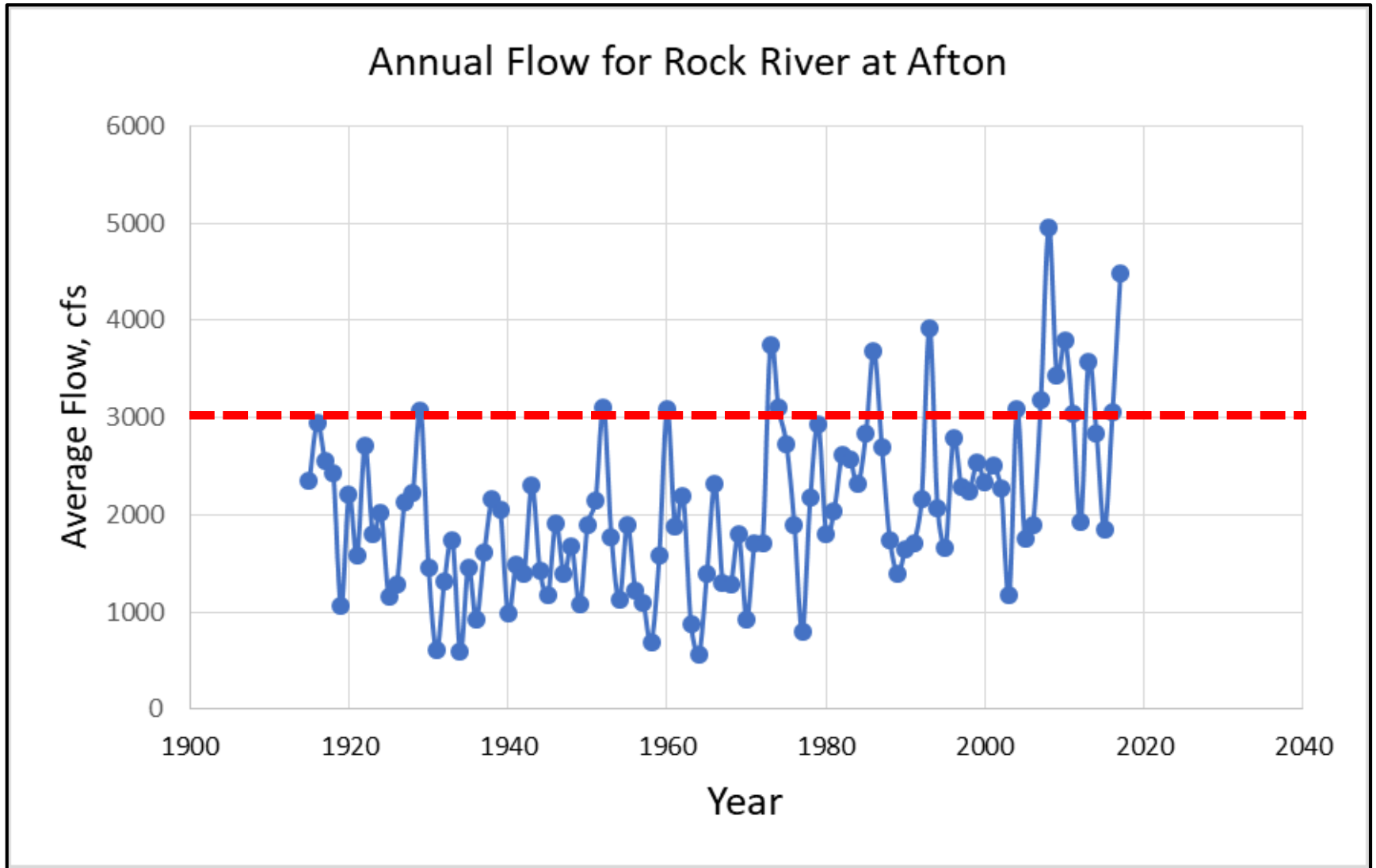
Options for Indianford Dam to improve water level control

- Options to help with high water – SNW & flood levels
- Action Plan for high water levels
- Brief comments on possible future work to control low water levels

Alterations to Indianford Dam to improve water level management LONG TERM ISSUE

- Report on analysis:
  - Five alternatives developed
  - Focus on effectiveness in reducing duration of Slow No Wake
  - Comment on effectiveness at flood times and low flow, use at boat transit locks
- Action item: confirm plan to
  - Propose plan and costs for authorization at Annual Meeting:
  - Hire engineer to develop designs
  - Apply for grants
  - Construct dam modifications in 2019 / 2020

If you're thinking that Rock River flows are higher than they used to be, you're right, they are!

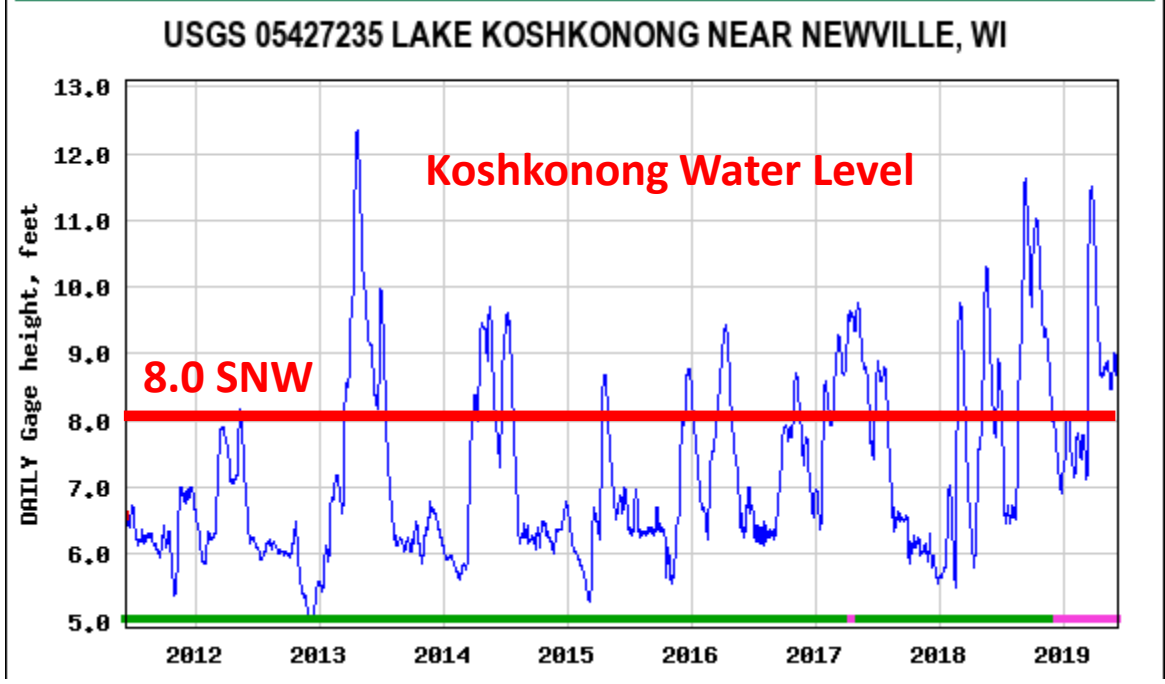


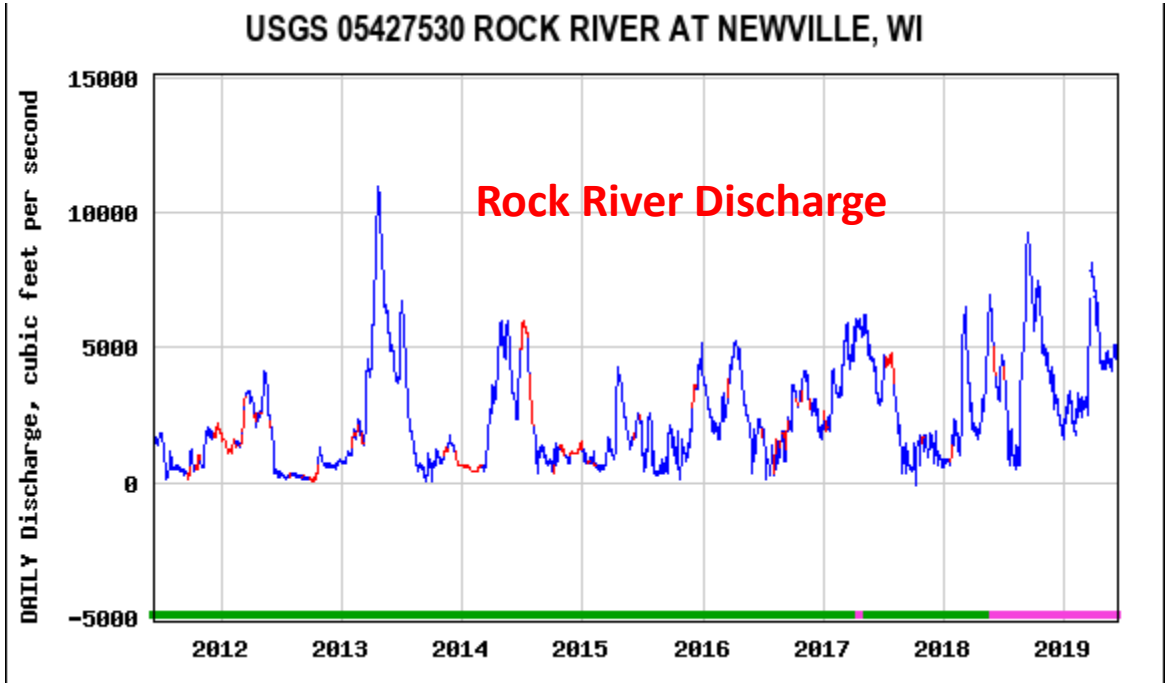
High flow and stage- lengthy periods of Slow No Wake, flood water conditions

Discharge explains most but not all water level fluctuations:

Gate operations and trashrack cleaning affect low flow water levels

Ice, temporary blockage and storage routing may vary discharge / water level relation



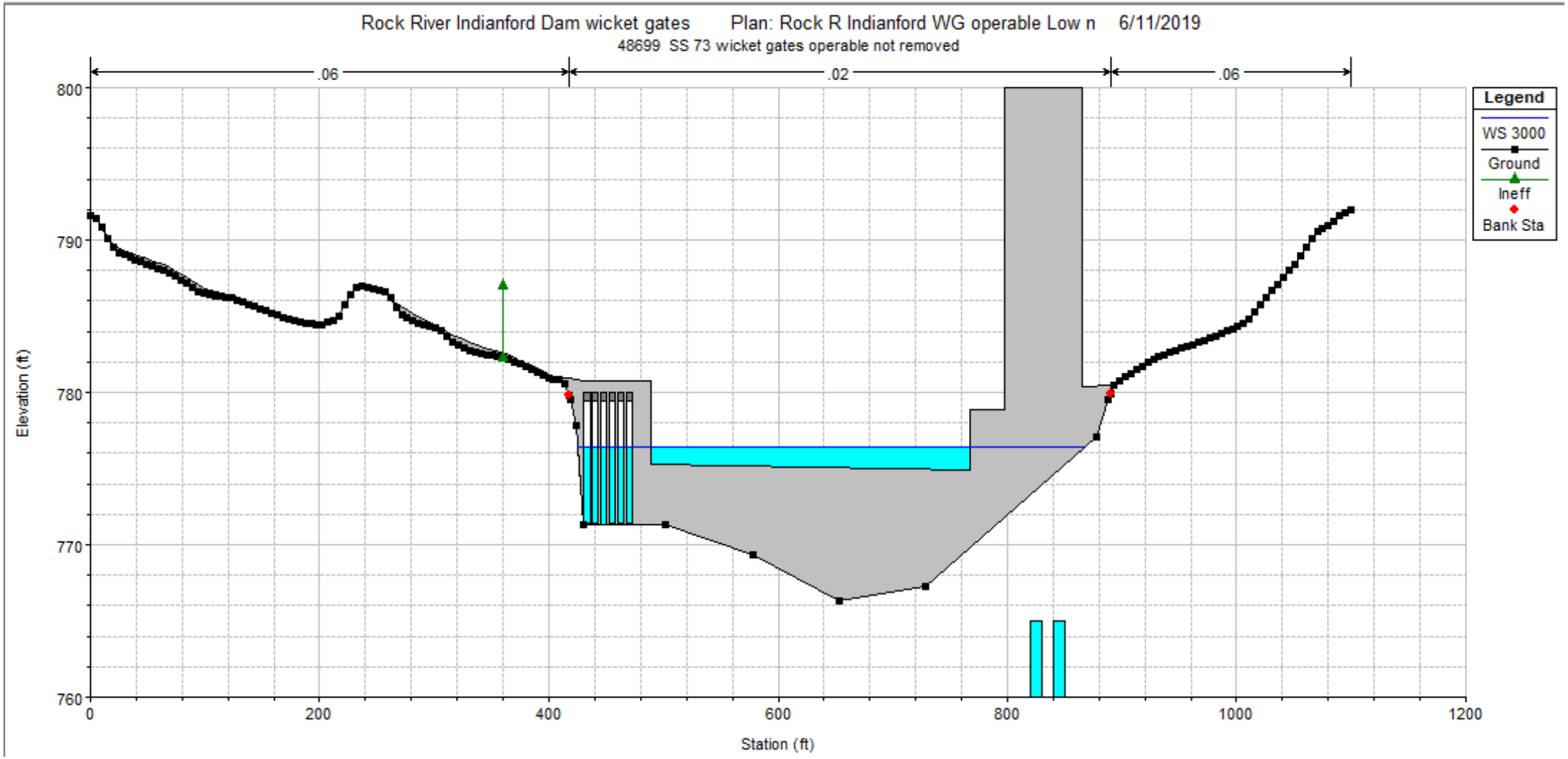


5 Indianford Dam modification alternatives

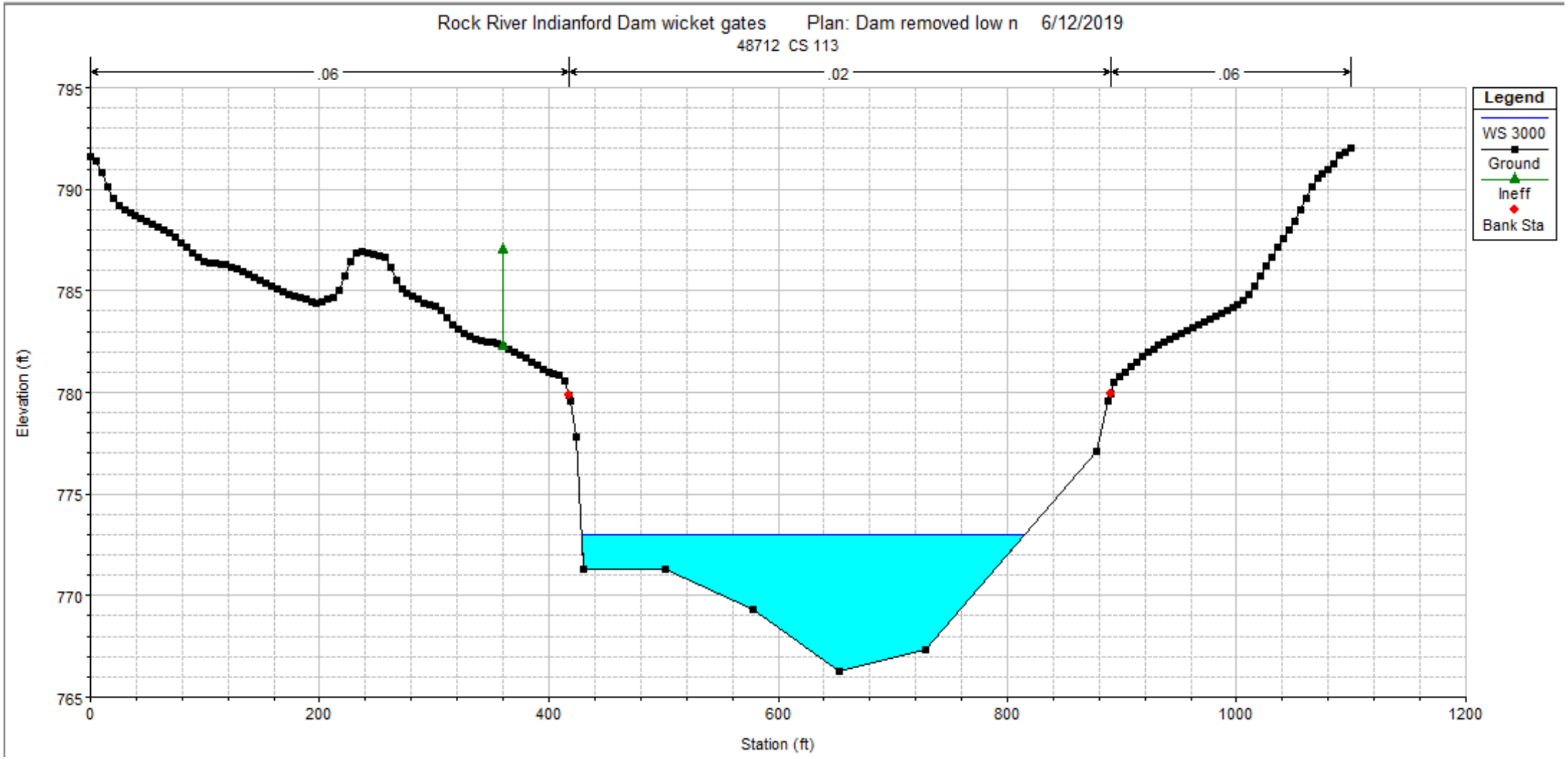
1. Powerhouse Wicket gates removed, new trash racks w/ wider spacing
2. 19 ft. wide gated sluiceway between powerhouse and overflow crest
3. Boat lock channel: 22 ft. wide, 200 ft. long
4. 50 ft. section of overflow crest removed and replaced with operable crest gates, sill at 771
5. Partial demolition of powerhouse and installation of 2 - 30-ft. gated sluiceways, sill at 765
6. Existing conditions
7. Dam removed

M
W Co Rd M
Rock River
3
1,5
2
4

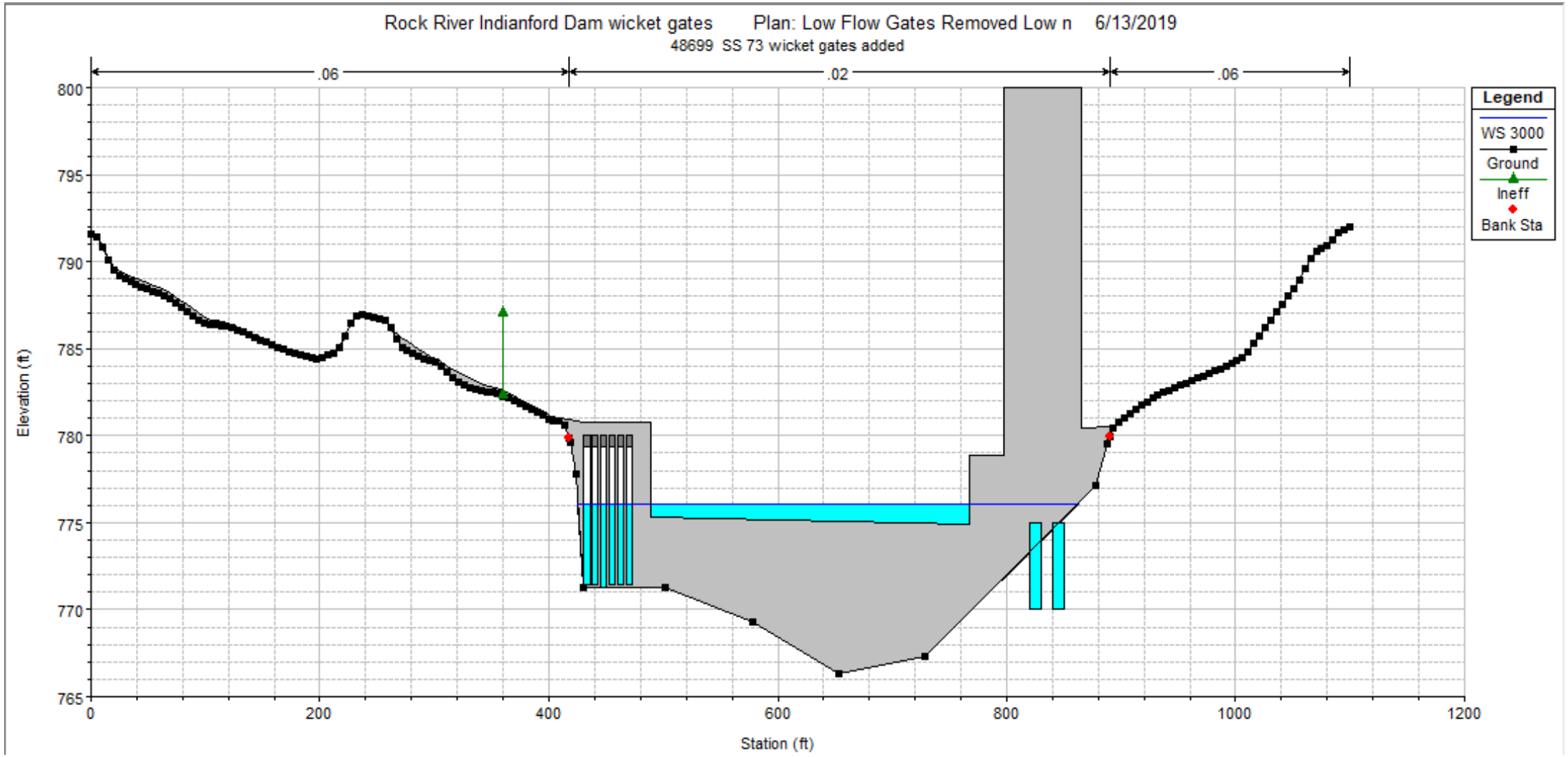
Existing Conditions



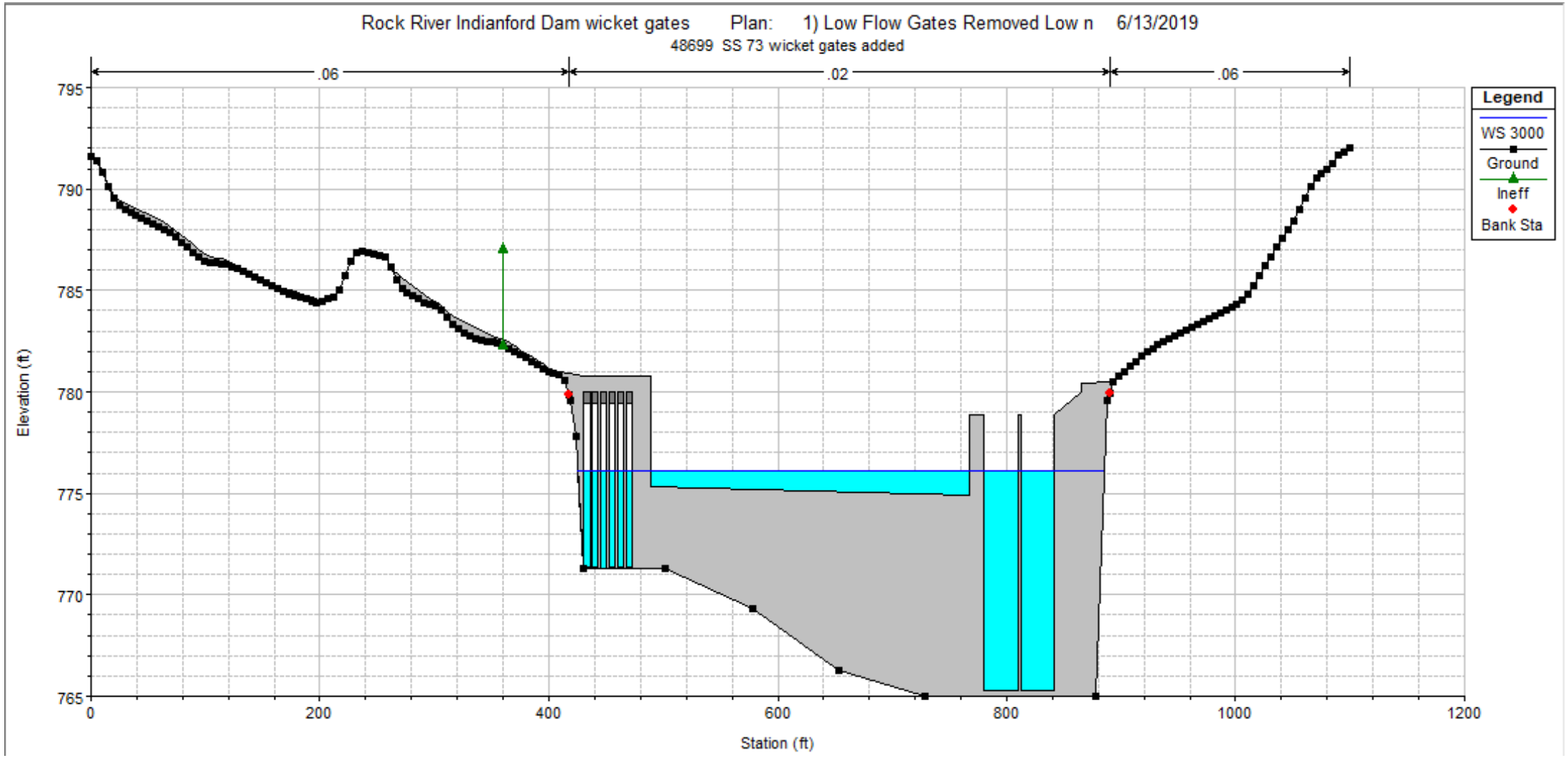
Dam Removed


Rock River Indianford Dam wicket gates Plan: Dam removed low n 6/12/2019
48712 CS 113
.06
.02
.06
Legend
WS 3000
Ground
Ineff
Bank Sta
Elevation (ft)
795
790
785
780
775
770
765
0
200
400
600
800
1000
1200
Station (ft)

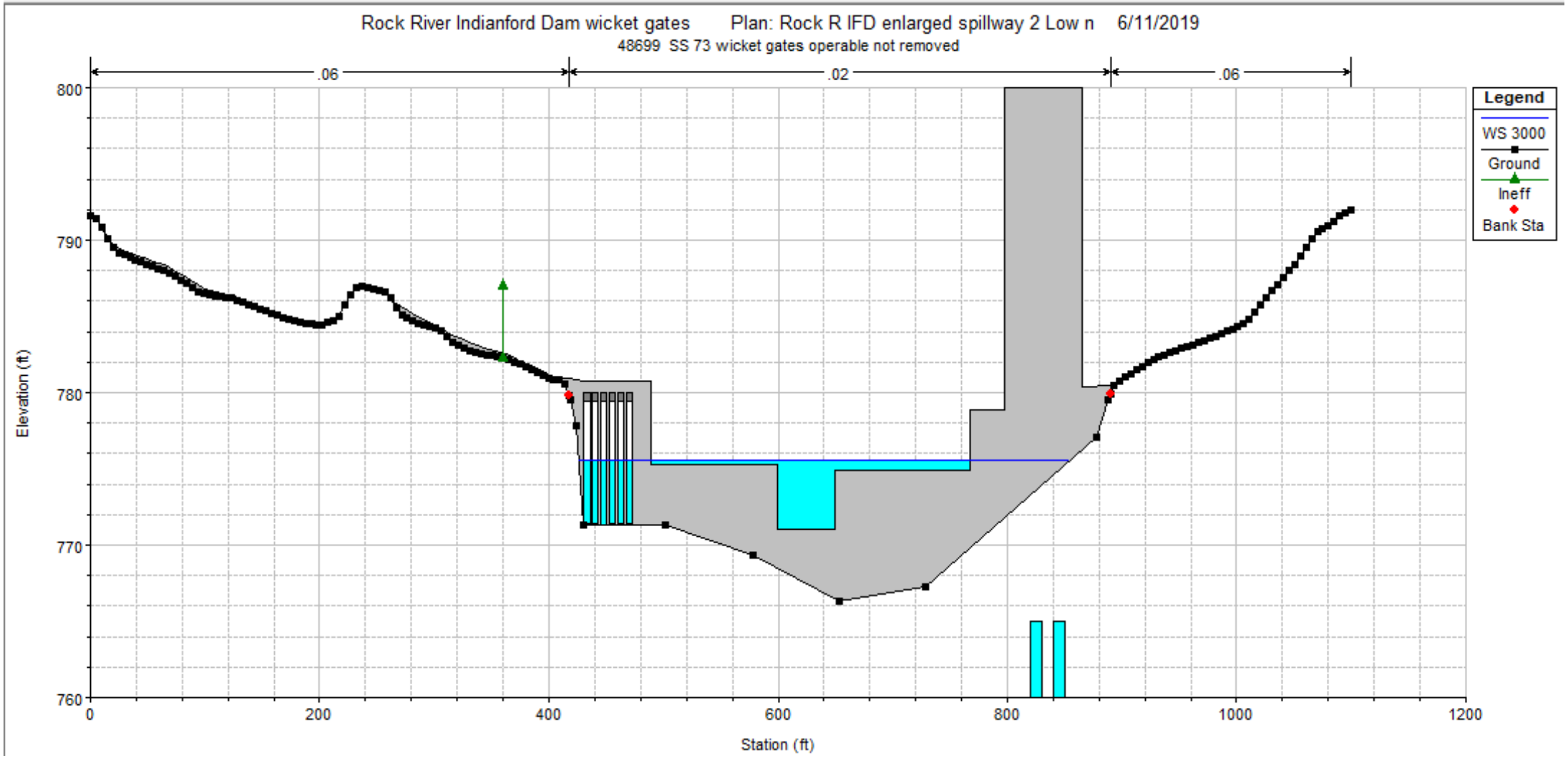
Wicket Gates Removed



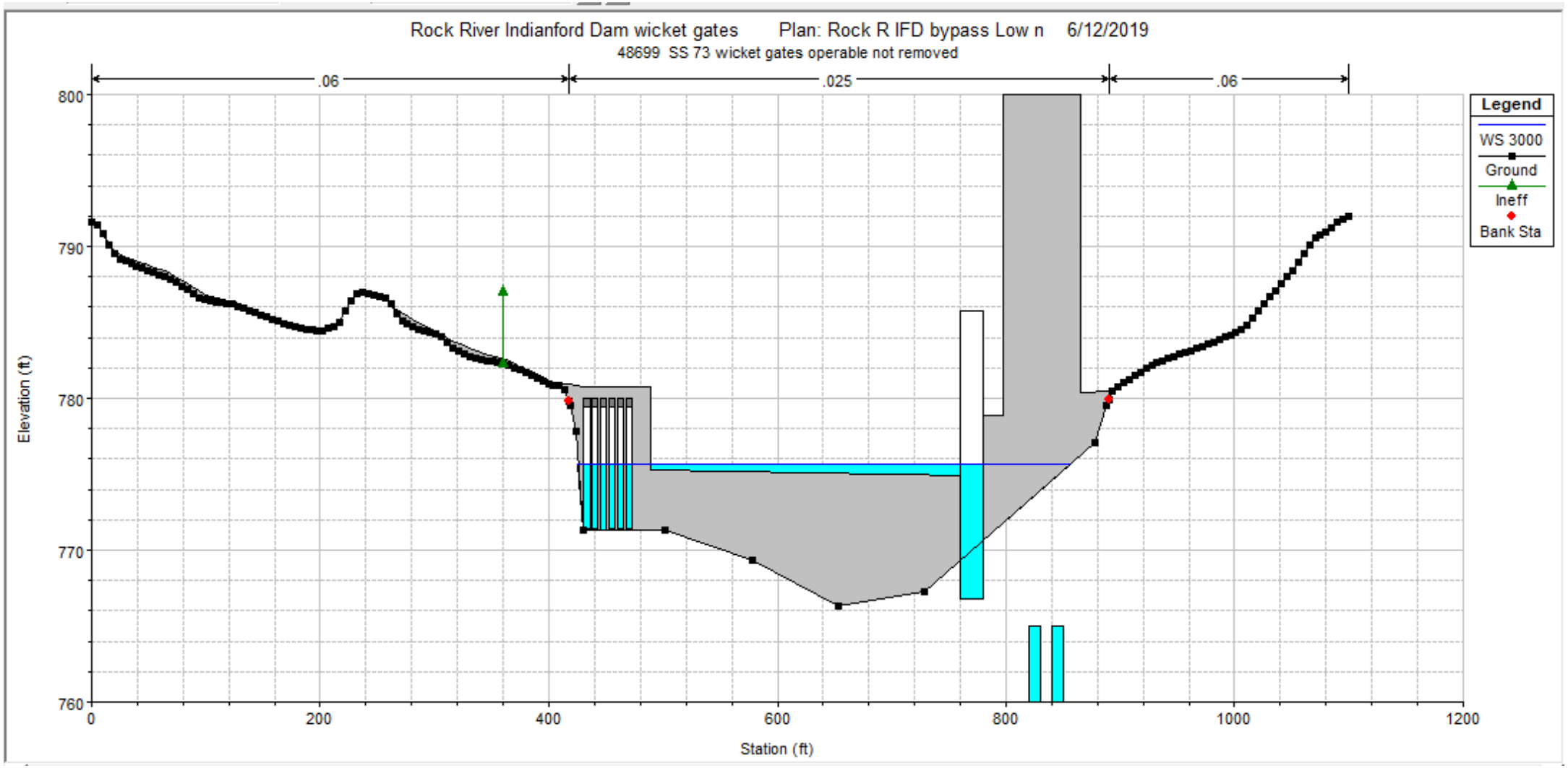
Powerhouse sluice



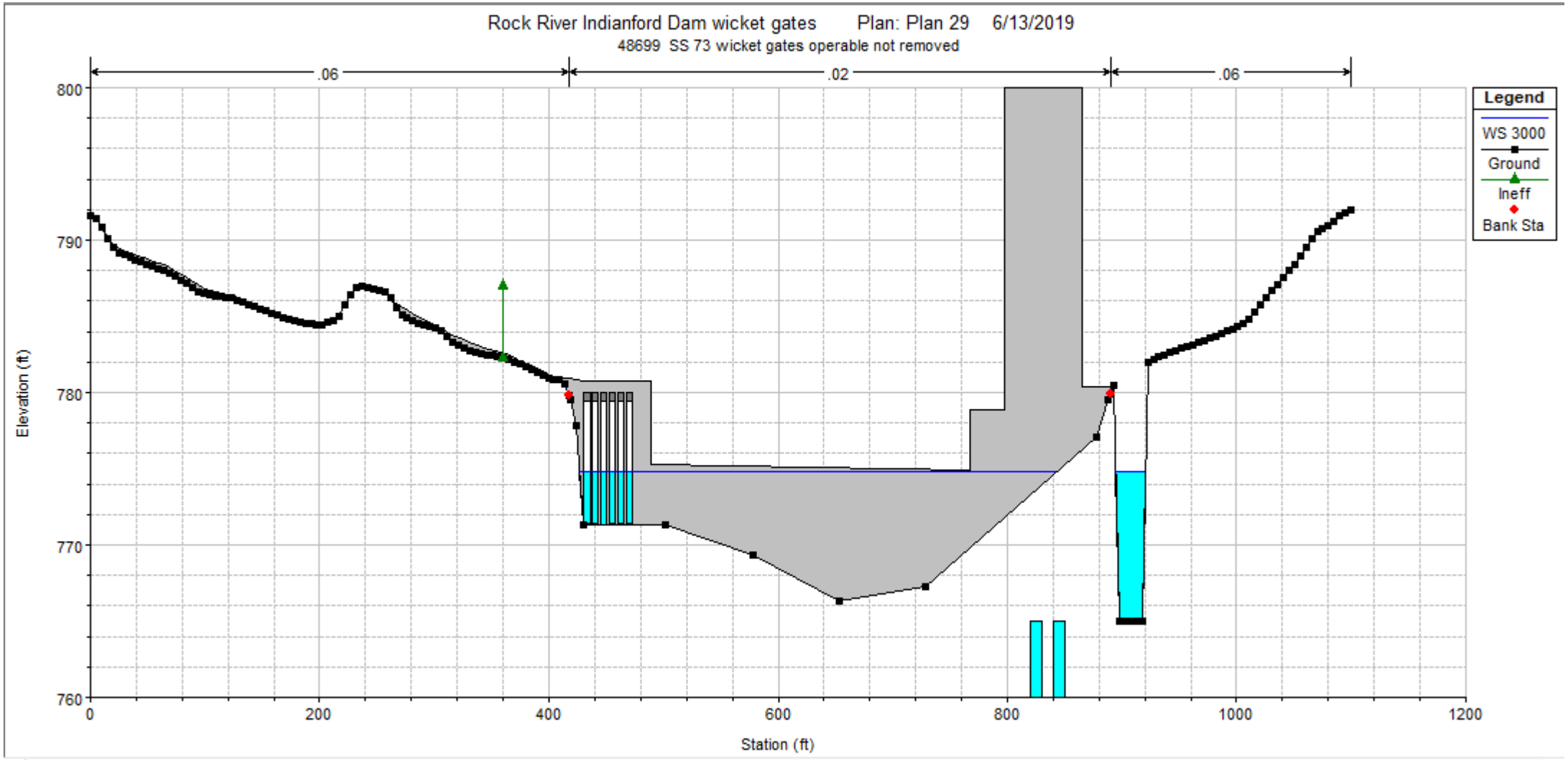
Enlarged Spillway



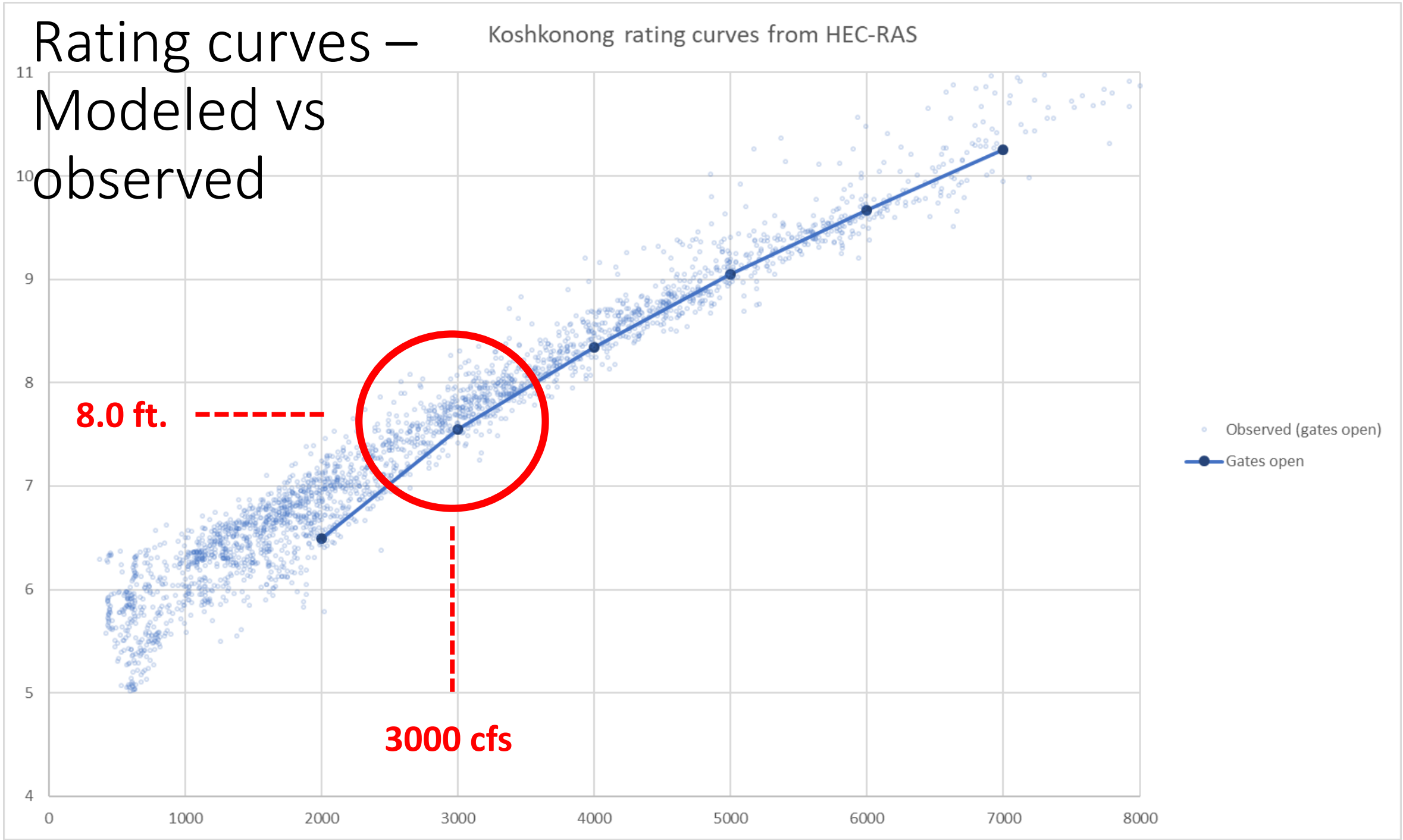
Bypass Channel



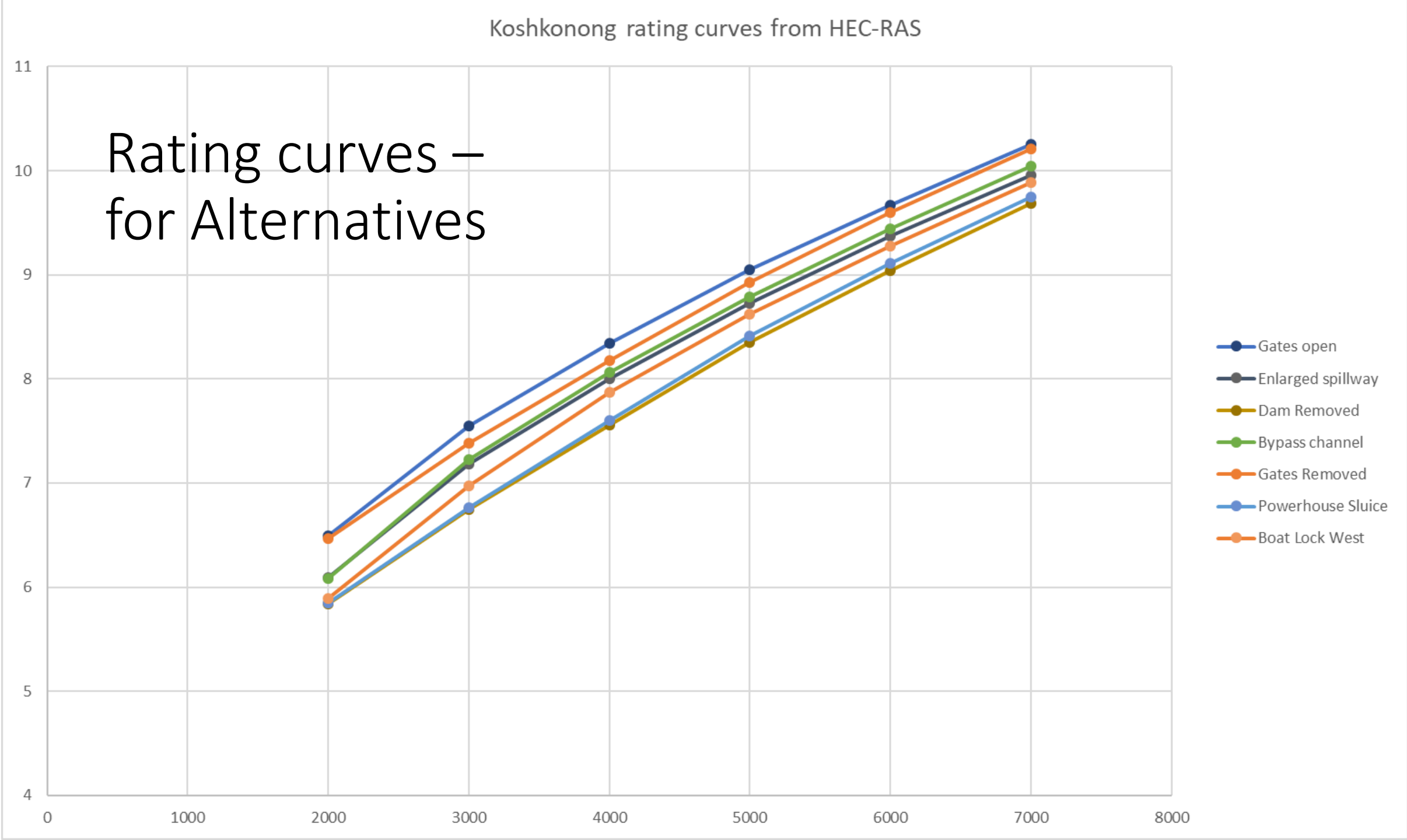
Boat lock added



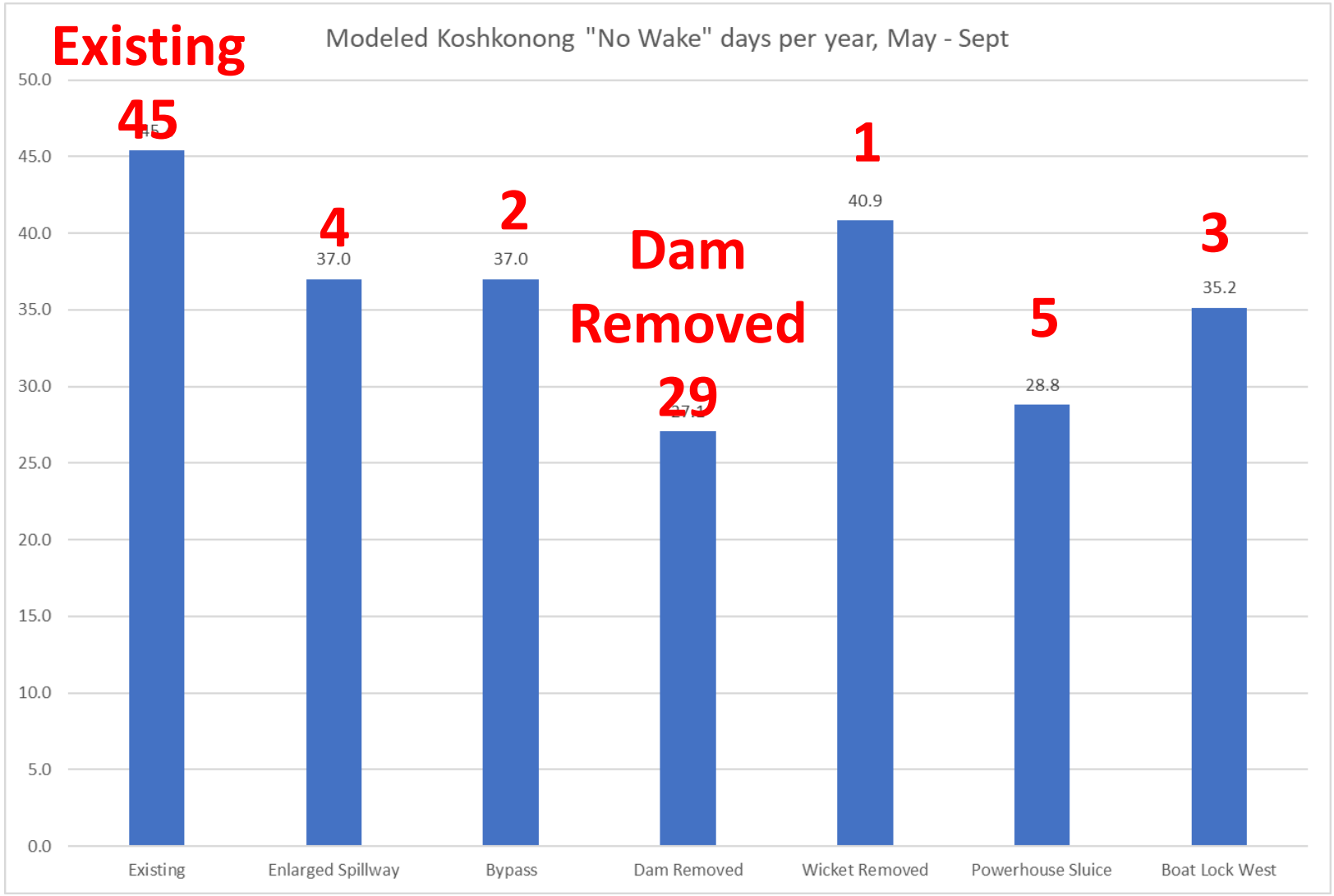
Rating curves – Modeled vs observed



Rating curves – for Alternatives



Modeled “No Wake” days



- Sept 30 2009 – May 20 2019
- Adjusted model data to match observed No Wake frequency over same period

Alternative	1	2	3	4	5	Existing Conditions	Dam Removed
Evaluation criteria	Remove Wicket Gates	19 ft. Gated sluiceway east of Powerhouse	Boat lock channel west of Powerhouse	50 ft. Operable Overflow Crest	Install 2 gated sluiceways in Powerhouse	Existing	Dam Removed
Expected “Slow No Wake” days per year, Based on last 10 years APPROX	42	39	36	39	31	46	29
Reduction in moderate flood (7,000 cfs) water levels from existing	.04’	.21’	.36	.29’	.50’	NA	.56’
Ability to raise low flow water levels vs existing dam	No	No	No	Yes	No	NA	Would drain lake
Comments	Trashrack debris still a problem	Can’t make larger	Land side access is limited	More effective if larger	One bay could serve as boat lock		Only for comparison

Suggested Action Plan for Indianford Dam

- Work with Board to on alternatives considering planning level costs
- Hold preliminary discussions with DNR
- Develop RFP for Consulting Engineer to complete detailed investigation and preliminary engineering study and grant applications August 2019 through March 2020, possible fee to be in range of $50K to $100K. Include engineering fee in 2019 Annual Meeting Budget
- If projected construction cost with grant awards is acceptable, include final design and construction cost in in 2020 Annual Meeting budget – note could use segregated fund in part
- Hire engineer to do final design, bid project out in fall 2020, possible additional engineering fee to be in range $50K to $100K
- Build project in 2021

Controlling low Koshkonong water levels

- Dam alterations to maintain target water levels under low flow must not raise water levels under high flow
- Separate project from high flow- need to make sure we don’t preclude future options.
- Possible ideas: moveable crest on some or all of overflow crest portion of dam
- Future topic of discussion

Bingham Road Boat Launch Ramp

- Possible layout
- Action plan

Example Bingham Rd. Launch Ramp Layout

- Parking: 24 stalls; Parcel: 2 acres; 200 Ft. x 200 ft. breakwater, engineering, contingency: ~ $450,000
- Design issues:
  - Parcel orientation & size
  - Number of parking stalls
  - Paving
  - Traffic Circulation
  - Breakwater
  - Dredging
  - Connection to Road
  - Budget

Bingham Rd. launch ramp project approach

1. Discuss with Dane County on funding for design, construction, long term O&M
2. RFP for hiring engineer drafted, need to confirm approach
3. Include Budget item for hiring engineer and construction of launch ramp for annual meeting (or engineer alone?)
4. RKLD & Town jointly design the project using engineer hired by RKLD this summer / fall
5. RKLD and Town confirm sharing of construction cost
6. Obtain agreement on size and cost of parcel to be acquired
7. Use engineer's design and cost estimate to apply for grant funding fall / winter (DNR? Dane County? Others?)
8. Final Design, bid, contract and build project in 2020
9. Transfer project to Dane County Parks

DISCUSSION, CONFIRM ACTION PLAN

Indianford Emergency and O&M Plans

- Plan are drafted, need to confirm details and contacts
- Draft Emergency Plan needs review by Rock County Emergency Management & DNR
- O&M Plan review by DNR
- Signatures and issuance to DNR, County, Town
- Expect to be completed and distributed by August