Showcasing Water Innovation
Elm Drive
August 2013 Monitoring Update

Monitoring Progress

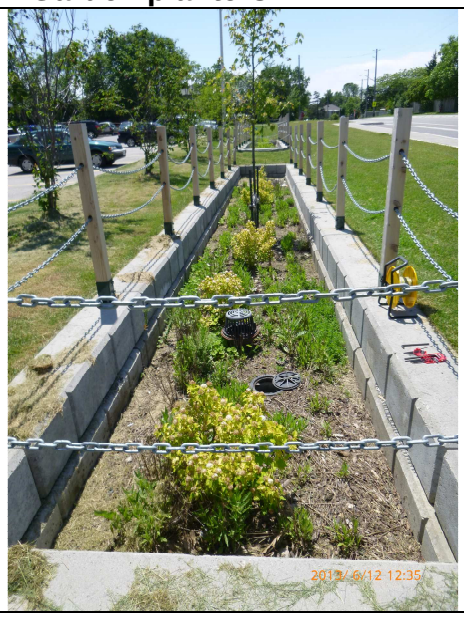
Water quantity (flow) monitoring started in July 2011. A weir and a continuous water flow logger were installed in the manhole downstream of the LID infrastructure and set to record water level at 10 minute intervals. The logger has been operating continuously since it was installed.

In May 2012 an automatic sampler was installed in the same manhole to collect water quality samples during storm events. To date, samples from 26 storm events have been collected.

Prior to November 2012, a City of Mississauga precipitation gauge located approximately 1 kilometer away from the Elm Drive site provided precipitation data for this project. In November 2012 CVC staff installed a new rain gauge and air temperature logger on the roof of the Elm Drive Adult Education Centre. They are set to record precipitation and air temperature at 5 minute intervals. Data from this new gauge is now being used for the Elm Drive monitoring program.

Since August 2011, for rain events not involving snow melt of up to 25 mm, no outflows have been observed leaving the LID infrastructure.

Summer 2013 photos of the Elm Drive Rain Garden planters



- **Landscaping –** The plants are doing well and some are still establishing as they were planted last fall. CVC's Conservation Youth Corps also performed basic maintenance such as weeding and litter removal on site.

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- **Maintenance –** As the LID site is next to an adult education school, litter continues to be a significant maintenance issue. The improved landscaping and educational signage will help to bring attention to the issue of litter and the purpose of these practices. Also, CVC will engage the City in developing a maintenance strategy for the site.

- **Water Levels –** Initial results from the observation well level loggers have shown that the rain garden is operating properly. Monitoring of flows from the site has found that in 1 year, 1.9 million litres of stormwater (1.3 Olympic size pools) has been stored and infiltrated by the rain garden planters. For rain events up to 25 mm, no outflow from the rain garden planters was measured.

  The largest precipitation event recorded to date happened July 8 2013, with a total of 104 mm of rainfall over one evening (larger than a 100 year design storm event).

Table 1 - Recorded precipitation events in 2013 resulting in flow at Elm Drive compared to Lakeview control, grass swale and LID sites. “X” indicates that flow was recorded at that monitoring station during the applicable event.

		SWI				
Date	**Total Rainfall**	**Elm**	**Lakeview**			
			Control	Swale	LID South	LID North
11-Jan-13	6		X			
13-Jan-13	36*	X	X	X	X	
26-Jan-13	4		X			
28-Jan-13	9		X	X		
30-Jan-13	21*	X	X	X	X	
08-Feb-13	4					
09-Feb-13	6					
12-Feb-13	5		X	X		
14-Feb-13	0		X			
19-Feb-13	9		X	X		
26-Feb-13	47*	X	X	X	X	X
9-Mar-13	3					
11-Mar-13	10*	X	X	X		
18-Mar-13	17		X			
20-Mar-13	3		X			
31-Mar-13	2		X			
8-Apr-13	75	X	X	X	X	X
13-Apr-13	3		X			
24-Apr-13	14		X	X		
28-Apr-13	13		X	X		

10-May-13	22	X	X	X		
20-May-13	7		X			
22-May-13	2		X			
28-May-13	23	X	X	X		
31-May-13	4		X			
2-Jun-13	8		X	X		
6-Jun-13	7		X			
10-Jun-13	33	X	X	X	X	X
13-Jun-13	5		X	X		
16-Jun-13	15	X	X	X		
22-Jun-13	4		X			
25-Jun-13	5		X			
28-Jun-13	7		X			
3-Jul-13	6		X	X		
5-Jul-13	15	X	X	X		
7-Jul-13	25		X	X		
8-Jul-13	81	X	X	X	X	X
19-Jul-13	13		X	X		
27-Jul-13	5 (18)^	X	X			
31-Jul-13	28	X	X	X		

*indicates event included snow melt
^() indicates event where precipitation at Elm Drive was significantly different from Lakeview (precip total for Elm in brackets)

Table 2 - Number of precipitation events sampled per monitoring site and the number remaining in the SWI commitment.

	Elm	**Lakeview**			**IMAX**
		Control	Swale	LID	Control
Commitment					
Surface Water	20	20	20	20	20
Groundwater	0	0	0	0	4
Soil	0	0	0	0	1
Taken to Date					
Surface Water	27	53	34	11	7
Groundwater	0	0	0	0	2
Soil	0	0	0	0	1
Remaining					
Surface Water	**7**	**33**	**14**	**-9**	**-13**
Groundwater					**-2**
Soil					**0**

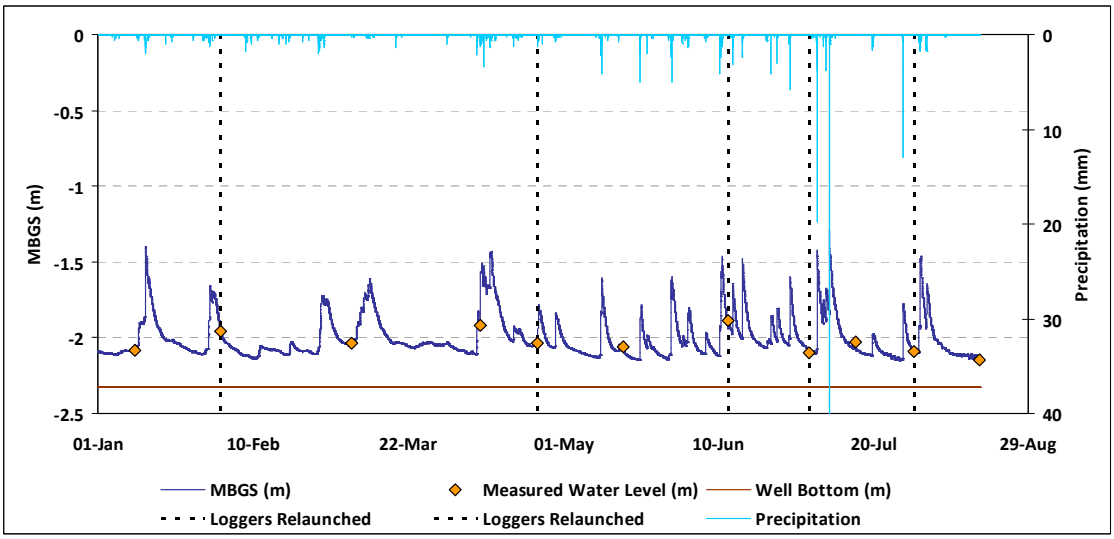

Figure 1 - Elm Drive Water Level and Precipitation at Observation Point 2 from January 2013 to early July.

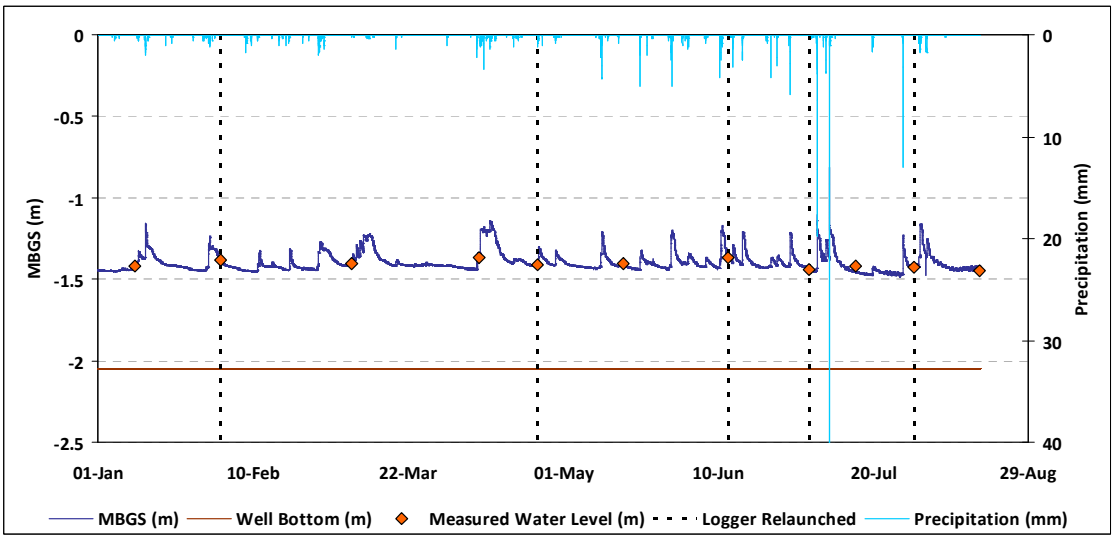

Figure 2 - Elm Drive Water Level and Precipitation at Observation Point 3 from January 2013 to early July.

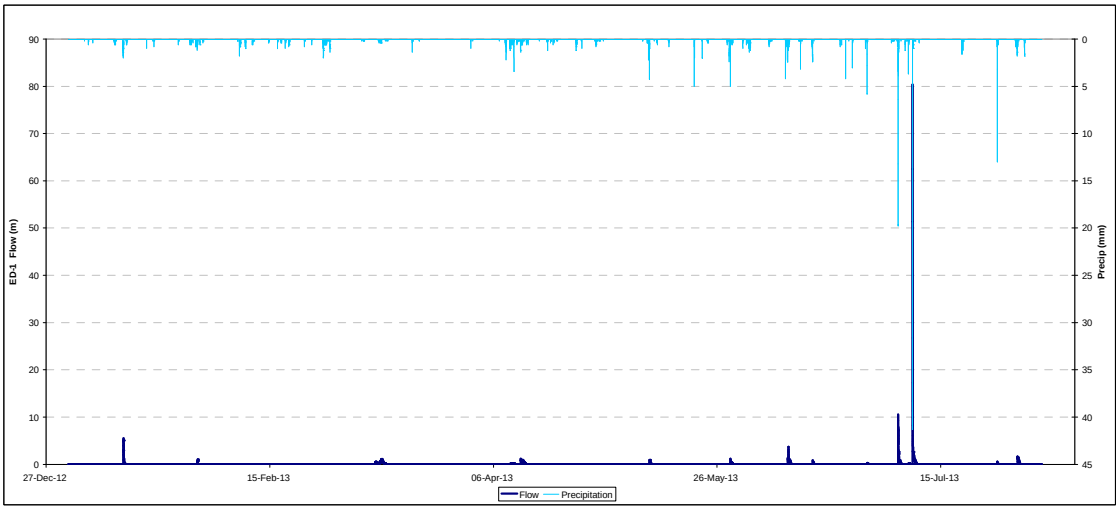

Figure 3 - Elm Drive Outlet Water Flow and Precipitation from January 2013 to early August.

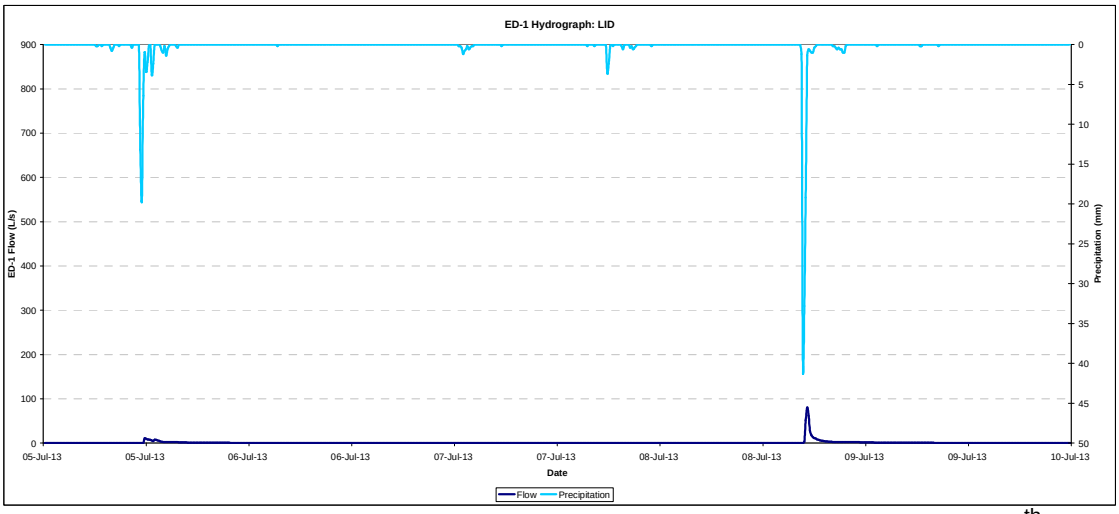

Figure 4 - Elm Drive Outlet Water Flow and Precipitation from the July 8th 2013 event totaling 104mm in one evening.