

re: Geotechnical Review - Preliminary SWMP Design
Phase 7 - Cardinal Creek Village
Old Montreal Road - Ottawa

to: Tamarack Homes - **Mr. Tim Lee** - tim.lee@tamarackhomes.com

date: March 18, 2022

file: PG1796-MEMO.211

As requested, Paterson Group (Paterson) prepared the current memorandum to provide a geotechnical review of the preliminary design drawings for the proposed stormwater management pond (SWMP) to be located within Phase 7 of the Cardinal Creek Village development in the City of Ottawa. The following sections detail our review findings and recommendations.

As part of the geotechnical review, Paterson reviewed the following drawings prepared by David Schaeffer Engineering Ltd. (DSEL) for the SWMP:

- Pond Inlet Profile - Cardinal Creek Village Phase 7 - Project No. 21-1263 - Sheet No. 1 - DRAFT - not dated.
- Pond Outlet Profile - Cardinal Creek Village Phase 7 - Project No. 21-1263 - Sheet No. 2 and 3 - DRAFT - not dated.
- South SWM Pond - Cardinal Creek Village Phase 7 - Project No. 21-1263 - Drawing No. 1 and 2 - dated February 2022.
- Overall Storm Drainage Plan - Cardinal Creek Village Phase 7 - Project No. 21-1263 - Drawing No. 3 - dated February 2022.

1.0 Background Information

It is understood based on discussion with the client and DSEL that detailed design of the proposed stormwater management pond (SWMP) has yet to be completed. However, Paterson was requested to complete a geotechnical review of the preliminary SWMP drawings in order to provide input on the design concept from a geotechnical perspective prior to completing the detailed design.

It is further understood that Geomorphix is expected to provide detailed channel design drawings to outline appropriate energy dissipation, flow dispersion, and long-term stability, from an environmental design perspective. It is expected that Paterson will review the detailed design prepared by Geomorphix prior to final approval and construction.

2.0 Geotechnical Review

Based on our review of the above mentioned drawings, it is understood that the side slopes of the proposed SWMP and associated spillway ranges between 3H:1V to 10H:1V, with 3 m safety benching at 10H:1V slope. The proposed pond bottom is expected to be at a geodetic elevation of 52.70 m.

Existing boreholes adjacent to the proposed pond location and bedrock contour mapping completed at the proposed pond location indicate the presence of a silty clay deposit overlaying bedrock. The bedrock surface at the location of the proposed pond is expected to fluctuate between an elevation of 52 to 42 m based on surrounding boreholes. It is important to note that the bedrock drops more than 300 m from the south end of the subject site to the north end. Reference should be made to Drawing PG1796-45 - bedrock contour plan attached to the current memorandum.

Based on our review of the preliminary SWMP design, there are no issues are expected with the pond design from a geotechnical perspective.

Recommendations

It is expected that the overburden within the footprint of the subject pond to consist mainly of silty clay deposit including the bottom of the pond and the excavation side slopes. However, if bedrock is encountered within the side slopes or the bottom of the pond, a clay liner may be required depending on the field observations of the water infiltration during excavation. The clay liner should be 300 mm thick of workable, dry brown silty clay and compacted to a minimum of 95% SPMDD with a sheepsfoot roller. Alternatively, an HDPE clay liner may be used on the side slopes. Further details will be discussed upon receiving the finalized SWMP design drawings.

We trust that this information satisfies your requirements.

Paterson Group Inc.



Nicole R.L. Patey, B.Eng.



Faisal I. Abou-Seido, P.Eng.

Attachments:

- Borehole Logs
- Drawing PG1796-XX - Bedrock Contour Plan

Paterson Group Inc.

Head Office
154 Colonnade Road South
Ottawa - Ontario - K2E 7J5
Tel: (613) 226-7381

Northern Office and Laboratory
63 Gibson Street
North Bay - Ontario - P1B 8Z4
Tel: (705) 472-5331

Ottawa Laboratory
28 Concourse Gate
Ottawa - Ontario - K2E 7T7
Tel: (613) 226-7381

DATUM Ground surface elevations provided by Stantec Geomatics Limited.

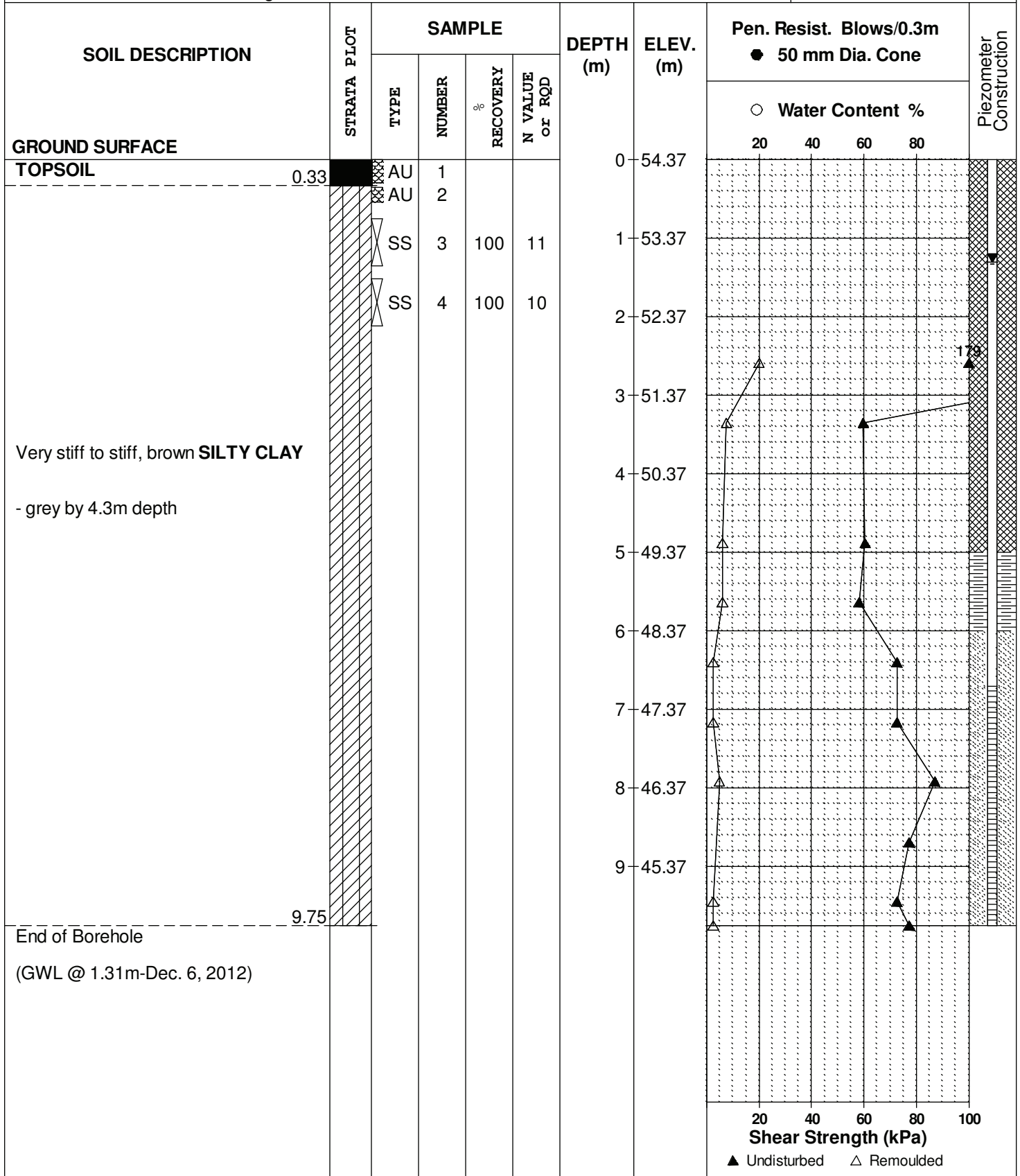
FILE NO. **PG1796**

REMARKS

HOLE NO. **BH42-12**

BORINGS BY CME 55 Power Auger

DATE November 5, 2012



(GWL @ 1.31m-Dec. 6, 2012)

DATUM Ground surface elevations provided by Stantec Geomatics Limited.

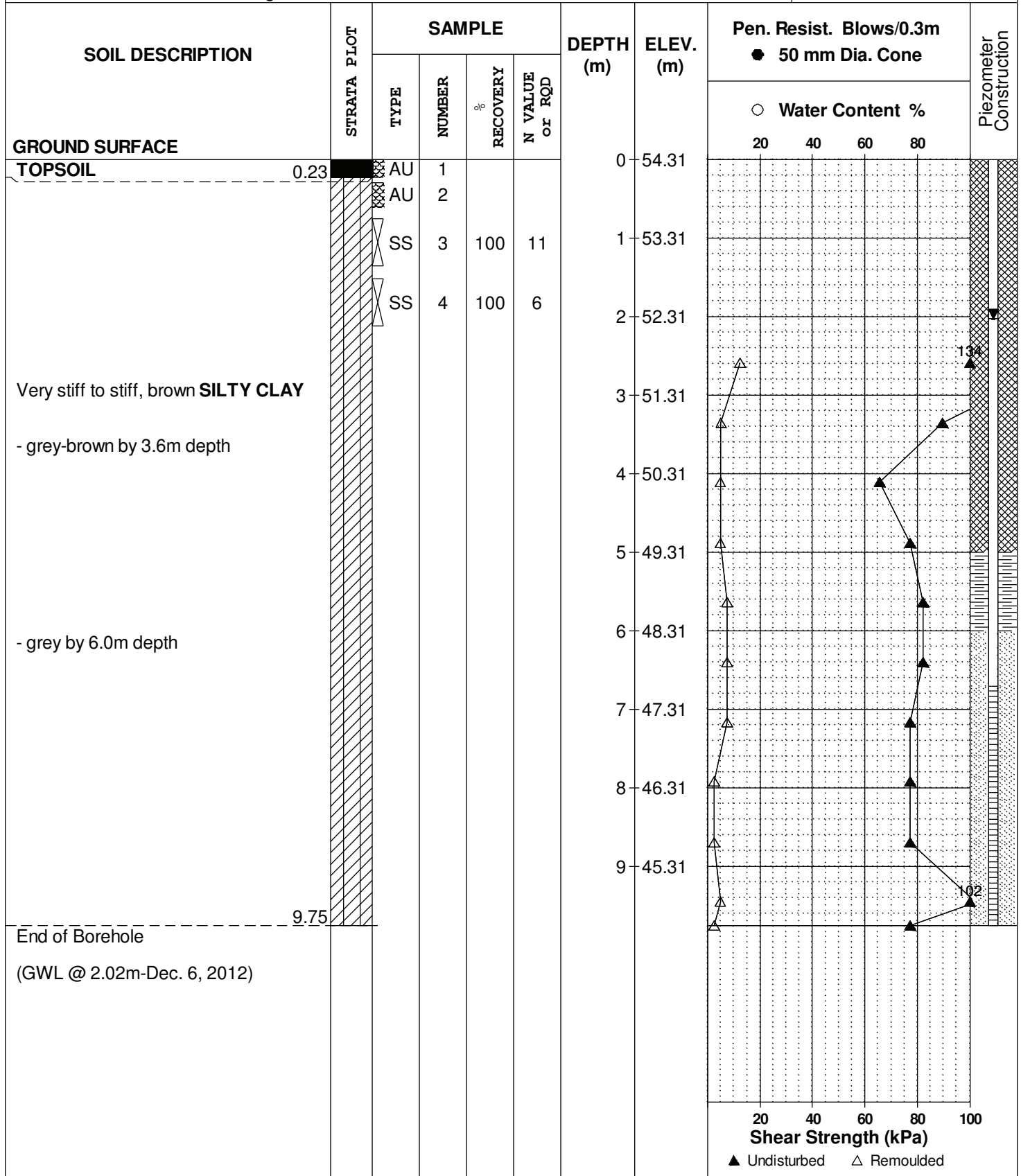
FILE NO. **PG1796**

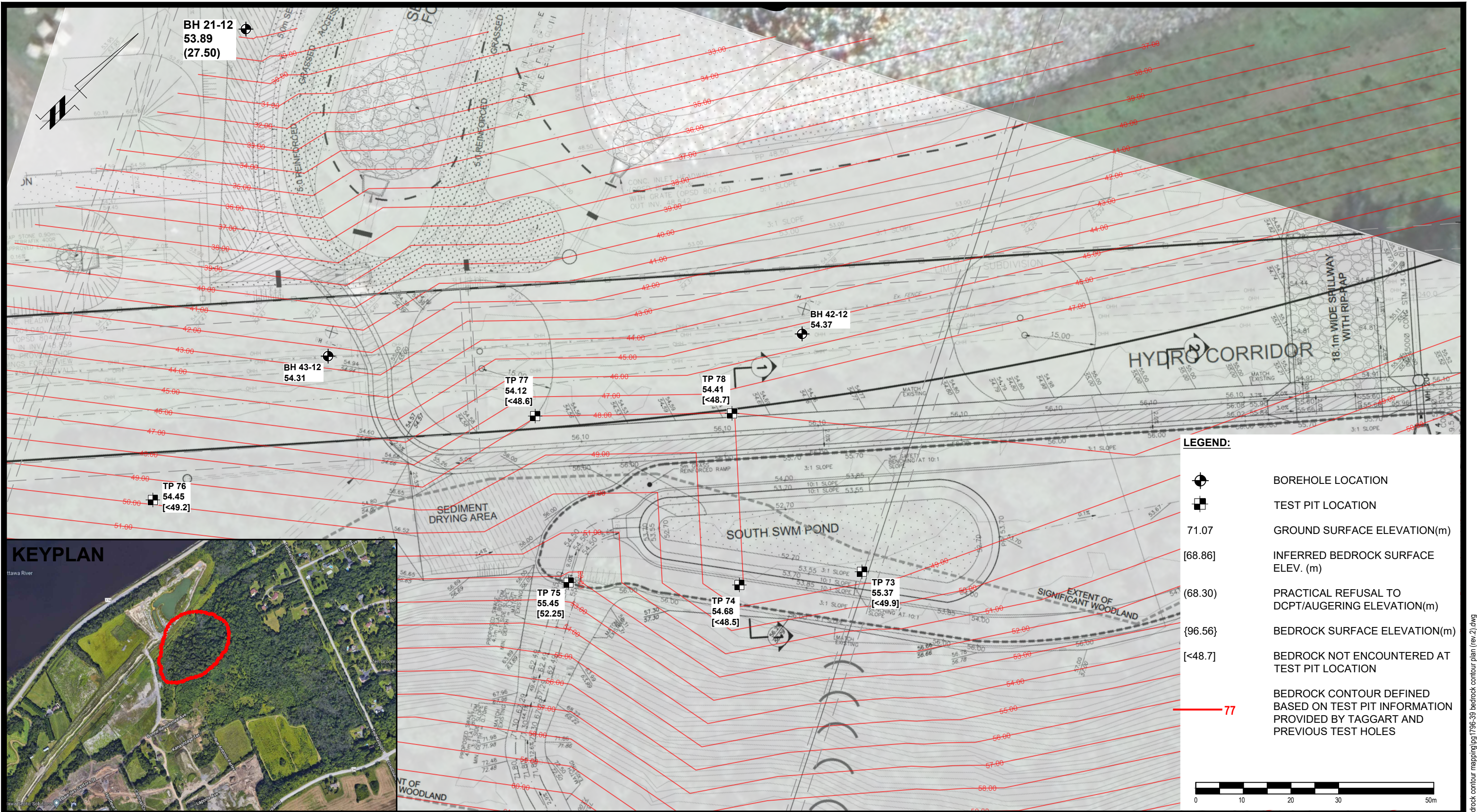
REMARKS

HOLE NO. **BH43-12**

BORINGS BY CME 55 Power Auger

DATE November 5, 2012





LEGEND:

- BOREHOLE LOCATION
- TEST PIT LOCATION
- 71.07 GROUND SURFACE ELEVATION(m)
- [68.86] INFERRED BEDROCK SURFACE ELEV. (m)
- (68.30) PRACTICAL REFUSAL TO DCPT/AUGERING ELEVATION(m)
- {96.56} BEDROCK SURFACE ELEVATION(m)
- <48.7] BEDROCK NOT ENCOUNTERED AT TEST PIT LOCATION
- 77 BEDROCK CONTOUR DEFINED BASED ON TEST PIT INFORMATION PROVIDED BY TAGGART AND PREVIOUS TEST HOLES



patersongroup
consulting engineers

154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL

TAMARACK (CARDINAL CREEK) CORPORATION
GEOTECHNICAL INVESTIGATION
PROPOSED SWMP - CARDINAL CREEK VILLAGE - PHASE 7

OTTAWA, ONTARIO

Title: **BEDROCK CONTOUR PLAN**

Scale:	1:750	Date:	03/2022
Drawn by:	RCG	Report No.:	PG1796-MEMO.211
Checked by:	NP	Dwg. No.:	PG1796-45
Approved by:	FA	Revision No.:	0