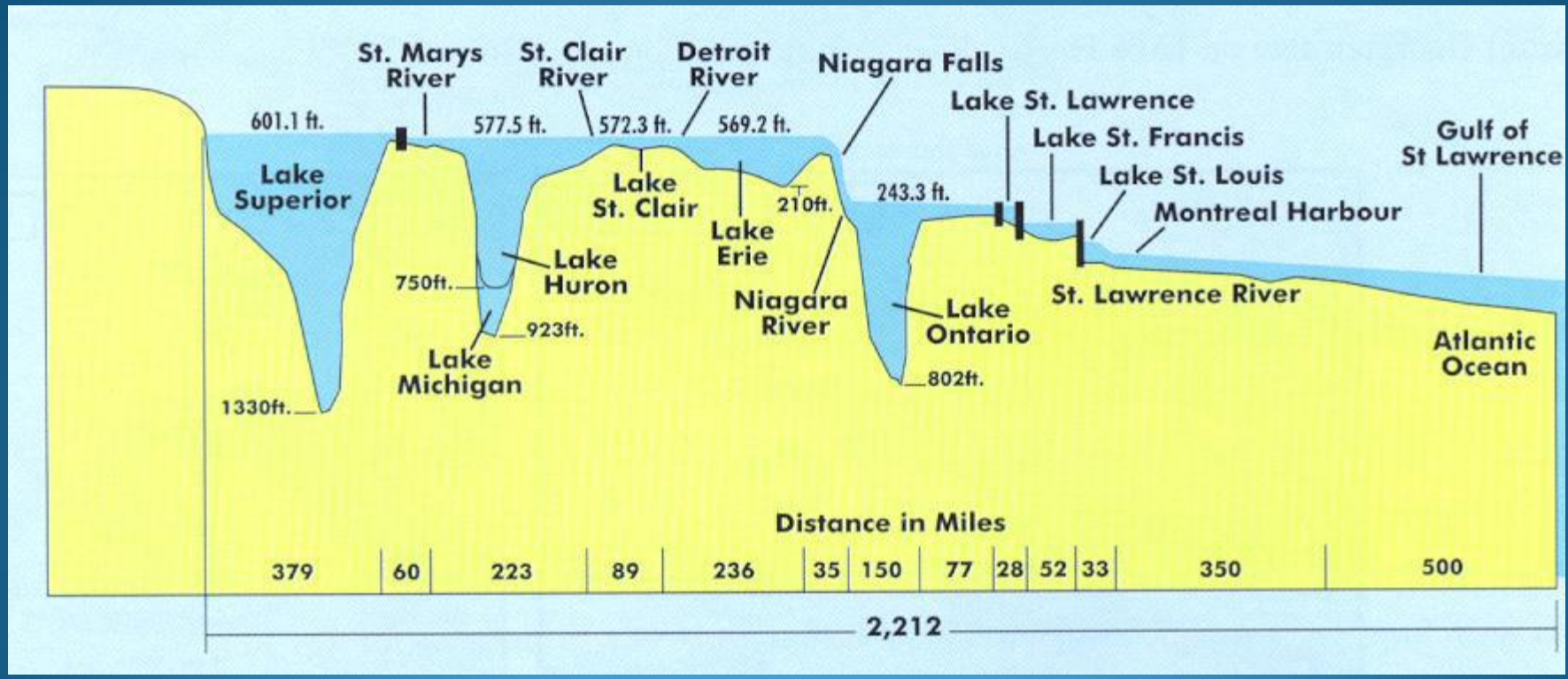
United Shoreline

Hilton, New York

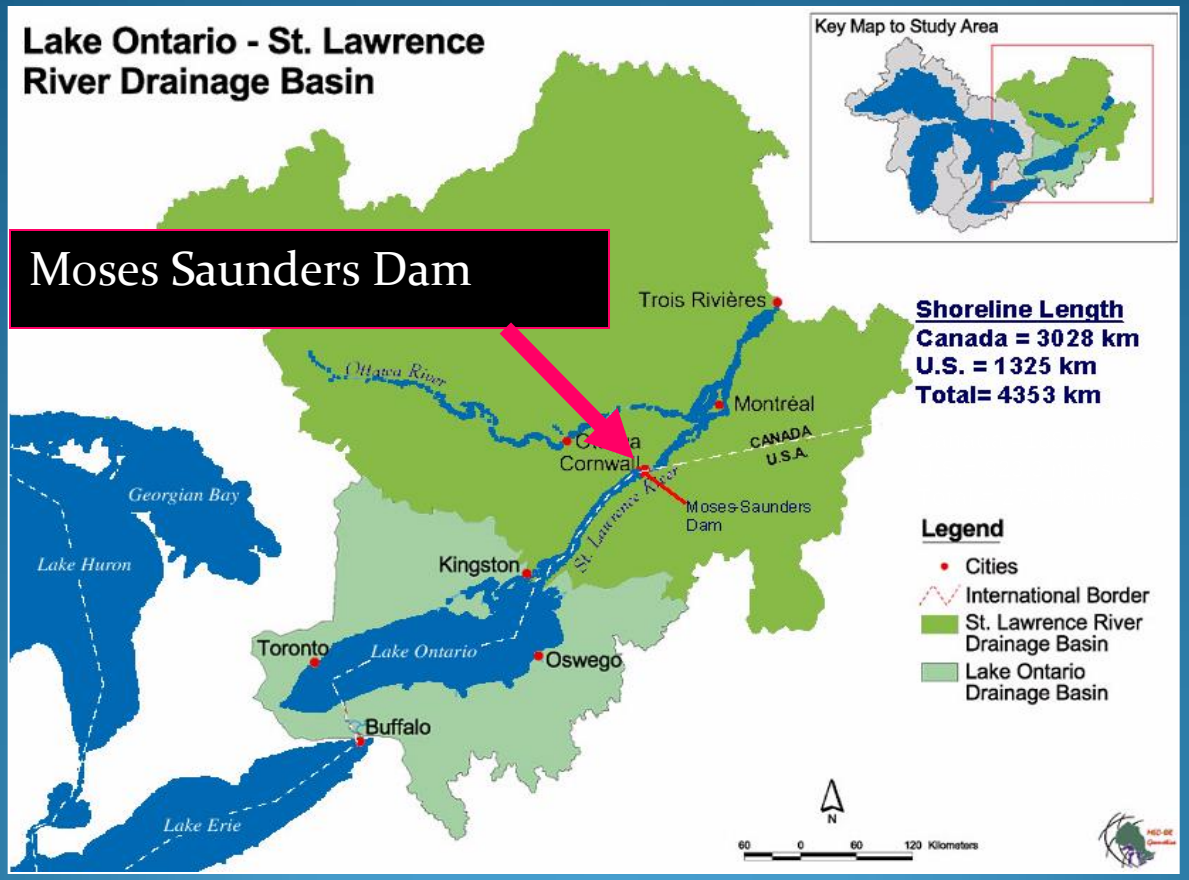
July 28, 2017

The Great Lakes Watershed

Great Lakes Profile



Complex System



Lake Ontario - St. Lawrence System

- Supplies (Uncontrolled)
  - –Local watershed runoff, precipitation and evaporation (15 +/- %)
  - –Inflow from Lake Erie and upper Great Lakes (85 +/- %)

- Point of Control
  - –Moses-Saunders Power Dam
  - –Outflows can be physically set within a wide range

St. Lawrence Project Approvals

•1952 IJC Order of Approval

–Allowed construction of hydropower projects and Seaway

–Established “Board of Engineers” (now St. Lawrence Board of Control)

•1956 Supplementary Order of Approval

–Established Criteria for operation

–Ordered Development of operating plan to meet criteria - Plan 1958D

Regulation Criteria

(a) The regulated outflow from Lake Ontario from 1 April to 15 December shall be such so as to not reduce the minimum level of Montreal Harbor below that which had occurred since 1860.

(b) Between 15 December and 31 March, outflows shall be as large as feasible and maintained to minimize difficulties of winter operations.

(c) During spring ice break up in and below Montreal Harbor, the regulated outflow of Lake Ontario shall not be greater than before regulation.

(d) During the spring flood discharge from the Ottawa River, the outflow of Lake Ontario shall not be greater than before regulation.

(e) The maximum outflow from Lake Ontario shall be such as to secure the maximum dependable flow for power.*

(f) The maximum regulated outflow from Lake Ontario shall be maintained as low as possible to reduce channel evacuations to a minimum.*

(g) The levels of Lake Ontario shall be regulated for the benefit of property owners on Lake Ontario in the United States and Canada so as to reduce the extremes of levels experienced.*

(h) The regulated monthly mean level of Lake Ontario shall not exceed elevation 247.29 feet (75.37m).

(i) Under regulation, the frequency of occurrences of monthly mean levels of 246.29 feet (75.07m) and higher on Lake Ontario shall be less than in the past.

(j) The level on Lake Ontario on 1 April shall not be lower than 243.29 feet (74.15m). The monthly mean level from 1 April to 30 November shall be maintained at or above 243.29 feet (74.15m).

(k) When supplies exceed those of the past, regulated outflow shall provide all possible relief to riparians upstream and downstream. When supplies are less than those of the past, regulated outflows shall provide all possible relief to navigation and power interests.

* Consistent with other requirements.

Criteria Review Background

Over 50 years since Criteria and Plan of operation were developed

- Affected interests have changed

- Previous studies indicated need for "better" regulation

- 1998: Control Board recommended new operation plan – called "Plan 1998"

- 1999 - IJC develops Plan of Study for Criteria Review and requests funding.

Plan of Study for Criteria Review

Initiated in December 1999

- Managed by the IJC through a Study Board

- Charge:
  - –Evaluate 1956 criteria for relevance and adequacy in meeting needs of current system users, including recreational boating and environment
  - –Examine Criteria, Operating Plan and other requirements of the Order of Approval
  - –Address how climate change may affect regulation

- Projected cost: $20 million over five years

The 2006 IJC Study recommended consideration of three plans:

–Plan A+ - “ The Economic Plan”

–Plan B+ - “The Environmental Plan”

–Plan D+ - “The Balanced Plan”

In 2008, the IJC decided to propose Plan D+, the Balanced Plan, renamed it Plan 2007, and stated:
“Plan 2007 is an improvement with respect to environmental and overall economic benefits, and takes a more balanced approach to all interests.”

In 2008, the IJC also stated that the environmental benefits of Plan B+ are desirable, but implementation of Plan B+ is not possible “without unduly reducing the benefits and protections currently accorded to other interests.”

IJC Decisions

•Spring 2008 - Public Hearings Held

•September 2008 - IJC Withdraws Proposal – requested formation of new Working Group of government representatives only.

- Secret, closed door negotiations begin in 2009.

• Fall 2011 – Working group, working in secret, presents preliminary recommendations to stakeholder audiences. Recommends version of Plan B termed Bv7 (2011)

- Spring/Summer 2012 – IJC holds "public information sessions" to explain Plan Bv7

- Public outcry along south shore gets IJC to send back Plan Bv7 to working group

IJC Decisions

- Spring 2013 – IJC announces new Order and Plan 2014 Plan 2014 is Bv7 but with Triggers for emergency deviations.

- July 2013 – IJC holds public hearings throughout basin

- August 30, 2013 – public comment period closed

- June 2014 - IJC Recommends Plan 2014 to governments

Points Regarding Plan 2014

•The proposed plan 2014 **is not** one of the recommended plans from the 2006 IJC Study and it violates three of the principle guidelines of the IJC Study.

•Damages from Plan 2014 are only to the south shore of Lake Ontario.

•The Plan 2014 economic analyses are based upon outdated and incorrect assumptions and data. Actual damages are not known.

•Trigger levels and deviations provided in Plan 2014 will not protect from extreme levels on Lake Ontario.

•For over fifty years, individuals, businesses and municipalities have relied upon the commitment to target Lake Ontario within the four-foot range in the design and construction of shore protection, public and private marine facilities and public infrastructure.

•**Government should honor its commitment.**

Plan 2014 explicitly violates three of the principle guidelines of the IJC Study.

(a) No plan should be implemented that results in a disproportionate loss to any one user group or geographic area.
–Plan 2014 concentrates damages in the south shore communities of Wayne, Cayuga, Monroe, Orleans and Niagara Counties with little to no damage elsewhere.

(b) No plan be adopted which results in damages without appropriate mitigation and compensation in place prior to implementation.
- **No mitigation or compensation is proposed or planned.**

(c) Plan development will be transparent with broad stakeholder and public input.
–Plan 2014, and its preceding Plan BV7, were developed by a secret Working Group, meeting in secret, with access and input only from environmental advocates.

•The proposed plan 2014 **is not** one of the recommended plans from the 2006 IJC Study. It is far more radical in its damages to the Lake Ontario shoreline communities with little additional benefit to the environment.

•The 2006 IJC Study recommended consideration of three plans:
–Plan A+ - " The Economic Plan"
–Plan B+ - "The Environmental Plan"
–Plan D+ - "The Balanced Plan"

The Plan 2014 analyses are based upon outdated and incorrect assumptions and data collected over fifteen years ago.

- Study Board Minority Report (2007) pointed out numerous problems with study.

- National Research Council/Royal Society Review stated that environmental and coastal processes analyses should not be relied upon for decision-making.

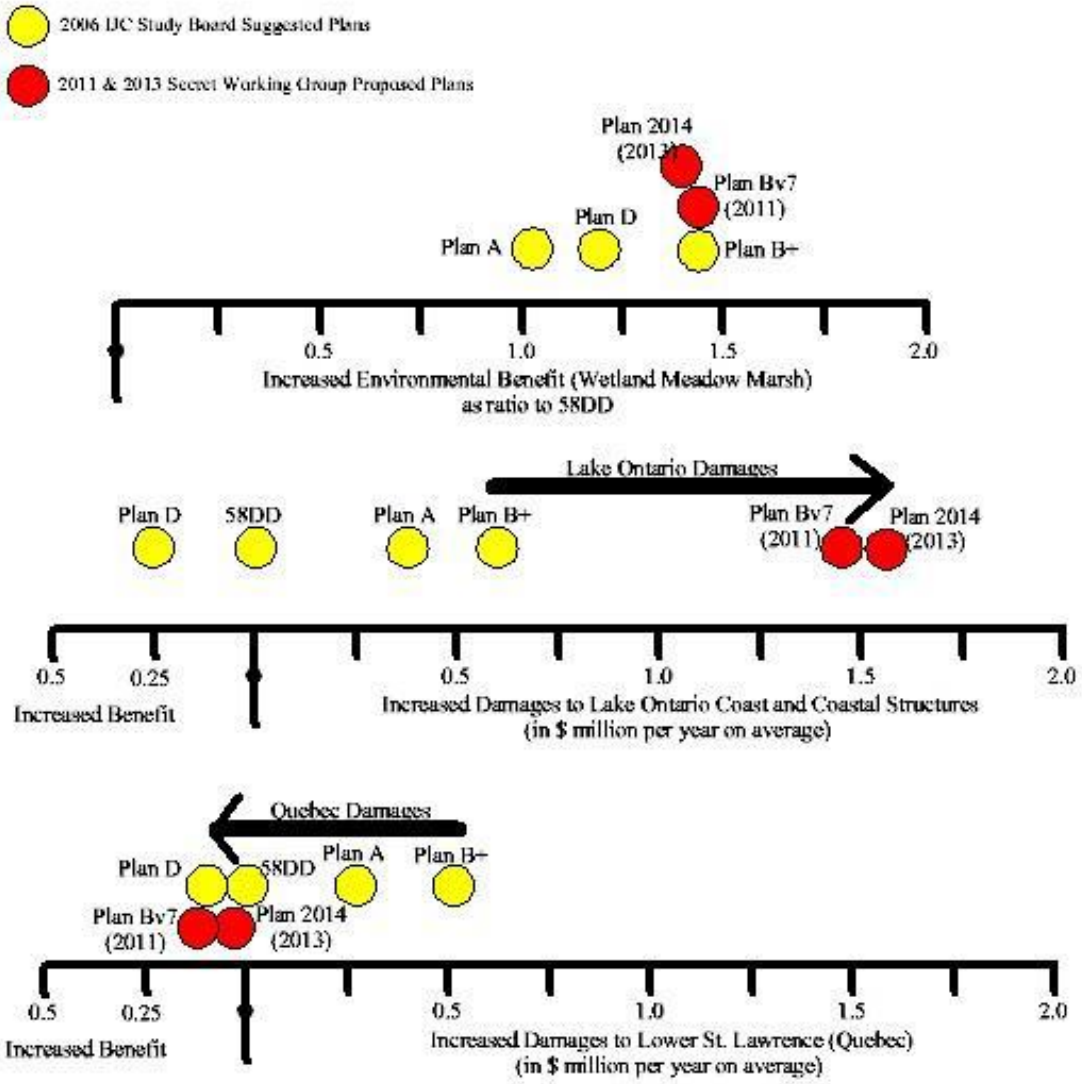
- Recreational boating impacts never reviewed and are severely underestimated.

		Lake Ontario level (m IGLD85)		Lake Ontario level (ft IGLD85)	
		High Trigger	Low Trigger	High Trigger	Low Trigger
1	1-Jan	75.03	74.13	246.16	243.21
2		75.07	74.13	246.29	243.21
3		75.10	74.13	246.39	243.21
4		75.13	74.12	246.49	243.18
5	1-Feb	75.14	74.12	246.52	243.18
6		75.14	74.12	246.52	243.18
7		75.13	74.11	246.49	243.14
8		75.14	74.11	246.52	243.14
9	1-Mar	75.16	74.13	246.59	243.21
10		75.18	74.15	246.65	243.27
11		75.22	74.19	246.78	243.41
12		75.27	74.25	246.95	243.60
13	1-Apr	75.33	74.33	247.15	243.86
14		75.40	74.40	247.38	244.09
15		75.45	74.46	247.54	244.29
16		75.50	74.51	247.70	244.46
17	1-May	75.53	74.55	247.80	244.59
18		75.56	74.58	247.90	244.69
19		75.60	74.61	248.03	244.78
20		75.62	74.62	248.10	244.82
21	1-Jun	75.63	74.64	248.13	244.88
22		75.62	74.65	248.10	244.91
23		75.60	74.65	248.03	244.91
24		75.59	74.65	248.00	244.91
25	1-Jul	75.57	74.65	247.93	244.91
26		75.54	74.64	247.83	244.88
27		75.50	74.63	247.70	244.85
28		75.47	74.61	247.60	244.78
29	1-Aug	75.43	74.59	247.47	244.72
30		75.39	74.56	247.34	244.62
31		75.34	74.53	247.18	244.52
32		75.30	74.50	247.05	244.42
33	1-Sep	75.26	74.46	246.92	244.29
34		75.20	74.42	246.72	244.16
35		75.15	74.39	246.56	244.06
36		75.10	74.35	246.39	243.93
37	1-Oct	75.06	74.31	246.26	243.80
38		75.01	74.27	246.10	243.67
39		74.97	74.24	245.96	243.57
40		74.95	74.20	245.90	243.44
41	1-Nov	74.94	74.18	245.87	243.37
42		74.92	74.17	245.80	243.34
43		74.91	74.16	245.77	243.31
44		74.92	74.16	245.80	243.31
45	1-Dec	74.93	74.15	245.83	243.27
46		74.93	74.15	245.83	243.27
47		74.95	74.14	245.90	243.24
48		75.00	74.13	246.06	243.21

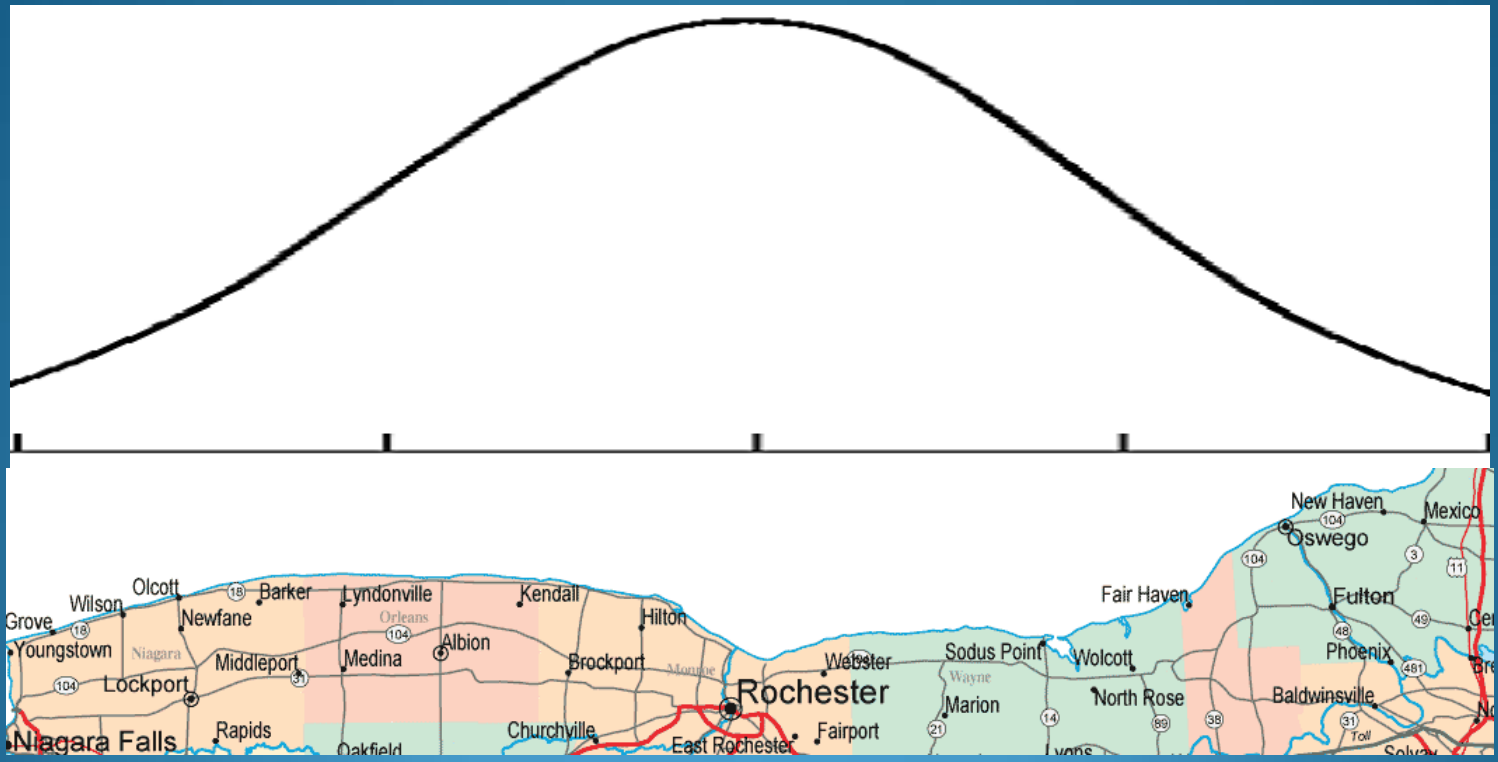
[1] The high triggers are those levels that are exceeded 2% of the time and the low thresholds are defined as the levels exceeded 95% of the time as determined by the full stochastic generation of lake levels with Plan Bv7, linked to the quarter months in which those levels occur.

Plan	Amt. of time above 247.0 ft during spring months (March - June)	
Modeled 58DD		2.80%
Plan B+		8%
Plan BV7		12.00%
Plan 2014		11.47%

Results From IJC Analyses
(Based Upon 1900 - 2000 Historic Water Supplies)



Damage Distribution to Lake Ontario South Shore with Plan 2014 *IJC damage estimate $2-3 million per year based on LOSL Study 2000-2006 *LORA estimate $5-6 million per year due to outdated data



Recreational Boating Economic Impacts

•Recreational boating on Lake Ontario south shore generates approximately $94 million in economic activity annually, supporting over 1350 jobs

•Wayne County alone:
–$18.5 million annual spending
–276 jobs
–$740,000 in sales tax to County
–$740,000 in sales tax to NY State

Full Economic Damages Not Included in Plan 2014 Estimates

- No damage estimates for public parks
- No damage estimates for public infrastructure
- No damage estimates for private property erosion or shoreline structure maintenance within embayments
- No damage estimate due to reduction in assessments
- Severe underestimate of damages to recreational boating industry, boating infrastructure, related jobs and sales taxes generated.

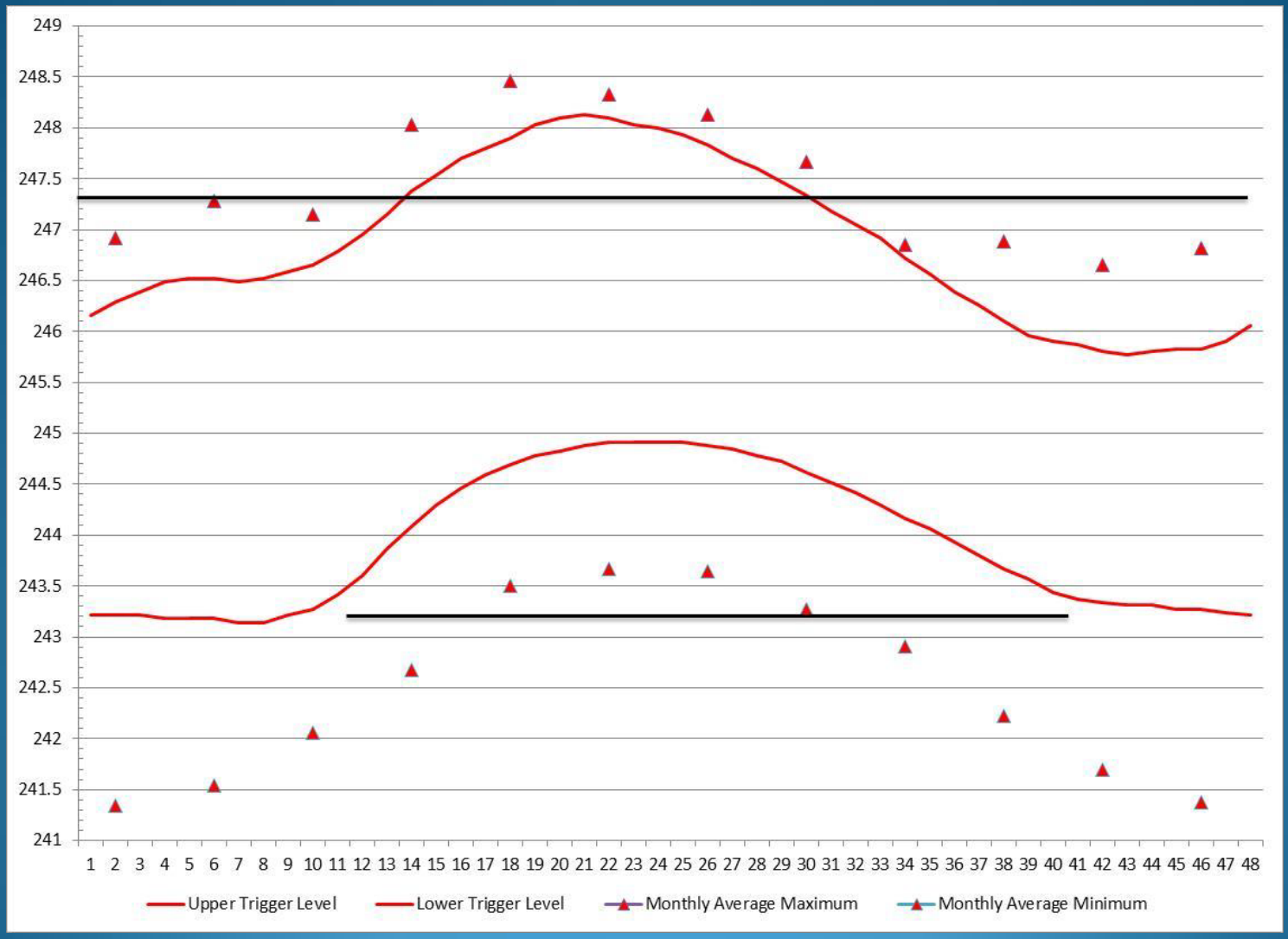
Trigger levels and deviations provided in Plan 2014 will not protect from extreme levels on Lake Ontario

- Under the Plan 2014 proposal, routine deviations from the plan will be allowed for all interests except for those affected by Lake level.

- Deviations for Lake allowed only when trigger levels are exceeded.

- Deviations allowed after hitting the trigger levels will not allow avoidance of extreme levels, especially on the high side.

Plan 2014 Monthly Limits and Trigger Levels



Existing and Proposed Maximum and Minimum Monthly Mean Levels

Trigger Levels and Monthly Target Range

- Trigger levels set at the 2% (upper) and 95% (lower) exceedance frequencies from Bv7.

- Why unequal on upper and lower?

- Why not 5% and 95%?

- Told environmental benefits not “acceptable” at these levels.

- The monthly average target levels are based upon reaching the extreme maximums and minimums in the Plan, thus they merely guarantee the damages and do not avoid or minimize them.

Lake Ontario Level (m)	Lake Ontario Level (ft.)	Point Claire Level (m)	Point Claire Level (ft.)
<75.3	<247.04	22.1	72.50
≥75.3 and ≤75.37	≥247.04 and ≤247.27	22.2	72.83
≥75.37 and ≤75.5	≥247.27 and ≤247.70	22.33	73.26
≥75.5 and ≤75.6	≥247.70 and ≤247.02	22.4	73.48
≥75.6	≥248.02	22.45	73.65

F limit – the maximum flow to limit flooding on Lake St. Louis and near Montreal in consideration of Lake Ontario level. It is a multi-tier rule that attempts to balance upstream and downstream flooding damages by keeping the level of Lake St. Louis below a given stage for a corresponding Lake Ontario level as follows:
This limit uses a one week (or quarter-month) forecast of the Ottawa River and local tributary inflows and the following relationship between Lake St. Louis outflows and levels at Pointe Claire: Pte. Claire Level = $16.57 + [(R_{\text{Pt. Claire}} \times Q_{\text{L. St. Louis}} / 604.0)^{0.58}]$
In this equation, R is the roughness factor and Q (in m3/s) is the total flow from Lake St. Louis. In operation the flow will be adjusted from day to day to maintain the level of Lake St. Louis below the applicable level determined by the Lake Ontario levels

For over fifty years, users have relied upon the commitment to target Lake Ontario within the four-foot

- Regulatory mean high and low water elevations set at the upper and lower ends of the former four foot range.

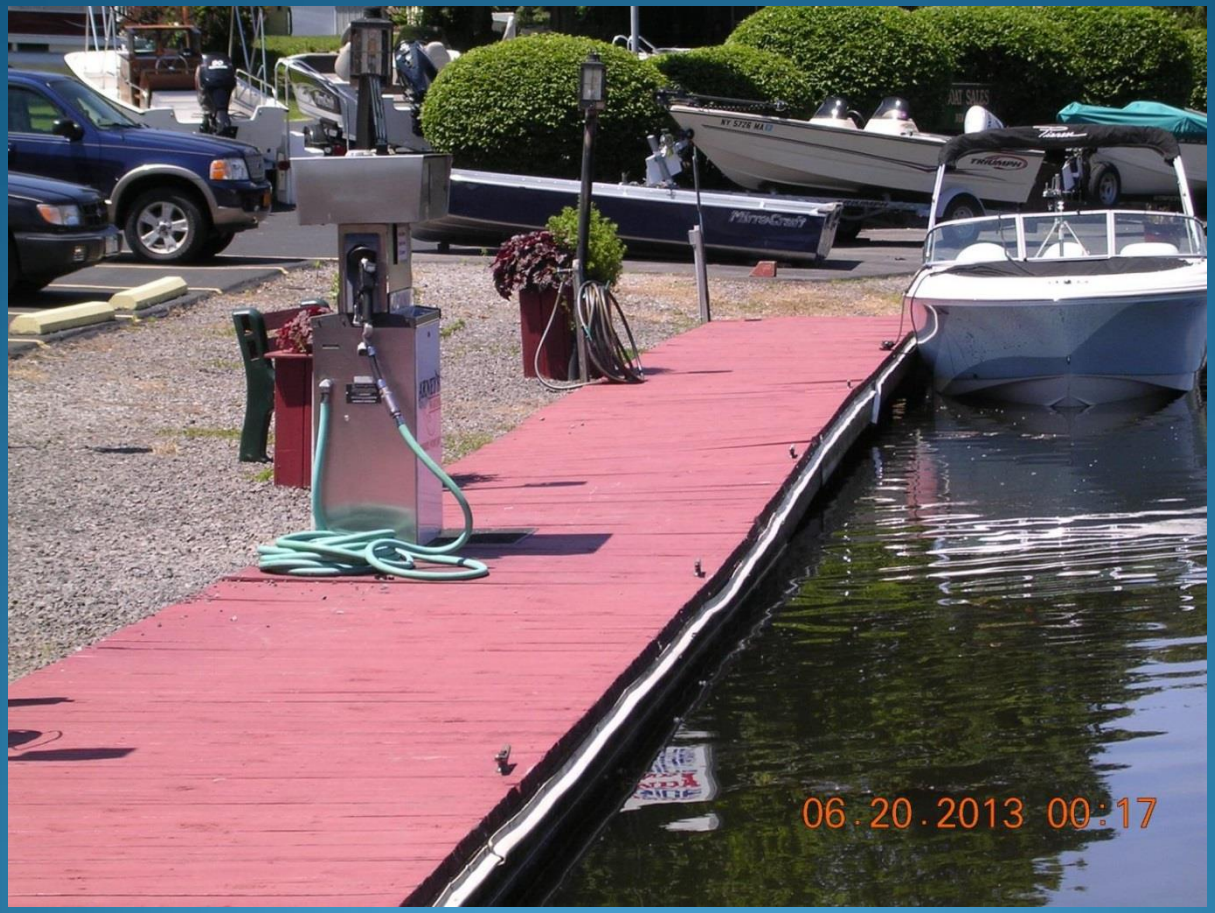
- Property rights begin at mean high water level 247.3 ft. Illegal taking of private property by government.

- Engineering design of boat launches, public and private docks, public infrastructure as well as private shore protection forced by State and Federal authorities to use these limits in design.

- Millions of dollars in retro-fits will be required with Plan 2014.

–Where is the mitigation and compensation for this?
–Who pays?
–Why are these costs not included in the economic projections presented for Plan 2014?

Some Examples



At Arney's Marina – Sodus Point, NY

- Lake level at 246.6 ft. Water at 8 inches (.67 ft) from gas dock.

- **Gas dock elevation set at 247.3 feet, upper limit of the four foot range.**
- **At present time about a foot under water**

Edgemere Drive in Greece, NY March 1973, Or it could have been May 2017

Lake level at 247.1 feet. Sewer line submerged.
This year, Town is pumped lightly treated sewage into adjacent pond to keep system from failing

Village of Sodus Point, June, 1973.
Water level = 248.4 feet.
Plan 2014 maximum monthly level = 248.46 feet
Currently Sodus Point under siege from lake

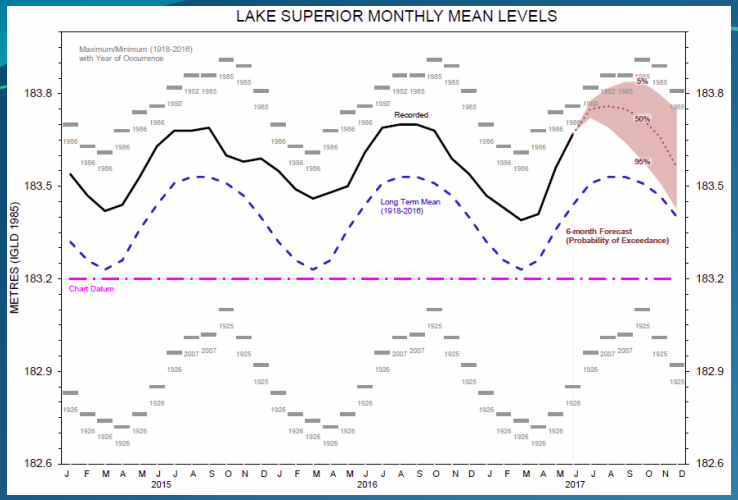
•Irondequoit Bay inlet channel, December 2012
Lake level = 243.7 ft
Monthly minimum level for December = 241.5 ft

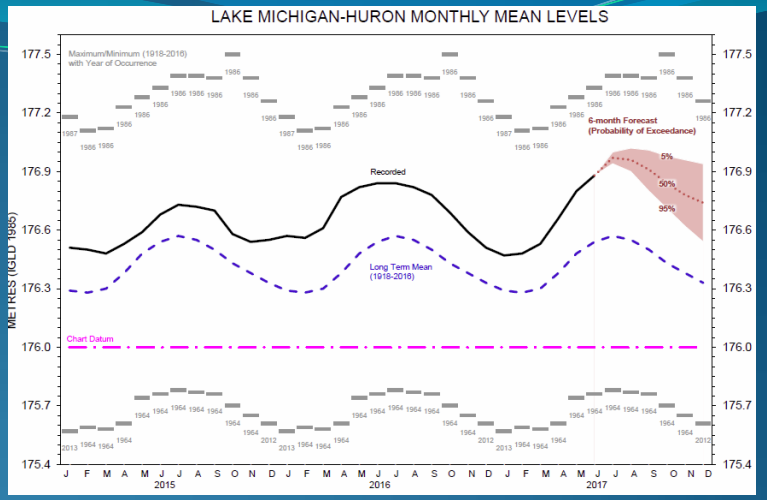
Canon EOS 5D Mark II - EF15mm f/2.8 Fisheye

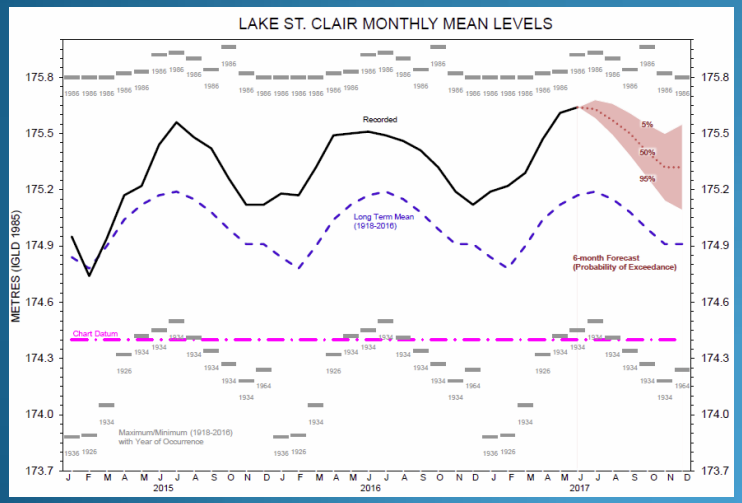
Wilson Harbor, December 2012
Lake level = 243.6 ft
Plan 2014 October Monthly Minimum = 241.5 ft

Braddock Bay

Actual Water level = 244.49 feet
Plan 2014 Trigger for emergency deviation = 244.06 feet
The channel depth on this date was 13 inches; with Plan 2014, the channel would be 8 inches or less. Might be able to float out of bay on an inner tube!
What happens to emergency access? The closest points for water rescue are between 7 and 10 miles away!
Braddock Bay


LAKE SUPERIOR MONTHLY MEAN LEVELS
Maximum/Minimum (1918-2016)
with Year of Occurrence
Recorded
Long Term Mean
(1918-2016)
6-month Forecast
(Probability of Exceedance)
5%
50%
95%
Chart Datum
METRES (IGLD 1985)
183.8
183.5
183.2
182.9
182.6
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
2015
2016
2017


LAKE MICHIGAN-HURON MONTHLY MEAN LEVELS
Maximum/Minimum (1918-2016)
with Year of Occurrence
Recorded
Long Term Mean
(1918-2016)
6-month Forecast
(Probability of Exceedance)
5%
50%
95%
Chart Datum
METRES (IGLD 1985)
177.5
177.2
176.9
176.6
176.3
176.0
175.7
175.4
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
2015
2016
2017


LAKE ST. CLAIR MONTHLY MEAN LEVELS
Recorded
Long Term Mean
(1918-2016)
6-month Forecast
(Probability of Exceedance)
5%
50%
95%
Chart Datum
Maximum/Minimum (1918-2016)
with Year of Occurrence
METRES (IGLD 1985)
175.8
175.5
175.2
174.9
174.6
174.3
174.0
173.7
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
2015
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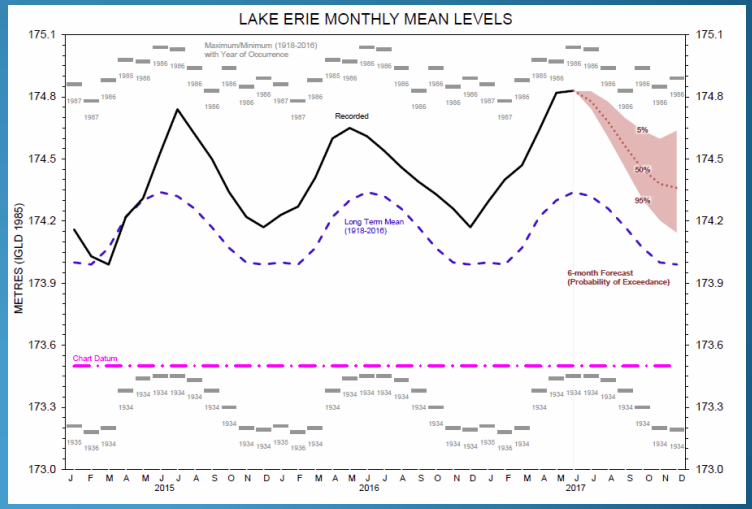
LAKE ERIE MONTHLY MEAN LEVELS
Maximum/Minimum (1918-2016)
with Year of Occurrence
Recorded
Long Term Mean
(1918-2016)
6-month Forecast
(Probability of Exceedance)
5%
50%
95%
Chart Datum
METRES (IGLD 1985)
175.1
174.8
174.5
174.2
173.9
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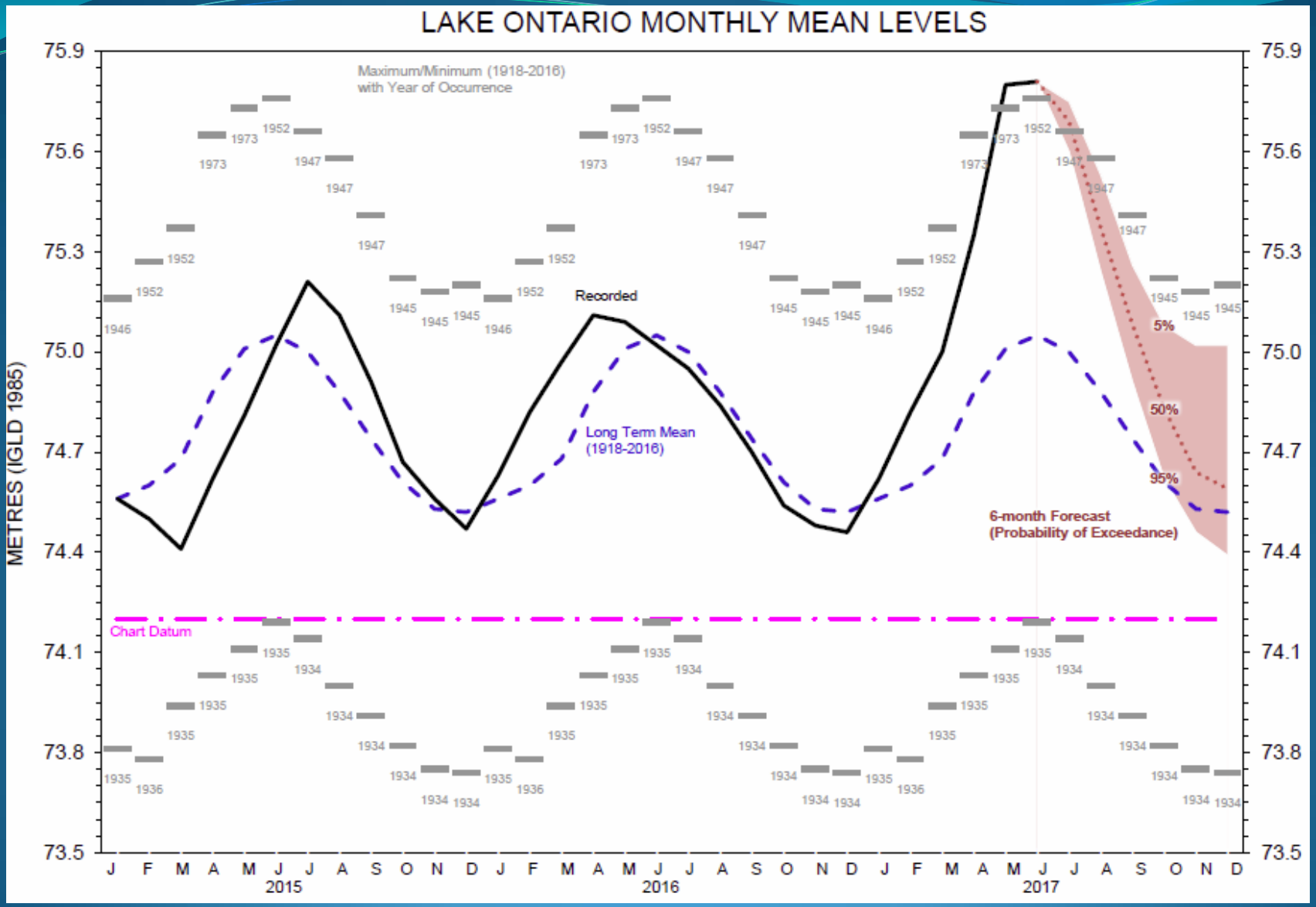
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
2015
2016
2017


LAKE ONTARIO MONTHLY MEAN LEVELS
Maximum/Minimum (1918-2016)
with Year of Occurrence
Recorded
Long Term Mean
(1918-2016)
Chart Datum
6-month Forecast
(Probability of Exceedance)
5%
50%
95%
METRES (IGLD 1985)
75.9
75.6
75.3
75.0
74.7
74.4
74.1
73.8
73.5
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
2015
2016
2017

Projected Lake Levels for November 2017

Continuing Wet Scenario = 246.45 feet

Normal Precipitation = 245.07 feet

Dry Scenario (Drought) = 244.35 feet

Long Term Average = 244.55 feet

Summary

- South shore counties will be hit hard by operations under Plan 2014 while all other areas will be held harmless
- No good estimates of actual costs/damages now available
- No mitigation/compensation is funded, planned or even proposed for these damages
- Plan 2014 betrays the commitment made when the project was approved and built.

Thank you