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K & A Engineering, Inc.  
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(541) 684-9399 Voice  
(541) 684-9358 FAX

August 23, 2006

Project: 145.06

Snow Mountain Resources  
P.O. Box 518  
Creswell, OR 97426

Subject: Response to City of Eugene staff report 8/14/2006  
Geotechnical issues for proposed Dillard Heights P.U.D.  
Dillard Road, Eugene, Oregon

#### **PURPOSE AND SCOPE**

As requested, K & A Engineering, Inc. has made additional analysis of the project site and geotechnical recommendations for the proposed planned unit development, including additional fieldwork. This additional work was proposed in our supplemental geotechnical recommendations for the project dated July 18, 2006.

The purpose of the additional fieldwork and recommendations is to address concerns of the City of Eugene planning staff in their review of the proposed planned unit development. Concerns of the planning staff include slope stability of the site during and after the proposed development.

The scope of our services included limited additional fieldwork and these additional recommendations in response to the staff report.

#### **FIELD INVESTIGATION**

K & A Engineering, Inc. met previously with a coalition of concerned citizens in July 2006 to look at areas of their concern. At that time we flagged (pink ribbon) an area for an additional test pit. However, when we arrived at the site on 8/21/2006 to excavate the test pits, the flagging was missing.

We excavated two test pits, one at the general vicinity of the west half of lot 32, and the other with bent trees that appear to be very similar to those in the testimony photograph. Both of these locations are in or near areas of the undisturbed slope that have the greatest ground slope gradient as surveyed by Olson Morris. Both of these sites also have trees that have slight to moderate bending of the trees near the ground surface.

These test pits, identified as test pit "TP-A" and "TP-B" are shown on the attached Geotechnical Site Plan. The test pits from our original geotechnical investigation in 2005 are also shown on this plan.

Soils in test pit "TP-A" consisted of 1.3-feet of brown, dry to damp, loose to moderately stiff organic SILT over tan/orange, dry to damp, highly weathered SANDSTONE. The test pit was excavated to a depth of 4.6-feet. No groundwater was encountered in the test pit.

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The soil and rock in these test pits is very consistent with the soil and rock found in the original five test pits summarized in our original Level II Stability Evaluation dated March 21, 2005.

## **SUMMARY AND RECOMMENDATIONS**

### **Areas of Additional Test Pits**

Based on our additional fieldwork we recommend that there is no evidence to support changing our original evaluation of the site for very low hazard of slope movement of the natural ground surface. The majority of bending of the trees in these areas was likely caused by factors other than significant soil creep.

The additional discovery does not imply or recommend any modifications to the proposed development and it supports and reinforces the conclusions made in the original geotechnical report.

### **Overall Hazard of Slope Movement on the Proposed P.U.D.**

#### *Existing Project Site*

Our recommendation is that there is a low hazard of slope movement on the project site in the undisturbed condition.

Areas where the ground slope has been disturbed, most notably the cut slope of Dillard Road on the west side of the project site, may continue to experience local areas of significant surface erosion and small slope movements if the areas of the cut slope that are prone to erosion and slope movement are not improved in some way. We note that these areas, however, do not represent new or increased threats to water quality or jeopardize the proposed improvements or the safety of the public. In fact it is unclear that, if this proposal were not to be approved, these areas of on-going surface erosion or localized failures would ever be adequately addressed due to the severe limitations of local road maintenance funding.

Furthermore, we recommend that the proposed development can be made in such a way that there is a low hazard of slope movement both during development and in the long term after development.

#### *Proposed Development*

The proposed development includes the construction of a small roadway and building pads for up to 32 new home sites. The roadway construction will require the construction cuts, fills, and a proposed mechanically stabilized earth (MAE) retaining wall. Building pads will be constructed on benched excavations that include engineered retaining structures, drains, and foundations.

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Our understanding is that the proposed development may include extension and/or improvement of the sanitary and storm collection system west of the project site. Some of this will include trenching and placement of new pipe in these trenches to connect to the existing system west of the project area.

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**Dillard Road Fill Stability**

We have reviewed geotechnical reports made by Squire Associates, dated June 19, 1996 and September 4, 1996 regarding the stability of two local areas of fill slope failure on the existing Dillard Road, west of the project site. The geotechnical investigation and recommendations provided by Squire Associates was thorough and appears to be based on sound geotechnical engineering principles. It appears that in these areas, these failed areas of fill have failed due to combination of the surcharge weight of the fill and a thin weak layer of clay and depth (10 to 20-feet in depth from the ground surface).

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We recommend that the road fill failures on Dillard Road are caused by conditions not found at the project site and do not change our recommendations for low hazard of slope stability.

Based on our investigation of the project site and experience in hillside development we are recommending that construction of the proposed development with no increased hazard of slope movement is entirely possible.

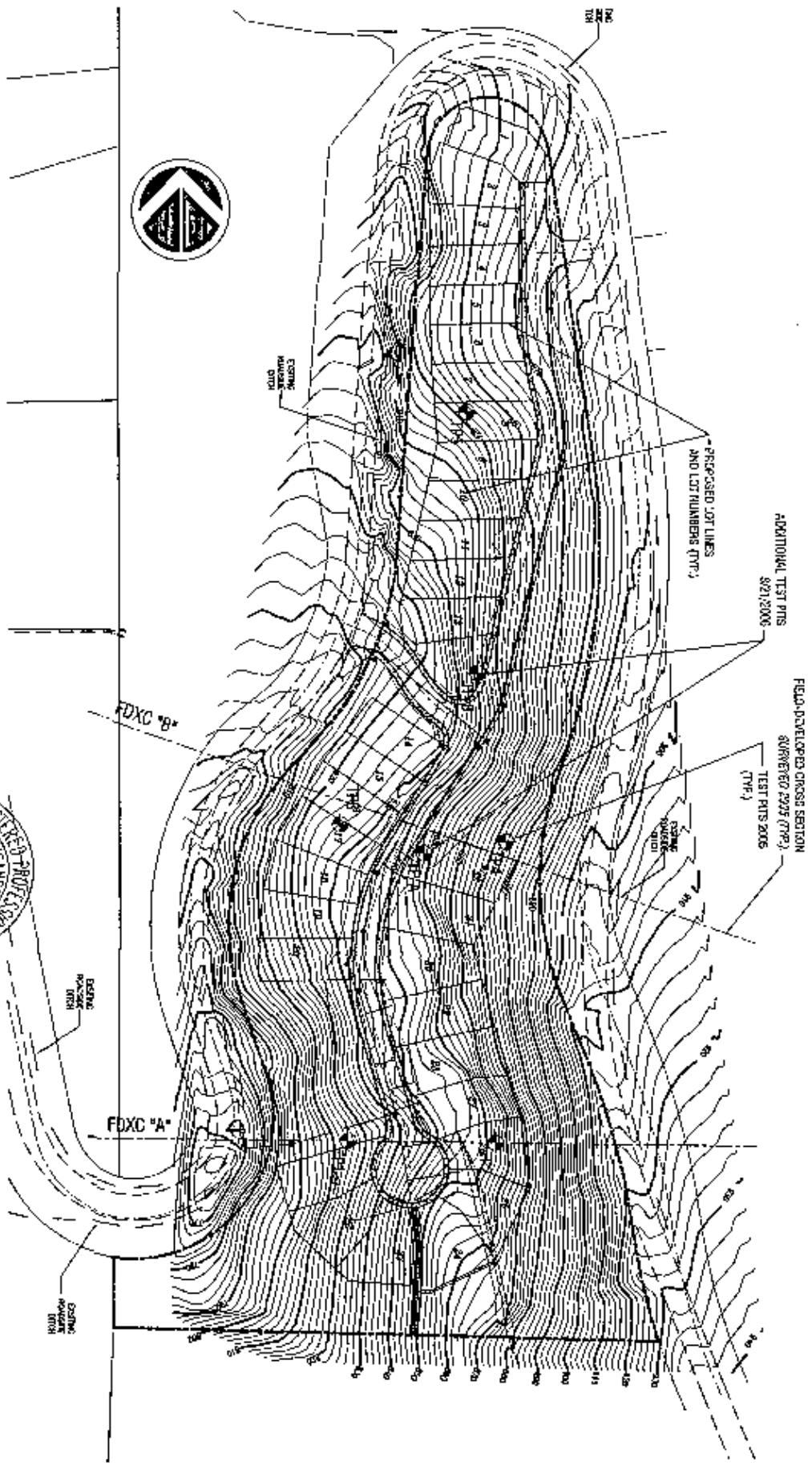
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Sincerely,



EXPIRES 12/31/02

Michael Remboldt, P.E.  
K & A Engineering, Inc.

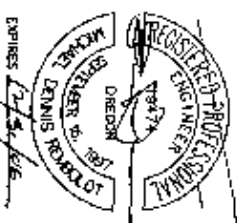


# GEOTECHNICAL SITE PLAN

1" = 100'

A

- NOTES:
1. THIS SITE PLAN IS BASED ON SURVEYING AND PROPOSED SITE DEVELOPMENT AS PER DISCUSS WITH MOHR'S ENGINEERING PLANS AUGUST 2004.
  2. LOCATIONS OF TEST PITS AND CROSS SECTIONS ARE APPROXIMATE AND WERE ESTABLISHED BY MEASUREMENTS FROM SURVEYED CONTROL POINTS USING CLOTH TAPE. INCONVENIENTS ON LASER RANGEFINDER.
  3. THIS SITE PLAN IS A REVISED PLAN BASED ON THE ORIGINAL SITE PLAN SHOWN IN OUR REPORT DATED MARCH 21, 2006.



**DILLARD HEIGHTS P. U. D.**  
**GEOTECHNICAL SITE PLAN**  
**DILLARD ROAD, EUGENE, OREGON**  
 CLIENT: SNOOK MOUNTAIN RESOURCES  
 PROJECT: 146.00  
 DATE: 4/23/2006  
 SHEET: 1 OF 1



K & A Engineering, Inc.  
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August 23, 2006

Project: 145.06

Snow Mountain Resources  
P.O. Box 518  
Creswell, OR 97426

Subject: Response to City of Eugene staff report 8/14/2006  
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Dillard Road, Eugene, Oregon

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## **SUMMARY AND RECOMMENDATIONS**

### **Areas of Additional Test Pits**

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#### *Existing Project Site*

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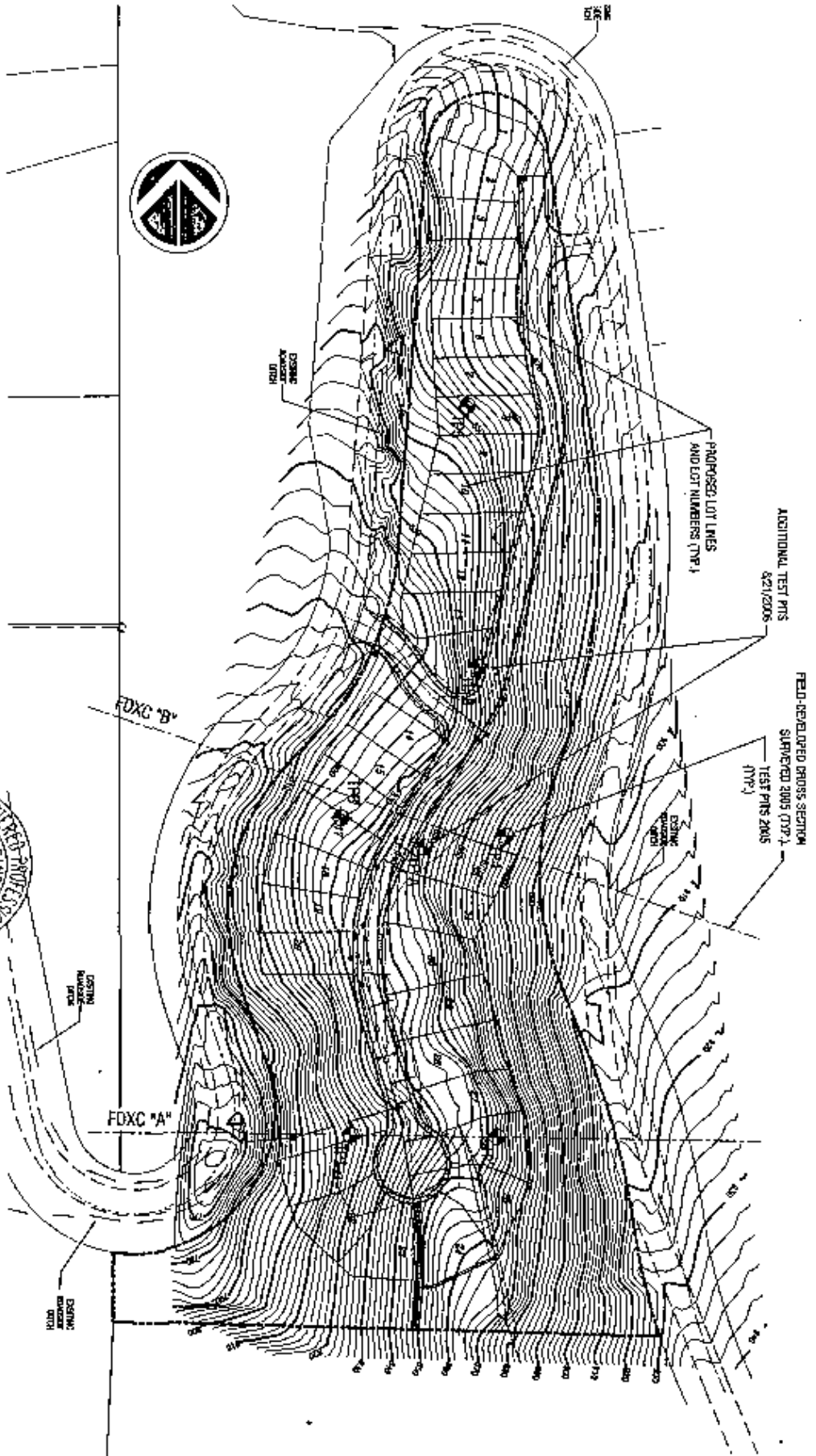
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EXPIRES

12/31/06

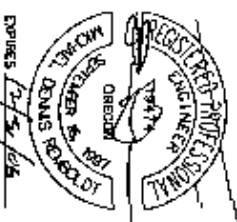
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**K&A**  
Engineering

**DILLARD HEIGHTS P.U.D.**  
**GEOTECHNICAL SITE PLAN**  
**DILLARD ROAD, EUGENE, OREGON**  
CLIENT: ANDREW MOUNTAIN RESOURCES  
PROJECT: 145.08  
DATE: 8/22/08  
SHEET: 1 OF 1



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Based on our investigation of the project site and experience in hillside development we are recommending that construction of the proposed development with no increased hazard of slope movement is entirely possible.

Thank you for the opportunity to be of service. Please call me if you have any questions.

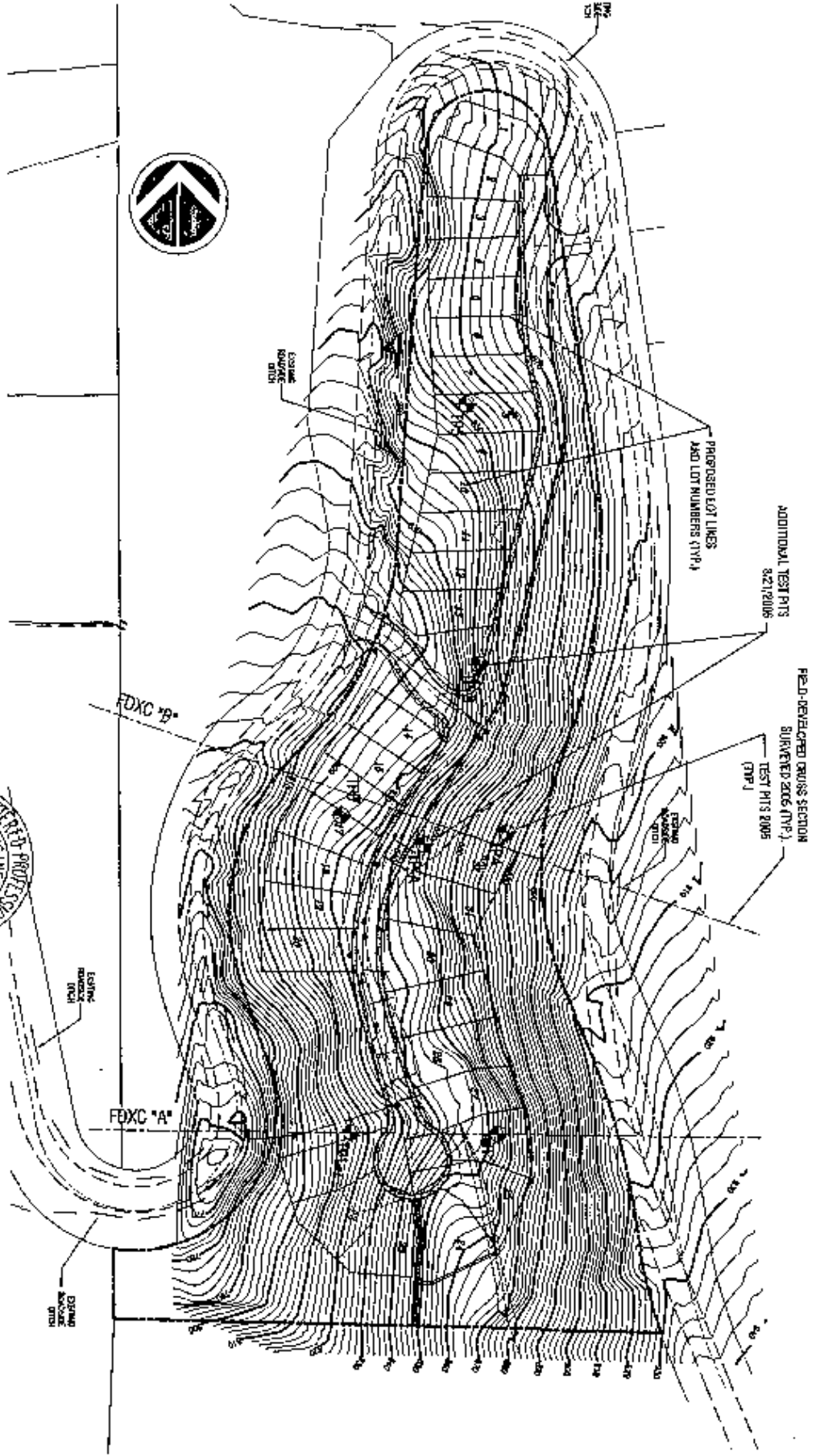
Sincerely,



EXPIRES

12/3/02

Michael Remboldt, P.E.  
K & A Engineering, Inc.



**GEOTECHNICAL SITE PLAN**

1" = 100'

- NOTES:
1. THIS SITE PLAN IS BASED ON SURVEYING AND PROPOSED SITE DEVELOPMENT AS PER DESIGN AND MORTON ENGINEERING PLANS DATED 2006.
  2. LOCATIONS OF TEST PITS AND CROSS SECTIONS ARE APPROXIMATE AND WERE ESTABLISHED BY MEASURING FROM SURVEYED CONTROL POINTS USING CLOTH TAPE, INSURANCE TAPE, OR LASER RANGEFINDER.
  3. THIS SITE PLAN IS A REVISED PLAN BASED ON THE ORIGINAL SITE PLAN SHOWN IN OUR REPORT DATED MARCH 21, 2005.



**DILLARD HEIGHTS P.U.D.  
GEOTECHNICAL SITE PLAN**

**DILLARD ROAD, EUGENE, OREGON**

CLIENT: SHOW MOUNTAIN RESOURCES  
PROJECT: 146.09  
DATE: 8/22/2006  
SHEET: 1 OF 1