

SITE OBSERVATION FORM: DNV Landslide Risk Assessment
LOCATION: 1797 Layton Drive
INSPECTION DATE: (mm/dd/yy) 11/01/05
WEATHER: Heavy rain, heavy rain for several days prior to visit.



BGC ENGINEERING INC.
 AN APPLIED EARTH SCIENCES COMPANY

500 - 1045 Howe Street
 Vancouver, BC
 Canada V6Z 2A9

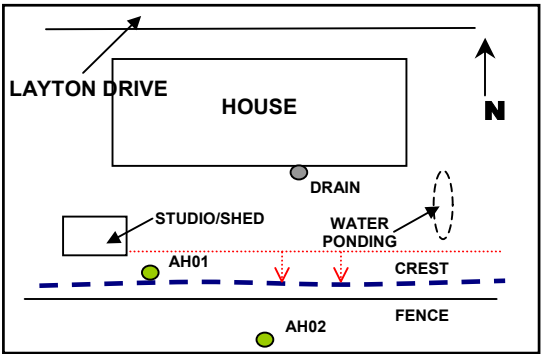
THICKNESS OF LOOSE MATERIALS	<1 m	1-2 m	2-3 m	>3 m
FENCE LINE		<input checked="" type="checkbox"/>		
15 m DOWNSLOPE FROM SLOPE CREST		<input checked="" type="checkbox"/>		

SLOPE BELOW FENCE/ RETAINING STRUCTURE	SLOPE = 45-47°		
	CRACKS	SLIDES	EROSION
OBSERVATIONS: No evidence of slope deformation. Slope angles taken on the western edge of the property.			

TREES BELOW FENCE/ RETAINING STRUCTURE	STRAIGHT	PISTOL-BUTT	LEANING
PERCENT CONIFER: 60%	<input checked="" type="checkbox"/>		
OBSERVATIONS: Trees at crest are generally straight, some trees are slightly swayed.			

RETAINING STRUCTURES	YES	NO <input checked="" type="checkbox"/>	HEIGHT= n/a
TYPE	CONCRETE	TIMBER CRIB	OTHER:
DEFORMATION	UNDEFORMED	CRACKED	BULGING
OBSERVATIONS: No retaining wall visible, slope covered by dense blackberries.			

DEFORMATION IN BACKYARD	YES	NO <input checked="" type="checkbox"/>
LOCATION:		
DESCRIPTION: Backyard dips gently toward slope.		



POOLS	YES	NO <input checked="" type="checkbox"/>
DESCRIPTION: None.		

SEEPAGE/ SPRINGS IN OR BELOW FILL	YES	NO <input checked="" type="checkbox"/>
OBSERVATIONS: None observed.		

HOUSE DISTANCE TO CREST = 7 m

RECEIVES SURFACE RUNOFF FROM	BACKYARD	1/2 ROOF	FULL ROOF	FRONT YARD	STREET
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
OBSERVATIONS: One roof drainage spout drains directly onto lawn where a small depression has formed. Corner eave dripping and water is ponding on lawn in southeast corner.					

CONNECTED TO STORM SEWER	YES	NO	UNSURE <input checked="" type="checkbox"/>
OWNERS COMMENTS:			

- GENERAL OBSERVATIONS**
- Slope heavily vegetated with blackberries.
 - Slope appears steeper on western edge of property.
 - Back 2-3 m of yard dips gently toward crest of slope.
 - Studio/shed is 2 m from crest of slope.



Figure 1. 1797 Layton Drive – Front of the house



Figure 2. 1797 Layton Drive – View looking west from backyard towards crest



Figure 3. 1797 Layton Drive – View looking SE along fence/crestline

Location : 1797 Layton
Drill Method : Dutch Hand Auger
Inspection Date : 01 Nov 05
Logged by : SF/JB
Reviewed by : MJP

Depth (m)	Lithologic Description	Depth To Water Table	Depth (m)	Lithologic Description	Depth To Water Table
	<p>AUGERHOLE: BGC05-1797LAY-AH01 on Slope Crest FINAL DEPTH OF AUGERHOLE: 1.20 m THICKNESS OF LOOSE MATERIALS: 1.20 m minimum</p>			<p>AUGERHOLE: BGC05-1797LAY-AH02 15 m Downslope FINAL DEPTH OF AUGERHOLE: 0.95 m THICKNESS OF LOOSE MATERIALS: 0.95 m minimum</p>	
0.0	<p>ORGANICS Very loose, moist</p>		0.0	<p>ORGANICS Very loose, moist</p>	
	<p>ORGANICS and SILT (ML) Some sand, trace medium gravel, low plastic, very soft, dark brown, organic odour, moist, homogeneous, roots and bark mulch [TOPSOIL]</p>			<p>SILT (ML) and SAND (SP) Fine to coarse sand, some fine to coarse gravel, poorly graded, loose, max particle size = 30 mm, sub-angular to sub-rounded, brown, moist, homogenous [FILL]</p>	
0.5	<p>SILT (ML) and SAND (SP) Fine to medium sand, trace fine to coarse gravel, gravel sized silt and sand clasts, poorly graded, non plastic silt, very loose, dark brown, minor orange brown staining on gravel clasts, organic odour, dry to moist, homogenous, max particle size = 40 mm, sub-angular to sub-rounded, rootlets, charcoal [FILL]</p>		0.5	<p>SAND (SW) Fine to coarse sand, some fine to coarse gravel, trace silt, well graded sand, loose, max particle size = 40 mm, sub-angular to sub-rounded, light brown, moist, homogeneous, some decomposed organics [FILL]</p>	
1.0	<p>0.75 - 1.00 m: Material density becomes 'loose to compact' 1.00 m: Charcoal, loose</p>		1.0	<p>0.50 m: Gravel, max particle size = 40 mm ORGANICS and SAND (SP) Fine to coarse sand, trace silt, trace fine to medium gravel, trace gravel sized sand clasts, poorly graded, loose, max particle size = 20 mm, sub-angular to sub-rounded, brown with orange brown rind around the sand clasts, trace charcoal and organics [FILL or COLLUVIUM]</p>	
	<p>SAND (SP) Fine to coarse sand, trace fine to medium gravel, trace silt, poorly graded, loose, max particle size = 20 mm, sub-rounded, brown, moist, homogeneous [FILL or COLLUVIUM]</p>			<p>0.95 m: EOH - Refusal on gravel No groundwater encountered</p>	
1.5	<p>1.20 m: EOH - Refusal on gravel No groundwater encountered</p>		1.5		
2.0			2.0		
2.5			2.5		
3.0			3.0		

SITE OBSERVATION FORM: DNV Landslide Risk Assessment
LOCATION: 1815 Layton Drive
INSPECTION DATE: (mm/dd/yy) 11/01/05
WEATHER: Raining, heavy rain for several days prior to visit.



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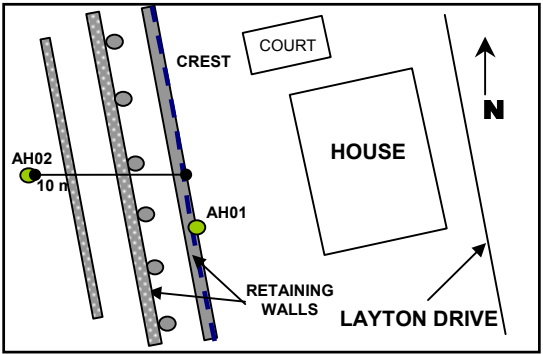
THICKNESS OF LOOSE MATERIALS	<1 m	1-2 m	2-3 m	>3 m
1m BACK FROM CREST LINE		<input checked="" type="checkbox"/>		
10 m DOWNSLOPE FROM SLOPE CREST			<input checked="" type="checkbox"/>	

SLOPE BELOW FENCE/ RETAINING STRUCTURE	SLOPE = 33°		
	CRACKS	SLIDES	EROSION
OBSERVATIONS: No evidence of slope deformation. Occupant in the process of building deck that will straddle the crest of the slope and level with the lawn.			

TREES BELOW FENCE/ RETAINING STRUCTURE	STRAIGHT	PISTOL-BUTT	LEANING
PERCENT CONIFER: 80%	<input checked="" type="checkbox"/>		
OBSERVATIONS:			

RETAINING STRUCTURES	YES <input checked="" type="checkbox"/>	NO	HEIGHT= 0.70 m
TYPE	BLOCKS	CONCRETE	TIMBER CRIB
DEFORMATION	UNDEFORMED	CRACKED	SETTLED
OBSERVATIONS: No evidence of deformation, wall appears to be newly built. Concrete wall at crest, concrete posts for deck and timber wall downslope form concrete wall.			

DEFORMATION IN BACKYARD	YES <input checked="" type="checkbox"/>	NO
LOCATION: West corner of backyard.		
DESCRIPTION: Some slumping and settlement occurring underneath a small shed.		



POOLS	YES	NO <input checked="" type="checkbox"/>
DESCRIPTION:		

SEEPAGE/ SPRINGS IN OR BELOW FILL	YES	NO <input checked="" type="checkbox"/>
OBSERVATIONS: None observed.		

HOUSE DISTANCE TO CREST = 6.0 m

RECEIVES SURFACE RUNOFF FROM	BACKYARD	1/2 ROOF	FULL ROOF	FRONT YARD	STREET
OBSERVATIONS: Some of the backyard (Basketball court) drains into sewer.					

CONNECTED TO STORM SEWER	YES	NO	UNSURE <input checked="" type="checkbox"/>
OWNERS COMMENTS:			

GENERAL OBSERVATIONS

- A concrete retaining wall is at lawn level
- A 20 cm high crib wall is located 2-3 m downslope from concrete wall
- An old concrete wall (20 cm high) is located 2 m downslope from the cribwall
- Fallen trees (old) placed across slope held in place with stumps.



Figure 1. 1815 Layton Drive – Front of the house



Figure 2. 1815 Layton Drive – View looking SW downslope from crest



Figure 3. 1815 Layton Drive – Slumping underneath a shed on the NW side of the backyard



Figure 4. 1815 Layton Drive – View of retaining wall and in-progress construction from west side of property

Project : DNV Landslide Risk Assessment

Project No. : 0404-002-01

Location : 1815 Layton
Drill Method : Dutch Hand Auger
Inspection Date : 01 Nov 05
Logged by : SF/JB
Reviewed by : MJP

Depth (m)	Lithologic Description	Depth To Water Table	Depth (m)	Lithologic Description	Depth To Water Table
	<p>AUGERHOLE: BGC05-1815LAY-AH01 1 m back from Slope Crest FINAL DEPTH OF AUGERHOLE: 1.00 m THICKNESS OF LOOSE MATERIALS: 1.00 m minimum</p>			<p>AUGERHOLE: BGC05-1815LAY-AH02 10 m Downslope FINAL DEPTH OF AUGERHOLE: 2.70 m THICKNESS OF LOOSE MATERIALS: 2.00 m minimum</p>	
0.0	SAND (SM) Fine to medium sand, silty, poorly graded, loose, dark brown, no odour, moist, homogeneous, no cementation, trace rootlets [TOPSOIL]		0.0	SAND (SM) Fine to coarse sand, silty, fine to coarse gravel, well graded, loose, max particle size = 30 mm, sub-rounded, brown, no odour, moist, homogeneous, no cementation, roots, charcoal and wood fragments [FILL]	
0.5	SAND (SW) Fine to coarse sand, some fine to medium gravel, trace silt, well graded, loose, max particle size = 15 mm, sub-angular, grey to light brown peppered appearance, no odour, moist, homogeneous, no cementation [FILL]		0.5		
1.0	SAND (SM) Fine to coarse sand, gravelly, fine to coarse gravel, silty, well graded, loose, max particle size = 15 mm, brown, no odour, moist, homogeneous, no cementation [FILL] 0.70 m: Material becomes wet 1.00 m - EOH - Refusal on gravel/cobbles	▼	1.0	SAND (SW) Fine to coarse sand, some fine to coarse gravel, trace silt, well graded, loose, max particle size = 40 mm, sub-rounded, light brown to brown, no odour, moist, homogeneous, no cementation [FILL]	
1.5			1.5	SAND (SP) Mainly fine sand, some medium sand, some silt, trace fine gravel, some gravel sized silt clasts, poorly graded, loose, max particle size = 2 mm, light brown, no odour, moist, homogeneous, no cementation [FILL]	
2.0			2.0	SILT (ML) Trace to some clay, some fine sand, trace fine to medium gravel, some gravel sized silt clasts, low plastic, firm, grey, dry to moist, homogeneous, no cementation, non dilatant [COLLUVIUM / Weathered GLACIOMARINE]	
2.5			2.5		
3.0			3.0	2.70 m: EOH - Refusal as material is too dense to auger through	

BGC05-1815LAY-AH01