Associated Earth Sciences, Inc.

June 4, 2004
Project No. KE04174A

Lakewood Construction
P.O. Box 12648
Mill Creek, Washington 98082

Attention: Mr. Randolf Cherewick

Subject: Geotechnical Report Addendum
Georgian Heights Division IV
Woodinville, Washington

Dear Mr. Cherewick:

In accordance with your request, Associated Earth Sciences, Inc. (AESI) has completed additional subsurface exploration in the southwestern portion of the subject site. This report presents the results of our findings and is presented as an addendum to our previous report entitled "Subsurface Exploration, Geologic Hazard, and Geotechnical Engineering Report, Georgian Heights Phases III and IV", dated April 30, 2004.

PROJECT AND SITE CONDITIONS

The subject area is located in the southwestern portion of the Georgian Heights, Phase IV property. The area is bounded to the south by the Woodinville High School property, on the west by residential property, and on the north and east by a small drainage feature. The topography of the area generally slopes downward toward the east and northeast at gradients ranging from approximately 5 to 10 percent. The area is currently undeveloped and is naturally forested with thick underbrush. The purpose of our study was to evaluate subsurface conditions in the area and provide geotechnical engineering recommendations for residential development.

SUBSURFACE CONDITIONS

Three exploration pits were excavated in the southwestern portion of the site using a track-mounted excavator. The soil and ground water conditions encountered in each of the explorations were observed and logged by an engineering geologist from out firm. The locations of the exploration pits are shown on the attached Site and Exploration Plan, Figure 1.

Sediments encountered in the explorations generally consisted of granular, glacial sediments of variable textural composition. Ground water seepage was encountered in all three of the explorations. The following is a more detailed description of the sediment types and ground water conditions encountered in our explorations (see attached exploration logs).

Stratigraphy

Topsoil

A surficial, organic topsoil layer was encountered at all three exploration locations. The topsoil was approximately 4 to 6 inches in thickness and is not considered suitable for foundation support, or for use in a structural fill.

Vashon Ice Contact Sediments

Sediments encountered directly below the surficial topsoil layer at the location of exploration pit EP-21 generally consisted of dense, moist to very moist, silty sand with gravel. We interpret these sediments to be representative of Vashon ice contact sediments. Ice contact deposits consist of sediments deposited by water on, within, below, or marginal to glacial ice. At the location of exploration pit EP-21, the ice contact sediments were weathered to a loose to medium dense state and a reddish brown to tan color to a depth of approximately 3.5 feet. This is typical of ice contact sediments encountered elsewhere at the site, as described in our April 2004 geotechnical report. At the location of exploration pit EP-21, the ice contact sediments extended to a depth of approximately 5.5 feet.

Vashon Advance Outwash

Sediments encountered below the Vashon ice contact sediments at the location of exploration pit EP-21, and below the surficial topsoil layer at the locations of exploration pits EP-22 and EP-23, generally consisted of dense to very dense sand with variable gravel content. Although the sediments of this geologic unit generally contained minor quantities of silt, these sediments were observed to become silty with sandy silt interbeds below a depth of approximately 9 feet at the location of exploration pit EP-22. We interpret these sediments to be representative of Vashon advance outwash. The Vashon advance outwash was deposited by meltwater streams that emanated from the advancing glacial ice during the Vashon Stade of the Fraser Glaciation, approximately 12,500 to 15,000 years ago. At the locations of exploration pits EP-22 and EP-23, these sediments have been weathered to a loose to medium dense state and a reddish brown to tan color to a depth of approximately 3 feet. The Vashon advance outwash sediments extended beyond the maximum depth explored of approximately 8.5 to 11.0 feet.

Hydrology

Slow to moderately rapid seepage was encountered in exploration pit EP-21 below a depth of 10 feet, in exploration pit EP-22 over the depth interval from approximately 8 to 9 feet, and in

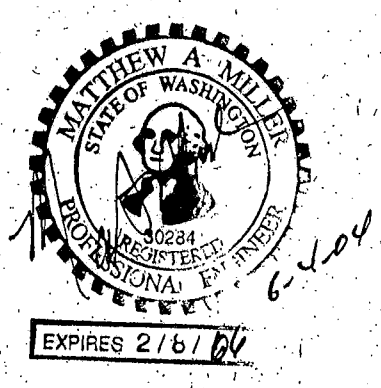
exploration pit EP-23 over the depth interval from approximately 6 to 6.5 feet. Because of the variable depth of occurrence and saturated thickness, the seepage at all three exploration locations appears to be due to perched ground water and not the actual water table.

GEOLOGIC HAZARDS AND DESIGN RECOMMENDATIONS

Sediments suitable for foundation support were encountered at depths ranging from approximately 2.5 to 3.0 feet and conventional spread footing foundations may be used. Due to the similarity of the conditions in the subject area to the conditions encountered in other areas of the Georgian Heights Phase III/IV property, it is our opinion that the recommendations previously provided in our April 30, 2004 geotechnical engineering report are applicable to the area addressed by this addendum.

We appreciate the opportunity to be of service to you on this project. Should you have any questions regarding this letter or other geotechnical aspects of the project, please call us at your earliest convenience.

Sincerely.
ASSOCIATED EARTH SCIENCES, INC.
Kirkland, Washington



Timothy J. Peter, P.G., P.E.G.
Project Geologist

Matthew A. Miller, P.E.
Senior Geotechnical Engineer

Attachments: Figure 1 - Site and Exploration Plan
Exploration Pit Logs

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LOG OF EXPLORATION PIT NO. EP-21

EXHIBIT 32
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This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.

Depth (ft)	DESCRIPTION
	Topsoil
1	**Weathered Vashon Ice Contact Sediments**
2	Loose, moist, reddish brown, SILTY SAND with gravel, scattered cobbles; becomes medium dense and tan below 2.5'; abundant roots 0' to 2.5'; contains lenses of clean sand below 2.5'.
3	
4	**Vashon Ice Contact Sediments**
5	Dense, very moist, tan, SILTY SAND with gravel (SM).
6	**Vashon Advance Outwash**
7	Very dense, very moist, tan SAND with gravel, trace silt (SW); becomes wet below 10'.
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12	Bottom of exploration pit at depth 11 feet No caving. Moderately rapid seepage below 10'.
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Georgian Heights Phase IV
Woodinville, WA

Associated Earth Sciences, Inc.

Logged by: TJP
Approved by: TJP

Project No. KE04174A

May 2004

KCTP3 04174A-4.GPJ June 2, 2004

LOG OF EXPLORATION PIT NO. EP-22

EXHIBIT 32
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This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.

Depth (ft)	DESCRIPTION
	Topsoil
1	**Weathered Vashon Advance Outwash**
2	Loose, moist, reddish brown, SILTY SAND with gravel (SM); becomes medium dense, very moist and tan below 2.5'; abundant roots 0' to 2.5'.
3	**Vashon Advance Outwash**
4	Medium dense to dense, very moist, tan, fine to medium SAND, little gravel, few silt (SP); becomes wet below 8'.
5	
6	
7	
8	
9	Dense, very moist, mottled tan, SILTY fine SAND (SM) with lenses of fine SANDY SILT (ML).
10	
11	
12	Bottom of exploration pit at depth 11 feet No caving. Moderately rapid seepage 8' to 9'.
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Georgian Heights Phase IV
Woodinville, WA

Associated Earth Sciences, Inc.

Logged by: TJP
Approved by: TJM

Project No. KE04174A
May 2004

KCTP3 04174A-4.GPJ May 28, 2004

LOG OF EXPLORATION PIT NO. EP-23

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Depth (ft)

This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.

DESCRIPTION

Topsoil

Weathered Vashon Advance Outwash

Loose to medium dense, moist, reddish brown, SILTY SAND with gravel, abundant roots (SM).

Vashon Advance Outwash

Dense to very dense, moist, tan SAND with gravel, little silt (SM); becomes very moist with trace silt below 5.5' (SW); becomes very moist to wet at 6' to 6.5; contains silt interbeds below 6.5'.

Bottom of exploration pit at depth 8.5 feet
No caving. Slow, spotty seepage at 6' to 6.5'.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Georgian Heights Phase IV
Woodinville, WA

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Logged by: TJP
Approved by: TJP

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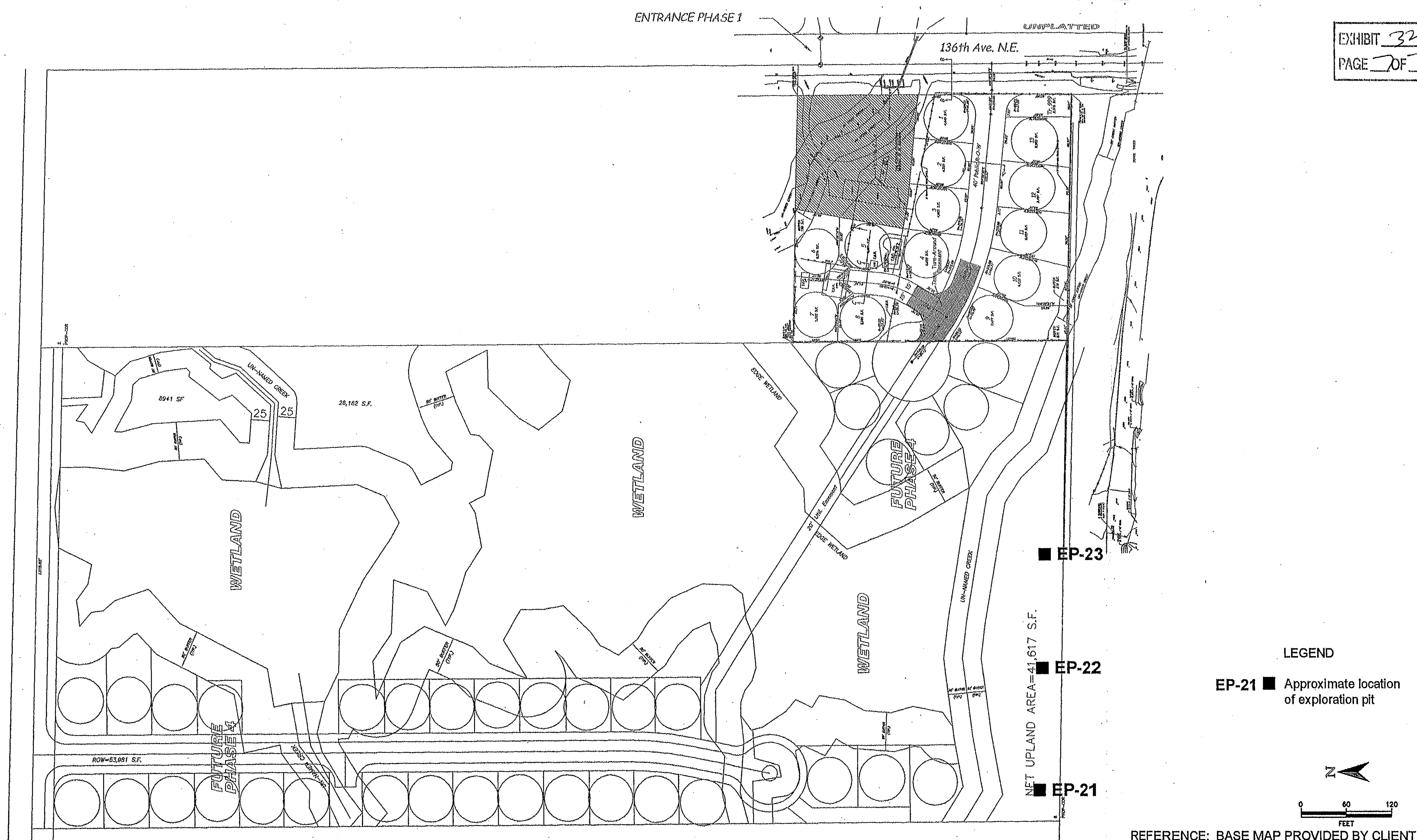

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Associated Earth Sciences, Inc.

SITE AND EXPLORATION PLAN

GEORGIAN HEIGHTS PHASE IV
WOODINVILLE, WASHINGTON

FIGURE 1

DATE 6/04

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