Discussion of due diligence efforts on 46-acre former pumice mine site

October 26, 2015
Agenda

INTRODUCTIONS
Anne George, Facilitator

OVERVIEW
Kelly Sparks, Assoc. Vice President for Finance and Strategic Planning, OSU-Cascades

ENVIRONMENTAL ANALYSIS
Toby Scott, Senior Project Manager, Hydrogeologist, PBS Engineering and Environmental Inc.

GEOTECH ANALYSIS
Brad Wilcox, Senior Engineer, Carlson Testing

ENGINEERING ANALYSIS
Marty Chase, Principal, KPFF

QUESTIONS (25 mins)
Overview
Historically, campuses were separate and removed from their communities.
Now more campuses, including OSU-Cascades, are built to be a part of their communities.
OSU is uniquely qualified to reclaim and repurpose unused/underutilized land

- Land grant mission
- **Sustainability one of our core values.** Development of this property would reflect OSU-Cascades' goal to embrace and advance sustainable design and operating practices.
- **We have the expertise.** We are confident that OSU-Cascades and those on the Corvallis main campus will bring the expertise and commitment to make this property a showcase for redevelopment and reuse
- **Ideal learning/research opportunity.** We are excited about the learning and research opportunities and anticipate development of a property such as this would be a learning laboratory for our faculty and students
Conceptualization of 56-acre campus to support 5,000 students
10-acre campus, status of adjacent properties
Pumice mine

- Four tax lots and situated southwest of downtown Bend
- Zoned for Surface Mining (SM) and Residential use (RM)
- Fully served for water, storm sewer, natural gas, electric, telephone and internet.
Due diligence completed to date

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PBS Engineering and Environmental Inc.

Entering 35 years of providing quality people, quality work, and quality results

Image Credit: Cacophony via CC BY-SA 3.0
PBS is a multi-disciplinary environmental & engineering consulting firm with diverse technical capabilities.

- Founded in 1982
- 130+ Staff Members

**Health & Safety**

**Environmental Engineering**

**Geo-Environmental**

**Natural Resources**

**Geotechnical Engineering**

**Civil Engineering**
Environmental Due Diligence Phase One

4R Equipment Property

Phase 1 Environmental Site Assessment (ASTM Standards)

- Site History
- Regulatory Database Search
- Site Reconnaissance
- Interviews
- Evaluation and Conclusions
Phase 1 Environmental Site Assessment

Findings

• No Recognized Environmental Conditions (RECs)

• No Historical RECs

• Other Issues of Concern
  - Clean Fill for Reclamation
  - Remnant Construction Materials & Equipment
  - Possible Landfill Encroachment
• Excavate test pits along north property boundary
• No waste material or liquids encountered in any of the test pits
• No indications of landfill encroachment onto subject property
Follow-Up Action Items

Verify:

- Remaining Other Issues of Concern have been addressed
- Site Conditions have not changed to affect our assessment findings
CGT PROJECT TEAM MEMBERS

Brad M. Wilcox, PE, GE
- Principal Geotechnical Engineer of CGT
- Originally from McMinnville, OR
- Bachelor of Science in Civil Engineering 2002, Oregon State University
- 13+ years progressive geotechnical engineering experience in OR and WA
- Licensed as professional engineer in OR, WA, ID & WY
- Been with CGT since 2002

Jeff A. Jones, RG, CEG
- Project Engineering Geologist at CGT
- Originally from Bend, OR
- Bachelor of Science in Geology 1996, Portland State University
- 18+ years progressive geologic engineering experience in OR and WA
- Licensed/certified as engineering geologist in OR & WA
- Been with CGT since 2004

LOCAL CGT PROJECT EXPERIENCE

Bend-LaPine Elementary School – Bend
Miller Elementary School – Bend
Wilco Farm Store – Bend
NW Crossing Discovery Park – Bend
COCC Science Building – Bend
St. Charles Medical – Bend
Warm Springs K-8 School – Warm Springs
Black Butte Ranch Redevelopment - Sisters

Mountain View High School - Bend
Touchmark at Mt. Bachelor Village - Bend
Westside Subdivision - Bend
Redmond Municipal Airport - Redmond
St. Charles Madras Hospital - Madras
Pillar Project Data Center - Prineville
SERVICES PROVIDED FOR OSU-CASCADES 46-ACRE SITE

Nov. 2013 – Jan 2014:
- Preliminary Geotechnical Investigation
- 18 Drilled Borings
- 35 Test Pit Explorations
- Geologic Reconnaissance
- Laboratory Testing
- Geotechnical Conclusions
- Preliminary Geotechnical Recommendations for Proposed Development (i.e. Earthwork, Buildings, Pavements, Utilities, etc.)

Feb. 2014 – May 2014
- Supplemental Geologic Reconnaissance
- Supplemental Laboratory Testing
- Slope Stability Analyses
- Recommendations for Regrading of Slopes
- Collaboration with KPFF on Conceptual Grading Plans for Mine Reclamation

May 2014 – Present
- Geotechnical & Geologic Engineering Support
GEOTECHNICAL CONSIDERATION #1 – ADDRESS UNCONTROLLED FILLS
- Identify areas underlain by fill, depths of fills, and composition of fills
- Develop geotechnical recommendations for mitigation and re-use of existing fills as structural fills during mine reclamation and campus site grading.

[Diagram and images of excavation and reclamation sites]
GEOTECHNICAL CONSIDERATION #2 – ADDRESS SLOPES ALONG PERIMETER OF SITE
- Identify type and conditions of geologic materials present along site walls
- Perform analyses to evaluate global stability, local stability, and rockfall
- Develop recommendations for slope remediation and grading
GEOTECHNICAL CONSIDERATION #3 – EVALUATE PRESENCE OF FAULT STRAND AT SITE
- Identify fault zone the strand is associated with (Rimrock-Tumalo section of Metolius fault zone).
- Review geologic literature to determine slip rate (very low, ~2mm per year) assigned by USGS and recurrence interval (not assigned, USGS estimates age of most recent deformation as Late Quaternary or less than 130,000 years).
- Mapping (below) indicates the fault zone spans most of the town of Bend. With respect to faulting, the 46-acre site is not a unique design case when comparing other sites in the same fault zone.
- The mine walls allow for direct observation of the fault strand. This is favorable for the project during master planning.
Engineering Analysis
OREGON STATE UNIVERSITY – CASCADES CAMPUS
BEND, OREGON
REVISED CANYON GRADING SCENARIO
SW CHANDLER AVE BERM REMOVED
INfiltration Basin
25,300 SF (3’ Deep)

Oregon State University – Cascades Campus
Bend, Oregon
Revised Canyon Grading Scenario
Sw Chandler Ave Berm Removed
OREGON STATE UNIVERSITY – CASCADES CAMPUS
BEND, OREGON
REVISED CANYON GRADING SCENARIO
SW CHANDLER AVE BERM REMOVED
Grading Conceptual Design and Cost Estimate by KPFF Engineers Final Report completed January 2015

Grading conceptual design were developed by KPFF based on preliminary site conceptualization and strategies identified for slope stabilization as discussed with Carlson Geotechnical and DOGAMI. Earthwork volumes were calculated and the basis for cost estimate.

Fill and grade = $7.6M
Verification of earthwork grading quantities by Earthwork Services completed March 2015

Earthwork Services was retained to confirm quantities of earthwork volume identified for the remediation estimated by KPFF which is a major component of the remediation cost estimate.

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<th>EARTHWORK SERVICES</th>
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<tr>
<td>EXCAVATION AND ON-SITE HAUL</td>
<td>256,000 CY</td>
<td>258,000 CY</td>
<td>+0.8%</td>
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<tr>
<td>IMPORT FILL</td>
<td>136,000 CY</td>
<td>126,000 CY</td>
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<tr>
<td>COMPACTION</td>
<td>392,000 CY</td>
<td>384,000 CY</td>
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Color map by Earthwork Services to verify quantity of earthwork remediation based on conceptual grading strategy.
Other Civil Facts:

- All storm water will be infiltrated on-site.

- All sanitary sewer could be treated on-site with aerobic and hydroponic systems – or- pumped to public sewer mains.

- 2,500 to 5,000 GPM water flow is during current maximum daily demand at 20 psi residual pressure.

- Gas, Power & Communication are all available
Thank You

Send questions to info@osucascades.edu

Presentation will be posted on OSUcascades.edu/4