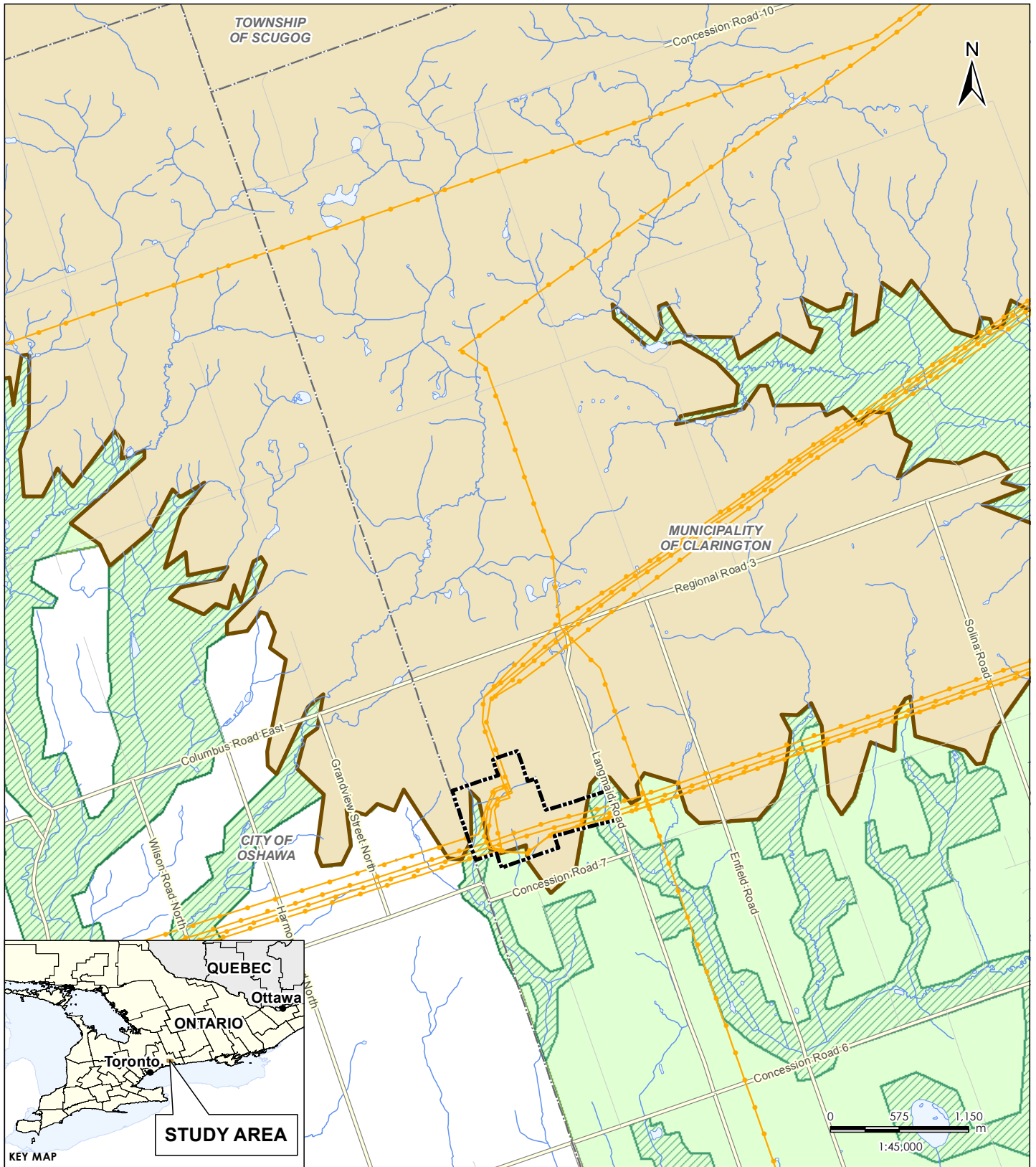


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 Revised: 2015-11-03 By: pmoser



November 2015
160900764



- Legend**
- Project Area
 - Municipal Boundary
 - Utility Line
 - Major Road
 - Local Road
 - Waterbody
 - Watercourse
 - Oak Ridges Moraine
 - Greenbelt - Natural Heritage System
 - Greenbelt - Protected Countryside

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.

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Figure No.
1

Title
Project Location



Legend

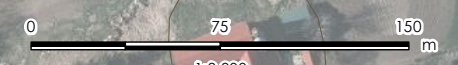
- Project Area
- Station Site
- Borehole (Stantec, 2015)
- Monitoring Well (Stantec, 2013, 2015)
- Piezometer (Stantec, 2013)
- Test Pit (Stantec, 2013)
- Surface Water Monitoring (Stantec, 2013)
- Monitoring Well (EXP, 2012)
- Monitoring Well (Inspec-Sol, 2012) - Abandoned
- Borehole (Inspec-Sol, 2012)
- Borehole (EXP, 2012)
- Topographic Contour (mAMSL)
- New/Planned Infrastructure
- Previously Existing Infrastructure
- Watercourse
- Wetland

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.
 3. Orthoimagery © First Base Solutions, 2012.
 4. Topography derived from the MNR Digital Elevation Model - Version 2.0.0 - Provincial Tiled Dataset (DEM) © Queen's Printer for Ontario, 2006.
 5. Wetland boundary as delineated by Stantec (Natural Heritage Existing Conditions Report, 2012). November 2015
160900764

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Figure No.
2

Title
Project Site Plan



\\cd1220-102\Work_group\01609\active\60960745\drawing\MXD\Hydrogeology\2015_MonitoringReport\160900764_2015\MonRept_Fig02_ProjectSitePlan.mxd
 Revise dt: 2015-11-17 By: P.Moser



Legend

- Project Area
- Station Site
- Private Well Monitoring Area
- Drainage Catchment
- MOECC Water Well Record
- Borehole (Stantec, 2015)
- Monitoring Well (Stantec, 2013, 2015)
- Piezometer (Stantec, 2013)
- Test Pit (Stantec, 2013)
- Surface Water Monitoring (Stantec, 2013)
- Monitoring Well (EXP, 2012)
- Monitoring Well (Inspec-Sol, 2012) - Abandoned
- Monitoring Well (MTO, 2009)
- Private Well
- Topographic Contour (mAMSL)
- Watercourse
- Waterbody
- Wetland

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.
 3. Orthoimagery © First Base Solutions, 2012.
 4. MOECC Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2012.

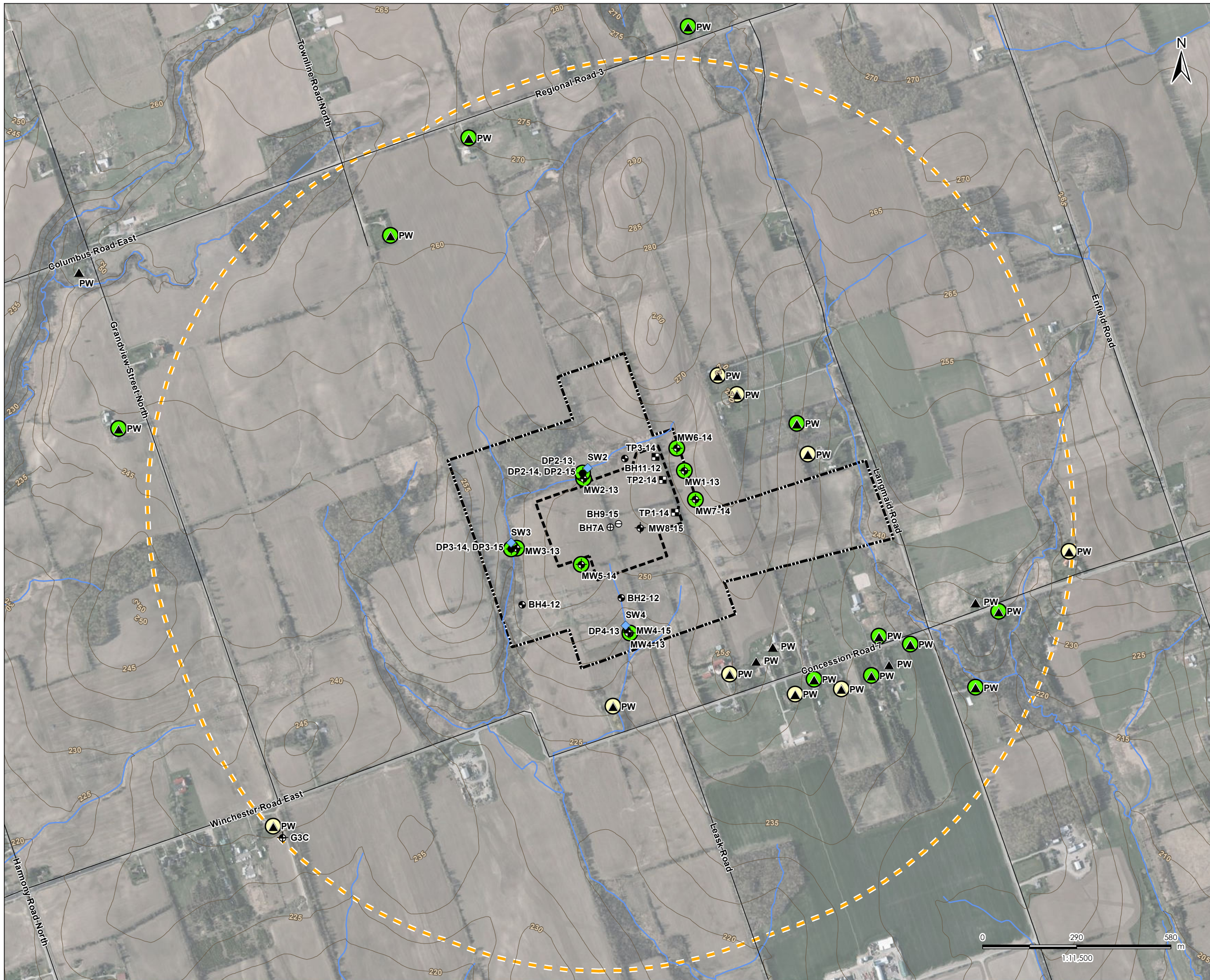
November 2015
160900764

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Figure No.
3

Title
Site Setting

\\cd\1220-102\Work_group\01609\active\60960745\drawing\MXD\Hydrogeology\2015_MonitoringReport\160900764_2015\MonRepl_Fig03_SiteSetting.mxd
 Revise dt: 2015-11-13 by: pmoser



- Legend**
- Project Area
 - Station Site
 - Private Well Monitoring Area
 - Borehole (Stantec, 2015)
 - Monitoring Well (Stantec, 2013, 2015)
 - Piezometer (Stantec, 2013)
 - Test Pit (Stantec, 2013)
 - Surface Water Monitoring (Stantec, 2013)
 - Monitoring Well (EXP, 2012)
 - Monitoring Well (Inspec-Sol, 2012)
 - Monitoring Well (MTO, 2009)
 - Private Well
 - Topographic Contour (mAMSL)
 - Watercourse
 - Well Screened within Thorncliffe Formation
 - Well Screened up to 16 mBGS

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.
 3. Orthoimagery © First Base Solutions, 2012.
 4. MOECC Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2012.

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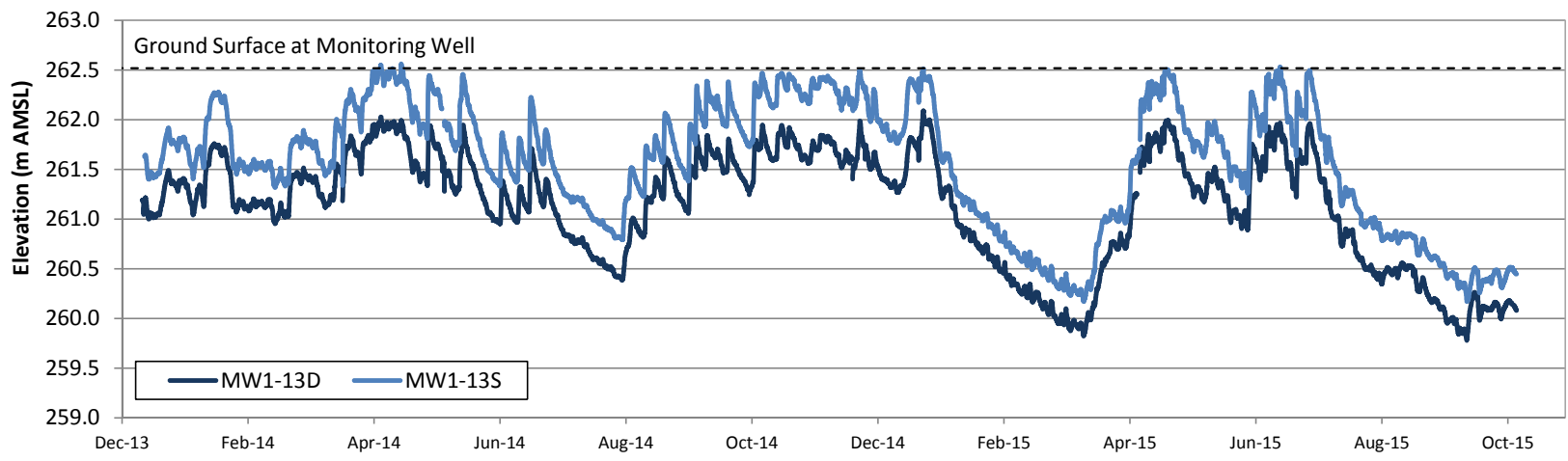
Client/Project
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Figure No.
4

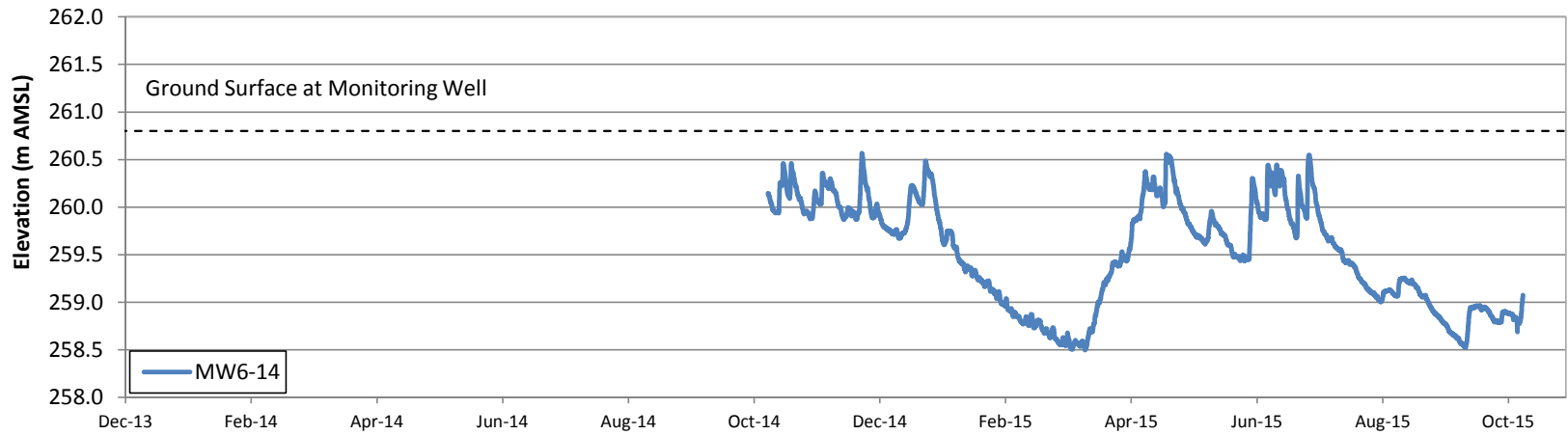
Title
Groundwater Monitoring Locations

\\cd1220-102\Work_group\01609\active\60960764\drawing\MXD\Hydrogeology\2015_MonitoringReport\160900764_2015MonRept_Fig4_GWMonitoringLocs.mxd
 Revise dt: 2015-11-13 by: pmoser

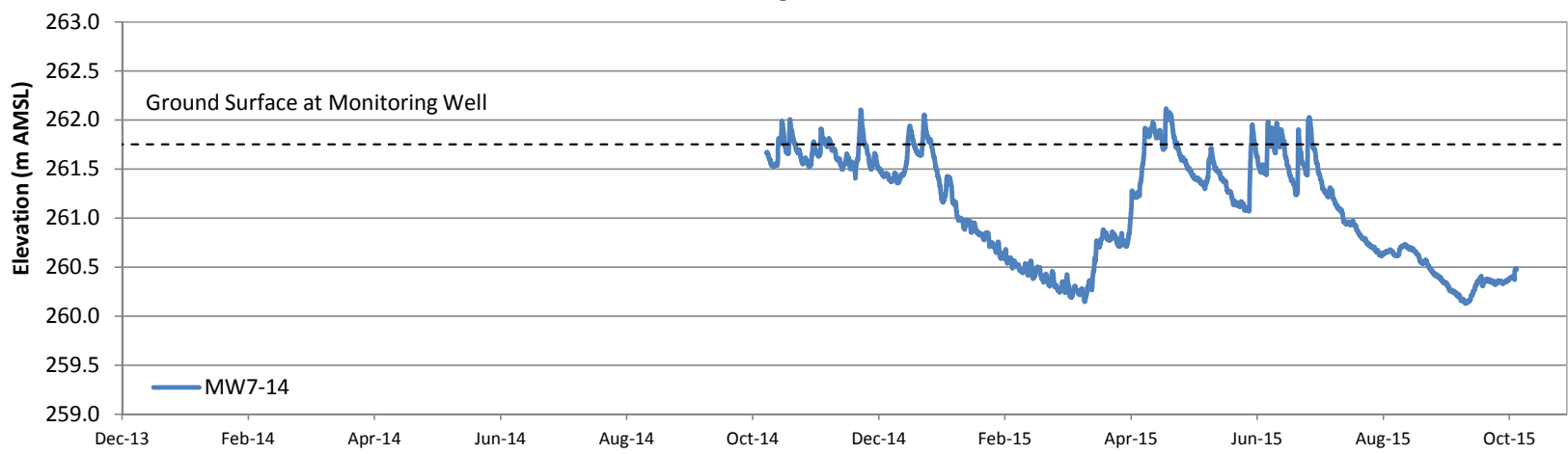
Monitoring Well MW1-13



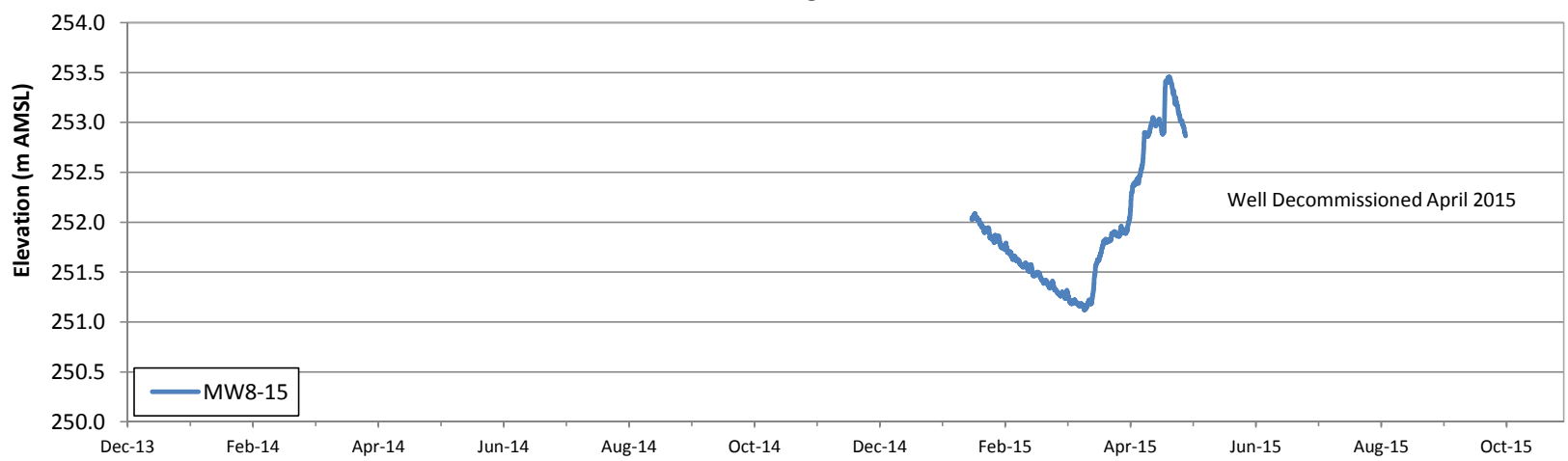
Monitoring Well MW6-14



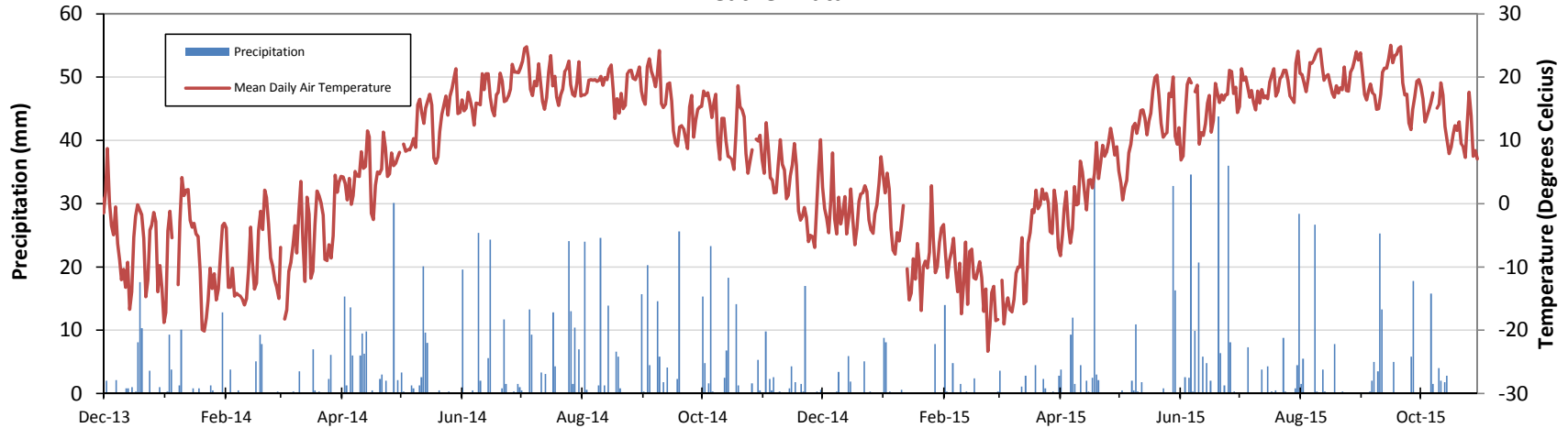
Monitoring Well MW7-14



Monitoring Wells MW8-15



Weather Data



Notes:

Precipitation and temperature data were obtained from Environment Canada for the Oshawa Climate Station.

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Hydro One Networks Inc.
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Figure No.

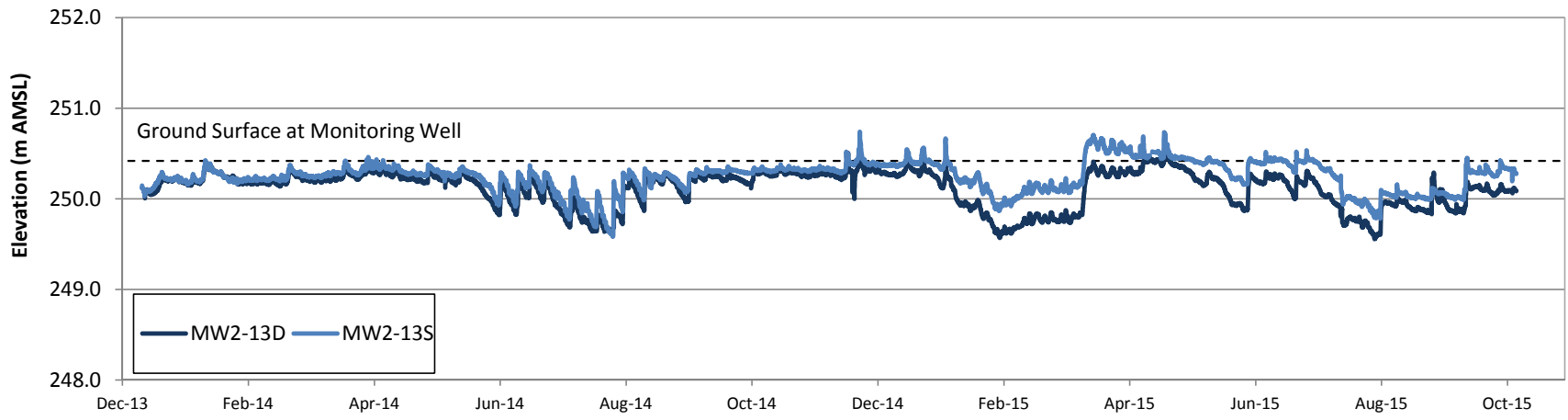
5

Title

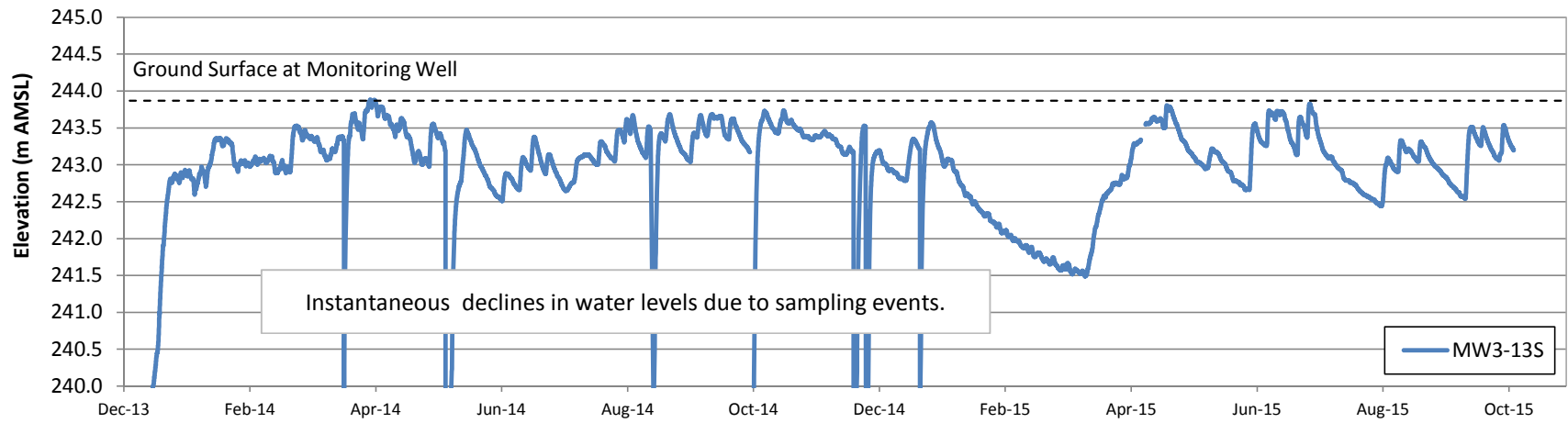
**Hydrographs
Monitoring Wells MW1, MW6 and MW7**



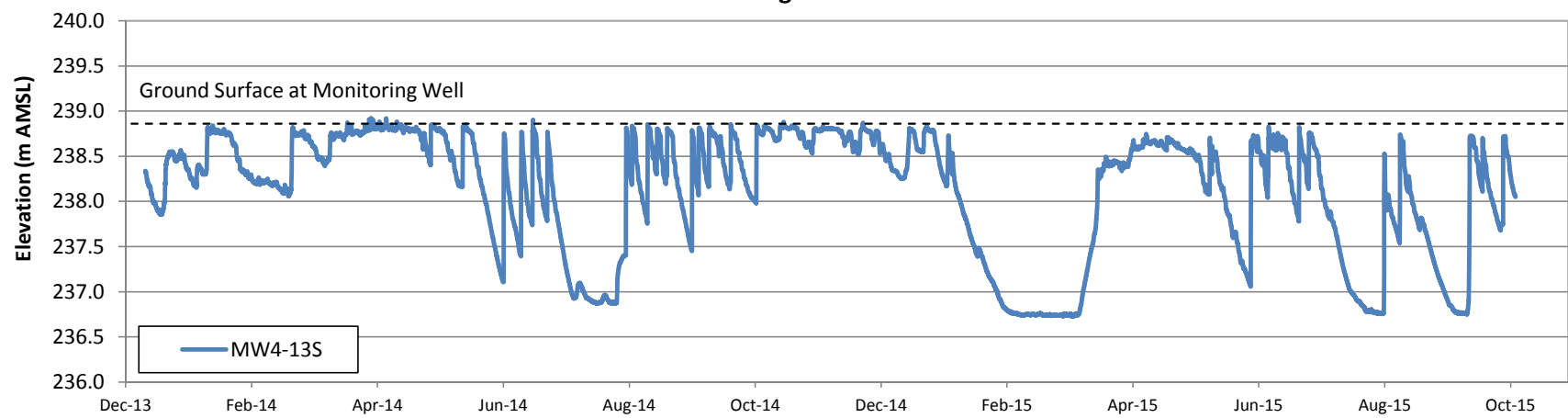
Monitoring Well MW2-13



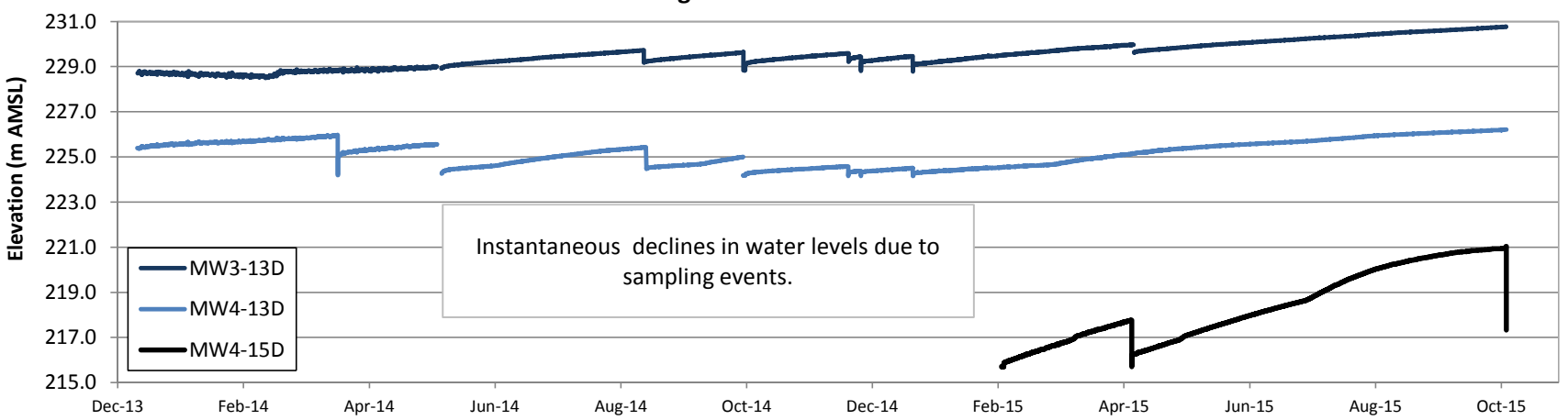
Monitoring Well MW3-13S



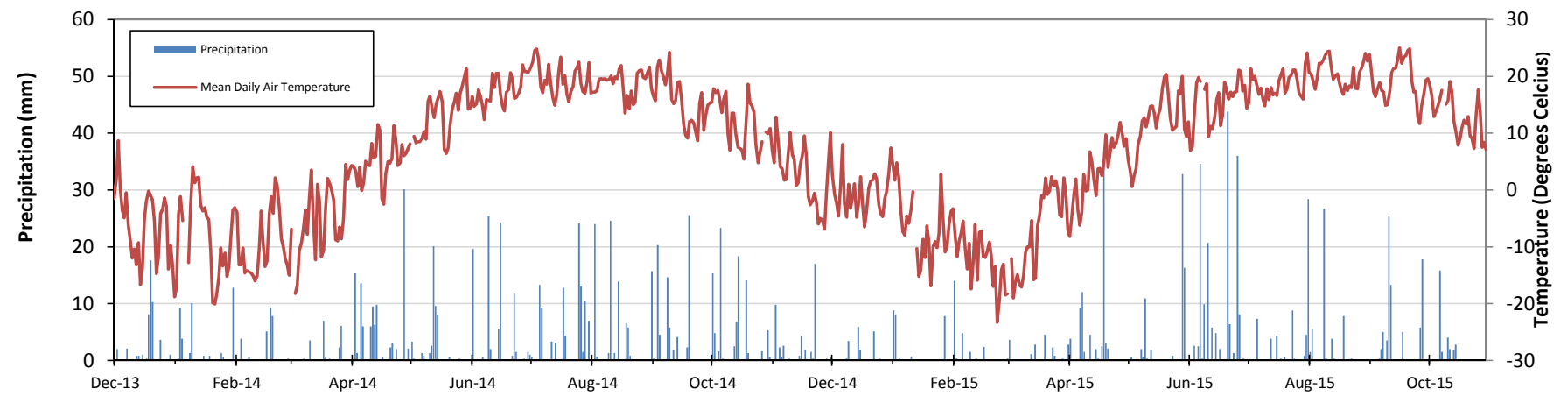
Monitoring Well MW4-13S



Monitoring Wells MW3-13D and MW4-13D



Weather Data



Notes:

Precipitation and temperature data were obtained from Environment Canada for the Oshawa Climate Station.

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Figure No.

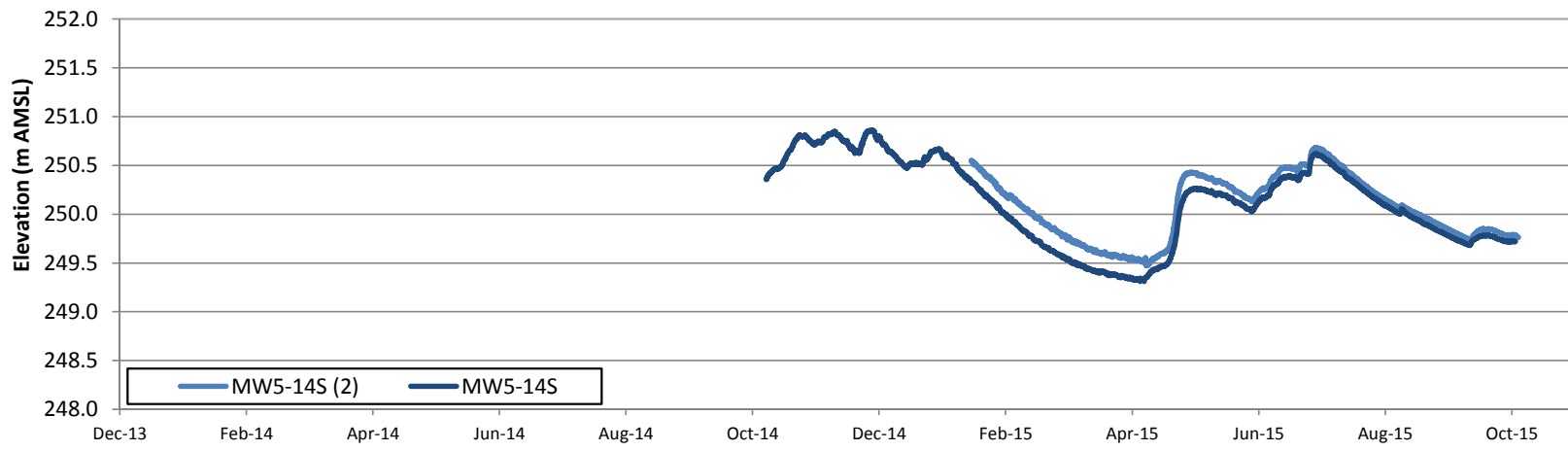
6

Title **Hydrographs**

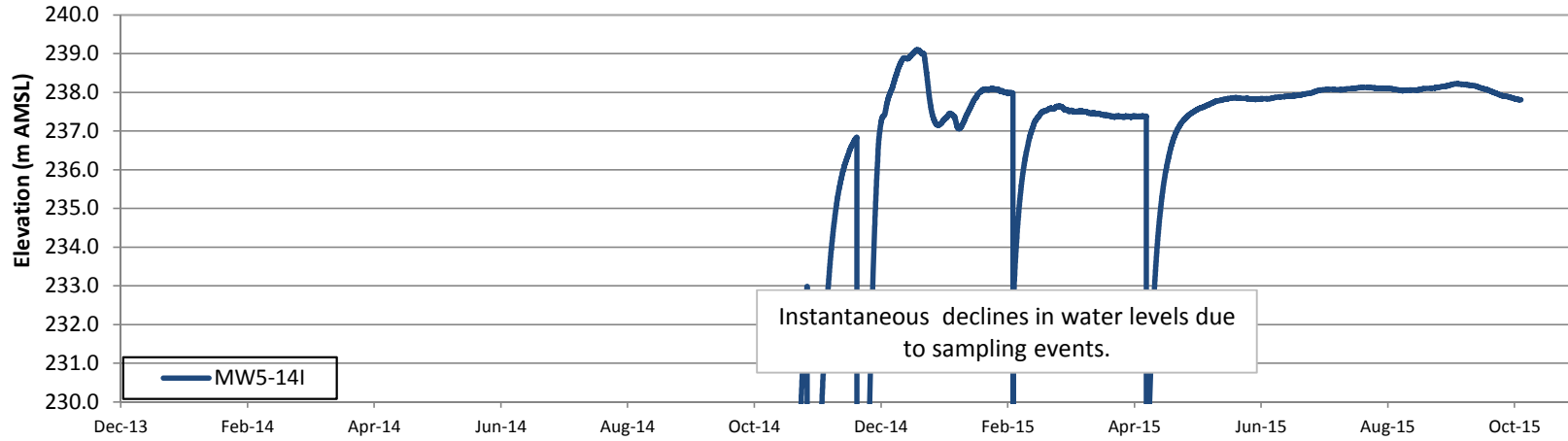
Monitoring Wells MW2, MW3, and MW4



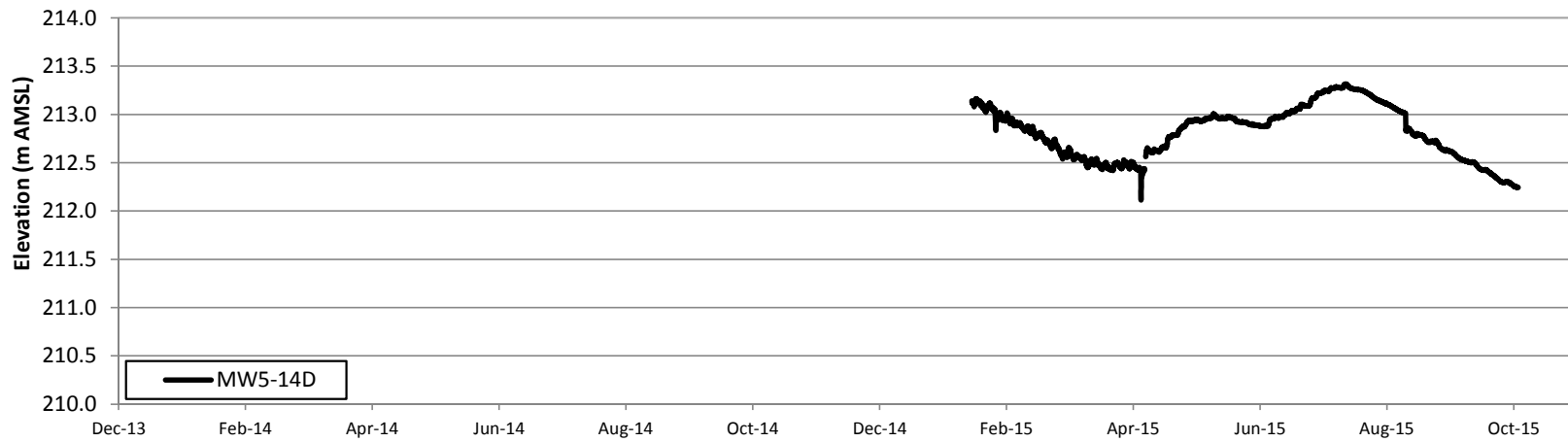
Monitoring Well MW5-14S (2) and MW5-14S



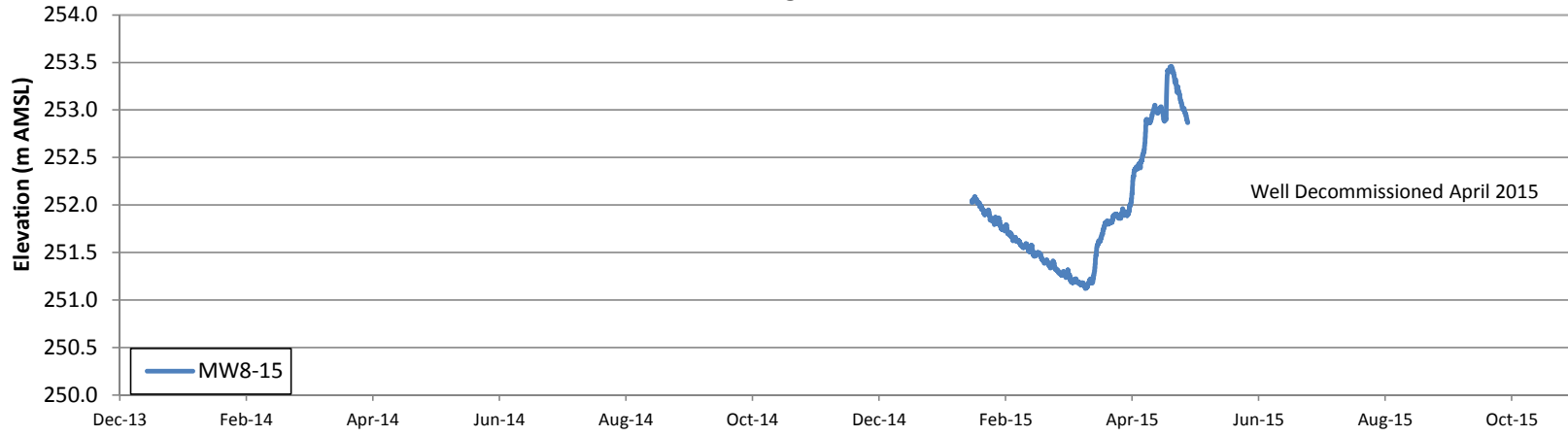
Monitoring Well MW5-14I



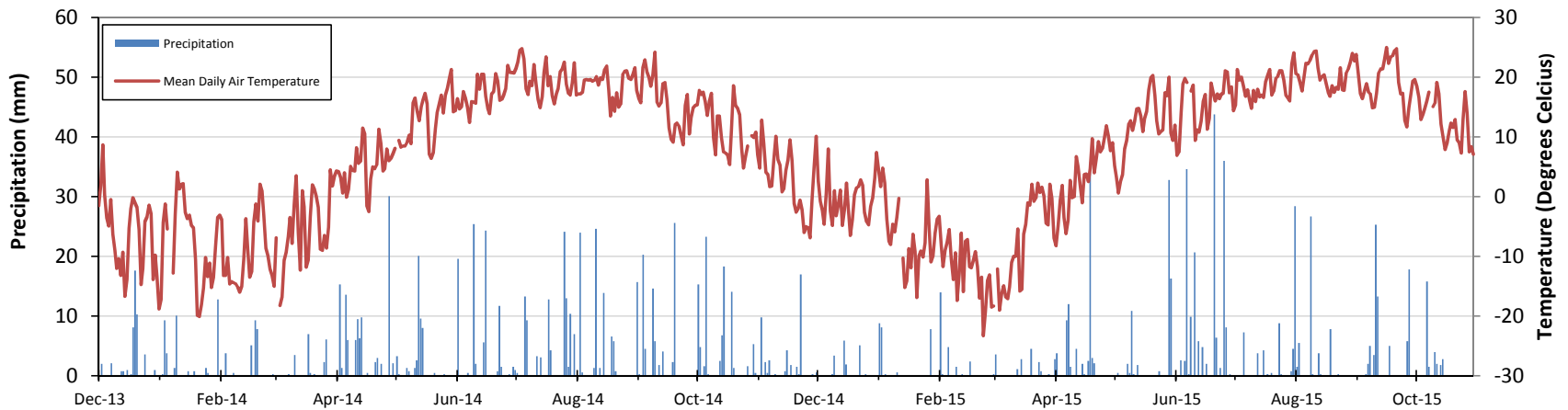
Monitoring Well MW5-14D



Monitoring Wells MW8-15



Weather Data



Notes:

Precipitation and temperature data were obtained from Environment Canada for the Oshawa Climate Station.

- MW5-14S(2) screened 250.1 to 248.6 m AMSL
- MW5-14S screened 249.5 to 246.5 m AMSL
- MW5-14I screened 215.5 to 212.5 m AMSL
- MW5-14D screened 200.0 to 198.5 m AMSL

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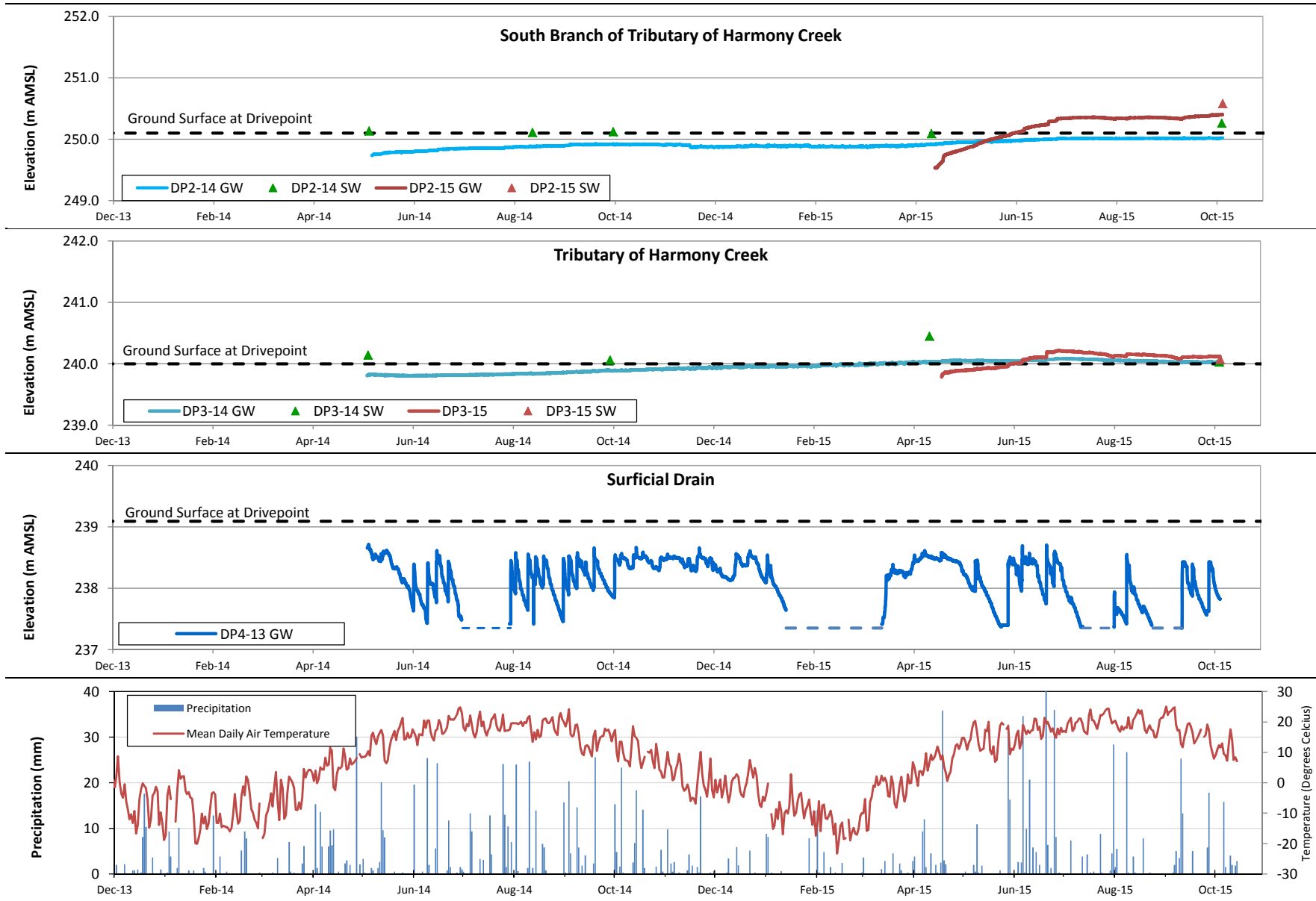
Figure No.

7

Title

**Hydrographs
Monitoring Wells MW5 and MW8**





Notes:

Precipitation and temperature data were obtained from Environment Canada for the Oshawa Climate Station.

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2015 Annual Groundwater and Surface
Water Monitoring Report

Figure No.

8

Title

**Hydrographs
Surface Water Drive-Points**



- Legend**
- Project Area
 - Station Site
 - Private Well Monitoring Area
 - 250.2 Groundwater Elevation (mAMSL)
 - PW Private Well
 - Borehole (Stantec, 2015)
 - Monitoring Well (Stantec, 2013, 2015)
 - Piezometer (Stantec, 2013)
 - Test Pit (Stantec, 2013)
 - Surface Water Monitoring (Stantec, 2013)
 - Monitoring Well (EXP, 2012)
 - Monitoring Well (Inspec-Sol, 2012) - Abandoned
 - Borehole (Inspec-Sol, 2012)
 - Monitoring Well (MTO, 2009)
 - Private Well
 - Topographic Contour (mAMSL)
 - Watercourse
 - Groundwater Flow Direction
 - Interpreted Shallow Groundwater Contour (mASL)
 - Watershed Divide
 - Wetland
 - Area Downgradient from Clarington TS Station Site

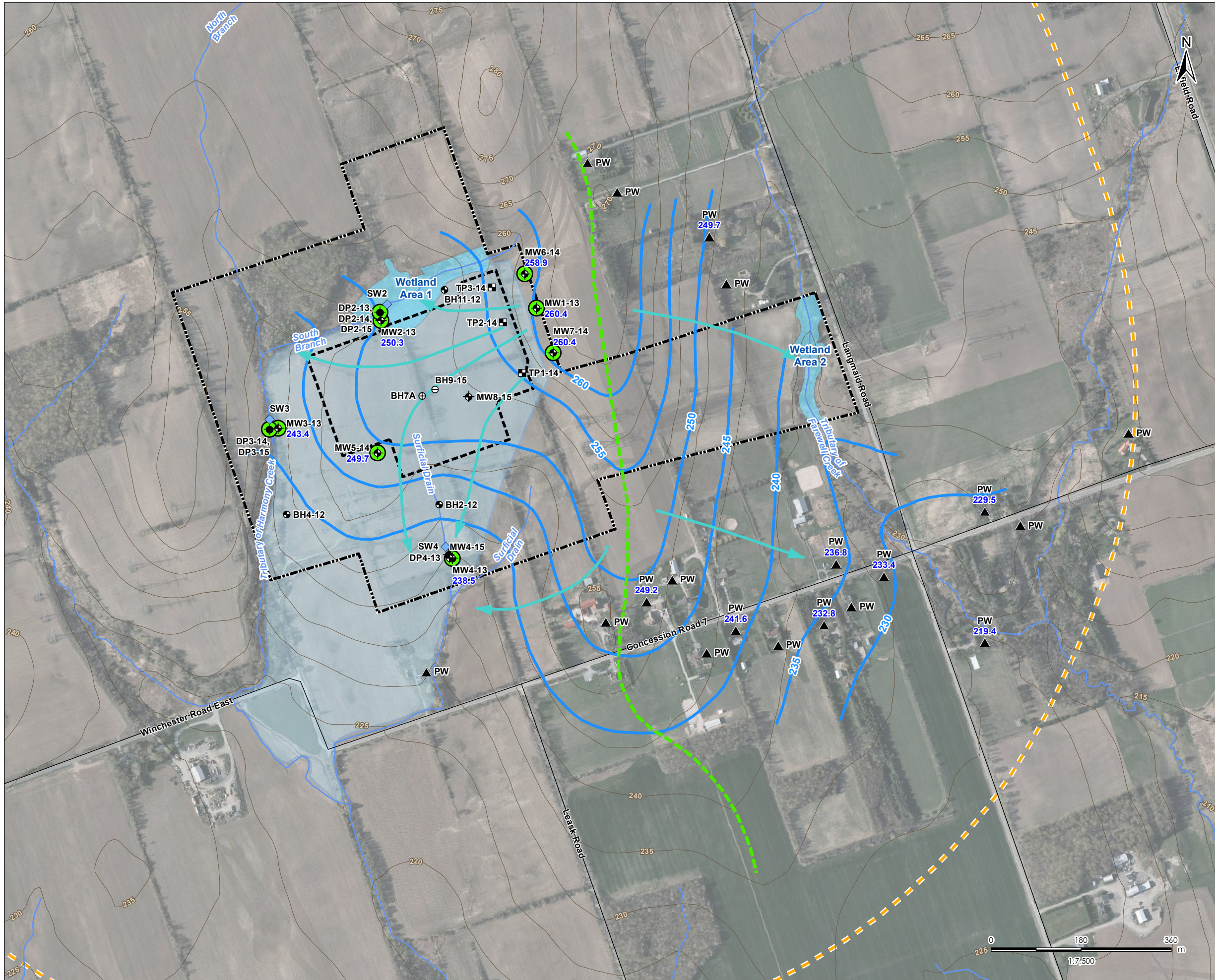
- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.
 3. Orthoimagery © First Base Solutions, 2012.
 4. Water level elevation data based on average elevations on October 1/2, 2015.

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Figure No.
9

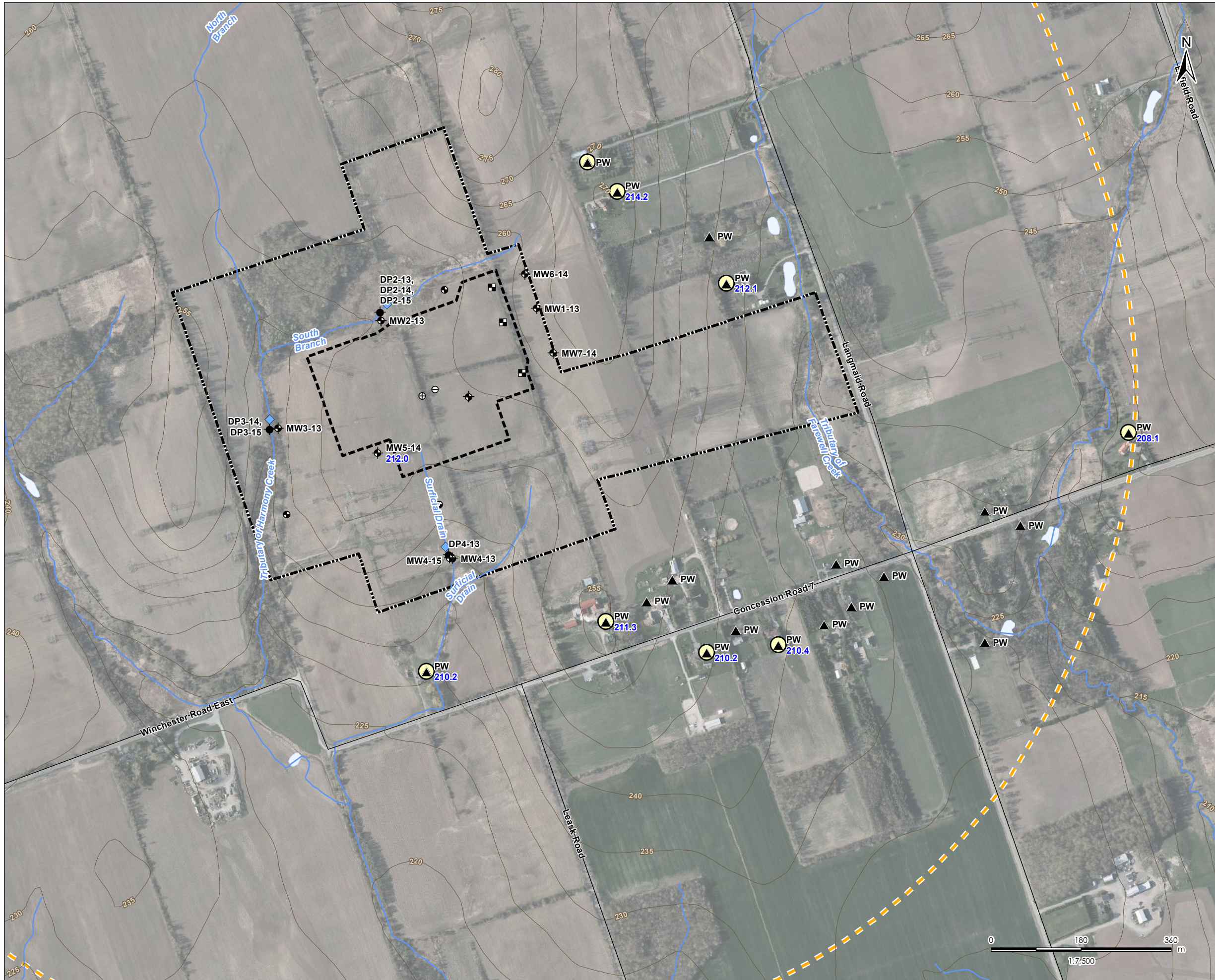
Title
Groundwater Levels Shallow Overburden - October 2015



\\cd1220-102\Work_group\01609\active\60960764\drawing\MXD\Hydrogeology\2015_MonitoringReport\160900764_2015\MonRept_Fig09_GW_ShallowOverburden_Oct2015.mxd
 Revise dt: 2015-11-16 By: jpmoser



- Legend**
- Project Area
 - Station Site
 - Private Well Monitoring Area
 - 250.1 Groundwater Elevation (mAMSL)
 - PW Private Well
 - Borehole (Stantec, 2015)
 - Monitoring Well (Stantec, 2013, 2015)
 - Piezometer (Stantec, 2013)
 - Test Pit (Stantec, 2013)
 - Surface Water Monitoring (Stantec, 2013)
 - Monitoring Well (EXP, 2012)
 - Monitoring Well (Inspec-Sol, 2012)
 - Borehole (Inspec-Sol, 2012)
 - Monitoring Well (MTO, 2009)
 - Private Well
 - Well Screened Within Thorncliffe Formation
 - Topographic Contour (mAMSL)
 - Watercourse
 - Waterbody



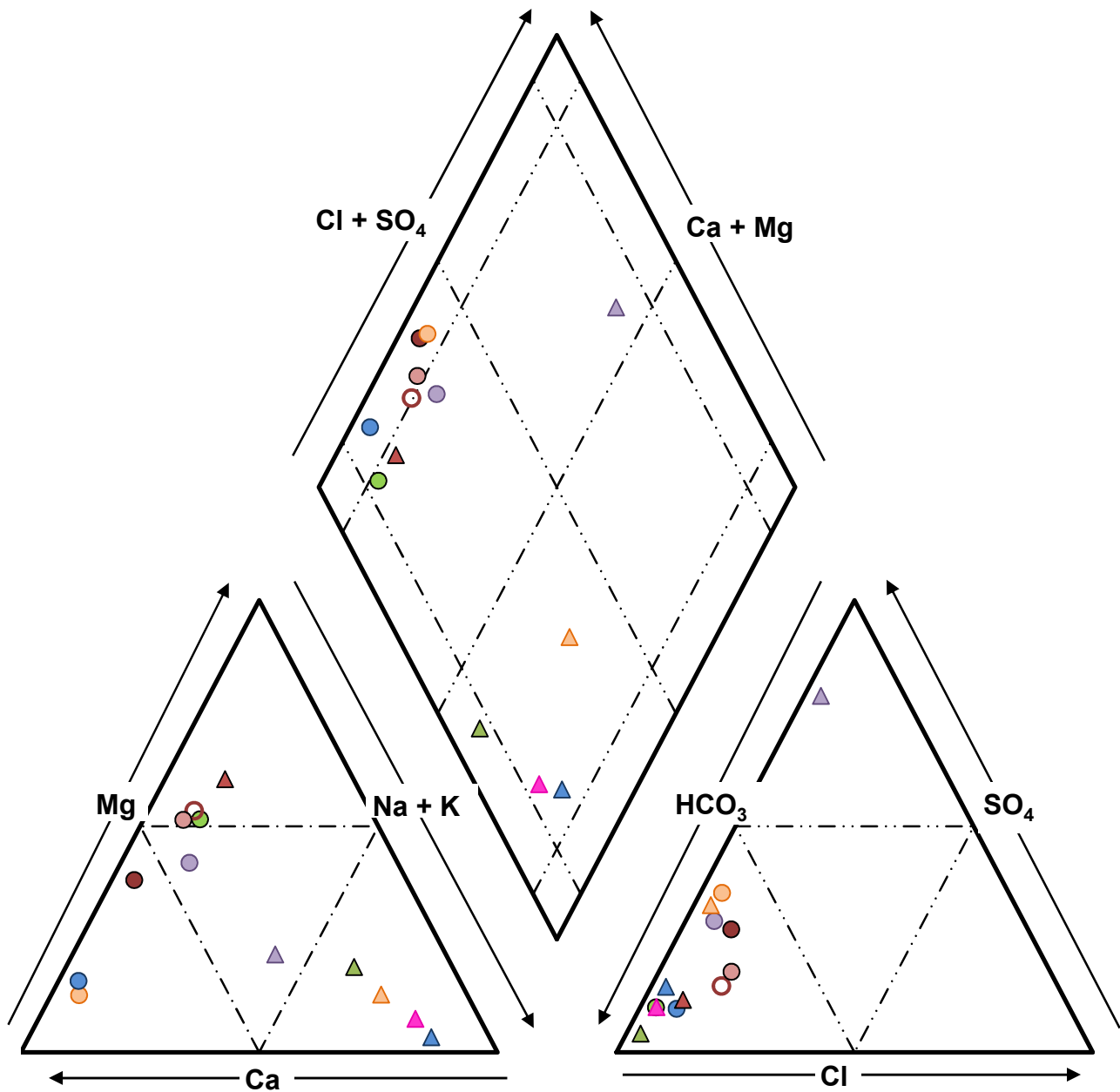
- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.
 3. Orthoimagery © First Base Solutions, 2012.
 4. Water level elevation data based on average elevations on October 1/2, 2015.

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Figure No.
10
Title
**Groundwater Elevations
Thorncliffe Formation - October 2015**

\\cd1220-102\Work_group\01609\active\60960745\drawing\MXD\Hydrogeology\2015_MonitoringReport\160900764_2015\MonRept_Fig10_GW_Thorncliffe_Oct2015.mxd
 Revise dt: 2015-11-16 By: jpmoser



- MW1-13S ● MW2-13S ● MW3-13S ● MW4-13S ● MW5-14S ● MW6-14 ● MW7-14
- ▲ MW1-13D ▲ MW2-13D ▲ MW3-13D ▲ MW4-15D ▲ MW5-14I ▲ MW5-14D

Water quality data from groundwater samples collected on October 5, 2015 at MW3-13, MW4-13S and MW4-15D, on October 6, 2015 at MW5-14, and on October 7, 2015 at MW1-13, MW2-13, MW6-14 and MW7-14.

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2015 Annual Groundwater and Surface Water Monitoring Report

Figure No.

11

Title

Water Chemistry - Piper Plot

