

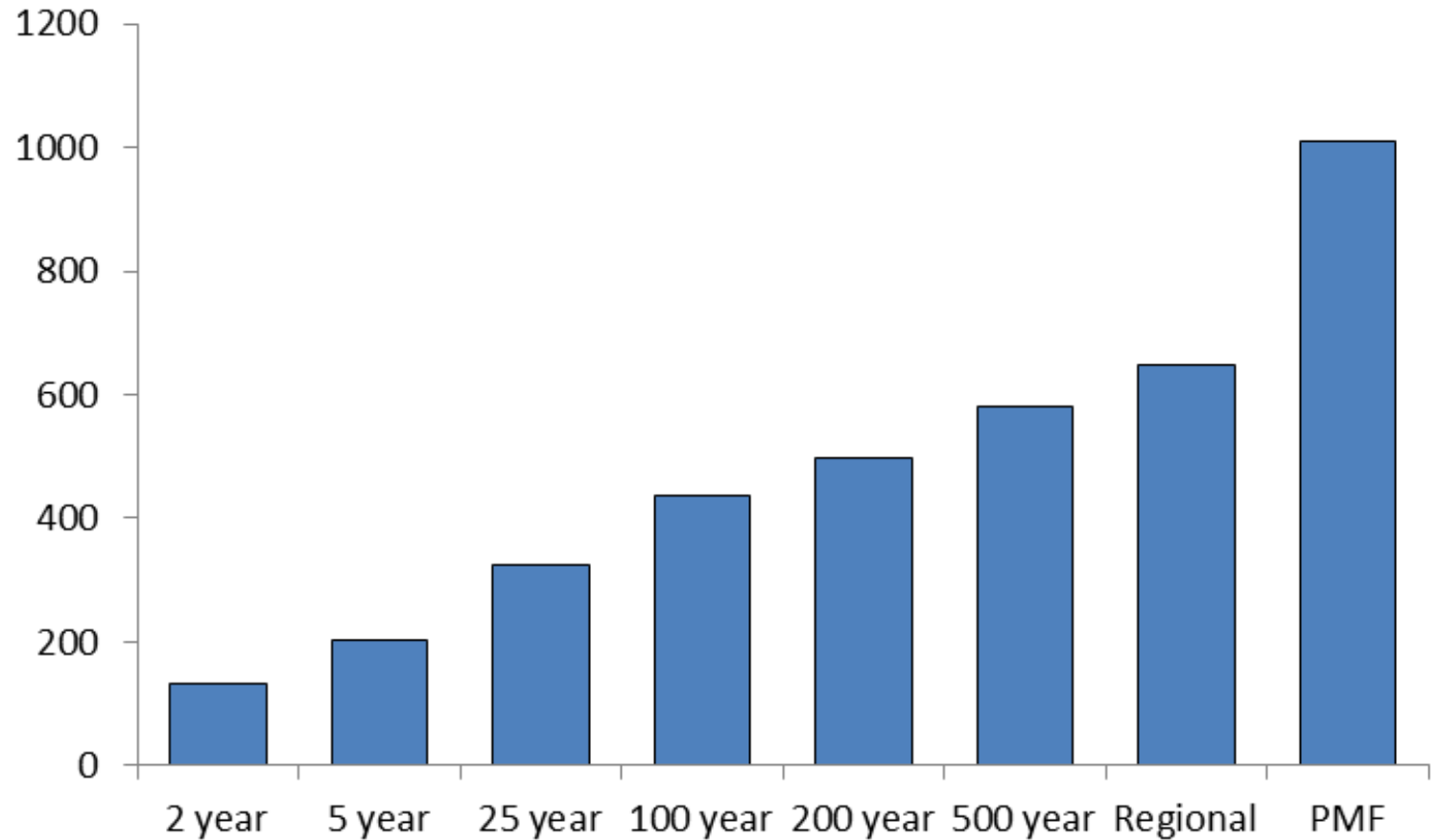
Hydraulic Models, Extreme Events and Flow Monitoring

Stephanie Shifflett, Water Resources Engineer

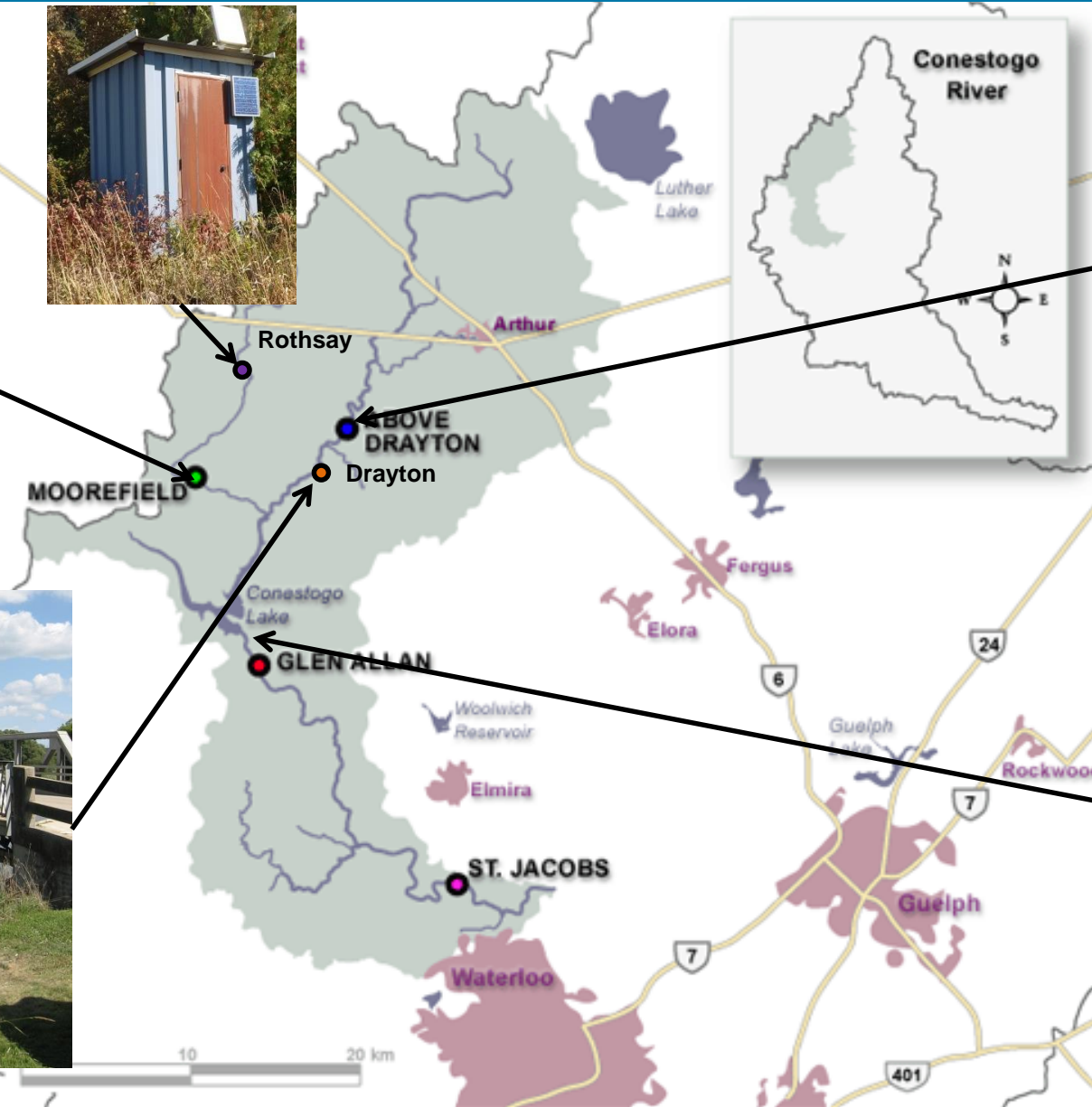


Extreme Events

- Events unlikely to occur within our careers
- Up to the PMF (Probable Maximum Flood)



Conestogo River



Monitoring Stations



1. Would the station continue to operate during extreme events?
2. Would the station continue to transmit during extreme events?
3. Can level be converted to flow at extreme levels?

Data Collection



Level Loggers

- installed Fall 2016
- upstream and downstream of each station
- at flow constriction locations

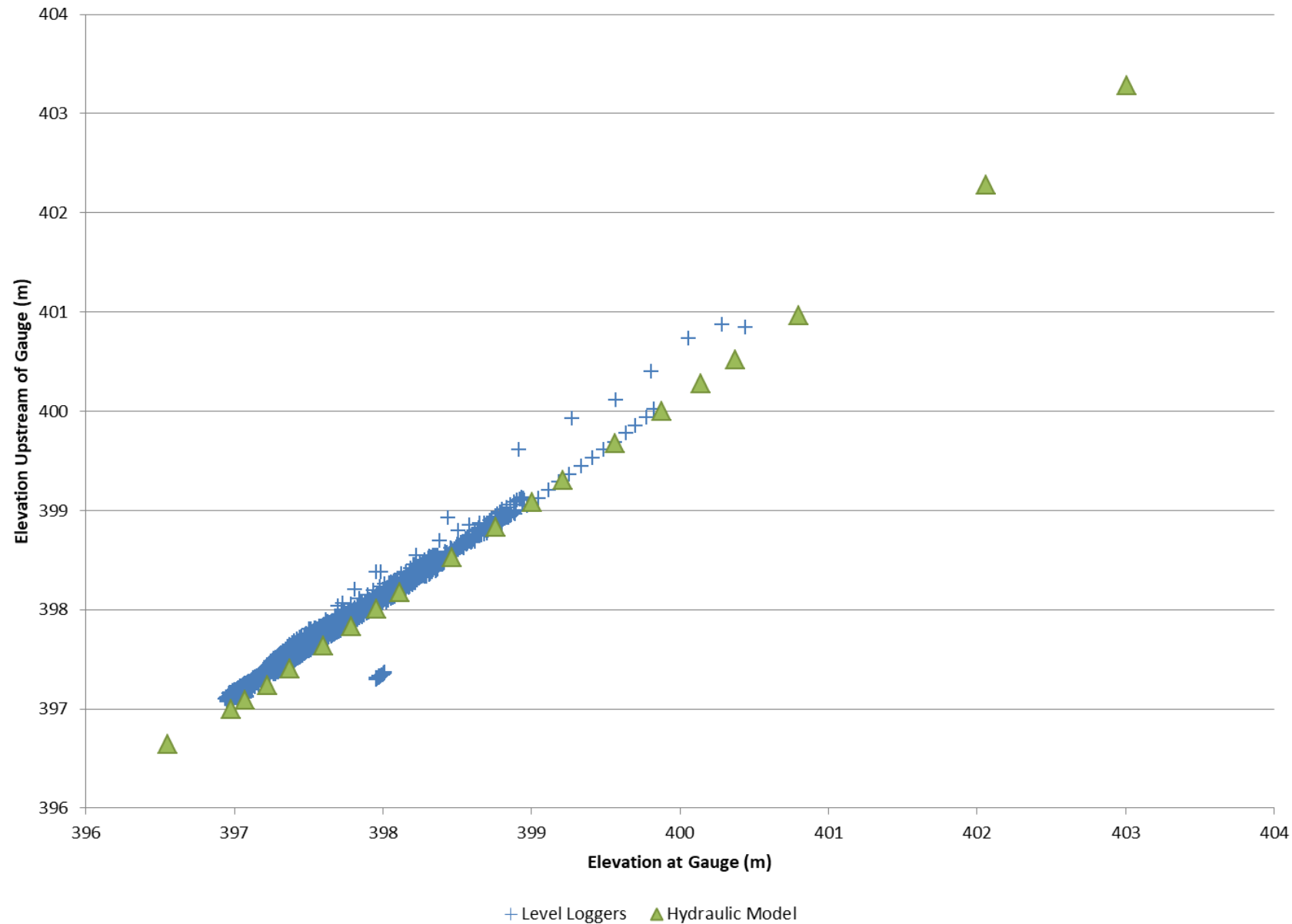
Data Collection

- **June 2017**
 - max observed
 - 100 year return period
- **February 2018**
 - fourth highest flow
 - 25 year return period



Data Collection

- **June 2017**
 - max observed
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Data Collection

Sideroad 12



Upper Conestogo Structures Inventory

Surveyor:	Eric Gazendam	Survey Date:	November 9, 2018
Street Location:	Sideroad 12	Watercourse:	Moorefield Cr.
Structure ID:		Municipality:	Mapleton Township
Coordinates:		Date of Construction:	2007
N: 4844184.31	E: 521848.51	Temporary Benchmark:	Elev. 398.14
Structure Type:	Bridge	CC at NW end of concrete rail	
Sag Elevation (m):	398.03	Structure Material:	Concrete
Opening Characteristics:	Rectangular	Railing Height:	0.78 concrete, 1.01 rail
Length:	9.69m	Railing Description:	Concrete with steel rail
Upstream Treatment:	natural	Pier Configuration:	none
Downstream Treatment:	natural	Skew Angle:	5°
Upstream Elevations (m):		Downstream Elevations (m):	
Invert	394.34	Invert	394.09
Obvert	397.03	Obvert	397.00
Top	398.27	Top	398.27
Comments:			



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



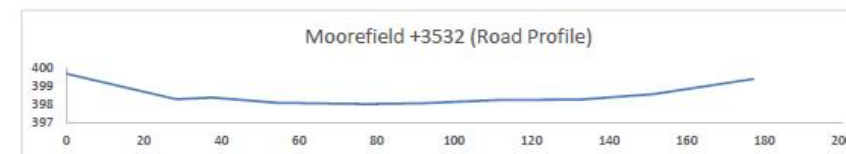
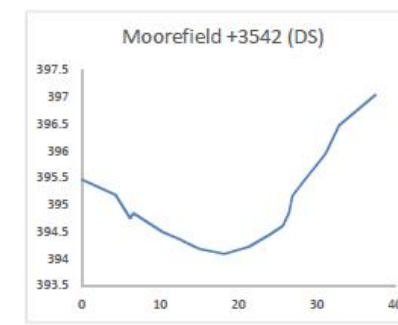
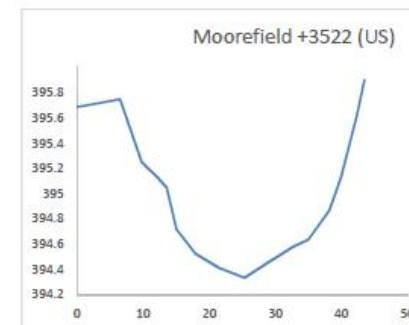
Description: Looking at d/s face

Sideroad 12

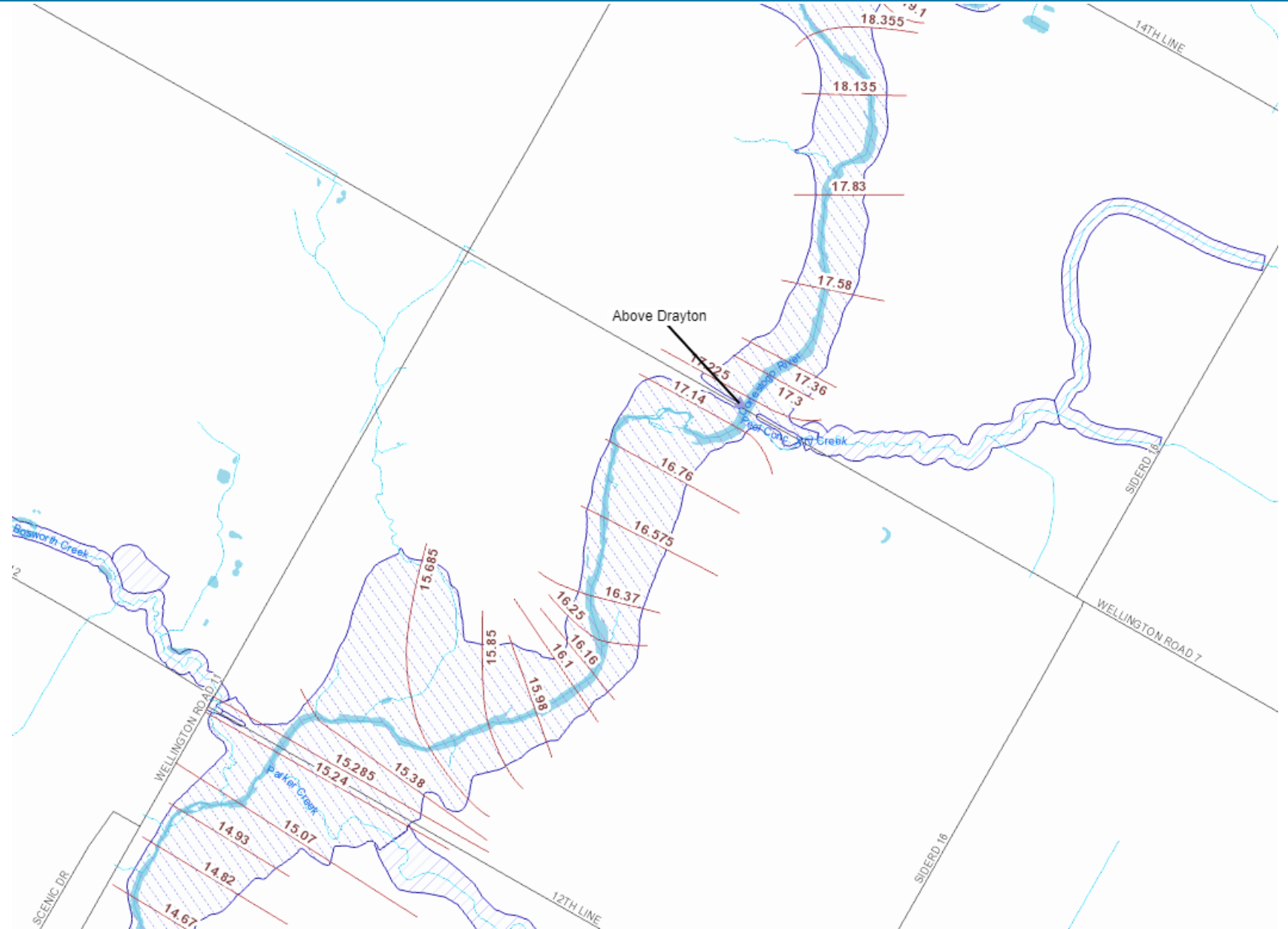
Moorefield +3522 (US)	
Distance	Elevation
0.00	395.69
6.51	395.75
9.75	395.25
12.07	395.13
13.54	395.05
15.03	394.72
17.90	394.53
21.47	394.41
25.31	394.34
29.09	394.46
32.67	394.58
34.97	394.64
38.15	394.87
39.91	395.13
42.32	395.62
43.48	395.90

Moorefield +3532 (road)	
Distance	Elevation
0.00	399.71
28.39	398.31
37.67	398.39
54.19	398.11
77.69	398.03
92.10	398.08
112.55	398.27
132.27	398.29
151.40	398.58
177.19	399.43

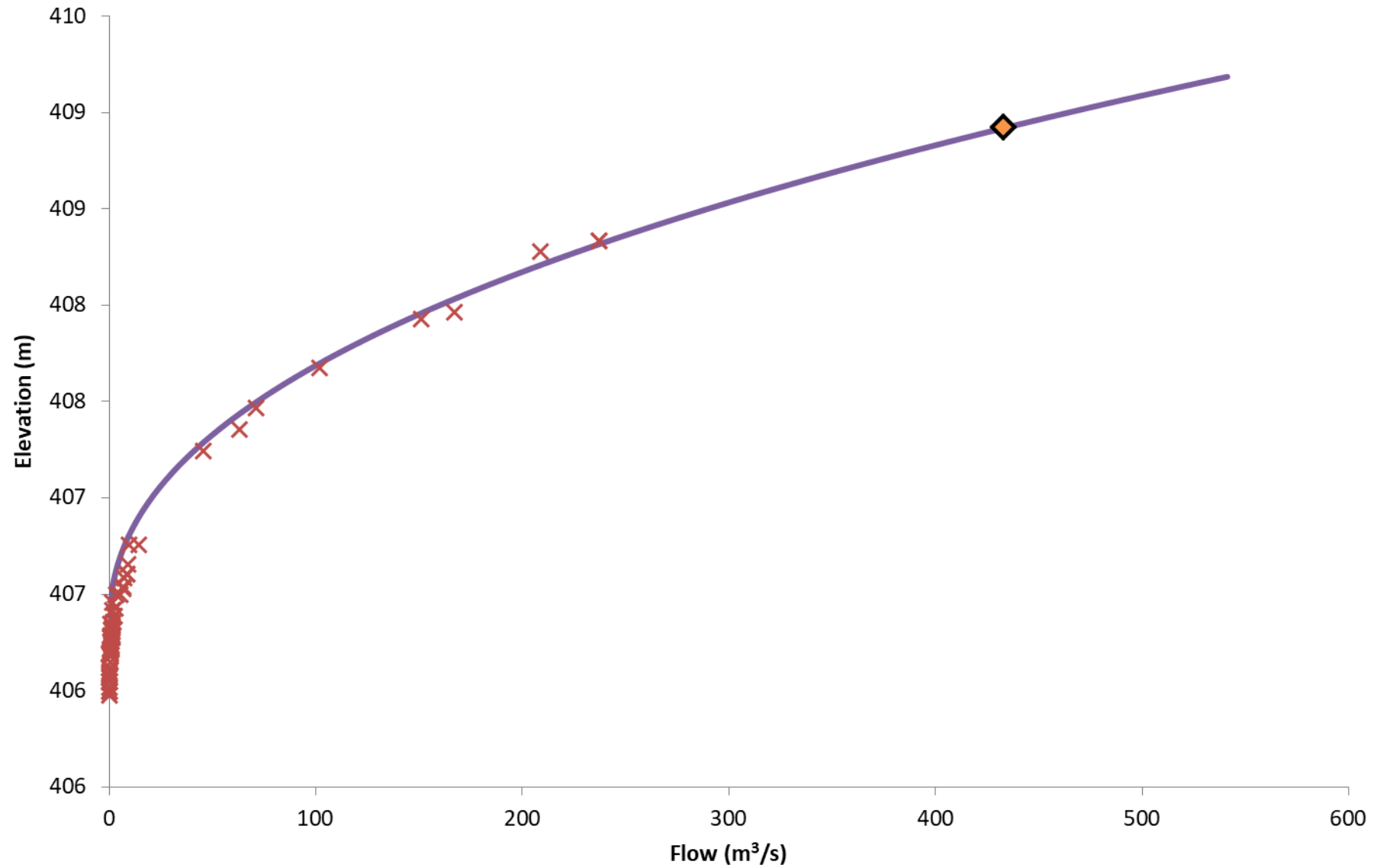
Moorefield +3542 (DS)	
Distance	Elevation
0.00	395.47
4.29	395.19
6.17	394.75
6.55	394.85
10.32	394.50
12.32	394.37
14.95	394.19
18.21	394.09
21.27	394.22
24.01	394.45
25.66	394.61
26.43	394.85
26.85	395.16
28.15	395.41
31.09	395.95
32.82	396.47
37.47	397.04



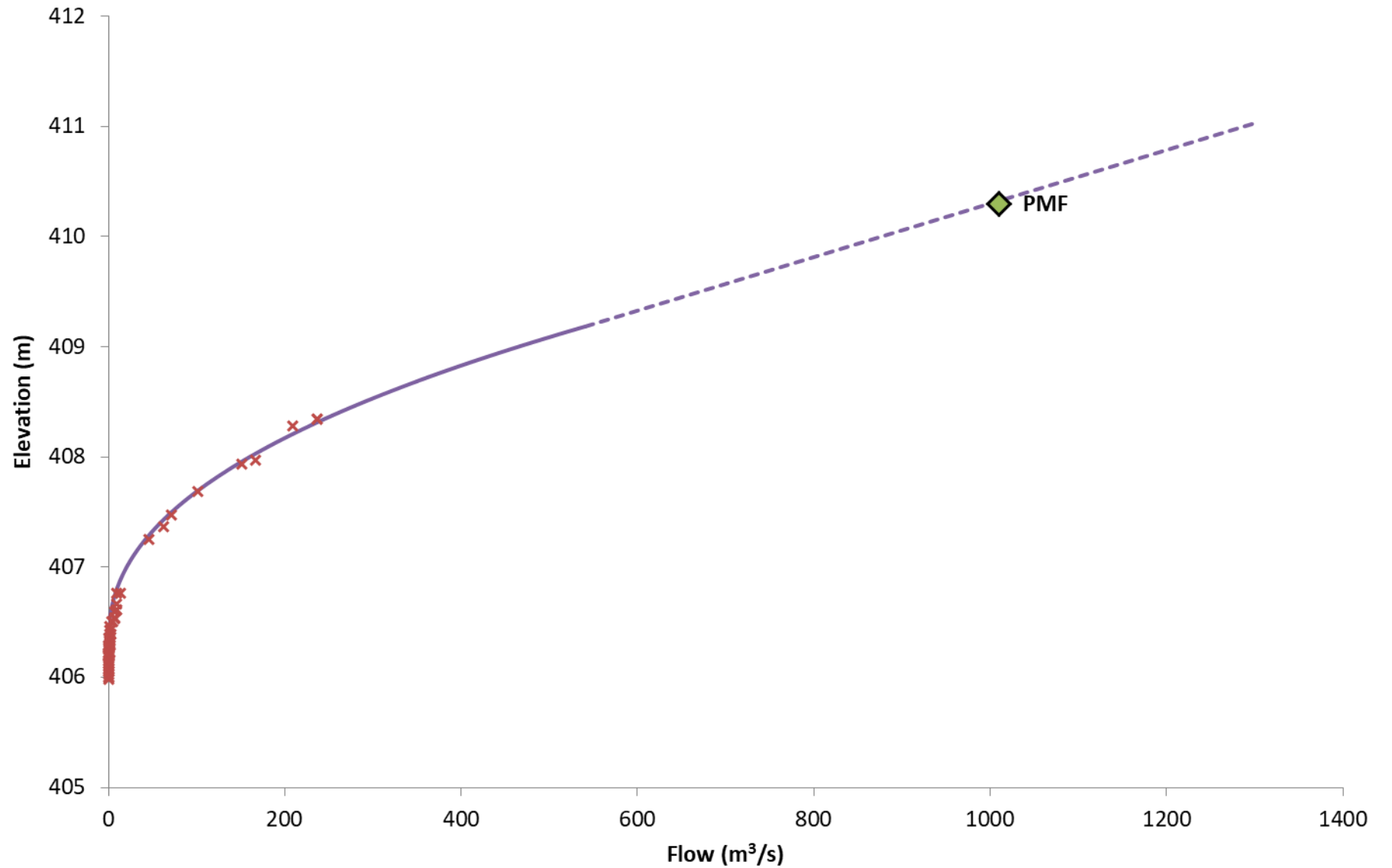
Modeling



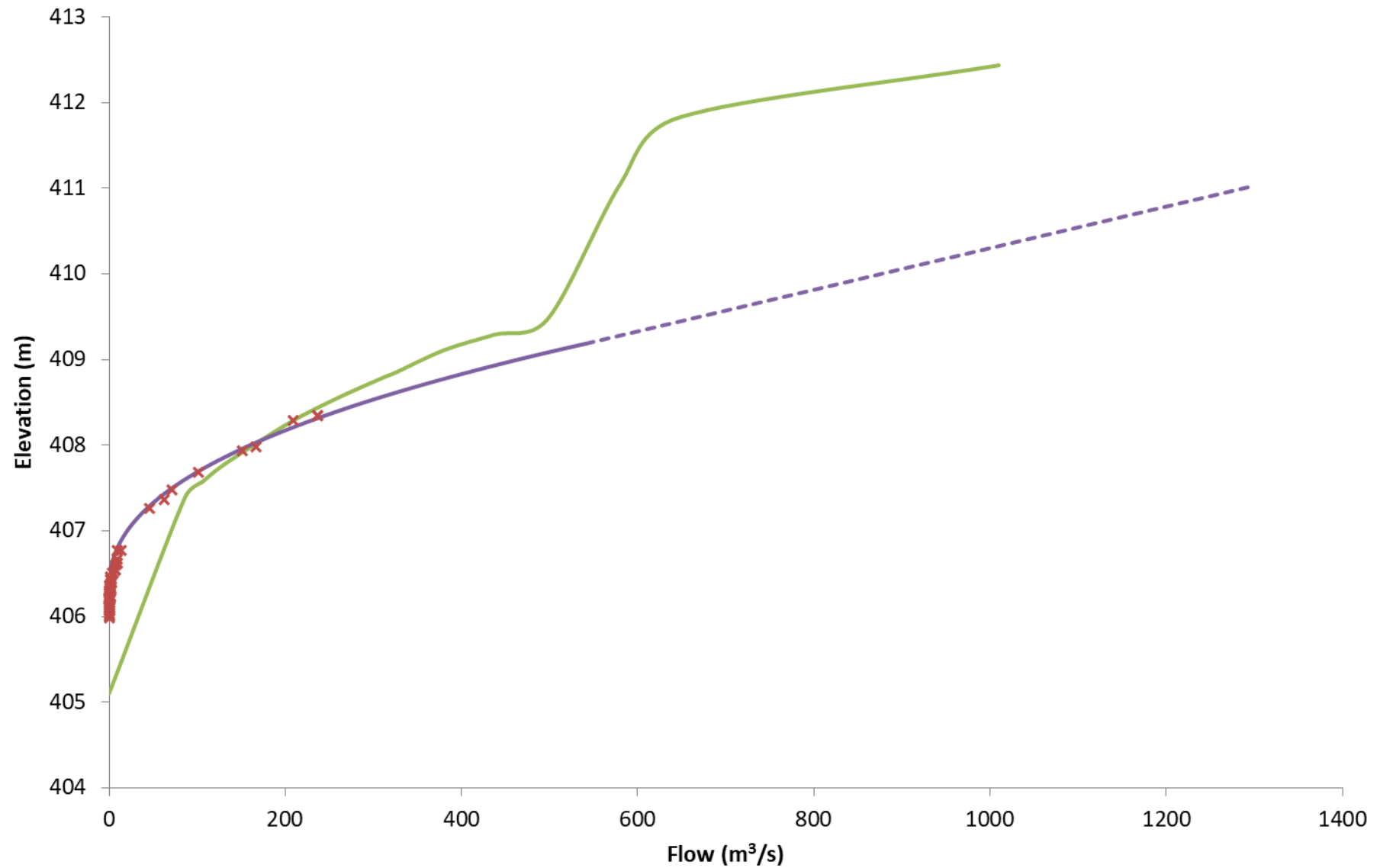
Rating Curve



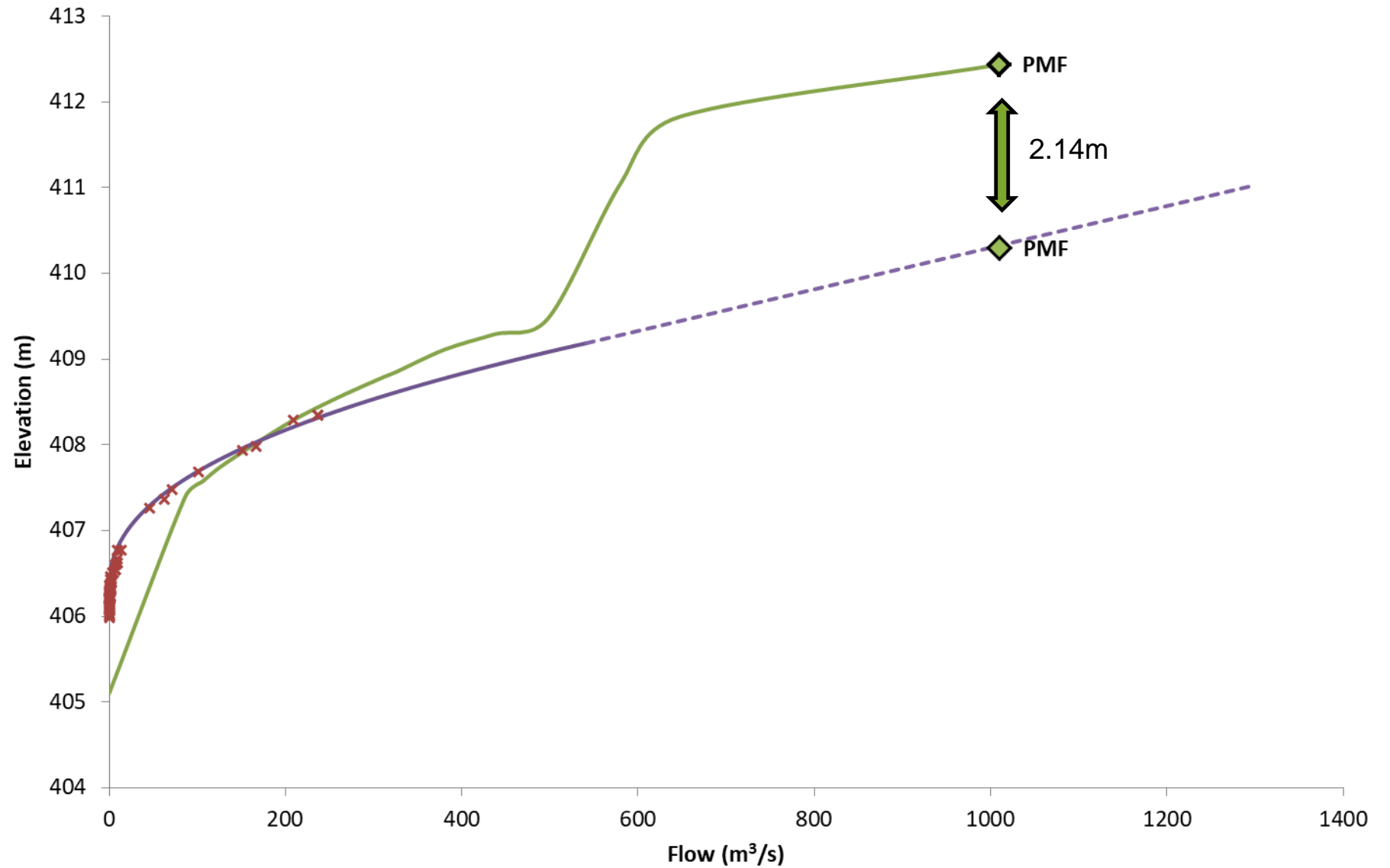
Rating Curve



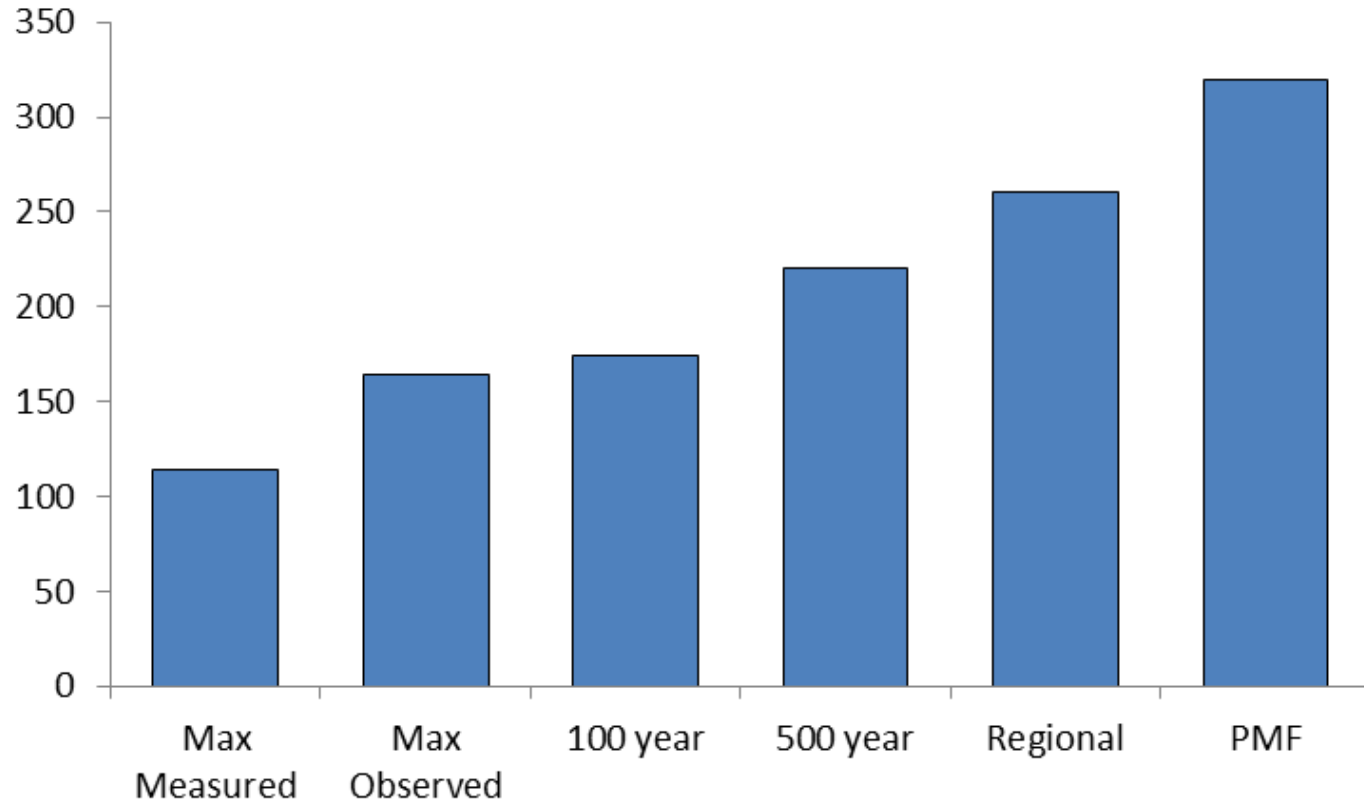
Rating Curve



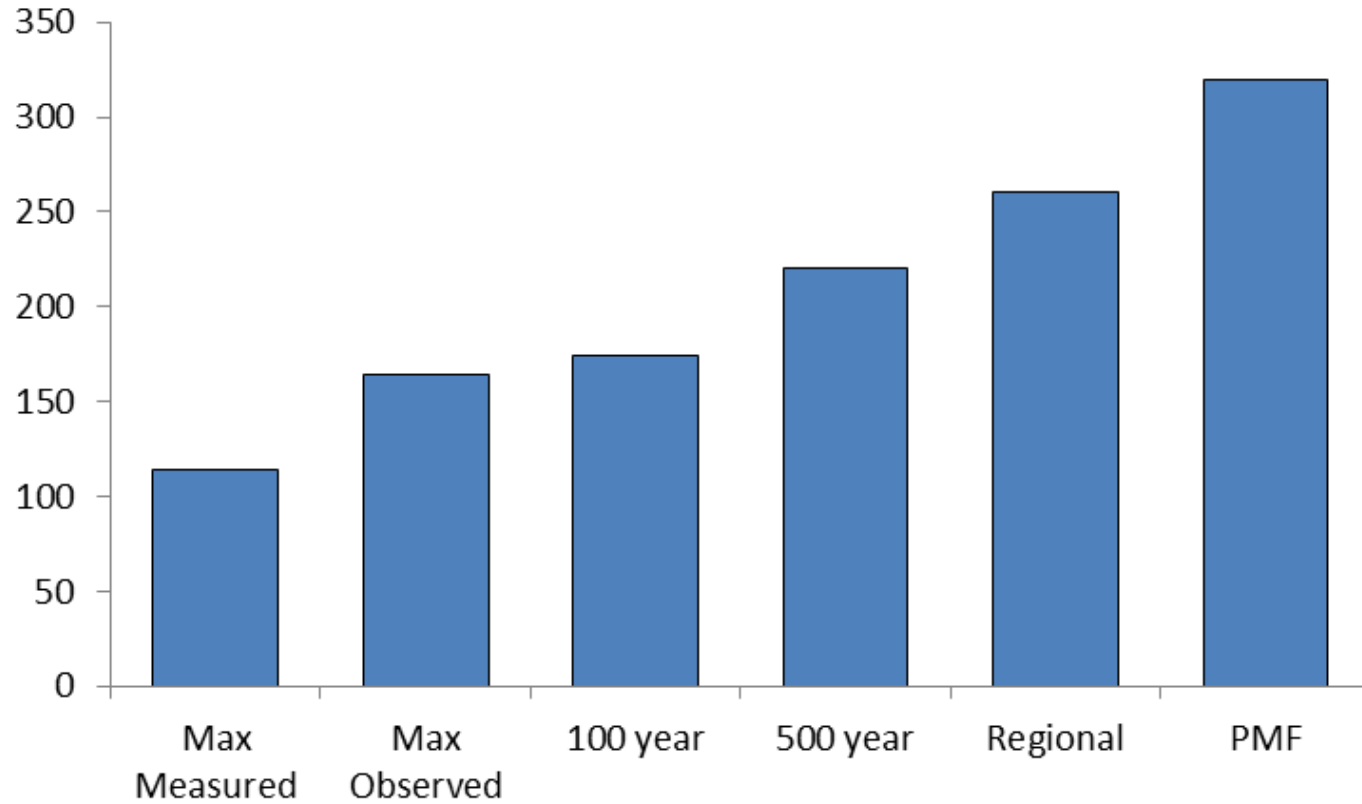
Rating Curve



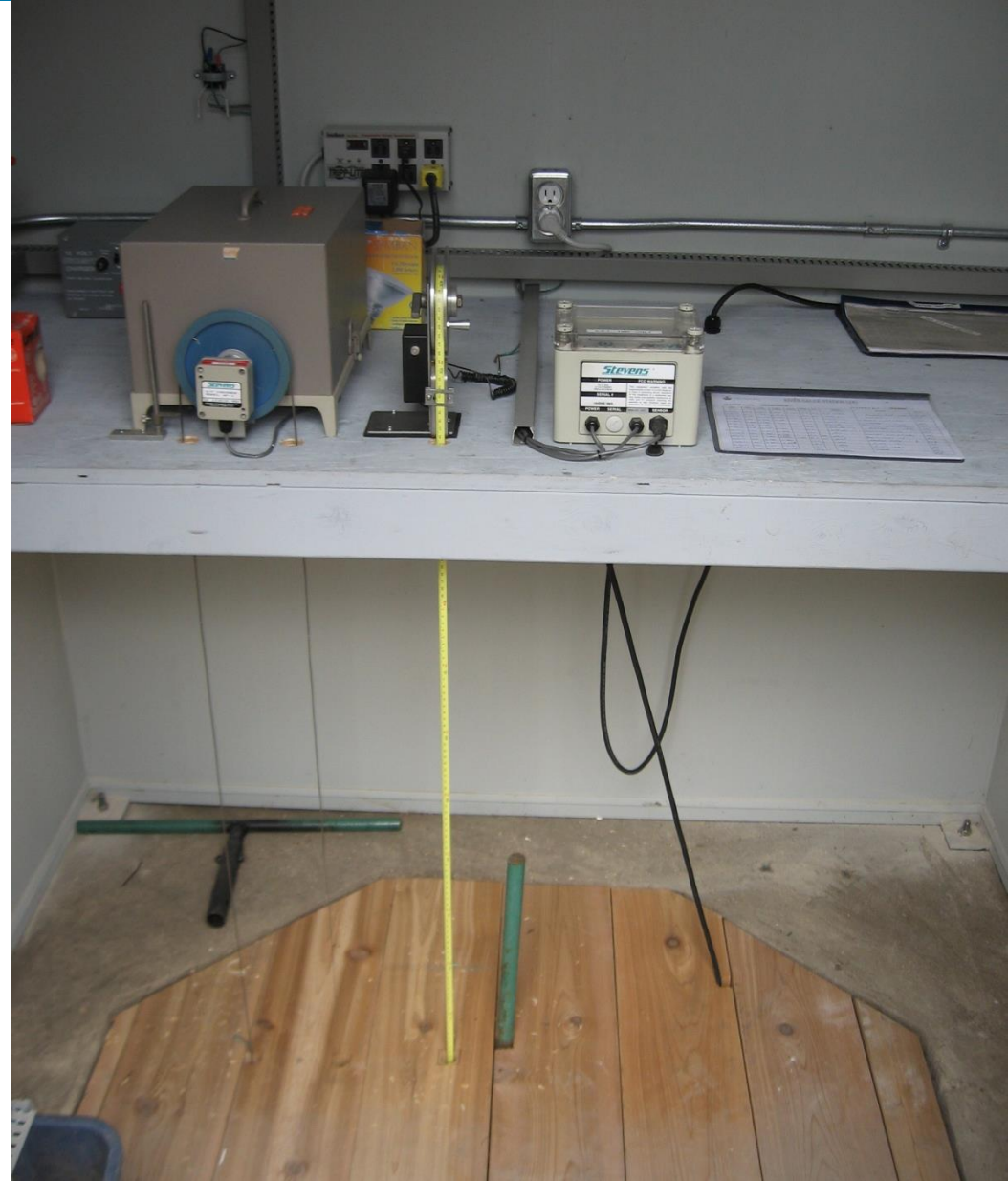
Station Analysis - Moorefield



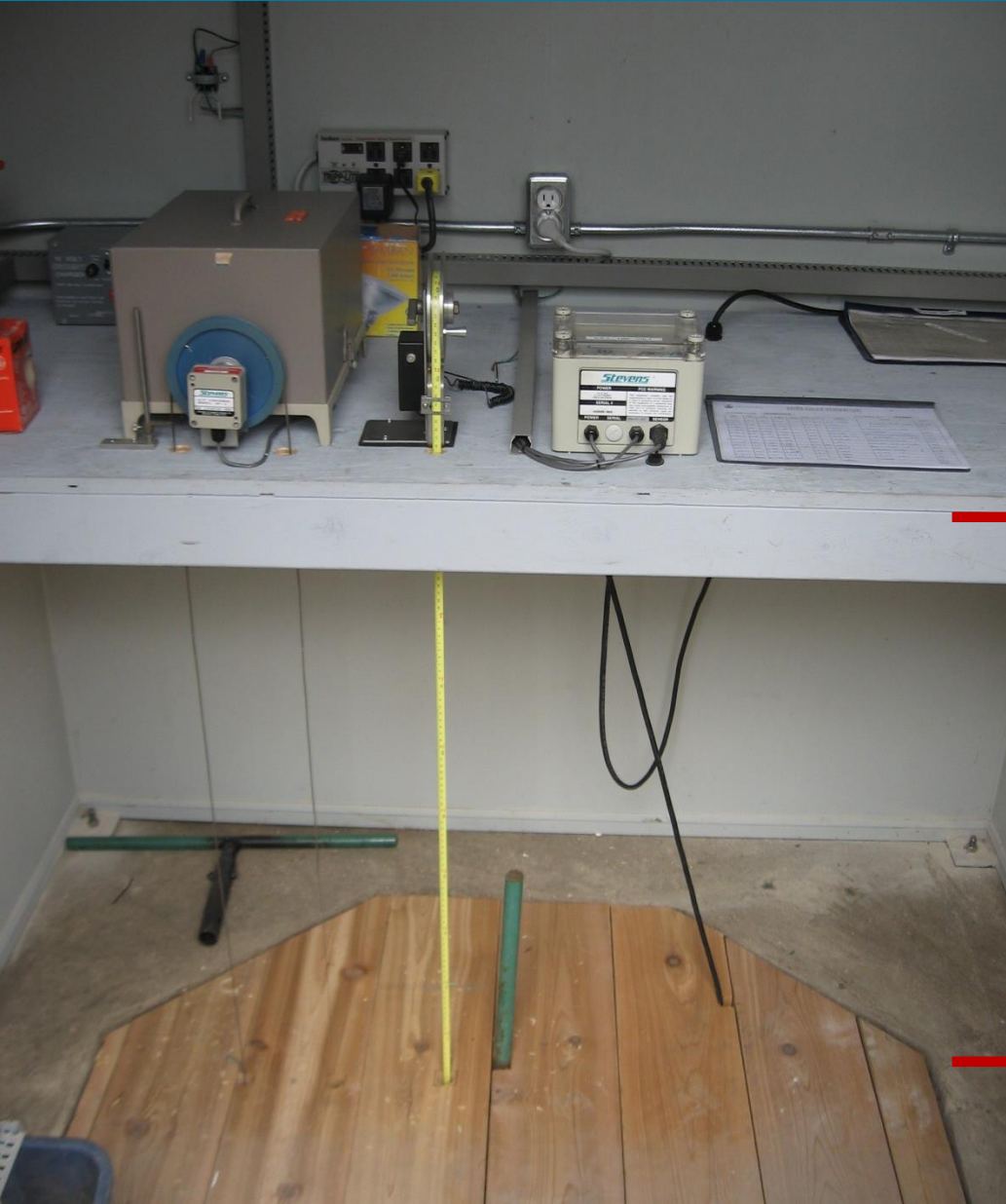
Station Analysis - Moorefield



Station Analysis – Drayton



Station Analysis – Drayton



PMF

500 year flow

Summary

- Floodplain mapping studies can produce more than just floodplain maps
- Field data is not available for the biggest possible events, models help to fill in the gaps
- Each station is unique and should be reviewed separately



Questions

