

	<b>FIELD REPORT</b>		File Number: 0422-113-00
	Project: Brighton Board Walk Landslide Evaluation		Date: June 8, 2015
600 DUPONT STREET BELLINGHAM, WA 98225 (360) 647-1510	Owner: Island County Public Works	Time of Arrival: 11:00am	Report Number: 5
	Location: Clinton, Washington	Time of Departure: 12:45 pm	Page: 1 of 3
Prepared by: Sean Cool, PE	Weather: Sunny, warm (70s)	Travel Time: 4 hrs	Permit Number:
Purpose of visit: Landslide Evaluation	Upon arrival to the site I assessed personal safety hazards: <input checked="" type="checkbox"/> Yes or <input type="checkbox"/> Referred to Site Safety Plan and Safety Tailgate if applicable Safety Hazards Were Addressed by : <input type="checkbox"/> Staying Alert to Construction and Equipment Hazards <input type="checkbox"/> Other (describe)		

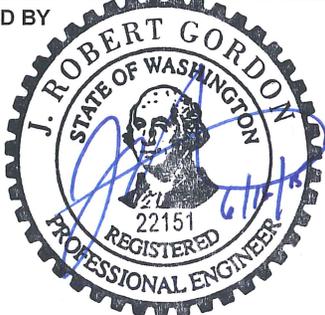
### Introduction

At the request of Connie Bowers with Island County Public Works (ICPW), GeoEngineers performed a site visit to provide continued periodic site observation related to past landslide activity at the Brighton Board Walk/Campers Row Walk Landslide just north of Clinton, Washington. The purpose of our visit was to evaluate any significant changes in site conditions that would affect the hazard to residents and property owners at the bottom of the slope in the vicinity of the landslide.

### Brighton Board Walk/Campers Row Walk

During our site visit today we walked the area from Campers Row Walk roadway in the south, to the north side of the active landslide on Brighton Board Walk. While on-site we met with Connie and local residents at the base of the slope north and south of the landslide area, including the owner of the residence at 6076 Brighton Board Walk, which was Yellow Tagged as a result of last winter's landslide activity. While on-site we made the following observations:

- We did not observe any substantive changes at the site since our last visit on March 14, 2015. Evidence that landslide movement had not progressed included sparse vegetation (primarily ferns and horsetail) beginning to grow in areas of the two primary slide chutes, no significant visible changes in surface topography, and no significant new deposition in the runout/fan area at the toe of the slide area (Photos 1 and 2 below). There was no visibly apparent change to the central possible slump block between the two landslide chutes.

<input type="radio"/> <b>THIS FIELD REPORT IS PRELIMINARY</b> A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.	FIELD REPRESENTATIVE 	DATE June 11, 2015
	<input checked="" type="radio"/> <b>THIS FIELD REPORT IS FINAL</b> A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	REVIEWED BY 

This report presents opinions formed as a result of our observation of activities relating to our services only. We rely on the contractor to comply with the plans and specification throughout the duration of the project irrespective of the presence of our representative. Our work does not include supervision or direction of the work of others. Our firm will not be responsible for job or site safety of others on this project. **DISCLAIMER:** Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Attachments: None

Distribution: Island County Public Works

- The upper portion of the landslide scarp is still near vertical, and possibly undercut slightly, with a mid-slope bench below the slide scarp. Based on review and comparison with past site photos, there was no readily apparent change to this area; however, it was difficult to evaluate directly because of site access.
- Surface water flow near the base of the slope, presumably from seepage at the slide face midway up the slope, had considerably slowed since our previous visits. Moderate flows were observed at both slide chutes. Slight seepage flow was also observed in areas at the base of the slope north and south of the slide area. Based on discussions with residents, these flows were generally consistent with historical observations, and typically continue throughout the summer.
- Based on discussed with residents north and south of the slide, there have been no observed indications of ongoing movement in the vicinity at the toe of the slope.

### Conclusions and Recommendations

We understand the neighborhood desires to clear some of the slide debris from the runout zone at the toe of the slope. We also understand the resident at 6076 Brighton Board Walk wishes to return to her home.

The conditions have been relatively stable since our last visit. The relatively dry spring weather and lower observed seepage volumes are indications of improved seasonal slope stability. Additionally, the reduced precipitation/storm events for the summer, lower soil moisture contents typically result in smaller failures that could occur, which would be less likely to result in a large flow-type failure and runout distances would be smaller.

Based on present conditions, we provide the following conclusions and recommendations:

- In our opinion, removal of debris from the base of the slope from the damage/destroyed residences at 6058 Campers Row Walk, 6066 Campers Row Walk and 6074 Brighton Board Walk, could be completed with relatively low risk to personnel. In our opinion, any debris removal should be completed with equipment operated from the shoreward side of the debris and the damaged structures should not be entered. Excavation should be limited to 20 feet from the toe of the slope. We recommend that the contractor establish a safety monitor during site activities. Since the material that will be removed consists of slope debris and/or residential materials impacted by the slide, we conclude that removal of this material will not adversely affect slope stability of this area.
- Performing a detailed assessment of the conditions in the immediate vicinity of the 6076 Brighton Board Walk residence is not within our scope for ICPW. While life safety at the residence in this environment cannot be assured, the residence appears to be at much lower risk based on present conditions observed, with a continued reduced risk at least during the summer months. Therefore, it is our opinion that allowing rehabilitation of the residence is reasonable at least for the summer months. We recommend that the owner have a more detailed slope assessment performed by a geotechnical engineer and determine if a reasonably effective and economic mitigation strategy and/or monitoring strategy can be identified for full-time inhabitation.
- Considering the site conditions and risk to this residence, we suggest that ICPW require a covenant between the applicant and Island County addressing living in a landslide hazard area similar to Section 11.02.170 of the County Code.

### Limitations

We have prepared this field report for use by ICPW and it may be made available to other interested parties. Our field report, findings, and recommendations are not applicable to other sites. The conclusions, recommendations,

and opinions presented in this field report are based on a visual observations during various site visits, our professional knowledge, judgment and experience. Our services were provided to assist in evaluating conditions associated with soil movement associated with a landslide. Our conclusions and recommendations are intended to help manage risk associated with the potential for future earth movements, drainage and/or erosion. However, all landslides are the result of dynamic and unpredictable conditions and involve risk. Favorable performance of conditions in the near term does not imply a certainty of long term performance, especially under conditions of adverse weather or seismic activity.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

We trust this field report serves your immediate needs. Please call if you have any questions.



Photo 1 - South landslide chute with new sparse vegetation.



Photo 2 - North landslide chute with new sparse vegetation and showing scarp at top of slope.