



CONSTRUCTION PROGRESS REPORT – 2017 Minor Construction Works

Project:	Cobble Hill Landfill – Closure Plan	Date:	October 15 th , 2017
Subject:	Construction Progress Update		
Location:	Cobble Hill Landfill	File:	17039-2017-03

Report

Distribution: CHH: Michael Kelly, Marty Block
Allterra Construction: Todd Mizuik, Raymond Lam
MoE: Maureen Bilawchuk, AJ Downie

The following summary of work includes construction progress from September 30th to October 5th, 2017 as well as the status of individual work tasks and deviations to the construction work plan. A photo log of construction activities for the above-mentioned dates is provided in Appendix A along with description of the work. Additionally, as-built record drawings have been included in Appendix B and laboratory analysis for pipe bedding materials are included in Appendix C.

1. Status of Work Tasks

- A. Secondary Clay Liner Investigation – **Complete** (Sept. 29th, 2017)

- B. New Leachate & Leak Detection Storage Facility– **Complete** (Oct. 5th, 2017)

-High level alarm has been installed in the leachate storage facility and is operational. Works included installation of a solar panel, control panel, transducer, floats and fully automated high and low-level alarm system for leachate tanks. Smartphone application was downloaded by the Electrical Contractor during install and functionality of the remote system was explained, tested and verified by the QP. With smartphone, levels in the tanks can be monitored and floats and alarms adjusted. The smartphone application has been downloaded by Allterra and will be used to manage leachate levels with the storage facility.

-Interconnecting hose (4” flex hose) between the two leachate storage tanks is installed. Connection were inspected and verified by QP.

-As-builts included in Appendix B

C. Installation of New Twin Piping from Existing PEA Collection Pipes to New Storage Facility – **Complete** (Sept. 29th, 2017)

-As-builts included in Appendix B

-Gradation Reports for Pipe Bedding Materials included in Appendix C

D. Decommissioning of Contract Water Containment Pond – **Complete** (Sept. 29th, 2017)

E. Stockpile and Cover Existing Soil in SMA – **Complete** (Sept. 29th, 2017)

F. Installation of Seepage Blanket Monitoring Wells – **Complete** (Sept. 29th, 2017)

-As-builts included in Appendix B

G. PEA Liner Repairs and Testing – **Complete** (Sept. 29th, 2017)

-As-builts included in Appendix B

H. PEA Crest Ditch Ballasting – **Complete** (Sept. 29th, 2017)

-As-builts included in Appendix B

I. Run-on Ditch Extension South Side of PEA – **Complete** (Sept. 29th, 2017)

-As-builts included in Appendix B

2. Deviations to Original Work Plan

A. Pipe Bedding Material for ‘New Twin Piping from PEA to New Leachate Storage Facility’: Pipe bedding material was sourced onsite from two stockpiles:

1) Pipe Bedding-1: 5-15mm Clear Round Gravel, and

2) Pipe Bedding-2: Well Graded Sand.

Sieve analysis were conducted on both materials and although they differ from the gradation specification included in the design, both products used are adequate for pipe bedding materials and were approved in the field prior to use by the QP. Sieve Analysis reports are included in Appendix C.

- B. Clean Outs for ‘New Twin Piping from PEA to New Leachate Storage Facility’:
Cleanouts on the Leak Detection and Leachate conveyance pipes were not constructed. Access to both Leachate and Leak Detection conveyance pipes is available at connection fittings located at the tie-in to leachate / leak detection storage tanks. Decision to not include the Clean-outs was made during construction and approved by the QP in the field.
- C. Stockpile and Cover Existing Soil in SMA:
In the original plan, it was outlined that the lock block walls were required to be washed down with water. During SMA clean up activities it was further discussed and QP approved ‘NOT’ washing down the lock block walls to reduce the re-introduction of water into the remediated soils. It is SHA’s opinion that the current condition of the lock blocks do not pose any environmental or human health hazards in their current state.
- D. Seepage Blanket Monitoring Wells at Landfill Toe:
A change to the backfill material was approved in the field by the QP. Original plan specified a 25-50mm clear drain rock be used. In place of the 25-50mm drain rock, 75mm clear drain rock was used.
- E. PEA Crest Ditch Ballasting:
A change to the ballast material used in the crest ditch of the PEA was approved in the field by the QP. The design plan specified coarse gravel and sandbags be placed over a layer of 8oz. Non-Woven geotextile. During construction, the ballast material was changed from coarse gravel and sand bags to rubber tires, placed back to back along the entire alignment.

3. Schedule

The 2017 Minor Construction Works are complete onsite at the Cobble Hill Landfill. All final construction tasks were completed on October 5th, 2017 with the completion of the High-level alarm in the Leachate Storage Facility as well as the interconnecting piping between the 2x Leachate Tanks. Environmental monitoring, including water quality sampling, will continue to be completed by the Named Parties at the site, and reported on accordingly.

Outstanding work items outlined in the September 30th Construction Progress Report have been completed and are included in this report. No further work is scheduled regarding the 2017 Minor Construction Works.

Please respond with any question or concerns regarding the above outlined construction activities or deviations to the design plan.

Report prepared by:

Sperling Hansen Associates



Scott Garthwaite, ASCT
Office Manager

Appendix A – Photo Log – attached
Appendix B – As-built Record Drawings - attached
Appendix C – Gradation Reports - attached

APPENDIX A
Photo Log of Construction Activities

Cobble Hill Landfill Closure – 2017 Minor Construction Works

Leachate / Leak Detection Storage Facility:



Photo 1 – 2x Leachate Tank Interconnecting Pipe Installed.



Photo 2 – Solar Panel Installed and Operational at Leachate Storage Facility.



Photo 3 – Digital Readout Screen on Inside Door of Control Panel – for High-level Alarm.

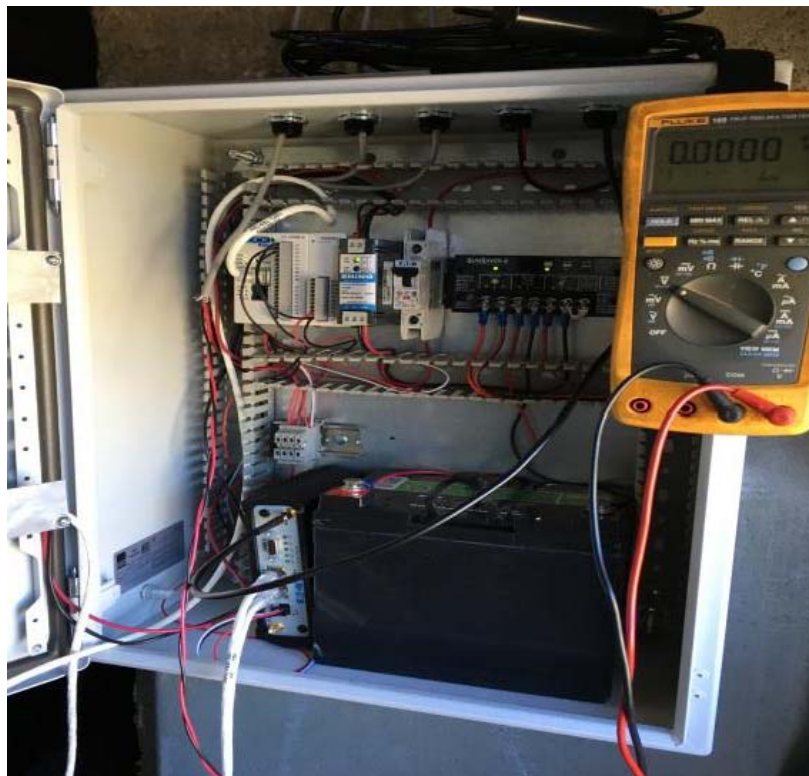


Photo 4 – Control Panel: PLC, 12V Battery, Router and Wiring – High-Level Alarm

APPENDIX B
As-Built Drawings



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ASSOCIATES

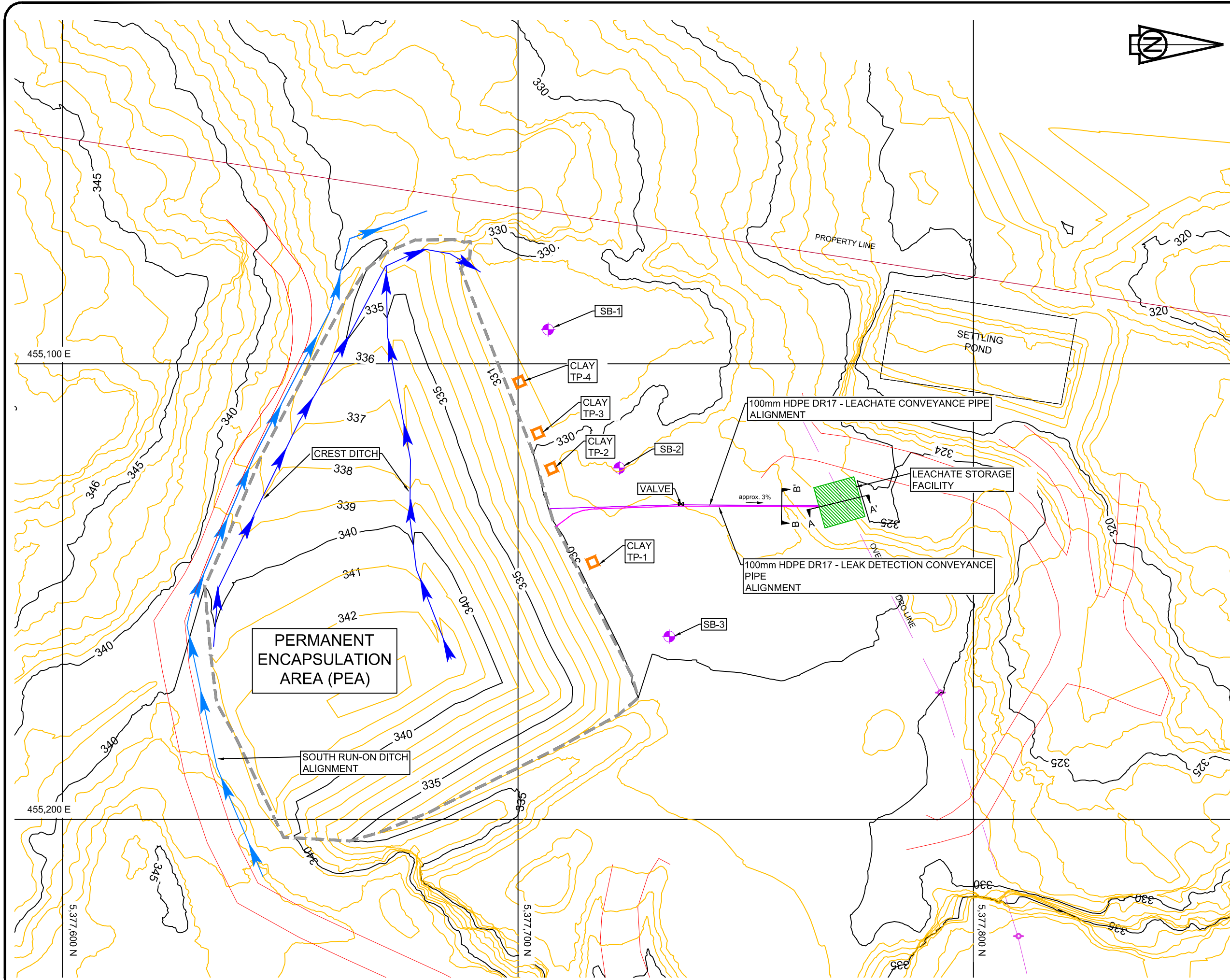
Landfill Services Group

- Landfill Siting
- Design & Operations Plans
- Landfill Closure
- Environmental Monitoring

#8 - 1225 East Keith Road
North Vancouver, B.C. V7J 1J3
Phone: (604) 986-7723
Fax: (604) 986-7734

LEGEND:

- 5m EXISTING CONTOUR
- 1m EXISTING CONTOUR
- ROAD
- SURFACE WATER DITCH
- RUN-ON DIVERSION DITCH
- PROPERTY LINES
- LEACHATE CONVEYANCE PIPE
- LEAK DETECTION CONVEYANCE PIPE
- CLAY TEST PIT LOCATIONS
- SEEPAGE BLANKET MONITORING LOCATION
- LEACHATE CONVEYANCE VALVE
- LEACHATE STORAGE FACILITY

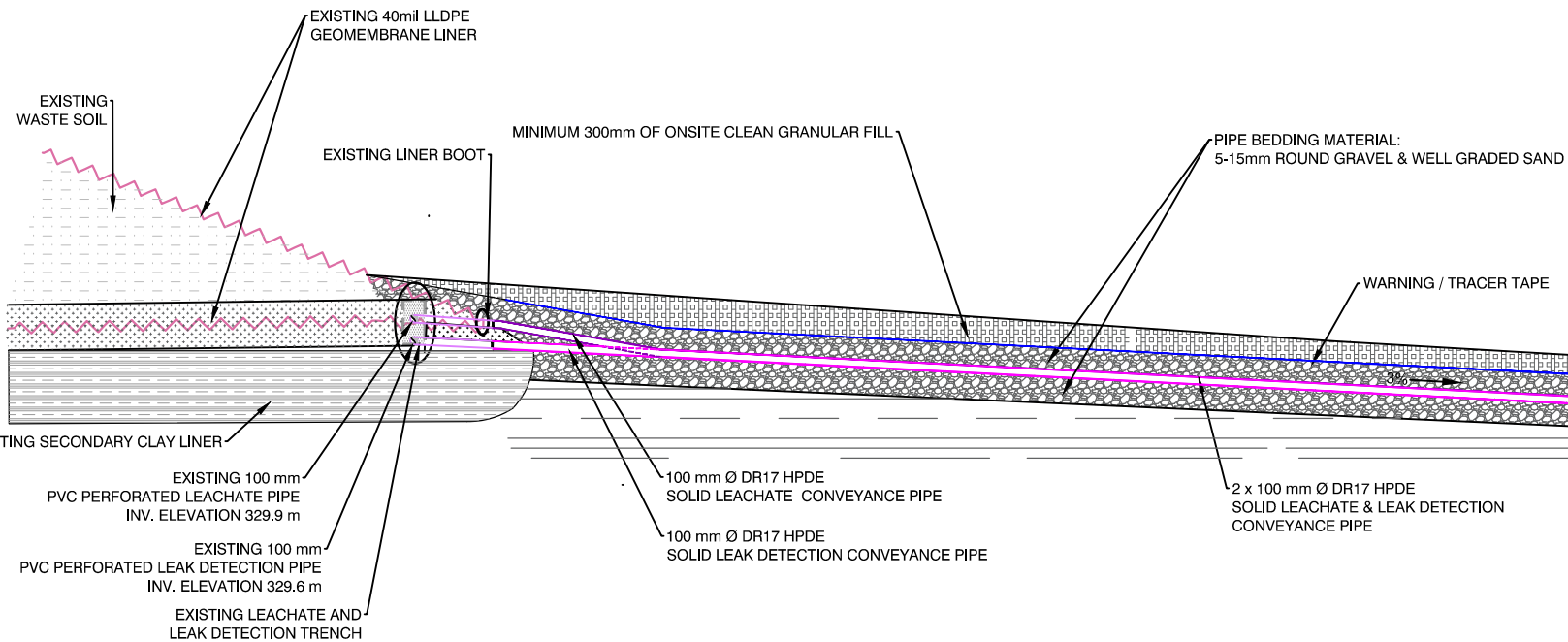


CLIENT:
COBBLE HILL HOLDINGS LTD.

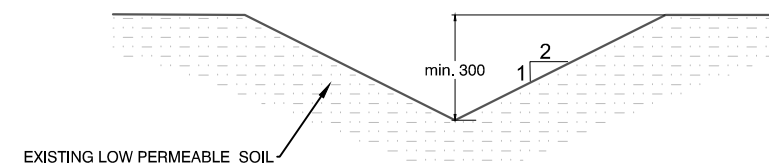
PROJECT:
**COBBLE HILL LANDFILL
DETAILED CONSTRUCTION PLAN FOR
2017 MINOR WORKS**

TITLE:
**AS-BUILT
PLAN VIEW**

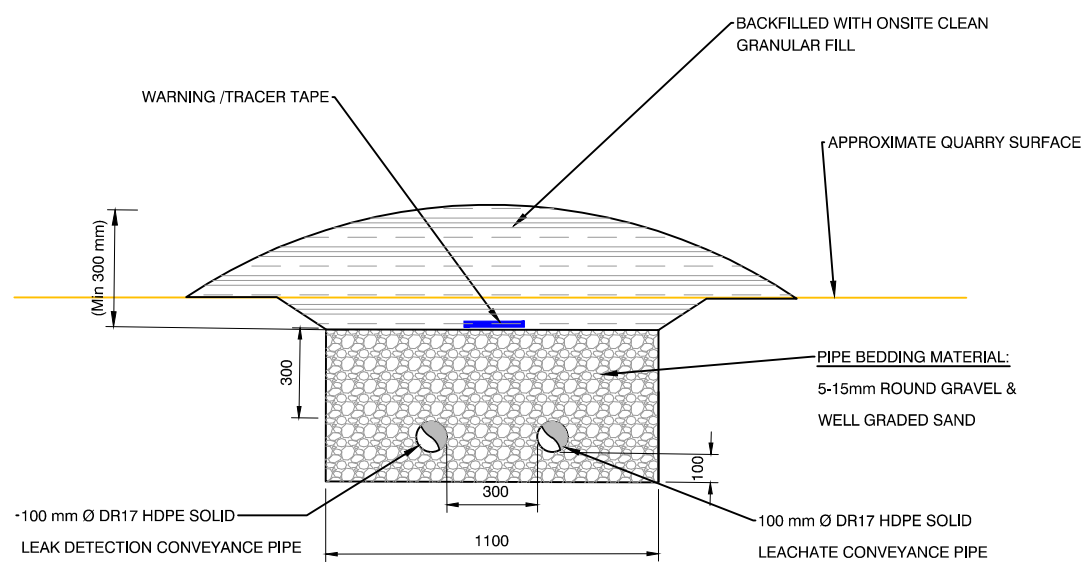
SCALE: 1:1,250	DATE: 2017/10/12 yyyy/mm/dd	PROJECT NO: PRJ 17039
DESIGNED	DRAWING NO:	
DRAWN	SG	FIGURE 1
CHECKED		



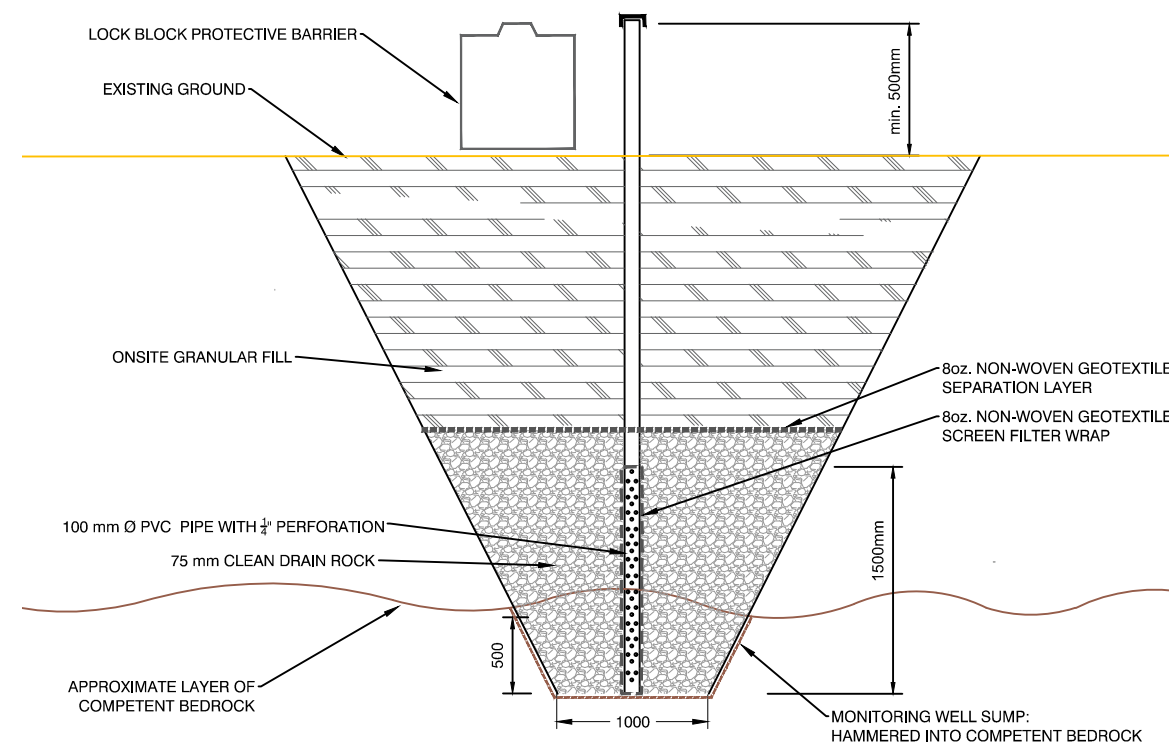
LEACHATE CONVEYANCE FROM PEA - SECTION
SCALE 1:100



SOUTH RUN-ON DITCH - SECTION
SCALE 1:100



TYPICAL TWIN LEACHATE/LEAK DETECTION CONVEYANCE PIPE TRENCH SECTION B - B'
SCALE 1:20



TYPICAL SEEPAGE BLANKET WELL
SCALE 1:50

LEGEND:

CLIENT:

COBBLE HILL HOLDINGS LTD.

PROJECT:

**COBBLE HILL LANDFILL
DETAILED CONSTRUCTION PLAN FOR
2017 MINOR WORKS**

TITLE:

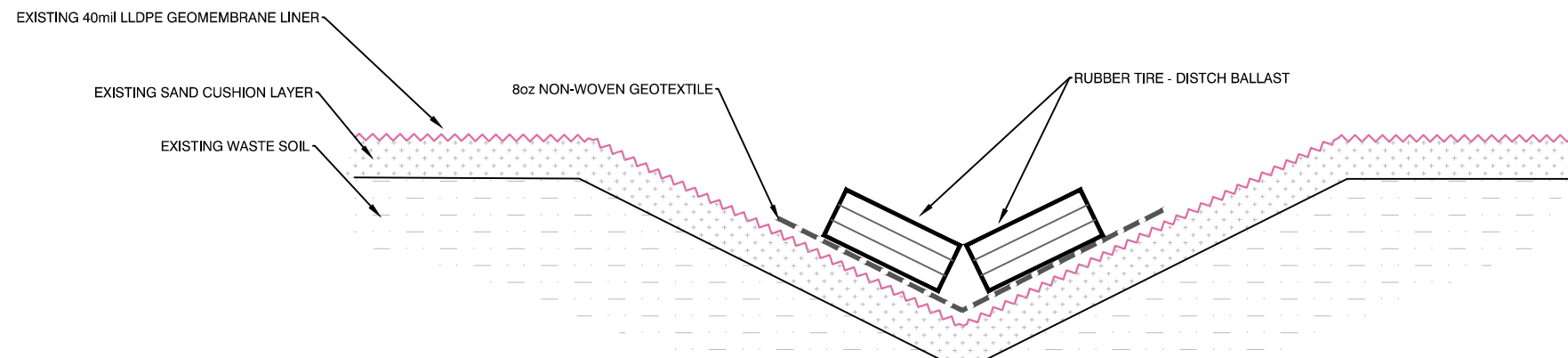
**AS-BUILT
DETAILS-1**

SCALE:	DATE: 2017/10/12 yyyy/mm/dd	PROJECT NO: PRJ 17039
DESIGNED	DRAWING NO:	
DRAWN	SG	FIGURE 2
CHECKED		

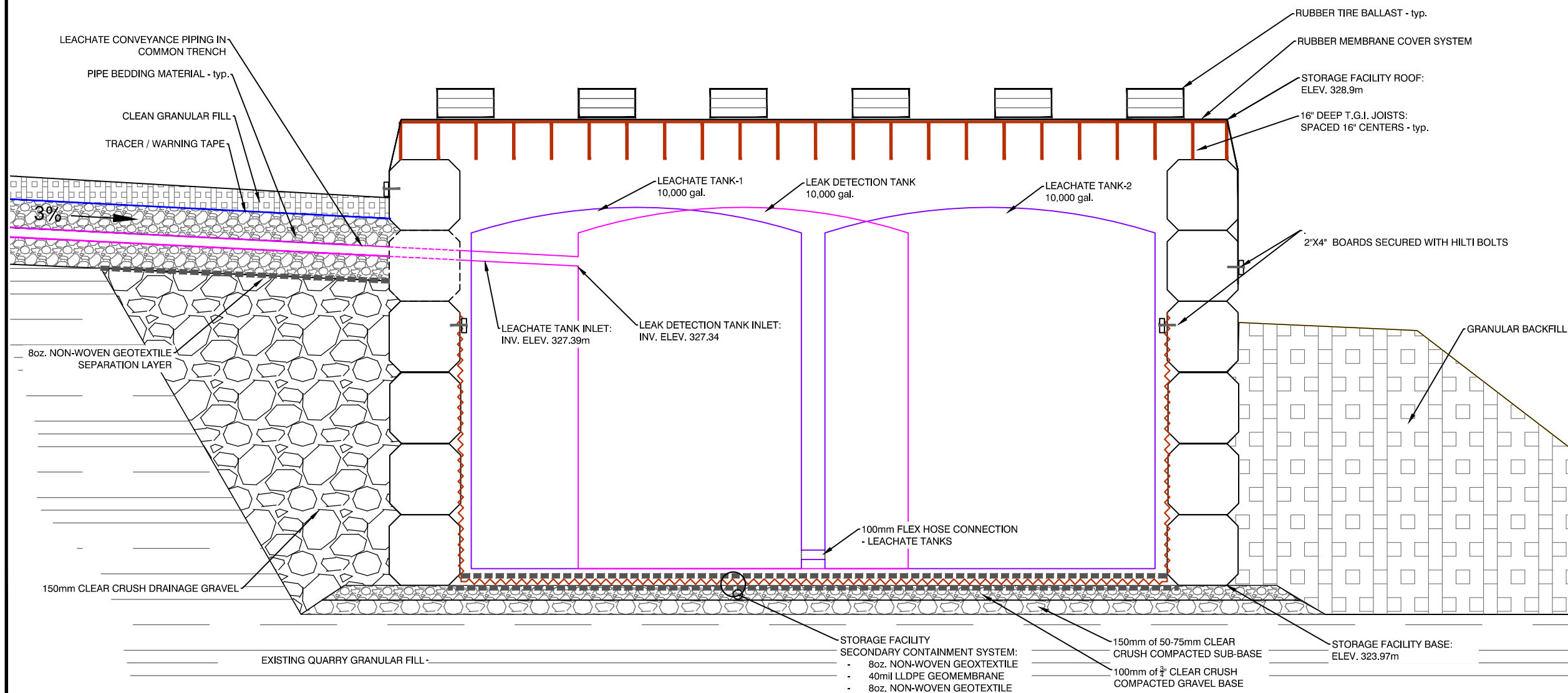
LEGEND:

NOTES:

- LEACHATE TANKS EQUIPPED WITH HIGH-LEVEL ALARM
- SOLAR PANEL POWER SUPPLY CONTROL PANEL INSIDE STORAGE FACILITY
- REMOTELY MONITORED LEVELS IN TANKS WITH SMARTPHONE APP. FOR REAL TIME READOUTS.



TYPICAL CREST DITCH SECTION
SCALE 1:50



LEACHATE STORAGE FACILITY - SECTION A - A'
SCALE 1:50

CLIENT:

COBBLE HILL HOLDINGS LTD.

PROJECT:

**COBBLE HILL LANDFILL
DETAILED CONSTRUCTION PLAN FOR
2017 MINOR CONSTRUCTION WORKS**

TITLE:

**AS-BUILT
DETAILS - 2**

SCALE:	DATE: 2017/10/12 yyyy/mm/dd	PROJECT NO: PRJ 17039
DESIGNED	DRAWING NO:	
DRAWN	SG	FIGURE 3
CHECKED		



**SPERLING
HANSEN
ASSOCIATES**

Landfill Services Group

- Landfill Siting
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- Landfill Closure
- Environmental Monitoring

#8 - 1225 East Keith Road
North Vancouver, B.C. V7J 1J3
Phone: (604) 986-7723
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LEGEND:

- 5m EXISTING CONTOUR
- 1m EXISTING CONTOUR
- ROAD
- SURFACE WATER DITCH
- PROPERTY LINES
- CREEK
- LANDFILL LINER EXTENTS
- PEA Liner Repair Location X-1 THROUGH X-21

CLIENT:

COBBLE HILL HOLDINGS LTD.

PROJECT:

**COBBLE HILL LANDFILL
CLOSURE PLAN - 2017 MINOR
CONSTRUCTION WORKS**

TITLE:

**PEA - AS-BUILTS
REPAIR WORK**

SCALE:

1:750

DATE:

2017/09/29
yyyy/mm/dd

PROJECT NO:

PRJ 17039

DESIGNED

DRAWN

CHECKED

DRAWING NO:

FIGURE 4

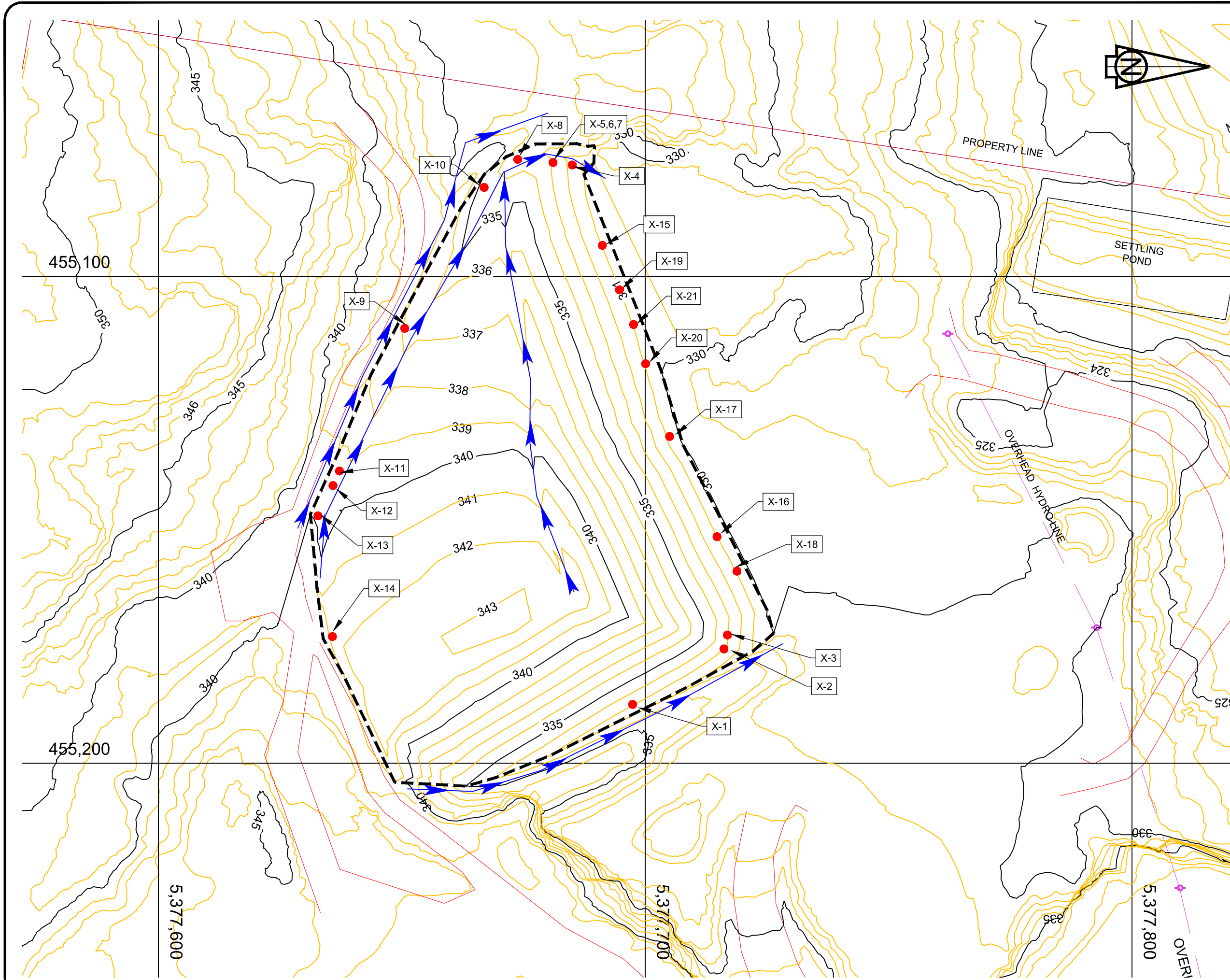


Table 1 - Seepage Blanket Monitoring Wells

As-Built Data

Name	Northing	Easting	Ground Elev. (m)	Stick Up (m)	Total Well Depth (m)	Sump Elev. (m)	Screen Length (m)
SB-1	5,377,706	455,092	329.57	0.74	4.01	326.3	1.5
SB-2	5,377,722	455,123	328.97	0.64	3.28	326.33	1.5
SB-3	5,377,733	455,160	331.16	0.56	3.53	328.19	1.5

APPENDIX C
Pipe Bedding Sieve Analysis



KamTech

QUALITY MANAGEMENT

TO: **Sperling Hansen Associates**
 1332 McGill Road
 Kamloops, B.C.
 V2C 6N6

ATTN: **Mairi Dalgleish**

PROJECT: **Materials Testing**

PROJECT #: **QM17-41**

COPIES TO:

SIEVE ANALYSIS REPORT

SAMPLE ID: Pipe Bedding 1

SAMPLE TYPE: Bulk

SAMPLED BY: Client

DATE SAMPLED: September 28, 2017

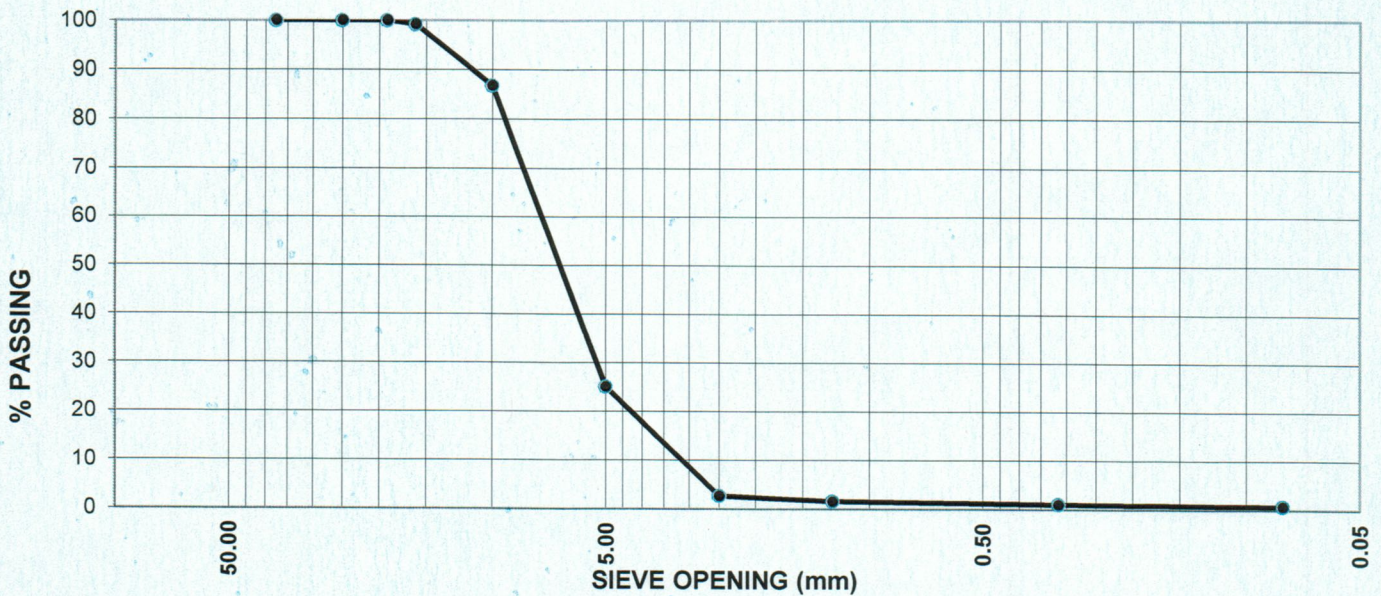
DATE RECEIVED: October 2, 2017

DATE TESTED: October 4, 2017

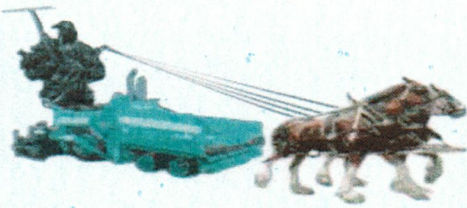
SOURCE: Cobble Hill Landfill

COMMENTS: In Situ Moisture : 0.63%

Pipe Bedding Material			
Sieve (mm)	Percent Passing	Spec Min %	Spec Max %
37.5	100.0		
25.0	100.0		
19.0	100.0		
16.0	99.2		
10.0	86.8		
5.0	25.1		
2.50	2.7		
1.25	1.6		
0.315	1.0		
0.08	0.7		



Per _____



KamTech

QUALITY MANAGEMENT

TO: Sperling Hansen Associates

PROJECT #: QM17-41

1332 McGill Road
Kamloops, B.C.
V2C 6N6

COPIES TO:

ATTN: Mairi Dagleish

PROJECT: Materials Testing

SIEVE ANALYSIS REPORT

SAMPLE ID: Pipe Bedding 2

SAMPLE TYPE: Bulk

SAMPLED BY: Client

DATE SAMPLED: September 28, 2017

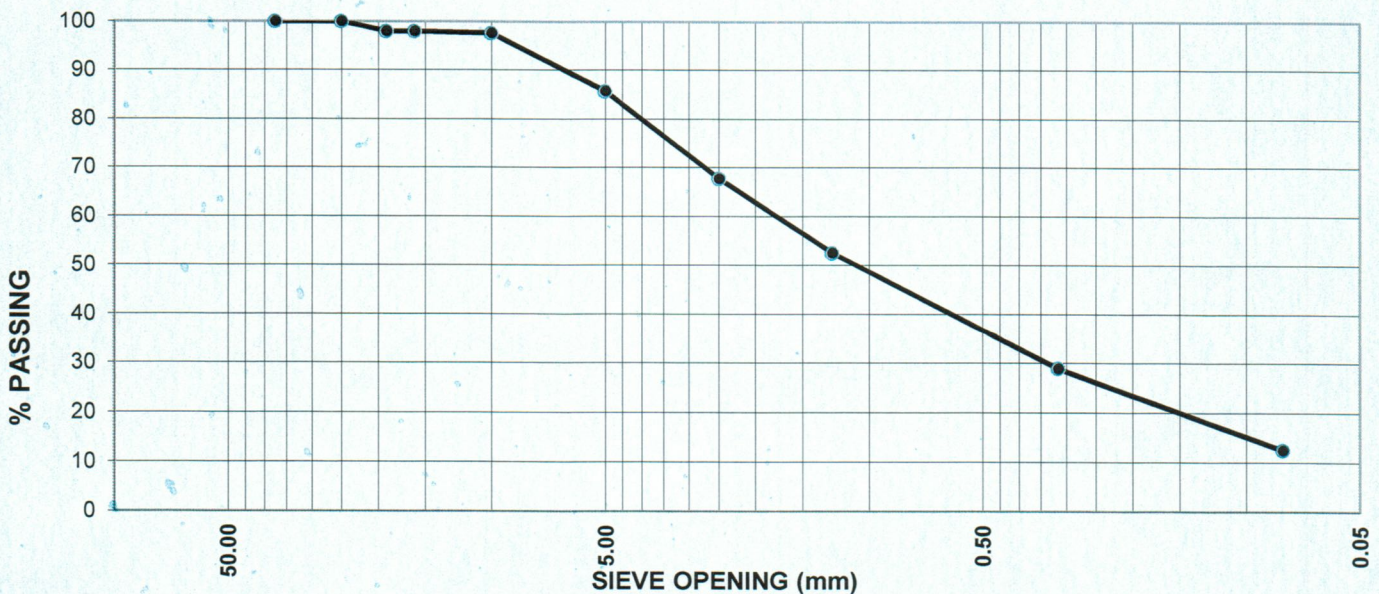
DATE RECEIVED: October 2, 2017

DATE TESTED: October 4, 2017

SOURCE: Cobble Hill Landfill

COMMENTS: In Situ Moisture : 2.21 %

Pipe Bedding Material			
Sieve (mm)	Percent Passing	Spec Min %	Spec Max %
37.5	100.0		
25.0	100.0		
19.0	98.0		
16.0	98.0		
10.0	97.6		
5.0	85.7		
2.50	67.7		
1.25	52.5		
0.315	28.9		
0.08	12.5		



Per 