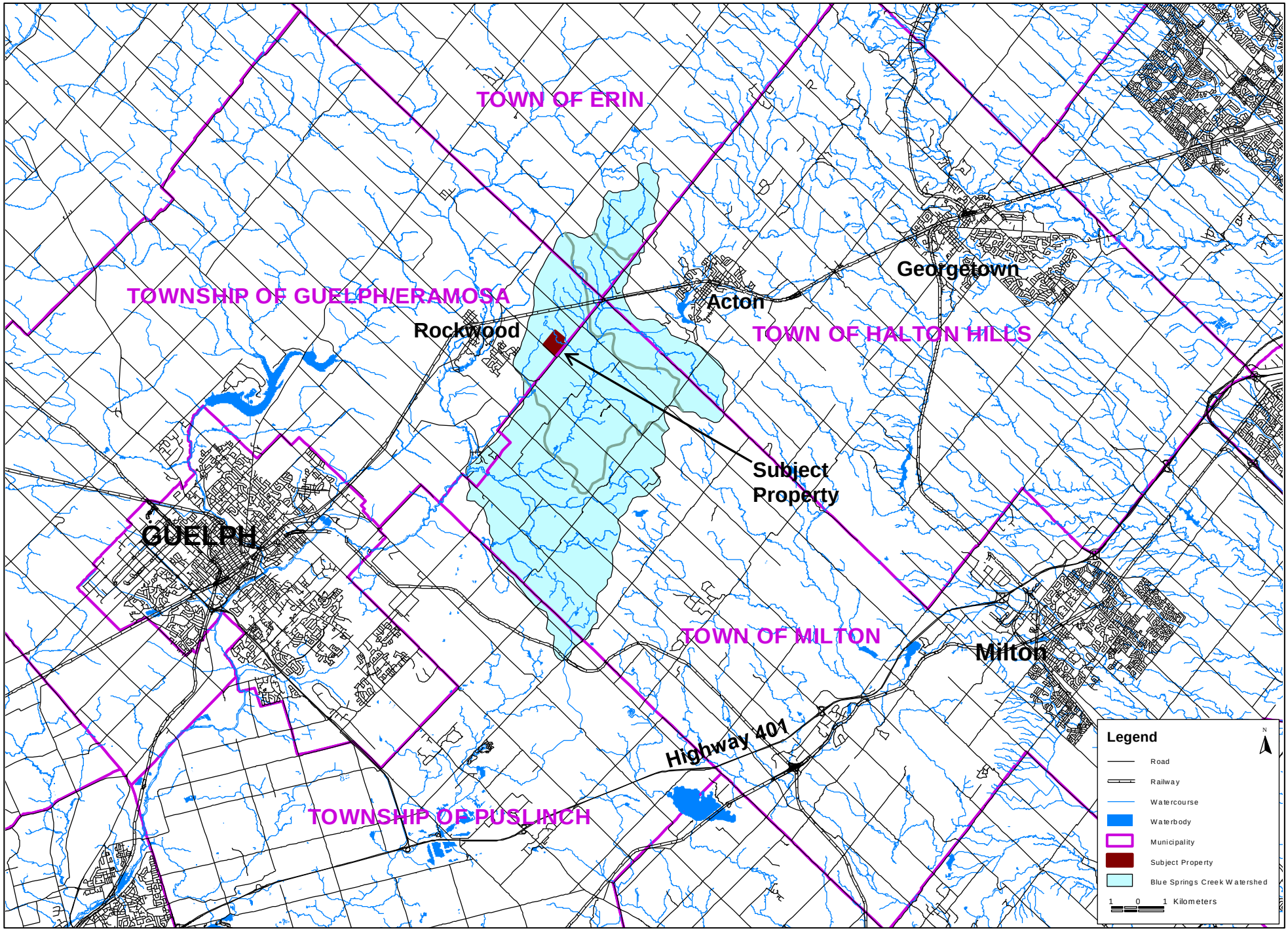
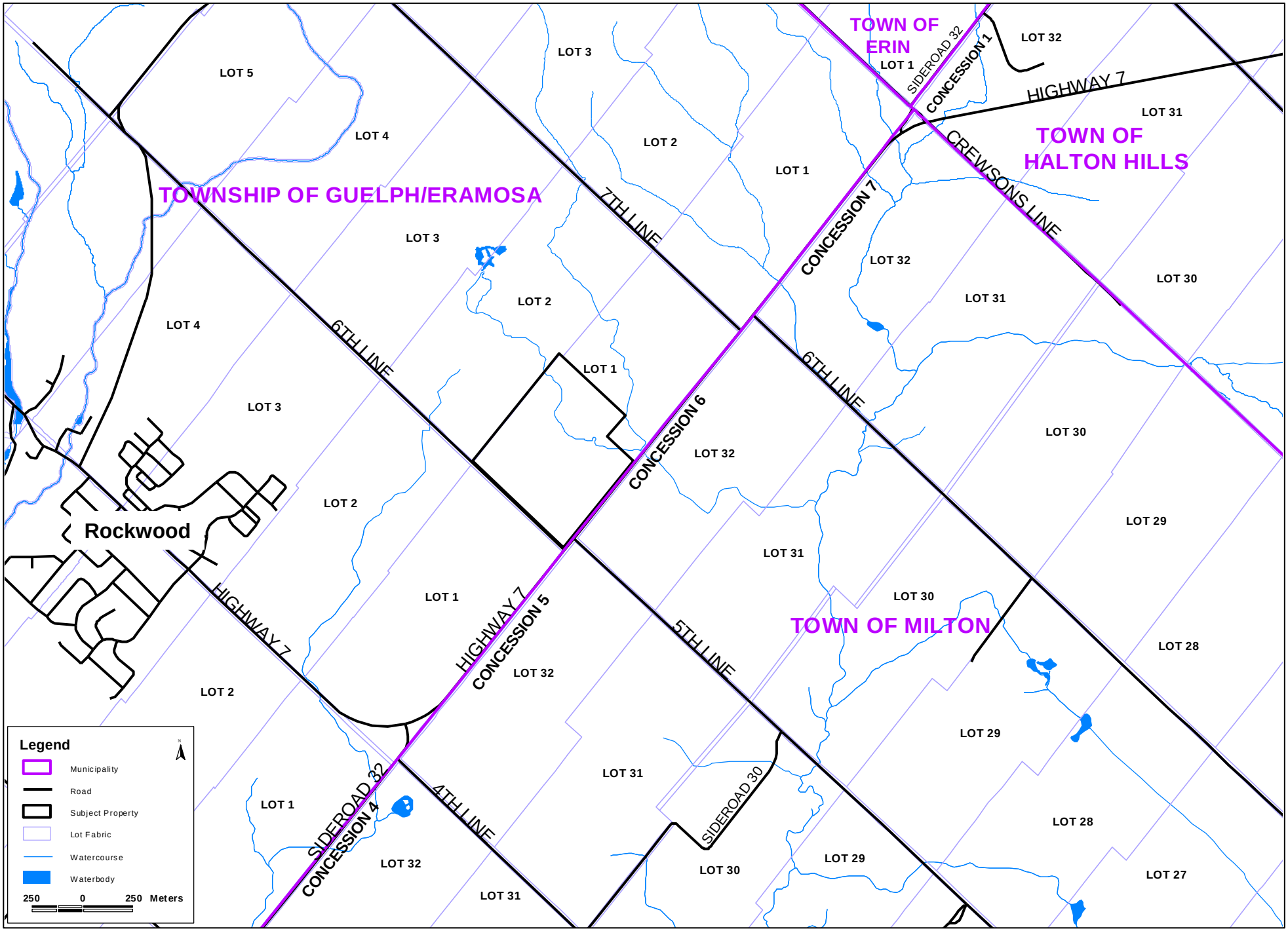
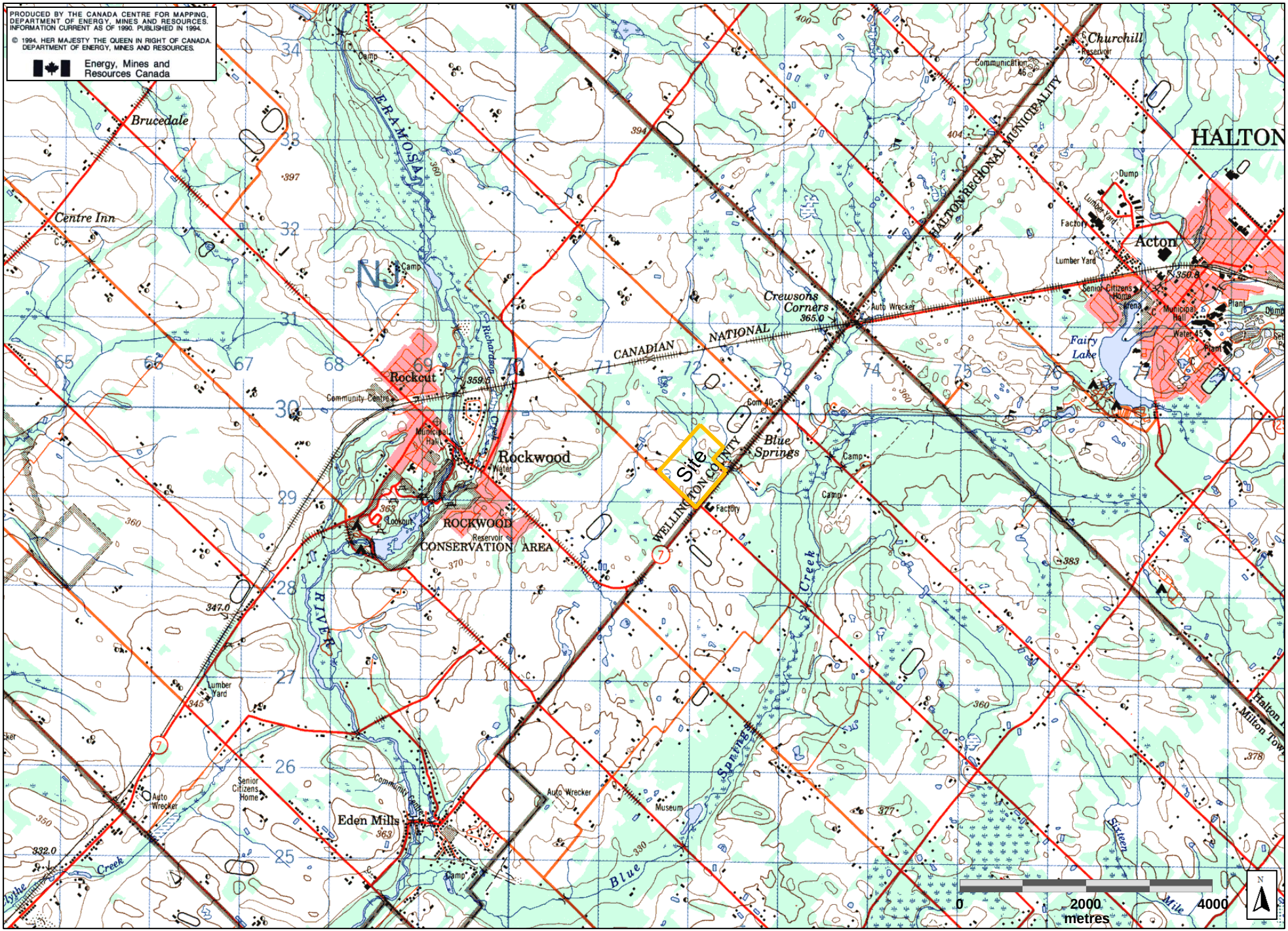
FIGURES



Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Figure 1.1: Site Location**
	Date: Nov 2011	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: AR		



Harden Environmental Services Ltd.	**Project No:** 9506 **Date:** Nov 2011 **Drawn By:** AR	Hydrogeologic Impact Assessment Proposed Aggregate Extraction Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	**Figure 1.2: Lot Fabric**



Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Figure 1.3: Regional Topography**
	Date: Nov 2011	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	Subject Property (Approximate)
	Drawn By: AR		

Legend

- Subject Property
- Road
- Railway
- 5 metre Contour Interval
- Watercourse
- Waterbody
- Wetland

250 0 250 Meters

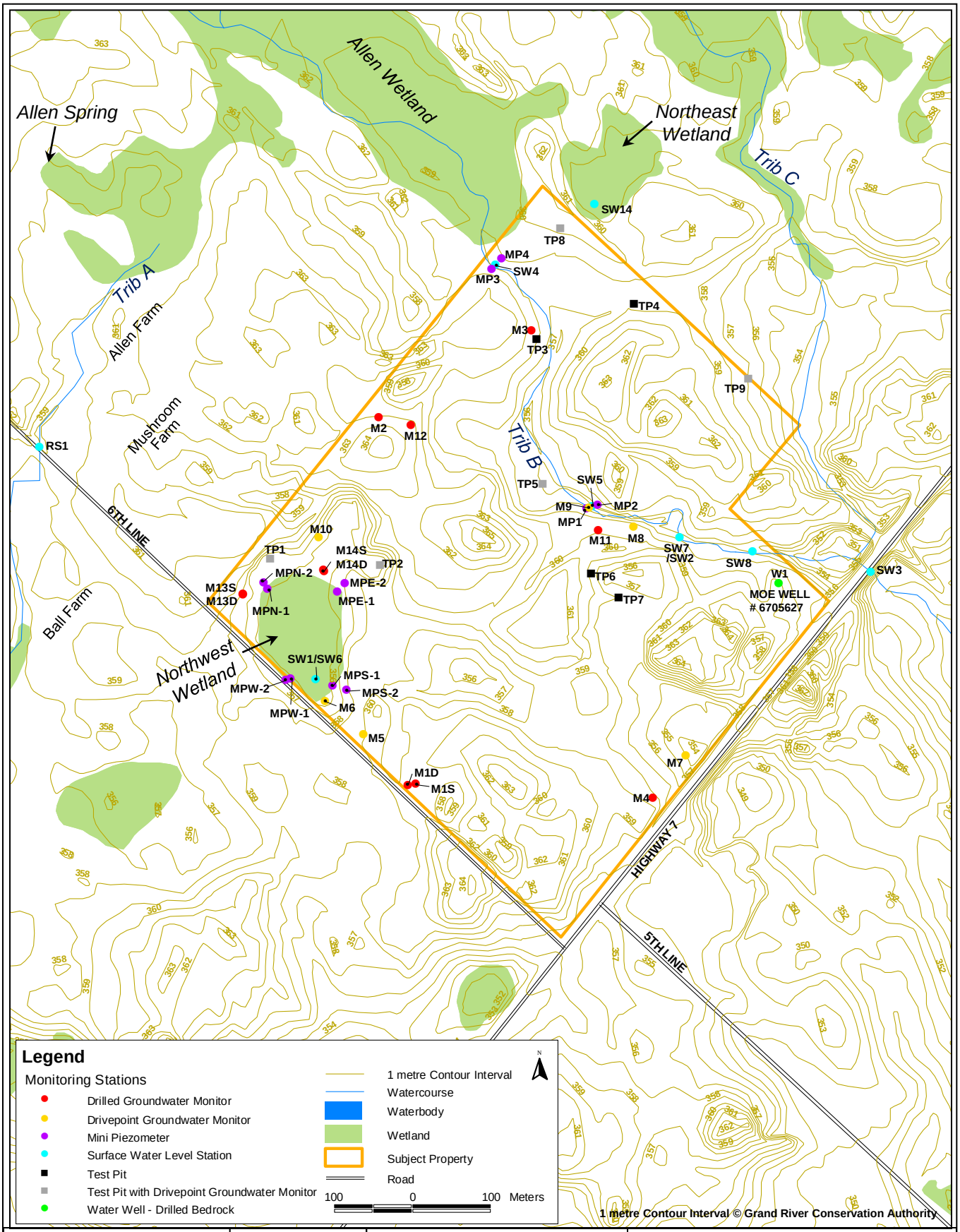
WELLINGTON 26 ROAD
1ST LINE
DUBLIN LINE
WELLINGTON 50 ROAD
7TH LINE
Eramosa River
CREWSONS LINE
Allen Wetland
De Grandis Farm
6TH LINE
Allen Spring
Tributary C
Tributary B
Allen Farm
Mushroom Farm
Northeast Wetland
Tributary A
Ball Farm
Northwest Wetland
Brydson Spring
5TH LINE
HIGHWAY 7
Blue Springs Creek
Tributary D
WELLINGTON 44 ROAD
SIDEROAD 32
4TH LINE
SIDEROAD 30
INDIAN TRAIL
GUELPH L

Harden Environmental Services Ltd.

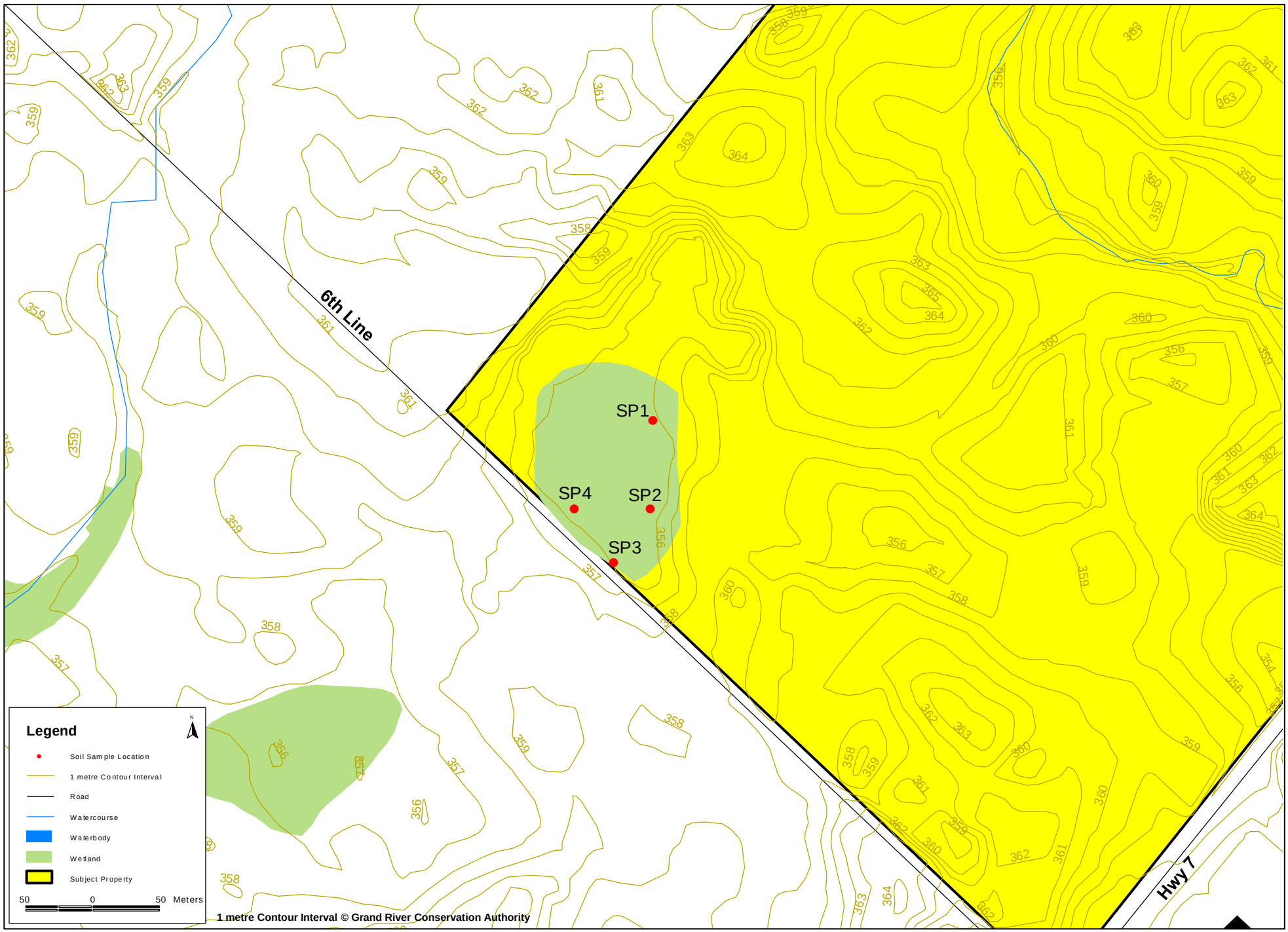
Project No: 9506
Date: Jul 2012
Drawn By: AR

Hydrogeologic Impact Assessment
Proposed Aggregate Extraction
Part of Lot 1, Concession 6
Township of Guelph/Eramosa, County of Wellington

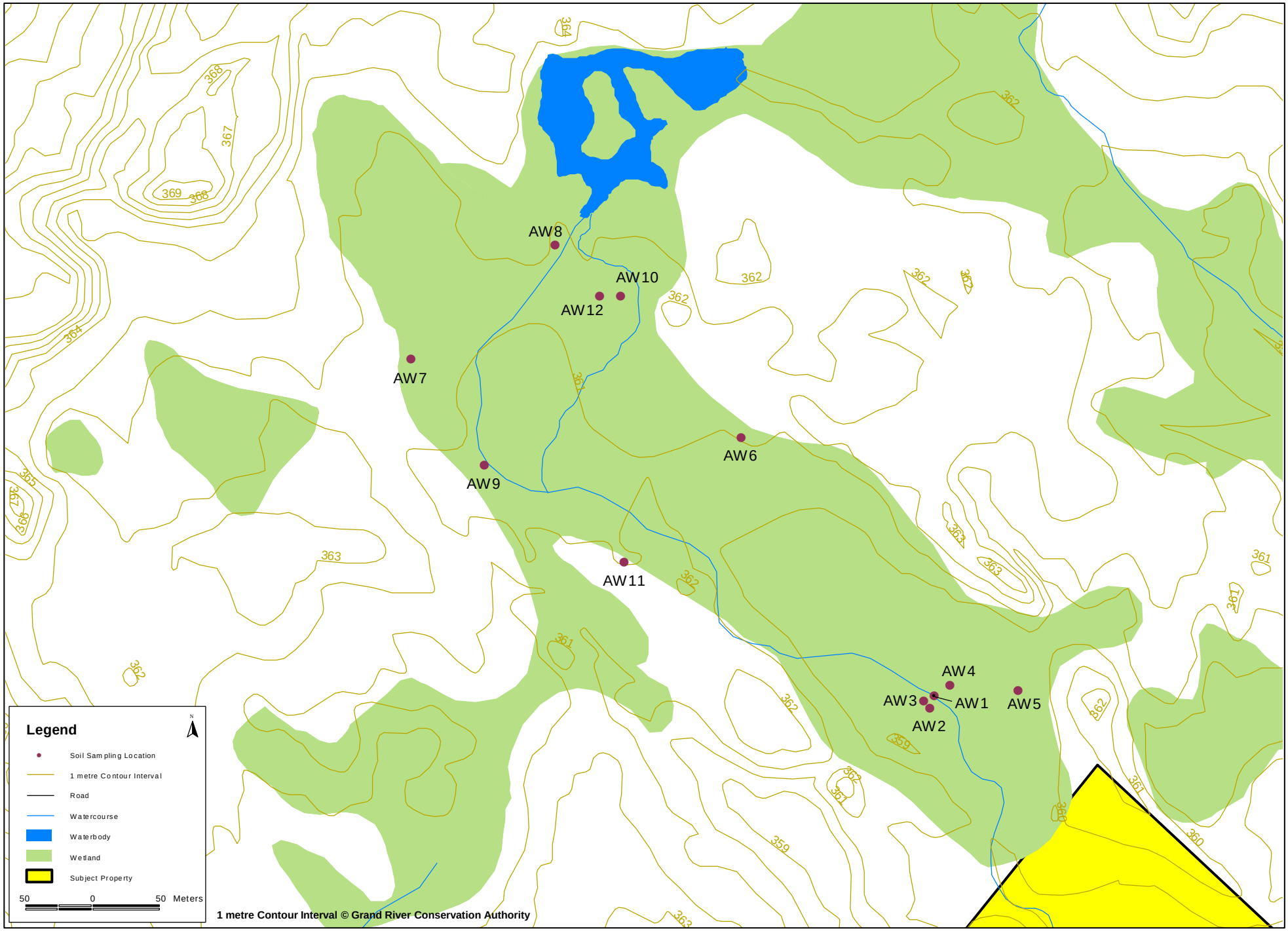
Figure 1.4:
Environmental Features



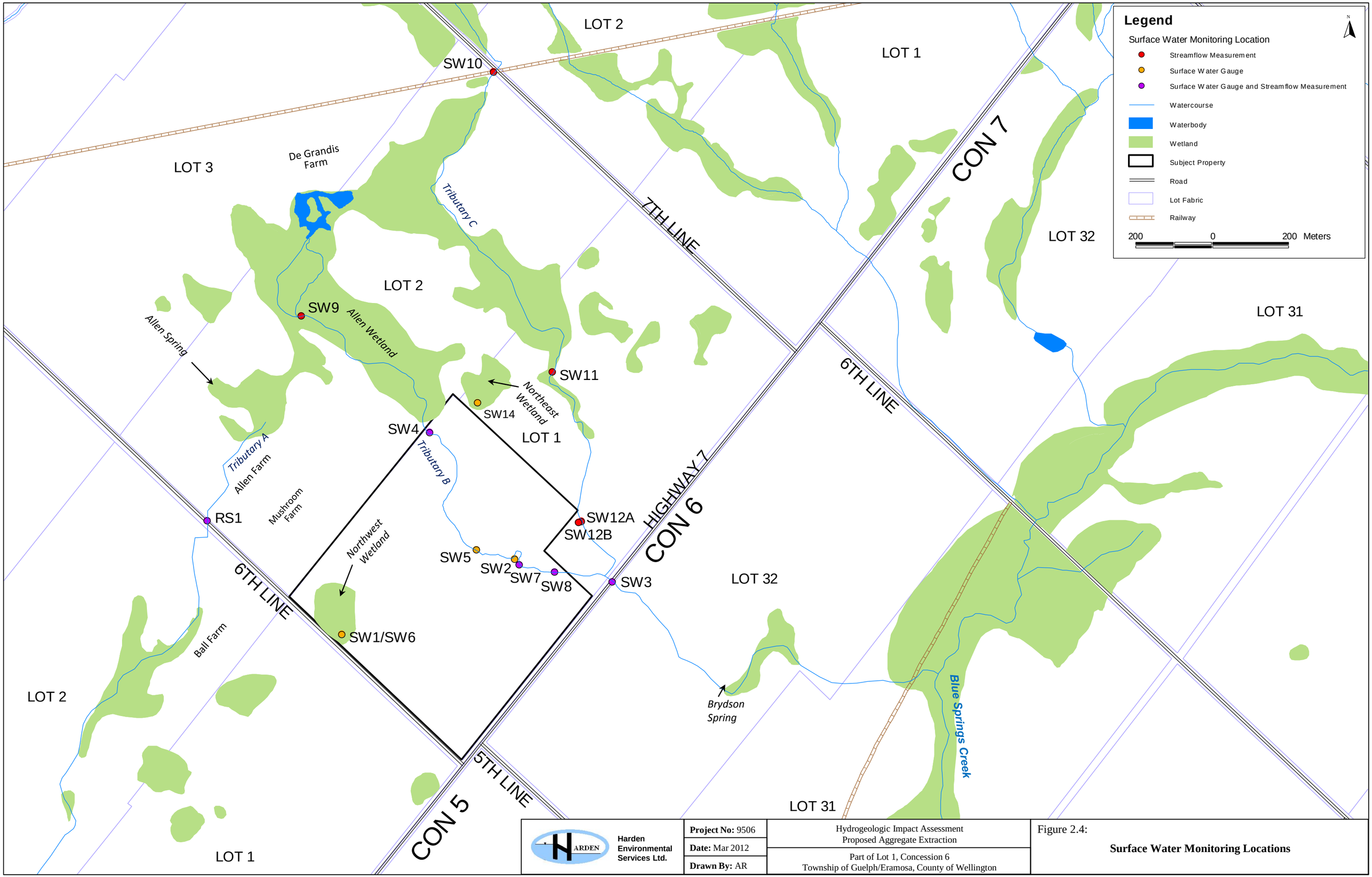
Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Figure 2.1:** **Water Level Monitoring Locations**
	Date: Mar 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: AR		



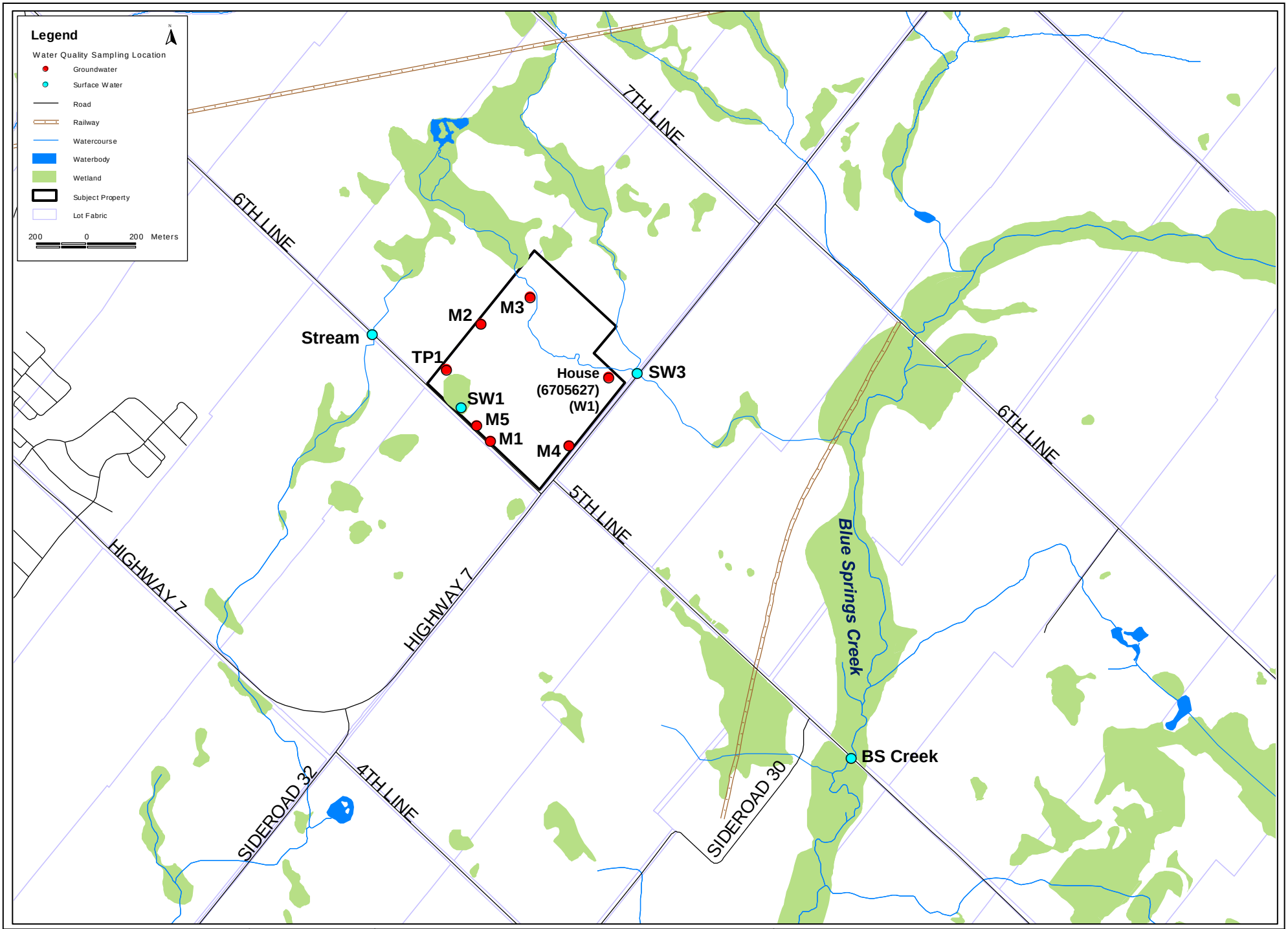
Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Figure 2.2: Northwest Wetland Soil Sampling Locations**
	Date: Apr 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: AR		



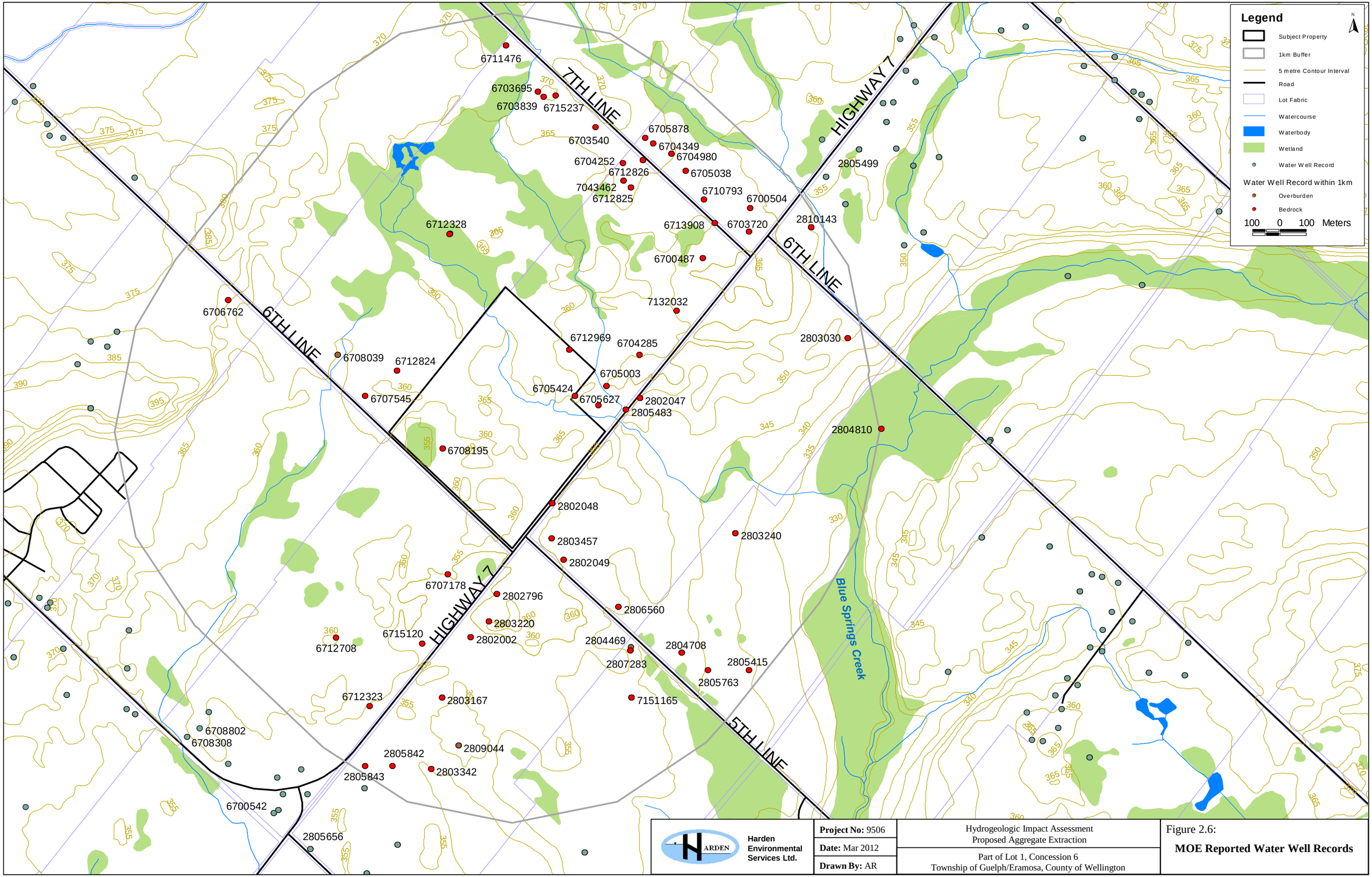
Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Figure 2.3: Allen Wetland Soil Sampling Locations**
	Date: Apr 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: AR		



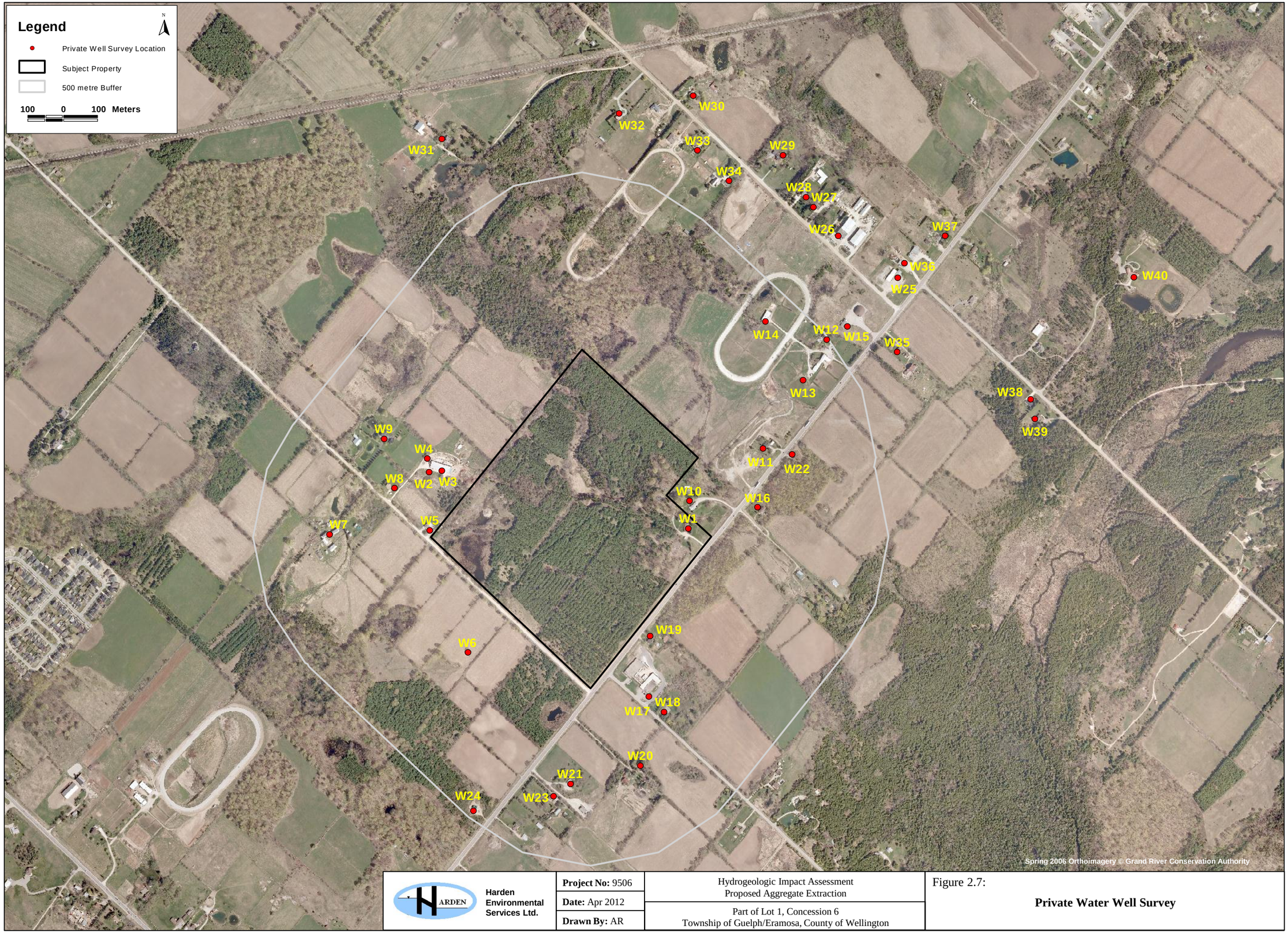
Harden Environmental Services Ltd.	**Project No:** 9506 **Date:** Mar 2012 **Drawn By:** AR	Hydrogeologic Impact Assessment Proposed Aggregate Extraction Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	Figure 2.4: **Surface Water Monitoring Locations**



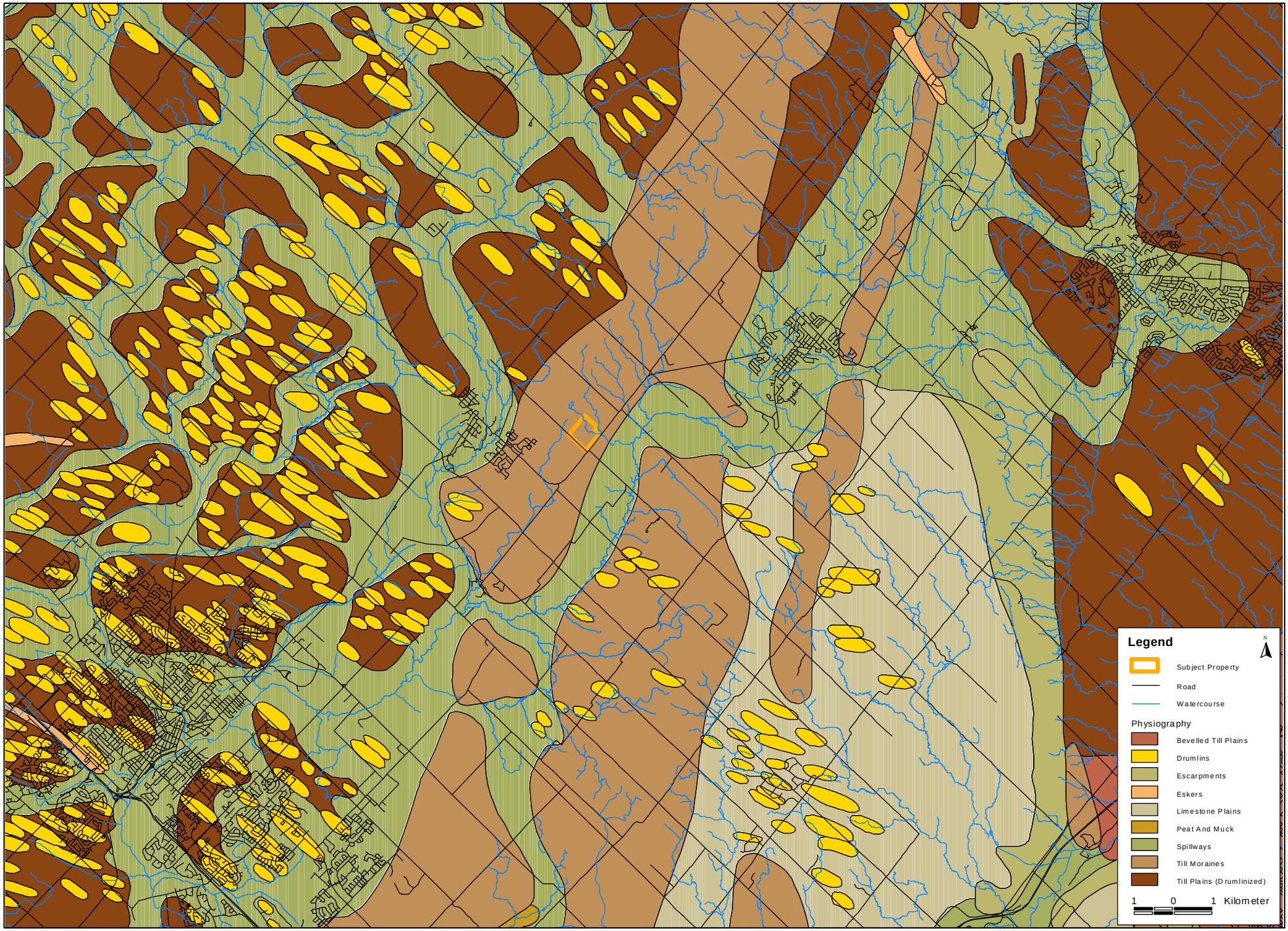
Harden Environmental Services Ltd.	**Project No:** 9506 **Date:** Apr 2012 **Drawn By:** AR	Hydrogeologic Impact Assessment Proposed Aggregate Extraction Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	**Figure 2.5: Water Quality Sampling Locations**



Harden Environmental Services Ltd.	**Project No:** 9506 **Date:** Mar 2012 **Drawn By:** AR	Hydrogeologic Impact Assessment Proposed Aggregate Extraction Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	Figure 2.6: **MOE Reported Water Well Records**



Harden Environmental Services Ltd.	**Project No:** 9506 **Date:** Apr 2012 **Drawn By:** AR	Hydrogeologic Impact Assessment Proposed Aggregate Extraction Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	Figure 2.7: **Private Water Well Survey**



Harden Environmental Services Ltd.

Project No: 9506

Date: Apr 2012

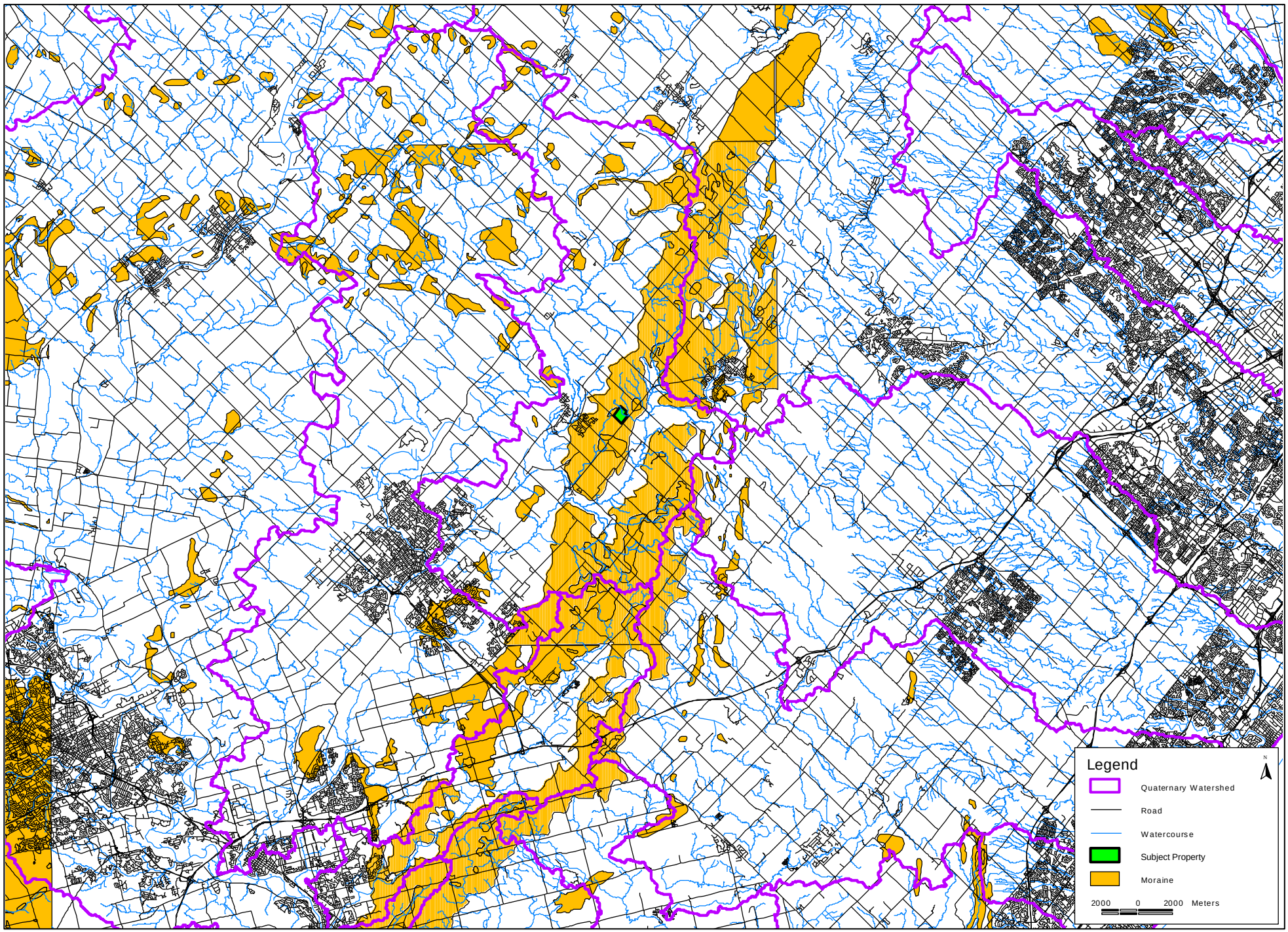
Drawn By: AR

Hydrogeologic Impact Assessment
Proposed Aggregate Extraction

Part of Lot 1, Concession 6
Township of Guelph/Eramosa, County of Wellington

Figure 3.1: Physiography

Source: Chapman, L.J. and Putnam, D.F. 2007. Physiography of southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 228. Copyright © Queen's Printer for Ontario



Harden Environmental Services Ltd.

Project No: 9506

Date: Nov 2011

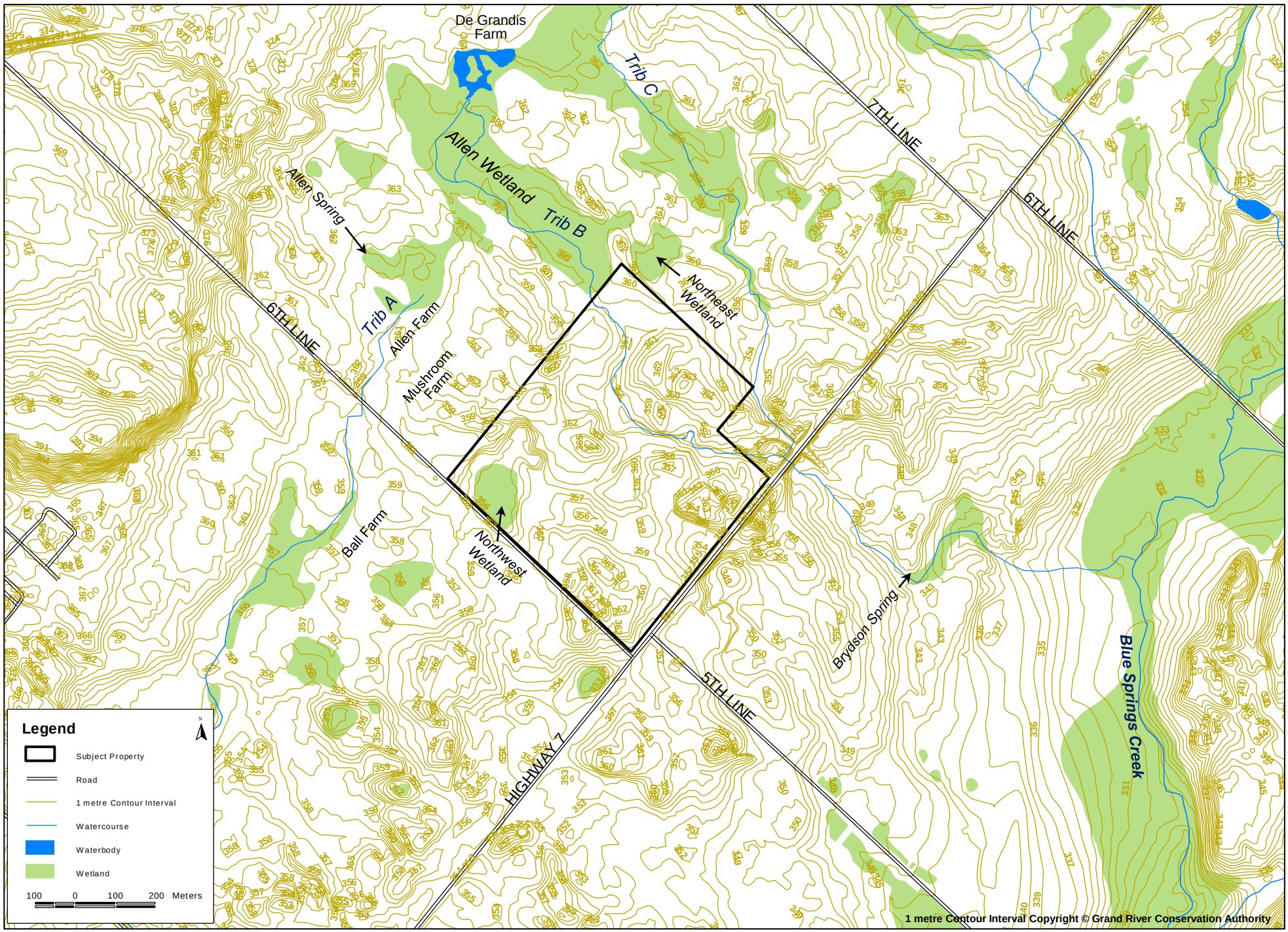
Drawn By: AR

Hydrogeologic Impact Assessment
Proposed Aggregate Extraction

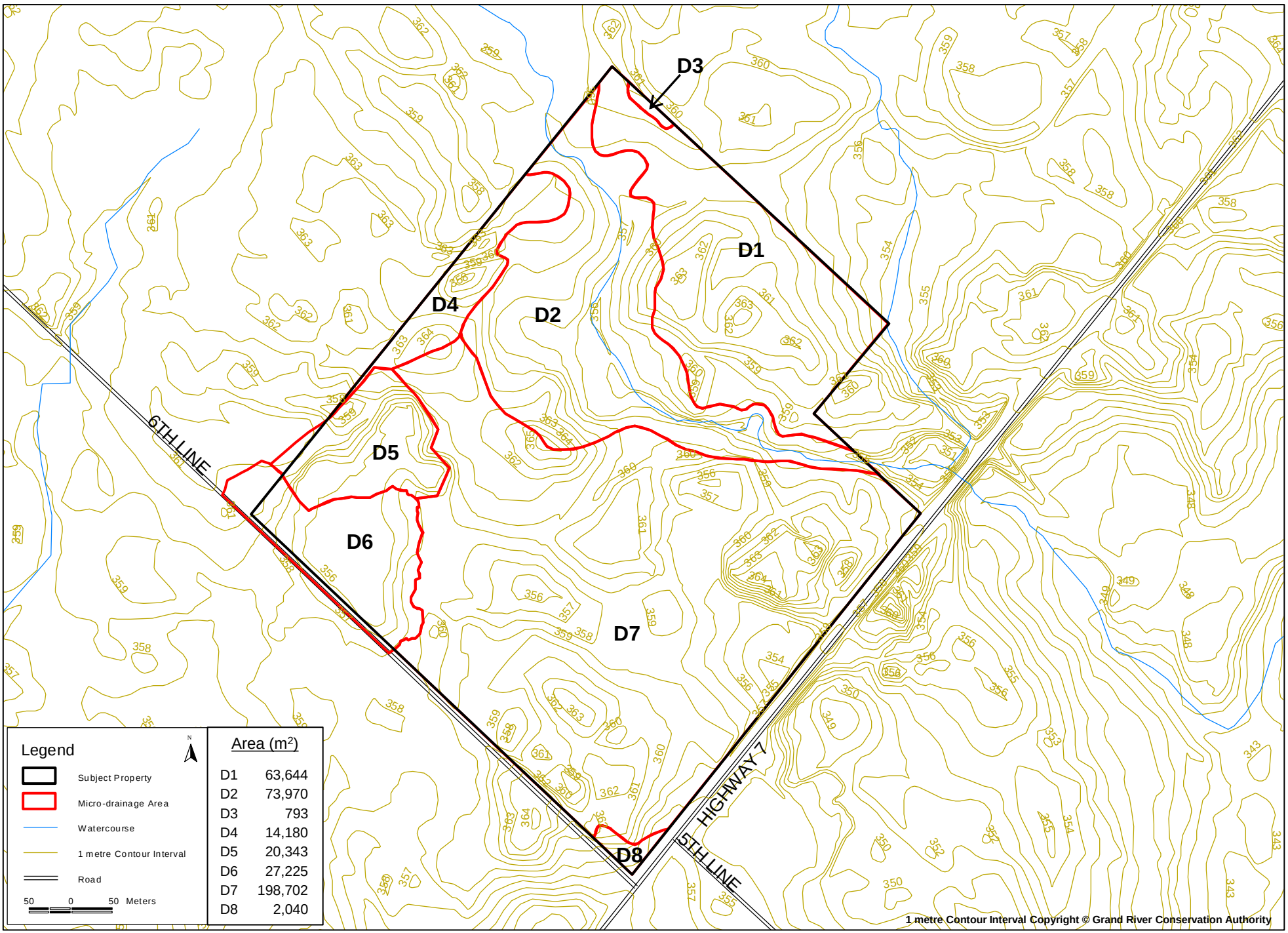
Part of Lot 1, Concession 6
Township of Guelph/Eramosa, County of Wellington

Figure 3.2: MNR Identified Moraine Locations

Source: Ontario Geological Survey 2010. Surficial geology of southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 128 – Revised. Copyright © Queen's Printer for Ontario



Harden Environmental Services Ltd.	**Project No:** 9506 **Date:** Mar 2012 **Drawn By:** AR	Hydrogeologic Impact Assessment Proposed Aggregate Extraction Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	**Figure 3.3: Site Topography and Drainage**



Harden Environmental Services Ltd.

Project No: 9506
Date: Jul 2012
Drawn By: AR

Hydrogeologic Impact Assessment
Proposed Aggregate Extraction

Part of Lot 1, Concession 6
Township of Guelph/Eramosa, County of Wellington

Figure 3.4: Micro-drainage Areas

Legend

- Subject Property
- Road
- 5 metre Contour Interval
- Watercourse
- Waterbody
- Wetland
- Lot Fabric

345.67 Top of Bedrock Elevation

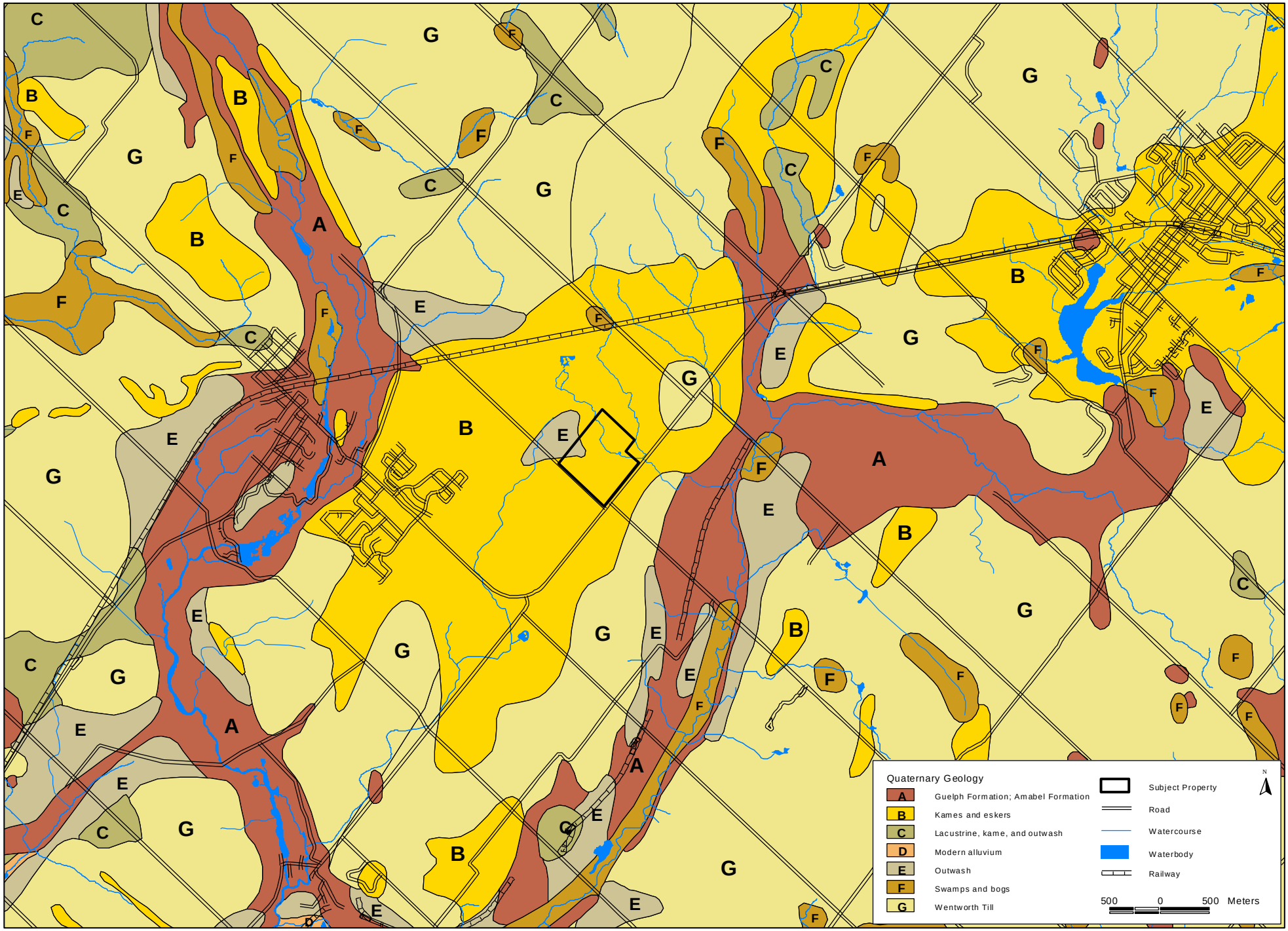
- Bedrock Outcrop
- Test Hole
- Water Well Record
- Water Well Record and Elevation Survey

100 0 100 200 Meters

N

Blue Springs Creek

Harden Environmental Services Ltd.	**Project No:** 9506 **Date:** Jul 2012 **Drawn By:** AR	Hydrogeologic Impact Assessment Proposed Aggregate Extraction Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	Figure 3.5: **Top of Bedrock Elevation (m AMSL)**



Harden Environmental Services Ltd.

Project No: 9506

Date: Mar 2012

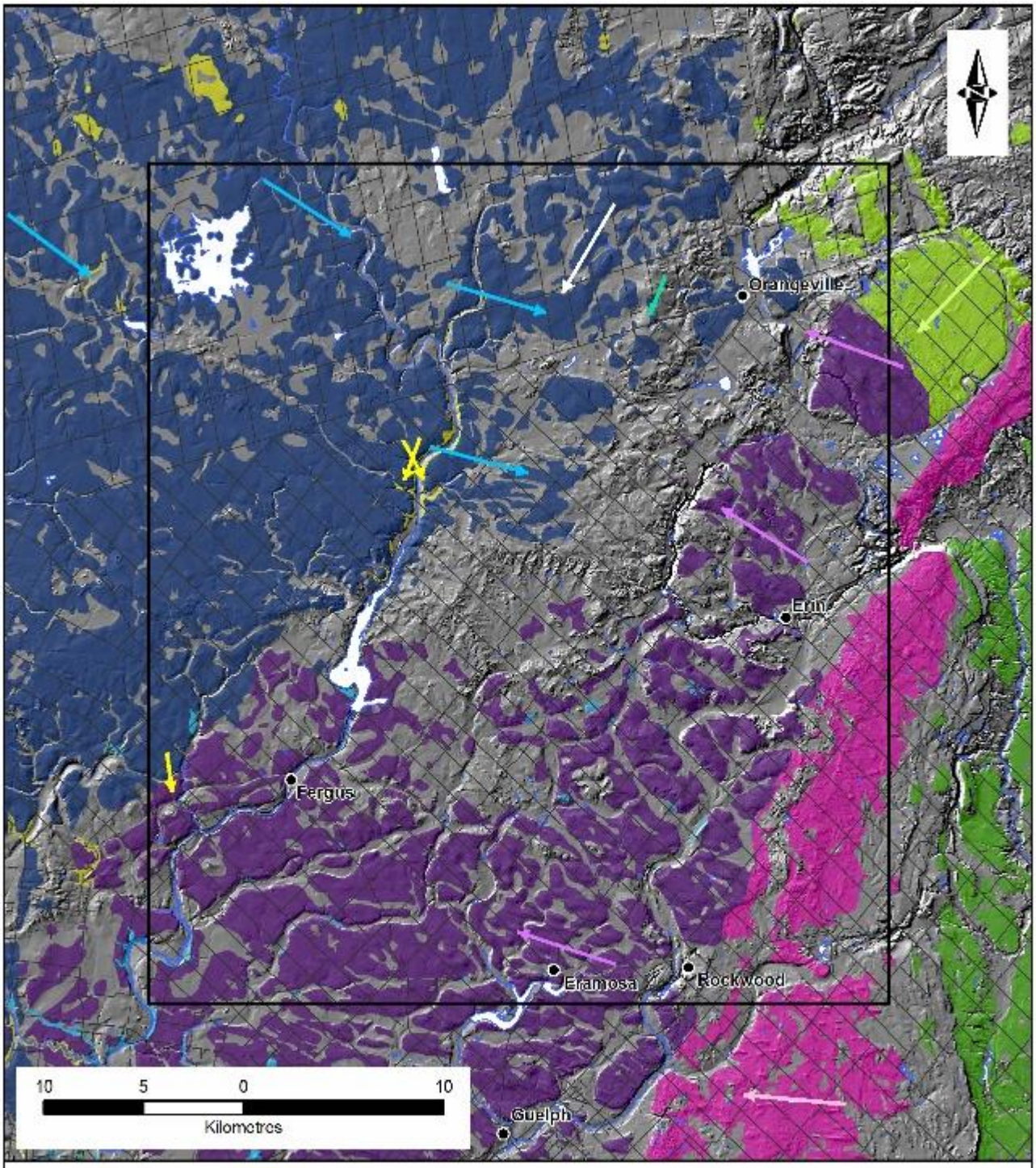
Drawn By: AR

Hydrogeologic Impact Assessment
Proposed Aggregate Extraction

Part of Lot 1, Concession 6
Township of Guelph/Eramosa, County of Wellington

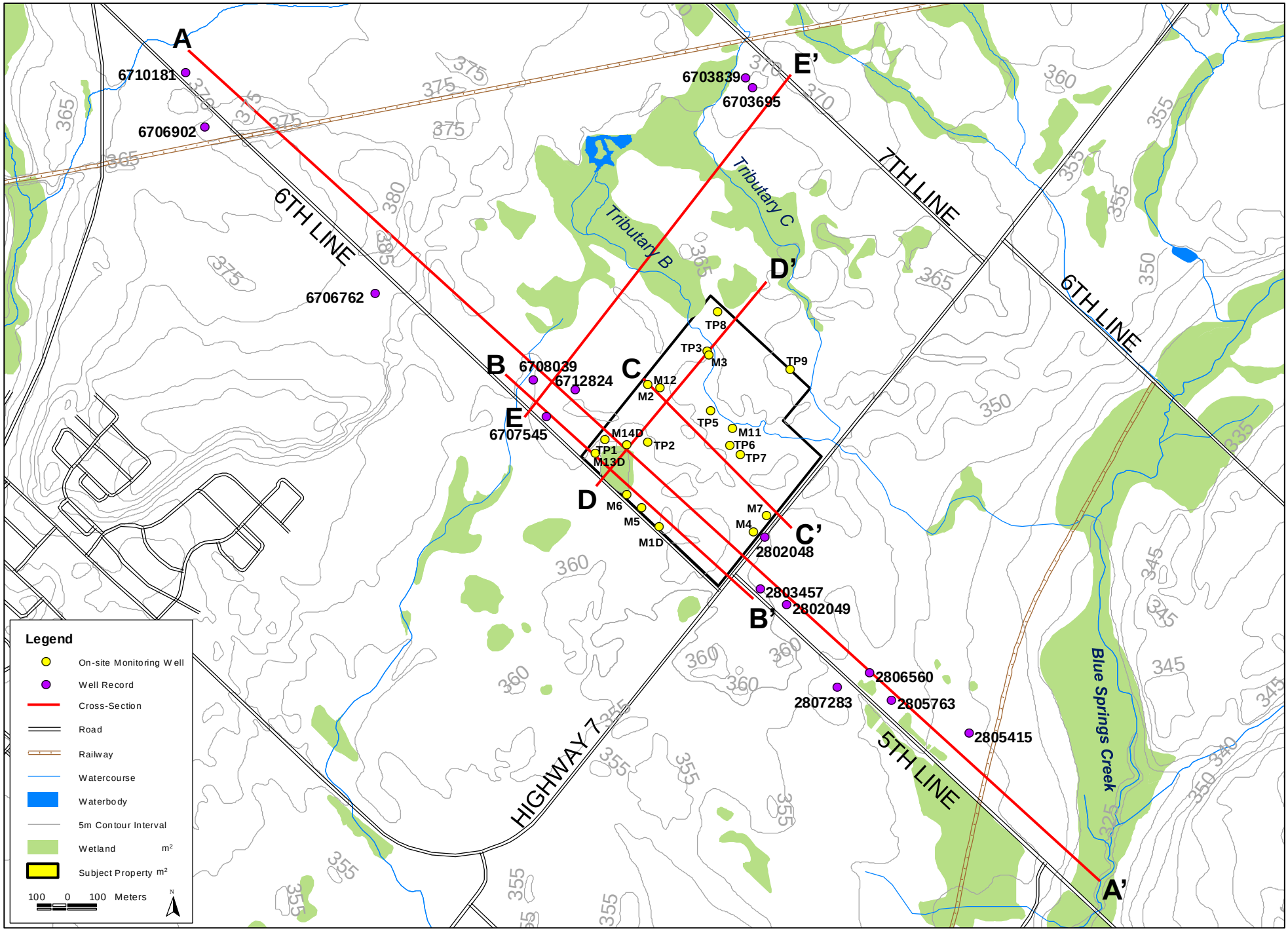
Figure 3.6: Quaternary Geology

Source: Ontario Geological Survey 2010. Surficial geology of southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 128 – Revised.



Source: Figure 28.5 Burt, A.K. 2011. The Orangeville moraine project: preliminary results of drilling and section work; in Summary of Field Work and Other Activities 2011, Ontario Geological Survey, Open File Report 6270, p.28-1 to 28-34.

Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Figure 3.7:**
	Date: 2011	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	**Quaternary Geology (Burt, 2011)**
	Drawn By: Burt, 2011		



Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Figure 3.8: Cross-Section Location Map**
	Date: Aug 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: AR		

A

PARIS MORAINE

WENTWORTH AND SILT TILL

DICK PROPERTY

HWY 7

BLUE SPRINGS CREEK

A'

KAME DEPOSITS UNDERLAIN BY SILT TILL

SPILLWAY EXPOSED BEDROCK

ELEVATION (MASL)

380
375
370
365
360
355
350
345
340
335
330
325
320
315

6706762
6706902
6710191
6708039
6707545
M13D
M1D
M4
2803457
2802049
2807283
2806560
2805763
2805415

TILL

BEDROCK

SAND & GRAVEL

TILL

BEDROCK

BEDROCK

PROPOSED EXTRACTION

LEGEND:

6706762 WELL DESIGNATION

GRAVEL

SAND

TILL

DOLOMITE

GROUNDWATER LEVEL

INTERPRETED GEOLOGICAL BOUNDARIES

0 200 400 600 800 1000

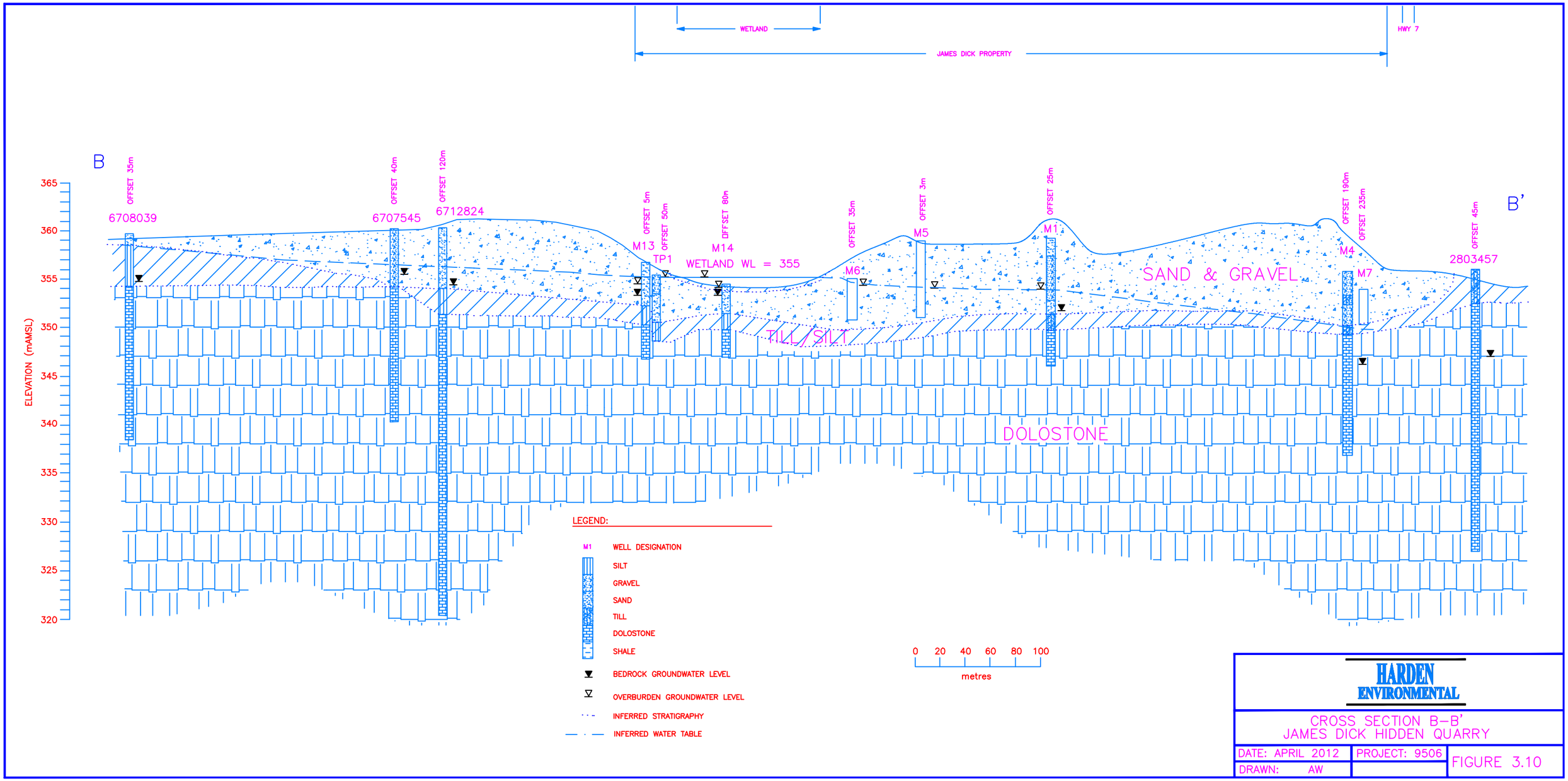
metres

HARDEN ENVIRONMENTAL

REGIONAL CROSS SECTION A–A'
JAMES DICK HIDDEN QUARRY

DATE: MAR 2000 | PROJECT: 9506 | FIGURE 3.9

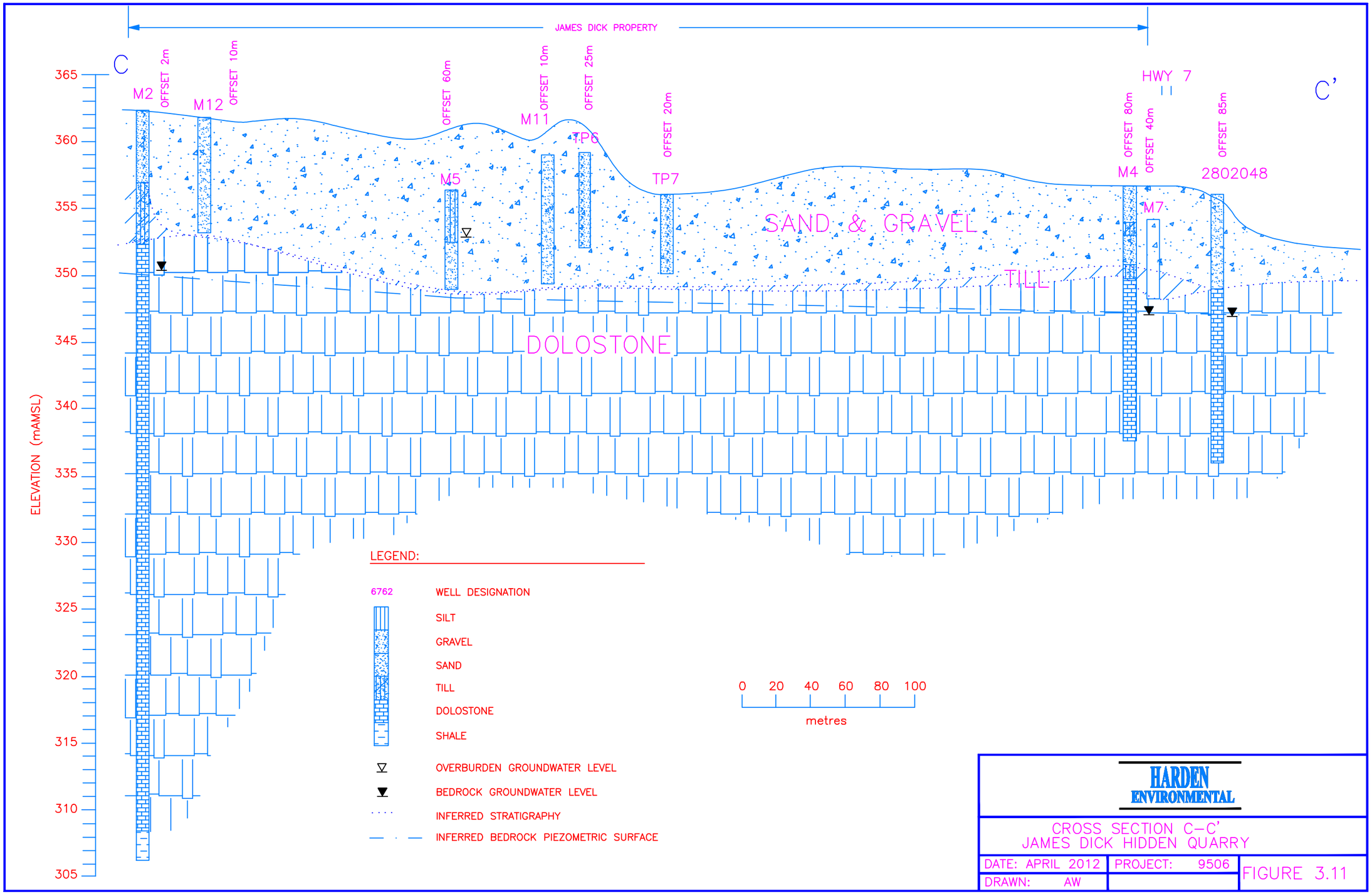
DRAWN: MR



HARDEN ENVIRONMENTAL

CROSS SECTION B–B'
JAMES DICK HIDDEN QUARRY

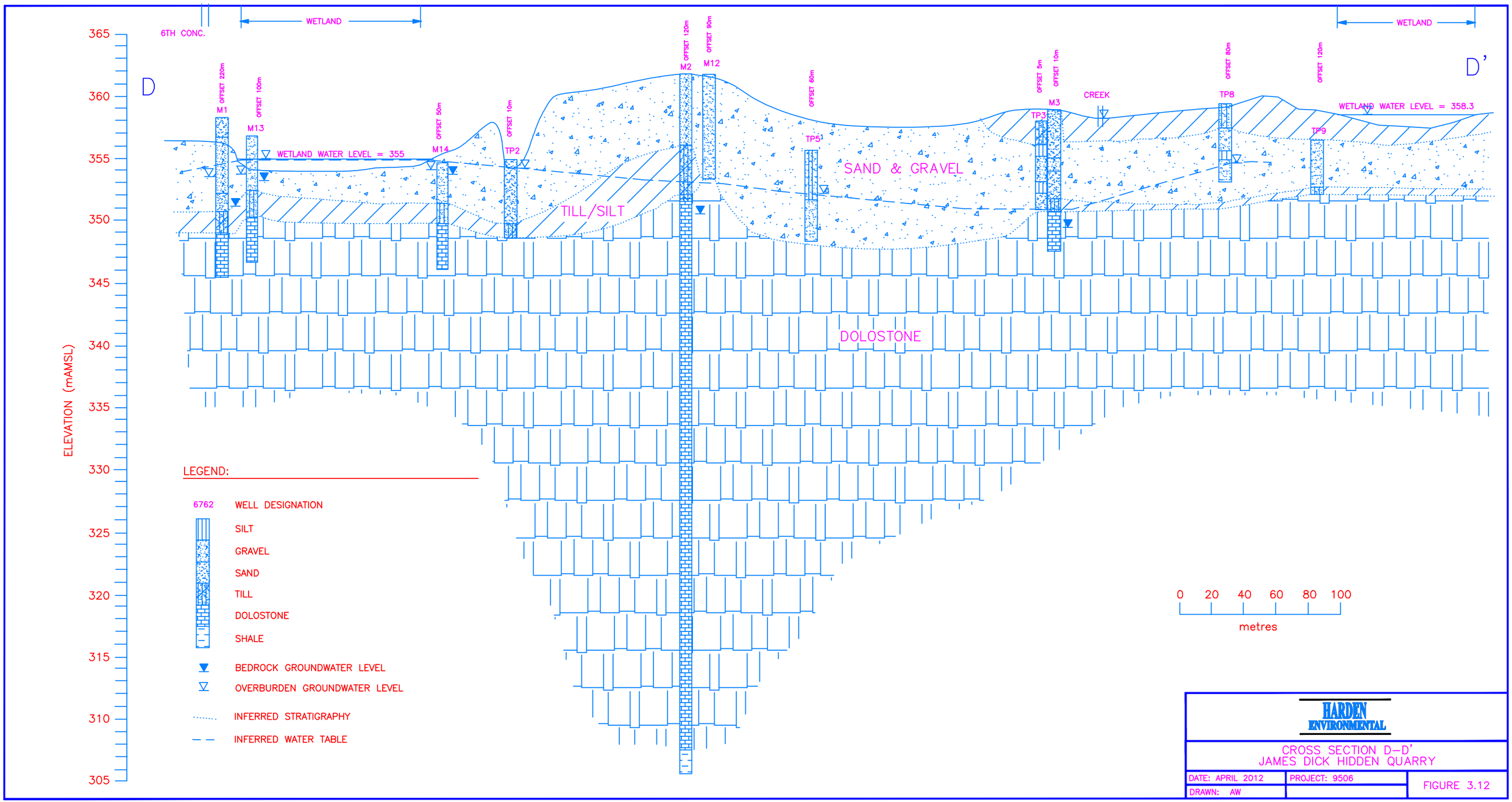
DATE: APRIL 2012	PROJECT: 9506	FIGURE 3.10
DRAWN: AW		



HARDEN ENVIRONMENTAL

CROSS SECTION C–C'
JAMES DICK HIDDEN QUARRY

DATE: APRIL 2012	PROJECT: 9506	FIGURE 3.11
DRAWN: AW		

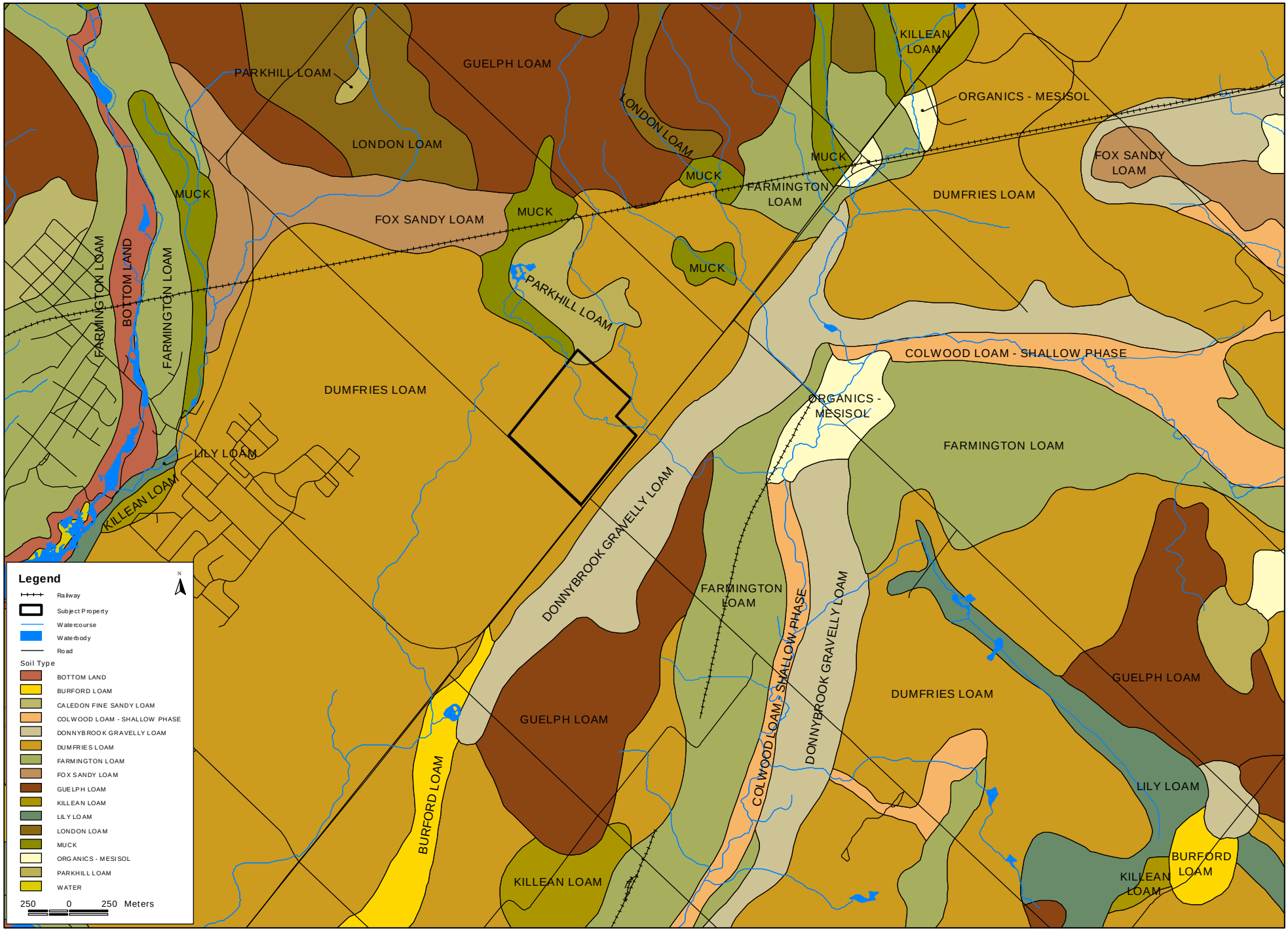


HARDEN ENVIRONMENTAL

CROSS SECTION D–D'
JAMES DICK HIDDEN QUARRY

DATE: APRIL 2012 | PROJECT: 9506 | FIGURE 3.12

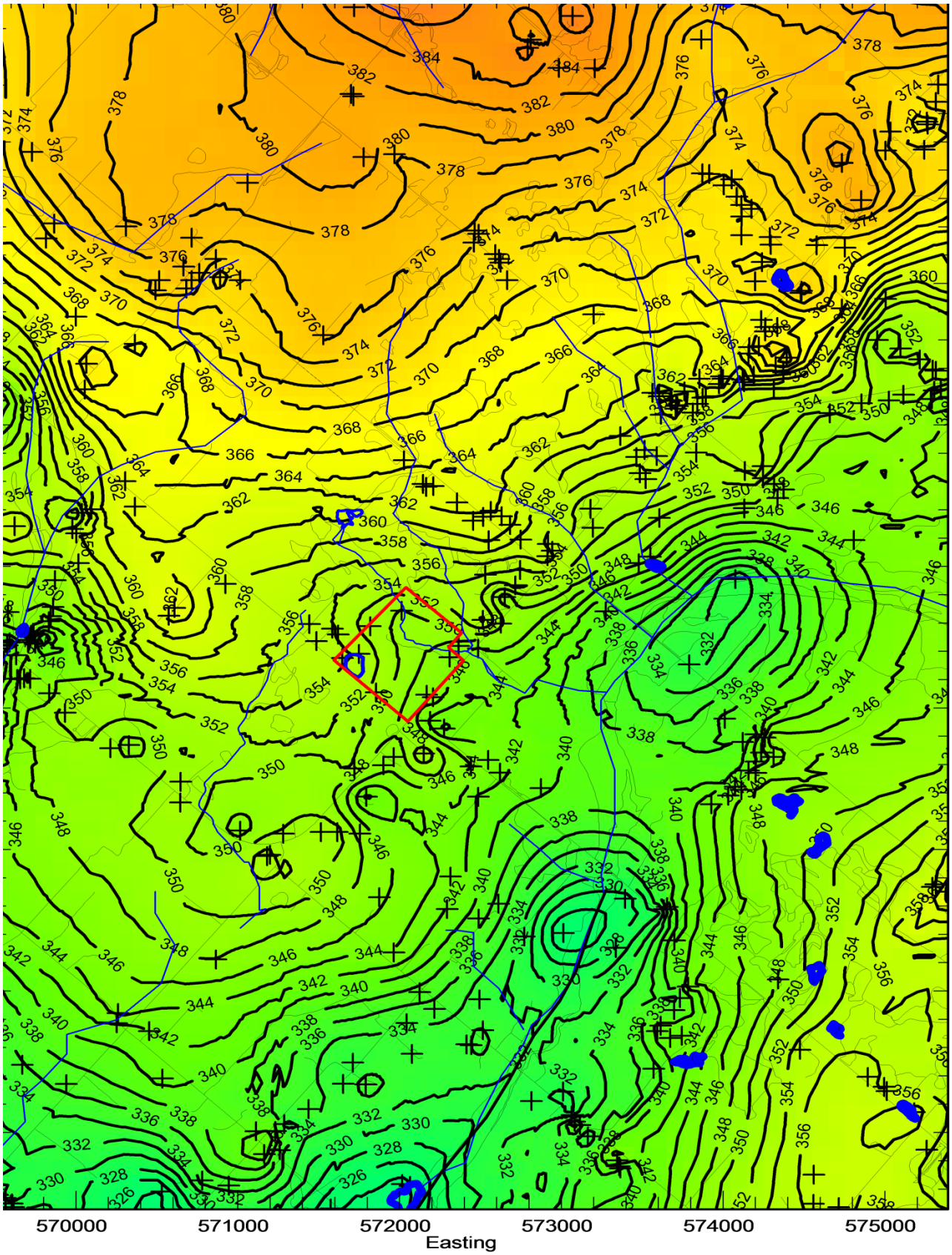
DRAWN: AW



Harden Environmental Services Ltd.	**Project No:** 9506 **Date:** Apr 2012 **Drawn By:** AR	Hydrogeologic Impact Assessment Proposed Aggregate Extraction Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington

Figure 3.13: Wellington County Soil Survey

Source: Ontario Ministry of Agriculture, Food and Rural Affairs, Agriculture and Agri-Food Canada, Ministry of Natural Resources, 2011, Soil Survey Complex.



Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Figure 3.14:**
	Date: Jul 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	**Regional Groundwater Flow**
	Drawn By: SD		

Legend

- Subject Property
- Road
- 5 metre Contour Interval
- Watercourse
- Waterbody
- Wetland
- Lot Fabric
- 345.67 Static Water Level Elevation (mAMSL)
- Test Hole
- Water Well Record
- Water Well Record and Elevation Survey

100 0 100 200 Meters

N

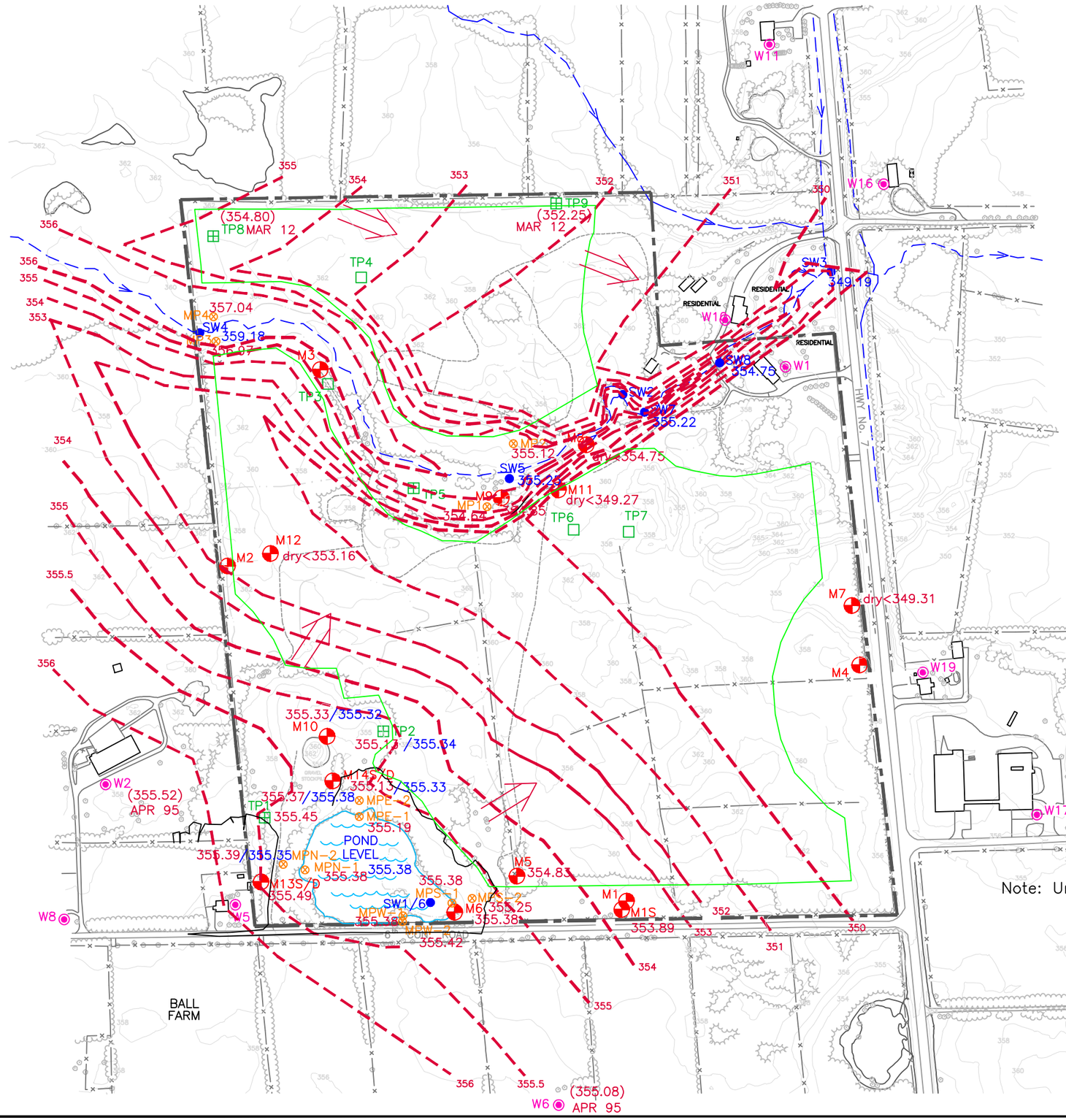
Blue Springs Creek

Harden Environmental Services Ltd.	**Project No:** 9506 **Date:** Jul 2012 **Drawn By:** AR	Hydrogeologic Impact Assessment Proposed Aggregate Extraction Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington

Figure 3.15:

Local Static Water Level Elevation (m AMSL)

DRAFT



LEGEND

- PROPERTY BOUNDARY
- FOREST EDGE
- TRAIL
- PERMANENT STREAM
- INTERMITTENT STREAM
- FENCELINE
- BUILDINGS (TYPE) — RESIDENTIAL
- M1 — GROUNDWATER MONITOR LOCATION AND DESIGNATION
- TP1 — TEST PIT WITH WATER TABLE MONITOR LOCATION AND DESIGNATION
- TP4 — TEST PIT LOCATION AND DESIGNATION
- SW1 — SURFACE WATER LOCATION AND DESIGNATION
- R1 — RESIDENTIAL WELL LOCATION AND DESIGNATION
- 352.05 — OBSERVED GROUNDWATER ELEVATION IN OVERBURDEN
- 352.22 — OBSERVED SURFACE WATER ELEVATION
- INFERRED GROUNDWATER ELEVATION IN OVERBURDEN
- OVERBURDEN GROUNDWATER FLOW DIRECTION

0 100 200 300 400
metres

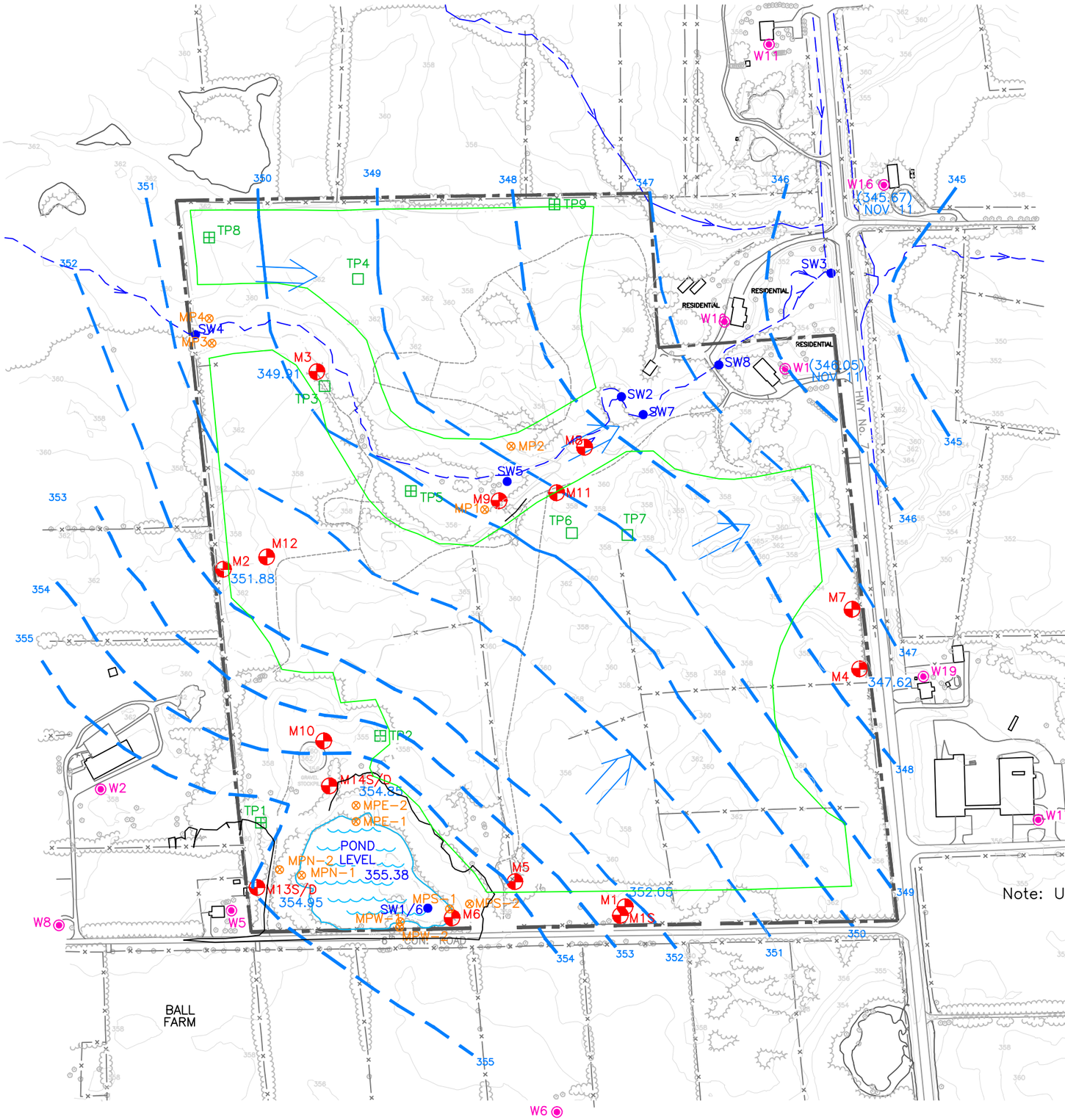
Note: Unless specified GW contours based on May 31, 2011 elevation data.

HARDEN ENVIRONMENTAL

OVERBURDEN WATER TABLE CONTOURS

DATE: SEPT 2011	PROJECT: 9506	Figure 3.16
DRAWN: AW	SCALE: 1 : 4000	

DRAFT



LEGEND

- PROPERTY BOUNDARY
- FOREST EDGE
- TRAIL
- PERMANENT STREAM
- INTERMITTENT STREAM
- FENCELINE
- RESIDENTIAL — BUILDINGS (TYPE)
- M1 — GROUNDWATER MONITOR LOCATION AND DESIGNATION
- TP1 — TEST PIT WITH WATER TABLE MONITOR LOCATION AND DESIGNATION
- TP4 — TEST PIT LOCATION AND DESIGNATION
- SW1 — SURFACE WATER LOCATION AND DESIGNATION
- R1 — RESIDENTIAL WELL LOCATION AND DESIGNATION
- 353.89 — OBSERVED GROUNDWATER ELEVATION IN BEDROCK
- INFERRED GROUNDWATER ELEVATION IN BEDROCK
- BEDROCK GROUNDWATER FLOW DIRECTION

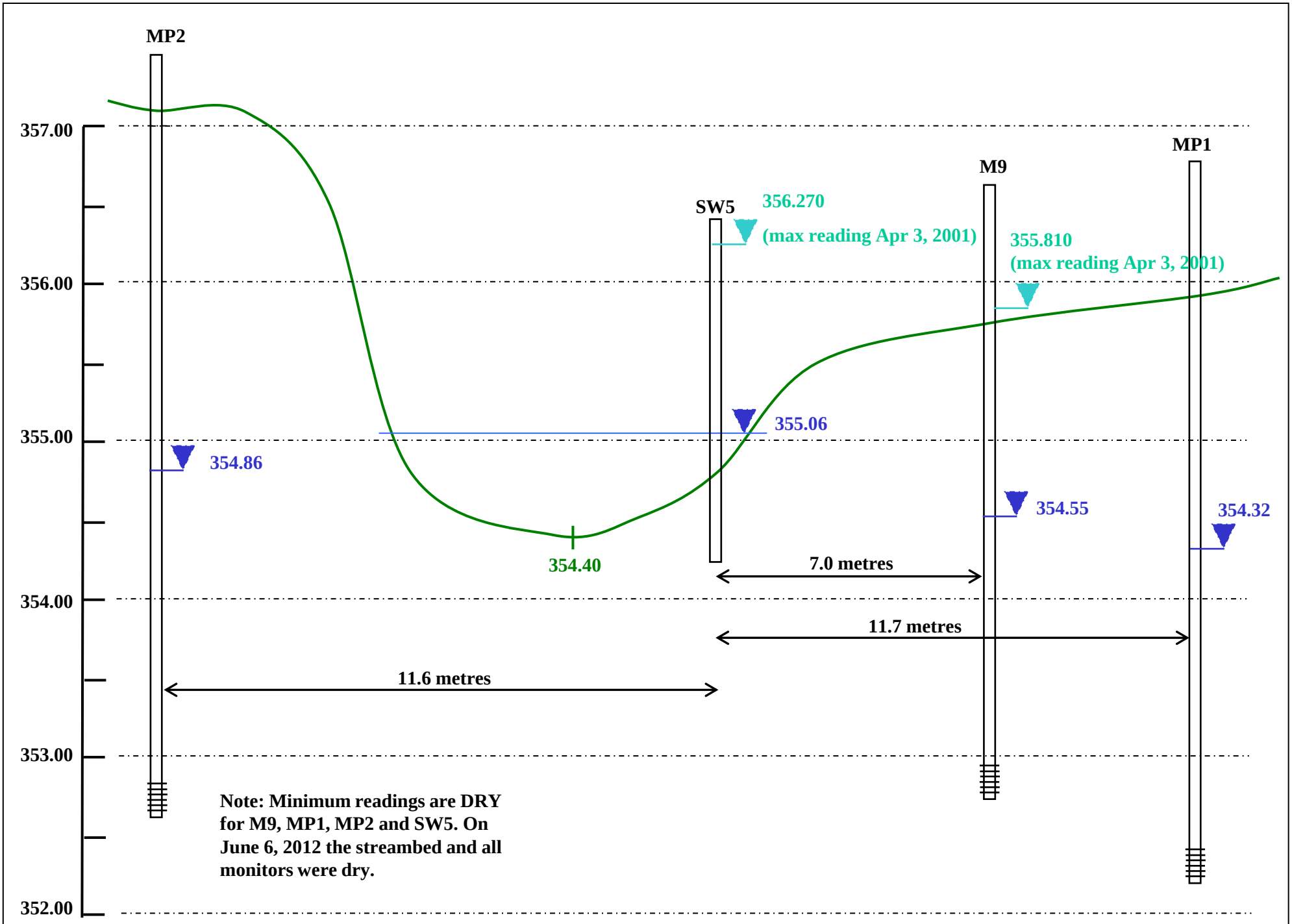
0 100 200 300 400
metres

Note: Unless specified GW contours based on May 31, 2011 elevation data.

HARDEN ENVIRONMENTAL

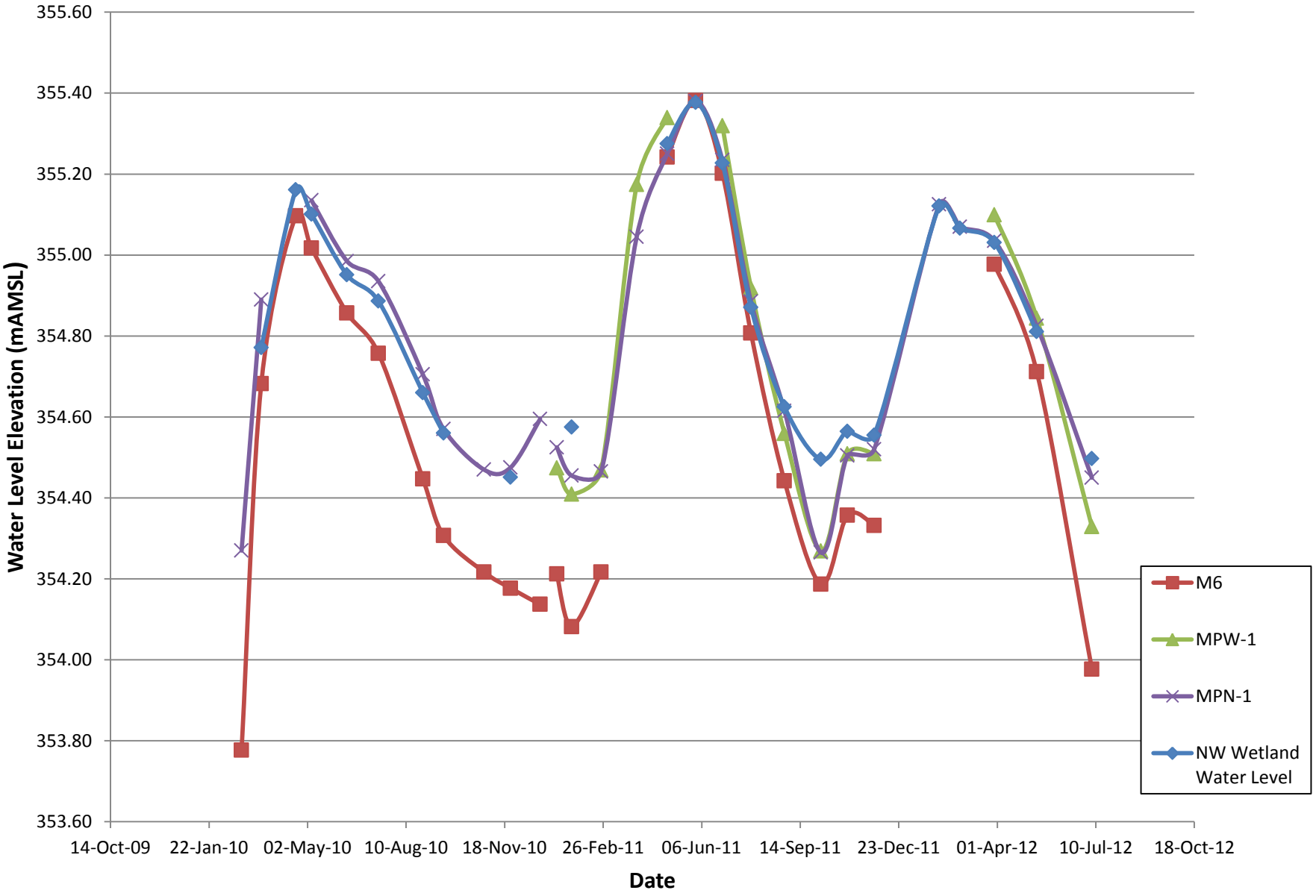
BEDROCK GROUNDWATER CONTOURS

DATE: SEPT 2011	PROJECT: 9506	FIGURE 3.17
DRAWN: AW	SCALE: 1 : 4000	



Harden Environmental Services Ltd.	**Project No:** 9506 **Date:** Jul 2012 **Drawn By:** AR	Hydrogeologic Impact Assessment Proposed Aggregate Extraction Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	**Figure 3.18: Water Table at SW5 July 26, 2011**

Figure 3.19: Hydrographs of Northwest Wetland Monitors



Harden Environmental Services Ltd.	**Project No:** 9506 **Date:** Jul 2012 **Drawn By:** AR	Hydrogeologic Impact Assessment Proposed Aggregate Extraction Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	**Figure 3.19: Hydrographs of Northwest Wetland Monitors**

m AMSL

370
369
368
367
366
365
364
363
362
361
360
359
358
357
356
355
354
353
352

6th Line
E
Southwest

7th Line
E'
Northeast

(30)
6707545

(25)
6712824

(150)
M2

Tributary B
Wetland

Depression

Tributary C

(40)
(55)
6703839
6703695

0 25 50 75 100 125 150 175 200 225 250 m
HORIZONTAL SCALE

Sand / Sand and Gravel
Silt Till
Bedrock
Estimated Groundwater Level (WWR)
(20) Offset Distance (m)

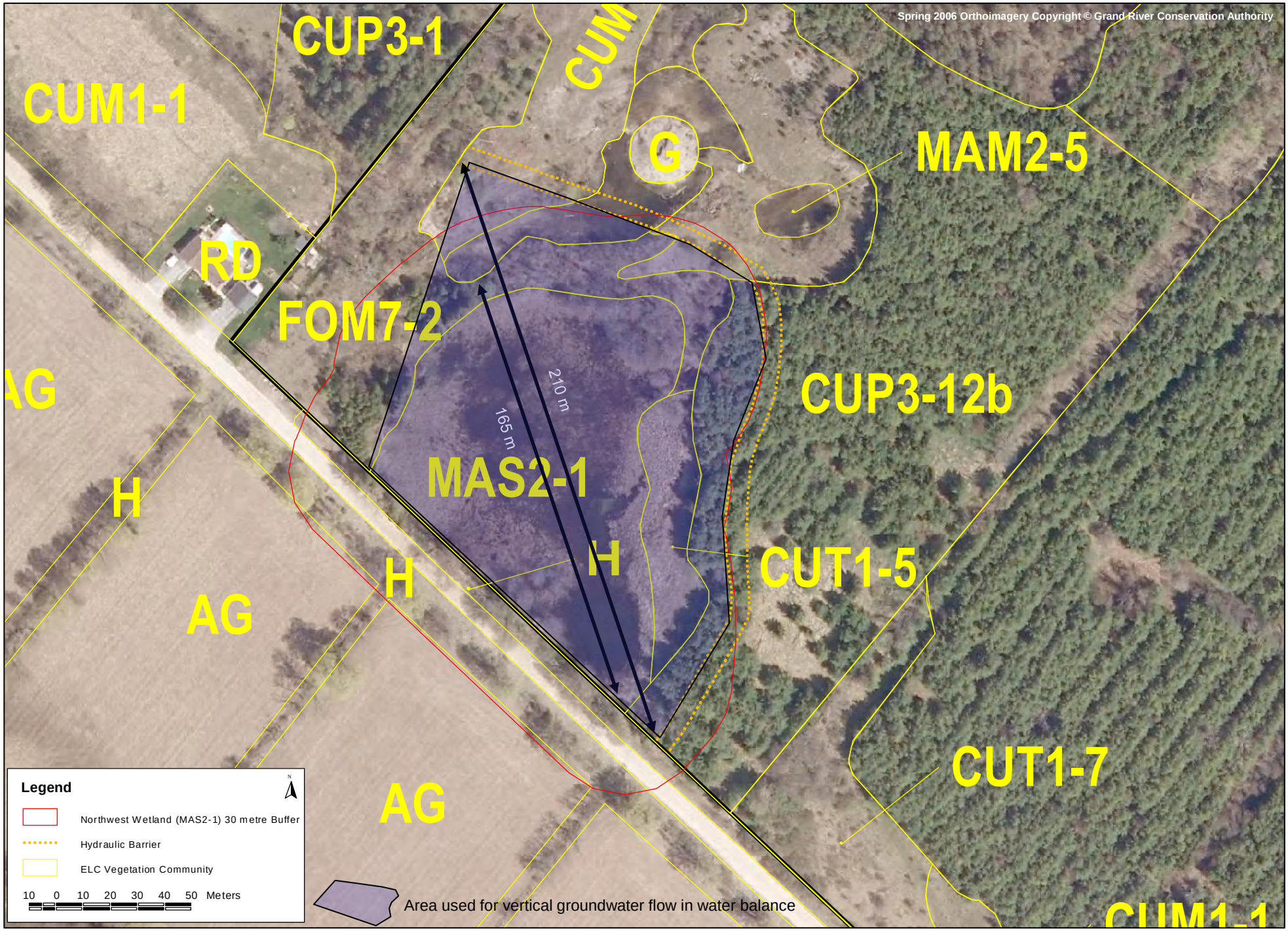
Note: Geological and hydrogeological conditions between boreholes have been interpretted and may not be accurate.

HARDEN ENVIRONMENTAL

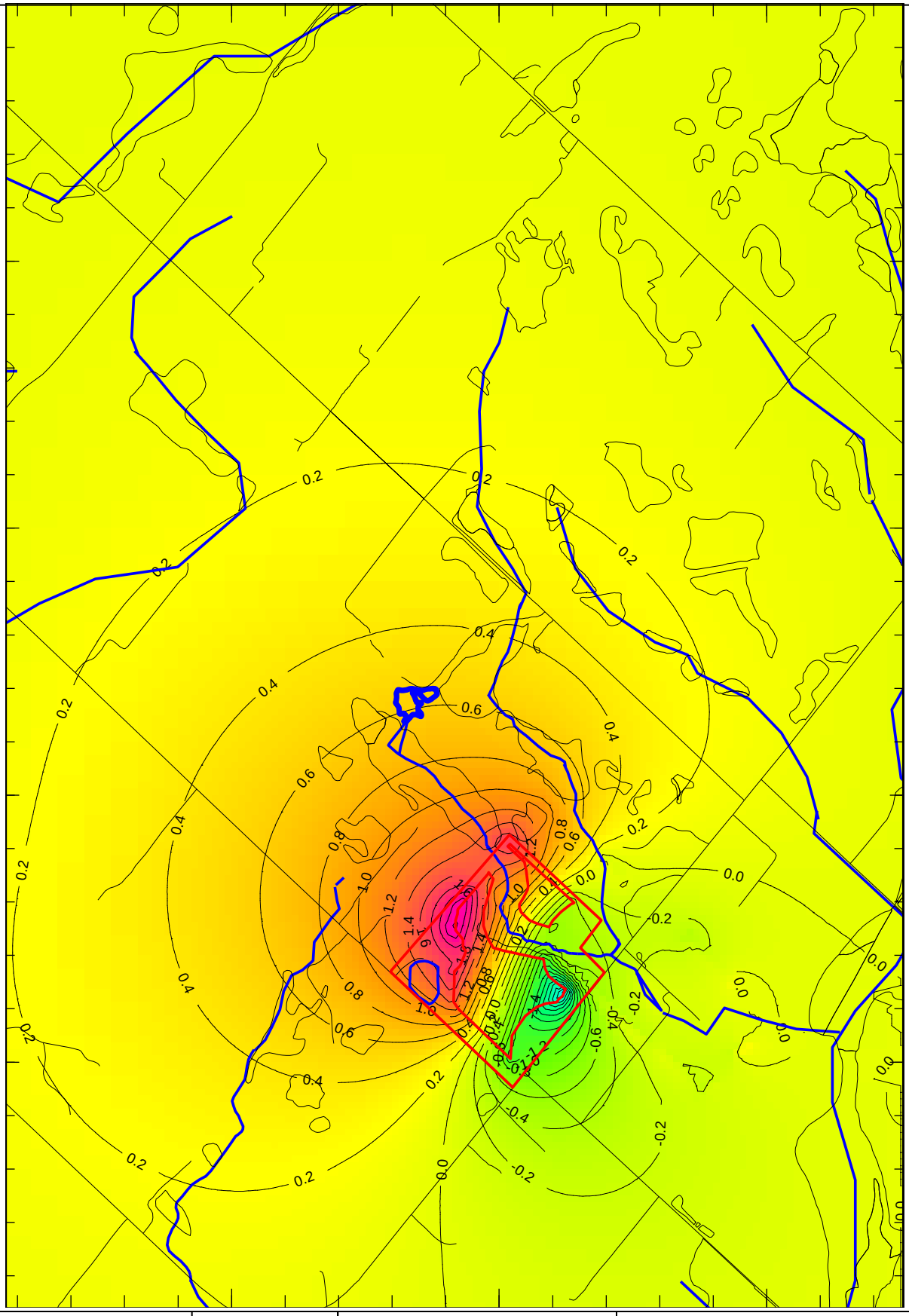
Figure 3.20: Simplified Geologic Cross-Section

DATE: Feb 2012	SCALE: As Shown
PROJECT: 1036	DRAWN BY: AW

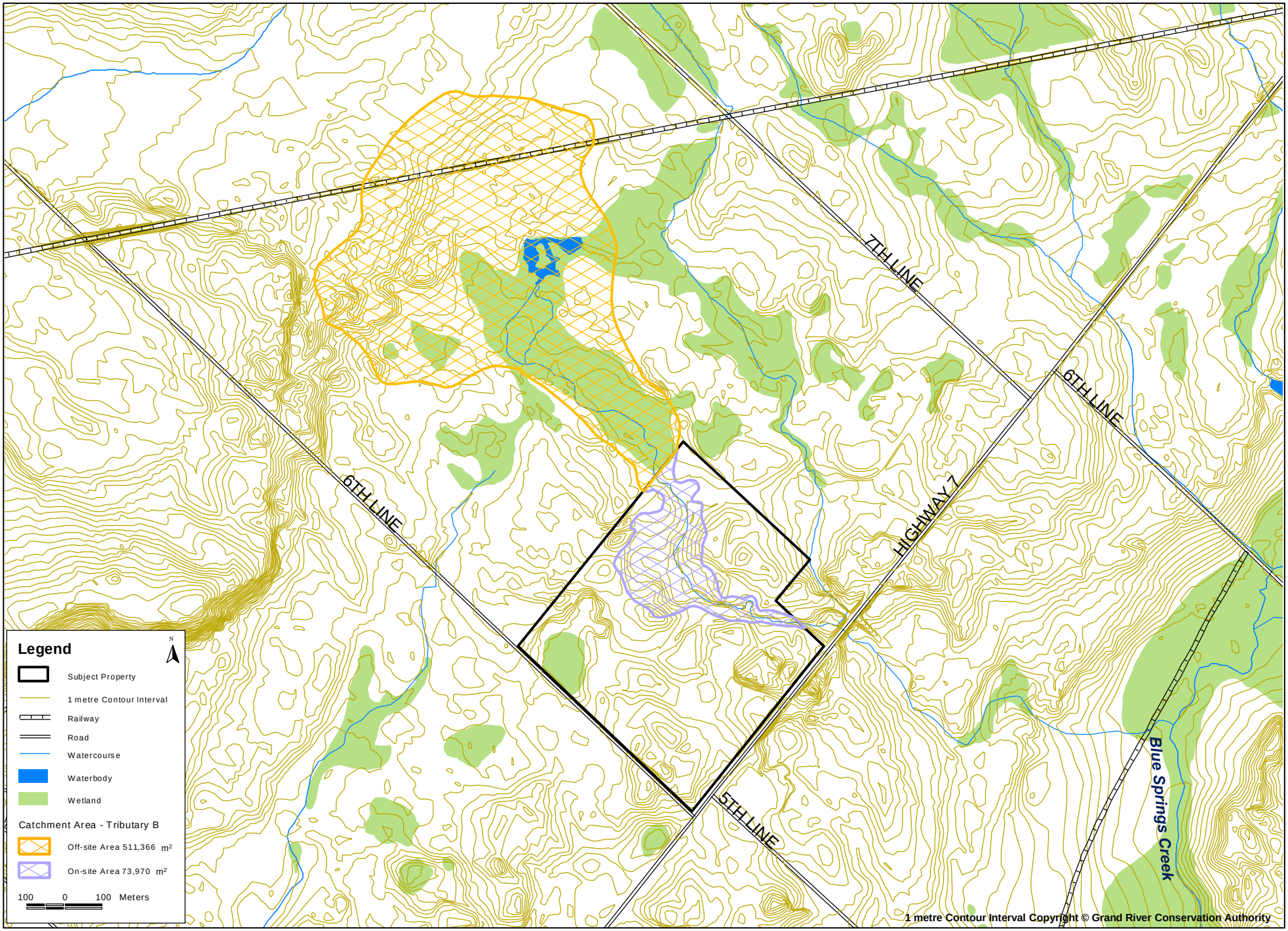
Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Figure 4.1: Extraction Footprint**
	Date: Jun 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: AR		



Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Figure 4.2: Northwest Wetland Hydraulic Barrier**
	Date: Jul 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: AR		

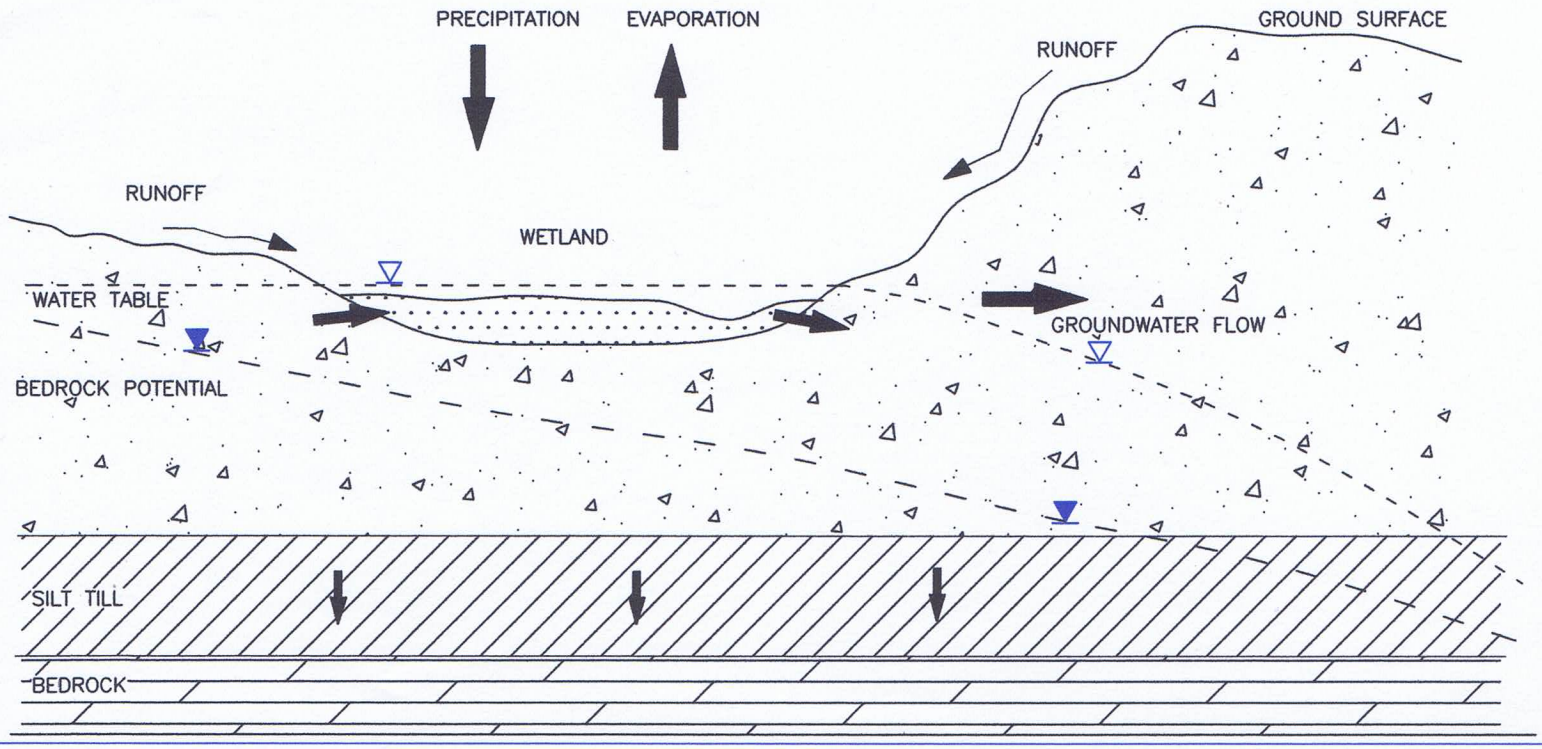


Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Figure 4.3** **Maximum Predicted Drawdown in Bedrock Aquifer**
	Date: Jul 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: SD		

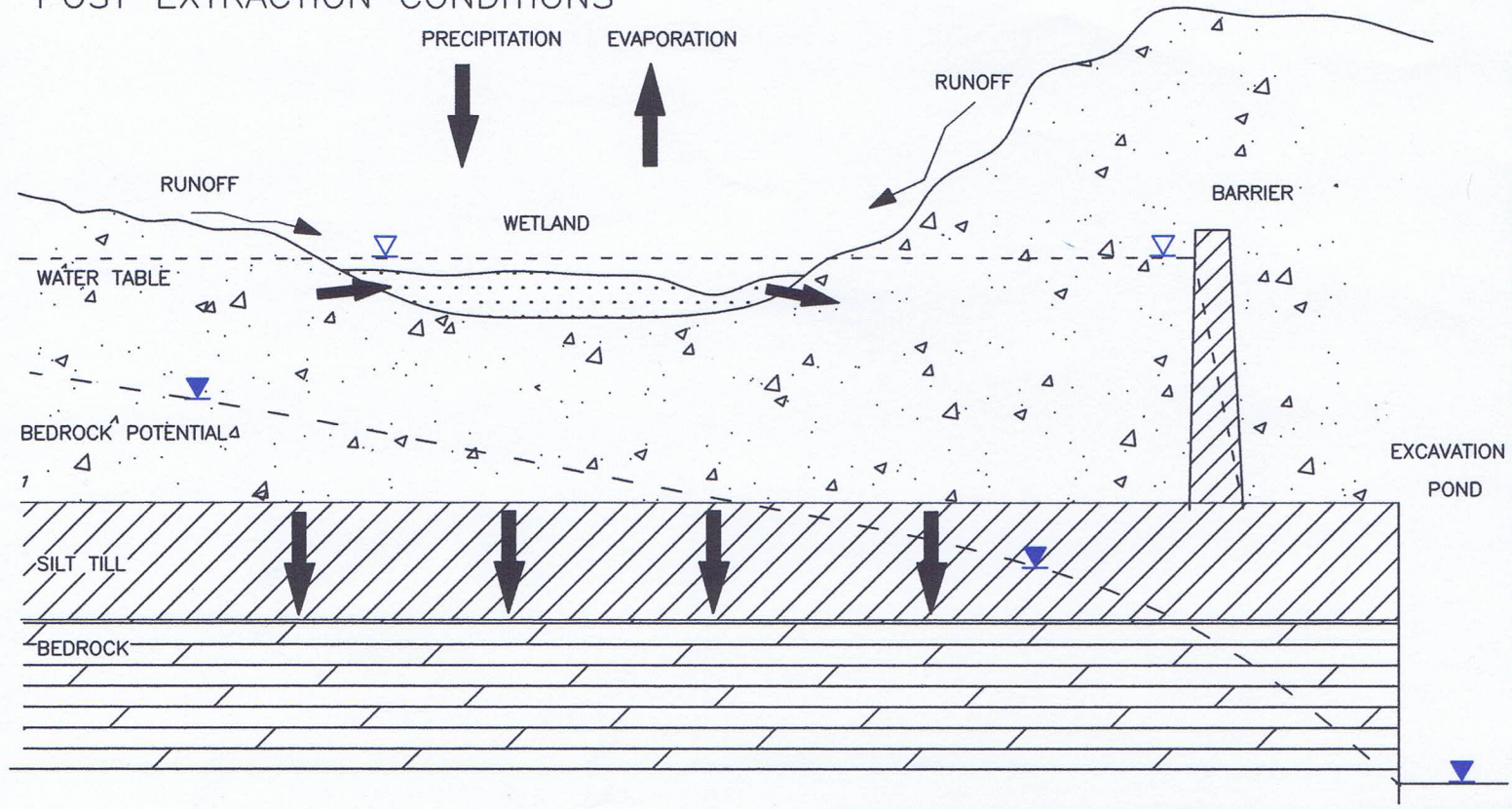


Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Figure 4.4: Tributary B Catchment Area**
	Date: May 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: AR		

EXISTING CONDITIONS



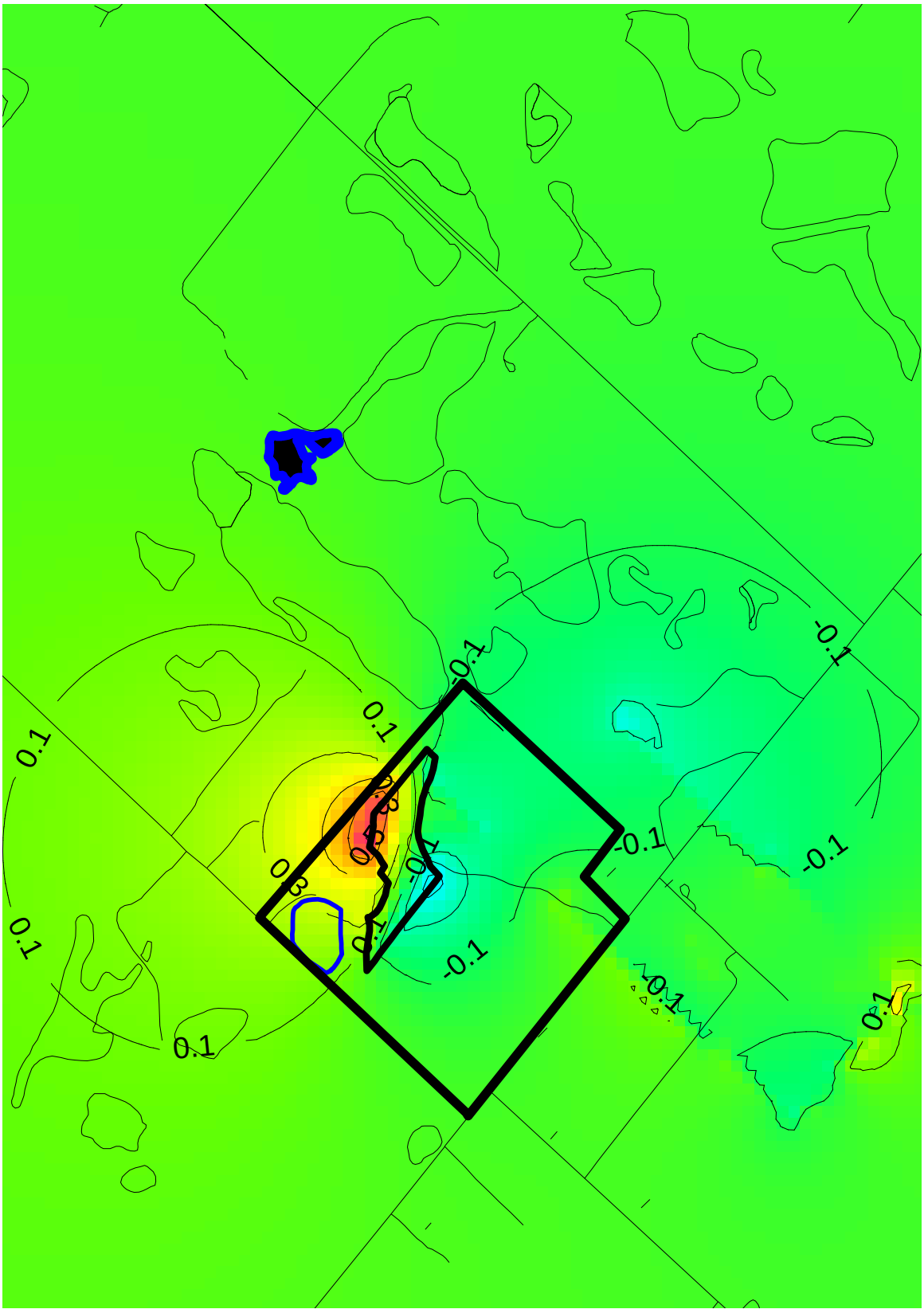
POST EXTRACTION CONDITIONS



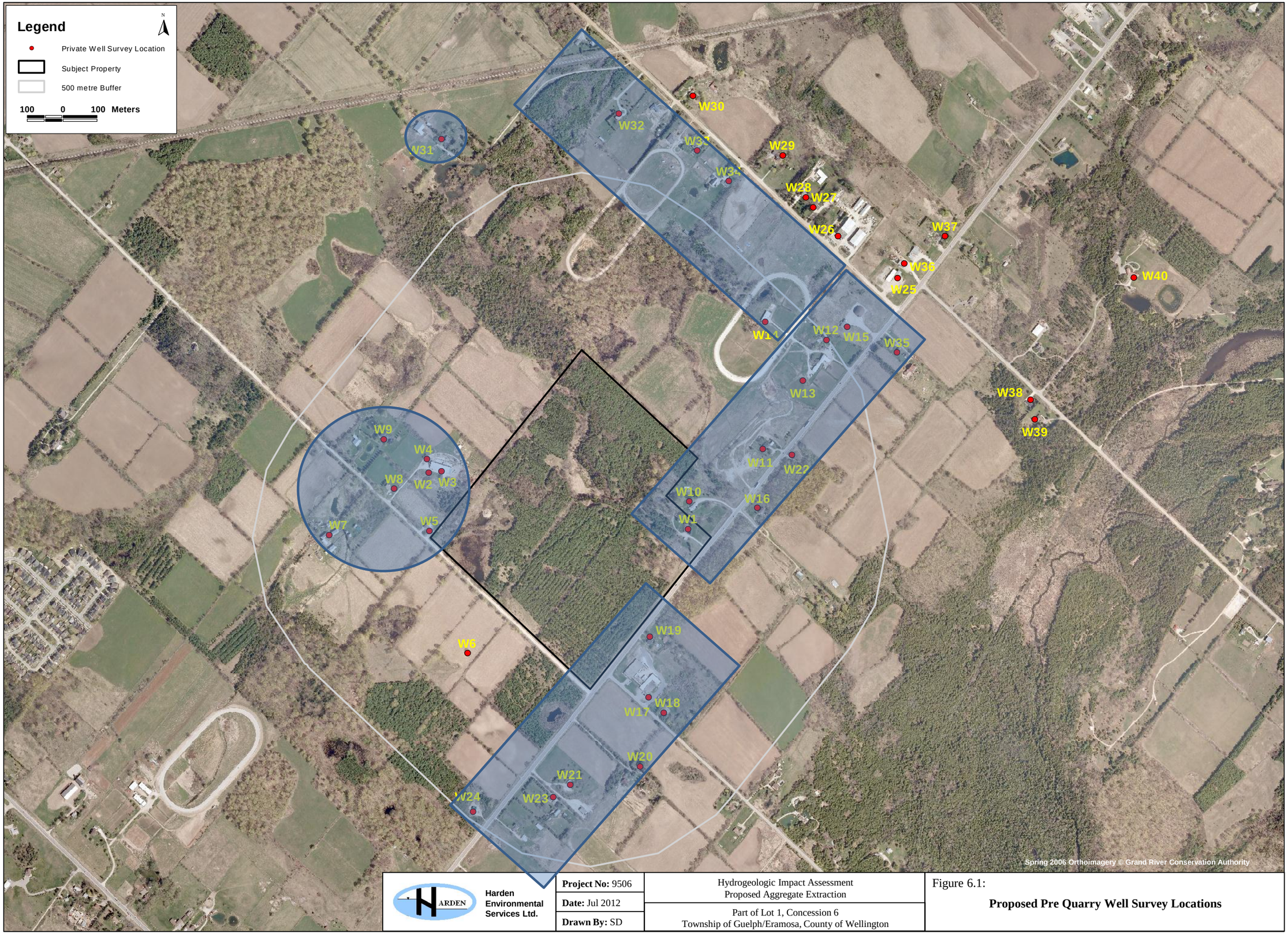
HARDEN ENVIRONMENTAL

WETLAND / BARRIER WATER BALANCE
JAMES DICK HIDDEN QUARRY

DATE: JUN 2012	PROJECT: 9506	FIGURE 5.1
DRAWN: AW		



Harden Environmental Services Ltd.	**Project No:** 9506	Rockwood Groundwater Model Addendum Report	**Figure 5.2:** **Predicted Drawdown in Bedrock Aquifer: North Half of West Pond**
	Date: Mar 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: SD		



Harden Environmental Services Ltd.	**Project No:** 9506 **Date:** Jul 2012 **Drawn By:** SD	Hydrogeologic Impact Assessment Proposed Aggregate Extraction Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	Figure 6.1: **Proposed Pre Quarry Well Survey Locations**

APPENDICES

Appendix A
Geological Data

Borehole Logs
Grain Size Analysis
Table A1: Monitoring Station Completion Details
Table A2: Soil Descriptions - Allen Wetland and Northwest Wetland
Table A3: Summary of Grain Size Analysis
Table A4: Top of Silt/Silt Till

PROJECT: M1-S

M1-S

LOCATION: Rockwood

BORING DATE: Dec 21, 2010 DATUM: GROUND SURFACE DIP: 90 LOGGED: AW

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)	SAMPLES ID	TYPE	RECOVERY (%)	"N" VALUE
			GS = 358.84 mAMSL						
		Auger	Dark brown, Sandy organics		0	S1	SS	29	3
			Sand, light brown, medium, silty		0.78	S2	SS	79	4
			Coarse gravel, silty, bouldery, with coarse to fine sand		1.68	S3	SS	21	-
						S4	SS	58	58
			Medium gravel, very silty, coarse to fine sand		2.59	S5	SS	75	48
						S6	SS	75	61
						S7	SS	50	-
			Bouldery medium gravel, very silty, coarse and fine sand		5.03	S9	SS	81	48
			Brown sand, gravelly, silty, medium to fine sand		6.10	S10	SS	54	29
			Till, reddish grey, gravelly, sandy silt till, some clay		7.62	S12	SS	42	26
						S13	SS	58	18
						S14	SS	58	-
			END OF HOLE @ 9.35m		9.35				

CONCENTRATION (%)

LEL ◆
MOISTURE CONTENT ●
GAS CONCENTRATION ■

0 20 40 60 80 100

INSTALLATION INFORMATION

DRAWN: AW

Harden Env

CHECKED: SD

PROJECT: 9506

RECORD OF BOREHOLE M1D

SHEET 1 OF 1

LOCATION: ROCKWOOD QUARRY

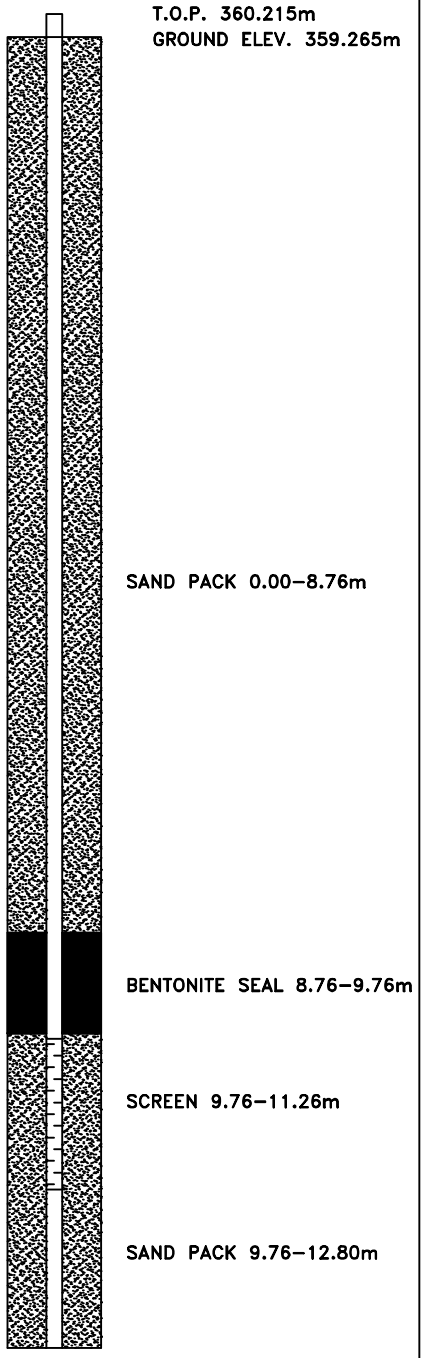
BORING DATE: MAY 1990 | DATUM: GROUND SURFACE | DIP: −90 | LOGGED: KI

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)
0	0		GROUND SURFACE		
			Dark brown, SANDY LOAM.		0.00
	2		SAND, light brown, medium, silty.		0.76
1	4		SAND, light brown, medium.		1.52
	6		COARSE GRAVEL, silty, bouldery, coarse to fine sand.		1.68
2	8				
			MEDIUM GRAVEL, very silty, coarse to fine sand. Lens of fine gravel and well graded sand (3.9–4.5m).		2.59
3	10				
	12				
4	14				
	16				
5	18		BOULDERY MEDIUM GRAVEL, very silty, coarse and fine sand.		5.03
6	20		SAND, gravelly, silty, medium to fine sand.		6.10
	22				
7	24				
			TILL, light brown, gravelly, sandy silt till, some clay.		7.62
8	26				
	28				
9	30		DOLOMITE, brown, fine grained, dense.		9.30
	32				9.45
10	34		DOLOMITE, light grey to light buff grey, medium grained, fine porosity, medium bedded.		
11	36				
	38		DOLOMITE, light to medium blueish grey, medium grained, medium porosity, thick bedded.		11.28
12	40		DOLOMITE, blueish grey, medium grained, coarse porosity, very fossiliferous.		12.19
	42		END OF HOLE		12.80
13	44				
14	46				
	48				
15	50				

SAMPLES: NUMBER | TYPE | RECOVERY | "N" VALUE

CONCENTRATION (%): LEL ♦ | MOISTURE CONTENT ● | GAS CONCENTRATION ■ | 0 20 40 60 80 100

INSTALLATION INFORMATION



DRAWN: MR

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: 9506

LOCATION: ROCKWOOD QUARRY

BORING DATE: MAY 1990

RECORD OF BOREHOLE M2

DATUM: GROUND SURFACE

DIP: −90

LOGGED: KI

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)
0	0		GROUND SURFACE		
			GRAVELLY LOAM, light brown.		0.00
	4		COARSE GRAVEL, silty, coarse and fine sand.		0.76
2	8				
	12		MEDIUM GRAVEL, silty, coarse to fine sand. Small dolomite boulders.		2.74
4	16				
6	20		TILL, light brown, gravelly, sandy silt till, some clay. Thin layers of silty sand and gravel. Occ. large dolomite boulders.		5.79
	24				
8	28				
10	32		DOLOMITE, light grey to light blueish grey, medium grained, medium to coarse porosity with vuggy sections, thick to massive bedded, very fossiliferous. Open fissures with some brown clay at 11.3, 13.0, 13.1, 13.3, and 14.5 m		9.91
	36				
12	40				
	44				
14	48				
			DOLOMITE, light grey mottled with light blueish grey, medium grained, medium porosity, some vuggy sections, thin to thick bedded. open fissures at 16.0, 16.2m		14.94
16	52				
	56		DOLOMITE, light buff grey, fine grained, thick to massive bedded, medium to fine porosity. Blueish grey, medium grained with coarse to vuggy porosity at 18.5−19.1 and 20.11−22.40m.		16.61
18	60				
	64				
20	68				
			DOLOMITE, light buff grey, fine grained, fine porosity, thick to massive bedded, light blueish grey, medium grained with coarse to vuggy porosity 24.2−24.8m.		21.03
22	72				
	76				
24	80				
			DOLOMITE, light blueish grey, fine grained, fine porosity, thick to massive bedded. Frequent stylolites. Large open fissure at 25.3m.		24.84
26	84				
	88				
28	92		DOLOMITE, light to medium grey, medium grained, thick to massive bedded, coarse to vuggy reefy porosity, large vugs lined with dolomite crystals, fossiliferous.		27.74
	96				
30	100		CONTINUED ON NEXT PAGE		

SAMPLES NUMBER	TYPE	RECOVERY	"N" VALUE

CONCENTRATION (%)

LEL ♦

MOISTURE CONTENT ●

GAS CONCENTRATION ■

0 20 40 60 80 100

INSTALLATION INFORMATION

MONITOR M2

T.O.P. 363.396m

GROUND ELEV. 362.440m

SAND PACK 0.00−15.6m

BENTONITE SEAL 15.6−16.6m

SCREEN 16.6−18.1m

SAND PACK 18.1−55.47m

DRAWN: MR

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: 9506

LOCATION: ROCKWOOD QUARRY

BORING DATE: MAY 1990

RECORD OF BOREHOLE M2

SHEET 2 OF 2

DATUM: GROUND SURFACE

DIP: −90

LOGGED: KI

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)
	100		DOLOMITE, light to medium grey, medium grained, thick to massive bedded, coarse to vuggy reefy porosity, large vugs lined with dolomite crystals, fossiliferous.		
	104				
32					32.00
	108		DOLOMITE, light grey, medium grained, fine porosity, medium thin bedded, very fossiliferous.		33.22
34	112				
	116				
36					
	120		DOLOMITE, light buff grey and light blueish grey banded, fine grained, fine porosity, minor coarse to vuggy porosity, massive bedded, some medium to thick bedded sections.		
38	124				
	128				
40					
	132				
	136				
42					
	140				42.98
44	144		DOLOMITE, light blueish grey mottled with light grey to white fossil debris, fine grained, thick to massive bedded. Inclined open fissure at 42.3–42.8m Greenish grey filmy shale seams between some beds.		
	148				
46					46.18
	152		DOLOMITE, light to medium blueish grey, coarse grained, coarse to medium reefy porosity, frequent vugs and small cavities, thick bedded with some inclined bedding. Thin dark grey shale seams between beds from 47.9m.		
48	156				
	160				48.77
			DOLOMITE, light grey, medium grained, fine porosity, thick bedded thin bedded with thin dark grey shale seams between beds 50.74–51.2m.		
50	164				
	168		DOLOMITE, transition beds: inter-bedded light grey, fossiliferous and medium grey, aphanitic dolomite.		51.21
52					52.12
	172		DOLOMITE, light brownish to med. greenish grey, aphanitic, medium to thin bedded. Bundles of dark grey shale seams with pellets and seams of pyrite.		
	176				53.64
54			SHALE, green limey with layers of dolomite and thin layers of calcareous sandstone.		
	180				54.86
			SHALE, interlayered red and dark grey, thin layers of dolomite.		55.47
56	184		END OF HOLE		
	188				
58					
	192				
	196				
60					
	200				

SAMPLES

NUMBER	TYPE	RECOVERY	"N" VALUE

CONCENTRATION (%)

LEL ♦

MOISTURE CONTENT ●

GAS CONCENTRATION ■

0 20 40 60 80 100

INSTALLATION INFORMATION

MONITOR M2

SAND PACK 18.1–55.47m

DRAWN: MR

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: 9506

RECORD OF BOREHOLE M3

SHEET 1 OF 1

LOCATION: ROCKWOOD QUARRY

BORING DATE: MAY 1990 | DATUM: GROUND SURFACE | DIP: −90 | LOGGED: KI

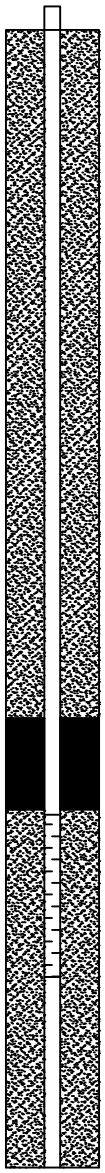
DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)
			GROUND SURFACE		
0	0		Light brown, SANDY SILT LOAM.		0.00
	2				0.61
1	4		SAND, light brown, fine, silty.		
	6				
2					2.13
	8				
3	10		SAND, light brown, gravelly, medium to fine sand; thin layers of coarse sand. Occasional boulders.		
	12				
4	14				
	16				
5					5.03
	18				
6	20		SAND, light brown, gravelly, silty, fine sand.		
	22				
7					7.16
	24		TILL, light brown, gravelly, silty sand till, trace clay.		
8	26				8.08
	28		DOLOMITE, light grey, coarse grained, coarse reefy porosity, thin to medium bedded.		
9	30				8.99
	32		DOLOMITE, light grey mottled with pale green and pink crinoid stems, medium grained, medium porosity, medium to thick bedded. Open weathered fissures at 9.5–10.1m Some brown clay.		
10	34				
11	36		END OF HOLE		11.13
	38				
12	40				
	42				
13					
	44				
14	46				
	48				
15	50				

SAMPLES: NUMBER | TYPE | RECOVERY | "N" VALUE

CONCENTRATION (%): LEL ♦ | MOISTURE CONTENT ● | GAS CONCENTRATION ■ — 0 20 40 60 80 100

INSTALLATION INFORMATION

MONITOR M3



T.O.P. 359.697m
GROUND ELEV. 358.765m

SAND PACK 0.00–6.76m

BENTONITE SEAL 6.76–7.76m

SCREEN 7.76–9.26m

SAND PACK 7.76–11.13m

DRAWN: MR

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: 9506

RECORD OF BOREHOLE M4

SHEET 1 OF 2

LOCATION: ROCKWOOD QUARRY

BORING DATE: MAY 1990 | DATUM: GROUND SURFACE | DIP: −90 | LOGGED: KI

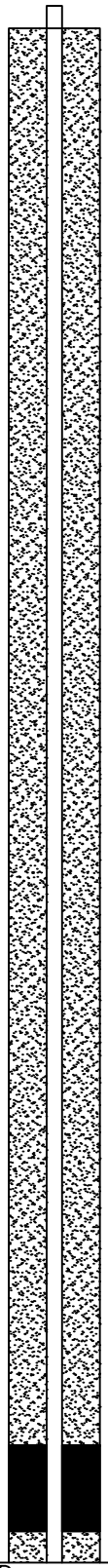
DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)
0	0		GROUND SURFACE		
			SANDY LOAM.		0.00
	2		FINE GRAVEL, medium to well graded sand.		0.30
1	4				1.22
	6		MEDIUM GRAVEL, very silty, medium to fine sand.		
2	8				2.59
3	10		TILL, light brown, bouldery, gravelly, silty sand till.		
	12				3.51
4	14		MEDIUM GRAVEL, very silty, coarse, to fine sand. Small dolomite boulders.		
5	16				
	18				5.33
6	20		TILL, light brown, silty sand till. some brown clay. occasional small dolomite boulders.		
	22				6.71
7	24		DOLOMITE, light buff grey mottled with pale fossil fragments and pink crinoid stems, coarse grained, coarse reefy porosity, medium to thick inclined beds 6.7−7.9m, massive bedded 7.9−8.8m.		
8	26				
	28				
9	30				9.14
	32		DOLOMITE, light grey banded and mottled with light blueish grey, fine grained, fine porosity, massive bedded.		
10	34				
11	36				10.97
	38		DOLOMITE, light grey, mottled with light blueish grey, fine grained, fine to medium porosity, medium to thick bedded, open inclined weathered fractures 12.0−12.3m., large cavity 12.8−13.3m.		
12	40				
	42				
13	44				13.26
			DOLOMITE, blueish grey, dense, patches of green argillaceous dolomite.		
14	46				14.17
	48		DOLOMITE, light buff grey, fine grained, fine porosity, cavity 14.5−14.8m.		
15	50		DOLOMITE		14.78
			CONTINUED ON NEXT PAGE		

SAMPLES: NUMBER | TYPE | RECOVERY | "N" VALUE

CONCENTRATION (%): LEL ♦ | MOISTURE CONTENT ● | GAS CONCENTRATION ■ | 0 20 40 60 80 100

INSTALLATION INFORMATION

MONITOR M4



T.O.P. 356.611m

GROUND ELEV. 355.816m

SAND PACK 0.00−14.3m

BENTONITE SEAL 14.3−15.3m

DRAWN: MR

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: 9506

RECORD OF BOREHOLE M4

SHEET 2 OF 2

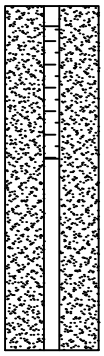
LOCATION: ROCKWOOD QUARRY

BORING DATE: MAY 1990 | DATUM: GROUND SURFACE | DIP: −90 | LOGGED: KI

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: DEPTH B.G.S. (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY	SAMPLES: "N" VALUE	CONCENTRATION (%)
16	50		DOLOMITE, light buff grey, with large patches of medium blueish grey dense dolomite, fine grained, coarse reefy porosity, frequent small cavities and fossil moulds, thin inclined bedding 14.8–15.2m. thick bedded 15.2–18.6m, open fracture filled with brown clay 15.8–16.0m. thin dark grey shale seams between beds 16.0–18.6m.							LEL ♦ MOISTURE CONTENT ● GAS CONCENTRATION ■ 0 20 40 60 80 100
17	52									
18	54									
19	56									
20	58									
21	60									
22	62		END OF HOLE		18.59					
23	64									
24	66									
25	68									
26	70									
27	72									
28	74									
29	76									
30	78									
	80									
	82									
	84									
	86									
	88									
	90									
	92									
	94									
	96									
	98									
	100									

INSTALLATION INFORMATION

MONITOR M4



T.O.P. 356.611m

GROUND ELEV. 355.816m

SCREEN 15.3–16.8m

SAND PACK 16.8–18.59m

DRAWN: MR

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: M11

M11

LOCATION: Rockwood

BORING DATE: Dec 22, 2010 DATUM: GROUND SURFACE DIP: 90 LOGGED: AW

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)	SAMPLES ID	TYPE	RECOVERY (%)	"N" VALUE	CONCENTRATION (%) LEL / MOISTURE CONTENT / GAS CONCENTRATION (0 20 40 60 80 100)
			GS = 358.57 mAMSL							
			Organic soil, reddish brown		0	S1	SS	37	3	
			Fine Sand with gravel, pale brown		0.6	S2	SS	58	13	
					1.52	S3	SS	42	44	
						S4	SS	67	22	
						S5	SS	17	-	
						S6	SS	58	-	
			Light brown silty sand till, stoney			S7	SS	71	70	
						S8	SS	79	51	
						S9	SS	79	42	
						S10	SS	50	-	
		Auger			7.62	S11	SS	50	-	
			Dark brown, silty sand till, stoney			S12	SS	69	51	
					9.14					
			END OF HOLE @ 9.30m		9.30					

INSTALLATION INFORMATION

M11

DRAWN: AW

Harden Env

CHECKED: SD

PROJECT: M12

M12

LOCATION: Rockwood

BORING DATE: Dec 22, 2010 DATUM: GROUND SURFACE DIP: 90 LOGGED: AW

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)	SAMPLES ID	SAMPLES TYPE	SAMPLES RECOVERY (%)	SAMPLES "N" VALUE
			GS = 362.00 mAMSL						
			Organic soil		0				
					0.45				
						S1	SS	62	15
						S2	SS	71	22
			Brown Fine-Medium Sand with trace silt, uniform, no stones			S3	SS	83	20
					6.24	S4	SS	83	19
			Fine to medium sand, with stones, with some silt, brown, dense			S5	SS	42	-
		Auger			7.62	S6	SS	75	45
			Silty Fine-Medium Sand with stones, dense			S7	SS	50	-
			END OF HOLE @ 8.84m		8.84				

CONCENTRATION (%)

LEL ◆

MOISTURE CONTENT ●

GAS CONCENTRATION ■

0 20 40 60 80 100

INSTALLATION INFORMATION

M12

DRAWN: AW

Harden Env

CHECKED: SD

PROJECT: M13-S

M13-S

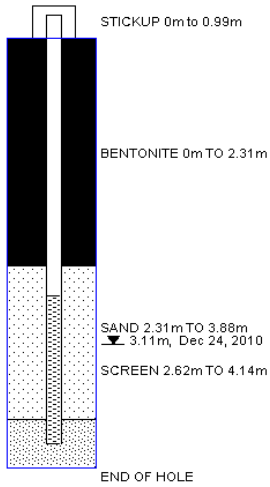
LOCATION: Rockwood

BORING DATE: Dec 23, 2010 DATUM: GROUND SURFACE DIP: 90 LOGGED: AW

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)	SAMPLES ID	SAMPLES TYPE	SAMPLES RECOVERY (%)	SAMPLES "N" VALUE	CONCENTRATION (%)
			GS = 356.78 mAMSL		0					LEL ◆ MOISTURE CONTENT ● GAS CONCENTRATION ■ 0 20 40 60 80 100
0 to 4	0 to 14	Auger	Coarse Sand and Gravel with some to little silt, with angular stones, with few cobbles							
			END OF HOLE @ 4.37m		4.37					
5 to 15	16 to 50									

INSTALLATION INFORMATION

M14-D



DRAWN: AW

Harden Env

CHECKED: SD

PROJECT: M13-D

M13-D

LOCATION: Rockwood

BORING DATE: Dec 23, 2010 DATUM: GROUND SURFACE DIP: 90 LOGGED: AW

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)	SAMPLES ID	SAMPLES TYPE	SAMPLES RECOVERY (%)	SAMPLES "N" VALUE
			GS = 356.75 mAMSL		0				
		Auger	Sand and gravel with some silt, with angular stones, with few cobbles			S1	SS	67	20
						S2	SS	71	20
						S3	SS	54	29
			Sandy Silt Till		4.57	S4	SS	50	22
						S5	SS	54	26
						S6	SS	81	25
			Dolostone, grey, weathered, fractured		6.55				
			END OF HOLE @10.06m		10.06				

CONCENTRATION (%)

LEL ◆

MOISTURE CONTENT ●

GAS CONCENTRATION ■

0 20 40 60 80 100

INSTALLATION INFORMATION

M13-D

DRAWN: AW

Harden Env

CHECKED: SD

PROJECT: M14-S

M14-S

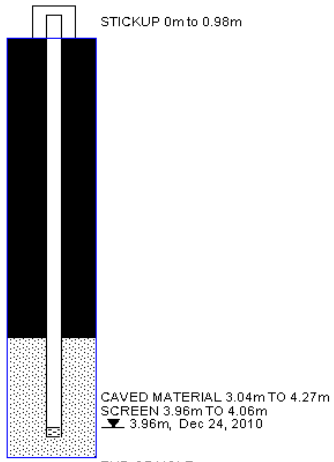
LOCATION: Rockwood

BORING DATE: Dec 24, 2010 DATUM: GROUND SURFACE DIP: 90 LOGGED: AW

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)	SAMPLES ID	SAMPLES TYPE	SAMPLES RECOVERY (%)	SAMPLES "N" VALUE	CONCENTRATION (%)
			GS = 354.64 mAMSL							LEL ◆ MOISTURE CONTENT ● GAS CONCENTRATION ■ 0 20 40 60 80 100
					0					
			Uniform Fine-Medium Sand with Silt, no gravel, no stones							
					3.05					
			Fine Sandy Silt Till with gravel with some stones, increasing plasticity in fines with depth							
			END OF HOLE @ 4.27m		4.27					
0	0	Auger								
1	4									
2	8									
3	10									
4	14									
5	16									
6	20									
7	24									
8	26									
9	30									
10	34									
11	36									
12	40									
13	42									
14	46									
15	50									

INSTALLATION INFORMATION

M14-S



DRAWN: AW

Harden Env

CHECKED: SD

PROJECT: M14-D

M14-D

LOCATION: Rockwood

BORING DATE: Dec 24, 2010 DATUM: GROUND SURFACE DIP: 90 LOGGED: AW

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)	SAMPLES ID	SAMPLES TYPE	SAMPLES RECOVERY (%)	SAMPLES "N" VALUE
			GS = 354.50 mAMSL		0				
			Uniform Fine Sand with Silt, no stones			S1	SS	79	21
			Sandy Silt Till, stoney, increasing plasticity in fines with depth		3.05	S2	SS	87	26
						S3	SS	75	25
			Dolostone, grey, weathered, fractured		4.72	S4	SS	17	-
		Auger	END OF HOLE @ 7.62m		7.62				

CONCENTRATION (%)

LEL ◆
MOISTURE CONTENT ●
GAS CONCENTRATION ■

0 20 40 60 80 100

INSTALLATION INFORMATION

M14-D

*** Integrity of bentonite seal unknown due to instability of borehole wall**

DRAWN: AW

Harden Env

CHECKED: SD

PROJECT: 9506

RECORD OF TEST PIT TP1

SHEET 1 OF 1

LOCATION: ROCKWOOD SITE

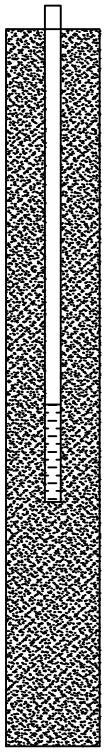
BORING DATE: SEPT. 1996 | DATUM: GROUND SURFACE | DIP: −90 | LOGGED: CD

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)	SAMPLES: NUMBER	TYPE	RECOVERY	"N" VALUE
			GROUND SURFACE		0.00				
0–1	0–4		Coarse SAND & COBBLES.		2.00	1			
2–4	6–14		Fine SAND.		5.00	2			
5–7	16–24		SILT, some clay, some stones. Layered.		7.00	3			
			END OF HOLE						

CONCENTRATION (%): LEL ♦ | MOISTURE CONTENT ● | GAS CONCENTRATION ■ — 0 20 40 60 80 100

INSTALLATION INFORMATION

MONITOR TP1



T.O.P. 356.473m

GROUND ELEV. 355.407m

▼ W.L. 0.61m B.G.S.

SCREEN 3.69–4.60m

NATIVE BACKFILL 0.00–7.00m

DRAWN: MR

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: 9506

RECORD OF TEST PIT TP2

SHEET 1 OF 1

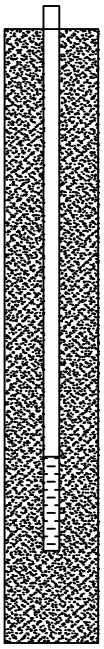
LOCATION: ROCKWOOD SITE

BORING DATE: SEPT. 1996 | DATUM: GROUND SURFACE | DIP: -90 | LOGGED: SD

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: DEPTH B.G.S. (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY	SAMPLES: "N" VALUE	CONCENTRATION (%)
0	0		GROUND SURFACE		0.00					LEL ♦ MOISTURE CONTENT ● GAS CONCENTRATION ■ 0 20 40 60 80 100
	2		Fine SAND, light olive brown.			4				
1	4									
	6									
2	8									
	10									
3	12									
	14									
4	16									
5	18		SILT, layered with stones, some clay.		5.00	5				
6	20		DOLOSTONE		6.00					
	22		END OF HOLE							
7	24									
	26									
8	28									
	30									
9	32									
10	34									
	36									
11	38									
	40									
12	42									
	44									
13	46									
	48									
14	50									
15										

INSTALLATION INFORMATION

MONITOR TP2



T.O.P. 356.025m

GROUND ELEV. 354.617m

▼ W.L. 0.60m B.G.S.

NATIVE BACKFILL 0.00–6.00m

SCREEN 4.17–5.08m

DRAWN: MR

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: 9506

RECORD OF TEST PIT TP3

SHEET 1 OF 1

LOCATION: ROCKWOOD SITE

BORING DATE: SEPT. 1996 | DATUM: GROUND SURFACE | DIP: -90 | LOGGED: SD

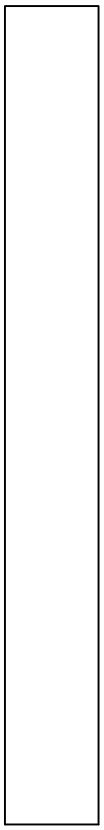
DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)
0	0		GROUND SURFACE		0.00
	2		Sandy TILL.		
1	4				
	6				2.00
2	8		SILT.		
	10				3.00
3	12		GRAVEL		
4	14				
	16				5.00
5	18		SILT		
	20				6.00
6	22		SAND, well sorted.		
7	24				
	26				8.00
8	28		END OF HOLE DRY AT COMPLETION		
9	30				
	32				
10	34				
11	36				
	38				
12	40				
	42				
13	44				
14	46				
	48				
15	50				

SAMPLES: NUMBER | TYPE | RECOVERY | "N" VALUE

CONCENTRATION (%): LEL ♦ | MOISTURE CONTENT ● | GAS CONCENTRATION ■ | 0 20 40 60 80 100

INSTALLATION INFORMATION

NO INSTALLATION



GROUND ELEV. 358.45m

DRAWN: MR

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: 9506

RECORD OF TEST PIT TP4

SHEET 1 OF 1

LOCATION: ROCKWOOD SITE

BORING DATE: SEPT. 1996 | DATUM: GROUND SURFACE | DIP: -90 | LOGGED: SD

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: DEPTH B.G.S. (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY	SAMPLES: "N" VALUE	CONCENTRATION (%): LEL ♦ MOISTURE CONTENT ● GAS CONCENTRATION ■ (0 20 40 60 80 100)	INSTALLATION INFORMATION
0	0		GROUND SURFACE		0.00						NO INSTALLATION
1	2										
	4										
2	6										
	8										
3	10										
	12		Silty, stoney SAND.			6					
4	14										
	16										
5	18										
	20										
6	22										
	24										
7	26										
	28		END OF HOLE DRY AT COMPLETION		8.00						
8	30										
	32										
9	34										
	36										
10	38										
	40										
11	42										
	44										
12	46										
	48										
13	50										
14											
15											

DRAWN: MR

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: 9506

RECORD OF TEST PIT TP5

SHEET 1 OF 1

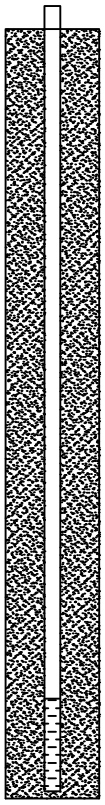
LOCATION: ROCKWOOD SITE

BORING DATE: SEPT. 1996 | DATUM: GROUND SURFACE | DIP: -90 | LOGGED: SD

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY	SAMPLES "N" VALUE	CONCENTRATION (%)
			GROUND SURFACE		0.00					LEL ♦ MOISTURE CONTENT ● GAS CONCENTRATION ■ 0 20 40 60 80 100
0–1	0–4		Sandy SILT, some oxidized iron staining, grey green.			7				
1–2	4–8									
2–3	8–12									
3–4	12–14				4.00					
4–5	14–18		Silty SAND.							
5–6	18–22									
6–7	20–24				7.00					
7–8	24–26		GRAVEL, well sorted.							
			END OF HOLE		7.50					
8–9	26–30									
9–10	30–34									
10–11	32–36									
11–12	36–40									
12–13	40–44									
13–14	42–46									
14–15	46–50									

INSTALLATION INFORMATION

MONITOR TP5



T.O.P. 356.639m

GROUND ELEV. 355.684m

▼ W.L. 3.92m B.G.S.

NATIVE BACKFILL 0.00–7.50m

SCREEN 6.55–7.46m

DRAWN: MR

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: 9506

RECORD OF TEST PIT TP6

SHEET 1 OF 1

LOCATION: ROCKWOOD SITE

BORING DATE: SEPT. 1996 | DATUM: GROUND SURFACE | DIP: -90 | LOGGED: SD

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: DEPTH B.G.S. (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY	SAMPLES: "N" VALUE	CONCENTRATION (%): LEL / MOISTURE CONTENT / GAS CONCENTRATION (0 20 40 60 80 100)	INSTALLATION INFORMATION
0	0		GROUND SURFACE		0.00						GROUND ELEV. 359.298m
			SAND & GRAVEL, lots of cobbles.								NO INSTALLATION
7	24		END OF HOLE DRY ON COMPLETION		7.00						

1 m = 2 ft; 2 m = 6 ft; 3 m = 10 ft; 4 m = 12 ft; 5 m = 16 ft; 6 m = 20 ft; 8 m = 26 ft; 9 m = 30 ft; 10 m = 32 ft; 11 m = 36 ft; 12 m = 40 ft; 13 m = 42 ft; 14 m = 46 ft; 15 m = 50 ft

DRAWN: MR

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: 9506

RECORD OF TEST PIT TP7

SHEET 1 OF 1

LOCATION: ROCKWOOD SITE

BORING DATE: SEPT. 1996 | DATUM: GROUND SURFACE | DIP: -90 | LOGGED: SD

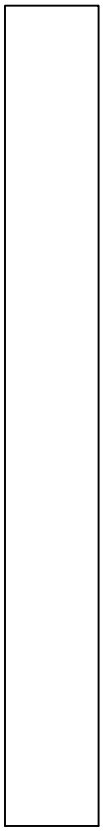
DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)
0	0		GROUND SURFACE		0.00
			SAND & GRAVEL.		
7	24		Silty SAND.		7.00
8	26		END OF HOLE DRY ON COMPLETION		8.00

SAMPLES: NUMBER | TYPE | RECOVERY | "N" VALUE

CONCENTRATION (%): LEL ♦ | MOISTURE CONTENT ● | GAS CONCENTRATION ■ | 0 20 40 60 80 100

INSTALLATION INFORMATION

NO INSTALLATION



GROUND ELEV. 356.245m

DRAWN: MR

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: 9506

RECORD OF TEST PIT TP8

SHEET 1 OF 1

LOCATION: ROCKWOOD SITE

BORING DATE: FEB. 2012 | DATUM: GROUND SURFACE | DIP: −90 | LOGGED: SD

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)	SAMPLES: NUMBER	TYPE	RECOVERY	"N" VALUE
0	0		GROUND SURFACE		0.00				
	2		Stoney, silty sand TILL, brown						
1	4								
	6								
2	8		Fine sand, coarse sand, with silt, some stones. Layered.		2.00				
	10								
3	12								
4	14		SILT		3.80	1			
	16		Medium SAND		4.50	2			
5	18		Sand and Gravel		5.05	3			
6	20		END OF HOLE		6.07				
	22								
7	24								
8	26								
	28								
9	30								
	32								
10	34								
11	36								
	38								
12	40								
	42								
13	44								
14	46								
	48								
15	50								

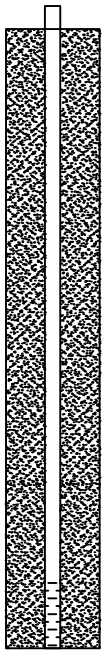
CONCENTRATION (%)

LEL ♦
MOISTURE CONTENT ●
GAS CONCENTRATION ■

0 20 40 60 80 100

INSTALLATION INFORMATION

MONITOR TP8



T.O.P. 360.36m
GROUND ELEV. 359.45m

NATIVE BACKFILL 0.00–6.07m

▼ W.L. 4.82m B.G.S.

SCREEN 5.46–6.07m

DRAWN: AW

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

PROJECT: 9506

RECORD OF TEST PIT TP9

SHEET 1 OF 1

LOCATION: ROCKWOOD SITE

BORING DATE: FEB. 2012 | DATUM: GROUND SURFACE | DIP: −90 | LOGGED: SD

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	DEPTH B.G.S. (m)	SAMPLES: NUMBER	TYPE	RECOVERY	"N" VALUE	CONCENTRATION (%): LEL ♦ MOISTURE CONTENT ● GAS CONCENTRATION ■ (0 20 40 60 80 100)	INSTALLATION INFORMATION
0	0		GROUND SURFACE		0.00						MONITOR TP9
			Topsoil, fine SAND, with stones								T.O.P. 357.59m GROUND ELEV. 356.65m
1	4				1.00	1					
			Fine sand, medium sand, some gravel, some stones. Layered.								NATIVE BACKFILL 0.00–4.57m
2	8										DRY UPON COMPLETION
3	10										
4	14		SILT TILL with rounded stones		4.00	2					SCREEN 3.96–4.57m
			DOLOSTONE END OF HOLE		4.57	3					
5	16										
6	20										
7	24										
8	26										
9	30										
10	34										
11	36										
12	40										
13	42										
14	46										
15	50										

DRAWN: AW

HARDEN ENVIRONMENTAL SERVICES LTD.

CHECKED: SD

BOREHOLE NO. 1

SAMPLE NO.	1	2	3	4	5	6				
FROM TO (ft)	2.5 5.0	5.0 5.5	5.5 8.5	8.5 11.5	11.5 16.5	20.0 26.5				
SIEVE SIZE	PERCENTAGE PASSING BY WEIGHT									
12in.			100							
6			97.4	100						
3			93.6	98.5	100	100				
1½			87.3	89.0	95.0	97.5				
3/4			75.8	77.8	87.4	93.0				
3/8			62.0	70.4	74.8	91.5				
No.4	100	100	50.4	62.8	58.0	89.0				
8	99.8	85.1	42.3	56.4	46.0	87.3				
16	98.8	72.2	35.9	49.9	39.2	83.6				
30	96.7	62.6	29.8	43.7	33.7	75.0				
50	90.5	52.8	24.0	36.9	27.9	63.1				
100	65.1	42.6	17.7	30.1	22.1	43.8				
200	35.3	27.5	12.1	23.2	17.3	17.2				

Appendix A
Grain Size Analysis

Borehole M1D

BOREHOLE NO. 2

SAMPLE NO.	1	2	3	4	5					
FROM TO (ft)	2.5 10.0	10.0 15.0	15.0 20.0	20.0 25.0	25.0 32.0					
SIEVE SIZE	PERCENTAGE PASSING BY WEIGHT									
12in.		100								
6	100	99.0		100	100					
3	93.0	97.0	100	97.5	98.8					
1½	82.0	75.1	96.0	89.0	94.5					
3/4	67.5	54.4	86.0	76.5	86.8					
3/8	51.4	44.0	73.6	64.8	71.7					
No.4	39.1	33.3	62.6	53.8	57.6					
8	29.7	27.1	53.0	45.0	47.6					
16	24.2	22.2	44.0	37.3	40.7					
30	20.1	17.6	36.0	32.1	35.3					
50	16.5	13.7	26.7	27.2	31.6					
100	13.5	11.0	18.9	25.0	28.8					
200	10.6	8.2	13.8	23.0	25.5					

BOREHOLE NO. 3

SAMPLE NO.	1	2	3	4	5	6				
FROM TO (ft)	2.0 3.0	3.0 7.0	7.0 12.0	12.0 16.5	16.5 23.5	23.5 26.5				
SIEVE SIZE	PERCENTAGE PASSING BY WEIGHT									
12in.										
6			100							
3			97.7	100	100	100				
1½		100	92.3	89.2	97.5	94.0				
3/4		96.2	87.0	77.7	96.0	84.5				
3/8	100	90.5	81.0	65.7	95.2	75.1				
No.4	98.0	89.0	75.0	55.3	95.0	67.9				
8	96.6	87.0	67.5	45.1	94.9	61.8				
16	94.7	85.2	60.4	34.1	94.8	55.9				
30	91.8	81.5	52.5	25.3	94.6	49.0				
50	86.6	72.8	44.5	19.0	94.3	42.3				
100	76.6	59.9	34.7	14.9	83.1	36.5				
200	61.3	45.1	21.0	10.9	34.1	28.5				

BOREHOLE NO. 4

SAMPLE NO.	1	2	3	4	5	6				
FROM TO (ft)	1.0 4.0	4.0 6.5	6.5 8.5	8.5 11.5	11.5 17.5	17.5 22.0				
SIEVE SIZE	PERCENTAGE PASSING BY WEIGHT									
12in.										
6		100	100	100	100					
3	100	89.0	99.0	93.0	96.0	100				
1½	92.0	70.0	90.3	86.5	93.5	79.5				
3/4	83.3	58.6	74.1	79.3	87.2	63.0				
3/8	78.4	53.4	56.4	70.5	68.1	48.2				
No.4	75.0	52.2	50.7	64.0	55.0	38.2				
8	72.3	50.4	47.2	57.0	48.3	31.7				
16	68.3	48.3	44.3	50.7	42.1	26.7				
30	63.6	45.8	41.0	44.5	36.0	22.2				
50	54.5	41.5	36.8	38.3	30.7	18.8				
100	39.5	33.8	31.2	32.5	26.2	16.2				
200	26.6	25.8	25.5	26.4	20.9	13.2				

ENGLAND NAYLOR ENGINEERING LTD.

CONSULTING ENGINEERS
353 Bridge Street East
Kitchener, Ontario N2K 2Y5
519-741-1313
FAX 519-741-5422

November 20, 1996 0979L1.R04

FACSIMILE TRANSMISSION

Harden Environmental Services Ltd.
497 Exmoor Street
Waterloo, Ontario
N2K 3T8

Attention: Mr. Stan Denhoed, P.Eng.

Dear Sir:

Re: Miscellaneous Laboratory Testing
for Harden Environmental Services Ltd.

Attached are the grain size distribution curves (Figures 1 to 3) for the three soil samples delivered to our laboratory on November 13, 1996.

I trust that this information meets your present requirements. Should you have any questions or require additional testing, please do not hesitate to contact our office.

Yours very truly,

T. Salter

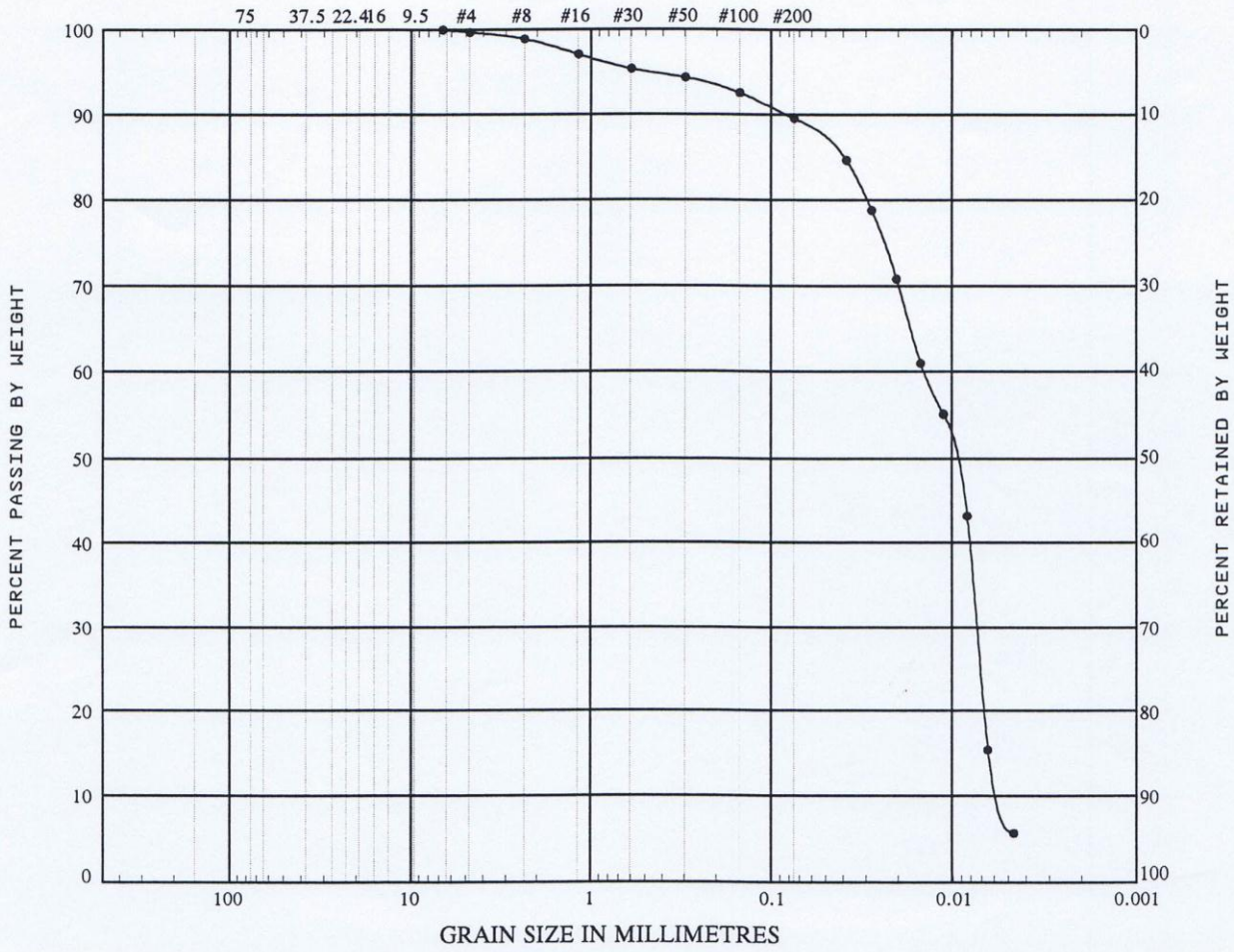
Tim Salter, C.E.T.

ta
Att.

Appendix A **Grain Size Analysis**	**TP1 / TP4 / TP5**

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	
U.S. SIEVE SIZE IN MILLIMETRES			U.S. STANDARD SIEVE No.			HYDROMETER



PROJECT Miscellaneous Lab Testing for Harden Environmental Services

LOCATION _____ JOB NO. 0979L01

CURVE ID	BOREHOLE/ TEST PIT	SAMPLE NO.	DEPTH (m)	SOIL DESCRIPTION
•	TP1	3	5→7m	Silt, some sand

REMARKS _____

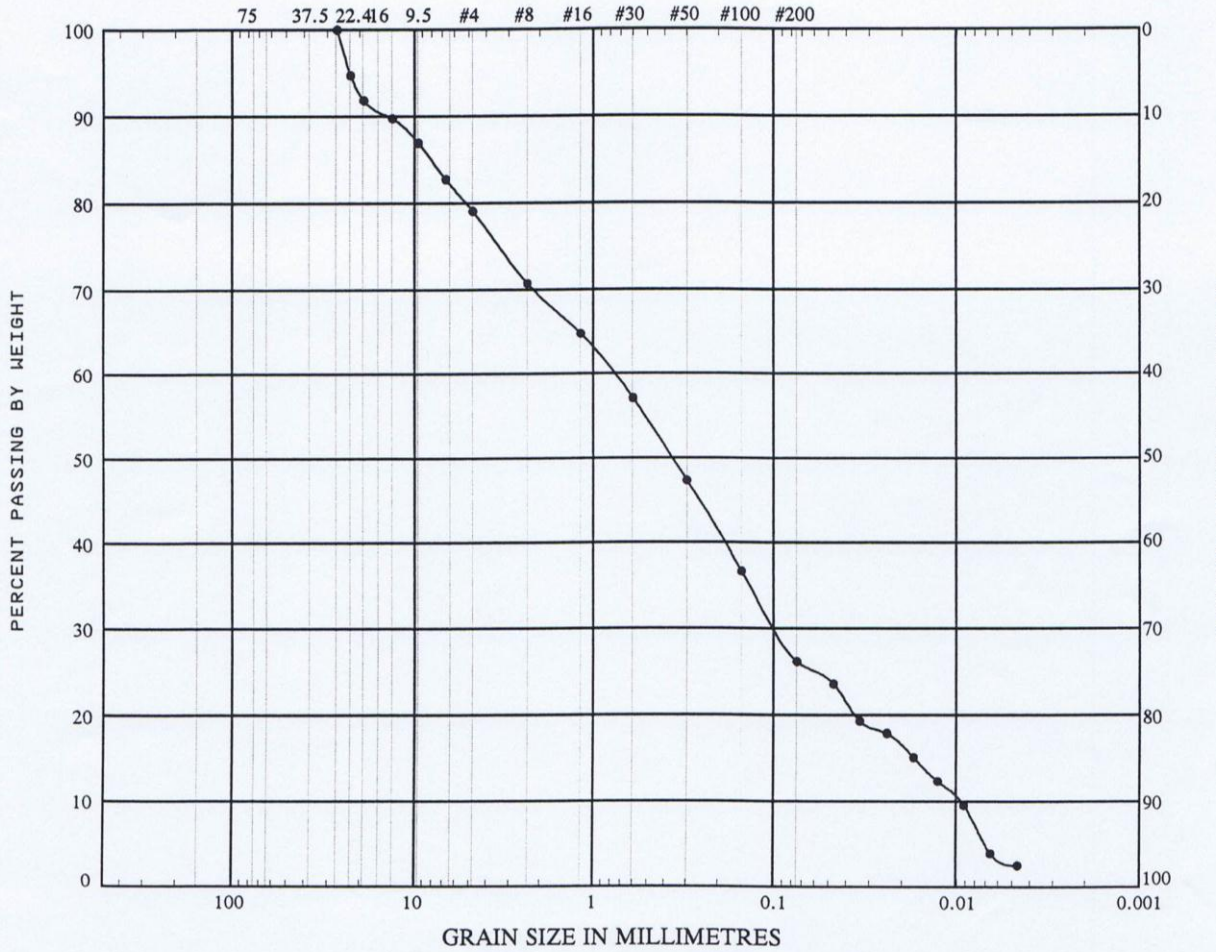
ENGLAND NAYLOR ENGINEERING LTD.
CONSULTING ENGINEERS

Figure No. 1

Appendix A **Grain Size Analysis**	**TP1 at 5-7 mbgs**

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	
U.S. SIEVE SIZE IN MILLIMETRES			U.S. STANDARD SIEVE No.			HYDROMETER



PROJECT Miscellaneous Lab Testing for Harden Environmental Services

LOCATION _____ JOB NO. 0979L01

CURVE ID	BOREHOLE/ TEST PIT	SAMPLE NO.	DEPTH (m)	SOIL DESCRIPTION
•	TP4	6	8m	Silty sand, some gravel

REMARKS _____

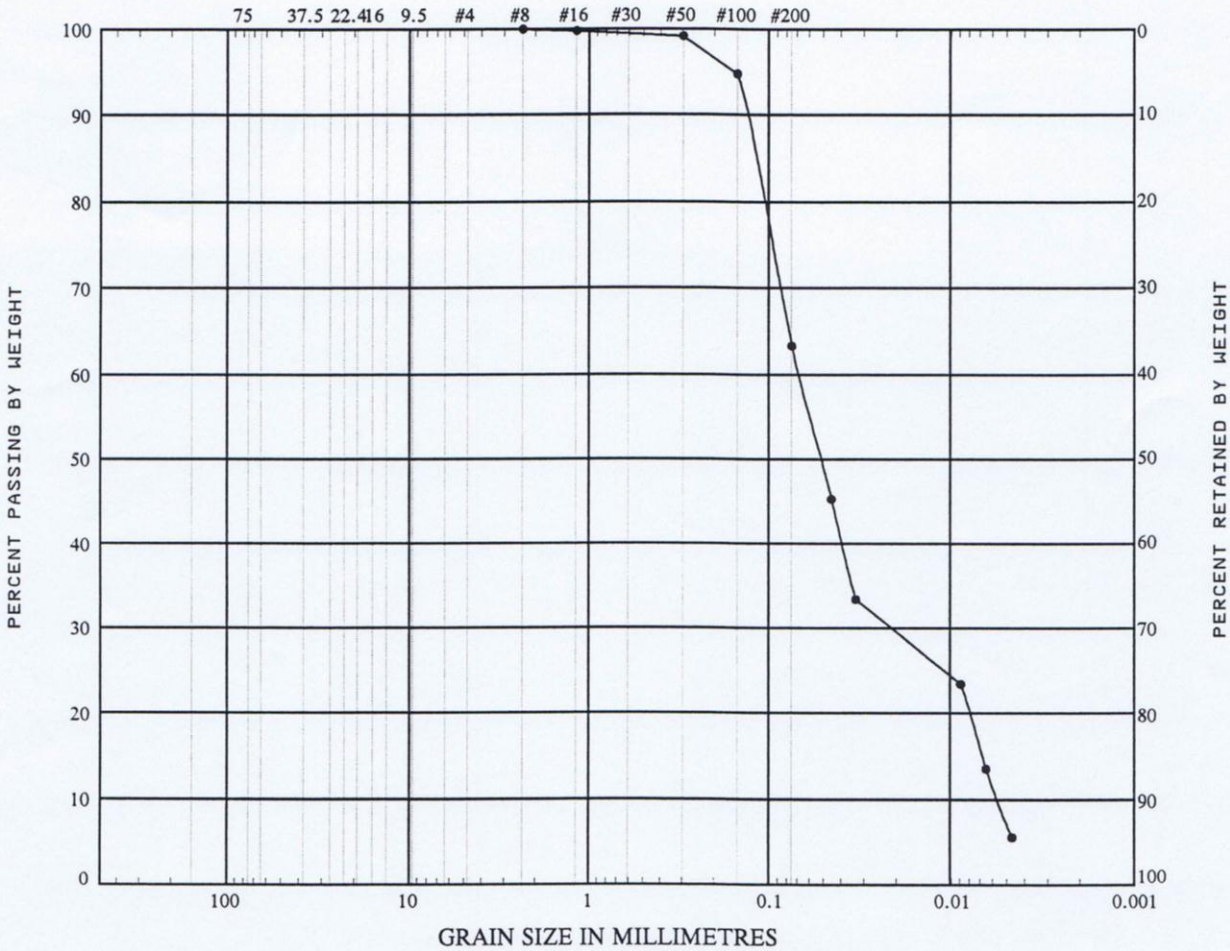
ENGLAND NAYLOR ENGINEERING LTD.
CONSULTING ENGINEERS

Figure No. 2

Appendix A **Grain Size Analysis**	**TP4 at 8 mbgs**

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	
U.S. SIEVE SIZE IN MILLIMETRES			U.S. STANDARD SIEVE No.			HYDROMETER



PROJECT Miscellaneous Lab Testing for Harden Environmental Services

LOCATION _____ JOB NO. 0979L01

CURVE ID	BOREHOLE/ TEST PIT	SAMPLE NO.	DEPTH (m)	SOIL DESCRIPTION
•	Tp5	7	4m	Sand and silt

REMARKS _____

ENGLAND NAYLOR ENGINEERING LTD.
CONSULTING ENGINEERS

Figure No. 3

Appendix A **Grain Size Analysis**	**TP5 at 4 mbgs**

Courtland Engineering Consultants Inc.
260 Courtland Avenue East
Kitchener, Ontario
N2G 2V7
Geotechnical Division
(519) 579-3110
Fax (519) 579-1510

May 15, 1998

Harden Environmental Services Limited
497 Exmoor Street
Waterloo, Ontario
N2K 3T8

Attention: Ian Judd-Henry

Project No. G785

Dear Sir:

Re: Gradation Analysis 9506 SP1

As per your request, we have carried out gradation analysis testing on a soil sample submitted to our laboratory on May 14, 1998. The resulting gradation curve is presented on the attached sheet.

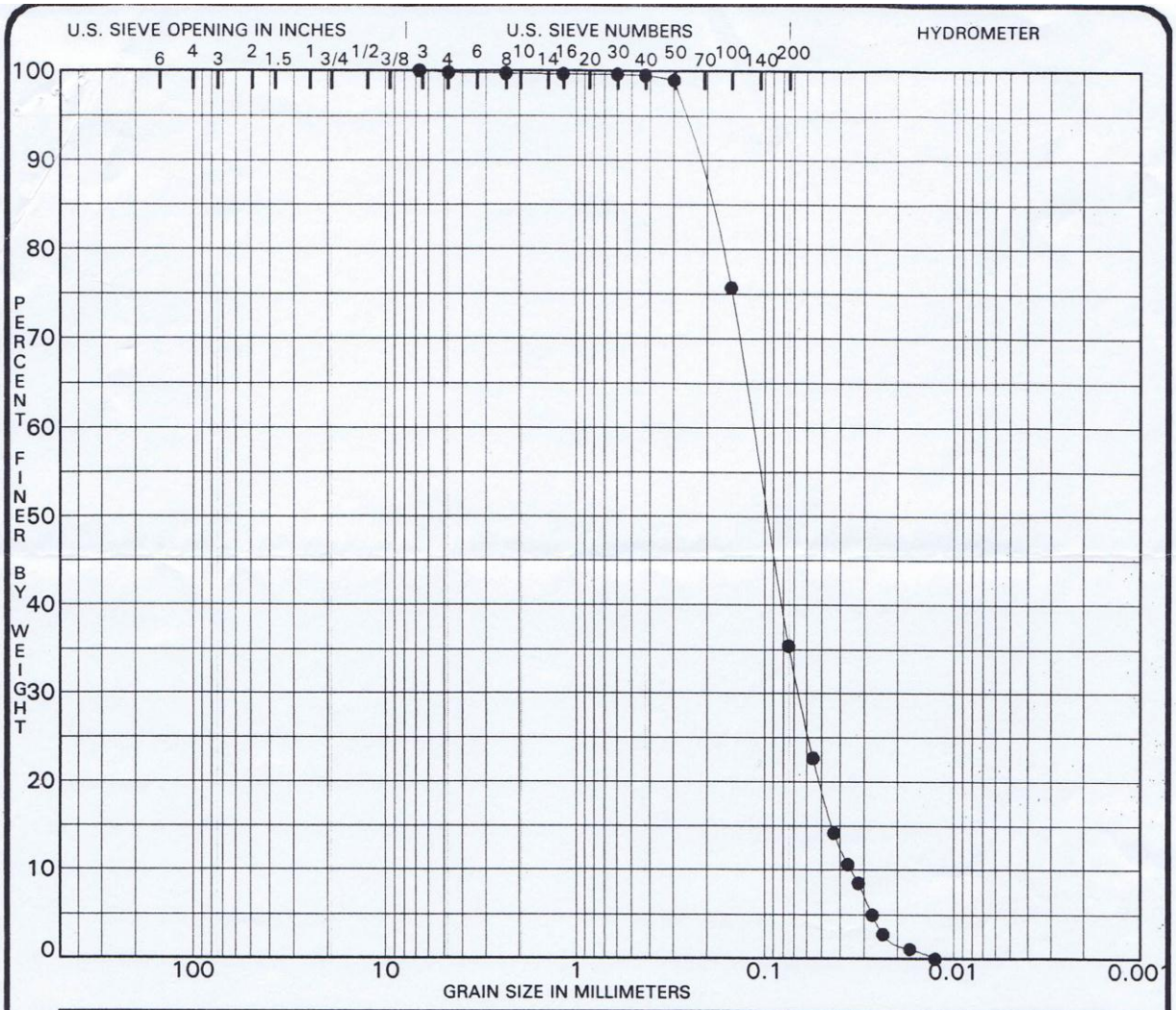
Please note that it is the producer's responsibility to ensure the consistency of the material supplied. Additional testing must be carried out if the gradation of the materials at the source varies from the sample submitted.

We trust that the information provided is sufficient for your present needs. If there are any questions, please contact the undersigned.

Yours truly
COURTLAND ENGINEERING CONSULTANTS INC.

Larry MacArthur, P.Eng.
Designated Consulting Engineer

Appendix A **Grain Size Analysis**	**TP2**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	G785-095 0.0	FINE SILTY SAND						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	G785-095 0.0	6.70	0.11	0.066	0.0352	0.2	64.4	35.4	

PROJECT Harden Environmental Services Ltd. - 9506
SP1 = TP2 @0.55m.
JOB NO. G785
DATE 15/05/98

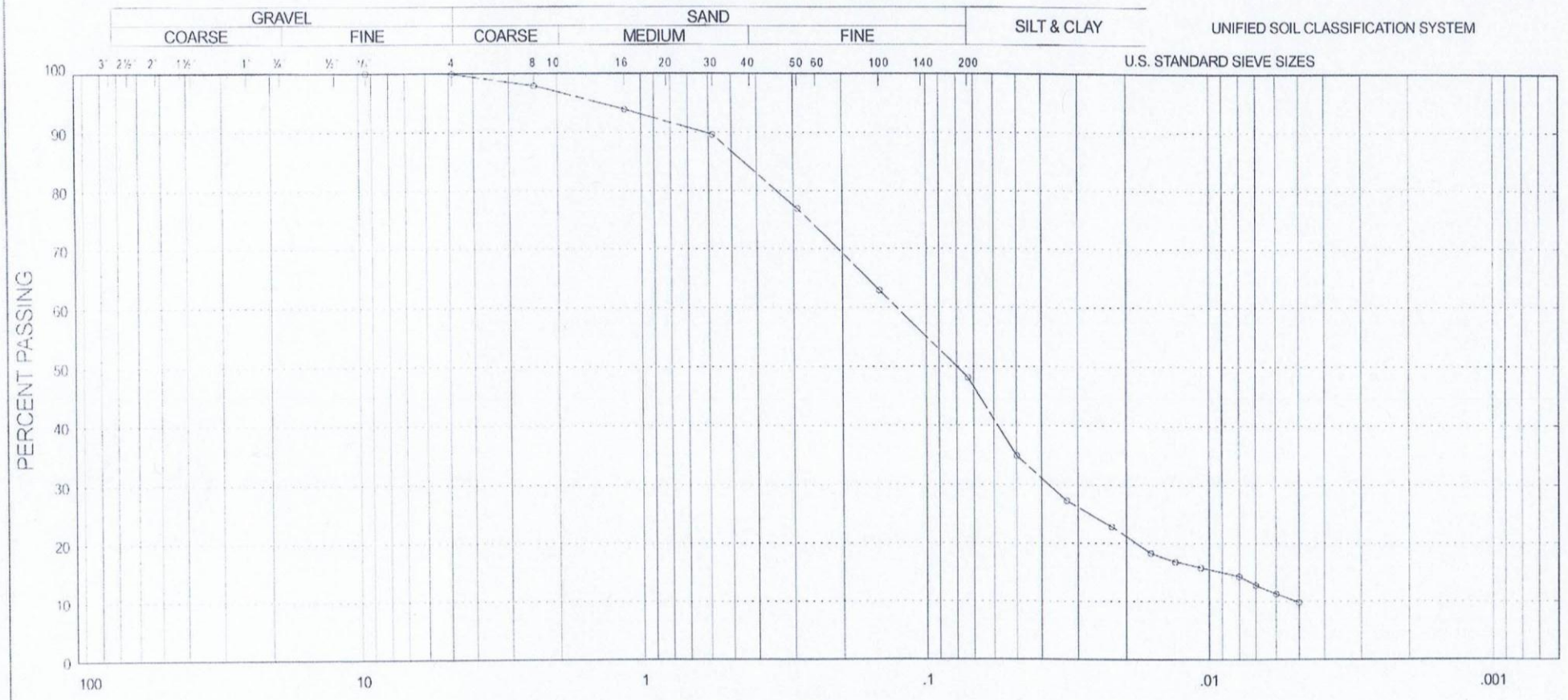
GRADATION CURVES

Courtland Engineering Consultants Inc.
260 Courtland Ave E. Kitchener, On.

Appendix A **Grain Size Analysis**	**TP2 at 0.55 mbgs**

GRAIN SIZE DISTRIBUTION

OUR REFERENCE N° G3188-2-2



PROJECT: Harden Environmental Proj. No. 9506
LOCATION:
BOREHOLE N°:
SAMPLE N°: 149
DEPTH:
ELEVATION:

COEFFICIENT OF UNIFORMITY:
COEFFICIENT OF CURVATURE:

Classification of Sample and Group Symbol:

SAND AND SILT, trace clay

PLASTIC PROPERTIES
LIQUID LIMIT % =
PLASTIC LIMIT % =
PLASTICITY INDEX % =
MOISTURE CONTENT % =

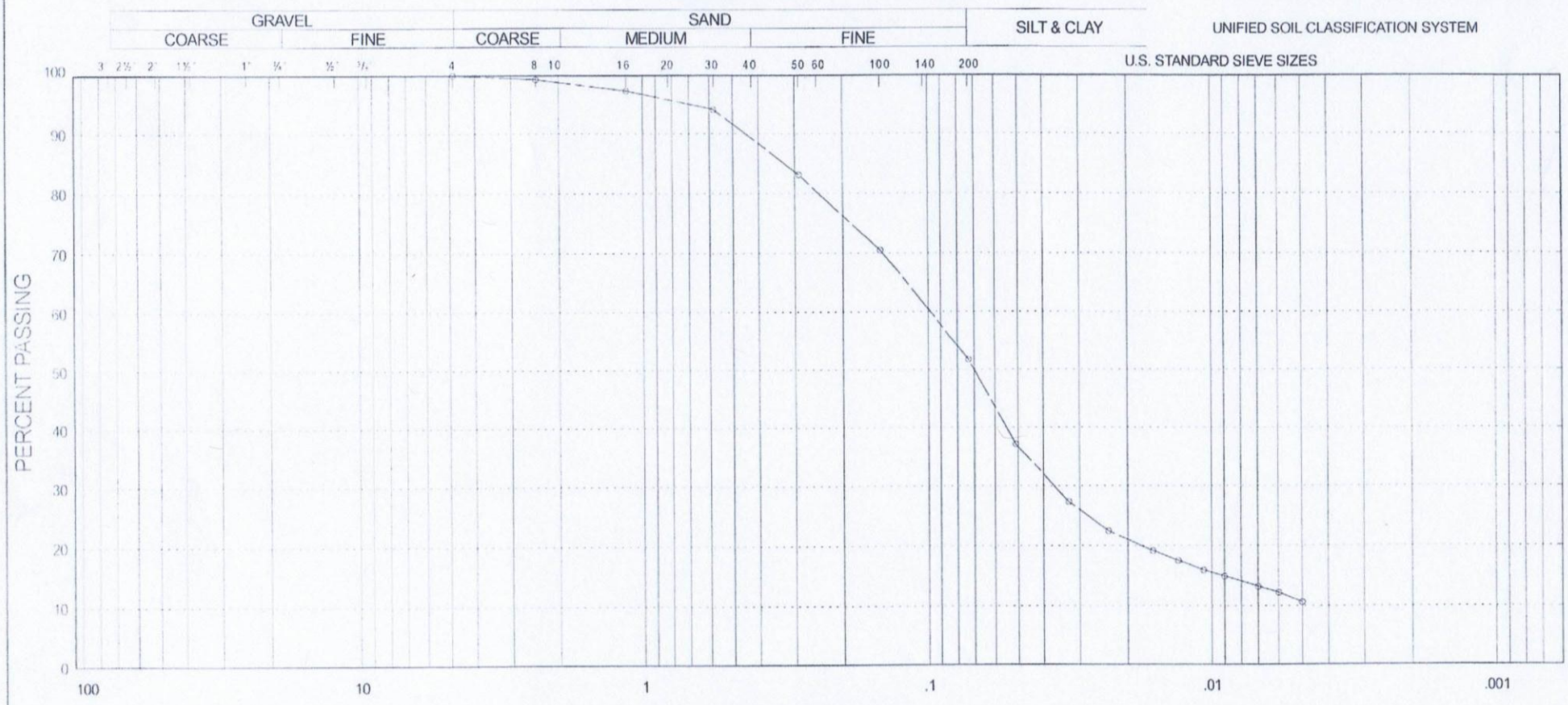
ENCLOSURE N° 2

V. A. **WOOD (GUELPH) INCORPORATED**

Appendix A **Grain Size Analysis**	**Allen Wetland AW7 at 0.2-0.4 mbgs**

GRAIN SIZE DISTRIBUTION

OUR REFERENCE N° G3188-2-2



PROJECT: Harden Environmental Proj No. 9506
LOCATION:
BOREHOLE N°:
SAMPLE N°: 148
DEPTH:
ELEVATION:

COEFFICIENT OF UNIFORMITY:
COEFFICIENT OF CURVATURE:

Classification of Sample and Group Symbol:

SAND AND SILT, some clay

PLASTIC PROPERTIES
LIQUID LIMIT % =
PLASTIC LIMIT % =
PLASTICITY INDEX % =
MOISTURE CONTENT % =

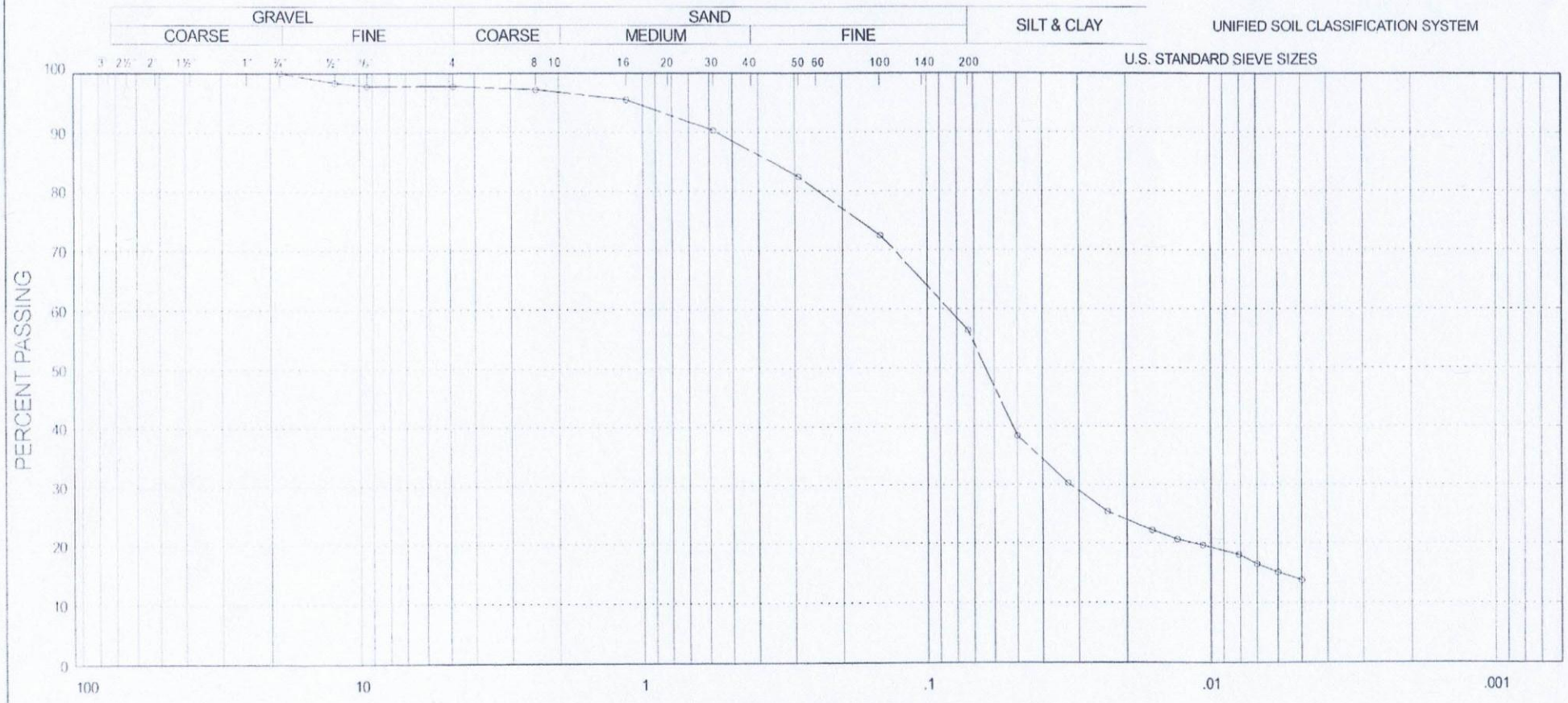
ENCLOSURE N° 1

V. A. **WOOD (GUELPH) INCORPORATED**

Appendix A **Grain Size Analysis**	**Allen Wetland AW8 at 0.2-0.4 mbgs**

GRAIN SIZE DISTRIBUTION

OUR REFERENCE N° G3188-2-2



PROJECT: Harden Environmental Proj. No. 9506
LOCATION:
BOREHOLE N°:
SAMPLE N°: 190
DEPTH:
ELEVATION:

COEFFICIENT OF UNIFORMITY:
COEFFICIENT OF CURVATURE:

Classification of Sample and Group Symbol:

SILT AND SAND, some clay, trace gravel

PLASTIC PROPERTIES
LIQUID LIMIT % =
PLASTIC LIMIT % =
PLASTICITY INDEX % =
MOISTURE CONTENT % =

ENCLOSURE N° 3

V. A. WOOD (GUELPH) INCORPORATED

Appendix A **Grain Size Analysis**	**Allen Wetland AW11 at 0.2-0.4 mbgs**

Table A1: Monitoring Station Completion Details

Monitoring Station	Type	Date Installed	Inside Diameter (in)	Stick-up (m)	Ground Elevation (mAMSL)	Reference Point Elevation (mAMSL)	Depth (mbgs)	Base of Screen Elevation (mAMSL)	Top of Screen Elevation (mAMSL)	Screen Length (m)
M1D	Drilled Groundwater Monitor	May-1990	2.00	0.87	358.83	359.70	12.80	347.57	349.07	1.50
M1S	Drilled Groundwater Monitor	Dec-2010	2.00	1.00	358.84	359.84	9.35	350.18	350.74	0.56
M2	Drilled Groundwater Monitor	May-1990	2.00	0.94	362.45	363.39	55.47	344.35	345.85	1.50
M3	Drilled Groundwater Monitor	May-1990	2.00	0.93	359.27	360.20	11.13	350.01	351.51	1.50
M4	Drilled Groundwater Monitor	May-1990	2.00	0.74	355.89	356.63	18.59	339.09	340.59	1.50
M5	Drivepoint Groundwater Monitor	Nov-1996	1.25	1.07	358.64	359.71	5.94	352.70	353.30	0.60
M6	Drivepoint Groundwater Monitor	Nov-1996	1.25	1.13	354.97	356.10	1.98	352.99	353.59	0.60
M7	Drivepoint Groundwater Monitor	Apr-1998	1.25	1.14	352.43	353.57	2.82	349.61	350.21	0.60
M7R	Drivepoint Groundwater Monitor	Nov-2010	1.25	0.82	352.45	353.27	3.14	349.31	349.91	0.60
M8	Drivepoint Groundwater Monitor	Apr-1998	1.25	1.16	356.30	357.46	1.55	354.75	355.35	0.60
M9	Drivepoint Groundwater Monitor	Apr-1998	1.25	1.35	355.67	357.02	2.61	353.07	353.67	0.60
M9R	Drivepoint Groundwater Monitor	Nov-2010	1.25	1.03	355.67	356.70	2.92	352.75	353.35	0.60
M10	Drivepoint Groundwater Monitor	Apr-1998	1.25	1.14	355.13	356.27	0.93	354.20	354.80	0.60
M11	Drilled Groundwater Monitor	Dec-2010	2.00	0.86	358.57	359.43	9.30	349.91	351.43	1.50
M12	Drilled Groundwater Monitor	Dec-2010	2.00	0.89	362.00	362.89	8.84	353.69	355.21	1.50
M13S	Drilled Groundwater Monitor	Dec-2010	2.00	0.99	356.78	357.77	4.37	352.64	354.16	1.50
M13D	Drilled Groundwater Monitor	Dec-2010	2.00	0.90	356.75	357.65	10.06	346.91	348.43	1.50
M14S	Drilled Groundwater Monitor	Dec-2010	2.00	0.98	354.64	355.62	4.27	350.58	350.88	0.30
M14D	Drilled Groundwater Monitor	Dec-2010	2.00	0.78	354.50	355.28	7.62	348.56	348.86	0.30
TP1	Test Pit Location With Drivepoint Groundwater Monitor	Sep-1996	1.25	1.07	355.35	356.41	4.60	350.75	351.66	0.91
TP2	Test Pit Location With Drivepoint Groundwater Monitor	Sep-1996	1.25	1.37	354.66	356.03	5.08	349.58	350.49	0.91
TP3	Test Pit Location	Sep-1996	n/a	n/a	358.45	n/a	8.00	n/a	n/a	n/a
TP4	Test Pit Location	Sep-1996	n/a	n/a	n/a	n/a	8.00	n/a	n/a	n/a
TP5	Test Pit Location With Drivepoint Groundwater Monitor	Sep-1996	1.25	0.96	355.68	356.64	7.46	348.22	349.13	0.91
TP6	Test Pit Location	Sep-1996	n/a	n/a	359.30	n/a	7.00	n/a	n/a	n/a
TP7	Test Pit Location	Sep-1996	n/a	n/a	356.25	n/a	8.00	n/a	n/a	n/a
TP8	Test Pit Location With Drivepoint Groundwater Monitor	Feb-2012	1.25	0.91	359.45	360.36	6.07	353.38	353.99	0.61
TP9	Test Pit Location With Drivepoint Groundwater Monitor	Feb-2012	1.25	0.94	356.65	357.59	4.57	352.08	352.69	0.61
MPN-1	Mini-Piezometer	Jul-2009	0.75	0.84	354.67	355.51	2.07	352.60	352.69	0.09
MPN-2	Mini-Piezometer	Jul-2009	0.75	1.29	355.29	356.58	1.62	353.67	353.76	0.09
MPE-1	Mini-Piezometer	Jul-2009	0.75	0.79	354.71	355.50	2.12	352.59	352.68	0.09
MPE-2	Mini-Piezometer	Jul-2009	0.75	0.79	355.29	356.08	2.12	353.17	353.26	0.09
MPS-1	Mini-Piezometer	Jul-2009	0.75	0.77	354.73	355.50	2.14	352.59	352.68	0.09
MPS-2	Mini-Piezometer	Jul-2009	0.75	0.68	355.54	356.22	2.23	353.31	353.40	0.09
MPW-1	Mini-Piezometer	Jan-2011	0.75	0.38	354.90	355.28	2.26	352.64	352.73	0.09
MPW-2	Mini-Piezometer	Jan-2011	0.75	0.76	355.09	355.85	1.88	353.21	353.30	0.09

Table A1: Monitoring Station Completion Details

Monitoring Station	Type	Date Installed	Inside Diameter (in)	Stick-up (m)	Ground Elevation (mAMSL)	Reference Point Elevation (mAMSL)	Depth (mbgs)	Base of Screen Elevation (mAMSL)	Top of Screen Elevation (mAMSL)	Screen Length (m)
MP1	Mini-Piezometer	Nov-2010	0.75	1.14	355.81	356.95	3.61	352.20	352.29	0.09
MP2	Mini-Piezometer	Nov-2010	0.75	0.44	356.95	357.38	4.32	352.63	352.72	0.09
MP3	Mini-Piezometer	Nov-2010	0.75	0.75	359.80	360.55	4.00	355.80	355.89	0.09
MP4	Mini-Piezometer	Nov-2010	0.75	0.76	359.23	359.99	3.99	355.24	355.33	0.09
SW1	Surface Water Gauge	Aug-1996	n/a	n/a	n/a	355.34	n/a	n/a	n/a	n/a
SW2	Surface Water Gauge	Aug-1996	n/a	n/a	n/a	355.28	n/a	n/a	n/a	n/a
SW3-D	Surface Water Gauge and Streamflow Measurement	Aug-1996	n/a	n/a	349.04	351.02	n/a	n/a	n/a	n/a
SW3-U	Surface Water Gauge and Streamflow Measurement	Aug-1996	n/a	n/a	n/a	351.96	n/a	n/a	n/a	n/a
SW3A/SW8	Streamflow Measurement	Mar-2009	n/a	n/a	n/a	355.33	n/a	n/a	n/a	n/a
SW4	Surface Water Gauge and Streamflow Measurement	Aug-1996	n/a	n/a	358.87	360.52	n/a	n/a	n/a	n/a
SW5	Surface Water Gauge	Aug-1996	n/a	n/a	354.72	355.66	n/a	n/a	n/a	n/a
SW6	Surface Water Gauge	Oct-2001	n/a	n/a	n/a	354.96	n/a	n/a	n/a	n/a
SW7	Surface Water Gauge and Streamflow Measurement	Oct-2001	n/a	n/a	n/a	356.46	n/a	n/a	n/a	n/a

Table A2: Soil Descriptions - Allen Wetland and Northwest Wetland

Location	Sample ID	Depth	Major Munsell Colour	Minor Munsell Colour	Soil Description
Allen Wetland	AW1	0.6 - 1.1 m	HUE 10YR 4/3 - Brown	HUE 10YR 4/3 - Brown	Fine Sand with silt with medium sand, no gravel, no tiny stones, brown, saturated, uniform
Allen Wetland	AW2	1.0 - 1.25 m	HUE 10YR 5/4 - Yellowish Brown	HUE 10YR 4/3 - Brown	Fine Sand with silt with medium sand, no gravel, no tiny stones, yellowish brown, saturated, uniform
Allen Wetland	AW3	1.0 - 1.25 m	HUE 10YR 5/6 - Yellowish Brown	HUE 10YR 3/1 - very dark gray	Fine Sandy Silt, yellowish brown with no tiny stones, no gravel, uniform
Allen Wetland	AW5	0.5 - 1.0 m	HUE 10YR 4/3 - Brown	HUE 10YR 5/6 - yellowish brown	Fine Sandy Silt, brown with few tiny stones, no gravel, uniform
Allen Wetland	AW5	1.0 - 1.25 m	HUE 10YR 3/4 - Dark Yellowish Brown	HUE 10YR 6/6 - brownish yellow	Fine Sandy Silt, brown with few gravel, trace tiny stones, saturated
Allen Wetland	AW6	0.3 - 0.5 m	HUE 10YR 4/3 - Brown	HUE 10YR 3/2 - very dark grayish brown	Silty Fine Sand with some gravel, brown with few tiny rounded stones
Allen Wetland	AW7	0.2 - 0.4 m	HUE 2.5Y 6/4 - Light Yellowish Brown	HUE 2.5Y 3/1 - Very Dark Gray	Silt and Fine Sand, yellowish brown, with some gravel, trace tiny stones
Allen Wetland	AW7	0.4 - 0.5 m	HUE 2.5Y 6/4 - Light Yellowish Brown	HUE 2.5Y 5/1 - Gray	Fine Sandy Silt, yellowish brown with few tiny stones, some gravel, uniform, saturated
Allen Wetland	AW8	0.2 - 0.4 m	HUE 2.5Y 4/1 - Dark Gray	HUE 2.5Y 6/6 - Olive Yellow	Fine Sandy Silt, yellowish gray with gravel, some tiny stones, saturated
Allen Wetland	AW9	0.5 - 1.0 m	HUE 2.5Y 4/1 - Dark Gray	HUE 2.5Y 5/1 - Gray	Fine Sandy Silt, gray with few tiny stones, some gravel, uniform, saturated
Allen Wetland	AW10	0.5 - 1.0 m	HUE 10YR 4/4 - Dark Yellowish Brown	HUE 10YR 4/1 - Dark Gray	Silt and Fine Sand, brown, with some gravel, trace tiny stones, saturated
Allen Wetland	AW11	0.2 - 0.4 m	HUE 7.5YR 4/6 - Strong Brown	HUE 7.5YR 4/1 - Dark Gray	Fine Sandy Silt, brown, with few gravel, trace tiny stones, moderate plasticity
Allen Wetland	AW11	0.4 - 0.6 m	HUE 2.5Y 5/4 - Light Olive Brown	HUE 2.5Y 6/6 - Olive Yellow	Fine Sandy Silt, brown, with gravel, with tiny stones, saturated, moderate plasticity
Allen Wetland	AW12	0.2-0.4 m below streambed	HUE 2.5Y 4/2 - Dark Grayish Brown	HUE 2.5Y 2.5/1 - Black	Fine Sandy Silt, brown, with trace gravel, few stones, low-moderate plasticity
Northwest Wetland	SP1 S1-1	0 - 0.37 m	HUE 10YR 2/1 - Black	HUE 10YR 2/1 - Black	Organics, blackish, silt with very fine sand
Northwest Wetland	SP1 S1-2	0.37 - 0.58 m	HUE 10YR 4/2 - Dark Grayish Brown	HUE 10YR 4/4 - Dark Yellowish Brown	Fine sand brown and silt, uniform, no stones, saturated below 0.3 mbgs
Northwest Wetland	SP1 S2	0.58 - 0.88 m	HUE 10YR 4/4 - Dark Yellowish Brown	HUE 10YR 5/6 - yellowish brown	Fine brown sand and silt, increased plasticity, with few gravel in top 5 cm and no gravel below, saturated
Northwest Wetland	SP1 S3-1	0.88 - 1.02 m	HUE 10YR 5/4 - yellowish brown	HUE 10YR 5/6 - yellowish brown	Silty Fine brown Sand, with trace gravel, no stones, saturated
Northwest Wetland	SP1 S3-2	1.02 - 1.12 m	HUE 10YR 5/3 - brown	HUE 10YR 5/4 - yellowish brown	Silty Fine-medium brown Sand, with few gravel, with trace tiny stones, saturated
Northwest Wetland	SP1 S3-3	1.12 - 1.18 m	HUE 10YR 5/3 - brown	HUE 10YR 3/1 - very dark gray	Silty Medium-fine brown sand, with some coarse sand, with trace gravel, with no stones, saturated
Northwest Wetland	SP1 S4-1	1.12 - 1.32 m	HUE 2.5Y 5/4 - light olive brown	HUE 2.5Y 6/4 - light yellowish brown	Silty Medium-fine brown sand, with some coarse sand, with some gravel, with few stones, saturated
Northwest Wetland	SP1 S4-2	1.32 - 1.54 m	HUE 2.5Y 6/3 - light yellowish brown	HUE 2.5Y 6/2 - light brownish gray	Silty Fine brown Sand, with trace gravel, no stones, saturated

Table A2: Soil Descriptions - Allen Wetland and Northwest Wetland

Location	Sample ID	Depth	Major Munsell Colour	Minor Munsell Colour	Soil Description
Northwest Wetland	SP1 S5-1	1.54 - 1.62 m	HUE 2.5Y 5/4 - light olive brown	HUE 2.5Y 5/2 - grayish brown	Silty Fine brown Sand, with trace gravel, no stones, saturated
Northwest Wetland	SP1 S5-2	1.62 - 2.00 m	HUE 2.5Y 5/3 - light olive brown	HUE 2.5Y 6/4 - light yellowish brown	Silty Medium-fine brown sand, with some coarse sand, with some gravel, with few stones, saturated
Northwest Wetland	SP2 S1-1	0 - 0.44 m	HUE 10YR 2/1 - Black	HUE 10YR 2/1 - Black	Organics, blackish, silt with very fine sand
Northwest Wetland	SP2 S1-2	0.44 - 0.6 m	HUE 10YR 5/2 - Grayish Brown	HUE 10YR 4/1 - Dark Gray	Fine brown sand and silt, no gravel, no stones, uniform
Northwest Wetland	SP2 S2-1	0.6 - 0.75 m	HUE 10YR 4/2 -Dark Grayish Brown	HUE 10YR 4/2 -Dark Grayish Brown	Silty fine brown sand, with no gravel, trace tiny stones, uniform, saturated
Northwest Wetland	SP2 S2-2	0.75 - 0.96 m	HUE 2.5Y 4/2 - Dark Grayish Brown	HUE 2.5Y 5/3 - light olive brown	Silty fine gray sand, with no gravel, trace tiny stones, uniform, saturated
Northwest Wetland	SP2 S3-1	0.96 - 1.05 m	HUE 2.5Y 4/4 - Olive Brown	HUE 2.5Y 6/6 - Olive Yellow	Silty fine brown sand, with few gravel, with trace tiny stones, saturated
Northwest Wetland	SP2 S3-2	1.34 - 1.54 m	HUE 2.5Y 5/6 - Light Olive Brown	HUE 2.5Y 6/6 - Olive Yellow	Fine sandy silt, brown, with few coarse sand, with trace tiny stones, saturated, low-moderate plasticity
Northwest Wetland	SP2 S4	1.54 - 1.62 m	HUE 2.5Y 5/4 - Light Olive Brown	HUE 2.5Y 6/4 - Light Yellowish Brown	Fine sandy silt, brown, with few coarse sand, with trace tiny stones, saturated
Northwest Wetland	SP2 S5	1.62 - 1.67 m	HUE 2.5Y 6/2 - Light Brownish Gray	HUE 2.5Y 6/3 - Light Yellowish Brown	Fine sandy silt, light gray, with some gravel, with trace tiny stones, saturated
Northwest Wetland	SP3 S1	0.3 -0.45 m	HUE 10YR 2/1 - Black	HUE 10YR 3/2 -Very Dark Grayish Brown	Organics, blackish, silt with very fine sand
Northwest Wetland	SP3 S2	0.45 - 0.6 m	HUE 10YR 2/1 - Black	HUE 10YR 3/2 -Very Dark Grayish Brown	Organics, blackish, silt with very fine sand, slight increase in plasticity
Northwest Wetland	SP3 S3	0.6 - 0.7 m	HUE 2.5Y 5/3 - Light Olive Brown	HUE 2.5Y 4/3 - Olive Brown	Fine Sandy Silt, brown, with no gravel, with trace tiny stones, uniform
Northwest Wetland	SP3 S4	0.7 - 0.8 m	HUE 2.5Y 5/3 - Light Olive Brown	HUE 2.5Y 5/4 - Light Olive Brown	Fine Sandy Silt, brown, with no gravel, with some medium sand, with trace tiny stones
Northwest Wetland	SP3 S5	0.8 - 0.9 m	HUE 2.5Y 5/3 - Light Olive Brown	HUE 2.5Y 4/2 - Dark Grayish Brown	Silty fine sand, brown gray, with few gravel, no tiny stones, saturated
Northwest Wetland	SP3 S6	0.9 - 1.3 m	HUE 2.5Y 6/4 - Light Yellowish Brown	HUE 2.5Y 5/4 - Light Olive Brown	Silty fine sand, yellowish brown, with few gravel, no tiny stones, saturated
Northwest Wetland	SP3 S7-1	1.3 - 1.5 m	HUE 2.5Y 5/3 - Light Olive Brown	HUE 2.5Y 5/4 - Light Olive Brown	Fine sand and silt, brown, with few gravel, trace tiny stones, saturated
Northwest Wetland	SP3 S7-2	1.5 - 1.65 m	HUE 2.5Y 6/3 - Light Yellowish Brown	HUE 2.5Y 6/2 - Light Brownish Gray	Fine sandy silt, gray with few gravel, no tiny stones
Northwest Wetland	SP3 S8	1.65 - 2.0 m	HUE 2.5Y 5/3 - Light Olive Brown	HUE 2.5Y 6/4 - Light Yellowish Brown	Silty fine sand, brown, with few tiny stones, no gravel
Northwest Wetland	SP4 S1	0.9 - 1.3 m	HUE 2.5Y 5/3 - Light Olive Brown	HUE 2.5Y 6/2 - Light Brownish Gray	Fine sandy silt, brown, no gravel, trace tiny stones, saturated
Northwest Wetland	SP4 S2	1.3 - 1.55 m	HUE 2.5Y 5/3 - Light Olive Brown	HUE 2.5Y 6/3 - Light Yellowish Brown	Fine silty sand, brown, with some gravel, with some tiny stones, with trace coarse sand, saturated

Table A3: Summary of Grain Size Analysis

BH1 (M1D) % Passing By Weight					BH2 (M2) % Passing By Weight					BH3 (M3) % Passing By Weight					BH4 (M4) % Passing By Weight				
Sample No.	mbgs		Sand and Gravel	Silt or Clay	Sample No.	mbgs		Sand and Gravel	Silt or Clay	Sample No.	mbgs		Sand and Gravel	Silt or Clay	Sample No.	mbgs		Sand and Gravel	Silt or Clay
1	From	0.76	64.7	35.3	1	From	0.76	89.4	10.6	1	From	0.61	38.7	61.3	1	From	0.30	73.4	26.6
	To	1.52				To	3.05				To	0.91				To	1.22		
2	From	1.52	72.5	27.5	2	From	3.05	91.8	8.2	2	From	0.91	54.9	45.1	2	From	1.22	74.2	25.8
	To	1.68				To	4.57				To	2.13				To	1.98		
3	From	1.68	87.9	12.1	3	From	4.57	86.2	13.8	3	From	2.13	79.0	21.0	3	From	1.98	74.5	25.5
	To	2.59				To	6.10				To	3.66				To	2.59		
4	From	2.59	76.8	23.2	4	From	6.10	77.0	23.0	4	From	3.66	89.1	10.9	4	From	2.59	73.6	26.4
	To	3.51				To	7.62				To	5.03				To	3.51		
5	From	3.51	82.7	17.3	5	From	7.62	74.5	25.5	5	From	5.03	65.9	34.1	5	From	3.51	79.1	20.9
	To	5.03				To	9.75				To	7.16				To	5.33		
6	From	6.10	82.8	17.2						6	From	7.16	71.5	28.5	6	From	5.33	86.8	13.2
	To	8.08									To	8.08				To	6.71		

			% Passing By Weight	
Sample	From (mbgs)	To (mbgs)	Sand and Gravel	Silt or Clay
TP1	5	7	10.5	89.5
TP2	0.55	0.55	64.6	35.4
TP4	8	8	74.0	26.0
TP5	4	4	36.5	63.5
AW S1	0.2	0.4	48.8	51.2
AW S2	0.2	0.4	52.2	47.8
AW S3	0.3	0.5	43.8	56.2

Table A4: Top of Silt/Silt Till

Top of Silt/Silt Till		
Monitor Location	Elevation (mAMSL)	Silt Thickness (Metres)
M13	352.18	1.98
M14	351.45	1.67
TP2	349.61	1.00
M1	351.21	1.68

Appendix B
Water Level Monitoring Data

Table B1: Groundwater Levels (Metres Below Top of Reference Point)
Table B2: Groundwater Elevations (Metres Above Mean Sea Level)
Table B3: Surface Water Levels (Metres Below Top of Reference Point)
Table B4: Surface Water Elevations (Metres Above Mean Sea Level)
Monitoring Station Hydrographs

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	17-Apr-95	01-May-95	17-May-95	27-Jun-95	11-Jul-95	01-Aug-95	18-Oct-95	04-Dec-95	30-Jan-96	11-Mar-96	20-Jun-96
M1D	**359.70**	8.17	8.11	8.07	8.19	8.27	8.35	8.6	8.23	8	7.9	7.82
M2	**363.39**	12.45	12.37	12.3	12.67	12.72	12.87	13.33	12.64	12.1	12.1	12.08
M3	**360.20**	10.63	10.3	10.29	10.31	10.31	10.3	10.33	10.32	10.28	10.28	10.29
M4	**356.63**	10.2	10.12	9.95	10.3	10.42	10.7	10.83	10.2	9.95	9.98	9.75
M5	**359.71**											
M6 in	**356.10**											
M6 out	**356.10**											
M7	**353.27**											
M8	**357.46**											
M9	**356.70**											
M10 in	**356.27**											
M10 out	**356.27**											
TP1	**356.41**											
TP2 in	**356.03**											
TP2 out	**356.03**											
TP5	**356.64**											
TP8	**360.36**											
TP9	**357.59**											
MPN-1 in	**355.51**											
MPN-1 out	**355.51**											
MPN-2 in	**356.58**											
MPN-2 out	**356.58**											
MPE-1 in	**355.50**											
MPE-1 out	**355.50**											
MPE-2 in	**356.08**											
MPE-2 out	**356.08**											
MPS-1 in	**355.50**											
MPS-1 out	**355.50**											
MPS-2	**356.22**											
MPW-1 in	**355.41**											
MPW-1 out	**355.41**											
MPW-2 in	**355.99**											
MPW-2 out	**355.99**											
MP1	**356.95**											
MP2	**357.38**											
MP3	**360.55**											
MP4	**359.99**											
M1-S	**359.84**											
M11	**359.43**											
M12	**362.89**											
M13-S	**357.77**											
M13-D	**357.65**											
M14-S in	**355.62**											
M14-S out	**355.62**											
M14-D	**355.28**											

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	02-Aug-96	04-Sep-96	08-Nov-96	21-Nov-96	14-May-97	26-Jun-97	15-Jul-97	14-Oct-97	17-Dec-97	06-Feb-98	31-Mar-98
M1D	**359.70**	8.14	8.3	8.13	8.12	7.82	8.08	8.21	8.74	8.97	8.57	8.01
M2	**363.39**	12.48	12.85	12.46	12.48	11.97	12.39	12.65	13.25	13.4	13.03	12.03
M3	**360.20**	10.28	10.32	10.31	10.31	10.3	10.29	10.29	10.36	10.78	10.59	10.32
M4	**356.63**	10.26	10.52	10.42	10.22	9.95	10.16	10.39	10.95	11.02	10.69	9.65
M5	**359.71**			5.66	5.67	5.3	5.59	5.71	6.3	6.5	6.08	5.35
M6 in	**356.10**			1.43		0.99	1.28	1.53	2.45	2.63	2.12	1.19
M6 out	**356.10**											
M7	**353.27**											
M8	**357.46**											
M9	**356.70**											
M10 in	**356.27**											
M10 out	**356.27**											
TP1	**356.41**		1.65	1.42		1.125	1.42	1.59	2.31	2.43	1.85	1.12
TP2 in	**356.03**		1.92	1.83		1.46	1.78	1.9	2.53	2.72	2.27	1.53
TP2 out	**356.03**											
TP5	**356.64**		3.92	3.82	3.9	3.45	Des	Des	Des	Des	Des	Des
TP8	**360.36**											
TP9	**357.59**											
MPN-1 in	**355.51**											
MPN-1 out	**355.51**											
MPN-2 in	**356.58**											
MPN-2 out	**356.58**											
MPE-1 in	**355.50**											
MPE-1 out	**355.50**											
MPE-2 in	**356.08**											
MPE-2 out	**356.08**											
MPS-1 in	**355.50**											
MPS-1 out	**355.50**											
MPS-2	**356.22**											
MPW-1 in	**355.41**											
MPW-1 out	**355.41**											
MPW-2 in	**355.99**											
MPW-2 out	**355.99**											
MP1	**356.95**											
MP2	**357.38**											
MP3	**360.55**											
MP4	**359.99**											
M1-S	**359.84**											
M11	**359.43**											
M12	**362.89**											
M13-S	**357.77**											
M13-D	**357.65**											
M14-S in	**355.62**											
M14-S out	**355.62**											
M14-D	**355.28**											

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	21-Apr-98	29-Apr-98	31-Aug-98	13-Oct-98	23-Nov-99	18-Jan-00	24-Feb-00	16-Mar-00	25-Apr-00	26-Jun-00	18-Jul-00
M1D	**359.70**	7.965	7.98	8.58	8.87	8.5	8.35	8.465	8.23	8.105	7.86	7.97
M2	**363.39**	12.08	12.13	13.18	13.33	12.955	12.8	12.94	12.55	12.27	11.88	12.14
M3	**360.20**	10.3	10.3	10.33	10.37	10.695	10.33	10.315	10.3	10.29	10.29	10.29
M4	**356.63**		9.9	10.86	10.98	10.64	10.54	10.77	10.36	9.8	9.5	9.95
M5	**359.71**	5.28	5.32	6.11	6.48	6.01	5.78	5.89	5.66	5.43	5.25	5.4
M6 in	**356.10**	1.055	1.1	2.29	2.68	1.9	1.65	1.81	1.355	1.145	0.95	1.08
M6 out	**356.10**											
M7	**353.27**	Dry	4.11	Dry	Dry	Dry	Dry		Dry	Dry	3.49	Dry
M8	**357.46**	Dry	Dry	Dry	Dry							
M9	**356.70**	2.61	2.61	Dry	Dry	3.39	2.93	Dry	3.25	1.455	1.275	1.72
M10 in	**356.27**	1.52	1.43	Dry	Dry	Dry	1.96	1.85	1.67	1.545	1.14	1.57
M10 out	**356.27**											
TP1	**356.41**	1.135		2.14	2.52	1.77	1.62	1.7	1.375	1.19	1.105	1.22
TP2 in	**356.03**	1.455	1.51	2.34	2.73	2.19	1.96	2.02	1.805	1.6	1.385	1.58
TP2 out	**356.03**											
TP5	**356.64**	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des
TP8	**360.36**											
TP9	**357.59**											
MPN-1 in	**355.51**											
MPN-1 out	**355.51**											
MPN-2 in	**356.58**											
MPN-2 out	**356.58**											
MPE-1 in	**355.50**											
MPE-1 out	**355.50**											
MPE-2 in	**356.08**											
MPE-2 out	**356.08**											
MPS-1 in	**355.50**											
MPS-1 out	**355.50**											
MPS-2	**356.22**											
MPW-1 in	**355.41**											
MPW-1 out	**355.41**											
MPW-2 in	**355.99**											
MPW-2 out	**355.99**											
MP1	**356.95**											
MP2	**357.38**											
MP3	**360.55**											
MP4	**359.99**											
M1-S	**359.84**											
M11	**359.43**											
M12	**362.89**											
M13-S	**357.77**											
M13-D	**357.65**											
M14-S in	**355.62**											
M14-S out	**355.62**											
M14-D	**355.28**											

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	19-Sep-00	30-Oct-00	30-Jan-01	03-Apr-01	04-Jun-01	17-Jul-01	23-Aug-01	04-Oct-01	06-Dec-01	30-Jan-02	22-Feb-02
M1D	**359.70**	8.35	8.555	8.87	8.06	8.06	8.31	8.53	8.74	8.38	8.30	8.22
M2	**363.39**	12.845	13.04	13.3	12.11	12.31	12.77	13.02	13.23	12.87	12.71	12.61
M3	**360.20**	10.31	10.34	10.45	10.29	10.30	10.30	10.32	10.36	10.40	10.32	10.31
M4	**356.63**	10.65	10.84	11.02	9.47	9.98	10.53	10.82	10.96	10.40	10.30	10.33
M5	**359.71**	5.83	6.08	6.39	5.505	5.47	5.71	6.05	6.31	5.95	5.73	5.62
M6 in	**356.10**	1.67	2.04	2.45	1.15	1.09	1.50	2.06	2.37	1.76	1.42	1.38
M6 out	**356.10**					1.00						
M7	**353.27**	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
M8	**357.46**										2.26	1.80
M9	**356.70**	3.63	Dry	Dry	1.205	1.53	2.77	Dry	Dry	2.15	2.15	1.78
M10 in	**356.27**	Dry	Dry	Dry	1.46	1.52	1.96	Dry	Dry	1.96	1.78	1.54
M10 out	**356.27**											
TP1	**356.41**	1.76	2.025	2.26	1.14	1.24	1.61	1.99	2.28	1.87	1.54	1.40
TP2 in	**356.03**	2.02	2.28	2.56	1.62	1.64	1.90	2.23	2.53	2.12	1.89	1.79
TP2 out	**356.03**											
TP5	**356.64**	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des
TP8	**360.36**											
TP9	**357.59**											
MPN-1 in	**355.51**											
MPN-1 out	**355.51**											
MPN-2 in	**356.58**											
MPN-2 out	**356.58**											
MPE-1 in	**355.50**											
MPE-1 out	**355.50**											
MPE-2 in	**356.08**											
MPE-2 out	**356.08**											
MPS-1 in	**355.50**											
MPS-1 out	**355.50**											
MPS-2	**356.22**											
MPW-1 in	**355.41**											
MPW-1 out	**355.41**											
MPW-2 in	**355.99**											
MPW-2 out	**355.99**											
MP1	**356.95**											
MP2	**357.38**											
MP3	**360.55**											
MP4	**359.99**											
M1-S	**359.84**											
M11	**359.43**											
M12	**362.89**											
M13-S	**357.77**											
M13-D	**357.65**											
M14-S in	**355.62**											
M14-S out	**355.62**											
M14-D	**355.28**											

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	01-Apr-02	06-Jun-02	04-Jul-02	08-Aug-02	27-Sep-02	19-Nov-02	31-Dec-02	06-Mar-03	09-May-03	13-Jun-03	18-Jul-03
M1D	359.70	8.97	7.92	7.70	8.33		8.91	9.03	9.12	8.16	8.00	8.18
M2	363.39		12.04	12.13	13.04	13.11	13.32	13.42	13.51	12.41	12.12	12.53
M3	360.20	10.30	10.29	10.31	10.30		10.56	11.01	11.29	10.30	10.29	10.29
M4	356.63	9.56	9.77	10.12	10.73		11.00	11.04	11.16	10.10	10.00	10.48
M5	359.71	5.40	5.32	5.49	5.80		6.59	6.61	6.69	5.54	5.36	5.60
M6 in	356.10	1.02	1.02	1.27	1.63	2.35	2.57	2.75	2.84	1.20	1.04	1.33
M6 out	356.10											
M7	353.27	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
M8	357.46	1.67	2.08	2.35	Dry	Dry	Dry	Dry	Dry	2.67	Dry	Dry @ 2.71
M9	356.70	1.20	1.40	2.47	Dry		Dry	Dry	Dry	2.65	2.47	2.72
M10 in	356.27	1.39	1.35	1.79	Dry	2.06	Dry	Dry	Dry	1.56	1.40	1.80
M10 out	356.27											
TP1	356.41	1.15	1.15	1.39	1.74	2.20	2.39	2.49	2.51	1.25	1.14	1.46
TP2 in	356.03	1.55	1.52	1.78	2.01	2.38	2.69	2.80	2.93	1.73	1.52	1.82
TP2 out	356.03											
TP5	356.64	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des
TP8	360.36											
TP9	357.59											
MPN-1 in	355.51											
MPN-1 out	355.51											
MPN-2 in	356.58											
MPN-2 out	356.58											
MPE-1 in	355.50											
MPE-1 out	355.50											
MPE-2 in	356.08											
MPE-2 out	356.08											
MPS-1 in	355.50											
MPS-1 out	355.50											
MPS-2	356.22											
MPW-1 in	355.41											
MPW-1 out	355.41											
MPW-2 in	355.99											
MPW-2 out	355.99											
MP1	356.95											
MP2	357.38											
MP3	360.55											
MP4	359.99											
M1-S	359.84											
M11	359.43											
M12	362.89											
M13-S	357.77											
M13-D	357.65											
M14-S in	355.62											
M14-S out	355.62											
M14-D	355.28											

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	26-Aug-03	02-Sep-03	29-Sep-03	24-Oct-03	28-Nov-03	19-Dec-03	30-Jan-04	12-Mar-04	16-Apr-04	13-May-04	17-Jun-04
M1D	**359.70**	8.81		8.50	8.55	8.24	8.08	8.02	7.92	7.65	8.05	7.86
M2	**363.39**	13.49	13.31	12.89	12.98	12.60	12.24	12.10	11.97	11.38	12.21	12.08
M3	**360.20**	10.33		10.40	10.40	10.39	10.30	10.29	10.30	10.28	10.28	10.28
M4	**356.63**	10.85		10.82	10.89	10.49	10.18	10.06	9.86	9.29	9.39	9.70
M5	**359.71**	5.87		5.88	6.08	5.80	5.58	5.54	5.45	5.06	5.03	5.72
M6 in	**356.10**	1.54		1.78	1.98	1.52	1.26			area flooded	inaccessible	0.90
M6 out	**356.10**											0.87
M7	**353.27**	Dry		Dry @ 4.00	dry	Dry	Dry	Dry	dry @ 3.96	dry @ 3.96	dry @ 3.96	dry @ 3.96
M8	**357.46**	Dry		Dry @ 2.70	dry	Dry	Dry	Dry	dry @ 1.27	dry @ 2.73	dry @ 2.73	dry @ 2.75
M9	**356.70**	3.97		Dry @ 3.98	dry	3.25	2.98	2.74	2.55	2.40	2.28	2.32
M10 in	**356.27**	1.98		1.98	Dry	1.82	1.65	1.65	1.43	1.04	1.03	1.07
M10 out	**356.27**											
TP1	**356.41**	1.68		1.82	1.97	1.51	1.32	1.33	1.17	1.07	1.02	1.06
TP2 in	**356.03**	2.00		2.18	2.27	1.88	1.77	1.74	1.59	area flooded	inaccessible	1.38
TP2 out	**356.03**											
TP5	**356.64**	Des		Des	Des	Des	Des	Des	Des	Des	Des	Des
TP8	**360.36**											
TP9	**357.59**											
MPN-1 in	**355.51**											
MPN-1 out	**355.51**											
MPN-2 in	**356.58**											
MPN-2 out	**356.58**											
MPE-1 in	**355.50**											
MPE-1 out	**355.50**											
MPE-2 in	**356.08**											
MPE-2 out	**356.08**											
MPS-1 in	**355.50**											
MPS-1 out	**355.50**											
MPS-2	**356.22**											
MPW-1 in	**355.41**											
MPW-1 out	**355.41**											
MPW-2 in	**355.99**											
MPW-2 out	**355.99**											
MP1	**356.95**											
MP2	**357.38**											
MP3	**360.55**											
MP4	**359.99**											
M1-S	**359.84**											
M11	**359.43**											
M12	**362.89**											
M13-S	**357.77**											
M13-D	**357.65**											
M14-S in	**355.62**											
M14-S out	**355.62**											
M14-D	**355.28**											

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	21-Jul-04	19-Aug-04	24-Sep-04	09-Nov-04	18-Nov-04	17-Dec-04	21-Jan-05	18-Feb-05	17-Mar-05	14-Apr-05	27-May-05
M1D	**359.70**	8.39	8.57	8.69	8.46	8.49	8.45	8.05	8.02	8.06	8.05	8.17
M2	**363.39**	12.69	13.17	13.40	12.87	12.88	12.82	12.11	12.12	12.27	11.99	12.52
M3	**360.20**	10.29	10.30	10.30	10.34	10.36	10.38	10.30	10.31	10.30	10.29	10.31
M4	**356.63**	10.42	10.58	10.72	10.83	10.85	10.67	10.08	10.03	10.15	9.31	9.93
M5	**359.71**	5.83	5.98	5.77	6.01	6.05	6.06	5.62	5.53	5.59	5.06	5.33
M6 in	**356.10**	1.43	1.57	1.52	1.85	1.93	1.94	1.32	frozen @ 1.12	frozen @ 0.97	0.92	0.94
M6 out	**356.10**	1.29	1.38									
M7	**353.27**	dry @ 3.96	dry @ 3.96	dry @ 3.95	dry @ 3.96	dry @ 3.95	dry @ 3.92	dry @ 3.95	frozen @ 1.22	frozen @ 1.07	dry @ 3.97	dry @ 3.96
M8	**357.46**	dry @ 2.70	dry @ 2.74	dry @ 2.72	dry @ 2.71	dry @ 2.72	dry @ 2.68	dry @ 2.70	dry @ 2.72	dry @ 2.73	dry @ 2.73	dry @ 2.73
M9	**356.70**	2.50	2.65	dry @ 3.94	dry @ 3.95	dry @ 3.93	3.51	2.89	2.69	2.70	2.39	2.39
M10 in	**356.27**	1.63	1.82	1.93	2.02	2.03	dry @ 2.05	1.60	1.41	1.64	0.98	1.12
M10 out	**356.27**											
TP1	**356.41**	1.20	1.37	1.54	1.93	1.97	2.11	frozen @ 1.18	frozen @ 1.15	frozen @ 1.10	1.02	1.10
TP2 in	**356.03**	1.72	1.85	1.95	2.21	2.25	2.24	1.79	1.73	frozen @ 1.33	inaccessible	1.46
TP2 out	**356.03**											
TP5	**356.64**	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des
TP8	**360.36**											
TP9	**357.59**											
MPN-1 in	**355.51**											
MPN-1 out	**355.51**											
MPN-2 in	**356.58**											
MPN-2 out	**356.58**											
MPE-1 in	**355.50**											
MPE-1 out	**355.50**											
MPE-2 in	**356.08**											
MPE-2 out	**356.08**											
MPS-1 in	**355.50**											
MPS-1 out	**355.50**											
MPS-2	**356.22**											
MPW-1 in	**355.41**											
MPW-1 out	**355.41**											
MPW-2 in	**355.99**											
MPW-2 out	**355.99**											
MP1	**356.95**											
MP2	**357.38**											
MP3	**360.55**											
MP4	**359.99**											
M1-S	**359.84**											
M11	**359.43**											
M12	**362.89**											
M13-S	**357.77**											
M13-D	**357.65**											
M14-S in	**355.62**											
M14-S out	**355.62**											
M14-D	**355.28**											

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	28-Jun-05	13-Jul-05	15-Aug-05	12-Sep-05	24-Oct-05	21-Nov-05	19-Dec-05	16-Jan-06	13-Feb-06	08-Mar-06	22-Jun-06
M1D	**359.70**	8.42	8.56	8.72	8.83	8.83	8.69	8.15	8.15	8.11	8.15	8.29
M2	**363.39**	12.76	13.19	13.48	13.51	13.58	13.35	12.34	12.31	12.09	12.33	12.58
M3	**360.20**	10.33	10.32	10.48	10.53	10.55	10.49	10.34	10.29	10.12	10.24	10.59
M4	**356.63**	10.18	10.68	10.83	10.93	10.96	10.90	10.31	10.28	10.10	10.18	10.50
M5	**359.71**	5.57	5.70	5.87	5.93	5.95	5.83	5.65	5.66	5.32	5.30	5.57
M6 in	**356.10**	1.10	1.46	1.75	1.80	1.84	1.63	frozen @ 1.26	1.35	frozen @ 1.27	fr @ 0.92	1.60
M6 out	**356.10**											
M7	**353.27**	dry @ 3.96	dry @ 3.96	dry @ 3.96	dry @ 3.96	dry	dry	dry	dry	dry	dry	dry
M8	**357.46**	dry @ 2.74	dry @ 2.74	dry @ 2.75	dry @ 2.74	dry	dry	dry	dry	dry	dry	dry
M9	**356.70**	2.63	3.48	dry @ 3.95	dry @ 3.95	dry	dry	3.33	2.90	2.77	2.65	2.49
M10 in	**356.27**	1.21	1.90	2.03	1.98	dry	1.80	dry	1.75	1.66	1.14	1.65
M10 out	**356.27**											
TP1	**356.41**	1.31	1.40	1.60	1.62	1.67	1.40	1.37	1.43	frozen @ 1.37	fr @ 1.08	1.27
TP2 in	**356.03**	1.66	1.91	2.08	2.10	2.12	1.97	1.82	1.64	1.73	1.43	1.74
TP2 out	**356.03**											
TP5	**356.64**	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des
TP8	**360.36**											
TP9	**357.59**											
MPN-1 in	**355.51**											
MPN-1 out	**355.51**											
MPN-2 in	**356.58**											
MPN-2 out	**356.58**											
MPE-1 in	**355.50**											
MPE-1 out	**355.50**											
MPE-2 in	**356.08**											
MPE-2 out	**356.08**											
MPS-1 in	**355.50**											
MPS-1 out	**355.50**											
MPS-2	**356.22**											
MPW-1 in	**355.41**											
MPW-1 out	**355.41**											
MPW-2 in	**355.99**											
MPW-2 out	**355.99**											
MP1	**356.95**											
MP2	**357.38**											
MP3	**360.55**											
MP4	**359.99**											
M1-S	**359.84**											
M11	**359.43**											
M12	**362.89**											
M13-S	**357.77**											
M13-D	**357.65**											
M14-S in	**355.62**											
M14-S out	**355.62**											
M14-D	**355.28**											

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	19-Jul-06	21-Aug-06	15-Sep-06	05-Oct-06	28-Dec-06	30-Jan-07	15-Feb-07	12-Mar-07	10-Apr-07	08-May-07	18-Jul-07
M1D	**359.70**	8.43	8.64	8.67	8.54	8.01	7.82	8.05	8.08	7.85	8.08	8.15
M2	**363.39**	12.80	13.30	13.47	13.25	12.31	11.85	11.98	12.08	11.80	11.98	12.12
M3	**360.20**	10.81	10.42	10.52	10.46	10.22	10.20	10.24	10.30	10.12	10.31	10.45
M4	**356.63**	10.72	10.85	10.91	10.94	10.03	10.08	9.96	9.83	9.65	9.80	9.96
M5	**359.71**	5.70	5.80	5.97	5.81	5.35	5.41	5.45	5.49	5.35	5.58	5.69
M6 in	**356.10**	1.71	1.58	1.72	1.55	1.37	1.25	fr @ 1.26	1.28	1.05	1.11	dry
M6 out	**356.10**									0.86		
M7	**353.27**	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
M8	**357.46**	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
M9	**356.70**	2.63	dry	dry	3.31	2.81	2.64	2.68	2.72	2.61	2.76	2.83
M10 in	**356.27**	1.77	1.92	dry	1.65	1.23	1.13	1.22	1.27	1.02	1.17	1.25
M10 out	**356.27**											
TP1	**356.41**	1.39	1.47	1.51	1.42	1.25	1.19	1.25	1.28	1.15	1.32	1.37
TP2 in	**356.03**	1.94	1.99	2.05	1.90	1.59	1.42	1.47	1.50	1.36	1.52	1.58
TP2 out	**356.03**											
TP5	**356.64**	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des
TP8	**360.36**											
TP9	**357.59**											
MPN-1 in	**355.51**											
MPN-1 out	**355.51**											
MPN-2 in	**356.58**											
MPN-2 out	**356.58**											
MPE-1 in	**355.50**											
MPE-1 out	**355.50**											
MPE-2 in	**356.08**											
MPE-2 out	**356.08**											
MPS-1 in	**355.50**											
MPS-1 out	**355.50**											
MPS-2	**356.22**											
MPW-1 in	**355.41**											
MPW-1 out	**355.41**											
MPW-2 in	**355.99**											
MPW-2 out	**355.99**											
MP1	**356.95**											
MP2	**357.38**											
MP3	**360.55**											
MP4	**359.99**											
M1-S	**359.84**											
M11	**359.43**											
M12	**362.89**											
M13-S	**357.77**											
M13-D	**357.65**											
M14-S in	**355.62**											
M14-S out	**355.62**											
M14-D	**355.28**											

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	30-Aug-07	26-Sep-07	25-Oct-07	26-Nov-07	21-Dec-07	23-Jan-08	22-Feb-08	18-Mar-08	21-Apr-08	26-May-08	16-Jul-08
M1D	**359.70**	8.75	8.89	8.80	8.68	8.84	8.13	8.00	7.90	7.49	7.92	8.10
M2	**363.39**	13.46	13.56	13.49	13.35	13.51	12.07	11.92	11.90	10.84	12.18	12.05
M3	**360.20**	10.72	10.83	10.78	10.65	10.79	10.42	10.20	10.16	10.02	10.22	10.36
M4	**356.63**	10.05	10.29	11.05	10.98	10.85	10.15	9.92	9.79	8.50	10.00	9.89
M5	**359.71**	6.21	6.32	6.22	6.10	6.22	5.73	5.54	5.46	4.63	5.26	5.63
M6 in	**356.10**	1.95	dry	2.24	2.18	2.46	dry/ice	dry/ice	dry/ice	0.48	0.93	1.24
M6 out	**356.10**									0.51		
M7	**353.27**	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
M8	**357.46**	dry	dry	dry	dry	dry	dry	dry	dry	2.48	dry	dry
M9	**356.70**	dry	dry	dry	dry	dry	2.78	2.65	2.63	2.20	2.61	2.79
M10 in	**356.27**	dry	dry	dry	dry	dry	1.21	1.20	1.20	0.71	1.10	1.21
M10 out	**356.27**											
TP1	**356.41**	1.97	2.08	1.96	1.81	1.96	1.39	1.23	1.18	0.82	1.44	1.36
TP2 in	**356.03**	2.24	2.32	2.30	2.15	2.31	1.55	1.46	1.42	0.51	1.09	1.55
TP2 out	**356.03**											
TP5	**356.64**	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des	Des
TP8	**360.36**											
TP9	**357.59**											
MPN-1 in	**355.51**											
MPN-1 out	**355.51**											
MPN-2 in	**356.58**											
MPN-2 out	**356.58**											
MPE-1 in	**355.50**											
MPE-1 out	**355.50**											
MPE-2 in	**356.08**											
MPE-2 out	**356.08**											
MPS-1 in	**355.50**											
MPS-1 out	**355.50**											
MPS-2	**356.22**											
MPW-1 in	**355.41**											
MPW-1 out	**355.41**											
MPW-2 in	**355.99**											
MPW-2 out	**355.99**											
MP1	**356.95**											
MP2	**357.38**											
MP3	**360.55**											
MP4	**359.99**											
M1-S	**359.84**											
M11	**359.43**											
M12	**362.89**											
M13-S	**357.77**											
M13-D	**357.65**											
M14-S in	**355.62**											
M14-S out	**355.62**											
M14-D	**355.28**											

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	18-Aug-08	08-Sep-08	30-Oct-08	12-Nov-08	16-Dec-08	30-Jan-09	13-Feb-09	12-Mar-09	07-Apr-09	08-Jun-09	23-Jun-09
M1D	**359.70**	8.05	8.12	8.22	8.51	8.18	7.85	7.77	7.54	7.50	7.84	8.16
M2	**363.39**	12.02	12.11	12.54	13.11	12.19	11.83	11.69	11.21	10.99	12.01	12.43
M3	**360.20**	10.36	10.43	10.55	10.62	10.49	10.19	10.14	10.17	10.18	10.31	10.50
M4	**356.63**	9.85	9.93	10.03	10.48	10.24	9.74	9.64	9.12	8.87	9.15	9.45
M5	**359.71**	5.60	5.68	5.81	5.87	5.79	5.46	5.36	4.93	5.01	5.47	5.77
M6 in	**356.10**	1.31	1.52	1.69	1.73	1.53	froz	froz	0.79	0.74	0.81	0.98
M6 out	**356.10**									0.65		
M7	**353.27**	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
M8	**357.46**	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
M9	**356.70**	2.73	2.80	2.91	3.11	2.87	2.40	froz	2.11	2.12	2.43	2.75
M10 in	**356.27**	1.18	1.24	1.35	dry	1.30	1.20	1.18	0.94	0.83	1.49	1.07
M10 out	**356.27**											
TP1	**356.41**	1.33	1.36	1.50	1.62	1.44	1.16	1.08	0.93	0.93	1.22	1.25
TP2 in	**356.03**	1.51	1.56	1.68	2.06	1.65	1.41	1.39	1.08	0.95	1.45	1.38
TP2 out	**356.03**											
TP5	**356.64**	Des	Des	Des	Des	Des	Des	Des	Des	des	des	des
TP8	**360.36**											
TP9	**357.59**											
MPN-1 in	**355.51**											
MPN-1 out	**355.51**											
MPN-2 in	**356.58**											
MPN-2 out	**356.58**											
MPE-1 in	**355.50**											
MPE-1 out	**355.50**											
MPE-2 in	**356.08**											
MPE-2 out	**356.08**											
MPS-1 in	**355.50**											
MPS-1 out	**355.50**											
MPS-2	**356.22**											
MPW-1 in	**355.41**											
MPW-1 out	**355.41**											
MPW-2 in	**355.99**											
MPW-2 out	**355.99**											
MP1	**356.95**											
MP2	**357.38**											
MP3	**360.55**											
MP4	**359.99**											
M1-S	**359.84**											
M11	**359.43**											
M12	**362.89**											
M13-S	**357.77**											
M13-D	**357.65**											
M14-S in	**355.62**											
M14-S out	**355.62**											
M14-D	**355.28**											

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	21-Jul-09	19-Aug-09	02-Sep-09	06-Oct-09	04-Nov-09	21-Dec-09	27-Jan-10	24-Feb-10	16-Mar-10	20-Apr-10	06-May-10
M1D	**359.70**	8.19	8.28	8.32	8.46	8.51	8.55	8.49	8.53	8.05	7.83	7.95
M2	**363.39**	12.51	12.80	12.83	12.94	12.97	12.99	12.87	12.89	12.19	11.83	12.06
M3	**360.20**	10.28	10.35	10.40	10.46	10.44	10.36	10.33	10.29	10.29	10.29	10.29
M4	**356.63**	9.48	10.54	10.59	10.75	10.81	10.85	10.76	10.78	10.03	9.76	10.00
M5	**359.71**	5.73	5.83	5.86	5.99	6.16	6.19	6.18	6.22	5.67	5.32	5.44
M6 in	**356.10**	1.50	1.66	1.77	2.27	2.07	2.10	2.08	2.32	1.42	1.00	1.08
M6 out	**356.10**										0.94	1.00
M7	**353.27**	dry	dry	dry	dry	dry	dry	dry	dry	3.75	dry	dry
M8	**357.46**	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
M9	**356.70**	2.92	3.73	3.76	3.93	3.98	3.85	3.24	dry	3.19	2.62	2.60
M10 in	**356.27**	1.92	1.94	1.96	dry	dry	dry	dry	dry	1.22	1.09	1.33
M10 out	**356.27**											
TP1	**356.41**	1.52	1.62	1.67	1.86	2.06	2.04	1.98	2.07	1.19	1.11	1.20
TP2 in	**356.03**	1.88	2.02	2.09	2.28	2.38	2.34	2.37	2.43	1.77	1.50	1.63
TP2 out	**356.03**											
TP5	**356.64**	des	des	des	des	des	des	des	des	des	des	des
TP8	**360.36**											
TP9	**357.59**											
MPN-1 in	**355.51**			0.9	1.15	1.22	1.205	1.12	1.235	0.615	-	0.37
MPN-1 out	**355.51**											0.405
MPN-2 in	**356.58**			1.98	2.25	2.31	2.325	2.225	2.33	1.52	1.36	1.45
MPN-2 out	**356.58**											
MPE-1 in	**355.50**			1.29	1.535	1.62	1.61	1.595	1.71	0.94	-	0.69
MPE-1 out	**355.50**											0.4
MPE-2 in	**356.08**			2.065	2.32	2.395	2.41	2.395	2.45	1.76	1.36	1.49
MPE-2 out	**356.08**											
MPS-1 in	**355.50**			1.23	1.45	1.54	1.56	1.555	1.74	0.845	0.485	0.565
MPS-1 out	**355.50**									0.73	0.34	0.4
MPS-2	**356.22**			2.145	2.46	2.525	2.53	2.545	2.595	1.73	1.36	1.45
MPW-1 in	**355.41**											
MPW-1 out	**355.41**											
MPW-2 in	**355.99**											
MPW-2 out	**355.99**											
MP1	**356.95**											
MP2	**357.38**											
MP3	**360.55**											
MP4	**359.99**											
M1-S	**359.84**											
M11	**359.43**											
M12	**362.89**											
M13-S	**357.77**											
M13-D	**357.65**											
M14-S in	**355.62**											
M14-S out	**355.62**											
M14-D	**355.28**											

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	11-Jun-10	13-Jul-10	27-Aug-10	17-Sep-10	28-Oct-10	24-Nov-10	24-Dec-10	30-Dec-10	10-Jan-11	25-Jan-11	24-Feb-11
M1D	**359.70**	8.06	8.29	8.29	8.36	8.42	8.42	8.28		8.29	8.31	8.28
M2	**363.39**	12.27	12.72	12.84	12.73	12.80	12.77	12.65			12.66	12.61
M3	**360.20**	10.29	10.29	10.29	10.32	10.33	10.33	10.32			10.31	10.30
M4	**356.63**	10.16	10.19	10.58	10.71	10.68	10.61	10.49			10.52	10.50
M5	**359.71**	5.58	5.60	5.78	5.92	6.05	6.08	5.92		5.84	5.86	5.89
M6 in	**356.10**	1.24	1.34	1.65	1.79	1.88	1.92	1.96		1.89	2.02	1.88
M6 out	**356.10**						dry					
M7	**353.27**	dry	dry	dry	dry	dry	dry	dry			dry	dry@3.85
M8	**357.46**	dry	dry	dry	dry	dry	dry	dry			dry	dry
M9	**356.70**	2.60	2.47	dry	dry	3.63	2.70	2.51			2.40	2.19
M10 in	**356.27**	1.65	1.72	1.96	1.99	dry	dry@2.07	dry		dry	dry	dry
M10 out	**356.27**											
TP1	**356.41**	1.35	1.30	1.61	1.78	1.90	1.91	1.72		1.78	1.86	1.83
TP2 in	**356.03**	1.77	1.80	1.97	2.11	2.23	2.26	2.13		2.04	2.08	2.10
TP2 out	**356.03**											
TP5	**356.64**	des	des	des	des	des	des	des			des	des
TP8	**360.36**											
TP9	**357.59**											
MPN-1 in	**355.51**	0.52	0.57	0.8	0.935	1.035	1.03	0.91		0.98	1.05	1.04
MPN-1 out	**355.51**	0.555	0.625	0.845	0.945	dry	dry	dry @ 0.87		dry		dry
MPN-2 in	**356.58**	1.585	1.61	1.87	2.09	2.135	2.125	2.01		2.05	2.13	2.12
MPN-2 out	**356.58**											
MPE-1 in	**355.50**	0.835	0.88	1.135	1.31	1.45	1.48	1.47		1.41	1.47	1.44
MPE-1 out	**355.50**	0.56	0.62	dry	dry	dry	dry	dry @ 0.81		dry		dry
MPE-2 in	**356.08**	1.65	1.69	1.92	2.11	2.245	2.28	2.12		2.04	2.08	2.07
MPE-2 out	**356.08**											
MPS-1 in	**355.50**	0.725	0.795	1.1	1.26	1.36	1.4	1.37		1.31	1.40	0.86
MPS-1 out	**355.50**	0.55	0.615	dry	dry	dry	dry	dry		dry		dry
MPS-2	**356.22**	1.62	1.68	1.97	2.21	2.37	2.42	2.28		2.19	2.25	2.26
MPW-1 in	**355.41**							2.09		0.94	1.00	0.94
MPW-1 out	**355.41**							dry		dry		dry
MPW-2 in	**355.99**							1.72		1.50	1.57	1.51
MPW-2 out	**355.99**											
MP1	**356.95**							3.055			2.96	froz@1.16
MP2	**357.38**							2.72			2.62	froz@0.45
MP3	**360.55**							dry			dry	3.24
MP4	**359.99**							dry			dry	2.65
M1-S	**359.84**							6.95		6.93	6.94	6.92
M11	**359.43**							dry @ 9.52			dry	dry
M12	**362.89**							dry @ 9.20			dry	dry@9.19
M13-S	**357.77**							3.11		3.17	3.25	3.21
M13-D	**357.65**							3.595		3.65	3.74	3.62
M14-S in	**355.62**							3.96	2.24	1.50	1.55	1.54
M14-S out	**355.62**											
M14-D	**355.28**							1.32	1.30	1.26	1.30	1.32

HARDEN
ENVIRONMENTAL

Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	01-Apr-11	02-May-11	31-May-11	27-Jun-11	26-Jul-11	29-Aug-11	05-Oct-11	01-Nov-11	28-Nov-11
M1D	**359.70**	7.76	7.67	7.65	7.65	8.19	8.27	8.41	8.26	8.31
M2	**363.39**	11.69	11.54	11.51	11.65	12.59	12.65	12.78	12.63	12.64
M3	**360.20**	10.28	10.30	10.29	10.30	10.30	10.31	10.32	10.32	10.32
M4	**356.63**	9.56	9.36	9.01	9.54	10.31	10.54	10.71	10.34	10.40
M5	**359.71**	5.25	5.13	4.88	5.24	5.54	5.75	5.99	5.88	5.84
M6 in	**356.10**	froz at 1.07	0.855	0.715	0.895	1.290	1.655	1.910	1.740	1.765
M6 out	**356.10**		0.855	0.720	0.870	dry	dry	dry	dry	dry
M7	**353.27**	3.76	dry at 3.85	dry	dry	dry	dry	dry	dry	dry
M8	**357.46**	froz at 1.19	dry	dry	dry	dry	dry	dry	dry	dry
M9	**356.70**	2.10	1.905	1.850	1.980	2.150	3.270	3.650	2.820	2.800
M10 in	**356.27**	1.30	1.09	0.94	1.11	1.81	1.97	dry	dry	dry
M10 out	**356.27**			0.95	1.07	dry	dry	dry	dry	dry
TP1	**356.41**	1.18	1.05	0.96	1.07	1.34	1.65	2.01	1.80	1.77
TP2 in	**356.03**	1.54	1.25	0.895	1.440	1.770	1.940	2.190	2.065	2.035
TP2 out	**356.03**			0.690	dry	dry	dry	dry	dry	dry
TP5	**356.64**	des	des	des	des	des	des	des	des	des
TP8	**360.36**									
TP9	**357.59**									
MPN-1 in	**355.51**	0.46	0.26	0.125	0.270	0.620	0.890	1.240	1.000	0.985
MPN-1 out	**355.51**	0.39	0.26	0.125	0.280	0.635	muck	dry	dry	dry
MPN-2 in	**356.58**	1.45	1.31	1.195	1.330	1.680	1.970	2.330	2.080	2.060
MPN-2 out	**356.58**			1.235		dry	dry	dry	dry	dry
MPE-1 in	**355.50**	0.78	0.54	0.315	0.620	0.970	1.240	1.555	1.400	1.360
MPE-1 out	**355.50**	0.39	0.26	0.125	0.280	0.635	dry	dry	dry	dry
MPE-2 in	**356.08**	1.08	0.85	0.71	0.90	1.36	1.78	2.21	2.00	1.91
MPE-2 out	**356.08**		dry	0.695	dry	dry	dry	dry	dry	dry
MPS-1 in	**355.50**	0.60	0.37	-0.12	0.43	0.81	1.13	1.41	1.25	1.26
MPS-1 out	**355.50**	0.40	-	-0.12	0.28	0.63	dry	dry	dry	dry
MPS-2	**356.22**	1.43	1.19	0.97	1.35	1.69	2.01	2.37	2.21	2.20
MPW-1 in	**355.41**	0.24	0.07	UW	0.09	0.49	0.85	1.14	0.90	0.90
MPW-1 out	**355.41**	0.20	0.05	UW	0.07	dry	dry	dry	dry	dry
MPW-2 in	**355.99**	0.80	0.63	0.465	0.660	1.100	1.430	1.710	1.470	1.465
MPW-2 out	**355.99**	0.76	0.625	0.49	0.64	dry	dry	dry	dry	dry
MP1	**356.95**	2.68	2.46	2.31	2.45	2.63	3.62	dry	3.35	3.34
MP2	**357.38**	froz at 0.48	2.31	2.26	2.37	2.52	3.71	3.65	3.03	3.01
MP3	**360.55**	froz at 0.84	3.34	3.58	dry	dry	dry	dry	dry	dry
MP4	**359.99**	froz at 0.82	2.69	2.95	dry	dry	dry	dry	dry	dry
M1-S	**359.84**	6.31	6.22	5.95	6.21	6.54	6.745	6.950	6.900	6.835
M11	**359.43**	dry	dry	dry	dry	dry	dry	dry	dry	dry
M12	**362.89**	dry	dry	dry	dry	dry	dry	dry	dry	dry
M13-S	**357.77**	2.57	2.39	2.28	2.44	2.76	3.08	3.45	3.19	3.17
M13-D	**357.65**	2.96	2.72	2.70	2.85	3.43	3.70	4.02	3.57	3.64
M14-S in	**355.62**	0.94	0.71	0.49	0.82	1.19	1.41	1.68	1.54	1.51
M14-S out	**355.62**	0.45	0.39	0.29	0.40	dry	dry	dry	dry	dry
M14-D	**355.28**	-	0.51	UW		0.96	1.16	1.43	1.30	1.27

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Table B1: Groundwater Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	02-Feb-12	23-Feb-12	29-Mar-12	11-May-12	06-Jul-12
M1D	**359.70**	7.91	7.97	7.99	8.34	8.63
M2	**363.39**	11.87	12.02	12.00	12.53	13.12
M3	**360.20**	10.30	10.32	10.32	10.31	10.31
M4	**356.63**	9.80	9.94	9.86	10.24	10.79
M5	**359.71**	5.42	5.47	5.46	5.63	5.90
M6 in	**356.10**	froz @1.045	froz @1.00	1.120	1.385	2.120
M6 out	**356.10**	0.980	froz @0.98	1.070	dry	dry
M7	**353.27**	dry	dry	dry	dry	dry
M8	**357.46**	dry	dry	dry	dry	dry
M9	**356.70**	2.380	2.290	2.080	2.100	dry
M10 in	**356.27**	1.45	1.58	1.61	1.78	dry
M10 out	**356.27**	dry	dry	dry	dry	dry
TP1	**356.41**	1.12	1.22	1.24	1.44	1.79
TP2 in	**356.03**	1.590	1.650	1.640	1.830	2.130
TP2 out	**356.03**	dry	dry	dry	dry	dry
TP5	**356.64**	des	des	des	des	des
TP8	**360.36**			5.56	6.18	6.63
TP9	**357.59**			5.34	5.31	dry
MPN-1 in	**355.51**	0.380	0.435	0.470	0.680	1.055
MPN-1 out	**355.51**	0.385	0.430	0.470	0.695	dry
MPN-2 in	**356.58**	1.425	1.500	1.520	1.740	2.130
MPN-2 out	**356.58**	dry	dry	dry	dry	dry
MPE-1 in	**355.50**	0.800	0.850	0.850	1.050	1.570
MPE-1 out	**355.50**	0.390	0.435	0.475	0.695	dry
MPE-2 in	**356.08**	1.16	1.23	1.25	1.52	2.14
MPE-2 out	**356.08**	dry	dry	dry	dry	dry
MPS-1 in	**355.50**	0.58	0.66	0.66	0.89	1.50
MPS-1 out	**355.50**	0.38	0.44	0.47	0.69	dry
MPS-2	**356.22**	1.38	1.46	1.52	1.77	2.31
MPW-1 in	**355.41**	froz @ 0.195	froz @0.26	0.31	0.57	1.08
MPW-1 out	**355.41**	0.19	froz @0.19	0.27	dry	dry
MPW-2 in	**355.99**	0.785	0.890	0.920	1.175	1.630
MPW-2 out	**355.99**	0.74	dry	dry	dry	dry
MP1	**356.95**	2.88	2.87	2.66	2.58	dry
MP2	**357.38**	2.54	2.52	2.47	2.52	dry
MP3	**360.55**	froz @1.02	froz	dry	dry	dry
MP4	**359.99**	froz @0.98	froz	dry	dry	dry
M1-S	**359.84**	6.470	6.495	6.490	6.660	6.870
M11	**359.43**	dry	dry	dry	dry	dry
M12	**362.89**	dry	dry	dry	dry	dry
M13-S	**357.77**	2.49	2.60	2.62	2.84	3.24
M13-D	**357.65**	2.91	3.06	3.08	3.52	4.13
M14-S in	**355.62**	1.02	1.08	1.07	1.27	1.59
M14-S out	**355.62**	0.68	0.71	0.81	dry	dry
M14-D	**355.28**	0.81	0.86	0.85	1.04	1.34

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Table B2: Groundwater Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	17-Apr-95	01-May-95	17-May-95	27-Jun-95	11-Jul-95	01-Aug-95	18-Oct-95	04-Dec-95	30-Jan-96	11-Mar-96	20-Jun-96	02-Aug-96	04-Sep-96	08-Nov-96
M1-D	**359.70**	351.53	351.59	351.63	351.51	351.43	351.35	351.10	351.47	351.70	351.80	351.88	351.56	351.40	351.57
M2	**363.39**	350.94	351.02	351.09	350.72	350.67	350.52	350.06	350.75	351.29	351.29	351.31	350.91	350.54	350.93
M3	**360.20**	349.57	349.90	349.91	349.89	349.89	349.90	349.87	349.88	349.92	349.92	349.91	349.92	349.88	349.89
M4	**356.63**	346.43	346.51	346.68	346.33	346.21	345.93	345.80	346.43	346.68	346.65	346.88	346.37	346.11	346.21
M5	**359.71**														354.05
M6 in	**356.10**														354.67
M6 out	**356.10**														
M7	**353.27**														
M8	**357.46**														
M9	**356.70**														
M10 in	**356.27**														
M10 out	**356.27**														
TP1	**356.41**													354.76	354.99
TP2 in	**356.03**													354.11	354.20
TP2 out	**356.03**														
TP5	**356.64**													352.72	352.82
TP8	**360.36**														
TP9	**357.59**														
MPN-1 in	**355.51**														
MPN-1 out	**355.51**														
MPN-2 in	**356.58**														
MPN-2 out	**356.58**														
MPE-1 in	**355.50**														
MPE-1 out	**355.50**														
MPE-2 in	**356.08**														
MPE-2 out	**356.08**														
MPS-1 in	**355.50**														
MPS-1 out	**355.50**														
MPS-2	**356.22**														
MPW-1 in	**355.41**														
MPW-1 out	**355.41**														
MPW-2 in	**355.99**														
MPW-2 out	**355.99**														
MP1	**356.95**														
MP2	**357.38**														
MP3	**360.55**														
MP4	**359.99**														
M1-S	**359.84**														
M11	**359.43**														
M12	**362.89**														
M13-S	**357.77**														
M13-D	**357.65**														
M14-S in	**355.62**														
M14-S out	**355.62**														
M14-D	**355.28**														

Table B2: Groundwater Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	21-Nov-96	14-May-97	26-Jun-97	15-Jul-97	14-Oct-97	17-Dec-97	06-Feb-98	31-Mar-98	21-Apr-98	29-Apr-98	31-Aug-98	13-Oct-98	23-Nov-99	18-Jan-00
M1-D	**359.70**	351.58	351.88	351.62	351.49	350.96	350.73	351.13	351.69	351.73	351.72	351.12	350.83	351.20	351.35
M2	**363.39**	350.91	351.42	351.00	350.74	350.14	349.99	350.36	351.36	351.31	351.26	350.21	350.06	350.43	350.59
M3	**360.20**	349.89	349.90	349.91	349.91	349.84	349.42	349.61	349.88	349.90	349.90	349.87	349.83	349.51	349.87
M4	**356.63**	346.41	346.68	346.47	346.24	345.68	345.61	345.94	346.98		346.73	345.77	345.65	345.99	346.09
M5	**359.71**	354.04	354.41	354.12	354.00	353.41	353.21	353.63	354.36	354.43	354.39	353.60	353.23	353.70	353.93
M6 in	**356.10**		355.11	354.82	354.57	353.65	353.47	353.98	354.91	355.04	355.00	353.81	353.42	354.20	354.45
M6 out	**356.10**														
M7	**353.27**										349.48				
M8	**357.46**														
M9	**356.70**									354.41	354.41			353.63	354.09
M10 in	**356.27**									354.75	354.84				354.31
M10 out	**356.27**														
TP1	**356.41**		355.29	354.99	354.82	354.10	353.98	354.56	355.29	355.28		354.27	353.89	354.64	354.79
TP2 in	**356.03**		354.57	354.25	354.13	353.50	353.31	353.76	354.50	354.57	354.52	353.69	353.30	353.84	354.07
TP2 out	**356.03**														
TP5	**356.64**	352.74	353.19												
TP8	**360.36**														
TP9	**357.59**														
MPN-1 in	**355.51**														
MPN-1 out	**355.51**														
MPN-2 in	**356.58**														
MPN-2 out	**356.58**														
MPE-1 in	**355.50**														
MPE-1 out	**355.50**														
MPE-2 in	**356.08**														
MPE-2 out	**356.08**														
MPS-1 in	**355.50**														
MPS-1 out	**355.50**														
MPS-2	**356.22**														
MPW-1 in	**355.41**														
MPW-1 out	**355.41**														
MPW-2 in	**355.99**														
MPW-2 out	**355.99**														
MP1	**356.95**														
MP2	**357.38**														
MP3	**360.55**														
MP4	**359.99**														
M1-S	**359.84**														
M11	**359.43**														
M12	**362.89**														
M13-S	**357.77**														
M13-D	**357.65**														
M14-S in	**355.62**														
M14-S out	**355.62**														
M14-D	**355.28**														

Table B2: Groundwater Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	24-Feb-00	16-Mar-00	25-Apr-00	26-Jun-00	18-Jul-00	19-Sep-00	30-Oct-00	30-Jan-01	03-Apr-01	04-Jun-01	17-Jul-01	23-Aug-01	04-Oct-01	05-Dec-01
M1-D	**359.70**	351.23	351.47	351.59	351.84	351.73	351.35	351.14	350.83	351.64	351.64	351.39	351.17	350.96	351.32
M2	**363.39**	350.45	350.84	351.12	351.51	351.25	350.54	350.35	350.09	351.28	351.08	350.62	350.37	350.16	350.52
M3	**360.20**	349.89	349.90	349.91	349.91	349.91	349.89	349.86	349.75	349.91	349.90	349.90	349.88	349.84	349.80
M4	**356.63**	345.86	346.27	346.83	347.13	346.68	345.98	345.79	345.61	347.16	346.65	346.10	345.81	345.67	346.23
M5	**359.71**	353.82	354.05	354.28	354.46	354.31	353.88	353.63	353.32	354.21	354.24	354.00	353.66	353.40	353.76
M6 in	**356.10**	354.29	354.74	354.95	355.15	355.02	354.43	354.06	353.65	354.95	355.01	354.60	354.04	353.73	354.34
M6 out	**356.10**										355.10				
M7	**353.27**				350.10										
M8	**357.46**														
M9	**356.70**		353.77	355.56	355.74	355.30	353.39			355.81	355.49	354.25			354.87
M10 in	**356.27**	354.42	354.60	354.73	355.13	354.70				354.81	354.75	354.31			354.31
M10 out	**356.27**														
TP1	**356.41**	354.71	355.04	355.22	355.31	355.19	354.65	354.39	354.15	355.27	355.17	354.80	354.43	354.13	354.54
TP2 in	**356.03**	354.01	354.22	354.43	354.64	354.45	354.01	353.75	353.47	354.41	354.39	354.13	353.80	353.50	353.91
TP2 out	**356.03**														
TP5	**356.64**														
TP8	**360.36**														
TP9	**357.59**														
MPN-1 in	**355.51**														
MPN-1 out	**355.51**														
MPN-2 in	**356.58**														
MPN-2 out	**356.58**														
MPE-1 in	**355.50**														
MPE-1 out	**355.50**														
MPE-2 in	**356.08**														
MPE-2 out	**356.08**														
MPS-1 in	**355.50**														
MPS-1 out	**355.50**														
MPS-2	**356.22**														
MPW-1 in	**355.41**														
MPW-1 out	**355.41**														
MPW-2 in	**355.99**														
MPW-2 out	**355.99**														
MP1	**356.95**														
MP2	**357.38**														
MP3	**360.55**														
MP4	**359.99**														
M1-S	**359.84**														
M11	**359.43**														
M12	**362.89**														
M13-S	**357.77**														
M13-D	**357.65**														
M14-S in	**355.62**														
M14-S out	**355.62**														
M14-D	**355.28**														

Table B2: Groundwater Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	30-Jan-02	22-Feb-02	01-Apr-02	06-Jun-02	04-Jul-02	08-Aug-02	27-Sep-02	19-Nov-02	31-Dec-02	06-Mar-03	09-May-03	13-Jun-03	18-Jul-03	26-Aug-03
M1-D	**359.70**	351.40	351.48	350.73	351.78	352.00	351.37		350.79	350.67	350.58	351.54	351.70	351.52	350.89
M2	**363.39**	350.68	350.78		351.35	351.26	350.35	350.28	350.07	349.97	349.88	350.98	351.27	350.86	349.90
M3	**360.20**	349.88	349.89	349.90	349.92	349.89	349.90		349.64	349.19	348.91	349.90	349.91	349.91	349.87
M4	**356.63**	346.33	346.30	347.07	346.86	346.51	345.90		345.63	345.59	345.47	346.53	346.63	346.15	345.78
M5	**359.71**	353.98	354.09	354.31	354.39	354.22	353.91		353.12	353.10	353.02	354.17	354.35	354.11	353.84
M6 in	**356.10**	354.68	354.72	355.08	355.08	354.83	354.47	353.75	353.53	353.35	353.26	354.90	355.06	354.77	354.56
M6 out	**356.10**														
M7	**353.27**														
M8	**357.46**	355.20	355.66	355.79	355.38	355.11						354.79			
M9	**356.70**	354.87	355.24	355.82	355.62	354.55						354.37	354.55	354.30	353.05
M10 in	**356.27**	354.49	354.73	354.88	354.92	354.48		354.21				354.71	354.87	354.47	354.29
M10 out	**356.27**														
TP1	**356.41**	354.87	355.01	355.26	355.26	355.02	354.67	354.21	354.02	353.92	353.90	355.16	355.27	354.95	354.73
TP2 in	**356.03**	354.14	354.24	354.48	354.51	354.25	354.02	353.65	353.34	353.23	353.10	354.30	354.51	354.21	354.03
TP2 out	**356.03**														
TP5	**356.64**														
TP8	**360.36**														
TP9	**357.59**														
MPN-1 in	**355.51**														
MPN-1 out	**355.51**														
MPN-2 in	**356.58**														
MPN-2 out	**356.58**														
MPE-1 in	**355.50**														
MPE-1 out	**355.50**														
MPE-2 in	**356.08**														
MPE-2 out	**356.08**														
MPS-1 in	**355.50**														
MPS-1 out	**355.50**														
MPS-2	**356.22**														
MPW-1 in	**355.41**														
MPW-1 out	**355.41**														
MPW-2 in	**355.99**														
MPW-2 out	**355.99**														
MP1	**356.95**														
MP2	**357.38**														
MP3	**360.55**														
MP4	**359.99**														
M1-S	**359.84**														
M11	**359.43**														
M12	**362.89**														
M13-S	**357.77**														
M13-D	**357.65**														
M14-S in	**355.62**														
M14-S out	**355.62**														
M14-D	**355.28**														

Table B2: Groundwater Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	02-Sep-03	29-Sep-03	24-Oct-03	28-Nov-03	19-Dec-03	30-Jan-04	12-Mar-04	16-Apr-04	13-May-04	17-Jun-04	21-Jul-04	19-Aug-04	24-Sep-04	09-Nov-04
M1-D	**359.70**		351.20	351.15	351.46	351.62	351.68	351.78	352.05	351.65	351.84	351.31	351.13	351.01	351.24
M2	**363.39**	350.08	350.50	350.41	350.79	351.15	351.29	351.42	352.01	351.18	351.31	350.70	350.22	349.99	350.52
M3	**360.20**		349.80	349.80	349.81	349.90	349.91	349.90	349.92	349.92	349.92	349.91	349.90	349.90	349.86
M4	**356.63**		345.81	345.74	346.14	346.45	346.57	346.77	347.34	347.24	346.93	346.21	346.05	345.91	345.80
M5	**359.71**		353.83	353.63	353.91	354.13	354.17	354.26	354.65	354.68	353.99	353.88	353.73	353.94	353.70
M6 in	**356.10**		354.32	354.12	354.58	354.84					355.20	354.67	354.53	354.58	354.25
M6 out	**356.10**										355.23	354.81	354.72		
M7	**353.27**														
M8	**357.46**														
M9	**356.70**				353.77	354.04	354.28	354.47	354.62	354.74	354.70	354.52	354.37		
M10 in	**356.27**		354.29		354.45	354.62	354.62	354.84	355.23	355.24	355.20	354.64	354.45	354.34	354.25
M10 out	**356.27**														
TP1	**356.41**		354.59	354.44	354.90	355.09	355.08	355.24	355.34	355.39	355.35	355.21	355.04	354.87	354.48
TP2 in	**356.03**		353.85	353.76	354.15	354.26	354.29	354.44			354.65	354.31	354.18	354.08	353.82
TP2 out	**356.03**														
TP5	**356.64**														
TP8	**360.36**														
TP9	**357.59**														
MPN-1 in	**355.51**														
MPN-1 out	**355.51**														
MPN-2 in	**356.58**														
MPN-2 out	**356.58**														
MPE-1 in	**355.50**														
MPE-1 out	**355.50**														
MPE-2 in	**356.08**														
MPE-2 out	**356.08**														
MPS-1 in	**355.50**														
MPS-1 out	**355.50**														
MPS-2	**356.22**														
MPW-1 in	**355.41**														
MPW-1 out	**355.41**														
MPW-2 in	**355.99**														
MPW-2 out	**355.99**														
MP1	**356.95**														
MP2	**357.38**														
MP3	**360.55**														
MP4	**359.99**														
M1-S	**359.84**														
M11	**359.43**														
M12	**362.89**														
M13-S	**357.77**														
M13-D	**357.65**														
M14-S in	**355.62**														
M14-S out	**355.62**														
M14-D	**355.28**														

Table B2: Groundwater Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	18-Nov-04	17-Dec-04	21-Jan-05	18-Feb-05	17-Mar-05	14-Apr-05	27-May-05	28-Jun-05	13-Jul-05	15-Aug-05	12-Sep-05	24-Oct-05	21-Nov-05	19-Dec-05
M1-D	**359.70**	351.21	351.25	351.65	351.68	351.64	351.65	351.53	351.28	351.14	350.98	350.87	350.87	351.01	351.55
M2	**363.39**	350.51	350.57	351.28	351.27	351.12	351.40	350.87	350.63	350.20	349.91	349.88	349.81	350.04	351.05
M3	**360.20**	349.84	349.82	349.90	349.89	349.90	349.91	349.89	349.87	349.88	349.72	349.67	349.65	349.71	349.86
M4	**356.63**	345.78	345.96	346.55	346.60	346.48	347.32	346.70	346.45	345.95	345.80	345.70	345.67	345.73	346.32
M5	**359.71**	353.66	353.65	354.09	354.18	354.12	354.65	354.38	354.14	354.01	353.84	353.78	353.76	353.88	354.06
M6 in	**356.10**	354.17	354.16	354.78			355.18	355.16	355.00	354.64	354.35	354.30	354.26	354.47	
M6 out	**356.10**														
M7	**353.27**														
M8	**357.46**														
M9	**356.70**		353.51	354.13	354.33	354.32	354.63	354.63	354.39	353.54					353.69
M10 in	**356.27**	354.24		354.67	354.86	354.63	355.29	355.15	355.06	354.37	354.24	354.29		354.47	
M10 out	**356.27**														
TP1	**356.41**	354.44	354.30				355.39	355.31	355.10	355.01	354.81	354.79	354.74	355.01	355.04
TP2 in	**356.03**	353.78	353.79	354.24	354.30			354.57	354.37	354.12	353.95	353.93	353.91	354.06	354.21
TP2 out	**356.03**														
TP5	**356.64**														
TP8	**360.36**														
TP9	**357.59**														
MPN-1 in	**355.51**														
MPN-1 out	**355.51**														
MPN-2 in	**356.58**														
MPN-2 out	**356.58**														
MPE-1 in	**355.50**														
MPE-1 out	**355.50**														
MPE-2 in	**356.08**														
MPE-2 out	**356.08**														
MPS-1 in	**355.50**														
MPS-1 out	**355.50**														
MPS-2	**356.22**														
MPW-1 in	**355.41**														
MPW-1 out	**355.41**														
MPW-2 in	**355.99**														
MPW-2 out	**355.99**														
MP1	**356.95**														
MP2	**357.38**														
MP3	**360.55**														
MP4	**359.99**														
M1-S	**359.84**														
M11	**359.43**														
M12	**362.89**														
M13-S	**357.77**														
M13-D	**357.65**														
M14-S in	**355.62**														
M14-S out	**355.62**														
M14-D	**355.28**														

Table B2: Groundwater Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	16-Jan-06	13-Feb-06	08-Mar-06	22-Jun-06	19-Jul-06	21-Aug-06	15-Sep-06	05-Oct-06	28-Dec-06	30-Jan-07	15-Feb-07	12-Mar-07	10-Apr-07	08-May-07
M1-D	**359.70**	351.55	351.59	351.55	351.41	351.27	351.06	351.03	351.16	351.69	351.88	351.65	351.62	351.85	351.62
M2	**363.39**	351.08	351.30	351.06	350.81	350.59	350.09	349.92	350.14	351.08	351.54	351.41	351.31	351.59	351.41
M3	**360.20**	349.91	350.08	349.96	349.61	349.39	349.78	349.68	349.74	349.98	350.00	349.96	349.90	350.08	349.89
M4	**356.63**	346.35	346.53	346.45	346.13	345.91	345.78	345.72	345.69	346.60	346.55	346.67	346.80	346.98	346.83
M5	**359.71**	354.05	354.39	354.41	354.14	354.01	353.91	353.74	353.90	354.36	354.30	354.26	354.22	354.36	354.13
M6 in	**356.10**	354.75			354.50	354.39	354.52	354.38	354.55	354.73	354.85		354.82	355.05	354.99
M6 out	**356.10**													355.24	
M7	**353.27**														
M8	**357.46**														
M9	**356.70**	354.12	354.25	354.37	354.53	354.39			353.71	354.21	354.38	354.34	354.30	354.41	354.26
M10 in	**356.27**	354.52	354.61	355.13	354.62	354.50	354.35		354.62	355.04	355.14	355.05	355.00	355.25	355.10
M10 out	**356.27**														
TP1	**356.41**	354.98			355.14	355.02	354.94	354.90	354.99	355.16	355.22	355.16	355.13	355.26	355.09
TP2 in	**356.03**	354.39	354.30	354.60	354.29	354.09	354.04	353.98	354.13	354.44	354.61	354.56	354.53	354.67	354.51
TP2 out	**356.03**														
TP5	**356.64**														
TP8	**360.36**														
TP9	**357.59**														
MPN-1 in	**355.51**														
MPN-1 out	**355.51**														
MPN-2 in	**356.58**														
MPN-2 out	**356.58**														
MPE-1 in	**355.50**														
MPE-1 out	**355.50**														
MPE-2 in	**356.08**														
MPE-2 out	**356.08**														
MPS-1 in	**355.50**														
MPS-1 out	**355.50**														
MPS-2	**356.22**														
MPW-1 in	**355.41**														
MPW-1 out	**355.41**														
MPW-2 in	**355.99**														
MPW-2 out	**355.99**														
MP1	**356.95**														
MP2	**357.38**														
MP3	**360.55**														
MP4	**359.99**														
M1-S	**359.84**														
M11	**359.43**														
M12	**362.89**														
M13-S	**357.77**														
M13-D	**357.65**														
M14-S in	**355.62**														
M14-S out	**355.62**														
M14-D	**355.28**														

Table B2: Groundwater Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	18-Jul-07	30-Aug-07	26-Sep-07	25-Oct-07	26-Nov-07	21-Dec-07	23-Jan-08	22-Feb-08	18-Mar-08	21-Apr-08	26-May-08	16-Jul-08	18-Aug-08	08-Sep-08
M1-D	**359.70**	351.55	350.95	350.81	350.90	351.02	350.86	351.57	351.70	351.80	352.21	351.78	351.60	351.65	351.58
M2	**363.39**	351.27	349.93	349.83	349.90	350.04	349.88	351.32	351.47	351.49	352.55	351.21	351.34	351.37	351.28
M3	**360.20**	349.75	349.48	349.37	349.42	349.55	349.41	349.78	350.00	350.04	350.18	349.98	349.84	349.84	349.77
M4	**356.63**	346.67	346.58	346.34	345.58	345.65	345.78	346.48	346.71	346.84	348.13	346.63	346.74	346.78	346.70
M5	**359.71**	354.02	353.50	353.39	353.49	353.61	353.49	353.98	354.17	354.25	355.08	354.45	354.08	354.11	354.03
M6 in	**356.10**		354.15		353.86	353.92	353.64				355.62	355.17	354.86	354.79	354.58
M6 out	**356.10**										355.59				
M7	**353.27**														
M8	**357.46**										354.98				
M9	**356.70**	354.19						354.24	354.37	354.39	354.82	354.41	354.23	354.29	354.22
M10 in	**356.27**	355.02						355.06	355.07	355.07	355.56	355.17	355.06	355.09	355.03
M10 out	**356.27**														
TP1	**356.41**	355.04	354.44	354.33	354.45	354.60	354.45	355.02	355.18	355.23	355.59	354.97	355.05	355.08	355.05
TP2 in	**356.03**	354.45	353.79	353.71	353.73	353.88	353.72	354.48	354.57	354.61	355.52	354.94	354.48	354.52	354.47
TP2 out	**356.03**														
TP5	**356.64**														
TP8	**360.36**														
TP9	**357.59**														
MPN-1 in	**355.51**														
MPN-1 out	**355.51**														
MPN-2 in	**356.58**														
MPN-2 out	**356.58**														
MPE-1 in	**355.50**														
MPE-1 out	**355.50**														
MPE-2 in	**356.08**														
MPE-2 out	**356.08**														
MPS-1 in	**355.50**														
MPS-1 out	**355.50**														
MPS-2	**356.22**														
MPW-1 in	**355.41**														
MPW-1 out	**355.41**														
MPW-2 in	**355.99**														
MPW-2 out	**355.99**														
MP1	**356.95**														
MP2	**357.38**														
MP3	**360.55**														
MP4	**359.99**														
M1-S	**359.84**														
M11	**359.43**														
M12	**362.89**														
M13-S	**357.77**														
M13-D	**357.65**														
M14-S in	**355.62**														
M14-S out	**355.62**														
M14-D	**355.28**														

Table B2: Groundwater Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	30-Oct-08	12-Nov-08	16-Dec-08	30-Jan-09	13-Feb-09	12-Mar-09	07-Apr-09	08-Jun-09	23-Jun-09	21-Jul-09	19-Aug-09	02-Sep-09	06-Oct-09	04-Nov-09
M1-D	**359.70**	351.48	351.19	351.52	351.85	351.93	352.16	352.20	351.86	351.54	351.51	351.42	351.38	351.24	351.19
M2	**363.39**	350.85	350.28	351.20	351.56	351.70	352.18	352.40	351.38	350.96	350.88	350.59	350.56	350.45	350.42
M3	**360.20**	349.65	349.58	349.71	350.01	350.06	350.03	350.02	349.89	349.70	349.92	349.85	349.80	349.74	349.76
M4	**356.63**	346.60	346.15	346.39	346.89	346.99	347.51	347.76	347.48	347.18	347.15	346.09	346.04	345.88	345.82
M5	**359.71**	353.90	353.84	353.92	354.25	354.35	354.78	354.70	354.24	353.94	353.98	353.88	353.85	353.72	353.55
M6 in	**356.10**	354.41	354.37	354.57			355.31	355.36	355.29	355.12	354.60	354.44	354.33	353.83	354.03
M6 out	**356.10**							355.45							
M7	**353.27**														
M8	**357.46**														
M9	**356.70**	354.11	353.91	354.15	354.62		354.91	354.90	354.59	354.27	354.10	353.29	353.26	353.09	353.04
M10 in	**356.27**	354.92		354.97	355.07	355.09	355.33	355.44	354.78	355.20	354.35	354.33	354.31		
M10 out	**356.27**														
TP1	**356.41**	354.91	354.79	354.97	355.25	355.33	355.48	355.48	355.19	355.16	354.89	354.79	354.74	354.55	354.35
TP2 in	**356.03**	354.35	353.97	354.38	354.62	354.64	354.95	355.08	354.58	354.65	354.15	354.01	353.94	353.75	353.65
TP2 out	**356.03**														
TP5	**356.64**														
TP8	**360.36**														
TP9	**357.59**														
MPN-1 in	**355.51**												354.61	354.36	354.29
MPN-1 out	**355.51**														
MPN-2 in	**356.58**												354.60	354.33	354.27
MPN-2 out	**356.58**														
MPE-1 in	**355.50**												354.21	353.97	353.88
MPE-1 out	**355.50**														
MPE-2 in	**356.08**												354.01	353.76	353.68
MPE-2 out	**356.08**														
MPS-1 in	**355.50**												354.27	354.05	353.96
MPS-1 out	**355.50**														
MPS-2	**356.22**												354.07	353.76	353.69
MPW-1 in	**355.41**														
MPW-1 out	**355.41**														
MPW-2 in	**355.99**														
MPW-2 out	**355.99**														
MP1	**356.95**														
MP2	**357.38**														
MP3	**360.55**														
MP4	**359.99**														
M1-S	**359.84**														
M11	**359.43**														
M12	**362.89**														
M13-S	**357.77**														
M13-D	**357.65**														
M14-S in	**355.62**														
M14-S out	**355.62**														
M14-D	**355.28**														

Table B2: Groundwater Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	21-Dec-09	27-Jan-10	24-Feb-10	16-Mar-10	20-Apr-10	06-May-10	11-Jun-10	13-Jul-10	27-Aug-10	17-Sep-10	28-Oct-10	24-Nov-10	24-Dec-10	30-Dec-10
M1-D	**359.70**	351.15	351.21	351.17	351.65	351.87	351.75	351.64	351.41	351.41	351.34	351.28	351.28	351.42	
M2	**363.39**	350.40	350.52	350.50	351.20	351.56	351.33	351.12	350.67	350.55	350.66	350.59	350.62	350.74	
M3	**360.20**	349.84	349.87	349.91	349.91	349.92	349.91	349.91	349.91	349.91	349.88	349.87	349.87	349.88	
M4	**356.63**	345.78	345.87	345.85	346.60	346.87	346.63	346.47	346.44	346.05	345.92	345.95	346.02	346.14	
M5	**359.71**	353.52	353.53	353.49	354.04	354.39	354.28	354.13	354.11	353.93	353.80	353.66	353.63	353.79	
M6 in	**356.10**	354.00	354.02	353.78	354.68	355.10	355.02	354.86	354.76	354.45	354.31	354.22	354.18	354.14	
M6 out	**356.10**					355.16	355.10								
M7	**353.27**				349.84										
M8	**357.46**														
M9	**356.70**	353.17	353.78		353.83	354.40	354.42	354.42	354.55			353.39	354.00	354.19	
M10 in	**356.27**				355.05	355.19	354.94	354.62	354.55	354.31	354.28				
M10 out	**356.27**														
TP1	**356.41**	354.37	354.43	354.34	355.23	355.30	355.21	355.06	355.11	354.80	354.63	354.51	354.51	354.69	
TP2 in	**356.03**	353.69	353.66	353.60	354.26	354.53	354.40	354.26	354.23	354.06	353.92	353.80	353.77	353.90	
TP2 out	**356.03**														
TP5	**356.64**														
TP8	**360.36**														
TP9	**357.59**														
MPN-1 in	**355.51**	354.30	354.39	354.27	354.89		355.14	354.99	354.94	354.71	354.57	354.47	354.48	354.60	
MPN-1 out	**355.51**						355.10	354.95	354.88	354.66	354.56				
MPN-2 in	**356.58**	354.26	354.36	354.25	355.06	355.22	355.13	355.00	354.97	354.71	354.49	354.45	354.46	354.57	
MPN-2 out	**356.58**														
MPE-1 in	**355.50**	353.89	353.91	353.79	354.56		354.81	354.67	354.62	354.37	354.19	354.05	354.02	354.03	
MPE-1 out	**355.50**						355.10	354.94	354.88						
MPE-2 in	**356.08**	353.67	353.68	353.63	354.32	354.72	354.59	354.43	354.39	354.16	353.97	353.83	353.80	353.96	
MPE-2 out	**356.08**														
MPS-1 in	**355.50**	353.94	353.95	353.76	354.66	355.02	354.94	354.78	354.71	354.40	354.24	354.14	354.10	354.13	
MPS-1 out	**355.50**				354.77	355.16	355.10	354.95	354.89						
MPS-2	**356.22**	353.69	353.67	353.62	354.49	354.86	354.77	354.60	354.54	354.25	354.01	353.85	353.80	353.94	
MPW-1 in	**355.41**													353.32	
MPW-1 out	**355.41**														
MPW-2 in	**355.99**													354.27	
MPW-2 out	**355.99**														
MP1	**356.95**													353.90	
MP2	**357.38**													354.66	
MP3	**360.55**														
MP4	**359.99**														
M1-S	**359.84**													352.89	
M11	**359.43**														
M12	**362.89**														
M13-S	**357.77**													354.66	
M13-D	**357.65**													354.05	
M14-S in	**355.62**													351.66	353.38
M14-S out	**355.62**														
M14-D	**355.28**													353.96	353.98

Table B2: Groundwater Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	10-Jan-11	25-Jan-11	24-Feb-11	01-Apr-11	02-May-11	31-May-11	27-Jun-11	26-Jul-11	29-Aug-11	05-Oct-11	01-Nov-11	28-Nov-11
M1-D	**359.70**	351.41	351.39	351.42	351.94	352.03	352.05	352.05	351.51	351.43	351.29	351.44	351.39
M2	**363.39**		350.73	350.78	351.70	351.85	351.88	351.74	350.80	350.74	350.61	350.76	350.75
M3	**360.20**		349.90	349.90	349.92	349.90	349.91	349.90	349.90	349.89	349.88	349.88	349.89
M4	**356.63**		346.11	346.13	347.07	347.27	347.62	347.09	346.32	346.09	345.92	346.29	346.23
M5	**359.71**	353.87	353.85	353.82	354.46	354.58	354.83	354.47	354.17	353.96	353.73	353.84	353.87
M6 in	**356.10**	354.21	354.08	354.22		355.24	355.38	355.20	354.81	354.44	354.19	354.36	354.33
M6 out	**356.10**					355.24	355.38	355.23					
M7	**353.27**				349.51								
M8	**357.46**												
M9	**356.70**		354.30	354.51	354.60	354.80	354.85	354.72	354.55	353.43	353.05	353.88	353.90
M10 in	**356.27**				354.97	355.18	355.33	355.16	354.47	354.30			
M10 out	**356.27**						355.32	355.20					
TP1	**356.41**	354.63	354.55	354.59	355.23	355.36	355.45	355.34	355.07	354.76	354.40	354.61	354.65
TP2 in	**356.03**	353.99	353.95	353.93	354.49	354.78	355.13	354.59	354.26	354.09	353.84	353.96	353.99
TP2 out	**356.03**						355.34						
TP5	**356.64**												
TP8	**360.36**												
TP9	**357.59**												
MPN-1 in	**355.51**	354.53	354.46	354.47	355.05	355.25	355.38	355.24	354.89	354.62	354.27	354.51	354.52
MPN-1 out	**355.51**				355.12	355.25	355.38	355.23	354.87				
MPN-2 in	**356.58**	354.53	354.45	354.46	355.13	355.27	355.39	355.25	354.90	354.61	354.25	354.50	354.52
MPN-2 out	**356.58**						355.35	356.58					
MPE-1 in	**355.50**	354.09	354.03	354.06	354.72	354.96	355.19	354.88	354.53	354.26	353.95	354.10	354.14
MPE-1 out	**355.50**				355.11	355.24	355.38	355.22	354.87				
MPE-2 in	**356.08**	354.04	354.00	354.01	355.00	355.23	355.37	355.18	354.72	354.30	353.87	354.08	354.17
MPE-2 out	**356.08**						355.38						
MPS-1 in	**355.50**	354.19	354.10	354.64	354.90	355.13	355.62	355.07	354.69	354.37	354.10	354.26	354.24
MPS-1 out	**355.50**				355.11			355.22	354.87				
MPS-2	**356.22**	354.03	353.97	353.96	354.79	355.03	355.25	354.87	354.53	354.21	353.85	354.01	354.02
MPW-1 in	**355.41**	354.47	354.41	354.47	355.17	355.34		355.32	354.92	354.56	354.27	354.51	354.51
MPW-1 out	**355.41**				355.21	355.36		355.34					
MPW-2 in	**355.99**	354.49	354.42	354.48	355.19	355.36	355.52	355.33	354.89	354.56	354.28	354.52	354.52
MPW-2 out	**355.99**				355.23		355.50	355.35					
MP1	**356.95**		353.99		354.27	354.49	354.64	354.50	354.32	353.33		353.61	353.61
MP2	**357.38**		354.76			355.07	355.12	355.02	354.86	353.67	353.73	354.35	354.37
MP3	**360.55**			357.31		357.21	356.97						
MP4	**359.99**			357.34		357.30	357.04						
M1-S	**359.84**	352.91	352.90	352.92	353.53	353.62	353.89	353.63	353.30	353.09	352.89	352.94	353.00
M11	**359.43**												
M12	**362.89**												
M13-S	**357.77**	354.60	354.52	354.56	355.20	355.38	355.49	355.33	355.01	354.69	354.32	354.59	354.60
M13-D	**357.65**	354.00	353.91	354.03	354.69	354.93	354.95	354.80	354.22	353.95	353.63	354.08	354.01
M14-S in	**355.62**	354.12	354.07	354.08	354.68	354.91	355.13	354.80	354.43	354.21	353.94	354.08	354.11
M14-S out	**355.62**				355.17		355.33	355.22					
M14-D	**355.28**	354.02	353.98	353.96		354.77			354.32	354.12	353.85	353.98	354.01

Table B2: Groundwater Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	02-Feb-12	23-Feb-12	29-Mar-12	11-May-12	06-Jul-12
M1-D	**359.70**	351.79	351.73	351.71	351.36	351.07
M2	**363.39**	351.52	351.37	351.39	350.86	350.27
M3	**360.20**	349.91	349.88	349.89	349.90	349.89
M4	**356.63**	346.83	346.69	346.77	346.39	345.84
M5	**359.71**	354.29	354.24	354.25	354.08	353.81
M6 in	**356.10**			354.98	354.71	353.98
M6 out	**356.10**	355.12		355.03		
M7	**353.27**					
M8	**357.46**					
M9	**356.70**	354.32	354.41	354.62	354.60	
M10 in	**356.27**	354.82	354.69	354.66	354.49	
M10 out	**356.27**					
TP1	**356.41**	355.30	355.19	355.18	354.97	354.62
TP2 in	**356.03**	354.44	354.38	354.39	354.20	353.90
TP2 out	**356.03**					
TP5	**356.64**					
TP8	**360.36**			354.80	354.19	353.73
TP9	**357.59**			352.25	352.29	
MPN-1 in	**355.51**	355.13	355.07	355.04	354.83	354.45
MPN-1 out	**355.51**	355.12	355.08	355.04	354.81	
MPN-2 in	**356.58**	355.16	355.08	355.06	354.84	354.45
MPN-2 out	**356.58**					
MPE-1 in	**355.50**	354.70	354.65	354.65	354.45	353.93
MPE-1 out	**355.50**	355.11	355.07	355.03	354.81	
MPE-2 in	**356.08**	354.92	354.85	354.83	354.56	353.94
MPE-2 out	**356.08**					
MPS-1 in	**355.50**	354.93	354.85	354.84	354.61	354.00
MPS-1 out	**355.50**	355.12	355.07	355.03	354.81	
MPS-2	**356.22**	354.84	354.76	354.70	354.45	353.91
MPW-1 in	**355.41**			355.10	354.84	354.33
MPW-1 out	**355.41**	355.22		355.14		
MPW-2 in	**355.99**	355.20	355.10	355.07	354.81	354.36
MPW-2 out	**355.99**	355.25				
MP1	**356.95**	354.07	354.08	354.29	354.37	
MP2	**357.38**	354.84	354.87	354.91	354.86	
MP3	**360.55**					
MP4	**359.99**					
M1-S	**359.84**	353.37	353.34	353.35	353.18	352.97
M11	**359.43**					
M12	**362.89**					
M13-S	**357.77**	355.28	355.18	355.16	354.93	354.53
M13-D	**357.65**	354.74	354.59	354.57	354.13	353.52
M14-S in	**355.62**	354.60	354.54	354.55	354.35	354.03
M14-S out	**355.62**	354.94	354.91	354.81		
M14-D	**355.28**	354.47	354.42	354.43	354.24	353.94

Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	02-Aug-96	04-Sep-96	08-Nov-96	21-Nov-96	14-May-97	26-Jun-97	15-Jul-97	14-Oct-97	17-Dec-97	06-Feb-98	31-Mar-98	07-Apr-98	21-Apr-98	29-Apr-98	23-Nov-99	18-Jan-99	22-Feb-00
SW1	**355.33**	0.54	0.32	0.52	0.51	0.19	0.44	0.64	1.1	1.13	1.04	1	0.22	0.17	0.2	0.92	0.66	0
SW2	**355.28**	0.648	0.7	0.78	0.71	0.21	0.30	0.75	Dry	Dry	0.23	0.03		0.9		0.78	0	
SW3	**351.02**																	
SW4	**360.52**																	
SW5	**355.66**												0.77	0.765	0.8	0.82	0.73	0.74
SW6 (Replaces SW1)	**355.34**																	
SW7 (Replaces SW2)	**356.46**																	
SW8	**355.33**																	
SW14	**358.64**																	
RS1	**359.78**																	

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Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	16-Mar-00	25-Apr-00	26-Jun-00	18-Jul-00	19-Sep-00	30-Oct-00	30-Jan-01	03-Apr-01	04-Jun-01	17-Jul-01	23-Aug-01	04-Oct-01	05-Dec-01	30-Jan-02
SW1	**355.33**	-0.275	-0.4		Submrgd	-0.02	0.22		Submrgd		0.05		Removed	Removed	Removed
SW2	**355.28**	-0.255			Submrgd	0.52	Dry		Submrgd			Dry	Removed	Removed	Removed
SW3	**351.02**			1.91	No Flow	Dry	Dry	Dry	Flow		Dry	Dry	Dry	Dry	Dry
SW4	**360.52**														
SW5	**355.66**	0.685	-0.015		Submrgd	Dry	Dry	Dry	Submrgd		0.83	Dry	Dry		0.15
SW6 (Replaces SW1)	**355.34**												0.14	0.345	0.57
SW7 (Replaces SW2)	**356.46**												Dry	Dry	Submrgd
SW8	**355.33**														
SW14	**358.64**														
RS1	**359.78**														

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Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	22-Feb-02	01-Apr-02	06-Jun-02	04-Jul-02	08-Aug-02	19-Nov-02	31-Dec-02	06-Mar-03	09-May-03
SW1	**355.33**	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed
SW2	**355.28**	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed
SW3	**351.02**				Dry	Dry			Dry	1.83
SW4	**360.52**									
SW5	**355.66**		Submrgd	Submrgd	0.65	Dry	Dry	Dry	Dry	0.52
SW6 (Replaces SW1)	**355.34**	0.65	Submrgd	Visible		0.68				0.7
SW7 (Replaces SW2)	**356.46**	Submrgd	Submrgd	Submrgd		Dry	Dry	Dry	Dry	Submrgd
SW8	**355.33**									
SW14	**358.64**									
RS1	**359.78**									

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Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	13-Jun-03	18-Jul-03	26-Aug-03	24-Oct-03	28-Nov-03	19-Dec-03	30-Jan-04	12-Mar-04	16-Apr-04
SW1	**355.33**	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed
SW2	**355.28**	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed
SW3	**351.02**	1.84	Dry	Dry	Dry	1.78	1.75	Frozen 1.72	buried	1.78
SW4	**360.52**								buried	1.32
SW5	**355.66**	0.52	0.8	Dry	Dry	0.49	0.43	0.39	frozen @ 0.42	0.51
SW6 (Replaces SW1)	**355.34**	0.83	0.85	0.95	0.95	0.68	0.42	Frozen 0.35	buried	0.5
SW7 (Replaces SW2)	**356.46**	Submrgd	0.85	Dry	Dry	Submrgd	Submrgd	Submrgd	buried	dry
SW8	**355.33**									
SW14	**358.64**									
RS1	**359.78**									1.15

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Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	13-May-04	17-Jun-04	21-Jul-04	19-Aug-04	24-Sep-04	09-Nov-04	18-Nov-04	17-Dec-04	21-Jan-05
SW1	**355.33**	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed
SW2	**355.28**	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed
SW3	**351.02**	1.82	1.88	dry @ 1.86	dry	dry	dry	dry	covered	covered
SW4	**360.52**	1.29	1.48	-	1.5	dry	dry	dry	covered	covered
SW5	**355.66**	0.29	0.61	0.81	0.73	dry	dry	dry	covered	covered
SW6 (Replaces SW1)	**355.34**	0.55	Submrgd	Submrgd	Submrgd	0.75	0.85	0.62	Frozen @0.38	Frozen @0.30
SW7 (Replaces SW2)	**356.46**	dry	Submrgd	Submrgd	0.89	dry	dry	dry	buried	buried
SW8	**355.33**									
SW14	**358.64**									
RS1	**359.78**	1.19	1.22	1.24	1.26	1.27	1.25	1.27	1.24	1.21

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Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	18-Feb-05	17-Mar-05	14-Apr-05	27-May-05	28-Jun-05	13-Jul-05	15-Aug-05	12-Sep-05	24-Oct-05
SW1	**355.33**	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed
SW2	**355.28**	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed	Removed
SW3	**351.02**	covered	covered	1.89	1.83	dry	dry	dry	dry	dry
SW4	**360.52**	covered	covered	1.31	1.46	1.41	1.41	dry	dry	1.49
SW5	**355.66**	covered	covered	0.42	0.52	0.7	dry	dry	dry	dry
SW6 (Replaces SW1)	**355.34**	0.62	snow @ 0.33	0.95	0.72	0.55	0.35	0.79	0.82	0.8
SW7 (Replaces SW2)	**356.46**	buried	buried	Submrgd		dry	dry	dry	dry	dry
SW8	**355.33**									
SW14	**358.64**									
RS1	**359.78**	1.18	1.22	1.16	1.2	1.23	1.26	1.28	1.28	1.25

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Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	21-Nov-05	19-Dec-05	16-Jan-06	13-Feb-06	08-Mar-06	24-Apr-06	24-May-06	22-Jun-06	19-Jul-06
SW1	**355.33**	Removed	Removed							
SW2	**355.28**	Removed	Removed							
SW3	**351.02**	dry	sc	sc	sc	sc	1.73	dry	dry	dry
SW4	**360.52**	1.52	sc	sc	sc	sc	1.3	1.42	dry	dry
SW5	**355.66**	dry	sc	sc	sc	sc	0.52	0.54	dry	dry
SW6 (Replaces SW1)	**355.34**	0.95	sc	sc	sc	sc	0.1	0.48	0.81	0.91
SW7 (Replaces SW2)	**356.46**	dry	sc	sc	sc	sc	1.35	1.48	dry	dry
SW8	**355.33**									
SW14	**358.64**									
RS1	**359.78**	1.23	1.25	1.22	1.2	1.22	1.2	1.28	1.32	1.28

***sc denotes snow covered**

Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	21-Aug-06	15-Sep-06	05-Oct-06	28-Dec-06	30-Jan-07	15-Feb-07	12-Mar-07	10-Apr-07	08-May-07
SW1	**355.33**									
SW2	**355.28**									
SW3	**351.02**	dry	dry	1.93	1.88	sc	sc	sc	1.72	1.81
SW4	**360.52**	dry	dry	1.58	1.54	sc	sc	sc	1.38	1.47
SW5	**355.66**	dry	dry	0.65	0.6	sc	sc	sc	0.51	0.63
SW6 (Replaces SW1)	**355.34**	0.89	1.1	0.88	0.8	sc	sc	sc	Submrgd	Submrgd
SW7 (Replaces SW2)	**356.46**	dry	dry	1.45	1.35	sc	sc	sc	1.4	1.43
SW8	**355.33**									
SW14	**358.64**									
RS1	**359.78**	1.28	1.3	1.22	1.24	1.3	1.32	1.2	1.22	1.23

***sc denotes snow covered**

Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	18-Jul-07	30-Aug-07	26-Sep-07	25-Oct-07	26-Nov-07	21-Dec-07	23-Jan-08	22-Feb-08	18-Mar-08
SW1	**355.33**									
SW2	**355.28**									
SW3	**351.02**	dry	dry	dry	dry	dry	sc	sc	sc	sc
SW4	**360.52**	1.5	1.6	dry	dry	1.62	sc	sc	sc	sc
SW5	**355.66**	dry	dry	dry	dry	dry	sc	sc	sc	sc
SW6 (Replaces SW1)	**355.34**	0.87	dry	dry	0.91	0.95	sc	sc	sc	sc
SW7 (Replaces SW2)	**356.46**	dry	dry	dry	dry	dry	sc	sc	sc	sc
SW8	**355.33**									
SW14	**358.64**									
RS1	**359.78**	1.29	1.29	1.32	1.31	1.28	1.27	1.25	1.21	1.21

***sc denotes snow covered**

Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	21-Apr-08	26-May-08	16-Jul-08	18-Aug-08	08-Sep-08	30-Oct-08	12-Nov-08	16-Dec-08	30-Jan-09
SW1	**355.33**									
SW2	**355.28**									
SW3	**351.02**	1.74	1.71	1.88	dry	dry	dry	dry	1.81	sc
SW4	**360.52**	1.15	1.35	1.35	1.39	1.38	1.59	1.46	1.47	sc
SW5	**355.66**	0.12	0.46	0.51	0.59	0.6	dry	dry	0.6	sc
SW6 (Replaces SW1)	**355.34**	Submrgd	0.02	0.5	0.6	0.75	0.81	0.89	frozen0.82	sc
SW7 (Replaces SW2)	**356.46**	0.27	1.41	1.44	1.47	1.47	dry	dry	1.45	sc
SW8	**355.33**									
SW14	**358.64**									
RS1	**359.78**	1.16	1.21	1.23	1.25	1.27	1.21	1.26	1.25	1.22

***sc denotes snow covered**

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Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	13-Feb-09	12-Mar-09	07-Apr-09	08-Jun-09	23-Jun-09	21-Jul-09	19-Aug-09	02-Sep-09	06-Oct-09
SW1	**355.33**									
SW2	**355.28**									
SW3	**351.02**	sc	1.83	1.78	1.83	1.73	dry	dry	dry	dry
SW4	**360.52**	1.25	1.2	1.25	1.31	1.42	1.55	1.59	1.61	muddy
SW5	**355.66**	sc	0.18	0.39	0.45	0.61	dry	dry	dry	dry
SW6 (Replaces SW1)	**355.34**	sc	Submrgd	Submrgd	0.55	0.63	0.73	0.89	0.9	0.9
SW7 (Replaces SW2)	**356.46**	froz@0.98	0.35	1.35	1.38	1.48	dry	dry	dry	dry
SW8	**355.33**									
SW14	**358.64**									
RS1	**359.78**	sc	1.14	1.1	1.14	1.21	1.23	1.24	1.27	1.29
***sc denotes snow covered**			froz	froz	0.76	0.65	0.73	0.85	dry	dry@1.08

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Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	04-Nov-09	21-Dec-09	27-Jan-10	24-Feb-10	16-Mar-10	20-Apr-10	06-May-10	11-Jun-10	13-Jul-10
SW1	**355.33**									
SW2	**355.28**									
SW3	**351.02**	dry	sc	frozen	frozen	-	-	1.86	1.81	1.74
SW4	**360.52**	muddy	sc	frozen@1.18	frozen@1.14	1.21	1.37	1.43	1.45	1.46
SW5	**355.66**	dry	sc	frozen@0.4	sc	0.22	0.465	0.54	0.493	0.51
SW6 (Replaces SW1)	**355.34**	0.88	sc	frozen@0.895	sc	damg	damg	damg	damg	damg
SW7 (Replaces SW2)	**356.46**	dry	sc	frozen@1.30	sc	0.31	1.33	1.365	1.36	1.38
SW8	**355.33**			-	-	-	-	-	-	0.48
SW14	**358.64**									
RS1	**359.78**	1.28	sc	1.24	1.25	1.155	1.205	1.25	1.2	1.23
***sc denotes snow covered**		dry	dry	dry		frozen	sc	-	0.94	

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Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	27-Aug-10	17-Sep-10	28-Oct-10	24-Nov-10	24-Dec-10	25-Jan-11	24-Feb-11	01-Apr-11	02-May-11
SW1	**355.33**									
SW2	**355.28**									
SW3	**351.02**	dry	dry	dry	1.94	frozen@1.65	frozen	frozen	1.81	1.85
SW4	**360.52**	-	1.58	1.5	1.46	frozen@1.26	frozen@1.20	frozen@1.06	1.295	1.32
SW5	**355.66**	dry	dry	0.59	0.535	frozen@0.48	frozen@0.45	frozen@0.15	0.42	0.42
SW6 (Replaces SW1)	**355.34**	damg	damg	damg	0.884	frozen	0.76	frozen@0.68	frozen	0.06
SW7 (Replaces SW2)	**356.46**	dry	dry	1.46	1.42	frozen@1.34	frozen@1.25	frozen@1.085	1.27	1.26
SW8	**355.33**	dry	dry	0.54	0.52	frozen@0.45	frozen@0.38	frozen	-	-
SW14	**358.64**									
RS1	**359.78**	1.24	1.22	1.215	1.21	1.24	1.24	1.225	1.19	1.2

***sc denotes snow covered**

dry

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Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	31-May-11	27-Jun-11	26-Jul-11	29-Aug-11	05-Oct-11	01-Nov-11	28-Nov-11	02-Feb-12	23-Feb-12
SW1	**355.33**									
SW2	**355.28**									
SW3	**351.02**	1.83	1.88	dry	dry	dry	1.87	1.85	1.81	froz
SW4	**360.52**	1.34	1.4	1.49	1.58	1.555	1.37	1.38	1.325	1.37
SW5	**355.66**	0.41	0.48	0.6	dry	0.8	0.485	0.455	froz @ 0.43	froz @ 0.45
SW6 (Replaces SW1)	**355.34**	UW			0.71	0.84	0.77	0.78	froz	frpz
SW7 (Replaces SW2)	**356.46**	1.245	1.335	1.64	dry	dry	1.38	1.39	froz @1.29	1.37
SW8	**355.33**	-					0.48	0.48	froz	froz
SW14	**358.64**									
RS1	**359.78**	1.18	1.21	1.25	1.28	1.24	1.23	1.215	1.215	1.23

***sc denotes snow covered**

Table B3: Surface Water Levels (Metres Below Top of Reference Point)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	29-Mar-12	11-May-12	23-May-12	06-Jul-12
SW1	**355.33**				
SW2	**355.28**				
SW3	**351.02**				dry
SW4	**360.52**	1.39	1.48	1.495	dry
SW5	**355.66**	0.51	0.565		dry
SW6 (Replaces SW1)	**355.34**				0.84
SW7 (Replaces SW2)	**356.46**	1.345	1.435	1.595	dry
SW8	**355.33**				dry
SW14	**358.64**	0.32	0.415		dry
RS1	**359.78**	1.21	1.2	1.23	1.25

***sc denotes snow covered**

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Table B4: Surface Water Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	02-Aug-96	04-Sep-96	08-Nov-96	21-Nov-96	14-May-97	26-Jun-97	15-Jul-97	14-Oct-97	17-Dec-97	06-Feb-98	31-Mar-98	07-Apr-98	21-Apr-98
SW1	**355.33**	354.79	355.01	354.82	354.83	355.15	354.89	354.69	354.23	354.20	354.29	354.33	355.11	355.16
SW2	**355.28**	354.63	354.58	354.50	354.57	355.07	354.98	354.54			355.05	355.25		354.38
SW3	**351.02**													
SW4	**360.52**													
SW5	**355.66**												354.89	354.90
SW6 (Replaces SW1)	**355.34**													
SW7 (Replaces SW2)	**356.46**													
SW8	**355.33**													
Northwest Wetland	*	354.79	355.01	354.82	354.83	355.15	354.89	354.69	354.23	354.20	354.29	354.33	355.11	355.16
SW14	**358.64**													
RS1	**359.78**													

* Levels obtained from SW1, SW6, M6 out, MPS-1 out

Table B4: Surface Water Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	29-Apr-98	23-Nov-99	18-Jan-00	22-Feb-00	16-Mar-00	25-Apr-00	26-Jun-00	18-Jul-00	19-Sep-00	30-Oct-00	30-Jan-01	03-Apr-01	04-Jun-01
SW1	**355.33**	355.13	354.41	354.67	355.33	355.61	355.73			355.35	355.11			
SW2	**355.28**		354.50	355.28		355.54				354.76				
SW3	**351.02**							349.11						
SW4	**360.52**													
SW5	**355.66**	354.86	354.84	354.93	354.92	354.98	355.68						356.27	355.91
SW6 (Replaces SW1)	**355.34**													
SW7 (Replaces SW2)	**356.46**													
SW8	**355.33**													
Northwest Wetland	*****	355.13	354.41	354.67	355.33	355.61	355.73			355.35	355.11			355.10
SW14	**358.64**													
RS1	**359.78**													

* Levels obtained from SW1, SW6, M6 out, MPS-1 out

Table B4: Surface Water Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	17-Jul-01	23-Aug-01	04-Oct-01	06-Dec-01	30-Jan-02	22-Feb-02	01-Apr-02	06-Jun-02	04-Jul-02	08-Aug-02	19-Nov-02	31-Dec-02	06-Mar-03
SW1	**355.33**	355.28												
SW2	**355.28**													
SW3	**351.02**													
SW4	**360.52**													
SW5	**355.66**	354.83				355.51		356.16	355.92	355.01				
SW6 (Replaces SW1)	**355.34**			354.48	354.68	354.91	354.99	355.15	355.15		355.02			
SW7 (Replaces SW2)	**356.46**													
SW8	**355.33**													
Northwest Wetland	*	355.28		354.48	354.68	354.91	354.99	355.15	355.15		355.02			
SW14	**358.64**													
RS1	**359.78**													

* Levels obtained from SW1, SW6, M6 out, MPS-1 out

Table B4: Surface Water Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	09-May-03	13-Jun-03	18-Jul-03	26-Aug-03	24-Oct-03	28-Nov-03	19-Dec-03	30-Jan-04	12-Mar-04	16-Apr-04	13-May-04	17-Jun-04	21-Jul-04
SW1	**355.33**													
SW2	**355.28**													
SW3	**351.02**	349.19	349.18				349.24	349.27			349.24	349.20	349.14	
SW4	**360.52**										359.20	359.23	359.04	
SW5	**355.66**	355.14	355.14	354.86			355.17	355.23	355.27		355.15	355.37	355.05	354.85
SW6 (Replaces SW1)	**355.34**	355.04	355.17	355.19	355.29	355.29	355.02	354.76			354.84	354.89		
SW7 (Replaces SW2)	**356.46**													
SW8	**355.33**													
Northwest Wetland	*****	355.04	355.17	355.19	355.29	355.29	355.02	354.76			354.84	354.89	355.23	354.81
SW14	**358.64**													
RS1	**359.78**										358.63	358.59	358.56	358.54

* Levels obtained from SW1, SW6, M6 out, MPS-1 out

Table B4: Surface Water Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	19-Aug-04	24-Sep-04	09-Nov-04	18-Nov-04	17-Dec-04	21-Jan-05	18-Feb-05	17-Mar-05	14-Apr-05	27-May-05	28-Jun-05	13-Jul-05	15-Aug-05
SW1	**355.33**													
SW2	**355.28**													
SW3	**351.02**									349.13	349.19			
SW4	**360.52**	359.02								359.21	359.06	359.11	359.11	
SW5	**355.66**	354.93								355.24	355.14	354.96		
SW6 (Replaces SW1)	**355.34**		355.09	355.19	354.96			354.96		355.29	355.06	354.89	354.69	355.13
SW7 (Replaces SW2)	**356.46**													
SW8	**355.33**													
Northwest Wetland	*****	354.72	355.09	355.19	354.96			354.96		355.29	355.06	354.89	354.69	355.13
SW14	**358.64**													
RS1	**359.78**	358.52	358.51	358.53	358.51	358.54	358.57	358.60	358.56	358.62	358.58	358.55	358.52	358.50

* Levels obtained from SW1, SW6, M6 out, MPS-1 out

Table B4: Surface Water Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	12-Sep-05	24-Oct-05	21-Nov-05	19-Dec-05	16-Jan-06	13-Feb-06	08-Mar-06	24-Apr-06	24-May-06	22-Jun-06	19-Jul-06	21-Aug-06	15-Sep-06
SW1	**355.33**													
SW2	**355.28**													
SW3	**351.02**								349.29					
SW4	**360.52**		359.03	359.00					359.22	359.10				
SW5	**355.66**								355.14	355.12				
SW6 (Replaces SW1)	**355.34**	355.16	355.14	355.29					354.44	354.82	355.15	355.25	355.23	355.44
SW7 (Replaces SW2)	**356.46**								355.11	354.98				
SW8	**355.33**													
Northwest Wetland	*	355.16	355.14	355.29					354.44	354.82	355.15	355.25	355.23	355.44
SW14	**358.64**													
RS1	**359.78**	358.50	358.53	358.55	358.53	358.56	358.58	358.56	358.58	358.50	358.46	358.50	358.50	358.48

* Levels obtained from SW1, SW6, M6 out, MPS-1 out

Table B4: Surface Water Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	05-Oct-06	28-Dec-06	30-Jan-07	15-Feb-07	12-Mar-07	10-Apr-07	08-May-07	18-Jul-07	30-Aug-07	26-Sep-07	25-Oct-07	26-Nov-07	21-Dec-07
SW1	**355.33**													
SW2	**355.28**													
SW3	**351.02**	349.09	349.14				349.30	349.21						
SW4	**360.52**	358.94	358.98				359.14	359.05	359.02	358.92			358.90	
SW5	**355.66**	355.01	355.06				355.15	355.03						
SW6 (Replaces SW1)	**355.34**	355.22	355.14						355.21			355.25	355.29	
SW7 (Replaces SW2)	**356.46**	355.01	355.11				355.06	355.03						
SW8	**355.33**													
Northwest Wetland	*****	355.22	355.14				355.24		355.21	354.30	354.30	355.25	355.29	
SW14	**358.64**													
RS1	**359.78**	358.56	358.54	358.48	358.46	358.58	358.56	358.55	358.49	358.49	358.46	358.47	358.50	358.51

* Levels obtained from SW1, SW6, M6 out, MPS-1 out

Table B4: Surface Water Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	23-Jan-08	22-Feb-08	18-Mar-08	21-Apr-08	26-May-08	16-Jul-08	18-Aug-08	08-Sep-08	30-Oct-08	12-Nov-08	16-Dec-08	30-Jan-09	13-Feb-09
SW1	**355.33**													
SW2	**355.28**													
SW3	**351.02**				349.28	349.31	349.14					349.21		
SW4	**360.52**				359.37	359.17	359.17	359.13	359.14	358.93	359.06	359.05		359.27
SW5	**355.66**				355.54	355.20	355.15	355.07	355.06			355.06		
SW6 (Replaces SW1)	**355.34**					354.36	354.84	354.94	355.09	355.15	355.23			
SW7 (Replaces SW2)	**356.46**				356.19	355.05	355.02	354.99	354.99			355.01		
SW8	**355.33**													
Northwest Wetland	*****				355.59	354.36	354.84	354.94	355.09	355.15	355.23			
SW14	**358.64**													
RS1	**359.78**	358.53	358.57	358.57	358.62	358.57	358.55	358.53	358.51	358.57	358.52	358.53	358.56	

* Levels obtained from SW1, SW6, M6 out, MPS-1 out

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Table B4: Surface Water Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	12-Mar-09	07-Apr-09	08-Jun-09	23-Jun-09	21-Jul-09	19-Aug-09	02-Sep-09	06-Oct-09	04-Nov-09	21-Dec-09	27-Jan-10	24-Feb-10	16-Mar-10
SW1	**355.33**													
SW2	**355.28**													
SW3	**351.02**	349.19	349.24	349.19	349.29									
SW4	**360.52**	359.32	359.27	359.21	359.10	358.97	358.93	358.91						359.31
SW5	**355.66**	355.48	355.27	355.21	355.05									355.44
SW6 (Replaces SW1)	**355.34**			354.89	354.97	355.07	355.23	355.24	355.24	355.22				
SW7 (Replaces SW2)	**356.46**	356.11	355.11	355.08	354.98									356.15
SW8	**355.33**													
Northwest Wetland	*****		355.45	354.89	354.97	355.07	355.23	355.24	355.24	355.22				354.77
SW14	**358.64**													
RS1	**359.78**	358.64	358.68	358.64	358.57	358.55	358.54	358.51	358.49	358.50		358.54	358.53	358.63

* Levels obtained from SW1, SW6, M6 out, MPS-1 out

Table B4: Surface Water Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	20-Apr-10	06-May-10	11-Jun-10	13-Jul-10	27-Aug-10	17-Sep-10	28-Oct-10	24-Nov-10	24-Dec-10	25-Jan-11	24-Feb-11	01-Apr-11	02-May-11
SW1	**355.33**													
SW2	**355.28**													
SW3	**351.02**		349.16	349.21	349.28				349.08				349.21	349.17
SW4	**360.52**	359.15	359.09	359.07	359.06		358.94	359.02	359.06				359.23	359.20
SW5	**355.66**	355.20	355.12	355.17	355.15			355.07	355.13				355.24	355.24
SW6 (Replaces SW1)	**355.34**								354.45		354.58			355.28
SW7 (Replaces SW2)	**356.46**	355.13	355.10	355.10	355.08			355.00	355.04				355.19	355.20
SW8	**355.33**													
Northwest Wetland	*****	355.16	355.10	354.95	354.89	354.66	354.56		354.45		354.58			355.28
SW14	**358.64**													
RS1	**359.78**	358.58	358.53	358.58	358.55	358.54	358.56	358.57	358.57	358.54	358.54	358.56	358.59	358.58

* Levels obtained from SW1, SW6, M6 out, MPS-1 out

Table B4: Surface Water Elevations (Metres Above Mean Sea Level)

MONITOR / LOCATION	REFERENCE ELEVATION (mAMSL)	31-May-11	27-Jun-11	26-Jul-11	29-Aug-11	05-Oct-11	01-Nov-11	28-Nov-11	02-Feb-12	23-Feb-12	29-Mar-12	11-May-12	23-May-12	06-Jul-12
SW1	**355.33**													
SW2	**355.28**													
SW3	**351.02**	349.19	349.14				349.15	349.17	349.21					
SW4	**360.52**	359.18	359.12	359.03	358.94	358.97	359.15	359.14	359.20	359.15	359.13	359.04	359.03	
SW5	**355.66**	355.25	355.18	355.06		354.86	355.18	355.21			355.15	355.10		
SW6 (Replaces SW1)	**355.34**				354.63	354.50	354.56	354.56						354.50
SW7 (Replaces SW2)	**356.46**	355.22	355.13	354.82			355.08	355.07		355.09	355.12	355.03	354.87	
SW8	**355.33**						354.85	354.85						
Northwest Wetland	*****	355.38	355.23	354.87	354.63	354.50	354.56	354.56	355.12	355.07	355.03	354.81		354.50
SW14	**358.64**										358.32	358.22		
RS1	**359.78**	358.60	358.57	358.53	358.50	358.54	358.55	358.57	358.57	358.55	358.57	358.58	358.55	358.53

* Levels obtained from SW1, SW6, M6 out, MPS-1 out

Figure B1: M1 S/D Hydrograph

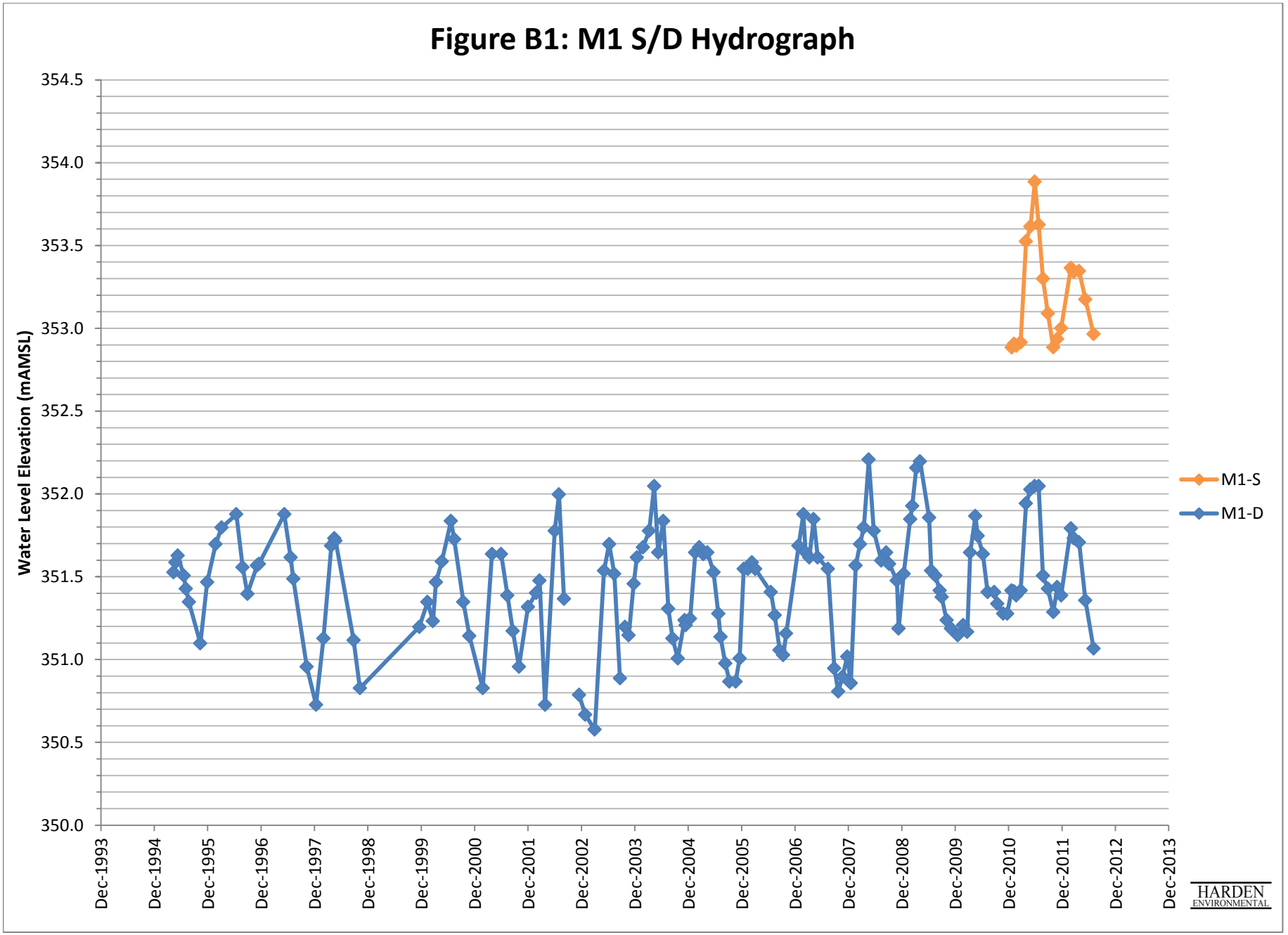


Figure B2: M2 Hydrograph

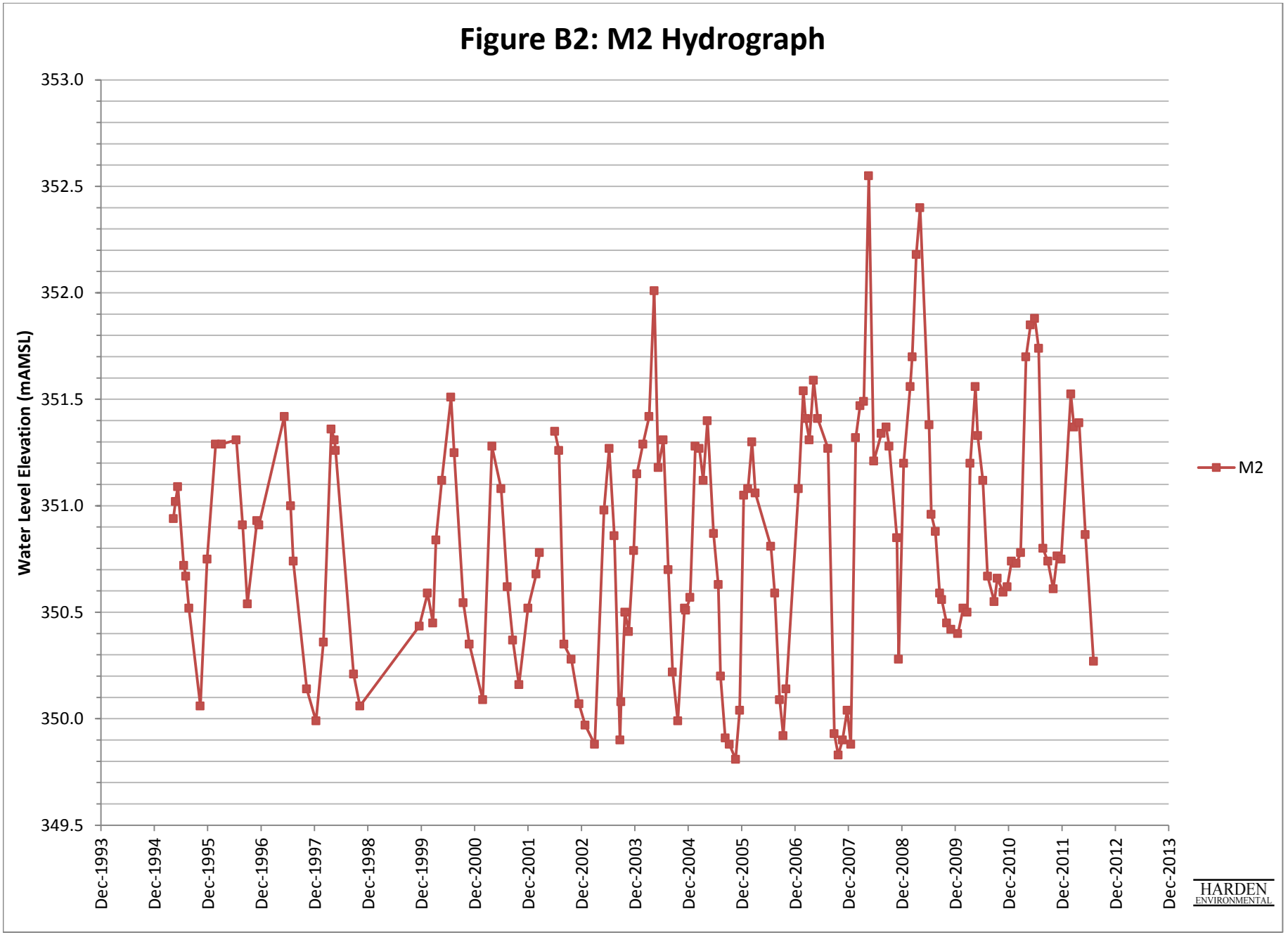


Figure B3: M3 Hydrograph

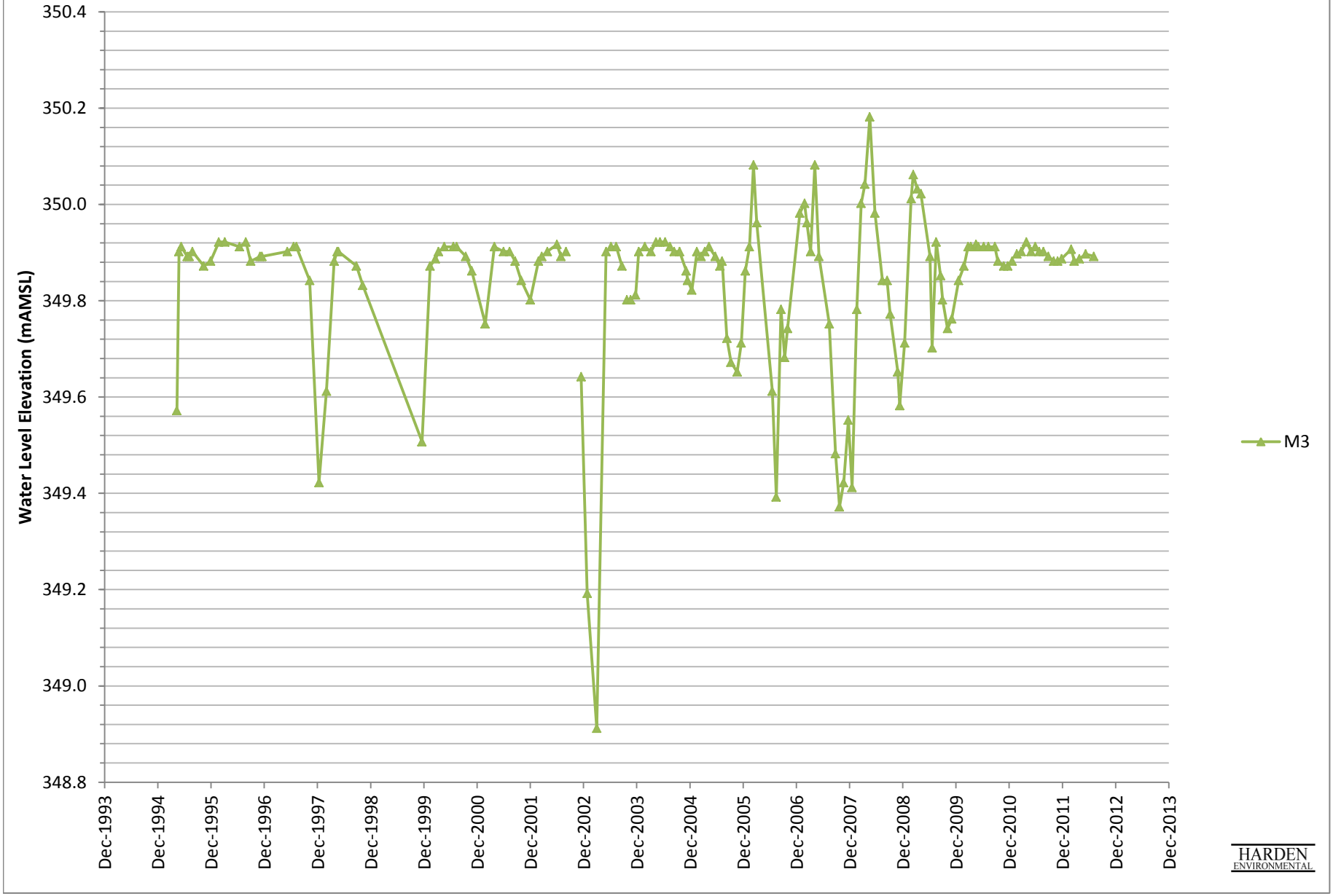


Figure B4: M4 Hydrograph

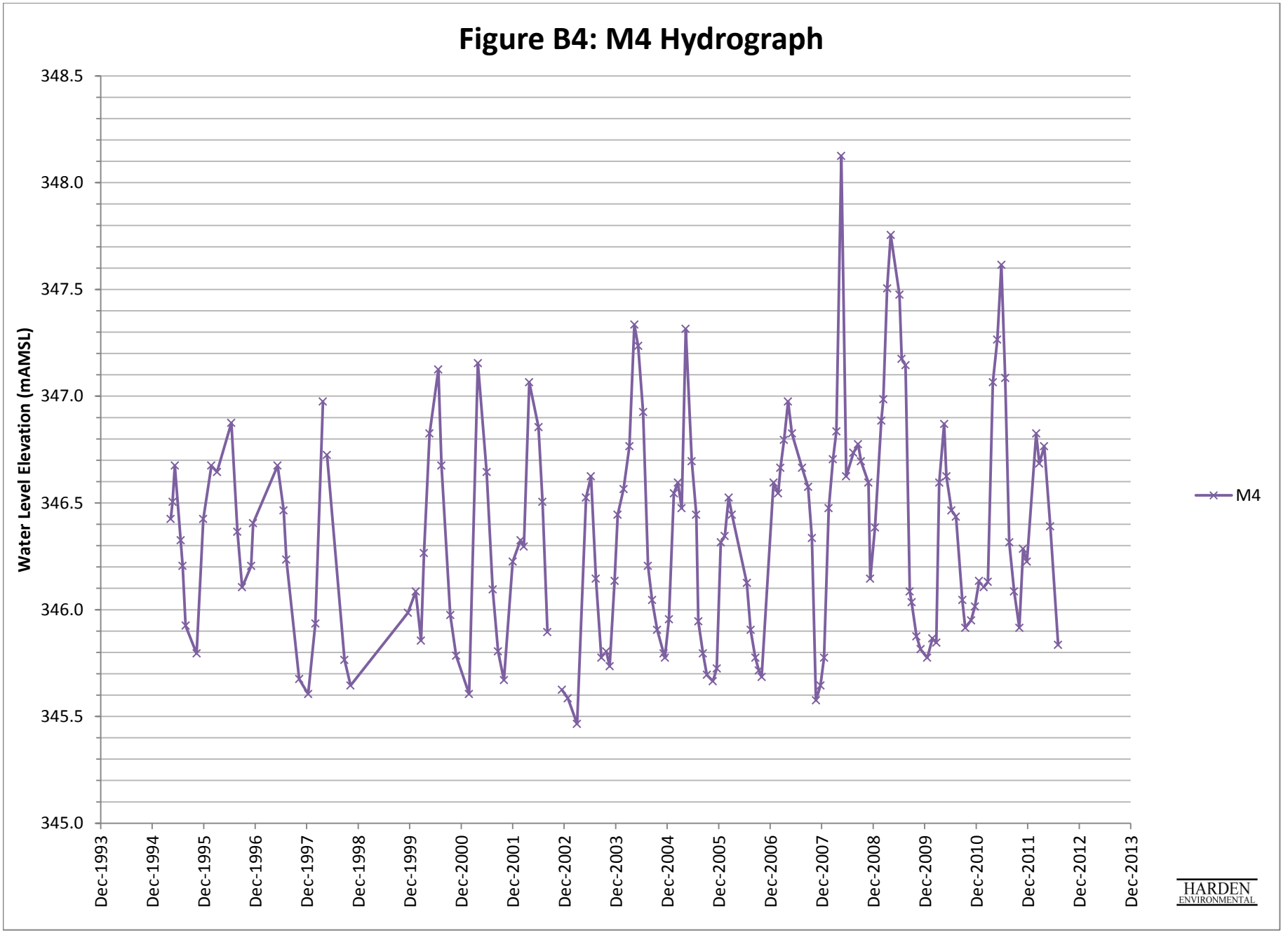


Figure B5: M5 Hydrograph

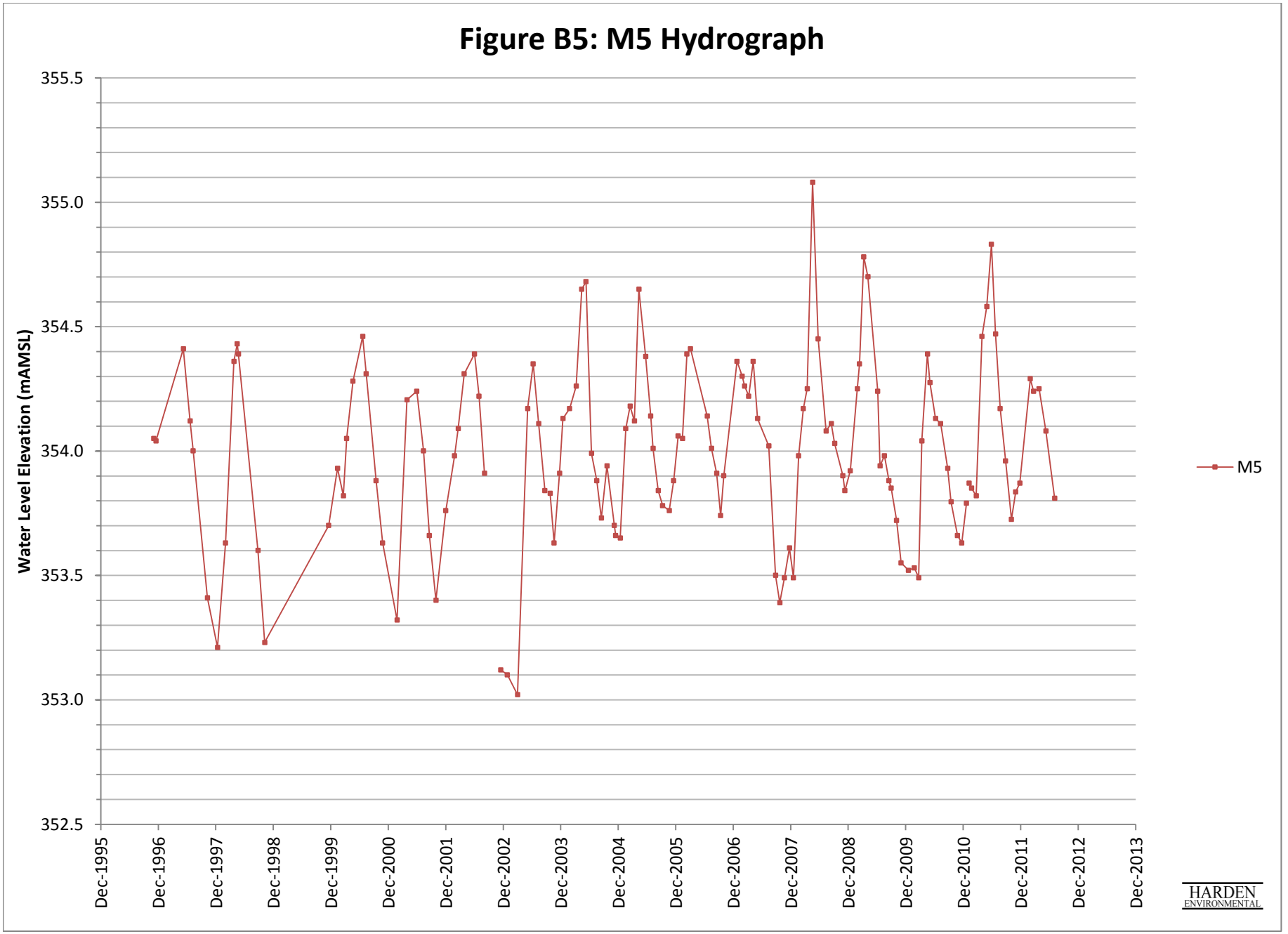


Figure B6: M6 Hydrograph

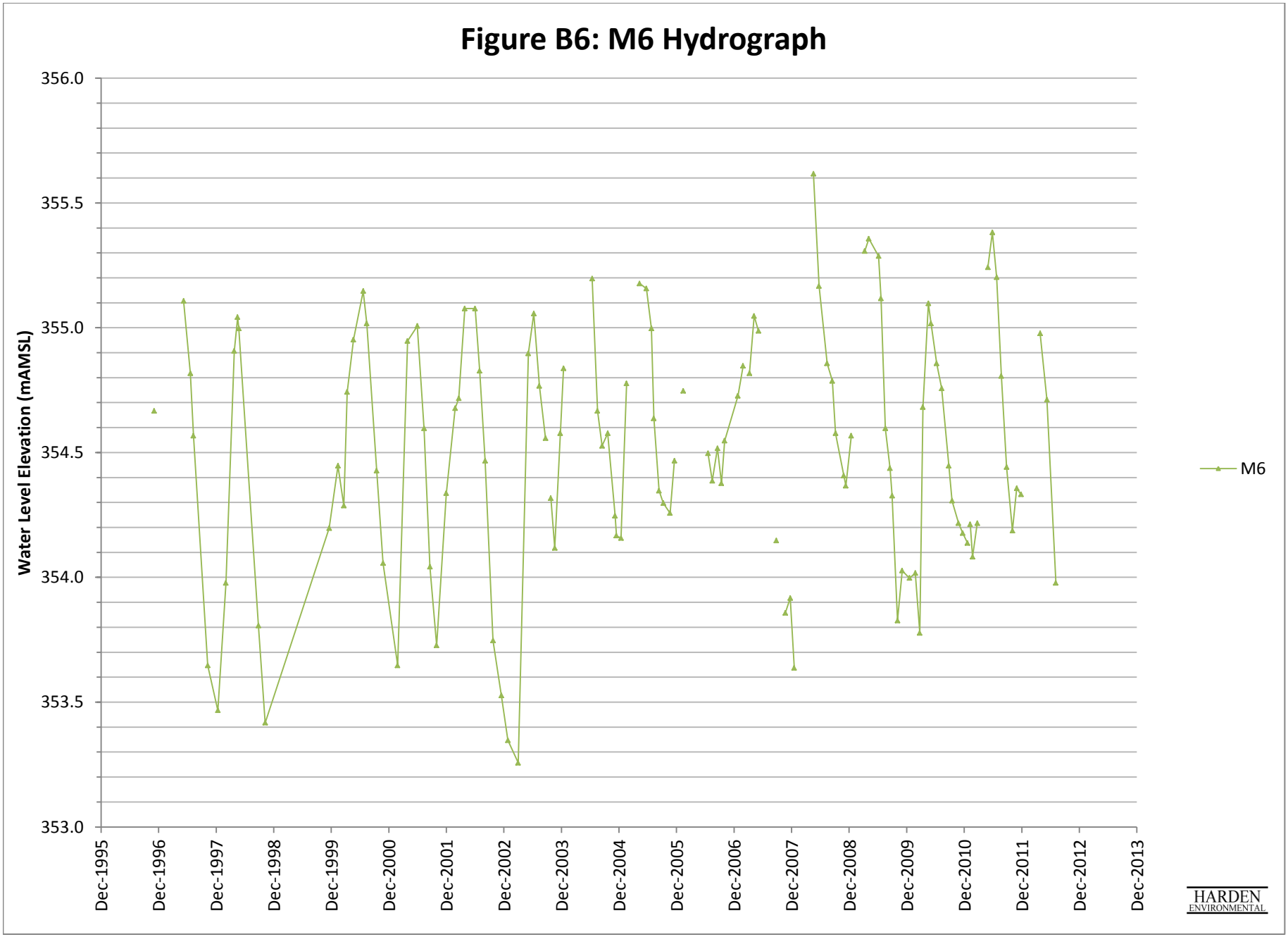


Figure B7: M9 Hydrograph

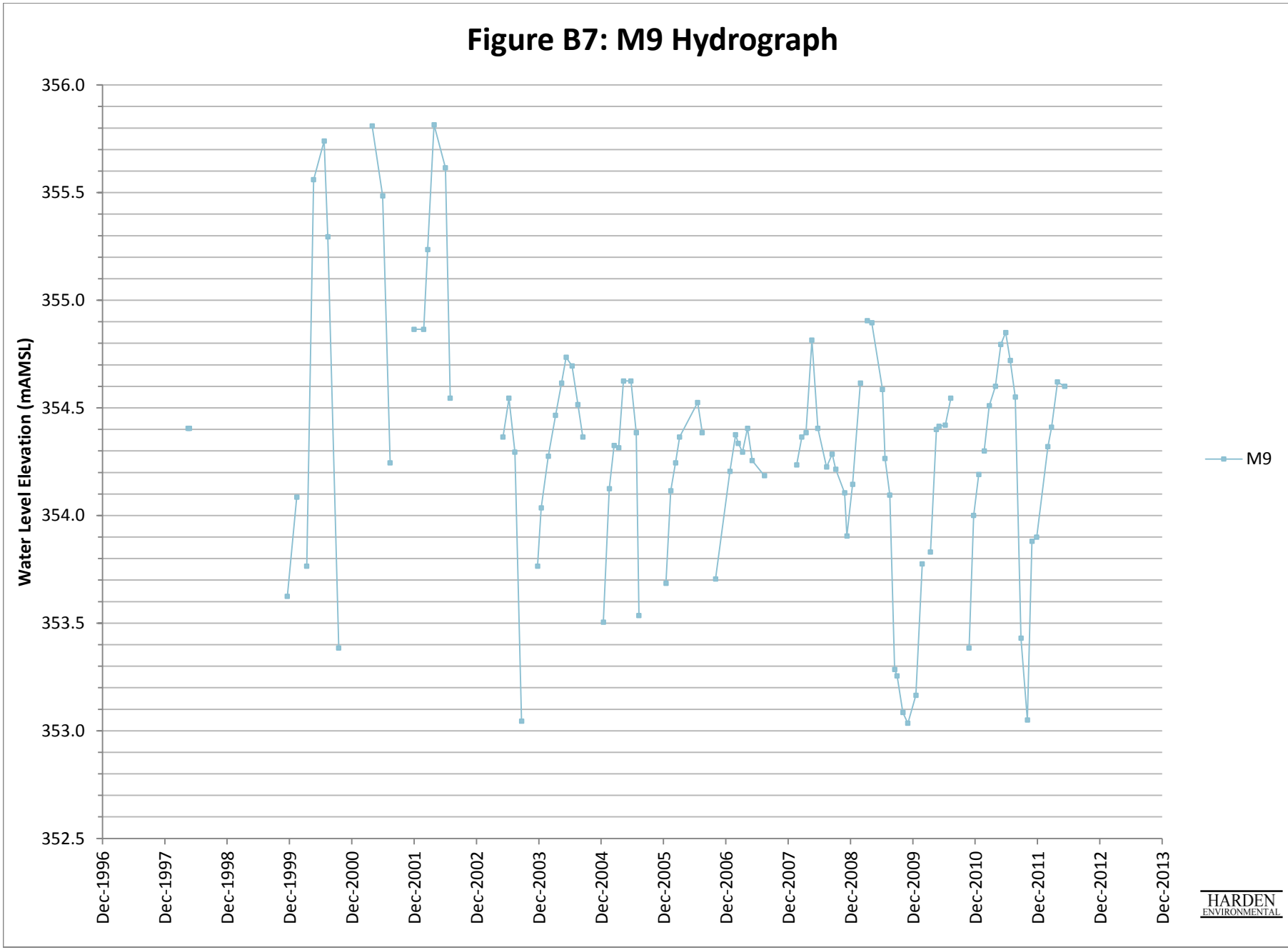


Figure B8: M10 Hydrograph

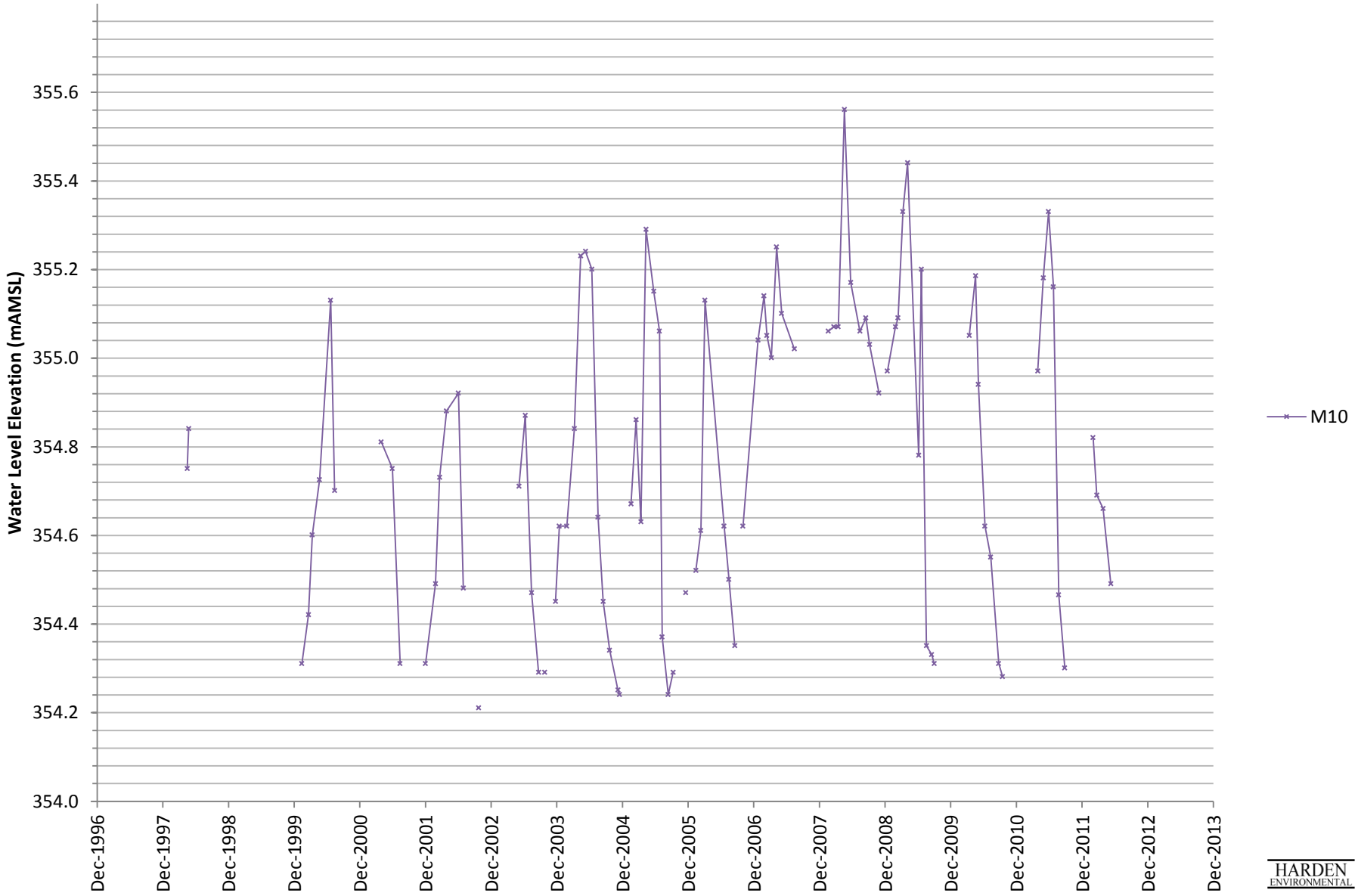


Figure B9: M13 S/D Hydrograph

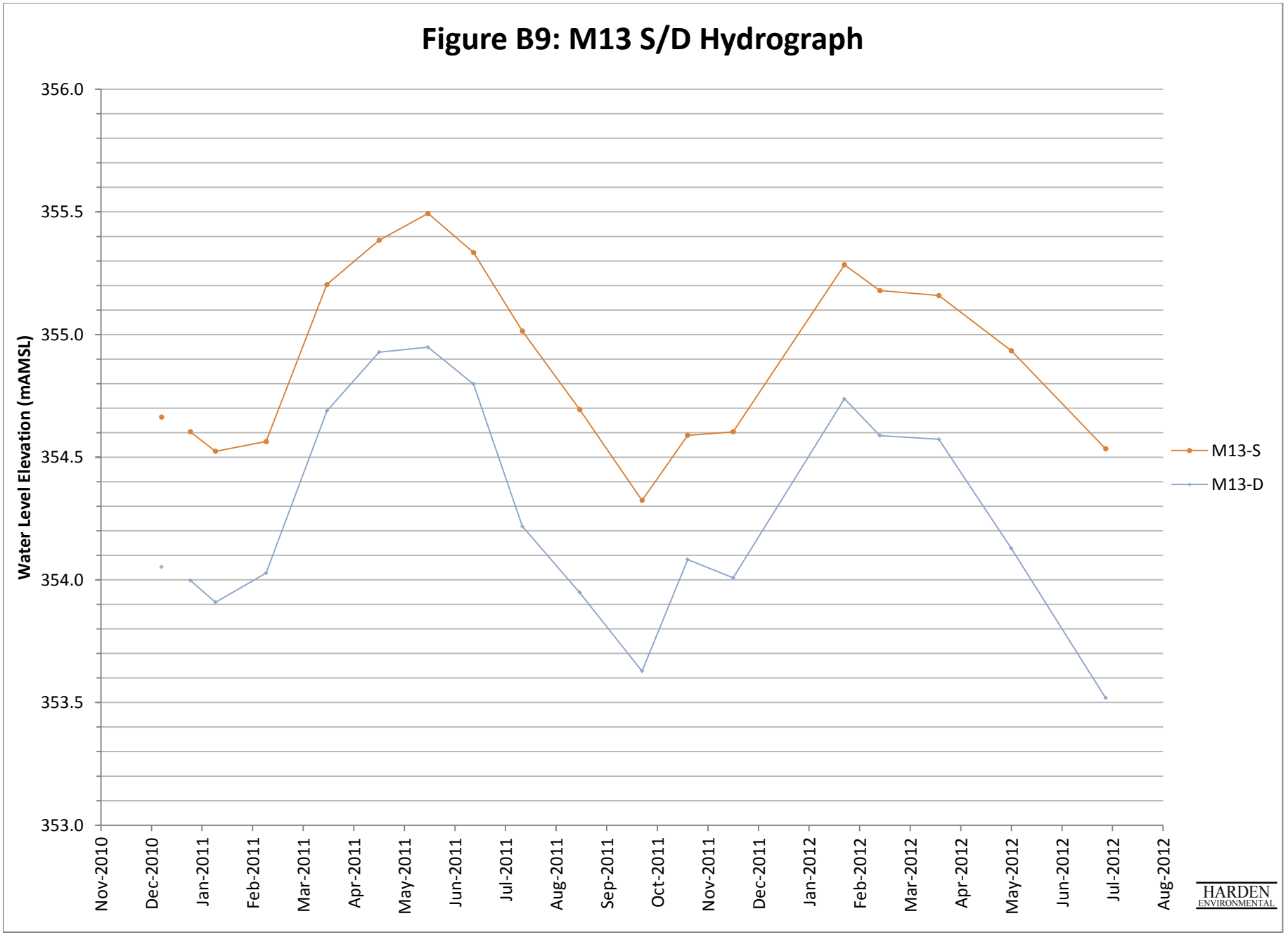


Figure B10: M14 S/D Hydrograph

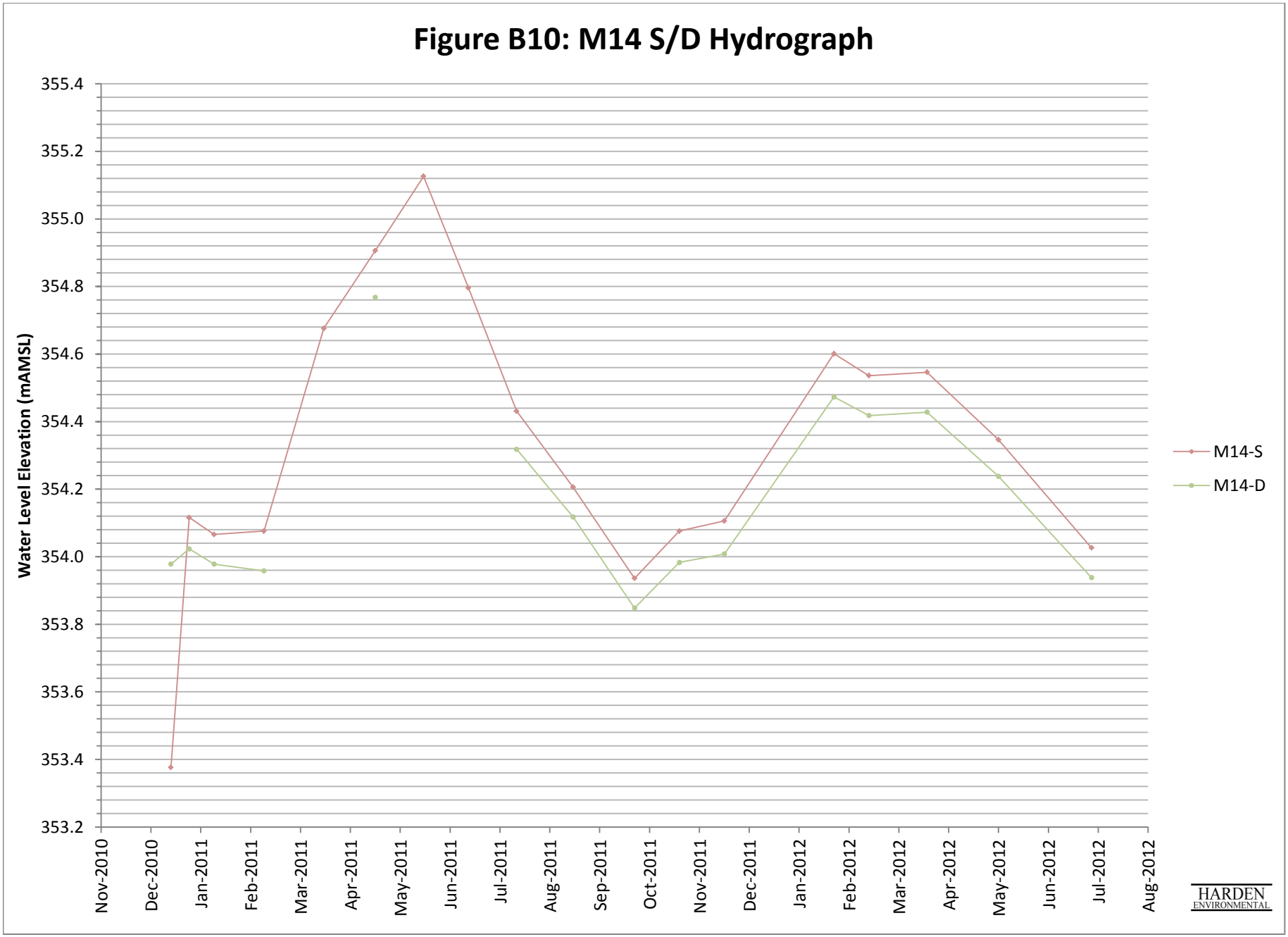


Figure B11: MP1/MP2 Hydrograph

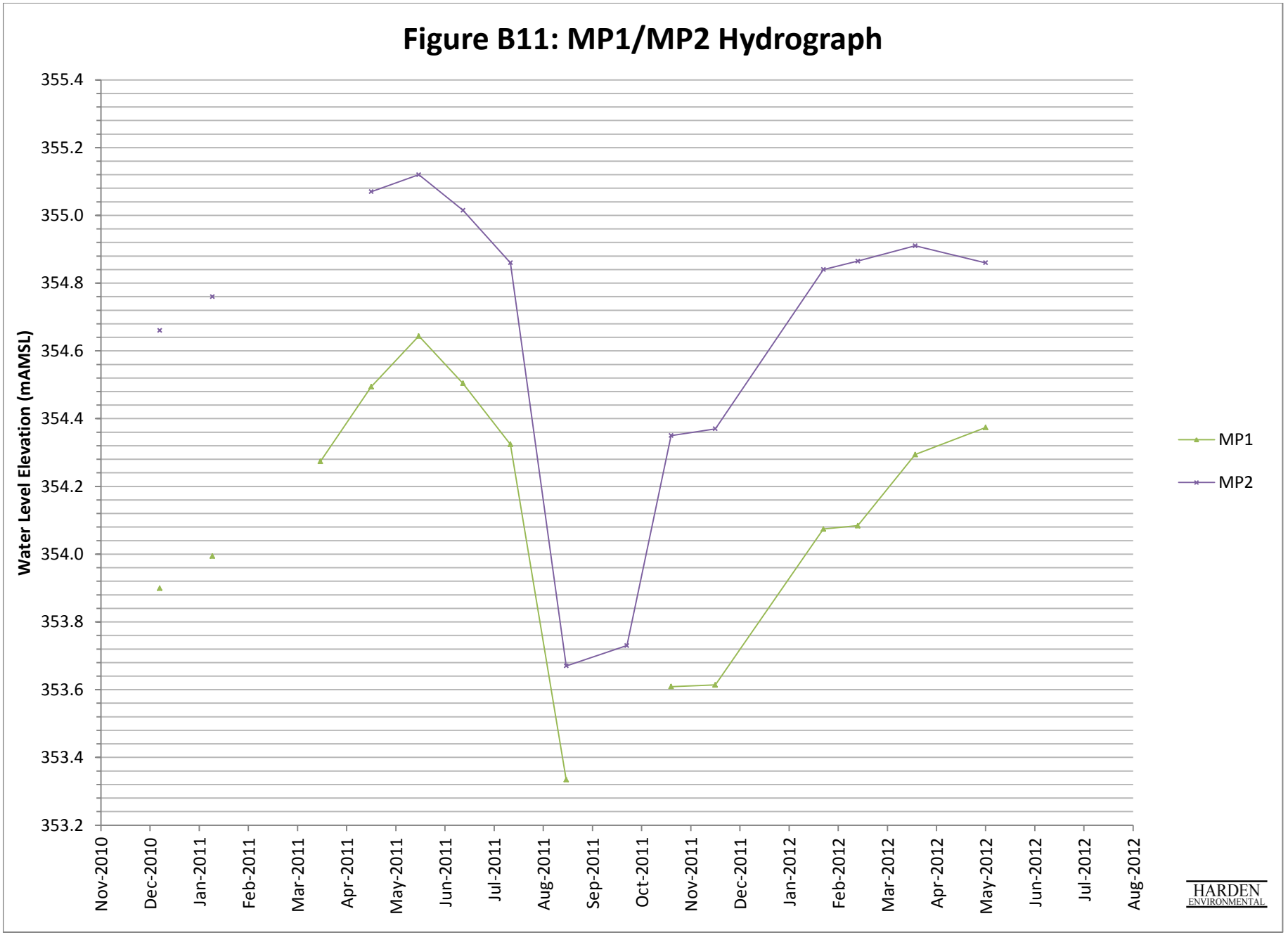


Figure B12: MP3/MP4 Hydrograph

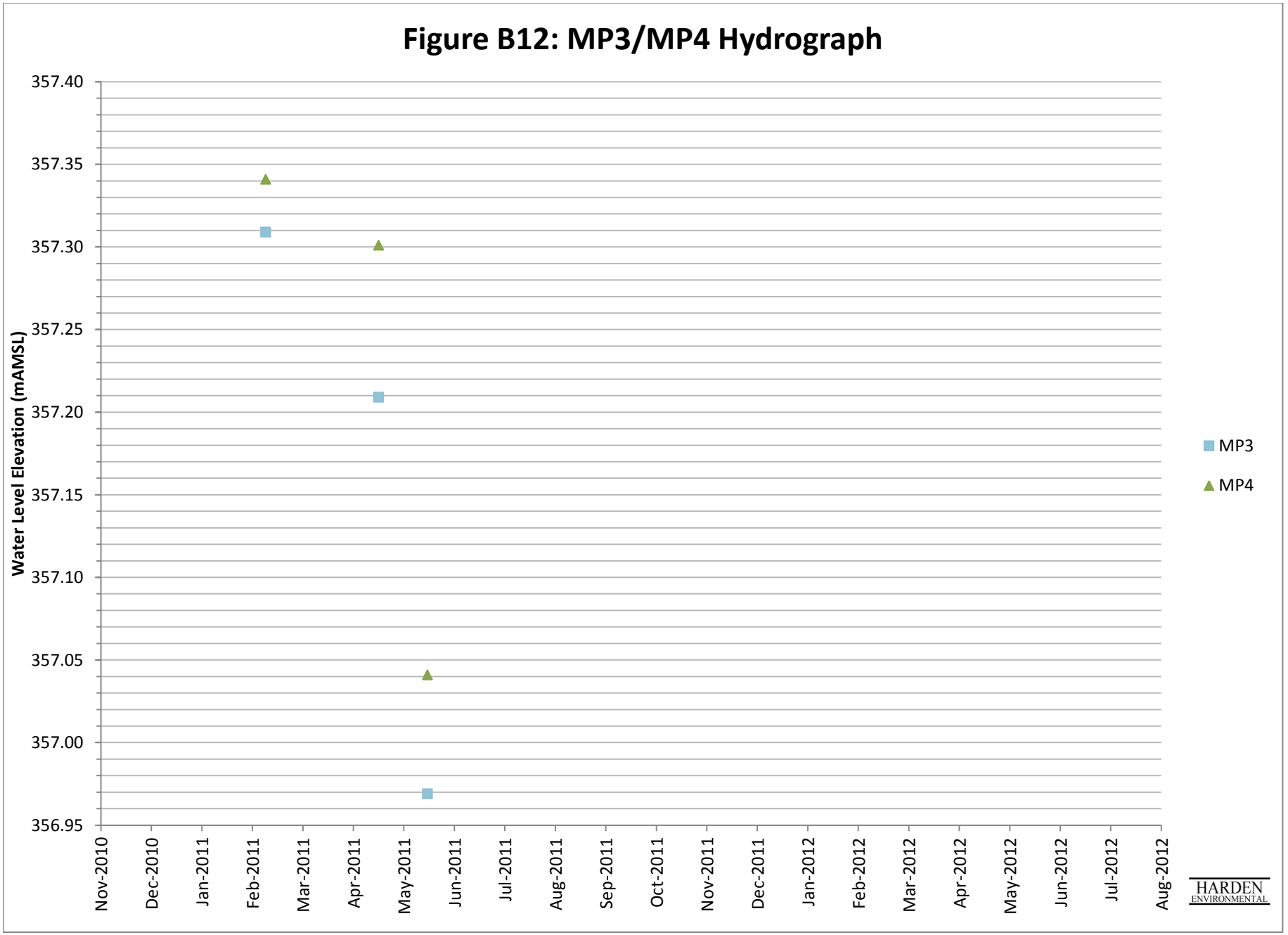


Figure B13: MPN-1/MPN-2 Hydrograph

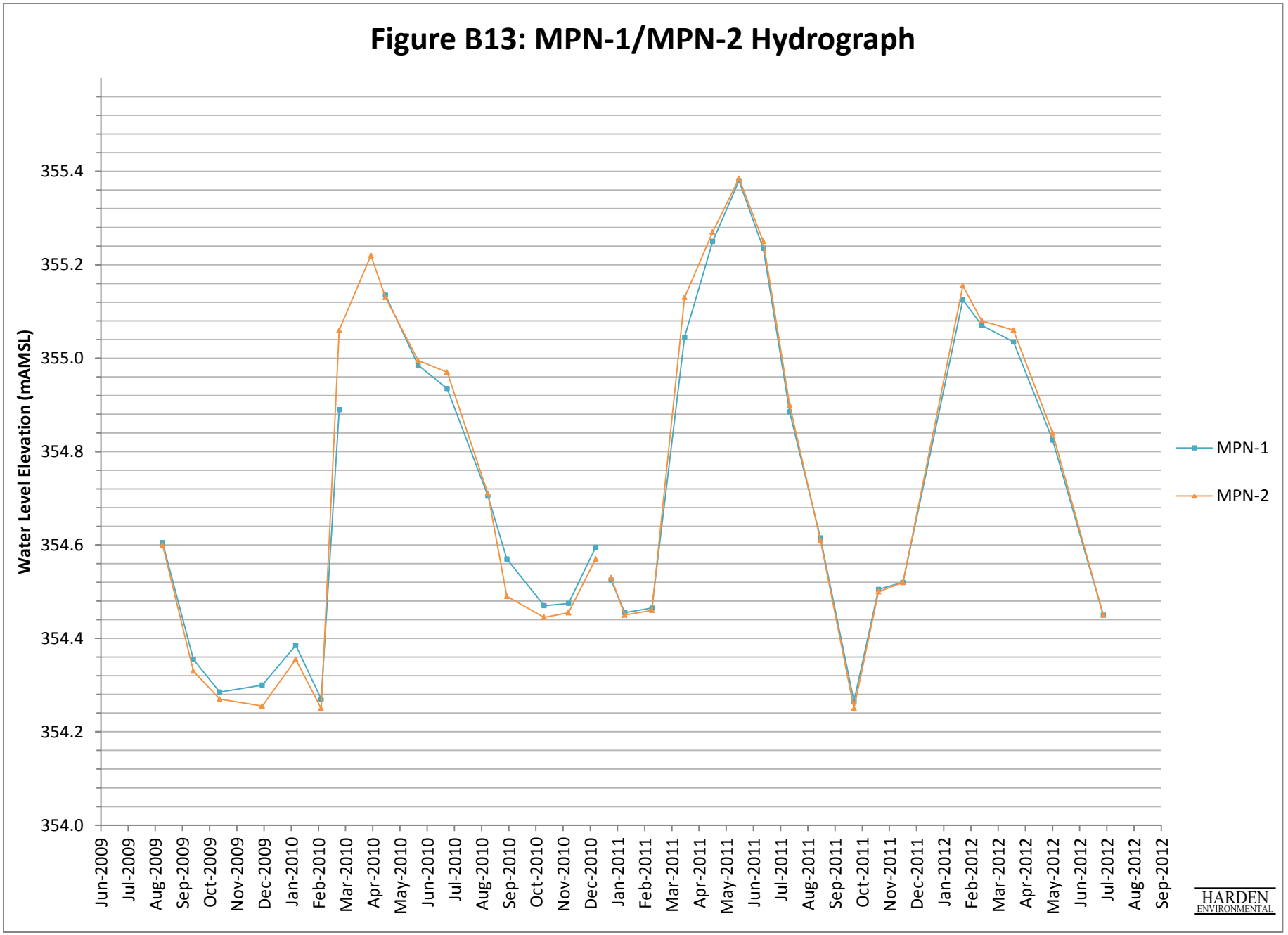


Figure B14: MPE-1/MPE-2 Hydrograph

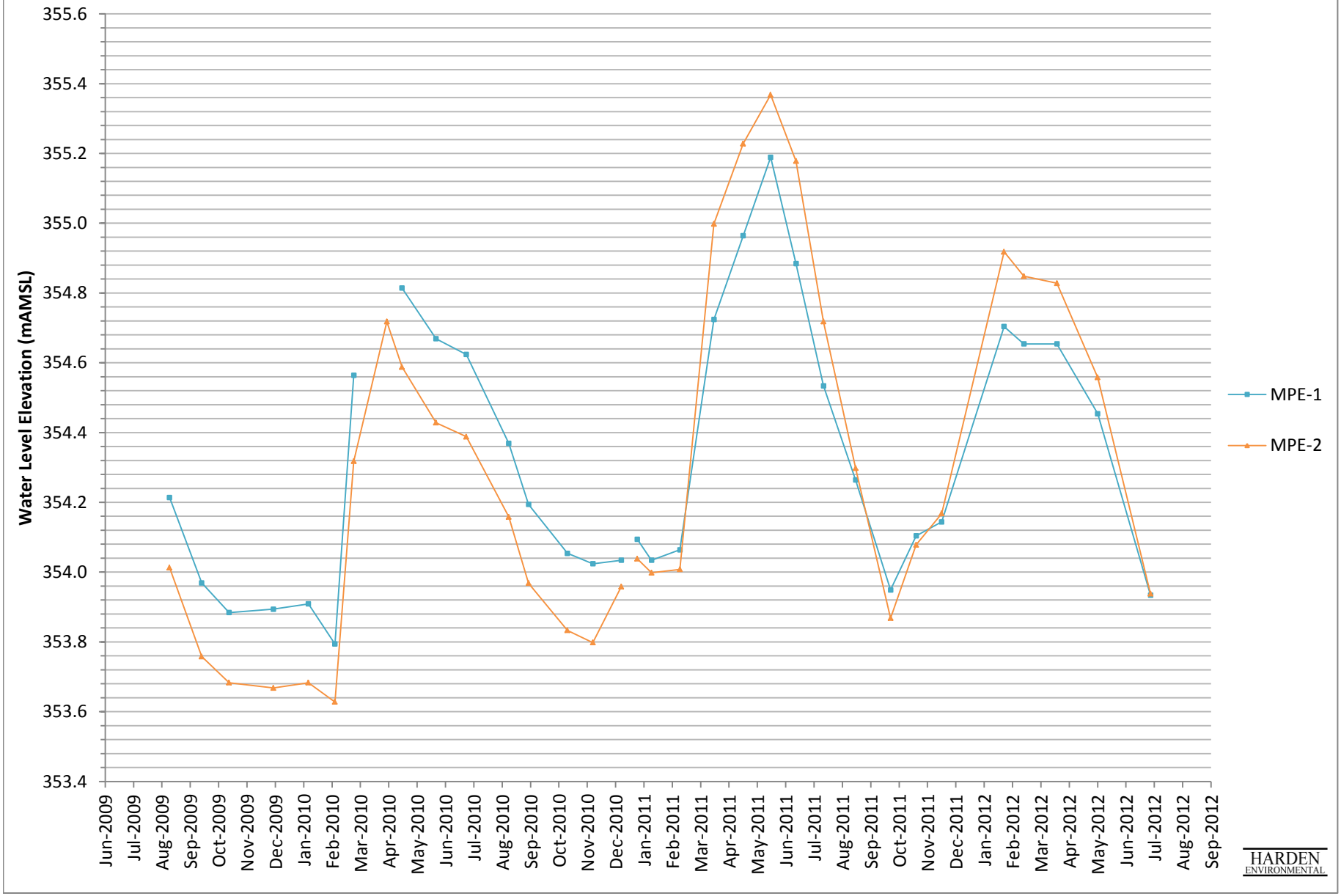


Figure B15: MPS-1/MPS-2 Hydrograph

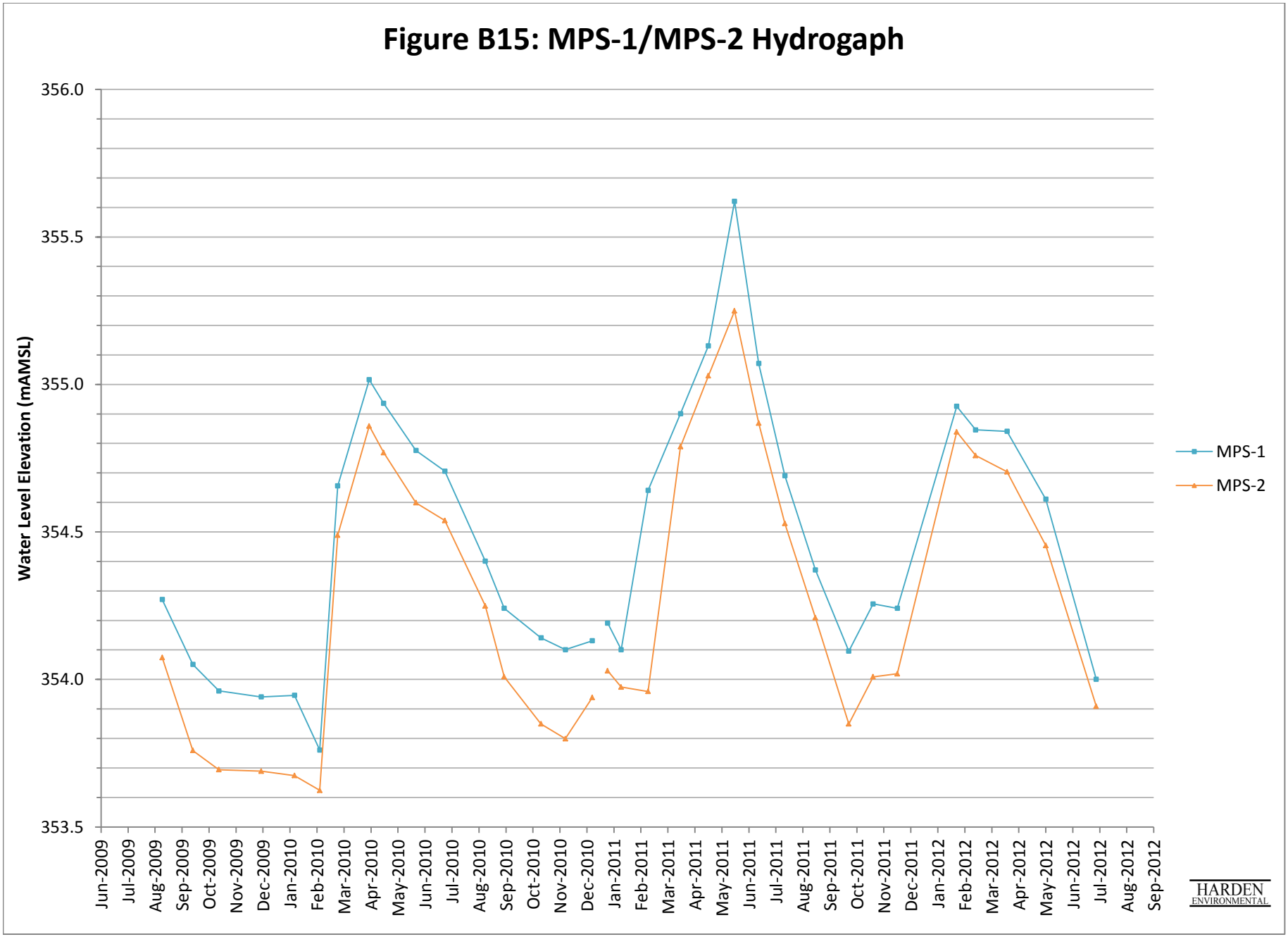


Figure B16: MPW-1/MPW-2 Hydrograph

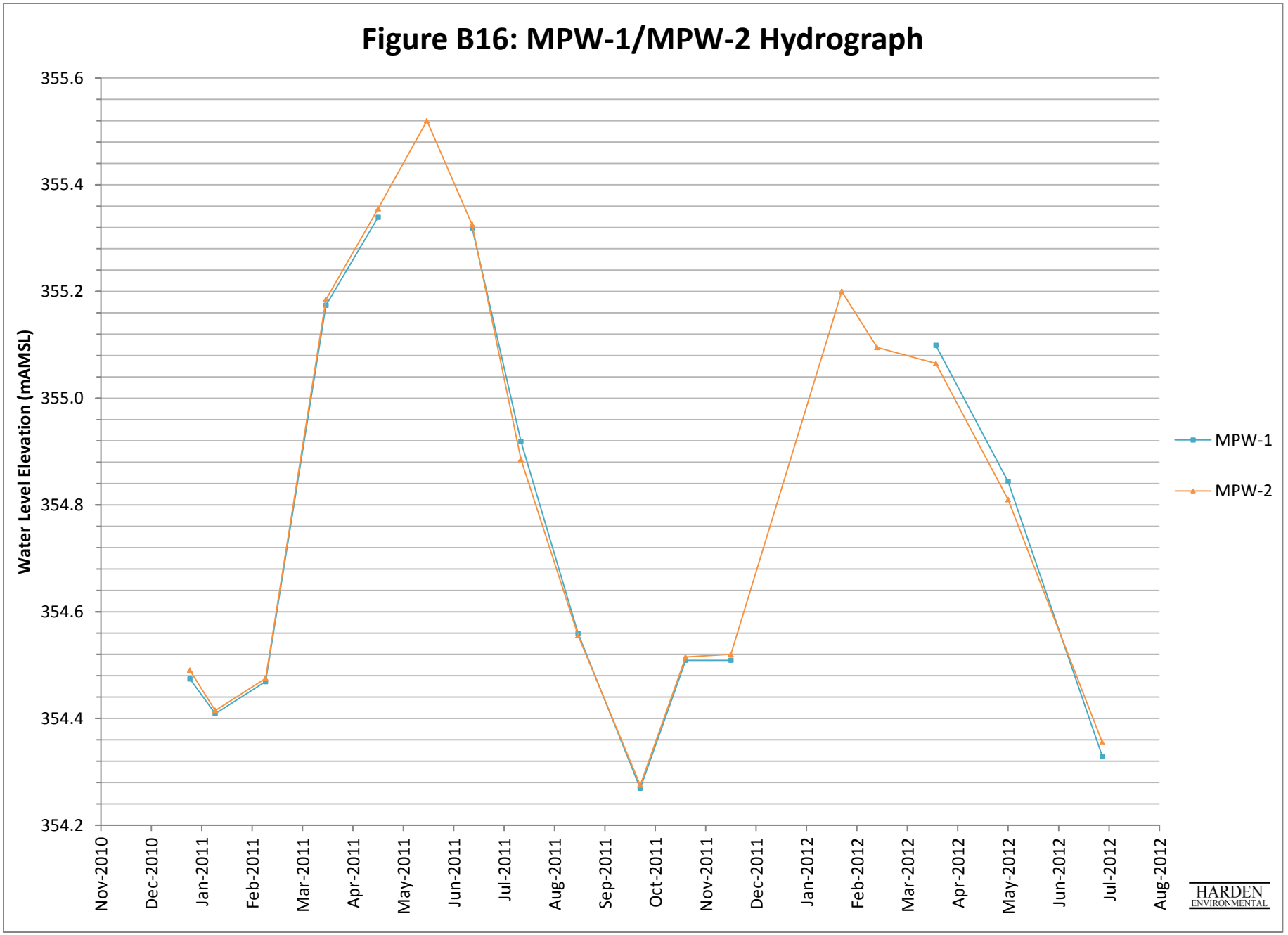


Figure B17: TP1 Hydrograph

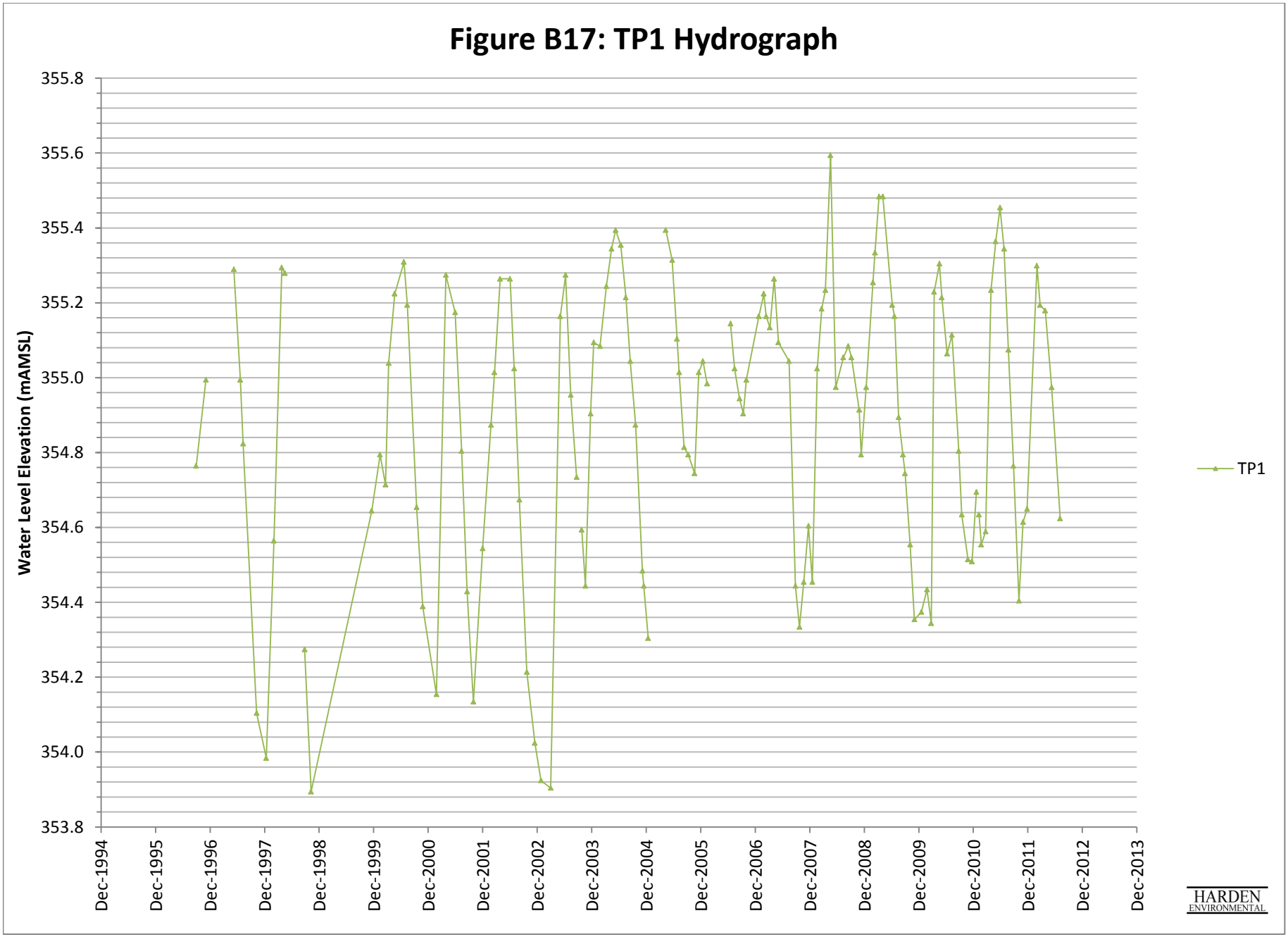


Figure B18: TP2 Hydrograph

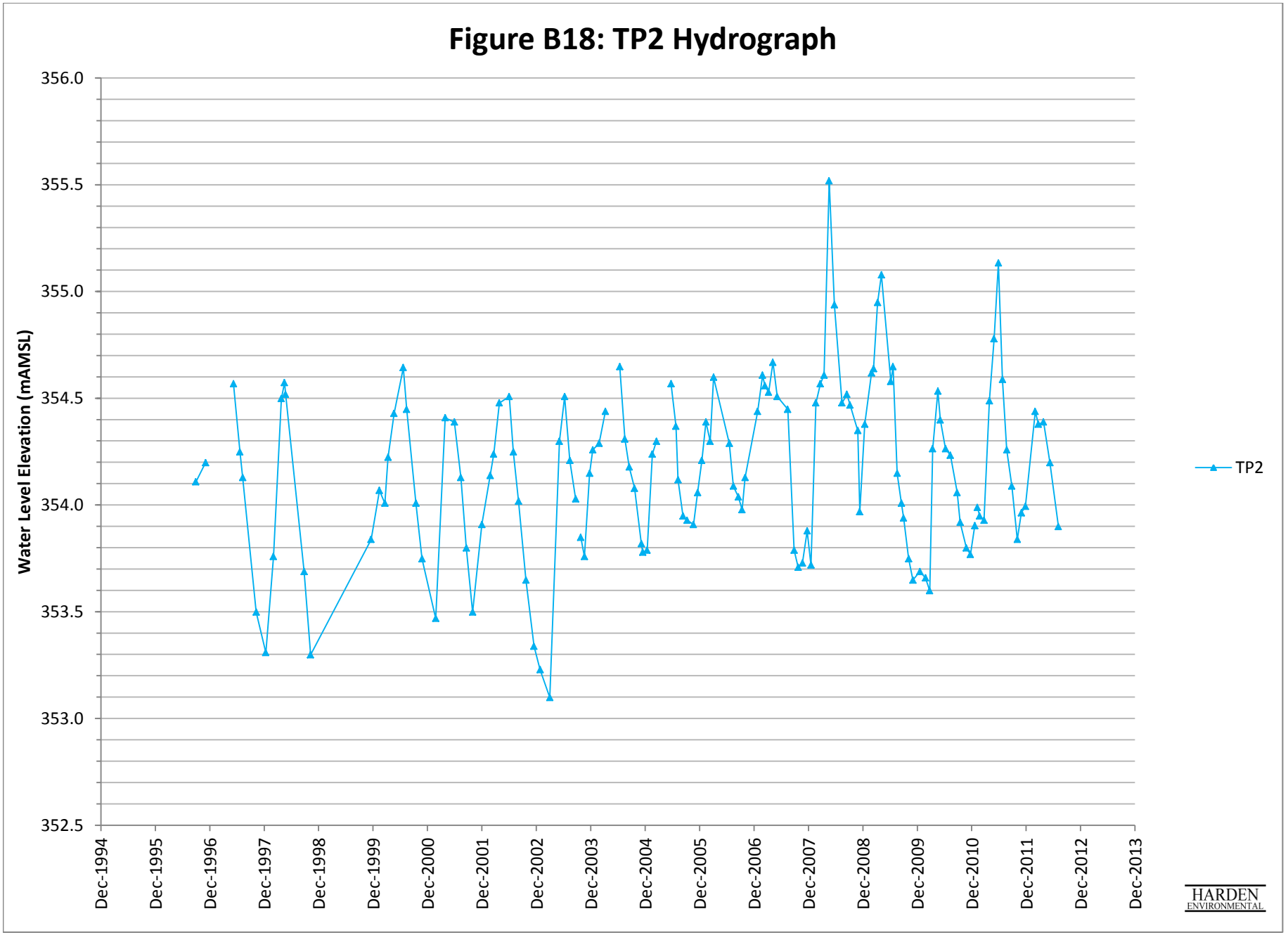
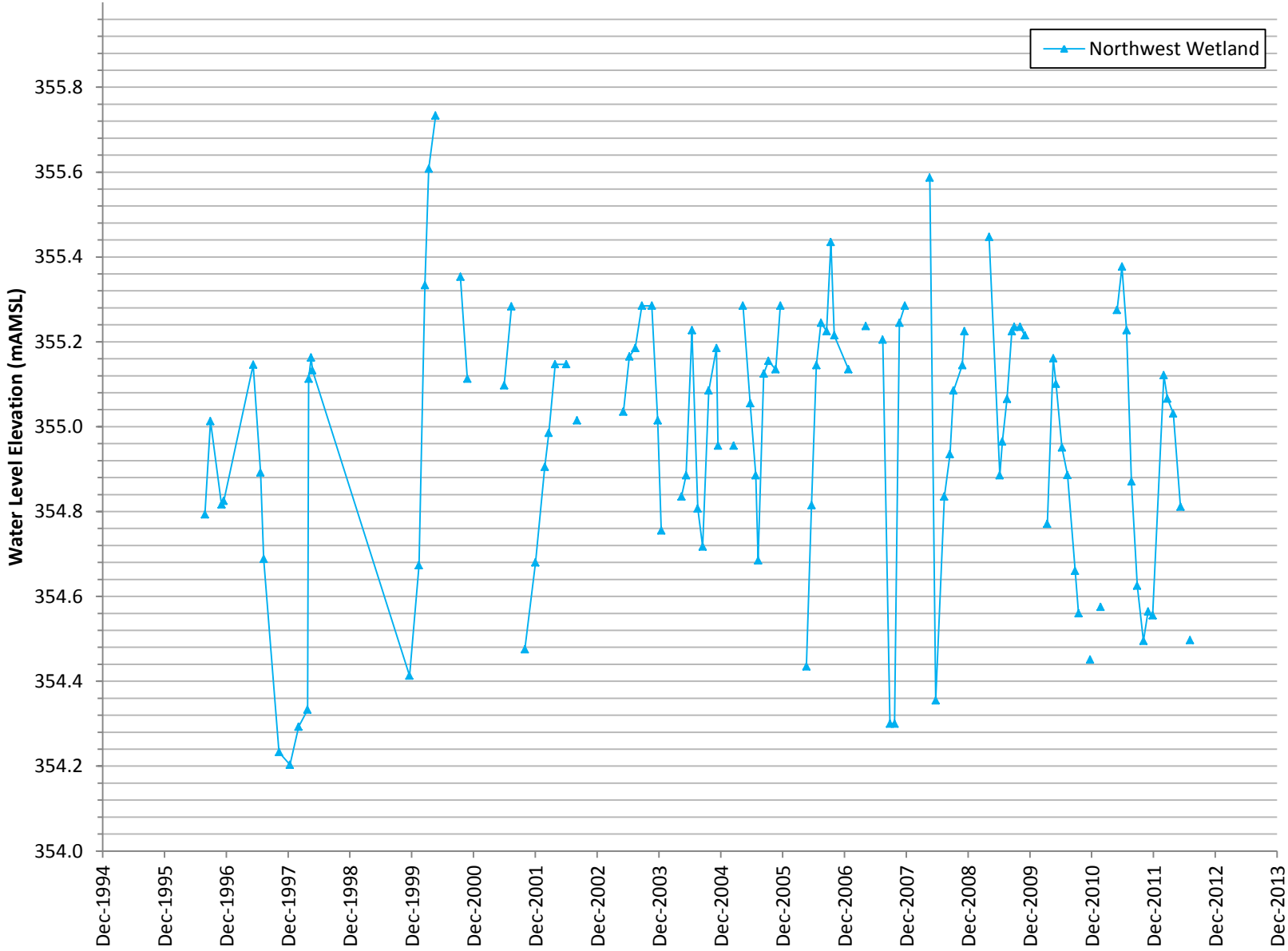


Figure B19: Northwest Wetland Hydrograph



HARDEN ENVIRONMENTAL

Appendix C
Surface Water Flow Data

Table C1: Surface Water Flow Data
Figure C1: SW3/SW4 Discharge Hydrograph
Figure C2: RS1 Discharge Hydrograph

Table C1: Surface Water Flow Data

MONITOR	21-Jan-05	18-Feb-05	18-Mar-05	14-Apr-05	27-May-05	28-Jun-05	13-Jul-05	15-Aug-05	12-Sep-05	24-Oct-05	21-Nov-05	19-Dec-05	16-Jan-06	13-Feb-06	08-Mar-06	24-Apr-06	24-May-06	22-Jun-06	19-Jul-06
SW3 (Downstream of Site)					5.33	0.00	0.00	0.00	0.00	0.00	0.00					76.88	0.00	0.00	0.00
SW4 (Upstream of Site)					15.34	4.40	1.70	0.00	0.00	7.66	7.08					91.45	24.08	0.00	0.00
RS1	21.36	32.70	42.70		24.68	10.25	7.90	4.19	9.74	12.22	6.61	19.20	20.37	32.61	47.60	38.50	17.78	8.00	5.22
SW5																			
SW7																			
SW8																			
SW9																			
SW10																			
SW11																			
SW12A																			
SW12B																			

NOTE: All values given in L/s

0.00 **Stream is dry**

Denotes frozen conditions no measurement obtained

HARDEN ENVIRONMENTAL

Table C1: Surface Water Flow Data

MONITOR	21-Aug-06	15-Sep-06	05-Oct-06	28-Dec-06	30-Jan-07	15-Feb-07	12-Mar-07	10-Apr-07	08-May-07	18-Jul-07	31-Aug-07	26-Sep-07	25-Oct-07	26-Nov-07	21-Dec-07	23-Jan-08	22-Feb-08	18-Mar-08	21-Apr-08	26-May-08
SW3 (Downstream of Site)	0.00	0.00	0.00	4.94				89.53	14.89	0.00	0.00	0.00	0.00	0.00					117.15	132.83
SW4 (Upstream of Site)	0.00	0.00	6.83	11.45				100.45	30.87	1.82	0.00	0.00	0.00	0.47					154.26	152.58
RS1	3.37	4.36	9.73	17.15	14.28	20.27	56.60	44.60	16.71	10.28	5.20	2.95	2.26	3.10	4.00	11.20	9.66	50.18	61.98	59.34
SW5																				
SW7								92.93	16.04	0.00	0.00	0.00	0.00	0.00					120.40	134.14
SW8																				
SW9																				
SW10																				
SW11																				
SW12A																				
SW12B																				

NOTE: All values given in L/s

0.00 **Stream is dry**

Denotes frozen conditions no measurement obtained

HARDEN ENVIRONMENTAL

Table C1: Surface Water Flow Data

MONITOR	16-Jul-08	18-Aug-08	08-Sep-08	30-Oct-08	12-Nov-08	16-Dec-08	30-Jan-09	13-Feb-09	12-Mar-09	07-Apr-09	08-Jun-09	23-Jun-09	21-Jul-09	19-Aug-09	02-Sep-09	06-Oct-09	04-Nov-09	21-Dec-09	27-Jan-10	24-Feb-10
SW3 (Downstream of Site)	35.20	0.00	0.00	0.00	0.00	6.64			80.83	98.53	52.62	29.69	0.00	0.00	0.00	0.00	0.00			
SW4 (Upstream of Site)	49.47	14.27	18.35	2.85	2.24	12.41		62.99	92.47	111.02	55.37	33.34	13.79	1.08	0.89	0.00	0.00			
RS1	39.82	13.08	15.10	1.54	1.15	5.50	11.17		65.30	68.93	28.82	12.75	9.13	8.76	5.54	1.49	1.29		15.76	
SW5																				
SW7	39.33	4.75	8.39	0.00	0.00	10.75														
SW8									83.02	100.20	53.16	30.18	0.00	0.00	0.00	0.00	0.00			
SW9																				
SW10																				
SW11																				
SW12A																				
SW12B																				

NOTE: All values given in L/s

0.00 **Stream is dry**

Denotes frozen conditions no measurement obtained

HARDEN ENVIRONMENTAL

Table C1: Surface Water Flow Data

MONITOR	16-Mar-10	20-Apr-10	06-May-10	11-Jun-10	13-Jul-10	27-Aug-10	17-Sep-10	28-Oct-10	24-Nov-10	24-Dec-10	25-Jan-11	24-Feb-11
SW3 (Downstream of Site)	133.25	18.72	1.21	12.13	2.74		0.00	0.00	0.00			
SW4 (Upstream of Site)	147.33	32.51	19.47	28.38	21.05		0.00	6.36	9.74			
RS1	51.94	13.31	12.87	14.48	11.75		7.41	11.33	9.80	7.43	7.06	14.01
SW5												
SW7												
SW8	132.08	18.95	10.98	14.77	9.98		0.00	0.00	3.84			
SW9												
SW10												
SW11												
SW12A												
SW12B												

NOTE: All values given in L/s

0.00 **Stream is dry**

Denotes frozen conditions no measurement obtained

HARDEN ENVIRONMENTAL

Table C1: Surface Water Flow Data

MONITOR	01-Apr-11	02-May-11	31-May-11	26-Jul-11	29-Aug-11	05-Oct-11	01-Nov-11	28-Nov-11	02-Dec-11	12-Dec-11	21-Dec-11	02-Feb-12	23-Feb-12	27-Mar-12	11-May-12	23-May-12	06-Jul-12
SW3 (Downstream of Site)	39.84	45.89	58.22	0.00	0.00	0.00	10.22	13.21	17.01			47.91	31.13	10.97	0.00	0.00	0.00
SW4 (Upstream of Site)	52.49	60.95	73.59	8.92	0.00	1.04	17.82	21.48	26.79	25.82	26.41	49.50	31.01	25.66	9.54	6.07	0.00
RS1	24.34	23.15	30.15	5.60	7.50	6.32	10.12	15.55	20.70			24.86	13.94	14.09	10.52	7.48	6.22
SW5													29.07				0.00
SW7																	0.00
SW8	43.74	50.27	63.76	0.00	0.00	0.00	10.84	13.47	17.65			47.25	29.61	12.57	2.68	0.00	0.00
SW9														32.57	14.14	10.92	0.00
SW10								23.69	32.69	26.65	28.38	53.13	31.27	16.64	4.74	0.38	0.00
SW11														16.88			0.00
SW12A														3.43			0.00
SW12B														1.32			0.00

NOTE: All values given in L/s

0.00 **Stream is dry**

Denotes frozen conditions no measurement obtained

HARDEN ENVIRONMENTAL

Figure C1: SW3/SW4 Discharge Hydrograph

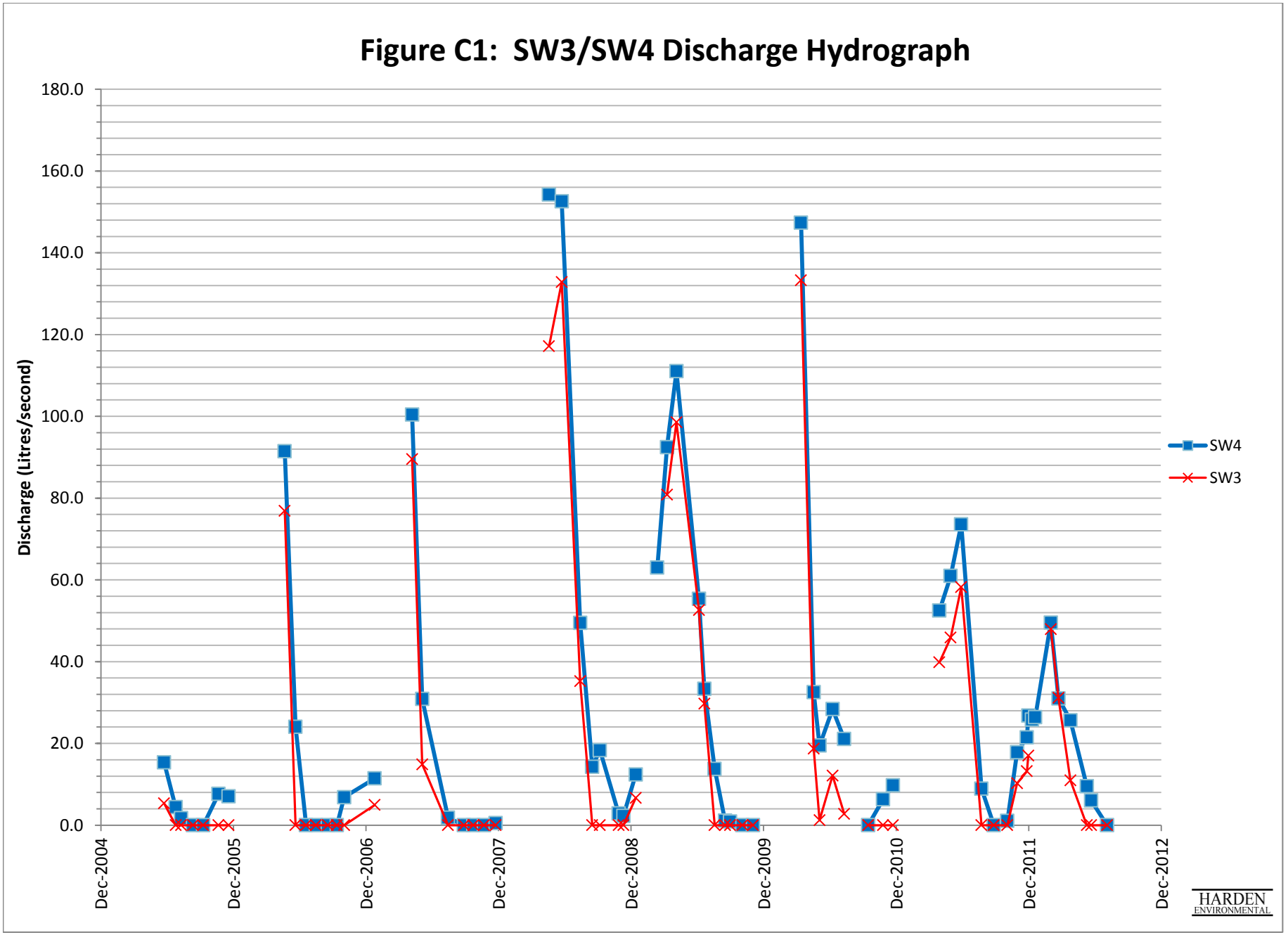
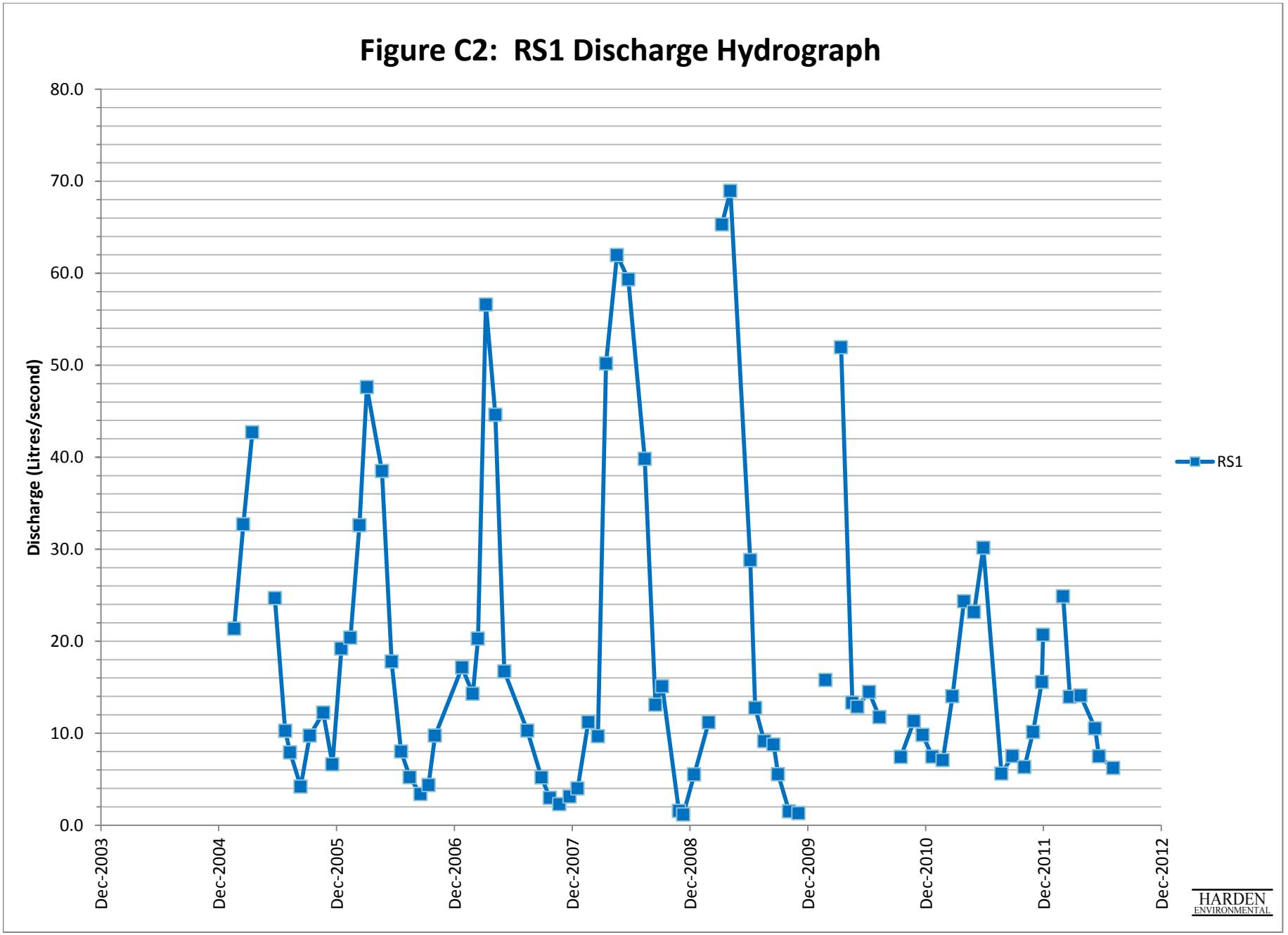


Figure C2: RS1 Discharge Hydrograph



Appendix D
Hydraulic Testing Data

Table D1: Summary of Hydraulic Testing

Hydraulic Testing Graphs

Table D1: Summary of Hydraulic Testing

Monitor	Completion	Test Method	K (m/sec)	Test Date
MPN-1	Overburden	Hvorslev (falling head test)	2.0×10^{-4}	Jan-2011
MPN-2	Overburden	Hvorslev (falling head test)	4.6×10^{-5}	Jan-2011
MPE-1	Overburden	Hvorslev (falling head test)	5.3×10^{-6}	Jan-2011
MPE-2	Overburden	Hvorslev (falling head test)	8.8×10^{-5}	Jan-2011
MPS-1	Overburden	Hvorslev (falling head test)	1.3×10^{-6}	Jan-2011
MPS-2	Overburden	Hvorslev (falling head test)	1.1×10^{-4}	Jan-2011
MPW-1	Overburden	Hvorslev (falling head test)	3.7×10^{-5}	Jan-2011
MPW-2	Overburden	Hvorslev (falling head test)	6.2×10^{-6}	Jan-2011
M1S	Overburden	Hvorslev (falling head test)	5.7×10^{-7}	Jan-2011
M1D	Bedrock	Hvorslev (falling head test)	5.8×10^{-7}	Mar-2012
M2	Bedrock	Hvorslev (falling head test)	1.5×10^{-6}	Mar-2012
M4	Bedrock	Short Term Pumping Test	1.3×10^{-5}	May-2012
M6	Overburden	Hvorslev (falling head test)	1.3×10^{-7}	Apr-1998
M6	Overburden	Hvorslev (falling head test)	9.9×10^{-7}	Jan-2011
M9	Overburden	Hvorslev (falling head test)	3.5×10^{-5}	Apr-1998
M10	Overburden	Hvorslev (falling head test)	2.0×10^{-9}	Apr-1998
M13S	Overburden	Hvorslev (falling head test)	8.0×10^{-5}	Jan-2011
M13D	Bedrock	Hvorslev (falling head test)	4.0×10^{-7}	Jan-2011
M14S	Overburden	Hvorslev (falling head test)	2.7×10^{-7}	Jan-2011
W1	Bedrock	Short Term Pumping Test	9.9×10^{-6}	May-2012

Figure D1: MPN-1 Falling Head Test (Hvorslev Method)
K = 2.0 x 10^{-4} m/sec

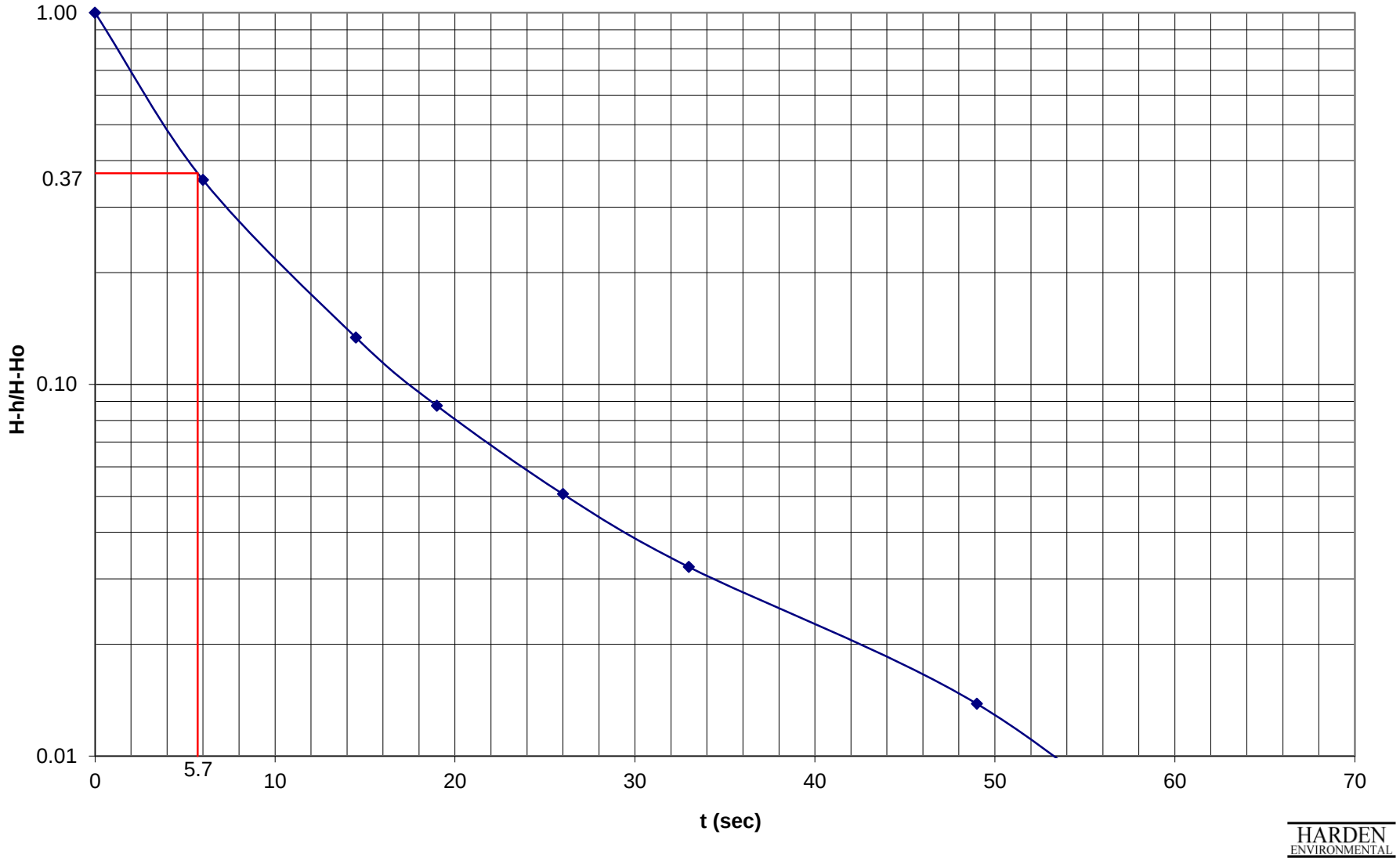


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Figure D2: MPN-2 Falling Head Test (Hvorslev Method)
K = 4.6 x 10^{-5} m/sec

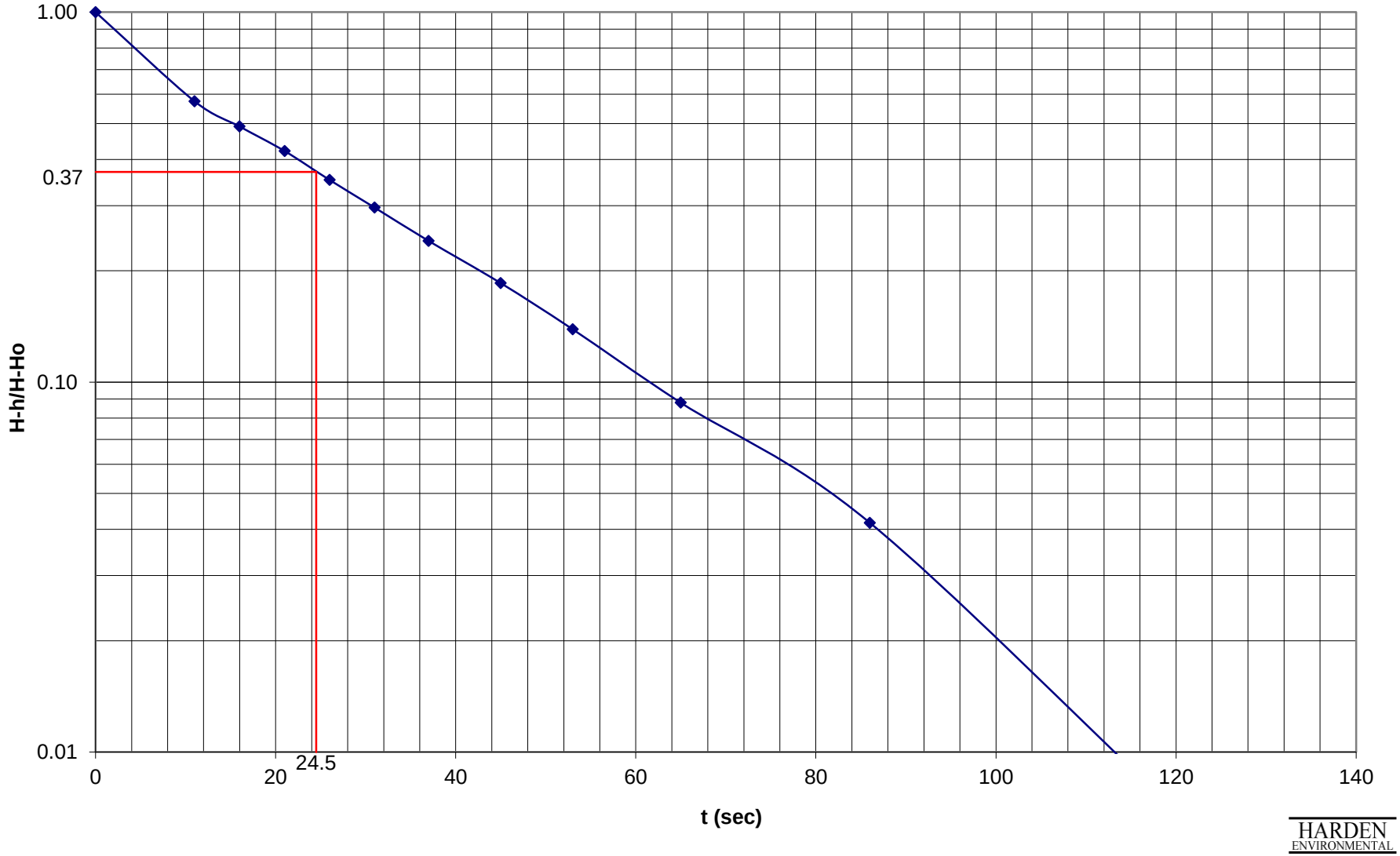

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Figure D3: MPE-1 Falling Head Test (Hvorslev Method)
K = 5.3 x 10^{-6} m/sec

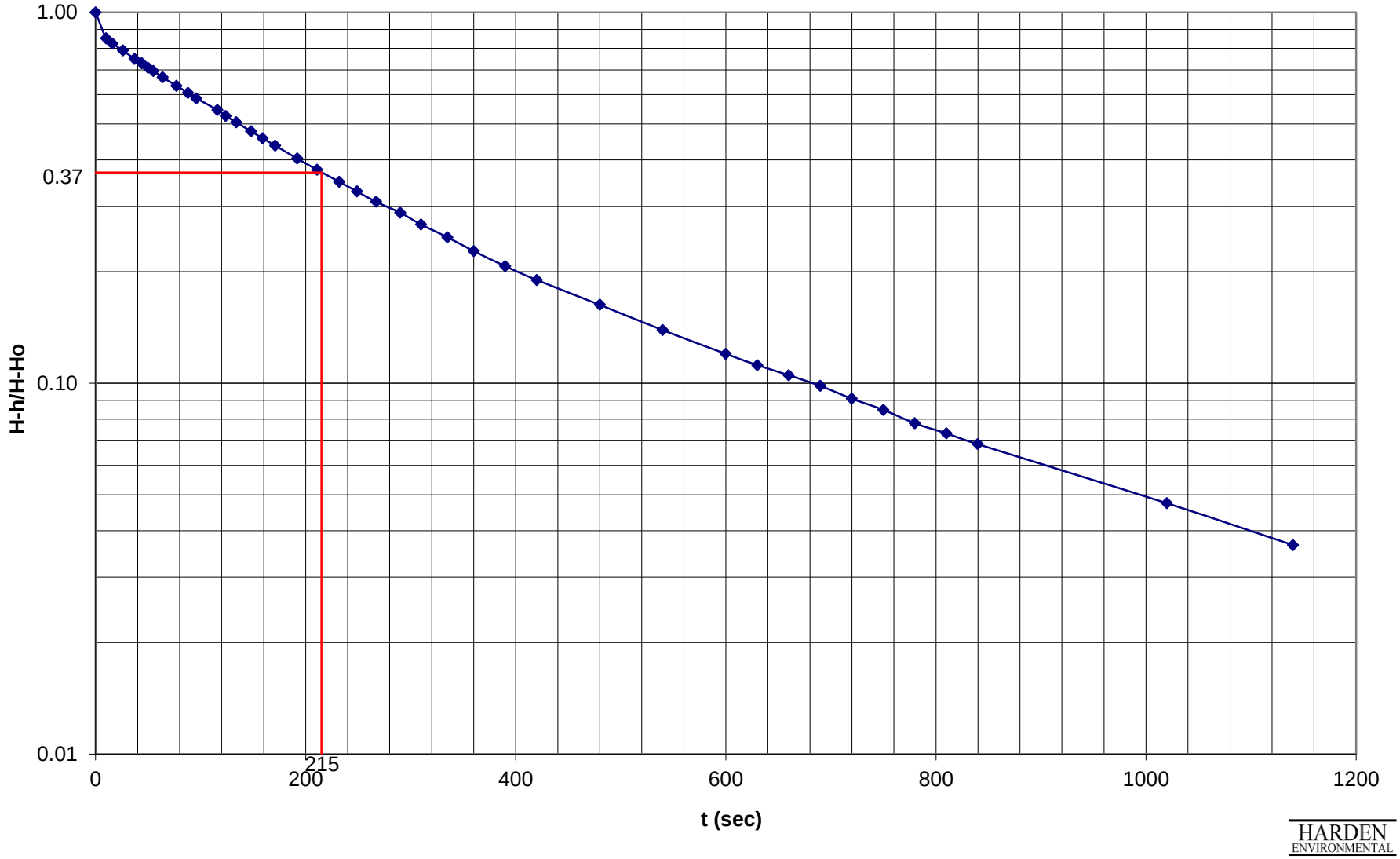

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Figure D4: MPE-2 Falling Head Test (Hvorslev Method)
K = 8.8 x 10^{-5} m/sec

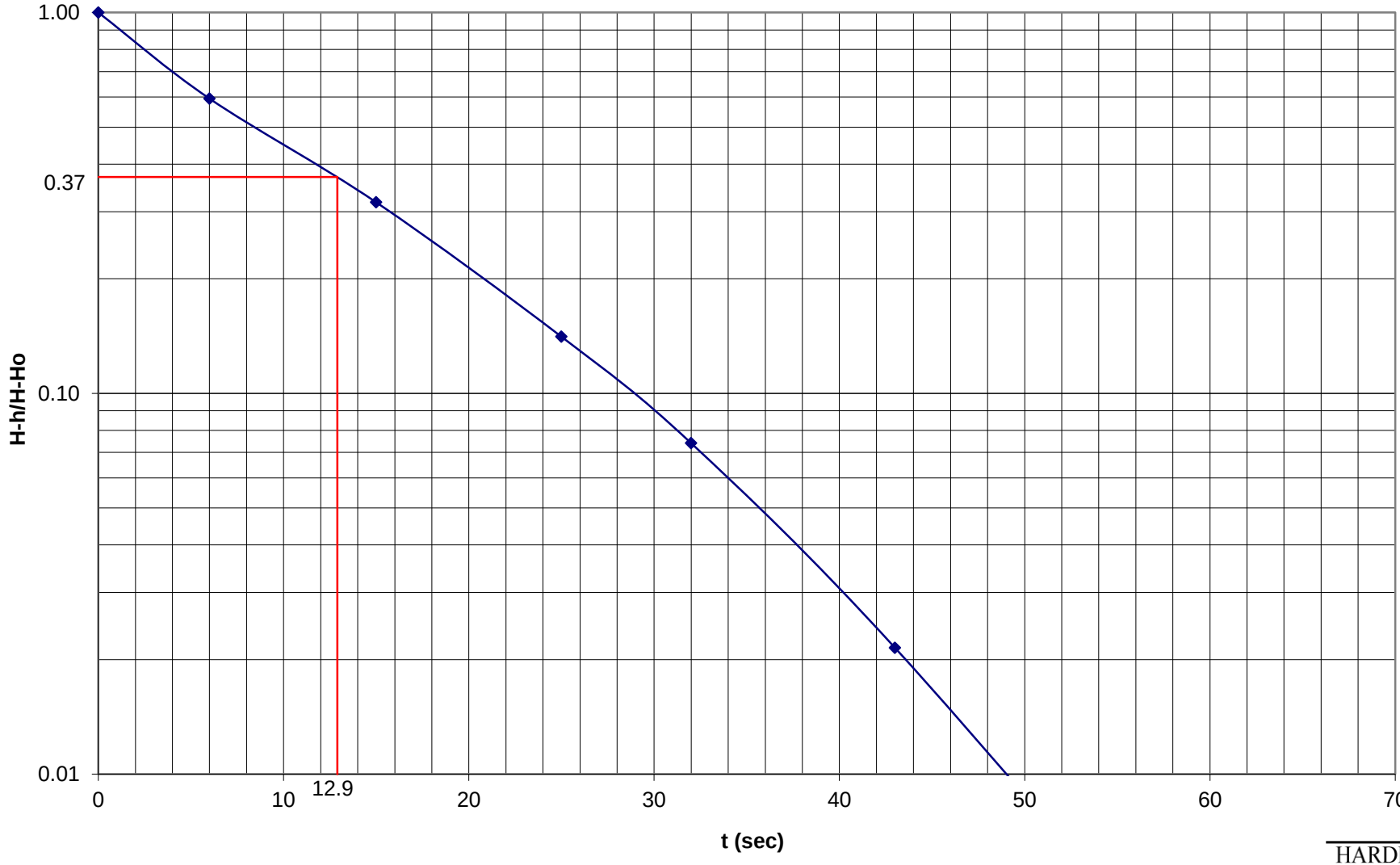

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Figure D5: MPS-1 Falling Head Test (Hvorslev Method)
K = 1.3 x 10^{-6} m/sec

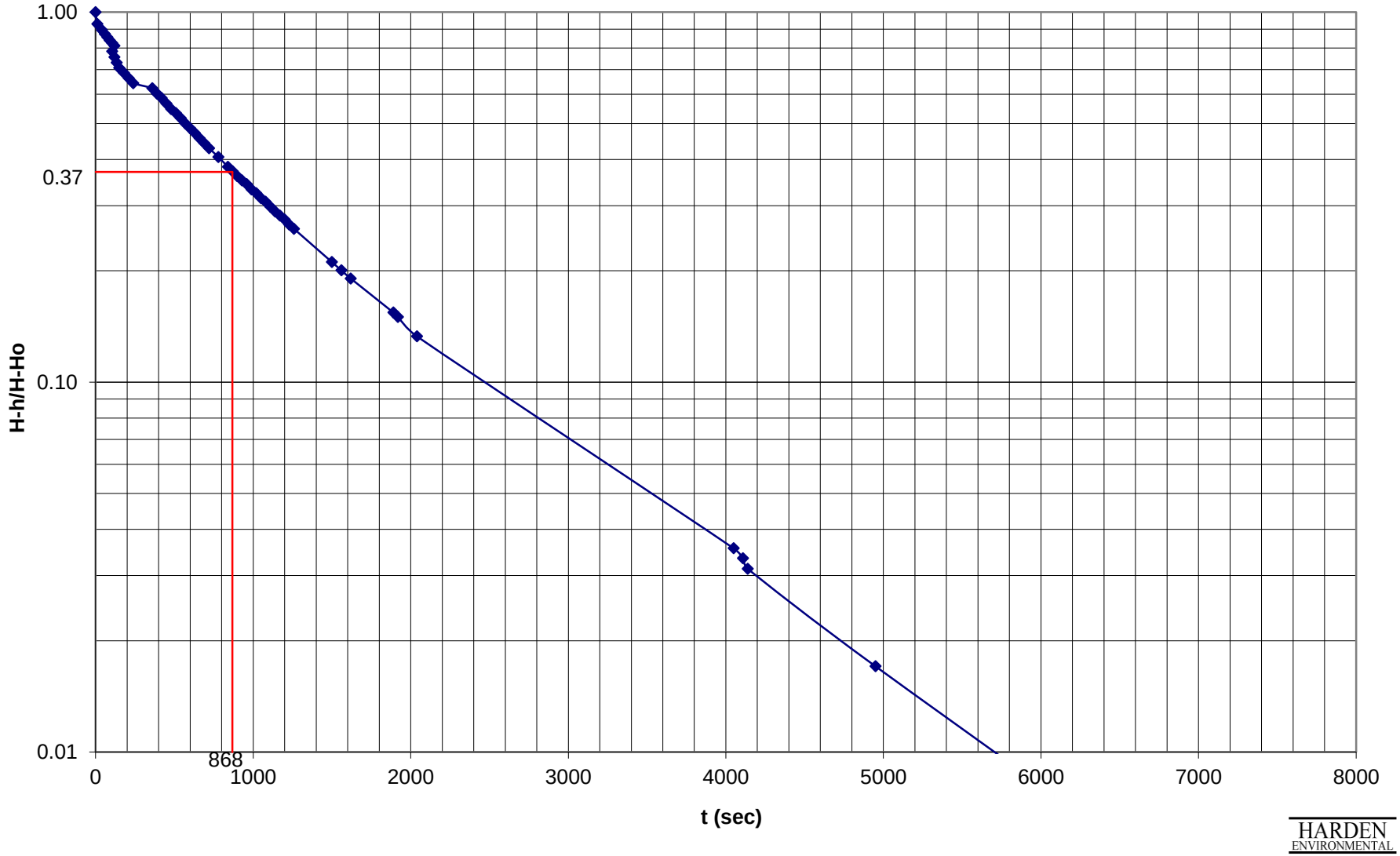

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Figure D6: MPS-2 Falling Head Test (Hvorslev Method)
K = 1.1 x 10^{-4} m/sec

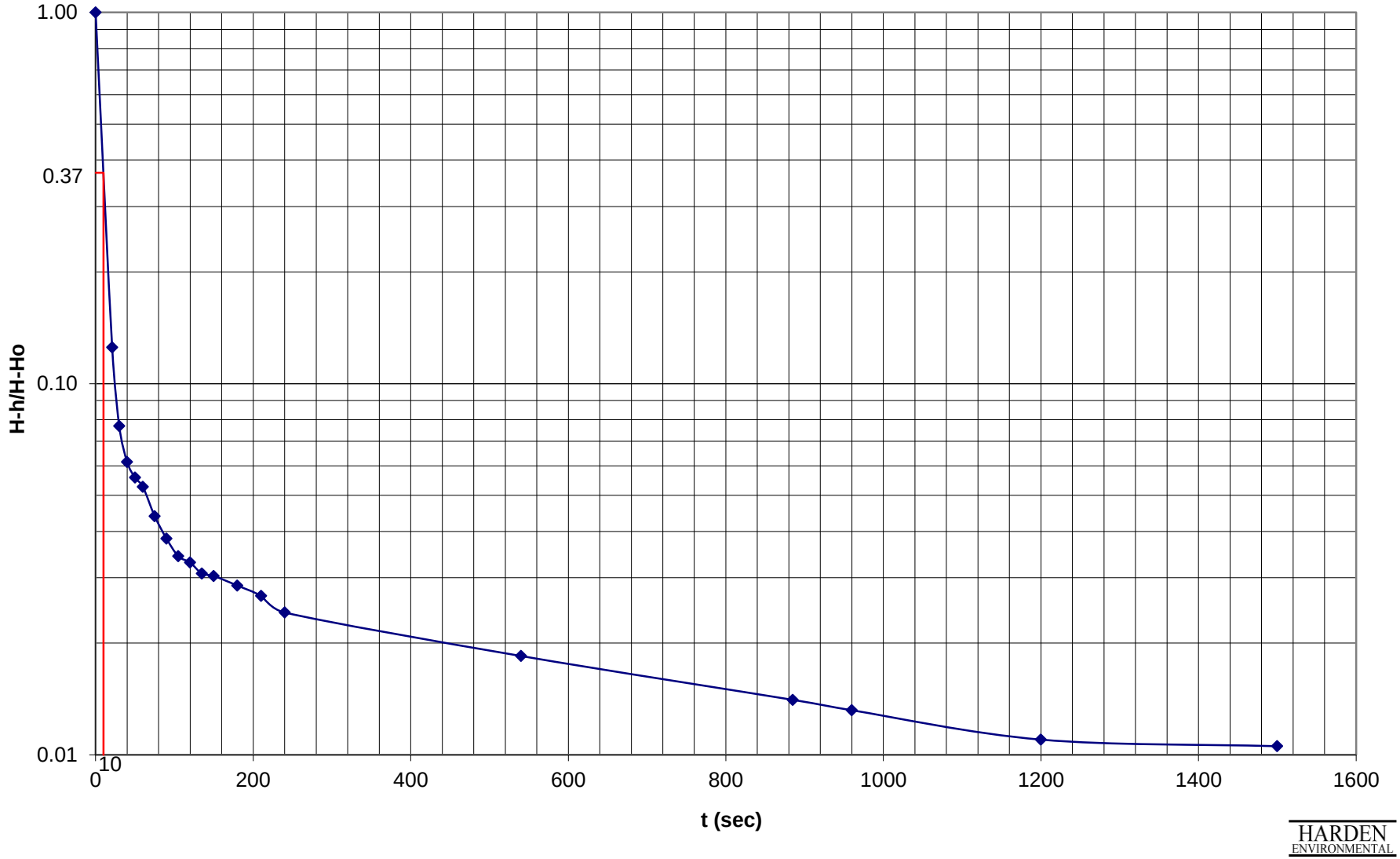

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Figure D7: MPW-1 Falling Head Test (Hvorslev Method)
K = 3.7 x 10^{-5} m/sec

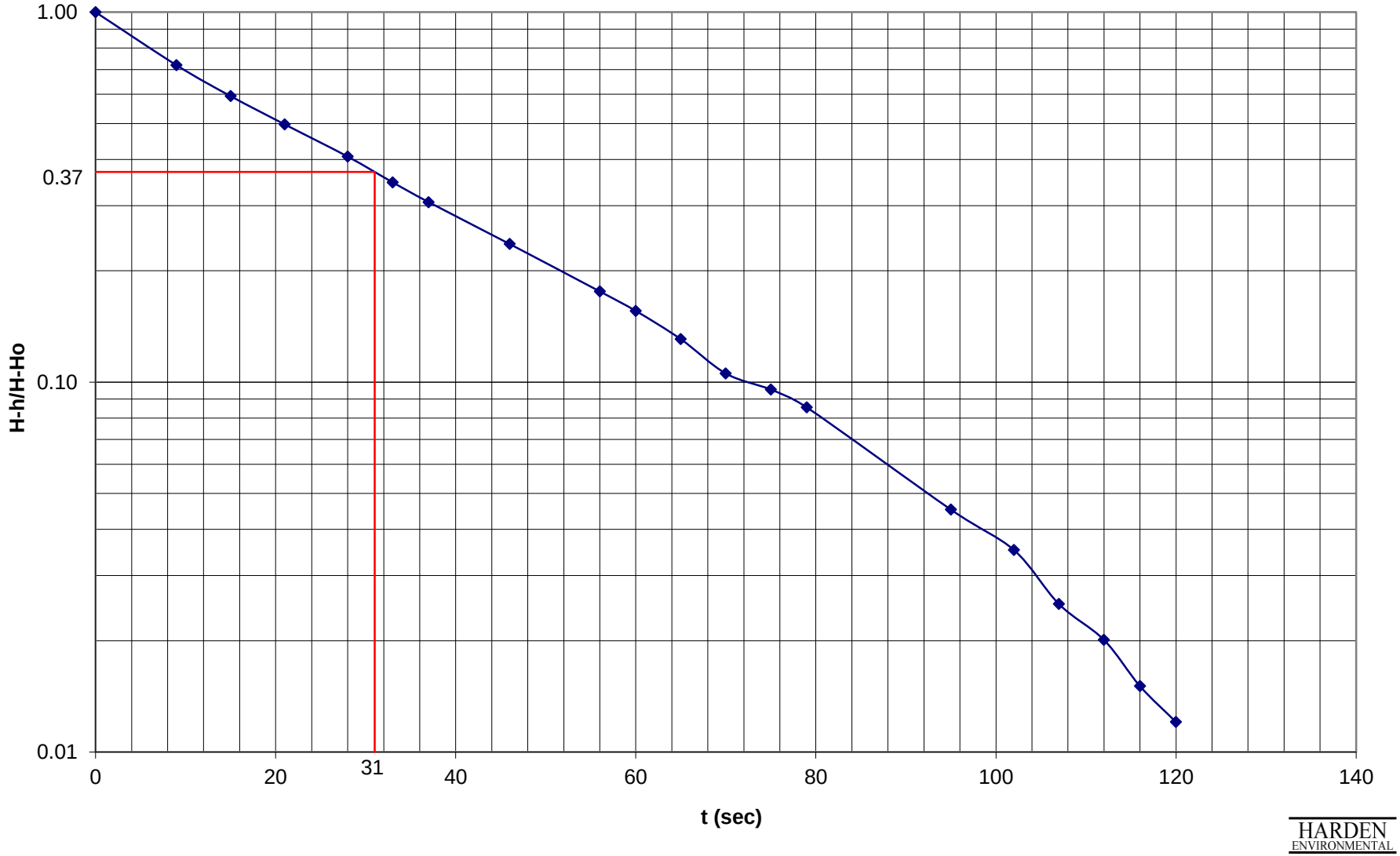

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Figure D8: MPW-2 Falling Head Test (Hvorslev Method)
K = 6.2 x 10^{-6} m/sec

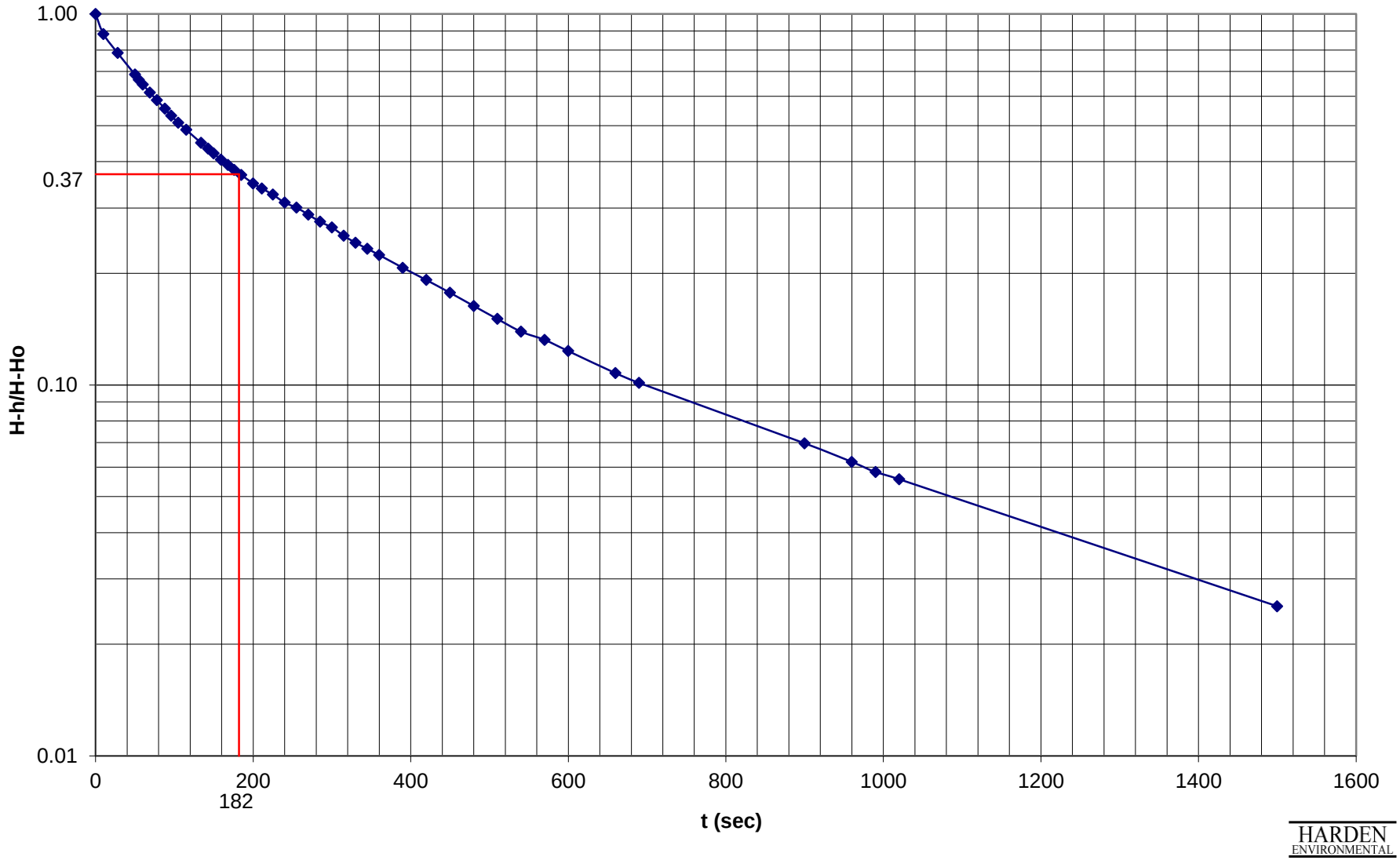

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Figure D9: M1S Falling Head Test (Hvorslev Method)
K = 5.7 x 10^{-7} m/sec

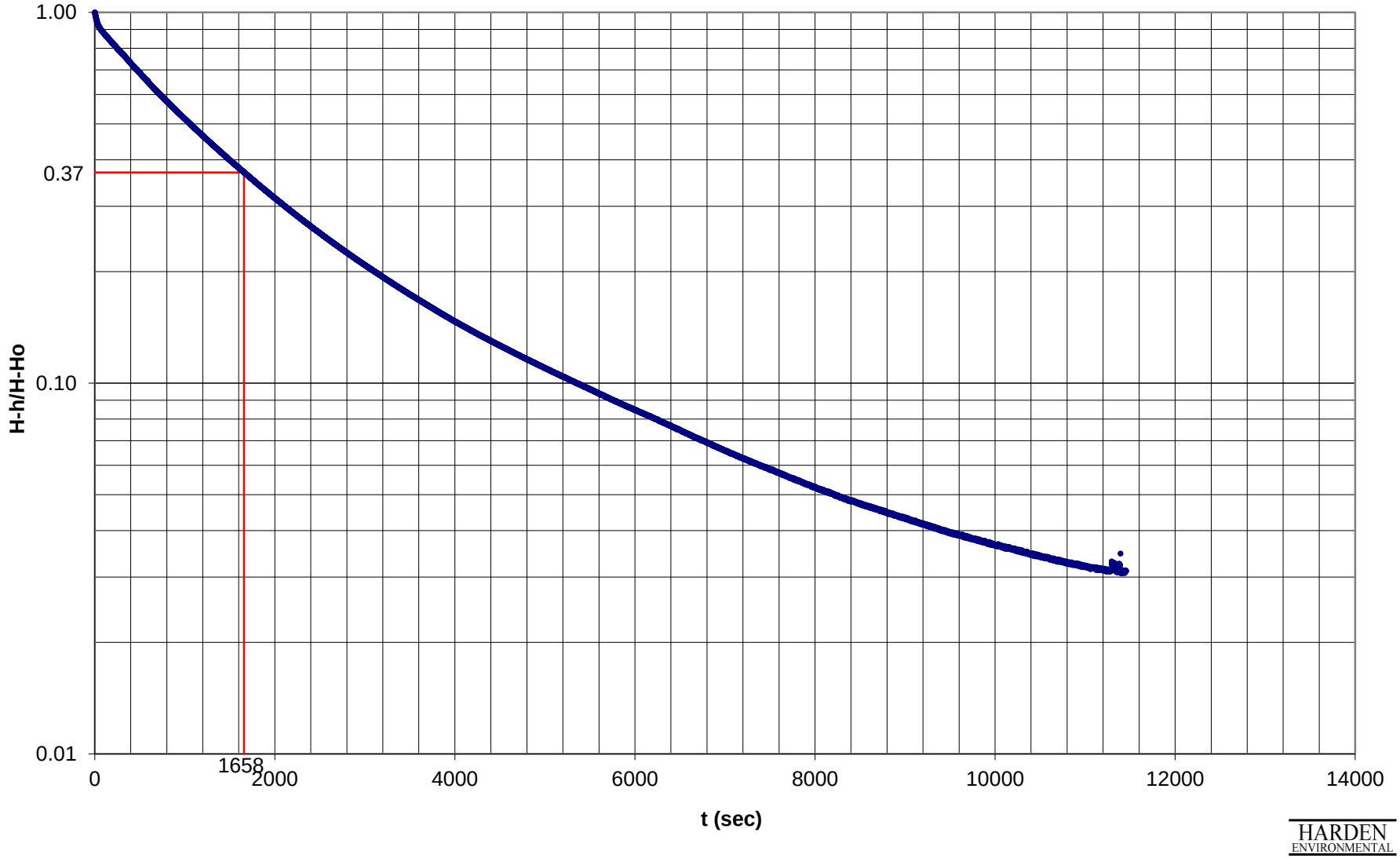

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Figure D10: M1D Falling Head Test (Hvorslev Method)
K = 5.8 x 10^{-7} m/sec

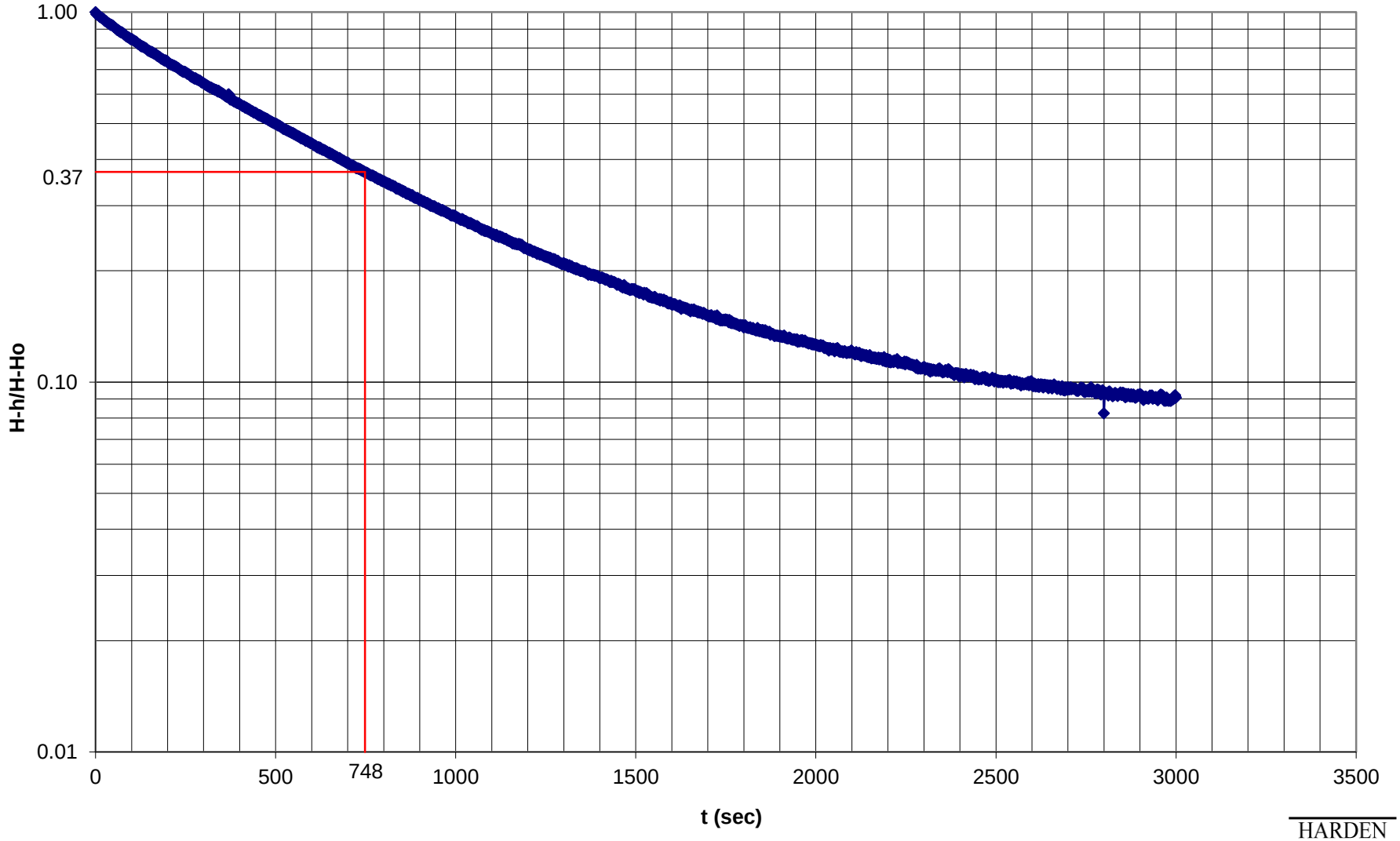

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Figure D11: M2 Falling Head Test (Hvorslev Method)
K = 1.5 x 10^{-6} m/sec

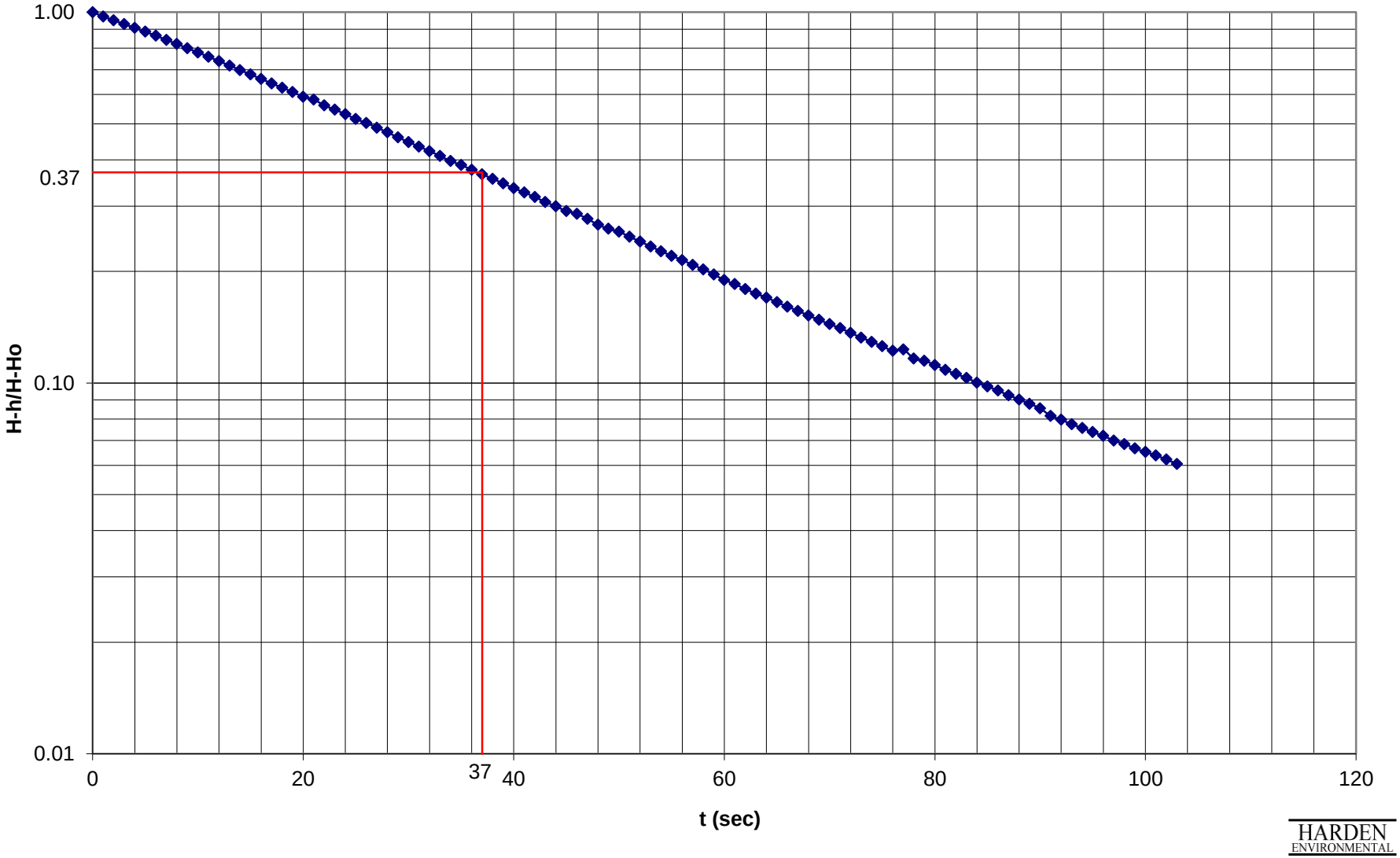

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Figure D12: M4 Drawdown (Pumping Rate 26L/min)
K = 1.3 x 10^{-5} m/sec

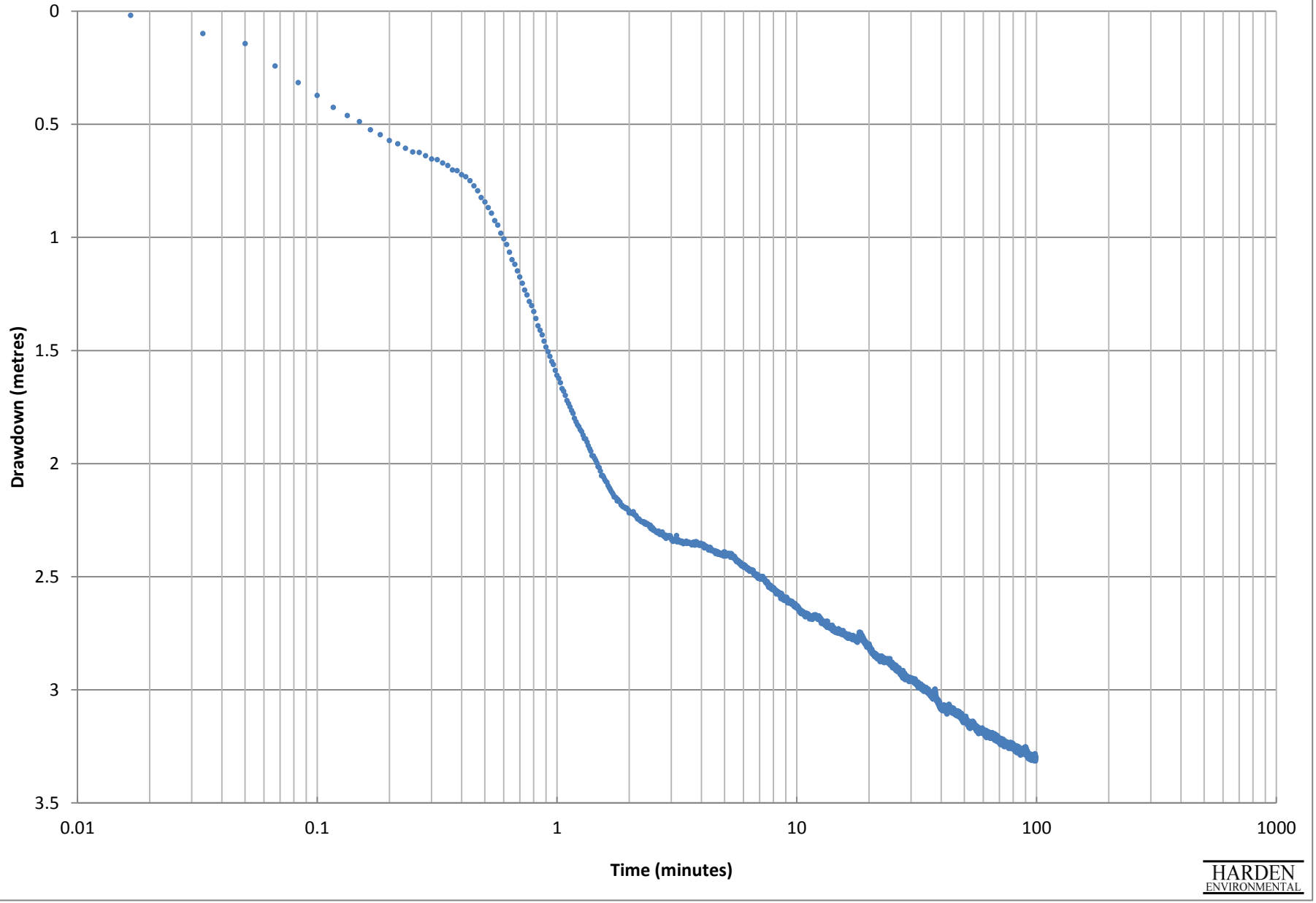

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Figure D13: M6 Falling Head Test (Hvorslev Method)
K = 9.9 x 10^{-7} m/sec

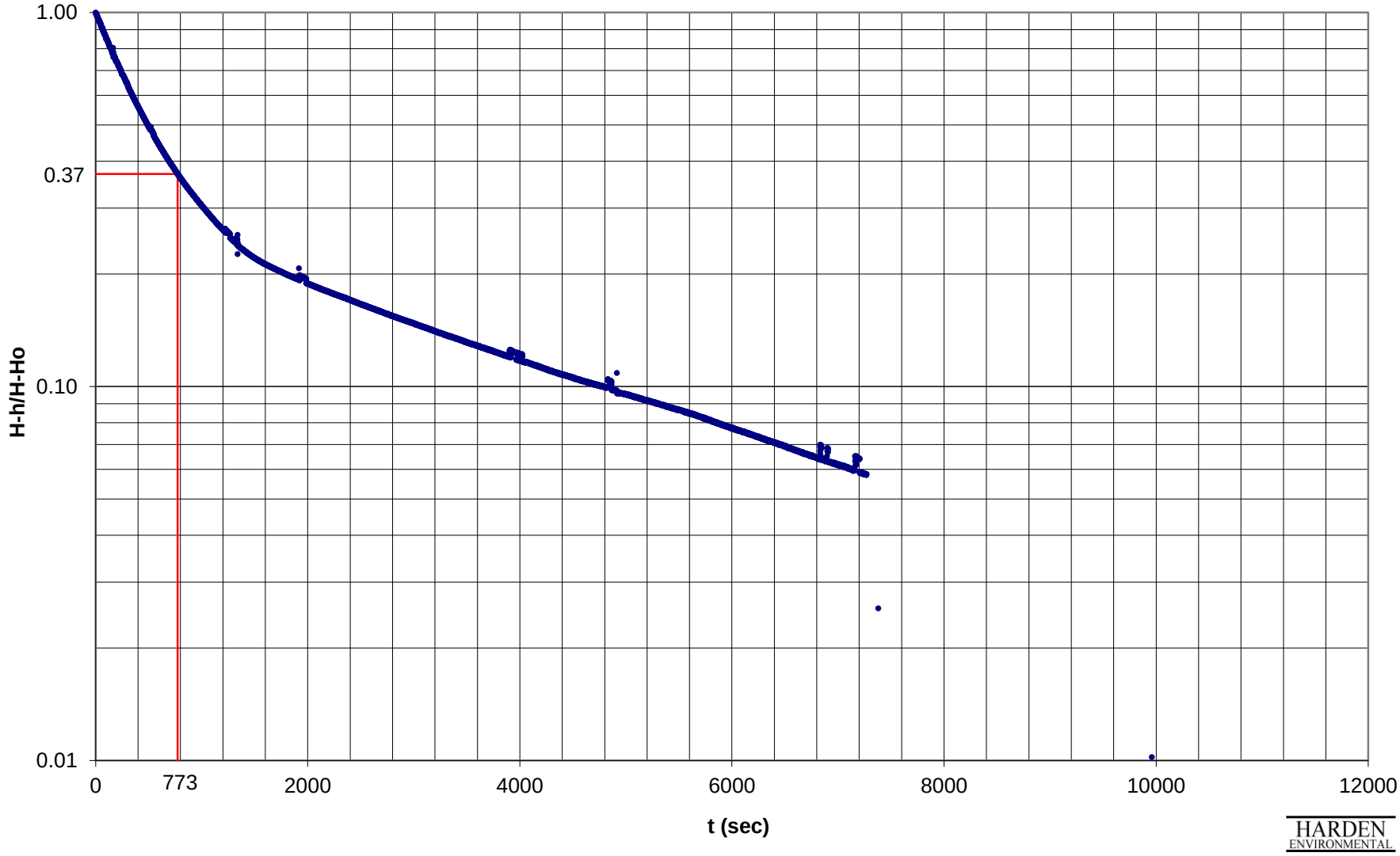

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Figure D14: M13S Falling Head Test (Hvorslev Method)
K = 8.0 x 10^{-5} m/sec

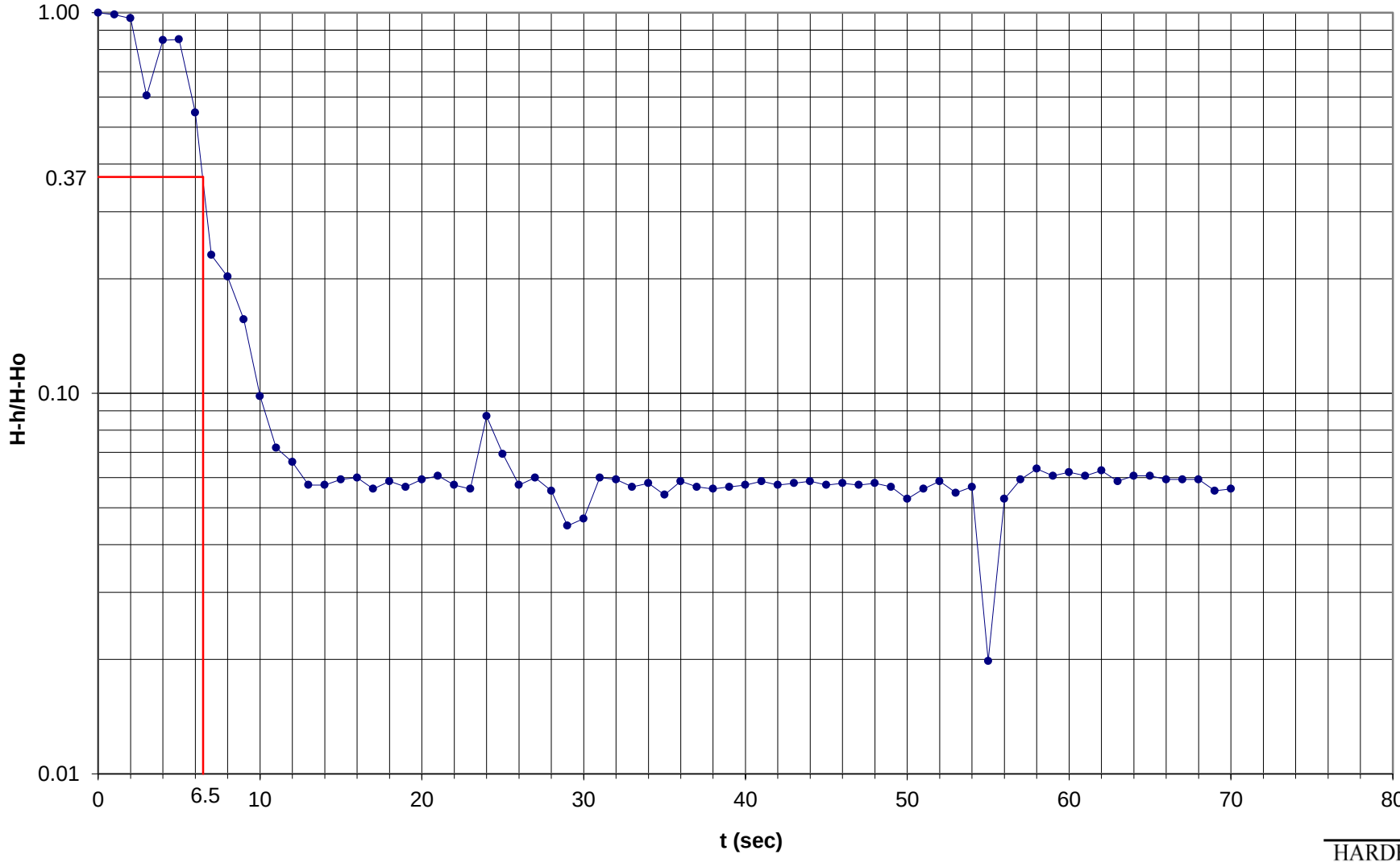

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Figure D15: M13D Falling Head Test (Hvorslev Method)
K = 4.0 x 10^{-7} m/sec

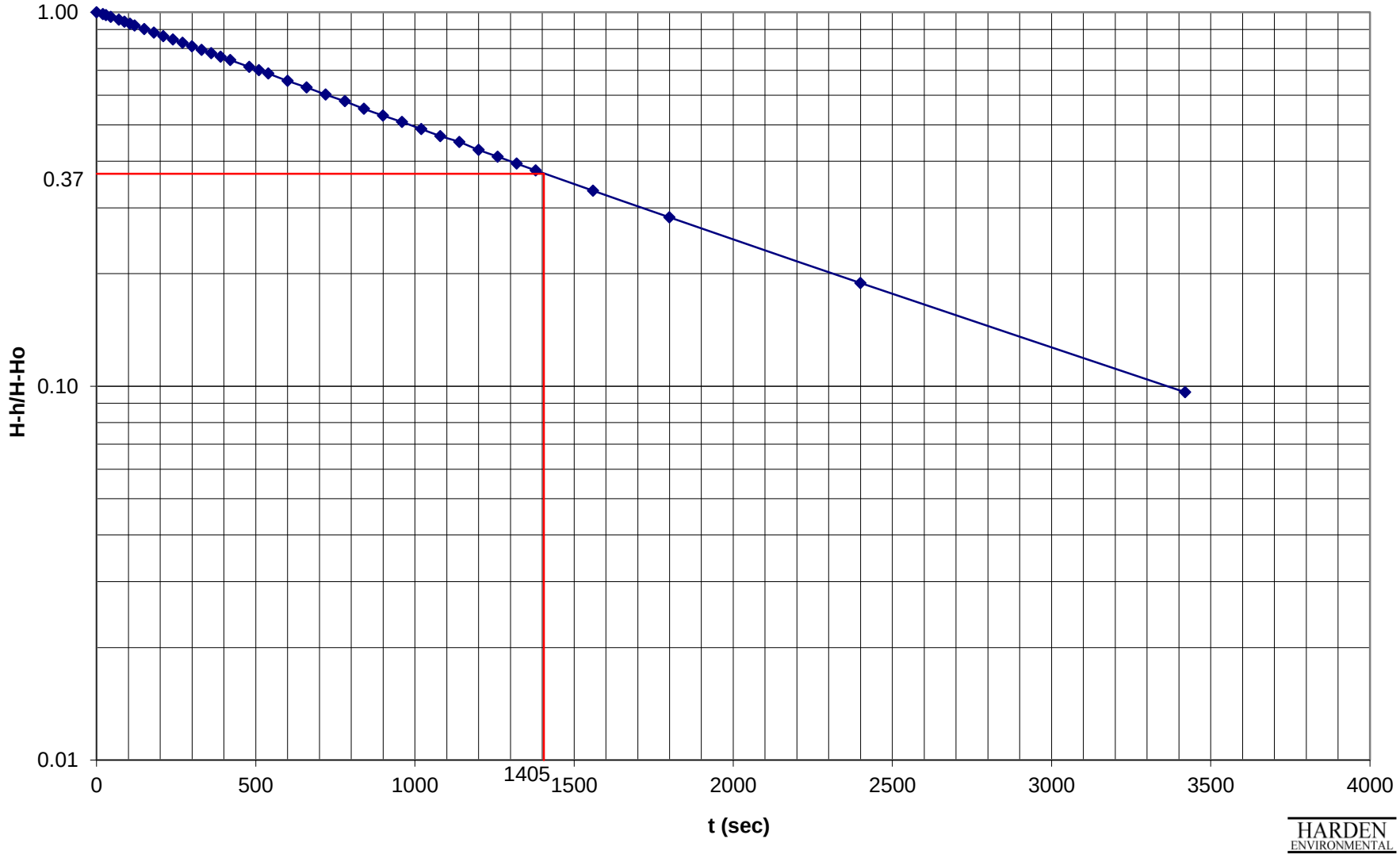

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Figure D16: M14S Falling Head Test (Hvorslev Method)
K = 2.7 x 10^{-7} m/sec

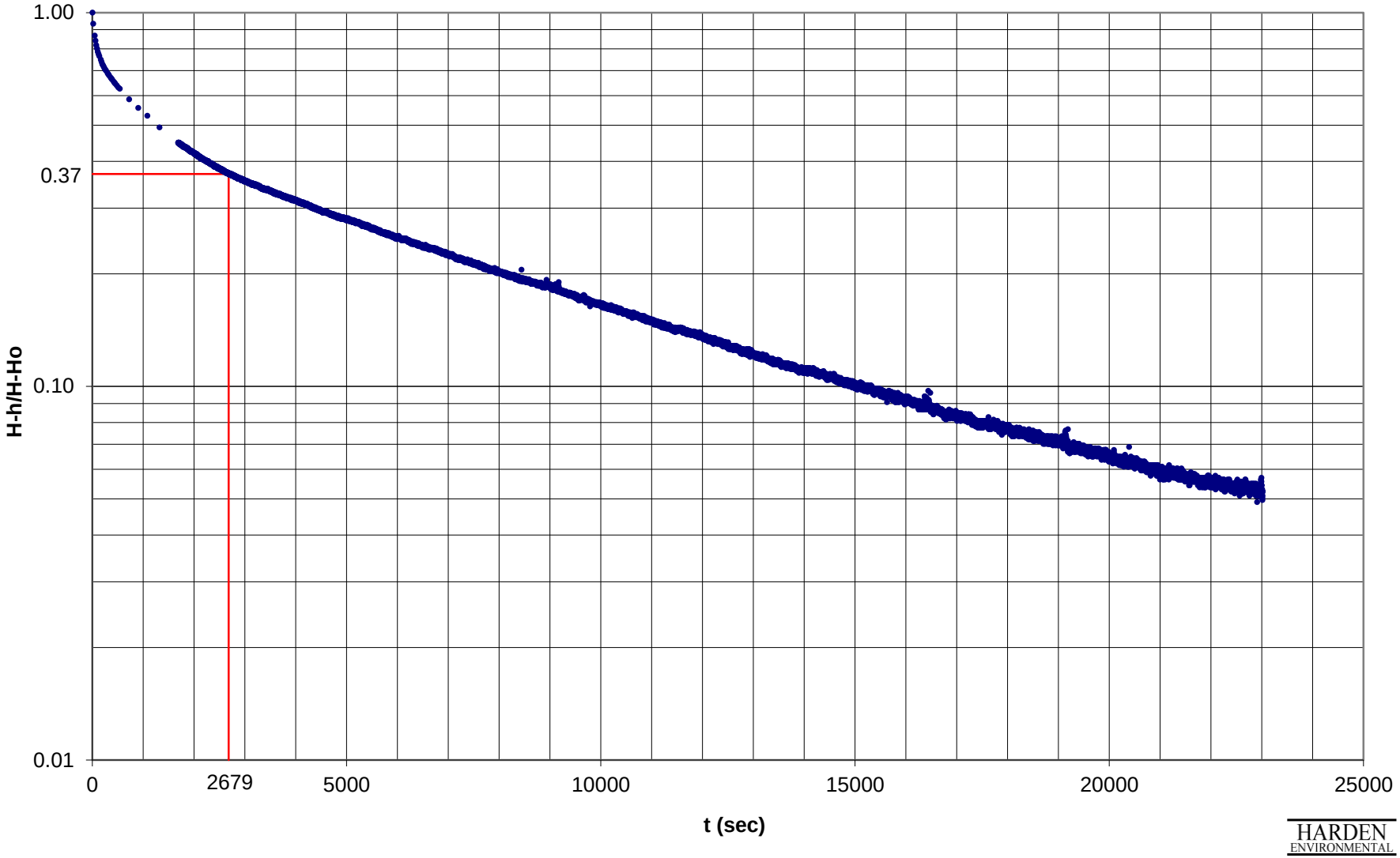

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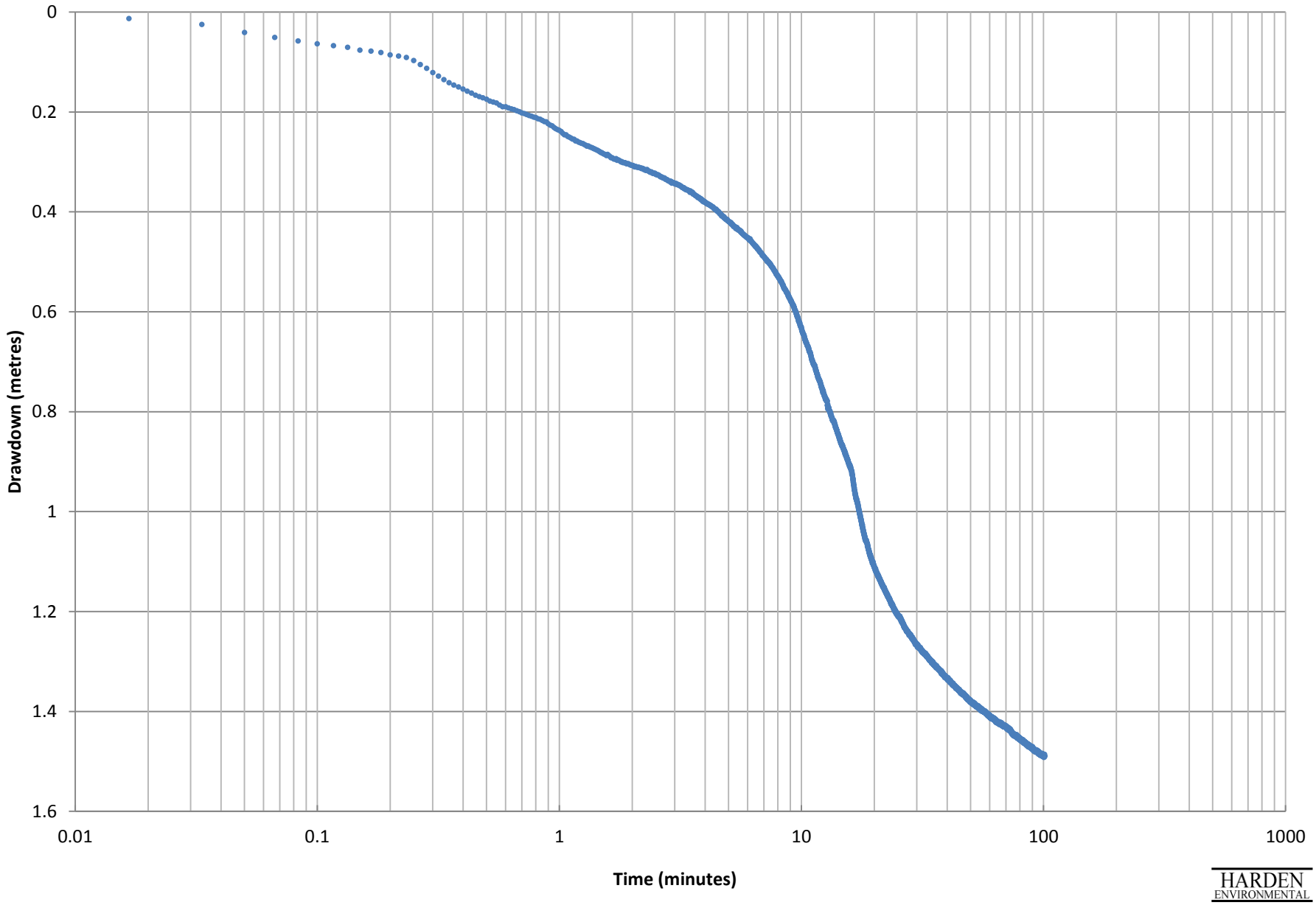
Figure D17: W1 Drawdown (Pumping Rate 26L/min)
K = 9.9 x 10^{-6} m/sec



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Appendix E
Water Quality Results

CANVIRO
Analytical Laboratories Ltd.
50 Bathurst Drive, Unit 12
Waterloo, Ontario N2V 2C5
FAX (519) 747-3806
Phone (519) 747-2575

REPORT OF ANALYSIS

Mr. Stan Denhoed
Harden Environmental Services
497 Exmoore Street
Waterloo, Ontario
N2K 3T8

REPORTED DATE	December 5, 1996
SUBMISSION NO.	96-11438
SAMPLES RECEIVED	November 22, 1996
PROJECT	9506

Dear Mr. Denhoed

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call.

EXPLANATION OF TERMS

RL = Reporting Limit
< = Less than RL unless otherwise stated. RL's are adjusted for dilutions when required.
mg/L = milligrams per litre

Respectfully yours,

Frank Mo
Inorganics
Laboratory Supervisor

CANVIRO
Analytical Laboratories Ltd.

CLIENT Harden Environmental Services
PROJECT 9506
SUBMISSION NO. 96-11438

INORGANIC ANALYSIS **MATRIX** Aqueous

		Stream	M3	SW3	M2	M4	
SAMPLE DESCRIPTION	SAMPLE #1	SAMPLE #2	SAMPLE #3	SAMPLE #4	SAMPLE #5	**RL**
SAMPLING DATE	11/21/96	11/21/96	11/21/96	11/21/96	11/21/96	
LAB SAMPLE NO.	11438-01	11438-02	11438-03	11438-04	11438-05	
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Fluoride	0.22	0.25	0.20	0.45	0.40	0.07
Chloride	21	17	19	12	12	0.2
Nitrite-N	<	<	<	<	<	0.1
Bromide	0.10	0.10	0.10	0.10	0.10	0.1
Nitrate-N	8.2	5.3	9.0	6.8	2.8	0.05
Phosphate-P	0.31	0.32	<	0.32	<	0.3
Sulphate	25	18	23	45	74	0.2

	M1	TPT	M5	SW1	BS Creek	
SAMPLE DESCRIPTION	SAMPLE #6	SAMPLE #7	SAMPLE #8	SAMPLE #9	SAMPLE #10	**RL**
SAMPLING DATE	11/21/96	11/21/96	11/21/96	11/21/96	11/21/96	
LAB SAMPLE NO.	11438-06	11438-07	11438-08	11438-09	11438-10	
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Fluoride	0.31	0.51	0.24	0.22	0.21	0.07
Chloride	11	45	90	26	31	0.2
Nitrite-N	<	<	<	<	<	0.1
Bromide	0.10	0.10	0.11	<	0.10	0.1
Nitrate-N	0.71	0.94	1.6	<	1.8	0.05
Phosphate-P	<	0.31	0.37	0.34	0.32	0.3
Sulphate	49	6.7	13	13	22	0.2

CANVIRO
Analytical Laboratories Ltd.

CLIENT Harden Environmental Services
PROJECT 9506
SUBMISSION NO. 96-11438

METAL ANALYSIS **MATRIX** Aqueous

SAMPLE DESCRIPTION	SAMPLE #1 (Stream)	SAMPLE #2 (M3)	SAMPLE #3 (SW3)	SAMPLE #4 (M2)	SAMPLE #5 (M4)	**RL**
SAMPLING DATE	11/21/96	11/21/96	11/21/96	11/21/96	11/21/96	
LAB SAMPLE NO.	11438-01	11438-02	11438-03	11438-04	11438-05	
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	0.08	0.06	0.12	0.24	0.22	0.05
Boron	0.14	0.09	0.23	0.12	0.30	0.05
Barium	0.03	0.07	0.03	0.51	0.25	0.01
Beryllium	<	<	<	<	<	0.001
Cadmium	<	<	<	<	<	0.002
Calcium	88	85	95	95	95	0.1
Chromium	<	<	<	<	<	0.02
Cobalt	<	<	<	<	<	0.05
Copper	<	<	<	<	<	0.02
Iron	<	<	<	0.68	0.14	0.05
Lead	<	<	<	<	<	0.05
Magnesium	25	23	26	28	29	0.1
Manganese	<	<	<	0.05	0.01	0.01
Vanadium	<	<	<	<	<	0.01
Zinc	0.05	0.06	0.03	0.23	0.14	0.01
Nickel	<	<	<	<	<	0.01
Silver	<	<	<	<	<	0.01
Strontium	0.12	0.12	0.13	0.16	0.54	0.01
Sodium	8.0	6.4	7.5	8.0	6.6	0.5
Molybdenum	<	<	<	<	<	0.02
Titanium	<	<	<	<	<	0.01
Potassium	2.7	2.2	2.5	1.3	1.6	1.0
Thallium	<	<	<	<	<	0.1
Zirconium	<	<	<	<	<	0.02

CANVIRO
Analytical Laboratories Ltd.

CLIENT Harden Environmental Services
PROJECT 9506
SUBMISSION NO. 96-11438

METAL ANALYSIS

MATRIX Aqueous

M1 TP1 M5 SW1 BSCreek

SAMPLE DESCRIPTION	SAMPLE #6	SAMPLE #7	SAMPLE #8	SAMPLE #9	SAMPLE #10	RL
SAMPLING DATE	11/21/96	11/21/96	11/21/96	11/21/96	11/21/96	
LAB SAMPLE NO.	11438-06	11438-07	11438-08	11438-09	11438-10	
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	0.20	0.17	0.14	0.20	0.13	0.05
Boron	0.28	0.27	0.31	0.27	0.27	0.05
Barium	0.13	0.20	0.15	0.02	0.04	0.01
Beryllium	<	<	<	<	<	0.001
Cadmium	<	<	<	<	<	0.002
Calcium	82	88	98	56	76	0.1
Chromium	<	<	<	<	<	0.02
Cobalt	<	<	<	<	<	0.05
Copper	<	<	<	<	<	0.02
Iron	0.22	0.43	2.1	0.06	0.06	0.05
Lead	<	<	<	<	<	0.05
Magnesium	31	26	25	19	25	0.1
Manganese	0.03	0.81	0.11	<	0.02	0.01
Vanadium	<	<	<	<	<	0.01
Zinc	0.07	0.36	2.9	0.01	0.01	0.01
Nickel	<	<	<	<	<	0.01
Silver	<	<	<	<	<	0.01
Strontium	0.13	0.15	0.14	0.08	0.12	0.01
Sodium	5.6	18	50	11	15	0.5
Molybdenum	<	<	<	<	<	0.02
Titanium	<	<	<	<	<	0.01
Potassium	1.8	1.8	1.2	2.0	1.3	1.0
Thallium	<	<	<	<	<	0.1
Zirconium	<	<	<	<	<	0.02

Water Quality Results - On-site House Well (MOE ID 6705627 / Harden ID W1)

Sample Date: May 18, 2012

	Units	ODWS	RENTAL RES	RDL
Calculated Parameters				
Anion Sum	me/L		10.4	N/A
Bicarb. Alkalinity (calc. as CaCO3)	mg/L		230	1.0
Calculated TDS	mg/L	**500**	613	1.0
Carb. Alkalinity (calc. as CaCO3)	mg/L		1.2	1.0
Cation Sum	me/L		10.3	N/A
Hardness (CaCO3)	mg/L	**80-100**	500	1.0
Ion Balance (% Difference)	%		0.610	N/A
Langelier Index (@ 20C)	N/A		0.774	
Langelier Index (@ 4C)	N/A		0.526	
Saturation pH (@ 20C)	N/A	**6.5-8.5**	6.97	
Saturation pH (@ 4C)	N/A		7.21	
Inorganics				
Total Ammonia-N	mg/L		ND	0.050
Conductivity	umho/cm		910	1.0
Dissolved Organic Carbon	mg/L	**5**	0.57	0.20
Orthophosphate (P)	mg/L		ND	0.010
pH	pH	**6.5-8.5**	7.74	
Dissolved Sulphate (SO4)	mg/L	**500**	270	1
Alkalinity (Total as CaCO3)	mg/L		230	1.0
Dissolved Chloride (Cl)	mg/L	**250**	7	1
Nitrite (N)	mg/L	**1**	ND	0.010
Nitrate (N)	mg/L	**10**	0.13	0.10
Nitrate + Nitrite	mg/L		0.13	0.10
Metals				
Dissolved Aluminum (Al)	mg/L	**0.1**	ND	0.0050
Dissolved Antimony (Sb)	mg/L		ND	0.00050
Dissolved Arsenic (As)	mg/L	**0.025**	ND	0.0010
Dissolved Barium (Ba)	mg/L	**1**	0.029	0.0020
Dissolved Beryllium (Be)	mg/L		ND	0.00050
Dissolved Bismuth (Bi)	mg/L		ND	0.0010
Dissolved Boron (B)	mg/L	**5**	0.017	0.010
Dissolved Cadmium (Cd)	mg/L	**0.005**	ND	0.00010
Dissolved Calcium (Ca)	mg/L		150	0.20
Dissolved Chromium (Cr)	mg/L	**0.05**	ND	0.0050
Dissolved Cobalt (Co)	mg/L		ND	0.00050
Dissolved Copper (Cu)	mg/L	**1**	ND	0.0010
Dissolved Iron (Fe)	mg/L	**0.3**	0.14	0.10
Dissolved Lead (Pb)	mg/L	**0.01**	ND	0.00050
Dissolved Magnesium (Mg)	mg/L		33	0.050
Dissolved Manganese (Mn)	mg/L	**0.05**	0.020	0.0020
Dissolved Molybdenum (Mo)	mg/L		0.0019	0.00050
Dissolved Nickel (Ni)	mg/L		ND	0.0010
Dissolved Phosphorus (P)	mg/L		ND	0.10
Dissolved Potassium (K)	mg/L		1.0	0.20
Dissolved Selenium (Se)	mg/L	**0.01**	ND	0.0020
Dissolved Silicon (Si)	mg/L		4.1	0.050
Dissolved Silver (Ag)	mg/L		ND	0.00010
Dissolved Sodium (Na)	mg/L	**20**	5.9	0.10
Dissolved Strontium (Sr)	mg/L		3.1	0.0010
Dissolved Thallium (Tl)	mg/L		ND	0.000050
Dissolved Titanium (Ti)	mg/L		ND	0.0050
Dissolved Uranium (U)	mg/L		0.00021	0.00010
Dissolved Vanadium (V)	mg/L		ND	0.00050
Dissolved Zinc (Zn)	mg/L	**5**	0.020	0.0050

ND = Not detected
RDL = Reportable Detection Limit

HARDEN ENVIRONMENTAL
RR#1
MOFFAT, ON
L0P 1J0
(519) 826-0099

Project No: 0508	**FIGURE 1**	**Sample Location – Guelph Limestone Quarry**
Date: February 2012	**Drawn By:** AW	

Table 1: Sump Water Quality Following Blast February 15, 2012
Dolime Quarry, Guelph, ON

Sampling Date			15/02/2012 16:00	
	Units	**Criteria**	**SUMP**	**RDL**
Metals				
Total Aluminum (Al)	mg/L	**-**	0.016	0.0050
Total Antimony (Sb)	mg/L	**0.02**	0.00090	0.00050
Total Arsenic (As)	mg/L	**0.1**	0.0016	0.0010
Total Barium (Ba)	mg/L	**-**	0.051	0.0020
Total Beryllium (Be)	mg/L	**0.011**	ND	0.00050
Total Bismuth (Bi)	mg/L	**-**	ND	0.0010
Total Boron (B)	mg/L	**0.2**	0.056	0.010
Total Cadmium (Cd)	mg/L	**0.0002**	ND	0.00010
Total Calcium (Ca)	mg/L	**-**	120	0.20
Total Chromium (Cr)	mg/L	**-**	ND	0.0050
Total Cobalt (Co)	mg/L	**0.0009**	**0.0013**	0.00050
Total Copper (Cu)	mg/L	**0.005**	0.0019	0.0010
Total Iron (Fe)	mg/L	**0.3**	ND	0.10
Total Lead (Pb)	mg/L	**0.005**	**0.0055**	0.00050
Total Lithium (Li)	mg/L	**-**	ND	0.0050
Total Magnesium (Mg)	mg/L	**-**	32	0.050
Total Manganese (Mn)	mg/L	**-**	0.026	0.0020
Total Molybdenum (Mo)	mg/L	**0.04**	0.0069	0.00050
Total Nickel (Ni)	mg/L	**0.025**	0.014	0.0010
Total Potassium (K)	mg/L	**-**	3.5	0.20
Total Silicon (Si)	mg/L	**-**	3.6	0.050
Total Selenium (Se)	mg/L	**0.1**	ND	0.0020
Total Silver (Ag)	mg/L	**0.0001**	ND	0.00010
Total Sodium (Na)	mg/L	**-**	80	0.10
Total Strontium (Sr)	mg/L	**-**	1.1	0.0010
Total Tellurium (Te)	mg/L	**-**	ND	0.0010
Total Thallium (Tl)	mg/L	**0.0003**	0.000056	0.000050
Total Tin (Sn)	mg/L	**-**	ND	0.0010
Total Titanium (Ti)	mg/L	**-**	ND	0.0050
Total Tungsten (W)	mg/L	**0.030**	ND	0.0010
Total Uranium (U)	mg/L	**0.005**	0.0020	0.00010
Total Vanadium (V)	mg/L	**0.006**	ND	0.00050
Total Zinc (Zn)	mg/L	**0.03**	**0.057**	0.0050
Total Zirconium (Zr)	mg/L	**0.004**	ND	0.0010
Inorganics				
Total Ammonia-N	mg/L	**0.5**	0.39	0.05
Total Kjeldahl Nitrogen (TKN)	mg/L		0.7	0.1
Nitrite (N)	mg/L		0.05	0.01
Nitrate (N)	mg/L	**10**	1.2	0.1
Nitrate + Nitrite	mg/L		1.2	0.1
Unionized Ammonia	mg/L	**0.02**	0.0050	
Miscellaneous Parameters				
Perchlorate (CLO4)	ug/L		ND	0.05
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/L	**-**	ND	0.071

ND = Not detected
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
Criteria: ONTARIO PROVINCIAL WATER QUALITY OBJECTIVES
Ref. to MOEE Water Management document dated Feb.1999

Table 1: Sump Water Quality Following Blast February 15, 2012
Dolime Quarry, Guelph, ON

	Units	Criteria	SUMP	RDL
Polyaromatic Hydrocarbons				
Biphenyl	ug/L	**0.2**	ND	0.050
Acenaphthene	ug/L	**-**	ND	0.050
Acenaphthylene	ug/L	**-**	ND	0.050
Anthracene	ug/L	**0.0008**	ND	0.050
Benzo(a)anthracene	ug/L	**0.0004**	ND	0.050
Benzo(a)pyrene	ug/L	**-**	ND	0.010
Benzo(b/j)fluoranthene	ug/L	**-**	ND	0.050
Benzo(g,h,i)perylene	ug/L	**0.00002**	ND	0.050
Benzo(k)fluoranthene	ug/L	**0.0002**	ND	0.050
Chrysene	ug/L	**0.0001**	ND	0.050
Dibenz(a,h)anthracene	ug/L	**0.002**	ND	0.050
Fluoranthene	ug/L	**0.0008**	ND	0.050
Fluorene	ug/L	**0.2**	ND	0.050
Indeno(1,2,3-cd)pyrene	ug/L	**-**	ND	0.050
1-Methylnaphthalene	ug/L	**2**	ND	0.050
2-Methylnaphthalene	ug/L	**2**	ND	0.050
Naphthalene	ug/L	**7**	ND	0.050
Phenanthrene	ug/L	**0.03**	ND	0.030
Pyrene	ug/L	**-**	ND	0.050
Surrogate Recovery (%)				
D10-Anthracene	%	-	89	
D14-Terphenyl (FS)	%	-	96	
D8-Acenaphthylene	%	-	86	
Volatile Organics				
Acetone (2-Propanone)	ug/L	**-**	ND	10
Benzene	ug/L	**100**	0.11	0.10
Bromodichloromethane	ug/L	**200**	ND	0.10
Bromoform	ug/L	**60**	ND	0.20
Bromomethane	ug/L	**0.9**	ND	0.50
Carbon Tetrachloride	ug/L	**-**	ND	0.10
Chlorobenzene	ug/L	**15**	ND	0.10
Chloroform	ug/L	**-**	ND	0.10
Dibromochloromethane	ug/L	**40**	ND	0.20
1,2-Dichlorobenzene	ug/L	**2.5**	ND	0.20
1,3-Dichlorobenzene	ug/L	**2.5**	ND	0.20
1,4-Dichlorobenzene	ug/L	**4**	ND	0.20
Dichlorodifluoromethane (FREON 12)	ug/L	**-**	ND	0.50
1,1-Dichloroethane	ug/L	**200**	ND	0.10
1,2-Dichloroethane	ug/L	**100**	ND	0.20
1,1-Dichloroethylene	ug/L	**40**	ND	0.10
cis-1,2-Dichloroethylene	ug/L	**200**	ND	0.10
trans-1,2-Dichloroethylene	ug/L	**200**	ND	0.10
1,2-Dichloropropane	ug/L	**0.7**	ND	0.10
cis-1,3-Dichloropropene	ug/L	**-**	ND	0.20
trans-1,3-Dichloropropene	ug/L	**7**	ND	0.20
Ethylbenzene	ug/L	**8**	ND	0.10
Ethylene Dibromide	ug/L	**5**	ND	0.20

ND = Not detected
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EDL = Estimated Detection Limit
Criteria: ONTARIO PROVINCIAL WATER QUALITY OBJECTIVES
Ref. to MOEE Water Management document dated Feb.1999

Table 1: Sump Water Quality Following Blast February 15, 2012
Dolime Quarry, Guelph, ON

	Units	Criteria	SUMP	RDL
Hexane	ug/L	**-**	ND	0.50
Methylene Chloride(Dichloromethane)	ug/L	**100**	ND	0.50
Methyl Isobutyl Ketone	ug/L	**-**	ND	5.0
Methyl Ethyl Ketone (2-Butanone)	ug/L	**400**	ND	5.0
Methyl t-butyl ether (MTBE)	ug/L	**200**	ND	0.20
Styrene	ug/L	**4**	ND	0.20
1,1,1,2-Tetrachloroethane	ug/L	**20**	ND	0.10
1,1,2,2-Tetrachloroethane	ug/L	**70**	ND	0.20
Tetrachloroethylene	ug/L	**50**	ND	0.10
Toluene	ug/L	**0.8**	ND	0.20
1,1,1-Trichloroethane	ug/L	**10**	ND	0.10
1,1,2-Trichloroethane	ug/L	**800**	ND	0.20
Trichloroethylene	ug/L	**20**	ND	0.10
Vinyl Chloride	ug/L	**600**	ND	0.20
p+m-Xylene	ug/L	**-**	ND	0.10
o-Xylene	ug/L	**40**	ND	0.10
Xylene (Total)	ug/L	**-**	ND	0.10
Trichlorofluoromethane (FREON 11)	ug/L	**-**	ND	0.20
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	-	94	
D4-1,2-Dichloroethane	%	-	106	
D8-Toluene	%	-	103	
BTEX & F1 Hydrocarbons				
F1 (C6-C10)	ug/L		ND	25
F1 (C6-C10) - BTEX	ug/L		ND	25
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/L		ND	100
F3 (C16-C34 Hydrocarbons)	ug/L		ND	100
F4 (C34-C50 Hydrocarbons)	ug/L		ND	100
Reached Baseline at C50	ug/L		Yes	
Surrogate Recovery (%)				
1,4-Difluorobenzene	%		99	
4-Bromofluorobenzene	%		100	
D10-Ethylbenzene	%		105	
D4-1,2-Dichloroethane	%		103	
o-Terphenyl	%		107	

ND = Not detected
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
Criteria: ONTARIO PROVINCIAL WATER QUALITY OBJECTIVES
Ref. to MOEE Water Management document dated Feb.1999

Appendix F

MOE Water Well Records

Table F1: MOE Water Well Records within 1km of Subject Property

Well ID	Well Type	Date Completed	Ground Elevation (mAMSL)	Well Depth (mbgs)	Static Water Level (mbgs)	Static Water Level Elevation (mbgs)	UTM Location Reliability	Material Colour	Material	Material 2	Material 3	Bottom Depth of Material (mbgs)
2802002	Bedrock	21/11/1959	352.69	17.07	6.71	345.98	100 m - 300 m		TOPSOIL			0.61
									GRAVEL			6.10
								GREY	LIMESTONE			17.07
2802047	Bedrock	01/06/1953	354.91	18.59	9.14	345.76	unknown UTM		GRAVEL	BOULDERS		12.50
									LIMESTONE			18.59
2802048	Bedrock	14/07/1959	355.41	20.12	8.53	346.87	100 m - 300 m		TOPSOIL			0.61
									BOULDERS			1.22
									GRAVEL			3.05
									BOULDERS			3.66
									GRAVEL	STONES		6.10
								GREY	LIMESTONE			20.12
2802049	Bedrock	06/09/1966	354.58	23.77	10.67	343.91	100 m - 300 m		GRAVEL	CLAY		6.10
								GREY	LIMESTONE			23.77
2802796	Bedrock	09/10/1968	356.34	23.16	6.10	350.24	30 m - 100 m		MEDIUM SAND			2.44
									GRAVEL	CLAY	STONES	6.40
								GREY	LIMESTONE			23.16
2803030	Bedrock	31/03/1969	350.26	27.43	10.67	339.60	30 m - 100 m		GRAVEL	CLAY		1.83
								GREY	LIMESTONE			27.43
2803167	Bedrock	29/07/1969	354.75	25.91	12.19	342.56	30 m - 100 m	BROWN	GRAVEL	STONES		6.71
								GREY	LIMESTONE			25.91
2803220	Bedrock	19/09/1969	359.72	21.03	13.72	346.00	30 m - 100 m		STONES	GRAVEL		15.85
								BLUE	LIMESTONE			21.03
2803240	Bedrock	01/10/1969	340.94	25.91	4.57	336.37	30 m - 100 m		GRAVEL			5.79
								GREY	LIMESTONE			25.91
2803342	Bedrock	14/04/1970	349.97	37.19	5.49	344.48	30 m - 100 m		GRAVEL			7.62
								GREY	LIMESTONE			37.19
2803457	Bedrock	21/08/1970	354.27	31.70	9.14	345.12	30 m - 100 m	BROWN	BOULDERS	CLAY		8.53
								GREY	LIMESTONE			31.70
2804469	Overburden	28/05/1974	348.15	6.10	2.13	346.02	30 m - 100 m	BROWN	SAND	GRAVEL	BOULDERS	6.10
2804708	Bedrock	20/12/1974	346.30	18.29	5.49	340.81	30 m - 100 m		PREVIOUSLY DUG			1.83
									SAND	STONES		4.27
									CLAY			5.18
								GREY	ROCK			18.29
2804810	Bedrock	20/11/1975	331.17	25.91	7.92	323.24	100 m - 300 m	BROWN	TOPSOIL			1.22
								BROWN	ROCK			16.76
								GREY	ROCK			25.91
2805415	Bedrock	22/10/1979	340.38	18.59	1.83	338.55	100 m - 300 m	BROWN	TOPSOIL	STONES	SOFT	0.91
								BROWN	LIMESTONE	PACKED		3.66
								GREY	LIMESTONE	HARD		18.59
2805483	Bedrock	17/12/1979	355.34	14.63	8.23	347.11	100 m - 300 m	BROWN	SAND	GRAVEL	BOULDERS	12.50
								GREY	LIMESTONE			14.63
2805763	Bedrock	13/05/1981	344.78	21.34	3.66	341.13	100 m - 300 m	BROWN	SAND	SOFT		0.61
								GREY	LIMESTONE	HARD		21.34
2805842	Bedrock	26/06/1982	351.26	30.48	2.74	348.52	100 m - 300 m	BROWN	SAND	GRAVEL	BOULDERS	11.89
								GREY	LIMESTONE	HARD		30.48
2805843	Bedrock	25/06/1982	352.79	24.38	2.74	350.05	100 m - 300 m	BROWN	SAND	GRAVEL	STONES	6.71
								GREY	LIMESTONE	HARD		24.38
2806560	Bedrock	05/11/1986	350.61	21.95	3.05	347.56	100 m - 300 m		FILL	CLAY		1.52
								GREY	LIMESTONE			21.95

mbgs - metres below ground surface | mAMSL - metres above mean sea level

Table F1: MOE Water Well Records within 1km of Subject Property

Well ID	Well Type	Date Completed	Ground Elevation (mAMSL)	Well Depth (mbgs)	Static Water Level (mbgs)	Static Water Level Elevation (mbgs)	UTM Location Reliability	Material Colour	Material	Material 2	Material 3	Bottom Depth of Material (mbgs)
2807283	Bedrock	11/04/1989	348.48	14.94	3.66	344.82	10 - 30 m		TOPSOIL			0.30
								RED	SAND			1.22
									CLAY	GRAVEL	STONES	2.74
									LIMESTONE	SHALE		3.35
								GREY	LIMESTONE	HARD		14.94
2809044	Overburden	28/05/1999	355.63	4.57	3.05	352.58	unknown UTM: Lot Centroid	BROWN	TOPSOIL			0.30
								BROWN	CLAY	SANDY	STONES	2.13
								BROWN	SAND	CLAY	GRAVEL	3.35
								BROWN	SAND	STONES		4.57
2810143	Bedrock	02/11/2004	354.75	44.20	17.00	337.75	unknown UTM: On Water Well Record	BLACK	TOPSOIL			0.61
								BROWN	CLAY	STONES		1.83
								GREY	LIMESTONE			39.02
								BLUE	SHALE			43.59
								RED	SHALE			44.20
6700487	Bedrock	29/07/1963	363.39	46.63	9.14	354.24	100 m - 300 m		BOULDERS	GRAVEL		6.40
								WHITE	LIMESTONE			39.62
								BLUE	LIMESTONE			46.63
6700504	Bedrock	02/05/1949	360.57	12.19	4.57	356.00	unknown UTM		GRAVEL	CLAY		3.66
									LIMESTONE			12.19
6703540	Bedrock	04/08/1969	368.65	24.38	4.57	364.08	30 m - 100 m	BROWN	CLAY	STONES		3.05
								GREY	LIMESTONE			24.38
6703695	Bedrock	13/05/1970	369.76	48.16	4.27	365.49	30 m - 100 m		CLAY	STONES		5.18
								GREY	LIMESTONE			48.16
6703720	Bedrock	09/04/1970	362.81	30.48	5.49	357.33	30 m - 100 m		TOPSOIL			1.22
									LIMESTONE			30.48
6703839	Bedrock	13/05/1970	369.98	48.16	4.27	365.71	30 m - 100 m		CLAY	STONES		5.18
								GREY	LIMESTONE			48.16
6704252	Bedrock	14/06/1972	365.82	16.76	3.66	362.16	30 m - 100 m	BROWN	CLAY	STONES		7.01
								GREY	ROCK			16.76
6704285	Bedrock	19/07/1972	359.81	14.63	5.49	354.33	30 m - 100 m		GRAVEL	STONES		3.05
								GREY	LIMESTONE			14.63
6704349	Bedrock	23/08/1972	366.79	26.21	3.66	363.13	30 m - 100 m	BROWN	CLAY	GRAVEL		4.57
								GREY	LIMESTONE			26.21
6704980	Bedrock	02/01/1974	365.18	22.25	2.13	363.04	30 m - 100 m		PREVIOUSLY DUG			1.52
								BROWN	CLAY	STONES	GRAVEL	4.57
								GREY	ROCK			10.06
								BROWN	ROCK			16.15
								WHITE	ROCK			22.25
6705003	Bedrock	27/03/1974	355.46	30.48	13.72	341.74	30 m - 100 m		GRAVEL			6.71
									CLAY	GRAVEL		11.58
								WHITE	ROCK			18.29
								BROWN	LIMESTONE			30.48
6705038	Bedrock	10/05/1974	363.63	24.38	1.22	362.41	30 m - 100 m		TOPSOIL			0.30
								BROWN	CLAY	STONES		4.57
								GREY	ROCK			24.38
6705424	Bedrock	11/02/1975	360.35	30.48	13.11	347.24	100 m - 300 m	BROWN	CLAY	SAND	STONES	7.62
								BROWN	CLAY	SAND	GRAVEL	10.67
								BROWN	ROCK	LIGHT-COLOURED		12.50
								GREY	ROCK			30.48
6705627	Bedrock	24/07/1974	355.53	28.96	8.84	346.70	100 m - 300 m		CLAY	STONES		13.72
								GREY	LIMESTONE			28.96

mbgs - metres below ground surface | mAMSL - metres above mean sea level

Table F1: MOE Water Well Records within 1km of Subject Property

Well ID	Well Type	Date Completed	Ground Elevation (mAMSL)	Well Depth (mbgs)	Static Water Level (mbgs)	Static Water Level Elevation (mbgs)	UTM Location Reliability	Material Colour	Material	Material 2	Material 3	Bottom Depth of Material (mbgs)
6705878	Bedrock	07/08/1975	367.77	24.38	2.44	365.33	100 m - 300 m	BROWN	SAND			3.66
								GREY	LIMESTONE			24.38
6706762	Bedrock	30/06/1978	370.68	42.67	21.34	349.34	100 m - 300 m		STONES	CLAY		15.85
									LIMESTONE	STONES		32.00
								BLUE	STONES			42.67
6707178	Bedrock	21/09/1979	354.99	38.10	10.67	344.32	100 m - 300 m		CLAY	STONES		6.10
									STONES			8.53
									LIMESTONE			38.10
6707545	Bedrock	13/08/1981	359.94	18.90	4.57	355.37	100 m - 300 m		GRAVEL	BOULDERS		6.10
								GREY	LIMESTONE			18.90
6708039	Overburden	17/08/1983	359.79	21.34	5.49	354.31	100 m - 300 m		TOPSOIL			0.30
								BROWN	CLAY	GRAVEL	STONES	5.49
								GREY	STONES			21.34
6708195	Bedrock	10/06/1985	356.29	27.74	5.79	350.50	100 m - 300 m	BROWN	SAND	STONES	SOFT	1.83
								GREY	LIMESTONE	STONES	HARD	11.89
								BLACK	LIMESTONE	STONES	VERY	16.46
								GREY	LIMESTONE	STONES	HARD	27.74
6710793	Bedrock	15/10/1991	361.07	44.50	3.66	357.41	100 m - 300 m	BROWN	CLAY	STONES		4.57
								GREY	LIMESTONE			44.50
6711476	Bedrock	04/04/1994	367.85	31.39	2.44	365.41	100 m - 300 m		TOPSOIL			0.30
								BROWN	CLAY	GRAVEL		3.96
								GREY	LIMESTONE			7.92
								GREY	LIMESTONE	FRACTURED		8.53
								GREY	LIMESTONE			31.39
6712323	Bedrock	14/08/1997	354.86	30.48	9.14	345.72	10 - 30 m	BROWN	CLAY	GRAVEL		9.75
								BROWN	ROCK			16.76
								GREY	ROCK			30.48
6712328	Bedrock	02/09/1997	361.71	43.59	7.62	354.09	unknown UTM: Lot Centroid		TOPSOIL			0.61
								GREY	CLAY	STONES		9.45
								BROWN	LIMESTONE	LIGHT-COLOURED		12.19
								BROWN	LIMESTONE			30.48
								BROWN	LIMESTONE	DARK-COLOURED		36.58
								BROWN	LIMESTONE			43.59
6712708	Bedrock	23/10/1998	360.04	18.90	6.10	353.94	unknown UTM: Lot Centroid		PREV. DRILLED			7.32
								GREY	LIMESTONE			18.90
6712824	Bedrock	23/11/1998	360.47	39.62	7.92	352.54	10 - 30 m		GRAVEL	BOULDERS		6.10
									CLAY	STONES	SAND	8.84
								GREY	LIMESTONE			36.58
								GREY	LIMESTONE			39.62
6712825	Bedrock	05/05/1998	365.20	39.32	7.62	357.58	10 - 30 m		TOPSOIL			0.61
									SAND	CLAY		2.74
									CLAY	STONES	GRAVEL	5.79
								GREY	LIMESTONE			21.34
								GREY	LIMESTONE			39.32
6712826	Bedrock	04/05/1998	366.09	28.96	3.35	362.74	10 - 30 m		TOPSOIL			0.30
								BROWN	CLAY	STONES		0.61
								BROWN	GRAVEL	CLAY		6.71
								GREY	LIMESTONE			17.98
								BROWN	LIMESTONE			19.81
								GREY	LIMESTONE			28.96

mbgs - metres below ground surface | mAMSL - metres above mean sea level

Table F1: MOE Water Well Records within 1km of Subject Property

Well ID	Well Type	Date Completed	Ground Elevation (mAMSL)	Well Depth (mbgs)	Static Water Level (mbgs)	Static Water Level Elevation (mbgs)	UTM Location Reliability	Material Colour	Material	Material 2	Material 3	Bottom Depth of Material (mbgs)
6712969	Bedrock	31/03/1999	358.77	31.39	6.40	352.37	unknown UTM: Lot Centroid		TOPSOIL			0.30
								BROWN	CLAY	SAND	STONES	9.14
								BROWN	LIMESTONE			12.19
								BROWN	LIMESTONE			16.76
								GREY	LIMESTONE			22.86
								BROWN	LIMESTONE			28.96
								GREY	LIMESTONE			31.39
6713908	Bedrock	22/10/2001	360.18	42.67	4.88	355.31	10 - 30 m	BROWN	CLAY	STONES		4.27
								GREY	ROCK			42.67
6714491	Bedrock	06/06/2003	361.59	54.86	7.01	354.58	unknown UTM: Lot Centroid	BROWN	CLAY	STONES		5.49
								BROWN	GRAVEL	SAND		7.62
								BROWN	CLAY	SAND	GRAVEL	9.45
								GREY	ROCK			51.82
								BLUE	SHALE			54.25
								RED	SHALE			54.86
6715120	Bedrock	15/08/2004	354.18	8.84	5.10	349.08	10 - 30 m	BROWN	SAND	GRAVEL	STONES	7.92
								GREY	LIMESTONE			8.84
6715237	Bedrock	21/10/2004	369.90	11.15	4.57	365.33	unknown UTM: On Water Well Record	BROWN	CLAY	STONES		1.67
								GREY	LIMESTONE			11.15
7043462	Bedrock	17/04/2007	365.35	25.30	12.00	353.35	10 - 30 m	BROWN	CLAY	STONES		7.01
								GREY	LIMESTONE			12.19
									LIMESTONE			22.62
								GREY	LIMESTONE			25.30
7132032	Bedrock	18/09/2009	360.25	31.09	14.63	345.62	10 - 30 m	BROWN	CLAY	STONES	SILTY	7.62
								BROWN	LIMESTONE			22.86
								GREY	LIMESTONE			31.09
7151165	Bedrock	27/08/2010	346.12	18.29	7.32	338.81	10 - 30 m	BROWN	CLAY	STONES		1.52
								BROWN	LIMESTONE			6.10
								GREY	ROCK			18.29

HARDEN ENVIRONMENTAL

mbgs - metres below ground surface | mAMSL - metres above mean sea level

Appendix G
Private Well Survey

Table G1: Private Well Survey Results

Well Identifier	Inferred MOE Well Record Number	Address	Con	Lot	Type of Well	Water Usage	Accessible	Well Depth	Static Water Level	Water Quality Issues	Water Quantity Issues	Comments	Date Surveyed
W1	6705627	8532 Hwy 7	6	1	Drilled Bedrock	Domestic	Yes	30.48 mbgs	12.41 mbgs	no	no	In well pit 1.73 mbgs	Mar 2012
W2	none	4949 6th Line	6	2	Dug Overburden	Cleaning	Yes	3.97 mbtoc	2.41 mbtoc	no	yes	Has occasionally gone dry in very dry summers, currently not in use for drinking, occasional use for cleaning	Apr 1998 and Nov 2011
W3	none	4949 6th Line	6	2	Drilled Bedrock	Agricultural	Yes	approx 61 mbgs	6.94 mbtoc	no	no	Pumping rate from well estimated by owner to be 89 gallons per minute used seasonally for cooling system.	Nov 2011
W4	6712824	4949 6th Line	6	2	Drilled Bedrock	Domestic	Yes	39.62 mbgs	7.71 mbtoc	no	no		Nov 2011
W5		4943 6th Line	6	2	Drilled Bedrock	Domestic	Yes, access not granted	n/a	n/a	no	no	New septic bed put in approx 2006, in well pit.	Apr 1998 and Nov 2011
W6	none	4958 6th Line	5	1	Overburden	Abandoned	Yes	3.58 mbtoc	3.35 mbtoc	unknown	unknown	There is a spring north of house which eventually infiltrates to the south	Apr 1998
W7	none	4958 6th Line	5	2	Bedrock	Domestic	Yes, access not granted	6m into rock	reportedly approx 1 mbtoc	no	no	There is a spring north of house which eventually infiltrates to the south	Apr 1998
W8	6707545	4953 6th Line	6	2	Drilled Bedrock	Domestic	Yes	33.20 mbtoc	4.18 mbtoc	Yes	no	Water issues with hardness, in well pit.	Apr 1998 and Nov 2011
W9	6708039	4963 6th Line	6	2	Drilled Bedrock	Domestic	Yes	n/a	4.94 mbtoc	no	no	Artesian well source of spring on property northeast of house	Apr 1998 and Nov 2011
W10	none	8540 Hwy 7	6	1	Drilled Bedrock	Domestic	No	reportedly approx 28 mbtoc	n/a	yes	no	Water quality issue is with iron	Apr 1998 and Nov 2011
W11	none	8554 Hwy 7	6	1	Bedrock	Domestic	No	reportedly approx 33mbtoc	n/a	no	no	Well is buried, no access	Apr 1998
W12	none	8572 Hwy 7	6	1	Drilled Bedrock	Domestic	Yes	n/a	9.79 mbtoc	yes	no	Hardness, some iron staining	Apr 1998 and Nov 2011
W13	7132032	8572 Hwy 7	6	1	Drilled Bedrock	Fire Safety Reservoir	Yes	31.09 mbgs	14.47 mbtoc	no	no		Nov 2011
W14	6705424	8572 Hwy 7	6	1	Drilled Bedrock	Equine	Yes	n/a	5.19 mbtoc	no	no	Drinking and washing water for horses	Nov 2011
W15	6700487	MTO Hwy 7 & 7th Line	6	1	Bedrock	Industrial	Could not locate	46.6 mbtoc	n/a	unknown	unknown	Location of well unknown	Oct 1995
W16	2805483	5134 Hwy 7	6	32	Drilled Bedrock	Domestic	Yes	13.72 mbtoc	7.71 mbtoc	no	no		Apr 1998 and Nov 2011
W17	2803457	14321 5th Line	6	32	Drilled Bedrock	Industrial	No	reportedly approx 34 mbgs	n/a	no	no	In well pit, water tested OK in 2001, some sediment	Apr 1998 and Nov 2011

mbtoc - metres below top of casing | mbgs - metres below ground surface | n/a - not available

Table G1: Private Well Survey Results

Well Identifier	Inferred MOE Well Record Number	Address	Con	Lot	Type of Well	Water Usage	Accessible	Well Depth	Static Water Level	Water Quality Issues	Water Quantity Issues	Comments	Date Surveyed
W18	2802049	14297 5th Line	6	32	Drilled Bedrock	Domestic	No	n/a	n/a	no	no	Inaccessible, buried	Apr 1998 and Nov 2011
W19	2802048	5036 Hwy 7	6	32	Drilled Bedrock	Domestic	Yes	20.12 mbgs	10.35 mbgs	yes	no	Issues with bacteria in 1996, salt flushed fixed problem temporarily, now use UV and reverse osmosis treatment, in well pit	Apr 1998 and Apr 2012
W20	none	4300 Hwy 7	5	32	Drilled Bedrock	Domestic	Yes	20.9 mbtoc	9.20 mbtoc	unknown	unknown	In well pit	Apr 1998
W21	2803220	4264 Hwy 7	5	32	Drilled (Unknown material)	Domestic	No	21 mbtoc	n/a	no	no	In well pit	Apr 1998 and Nov 2011
W22	2802047	5198 Hwy 7	6	32	Drilled (Unknown material)	Domestic	No	approx 20 mbtoc	n/a	no	no	In well pit	Oct 1995 and Nov 2011
W23	2802002	4248 Hwy 7	5	32	Unknown	Domestic	No	n/a	n/a	no	no		Apr 1998 and Nov 2011
W24	6715120	8470 Hwy 7	5	1	Drilled Bedrock	Unknown	Unknown	8.84 mbgs	5.1 mbgs	Unknown	Unknown	Property gated/locked, survey information based on MOE well record.	Nov 2011
W25		Northeast corner Hwy 7 & 7th Line	7	1	Drilled	Unknown	Yes	23.40 mbtoc	4.78 mbtoc	Unknown	Unknown	Well location south side of office	Oct 1995
W26		Northeast corner Hwy 7 & 7th Line	7	1	Drilled	Unknown	Yes	22.00 mbtoc	3.15 mbtoc	Unknown	Unknown	Well location in front of office	Oct 1995
W27		Northeast corner Hwy 7 & 7th Line	7	1	Drilled	Unknown	No	Unknown	Unknown	Unknown	Unknown	Well location in front of house	Oct 1995
W28		4925 7th Line	7	1	Drilled	Domestic	No	Approx 50 mbtoc	n/a	no	no	Well location south side of house	Oct 1995
W29		4935 7th Line	7	1	Drilled	Domestic	No	Approx 25 mbtoc	n/a	no	no	Well location behind house	Oct 1995
W30		4961 7th Line	7	2	Drilled	Domestic	Yes	12.5 mbtoc	5.00 mbtoc	no	no	Well location southeast corner of house	Oct 1995
W31		4970 7th Line	6	3	Drilled	Domestic/Livestock	No	Unknown	Unknown	no	no	Well location in front of house	Oct 1995 and Mar 2012
W32		4964 7th Line	6	2	Drilled	Domestic	No	Unknown	approx 5 mbtoc	no	no	Well location in front of house	Oct 1995
W33		4952 7th Line	6	2	Drilled	Domestic	Yes	Unknown	Unknown	no	no	Well location south side of house	Oct 1995
W34		4944 7th Line	6	2	Drilled	Domestic	No	Unknown	Unknown	no	no		Oct 1995
W35		Hwy 7 South Side first house west of 7th Line	6	32	Drilled	Unknown	Yes	22.3 mbtoc	10.9 mbtoc	Unknown	no	Well location behind barn	Oct 1995
W36		Hwy 7 North side East of Well ID 25	7	1	Drilled	Unknown	No	Unknown	Unknown	no	no	Well location inside auto body shop	Oct 1995
W37		Hwy 7 North side East of Well ID 36	7	1	Drilled	Domestic	No	Approx 20 mbtoc	Unknown	no	no	Well location east corner of house	Oct 1995
W38		RR1 Acton	6	32	Drilled	Domestic	No	Unknown	Unknown	unknown	unknown	Well location in front of house	Oct 1995
W39		RR1 Acton	6	32	Drilled	Domestic	No	Approx 30 mbtoc	Unknown	no	no	Well location in behind house	Oct 1995
W40		RR1 Acton	7	32	Drilled	Unknown	No	Approx 35 mbtoc	near top	Yes	Yes	Hardness, occasionally goes dry in long droughts	Oct 1995

HARDEN ENVIRONMENTAL

mbtoc - metres below top of casing | mbgs - metres below ground surface | n/a - not available

Appendix H
Groundwater Model

Groundwater Model Report
Hidden Quarry
Rockwood, Ontario

James Dick Construction Ltd.

Prepared By: Harden Environmental Services Ltd.
September 2012

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1.0 Introduction

This report describes the groundwater model prepared for the James Dick Construction Ltd. proposed pit/quarry. The Site is located in Lot 1, Concession 6, Township of Eramosa (Figure H1). The model inputs consider groundwater modeling completed in the area for both the Guelph-Eramosa Township (Gartner-Lee Limited, April 2004) and for the City of Guelph (Aqua Resources Incorporated, March 2010) regional groundwater characterization and well head protection studies. Information gathered from MOE water well records (WWRs) and on-site wells were used in the creation and calibration of the model.

The purpose of the model is to provide an estimate of the drawdown that will occur in the bedrock aquifer as a result of the quarry development.

2.0 Numerical Model Development

In constructing this detailed steady-state groundwater flow model, data (such as water levels, stream flows, hydro stratigraphic, topographic and lithographic properties), described in the main section of the report were incorporated into the numerical model.

The model was calibrated to water levels measured from over three hundred wells in the surrounding area.

The calibrated model is used to predict changes to the groundwater flow systems due to below water table bedrock extraction at the Rockwood Pit/Quarry Site. As shown in Figure H2 the extraction footprint will occur in two main areas at the Site. These areas are referred to as the West and East Pond extraction areas.

3.0 Numerical Modeling Software

The United States Geological Survey (USGS) model MODFLOW was used for the groundwater flow simulations. Viewlog™ was used as the graphical interface for the model runs. Microsoft Access™ was used to create and manipulate the database input files obtained from the Water Well Records Database.

4.0 Model Extent and Discretization

The location and extent of the model domain for this modeling project is presented in Figure H3. The model domain is approximately 12 x 14 kilometers (W-E x N-S). As shown in Figure H3, the model domain was designed to encompass an active model area of approximately 112 square kilometres, located between and encompassing the Eramosa River and Blue Springs Creek where the Site is located. A grid spacing of 100 m x 100 m was used for the overall model domain with a refined grid spacing of 25 m x 25 m within an area of five square kilometres centered at the Site.

5.0 Model Layers and Hydrogeological Properties

The groundwater model consists of three layers necessitated by the need for vertical control in representing the depth of the quarry and the depth of a relatively high permeability zone near the bedrock surface. All three layers represent the Amabel dolostone. Model Layer 1 is the topmost layer with a thickness of approximately 30 metres. The bottom of Layer 1 is used to represent the bottom of the quarry during model runs. Model Layer 2 is a relatively thin layer used during the model development stage to test the effect of a 'production zone' within the Amabel formation. Model layer 3 represents the lower Amabel formation.

The ground surface is derived from a combination of digital Ontario Base Mapping (Lands Inventory Ontario database) providing five metre contouring and mapping completed for the Grand River Conservation Authority (GRCA) providing one metre contouring. The top of the bedrock layer was determined from the MOE Water Well Database, and on-site boreholes and testpits. The top of the Cabot Head Shale Formation was determined from contact information obtained from the MOE Water Well Database and one on-site borehole (M2).

Layer 1 hydraulic conductivity was based on input data obtained from on-site hydraulic testing, the Guelph-Eramosa Township groundwater model (Gartner Lee Limited, April 2004) and hydraulic testing completed for the City of Guelph (University of Guelph, 2011). The distribution of hydraulic conductivity in Layer 1 is shown on Figure H4. In general, the hydraulic conductivity of 2.0×10^{-5} m/s was assigned to Layer 1. A zone of increased hydraulic conductivity is interpreted to occur beneath the eastern half of the quarry. This zone is warranted by the following observations;

a) West to east groundwater flow at the site,

b) Relatively high hydraulic conductivity in M3
c) Relatively low hydraulic gradient from M3 to Brydson Spring.

The hydraulic conductivity in this area was assigned a value of 1.8×10^{-4} m/s.

Constant hydraulic conductivities of 2.0×10^{-5} and 1.0×10^{-5} m/s were assigned to Layers 2 and 3, respectively. The addition of a 'production' zone within the Gasport Formation was found to have little influence on the model and on-site testing does not indicate the presence of a 'production' zone, thus Model Layer 2 is assigned a moderate hydraulic conductivity the same as Layer 1.

The porosity of the bedrock is assigned to be 0.05.

Model input parameters for the three layers are summarized in Table 1.

Table 1: Summary of Hydrogeological Properties

Layer	Hydraulic Conductivity	Porosity
Layer 1	2.0×10^{-5}	0.05
Layer 1 High Conductivity Zone	1.8×10^{-4}	0.05
Layer 2	2.0×10^{-5}	0.05
Layer 3	1.0×10^{-5}	0.05

6.0 Boundary Conditions

Boundary conditions set for the groundwater model are shown on Figure H5. No-flow boundaries were used at the perimeter of the model with the exception of the north-east model area. A constant head boundary condition is assigned in this area. A hydraulic potential estimated from static water levels from water well records was assigned as the constant head value.

7.0 Drains

Drains were assigned to major waterways within the model space (Figure H6). This included the Eramosa River and Blue Springs Creek. In addition, several small tributaries of the Eramosa River and Blue Springs Creek were identified as drains based on perennial flow observed in the stream. The elevation of the drains occurring within

the overburden, were assigned to be 0.5 metres below the ground surface. The elevation of drains occurring within the bedrock, were assigned an elevation of 0.5 metres below the top of rock in Layer 1. The elevation of the Bryson Farm creek drain was assigned to be two metres below the top of the bedrock.

The conductance value assigned to the drains is 43.2 m/day.

7.0 Recharge

The modeled recharge values are presented in Figure H7. In general, a recharge value of 130 mm per year was assigned to the upper bedrock Layer 1. This represents groundwater movement occurring from the overburden to the bedrock. It is recognized that recharge rates at the ground surface are generally higher than 130 mm/year; however, the presence of till at depth and observation of several springs suggests a limitation to groundwater movement into the bedrock aquifer.

As shown in Figure H7, an area of higher recharge was assigned to areas east and south of the Site that have relatively thin deposits of coarse grained outwash above the bedrock and known spring discharge locations. The recharge value of 150 mm per year was assigned to this area for the upper bedrock Layer 1.

Streamflow measurements of the on-site ephemeral stream, (Tributary B, Figure H6) provide evidence that the creek is a losing stream across the Site. A zone of increased recharge therefore created along the creek. A recharge value of 0.0154 m/day was assigned to the model along the length of the creek running through the Site. In addition, studies of the creek (Tributary C, Figure H6) located on the property immediately east of the Site suggest that the creek is also an area of groundwater recharge. A recharge value of 0.0392 m/day was assigned to creek where infiltration is known to occur. Tributary A is also a known area of enhanced groundwater recharge and assigned a value of 0.0196 m/day.

9.0 Model Calibration

A total of 330 bedrock water wells were used in the model domain to calibrate the model. Table 2 summarizes the relevant calibration statistics for wells involved in the field survey.

Table 2: Summary of Calibration Statistics

	Number of Wells	ME	MAE	RMS	Normalized RMS
Calibration Statistics	330	1.68	3.49	4.35	4.7 %

ME: Mean Error, MAE: Mean Absolute Error, RMS: Root Mean Squared Error, NRMS: Normalized Root Mean Squared Error

The graph of the predicted vs. measured water levels for the calibration targets is shown on Figure H8. The normalized Root Mean Square is often used in the industry to evaluate the "validity" of a model. In the case of model calibration with 330 water wells, there is a total difference of 92 metres of hydraulic potential in the model and a Root Mean Squared Error of 4.35 m, or 4.7% of the total difference. A normalized RMS of less than 10% is often considered acceptable and a normalized RMS of less than 5% is desirable. Using these numbers as a guide, the model results are acceptable.

The model-predicted water levels are shown on Figure H9 and static water levels recorded in the MOE Water Well database are shown on Figure H10.

10.0 Impacts Due To Bedrock Extraction

The removal of the dolostone aquifer is simulated in the groundwater model by modifying the hydraulic conductivity to 10,000 m/d. This high hydraulic conductivity allows water within the quarry to 'level out' as occurs in lakes and ponds.

The porosity was also modified from 0.05 to 1 in the extraction area.

Two scenarios were simulated with the model as follows:

Scenario 1: Maximum Extraction

The maximum potential impact of the quarry was modeled by simulating the removal of the dolostone aquifer within the entire proposed quarry footprint.

Scenario 2: North Half of West Pond

The potential impact of extracting the north half of the west pond was simulated. This provides an indication of the potential change in bedrock groundwater potential in the area adjacent to the northwest wetland and also the potential impact from the initial phase of the quarry.

10.1 Scenario 1: Maximum Site Extraction

Figure H11 depicts areas and magnitude of impact to the groundwater system predicted to occur following maximum bedrock extraction at the site. The maximum drawdown will occur in the northern most portion of the west pond. The maximum drawdown is predicted to be 2.45 m. The drawdown in the bedrock aquifer will decrease exponentially from the edge of the quarry and as shown in Figure H11 the maximum drawdown to the northern Site boundary is 1.8 metres. Similar, the maximum predicted rise in water levels at the southern edge of the quarry is 2.81 m. The maximum rise in the water table downgradient of the Site at the southern Site boundary is 1.5 metres.

The change in bedrock water levels beneath the northwest wetland[1] range from 1.1 to 1.9 metres. On average, the change in water level is 1.53 metres.

Springs have been identified along the northern edge and west of the Allan wetland and are referred to as the Degrandis Spring and Allan Spring, respectively (Figure H7). Based on modeled results the maximum potential impacts to the bedrock aquifer beneath these spring sources are 0.5 and 07 metres, respectively.

10.3 Scenario 2: Extraction North Half of West Pond

Figure H12 depicts areas and magnitude of impact to the groundwater following bedrock extraction in the north half of the west pond only. As shown in Figure H12 the maximum drawdown at the northern Site boundary is 0.4 metres. Maximum rise in the water table downgradient of the Site at the southern Site boundary is 0.02 metres.

Potential impacts to the bedrock aquifer based on modeled results for the northwest wetland range from 0.2 to 0.35 metres. Based on modeled results the maximum potential impacts to the bedrock aquifer beneath the Rockwood Farm spring and the Degrandis pond is less than five centimeters.

11.0 Conclusions and Recommendations

1. The 3-Dimensional groundwater model presented in this report is a reasonable representation of groundwater flow conditions in the area of the Site.

[1] From proposed hydraulic barrier to upgradient edge of wetland

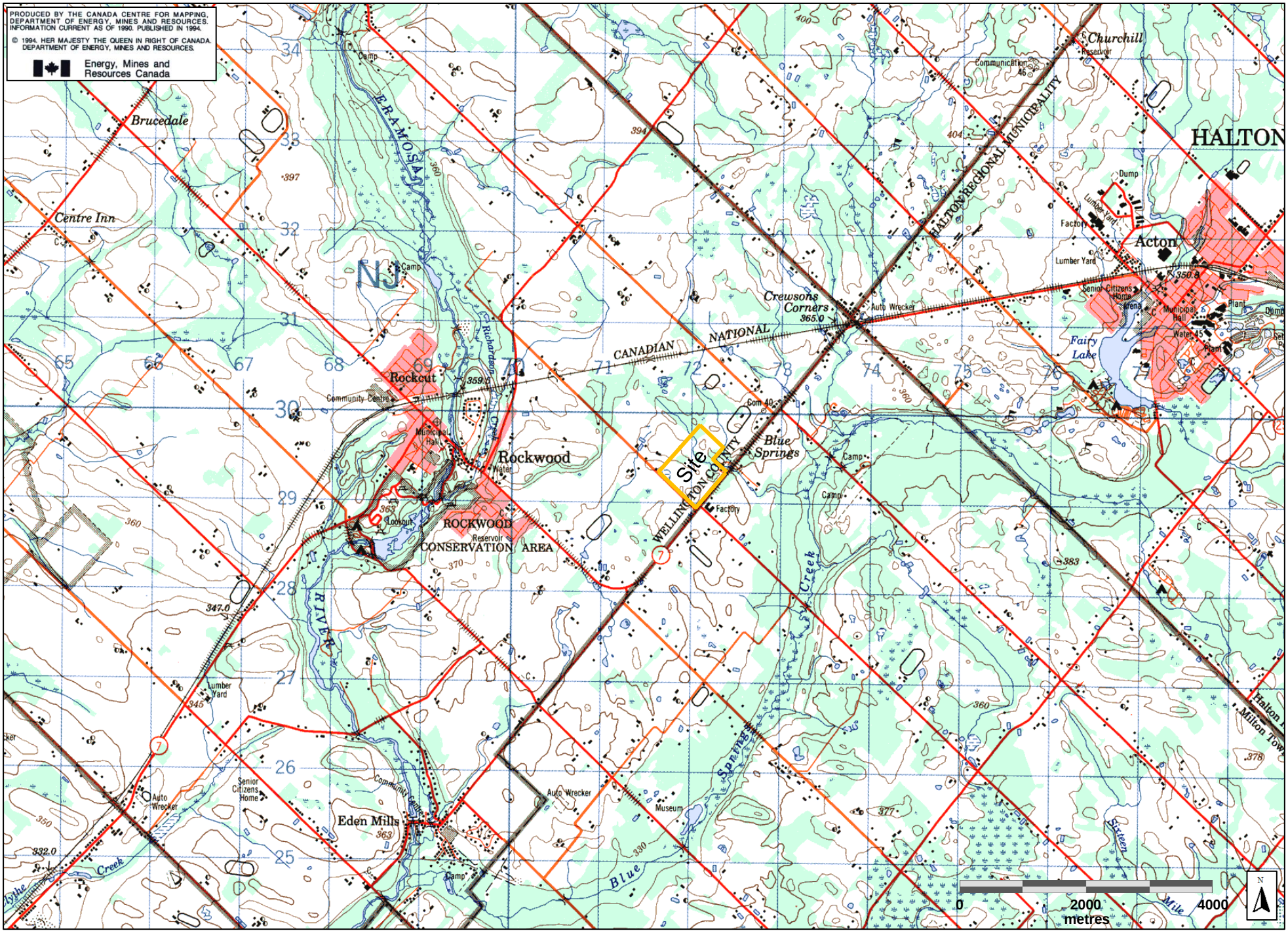
2. Based on modeled results, the maximum magnitude of water level change in the bedrock aquifer is a decline of 1.8 metres at the northern Site boundary and a rise of 1.5 metres at the southern Site boundary.

3. The magnitude of groundwater drawdown at the northwest wetland ranges from 1.1 to 1.9 metres for the maximum extraction scenario. The average drawdown value of 1.53 metres should be used to estimate the increase in groundwater flux beneath the wetland and area upgradient of the proposed hydraulic barrier.

4. The extraction of the north half of the west pond will result in a maximum predicted change of 0.7 metres at the northern property line, a maximum change of 0.35 metres below the northwest wetland and less than five centimeter change beneath the Rockwood Farm or Degrandis springs. The commencement of extraction in the north half of the west pond will allow for several years of monitoring to verify predicted impacts prior to extracting the south half of the west pond.

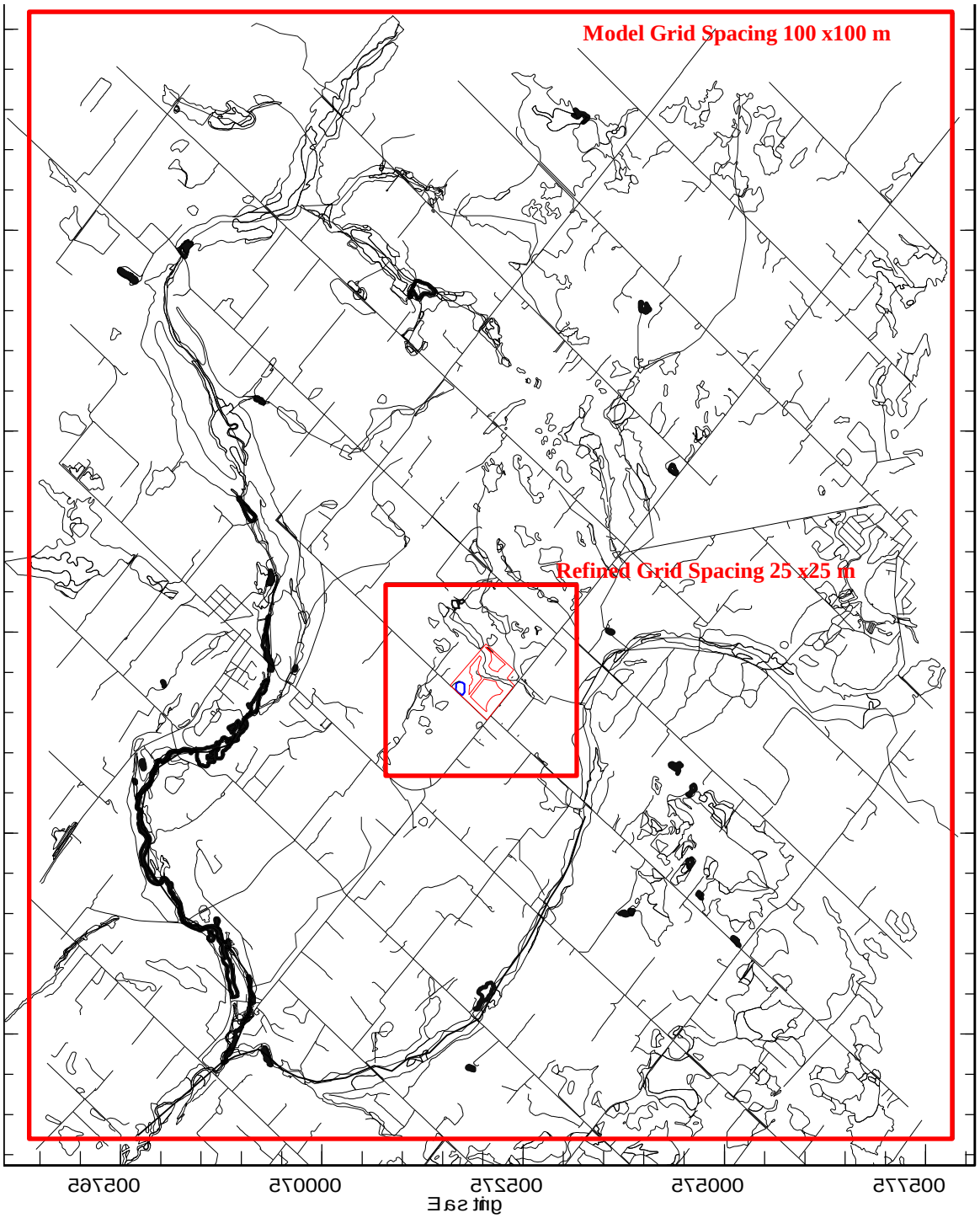
Respectfully Submitted
Harden Environmental Services Ltd.

Stan Denhoed, P.Eng., M.Sc.
Senior Hydrogeologist

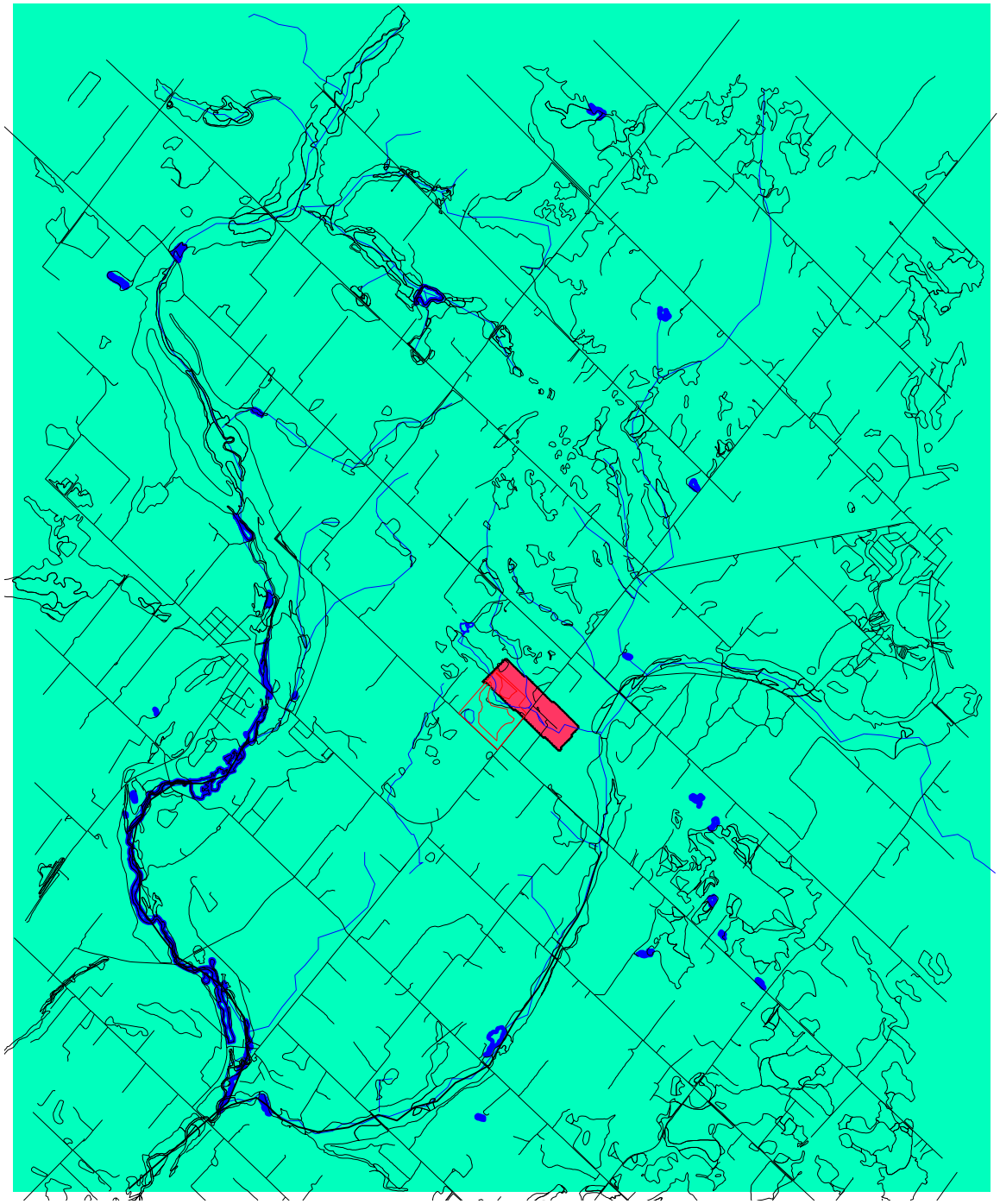


Harden Environmental Services Ltd.	**Project No:** 9506	Hidden Quarry Site Groundwater Model Addendum Report	**Figure H1: Study Area**
	Date: Nov 2011		
	Drawn By: AR	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	Subject Property (Approximate)

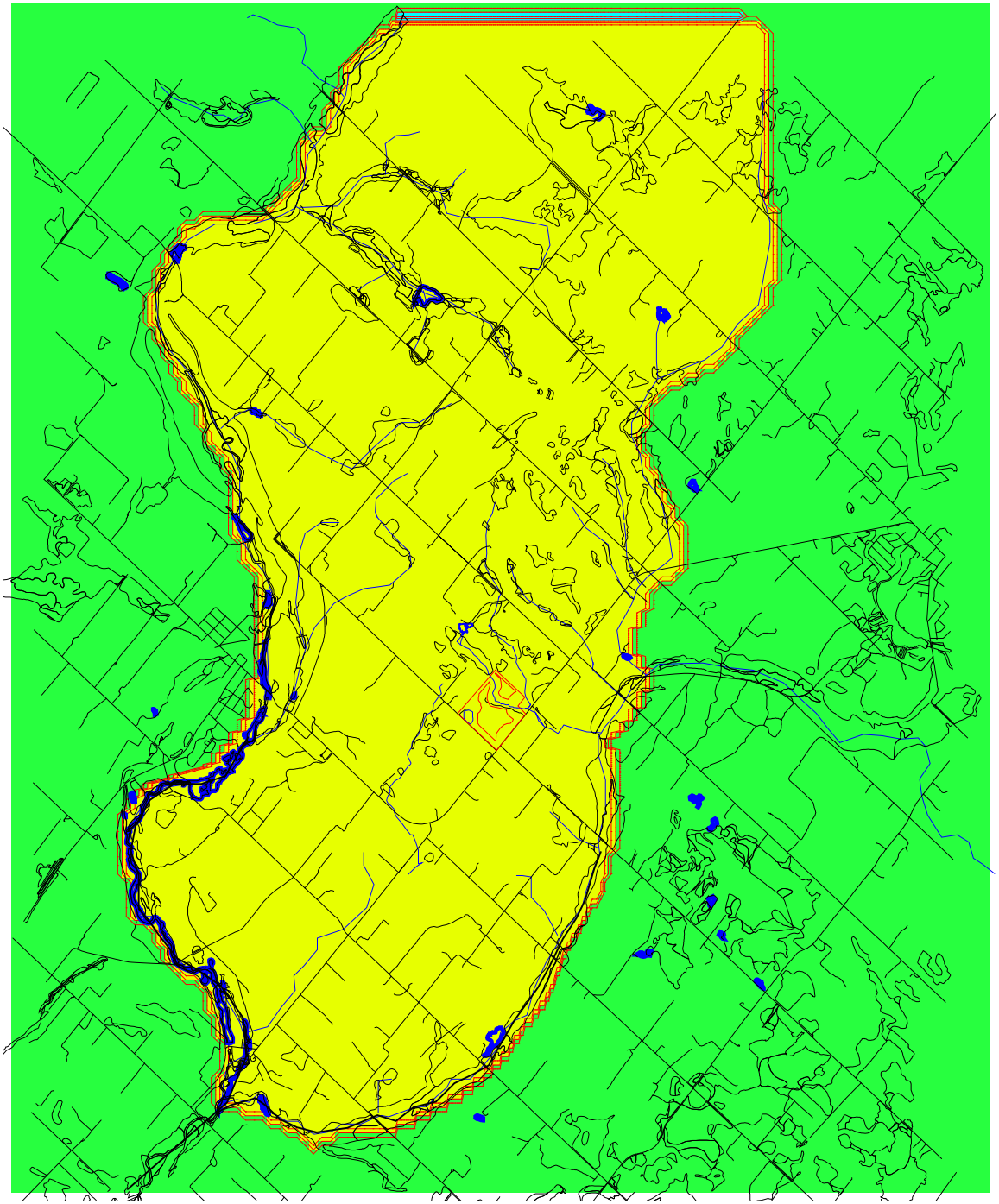
Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Figure H2: Extraction Footprint**
	Date: Jun 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: AR		



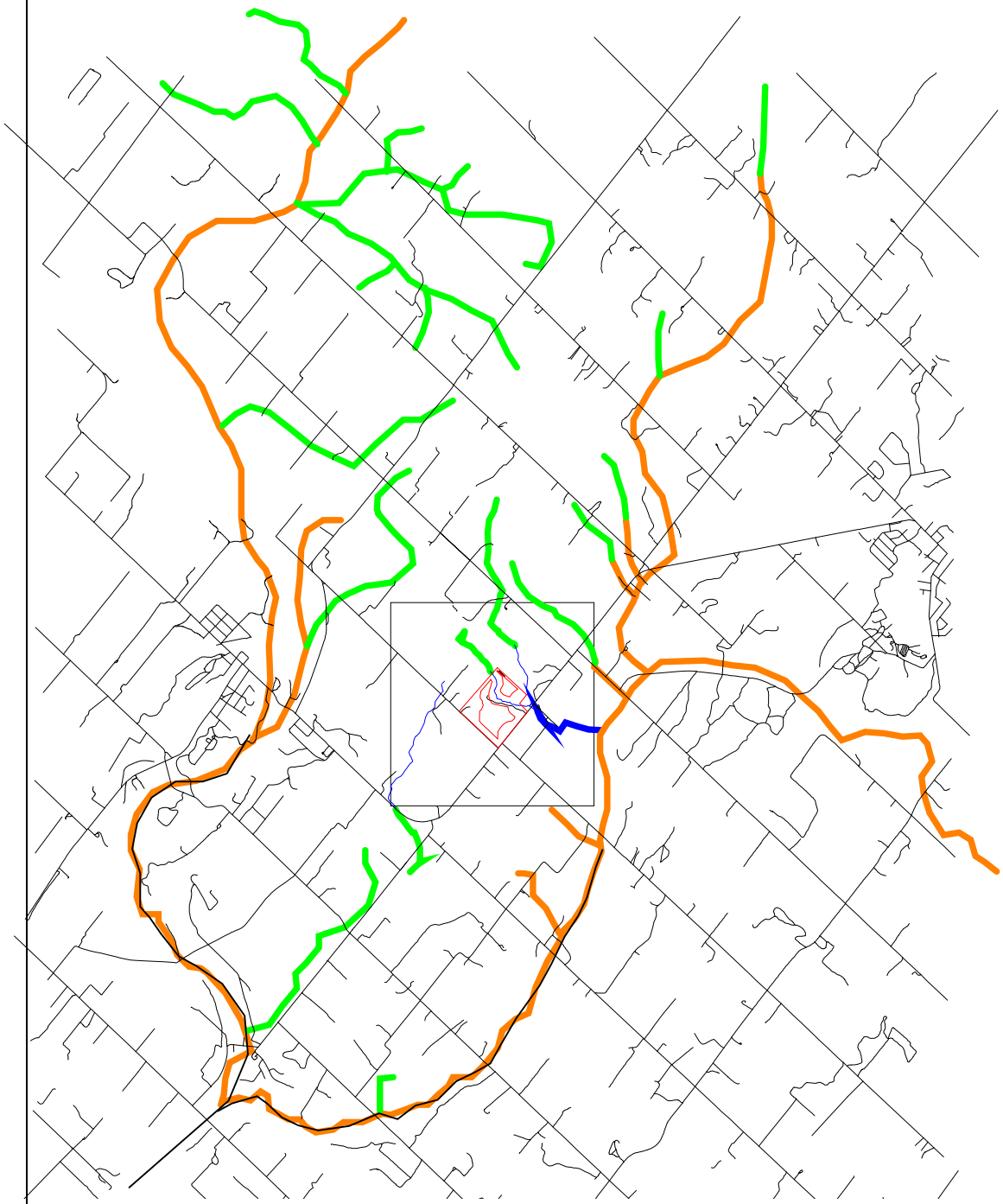
Harden Environmental Services Ltd.	**Project No:** 9506	Hidden Quarry Groundwater Model Addendum Report	**Figure H3: Model Domain**
	Date: Mar 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: SD		



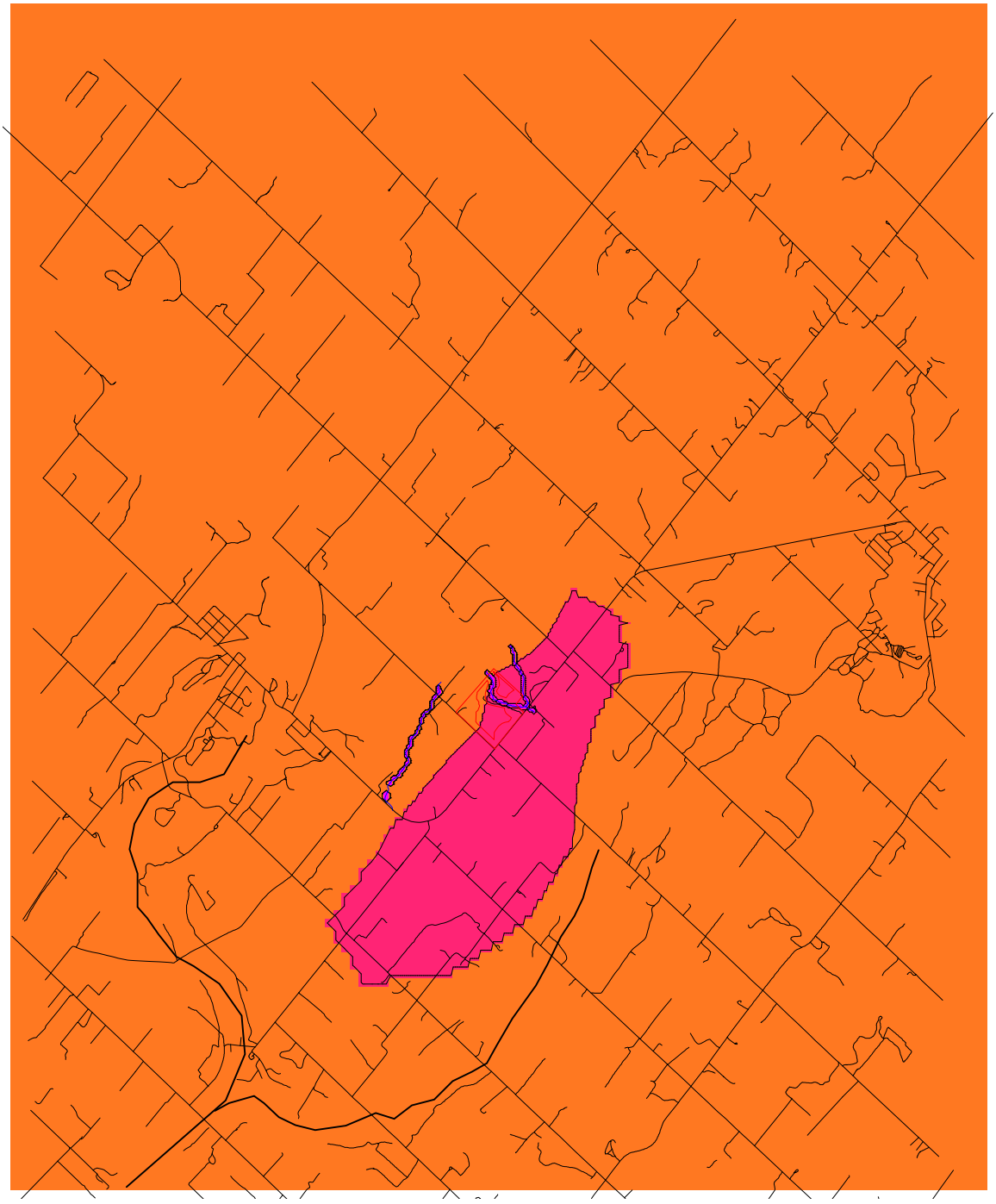
Harden Environmental Services Ltd.	**Project No:** 9506	Hidden Quarry Groundwater Model Addendum Report	**Figure H4: Hydraulic Conductivity Layer 1**
	Date: Mar 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: SD		



Harden Environmental Services Ltd.	**Project No:** 9506	Hidden Quarry Groundwater Model Addendum Report	**Figure H5: Boundary Conditions**
	Date: Mar 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: SD		



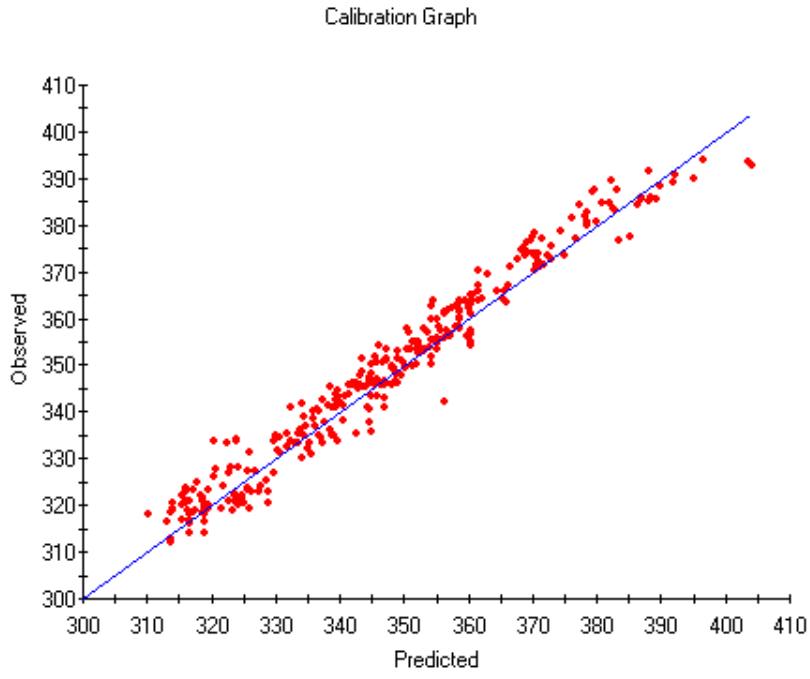
Harden Environmental Services Ltd.	**Project No:** 9506	Hidden Quarry Groundwater Model Addendum Report	**Figure H6: Drains**
	Date: Mar 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: SD		



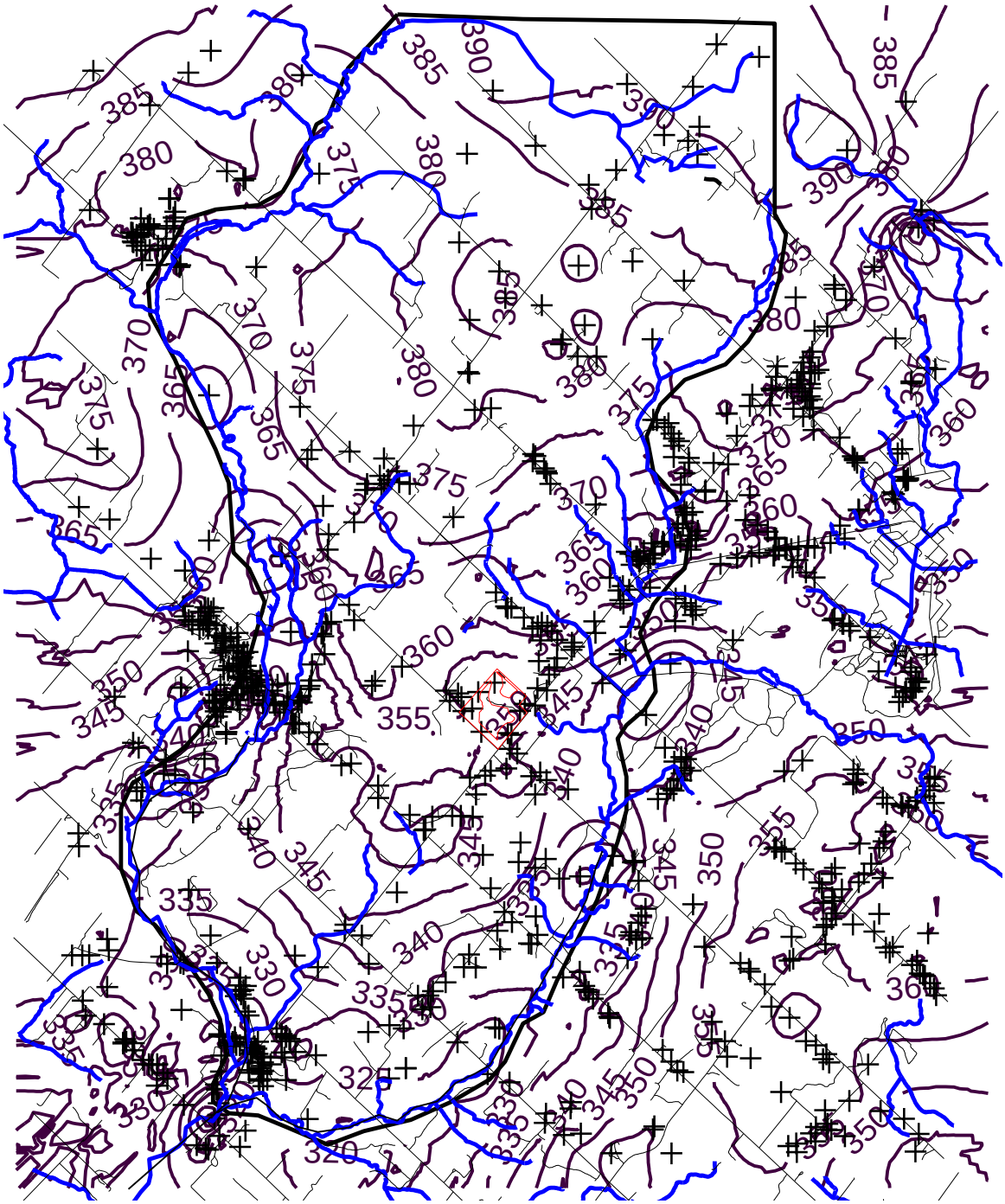
Harden Environmental Services Ltd.	**Project No:** 9506	Hidden Quarry Groundwater Model Addendum Report	**Figure H7: Model Recharge**
	Date: Mar 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: SD		

VLNotepad

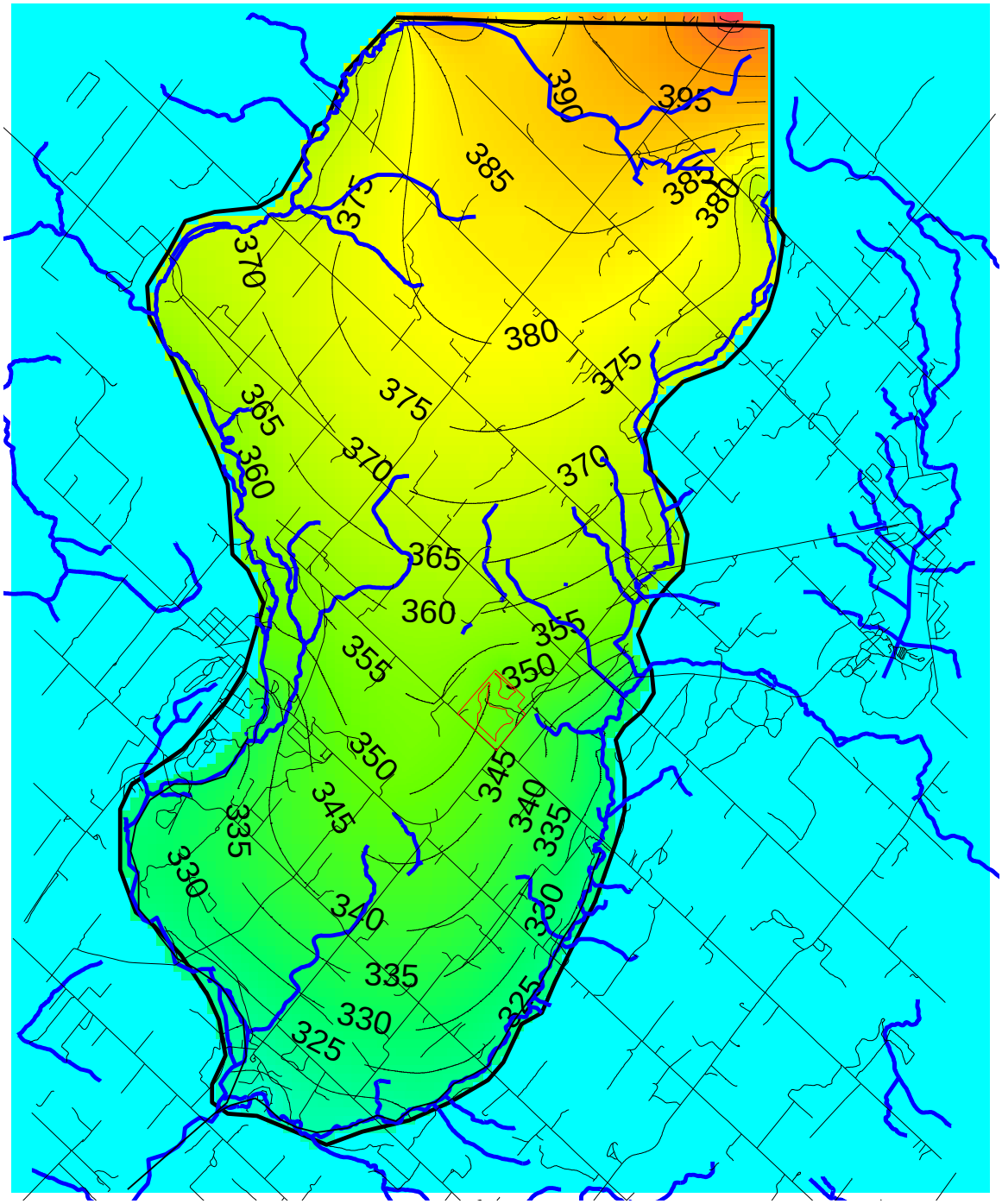
Calibration Statistics Report
Observation Point Parameter: 36. Final check layer Calib WL from WWR
Model Result Parameter: 287. Rev Final Model NO Production Zone BASE CASE potentials
Statistics:(Observed - Predicted)
Date: 14/06/2012 12:42:05 PM
Number of points: 330
Mean Error: 2.13263
Mean Abs. Error: 3.68225
RMS Error: 4.47888
Max Abs. Difference: 13.96613
Min Abs. Difference: 0.03671
Max value: 403.75366



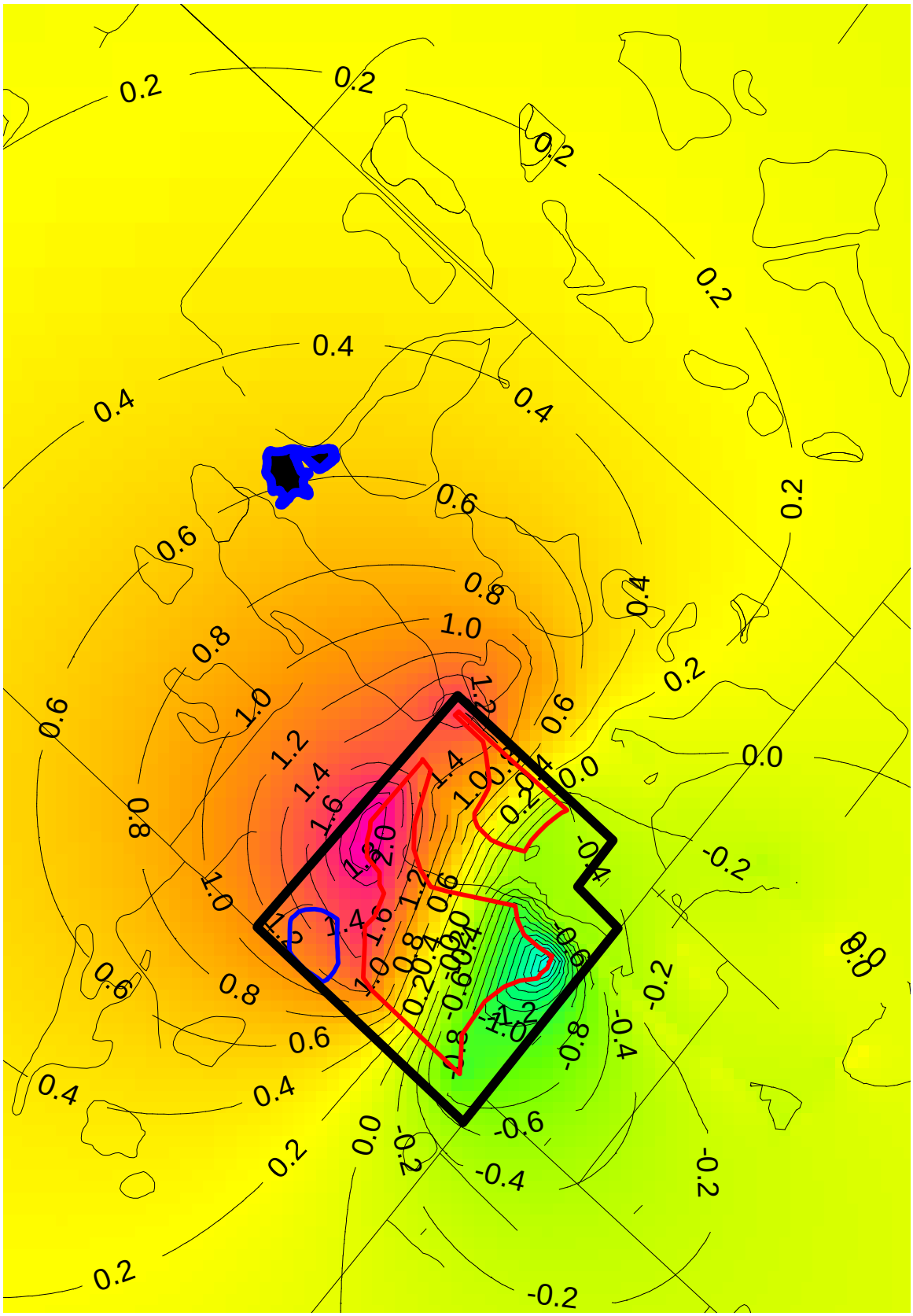
Harden Environmental Services Ltd.	**Project No:** 9506	Hidden Quarry Groundwater Model Addendum Report	**Figure H8: Calibration Statistics**
	Date: Mar 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: SD		



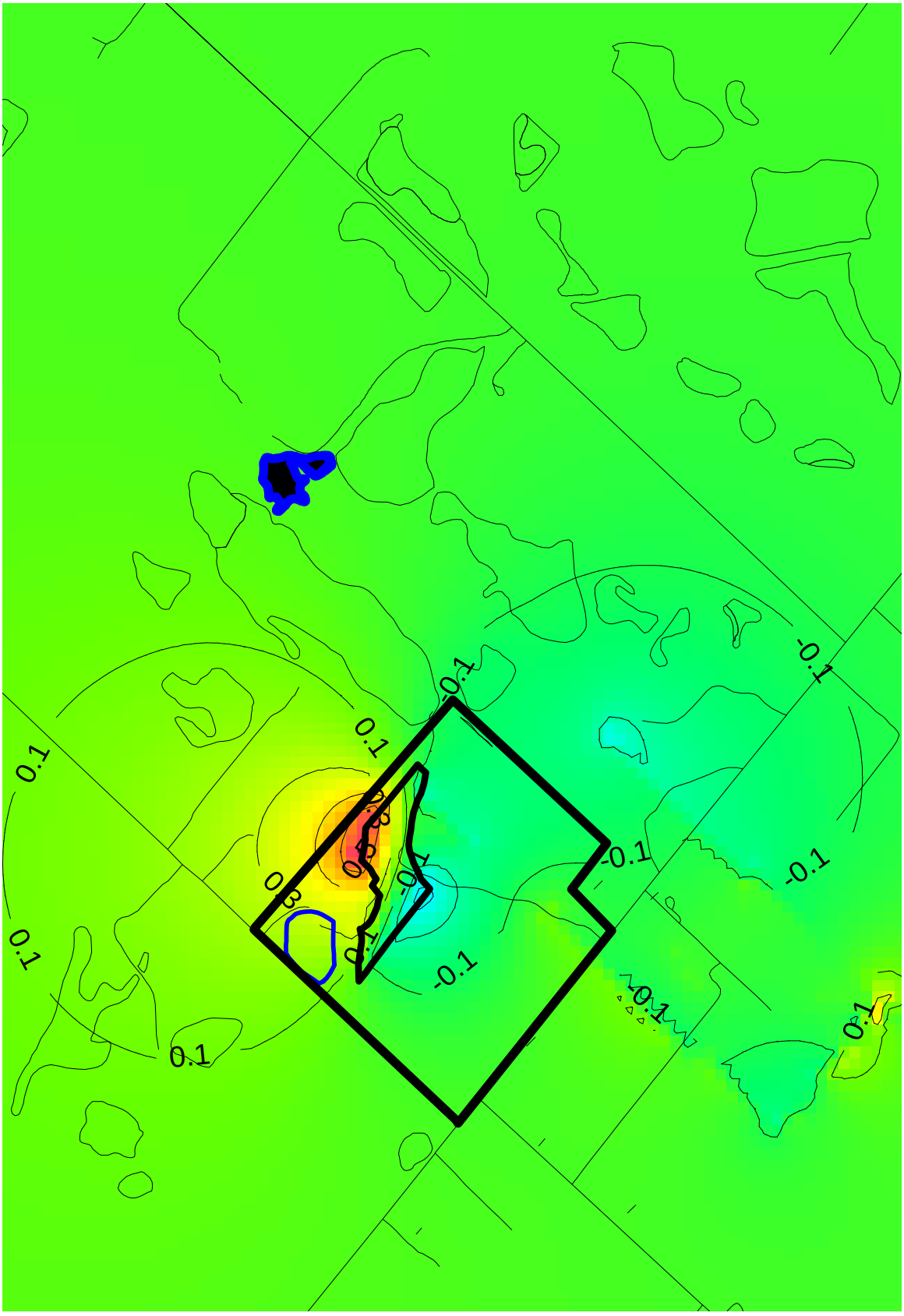
Harden Environmental Services Ltd.	**Project No:** 9506	Hidden Quarry Groundwater Model Addendum Report	**Figure H9: Static Water Levels WWR**
	Date: Mar 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: SD		



Harden Environmental Services Ltd.	**Project No:** 9506	Hidden Quarry Groundwater Model Addendum Report	**Figure H10: Predicted Water Levels Layer 1**
	Date: Mar 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: SD		



Harden Environmental Services Ltd.	**Project No:** 9506	Hidden Quarry Groundwater Model Addendum Report	**Figure 11: Maximum Predicted Water Level Change**
	Date: Mar 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: SD		



Harden Environmental Services Ltd.	**Project No:** 9506	Hidden Quarry Groundwater Model Addendum Report	**Figure H12:** **North Half of West Pond** **Predicted Water Level Change**
	Date: Mar 2012	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: SD		

Appendix I
Historical Aerial Photographs

Harden Environmental Services Ltd.

Project No: 9506
Date: Dec 2011
Drawn By: AR

Hydrogeologic Impact Assessment
Proposed Aggregate Extraction

Part of Lot 1, Concession 6
Township of Guelph/Eramosa, County of Wellington

Aerial Imagery April 29, 1930

N

Harden Environmental Services Ltd.

Project No: 9506
Date: Dec 2011
Drawn By: AR

Hydrogeologic Impact Assessment
Proposed Aggregate Extraction

Part of Lot 1, Concession 6
Township of Guelph/Eramosa, County of Wellington

Aerial Imagery April 9, 1964

N

Harden Environmental Services Ltd.

Project No: 9506
Date: Dec 2011
Drawn By: AR

Hydrogeologic Impact Assessment
Proposed Aggregate Extraction

Part of Lot 1, Concession 6
Township of Guelph/Eramosa, County of Wellington

Aerial Imagery June 7, 1972

N

Harden Environmental Services Ltd.

Project No: 9506
Date: Dec 2011
Drawn By: AR

Hydrogeologic Impact Assessment
Proposed Aggregate Extraction

Part of Lot 1, Concession 6
Township of Guelph/Eramosa, County of Wellington

Aerial Imagery April 19, 1980

N

Harden Environmental Services Ltd.

Project No: 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Aerial Imagery** **May 1994**
Date: Dec 2011	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
Drawn By: AR		

Harden Environmental Services Ltd.	**Project No:** 9506	Hydrogeologic Impact Assessment Proposed Aggregate Extraction	**Aerial Imagery Spring 2006**
	Date: Dec 2011	Part of Lot 1, Concession 6 Township of Guelph/Eramosa, County of Wellington	
	Drawn By: AR		

Appendix J

Water Balance

Table J1: Northwest Wetland Water Balance

Parameter	Units	Pre Extraction	Post Extraction
Wetland Area	m^2	10,590	10,590
Catchment Area	m^2	16,635	16,635
Area Upgradient of Barrier	m^2	26,445	26,445
Direct Precipitation	m^3	9,531	9,531
Groundwater Flow In	m^3	50,408	51,325
Runoff	m^3	846	846
Total In	m^3	60,786	61,702
Evapotranspiration	m^3	6,905	6,905
GW out Horizontal	m^3	42,343	6,623
GW out Vertical	m^3	12,301	44,647
Total out	m^3	61,549	58,174
Annual Imbalance	m^3	- 763	3,528
Annual Imbalance	%	-1.26%	6%

Appendix K
Spills Action Plan

RECOMMENDED PROCEDURES FOR THE PREVENTION AND MITIGATION OF CONTAMINANT SPILLS AT THE HIDDEN QUARRY

Emergency Response Numbers:

Fire, Ambulance, Police	**911**
Ministry of the Environment	**1-800-268-6060**
James Dick Construction Ltd.	**1-905-857-3500**
County of Wellington	**519-846-8058**

Harden Environmental Services Ltd.
R.R. 1, Moffat, Ontario L0P 1J0
1-877-336-4633

TABLE OF CONTENTS

ATTACHMENTS

1.0 Introduction

The majority of spills can be minimized through the adoption of good housekeeping policies. Cleanliness, readiness to respond to problems and correct waste management techniques will go a long way to creating a better working environment and prevention of spills. The following list identifies the more common contaminants which could be present on a regular basis on the site.

Vehicular Operating Fuels	Gasoline, diesel fuel
Lubricants	Motor oil, grease, lubricants, coolants, brake fluids, transmission fluids and other liquids used in the normal operation of a vehicle.
Explosives	
Miscellaneous Liquids	degreasing agents, solvents

The site foreman and all employees on site shall be familiar with procedures as set out in the attached document - “Plan of Action - Contaminant Spills".

2.0 Objective

The objective of this brief is to describe the procedures which will be undertaken to prevent and ameliorate spills of contaminant materials and to minimize the adverse effects if a spill does occur. A spill can be defined as a discharge of a pollutant:

a) into the natural environment,
b) from or out of a structure, vehicle or any other container and
c) which will have an adverse impact on the natural environment.

3.0 Prevention

The majority of products listed in the Introduction are used in the operation and maintenance of vehicles. One of the various methods, as outlined in this section will be used by the site operators to service vehicles and machinery, depending on the level of activity at the site or on the stage at which the pit/quarry is operating. Delivery vehicles (haul trucks) will not be maintained on the site.

3.1 Vehicular Maintenance

3.1.1 Outdoor Maintenance Pad

A pad will be constructed of concrete or another relatively impervious material resistant to solvents. Mobile vehicles will be maintained on the pad by a mobile maintenance vehicle. All fluids removed from the vehicle will be hauled off-site. Any spill occurring during maintenance will be collected with absorbent materials and removed from the site.

A mobile maintenance vehicle will service vehicles on the site. If possible, the vehicles will be driven out of the active pit area. All fluids removed from the vehicle for the purpose of replacement or disposal will be collected and removed from the site for disposal in a manner acceptable to the Ontario Ministry of the Environment (MOE). Any spilled fluids will be collected with absorbent material and any contaminated soil will be collected.

3.2 Immobile Equipment

Crushers, screens, conveyers, generators etc. require regular maintenance. This often entails lubrication, cleaning and/or replacement of oils. All fluids removed from this machinery will be collected and removed from the site. All spillage of fuels, liquids, lubricants etc. will be cleaned up

immediately. The use of degreasers on immobile machinery will be kept to a minimum.

4.0 Mitigation

Due to unforeseeable circumstances and/or catastrophic events, spills of larger quantities of materials may occur. In the event of this occurring the following procedure will be followed:

4.1 The following information regarding the spill will be reported immediately to the site foreman:

- Type of substance spilled
- Quantity of substance spilled
- Location of spill
- Time that spill occurred

4.2 If the spill is over 80 litres of oils or 40 litres of fuel, degreasing agents, coolants or solvents, the MOE and the County of Wellington will be informed immediately. The current telephone number for the MOE Spills Action Centre is 1-800-268-6060 (24 hrs) and the County of Wellington is (519) 846-8058.

4.3 Regardless of the quantity of the spill, mitigative measures will commence immediately in accordance with the attached plan of action. Initial measures will involve excavation of the contaminated soil. The soil removed from the spill area will be stored onsite in a manner acceptable to the MOE until the MOE has had an opportunity to assess the situation. If required by the MOE, the site operator will remove the contaminated material from the site by an approved waste hauler to an approved waste receiver.

4.4 If it is reasonable to suspect that the contamination will ultimately reach the groundwater the

following procedures will be followed.

4.4.1 The excavation will be extended to the water table and a pump, suitable for the type of contamination, will be installed and operated to collect the contaminated groundwater. The collected groundwater will be stored, treated and discharged or removed from the site as recommended by the MOE.

4.4.2 Where the thickness of soil above the water table makes it impossible to excavate to the water table, a withdrawal well will be drilled and a pumping system installed and operated to collect the contaminated ground water. The collected ground water will be stored on site, treated and discharged or removed from the site.

4.5 If required, additional ground water monitors will be installed to verify that the contamination has been mitigated.

4.6 If there is a potential for domestic wells being impacted by the spill, the users of those wells will be notified.

5.0 Employee Training

The site employees are required to have the following training.

5.1 All employees shall be familiar with "Recommended Procedures for the Prevention and Mitigation of Contaminant Spills" cleanup, the associated plan of action report form, any and all materials and equipment that would be used and their location in the event of a contaminant spill.

5.2 Employees shall receive training in respect to the use of materials and equipment required in a contaminant spill cleanup.

6.0 Reporting Requirements

A copy of each written contaminant spill report will be stored on-site for future reference and will be made available to the MOE and/or the County of Wellington upon request.

JAMES DICK CONSTRUCTION LTD

PLAN OF ACTION

CONTAMINANT SPILLS

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1. Contact the foreman.

2. Appraise the situation and take immediate action to stop further spillage.
   a) Stop the source.
   b) Confine or contain the spill.
   c) Appropriate service vehicles in the area to proceed immediately to the spill site when advised that a spill has occurred.
   d) Use kit materials to start removing spill product.
   Kit material to be located in scale house or maintenance building.

   Spill Kit contains: 1 - 27 litre (7 gallon) polyethylene pail
   1- Gasket seal lid,
   6- 'Eliminator ' E-2 socks and
   1 - Polyethylene disposal bag.

   e) Use 45 gallon containers to contain smaller spills. Put any absorbed oils into containers for disposal

3. The dispatcher/scale operator/foreman is to confirm that the Ministry of the Environment and the County of Wellington has been contacted, where necessary. The phone numbers are 1-800-268-6060 (MOE) and (519) 837-2600 (County of Wellington).

4. The spill site supervisor is to contact the Fire and Police departments, where deemed necessary.

5. The site supervisor and person finding the spill will make out a full written report immediately after the spill is taken care of. The following shall be documented in the report:

a) location in pit (shown on reduced site plan photocopy)
b) time of spill
c) type of spill
d) estimated quantity
e) cause of spill
f) property damage
g) response time and number of people involved
h) clean up measures taken
i) assessment of area affected after clean up
j) an assessment of how spill could have been prevented
k) a diagram of the spill area
l) signature of site supervisor and personnel involved in cleanup

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CONTAMINANT SPILL

CLEAN UP REPORT FORM

Location: _____

_____

_____

Time of Spill: _____

_____

_____

Type of Spill: _____

_____

_____

Estimated Quantity of Spill: _____

_____

_____

Cause of Spill: _____

_____

Property Damage:

Response Times and Names of People involved in Cleanup:

Clean up measures Taken:

Assessment of area affected after clean up:

How could this spill have been prevented?

Diagrams:

Signature of Site Supervisor and personnel involved in clean-up: