North American Tungsten Corporation Ltd.

MACTUNG PROJECT

2006 ENVIRONMENTAL BASELINE STUDIES

TERRAIN and SURFICIAL GEOLOGY

1200163.006

June 2007
EXECUTIVE SUMMARY

North American Tungsten Corporation Ltd. (NATCL) is considering the development of a world-class tungsten deposit located in the Yukon near Macmillan Pass, on the border between the Northwest Territories and the Yukon Territory. This terrain study was completed by EBA as part of environmental assessments required for project planning and regulatory submissions leading to MacTung Project approvals and implementation.

This terrain component of the biophysical assessment for the MacTung study area includes the results of a review of previous studies, air photo interpretation, field checking and terrain mapping revisions. Terrain mapping includes definition of polygons with similar terrain attributes such as surficial material type/genesis, surface expression, geomorphological processes (where applicable), drainage, and soil texture.

The MacTung terrain study area straddles the Yukon and NWT border within the Selwyn Mountain Ecoregion of the Taiga Cordillera Ecozone of Canada at an elevation of 1,725 m to 1,800 m a.s.l. The landscape of the study area varies from gentle to flat terrain on the valley floor to steep relief on glacially scoured, upper hillslope bedrock slopes. The terrain mapping study area (about 4,200 ha) for the MacTung project was defined to include the proposed mine production area footprint and options under consideration.

Till (moraine) is the most common surficial material mapped in the study area. Morainal deposit textures ranged from gravelly silty sand to silty sand and most commonly consists of a sand matrix with variable silt and gravel content. Colluvium on upper valley hillslopes is typically coarse, blocky material derived from ongoing erosion of upslope bedrock. Colluvium on lower valley hillslopes ranged from sandy gravel with some silt to silt with some sand.

Sites near the mine access road in the NWT are identified that may be suitable for good granular borrow. Further exploration and testing is required to identify potential granular sources on the Yukon side.

Active geomorphological processes in the study area include rockfall, debris slides, debris flows, avalanches, gully erosion and permafrost processes (e.g., rock glaciers).

Low soil temperatures, short growing season and slow rates of plant reproduction, organic accumulation and decomposition contribute to poorly developed soils. Most of the soils in the study area are Regosols or Brunisols. Some organisols have developed in flat, poorly-drained areas on the valley floor and crysosols exist in some areas where organic layers provide sufficient insulation to allow frozen soil horizons to develop.
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1.0 INTRODUCTION

1.1 BACKGROUND

North American Tungsten Corporation Ltd. (NATCL) is considering the development of a world-class tungsten deposit located in the Yukon near Macmillan Pass, on the border between the Northwest Territories and Yukon (Figure 1). The mine site is located in the Selwyn Mountains at an elevation of 1,725 m to 1,800 m a.s.l. The mine site is located 650 km (400 air km) northeast of Whitehorse and is accessible by the Canol Road, a gravel surfaced road to the southern Yukon that is open only during summer months. The mine site is linked to the Canol Road east of Macmillan Pass by a 10 km access road.

NATCL retained EBA to conduct a terrain study in the MacTung Project area (study area). This information is required for project planning and regulatory submissions leading to MacTung project approvals and implementation. The terrain and soils mapping comprised part of the comprehensive environmental baseline study being conducted within the MacTung study area which includes components such meteorology, hydrology, fisheries and aquatic studies, vegetation, archaeology, wildlife studies and water sampling.

2.0 SCOPE

The terrain component of the biophysical assessment for the MacTung study area included project initiation, review of previous studies, study area boundary definition, air photo interpretation, field checking, terrain mapping revisions and preparation of figures and this report.

To initiate the terrain mapping, the project objectives and the local study area boundaries were defined. The following documents were assembled and reviewed:

- Air photos
- Previous relevant reports
- Previous geology mapping and soil descriptions
- Previous geotechnical sub-surface reports

Terrain mapping for the local study area was based on the Guidelines and Standards for Terrain Mapping in B.C. and Terrain Classification System for British Columbia, Version 2 (RIC, 1996 and 1997 resp.)

Terrain Mapping was completed at Terrain Survey Intensity Level D (TSIL D). TSIL D includes field checking of 0 to 25% of polygons by vehicle and flying. The typical objectives of TSIL D are preliminary mapping to produce a terrain map at a scale between 1:20,000 and 1:250,000. Terrain mapping includes creating polygons with similar terrain attributes such as surficial material type/genesis, surface expression, geomorphological processes (where applicable), drainage, and soil texture (where known).
3.0 STUDY AREA

The MacTung study area occurs in both the Yukon and the NWT adjacent to where the North Canol Road crosses the border between the two Territories. The site lies within the Selwyn Mountain Ecoregion of the Taiga Cordillera Ecozone of Canada. The Selwyn Mountain Ecoregion is characterized by high elevation mountain ranges that contain alpine glaciers such as those located on nearby Keele Peak (2,970 m a.s.l.). Elevations range from 745 m a.s.l. to 2,970 m a.s.l.. The Selwyn Mountains give rise to the highest levels of annual precipitation (600-700 mm) in the Yukon outside the Coast Mountains (Yukon Ecoregions Working group 2004). Mean annual temperatures for the region are -5°C to -8°C, ranging from an average of -20°C in January to 8°C in July. The region lies in the discontinuous permafrost zone, however, the study area is likely within the continuous permafrost zone due to its high elevation of between 1,300 m a.s.l. to 2,200 m a.s.l.. Approximate land cover in the Selwyn Mountain Ecoregion is 65% boreal/subalpine coniferous forest, 20% alpine tundra, and 15% rockland (Yukon Ecoregions Working Group 2004). The regional study area has been defined in previous reports and terrain definition for the region is outside the scope of this study.

The terrain mapping study area for the MacTung project was defined to include the probable footprint of the mine production area. This includes areas such as buildings, roads, mill site, tailings ponds and borrow areas. The study area also includes areas within the adjacent valleys and valley sideslopes that could potentially impact the mine footprint area. Initially, the focus was on the Yukon side of the Yukon-NWT border, but the study area was later expanded to include a potential mine production area on the NWT side. The NWT side was the focus of previous studies (AMAX 1981; EBA,1983).

3.1 SITE DESCRIPTION

The project area defined for terrain mapping is about 10 km by 4 km (40 km²), with the proposed mine site near the centre (Figure 2). Within the terrain study area, valley bottoms measure between 1,160 m a.s.l. and 1,400 m a.s.l. Alpine peaks range from 1,800 m a.s.l. to 2,200 m a.s.l. Terrain is highly variable in the study area due to depositional and erosional differences and variable permafrost conditions. Valley bottoms tend to be flat to gentle gradient and valley sideslopes are steep with much open bedrock.

The Yukon / NWT border is located on the continental divide. The Yukon side is within the Yukon River watershed which drains to the Pacific Ocean. The NWT side is within the Mackenzie River watershed which drains to the Arctic Ocean.

3.2 GEOMORPHOLOGY AND GEOLOGY

The landscape of the study area varies from gentle to flat terrain on the valley floor to steep relief on glacially scoured, upper hillslope bedrock slopes. The area landscape is the result of montainie glaciation that scoured valley hillslopes, creating steep rock headwalls with associated colluvial slopes below. On the lower valley hillslopes and floor, morainal deposits form lower gradient slopes and low relief irregular terrain.
The general site geology and topography have been extensively described and documented in previous reports. The site is located within the Selwyn Mountain Range, which is characterized by extreme relief with pointed summits, steep sideslopes and narrow valleys. Evidence of glaciation is widespread. The lower valley areas were affected by continental ice sheets which deposited varying thicknesses of till, while the upper elevations have been affected more recently by alpine glaciation. Lower valley slopes are typically covered in colluvium due to erosion processes, landslides and surface flowslides. In the immediate vicinity of the mine, bedrock geology consists of laminated shales and phyllites. These were intruded by granitic blocks which form the higher, more competent peaks.

The proposed mine site has elevations varying from 1,524 m (5,000 ft) at the bottom of Dale Creek valley to about 1,890 m (6,200 ft) near the proposed mill site. The Selwyn Mountains are very rugged, with sharp peaks and steep side slopes. The valleys tend to be narrow and slightly rounded. The higher areas of the mountains have little or no surficial soils while the lower slopes and valley bottoms are covered with thin deposits of residual soils and glacial tills. Kames and eskers deposits are visible in the Dale Creek valley and extend eastward into the Tsichu River valley.

Due to the generally weak and fissile nature of the parent rocks in the area, which are generally highly schistostic metamorphic rocks, most granular deposits are of poor quality. Granular material suitable for concrete aggregate has not been reported near the proposed plant area. However, at least one source of talus gravel that may be suitable for road surfacing was identified on the south side of Dale Creek near the existing bridge (Geocon 1983 cited in Golder Associates 1981). Initial indications are that concrete aggregates may have to be obtained by crushing local competent bedrock.

4.0 METHODS

4.1 PREVIOUS REPORTS

According to AMAX (circa 1983), weather studies were first undertaken for the area in 1968 with environmental and socio-economic studies first conducted in 1973. Of the many studies completed since, four studies that provide a background of the terrain and geology of the area are:

- Golder Associates. 1981. Report to AMAX Northwest Mining Company Ltd. on Geotechnical Investigations for Tailing Disposal at MacTung

Kershaw (1983) provides a reconnaissance level interpretation of the terrain and surficial geology within the local study area, covering about 450 km².

4.2 TERRAIN CLASSIFICATION SYSTEM

The Terrain Classification System is designed for the classification of surficial materials, landforms and geomorphological processes. It has been specifically developed to provide an inventory of the terrain features in the landscape and to show their distribution, extent and location. The system is scale independent and provides base data applicable for a wide range of natural resource applications including planning, management, effects assessment and research. The data are conveyed in map form by the use of terrain symbols and is conducive to computer digital storage, management and processing.

The process results in the production of a terrain map that shows the distribution of surficial (Quaternary) deposits and related landforms. It also provides information about present day geomorphological processes such as debris slides, permafrost and erosion.

Terrain mapping consists of project planning, review of previous reports and geology, air photo interpretation and initial classification of terrain, field-checking, post-field terrain revisions and mapping. The methods and approaches for each phase are discussed below.

Project planning and initial review included defining the objectives and the purpose of the work, a detailed literature review of prior geology and terrain classification for the study area and defining the survey intensity. Level D survey intensity (RIC 1996) was determined to be adequate for the 22,500 hectare local study area. A Level D survey intensity protocol includes investigation of up to 25% of the terrain polygons.

Terrain mapping was completed by Jack Dennett, P.Geo. (BC). Field checking was conducted by Jack Dennett and Glenn Rudman, M.Sc. between July 4th and July 10th 2006. Representative terrain polygons were accessed mostly on foot or by road with some assistance by helicopter to access remote areas. Terrain descriptions and data from hand excavated soil pits were recorded on standardized field form. Mapping of terrain was based on the Terrain Classification System for British Columbia (RIC 1997). All plot positions were recorded using a Garmin 76 Global Positioning System with accuracy of between 6 to 20 m.

Terrain field checking included observations at 42 field stations with additional overview mapping from the air and strategic view sites. A total of 145 polygons were mapped in the terrain study area. Field checking intensity was 24%. This meets the requirements for Terrain Survey Intensity Level D terrain mapping.
Air photo interpretation of the terrain was completed on 1:30,000 scale, black and white air photographs flown in July 1996. Specifically, the air photographs used to cover the local study area were Flight Line A28283, photographs 49 to 53, and 24 to 28.

Terrain maps were completed using ArcGIS version 9.1. Reconciliation of all polygons was completed to ensure quality assurance and control.

5.0 RESULTS

5.1 TERRAIN CLASSIFICATION INVENTORY

Terrain mapping was completed within the terrain study area, which includes the main valley and hillslopes on each side of the NWT/Yukon border. The study area extends into the Yukon about 7 km west of the border and about 4.5 km east into the NWT. During the course of the study, 145 terrain polygons were delineated within a study area covering an area of about 4200 ha. A statistical summary of the four general terrain units classified in the area (colluvium, till, fluvial and bedrock) is presented on Table 5.1.

<table>
<thead>
<tr>
<th>Surficial Material Type</th>
<th>Symbol</th>
<th>Number of Polygons</th>
<th>Percent of Total</th>
</tr>
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<tbody>
<tr>
<td>Colluvium</td>
<td>C</td>
<td>44</td>
<td>30</td>
</tr>
<tr>
<td>Till (moraine)</td>
<td>M</td>
<td>59</td>
<td>41</td>
</tr>
<tr>
<td>Fluvial</td>
<td>A</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bedrock</td>
<td>R</td>
<td>41</td>
<td>28</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>145</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

5.2 PERMAFROST

The area falls within the discontinuous permafrost zone. However, the study area is within a high elevation alpine zone with a low mean annual temperature (-7.7°C to -8.5°C) and the area climate is likely similar to conditions found in the continuous permafrost zone. Continuous permafrost terrain is generally expected wherever the mean annual air temperature is less than about -5°C. Permafrost was not intersected in any of the shallow hand excavated pits evaluated during the 2006 terrain field program. However, permafrost was intersected at some of the boreholes and testpits advanced on the NWT side in 1980 (Golder Associates 1981).
5.3 SURFICIAL MATERIALS

Colluvium on upper valley hillslopes is typically coarse, blocky material derived from ongoing erosion of upslope bedrock. Colluvium on lower valley hillslopes ranged from sandy gravel with some silt to silt with some sand. Colluvium in the valley bottom is generally similar to the till texture.

Morainal deposit texture ranged from gravelly silty sand to silty sand and most commonly consists of a sand matrix with variable silt and gravel content. Hand excavated testpits on the Yukon side of the study area indicated generally similar soil textures to those found in testpits and boreholes reported in previous reports from the NWT side.

Fluvial materials have accumulated in some low gradient stream channel areas on the valley floor. Soil textures of these fluvial materials are expected to have increased silt and sand content.

Previous reports identify sites on the NWT side that may be suitable for good granular borrow (Golder Associates 1981). Boreholes 80-17A and 80-18 report 6.0 m thick intersections of sand and gravel. Testpits 79-9 and 79-10 report intersections of up to 2.7 m sand and gravel, and boreholes 75-8 and 75-9 report 3.8 m to 5.6 m sand and gravel (Figure 3). Further exploration and testing is required to identify potential granular sources on the Yukon side.

5.4 TERRAIN DESCRIPTION

The bedrock slopes of the upper valley walls and cirques are typically steep (greater than 70%) and moderately steep (50 to 70%). They are rapidly drained. Snow accumulations in the area are heavy and the moderately steep to steep slopes are likely subject to avalanching. Rockfall is the primary erosional process on these slopes. A possible relic debris slide about 20 ha in area was mapped on a north valley hillslope about 6 km west of the Yukon / NWT border.

Colluvium most commonly occurs on moderately steep (50-70%) to moderate (27-49%) gradient, well drained blocky talus slopes below bedrock headwalls. Colluvium on lower gradient (moderate to gentle) lower valley slopes is more weathered and is typically covered by a thin organic horizon with ground vegetation. Lower valley slopes are typically moderately well to moderately drained. Colluvial fans are abundant on the lower reaches of tributary streams, where colluvium has been deposited from debris flows and alluvial processes. Fans are typically imperfectly drained near the toe.

Till deposits in the study area may be the result of basal deposits, lateral and terminal moraines and other intra-glacial deposits formed during periodic glacial advance and retreat throughout deglaciation. Very compact soils reported at test sites on the NWT side (Golder Associates 1981) may be basal tills. Loose material, forming ridges and hummocks on the valley floor, are probably from intra-glacial deposition. Recent fluvial deposits on the flat areas of the valley floor have formed silt rich plains.
5.5 GEOMORPHOLOGICAL PROCESSES

Six geomorphological processes, rockfall (-Rb), debris slides (-Rs), debris flows (-Rd), avalanches (-A), gully erosion (-V) and rock glaciers (-Z), are active in the study area.

Rockfall involves the release of relatively small masses of rock (e.g., a single block or a few cubic metres) and movement downslope by freefall, rolling and bouncing. This is the most common process in the area and results in the formation of extensive talus slopes.

Debris slides occur when a mass of glacial drift or colluvium becomes detached from a hillside and moves rapidly downslope by sliding along a shear plane. Debris slides are initiated on steep hillsides by the sliding of weathered till and/or colluvium along a shear plane that coincides with the contact between weathered till and unweathered till, or between colluvium and till, or between any of these materials and bedrock. A possible relic debris slide about 10 ha in area was mapped on a north valley hillslope about 6 km west of the Yukon / NWT border.

A debris flow is the rapid flow of a mass of viscous material, consisting of mud, sand, stones and/or organic debris. A debris flow is often initiated when a debris slide enters a stream channel and may move downslope for several hundred metres or more. They are a significant source of stream sediment and deposition on colluvial fans in lower reach run-out zones. Small, periodic debris flows are probably an ongoing process within valley sideslope stream channels and contribute to the colluvial fan deposits mapped in the study area.

Avalanches are rapid slides or flows of snow. Rocky debris and vegetative material are commonly transported by the snow. Avalanches probably play a part in downslope transport of some colluvial material in the study area.

Gullies are small ravines with v-shaped profiles that form in drift and bedrock. In the terrain study area gullies on the valley sideslopes are mostly active, with most erosion probably taking place during spring run-off. The presence of gullies indicates erodible material, such as till, colluvium and weathered bedrock.

Rock glaciers are typically thick talus deposits with an ice-rich core and have a lobate, tongue-shaped form. They can form where deep blocky colluvium over permafrost receives sub-surface flow from an upslope basin. Rock glaciers are usually active, moving downslope at a very slow rate, and have a moderately steep, active escarpment on the downslope face. Numerous rock glaciers are mapped in the study area.

5.6 SOILS

Terrain field checking indicated the lack of well developed soil profiles, which is typical of arctic alpine environments. Soils are absent on the upper, steep to moderately steep slopes where erosional processes are active. Low soil temperatures, short growing season and slow rates of plant reproduction, organic accumulation and decomposition contribute to poorly developed soils. Most of the soils in the study area are Regosols or Brunisols. Regosols
occur at high elevations in association with till deposits and Brunisols generally occur at lower elevations in well drained locations. Organisols have developed in flat, poorly drained areas on the valley floor. Cryosols exist in some areas where organic layers provide sufficient insulation to allow frozen soil horizons to develop. Palsas – hummocks of frozen peat with ice-rich cores – were mapped on the valley floor about 2.6 km east of the Yukon/NWT border.

6.0 DISCUSSION AND CONCLUSIONS

The results of the terrain mapping characterize a landscape typical of northern alpine mountainous terrain. Surficial material ranges from coarse textured colluvial talus on middle to upper slopes to sandy gravelly silt colluvium and till on lower slopes.

Much of the colluvium and till should be suitable as general fill. Previous reports identify sites on the NWT side that may be suitable for good granular borrow as sand and gravel intersections between 2.7 m and 6.0 m were located.

Hand excavated testpits on the Yukon side of the study area indicated generally similar soil textures to those found in testpits and boreholes reported in previous reports from the NWT side.

Geomorphological processes identified in the study area include rockfall, debris slides, debris flows, avalanches, gully erosion and permafrost processes (e.g., rock glaciers). Colluvium and bedrock dominate the upper valley hillslopes and moraine is the common soil cover on the lower valley hillslopes and main valley floor.

Although the area is within the zone of discontinuous permafrost, continuous permafrost is more likely to occur in the high elevation alpine climate. Permafrost features are mapped in the area.

Most of the soils in the study area are Regosols or Brunisols. Organisols have developed in flat, poorly drained areas on the valley floor. Cryosols have developed in some areas where organic layers provide sufficient insulation for frozen soil horizons to develop.

7.0 CLOSURE

The information and analyses contained in this report and maps are based on the results of previous reports, air photograph interpretation, current understanding of regional terrain and geology, and on limited observations of land-surface conditions. In most of the study area, subsurface conditions (e.g., characteristics of subsurface materials and subsurface hydrologic conditions) are interpreted from surface observations or air photo interpretation with only reconnaissance scale field checking.

EBA is pleased to present North American Tungsten Corporation Ltd. with this Terrain Study report for the MacTung project. The report has been produced to aid project planning and future regulatory submissions leading to MacTung project approvals and
implementation. We are confident that the data and associated information presented in
the report will assist in supporting this objective.

Further information on the use of this report is presented in the attached General
Conditions, which form a part of the report.

Respectfully submitted,
EBA Engineering Consultants Ltd.

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REFERENCES


Golder Associates. 1981. Report to AMAX Northwest Mining Company Ltd. on Geotechnical Investigations for Tailing Disposal at MacTung

Resources Inventory Committee (RIC). 1996. Guidelines and Standards to Terrain Mapping in B.C.


LEGEND

- Provincial / Territorial Boundary
- Terrain Study Area
- Watercourse
- Waterbody
- Roads

Project Location

MCTUNG PROJECT
2006 ENVIRONMENTAL BASELINE STUDIES
TERRAIN STUDY

Project Location

NOTES

Landsat TM imagery Earthsat acquired Sept. 17, 1995
Bands 432 enhanced
Photo 1
MacTung July 2006. Soil pit on colluvial, mid-valley slope

Photo 2
MacTung July 2006. Excavation of soil testpit on lower valley hill slope
Photo 3
MacTung July 2006. Valley floor and steep sideslopes characteristic of the study area

Photo 4
MacTung July 2006. Moderately steep talus slopes with periglacial processes (CK-Z)
Photo 5
MacTung July 2006. Rock glacier (Cjk-Z) near mine access road on south valley hillslope, located about four kilometers east of the Yukon NWT border

Photo 6
MacTung July 2006. Common till (moraine) texture on valley floor
Photo 7
MacTung July 2006. View east of morainal terrain on valley floor at the eastern extent of the terrain study area.

Photo 8
MacTung July 2006. Moderately steep to steep valley sideslopes in the NWT side of the terrain study area.
Photo 9
MacTung July 2006. Gullying (-V) through thick till deposits on south-facing valley

Photo 10
MacTung July 2006. Palsas (ice-core peat) in thick organic deposits on valley floor in NWT side of terrain study area.
## Site Description

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<thead>
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<th>Site No.</th>
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<td>Aspect</td>
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<td>Slope</td>
<td>90°</td>
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<tr>
<td>Elevation</td>
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**Site Description**
- Soil color: medium brown
- Erosion potential: high (steepest, lowest)
- Unfrozen
- Dry
- Regosol

**Sketch**
- X-Sec. to show site position, indicate orientation and scale

## Soil Characteristics

<table>
<thead>
<tr>
<th>Horizon</th>
<th>Thickness cm</th>
<th>Absent</th>
<th>Soil Color</th>
<th>B and/or C horizon notes</th>
<th>B and/or C pedogenic concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
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**Soil Drainage**
- Very high

## Surficial Materials

<table>
<thead>
<tr>
<th>Stratigraphic Unit</th>
<th>Thickness (m)</th>
<th>Overall Texture</th>
<th>Origin</th>
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<tbody>
<tr>
<td>1</td>
<td>0.5</td>
<td>gravelly soil</td>
<td>C</td>
</tr>
</tbody>
</table>

**Contact**
- Sharp or gradational; horizontal or wavy

**Hillslope Config.**
- Uplift

**Slope Config.**
- Downslope: concave convex; straight
- Across slope: concave convex; straight

**Bedrock Outcrop**
- Slow motion

**Photos**
- Roll no. description: 15/0 0

**Samples**

**Lithology of Coarse Fragments**
- Weathering of clasts/bedrock

**Terrain Unit Symbol**
- Represents polygon? Yes
- Add. Notes in field book? Yes
### SITE DESCRIPTION

**SITE NO.** JD-2  
**ASPECT** W to Fl  
**SLOPE** 0-50  
**ELEVATION** 1622

**SITE DESCRIPTION** (void or voided, etc.)  
**SECTION HT/PIT DEPTH** m 50  
**LOCATION** N: 7015993

**SKETCH** (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)  
- Unfrozen  
- Dry  
- Mud/dark gray-brown  
- Regosol  
- NB. one sub-rounded cobble noted (Me)

### SURFICIAL MATERIALS

<table>
<thead>
<tr>
<th>STRATG. UNIT</th>
<th>THICKNESS (m)</th>
<th>OVERALL TEXTURE</th>
<th>ORIGIN</th>
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<tbody>
<tr>
<td>l</td>
<td></td>
<td>Zstg</td>
<td>C</td>
</tr>
</tbody>
</table>

**CONTACT** sharp or gradual; horizontal or wavy

### BEDDING/STRATIFICATION

- well mod. wall, mod. weak, massive

### MATRIX TEXTURE

<table>
<thead>
<tr>
<th>% CLASTS:</th>
<th>35</th>
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<tbody>
<tr>
<td>CLAST ROUNDNESS</td>
<td>A SR R WR</td>
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<tr>
<td>PEBBLES</td>
<td>0 5 0</td>
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<td>COBBLES</td>
<td>0 5 0</td>
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<tr>
<td>BOULDERS</td>
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<tr>
<td>CONSOLIDATION</td>
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<tr>
<td>COHESION</td>
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<tr>
<td>INDIURATION</td>
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<tr>
<td>OXIDATION</td>
<td>high mod. slight non.</td>
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### LITHOLOGY OF COARSE FRAGMENTS

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<th>Lithology</th>
<th>Weathering of Clasts/Bedrock</th>
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</thead>
<tbody>
<tr>
<td>grit, fine pebbles</td>
<td>2 3 0</td>
</tr>
</tbody>
</table>

**REPRESENTS POLYGON?**  
**ADJ. NOTES IN FIELD BOOK?**

**Vegetation:** GF
SITE DESCRIPTION

SITE NO. JD-3  ASPECT °  350 N  SLOPE ° %  Typical Minimax  ELEVATION 1649

SITE DESCRIPTION (soil pit, road cut, etc.) SECTION H/T/PEIT DEPTH: H: 0.4 H: 1800 W: 701 5745

LOCATION:

SKETCH (X-SEC. TO SHOW SITE RELATION; INDICATE ORIENTATION AND SCALE)

unfrozen
soil color: black
dry
Regosol

NB: one 0.5m boulder of sub-rounded granite rock (m) riddled on hill slope.

SLOPE CONFIG. (DOWN SLOPE)
concave convex straight

SLOPE CONFIG. (ACROSS SLOPE)
concave convex straight

HILLSLOPE CONFIG.
unit: hum barren rid gul gull

DOM. VES. & MOISTURE INDICATOR PLANTS

BOULDERS
blocks
bedrock outcrop
hydro char.

PHOTOS/NOTES/DESCRIPTION
3 14:27 - slope with 1 well behind

SAMPLES

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS
LFH HORIZON: thickness 5 cm absent
B HORIZON: thickness 5 cm absent
B and/or C horizon moisture below depth of 10 cm abundant
B and/or C pedogenic concentration: top at 10 cm; base at 10 cm non moderate high

SOIL DRAINAGE: T m l p v

SURFACE MATERIALS

STRATG. UNIT: THICKNESS (m) OVERALL TEXTURE ORIGIN
1 0.0 (a) gravelly sand
CONTACT: sharp or gradational; horizontal or wavy

bns

CONTACT: sharp or gradational; horizontal or wavy

bns

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION
well mod well mod. weak massive

MATRIX TEXTURE
sand + clay

% CLASTS: 30

CLAST ROUNDNESS: A B C D

CLAST ABUNDANCE
by size
pebbles: 0 0 0 0

COBBLES: 0 0 0 0

BOULDERS: 0 0 0 0

CONSOLIDATION
high mod slight high mod slight high mod slight non

COHESION
high mod slight high mod slight high mod slight high mod slight non

INDURATION
oxidation

LIOTHOLGY OF COARSE FRAGMENTS
graphitic shale

WEATHERING OF CLASTS/BEDROCK
1 2 3 D

TERRAIN UNIT SYMBOL: for vicinity of site:
represents polygon:
ADD NOTES IN FIELD BOOK:
vegetation: G:

30 C 0
### Site Description

**Site No.:** 4  
**Aspect:** *  
**Slope:** %  
**Elevation:** 1610

**Site Description:** (Soil, road cut, etc.)  
**Section HT/Pit Depth:** m, cm  
**H: 70 15 49 7**

**Sketch:** (X-sec. to show site position; indicate orientation and scale)
- Black soil
- Unfraged
- 0.6m wide trail of tules near by
- vegosal

**Slope Config. (Down Slope):** concave, convex, straight  
**Slope Config. (Across Slope):** concave, convex, straight

**Hillslope Config.:** unstrong, strong, medium  
**Dom. Veg. & Moisture Indicator Plants:** grass, comb-like, moss

**Boulders:** -  
**Blocks:** -  
**Bedrock Outcrop:** dry  
**Hydro. Char.:**

**Photos:** Roll no. description

**Samples:**

### Soil Characteristics

- LFH HORIZON: thickness 8 cm, absent  
- B/HORIZON: thickness 12 cm, absent  
- C horizon: depth 4 cm, abundant  
- B and/or C pedogenic concentration: top at 6 cm, base at 24 cm

**Soil Drainage:** r m l p v

### Surficial Materials

<table>
<thead>
<tr>
<th>Stratigraphic Unit</th>
<th>Thickness (m)</th>
<th>Overall Texture</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>gravelly sandy</td>
<td>C</td>
</tr>
</tbody>
</table>

**Contact:** sharp or gradational, horizontal or wavy

- bns

**Contact:** sharp or gradational, horizontal or wavy

- bns

### Bedding/Stratification

- Well mod. well mod. weak reactive

### Matrix Texture

- Sand

### % Clasts: 30

<table>
<thead>
<tr>
<th>Clast Abundance</th>
<th>Pebbles</th>
<th>Cobble</th>
<th>Boulders</th>
</tr>
</thead>
<tbody>
<tr>
<td>By Size</td>
<td>0 / 0</td>
<td>0 / 0</td>
<td>0 / 0</td>
</tr>
</tbody>
</table>

**Consolidation:**
- Well mod. slight
- Mod. slight
- High mod. slight

**Cohesion:**
- High mod. slight
- High mod. slight
- High mod. slight

**Insolation:**
- High mod. slight
- High mod. slight
- High mod. slight

**Oxidation:**
- High mod. slight
- High mod. slight
- High mod. slight

### Lithology of Coarse Fragments

<table>
<thead>
<tr>
<th>Quant.</th>
<th>QBBT</th>
<th>S &amp; M</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

### Weatherings of Clast/Bedrock

- *OM
d

**Terrain Unit Symbol:** for vicinity of site

- Cb - Z

**Represents Polygon:** Yes / No

**Add Notes in Field Book:** Yes / No

**Vegetation:** GR
**SITE DESCRIPTION**

- **SITE NO.:** JD-5
- **ASPECT:** South/west
- **SLOPE:** 6
- **ELEVATION (m):** 1624

**SITE DESCRIPTION (soil profile, etc.):**
- **SECTION HT/PIT DEPTH (cm):** E: 444/436
- **LOCATION:** N: 4016191

**SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE):**
- Medium, gray-gray color
- Unfrozen
- Pit at small stone to till (MF)
- Montane till
- Reposol
- Black shale (rusty W) 0/2 in montane
down slope w/ hydrocarbon odor.

**SLOPE CONFIG. (DOWN-SLOPE):**
- Convex

**SLOPE CONFIG. (ACROSS SLOPE):**
- Convex
- Straight

**HILLSLOPE CONFIG.:**
- Uplifted humatized
- Ridge and soil
- Micro/low relief upland

**DOM. VEGET. & MOISTURE INDICATOR PLANTS:**
- Alpine grasses

**BOULDERS:**
- Blocks
- Blocks

**BEDROCK OUTCROP:**
- Dry

**HYDRO. CHAR.:**
- Acro

**PHOTOS:** No. description

**SAMPLES:**

---

**MATERIAL DESCRIPTION**

**SOIL CHARACTERISTICS**
- **LFH HORIZON:**
  - Thickness: 3 cm
  - Absent
- **B HORIZON:**
  - Thickness: 3 cm
  - Absent
  - Bt, Bw, Bh, Bg, Bgl, Bm
- **B and/or C horizon materials below depth:**
  - Absent
  - Some
  - Absent
  - B and/or C pedogenic concentration:
    - Top at 3 cm
    - Base at 3 cm

**SOIL DRAINAGE:**
- Type: r (no) m (moderately) p (poor)

**SOIL DRAINAGE:**
- Type: r (no) m (moderately) p (poor)

**SOIL MATERIALS:**

<table>
<thead>
<tr>
<th>STRATIG. UNIT</th>
<th>THICKNESS (m)</th>
<th>OVERALL TEXTURE</th>
<th>ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>gravelly sand</td>
<td>M (C?)</td>
</tr>
</tbody>
</table>

**CONTACT:**
- Sharp or gradational; horizontal or wavy

**BEDDING/STRATIFICATION:**
- Well mod. w/ mod. weak massive

**MATRIX TEXTURE:**
- Sand, silt (trace) silt

**% CLASTS:** 25

**CLAST ROUNDNESS:**
- A (CR) SH R WR

**CLAST ABUNDANCE:**
- Pebbles: 0
- Cobble: 0
- Boulders: 0

**CONSOLIDATION:**
- High mod. slight silt
- High mod. slight silt

**COHESION:**
- High mod. slight silt
- High mod. slight silt

**INDURATION:**
- High mod. slight silt
- High mod. slight silt

**OXIDATION:**
- High mod. slight silt
- High mod. slight silt

**LITHOLOGY OF COARSE FRAGMENTS:**
- Granitoid, shale

**WEATHERING OF CLASTS/BEDROCK:**
- P 1 2 3 D

**TERRAIN UNIT SYMBOL for vicinity of site:**
- 9m5 M

**REPRESENTS POLYGON:** Yes No

**ADD. NOTES IN FIELD BOOK:** Yes No

**VEGETATION:**
- GR

---
### Site Description

**Project No.** 1200163.006  
**Date:** 3 July 06  
**Air Photo No.**

#### Site Description

- **Site No.:** UP-6  
- **Aspect:** SW  
- **Slope:** 2/3  
- **Elevation:** 1645 ft.

**Site Description (soil pit, bed cut, etc.)**

- **Section HT/Pit Depth:** 441 (524 cm)  
- **N:** 701.6 (483 cm)

**Sketch (X-sec. to show site position; indicate orientation and scale)**

- Dark brown soil
- Unfrosted
- Regolith

#### Soil Characteristics

<table>
<thead>
<tr>
<th>LFH Horizon</th>
<th>Thickness</th>
<th>B, absence</th>
<th>B Horizon</th>
<th>Thickness</th>
<th>B, absence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>cm</td>
<td>cm</td>
<td></td>
<td>cm</td>
</tr>
</tbody>
</table>

B and/or C horizon mottles below depth of cm  
B and/or C pedogenesis concentration:
- Top at cm; base at cm

**Soil Drainage:** v w p v

#### Stratigraphic Unit

<table>
<thead>
<tr>
<th>Stratigraphic Unit</th>
<th>Thickness (m)</th>
<th>Overall Texture</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>? m</td>
<td>gravelly sand</td>
<td>C</td>
</tr>
</tbody>
</table>

**Contact:** sharp or gradational; horizontal or wavy

#### Bedding/Stratification

<table>
<thead>
<tr>
<th>Bedding/Stratification</th>
<th>Matrix Texture</th>
</tr>
</thead>
<tbody>
<tr>
<td>well mod. well mod. weak massive</td>
<td>sand some silt</td>
</tr>
</tbody>
</table>

**% Clasts:** 25  
**CLAST ROUNDNESS:** A  
**CLAST SIZES:**
- **PEBBLES**
- **COBBLES**
- **BOULDERS**

**Consolidation:**
- High mod. slight con
- High mod. slight non

**Induration:**
- High mod. slight con
- High mod. slight non

**Lithology of Coarse Fragments**

- Black shale

**Weathering of Clasts/Bedrock**

<table>
<thead>
<tr>
<th>Weathering</th>
</tr>
</thead>
<tbody>
<tr>
<td>123d</td>
</tr>
</tbody>
</table>

**Terrain Unit, Symbol for vicinity of site**

- g s Cb/Mb(2)

**Represents Polygon?** Yes No

**Notes in Field Book?**

- Yes
- No

**Vegetation**

- &
SOIL CHARACTERISTICS

LH Horizon: thickness __ cm absent
B Horizon: thickness __ cm absent
B and/or C horizon materials: below depth of __ cm absent
B and/or C pedogenic concentration: top at __ cm; base at __ cm

SOIL DRAINAGE: r w m i p v

MATERIAL DESCRIPTION

STRATIG. UNIT | THICKNESS (in) | OVERALL TEXTURE | ORIGIN
--- | --- | --- | ---
| | | | 

CONTACT: sharp or gradual; horizontal or wavy

BEDDING/STRATIFICATION: well mod, well mod, weak massive

MATRIX TEXTURE

% CLASTS:  

CLAST, ROUNDNESS: A SA BR R WR

CLAST, ABUNDANCE BY SIZE

PEBBLES a c b o
COBBLES a c b o
BOULDERS a c b o

CONSOLIDATION

INDURATION

OXIDATION

LITHOLOGY OF COARSE FRAGMENTS

WEATHERING OF CLASTS/BEDROCK

LITHOL. FINGERS:  
black shale (gry)

WEATHERING: 1 2 3 4

TERRAIN UNIT SYMBOL for vicinity of site

REPRESENTS POLYGON: YES NO

ADD. NOTES IN FIELD BOOK: YES NO

Vegetation: Fair
### Site Description

**Site No.** JD-8  
**Aspect**  
**Slope**  
**Elevation** m  
**Site Description (soil pit/road cut etc.)**

**SECTION H/T/PIT DEPTH m on**
- E: 4.498535
- N: 70166.68

**Sketch (X-sec. to show site position; indicate orientation and scale)**
- Probably not a slide here; downslope deposition likely in rich talus
- Road
- Boulders/cobble talus

**Slope Config. (Down Slope)**
- Concave
- Convex
- Straight

**Hillslope Config.**
- Uplift hum ber ter rid gul sea

**Dominant & Moisture Indicator Plants**
- Bristlecone willow, grass, dwarf

**Boulders**
- 0 cc 0

**Bedrock Outcrop**
- 0 cc 0

**Hydrochar.**
- Dry

**Photos roll no. & description**
- 1755 – 2 photos – 1 downslope

**Samples**

### Soil Characteristics

<table>
<thead>
<tr>
<th>LFH Horizon</th>
<th>Thickness (cm)</th>
<th>B Horizon</th>
<th>Thickness (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>0</td>
<td>Bc</td>
<td>0</td>
</tr>
<tr>
<td>Bf</td>
<td>0</td>
<td>Bf</td>
<td>0</td>
</tr>
<tr>
<td>Bh</td>
<td>0</td>
<td>Bh</td>
<td>0</td>
</tr>
<tr>
<td>Bg</td>
<td>0</td>
<td>Bg</td>
<td>0</td>
</tr>
<tr>
<td>Bm</td>
<td>0</td>
<td>Bm</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section HT/Pit Depth m on</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.498535</td>
</tr>
<tr>
<td>N: 70166.68</td>
</tr>
</tbody>
</table>

**Soil Drainage**
- S m i p v

### Surficial Materials

<table>
<thead>
<tr>
<th>Stratigraphic Unit</th>
<th>Thickness (m)</th>
<th>Overall Texture</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>R</td>
<td></td>
</tr>
</tbody>
</table>

**Contact**
- Sharp or gradational; horizontal or wavy

**Lithology of Coarse Fragments**
- 2:3:0

**Weathering of Clasts/Bedrock**
- B 2 3 0

**Terrain Unit, Symbol for vicinity of site**
- Rs upslope; Ck downslope

**Represented Polygon?**
- Yes

**Add. Notes in Field Book?**
- Yes
**SITE DESCRIPTION**

- Intersected mineral soil at full auger stem length
- Medium blue-grey soil
- Unfrozen

**SOIL DRAINAGE**

- NW to NE

**SOIL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Horizon</th>
<th>Thickness (cm)</th>
<th>Depth (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L &amp; H</td>
<td>180</td>
<td>180</td>
</tr>
<tr>
<td>B</td>
<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>

**GENERAL MATERIALS**

<table>
<thead>
<tr>
<th>Stratigraphic Unit</th>
<th>Thickness (cm)</th>
<th>Overall Texture</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>180</td>
<td>Peat</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>50</td>
<td>Silty Sand</td>
<td>M</td>
</tr>
</tbody>
</table>

**BEDDING/STRATIFICATION**

- Well sorted, fine sand

**LITHOLOGY OF COARSE FRAGMENTS**

- Shale

**WEATHERING OF CLASTS/BEDROCK**

- F123D

**CLAST ROUNDNESS**

- A

**TERRAIN UNIT SYMBOL**

- POB, 25 M
**SOIL CHARACTERISTICS**

- LFH HORIZON: thickness ___ cm absent
- B HORIZON: thickness ___ cm absent
- B and/or C horizon palus: below depth of ___ cm perhaps some abundant
- B and/or C pedogenic concentration: top at ___ cm base at ___ cm
- SOIL DRAINAGE: ___ m i p v

**SURVEY MATERIALS**

<table>
<thead>
<tr>
<th>STRATIG. UNIT</th>
<th>THICKNESS (m)</th>
<th>OVERALL TEXTURE</th>
<th>ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>gravelly sand</td>
<td>trace silt</td>
<td>M</td>
</tr>
</tbody>
</table>

**CONTACT:** sharp or gradual; horizontal or wavy

**BEDDING/STRATIFICATION:**
- well mod.
- wall mod.
- weak massive

**MATRIX TEXTURE:**
- sand, trace silt

**% CLASTS:** 50

**CLAST ROUNDNESS:**
- A
- B
- C
- R
- W
- R

**CLAST ABUNDANCE BY SIZE:**
- pebbles: __
- cobbles: __
- boulders: __

**CONSOLIDATION:**
- high mod.
- slight

**COHESION:**
- high mod.
- slight

**INDURATION:**
- high mod.
- slight

**OXIDATION:**
- high mod.
- slight

**LITHOLOGY OF COARSE FRAGMENTS:**
- black shale matrix + granite

**WEATHERING OF CLASTS/BEDROCK:**
- D

**TERRAIN UNIT SYMBOL:**
- g5Mr

**REPRESENTS POLYGON:**
- Yes

**ADJ. NOTES IN FIELD BOOK:**
- Yes

**Vegetation:**
- GR

**PHOTOS roll no. description:**
- 18:36 - mod cut w/ GR filling pit

**HILLSLOPE CONFIG.:**
- Convex
- Convex
- Straight

**DOM. VEG. & MOISTURE INDICATOR PLANTS:**
- Low relief

**SLOPE CONFIG. (DOWN SLOPE):**
- Converse
- Convex
- Straight

**SLOPE CONFIG. (ACROSS SLOPE):**
- Converse
- Convex
- Straight

**BOULDERS:**
- __

**BLOCKS:**
- __

**BEDROCK/OUTCROP:**
- __

**HYDRO. CHAR.:**
- Dry

**DATE:** 3 July 06
### Soil Characteristics

<table>
<thead>
<tr>
<th>LPH Horizon: Thickness</th>
<th>B Horizon: Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 cm absent</td>
<td>50 cm absent Bc, Bf, Bh, By, Bg, Gm (8m)</td>
</tr>
</tbody>
</table>

B and/or C horizon mottles: below depth of __ cm absent; some abundant; top at __ cm; base at __ cm

- **Soil Drainage:** (D) high, (M) moderate, (L) low, (P) very low

### Surface Materials

<table>
<thead>
<tr>
<th>Stratigraphic Unit</th>
<th>Thickness (m)</th>
<th>Overall Texture</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>gravel, sand</td>
<td>M</td>
<td></td>
</tr>
</tbody>
</table>

CONTACT: sharp or gradational; horizontal or wavy

### Bedding/Stratification

- **Bedding:** well, mod, none
- **Stratification:** massive, weak

### Matrix Texture

- **Matrix:** sand, silt, silty clay

### % Clasts

- **60%**

### Clast Roundness

- **A**

### Clast Abundance by Size

- **Pebbles:** 60%
- **Cobbles:** 0%
- **Boulders:** 0%

### Consolidation

- **High:** mod, slight
- **Low:** high, mod, slight

### Cohesion

- **High:** mod, slight
- **Low:** high, mod, slight

### Induration

- **High:** mod, slight
- **Low:** high, mod, slight

### Oxidation

- **High:** mod, slight
- **Low:** high, mod, slight

### Lithology of Coarse Fragments

- **Scale:** matrix, matrix w/ clast, clast plus matrix, blocky, weathered

### Weathering of Clasts/Bedrock

- **F1 2 3 4**

### Terrain Unit Symbol for vicinity of site

- **395 MP**

### Additional Notes

- **Yes/No**
SITE DESCRIPTION

SITE NO. JD-13
ASPECT 97/126
SLOPE 44
ELEVATION 1402

SITE DESCRIPTION
road out = 20 m
LOCATION N: 7014 619
E: 4483 54

SKETCH (X-SEC TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)
- medium brown soil
- unfrozen
- dense angular C @ 30cm depth
- small window of shale R exposed within fill in borrow pit by road 1/2 km N.
- cut slope is mainly blocky shale with Mander's cobbles
- regosol

SLOPE CONFIG (DOWN SLOPE) concave convex straight
SLOPE CONFIG (ACROSS SLOPE) concave convex straight

HILLSLOPE CONFIG
- Unit hum ben ter rid gul sea

DOM. VEG. & MOISTURE INDICATOR PLANTs
- dense leaf willow, cottonwood, moss

BOULDERS 0 0
BLOCKS 0 0
BEDROCK OUTCROP 0 0
HYDRO. CHAR. dry

PHOTOS roll no. description 12:23: View back of ridge 1/2 JD-13, JD-13 is end of road, road in background disappears off to right

SAMPLES

PROJECT NO. (area) 700163.006
DATE 4 July 06
AIR PHOTO NO.
<table>
<thead>
<tr>
<th>SOIL CHARACTERISTICS</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOIL HORIZON: A</td>
<td>MATERIAL: gravel &amp; silt M</td>
</tr>
<tr>
<td>SOIL DRAINAGE: 10%</td>
<td>THICKNESS (cm): 1</td>
</tr>
<tr>
<td>SUBSOIL: Bk, Bg, Bt, Bf</td>
<td>TEXTURE: fine to medium, moderate to high</td>
</tr>
<tr>
<td>SOIL ORIGINATION:</td>
<td>STRATUM UNIT: stable</td>
</tr>
<tr>
<td>B &amp; C pedogenic horizon:</td>
<td>CONTACT: sharp or gradual, horizontal or very weak</td>
</tr>
<tr>
<td>BEDDING/STRIATIGATION:</td>
<td>□</td>
</tr>
<tr>
<td>CLAST ABUNDANCE:</td>
<td>45</td>
</tr>
<tr>
<td>CONSOLIDATION:</td>
<td>very slight</td>
</tr>
<tr>
<td>OXIDATION:</td>
<td>none</td>
</tr>
<tr>
<td>LITHOLOGY OF COARSE FRAGMENTS:</td>
<td>Weathered Clasts/Bedrock</td>
</tr>
<tr>
<td>TERRAIN UNIT SYMBOL:</td>
<td>N - d</td>
</tr>
</tbody>
</table>

AR - 004 4 - JULY 06

- Rolog
- Unfrozen

- SLOPE CONTOUR (ACROSS SLOPE) concave, convex, straight
- SLOPE CONTROL (DOWNSLOPE) concave, convex, straight
- HILLSLOPE CONTROL: concave, convex, straight
- Boulders: from bottom to middle, none
- Hydroxide: dry

PHOTOS no. description

SAMPLES
### Soil Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFH Horizon: Thickness</td>
<td>6 cm</td>
</tr>
<tr>
<td>LFH Horizon: Absent</td>
<td></td>
</tr>
<tr>
<td>B Horizon: Thickness</td>
<td></td>
</tr>
<tr>
<td>B Horizon: Absent</td>
<td></td>
</tr>
<tr>
<td>B and/or C Horizon moisture</td>
<td></td>
</tr>
<tr>
<td>B and/or C Horizon moisture:</td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td></td>
</tr>
<tr>
<td>B and/or C horizon: moisture:</td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td></td>
</tr>
<tr>
<td>B horizon: Some Abundant</td>
<td></td>
</tr>
<tr>
<td>B horizon: Base</td>
<td></td>
</tr>
<tr>
<td>Definition:</td>
<td></td>
</tr>
<tr>
<td>Soil Drainage:</td>
<td>r w m</td>
</tr>
<tr>
<td>i p v</td>
<td></td>
</tr>
</tbody>
</table>

### Vegetation

- Woody vegetation: M. hydrastis, M. lignaria
- Herbaceous vegetation: M. glabra
- Grasses: M. perennis, M. flexuosa

### Geologic Information

- **Site No.**: JD-15
- **Aspect**: 130° SE
- **Slope**: [Diagram]
- **Elevation**: 1452 ft
- **Location**: NG 70155/6

### Soil Details

<table>
<thead>
<tr>
<th>Stratigraphic Unit</th>
<th>Thickness (m)</th>
<th>Overall Texture</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>Gravelly sand</td>
<td>C</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>Void cast</td>
<td>R</td>
</tr>
</tbody>
</table>

**Notes:**
- Unweathered surface material
- Bedding/Stratification: Weak
- Matrix Texture: Sand, Silt
- % Clasts: 50%
- Clast Roundness: A
- CLAST ABUNDANCE BY SIZE:
  - Pebbles: 0%
  - Cobble: 0%
  - Boulders: 0%
- CONSOLIDATION: High
- COHESION: High
- INDURATION: High
- OXIDATION: High
- LITHOLOGY OF COARSE FRAGMENTS: M. hydra
- WEATHERING OF CLASTS/MICRODREGA: F1 2 3 0
- TERRAIN UNIT SYMBOL: B Sr
- REPRESENTS POLYGON? Yes
- ADD. NOTES IN FIELD BOOK? No
- Note: Dry bedrock
SITE NO: JD-16   ASPECT: 354° N   SLOPE: 1:10   ELEVATION: 1471 ft

SITE DESCRIPTION (soil profile cut etc.): SECTION HT/PIT DEPTH: m 60   45
LOCATION: E: 448127   N: 7015758

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

Undisturbed gray soil unfrozen, but below 45 m may be approximately PIF = compact/well-indurated, best no visible ice. Bottom of pit 45 m.

1.5 m red cut: till, clayey and silt, rich soil.

Regosol

SLOPE CONFIG. (DOWN SLOPE)
convex
concave
straight

SLOPE CONFIG. (ACROSS SLOPE)
convex
concave
straight

HILLSLOPE CONFIG.
unit hum ben ter rid gui sea

DOM. VEG. & MOISTURE INDICATOR PLANTS
willow dwarf birch

BOULDERS

BLOCKS

BEDROCK OUTCROP

HYDRO. CHAR.

PHOTOS roll no. description

SAMPLES

MAJOR DEFORMATION

SOIL CHARACTERISTICS

LPIH HORIZON: thickness _ cm absent B/HORIZON: thickness _ cm absent

B and/or C horizon mottles: below depth of _ cm some abundant B and/or C pedologic concentration:
top at _ cm base at _ cm

SOIL DRAINAGE: r w m i p y

SURFACE MATERIALS

STRATIG. UNIT

THICKNESS (m)

OVERALL TEXTURE

ORIGIN

CONTACT: sharp or gradational; horizontal or wavy

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION
well mod well mod weak massive

MATRIX TEXTURE
Sandy silt

% CLASTS: 35

CLAST ROUNDNESS: A (SA) SR R WR

CLAST ABUNDANCE
BY SIZE

PEBBLES
COBBLES
BOULDERS

CONSOLIDATION
high mod slight non

COHESION
high mod slight non

INDURATION
high mod slight non

OXIDATION
high mod slight non

LITHOLOGY OF COARSE FRAGMENTS
shale + grastic

WEATHERING OF CLASTS/BEDROCK

TEMPAIN UNIT SYMBOL for vicinity of site

REPRESENTS POLYGON?
YES NO

ADD. NOTES IN FIELD BOOK?
YES NO
SOIL CHARACTERISTICS

LH HORIZON: thickness __ cm absent
Some as D16

B HORIZON: thickness __ cm absent Bc Bf Bh Bt Bg Bt

B and/or C horizon mottles: below depth of __ cm absent some abundant
top of __ cm; base at __ cm none moderate high

SOIL DRAINAGE: V (d m p v)

SURFICIAL MATERIALS

STRATIG. UNIT THICKNESS (m) OVERALL TEXTURE ORIGIN

<table>
<thead>
<tr>
<th></th>
<th>9.5</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTACT:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sharp or gradational; horizontal or wavy</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|                |      |          |        |
| CONTACT:       |      |          |        |
| sharp or gradational; horizontal or wavy |

Complete the following for unweathered surficial material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION:
well mod, wall mod, weak massive

MATRIX TEXTURE:
Sandy silt

CLAST ROUNDNESS:
4 8 5

CLAST ABUNDANCE BY SIZE:

<table>
<thead>
<tr>
<th>PEBBLES</th>
<th>COBBLES</th>
<th>BOULDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>a 5 c</td>
<td>a 8 o</td>
<td>o 5 a</td>
</tr>
</tbody>
</table>

CONSOLIDATION:
high mod slight firm

COHESION:
high mod slight firm

INDURATION:
high mod slight firm

OXIDATION:
high mod slight firm

LITHOLOGY OF COARSE FRAGMENTS:
matrix "shale"

WEATHERING OF CLASTS/BEDROCK:
F 2 0 0

REPRESENTS POLYGON? [YES NO]

SAMPLES

TERRAIN UNIT SYMBOL for vicinity of site

952WMB

ADD NOTES IN FIELD BOOK? [YES NO]
SITE DESCRIPTION

SITE NO. JD-18  ASPECT N  SLOPE 50'  ELEVATION 1476

SECTION HT/PT DEPTH m cm
E: 446408
N: 7015352

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

SOIL CHARACTERISTICS

LFH HORIZON: thickness cm absent

B HORIZON: thickness cm absent

B and/or C horizon moisture: below depth cm

SOIL DRAINAGE:

SLOPE CONFI. (DOWN SLOPE)
concave convex straight

HILLSIDE CONFIG.
undisturbed
dominant
moist indicator

BoULdERS

BEDROCK OUTCROP

HYDRO.CHR.

samples

MATERIAL DESCRIPTION

SURFACE MATERIALS

STRATIG. UNIT  THICKNESS (m)  OVERALL TEXTURE  ORIGIN

CONTACT: sharp or gradational; horizontal or wavy

BEDDING/STRATIFICATION

MATRIX TEXTURE

% CLASTS: 100

PEBBLES

COBBLES

BOULDERS

CONSOLIDATION

COHESION

INDURATION

OXIDATION

LITHOLOGY OF COARSE FRAGMENTS

WEATHERING OF CLASTS/DEBROOK

TERRAIN UNIT SYMBOL for vicinity of site

shCa

REPRESENTS POLYGON?

ADD. NOTES IN FIELD BOOK?

YES

NO
SITE DESCRIPTION

SITE NO. JD-19
ASPECT * 350 N
SLOPE * 80% 10% 15%
ELEVATION 1601 ft.

SITE DESCRIPTION (eg. hill, roadcut, etc.)

E: 445340
N: 701505

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- AT CREST OF FACE OF "ROCK CLIFFER"
- Hummocky rubble beyond toe of face indicates subsidence, possible melting of ice lenses.

SOIL CHARACTERISTICS

LITHOFRACERIS: thickness cm absent
B HORIZON: thickness cm absenl Be, Bt, B, B, B, B
B horizon metles: below depth of cm absent: some abundant
soil some abundant

B horizon pedogenic concentration:
top at cm; base at cm
none moderate high

SOIL DRAINAGE: r w l p v

SURFICIAL MATERIALS

<table>
<thead>
<tr>
<th>STRATIG. UNIT</th>
<th>THICKNESS (m)</th>
<th>OVERALL TEXTURE</th>
<th>ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>bns</td>
<td>rubble</td>
<td>C</td>
</tr>
</tbody>
</table>

CONTACT: sharp or gradational; horizontal or wavy
bns

CONTACT: sharp or gradational; horizontal or wavy
bns

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered):

BEDDING/STRATIFICATION:
well mod. well mod. weak massive

MATRIX TEXTURE:

% CLASTS:
100

CLAST ROUNDNESS:

CLAST ABDUNDANCE
BY SIZE
pebbles:
coarse:
boulders:

CONSOLIDATION

COHESION

INDURATION

OXIDATION

LITHOLOGY OF COARSE FRAGMENTS
black shale

WEATHERING OF CLASTS/BEDROCK

TERRAIN UNIT SYMBOL: a 1 1 2 3 3 5
represents polygon?
YES/NO

ADD. NOTES IN FIELD BOOK?
YES/NO
SITE DESCRIPTION

SITE NO. JD-20
ASPECT ° S
SLOPE ° % Trypon Miniflex
ELEVATION m ft. 1501

SITE DESCRIPTION (soil pit, road cut, etc.) Outcrop on stream bank
SECTION HT/PIT DEPTH m cm 20

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- Stream flows down fault: shale on North side, sandy clay on South side. More measure (quadrant?) [bedding not clear] on South side.

SOIL CHARACTERISTICS

LFH HORIZON: thickness cm absent
B HORIZON: thickness cm absent

B AND/ OR C HORIZON: mottles below depth of cm absent some abundant
B AND/ OR C PEDOGENIC CONCENTRATION:

SOIL DRAINAGE: r m

SUPERFICIAL materials

STRATIG. UNIT THICKNESS (m) OVERALL TEXTURE ORIGIN
1 ~1.0 s 7 M

CONTACT: sharp or gradational; horizontal or wavy

R

CONTACT: sharp or gradational; horizontal or wavy

Complete the following for unweathered or face materials if possible, otherwise use B horizon (weathered):

BEDDING/STRATIFICATION:

MATRIX TEXTURE:

% CLASTS:

CLAST ROUNDNESS: A BA SR R WR

CLAST ABUNDANCE:

PEBBLES

COBBLES

BOULDERS

CONSOLIDATION:

INDURATION:

OXIDATION:

LITHOLOGY OF COARSE FRAGMENTS:

WEATHERING OF CLASTS/BEDROCK

TERRAIN UNIT SYMBOL for vicinity of site

SAMPLES

PHOTOS roll no. description

17:24 O PAN OF THIS SITE FROM ACROSS VALLEY
**SITE DESCRIPTION**

- **SITE NO.**: JD-21
- **ASPECT**: 110 E
- **SLOPE TYPE**: 0/10-16
- **ELEVATION (m, ft)**: 1522

**SITE DESCRIPTION** (self-pl, road cut, etc.):
- Location on hummock, rounded top
- Frost boil of boulders in 1 m dia. scale noted at permafrost
- Regosol
- Permafrost not intersected

**SOIL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>LFH HORIZON</th>
<th>B Horizon</th>
<th>C horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td>thickness</td>
<td>cm</td>
<td>cm</td>
</tr>
<tr>
<td>absent</td>
<td>absent</td>
<td>absent</td>
</tr>
<tr>
<td>B and/or C horizon contact below depth of</td>
<td>cm</td>
<td></td>
</tr>
<tr>
<td>absent</td>
<td>none</td>
<td>abundant</td>
</tr>
<tr>
<td>B horizon: thickness</td>
<td>cm</td>
<td>Base at cm</td>
</tr>
<tr>
<td>absent</td>
<td>none</td>
<td>moderate</td>
</tr>
</tbody>
</table>

**SOIL DRAINAGE**: (0 m i p v)

**SOIL BASE MATERIAL**

- **STRATIG. UNIT**
  - Thickness (m)
  - Overall Texture
  - Origin
  - Contact: sharp or gradational; horizontal or wavy

**SLOPE CONFIG. (DOWN SLOPE)**

- Concave (Convex) Straight

**SLOPE CONFIG. (ACROSS SLOPE)**

- Concave (Convex) Straight

**HILLSLOPE CONFIG.**

- Humus, bare, tidal, gulch

**DOM. VEG. & MOISTURE INDICATOR PLANTS**

- Grasses, caribou, lichen

**BOULDERS**

- Number
- Size

**BEDROCK OUTCROP**

- Number
- Type
- Hydrochar.
  - Dry

**PHOTOS**

- Roll no.
- Description
  - 0 10:53 - Snow edge of hummock, pit, shrub, bank,itty-bitty

**SAMPLES**

- Description
**SITE DESCRIPTION**

- **SITE NO.**: JD-22
- **ASPECT**: 290 W
- **SLOPE**: 25%
- **ELEVATION (m)**: 1593

**SITE DESCRIPTION**
- Soil pit, road cut, etc.
- **LOCATION**: E: 440964, N: 701679
- **SECTION HT/PIT DEPTH**: 47 m

**SKETCH (X-SEQ. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)**
- Reef isle
- Boulder circle common

**SOIL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>LFN HORIZON</th>
<th>thickness cm</th>
<th>B HORIZON</th>
<th>thickness cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>absent</td>
<td></td>
<td>absent</td>
<td></td>
</tr>
</tbody>
</table>

**B and/or C horizon notes**: depth of cm out, some abundant

**SOIL DRAINAGE**: m i p v

**SPECIAL MATERIAL**

<table>
<thead>
<tr>
<th>STRATG. UNIT</th>
<th>THICKNESS (m)</th>
<th>OVERALL TEXTURE</th>
<th>ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>gravelly sand</td>
<td>C</td>
</tr>
</tbody>
</table>

**CONTACT**: sharp or gradational; horizontal or wavy

<table>
<thead>
<tr>
<th>CONTACT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>sharp or gradational; horizontal or wavy</td>
<td></td>
</tr>
</tbody>
</table>

**Completion of the following for unweathered surface material if possible, otherwise use B horizon (varnished)**

**BEDDING/STRATIFICATION**: well mod, well mod, weak massive

**MATRIX TEXTURE**: sand, some silt

**% CLASTS**: 50 - 60

**CLAST ROUNDNESS**: A B R W R

**CLAST ABUNDANCE BY SIZE**: PEBBLES C/S AND ROCKS

**CONSOLIDATION**: high mod, slight non

**LITHOLOGY OF COARSE FRAGMENTS**: shale, argillite

**WEATHERING OF CLASTS/Bedrock**: 1 2 3 D

**TELLIAN UNIT SYMBOL**

**REPRESENTS POLYGON**: YES

**ADD. NOTES IN FIELD BOOK**: YES, NO

**SAMPLES**
### Soil Characteristics

<table>
<thead>
<tr>
<th>Layer</th>
<th>Thickness (cm)</th>
<th>Absent</th>
<th>B Horizon: Thickness (cm)</th>
<th>Absent Bc, Bg, Bt, Bk, Bgl, Bgcl</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Soil Drainage

- **W** = Well
- **m** = Moderately
- **p** = Poorly
- **v** = Very

### Stratigraphic Unit

<table>
<thead>
<tr>
<th>Number</th>
<th>Thickness (m)</th>
<th>Overall Texture</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&lt; 1 m</td>
<td></td>
<td>C</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>R</td>
</tr>
</tbody>
</table>

### Contact

- Sharp or gradual; horizontal or wavy

### Bedding/Stratification

- Weak, moderately weak, weak massive

### Matrix Texture

- Weak

### Clasts

<table>
<thead>
<tr>
<th>Clast Abundance by Size</th>
<th>Pebbles</th>
<th>Gravels</th>
<th>Boulders</th>
</tr>
</thead>
<tbody>
<tr>
<td>a, c, s</td>
<td>a, c, s</td>
<td>a, c, s</td>
<td>a, c, s</td>
</tr>
</tbody>
</table>

### Consolidation

- High mod. slight non

### Cohesion

- High mod. slight non

### Induration

- High mod. slight non

### Oxidation

- High mod. slight non

### Lithology of Coarse Fragments

<table>
<thead>
<tr>
<th>Shale/Clay</th>
<th>Weathering of Clasts/Bedrock</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>F 23 D</td>
</tr>
</tbody>
</table>

### Terrain Unit Symbol

- Represents Polygon? Yes

### Additional Notes

- View across creek from JD-23 to JD-22

- Horizon: thickness cm absent
- B Horizon: thickness cm absent
- B and/or C horizon mollis: below depth of cm
- B and/or C pedogenic concentration: top at cm; base at cm
SITE DESCRIPTION

TE: 24
ASPECT: FLAT
SLOPE: 6-15% on top
ELEVATION: 1590

SITE DESCRIPTION (soil pit, road cut, etc.)

SECTION HT/PT DEPTH: 440.795
N: 70.6144

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- AT EOL OF ROCK CANYON
- EROSOL
- Canyon depth ~ 40m

SLOPE CONFIG. (DOWN SLOPE)
concave convex straight

SLOPE CONFIG. (ACROSS SLOPE)
concave convex straight

HILLSLOPE CONFIG.
unit ir nat ben ter rid gul sea

DOM. VEG. & MOISTURE INDICATOR PLANTS

BOULDERS

BLOCKS

BEDROCK OUTCROP

HYDRO. CHAR.

PHOTOS roll no. description

SAMPLES

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS
LFH HORIZON: thickness B cm absent

B HORIZON: thickness cm
(absent B0 B1 B2 B3 B4 B5)

B and/or C horizon mottles: below depth of cm
(absent none abundant top at cm base at cm)

SOIL DRAINAGE: m l p v

SURFICIAL MARRALS

STRATIG. UNIT THICKNESS (m) OVERALL TEXTURE ORIGIN

CONTACT: sharp or gradational; horizontal or wavy

Beds

CONTACT: sharp or gradational; horizontal or wavy

Beds

Complete the following for unweathered surficial material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION
well mod. mod. weak/moderate

MATRIX TEXTURE
Sandy, trace silty

% CLASTS:

CLAST. ROUNDNESS: A BA BR R WR

CLAST. ABUNDANCE BY SIZE
Pebbles
Cobbles
Boulders

CONSOLIDATION
high mod. slight high mod. slight high mod. slight

COHESION:
high mod. slight high mod. slight high mod. slight

INDURATION
high mod. slight high mod. slight high mod. slight

OXIDATION

LITHOLOGY OF COARSE FRAGMENTS WEATHERING OF CLASTS/BEDEORK

TERAIN UNIT SYMBOL for vicinity of site
Cb/Rh

REPRESENTS POLYGON?
YES NO

ADO. NOTES IN FIELD BOOK?
YES NO

Vegetation: CR
**SITE DESCRIPTION**

<table>
<thead>
<tr>
<th>SITE NO.</th>
<th>JD-25</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPECT</td>
<td></td>
</tr>
<tr>
<td>SLOPE %</td>
<td></td>
</tr>
<tr>
<td>ELEVATION (ft)</td>
<td>157-4</td>
</tr>
<tr>
<td>SITE DESCRIPTION (soil pit cut, etc.)</td>
<td>REGO SOL</td>
</tr>
<tr>
<td>LOCATION</td>
<td>N: 7015967</td>
</tr>
<tr>
<td>SECTION HT/PIT DEPTH</td>
<td>31</td>
</tr>
</tbody>
</table>

**SKETCH (X-SEC. TO SHOW SITE POSITION, INDICATE ORIENTATION AND SCALE)**

- Regosol

---

**MATERIAL DESCRIPTION**

**SOIL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>LFH HORIZON</th>
<th>thickness</th>
<th>cm</th>
<th>absent</th>
<th>B-horizon</th>
<th>thickness</th>
<th>cm</th>
<th>absent</th>
<th>B &amp; C horizon mottles</th>
<th>below depth of</th>
<th>cm</th>
<th>absent</th>
<th>B &amp; C pedogenic concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SOIL DRAINAGE:** r (w) p y

**SURFICIAL MATERIALS**

<table>
<thead>
<tr>
<th>STRATIG. UNIT</th>
<th>THICKNESS (m)</th>
<th>OVERALL TEXTURE</th>
<th>ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td></td>
<td>gravelly</td>
<td>M (C?)</td>
</tr>
</tbody>
</table>

**CONTACT:** sharp or gradational, horizontal or wavy

**BEDDING/STRATIFICATION:** well mod. | matrix texture | sandy, silt, silt

- % CLASTS:
  - CLAST ROUNDNESS: (a) SA, SR, R, WR
  - CLAST ABUNDANCE BY SIZE:
    - COBBLES:
      - CONSOLIDATION:
        - COHESION:
          - INDURATION:
            - OXIDATION:
              - WEATHERING OF CLASTS/BEDROCK

**LITHOLOGY OF COARSE FRAGMENTS:** conglomerate sediments

**TERRAIN UNIT SYMBOL** for vicinity of site

ZGS MB

**REPRESENTS POLYGON? YES NO**

**ADD. NOTES IN FIELD BOOK? YES NO**
**SITE DESCRIPTION**

<table>
<thead>
<tr>
<th>PROJECT NO. (+area)</th>
<th>DATE</th>
<th>AIR PHOTO NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200163,086</td>
<td>5 July 2006</td>
<td></td>
</tr>
</tbody>
</table>

**SITE NO.**

<table>
<thead>
<tr>
<th>JD-26</th>
<th>ASPECT °</th>
<th>SLOPE %</th>
<th>ELEVATION (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>340 N</td>
<td></td>
<td></td>
<td>1569</td>
</tr>
</tbody>
</table>

**SITE DESCRIPTION (soil profile, cut, etc.)**

<table>
<thead>
<tr>
<th>SECTION HT/PT DEPTH (cm)</th>
<th>E:</th>
<th>N:</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
<td>440,398</td>
<td>31,569</td>
</tr>
</tbody>
</table>

**SOIL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>LFH HORIZON</th>
<th>thickness (cm)</th>
<th>B/HORIZON</th>
<th>thickness (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B and/or C horizon mattles: below depth of ___cm

B and/or C pedogenic concentation:

<table>
<thead>
<tr>
<th>top at</th>
<th>base at</th>
</tr>
</thead>
<tbody>
<tr>
<td>cm</td>
<td>cm</td>
</tr>
</tbody>
</table>

**SOIL DRAINAGE:**

<table>
<thead>
<tr>
<th>m</th>
<th>p</th>
<th>v</th>
</tr>
</thead>
</table>

**SUFRACE MATERIALS**

<table>
<thead>
<tr>
<th>STRATIG. UNIT</th>
<th>THICKNESS (m)</th>
<th>OVERALL TEXTURE</th>
<th>ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Coarse</td>
<td>Cx</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Gravelly siltly</td>
<td>M</td>
</tr>
</tbody>
</table>

**SLOPE CONFIG. (DOWN SLOPE)**

<table>
<thead>
<tr>
<th>CONCAVE</th>
<th>CONVEX</th>
<th>STRAIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**HILLSLOPE CONFIG.**

<table>
<thead>
<tr>
<th>UNI</th>
<th>(hum)</th>
<th>bun</th>
<th>ter</th>
<th>rid</th>
<th>gull</th>
<th>sea</th>
</tr>
</thead>
</table>

**DOM. VEG. & MOISTURE INDICATOR PLANTS**

<table>
<thead>
<tr>
<th>Boulders</th>
<th>Blocks</th>
<th>Bedrock Outcrop</th>
<th>Hydro. Char.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BEDDING/STRATIFICATION**

<table>
<thead>
<tr>
<th>WELL MOD</th>
<th>MOD</th>
<th>VACC</th>
<th>MASSIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MATRIX TEXTURE**

<table>
<thead>
<tr>
<th>Silty sand</th>
</tr>
</thead>
</table>

**% CLASTS:**

| 40 | 2 |

**CLAST ROUNDNESS:**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>R</th>
<th>WR</th>
</tr>
</thead>
</table>

**CLAST ABUNDANCE BY SIZE**

<table>
<thead>
<tr>
<th>PEBBLES</th>
<th>COBBLES</th>
<th>BOULDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CONSOLIDATION**

<table>
<thead>
<tr>
<th>HIGH MOD SIGHT</th>
<th>HIGH MOD MEDIUM</th>
<th>HIGH MOD MEDIUM</th>
<th>HIGH MOD SLIGHT</th>
<th>HIGH MOD MEDIUM</th>
<th>HIGH MOD SLIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LITHOLOGY OF COARSE FRAGMENTS**

| Weathering of Clasts/Bedrock |
|------------------------------|-------------------|
|                              |                   |

**TERRAIN UNIT SYMBOL**

| Cx | 295 Ml. |

**REPRESENTS POLYGON:**

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

**ADD NOTES IN FIELD BOOK:**

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

**VEGETATION:**

| GR |
**SITE DESCRIPTION**

- **TE NO.:** JD-27
- **ASPECT:** 240 W
- **SLOPE:** 29.4° ± 11°
- **ELEVATION:** 1538 ft
- **SITE DESCRIPTION:** (soil pit, road cut, etc.)
  - **LOCATION:** 9018456
- **SECTION/HT/PIT DEPTH:** 0.5m ± 0.5

**SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE):**
- Regosol
- Dark gray soil

**SLOPE CONFIG. (DOWN SLOPE):**
- Concave
- Convex
- Straight

**SLOPE CONFIG. (ACROSS SLOPE):**
- Concave
- Convex
- Straight

**HILLSLOPE CONFIG.**
- Terr hum ben ter rd gal sea

**DOM. VEgL & MOISTURE INDICATOR PLANTS:**
- Blocks
- Bedrock outcrop
- Hydro. char.
- Dry site

**PHOTOS (roll no. description):**
- R 14:09

**SAMPLES:**

**MATERIAL DESCRIPTION**

**SOIL CHARACTERISTICS**

- LFH HORIZON: thickness __ cm absent
- B/HORIZON: thickness __ cm absent
- B and/or C horizon, motile: below depth __ cm absent/some abundant
- B and/or C pedogenic concentration: top at __ cm; base at __ cm
- Soil drainage: (e) m l p v

**SURFICIAL MATERIALS**

<table>
<thead>
<tr>
<th>STRAT. UNIT</th>
<th>THICKNESS (m)</th>
<th>OVERALL TEXTURE</th>
<th>ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>bna</td>
<td>gravelly sand</td>
<td>M (c?)</td>
</tr>
</tbody>
</table>

- Contact: sharp or gradational; horizontal or wavy
- Contact: sharp or gradational; horizontal or wavy

Complete the following for unweathered surface material if possible; otherwise use B horizon (weathered)

<table>
<thead>
<tr>
<th>BEDDING/STRATIFICATION</th>
<th>MATRTEX TEXTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>well mod, wall mod.</td>
<td>weak massive</td>
</tr>
</tbody>
</table>

% CLASTS:

<table>
<thead>
<tr>
<th>CLAST ABUNDANCE BY SIZE</th>
<th>PEBBLES</th>
<th>COBBLES</th>
<th>Boulders</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>d c o</td>
<td>o c o</td>
<td>o c o</td>
</tr>
</tbody>
</table>

Consolidation:

- High mod slight non
- High mod slight non
- High mod slight non
- High mod slight non

Lithology of coarse fragments:

- Graphitic?
- Shear

Weathering of clasts/bedrock:

- F 1 2 3 D

Terrain unit symbol for vicinity of site:

- 925 Mba (c?)

Represents polygon? Yes No

Additional notes in field book? Yes No
SITE DESCRIPTION

SITE NO: JD-28
ASPECT: 220° SW
SLOPE: 3%
ELEVATION: 1354

SITE DESCRIPTION (soil pit, road cut, etc.):
SECTION HT/PT/DEPTH: m cm
E: 478 396
N: 341 858

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- Brunisol

- LFH 19cm
  - Bm 38cm
  - C
  - Bottom of pit 62cm

SOIL CHARACTERISTICS

LFH HORIZON: thickness 19 cm absent
B HORIZON: thickness 6 cm absent

B and/or C horizon materials: below depth of cm absent
B and/or C pedogenic concentrations: top at cm base at cm

SOIL DRAINAGE: rw tp

SURFACE MATERIALS

STRATIG. UNIT | THICKNESS (cm) | OVERALL TEXTURE | ORIGIN
---------------|----------------|-----------------|-------
|               | silty sand     |                 | M     |
|               | some gravel    |                 |       |

CONTACT: sharp or gradational; horizontal or wavy

- bns

CONTACT: sharp or gradational; horizontal or wavy

- bns

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION: well mod. well mod. weak Massive

MATRIX TEXTURE: silty sand

% CLASTS:

- CLAST ROUNDNESS: strongly angular (SA)

CLAST ABUNDANCE BY SIZE:
- PEBBLES: a
- COBBLES: a
- Boulders: c

CONSOLIDATION:
- high mod. slight non
- high mod. slight non
- high mod. slight non

COHESION:
- high mod. slight non
- high mod. slight non
- high mod. slight non

INDURATION:
- high mod. slight non
- high mod. slight non
- high mod. slight non

OXIDATION:
- high mod. slight non
- high mod. slight non
- high mod. slight non

LITHOLOGY OF COARSE FRAGMENTS:
- very block (gypsophite) calcite?

WEATHERING OF CLASTS/BEDROCK:

- 0 1 2 3 4

TERRAIN UNIT SYMBOL for vicinity of site: 925 Mj

REPRESENTS POLYGON?
- YES
- NO

ADD. NOTES IN FIELD BOOK?
- YES
- NO

VEGETATION:
- CR
SITE DESCRIPTION

SITE NO: JD-29
ASPECT: 360° N
SLOPE ° %: 50/25°
ELEVATION (m): 1317

SITE DESCRIPTION:
- gently sloped "bench"
- black soil
- Regosol

LOCATION:
N: 30°17.49'
E: 43°18.29'

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE):
- black soil
- Regosol

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS
- L/H Horizon: thickness 12 cm absent
- B Horizon: thickness cm
  - Absent/Ab Bf Bh Bg Bj Bl
- B and/or C horizon motile below depth of __ cm
  - Absent/Ab Bf Bh Bg Bj Bl

SOIL DRAINAGE:
- r.w. (c) v

SURFICIAL MATERIALS

STRATIG. UNIT | THICKNESS (m) | OVERALL TEXTURE | ORIGIN
---------------|---------------|-----------------|------
bsa            | Silty sand    | Some gravel     |

CONTACT:
- sharp or gradational; horizontal or wavy

bsa

CONTACT:
- sharp or gradational; horizontal or wavy

bsa

BEDDING/STRATIFICATION:
- well mod. well mod. weak massive

MATRIX TEXTURE:

% CLASTS:
- CLAST ROUNDNESS: A a Sr R Wr

CLAST ABUNDANCE:
- BY SIZE:
  - Pebbles: 0 e 0 a
  - Cobble: 0 a 0 e

CONSOLIDATION:
- Cohesion:
  - High mod. slight non:
  - High mod. slight non:

LITHOLOGY OF COARSE FRAGMENTS:
- Weathering of clasts/bedrock:
  - F 2 3 D

TERRAIN UNIT SYMBOL for vicinity of site:
- Represents Polygon?: YES NO

ADD NOTES IN FIELD BOOK?: YES NO

SAMPLES:
- Black soil
- Regosol
**SITE DESCRIPTION**

- **SITE NO.**: JD-30
- **ASPECT**: N
- **SLOPE %**: 30 / 30
- **ELEVATION ft**: 1562

**SOIL CHARACTERISTICS**

- **LFH HORIZON**: thickness _6 cm absent
- **B HORIZON**: thickness _3.5 cm absent Bc Bf Bh Bg Bgj

**B AND/OR C HORIZON MOTTLES**: below depth of _cm absent some abundant top at _cm base at _cm

- **SOIL DRAINAGE**: r (0 / 1 p v)

**SUBSOIL MATERIAL**

<table>
<thead>
<tr>
<th>STRATIG. UNIT</th>
<th>THICKNESS (m)</th>
<th>OVERALL TEXTURE</th>
<th>ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>bns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONTACT:</td>
<td>sharp or gradational; horizontal or wavy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bns</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**HILLSLOPE CONFIG.**

- **DOM. VEG. & MOISTURE INDICATOR PLANTS**: hum ben ter rid gul sea

**BEDDING/STRATIFICATION**

- **MATRIX TEXTURE**: well mod well mod. weak massive

**% CLASTS**

<table>
<thead>
<tr>
<th>CLAST, ROUNDNESS</th>
<th>A</th>
<th>BA</th>
<th>SR</th>
<th>R</th>
<th>WR</th>
</tr>
</thead>
</table>

**CLAST, ABUNDANCE BY SIZE**

- **PEBBLES**: 0 / 0 / 0
- **COBBLES**: 0 / 0 / 0
- **BOULDERS**: 0 / 0 / 0

**CONSOLIDATION**

- **COHESION**: high mod slight non
- **INDURATION**: high mod slight non
- **OXIDATION**: high mod slight non

**LITHOLOGY OF COARSE FRAGMENTS**

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>P</th>
<th>I</th>
<th>Z</th>
<th>3</th>
<th>D</th>
</tr>
</thead>
</table>

**TERRAIN UNIT SYMBOL**

- **REPRESENTS POLYGON?**: YES
- **ADD. NOTES IN FIELD BOOK**: NO
- **VEGETATION**: CR
**SITE DESCRIPTION**

- **SITE NO.**: JD-31
- **ASPECT**: FLAT
- **SLOPE**: 0%
- **ELEVATION (m)**: 1529
- **SECTION H/P/T/DEPTH (m)**: 439.769
- **N**: 3017.648

**SKETCH**:
- On surface = angular shale (Cx)
- Block V. dark gray soil
- Regosol
- 10m x 10m slump block at edge of ridge above stream - at end of swale that collects run-off from up-ridge slope (Photo)

**SURFACE MATERIALS**

<table>
<thead>
<tr>
<th>STRATIG. UNIT</th>
<th>THICKNESS (m)</th>
<th>OVERALL TEXTURE</th>
<th>ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.2</td>
<td>gravelly sand</td>
<td>M</td>
</tr>
</tbody>
</table>

**CONTACT**: Sharp or gradational; horizontal or wavy

**BEDDING/STRATIFICATION**: Well mod, well mod, weak/massive

**MATRIX TEXTURE**: Sand, trace silt

**% CLASTS**: 30

**CLAST ROUNDNESS**: R R R R W R

**CLAST ABUNDANCE BY SIZE**
- Pebbles: 0
- Cobble: 0
- Boulder: 0

**CONSOLIDATION**
- High mod. slight non

**LITHOLOGY OF COARSE FRAGMENTS**
- Mostly shale, angular, some granite

**WEATHERING OF CLASTS/BEDROCK**
- 1230

**TERRAIN UNIT SYMBOL**
- Represents polygon: Yes

**ADDITIONAL NOTES IN FIELD BOOK**
- Yes

**VOCATION**: GR

---

**SOIL CHARACTERISTICS**

- **LH Horizon**: Thickness 7 cm absent
- **B Horizon**: Thickness 7 cm
- **B and/or C horizon moles**: Below depth of 7 cm
- **B and/or C pedogenic concentration**: Top at 7 cm; base at 7 cm

**SOIL DRAINAGE**: C C C C C
SITE NO. JD-32
ASPECT 310° SW
SLOPE 45/46
ELEVATION (ft) 1465

SITE DESCRIPTION

- Prongosol
- Medium gray soil colour
- Water pooling in soil pit
- This site at mound in valley bottom
- Where vegetation is limited across slope (feature noted on air photos). Ice retreat line?
- Lasso boulders warped on surface (brought to surface by cryoturbation).

USG:

- Bedrock outcrop
- Hydro Char

PHOTOS
- 018:02 pit, clay meadows

SAMPLES

LOCATION
N: 7016991

SOIL CHARACTERISTICS

LH HORIZON: thickness 15 cm absent
S HORIZON: thickness

B horizon: 6c 6d

B and/or C horizon mottles: below depth of cm

B and/or C pedogenic concentration:

SOIL DRAINAGE: r w m op v

SURFICIAL MATERIAL

<table>
<thead>
<tr>
<th>STRATIG. UNIT</th>
<th>THICKNESS (cm)</th>
<th>OVERALL TEXTURE</th>
<th>ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bns</td>
<td>Silty sand</td>
<td>Some gravel</td>
<td></td>
</tr>
</tbody>
</table>

CONTACT: sharp or gradational; horizontal or wavy

bs

bs

bs

bs

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered):

BEDDING/STRATIFICATION: well mod, well mod, weak fissility

MATRIX TEXTURE:

% CLASTS:

- Clast roundness: A B R WR

- PEBBLES: 0 0 u

- CUBBLES: 0 0 u

- BOULDERS: 0 0 u

- CONSOLIDATION: high mod slight con

- COHESION: high mod slight con

- INDISPOSITION: high mod slight con

- OXIDATION: high mod slight con

LITHOLOGY OF COARSE FRAGMENTS:

VARIOUS

WEATHERING OF CLASTS/Bedrock:

F 1 2 3 D

TELEMARK UNIT SYMBOL for vicinity of site:

925 MB

REPRESENTS POLYGON?: YES NO

ADD NOTES IN FIELD BOOK?: YES NO

Vegetation:

GR
SITE NAME
JD-33

ASPECT
E 160° S

HILLSLOPE
C 80°

SLOPE
40°

ELEVATION
1624

SITE DESCRIPTION (soil pit, test pit, etc.)

SECTION RT/PT/DEPT:
E: 443022
N: 701607

LOCATION:

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- regolite
- medium brown soil colour
- boulders/cobbles/pebbles are sub-angular till clasts; surface blocks are angular

SLOPE CONFIG. (DOWNSLOPE)

concave convex (straight)

HILLSLOPE CONFIG.
unit (if any) brown loam loam

DOM. VEG. & MOISTURE INDICATOR PLANTS
blueberry willow grassy (include)

BOULDERS
a
b
c

SLOPE CONFIG. (ACROSS SLOPE)
concave convex (straight)

BEDROCK OUTCROP
a
b

HILLTOP/ORES

HYDRO. CHAR.

SOAPY

PHOTOS no. description
2 8:58

SAMPLES
O

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LHF HORIZON:

thickness 4 cm absent

B HORIZON:

thickness

absent

medium

B AND/OR C HORIZON MOTION:

below depth of

absent

some

abundant

B AND/OR C PEDOGENIC CONCENTRATION:

top at

base at

NON:

MODERATE

HIGH

SOIL DRAINAGE

SURFACE MATERIALS

STRATIG. UNIT:

THICKNESS (cm)

OVERALL TEXTURE

ORIGIN

1
disc

b

loamy

C

CONTACT:

sharp or gradational: horizontal or wavy

2

granulitic silty sand

M

CONTACT:

sharp or gradational: horizontal or wavy

BEDDING/STRATIFICATION

MATRIX TEXTURE

% CLASTS:

40

CLAST ROUNDNESS:

A

SAND

CLAST ABUNDANCE

BY SIZE

PEBBLES
5

COBBLES
0

BOULDER
0

CONSOLIDATION

COHESION

INDUSTRATION

OXIDATION

LITHOLOGY OF COARSE FRAGMENTS

WEATHERING OF CLASTS/BEARK

M

TERRAIN UNIT SYMBOL:

represents polygon?

YES

NO

ADD. NOTES IN FIELD BOOK?

YES

NO

Vegetation:

GR
### Site Description

**Site No.:** 1200/63/006  
**Date:** 6 July 2008  
**Air Photo No.:**

#### Site Description

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Aspect °</th>
<th>Slope ° %</th>
<th>Elevation (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200/63/006</td>
<td>FLAT</td>
<td>1505</td>
<td></td>
</tr>
</tbody>
</table>

**Site Description (soil ph, root out, etc.):**

- **Scope:**

**Sketch (cross-section to show site position; indicate orientation and scale):**

- **Flat (Micro-irregular):** Pseudo-Alluvial/Fe terrace with ~12 m high escarpment 20 m N. of stream.
- Some UC blocks of sandy alluvial on slope.
- **Likely K. upper surfacet.
- Soil has alluvial clays - not weathered soil.
- Stream bed has till boulders.

**Bedding/Stratification:**

- **Matrix Texture:** Sand
- **% Clasts:** 40

### Soil Characteristics

<table>
<thead>
<tr>
<th>LFN HORIZON:</th>
<th>Thickness cm</th>
<th>B HORIZON:</th>
</tr>
</thead>
<tbody>
<tr>
<td>~</td>
<td></td>
<td>Absent</td>
</tr>
</tbody>
</table>

| B and/or C horizon moisture below depth of cm: |
| ~ | Absent to some moderate high |

**Soil Drainage:** r(w) m i p v

#### Stratigraphic Unit

<table>
<thead>
<tr>
<th>Stratigraphic Unit</th>
<th>Thickness (m)</th>
<th>Overall Texture</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>bns</td>
<td>gravel &amp; sand</td>
<td>C</td>
</tr>
</tbody>
</table>

**Contact:** Sharp or gradational; horizontal or wavy

**Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered):**

**Matrix Texture:** Sand

**% Clasts:** 40

<table>
<thead>
<tr>
<th>Clast Abundance</th>
<th>Pebbles</th>
<th>Cobbles</th>
<th>Boulders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>@</td>
<td>@</td>
<td>@</td>
</tr>
</tbody>
</table>

**Consolidation:**

- **High mod slight non:**

**Cohesion:**

- **High mod slight non:**

**Induration:**

- **High mod slight non:**

**Oxidation:**

#### Lithology of Coarse Fragments

- **Weathering of Clasts/Bedrock:**

**Terrain Symbol:**

- Represents Polygon? Yes
- Add Notes in Field Book? Yes
- Vegetation? No

**Samples:**

- gcv lsh rt

**Photos:**

- 9:30 escarpment
- View up valley
- Flat-topped knoll with hill
SOIL CHARACTERISTICS

LFH HORIZON: thickness: 10 cm absent

AE # HORIZON: thickness: 7 cm
absent: Bc, Bl, Bt, Bn, Bg, Bg

B and/or C horizon mottles: below depth of: 60 cm
absent: some abundant

B and/or C pedogenic concentration:
top at: 15 cm; base at: 60 cm
none: moderate: high

SOIL DRAINAGE: I w i p v

SUBLIMINAL MATERIALS

<table>
<thead>
<tr>
<th>STRATIG. UNIT</th>
<th>THICKNESS (m)</th>
<th>OVERALL TEXTURE</th>
<th>ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>0.75</td>
<td>Sandy Silt</td>
<td>O + Alluvium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sandy Gravel</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sandy Silt</td>
<td></td>
</tr>
</tbody>
</table>

CONTACT: sharp or gradational; horizontal or wavy

Complete the following for unweathered surface material if possible; otherwise use B horizon (weathered)

BEDDING/STRATIFICATION: 
well: well: weak: weak: massive

MATRIX TEXTURE: Sandy Silt

% CLASTS: 15

CLAST ROUNDNESS: A (RA) BR R WR

CLAST ABUNDANCE

<table>
<thead>
<tr>
<th>BY SIZE</th>
<th>PEBBLES</th>
<th>COBLES</th>
<th>BOULDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
</tr>
</tbody>
</table>

CONSOLIDATION

<table>
<thead>
<tr>
<th></th>
<th>COHESION</th>
<th>INDIURATION</th>
<th>OXIDATION</th>
</tr>
</thead>
</table>

LITHOLOGY OF COARSE FRAGMENTS

SHaly ARGILLACEOUS UNIT

TERRAIN UNIT SYMBOL: for vicinity of site

Ovi. Acr/Gr Ap

ADD. NOTES IN FIELD BOOK: YES NO

REPRESENTS POLYGON?: YES NO

Vegetation: 5% CR
**SITE DESCRIPTION**

**SITE NO.** J237
**ASPECT:** 335°N
**SLOPE:** 37/186
**ELEVATION (m):** 1559

**SITE DESCRIPTION (incl. road cut, etc.)**

**LOCATION:**

**SECTION INT/PT DEPTH (m):** 50

**SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)**

- Bedrock 0/c 50m up
- Leadoff horizon (light bgr)
- Somewhat hard (kaq) within dark gray soil
- O + C at 22 cm = Be?
- Possible other thin layer Oa at 22 cm -
- C, some blocks from Ra above (Oc) - discontinuous

**SLOPE CONFIG. (DOWN SLOPE)**

- Concave convex straight

**SLOPE CONFIG. (ACROSS SLOPE)**

- Concave convex straight

**HILLSLOPE CONFIG.**

- Unit 1 or hum (baa) ter no (baa)

**DOM. VEG. & MOISTURE INDICATOR PLANTS**

- Garcia, new willow

**BOULDERS**

- a 0/0

**BLOCKS**

- a 0/0

**BEDROCK OUTCROP**

- Moist slope

**PHOTOS**

- 0 swerea term to last site

**SAMPLES**

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**MATHEMATICAL DESCRIPTION**

**SOIL CHARACTERISTICS**

**LFH HORIZON:** thickness 7 cm absent

**B HORIZON:** thickness absent

**B and/or C horizon motes:** below depth of cm absent

**B and/or C peat/organic concentration:**

- B Highest moderate high

**SOIL DRAINAGE:**

- In v w p

**SUBSURFACE MATERIALS**

<table>
<thead>
<tr>
<th>STRATIG. UNIT</th>
<th>THICKNESS (m)</th>
<th>OVERALL TEXTURE</th>
<th>ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>925</td>
<td>M</td>
<td></td>
</tr>
</tbody>
</table>

**CONTACT:**

- Sharp or gradational; horizontal or wavy

**BEDDING/STRATIFICATION:**

- Well mod. mem. weak massive

**MATRIX TEXTURE:**

- Silty sand

**% CLASTS:**

- 15

**CLAST, ROUNDNESS:**

- A - SA - GR - WR

**CLAST, ABDUNDANCE BY SIZE**

- Pebbles

- Cobble

- Boulders

**CONSOLIDATION**

- High mod. slight con

**COHESION**

- High mod. slight con

**INDURATION**

- High mod. slight con

**OXIDATION**

- High mod. slight con

**LITHOLOGY OF COARSE FRAGMENTS**

- Shaly unit

**WEATHERING OF CLASTS/Bedrock**

-早点代表

**TERRAIN UNIT SYMBOL**

- 0 g 925 Mb

**REPRESENTS POLYGON?**

- Yes No

**ADD. NOTES IN FIELD BOOK?**

- Yes No

**VEGETATION:**

- Gr
SOIL CHARACTERISTICS

L/H HORIZON: thickness _ cm absent
B HORIZON: thickness _ cm absent
B and/or C horizon moistens below depth of _ cm
B and/or C pedogenic concentration: top at _ cm; base at _ cm

SOIL DRAINAGE: _

SURFICIAL MATERIALS

STRATIG. UNIT | THICKNESS (cm) | OVERALL TEXTURE | ORIGIN
---|---|---|---
| | | silty sand | M

CONTACT: sharp or gradational; horizontal or wavy

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION:
well mod. well mod. weak (fossil)

MATRIX TEXTURE:
silty sand

% CLASTS: 15

CLAST ROUNDNESS: A B R W R

CLAST ABUNDANCE

BY SIZE
PEBBLES | COBBLES | BOULDERS
---|---|---
O | O | O

CONSOLIDATION

JOIN |

INDURATION

OXIDATION

High mod. slight non |

LITHOLOGY OF COARSE FRAGMENTS

WEATHERING OF CLASTS/BEDROCK

TERRAIN UNIT SYMBOL FOR Stability of site

925 Mb (unlabeled)

REPRESENTS POLYGON? YES
NO
ADD. NOTES IN FIELD BOOK? YES
NO

Vegetation:

1 2 3 4
**SITE DESCRIPTION**

<table>
<thead>
<tr>
<th>SITE NO.</th>
<th>ASPECT.</th>
<th>SLOPE %</th>
<th>ELEVATION (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JD-3A</td>
<td>350°N</td>
<td>&lt; 3%</td>
<td>1513</td>
</tr>
</tbody>
</table>

**SITE DESCRIPTION (soil, road cul., etc.)**

- Regosol
- Black soil

**AMENITY MATERIALS**

- **SOIL CHARACTERISTICS**
  - LFH HORIZON: thickness __ cm absent
  - B HORIZON: thickness __ cm absent
  - B and/or C horizon matter: below depth __ cm: absent, none, abundant
    - top at __ cm; base at __ cm
  - B and/or C pedogenic concentration:
    - none, moderate, high

**SLOPE CONFIG. (DOWN SLOPE)**

- Concave
- Convex
- Steep

**SLOPE CONFIG. (ACROSS SLOPE)**

- Concave
- Convex
- Steep

**HILLSLOPE CONFIG.**

- Unir hum ben ter rid gul saa
- Incr inty gro (hill)

**DOM. VEG. & MOISTURE INDICATOR PLANTS**

- Boulders
- Blocks
- Bedrock outcrop
- Dry hydro.

**PHOTO/Survey No. description**

- a 0

**SAMPLES**

- 0

**SOIL DRAINAGE**

- r w p v

**BEDDING/STRATIFICATION**

- Sandy, text soil

**MATRIX TEXTURE**

- 1

**% CLASTS:**

- **CLAST ROUNDNESS**
  - A SA SR R WR

**CLAST ABUNDANCE BY SIZE**

- Pebbles: __
- Cobble: __
- Blocks: __
- Boulders: __

**CONSOLIDATION**

- High mod slight
- High mod slight

**COHESION**

- High mod slight
- High mod slight

**INDURATION**

- High mod slight
- High mod slight

**OXIDATION**

- High mod slight
- High mod slight

**LITHOLOGY OF COARSE FRAGMENTS**

- Black (geosyn.) shale

**WEATHERING OF CLASTS/BEDECK**

- 2 3 4

**TERRAIN UNIT SYMBOL**

- (C.?)

**REPRESENTS POLYGON?**

- YES NO

**ADD. NOTES IN FIELD BOOK?**

- YES NO

**VEGETATION:**

- 0
### Site Description

<table>
<thead>
<tr>
<th>Project No. (here)</th>
<th>200193.06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>6 July 2006</td>
</tr>
</tbody>
</table>

#### Site No.
- **JD-40**  

#### Aspect
- **Flat**

#### Slope %
- **Typical Minmax**
  - **1483**

#### Elevation (ft.)
- **42**

#### Site Description (soil pit, road cut, etc.)
- **Hand auger**

#### Section HT/Pit Depth (ft.)
- **444 902**
- **N: 7045552**

#### Sketch (X-SECT. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)
- Top of 3rd palo from up-valley (western palo is #1)

#### Elevation Graph

#### Bedding/Stratification
- Well mod. Well mod. weak/massive

#### Matrix Texture
- **Peat**

#### % Clasts:
- **Clast, Rounding: A SA SR R WR**

#### Clast, Abundance by Size
- **Pebbles**: 0, 0, 0  
  - **Cobbles**: 0, 0, 0  
  - **Boulders**: 0, 0, 0

#### Consolidation
- **Cohesion**: High Mod. High Mod. High Mod.
- **Induration**: High Mod. High Mod. High Mod.
- **Oxidation**: High Mod. High Mod. High Mod.

#### Lithology of coarse fragments
- **Weathering of Clast/Bedrock**: 0

#### Terrain Unit Symbol for vicinity of site
- **p0f - ZP**

#### Represents Polygon?
- Yes

#### Add Notes in Field Book?
- No
**SITE DESCRIPTION**

<table>
<thead>
<tr>
<th>SITE NO.</th>
<th>ASPECT</th>
<th>SLOPE</th>
<th>ELEVATION (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>J-41</td>
<td>530 NW</td>
<td>1623</td>
<td></td>
</tr>
</tbody>
</table>

**SOIL CHARACTERISTICS**

- **Surface Material**
  - **Stratigraphic Unit**: 
    - **Thickness (m)**: 
    - **Overall Texture**: gravelly sand 
    - **Origin**: M
  - **Contact**: sharp or gradational; horizontal or wavy

- **Bedding/Stratification**: sand, silt

- **% Clasts**: 15
- **Clast Roundness**: A 
  - **Clast Abundance by Size**:
    - Pebbles: 0.50
    - Cobble: 0.60
    - Boulders: 0.80
- **Consolidation**: comes on
  - **Induration**: high mod slight non
  - **Oxidation**: high mod slight non

- **Lithology of Coarse Fragments**: 0 1 2 3
- **Weathering of Clasts/Bedrock**: 0

- **TERRAIN UNIT SYMBOL**: 95 MB/R
- **Represents Polygon?**: Yes

**SKECH**

- "Rogasol" med. grey colour
**SITE DESCRIPTION**

- Site No.: 15-42
- Aspect: 075°E
- Slope: %
- Elevation (m): 1614

**SOIL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Horizon</th>
<th>Thickness (cm)</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFH HORIZON</td>
<td>thickness cm</td>
<td>absent</td>
</tr>
</tbody>
</table>
| B HORIZON | thickness cm | absent

B and/or C horizon notes: below depth of cm
- Abundant
- Some abundant
- Absent
- Non or moderate

**SOIL DRAINAGE: i w m p v**

**SURFICIAL MATERIALS**

<table>
<thead>
<tr>
<th>Stratigraphic Unit</th>
<th>Thickness (m)</th>
<th>Overall Texture</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>blocky</td>
<td>C</td>
</tr>
<tr>
<td>2</td>
<td>+5.0</td>
<td>gravelly sand</td>
<td>M</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>R</td>
</tr>
</tbody>
</table>

**BEDDING/STRATIFICATION**

- Sand, f, s, t, f

**CLAST ROUNDNESS**

<table>
<thead>
<tr>
<th>% Clasts</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

**CLAST ABUNDANCE BY SIZE**

<table>
<thead>
<tr>
<th>Pebbles</th>
<th>Gravel</th>
<th>Cobble</th>
<th>Boulder</th>
</tr>
</thead>
<tbody>
<tr>
<td>a o s o</td>
<td>a o s o</td>
<td>a o s o</td>
<td>a o s o</td>
</tr>
</tbody>
</table>

**CONSOLIDATION**

- High mod slight non
- High mod slight non
- High mod slight non

**LITHOLOGY OF COARSE FRAGMENTS**

<table>
<thead>
<tr>
<th>Weathering of Clast/Bedrock</th>
<th>1 2 3 4</th>
</tr>
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<tbody>
<tr>
<td>14.59</td>
<td></td>
</tr>
</tbody>
</table>

**TERRAIN UNIT/SYMBOl for vicinity of site**

- Represents Povson? | Yes | No
- Add notes in field book? | Yes | No

**PHOTOS**

- View up cirque canyon from 14:59

**HILLSLOPE CONFIG.**

- Concave straight

**DOM. VEGETATION & MOISTURE INDICATOR PLANTS**

- Stunted willow

**BOULDERS**

- A 600
- B 600

**BLOCKS**

- A 600
- B 600

**BEDROCK OUTCROP**

- A 600
- B 600

**HYDRO. CHAR.**

- Dry 2.96