156-F-6
40 Union St.
Slope Reconstruction
Back Cove Estates

2013-097

PORTLAND MAINE

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Planning & Urban Development Department
Jeff Levine, Director

Planning Division
Alexander Jaegerman, Director

May 23, 2013

Jeff Amos, PE
PO Box 339
New Gloucester, ME 04260

Back Cove Estates Condo Association
107 York Street
Kennebunk, ME 04043

RE: Staff Review Comments for Preliminary Level I Site Alteration Plan

Project Name:	Back Cove Estates Slope Reconstruction	Project ID:	2013-097
Address:	40 Union Street	CBL:	156-F006001
Applicant:	Back Cove Estates Condo Association		
Planner:	Nell Donaldson		

Dear Mr. Amos:

Thank you for submitting an application for the slope reconstruction project at Back Cove Estates. This proposal is being reviewed as a preliminary plan subject to the Site Plan Ordinance, Article V of the Land Use Code. This letter outlines preliminary staff comments.

Staff Review Comments for Preliminary Level I Site Alteration Plan

Zoning
Marge Schmuckal, the city's Zoning Administrator, provides the following comments:

A site visit on 4/25/2013 revealed the necessity for re-establishing the embankment. A severe slump has already happened with indications of additional slumping abutting the original slump. The area is in a shoreland area as designated on City Zoning maps.

I would like to see a plan to show how the work is to be accomplished. Although the planting plan shows a significant planting of trees (which I will default to the City's Arborist to approve), I would also like to see what ground vegetation will also be introduced to help hold soils.

Section 14-449(d) of the Shoreland Ordinance states that "Best Management Practices" must be followed with a plan of action to stabilize the area within 1 week of completion. "Where mulch is used, it shall be applied at a rate of at least one (1) bale per 500 sq ft and shall be maintained until a catch of vegetation is established". Also additional measures shall be taken where necessary in order to avoid siltation into the water. Such measures may include the use of staked hay bales and/or silt fences.

A separate permit is required from Inspections Services.

Transmittal Letter

To: City of Portland
Planning Division
389 Congress Street
Portland, ME 04101

From: Terradyn Consultants L.L.C.
P.O. Box 339
New Gloucester, ME 04260
(207) 926-5111

info@terradynconsultants.com

Attn: Ms. Nell Donaldson, Planner

Re: Back Cove Estates – comment response

Date: September 3, 2013

Quantity	Description
1	Paper copy of comment response

Nell

Attached is our response to the Back Cove Estates City review.

Sorry for the delay. It seemingly took a couple of months for the City Arborist and our landscaper to connect.

Anyway if you have any questions or need additional information, feel free to call me.

Thank you,

Jeffrey D. Amos, P.E.

TERRADYN
CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

September 3, 2013

City of Portland Maine
Planning Department
C/O Ms. Nell Donaldson, Planner
389 Congress Street
Portland, Maine 04101

Subject: Comment Response – Back Cove Estates Slope Reconstruction – Level 1 Review.

Ms. Donaldson:

In response to the May 23, 2013 review memo provided by you regarding the Level 1 review of the Back Cove Estates Slope Reconstruction Project, we would like to offer the following responses:

Zoning – Marge Schmuckal

Comment 1: A site visit on 4/25/2013 revealed the necessity for re-establishing the embankment. A severe slump has already happened with indications of additional slumping abutting the original slump. The area is in a shoreland area as designated on City Zoning maps.

Response: We recognize that great care needs to be taken during the construction phase to not only reconstruct the slope, but to protect the stream and surrounding areas from further damage. The construction plan would vary greatly between contractors depending upon available equipment. We request that a construction sequencing plan be a condition of approval. When the applicants request bids from qualified area contractors, they could include a requirement that the winning contractor shall submit a construction sequencing plan that is to be reviewed and approved by the City.

Comment 2: I would like to see a plan to show how the work is to be accomplished. Although the planting plan show a significant planting of trees (which I will default to the City's Arborist to approve), I would also like to see what ground vegetation will also be introduced to help hold soils.

Response: Fox Landscaping met with Jeff Tarling, City Arborist in late August. According to Fox Landscaping, Mr. Tarling said that "everything was fine and all set with the plan that was originally submitted. He said that once the area is cleaned out, and re-graded some of the other plants that are in the area such as the sumac will seed itself and start to reclaim the area. While that is happening the seed mix that we put down will work."

Comment 3: Section 14-449(d) of the Shoreland Ordinance states that "Best Management Practices" must be followed with a plan of action to stabilize the area within

1 week of completion. "Where mulch is used, it shall be applied at a rate of at least one (1) bale per 500 sq ft and shall be maintained until a catch of vegetation is established". Also additional measures shall be taken where necessary in order to avoid siltation into the water. Such measures may include the use of staked hay bales and/or silt fences.

Response: We have revised our Erosion & Sediment Control Plan on Sheet 2 of 2 to clarify the 7 day stabilization requirement and to add that the mulch shall be maintained until a catch of vegetation is established. A row of silt fence backed by a row of erosion control mix berm is proposed. Our Erosion & Sediment Control Plan speaks to the contractors responsibility to add additional measures if necessary. Additionally, we added Note # 9 to the Grading & Erosion Control Plan to ensure clarity.

Comment 4: A separate permit is required from Inspection Services.

Response: Comment acknowledged.

Environmental Quality Standards – David Margolis-Pineo

Comment 1: Runoff from a portion of the roadway, parking, landscaped areas and roof downspouts that previously sheet flowed off the property and down to the stream will be redirected and concentrated into a proposed rock lined drainage channel using a berm and contouring. By definition, this creates a new and untreated stormwater discharge to Fall Brook and its estuary (a coastal wetland). It is usually preferable to direct un-concentrated sheet flow through a vegetated buffer to provide a level of stormwater treatment. It is desirable and possibly required to provide a means of stormwater treatment for this pavement runoff. Creating a depressed area to use as a soil filter with a rip-rapped overflow to the proposed rip-rap swale would be desirable.

Response: I reviewed your request with the project geotechnical engineer. Together, we gave it careful consideration. During the early stages of this project, the geotechnical engineer inspected the site and produced an inspection report that outlined the suspected causes of the slope failure. According to that report, "...the slope failure was likely due to toe erosion that undermined the stream bank and caused a shallow surface failure." Surface flow was not a likely cause. The original report also included a recommendation to construct a diversion berm at the top of the slope. At the time, the berm was seen as a common sense preventative measure. Now that the landscaping plan has been developed and additional treatment measures are requested, we have revisited the original recommendations. The swale creates a 6' wide swath where trees and shrubs can not be planted. The swale also creates a concentrated flow of water that will have a relatively high velocity. Due to the steepness of the slope and close proximity of the stream, there is not room for a standard plunge pool to be constructed prior to entering the stream. The requested water quality measures – although potentially lined – introduce a means for surface water into the reconstructed slope.

We have decided to remove the diversion berm & swale. Once stabilized, runoff will flow over the reconstructed slope in sheet flow – as it did in prior years. Simply put, the combination of berm & swale caused more potential problems than they were worth. See attached revised geotechnical report.

Comment 2: Rip-rapped swales provide no means of stormwater treatment and actually impart additional thermal pollution to runoff. I encourage the applicant to look into other means of securing the swale that includes vegetation and possible check dams to slow the velocity of the runoff. Please consider products such as "Scourstop" and North American Green permanent protection options. Are there more natural looking alternatives to boulders for stabilized the base of slope?

Response: As previously discussed, the swale has been removed due to the limitations it places on the proposed landscaping.

With respect to the boulders, we investigated several different options for the toe of the slope. The geotechnical engineer suggests the placement of either a retaining wall or boulders. MDEP will not allow the construction of a retaining wall in this location. We believe that the large boulders will be able to support the slope while allowing for smooth edge transitions into the surrounding stream bed. The face of the boulders will extend approximately 2'-3' above the ground in order to tie into the surrounding embankments.

Comment 3: It is critically important for the slope to be stabilized with erosion control materials and vegetation including a mix of plants, shrubs and trees that will help hold the soil in place. Please consider a more diverse planting plan. Mowed or trimmed grass alone would not have the root structure needed to prevent future slope erosion.

Response: See Zoning Comment 1

Comment 4: During the site visit we noted an area of erosion behind the corner of the small parking area where there had been some effort to repair with mulch and grass seed. This is likely the result of winter plowing compounded by drainage issues as evidenced by the collected pile of soil, leaves & branches below this area. This erosion problem will continue to get worse if not properly stabilized with erosion control matting and re-vegetated. Please address this area and consider changes to winter plowing operations to reduce these problems in the future.

Response: We have added a note to the plan that directs the contractor to install erosion control matting to this area and re-vegetated, as necessary. The applicant will review their winter plowing operations with their plowing contractor and revise as necessary.

<u>Environmental Quality Standards – David Senus</u>

Comment 1: The landscaping Plan should be revised to show the Rip-Rap lined swale and diversion berm; it appears the diversion berm & swale may conflict with some fo the proposed landscaping features.

Response: The diversion berm & swale have been removed from the design. The landscaping plan has been revised to address other comments.

Comment 2: The Grading & Erosion Control Plan should include requirement for temporary diversion of stormwater runoff from uphill sources during construction. Stormwater runoff from areas above the slope stabilization location shall not be allowed to run over the disturbed project area during construction.

Response: We have added notes #10 & 11 to the Grading & Erosion Control Plan as requested.

Comment 3: The Erosion and Sediment Control plan states that a construction entrance shall be constructed to avoid tracking mud, dust, and debris from the site onto adjacent roads. A stabilized construction entrance detail should be added to the detail sheet and the location for the stabilized construction entrance should be included on the site plan.

Response: A stabilized construction entrance detail has been added to the plans. We have added a 50' long x 15' wide stabilized construction entrance at the top of the embankment. The entrance will provide access to the construction area and will act as an equipment maneuvering area.

We have also requested that a contractor created construction plan be a condition of approval so that the City may review the plan. The contractor may require a different configuration to the equipment maneuvering area depending upon the available equipment.

Comment 4: As noted above, there are concerns about further erosion during construction. Please provide information on how the construction work will be completed. Limits of disturbance should be added to the plans.

Response: No work is proposed outside of the extents of the installation of the erosion control matting & riprap. We have added a note that outlines this assumption. The chosen contractor may require additional areas of disturbance depending upon the available equipment. We have asked that the request for information about the construction sequencing be made a condition of approval.

We hope that this response addresses your concerns. Please contact me directly with any additional questions or concerns.

Sincerely,
Terradyn Consultants, LLC

Jeffrey D. Amos, P.E.

12-0974

October 18, 2012
(rev 1 June 28, 2013)

Terradyn Consultants, LLC
Attention: Jeff Amos, P.E.
111 Elderberry Lane
New Gloucester, ME 04260

Subject: Geotechnical Consultation Services
Back Cove Estates Condominiums
East Road Slope Repair
Portland, Maine

Dear Jeff:

In accordance with our Agreement, dated October 10, 2012, we have completed a geotechnical reconnaissance of the subject project. This report presents our findings and its contents are subject to the limitations set forth in Attachment A.

Our scope of services included a site visit, two shallow hand borings and preparation of this report. The purpose of our work was to observe visible conditions in order to provide an opinion of the likely causative agents for a slope failure along the East Road of the Back Cove Estates Condominiums and to assist in development of general concepts for slope repair. This report has been revised to remove a previously recommended landscape berm in order to address MaineDEP review comments.

SITE AND SUBSURFACE CONDITIONS

The site is located along the west bank of Fall Brook along the East Road of the Back Cove Condominiums off Ocean Avenue in Portland, Maine. The slope failure area is generally bounded by Fall Brook at the toe (east), East Road at the head (west) and undisturbed, vegetated, slope areas to the north and south. The site area and existing topography are shown on the "Exploration Location Plan" attached as Sheet 1.

Surficial Conditions: The stream bed conditions vary from sand and gravel with boulders to exposed bedrock, see photos attached as Sheet 2. The stream bank conditions vary from exposed bedrock to native clay, see photos attached as Sheet 3. The soils in the slope failure area (slide area) consist of disturbed clay with organics (slide debris) overlying a relatively stiff undisturbed native clay exposed at the head of the slide area, see photos attached as Sheet 4. We did not observe tension cracking or faulting upslope of the head scarp of the slide area.

Subsurface Conditions: We completed two shallow hand borings (HB-1 and HB-2). HB-1 was completed at the toe of the slide area and encountered about 2 feet of slide debris (disturbed clay and organics) overlying a refusal surface interpreted to be wood or boulders. HB-2 was completed about mid-slope in the slide area and encountered about 5 feet of slide debris overlying undisturbed, native stiff clay. HB-2 was terminated at a depth of 7 feet in the undisturbed, native stiff clay. Logs of the explorations are attached as Sheet 5. A key to the notes and symbols used on the logs is attached as Sheet 6.

We completed hand vane shear tests in HB-2 at depths of 2.0, 2.8, 3.7, 5.3 and 7.0 feet to assess the in-situ shear strength of the slide debris and undisturbed native stiff clay. Vane shear testing in the slide debris yielded in-situ shear strengths ranging from 2.0 to 0.63 ksf. Vane shear testing in the undisturbed native stiff clay yielded in-situ shear strengths ranging from 1.42 to 1.46 ksf (undisturbed) and 0.63 to 0.68 ksf (remolded/disturbed). Vane shear test results are shown on the logs.

Groundwater Conditions: Free groundwater was not encountered in the explorations nor did we observe visible evidence of water bearing strata exiting the slope. Groundwater is likely level with water levels in the stream.

CONCLUSIONS AND RECOMMENDATIONS

Based upon visual observations and subsurface findings at the hand boring locations, the slide plane of the failure area appeared to be relatively shallow and on the order of 5 feet below the surface of the slide debris. The stream bank upstream and downstream of the failure area consists of erodible native clay and the stream bed consists of relatively stable sand and gravel or bedrock. Considering the visible surface conditions and subsurface findings, it is our opinion the slope failure was likely due to toe erosion that undermined the stream bank and caused a shallow surface failure.

We recommend the slide area be repaired by armoring the stream bank with a boulder wall, removing the slide debris to expose undisturbed native clay and keying in a compacted granular borrow fill to re-establish the slope. The surface of the slope should be covered with a loam and seed that is protected by a turf reinforcement mat until a root mass of vegetation is established. We also recommend grading the slope and incorporating plantings to prevent future soil erosion. Conceptual Slope Repair details are illustrated on Sheet 1.

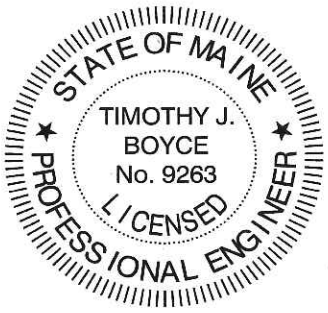
The conceptual slope repair details presented on Sheet 1 are provided for permitting purposes only and are not developed for bidding nor for construction. S.W.COLE ENGINEERING, INC should be engaged to help develop construction documents for slope repair, solicit and evaluate contractor proposals for slope repair and observe slope repair activities.

CLOSURE

It has been a pleasure to be of assistance to you with this phase of the project. If you have any questions, please do not hesitate to call.

Sincerely,

S.W.COLE ENGINEERING, INC.



Timothy J. Boyce, P.E.
Senior Geotechnical Engineer

TJB:rec

Enc (7)

Attachment A
Limitations

This report has been prepared for the exclusive use of Terradyn Consultants, LLC for specific application to the Proposed Slope Repair of East Road in the Back Cove Estates Condominiums off Ocean Avenue in Portland, Maine. S.W.COLE ENGINEERING, INC. has endeavored to conduct the work in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

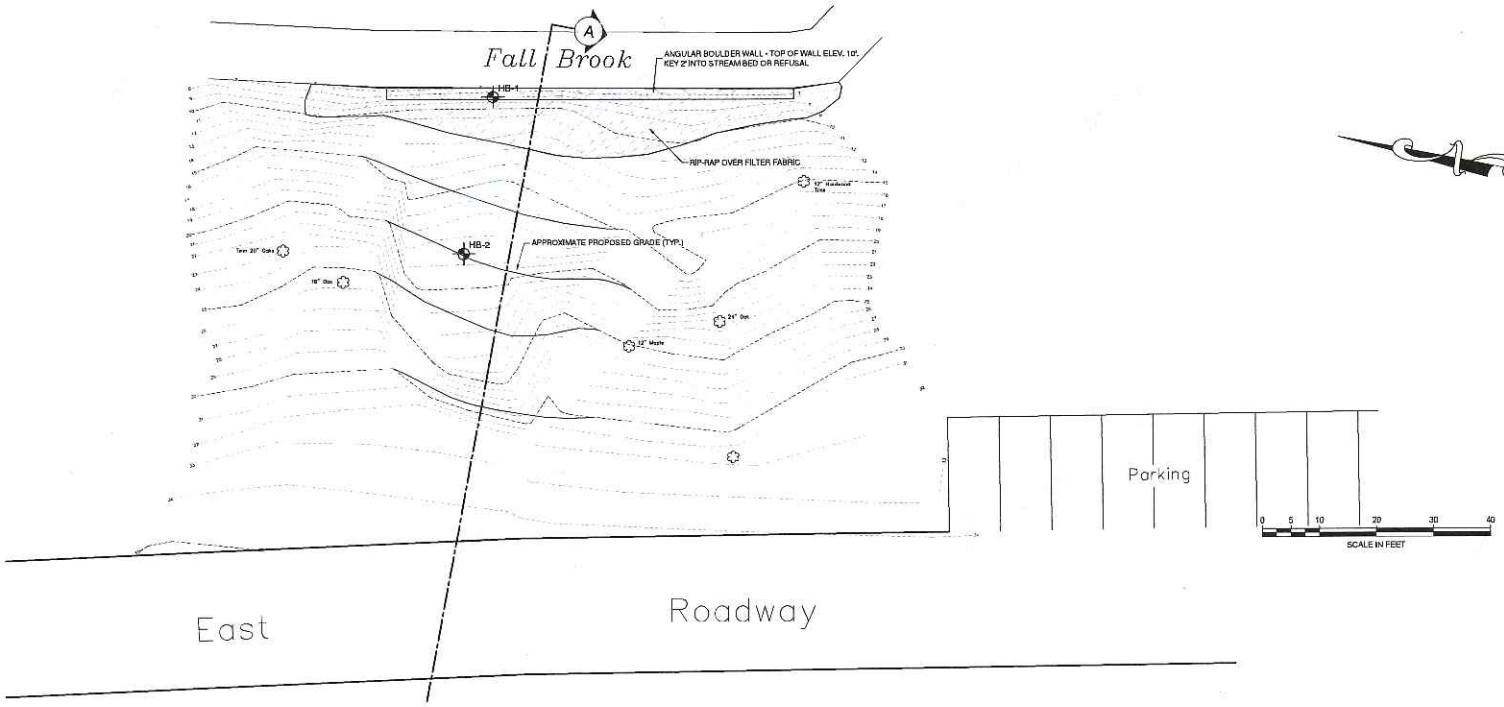
The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

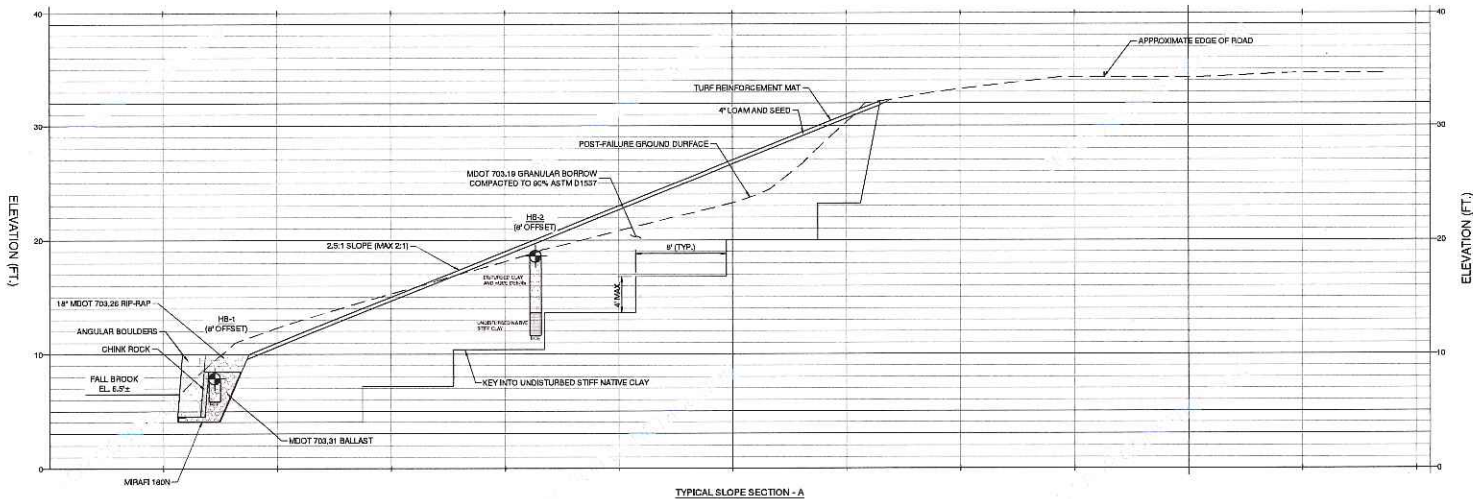
Our assessment and the recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE ENGINEERING, INC.'s scope of work has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE ENGINEERING, INC. should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE ENGINEERING, INC.





TYPICAL SLOPE SECTION - A
SCALE: 1"=5'

LEGEND:

APPROXIMATE HAND BORING LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A 1"=10' SCALE PLAN OF THE SITE ENTITLED "EXISTING TOPOGRAPHIC SURVEY" PREPARED BY WAYNE T. WOOD & CO., DATED OCTOBER 2012.
2. THE HAND BORINGS WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM EXISTING SITE FEATURES.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S.W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND TO ILLUSTRATE A CONCEPTUAL SLOPE REPAIR AND IS NOT TO BE USED FOR CONSTRUCTION.

NO.	DATE	DESCRIPTION	BY
1	06/28/2013	REMOVED LANDSCAPE BERM	CEM

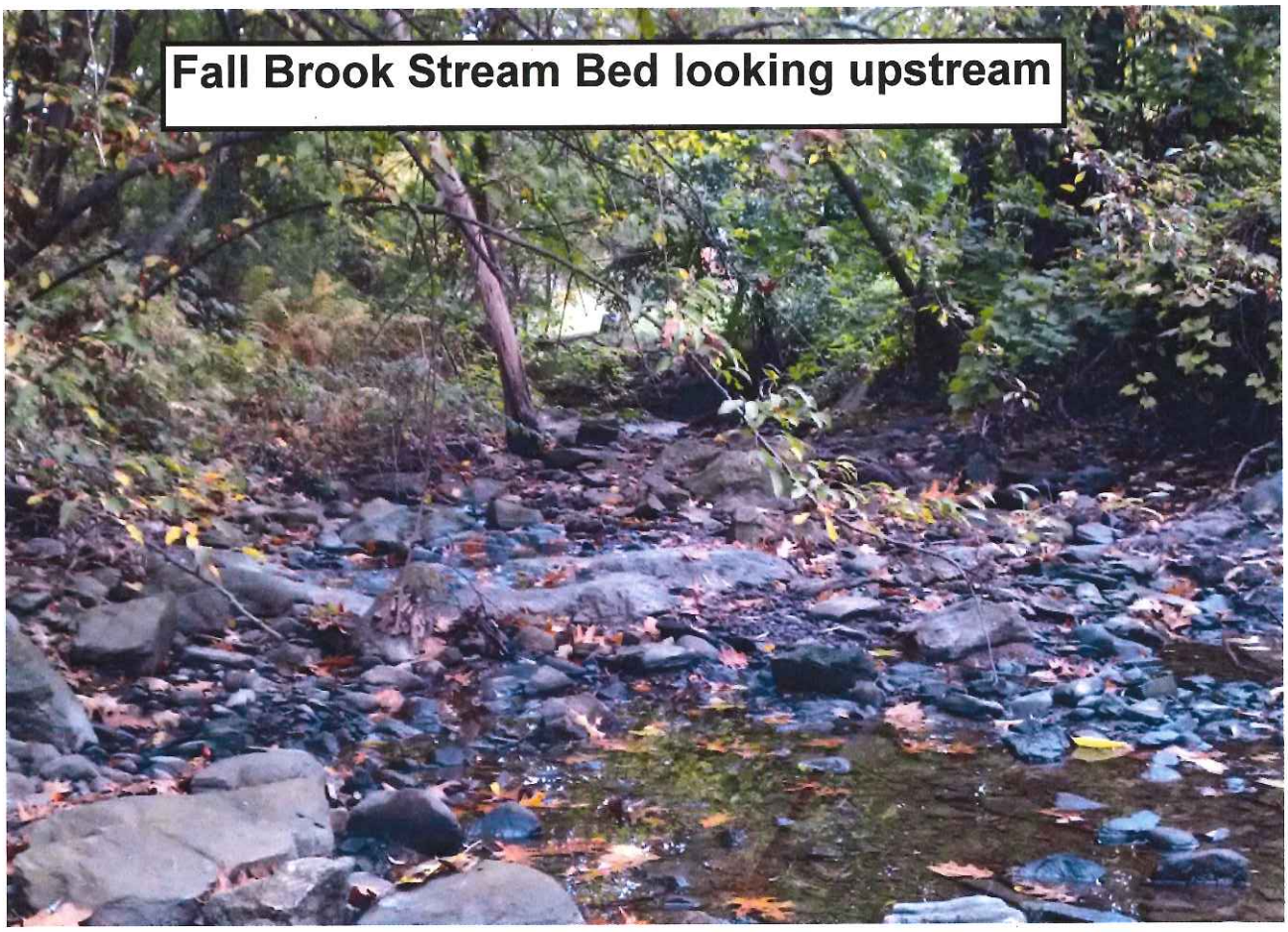
S.W. COLE ENGINEERING, INC.

TERRADYN CONSULTANTS, LLC

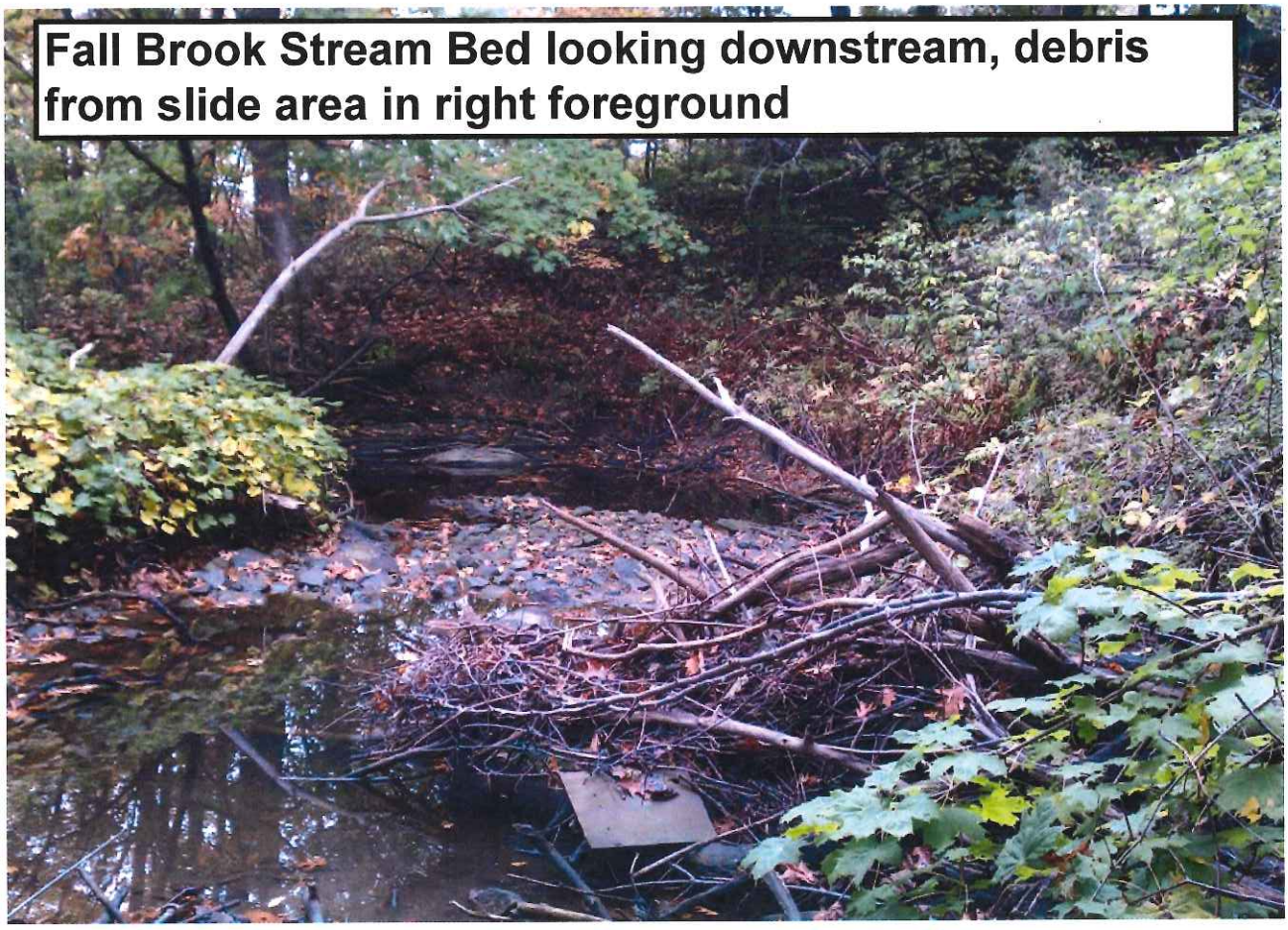
EXPLORATION LOCATION PLAN AND CONCEPTUAL SLOPE REPAIR

BACK COVE ESTATES
EAST ROAD
PORTLAND, MAINE

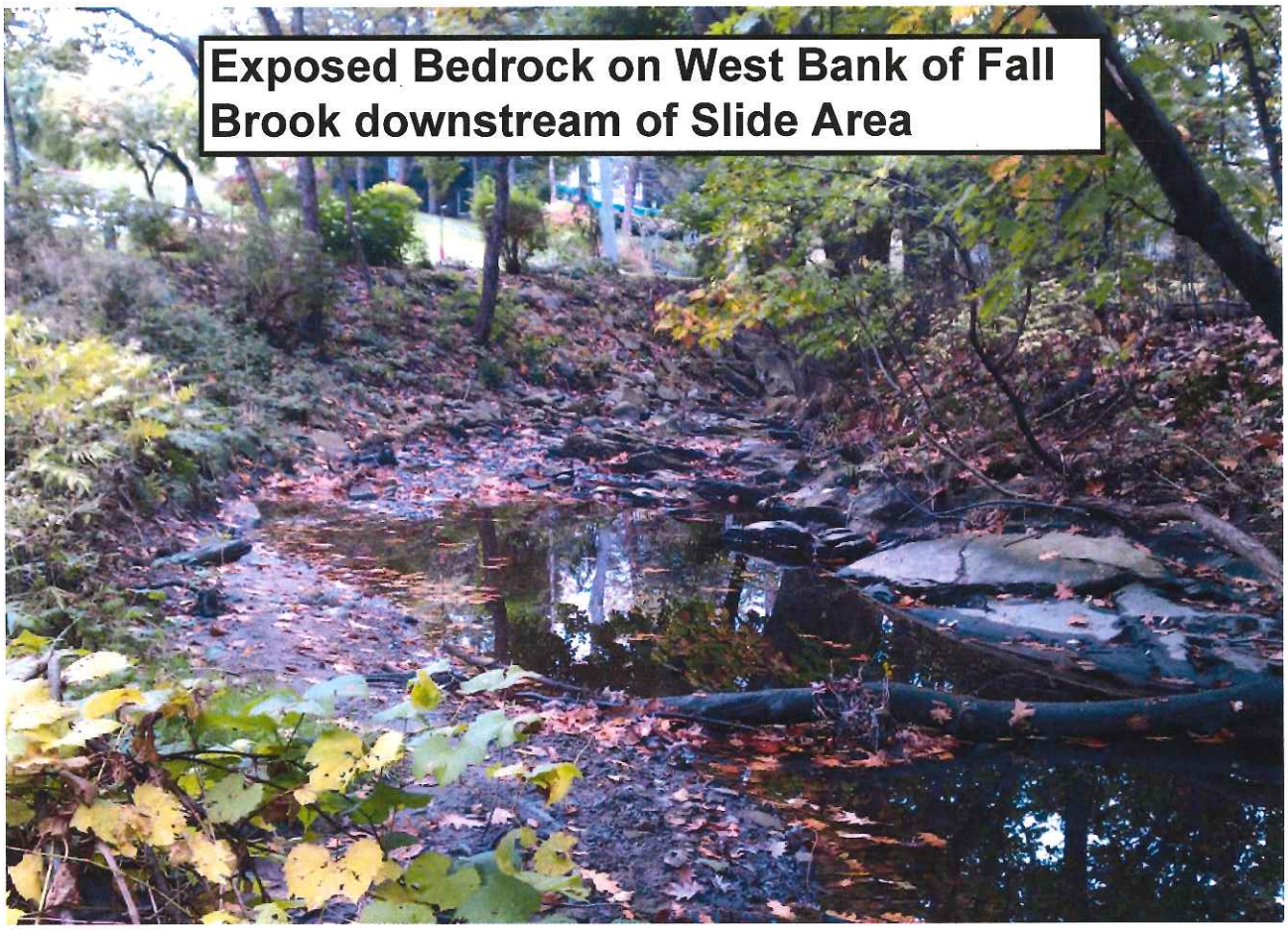
Job No.:	12-0974	Scale:	As Noted
Date:	10/18/2012	Sheet:	1



Fall Brook Stream Bed looking upstream



Fall Brook Stream Bed looking downstream, debris from slide area in right foreground



Exposed Bedrock on West Bank of Fall Brook downstream of Slide Area

Exposed Undisturbed Native Clay just downstream of Slide Area

Head of Slide Area, East Road Above

Toe of Slide Area, West Bank of Fall Brook

S.W.COLE ENGINEERING, INC.

HAND BORING LOGS

PROJECT / CLIENT: Back Cove Estates, East Road Slope Repair / Terradyn Consultants, LLC

LOCATION: Ocean Avenue, Portland, Maine PROJECT NO. 12-0974

HAND BORING HB-1

DATE: 10-10-12 SURFACE ELEVATION: 8' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (IN)	STRATUM DESCRIPTION	TEST RESULTS
			DISTURBED OLIVE-BROWN SILTY CLAY WITH ORGANICS AND VEGETATION (SLIDE DEBRIS)	
			REFUSAL @ 2.0 FEET (PROBABLE WOOD OR BOULDER)	

COMPLETION DEPTH: 2.0' DEPTH TO WATER: FALL BROOK

HAND BORING HB-2

DATE: 10-10-12 SURFACE ELEVATION: 18' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (IN)	STRATUM DESCRIPTION	TEST RESULTS
			OLIVE-BROWN SILTY CLAY WITH ORGANICS AND VEGETATION (SLIDE DEBRIS)	
			~ DISTURBED ~	S_V = 2.0 ksf S_V = 0.63 ksf S_V = 0.63 ksf
		5.0'	<<<< INCREASED RESISTANCE TO PENETRATION / LIKELY SLIDE PLANE >>>>	
			UNDISTURBED, NATIVE OLIVE-BROWN SILTY CLAY ~ STIFF ~	S_V = 1.46 / 0.63 ksf S_V = 1.42 / 0.68 ksf
			BOTTOM OF EXPLORATION @ 7.0'	

COMPLETION DEPTH: 7.0' DEPTH TO WATER: FALL BROOK

KEY TO THE NOTES & SYMBOLS
Test Boring and Test Pit Explorations

All stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - based on laboratory unconfined compressive test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. based on pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass. RQD is computed from recovered core samples.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight
f	-	fines content (percent by weight passing U.S. No. 200 Sieve)

Description of Proportions:

0 to 5% TRACE
5 to 12% SOME
12 to 35% "Y"
35+% AND

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

As noted above, there are concerns about further erosion during construction. Please provide information on how the construction work will be completed. Limits of disturbance should be added to the plans.

3. **Public Infrastructure and Community Safety Standards**
   a. ***Consistency with Master Plans***
   No comments at this time.

4. **Site Design Standards**
   a. ***Historic Resources***
   N/A

   b. ***Exterior Lighting***
   No comments at this time.

   c. ***Signage and Wayfinding***
   No comments at this time.

   d. ***Zoning Related Design Standards***
   No comments at this time.

Additional Submittals Required

Note that the Planning Authority may request additional information during the continued review of the proposal according to applicable laws, ordinances and regulations.

Planning Staff Recommendation

Based upon the staff review of the preliminary Level I site plan, I recommend that the applicant proceed with submission of a final plan for staff review. Please submit one (1) complete paper set and one (1) digital set of plans and documents to address staff comments. Upon receipt of the revised material, the City of Portland will review the additional plans and information for conformance with applicable ordinances. Please be aware that an application expires within 120 days of the date upon which this written request for additional information was made.

If you have any questions, feel free to contact me at 874-8723 or by email at hcd@portlandmaine.gov.

Sincerely,

Neil Donaldson
Planner

Electronic Distribution
Alexander Jaegerman, Planning Division Director
Barbara Barhydt, Development Review Services Manager
Danielle West-Chuhta, Associate Corporation Counsel
Marge Schmuckal, Zoning Administrator
Katherine Earley, City Engineer, Public Services
David Margolis-Pineo, Deputy City Engineer
Captain Chris Pirone, Fire
Jeff Tarling, City Arborist
Tom Errico, P.E., TY Lin Associates
David Senus, P.E., Woodard & Curran

COMMITMENT & INTEGRITY
DRIVE RESULTS

41 Hutchins Drive
Portland, Maine 04102
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

MEMORANDUM

TO: Nell Donaldson, Planner
FROM: David Senus, P.E.
DATE: May 16, 2013
RE: Back Cove Estates Slope Stabilization, Level I Site Alteration Application

Woodard & Curran has reviewed the Back Cove Estates slope stabilization Level I Site Alteration Application for compliance with the City's stormwater and environmental quality standards. Back Cove Estates is located off of Ocean Avenue in Portland. The slope stabilization project consists of re-grading, stabilizing, and re-vegetating a slope failure condition between the Estate's driveway (above) and Fall Brook (below).

Documents Reviewed by Woodard & Curran

- Level 1 Site Alteration Application prepared by Terradyn Consultants, LLC on behalf of Back Cove Estates Condominium Association, dated April 9, 2013
- Existing Conditions Plan prepared by Wayne Wood & Co on behalf of Back Cove Estates Condominiums, dated October 2012
- Grading and Erosion Control Plan and Details, Sheets 1 & 2, prepared by Terradyn Consultants, LLC on behalf of Back Cove Estates Condominium Association, dated April 7, 2013
- MaineDEP NRPA Approval for the Project (L-25877-4D-A-N, dated April 18, 2013)
- Landscaping Plan, Sheet 1, prepared by Terradyn Consultants, LLC on behalf of Back Cove Estates Condominium Association, dated November 18, 2012

Comments

1) The Landscaping Plan should be revised to show the Rip-Rap lined swale and diversion berm; it appears the diversion berm & swale may conflict with some of the proposed landscaping features.
2) The Grading and Erosion Control Plan should include requirements for temporary diversion of stormwater runoff from uphill sources during construction. Stormwater runoff from areas above the slope stabilization location shall not be allowed to run over the disturbed project area during construction.
3) The Erosion and Sediment Control plan states that a construction entrance shall be constructed to avoid tracking mud, dust, and debris from the site onto adjacent roads. A stabilized construction entrance detail should be added to the detail sheet, and the location for the stabilized construction entrance should be included on the site plan.

A site visit on 4/25/2013 revealed the necessity for re-establishing the embankment. A severe slump has already happened with indications of additional slumping abutting the original slump. The area is in a shoreland area as designated on City Zoning maps.

I would like to see a plan to show how the work is to be accomplished. Although the planting plan shows a significant planting of trees (which I will default to the Citu's Arborist to approve), I would also like to see what ground vegetation will also be introduced to help hold soils.

Section 14-449(d) of the Shoreland Ordinance states that "Best Management Practices" must be followed with a plan of action to stabilize the area within 1 week of completion. "Where mulchis used, it shall be applied at a rate of atleast one (1) bale per 500 sq ft and shall be maintained until a catch of begetation is established". Also additional measures shall be taken where necessary in order to avoid siltation into the water. Such measures may include the use of staked hay bsales and/or silt fences.

A separate permit is required from Inspections Services.

Marge Schmuckal

Zoning Administrator

May 15, 2013

To: Nell Donaldson
From: David Margolis-Pineo
Re: Review Comments – Back Cove Estates

The Department of Public Services has the following review comments:

1. Runoff from a portion of the roadway, parking, landscaped areas and roof downspouts that previously sheet flowed off the property and down to the stream will be redirected and concentrated into a proposed rock lined drainage channel using a berm and contouring. By definition, this creates a new and untreated stormwater discharge to Fall Brook and its estuary (a coastal wetland). It is usually preferable to direct un-concentrated sheet flow through a vegetated buffer to provide a level of stormwater treatment. It is desirable and possibly required to provide a means of stormwater treatment for this pavement runoff. Creating a depressed area to use as a soil filter with a rip-rapped overflow to the proposed rip-rap swale would be desirable.
2. Rip-rapped swales provide no means of stormwater treatment and actually impart additional thermal pollution to runoff. I encourage the applicant to look into other means of securing the swale that includes vegetation and possibly check dams to slow the velocity of the runoff. Please consider products such as "Scourstop" and North American Green permanent protection options. Are there more natural looking alternatives to boulders for stabilizing the base of slope?
3. It is critically important for the slope to be stabilized with erosion control materials and vegetation including a mix of plants, shrubs and trees that will help hold the soil in place. Please consider a more diverse planting plan. Mowed or trimmed grass alone would not have the root structure needed to prevent future slope erosion.
4. During the site visit we noted an area of erosion behind the corner of the small parking area where there had been some effort to repair with mulch & grass seed. This is likely the result of winter plowing compounded by drainage issues as evidenced by the collected pile of soil, leaves & branches below this area. This erosion problem will continue to get worse if not properly stabilized with erosion control matting and re-vegetated. Please address this area and consider changes to winter plowing operations to reduce these problems in the future.

BACK COVE - SLOPE STABILIZATION.

remove debris down to existing stiff clay
filling to re-establish slope
riprap + large boulders in 100' year flood plain
erosion control mat + plantings in stabilized area

DAVE + DAVID - slope, erosion
JEFF - trees.
MARGE - shareland

NEEDS NRPA permit prior to construction - got it

* How long work?
BMPs.

LEVEL I: SITE ALTERATION : BAY CAVE ESTATES. slope stabilization

	Standards	Preliminary Plan	1st Revision
Transportation	1. Impact on street system	N/A	
	2. Access & Circulation	N/A	
	4. Parking	N/A.	
Environmental	1. Preservation of Natural Features		
	2. Landscaping & Landscape Pres.	see Jeff.	
	3. Water Quality, Storm Water Mgt, Erosion Control	see DMP/Dave Sews.	
Public Infrastructure & Comm. Safety	1. Consistency with Master Plans	ok.	
Site Design	5. Historic Resources	N/A.	
	6. Exterior Lighting	N/A.	
	8. Signage and Wayfinding	N/A	
	9. Zoning Related Design Standards	N/A.	

MISSING:

City of Portland

Development Review Application

Planning Division Transmittal Form

Application Number: 2013-097 **Application Date:** 04/17/2013

CBL: 156 F006001 **Application Type:** Level I Site Alteration

Project Name: Slope Re-Construction - Back Cove Estates

Address: 1 BACK COVE ESTATES

Project Description: Reconstruction of a failed embankment. Original embankment slid down the hill and came to rest in and adjacent to Fallbrook.

Zoning: R3

Other Required Reviews:

- ☐ Traffic Movement
- ☐ Storm Water
- ☐ Subdivision
  # Lots _____
- ☐ Site Location
  # Unit _____
- ☐ 14-403 Streets
  # Units _____
- ☐ Flood Plain
- ☐ Shoreland
- ☐ Design Review
- ☐ Housing Replacement
- ☐ Historic Preservation
- ☐ Other:

Distribution List:

	Planner	Barbara Barhydt		**Parking**	John Peverada
	Zoning	Marge Schmuckal		**Design Review**	Alex Jaegerman
	Traffic Engineer	Tom Errico		**Corporation Counsel**	Danielle West-Chuhta
	Civil Engineer	David Senus		**Sanitary Sewer**	John Emerson
	Fire Department	Chris Pirone		**Inspections**	Tammy Munson
	City Arborist	Jeff Tarling		**Historic Preservation**	Deb Andrews
	Engineering	David Margolis-Pineo		**DRC Coordinator**	Phil DiPierro
				Outside Agency	

Comments needed by 4/24/2013

CITY OF PORTLAND
DEPARTMENT OF PLANNING & URBAN DEVELOPMENT
389 Congress Street
Portland, Maine 04101

INVOICE FOR FEES

Application No:	2013-097	**Applicant:**	
Project Name:	Slope Re-Construction - Back Cove	**Location:**	1 BACK COVE ESTATES
CBL:	156 F006001	**Development Type:**	Level I Site Alteration
Invoice Date:	04/17/2013		

Previous Balance	-	Payment Received	+	Current Fees	-	Current Payment	=	Total Due	Payment Due Date
$0.00		$0.00		$200.00		$200.00		$0.00	On Receipt

Previous Balance **$0.00**

Fee Description	Qty	Fee/Deposit Charge
Level I Site Alteration	1	$200.00
		$200.00

Total Current Fees:	+	**$200.00**
Total Current Payments:	-	**$200.00**
Amount Due Now:		**$0.00**

CBL 156 F006001
Bill to: R & E Associates
107 York Street
Kennebunk, ME 04043

Application No: 2013097
Invoice Date: 04/17/2013
Invoice No: 40795
Total Amt Due: $0.00
Payment Amount: $200.00

Make checks payable to the ***City of Portland,*** ATTN: Jennifer Yeaton, 4th Floor, 389 Congress Street, Portland, ME 0410

PROJECT NAME: Back Cove Estates Slope Re-Construction

PROPOSED DEVELOPMENT ADDRESS:

Back Cove Estates Condominiums - Back Cove Estates Road, Portland, ME 04103

PROJECT DESCRIPTION:

Reconstruction of a failed embankment. Original embankment slid down hill and came to rest in and adjacent to Fall Brook.

CHART/BLOCK/LOT: 156-F-6 (156-F-5 add'l CBL)

CONTACT INFORMATION:

	Applicant's Contact for electronic plans Name: Jeff Amos, P.E. e-mail: jeff@terradynconsultants.com work #: 926-5111
Applicant – must be owner, Lessee or Buyer Name: Back Cove Estates Condo. Association Business Name, if applicable: c/o R &E Associates Address: 107 York Street City/State : Kennebunk, ME Zip Code: 04043	**Applicant Contact Information** Work # 207-985-9740 Home# Cell # Fax# 207-985-0390 e-mail: reassoc@r-eassociates.com
Owner – (if different from Applicant) Name: Same Address: City/State : Zip Code:	**Owner Contact Information** Work # Home# Cell # Fax# e-mail:
Agent/ Representative Name: Patrick Martin, P.E. Address: 51 Back Cove Estates City/State : Portland, ME Zip Code: 04103	**Agent/Representative Contact information** Work # 207-274-2636 Cell # 207-485-5411 e-mail: patmartin3@earthlink.net
Billing Information Name: Back Cove Estates Condo. Association c/o R &E Associates Address: 107 York Street City/State : Kennebunk, ME Zip Code: 04043	**Billing Information** Work # 207-985-9740 Cell # Fax# 207-985-0390 e-mail: reassoc@r-eassociates.com

Engineer	Engineer Contact Information
Name: Jeff Amos, P.E. Address: P.O. Box 339 City/State : New Gloucester, ME Zip Code: 04260	Work # 926-5111 Cell # 272-7571 Fax# 221-1317 e-mail: jeff@terradynconsultants.com
Surveyor	**Surveyor Contact Information**
Name: Wayne Wood & Co Address: 30 Wood Drive City/State : Gray, ME Zip Code: 04039	Work # 657-3330 Cell # Fax# e-mail: wtwco@securespeed.net

APPLICATION FEES:

Check all reviews that apply. Payment may be made by Check or Cash addressed to the City of Portland.

Level I Site Alteration Site Plan _X_ Application Fee ($200.00) The City invoices separately for the following: • Notices ($.75 each) • Legal Ad (% of total Ad) • Planning Review ($40.00 hour) • Legal Review ($75.00 hour) Third party review is assessed separately.	**Fees Paid** (office use) ——

Performance Guarantee: A performance guarantee is required to cover all public and private site improvements.	Required
Inspection Fee: An inspection fee of 2% of the performance guarantee is due prior to the release of permits	2% of the performance guarantee

Application Check List

Refer to the application checklist for a detailed list of submittal requirements.

All site plans and written application materials must be uploaded to a website for review. At the time of application, instructions for uploading the plans will be provided to the applicant. One paper set of the plans, written materials and application fee must be submitted to the Planning Division Office to start the review process.

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14), which includes the Subdivision Ordinance (Section 14-491) and the Site Plan Ordinance (Section 14-521).

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Site Plan review only, a Performance Guarantee, Inspection Fee, Building Permit Application and associated fees will be required prior to construction.

Signature of Applicant:	**Date:**
Patricia M Martin	4/8/2013

Please refer to Article V, Site Plan of the City of Portland Land Use Code for detailed information concerning the City's site plan review process, thresholds and standards. Should you have any questions regarding the submittal requirements or any other aspect of the site plan review process, please contact the Planning Division.

PROJECT DATA

The following information is required where applicable, in order complete the application

Total Site Area	12.6 Ac	~~sq. ft.~~
Proposed Total Disturbed Area of the Site	3,650	sq. ft.
IMPERVIOUS SURFACE AREA		
• Proposed Total Paved Area	n/a	sq. ft.
• Existing Total Impervious Area	n/a	sq. ft.
• Proposed Total Impervious Area	n/a	sq. ft.
• Proposed Impervious Net Change	0	sq. ft.
PARKING SPACES		
• Existing Number of Parking Spaces	n/a	
• Proposed Number of Parking Spaces	n/a	
TOTAL Number of Parking Spaces	n/a	

General Submittal Requirements – Level I Site Alteration

Applicant Checklist	Planner Checklist	Number of Paper Copies	Submittal Requirement
☒	☐	1	Completed application form.
☒	☐	1	Application fees.
☒	☐	1	Written description of project.
☒	☐	1	Evidence of right, title and interest.
☒	☐	1	Copies of required state and/or federal permits.
☒	☐	1	Written assessment of proposed project's compliance with applicable zoning. requirements.
☒ - N/A	☐	1	Written description of existing and proposed easements or other burdens.
☒- N/A	☐	1	Written requests for waivers from individual site plan and/or technical standards.
☒	☐	1	Evidence of financial and technical capacity.

Site Plans and Boundary Survey Requirements – Level I Site Alteration

Applicant Checklist	Planner Checklist	Number of Copies	Submittal Requirement
☒	☐	1	Boundary Survey meeting the requirements of Section 13 of the City of Portland Technical Manual.
☒	☐	1	**Site Plan Including the following:**
☒	☐		▪ *Existing structures with distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone)*
☒	☐		▪ *Location and dimension of existing and proposed paved areas.*
☒	☐		▪ *Location and details of proposed infrastructure improvements (e.g. - curb and sidewalk improvements, utility connections, roadway improvements).*
☒	☐		▪ *Identification of and proposed protection measures for any significant natural features on the site (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features listed in Section 14-526 (b)1. of the Land Use Code.*
☒ - N/A	☐		▪ *Details of proposed pier rehabilitation (Shoreland areas only).*
☒	☐		▪ *Existing utilities.*
☒	☐		▪ *Existing and proposed grading and contours.*
☒	☐		▪ *Proposed stormwater management and erosion controls.*
☒	☐		▪ *Total area and limits of proposed land disturbance.*
☒	☐		▪ *Existing vegetation to be preserved and proposed site landscaping.*
☒ - N/A	☐		▪ *Existing and proposed easements or public or private rights of way.*

Activity Description

Introduction

Back Cove Estates is a 66 unit condominium development that is located on Ocean Avenue in Portland, Maine. It is bounded to the east by Fall Brook, to the west by an un-named stream, to the south by Baxter Boulevard and to the north by Ocean Avenue. The Back Cove Estates Condominium Association is seeking a Level 1 – Site Alteration permit to repair the damage caused when a portion of the embankment that is located adjacent to the eastern loop of their access road slid down to the edge of Fall Brook. If not repaired & properly stabilized, the area of the slide will continue to grow, potentially threatening a portion of Back Cove Estates Road. The portion of Fall Brook that is directly adjacent to the project is tidally influenced. According to the attached high tide data, the highest annual tide elevation for Portland is 7.4'. The stream bed adjacent to the project is approximately at elevation 6'.

Back Cove Estates is located just above Back Cove. The development is located between Ocean Ave, Baxter Blvd & two streams. The project area is shown on the above aerial photo.

Existing Conditions

Back Cove Estates Road forms a loop through the property. Along the eastern side of the loop road - nearest to Unit #61- part of the embankment has washed down the slope, leaving a deposit of soft clay and top soil along the edge of Fall Brook. The slope failure is located approximately 15' east of the access road. A 6'-8' tall nearly vertical face has marks the beginning of the slide plane. The slide area is approximately 20' wide nearest to the access road and widens as it nears the brook. Another slide appears likely in the area directly to the south. A crack has formed that emanates out of the southern edge of the exposed vertical face. The crack runs away from the failure line at about a 30 degree angle and leads down the embankment toward the brook. We have labeled this crack on the attached plans as the location of potential secondary failure.

S.W.Cole performed a geotechnical reconnaissance to determine the likely cause of the embankment failure. They examined the embankment and performed a series of hand borings. They determined that the original embankment had a small layer of organics on top of a 5' deep layer of soft clay that was resting on top of a layer of hard clay. They concluded that the slope failure was likely due to toe erosion that undermined the stream bank and caused a shallow surface failure.

A 6'-8' high vertical face is located along the upper rim of the slide.

The slide plane formed at the interface of the soft & hard clay. They recommended that the area be repaired by armoring the stream bank with a boulder wall, removing the slide debris to expose undisturbed native clay and keying in a compacted granular borrow fill to re-establish the slope. A copy of their report is attached to this section.

The existing edge of roadway is approximately at elevation 35. There is grassed shoulder that is about 15' wide that drops away from the road at an approximate grade of 10%-15%. From there, the embankment slopes steeply down to the edge of the stream. The embankment is approximately 60' long and is generally sloped between 2:1

to 2.5:1 as it drops from elevation 33' down to elevation 7. The embankment failure is located at the interface of the shoulder and embankment.

Proposed Improvements

We propose to reconstruct the slope to its approximate original grade. The soft clay and organic slide material will be removed. The underlying stiff clay will be terraced to allow for the stable installation of granular fill material. The granular fill will allow for proper compaction of the reconstructed slope.

Riprap will be placed along the edge of Fall Brook and will extend up to the 100 year flood elevation. The riprap directly adjacent to the brook will have a large diameter, typically 2'-3'. We propose large boulders in this area for two reasons. First, the large stones will help to support the newly constructed embankment. Secondly, the shore of Fall Brook has an approximately 2' high vertical face in the area adjacent to the project area. The large rocks –being the same height as the existing vertical face- will allow for an easy transition back into the natural stream bed at the edge of the riprap.

The improvements have been limited to the areas necessary to re-construct the slide area and to address the secondary failure area, hopefully before it happens. The riprap boulders will be placed along approximately 78' of Fall Brook. The actual bed of Fall Brook will not be disturbed. A wetland delineation was not conducted since the majority of the material adjacent to the stream is comprised of topsoil that was deposited from the slope failure. The area that is not covered from slide material is located downstream of the potential secondary slide and will be covered once the hillside eventually collapses.

The riprap will be constructed at a 2:1 slope. Above that, a vegetated slope will extend to top of the hill. It will transition from 2:1 to 3:1 as it extends from the riprap to the grassy shoulder. The vegetated slope will be stabilized by a permanent erosion control mat.

TERRADYN
CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

April 9, 2013

Mr. Phil DiPierro, Development Review Coordinator
City of Portland
Planning & Urban Development Department
389 Congress St.
Room 308
Portland, ME 04101

Level 1 – Site Alteration Application: Back Cove Estates Condominiums Slope Failure

On behalf of Back Cove Estates Condominium Association, we are pleased to submit the Level 1 – Site Alteration Application for the repair of an eroded slope. We previously provided the City with a copy of the associated NRPA Application.

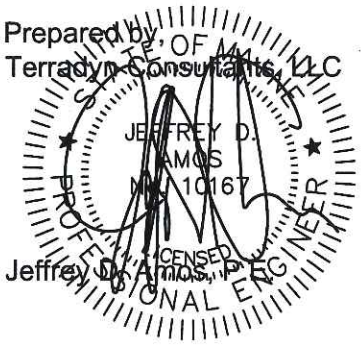
The association plans to repair the damage to a portion of the embankment that is located adjacent to the eastern loop of their access road slid down to the edge of Fall Brook. This area is badly eroded and showing signs of worsening. If not repaired & properly stabilized, the area of the slide will continue to grow, potentially threatening a portion of Back Cove Estates Road. We believe that the repair is necessary and in compliance with the zoning requirements. The project is located directly adjacent to Fall Brook. Therefore a NRPA permit will be needed from MDEP prior to starting construction. We believe that MDEP will issue the permit within two weeks.

The following items are attached as required by the Level 1 – Site Alteration Application procedures:

- Level 1 – Site Alteration Application
- Application Fee ($200)
- Activity Description
- Copy of NRPA Permit (previously submitted)
- Cost Estimate
- Bank Statement of Back Cove Estates Reserve Account (Financial Capacity)
- Survey of project area
- Evidence of right, title and interest (copy of legal description of land from Back Cove Estates Declaration of Covenants)
- Geotechnical Reconnaissance Report prepared by S.W. Cole Engineering, Inc.
- Construction Plans
- Landscaping Plan

We are hopeful that we have provided you with the necessary information for you to review and approve this application. Thank you for your consideration, and please call me if you have any questions as you review the enclosed plans and information.

Prepared by:
Terradyn Consultants, LLC



Jeffrey D. Amos, P.E.

TERRADYN CONSULTANTS, LLC
P.O. Box 339
New Gloucester, ME 04260
(207) 926-5111

JOB 1222 Back Cove Estates
SHEET NO. 1 OF 1
CALCULATED BY JDA DATE 2/1/2013

ENGINEER'S COST ESTIMATE - Phase 1

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	CLEAR, GRUB, AND SITE PREPARATION (WOODED AREA)	ALLOW	$5,000.00	1	$5,000.00
2	COMMON EXCAVATION WITHIN SITE AREA	CY	$8.00	480	$3,840.00
3	MDOT COMMON BORROW	CY	$12.00	690	$8,280.00
4	SILTATION FENCE	LF	$5.00	100	$500.00
5	NAG DS 150 EC BLANKET	SY	$9.00	342	$3,078.00
6	MIRAFI 180N GEOTEXTILE	SY	$9.00	445	$4,005.00
7	RIPRAP D12	CY	$50.00	30	$1,500.00
8	RIPRAP D30	CY	$100.00	26	$2,600.00
9	LOAM	CY	$20.00	38	$760.00
10	LANDSCAPING	ALLOW	$5,000.00	1	$5,000.00

SITE WORK SUBTOTAL=	$34,563.00
10% CONTINGENCY=	$3,456.30
TOTAL=	$38,019.30

NOTES

1. THE OPINION OF PROBABLE CONSTRUCTION COST IS BASED UPON THE GRADING & EROSION CONTROL PLAN, DATED NOVEMBER 2012, AS PREPARED BY TERRADYN CONSULTANTS, LLC. THIS OPINION OF COST IS IN NO WAY, IMPLIED OR EXPRESSED OTHERWISE, AS A WARRANTEE THAT THE PROJECT CAN BE CONSTRUCTED FOR THE ABOVE COSTS. CONTRACTOR WORKLOAD, LABOR AVAILABILITY, AND MARKET CLIMATE ARE FACTORS THAT THIS OPINION OF COST CANNOT AND DOES NOT ATTEMPT TO QUANTIFY. THIS OPINION OF PROBABLE CONSTRUCTION COST IS LIMITED TO THE WORK INVOLVED TO CONSTRUCT THE PROJECT AND DOES NOT INCLUDE COST ASSOCIATED WITH THE ENGINEERING DESIGN FEES, LAND ACQUISITION, LEGAL FEES, PERMITING FEES, TESTING SERVICES OR CONSTRUCTION PHASE SERVICES.

DECLARATION OF BACK COVE ESTATES CONDOMINIUM

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TABLE OF CONTENTS

****

Exhibit A
Legal Description of Land

A certain lot or parcel of land, with the buildings thereon, situated on the southerly side of Ocean Avenue in the City of Portland, County of Cumberland and State of Maine bounded and described as follows:

Beginning on the southerly sideline of said Ocean Avenue at the intersection with the westerly line of land conveyed to Back Cove Housing Associates by John S. Stilphen et. al. by deed dated May 25, 1984 and recorded in the Cumberland County Registry of Deeds in Book 6459, page 95;

Thence, from said point of beginning, easterly along the southerly sideline of said Ocean Avenue along a curve to the right having a radius of 690.20 feet an arc distance of 300.14 feet;

Thence South 85° 00' 45" East along said Ocean Avenue a distance of 138.37 feet;

Thence South 71° 15' 44" East along said Ocean Avenue a distance of 3.20 feet;

Thence South 83° 25' 44" East along said Ocean Avenue a distance of 152.02 feet;

Thence North 80° 07' 46" East along said Ocean Avenue a distance of 28.50 feet to the center of Fall Brook;

Thence southerly along Fall Brook a distance of 1050 feet more or less to the northerly sideline of Baxter Boulevard;

Thence by the following courses and distances along said Baxter Boulevard:

South 89° 09' 47" West a distance of 48 feet;

South 00° 50' 13" East a distance of 15.00 feet;

South 89° 09' 47" West a distance of 35.19 feet;

Westerly along a curve to the left having a radius of 348.81 feet an arc length of 175.28 feet;

South 60° 28' 12" West a distance of 285.80 feet;

North 29° 31' 48" West a distance of 15.00 feet;

South 60° 28' 12" West a distance of 46.51 feet to land of the Portland Water District;

Thence North 29° 31' 48" West along said land of Portland Water District a distance of 17 feet more or less to the center of Berry Creek;

Thence northerly along said Berry Creek a distance of 960 feet more or less to said westerly line of land conveyed to Back Cove Housing Associates by John S. Stilphen et al.;

Thence North 41° 26' 23" West along said westerly line 380.76 feet to the point of beginning.

Containing 12.6 acres more or less. Reference is made to survey dated Sept. 20, 2004 by Owen Haskell, Inc. (Job #2004-176 P) for a further description of the above described premises. Meaning and intending to convey and hereby conveying the same premises as previously described in a deed from Back Cove Housing Associates dated December 15, 2003 and recorded in the Cumberland County Registry of Deeds in Book 20684, Page 301 as supplemented in Book 20768, Page 131 and in Book 21816, Page 155.

Subject to:

(a) Easements and rights conveyed to Portland Water District by St. Ignatius Residence of the Society of Jesus dated June 4, 1975 and recorded in said Registry of Deeds in Book 3814, Page 47;

(b) Easements and rights conveyed to Portland Water District by Back Cove Housing Associates acknowledged May 25, 1984 and recorded in said Registry of Deeds in Book 6459, Page 100;

(c) An easement and rights conveyed to Central Maine Power Company by Back Cove Housing Associates dated October 29, 1984 and recorded in said Registry of Deeds in Book 6727, Page 342;

(d) Easements taken by the State of Maine for highway purposes by instrument dated November 25, 1980 and recorded in said Registry of Deeds in Book 4708, Page 279, if applicable;

(e) Terms and conditions of a Notice of Layout and Taking in favor of the State of Maine by its Department of Transportation dated November 25, 1980, recorded in said Registry of Deeds in Book 4708, Page 279, if applicable;

(f) Rights of the public and others in and to the bottom, tidal flats and shores of said brooks; and

(g) State of facts as shown on Plan of Back Cove Estates in Portland, Maine, Ocean Avenue for Back Cove Housing Associates recorded in said R Registry of Deeds in Plan Book 142, Page 22.

File: 2004-176-02-JWS

12-0974

October 18, 2012

Terradyn Consultants, LLC
Attention: Jeff Amos, P.E.
111 Elderberry Lane
New Gloucester, ME 04260

Subject: Geotechnical Consultation Services
Back Cove Estates Condominiums
East Road Slope Repair
Portland, Maine

Dear Jeff:

In accordance with our Agreement, dated October 10, 2012, we have completed a geotechnical reconnaissance of the subject project. This report presents our findings and its contents are subject to the limitations set forth in Attachment A.

Our scope of services included a site visit, two shallow hand borings and preparation of this report. The purpose of our work was to observe visible conditions in order to provide an opinion of the likely causative agents for a slope failure along the East Road of the Back Cove Estates Condominiums and to assist in development of general concepts for slope repair.

SITE AND SUBSURFACE CONDITIONS

The site is located along the west bank of Fall Brook along the East Road of the Back Cove Condominiums off Ocean Avenue in Portland, Maine. The slope failure area is generally bounded by Fall Brook at the toe (east), East Road at the head (west) and undisturbed, vegetated, slope areas to the north and south. The site area and existing topography are shown on the "Exploration Location Plan" attached as Sheet 1.

Surficial Conditions: The stream bed conditions vary from sand and gravel with boulders to exposed bedrock, see photos attached as Sheet 2. The stream bank conditions vary from exposed bedrock to native clay, see photos attached as Sheet 3. The soils in the

slope failure area (slide area) consist of disturbed clay with organics (slide debris) overlying a relatively stiff undisturbed native clay exposed at the head of the slide area, see photos attached as Sheet 4. We did not observe tension cracking or faulting upslope of the head scarp of the slide area.

Subsurface Conditions: We completed two shallow hand borings (HB-1 and HB-2). HB-1 was completed at the toe of the slide area and encountered about 2 feet of slide debris (disturbed clay and organics) overlying a refusal surface interpreted to be wood or boulders. HB-2 was completed about mid-slope in the slide area and encountered about 5 feet of slide debris overlying undisturbed, native stiff clay. HB-2 was terminated at a depth of 7 feet in the undisturbed, native stiff clay. Logs of the explorations are attached as Sheet 5. A key to the notes and symbols used on the logs is attached as Sheet 6.

We completed hand vane shear tests in HB-2 at depths of 2.0, 2.8, 3.7, 5.3 and 7.0 feet to assess the in-situ shear strength of the slide debris and undisturbed native stiff clay. Vane shear testing in the slide debris yielded in-situ shear strengths ranging from 2.0 to 0.63 ksf. Vane shear testing in the undisturbed native stiff clay yielded in-situ shear strengths ranging from 1.42 to 1.46 ksf (undisturbed) and 0.63 to 0.68 ksf (remolded/disturbed). Vane shear test results are shown on the logs.

Groundwater Conditions: Free groundwater was not encountered in the explorations nor did we observe visible evidence of water bearing strata exiting the slope. Groundwater is likely level with water levels in the stream.

CONCLUSIONS AND RECOMMENDATIONS

Based upon visual observations and subsurface findings at the hand boring locations, the slide plane of the failure area appeared to be relatively shallow and on the order of 5 feet below the surface of the slide debris. The stream bank upstream and downstream of the failure area consists of erodible native clay and the stream bed consists of relatively stable sand and gravel or bedrock. Considering the visible surface conditions and subsurface findings, it is our opinion the slope failure was likely due to toe erosion that undermined the stream bank and caused a shallow surface failure.

We recommend the slide area be repaired by armoring the stream bank with a boulder wall, removing the slide debris to expose undisturbed native clay and keying in a

compacted granular borrow fill to re-establish the slope. The surface of the slope should be covered with a loam and seed that is protected by a turf reinforcement mat until a root mass of vegetation is established. We also recommend creating a landscape berm at the head of the slope to divert runoff around the repaired slope area. Conceptual Slope Repair details are illustrated on Sheet 1.

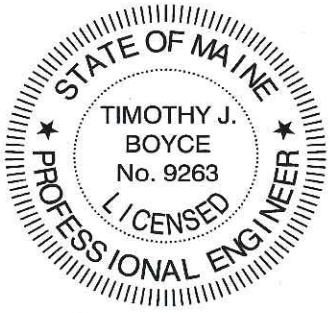
The conceptual slope repair details presented on Sheet 1 are provided for permitting purposes only and are not developed for bidding nor for construction. S.W.COLE ENGINEERING, INC should be engaged to help develop construction documents for slope repair, solicit and evaluate contractor proposals for slope repair and observe slope repair activities.

CLOSURE

It has been a pleasure to be of assistance to you with this phase of the project. If you have any questions, please do not hesitate to call.

Sincerely,

S.W.COLE ENGINEERING, INC.



Timothy J. Boyce, P.E.
Senior Geotechnical Engineer

TJB:rec

Enc (7)

Attachment A
Limitations

This report has been prepared for the exclusive use of Terradyn Consultants, LLC for specific application to the Proposed Slope Repair of East Road in the Back Cove Estates Condominiums off Ocean Avenue in Portland, Maine. S.W.COLE ENGINEERING, INC. has endeavored to conduct the work in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

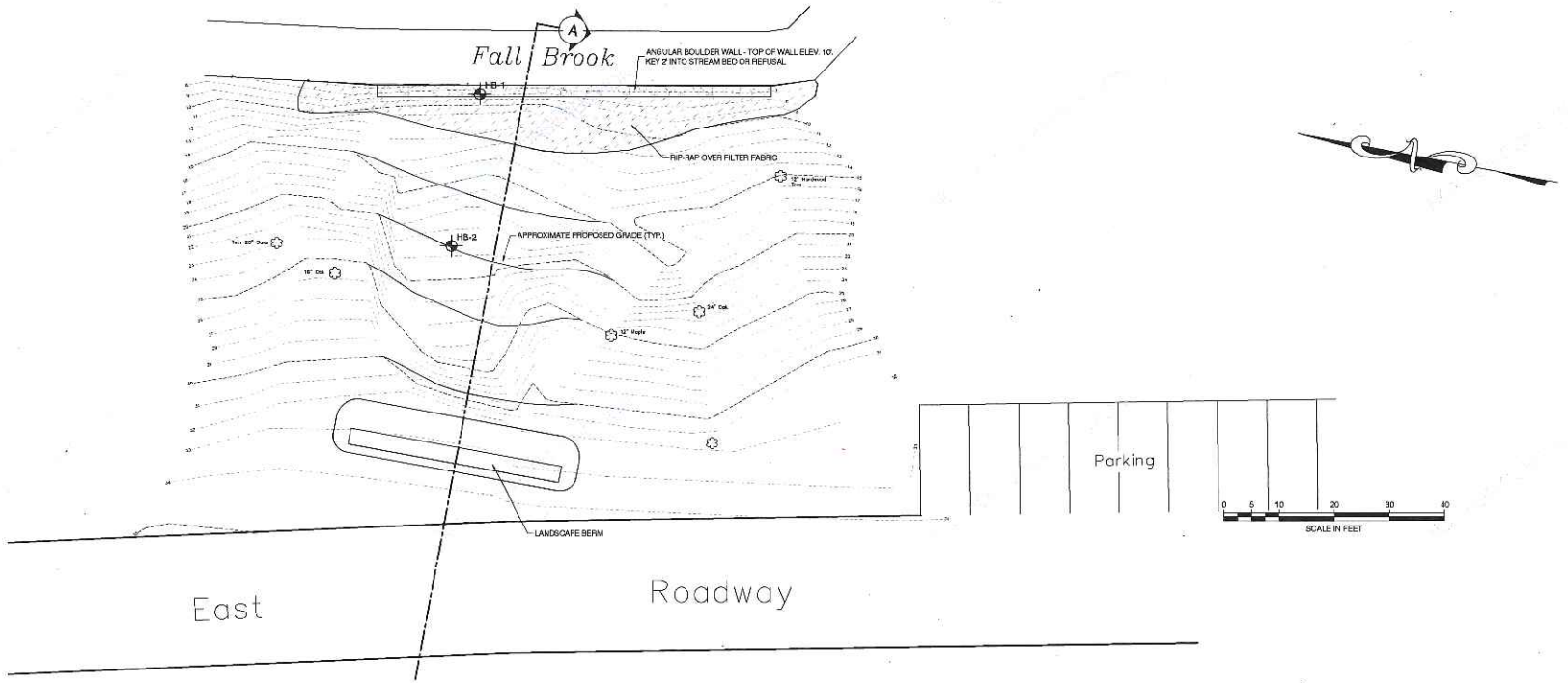
The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

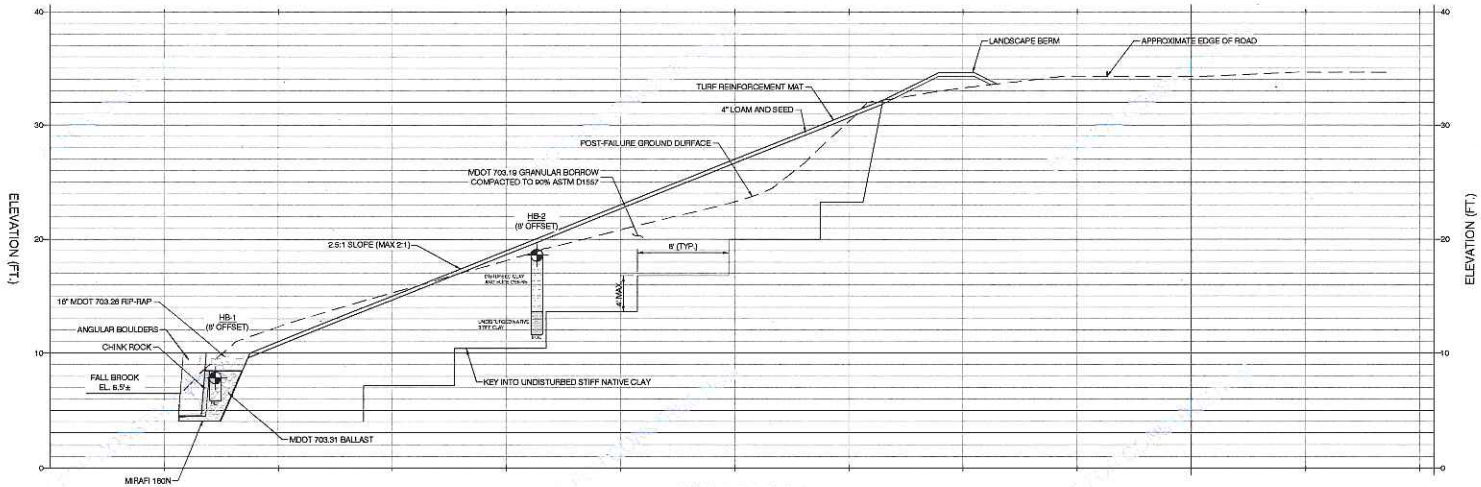
Our assessment and the recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE ENGINEERING, INC.'s scope of work has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE ENGINEERING, INC. should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE ENGINEERING, INC.





TYPICAL SLOPE SECTION - A
SCALE: 1"=5'

LEGEND:

APPROXIMATE HAND BORING LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A 1"=10' SCALE PLAN OF THE SITE ENTITLED "EXISTING TOPOGRAPHIC SURVEY," PREPARED BY WAYNE T. WOOD & CO., DATED OCTOBER 2012.
2. THE HAND BORINGS WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM EXISTING SITE FEATURES.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S.W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND TO ILLUSTRATE A CONCEPTUAL SLOPE REPAIR AND IS NOT TO BE USED FOR CONSTRUCTION.

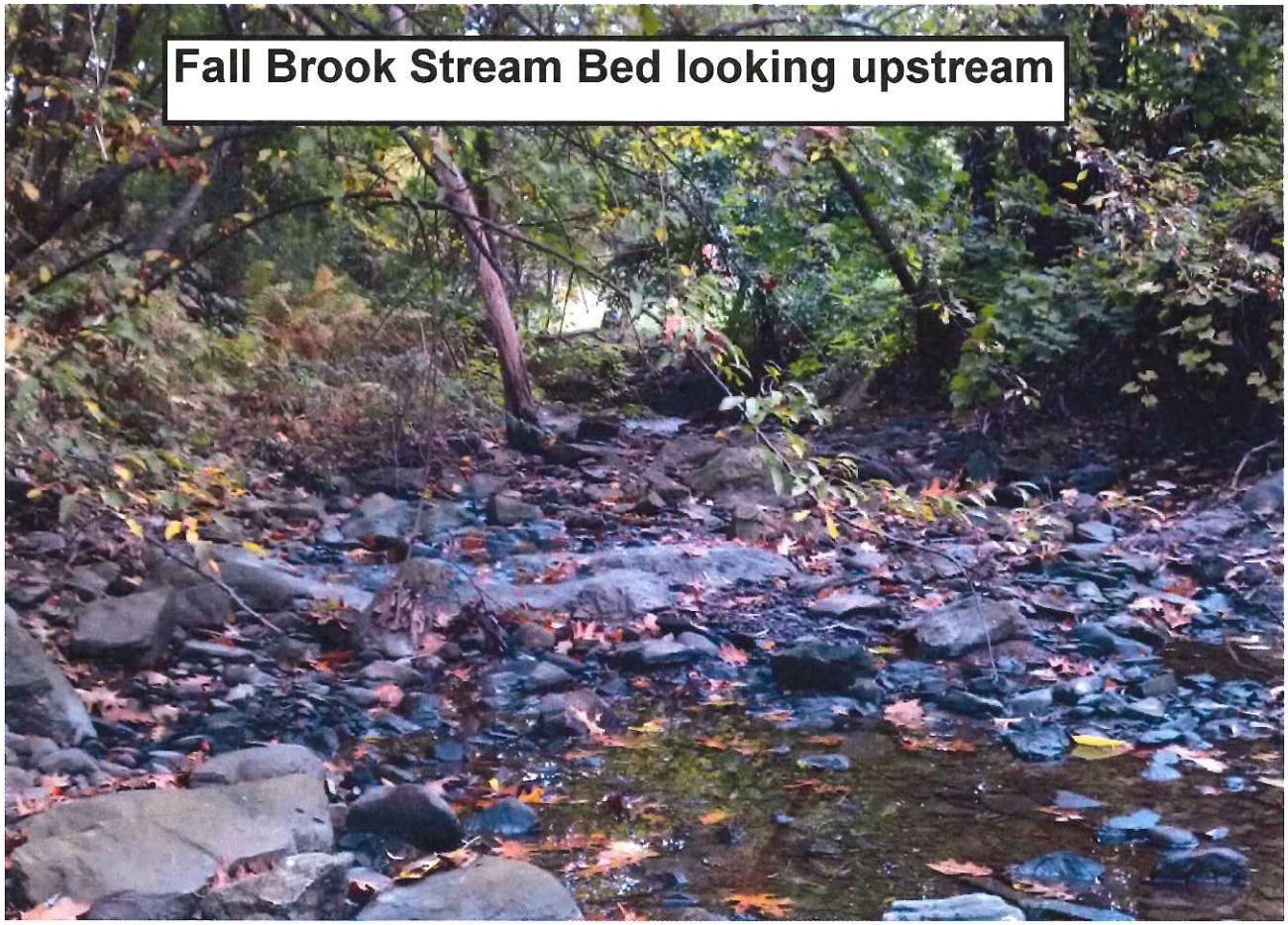
S.W. COLE ENGINEERING, INC.

TERRADYN CONSULTANTS, LLC

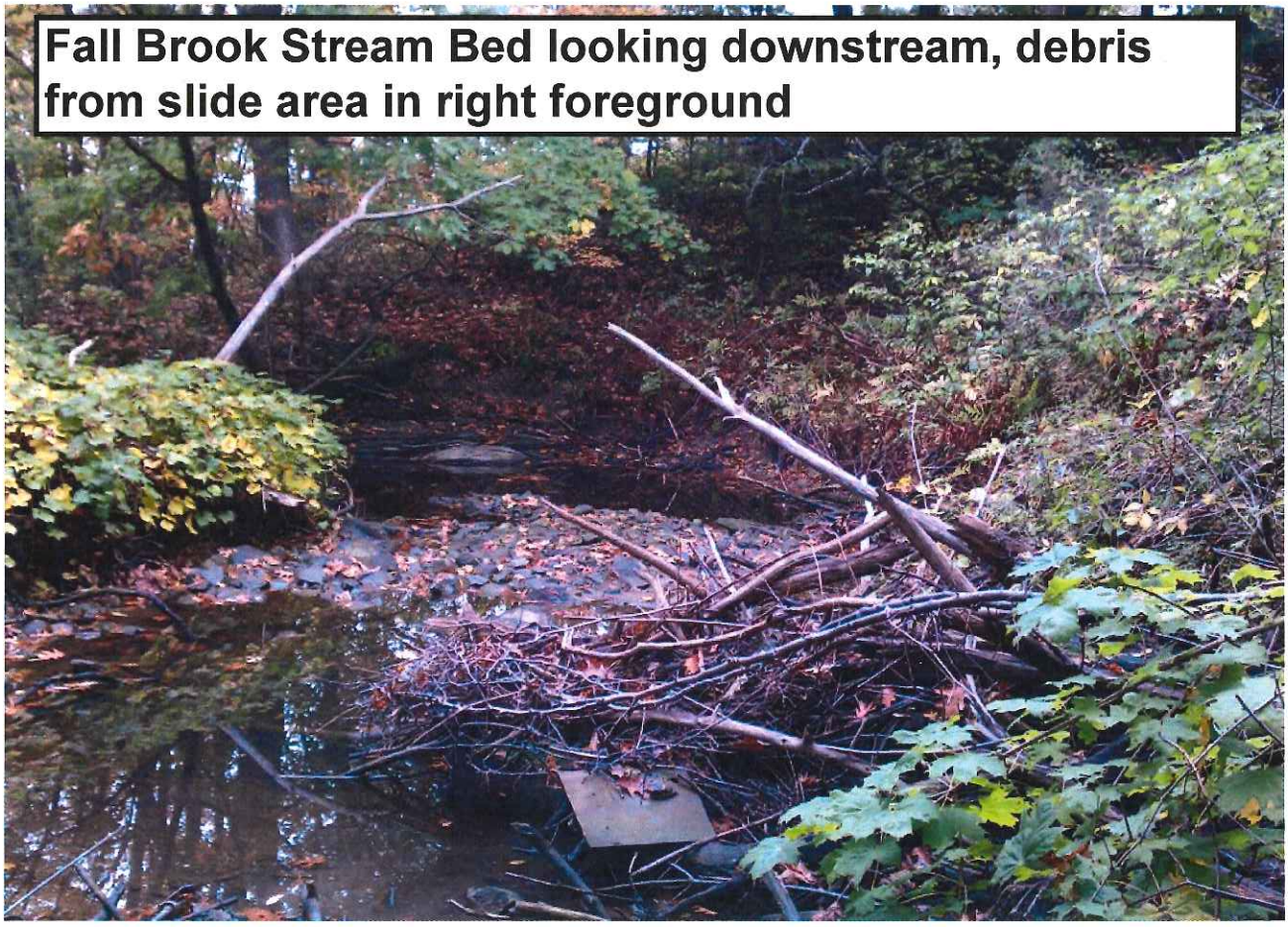
EXPLORATION LOCATION PLAN AND CONCEPTUAL SLOPE REPAIR

BACK COVE ESTATES
EAST ROAD
PORTLAND, MAINE

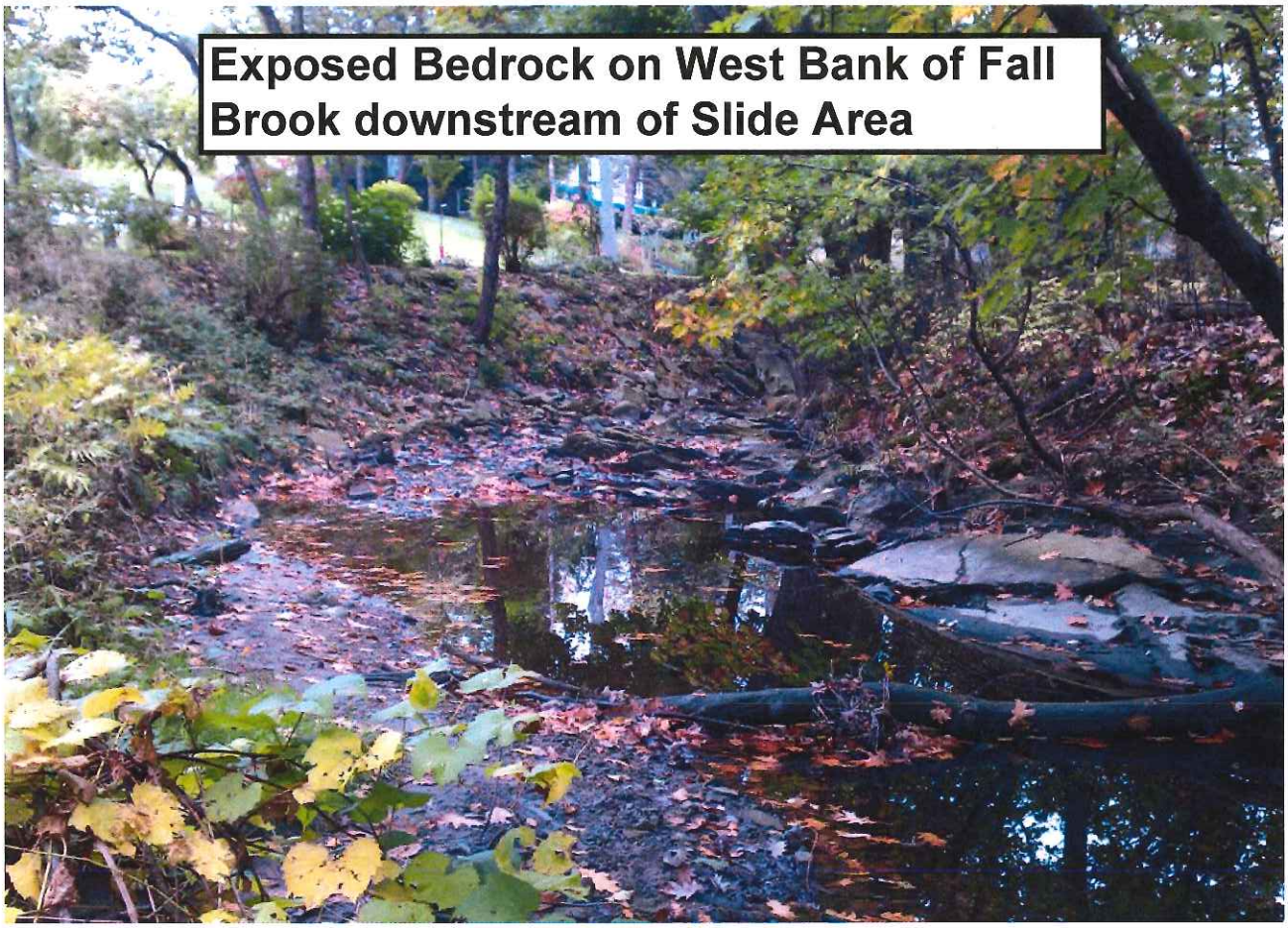
Job No.:	12-0974	Scale:	As Noted
Date:	10/18/2012	Sheet:	1



Fall Brook Stream Bed looking upstream



Fall Brook Stream Bed looking downstream, debris from slide area in right foreground



Exposed Bedrock on West Bank of Fall Brook downstream of Slide Area

Exposed Undisturbed Native Clay just downstream of Slide Area

Head of Slide Area, East Road Above

Toe of Slide Area, West Bank of Fall Brook

S.W.COLE ENGINEERING, INC.

HAND BORING LOGS

PROJECT / CLIENT: Back Cove Estates, East Road Slope Repair / Terradyn Consultants, LLC

LOCATION: Ocean Avenue, Portland, Maine PROJECT NO. 12-0974

HAND BORING HB-1

DATE: 10-10-12 SURFACE ELEVATION: 8' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (IN)	STRATUM DESCRIPTION	TEST RESULTS
			DISTURBED OLIVE-BROWN SILTY CLAY WITH ORGANICS AND VEGETATION (SLIDE DEBRIS)	
			REFUSAL @ 2.0 FEET (PROBABLE WOOD OR BOULDER)	

COMPLETION DEPTH: 2.0' DEPTH TO WATER: FALL BROOK

HAND BORING HB-2

DATE: 10-10-12 SURFACE ELEVATION: 18' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (IN)	STRATUM DESCRIPTION	TEST RESULTS
			OLIVE-BROWN SILTY CLAY WITH ORGANICS AND VEGETATION (SLIDE DEBRIS)	
			~ DISTURBED ~	S_V = 2.0 ksf S_V = 0.63 ksf S_V = 0.63 ksf
		5.0'	<<<< INCREASED RESISTANCE TO PENETRATION / LIKELY SLIDE PLANE >>>>	
			UNDISTURBED, NATIVE OLIVE-BROWN SILTY CLAY ~ STIFF ~	S_V = 1.46 / 0.63 ksf S_V = 1.42 / 0.68 ksf
			BOTTOM OF EXPLORATION @ 7.0'	

COMPLETION DEPTH: 7.0' DEPTH TO WATER: FALL BROOK

KEY TO THE NOTES & SYMBOLS
Test Boring and Test Pit Explorations

All stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - based on laboratory unconfined compressive test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. based on pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass. RQD is computed from recovered core samples.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight
f	-	fines content (percent by weight passing U.S. No. 200 Sieve)

Description of Proportions:

0 to 5% TRACE
5 to 12% SOME
12 to 35% "Y"
35+% AND

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

Hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Site Plan review only, a Performance Guarantee, Inspection Fee, Building Permit Application and associated fees will be required prior to construction.

Signature of Applicant:	**Date:**
Patricia M Martin	4/8/2013

Please refer to Article V, Site Plan of the City of Portland Land Use Code for detailed information concerning the City's site plan review process, thresholds and standards. Should you have any questions regarding the submittal requirements or any other aspect of the site plan review process, please contact the Planning Division.

PROJECT DATA

The following information is required where applicable, in order complete the application

Total Site Area	12.6 Ac	~~sq. ft.~~
Proposed Total Disturbed Area of the Site	3,650	sq. ft.
IMPERVIOUS SURFACE AREA		
• Proposed Total Paved Area	n/a	sq. ft.
• Existing Total Impervious Area	n/a	sq. ft.
• Proposed Total Impervious Area	n/a	sq. ft.
• Proposed Impervious Net Change	0	sq. ft.
PARKING SPACES		
• Existing Number of Parking Spaces	n/a	
• Proposed Number of Parking Spaces	n/a	
TOTAL Number of Parking Spaces	n/a	

General Submittal Requirements – Level I Site Alteration

Applicant Checklist	Planner Checklist	Number of Paper Copies	Submittal Requirement
☒	☒	1	Completed application form.
☒	☒	1	Application fees.
☒	☒	1	Written description of project.
☒	☒	1	Evidence of right, title and interest.
☒	☒	1	Copies of required state and/or federal permits. N/A
☒	☐	1	Written assessment of proposed project's compliance with applicable zoning. requirements.
☒ - N/A	☐	1	Written description of existing and proposed easements or other burdens.
☒ - N/A	☐	1	Written requests for waivers from individual site plan and/or technical standards.
☒	☐	1	Evidence of financial and technical capacity.

Site Plans and Boundary Survey Requirements – Level I Site Alteration

Applicant Checklist	Planner Checklist	Number of Copies	Submittal Requirement
☒	☒	1	Boundary Survey meeting the requirements of Section 13 of the City of Portland Technical Manual.
☒	☐	1	**Site Plan Including the following:**
☒	☑		▪ *Existing structures with distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone)*
☒	☒		▪ *Location and dimension of existing and proposed paved areas.*
☒	☐ N/A		▪ *Location and details of proposed infrastructure improvements (e.g. - curb and sidewalk improvements, utility connections, roadway improvements).*
☒	☐		▪ *Identification of and proposed protection measures for any significant natural features on the site (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features listed in Section 14-526 (b)1. of the Land Use Code.*
☒ - N/A	☐ N/A		▪ *Details of proposed pier rehabilitation (Shoreland areas only).*
☒	☐ N/A		▪ *Existing utilities.*
☒	☒		▪ *Existing and proposed grading and contours.*
☒	☒		▪ *Proposed stormwater management and erosion controls.*
☒	☐		▪ *Total area and limits of proposed land disturbance.*
☒	☒		▪ *Existing vegetation to be preserved and proposed site landscaping.*
☒ - N/A	☒		▪ *Existing and proposed easements or public or private rights of way.*

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION
AUGUSTA, ME 04333

DEPARTMENT ORDER

IN THE MATTER OF

BACK COVE ESTATES HOMEOWNERS ASSOCIATION	) NATURAL RESOURCES PROTECTION ACT
Portland, Cumberland County	) SHORELINE STABILIZATION
EMBANKMENT REPAIR	) WATER QUALITY CERTIFICATION
L-25877-4D-A-N (approval)	) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S.A. Sections 480-A et seq. and Section 401 of the Federal Water Pollution Control Act, the Department of Environmental Protection has considered the application of BACK COVE ESTATES HOMEOWNERS ASSOCIATION with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. Summary: The applicant proposes to repair an eroded section of embankment adjacent to Fall Brook, which forms the eastern boundary of the project site. This section of Fall Brook is tidally-influenced; the highest annual tide (HAT) elevation for Portand is 7.4 feet and the stream bed adjacent to the proposed project site is approximately at elevation 6 feet. Back Cove Estates Road forms a loop through the parcel. Along the eastern edge of the loop road, a portion of the embankment failed and washed down the slope, depositing soft clay and topsoil along the edge of Fall Brook. The slide area is located approximately 15 feet east of the loop road and is approximately 20 feet wide near the road and widens as it approaches Fall Brook. The exposed vertical face is also exhibiting cracks that could lead to further failures.

The applicant proposes to reconstruct the slope to its approximate original grade, removing the soft clay and organic materials in the slide, terrace the underlying stiff clay, and add granular fill material, compacting it into the slope. The applicant also proposes to place riprap along the edge of Fall Brook that will extend up to the 100-year flood elevation. Larger riprap will be placed at the bottom near the stream and will be transitioned with smaller-diameter stone into the reconstructed slope face. Approximately 78 linear feet along the stream will be armored and, based on staff reconnaissance, the amount of floodplain wetland to be altered is approximately 334 square feet. The stream bed itself will not be altered. The riprap will be constructed at a 2:1 slope. Above the riprap, a vegetated slope will extend to the top of the embankment and will transition from a 2:1 slope to a 3:1 slope as it reaches the grassy shoulder of the loop road. The grassed slope will be stabilized with a permanent erosion control mat.

The proposed project is shown on a set of plans, the first of which is titled "Back Cove Estates Slope Re-Construction – Grading & Erosion Control Plan," prepared by Terradyn Consultants,

LLC and dated November 18, 2012, with a latest revision date of April 7, 2013. The project site is located on Ocean Avenue in the City of Portland.

B. Current Use of the Site: The site of the proposed project is an eroded embankment located between Fall Brook and the entrance road to Back Cove Estates condominiums.

2. EXISTING SCENIC, AESTHETIC, RECREATIONAL OR NAVIGATIONAL USES:

In accordance with Chapter 315, Assessing and Mitigating Impacts to Scenic and Aesthetic Uses, the applicant submitted a copy of the Department's Visual Evaluation Field Survey Checklist as Appendix A to the application along with a description of the property and the proposed project. The applicant also submitted several photographs of the proposed project site, including an aerial photograph. Department staff visited the project site on February 22, 2013 and on March 26, 2013.

The proposed project is located adjacent to Fall Brook, which is not a scenic resource typically visited by the general public, in part, for the use, observation, enjoyment and appreciation of its natural and cultural visual qualities. The applicant submitted a planting plan, prepared by Fox Property Maintenance and dated March 26, 2013, that specifies tree and shrub plantings to reduce the visibility of the reconstructed slope. The planting plan calls for the installation of a mix of white pines, red oaks, swamp white oaks, maple leaf viburnum, and gray dogwoods. The applicant must monitor the plantings and the plantings must be replaced or maintained as necessary to achieve 85% survival after one full growing season.

The proposed project was evaluated using the Department's Visual Impact Assessment Matrix and was found to have an acceptable potential visual impact rating. Based on the information submitted in the application, the visual impact rating and the site visits, the Department determined that the location and scale of the proposed activity is compatible with the existing visual quality and landscape characteristics found within the viewshed of the scenic resource in the project area.

The Department did not identify any issues involving existing recreational and navigational uses.

The Department finds that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses of the protected natural resource.

3. SOIL EROSION:

The applicant's Erosion Control Plan calls for the use of silt fence and erosion control blankets. At the Department's request, the applicant revised its Erosion Control Plan by adding a landscaped berm at the top of the slope to divert runoff around the embankment repair area, and a shallow riprap channel to convey surface flows to the bottom of the slope. An erosion control mix berm was also added as a secondary measure behind the silt fence.

The Department finds that the activity will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.