26 feet below ~~XXXXXXXX~~  the surface, or  other \_\_\_\_\_
- Annual fluctuation of water table is from 26 feet on Jan. 1 to 24 feet on July 1.
- (date) (date)

- Direction of ground water flow: Southeast
- Is the aquifer perched?  yes  no
- Is the shallowest aquifer:  confined  unconfined?
- The site will be mined:  wet  dry  both
- Explain This will be a dry mining site  
into the hill side.

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- If any of the following conditions apply, a hydrogeologic evaluation that outlines measures to protect against or mitigate avulsion, erosion, and damage to fisheries may be necessary. The site is in a:
- river or stream channel  100-year flood plain
- critical aquifer recharge area  sole source aquifer
- wellhead protection area  special protection area
- public water supply watershed
- designated aquifer protection area
- Hydrogeologic evaluation is attached  yes  no

Explain: This is not a flood plain or protected aquifer area.

mixed with sterile soil. Topsoil should not be used for screening berms require by county or municipal government because this would preclude its timely use for reclamation.

Depth of topsoil is 0 feet.  
Depth of subsoil is 0 feet.  
Depth to bedrock is 0 feet.

### SUBSEQUENT LAND USE

Subsequent land use:  industrial  agricultural  
 forestry  residential  wetlands and lakes  
 other \_\_\_\_\_

Topsoil will be salvaged where possible?  yes  no  
If no, explain: No soil or overburden on site.  
Reject fines (if any) will be saved for reclamation.

Subsequent land use is compatible with county or municipal comprehensive plan?  yes  no

Topsoil and overburden will immediately be moved to reclaim adjacent depleted segment?  yes  no  
If no, explain: No soil or overburden on site.

County or Municipality Approval for Surface Mining (Form SM-6) is attached?  yes  no

If any answers are no, explain: \_\_\_\_\_

Topsoil and overburden storage areas will be beyond the limits of mining but positioned for the shortest possible downhill transport during reclamation?  yes  no  
If no, explain: Reject fines will be stock-piled on pit floor.

Note: Approval of the reclamation plan and (or) Form SM-6 does not vest the subsequent land use. Subsequent use may be changed by the permit holder with the written approval of local government up until the time reclamation is complete and the reclamation permit is terminated. Change of subsequent use by the permit holder may require submission of revised Forms SM-6 and SM-8A and a State Environmental Policy Act (SEPA) checklist.

Before materials are moved, vegetation will be cleared and drainage planned for the storage areas?  yes  no  
If no, explain: No vegetation & no drainage system on site.

### SITE PREPARATION

#### Permit and Disturbed Area Boundaries

The permit holder should delineate the permit boundaries and maximum extent of disturbance and setbacks with clearly visible permanent boundary markers. The permit holder must maintain the boundary markers until the termination of the reclamation permit.

Storage areas will be stabilized with vegetation if materials will be stored more than one season?  yes  no  
If no, explain: \_\_\_\_\_

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Boundary of the permit area has been marked with permanent boundary markers?  yes  no

Boundaries of areas to be disturbed by mining (permit area minus setbacks) have been marked with permanent boundary markers?  yes  no

If no, explain: \_\_\_\_\_

### GEOLOGY AND EARTH RESOURCES

#### Permanent Setbacks and Screens

Permanent setbacks and screens help control erosion, and provide seed sources for reclamation. Screens should consist of native vegetation and (or) topography. Permanent setbacks are not required for pits (unconsolidated deposits) but may still be useful if the mine has close neighbors or adjacent scenic resources, and setbacks may be required by local government. Permanent setback and screen material should not be mined or used for reclamation. The minimum permanent setback for quarries (consolidated deposits) permitted after June 30, 1993, is 30 feet.

The permanent setback for this site will be 30 feet wide.

#### Saving Topsoil and Overburden for Reclamation

Prior to any surface mining operation, the permit holder shall carefully stockpile all available topsoil and overburden in stable storage areas for use in later reclamation or immediately move them to reclaim adjacent depleted segments. Topsoil needed for reclamation may not be sold or given away or removed or

**Reclamation Setbacks**

If the cut-and-fill method will be used to restore slopes rather than mining to a final slope, a setback from the property boundary or permanent setback (where used) is necessary to insure sufficient material for reclamation. The reclamation setback for pits (unconsolidated deposits) permitted after June 30, 1993, must be at least equal to the maximum anticipated height of the adjacent working face. (A setback equal to the working face will provide only enough material for a 2:1 slope. To meet the standards of the law for slopes of between 2:1 and 3:1, a larger setback is generally required.)

Maximum depth of the mine will be 150 feet.

The reclamation setback (material that can be used for reclamation) for this site will be 0 to 150 feet wide, equal to the height of working face. Reclamation setback has been marked with permanent boundary markers?  yes  no

If no, explain: Same as disturbed area markers.

This site will not have a reclamation setback because a backfilling plan is attached?  yes  no

This site will not have a reclamation setback for the following reason(s): Reclamation setback will be equal to the height of the working face on the North & East side of property. The grade of the site make a setback N/A on the south side.  
**Setbacks to Protect Streams and Flood Plains**

Generally no mine may be located in or near streams or on 100-year flood plains unless a Shoreline Permit has been issued. Setbacks from streams and flood plains should be at least 200 feet wide. Wider setbacks may be necessary for stream and flood-plain stability and to prevent breaching of the pit at a later date.

A stream setback of at least 200 feet has been marked with permanent boundary markers?  yes  no

A setback of at least 200 feet from the 100-year flood plain has been marked with permanent boundary markers?  yes  no

Explain: Site not on flood plain.

Copy of Shoreline Permit from the Department of Ecology and (or) local government is attached?  yes  no

Hydraulic project approval from the Department of Fisheries and Wildlife is attached?  yes  no

**Conservation Setbacks**

In special cases, setbacks may be necessary to protect unstable slopes, wildlife habitat, or other sensitive areas or to limit turbid water discharge from areas that will be disturbed.

Conservation setbacks are necessary for:  unstable slopes  wildlife habitat  water quality  other \_\_\_\_\_

Explain: N/A

Conservation setbacks have been marked with permanent boundary markers?  yes  no

**SEGMENTAL RECLAMATION**

The permit holder must reclaim each segment of the mine within two years of completing mining on that segment and (or) in the manner described in this reclamation plan or a separate segmental reclamation agreement. Segmental reclamation helps establish self-sustaining vegetation, especially native pioneer vegetation, and promotes stable slope conditions and improves the water quality and appearance of the site.

Permit area has been divided into segments for mining and reclamation purposes?  yes  no

If no, explain: \_\_\_\_\_

Each segment is smaller than seven acres, has less than 500 linear feet of working face, and has characteristics that make it feasible to treat it as a unit?  yes  no

Explain: \_\_\_\_\_

A schedule for the sequence of mining and segmental reclamation of each segment or a Segmental Reclamation Agreement is attached?  yes  no

If no, explain: **RECEIVED**

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**GEOLOGY AND EARTH RESOURCES**

**MINING PRACTICES TO FACILITATE RECLAMATION**

**Removal of Vegetation**

Vegetation will be removed sequentially from areas to be mined to prevent unnecessary erosion?  yes  no

If no, explain: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Small trees and other transplantable vegetation will be salvaged for use in revegetating other segments?  yes  no  
If yes, give details: No small trees in area to be disturbed.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Wood and other compactible debris should not be buried; it should be recycled, removed, burned, or chipped. If wood and other compactible debris will be buried, solid-waste disposal and land-use permits must be obtained.

Wood and other compactible debris will be:  recycled  
 removed  chipped  burned  buried  
 used to synthesize topsoil or mulch  
 other No wood is in the disturbed area.

\_\_\_\_\_  
\_\_\_\_\_

Solid-waste disposal, burning, and land-use permits are attached?  yes  no

Some wood and other debris will be salvaged and used for fish and wildlife habitats?  yes  no

If yes, give details; if no, explain: N/A

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Erosion Control**

Erosion control measures are generally necessary during mining to avoid severe erosion or loss of topsoil. Each site must be evaluated on an individual basis, and multiple techniques to control erosion may be necessary. The Department of Ecology requires discharge permits for most surface mines. In addition, some mines at higher elevations should plan for the effects of rain-on-snow events on slope stability and erosion.

Pit floor will slope at gentle angles toward highwall, sediment retention pond, or proper drainage?  yes  no

If yes, give details; if no, explain: Pit floor

slightly sloped towards highwall.  
\_\_\_\_\_  
\_\_\_\_\_

Revegetation, sheeting, and (or) matting will be used to protect areas susceptible to erosion?  yes  no  
If yes, give details; if no, explain: Site composed of talus. No erodable material on disturbed slopes.

\_\_\_\_\_  
\_\_\_\_\_

Temporary water-control systems used for erosion control will:

- Divert clean water around the pit?  yes  no N/A
- Trap sediment-laden runoff before it enters a stream?  yes  no
- Result in essentially natural conditions of volume, velocity, and turbidity?  yes  no
- Be designed for 25-yr, 24-hr peak event?  yes  no
- Be removed or reclaimed?  yes  no

If any answers are no, explain: (1) No clean water streams on site. (2) Temporary water control systems will not be reclaimed a they are part of the capital developmen of the site.

\_\_\_\_\_  
\_\_\_\_\_

Ditches, flumes, and (or) armored channels will be established to prevent erosion of setbacks on neighboring properties?  yes  no

If yes, give details; if no, explain: No run-off from site.

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**GEOLOGY AND EARTH RESOURCES**

Stormwater conveyance ditches and channels will be lined with vegetation or riprap?  yes  no

If yes, give details; if no, explain: Storm waters will be trapped by back sloping pit floor.

\_\_\_\_\_  
\_\_\_\_\_

Natural and other drainage channels will be kept free of equipment, wastes, stockpiles, and overburden?

yes  no

If no, explain: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### RECLAMATION TOPOGRAPHY

The goal of reclamation is to create stable, usable land. New drainages should be established, and contours should blend smoothly with adjacent offsite topography. To promote slope stability and revegetation, slopes should generally vary between 2.0 and 3.0 feet horizontal to 1.0 foot vertical or flatter. Slopes steeper than 1.5 feet horizontal to 1.0 foot vertical are not acceptable for pits except in limited areas to tie in to offsite topography. The reclaimed mine site should appear natural—that is, slopes should be sinuous and right-angle corners should be eliminated by rounding. Sinuous slopes can be formed either by mining to the prescribed angles, which is generally more cost effective, or by using the cut-and-fill method. Backfilling is not allowed unless prior approval is obtained from DNR.

#### FINAL SLOPES

Slopes will vary in steepness?

yes  no

If no, explain: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Slopes will have a sinuous appearance in both profile and plan view?

yes  no

If no, explain: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Slopes will have no large rectilinear (that is, right angle or straight, planar) areas?

yes  no

If no, explain: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Where reasonable, tracks of the final equipment pass will be preserved and oriented to trap moisture, soil, and seeds and to inhibit erosion?

yes  no

If no, explain: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Slope Requirements for Pits and Waste Rock Dumps

For unconsolidated material (such as sand and gravel pits, waste rock dumps, etc.), final slopes must meet the following requirements:

Slopes will vary between 2.0 and 3.0 feet horizontal to 1.0 foot vertical or flatter, except in limited areas where steeper slopes are necessary to create sinuous topography and control drainage?

yes  no

If no, explain: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

For pits, slopes will not exceed 1.5 feet horizontal to 1.0 foot vertical except as necessary to blend with adjacent natural slopes?

yes  no

Give details: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

### Slope Requirements for Quarries and Hardrock Metal Mines

For consolidated rock, such as basalt, andesite, granite, limestone, or quartzite, a vertical highwall face may be acceptable. There is no prescribed angle or height.

Some slopes will be reclaimed as cliffs?

yes  no

If yes, explain by checking the appropriate box below:

Slopes steeper than 1.0 foot horizontal to 1.0 foot vertical are an acceptable subsequent land use as confirmed on Form SM-6.

Cliffs are indigenous to the immediate area and already present a threat to human life. Photo attached to document presence of cliffs.

Geologic or topographic characteristics of the site preclude slopes being reclaimed at a flatter angle and are an acceptable subsequent land use as confirmed on Form SM-6.

Explain: \_\_\_\_\_

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Selective blasting will be used to remove benches and walls and to create chutes, buttresses, spurs, scree slopes, and rough cliff faces that appear natural?

yes  no

If yes, give details; if no, explain: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Reclamation blasting will be used to reduce the entire highwall to a scree or overburden slope less than 2.0 feet horizontal to 1.0 foot vertical?  yes  no  
If yes, give details; if no, explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Small portions of benches will be left to provide habitat for raptors and other cliff-dwelling birds?  yes  no

**Backfilling**

If backfilling is proposed, it is necessary to give the source of the backfill material, quantity needed, grading and compaction scheme, erosion control plan, and immediate vegetation plan. If backfill is to be brought from off site, copies of all permits from local government will be necessary.

Slopes will require significant backfilling?  yes  no

DNR-approved backfilling plan and (or) permits are attached?  yes  no

If no backfilling plan attached, explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Backfilling will be done with overburden material (not topsoil) perched above the mine?  yes  no  
If no, what is the source of the material? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

All grading/backfilling will be done with non-noxious, non-combustible, relatively incompactible solids?  yes  no  
If yes, give details; if no, explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Backfilled slopes will be compacted?  yes  no  
If yes, give details; if no, explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**MINE FLOORS**

Flat areas will be formed into rolling mounds?  yes  no  
If yes, give details; if no, explain: Subsequent use requires a fairly level surface.

Mine floor will be gradually graded into sinuous drainage channels to preclude sheet-wash erosion during intense precipitation?  yes  no

If yes, give details; if no, explain: Subsequent use requires a level surface.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Mine floor will be bulldozed, plowed, ripped, or blasted to foster revegetation?  yes  no

If yes, give details; if no, explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**LAKES, PONDS, AND WETLANDS**

If surface mining results in the formation of a swamp, pond, or lake useful for recreation, wildlife habitat, water quality control, or other beneficial wetland purposes, the site must be reclaimed in the following manner:

Reclaimed areas below the permanent low water table in soil, sand, gravel, and other unconsolidated material will have a slope no steeper than 1.5 feet horizontal to 1.0 foot vertical?  yes  no

If yes, give details; if no, explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If not already present, soils, silts, and clay-bearing material will be placed below water level to enhance revegetation?  yes  no

If yes, give details; if no, explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Some parts of pond and lake banks will be shaped so that a person can escape from the water?  yes  no

If yes, give details; if no, explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Armored spillways or other measures to prevent undesirable overflow or seepage will be provided to stabilize bodies of water and adjacent slopes?  yes  no

If yes, give details; if no, explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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Wildlife habitat will be developed, incorporating such measures as:

- Sinuuous and irregular shorelines?  yes  no
- Varied water depths?  yes  no
- Shallow areas <18 inches deep?  yes  no
- Islands and peninsulas?  yes  no

Give details: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Ponds or basins will:

- Be located in stable areas?  yes  no
- Have sufficient volume for expected runoff?  yes  no
- Have an emergency overflow spillway?  yes  no
- Have protected spillways and outfalls (for example, rock armor) to prevent failure and erosion?  yes  no

If any answers are no, explain: no water on mining site  
\_\_\_\_\_

Proper measures will be taken to prevent seepage from water impoundments that could cause flooding outside the permitted area or adversely affect the stability of impoundment dams or adjacent slopes?  yes  no

If yes, give details; if no, explain: DRY PIT  
\_\_\_\_\_

Written approval from other agencies with the jurisdiction to regulate impoundment of water is attached?  yes  no

If no, explain: NO WATER ON SITE  
\_\_\_\_\_

### Final Drainage Configuration

Reconstructed drainages must be graded and contain enough energy-dissipation devices so that essentially natural conditions of water velocity, volume, and turbidity are re-established within six months of reclamation of each mine segment.

Drainage will be capable of carrying the peak flow of the 25-year, 24-hour precipitation event? (Data are available at DNR Region offices.)?  yes  no

If yes, give details; if no, explain: Drainage will be directed towards the permiable working faces.  
\_\_\_\_\_

Drainages will be constructed on each reclaimed segment to control surface water, erosion, and siltation, and to direct clean runoff to a safe outlet?  yes  no  
If yes, give details; if no, explain: Back sloping will direct drainage toward permiable working faces.  
\_\_\_\_\_

The grade of ditches and channels will be constructed to limit erosion and siltation?  yes  no  
If yes, give details; if no, explain: Site is enclosed so that back sloping pit floor will control erosion.  
\_\_\_\_\_

## SITE CLEANUP AND PREPARATION FOR REVEGETATION

### Dealing with Hazardous Materials

If surface mining will expose hazardous natural materials, such as acid-forming coals and metalliferous rock or soil, the permit holder must attach a plan to handle such materials. All grading/backfilling to cover the hazardous materials must be made with non-noxious, noncombustible, relatively incompatible solids unless the permit holder provides written approval from all appropriate solid waste regulatory agencies. Other methods may also be acceptable.

Natural hazardous materials are present at the mine site?  yes  no

The final ground surface drains away from any hazardous natural materials?  yes  no

If yes, give details; if no, explain: No hazardous materials on site.  
\_\_\_\_\_

Plan for handling hazardous mineral wastes indigenous to the site is attached?  yes  no

If no, written approval from all appropriate solid waste regulatory agencies is attached?  yes  no

### Removal of Debris

All debris (garbage, "bone piles", treated wood, etc.) will be removed from the site?  yes  no

All temporary sheds, scale houses, and other structures will be removed from the site?  yes  no

If either answer is yes, give details; if no, explain: Site will be left clean  
\_\_\_\_\_

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## SOIL REPLACEMENT

If available, up to 3 feet of topsoil and (or) subsoil will be restored?  yes  no

If no, explain: No soil on site.

\_\_\_\_\_

\_\_\_\_\_

Topsoil will be restored and seedbeds prepared as necessary to promote effective revegetation and to stabilize slopes and mine floor?  yes  no

If yes, give details; if no, explain: Reject fines will be used on pit floor for revegetation.

\_\_\_\_\_

Topsoil will be replaced to an approximate depth of 1/4 to 1/2 feet on the pit floor and a depth of 0 feet on slopes.

Topsoil will be distributed evenly over the site  yes  no

If no, explain: NO TOP SOIL

\_\_\_\_\_

\_\_\_\_\_

If topsoil is in short supply, it will be strategically placed in depressions and low areas in adequate thickness to conserve moisture and promote revegetation?  yes  no

If no, explain: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Topsoil will be moved when conditions are not overly wet or dry?  yes  no

If no, explain: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Topsoil will be imported?  yes  no

Explain: No topsoil has ever been on the site and it will not be imported.

\_\_\_\_\_

\_\_\_\_\_

Synthetic topsoil will be used and (or) made on site to supplement existing topsoil?  yes  no

If no, explain: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Materials, such as silt, loess, and (or) shale, are available on site that could be used to supplement topsoil for reclamation?  yes  no

If no, explain: Fine rejects will be used as topsoil.

\_\_\_\_\_

\_\_\_\_\_

Silts from settling ponds or a filter press will be used for reclamation?  yes  no

If no, explain: No settling ponds or filter press will be used at or near the site.

\_\_\_\_\_

Settling pond clay slurries will be pumped or hauled to other segments for reclamation?  yes  no

If no, explain: No settling ponds on site.

\_\_\_\_\_

\_\_\_\_\_

Topsoil will be replaced with equipment that will minimize compaction, or it will be plowed, disked, or ripped following placement?  yes  no

If no, explain: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Topsoil will be immediately stabilized with grasses and legumes to prevent loss by erosion, slumping or crusting?  yes  no

If no, explain: As compatible with pasture uses.

\_\_\_\_\_

\_\_\_\_\_

## REVEGETATION

The revegetation plan should show how, when, where, and what vegetation will be planted. A thorough and detailed plan increases the chances that plants are well established when reclamation is finished. It is best to do test and demonstration plantings early and to monitor the results so that appropriate changes can be made before mining ceases.

The mine site is in:  eastern Washington  
 western Washington?

The mine site is:  wet  dry?

The average precipitation is 15 inches/year.

Revegetation of a segment will start during the first proper planting season (fall for grasses and legumes, fall or late winter for trees and shrubs) following restoration of slopes?  yes  no

**GEOLOGY AND EARTH RESOURCES**

If yes, give details; if no, explain: Site will be planted in the spring during periods of high moisture.

Test plots will be used to determine optimum vegetation plans?  yes  no

The site will not be actively revegetated because:

- It is a rural area with a rainfall exceeding 30 inches annually and erosion will not be a problem (requires approval of DNR Region office).
- Demonstration plots and areas will be used to show that active revegetation is not necessary.
- Revegetation is inappropriate for the approved subsequent use of this surface mine.

Explain: Subsequent use requires pasture grass and/or trees for revegetation.

Documentation is attached?  yes  no

### RECOMMENDED PIONEER SPECIES

Segmental reclamation allows plant communities to develop according to ecological succession stages. A combination of natural reseeding and intentional planting is the most effective means of establishing diverse and prosperous pioneer vegetation. Revegetation with grass and legumes should occur during the first appropriate season after slope shaping and replacement of topsoil. Establishing widespread healthy vegetation generally takes several seasons. Follow-up evaluations may be necessary to monitor progress and to determine why plants did not thrive.

In eastern Washington, continuous ground cover may not be achievable because of arid conditions or sparse topsoil. However, revegetation shall be as continuous as reasonably possible.

The sections below give suggestions for species most likely to survive in different types of climate. Check the species that will probably be planted at your mine site.

#### Western Washington Dry Areas

- |   |   |
|---|---|
| <input type="checkbox"/> alfalfa*               | <input type="checkbox"/> lupine*        |
| <input type="checkbox"/> clover*                | <input type="checkbox"/> orchard grass  |
| <input type="checkbox"/> cereal rye             | <input type="checkbox"/> perennial rye  |
| <input type="checkbox"/> colonial bent grass    | <input type="checkbox"/> ponderosa pine |
| <input type="checkbox"/> creeping red fescue    | <input type="checkbox"/> red alder*     |
| <input checked="" type="checkbox"/> Douglas fir | <input type="checkbox"/> shore pine     |
| <input type="checkbox"/> ground cover (other)   | <input type="checkbox"/> shrubs         |

Other PINE BARK OR YELLOW

#### Western Washington Wet Areas

- |  |  |
|--|--|
| <input type="checkbox"/> birdsfoot trefoil   | <input type="checkbox"/> sedges          |
| <input type="checkbox"/> cedar               | <input type="checkbox"/> tubers          |
| <input type="checkbox"/> cottonwood          | <input type="checkbox"/> wetland grasses |
| <input type="checkbox"/> creeping red fescue | <input type="checkbox"/> willow          |
| <input type="checkbox"/> red alder*          |  |

Other \_\_\_\_\_

#### Eastern Washington Dry Areas

- |   |   |
|---|---|
| <input type="checkbox"/> alder*                   | <input type="checkbox"/> juniper            |
| <input checked="" type="checkbox"/> alfalfa*      | <input type="checkbox"/> lodgepole pine     |
| <input type="checkbox"/> black locust*            | <input type="checkbox"/> lupine*            |
| <input type="checkbox"/> deciduous trees          | <input type="checkbox"/> ponderosa pine     |
| <input type="checkbox"/> deep-rooted ground cover | <input type="checkbox"/> Russian olive*     |
| <input type="checkbox"/> diverse evergreens       | <input type="checkbox"/> shrubs             |
| <input checked="" type="checkbox"/> grasses       | <input checked="" type="checkbox"/> clover* |

Other Possible Ponderosa Pine

#### Eastern Washington Wet Areas

- |                                     |                                       |
|-------------------------------------|---------------------------------------|
| <input type="checkbox"/> alder*     | <input type="checkbox"/> serviceberry |
| <input type="checkbox"/> cottonwood | <input type="checkbox"/> tubers       |
| <input type="checkbox"/> poplar     | <input type="checkbox"/> willow       |
| <input type="checkbox"/> sedges     |                                       |

Other OUR AREA IS

DRY

Give planting details: \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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\* Indicates nitrogen-fixing species

#### PLANTING TECHNIQUES

Mined sites generally present harsh conditions that hamper revegetation. Nevertheless, much can be done to increase the chances for successful seeding and planting.

Revegetation at this site will require:

- Ripping and tilling?  yes  no
- Blasting to create permeability?  yes  no
- Mulching?  yes  no
- Irrigation?  yes  no
- Fertilization?  yes  no
- Importation of clay or humus-bearing soils?  yes  no
- Adding other soil conditioners or amendments?  yes  no

Give details: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Trees and shrubs will be planted in topsoil or in subsoil amended with generous amounts of organic matter?  yes  no

If yes, give details; if no, explain: Lack of topsoil limits trees and shrubs to natural seed only.

Mulch will be piled around the base of trees and shrubs?  yes  no

High-quality stock will be used?  yes  no

Trees and shrubs will be planted while they are dormant?  yes  no

Stock will be properly handled, kept cool and moist, and planted as soon as possible?  yes  no

Seeds will be covered with topsoil or mulch no deeper than a half inch?  yes  no

If any answers are no, explain: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

A Reclamation Reopening Report (Form SM-8) will be filed with the Department upon completion of revegetation for each segment?  yes  no

If no, explain: \_\_\_\_\_

### GEOLOGY AND EARTH RESOURCES

Note: The Department of Natural Resources will not release a reclamation permit or performance security until it deems that effective revegetation has commenced. That is, vegetation has survived through at least one growing season and come up again (usually about 18 months).

## MAPS

U.S.F.S. Map

Information about your proposed reclamation plan should be provided on several types of maps: (1) a site-access map, (2) a pre-mining topographic map, (3) a reclamation sequence map, and (4) a final reclamation map with at least two intersecting cross sections. These maps and cross sections should be at an appropriate scale to show the desired information.

### Suggested Map Scales

Site size	Map scale
3-5 acres	not less than 1 inch = 50 feet
5-10 acres	not less than 1 inch = 100 feet
10 or more acres	not less than 1 inch = 200 feet

### Other Map Requirements

Preferred map size is 11 x 17 inches unless otherwise noted; larger maps are acceptable, but you must be prepared to furnish additional copies, if requested. If maps are small, they may be grouped together on a single sheet of paper.

Each map must include:

- Scale  Bar scale  North arrow
- Legend with all symbols defined or explained
- Title block with the following information:
  - Title of map
  - Application/permit number
  - Name and address of applicant/permit holder(s)
  - Space for signature
  - Map/exhibit number
  - Date map was drawn or revised

### SITE ACCESS MAP U.S.F.S. Map

An 8 1/2 x 11 inch copy of the pertinent section of a road map that clearly shows how to get to the site from the nearest town.

### PRE-MINING TOPOGRAPHIC MAP<sup>1</sup>

This map is necessary to establish the location and setting of the mine site. It must show:

- Permit area plus an appropriate border on all sides.
- Elevations and contours, natural ground slopes, drainage patterns, and other topographic features <sup>2</sup>.
- Boundaries and names of counties and municipalities.
- Boundaries of property ownership, including adjacent properties.
- Names and addresses of adjacent property owners.
- Locations and names of other mines.
- Locations and names of all roads, railroads, utility lines, or any other rights of way.
- Locations and names of all streams and natural and manmade drainways.

<sup>1</sup> For a base map, use U.S. Geological Survey 7.5-minute maps, which are available from sporting goods stores or may be ordered from the U.S. Geological Survey, (509) 353-2524, or DNR Photo and Map Sales, P.O. Box 47031, Olympia, WA, 98504-7031, (206) 902-1234.

<sup>2</sup> Contour intervals are deemed adequate if they accurately reflect the conditions of the site. Generally, contour intervals should be between 5 and 20 feet.

12365

- Locations and names of significant buildings, parks, and other manmade features.
- Locations and names of all wells, lakes, springs, and existing wetlands<sup>1</sup>.
- Boundaries of the areas that will be disturbed by mining.

**RECLAMATION SEQUENCE MAP**

This map shows the details of the plan for mining and segmental reclamation. It should cover the same area as the pre-mining topographic map and display the following information:

- Permit area plus an appropriate border on all sides.
- Boundaries of the areas that will be disturbed by mining.
- Locations of all permanent boundary markers.
- Location of proposed access roads to be built in conjunction with the surface mining operation and whether they will be reclaimed or left as roads.
- Locations and types of setbacks and berms.
- Numbered segments and the direction and sequence of mining. Avoid mining from the center outward.
- Topsoil storage areas and sequence of stripping, storing, and replacement on mined segments.
- Overburden storage areas and sequence of stripping, storing, and replacement of soil on mined segments.
- Waste rock piles and how they will be reclaimed and stabilized.
- Operation plant and processing areas.
- Measures taken to protect adjacent surface resources, including prevention of slumping or landslides on adjacent lands.
- Location and description of the erosion control systems, including drainage facilities and settling ponds.
- Other pertinent features.

**FINAL RECLAMATION MAP**

This is a topographic map of the site as it will look after final reclamation. It must show all applicable data required in the narrative portion of the reclamation plan and details of the mine reclamation. The map should cover the same area as the pre-mining topographic map and should display the following information:

- Permit area plus an appropriate border on all sides.
- Final elevations and contours, adjacent natural ground slopes, reclaimed drainage patterns, and other topographic features.
- Locations and names of all roads, railroads, utility lines, or any other rights of way.
- Locations and names of all streams and drainages.
- Locations and names of significant buildings, parks, and other structures, facilities, or features.

<sup>1</sup> Existing wetland should be clearly shown on the plans. If wetland questions arise, contact the Department of Ecology (DOE).

<sup>2</sup> Information about geology may be available from the Department of Natural Resources, Division of Geology and Earth Resources, P.O. Box 47007, Olympia, WA 98504-7007, (206) 902-1450 or the USGS, (509) 353-2524.

- Locations and names of all lakes, springs, and wetlands.
- Location and depth of replaced topsoil.
- Permanent drainage and water-control systems (with expanded view, if needed).
- Area to be revegetated and proposed species.
- Other information pertaining to the permit and required by statute.

**Cross sections**

- At least two cross sections (generally at right angles) show original and final topography and water table.

**GEOLOGIC MAP<sup>2</sup>**

When required by the DNR, a detailed description of geologic setting and the type of deposit to be mined.

**PHOTOS AND OTHER SUPPORTING DATA**

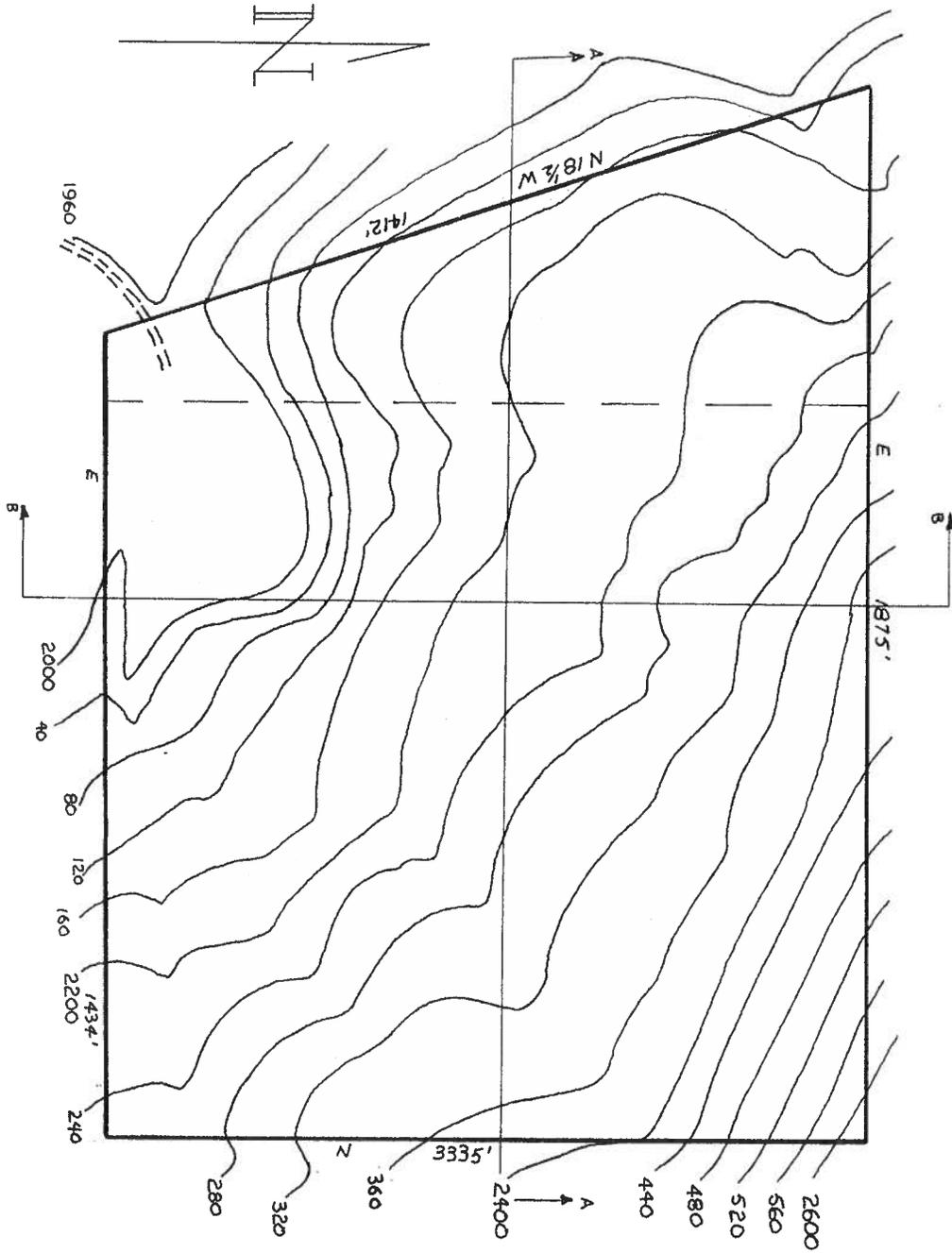
Aerial and (or) other photographs should be submitted in support of the application, when feasible. Additional maps, photos, and detailed reports may be required by DNR.

**FINAL CHECK**

- All documents submitted have the date, the name and address of the permit holder, and the application number on every page of the material.
- The plan contains predominantly relevant information.

*When signed by the applicant and approved by the Department of Natural Resources, this document and the associated maps, cross sections, and other attachments will be the approved reclamation plan for this permit that the permit holder must follow. Significant variations from the approved reclamation plan may require that a new plan be submitted to the Department for approval.*

I hereby agree to comply with this plan.	Date signed
<i>Alfred L. Simmons</i> <small>(Signature of applicant/permit holder)</small>	Oct 27 1994
I hereby verify that I have seen and approve this plan.	Date signed
<small>(Signatures of all individuals with possessory interest)</small>	
<b>FOR DEPARTMENTAL USE ONLY:</b>	
Approved by	Date approved
<i>Lorraine Powell</i>	Nov 30, 1994
Comments by Region	
<div style="font-size: 2em; font-weight: bold; margin-bottom: 10px;">RECEIVED</div> <div style="font-size: 1.5em; font-weight: bold; margin-bottom: 10px;">DEC 16 1994</div> <div style="font-size: 1.2em; font-weight: bold;">GEOLOGY AND EARTH RESOURCES</div>	



SCALE 1"=200'

RECEIVED

DEC 16 1994

PHOENIX AND EARTH RESOURCES

A.L. SIMMONS PIT

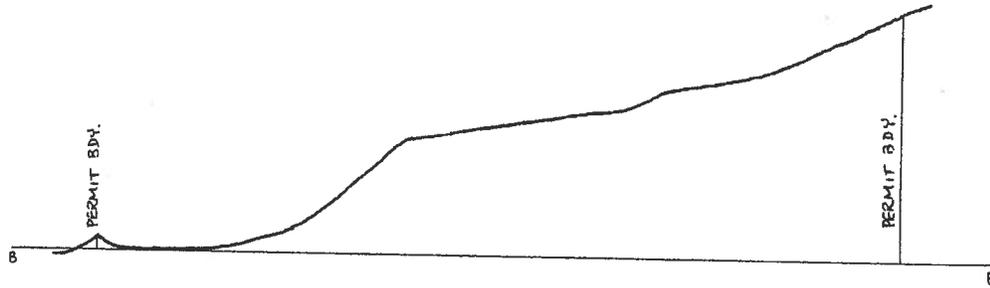
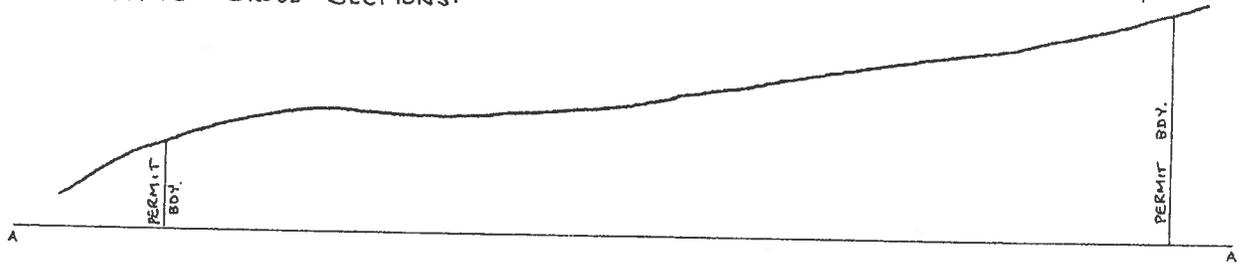
EXISTING CONTOURS

PERMIT No. 12363

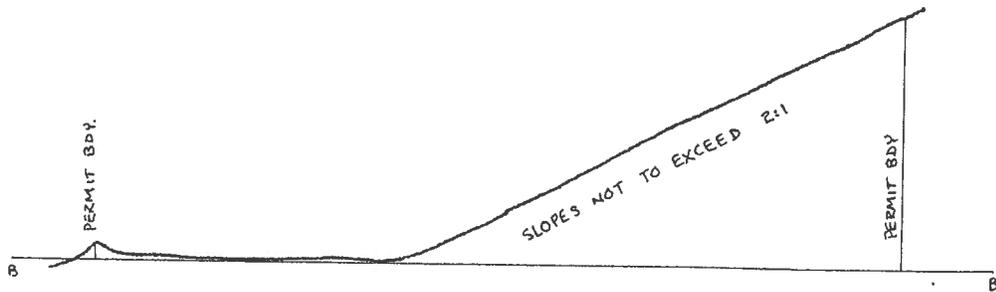
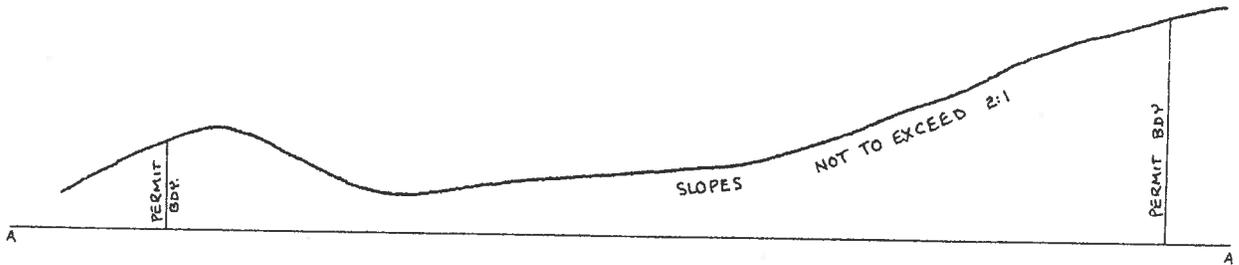
Oct 25 94  
DATE

*Albert Simmons*  
SIGNATURE

EXISTING CROSS-SECTIONS:

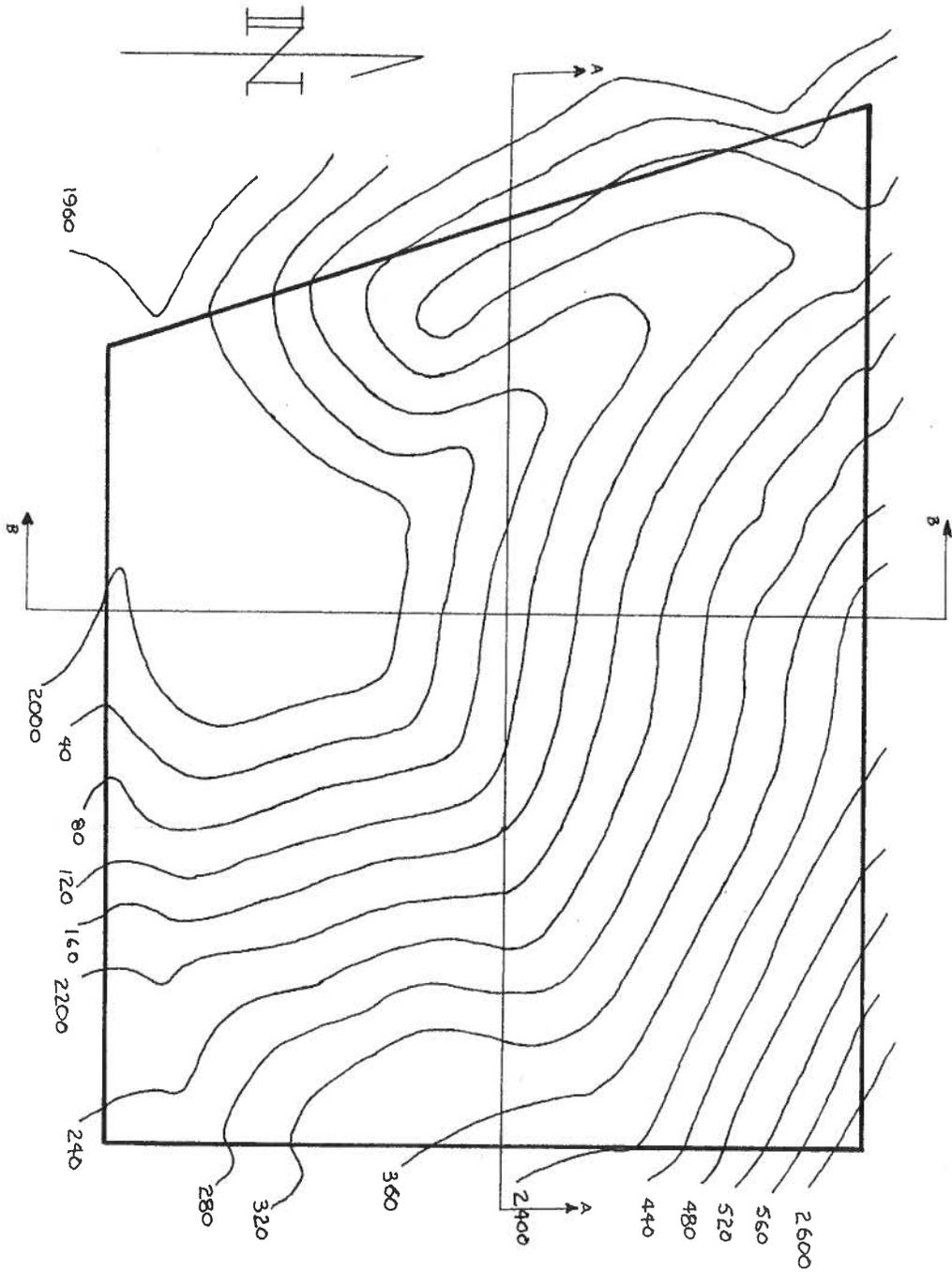


PROPOSED CROSS-SECTIONS:



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DEC 16 1994  
GEOLOGY AND EARTH RESOURCES

A.L. SIMMONS PIT  
CROSS-SECTIONS  
PERMIT No. 12365  
DATE 12/25/94 SIGNATURE Alfred Simmons



SCALE 1" = 200'

**RECEIVED**

DEC 16 1994

GEOLOGY AND EARTH RESOURCES

A.L. SIMMONS PIT

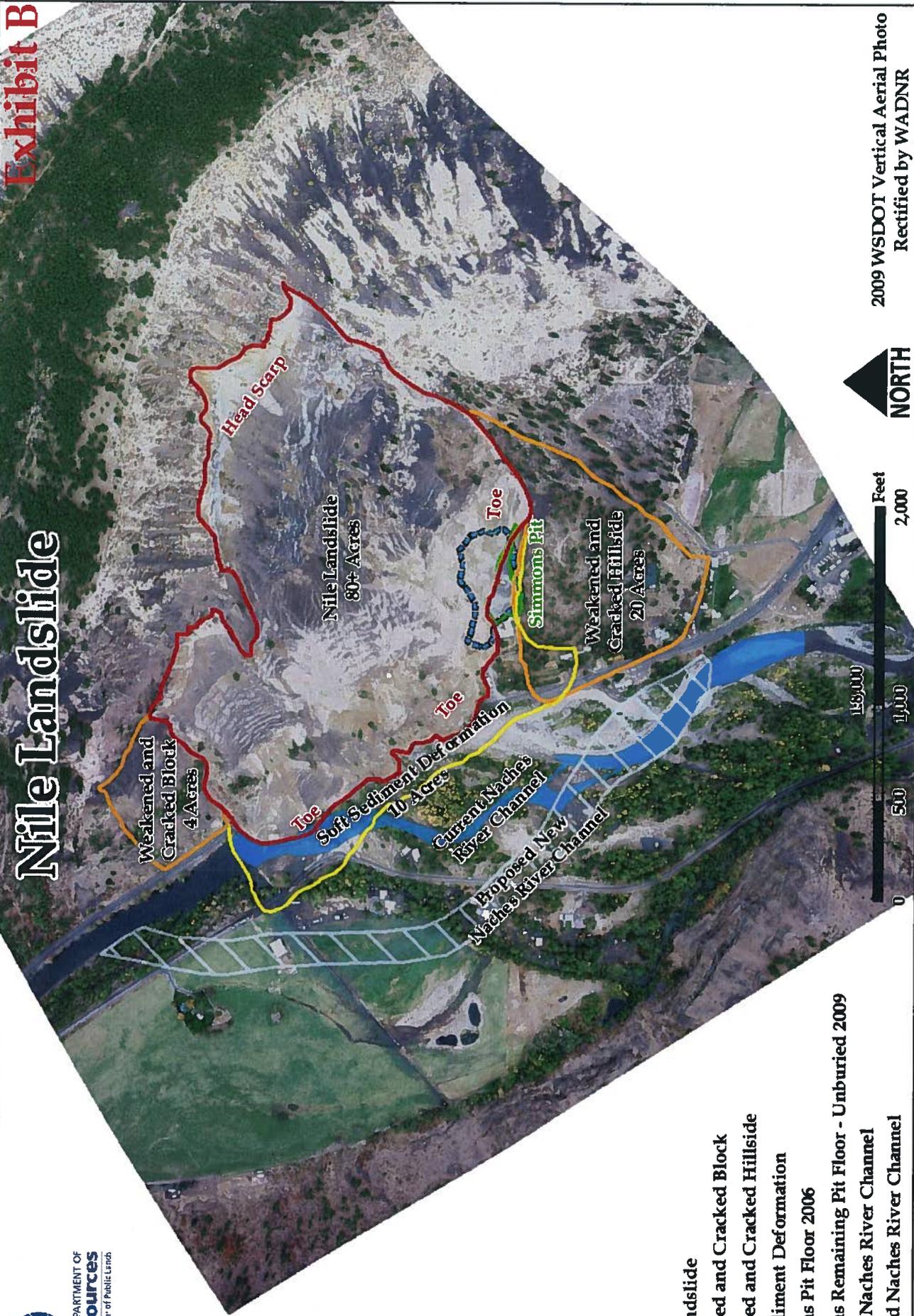
PROPOSED CONTOURS

PERMIT No. 12365

Oct 25 94  
DATE

A.L. Simmons  
SIGNATURE

# Nile Landslide



2009 WSDOT Vertical Aerial Photo  
Rectified by WADNR



- Legend**
- Nile Landslide
  - Weakened and Cracked Block
  - Weakened and Cracked Hillside
  - Soft Sediment Deformation
  - Simmons Pit Floor 2006
  - Simmons Remaining Pit Floor - Unburied 2009
  - Current Naches River Channel
  - Proposed Naches River Channel



Head Scarp

Head Scarp

Cracked Block

Cracked Hillside

Toe

Simmons Pit

Toe

Toe

Exhibit D









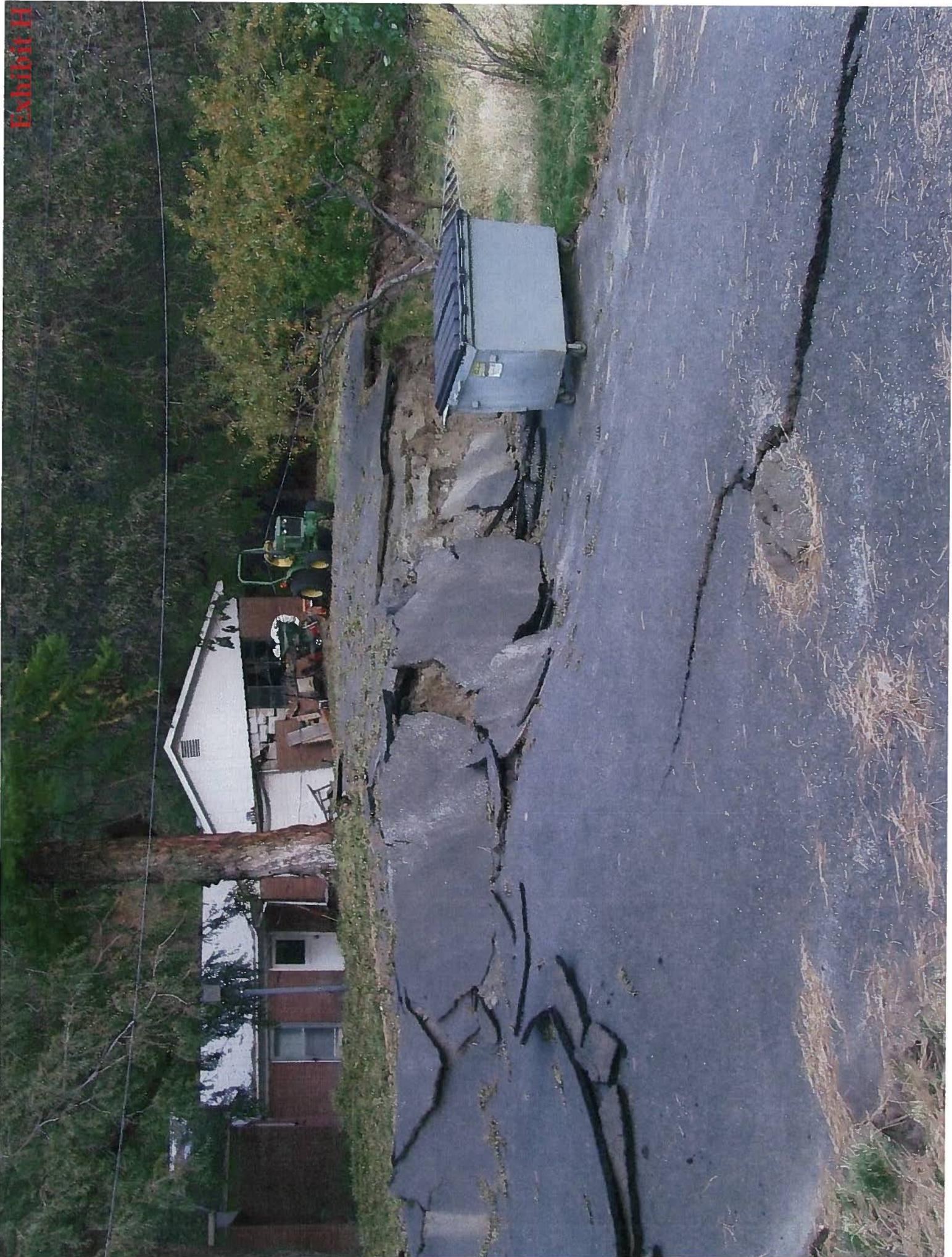


Exhibit H

