Vicinity Map

The City of Bellevue does not guarantee the information on this map is accurate or complete. This data is provided "as is" basis and disclaims all warranties.

Map Generated on: 01/09/2024

TOPOGRAPHIC & BOUNDARY SURVEY

LEGAL DESCRIPTION

(PER STATUTORY WARRANTY DEED RECORDING# 20230515000758)

THE NORTH 84.14 FEET, AS MEASURED ALONG THE WESTERLY LINE OF LOT 1; THE NORTH 84.14 FEET OF THE EAST 40 FEET OF LOT 2; ALSO THE EAST 15 FEET OF THAT PORTION OF LOT 2 LYING SOUTH OF THE SOUTH LINE OF THE NORTH 84.14 FEET OF SAID LOT 2; ALL IN BLOCK 5, KILLARNEY NO. 3, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 45 OF PLATS ON PAGE 38, RECORDS OF KING COUNTY; SITUATE IN THE CITY OF BELLEVUE, COUNTY OF KING, STATE OF WASHINGTON.

BASIS OF BEARINGS

NAD 83(11) WASHINGTON NORTH COORDINATE SYSTEM PER CITY OF BELLEVUE CONTROL POINTS #2067 & #2077

REFERENCES

R1. RECORD OF SURVEY, VOL. 347, PGS. 59–61, RECORDS OF KING COUNTY, WASHINGTON.

VERTICAL DATUM

NAVD88 PER CITY OF BELLEVUE VERTICAL BENCHMARK 753

3.5"x3.5" CONCRETE MON W/ 1/2" DIA BRASS PLUG W/ PUNCH MK IN CASE; TOP MON TO TOP RIM CASE 0.88 FEET. ON CENTERLINE SE 19TH ST – 65 FEET+– EAST OF INTERSECTION SE 19TH ST & 104TH AVE SE @ HOUSE #10402 SE 19TH ST.

ELEV=145.346'

SURVEYOR'S NOTES

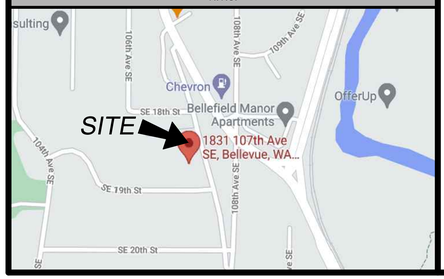
1. THE TOPOGRAPHIC SURVEY SHOWN HEREON WAS PERFORMED IN MAY OF 2023. THE FIELD DATA WAS COLLECTED AND RECORDED ON MAGNETIC MEDIA THROUGH AN ELECTRONIC THEODOLITE. THE DATA FILE IS ARCHIVED ON DISC OR CD. WRITTEN FIELD NOTES MAY NOT EXIST. CONTOURS ARE SHOWN FOR CONVENIENCE ONLY. DESIGN SHOULD RELY ON SPOT ELEVATIONS.
2. ALL MONUMENTS SHOWN HEREON WERE LOCATED DURING THE COURSE OF THIS SURVEY UNLESS OTHERWISE NOTED.
3. THE TYPES AND LOCATIONS OF ANY UTILITIES SHOWN ON THIS DRAWING ARE BASED ON INFORMATION PROVIDED TO US, BY OTHERS OR GENERAL INFORMATION READILY AVAILABLE IN THE PUBLIC DOMAIN INCLUDING, AS APPLICABLE, IDENTIFYING MARKINGS PLACED BY UTILITY LOCATE SERVICES AND OBSERVED BY TERRANE IN THE FIELD. AS SUCH, THE UTILITY INFORMATION SHOWN ON THESE DRAWINGS ARE FOR INFORMATIONAL PURPOSES ONLY AND SHOULD NOT BE RELIED ON FOR DESIGN OR CONSTRUCTION PURPOSES; TERRANE IS NOT RESPONSIBLE OR LIABLE FOR THE ACCURACY OR COMPLETENESS OF THIS UTILITY INFORMATION. FOR THE ACCURATE LOCATION AND TYPE OF UTILITIES NECESSARY FOR DESIGN AND CONSTRUCTION, PLEASE CONTACT THE SITE OWNER AND THE LOCAL UTILITY LOCATE SERVICE (800–424–5555).
4. SUBJECT PROPERTY TAX PARCEL NO. 3860900061.
5. SUBJECT PROPERTY AREA PER THIS SURVEY IS 11,992± S.F. (0.28 ACRES)
6. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT. EASEMENTS AND OTHER ENCUMBRANCES MAY EXIST THAT ARE NOT SHOWN HEREON.
7. EXISTING STRUCTURE(S) LOCATION AND DIMENSIONS ARE MEASURED FROM THE FACE OF THE SIDING UNLESS OTHERWISE NOTED.
8. FIELD DATA FOR THIS SURVEY WAS OBTAINED BY DIRECT FIELD MEASUREMENTS WITH A CALIBRATED ELECTRONIC 5–SECOND TOTAL STATION AND/OR SURVEY GRADE GPS OBSERVATIONS. ALL ANGULAR AND LINEAR RELATIONSHIPS ARE ACCURATE AND MEET THE STANDARDS SET BY WAC 332–130–090.

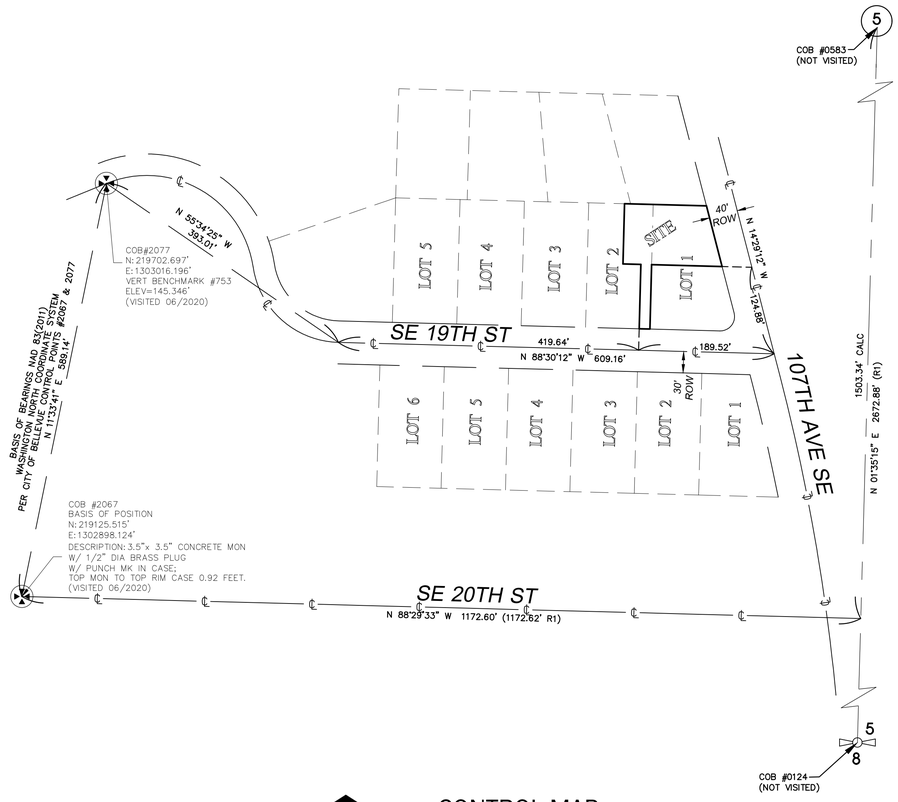
LEGEND

	AREA DRAIN	P	POWER METER
	ASPHALT SURFACE	P	POWER (OVERHEAD)
	BUILDING	PP	POWER POLE
	CENTERLINE ROW	PP	POWER POLE W/ LIGHT
	CONCRETE SURFACE		RETAINING WALL
	DECK		REBAR AS NOTED (FOUND)
	DITCH (FLOWLINE)		REBAR & CAP (SET)
	FENCE LINE (CHAIN LINK)		ROCKERY
	FENCE LINE (WOOD)	SS	SEWER LINE
	GRAVEL SURFACE		SEWER MANHOLE
	GUY ANCHOR	SIZE TYPE	TREE (AS NOTED)
IP	IRON PIPE (FOUND)	WM	WATER METER
	MONUMENT IN CASE (FOUND)	WV	WATER VALVE
	NAIL AS NOTED		YARD LIGHT
TMH	TELEPHONE MAINTENANCE HOLE	OIL	OIL FILL CAP
	STEEP SLOPE AREA	W	WATER LINE

VICINITY MAP

N.T.S.





CONTROL MAP

N.T.S.

STEEP SLOPE/BUFFER DISCLAIMER:

THE LOCATION AND EXTENT OF STEEP SLOPES SHOWN ON THIS DRAWING ARE FOR INFORMATIONAL PURPOSES ONLY AND CANNOT BE RELIED ON FOR DESIGN AND/OR CONSTRUCTION. THE PITCH, LOCATION, AND EXTENT ARE BASED SOLELY ON OUR GENERAL OBSERVATIONS ON SITE AND OUR CURSORY REVIEW OF READILY AVAILABLE PUBLIC DOCUMENTS; AS SUCH, TERRANE CANNOT BE LIABLE OR RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY STEEP SLOPE INFORMATION. ULTIMATELY, THE LIMITS AND EXTENT OF ANY STEEP SLOPES ASSOCIATED WITH ANY SETBACKS OR OTHER DESIGN OR CONSTRUCTION PARAMETERS MUST BE DISCUSSED AND APPROVED BY THE REVIEWING AGENCY BEFORE ANY CONSTRUCTION CAN OCCUR.

INDEXING INFORMATION

NE 1/4 SW 1/4
SECTION: 05
TOWNSHIP: 24N
RANGE: 05E, W.M.
COUNTY: KING

measure success

TOPOGRAPHIC & BOUNDARY SURVEY
PARCEL NO. 3860900061

HAMADEH / MELNIK RESIDENCE
1831 107TH AVE SE
BELLEVUE, WA 98004

JASON SANCHEZ — STATE OF WASHINGTON — 22815 — REGISTERED PROFESSIONAL LAND SURVEYOR — 06/02/23

Terrane
10801 Main Street, Suite 102, Bellevue, WA 98004
phone 425.458.4488 support@terrane.net
www.terrane.net

JOB NUMBER:	211686
DATE:	06/02/23
DRAFTED BY:	TLR
CHECKED BY:	JPH/JPS
SCALE:	N.T.S.

REVISION HISTORY

SHEET NUMBER
1 OF 3

TOPOGRAPHIC & BOUNDARY SURVEY

LEGEND

	AREA DRAIN	P	POWER METER
	ASPHALT SURFACE	P	POWER (OVERHEAD)
	BUILDING	PP	POWER POLE
	CENTERLINE ROW	PP	POWER POLE W/ LIGHT
	CONCRETE SURFACE		RETAINING WALL
	DECK		REBAR AS NOTED (FOUND)
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	FENCE LINE (WOOD)	SS	SEWER LINE
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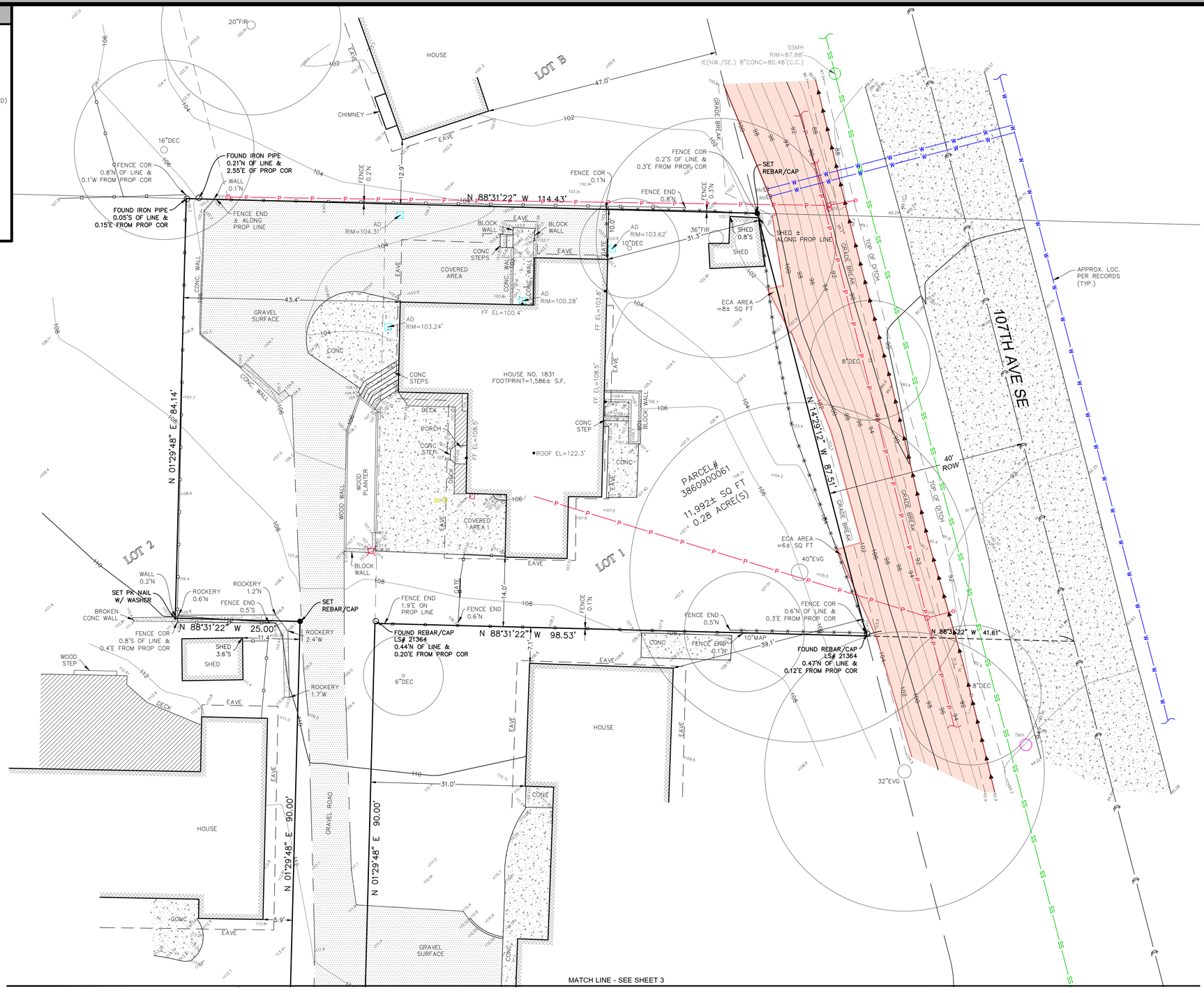
	NAIL AS NOTED		YARD LIGHT
TMH	TELEPHONE MAINTENANCE HOLE	OIL	OIL FILL CAP
	STEEP SLOPE AREA	W	WATER LINE



MATCH LINE - SEE SHEET 3

(IN FEET)
1 INCH = 10 FT.

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measure success

TOPOGRAPHIC & BOUNDARY SURVEY
PARCEL NO. 3860900061

HAMADEH / MELNIK RESIDENCE
1831 107TH AVE SE
BELLEVUE, WA 98004

06/02/23

Terrane
10801 Main Street, Suite 102, Bellevue, WA 98004
phone 425.458.4488 support@terrane.net
www.terrane.net

JOB NUMBER:	211686
DATE:	06/02/23
DRAFTED BY:	TLR
CHECKED BY:	JPH/JPS
SCALE:	1"= 10'

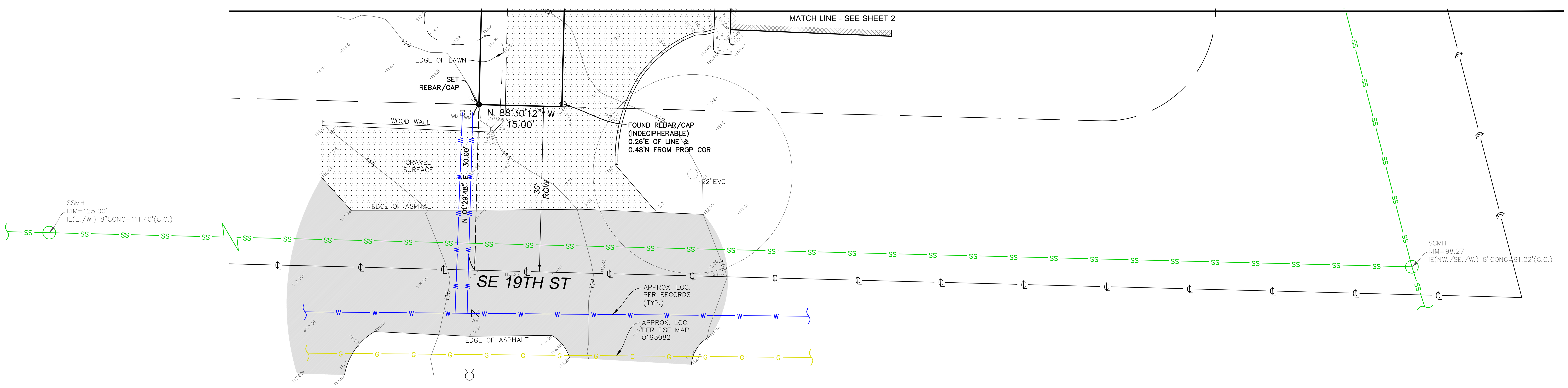
REVISION HISTORY

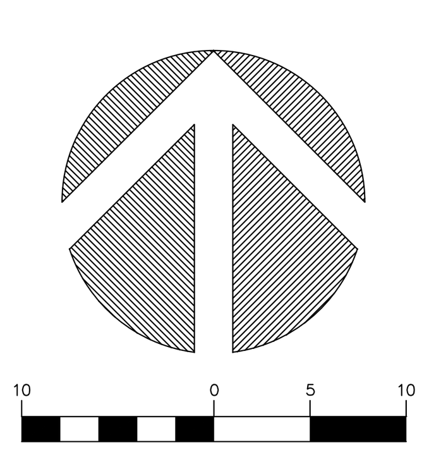
SHEET NUMBER
2 OF 3

TOPOGRAPHIC & BOUNDARY SURVEY

LEGEND

AREA DRAIN	POWER METER
ASPHALT SURFACE	POWER (OVERHEAD)
BUILDING	POWER POLE
CENTERLINE ROW	POWER POLE W/ LIGHT
CONCRETE SURFACE	RETAINING WALL
DECK	REBAR AS NOTED (FOUND)
DITCH (FLOWLINE)	REBAR & CAP (SET)
FENCE LINE (CHAIN LINK)	ROCKERY
FENCE LINE (WOOD)	SEWER LINE
GRAVEL SURFACE	SEWER MANHOLE
GUY ANCHOR	TREE (AS NOTED)
IRON PIPE (FOUND)	WATER METER
MONUMENT IN CASE (FOUND)	WATER VALVE
NAIL AS NOTED	YARD LIGHT
TELEPHONE MAINTENANCE HOLE	OIL FILL CAP
STEEP SLOPE AREA	WATER LINE





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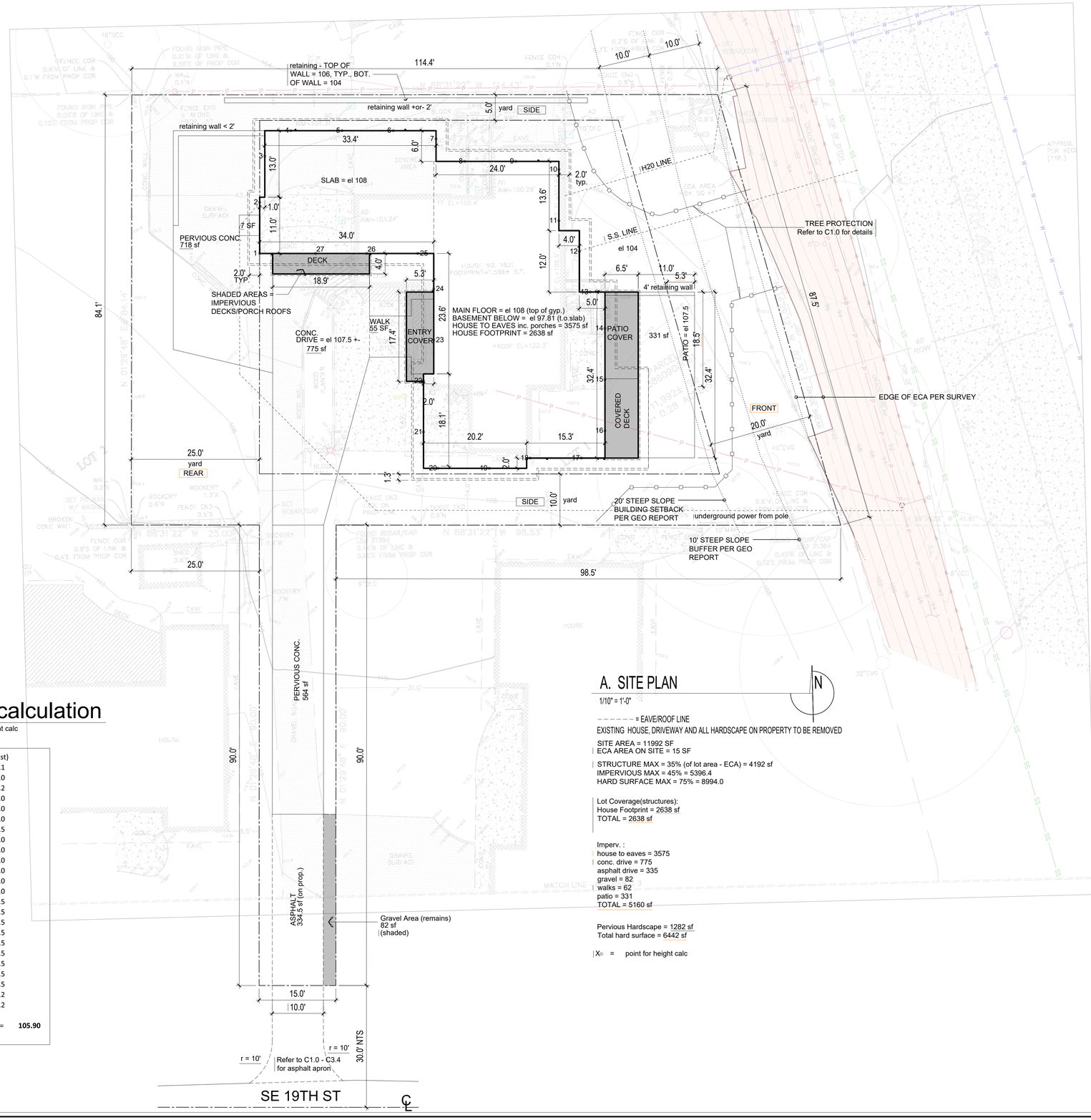


A. SITE PLAN

1/10" = 1'-0"

N

= EAVE/ROOF LINE

EXISTING HOUSE, DRIVEWAY AND ALL HARDSCAPE ON PROPERTY TO BE REMOVED

SITE AREA = 11992 SF
ECA AREA ON SITE = 15 SF

STRUCTURE MAX = 35% (of lot area - ECA) = 4192 sf
IMPERVIOUS MAX = 45% = 5396.4
HARD SURFACE MAX = 75% = 8994.0

Lot Coverage(structures):
House Footprint = 2638 sf
TOTAL = 2638 sf

Imperv. :
house to eaves = 3575
conc. drive = 775
asphalt drive = 335
gravel = 82
walks = 62
patio = 331
TOTAL = 5160 sf

Pervious Hardscape = 1282 sf
Total hard surface = 6442 sf

X◇ = point for height calc

A.E.G. calculation

X◇ = point for height calc

point	elev. (exist)
1	104.1
2	104.0
3	104.2
5	104.0
6	104.0
9	102.0
10	103.5
11	104.0
12	104.0
13	108.0
14	108.0
15	108.0
16	108.0
17	107.5
18	107.5
19	107.5
20	107.5
21	107.5
22	107.5
23	107.5
24	107.5
25	107.5
26	104.2
27	104.2
avg elev =	**105.90**

Civil Engineer

Duffy Ellis
CES Civil Engineering
102 NW Canal St Seattle WA 98107
206.930.0342

Structural Engineer

Javid Abdi, PE, SE Atlas Consulting Structural Engineers
6810 NE 149th St Kenmore WA 98028
Phone: (206) 427-7233

Geotechnical Engineer

Phil Haberman
Cobalt Geosciences, LLC
P.O. Box 82243
Kenmore, WA 98028
(206) 331-1097
www.cobaltgeo.com
cobaltgeo@gmail.com

Project Description

Demolish existing and build new single family residence.

Parcel Number/Legal

Parcel # = 3860900061

Legal Description:
KILLARNEY ADD # 3 N 84.14 FT OF 1 MEAS ALG W LN & N 84.14 FT OF E 40 FT OF 2 & E 15 FT EX N 84.14 FT OF 2

lot size = 11,992 sf

Owner

WASIEM HAMADEH + TATYANA MELNIK
10468 SE 19TH ST
Bellevue WA

Greenscape in front setback

total front setback area	1750
hardscape	98.05
greenscape	1651.95
% of greenscape	94.4%
min % of greenspace	50%

F.A.R. calculation

Basement Area with > 5' exposed	0
First Floor enclosed area (inc. gar)	2266.6
Upper Floor enclosed	2109.6
Areas > 18' clg	404.8
TOTAL enclosed area	4781
Lot sf	11992
FAR	0.40
MAX allowable far	0.50

NOT TREES TO BE REMOVED

9317 REGISTERED ARCHITECT CHRIS LUTHI STATE OF WASHINGTON

CENTERLINE DESIGN
4737 37th AVE SW
SEATTLE
206.932.8706
www.Centerline-Design.com

Hamadeh - Melnik Residence

10468 SE 19TH ST Bellevue WA

CONTENTS

Site Plan

DRAWN BY
CRL

DATE
9.16.23
1.4.24
1.9.24

A1

Cobalt Geosciences, LLC
P.O. Box 82243
Kenmore, Washington 98028

June 7, 2023

Wasiem Hamadeh
Hamadeh84@gmail.com

RE: Geotechnical Investigation & Critical Areas Report
Proposed Additions
1831 107th Avenue SE
Bellevue, Washington

In accordance with your authorization, Cobalt Geosciences, LLC has prepared this letter to discuss the results of our geotechnical evaluation at the referenced site.

The purpose of our evaluation was to provide recommendations for foundation design, grading, and earthwork.

Site and Project Description

The site is located at 1831 107th Avenue SE in Bellevue, Washington. The site consists of one irregularly shaped parcel (No. 3860900061) with a total area of 12,999 square feet.

The property is developed with a single-family residence with basement areas and driveway. The remainder of the site is undeveloped and vegetated with grasses, bushes, and variable diameter trees.

The site slopes downward from south to north at magnitudes of 5 to 15 percent and relief of about 15 feet. There is a short, relatively steep slope near the east property line extending downward to the east. This slope is well vegetated and has magnitudes of 70 to 90 percent and relief of about 11 to 14 feet. This slope has been previously graded as part of construction of 107th Avenue SE.

The site is bordered to the north, south, and west by residences, and to the east by 107th Avenue SE.

The proposed development includes additions to the existing residence. Details regarding the addition locations, elevations, and sizes have not been provided. Figure 2 shows a likely layout of the final structure.

We anticipate that foundation loads will be light and grading may include cuts of 9 feet or less if basement areas are proposed. We must be provided with the final plans so that we may update this report.

Area Geology

The site lies within the Puget Lowland. The lowland is part of a regional north-south trending trough that extends from southwestern British Columbia to near Eugene, Oregon. North of Olympia, Washington, this lowland is glacially carved, with a depositional and erosional history including at least four separate glacial advances/retreats.

The Puget Lowland is bounded to the west by the Olympic Mountains and to the east by the Cascade Range. The lowland is filled with glacial and non-glacial sediments consisting of interbedded gravel, sand, silt, till, and peat lenses.

The Geologic Map of King County indicates that the site is near the contacts between Vashon Glacial Till and Vashon Advance Outwash.

Vashon Glacial Till includes mixtures of silt, sand, gravel, and clay in a nonsorted matrix or diamict. These soils become denser with depth below a weathered zone of looser materials. These deposits are typically underlain by Vashon Advance Outwash.

The Vashon Advance Outwash includes fine to medium grained sands with lesser silt and gravel. These soils also become denser with depth below a weathered zone. These soils can have a slight liquefaction potential if groundwater is present in the looser materials.

Boring Exploration

The geotechnical field investigation program was completed in June 2023 and included drilling and sampling two hollow stem auger borings with a limited access drill rig.

Disturbed soil samples were obtained during drilling by using the Standard Penetration Test (SPT) as described in ASTM D-1586. The Standard Penetration Test and sampling method consists of driving a standard 2-inch outside-diameter, split barrel sampler into the subsoil with a 140-pound hammer free falling a vertical distance of 30 inches. The summation of hammer-blows required to drive the sampler the final 12-inches of an 18-inch sample interval is defined as the Standard Penetration Resistance, or N-value. The blow count is presented graphically on the boring logs in this appendix. The resistance, or "N" value, provides a measure of the relative density of granular soils or of the relative consistency of cohesive soils.

The soils encountered were logged in the field and are described in accordance with the Unified Soil Classification System (USCS).

A Cobalt Geosciences field representative conducted the exploration, collected disturbed soil samples, classified the encountered soils, kept a detailed log of the exploration, and observed and recorded pertinent site features.

The borings encountered approximately 6 inches of grass and topsoil underlain by approximately 6.5 to 7.5 feet of loose to medium dense, silty-fine to medium grained sand trace gravel (Weathered Advance Outwash). These materials were underlain by medium dense to dense, fine to medium grained sand trace gravel and silt (Advance Outwash), which continued to the termination depths of the borings.

Groundwater

Groundwater was not encountered in the exploration during the field investigation. We do not anticipate that significant volumes of runoff will be encountered at shallow depths at this site. Groundwater is likely 20 or more feet below site elevations.

Water table elevations often fluctuate over time. The groundwater level will depend on a variety of factors that may include seasonal precipitation, irrigation, land use, climatic conditions and soil permeability. Water levels at the time of the field investigation may be different from those encountered during the construction phase of the project.

Steep Slope Hazards

Critical area ordinances designate slopes with magnitudes greater than about 40 percent and vertical relief of at least 10 feet as potentially geologically hazardous (steep slope/landslide hazards). Additional criteria include areas where landslide activity has taken place historically or where there is evidence of slope movements. Slope areas underlain by permeable soils overlying impermeable soils often exhibit landslide activity.

The site slopes downward from south to north at magnitudes of 5 to 15 percent and relief of about 15 feet. There is a short, relatively steep slope near the east property line extending downward to the east. This slope is well vegetated and has magnitudes of 70 to 90 percent and relief of about 11 to 14 feet. This slope has been previously graded as part of construction of 107th Avenue SE. We did not observe evidence of instability or soil creep within the steeper slope areas during our site visit.

The LUC defines steep slope hazard areas as having any of the following characteristics:

A. Designation of Critical Areas.

The following geologic hazard areas are hereby designated critical areas subject to the regulations of this part.

1. Landslide Hazards. Areas of slopes of 15 percent or more with more than 10 feet of rise, which also display any of the following characteristics:

a. Areas of historic failures, including those areas designated as quaternary slumps, earthflows, mudflows, or landslides.

b. Areas that have shown movement during the Holocene Epoch (past 13,500 years) or that are underlain by landslide deposits.

c. Slopes that are parallel or subparallel to planes of weakness in subsurface materials.

d. Slopes exhibiting geomorphological features indicative of past failures, such as hummocky ground and back-rotated benches on slopes.

e. Areas with seeps indicating a shallow ground water table on or adjacent to the slope face.

f. Areas of potential instability because of rapid stream incision, stream bank erosion, and undercutting by wave action.

2. Steep Slopes. Slopes of 40 percent or more that have a rise of at least 10 feet and exceed 1,000 square feet in area.

The site contains steep slope areas as defined above. The steep slopes have been locally modified through prior grading, including cuts associated with historic roadway construction.

During our field assessment, we traversed slope areas and observed steep slope areas on the property and adjacent areas. As we conducted the traverses, we looked for any signs that would indicate past slope failures or features indicating possible future instability.

Overall, the steep slope areas and adjacent areas within 200 feet of the site appear stable at this time with no evidence of severe erosion, exposed soils, hummocky terrain, or other signs of landslide activity. The geologic units that underlie the slope system become denser with depth and are typically resistant to large-scale slide activity in that state.

There is a chance of shallow sloughing at the site within the upper weathered soils. This could occur for a variety of reasons but would be most likely to occur during the winter months. It is critical that all runoff, temporary and permanent, be routed away from the slope.

Erosion Hazard

The Natural Resources Conservation Services (NRCS) maps for King County indicate that the site is underlain by Everett-Alderwood gravelly sandy loam (6 to 15 percent slopes). These soils would have a slight erosion potential in a disturbed state depending on the slope magnitude.

It is our opinion that soil erosion potential at this project site can be reduced through landscaping and surface water runoff control. Typically, erosion of exposed soils will be most noticeable during periods of rainfall and may be controlled by the use of normal temporary erosion control measures, such as silt fences, hay bales, mulching, control ditches and diversion trenches. The typical wet weather season, with regard to site grading, is from October 31st to April 1st. Erosion control measures should be in place before the onset of wet weather.

Seismic Hazard

The overall subsurface profile corresponds to a Site Class *D* as defined by Table 1613.5.2 of the International Building Code (IBC). A Site Class *D* applies to an overall profile consisting of stiff/medium dense soils within the upper 100 feet.

We referenced the U.S. Geological Survey (USGS) Earthquake Hazards Program Website to obtain values for S_S, S_1, F_a, and F_v. The USGS website includes the most updated published data on seismic conditions. The following tables provide seismic parameters from the USGS web site with referenced parameters from ASCE 7-16.

Seismic Design Parameters (ASCE 7-16)

Site Class	Spectral Acceleration at 0.2 sec. (g)	Spectral Acceleration at 1.0 sec. (g)	Site Coefficients		Design Spectral Response Parameters		Design PGA
			F_a	F_v	S_{DS}	S_{D1}	
D	1.364	0.475	1.0	Null	0.909	Null	0.583

Additional seismic considerations include liquefaction potential and amplification of ground motions by soft/loose soil deposits. The liquefaction potential is highest for loose sand with a high groundwater table. The site has a low risk of liquefaction. For items listed as "Null" see Section 11.4.8 of the ASCE.

Critical Area Report Summary

In this section, we present a generalized discussion of the relevant sections of the City of Bellevue Land Use Code pertaining to geologically hazardous areas and critical area reports. Comments follow each section where applicable.

VII. GEOLOGIC HAZARD AREAS

20.25H.120 Designation of critical area and buffers.

A. Designation of Critical Areas.

The following geologic hazard areas are hereby designated critical areas subject to the regulations of this part.

1. Landslide Hazards. Areas of slopes of 15 percent or more with more than 10 feet of rise, which also display any of the following characteristics:

a. Areas of historic failures, including those areas designated as quaternary slumps, earthflows, mudflows, or landslides.

b. Areas that have shown movement during the Holocene Epoch (past 13,500 years) or that are underlain by landslide deposits.

c. Slopes that are parallel or subparallel to planes of weakness in subsurface materials.

d. Slopes exhibiting geomorphological features indicative of past failures, such as hummocky ground and back-rotated benches on slopes.

e. Areas with seeps indicating a shallow ground water table on or adjacent to the slope face.

f. Areas of potential instability because of rapid stream incision, stream bank erosion, and undercutting by wave action.

2. Steep Slopes. Slopes of 40 percent or more that have a rise of at least 10 feet and exceed 1,000 square feet in area.

- The highlighted criteria are present at the site. See steep slope section for more information. Based on our explorations, hazards associated with steep slopes at the site are relatively low, provided stormwater runoff is fully controlled and excavation work, fill placement, and drainage system installation are monitored by the geotechnical engineer. The construction can be completed without affecting the steep slope areas.

- There will always be a chance of shallow sloughing, erosion, and landslide activity within the upper weathered soils, particularly during the winter months/wet season. These areas would be outside of the development areas once completed.

20.25H.125 Performance standards – Landslide hazards and steep slopes.

In addition to generally applicable performance standards set forth in LUC 20.25H.055 and 20.25H.065, development within a landslide hazard or steep slope critical area or the critical area buffers of such hazards shall incorporate the following additional performance standards in design of the development, as applicable. The requirement for long-term slope stability shall exclude designs that require regular and periodic maintenance to maintain their level of function.

A. Structures and improvements shall minimize alterations to the natural contour of the slope, and foundations shall be tiered where possible to conform to existing topography;

- In general, the proposed additions will be constructed to generally fit the current topography with benches and new concrete retaining walls. Cuts are necessary for the proposed project but will be benched as required to maintain temporary stability. The

additions may utilize basement areas, consistent with the current construction on site. The foundation walls proposed to support these cuts should be engineered for the appropriate lateral earth pressures.

B. Structures and improvements shall be located to preserve the most critical portion of the site and its natural landforms and vegetation;

- Disturbance to vegetation will be minimized during construction and any areas temporarily disturbed beyond the footprint of the proposed structure will be revegetated. Note that all areas scheduled for re-development are currently developed and/or landscaped with typical residential vegetation.

C. The proposed development shall not result in greater risk or a need for increased buffers on neighboring properties;

- The site slopes are globally stable in their current configurations under static conditions. There will be no net increase in risk to critical areas or adjacent properties provided runoff is controlled and structures are setback at least 20 feet from the top of the slope. Increased buffers are not warranted. Steep slope areas should be fully vegetated.

D. The use of retaining walls that allow the maintenance of existing natural slope area is preferred over graded artificial slopes where graded slopes would result in increased disturbance as compared to use of retaining wall;

- Provided within the proposal. We agree that retaining walls generally require less land disturbance and fill slopes are typically not more stable than a wall system with natural slope conditions. Earthwork will be performed outside of steep slope areas and will not affect these areas.

E. Development shall be designed to minimize impervious surfaces within the critical area and critical area buffer;

- Stormwater collected from existing and future impervious surfaces will be collected and either infiltrated on site into the outwash soils or routed to City infrastructure. We are not aware of the overall impervious surface percentages at this time.

F. Where change in grade outside the building footprint is necessary, the site retention system should be stepped and regrading should be designed to minimize topographic modification. On slopes in excess of 40 percent, grading for yard area may be disallowed where inconsistent with this criteria;

- Walls will be used if required for new basements. No grading will occur on steep slopes.

G. Building foundation walls shall be utilized as retaining walls rather than rockeries or retaining structures built separately and away from the building wherever feasible. Freestanding retaining devices are only permitted when they cannot be designed as structural elements of the building foundation;

- The building foundation walls will be used as retaining walls depending on the foundation layout and building elevations.

H. On slopes in excess of 40 percent, use of pole-type construction which conforms to the existing topography is required where feasible. If pole-type construction is not technically feasible, the structure must be tiered to conform to the existing topography and to minimize topographic modification;

- Not proposed.

I. On slopes in excess of 40 percent, piled deck support structures are required where technically feasible for parking or garages over fill-based construction types; and

- Not proposed at this time.

J. Areas of new permanent disturbance and all areas of temporary disturbance shall be mitigated and/or restored pursuant to a mitigation and restoration plan meeting the requirements of LUC 20.25H.210. (Ord. 5680, 6-26-06, § 3)

- Applicable to civil engineer and landscape architect.

20.25H.140 Critical areas report – Additional provisions for landslide hazards and steep slopes.

In addition to the provisions of LUC 20.25H.230, any proposal to modify a landslide hazard or steep slope or associated critical area buffer through a critical areas report shall comply with the requirements of this section.

A. Limitation on Modification.

The provisions for coal mine hazard areas in LUC 20.25H.130 may not be modified through a critical areas report.

B. Area Addressed in Critical Area Report.

In addition to the general requirements of LUC 20.25H.230, the following areas shall be addressed in a critical areas report for geologically hazardous areas:

1. Site and Construction Plans. The report shall include a copy of the site plans for the proposal and a topographic survey;

We have included a provided topographic survey and preliminary site plan. We have not reviewed or received building plans at this time. Applicant should supply additional plan sheets as needed.

2. Assessment of Geological Characteristics. The report shall include an assessment of the geologic characteristics of the soils, sediments, and/or rock of the project area and potentially affected adjacent properties, and a review of the site history regarding landslides, erosion, and prior grading. Soils analysis shall be accomplished in accordance with accepted classification systems in use in the region;

Provided in this report. Underlying geologic units include advance outwash and glacial till. Both units are typically dense below a weathered zone and resistant to instability. We did not observe evidence of landslide activity at the site or adjacent areas. Our review of geologic maps did not find areas of instability near the site.

We anticipate that temporary excavations will be utilized. We should review the final plans to confirm suitable geometry for the excavations. The new work will be in the area of the existing residence and not significantly expanded to the steep slope buffer or slope itself. The drainage collection system for the new home will likely be an improvement over what currently exists at the site.

3. Analysis of Proposal. The report shall contain a hazards analysis including a detailed description of the project, its relationship to the geologic hazard(s), and its potential impact upon the hazard area, the subject property, and affected adjacent properties; and

We have prepared slope stability analyses to show that the additions will not alter slope stability.

Upon completion of grading and construction, there should be no adverse effects to existing hazards on the subject or adjacent properties. It is critical that the geotechnical engineer observe all aspects of grading, drainage installation, foundation placement, infiltration system conditions, and final surfacing to verify that the construction efforts meet project specifications.

4. Minimum Critical Area Buffer and Building Setback. The report shall make a recommendation for a minimum geologic hazard critical area buffer, if any, and minimum building setback, if any, from any geologic hazard based upon the geotechnical analysis. (Ord. 5717, 2-20-07, § 10; Ord. 5680, 6-26-06, § 3)

The additions will be situated at least 25 feet from the top of the slope, in the area of the existing residence. The location is generally suitable, and we recommend limiting grading to the areas required for home construction. We suggest a 10 foot buffer and total building setback of 20 feet. This can be considered 10 foot buffer and 10 foot setback from that buffer, if necessary.

20.25H.145 Critical areas report – Approval of modification.

Modifications to geologic hazard critical areas and critical area buffers shall only be approved if the Director determines that the modification:

A. Will not increase the threat of the geological hazard to adjacent properties over conditions that would exist if the provisions of this part were not modified;

The site is underlain by weathered and unweathered outwash and possible till. There are slopes with magnitudes that meet the definition of steep slope hazards, and surface soils can be susceptible to erosion if cleared of vegetation. There is a slight potential for near surface sloughing on the steep slope; however, this risk will not be increased or decreased by the proposed development (no net effect). Overall, the planned development with proper foundation systems will not alter stability. The work is not located on or very close to steep slope areas.

The proposed development will not increase the threat of geologic hazards (erosion and steep slopes) on the property or adjacent properties provided the work is performed in accordance with permit requirements, our recommendations, TESC plans are implemented, and geotechnical oversight is performed during construction.

B. Will not adversely impact other critical areas;

The proposed development is not expected to affect any critical areas within the site and adjacent areas provided proper TESC and oversight are implemented and performed.

C. Is designed so that the hazard to the project is eliminated or mitigated to a level equal to or less than would exist if the provisions of this part were not modified;

The risk of soil movements will not be adversely affected by the proposal provided the foundation is supported as recommended and shoring wall(s) are implemented. The relative stability of the adjacent slopes will be essentially the same as what currently exists provided runoff is controlled and routed to an approved system (could include infiltration).

D. Is certified as safe as designed and under anticipated conditions by a qualified engineer or geologist, licensed in the state of Washington;

Provided the site development occurs during the dry grading season, all TESC is implemented, the geotechnical engineer reviews all finalized plans, and the geotechnical engineer observed the construction/grading activities, the proposal as designed is safe. Note that earthwork could occur during the wet season provided all runoff if fully controlled and verified by the geotechnical engineer. We would anticipate the need for winter erosion control monitoring weekly and after any storm event of 0.5 inches or more.

E. The applicant provides a geotechnical report prepared by a qualified professional demonstrating that modification of the critical area or critical area buffer will have no adverse impacts on stability of any adjacent slopes, and will not impact stability of any existing structures. Geotechnical reporting standards shall comply with requirements developed by the Director in City of Bellevue Submittal Requirements Sheet 25, Geotechnical Report and Stability Analysis Requirements, now or as hereafter amended;

Provided herein.

F. Any modification complies with recommendations of the geotechnical support with respect to best management practices, construction techniques or other recommendations; and

G. The proposed modification to the critical area or critical area buffer with any associated mitigation does not significantly impact habitat associated with species of local importance, or such habitat that could reasonably be expected to exist during the anticipated life of the development proposal if the area were regulated under this part.

Habitat analyses are not within our scope of work.

Slope Stability Analyses

We performed slope stability analyses through a representational cross section through the steep slope area and proposed building. Analyses were performed using data from the explorations, location and anticipated elevations of the proposed structure, and topography from several sources.

The commercially available slope stability computer program Slope/W was used to evaluate the global stability of the slope within the property. The slope stability was analyzed under static and seismic (pseudo-static method) conditions for the existing and proposed topography.

The computer program calculates factors of safety for potential slope failures and generates the potential failure planes. This software calculates the slope stability under seismic conditions using pseudo-static methods. The stability of the described configuration was analyzed by comparing observed factors of safety to minimum values as set by standard geotechnical practice.

A factor of safety of 1.0 is considered equilibrium and less than 1.0 is considered failure. The required factor of safety for global stability is 1.5 for static conditions and 1.1 for seismic conditions. In accordance with typical engineering standards, we used a seismic acceleration equal to one half of the horizontal peak ground acceleration. At this location, the site modified PGA is 0.583 with one half equal to 0.29.

The following estimated soil parameters were used in our analyses:

Soil Description	Unit Weight (pcf)	Cohesion (psf)	Friction (degrees)
Weathered Outwash	115	0	34
Advance Outwash	120	100	38

Slope Stability Results

Cross Section	Static Factor of Safety	0.29g Seismic Factor of Safety
Current Topography	2.630	1.375
Proposed Conditions with Drywells at 20' Setback & Additions	2.630	1.375

The analyses indicate suitable factors of safety are present for current and proposed grading conditions, including with infiltration drywells located 20 feet or more from the top of the steeper slope areas.

These analyses do not determine safety during construction. Typically, construction activities are temporary and provided excavation recommendations from the geotechnical engineer are followed, the risk of failure can be managed through daily observation of stability. Please see temporary excavation section of this report for more information.

Conclusions and Recommendations

General

The site is underlain by soils generally consistent with weathered and unweathered outwash sands. The site is near the contact with glacial till and till-like materials could be present at the site. Both units generally become denser with depth below a weathered zone.

The proposed additions may be supported on shallow foundation systems bearing on medium dense native soils or on properly compacted structural fill (or clean rock) placed on suitable native soils.

Infiltration is generally feasible in outwash sands that underlie the site. We recommend utilizing drywells located at least 20 feet from the top of any slopes with magnitudes of 40 percent or more and relief of 10 feet or more.

Any till-like soils must be removed (if encountered) and replaced with washed rock. We must verify soil conditions during system placement. Additionally, if systems are utilized, we should confirm suitability of the locations and elevations relative to any existing or new basement areas.

Site Preparation

Trees, shrubs and other vegetation should be removed prior to stripping of surficial organic-rich soil and fill. Based on observations from the site investigation program, it is anticipated that the stripping depth will be 6 to 18 inches. Deeper excavations will be necessary in areas of existing foundation systems, large trees, and in any areas underlain by undocumented fill.

Most of the native soils may be used as structural fill provided they achieve compaction requirements and are within 3 percent of the optimum moisture. Some of these soils may only be suitable for use as fill during the summer months, as they will be above the optimum moisture levels in their current state. These soils are variably moisture sensitive and may degrade during periods of wet weather and under equipment traffic.

Imported structural fill should consist of a sand and gravel mixture with a maximum grain size of 3 inches and less than 5 percent fines (material passing the U.S. Standard No. 200 Sieve). Structural fill should be placed in maximum lift thicknesses of 12 inches and should be compacted to a minimum of 95 percent of the modified proctor maximum dry density, as determined by the ASTM D 1557 test method.

Temporary Excavations

Based on our understanding of the project, we anticipate that the grading could include local cuts on the order of approximately 9 feet or less if basement areas are proposed.

Temporary excavations should be sloped no steeper than 1.5H:1V (Horizontal:Vertical) in loose native soils and fill and 1H:1V in medium dense native soils, and 3/4H:1V in dense to very dense native soils. If an excavation is subject to heavy vibrations, groundwater seepage, or surcharge loads, we recommend that the excavations be sloped no steeper than 2H:1V, where room permits.

Temporary cuts should be in accordance with the Washington Administrative Code (WAC) Part N, Excavation, Trenching, and Shoring. Temporary slopes should be visually inspected daily by a qualified person during construction activities and the inspections should be documented in daily reports. The contractor is responsible for maintaining the stability of the temporary cut slopes and reducing slope erosion during construction.

Temporary cut slopes should be covered with visqueen to help reduce erosion during wet weather, and the slopes should be closely monitored until the permanent retaining systems or slope configurations are complete. Materials should not be stored or equipment operated within 10 feet of the top of any temporary cut slope.

Soil conditions may not be completely known from the geotechnical investigation. In the case of temporary cuts, the existing soil conditions may not be completely revealed until the excavation work exposes the soil. Typically, as excavation work progresses the maximum inclination of temporary slopes will need to be re-evaluated by the geotechnical engineer so that supplemental recommendations can be made. Soil and groundwater conditions can be highly variable.

Scheduling for soil work will need to be adjustable, to deal with unanticipated conditions, so that the project can proceed and required deadlines can be met.

If any variations or undesirable conditions are encountered during construction, we should be notified so that supplemental recommendations can be made. If room constraints or groundwater conditions do not permit temporary slopes to be cut to the maximum angles allowed by the WAC, temporary shoring systems may be required. The contractor should be responsible for developing temporary shoring systems, if needed. We recommend that Cobalt Geosciences and the project structural engineer review temporary shoring designs prior to installation, to verify the suitability of the proposed systems.

Foundation Design

The proposed additions may be supported on shallow spread footing foundation systems bearing on undisturbed medium dense or firmer native soils or on properly compacted structural fill placed on the suitable native soils. Any undocumented fill and/or loose native soils should be removed and replaced with structural fill below foundation elements. Structural fill below footings should consist of clean angular rock 5/8 to 4 inches in size. We should verify soil conditions during foundation excavation work.

Note that if basement areas are not proposed but additions are located above and near existing basement areas, removal of all basement backfill will be required below new foundation elements. Any fill should be removed and benched into medium dense native soils in a series of steps. Fill should be removed with properly compacted structural fill. Also, if shallow foundations for additions are situated near existing basement walls, a structural engineer should evaluate potential surcharge loads. We can provide additional input once a more detailed site plan with elevations has been prepared.

For shallow foundation support, we recommend widths of at least 16 and 24 inches, respectively, for continuous wall and isolated column footings supporting the proposed structure. Provided that the footings are supported as recommended above, a net allowable bearing pressure of 2,000 pounds per square foot (psf) may be used for design.

A 1/3 increase in the above value may be used for short duration loads, such as those imposed by wind and seismic events. Structural fill placed on bearing, native subgrade should be compacted to at least 95 percent of the maximum dry density based on ASTM Test Method D1557. Footing excavations should be inspected to verify that the foundations will bear on suitable material.

Exterior footings should have a minimum depth of 18 inches below pad subgrade (soil grade) or adjacent exterior grade, whichever is lower. Interior footings should have a minimum depth of 12 inches below pad subgrade (soil grade) or adjacent exterior grade, whichever is lower.

If constructed as recommended, the total foundation settlement is not expected to exceed 1 inch. Differential settlement, along a 25-foot exterior wall footing, or between adjoining column footings, should be less than ½ inch. This translates to an angular distortion of 0.002. Most settlement is expected to occur during construction, as the loads are applied. However, additional post-construction settlement may occur if the foundation soils are flooded or saturated. All footing excavations should be observed by a qualified geotechnical consultant.

Resistance to lateral footing displacement can be determined using an allowable friction factor of 0.40 acting between the base of foundations and the supporting subgrades. Lateral resistance for footings can also be developed using an allowable equivalent fluid passive pressure of 225 pounds per cubic foot (pcf) acting against the appropriate vertical footing faces (neglect the upper 12

inches below grade in exterior areas). The frictional and passive resistance of the soil may be combined without reduction in determining the total lateral resistance.

Care should be taken to prevent wetting or drying of the bearing materials during construction. Any extremely wet or dry materials, or any loose or disturbed materials at the bottom of the footing excavations, should be removed prior to placing concrete. The potential for wetting or drying of the bearing materials can be reduced by pouring concrete as soon as possible after completing the footing excavation and evaluating the bearing surface by the geotechnical engineer or his representative.

Concrete Retaining Walls

The following table, titled **Wall Design Criteria**, presents the recommended soil related design parameters for retaining walls with a level backslope. Contact Cobalt if an alternate retaining wall system is used. This has been included for new cast in place walls supporting backfill.

Wall Design Criteria	
"At-rest" Conditions (Lateral Earth Pressure – EFD[+])	55 pcf (Equivalent Fluid Density)
"Active" Conditions (Lateral Earth Pressure – EFD[+])	35 pcf (Equivalent Fluid Density)
Seismic Increase for "At-rest" Conditions (Lateral Earth Pressure)	14H* (Uniform Distribution)
Seismic Increase for "Active" Conditions (Lateral Earth Pressure)	7H* (Uniform Distribution)
Passive Earth Pressure on Low Side of Wall (Allowable, includes F.S. = 1.5)	Neglect upper 2 feet, then 250 pcf EFD[+]
Soil-Footing Coefficient of Sliding Friction (Allowable; includes F.S. = 1.5)	0.40

[*]H is the height of the wall; Increase based on one in 500 year seismic event (10 percent probability of being exceeded in 50 years),
[+]EFD – Equivalent Fluid Density

The stated lateral earth pressures do not include the effects of hydrostatic pressure generated by water accumulation behind the retaining walls. Uniform horizontal lateral active and at-rest pressures on the retaining walls from vertical surcharges behind the wall may be calculated using active and at-rest lateral earth pressure coefficients of 0.3 and 0.5, respectively. A soil unit weight of 125 pcf may be used to calculate vertical earth surcharges.

To reduce the potential for the buildup of water pressure against the walls, continuous footing drains (with cleanouts) should be provided at the bases of the walls. The footing drains should consist of a minimum 4-inch diameter perforated pipe, sloped to drain, with perforations placed down and enveloped by a minimum 6 inches of pea gravel in all directions.

The backfill adjacent to and extending a lateral distance behind the walls at least 2 feet should consist of free-draining granular material. All free draining backfill should contain less than 3 percent fines (passing the U.S. Standard No. 200 Sieve) based upon the fraction passing the U.S. Standard No. 4 Sieve with at least 30 percent of the material being retained on the U.S. Standard

No. 4 Sieve. The primary purpose of the free-draining material is the reduction of hydrostatic pressure. Some potential for the moisture to contact the back face of the wall may exist, even with treatment, which may require that more extensive waterproofing be specified for walls, which require interior moisture sensitive finishes.

We recommend that the backfill be compacted to at least 90 percent of the maximum dry density based on ASTM Test Method D1557. In place density tests should be performed to verify adequate compaction. Soil compactors place transient surcharges on the backfill. Consequently, only light hand operated equipment is recommended within 3 feet of walls so that excessive stress is not imposed on the walls.

Stormwater Management Feasibility

The site appears to be underlain by relatively coarse outwash deposits below a zone of finer grained materials. We performed a falling head infiltration test in B-2 at a depth of 6.5 feet below grade.

The design infiltration rate was determined by applying correction factors to the observed infiltration rate as prescribed in Volume III, Section 3.3.6 of the DOE. The observed rate must be reduced through appropriate correction factors for site variability (CF_V), uncertainty of test method (CF_T), and degree of influent control (CF_M) to prevent siltation and bio-buildup.

It should be noted that construction traffic or other disturbance to the target infiltration area could compact the soil, which may decrease the effective infiltration rates. The correction factors and resulting design infiltration rate are also shown in the table below.

Test Number	Test Depth (ft)	Measured Infiltration Rate (in/hr)	Correction Factors			Design Infiltration Rate (in/hr)
			CF_V	CF_T	CF_M	
B-2	6.5	2.4	0.7	0.5	0.9	0.76

Infiltration is feasible in the coarser, clean outwash deposits below the siltier soils. We recommend utilizing drywells or galleries set at least 6 inches into these soils and at least 24 inches below any nearby finish floor elevations.

Note that glacial till and outwash can be intermingled near the geologic contact. We must very soil conditions during construction to confirm that outwash is present. If till is observed, it will need to be removed and replaced with washed rock. Also, we should verify locations and elevations of new systems relative to existing or proposed basement areas.

Systems may be designed using the Medium Sand designation from the USDA Textural Triangle and King County Surface Water Design Manual (SWDM).We should be provided with final plans for review to determine if the intent of our recommendations has been incorporated or if additional modifications are needed.

Slab-on-Grade

Depending on the elevations of any slabs, it may be necessary to overexcavate loose fill and soft native soils and replace these materials with clean angular rock or other imported fill with minimal fines. We can provide location-specific recommendations during construction. We can provide additional input once more detailed plans have been prepared.

Often, a vapor barrier is considered below concrete slab areas. However, the usage of a vapor barrier could result in curling of the concrete slab at joints. Floor covers sensitive to moisture typically requires the usage of a vapor barrier. A materials or structural engineer should be consulted regarding the detailing of the vapor barrier below concrete slabs. Exterior slabs typically do not utilize vapor barriers.

The American Concrete Institutes ACI 360R-06 Design of Slabs on Grade and ACI 302.1R-04 Guide for Concrete Floor and Slab Construction are recommended references for vapor barrier selection and floor slab detailing.

Slabs on grade may be designed using a coefficient of subgrade reaction of 150 pounds per cubic inch (pci) assuming the slab-on-grade base course is underlain by structural fill placed and compacted as outlined above. A 4- to 6-inch-thick capillary break layer should be placed over the prepared subgrade. This material should consist of pea gravel or 5/8 inch clean angular rock.

A perimeter drainage system is recommended unless interior slab areas are elevated a minimum of 12 inches above adjacent exterior grades. If installed, a perimeter drainage system should consist of a 4-inch diameter perforated drain pipe surrounded by a minimum 6 inches of drain rock wrapped in a non-woven geosynthetic filter fabric to reduce migration of soil particles into the drainage system. The perimeter drainage system should discharge by gravity flow to a suitable stormwater system.

Exterior grades surrounding buildings should be sloped at a minimum of one percent to facilitate surface water flow away from the building and preferably with a relatively impermeable surface cover immediately adjacent to the building.

Erosion and Sediment Control

Erosion and sediment control (ESC) is used to reduce the transportation of eroded sediment to wetlands, streams, lakes, drainage systems, and adjacent properties. Erosion and sediment control measures should be implemented, and these measures should be in general accordance with local regulations. At a minimum, the following basic recommendations should be incorporated into the design of the erosion and sediment control features for the site:

- Schedule the soil, foundation, utility, and other work requiring excavation or the disturbance of the site soils, to take place during the dry season (generally May through September). However, provided precautions are taken using Best Management Practices (BMP's), grading activities can be completed during the wet season (generally October through April).
- All site work should be completed and stabilized as quickly as possible.
- Additional perimeter erosion and sediment control features may be required to reduce the possibility of sediment entering the surface water. This may include additional silt fences, silt fences with a higher Apparent Opening Size (AOS), construction of a berm, or other filtration systems.

- Any runoff generated by dewatering discharge should be treated through construction of a sediment trap if there is sufficient space. If space is limited other filtration methods will need to be incorporated.

Utilities

Utility trenches should be excavated according to accepted engineering practices following OSHA (Occupational Safety and Health Administration) standards, by a contractor experienced in such work. The contractor is responsible for the safety of open trenches. Traffic and vibration adjacent to trench walls should be reduced; cyclic wetting and drying of excavation side slopes should be avoided. Depending upon the location and depth of some utility trenches, groundwater flow into open excavations could be experienced, especially during or shortly following periods of precipitation.

In general, silty and sandy soils were encountered at shallow depths in the explorations at this site. These soils have low cohesion and density and will have a tendency to cave or slough in excavations. Shoring or sloping back trench sidewalls is required within these soils in excavations greater than 4 feet deep.

All utility trench backfill should consist of imported structural fill or suitable on site soils. Utility trench backfill placed in or adjacent to buildings and exterior slabs should be compacted to at least 95 percent of the maximum dry density based on ASTM Test Method D1557. The upper 5 feet of utility trench backfill placed in pavement areas should be compacted to at least 95 percent of the maximum dry density based on ASTM Test Method D1557. Below 5 feet, utility trench backfill in pavement areas should be compacted to at least 90 percent of the maximum dry density based on ASTM Test Method D1557. Pipe bedding should be in accordance with the pipe manufacturer's recommendations.

The contractor is responsible for removing all water-sensitive soils from the trenches regardless of the backfill location and compaction requirements. Depending on the depth and location of the proposed utilities, we anticipate the need to re-compact existing fill soils below the utility structures and pipes. The contractor should use appropriate equipment and methods to avoid damage to the utilities and/or structures during fill placement and compaction procedures.

CONSTRUCTION FIELD REVIEWS

Cobalt Geosciences should be retained to provide part time field review during construction in order to verify that the soil conditions encountered are consistent with our design assumptions and that the intent of our recommendations is being met. This will require field and engineering review to:

- Monitor and test structural fill placement and soil compaction
- Verify soil bearing of foundation areas
- Observe slab-on-grade preparation
- Monitor foundation drainage placement
- Verify infiltration system soil conditions
- Observe excavation stability

Geotechnical design services should also be anticipated during the subsequent final design phase to support the structural design and address specific issues arising during this phase. Field and engineering review services will also be required during the construction phase in order to provide a Final Letter for the project.

CLOSURE

This report was prepared for the exclusive use of Wasiem Hamadeh and his appointed consultants. Any use of this report or the material contained herein by third parties, or for other than the intended purpose, should first be approved in writing by Cobalt Geosciences, LLC.

The recommendations contained in this report are based on assumed continuity of soils with those of our test holes and assumed structural loads. Cobalt Geosciences should be provided with final architectural and civil drawings when they become available in order that we may review our design recommendations and advise of any revisions, if necessary.

Use of this report is subject to the Statement of General Conditions provided in Appendix A. It is the responsibility of Wasiem Hamadeh who is identified as "the Client" within the Statement of General Conditions, and its agents to review the conditions and to notify Cobalt Geosciences should any of these not be satisfied.

Sincerely,

Cobalt Geosciences, LLC

6/7/2023
Phil Haberman, PE, LG, LEG
Principal

Statement of General Conditions

USE OF THIS REPORT: This report has been prepared for the sole benefit of the Client or its agent and may not be used by any third party without the express written consent of Cobalt Geosciences and the Client. Any use which a third party makes of this report is the responsibility of such third party.

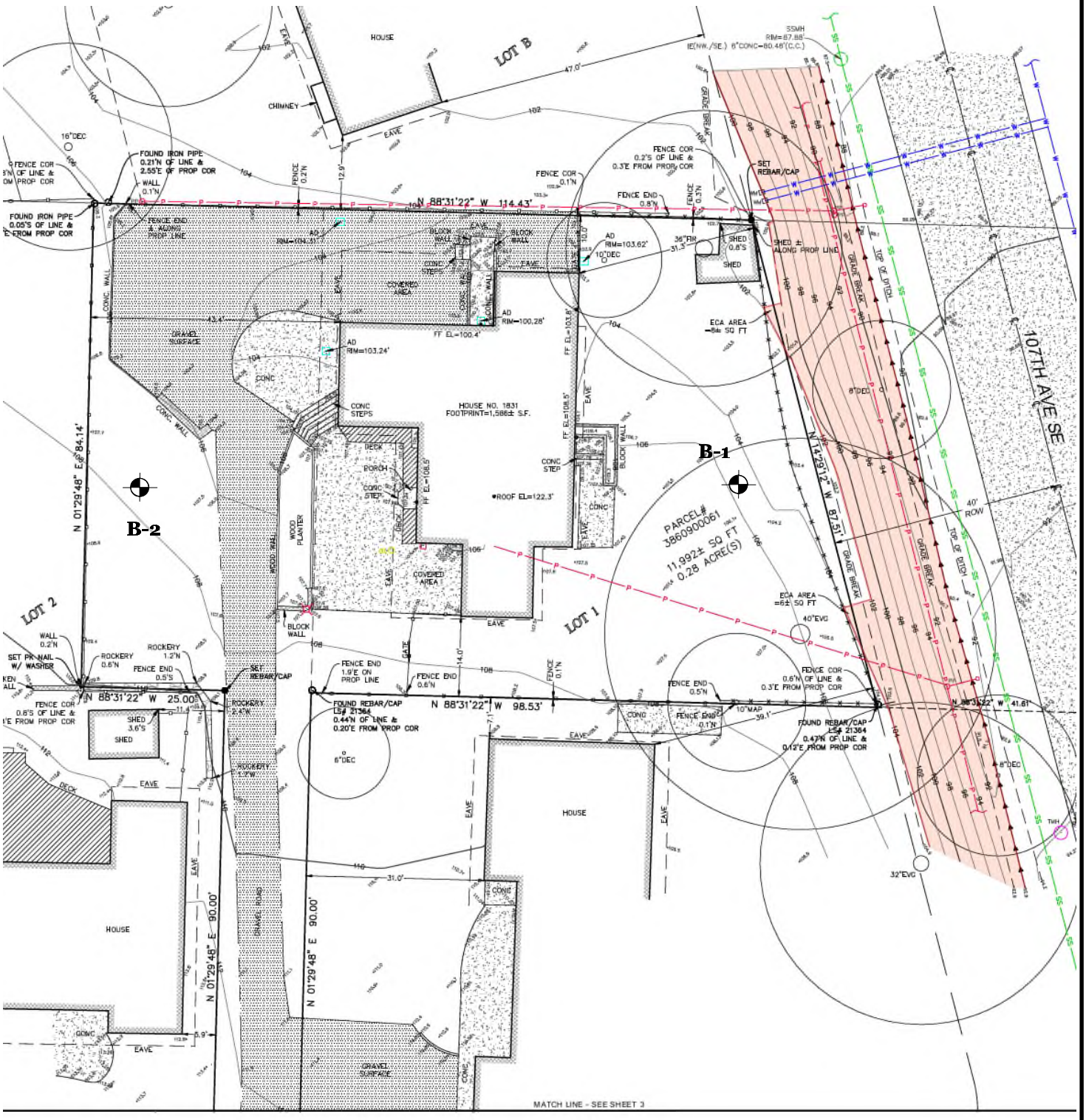
BASIS OF THE REPORT: The information, opinions, and/or recommendations made in this report are in accordance with Cobalt Geosciences present understanding of the site specific project as described by the Client. The applicability of these is restricted to the site conditions encountered at the time of the investigation or study. If the proposed site specific project differs or is modified from what is described in this report or if the site conditions are altered, this report is no longer valid unless Cobalt Geosciences is requested by the Client to review and revise the report to reflect the differing or modified project specifics and/or the altered site conditions.

STANDARD OF CARE: Preparation of this report, and all associated work, was carried out in accordance with the normally accepted standard of care in the state of execution for the specific professional service provided to the Client. No other warranty is made.

INTERPRETATION OF SITE CONDITIONS: Soil, rock, or other material descriptions, and statements regarding their condition, made in this report are based on site conditions encountered by Cobalt Geosciences at the time of the work and at the specific testing and/or sampling locations. Classifications and statements of condition have been made in accordance with normally accepted practices which are judgmental in nature; no specific description should be considered exact, but rather reflective of the anticipated material behavior. Extrapolation of in situ conditions can only be made to some limited extent beyond the sampling or test points. The extent depends on variability of the soil, rock and groundwater conditions as influenced by geological processes, construction activity, and site use.

VARYING OR UNEXPECTED CONDITIONS: Should any site or subsurface conditions be encountered that are different from those described in this report or encountered at the test locations, Cobalt Geosciences must be notified immediately to assess if the varying or unexpected conditions are substantial and if reassessments of the report conclusions or recommendations are required. Cobalt Geosciences will not be responsible to any party for damages incurred as a result of failing to notify Cobalt Geosciences that differing site or sub-surface conditions are present upon becoming aware of such conditions.

PLANNING, DESIGN, OR CONSTRUCTION: Development or design plans and specifications should be reviewed by Cobalt Geosciences, sufficiently ahead of initiating the next project stage (property acquisition, tender, construction, etc), to confirm that this report completely addresses the elaborated project specifics and that the contents of this report have been properly interpreted. Specialty quality assurance services (field observations and testing) during construction are a necessary part of the evaluation of sub-subsurface conditions and site preparation works. Site work relating to the recommendations included in this report should only be carried out in the presence of a qualified geotechnical engineer; Cobalt Geosciences cannot be responsible for site work carried out without being present.



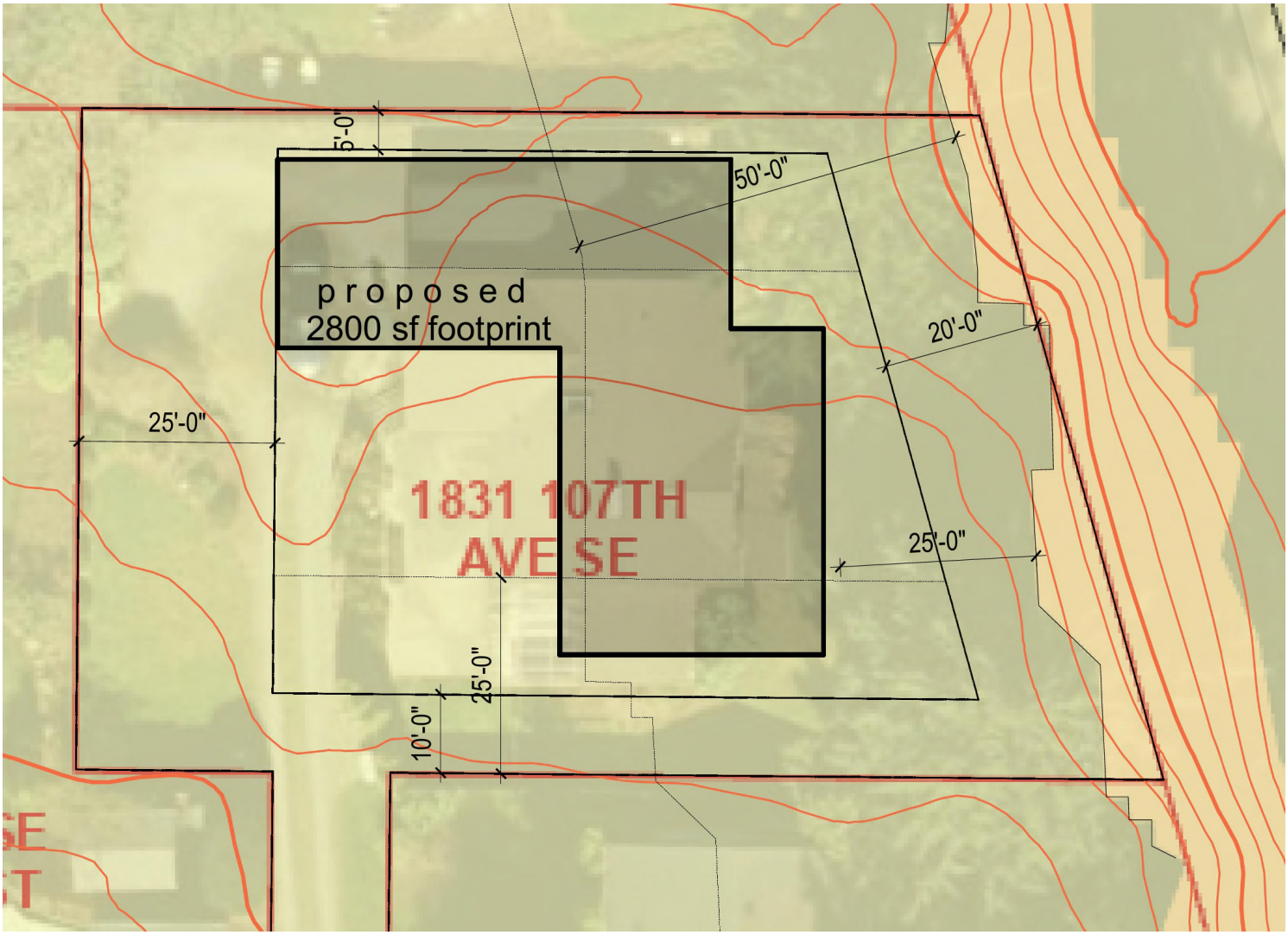
Provided topographic survey

B-1 **Approximate Boring Location**

N

Not to scale

COBALT GEOSCIENCES	Proposed Additions 1831 107th Avenue SE Bellevue, Washington	**SITE MAP FIGURE 1**	Cobalt Geosciences, LLC P.O. Box 82243 Kenmore, WA 98028 (206) 331-1097 www.cobaltgeo.com cobaltgeo@gmail.com

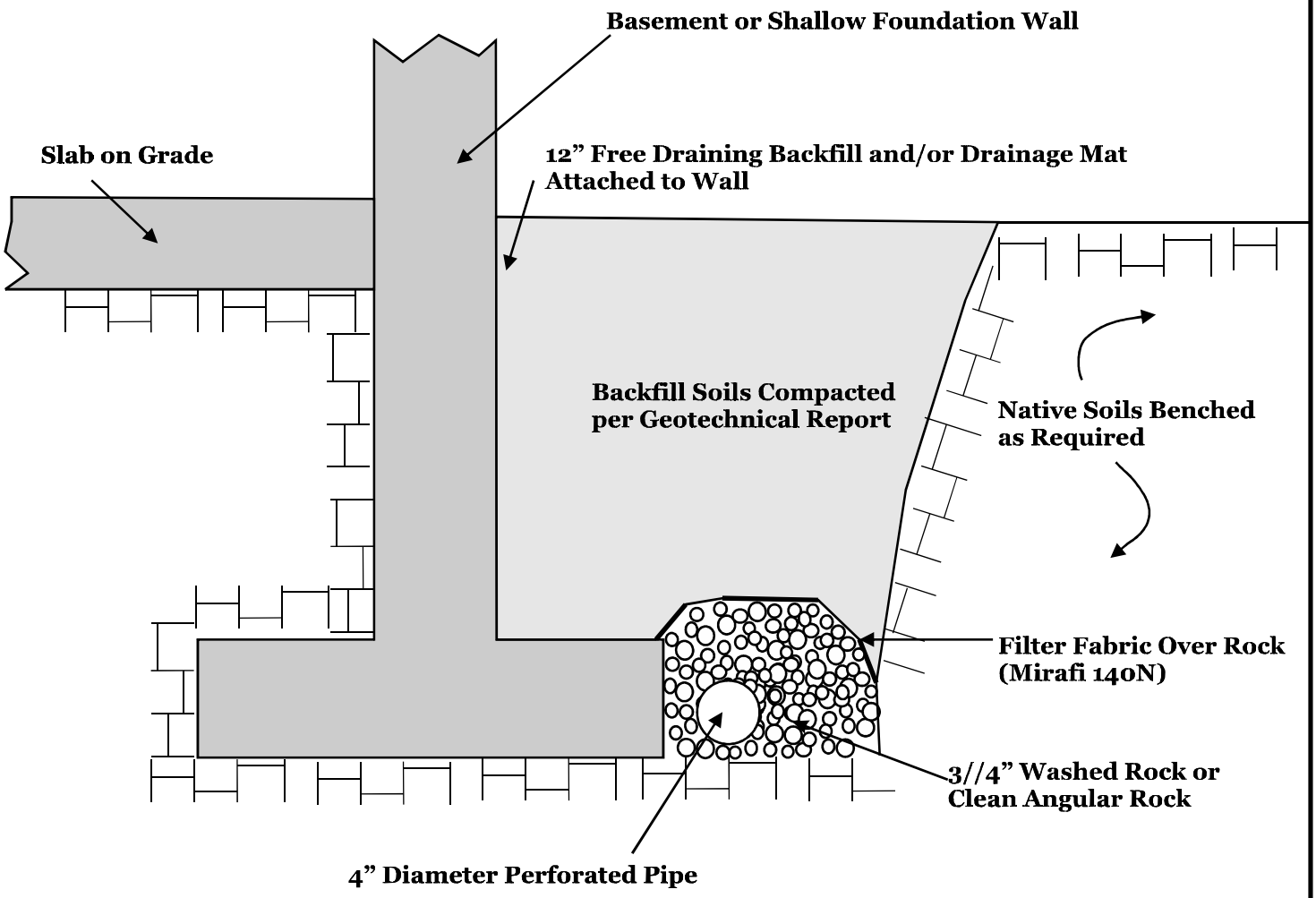


Provided site plan

N

Not to Scale

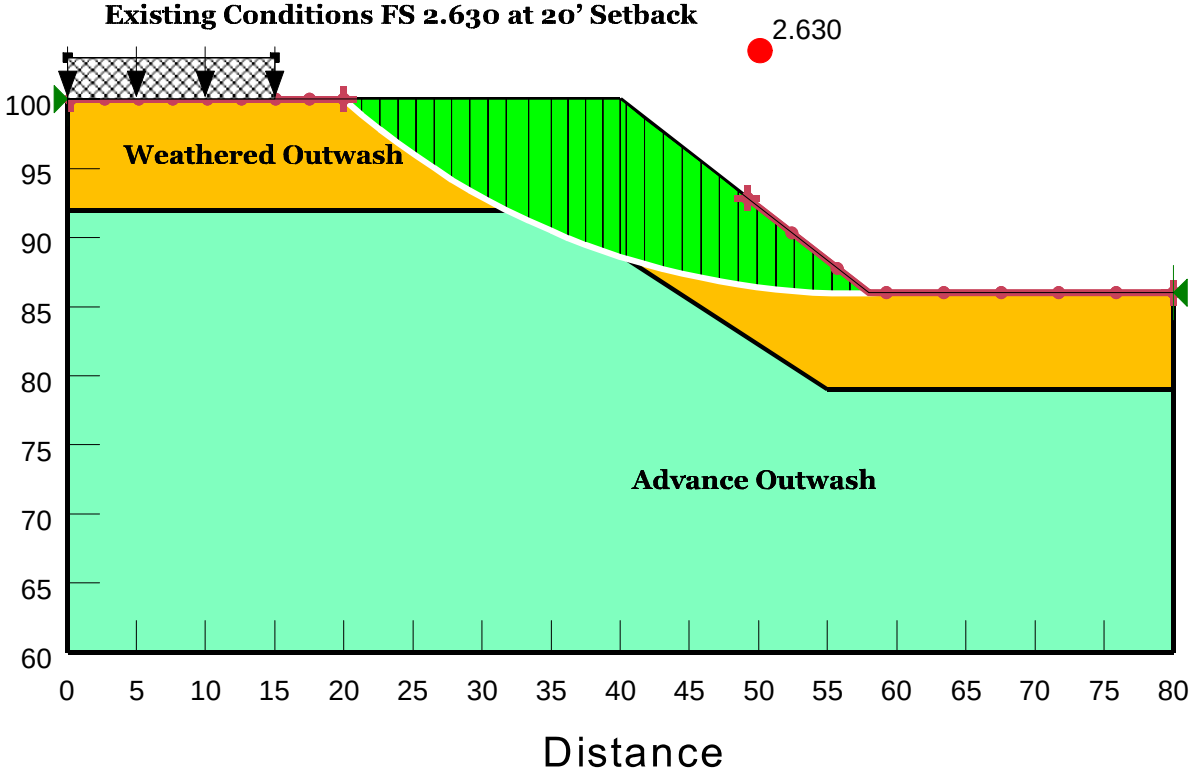
COBALT GEOSCIENCES	Proposed Additions 1831 107th Avenue SE Bellevue, Washington	**SITE PLAN** **FIGURE 2**	Cobalt Geosciences, LLC P.O. Box 82243 Kenmore, WA 98028 (206) 331-1097 www.cobaltgeo.com cobaltgeo@gmail.com



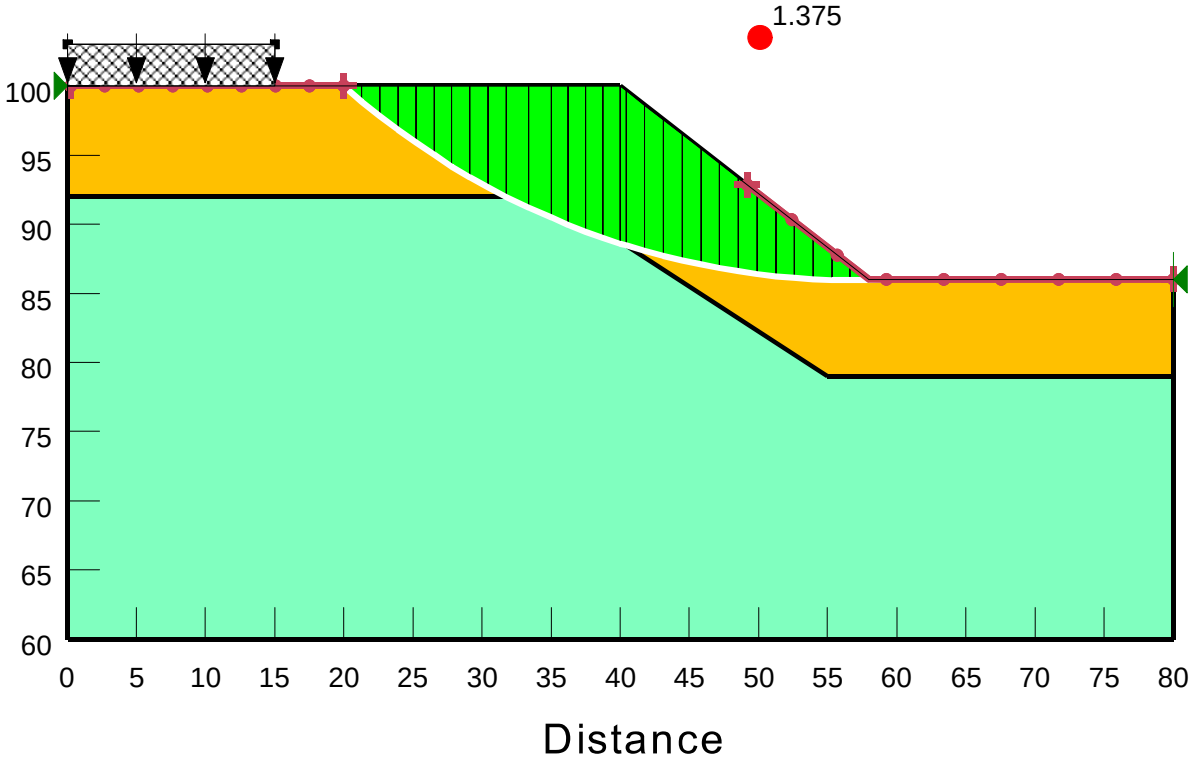
Not to Scale

COBALT GEOSCIENCES	**Typical Foundation Drain Detail**	**Attachment**	Cobalt Geosciences, LLC PO Box 1792 North Bend, WA 98045 (206) 331-1097 www.cobaltgeo.com phil@cobaltgeo.com

Static Stability
Existing Conditions FS 2.630 at 20' Setback



0.29g Seismic Stability
Existing Conditions FS 1.375 at 20' Setback



COBALT GEOSCIENCES

Proposed Additions
1831 107th Avenue SE
Bellevue, Washington

SLOPE STABILITY

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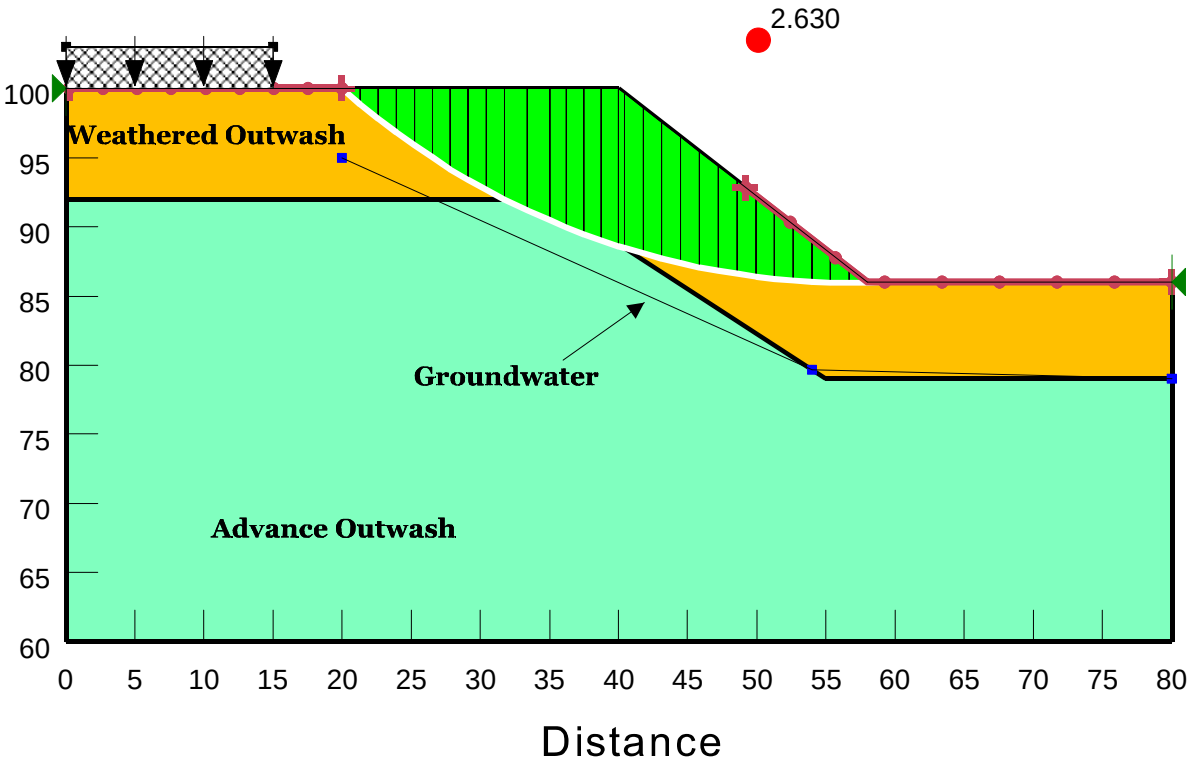
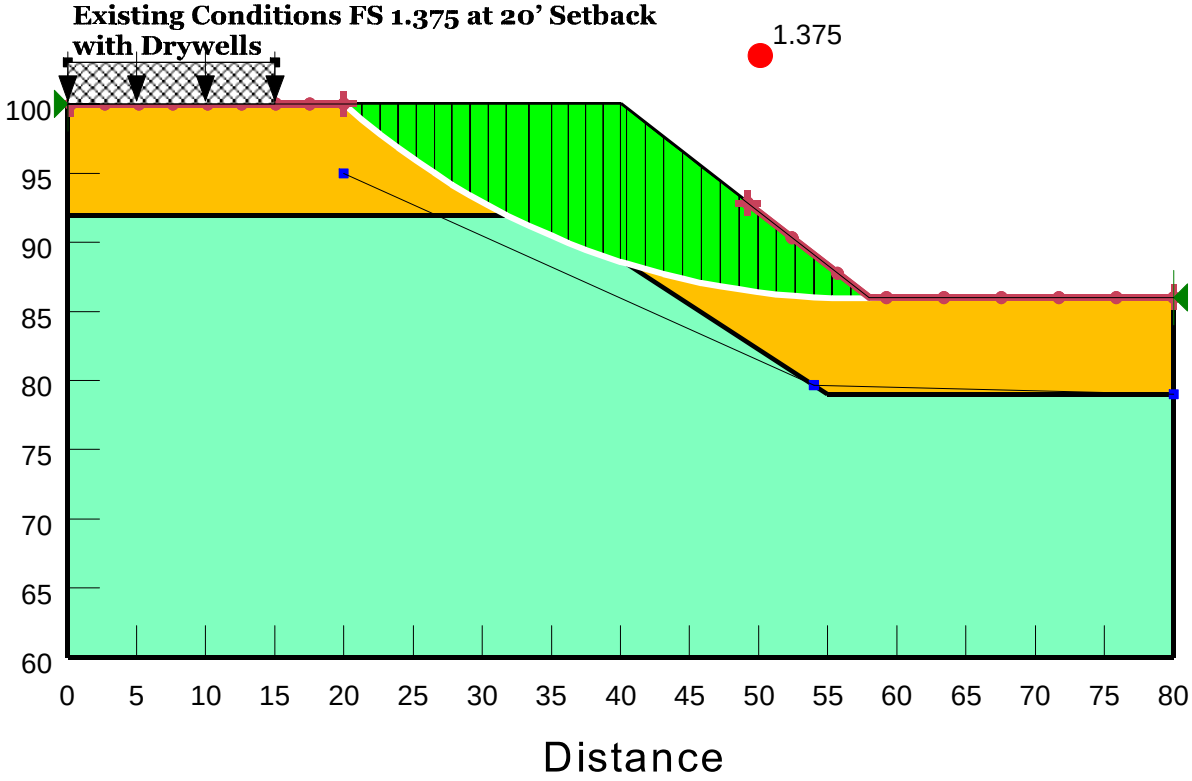
cobaltgeo@gmail.com

Static Stability
Existing Conditions FS 2.630 at 20' Setback
with Drywells



0.29g Seismic Stability
Existing Conditions FS 1.375 at 20' Setback
with Drywells



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SLOPE STABILITY

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Unified Soil Classification System (USCS)

MAJOR DIVISIONS			SYMBOL	TYPICAL DESCRIPTION
COARSE GRAINED SOILS (more than 50% retained on No. 200 sieve)	Gravels (more than 50% of coarse fraction retained on No. 4 sieve)	Clean Gravels (less than 5% fines)	GW	Well-graded gravels, gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		Gravels with Fines (more than 12% fines)	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	Sands (50% or more of coarse fraction passes the No. 4 sieve)	Clean Sands (less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines
			SP	Poorly graded sand, gravelly sands, little or no fines
		Sands with Fines (more than 12% fines)	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS (50% or more passes the No. 200 sieve)	Silts and Clays (liquid limit less than 50)	Inorganic	ML	Inorganic silts of low to medium plasticity, sandy silts, gravelly silts, or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays silty clays, lean clays
		Organic	OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays (liquid limit 50 or more)	Inorganic	MH	Inorganic silts, micaceous or diatomaceous fine sands or silty soils, elastic silt
			CH	Inorganic clays of medium to high plasticity, sandy fat clay, or gravelly fat clay
		Organic	OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor		PT	Peat, humus, swamp soils with high organic content (ASTM D4427)

Classification of Soil Constituents

MAJOR constituents compose more than 50 percent, by weight, of the soil. Major constituents are capitalized (i.e., SAND).

Minor constituents compose 12 to 50 percent of the soil and precede the major constituents (i.e., silty SAND). Minor constituents preceded by "slightly" compose 5 to 12 percent of the soil (i.e., slightly silty SAND).

Trace constituents compose 0 to 5 percent of the soil (i.e., slightly silty SAND, trace gravel).

Grain Size Definitions

Description	Sieve Number and/or Size
Fines	<#200 (0.08 mm)
Sand	
-Fine	#200 to #40 (0.08 to 0.4 mm)
-Medium	#40 to #10 (0.4 to 2 mm)
-Coarse	#10 to #4 (2 to 5 mm)
Gravel	
-Fine	#4 to 3/4 inch (5 to 19 mm)
-Coarse	3/4 to 3 inches (19 to 76 mm)
Cobbles	3 to 12 inches (75 to 305 mm)
Boulders	>12 inches (305 mm)

Relative Density (Coarse Grained Soils)

N, SPT, Blows/FT	Relative Density
0 - 4	Very loose
4 - 10	Loose
10 - 30	Medium dense
30 - 50	Dense
Over 50	Very dense

Consistency (Fine Grained Soils)

N, SPT, Blows/FT	Relative Consistency
Under 2	Very soft
2 - 4	Soft
4 - 8	Medium stiff
8 - 15	Stiff
15 - 30	Very stiff
Over 30	Hard

Moisture Content Definitions

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, from below water table

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Soil Classification Chart

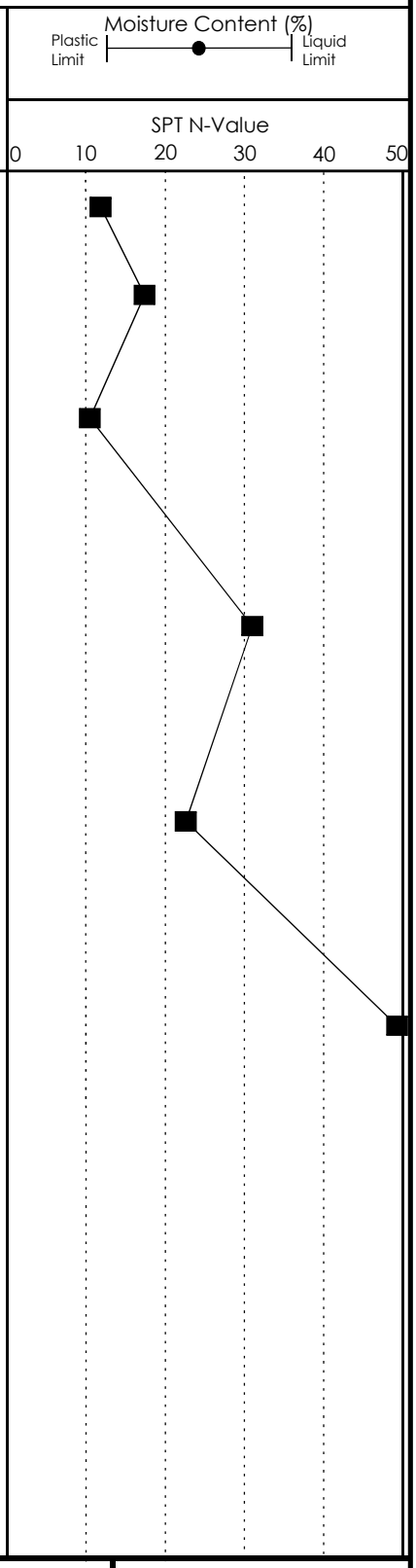
Figure C1

Log of Boring B-1

Date: June 7, 2023	Depth: 21.5'	Initial Groundwater: None
Contractor: CN	Elevation: N/A	Sample Type: Split Spoon
Method: Hollow Stem Auger	Logged By: PH Checked By: SC	Final Groundwater: N/A

Depth (Feet)	Interval	% Recovery	Blows/6"	Graphic Log	USCS Symbol	Material Description
			2			Vegetation/Topsoil
2			3 9		SM/ SP	Loose to medium dense, silty-fine to medium grained sand with gravel, yellowish brown, moist. (Weathered Advance Outwash)
4			6 8 9			Grades less silt with depth
6			2 5 5			
8					SP	Medium dense to dense, fine to medium grained sand trace silt, grayish brown, moist. (Advance Outwash)
10			6 14 17			
12						
14						
16			9 10 12			
18						
20			10 19 30			
22						End of Boring 21.5'
24						
26						
28						
30						
32						
34						

Groundwater



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Proposed Additions
1831 107th Avenue SE
Bellevue, Washington

Boring Log

Log of Boring B-2

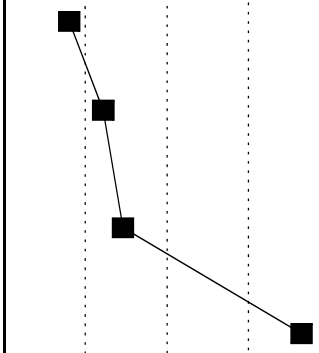
Date: June 7, 2023	Depth: 9'	Initial Groundwater: None
Contractor: CN	Elevation: N/A	Sample Type: Split Spoon
Method: Hollow Stem Auger	Logged By: PH Checked By: SC	Final Groundwater: N/A

Depth (Feet)	Interval	% Recovery	Blows/6"	Graphic Log	USCS Symbol	Material Description
			1			Vegetation/Topsoil
2			3 5		SM/ SP	Loose to medium dense, silty-fine to medium grained sand with gravel, yellowish brown, moist. (Weathered Advance Outwash)
4			4 5 7			Grades less silt with depth
6			4 6 8			
8			9 14 22		SP	Medium dense to dense, fine to medium grained sand trace silt, grayish brown, moist. (Advance Outwash)
10						End of Boring 21.5'
12						
14						
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						

Groundwater

Moisture Content (%)
Plastic Limit — Liquid Limit

SPT N-Value
0 10 20 30 40 50



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Proposed Additions
1831 107th Avenue SE
Bellevue, Washington

Boring Log

Altmann Oliver Associates, LLC
AOA
PO Box 578 Carnation, WA 98014 Office (425) 333-4535 Fax (425) 333-4509
Environmental Planning & Landscape Architecture

December 19, 2023

AOA-7257

Chris Luthi
cluthi@comcast.net

SUBJECT: **Critical Areas Report for Hamadeh – Melnik Residence**
10468 SE 19th St. (1831 -107th Ave. SE), Bellevue, WA
Parcel 386090-0061

Dear Chris:

On November 17, 2023 AOA conducted a habitat assessment on the subject property to review the proposed steep slope buffer impacts associated with the expansion of the existing residence. The property is currently developed with a single-family residence and associated yard.

1.0 EXISTING CRITICAL AREAS

A steep slope is located along the east property line adjacent to 107th Ave. SE. The steep slope requires a standard 50-foot buffer from the top of the slope, but the geotechnical engineer has recommended a 10-foot steep slope buffer and a 20-foot steep slope building setback for the project.

2.0 WILDLIFE HABITAT ASSESSMENT

Prior to conducting the field investigations, the Washington State Department of Fish and Wildlife's Priority Habitats and Species (PHS) database was reviewed. No priority habitats or species were identified on or immediately adjacent to the site as part of this mapping (**Attachment A**).

The project site consists of one 0.3-acre tax parcel that is nearly entirely developed with a single-family residence and associated yard. The northeast and southeast corners of the site include two larger Douglas fir (*Pseudotsuga menziesii*) trees, with much of the steep slope and buffer dominated by lawn and invasive species including English ivy (*Hedera helix*) and Himalayan blackberry (*Rubus armeniacus*).

Surrounding land use consists of single-family residential.

No large snags, downed logs, or other significant habitat features were observed on or adjacent to the site and no raptors or raptor nests were identified during the field investigation.

Wildlife Species of Local Importance
Twenty-three (23) species have been designated by the City of Bellevue as species of local importance (**LUC 20.25H.150**). The potential of site utilization by each species is briefly described below:

- Bald eagle (*Haliaeetus leucocephalus*): site not located within Bald Eagle Buffer Management Zone per PHS data. Some potential occasional perching opportunity within larger trees in vicinity of site possible but does not have a primary association with habitat on or immediately adjacent site. Primary Association: no.

- Peregrine falcon (*Falco peregrinus*): generally associated with coastal cliffs and shorelines, but also use large buildings in city center. Use of project site unlikely. Primary Association: no.

- Common Loon (*Gavia immer*): no presence - highly aquatic species associated with large water bodies. Primary Association: no.

- Pileated woodpecker (*Dryocopus pileatus*): Pileated woodpeckers generally inhabit mature and old-growth forests, and second-growth forests with large snags and fallen trees. The range of the species encompasses all of the forested areas of the state. Although typically found in larger forested tracts, they are known to occur in suburban habitats as well. Their key breeding habitat need is the presence of large snags or decaying live trees for nesting, as this species generally excavates a new nest cavity each year. The breeding and nesting periods of the pileated woodpecker extends from late March to early July. Although some foraging potential is present, the lack of large snags limits the nesting potential of this species. Primary Association: no.

- Vaux's swift (*Chaetura vauxi*): Vaux's swifts are strongly associated with old growth and mature forests throughout the state and are highly dependent on large hollow trees and snags for breeding and roosting. Although some minor potential for foraging, unlikely nesting or primary association on the site due to lack of large snags. Primary Association: no.

- Merlin (*Falco columbarius*): unlikely presence – generally require coastal or high elevation forests. Primary Association: no.

- Purple martin (*Progne subis*): unlikely presence – generally require cavities near or over water for nesting. Primary Association: no.

- Western grebe (*Aechmophorus occidentalis*): no presence – highly aquatic species associated with large water bodies. Primary Association: no.

- Great blue heron (*Ardea herodias*): unlikely presence – typically forage in larger wetlands or pasture which do not occur on-site. No roosts observed on or adjacent site. Primary Association: no.

- Osprey (*Pandion haliaetus*): unlikely presence - perch availability not adjacent large water body. Primary Association: no.

- Green heron (*Butorides striatus*): unlikely presence – not near large wetland or waterbody. Primary Association: no.

- Red-tailed hawk (*Buteo jamaicensis*): potential utilization of site for occasional perching, although no nests observed and not near significant open expanse. Primary Association: no.

- Western big-eared bat (*Plecotus townsendii*): potential presence, but no known nearby hibernacula or caves so not considered a habitat of primary association. Primary Association: no.

- Keen's myotis (*Myotis keenii*): potential presence, but generally associated with larger coniferous forests so not considered a habitat of primary association. Primary Association: no.

- Long-legged myotis (*Myotis volans*): potential presence, but generally associated with larger coniferous forests so not considered a habitat of primary association. Primary Association: no.

- Long-eared myotis (*Myotis evotis*): potential presence, but generally associated with larger coniferous forests so not considered a habitat of primary association. Primary Association: no.

- Oregon spotted frog (*Rana pretiosa*): no presence - believed to be extirpated from nearly all of western Washington and no ponding on the site. Primary Association: no.

- Western toad (*Bufo boreas*): presence possible but no breeding potential and not considered habitat of primary association. Primary Association: no.

- Western pond turtle (*Clemmys marmorata*): no presence - no ponding on site and no known nearby populations. Primary Association: no.

- Chinook (*Oncorhynchus tshawytscha*): no presence – no streams that support Chinook on or adjacent to the site. Primary Association: no.

- Bull trout (*Salvelinus confluentus*): no presence – no streams that support bull trout on or adjacent to the site. Primary Association: no.

- Coho salmon (*Oncorhynchus kisutch*): no presence – no streams that support Coho on or adjacent to site. Primary Association: no.

- River lamprey (*Lampetra ayresi*): no presence – no streams that support river lamprey on or adjacent to the site. Primary Association: no.

None of the 23 species of local importance appear to have a primary association with habitat on or adjacent to the project site. The proposed project consists of the construction of a new addition. There are no anticipated significant impacts to any species of local importance from the proposed project.

3.0 PROPOSED SLOPE AND SLOPE BUFFER MODIFICATIONS

The proposed project consists of the construction of a new addition to the existing residence in the eastern portion of the site. As part of the project, 755 s.f. of the standard slope buffer would be permanently impacted by the development.

Due to the standard slope buffer encumbrance it is not possible to avoid the buffer modification. It is also my understanding that any site grading is the minimum necessary to accomplish the goal of the project. The area of the slope buffer impact consists of existing lawn that does not provide a significant habitat function. In addition, the project has been designed to avoid significant vegetation removal.

3.1 Steep Slope and Slope Buffer Modification

Any proposals to modify a critical area buffer must meet the criteria of **LUC 20.25H.255.A**

A. General.

Except for the proposals described in subsection B of this section, the Director may approve, or approve with modifications, the proposed modification where the applicant demonstrates:

1. *The modifications and performance standards included in the proposal lead to levels of protection of critical area functions and values at least as protective as application of the regulations and standards of this code;*

We have prepared an enhancement plan (**Figures 1 through 6**) for the remaining degraded slope buffer habitat on the site. Enhancement will occur through the removal of invasive plant species and re-planting degraded or sparsely vegetated areas with a variety of native shrub and groundcover plant species. Implementation of this plan will increase critical area functions over current conditions.

2. *Adequate resources to ensure completion of any required mitigation and monitoring efforts*;

Installation of the habitat enhancement plan should be a condition of any permit requirement by the City of Bellevue and the project would be maintained and monitored for a period of 5 years.

3. *The modifications and performance standards included in the proposal are not detrimental to the functions and values of critical area and critical area buffers off-site; and*

The proposed work should not be detrimental to any off-site critical area functions

4. *The resulting development is compatible with other uses and development in the same land use district*.

The residential project is compatible with adjacent land uses and is in line with the land use district.

We have also included the decision criteria of **LUC 20.25H.255.B**

B. Decision Criteria – Proposals to Reduce Regulated Critical Area Buffer.

The Director may approve, or approve with modifications, a proposal to reduce the regulated critical area buffer on a site where the applicant demonstrates:

1. *The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in overall critical area or critical area buffer functions;*

   A habitat enhancement plan has been prepared for the degraded slope buffer in the eastern portion of the site immediately adjacent to the proposed work area. Enhancement will occur through the removal of invasive plant species and re-planting degraded or sparsely vegetated areas with a variety of native shrub and groundcover plant species beneath the existing canopy.

2. *The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in the most important critical area or critical area buffer functions to the ecosystem in which they exist;*

   Since the primary function of the buffer on the site is as a component of the overall habitat on and adjacent to the property, an enhancement plan has been prepared to increase the plant species and structural diversity of the degraded habitat on the site.

3. *The proposal includes a net gain in stormwater quality function by the critical area buffer or by elements of the development proposal outside of the reduced regulated critical area buffer;*

   The proposed project will be designed to incorporate all required City of Bellevue stormwater management measures.

4. *Adequate resources to ensure completion of any required restoration, mitigation and monitoring efforts;*

Installation of the habitat enhancement plan should be a condition of any permit requirement by the City of Bellevue and will include a 5 year maintenance and monitoring program.

5. *The modifications and performance standards included in the proposal are not detrimental to the functions and values of critical area and critical area buffers off-site; and*

   The proposed work should not be detrimental to any off-site critical areas.

6. *The resulting development is compatible with other uses and development in the same land use district. (Ord. 5680, 6-26-06)*

   The residential project is compatible with adjacent land uses and is in line with the land use district.

3.2 Decision Criteria per LUC 20.30P.140

The Director may approve or approve with modifications an application for a Critical Areas Land Use Permit if:

A. The proposal obtains all other permits required by the Land Use Code; and

It is our understanding that all permits required by the Land Use Code will be obtained.

B The proposal utilizes to the maximum extent possible the best available construction, design and development techniques which result in the least impact on the critical area and critical area buffer; and

The project will need to utilize all of the best available construction, design, and development techniques to ensure the least possible impact on the critical area and its buffer.

All plantings within the enhancement area will consist of native species and will be installed and maintained only by a qualified landscape contractor familiar with work in sensitive environments.

C The proposal incorporates the performance standards of Part 20.25H LUC to the maximum extent applicable; and

All of the applicable performance standards in LUC 20.25H would be implemented to the maximum extent possible.

D The proposal will be served by adequate public facilities including streets, fire protection, and utilities; and

It is our understanding that the proposal will be served by adequate public facilities including streets, fire protection, and utilities.

E The proposal includes a mitigation or restoration plan consistent with the requirements of LUC 20.25H.210; except that a proposal to modify or remove vegetation pursuant to an approved Vegetation Management Plan under LUC 20.25H.055.C.3.i shall not require a mitigation or restoration plan; and

A critical area enhancement plan has been prepared for a degraded portion of the site.

F The proposal complies with other applicable requirements of this code

It is our understanding that all other applicable requirements of the Land Use Code will be met.

4.0 FUNCTIONAL ASSESSMENT

Per LUC 20.25H.250.B, the City of Bellevue requires an *analysis of the level of protection of critical area functions and values provided by the regulations or standards of this code, compared with the level of protection provided by the proposal. The analysis shall include:*

a. *A discussion of the functions and values currently provided by the critical area and critical area buffer on the site and their relative importance to the ecosystem in which they exist*;

Critical areas include a steep slope along the east property line. The steep slope requires a standard 50-foot buffer from the top of the slope. This steep slope buffer is currently almost entirely lawn or degraded with invasive species and does not provide a significant functional benefit to the slope.

The primary habitat function of the steep slope and steep slope buffer on this site are as a component of the overall habitat on and adjacent to the property and not as specific habitat for an individual species of local importance. The slope stability functions of the slope and slope buffer have been assessed by the geotechnical engineer.

b. A discussion of the functions and values likely to be provided by the critical area and critical area structure setback on the site through application of the regulations and standards of this Code over the anticipated life of the proposed development; and

The slope stability functions of the slope and structure setback have been assessed by the geotechnical engineer and these functions should continue following the proposed project.

c. A discussion of the functions and values likely to be provided by the critical area and critical area structure setback on the site through the modifications

and performance standards included in the proposal over the anticipated life of the proposed development;

Enhancement of a degraded area on the site will increase the habitat value of the property by increasing the plant species and structural diversity within the enhanced area. The proposed plantings will increase the quality of the preserved habitat. Without implementation of the proposed planting plan, the degraded area will likely continue to become established with invasive species such as Himalayan blackberry and English ivy.

5.0 MONITORING PROGRAM

We have prepared a mitigation plan (**Figures 1 through 6**) for the required slope buffer impacts on the site. Mitigation will consist of enhancing with native plantings a degraded area on the property. The mitigation has been designed to increase the habitat quality of the degraded area by increasing the plant species and structural diversity over current conditions.

5.1 Goal, Objectives, and Performance Standards for Enhancement Areas

The primary goal of the enhancement plan is to increase the habitat and protective functions of the degraded area on the site over current conditions. To meet this goal, the following objectives and performance standards have been incorporated into the design of the plan:

Objective A: Increase the structural and plant species diversity within the enhancement area.
Performance Standard: There will be 100% survival of all woody planted species throughout the enhancement area at the end of the first year of planting. Following Year 1, success will be based on an 85% survival rate of all planted tree and shrub species or equivalent replacement of a combination of planted and re-colonized native species. Areal coverage of plantings or native re-colonized species will be at least 15% at Year 1, 20% at Year 2, 30% at Year 3, and 60% at Year 5.

Objective B: Limit the amount of invasive and exotic species within the enhancement area.
Performance Standard: After construction and following every monitoring event for a period of at least five years, exotic and invasive plant species will be maintained at levels below 10% total cover in all planted areas.

5.2 Construction Management

Prior to commencement of any work in the enhancement area, the clearing limits will be staked and all existing vegetation to be saved will be clearly marked. A pre-construction meeting will be held at the site to review and discuss all aspects of the project with the landscape contractor and the owner.

A consultant will supervise plan implementation during construction to ensure that objectives and specifications of the enhancement plan are met. Any necessary significant modifications to the design that occur as a result of unforeseen site conditions will be jointly approved by the City of Bellevue and the consultant prior to their implementation.

5.3 Monitoring Methodology

As required, the monitoring program will be conducted for a period of five years with annual reports submitted to the City of Bellevue. Permanent vegetation sampling plots will be established to monitor the general appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, and invasive weeds.

Photo-points will be established from which photographs will be taken throughout the monitoring period. These photographs will document general appearance and progress in plant community establishment in the enhancement area. Review of the photos over time will provide a visual representation of the success of the plan.

5.4 Maintenance Plan

Maintenance will be conducted on a routine, year round basis. Additional maintenance needs will be identified and addressed following a twice-yearly consultant maintenance review. Contingency measures and remedial action on the site shall be implemented on an as-needed basis at the direction of the consultant or the owner.

Routine removal and control of non-native and other invasive plants shall be performed by manual means whenever possible. Weed removal includes hand grubbing all roots and exporting off-site. Undesirable and weedy exotic plant species shall be maintained at levels below 10% total cover within any given stratum at any time during the five-year monitoring period.

5.5 Contingency Plan

All dead plants will be replaced with the same species or an approved substitute species that meets the goal of the enhancement plan. Plant material shall meet the same specifications as originally installed material. Replanting will not occur until after the reason for failure has been identified (e.g., moisture regime, poor plant stock, disease, shade/sun conditions, wildlife damage, etc.). Replanting shall be completed under the direction of the consultant, City of Bellevue, or the owner.

5.6 As-Built Plan

Following completion of construction activities, an as-built plan for the enhancement area will be provided to the City of Bellevue. The plan will identify and describe any changes in relation to the original approved plan.

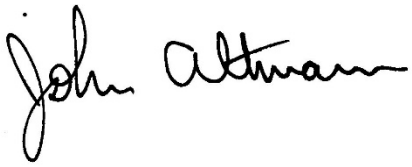
5.7 Financial Guarantee

A financial guarantee will be posted to ensure that the mitigation and monitoring program is fully implemented.

If you have any questions regarding the critical areas report, please give me a call.

Sincerely,

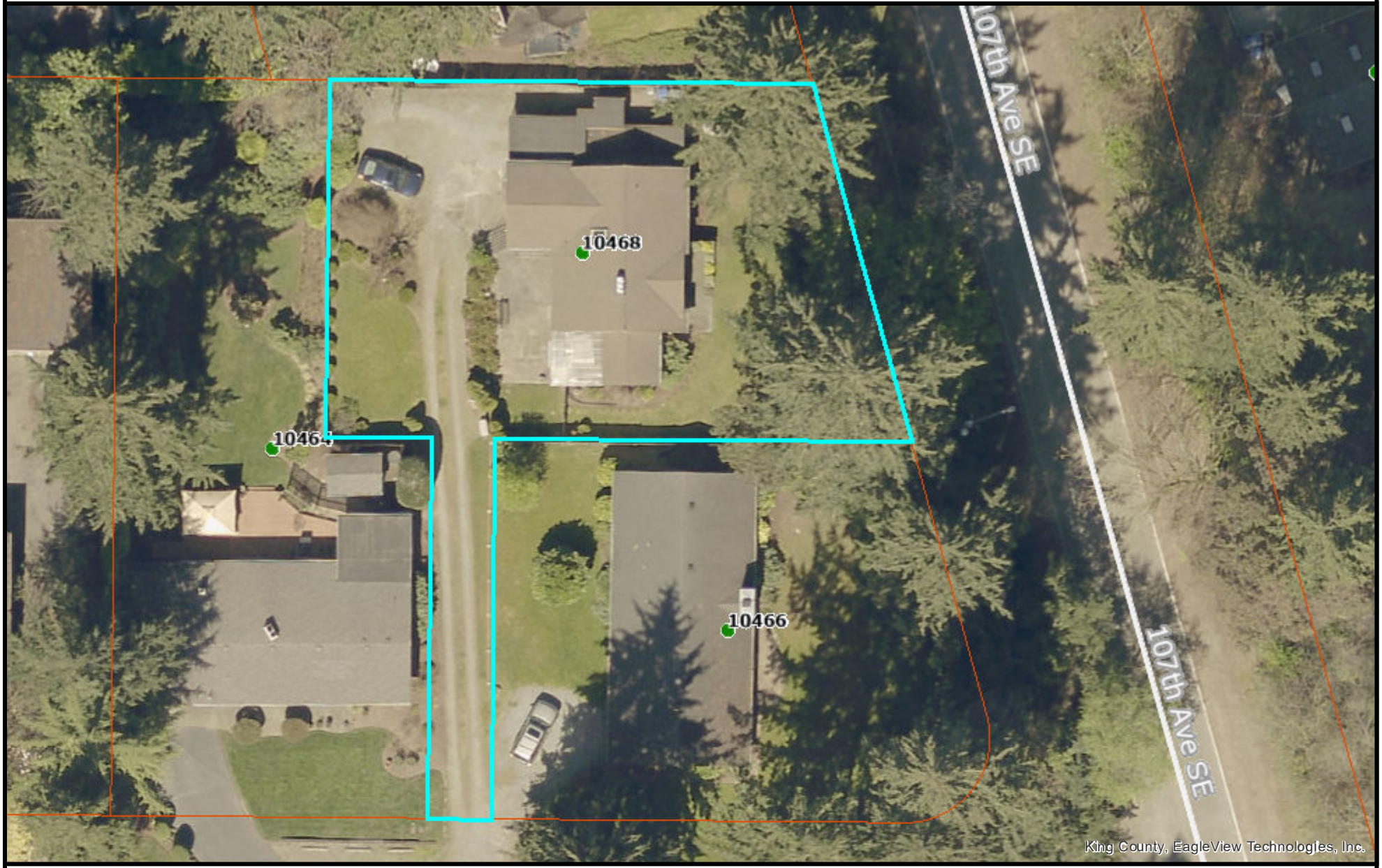
ALTMANN OLIVER ASSOCIATES, LLC



John Altmann
Ecologist

Attachments

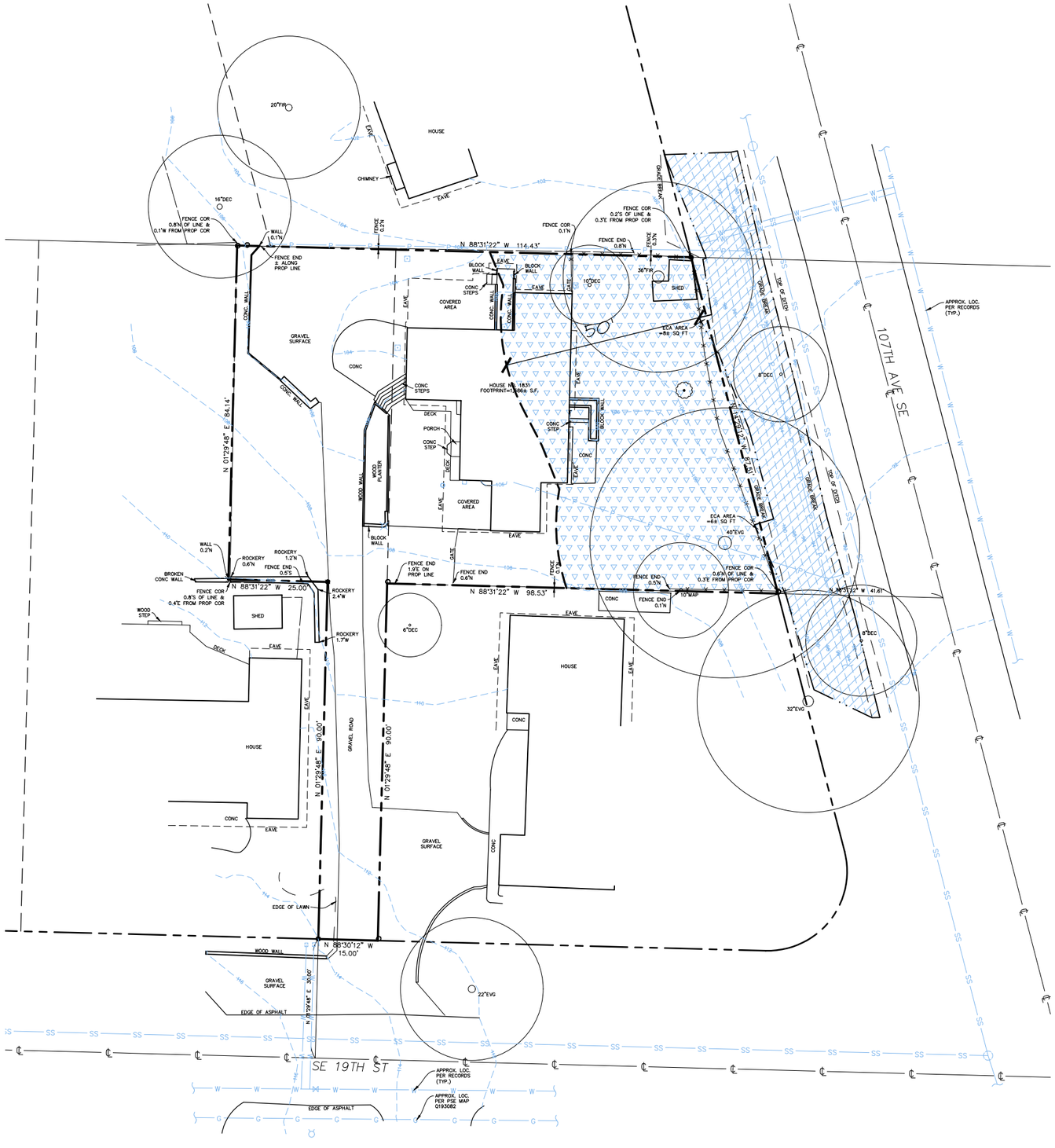
King County iMap



Date: 12/19/2023 Notes:

N

King County



PLAN LEGEND

- PROPERTY LINE
- STEEP SLOPES
- STEEP SLOPE BUFFER (50' FROM TOP OF SLOPE, 75' AT TOE OF SLOPE)

GRAPHIC SCALE (IN FEET)

0 15 30 45 60 90

SCALE: 1:30

N

NOTES

1. BASE INFORMATION PROVIDED BY TERRANE, 10801 MAIN STREET, SUITE 102, BELLEVUE, WA 98004, 425.458.4488.

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FIGURE 1: EXISTING CONDITIONS
HAMADEH PROPERTY - STEEP SLOPE MITIGATION PLAN
1831 107TH AVE. SE
BELLEVUE, WA 98004
PARCEL 3860900061

Altmann Oliver Associates, LLC
AOA
Environmental Planning & Landscape Architecture
PO Box 578 Carnation, WA 98014 Office (425) 333-4535 Fax (425) 333-4509

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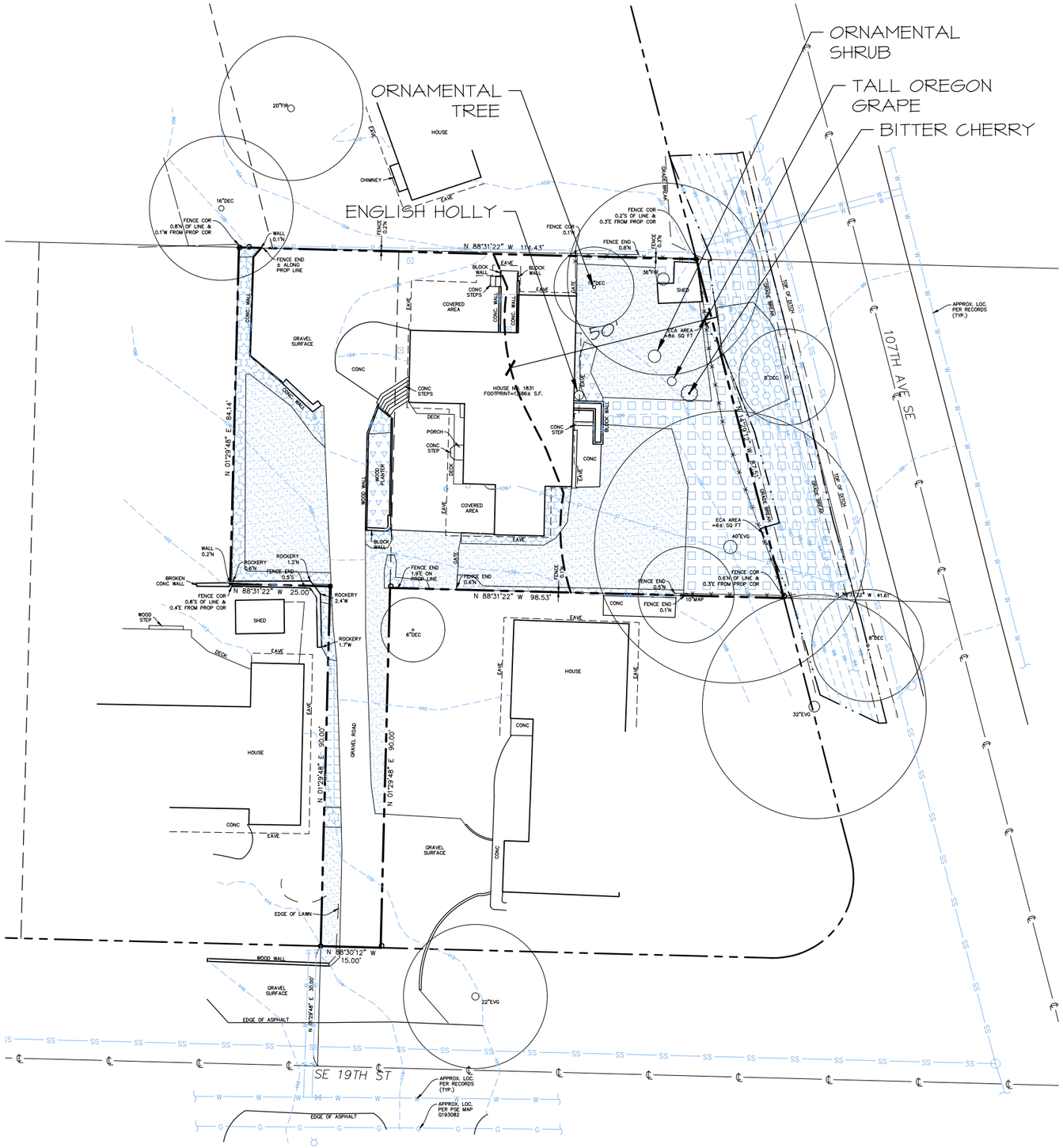

PLAN LEGEND

- PROPERTY LINE
- STEEP SLOPES
- STEEP SLOPE BUFFER (50' FROM TOP OF SLOPE, 75' AT TOE OF SLOPE)

EXISTING VEGETATION LEGEND

ORNAMENTAL PLANTING BEDS	774 SF
MOWED LAWN	3,779 SF
100% SWORD FERN AND RHODODENDRON	131 SF
100% SWORD FERN	183 SF
100% IVY	11 SF
50% HAZELNUT, OREGON ASH / 50% IVY	334 SF
100% IVY, CHERRY LAUREL, AND HIMALAYAN BLACKBERRY	2,413 SF

GRAPHIC SCALE (IN FEET)

0 15 30 45 60 90

SCALE: 1:30

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NOTES

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FIGURE 2: EXISTING VEGETATION MAP
HAMADEH PROPERTY - STEEP SLOPE MITIGATION PLAN
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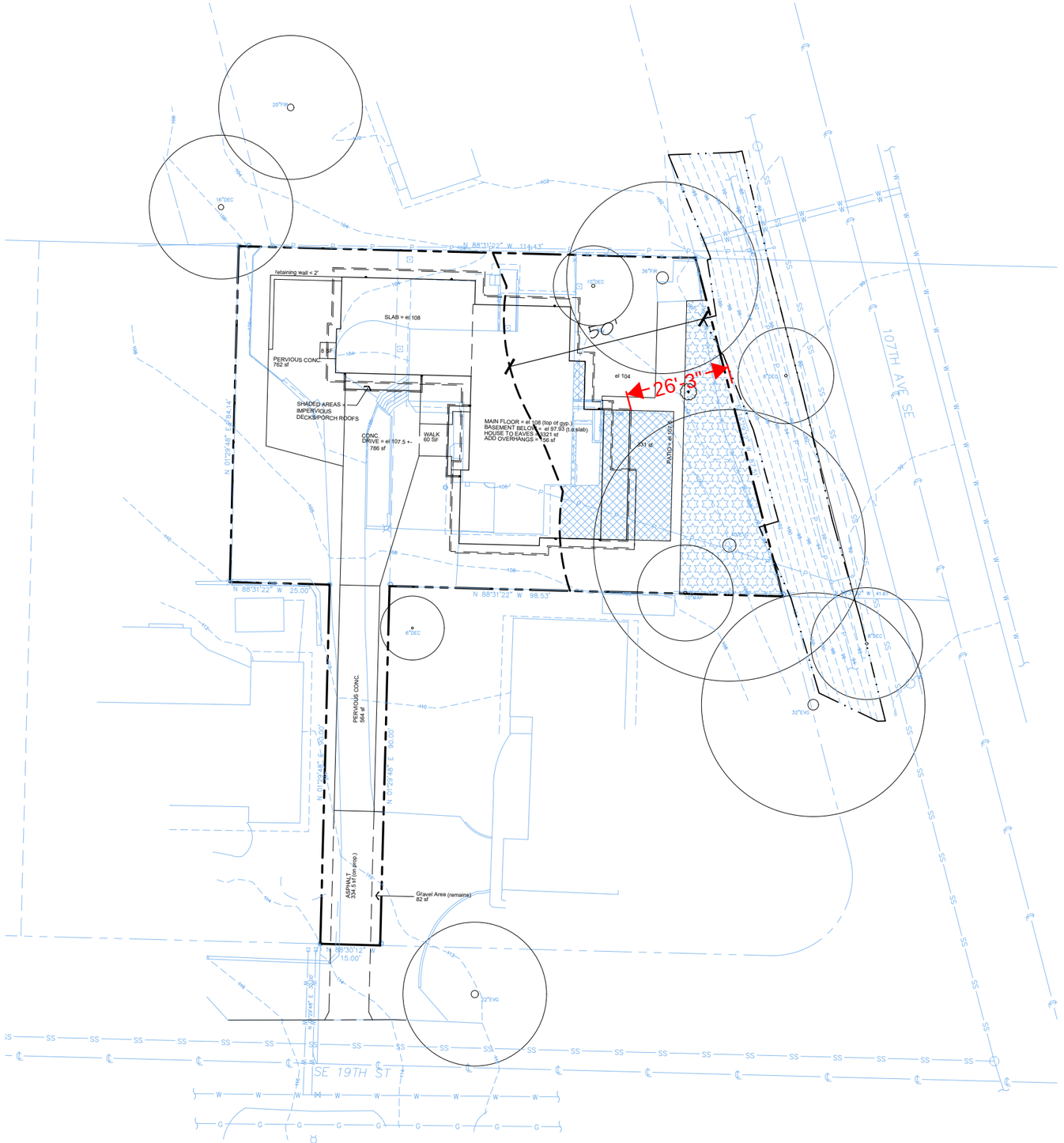

PLAN LEGEND

- PROPERTY LINE
- STEEP SLOPES
- STEEP SLOPE BUFFER (50' FROM TOP OF SLOPE, 75' AT TOE OF SLOPE)

IMPACT LEGEND

	PERMANENT STEEP SLOPE BUFFER IMPACTS	755 SF

MITIGATION LEGEND

	MITIGATION AREA - SHRUBS AND GROUNDCOVER TO BE PLANTED AT 100% DENSITY AT 1.5:1 RATIO FOR IMPACTS	1,133 SF (MIN.)

GRAPHIC SCALE
(IN FEET)

0 15 30 45 60 90

SCALE: 1:30

N

NOTES

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FIGURE 3: IMPACTS & MITIGATION
HAMADEH PROPERTY
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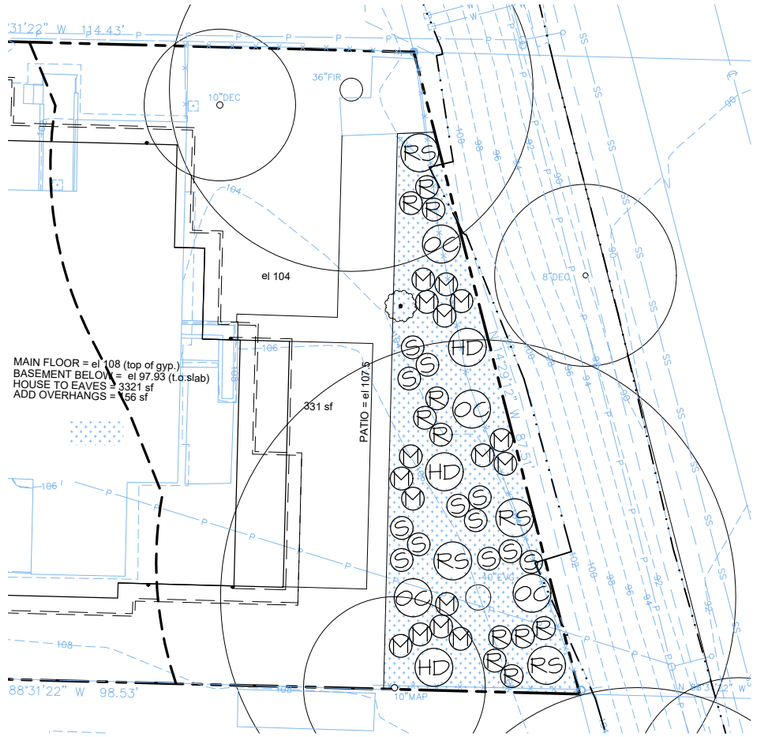
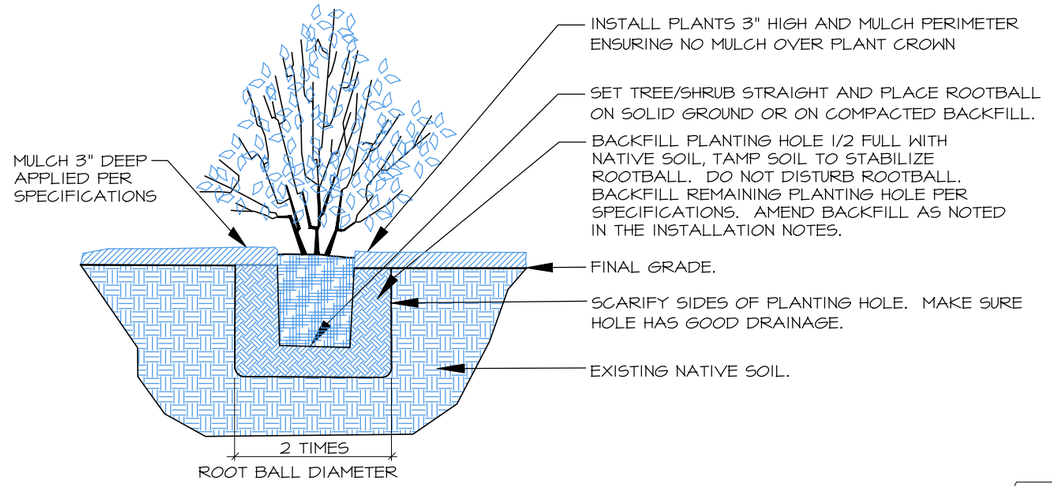
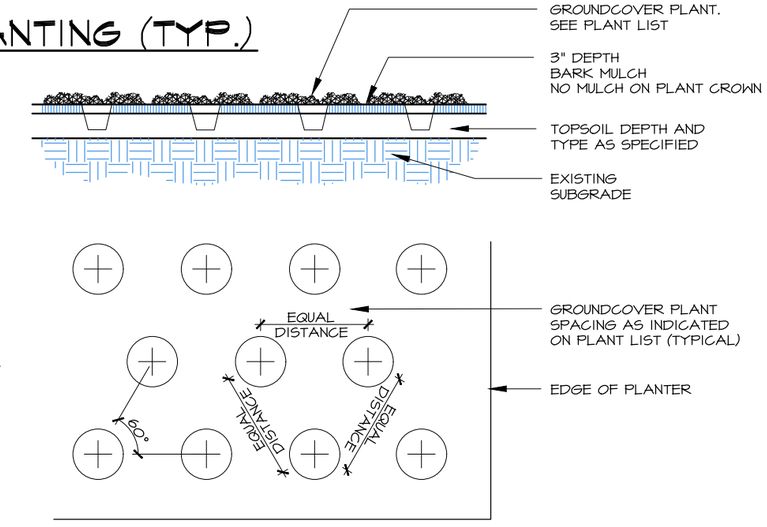




1 CONTAINER TREE/SHRUB PLANTING (TYP.)

SCALE: NTS



2 GROUNDCOVER PLANTING (TYP.)

SCALE: NTS

PLANT SCHEDULE

SHRUBS

KEY	SCIENTIFIC NAME	COMMON NAME	DENSITY	QTY.	SIZE (MIN.)	NOTES
HD	HOLODISCUS DISCOLOR	OCEAN SPRAY	4.5' O.C.	3	1 GAL.	MULTI-STEM (3 MIN.)
M	MAHONIA AQUIFOLIUM	TALL OREGON GRAPE	4.5' O.C.	16	1 GAL.	FULL & BUSHY
OC	OEMLERIA CERASIFORMIS	INDIAN PLUM	4.5' O.C.	4	1 GAL.	MULTI-STEM (3 MIN.)
RS	RIBES SANGUINEUM	RED CURRANT	4.5' O.C.	4	1 GAL.	MULTI-STEM (3 MIN.)
R	ROSA NUTKANA	NOOTKA ROSE	4.5' O.C.	11	1 GAL.	MULTI-STEM (3 MIN.)
S	SYMPHORICARPOS ALBUS	SNOWBERRY	4.5' O.C.	12	1 GAL.	MULTI-STEM (3 MIN.)

GROUNDCOVER

KEY	SCIENTIFIC NAME	COMMON NAME	SPACING	QTY.	SIZE (MIN.)	NOTES
	POLYSTICHUM MUNITUM	SWORD FERN	3' O.C.	100	1 GAL.	FULL & BUSHY

GRAPHIC SCALE (IN FEET)

0 10 20 30 40 60

SCALE: 1:20

N

NOTES

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FIGURE 4: PLANTING PLAN & DETAILS
HAMADEH PROPERTY - STEEP SLOPE MITIGATION PLAN
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SPECIFICATIONS

1. CONTRACTOR INFORMATION. WHEN IT IS AVAILABLE, CONTACT INFORMATION SHALL BE PROVIDED TO THE CITY OF BELLEVUE THAT INCLUDES NAMES, ADDRESSES AND PHONE NUMBERS OF PERSONS/FIRMS THAT WILL BE RESPONSIBLE FOR INSTALLING REQUIRED PLANTS AND PERFORMING REQUIRED MAINTENANCE.
2. CONTRACTOR'S QUALIFICATIONS. ALL WORK SHALL BE PERFORMED BY A LICENSED LANDSCAPE CONTRACTOR REGISTERED IN THE STATE OF WASHINGTON. CONTRACTOR MUST BE EXPERIENCED IN MITIGATION AND RESTORATION WORK. THE CONTRACTOR SHALL PROVIDE THAT THERE IS ONE PERSON ON THE SITE AT ALL TIMES DURING WORK AND INSTALLATION WHO IS THOROUGHLY FAMILIAR WITH THE TYPE OF MATERIALS BEING INSTALLED AND THE BEST METHODS FOR THEIR INSTALLATION, AND WHO SHALL DIRECT ALL WORK BEING PERFORMED UNDER THESE SPECIFICATIONS. THIS PERSON SHALL HAVE A MINIMUM OF FIVE (5) YEARS EXPERIENCE INSTALLING NATIVE PLANT MATERIALS FOR WETLAND MITIGATION OR RESTORATION PROJECTS, UNLESS OTHERWISE ALLOWED BY THE LANDSCAPE DESIGNER, WETLAND BIOLOGIST AND/OR THE CITY OF BELLEVUE.
3. TEMPORARY EROSION CONTROL MEASURES WILL BE INSTALLED ALONG THE PROPOSED BUFFER BOUNDARY PRIOR TO ANY WORK IN THE CRITICAL AREA OR BUFFER.
4. A PRE-CONSTRUCTION MEETING WILL BE HELD ONSITE WITH THE LANDSCAPE CONTRACTOR AND AOA PRIOR TO START OF WORK.
5. ALL PLANTS SHOULD BE INSTALLED BETWEEN DECEMBER 1ST AND MARCH 15TH UNLESS SUPPLEMENTAL IRRIGATION IS IN PLACE PRIOR TO PLANTING.
6. INTERMEDIATE INSPECTIONS. ALL PLANTS SHALL BE INSPECTED AND APPROVED BY THE LANDSCAPE DESIGNER AND/OR WETLAND BIOLOGIST PRIOR TO INSTALLATION. CONDITION OF ROOTS OF A RANDOM SAMPLE OF PLANTS WILL BE INSPECTED, AS WELL AS ALL ABOVEGROUND GROWTH ON ALL PLANTS. ROOTS OF ANY BARE ROOT PLANTS, IF PERMITTED FOR USE, WILL BE INSPECTED. PLANT MATERIAL MAY BE APPROVED AT THE SOURCE, AT THE DISCRETION OF THE LANDSCAPE DESIGNER AND THE WETLAND BIOLOGIST. ALL MATERIAL MUST BE RE-INSPECTED AND APPROVED ON THE SITE PRIOR TO INSTALLATION. PLANT LOCATIONS SHALL ALSO BE INSPECTED AND APPROVED PRIOR TO PLANTING.
7. PRIOR TO INSTALLATION OF PLANT MATERIAL, THE PLANTING AREAS WILL BE LAID OUT BASED ON THE PLANTING PLAN, AND ALL NON-NATIVE WOODY AND HERBACEOUS VEGETATION LOCATED IN THE PLANTING AREAS WILL BE REMOVED BY HAND WITH THE EXCEPTION OF JAPANESE KNOTWEED THAT SHOULD BE INJECTED PER KING COUNTY STANDARDS. ENSURE FULL KILL BEFORE HAND REMOVAL OF REMAINING PLANT MATTER.
8. IN WEED-REMOVAL AREAS, IMPORTED DEJONG'S FERTIL-MULCH SHALL BE PLACED TO PRE CLEARING GRADES.
9. ALL PLANTS SHALL BE PIT-PLANTED IN PLANTING PITS EXCAVATED 2X THE DIAMETER OF THE PLANT. PITS SHALL BE BACKFILLED WITH A 30/70 MIX OF STEERCO TO NATIVE SOIL. PLANTS SHALL BE INSTALLED 3" HIGH AND SURFACED MULCHED TO A DEPTH OF 3" WITH COMPOSTED HOG-FUEL OR WOOD CHIPS PLACED CONTINUOUSLY THROUGHOUT THE PLANTING BED IN OPEN AREAS AND PLACED WITHIN A 24" DIAMETER AROUND EACH PLANT IN VEGETATED AREAS..
10. ALL PLANTS SHALL BE NURSERY GROWN (IN WESTERN WA OR OR) FOR AT LEAST 1 YEAR FROM PURCHASE DATE, FREE FROM DISEASE OR PESTS, WELL-ROOTED, BUT NOT ROOT-BOUND AND TRUE TO SPECIES.
11. PLANT LAYOUT SHALL BE APPROVED BY AOA PRIOR TO INSTALLATION AND APPROVED UPON COMPLETION OF PLANTING.
12. UPON COMPLETION OF PLANTING, ALL PLANTS SHALL BE THOROUGHLY WATERED.
13. UPON APPROVAL OF PLANTING INSTALLATION BY AOA, THE CITY OF BELLEVUE WILL BE NOTIFIED TO CONDUCT A SITE REVIEW FOR FINAL APPROVAL OF CONSTRUCTION.
14. MAINTENANCE SHALL BE REQUIRED IN ACCORDANCE WITH THE CITY OF BELLEVUE MITIGATION GUIDELINES AND APPROVED PLANS.
15. AN IRRIGATION SYSTEM SHALL BE DESIGNED BY THE LANDSCAPE CONTRACTOR TO PROVIDE 1/2" OF FLOW 2-3 TIMES WEEKLY FROM JULY 1 –OCTOBER 31 THE FIRST YEAR AFTER PLANTING TO ALL PLANTED AREAS VIA MP3 ROTOR HEADS. FLOW SHALL REDUCE TO 1-2 TIMES WEEKLY THE SECOND YEAR AFTER PLANTING AND ONCE WEEKLY THE YEARS 3-5.
16. MAINTENANCE SHALL BE IMPLEMENTED ON A REGULAR BASIS ACCORDING TO THE SCHEDULE BELOW.

ANNUAL MAINTENANCE SCHEDULE

MAINTENANCE ITEM	J	F	M	A	M	J	J	A	S	O	N	D
WEED CONTROL			1		1	1	1	1	1	1		
GENERAL MAINT.			1		1	1	1	1	1	1		
IRRIGATION - YEAR 1						4	8	8	8			
IRRIGATION - YEAR 2						4	8	8	8			
IRRIGATION - YEARS 3-5						4	4	4	4			

1-8 = NUMBER OF TIMES TASK SHALL BE PERFORMED PER MONTH.

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FIGURE 5: SPECIFICATIONS
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MAINTENANCE & MONITORING PLAN

CONSTRUCTION MANAGEMENT
1. Prior to commencement of any work in the mitigation planting area, the clearing limits will be staked and all existing vegetation to be saved will be clearly marked. A pre-installation meeting will be held at the site to review and discuss all aspects of the project with the owner, aoa, the geotechnical engineer and the civil engineer.
2. A biologist will supervise plan implementation during construction to ensure that objectives and specifications of the mitigation planting area are met.
3. Any necessary significant modifications to the design that occur as a result of unforeseen site conditions will be jointly approved by the City of Bellevue and the biologist prior to their implementation.

MONITORING METHODOLOGY
1. The monitoring program will be conducted twice yearly (in the beginning and end of the growing season) for a period of five years, with reports submitted annually (at the end of the growing season) to the City of Bellevue.
2. Vegetation establishment within the mitigation planting area will be monitored during each field visit with a record kept of all plant species found.
3. Photo-points will be established from which photographs will be taken throughout the monitoring period. These photographs will document general appearance and progress in plant community establishment in the mitigation area. Review of the photos over time will provide a semi-quantitative representation of success of the restoration plan.

PERFORMANCE STANDARDS
Success of plant establishment within the mitigation planting area will be evaluated on the basis of percent survival of planted species.
1. Native woody cover will be a minimum of; 10% at construction completion, 15% at year 1, 20% at year 2, 30% at year 3 and 60% at year 5.
2. There will be 100% survival of all woody planted species throughout the mitigation planted area at the end of the first year of planting. For years 2-5, success will be based on an 85% survival rate or similar number of recolonized native woody plants.
3. Exotic and invasive plant species will be maintained at levels below 10% total cover. Removal of these species will occur immediately following the monitoring event in which they surpass the above maximum coverage. Removal will occur by hand whenever possible.

MAINTENANCE (M) & CONTINGENCY (C)
1. Established performance standards for the project will be compared to the monitoring results in order to judge the success of the mitigation project.
2. Contingency will include many of the items listed below and would be implemented if these performance standards are not met.
3. Maintenance and remedial action on the site will be implemented immediately upon completion of the monitoring event, (unless otherwise specifically indicated below).

- replace dead plants with the same species or a substitute species that meet the goal of the mitigation plan (C)
- re-plant areas after reason for failure has been identified (e.g., moisture regime, poor plant stock, disease, shade/sun conditions, wildlife damage, etc.) (C)
- irrigate following plant installation for five years (M)

PERFORMANCE BOND
1. A performance bond or other surety device will be posted with the City of Bellevue by the applicant to cover the costs of mitigation plan implementation (including labor, materials, maintenance, and monitoring).
2. The bond or assignment may be released in partial amounts in proportion to work successfully completed over the five year monitoring period, as the applicant demonstrates performance and corrective measures.

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FIGURE 6: MAINTENANCE & MONITORING PLAN
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Priority Habitats and Species on the Web

Attachment A

Report Date: 12/19/2023, Parcel ID: 3860900061

The Priority Habitats and Species (PHS) datasets do not contain information for your project area. This does not mean that species and habitats do not occur in your project area. PHS data, points, lines and polygons are mapped only when occurrences of these species or habitats have been observed in the field. Unfortunately, we have not been able to comprehensively survey all sections in the state and therefore, it is important to note that priority species and habitats may occur in areas not currently known to the Department.