Memorandum For The Record

15 April 2003

Subject: Downstream Citizens Group Meeting – Headwaters ROPE Study

1. On Monday, 14 April 2003, the subject meeting of the Downstream Citizens Group met at the Corps Gull Lake Recreation Area Administration Building near Brainerd, Minnesota. There were 11 participants at this meeting. In addition to Corps representatives, stakeholders represented included an Aitkin businessman, two rural riverine resident, a Aitkin farmer, two representatives from the Audubon Society, and a key representative from The Nature Conservancy (See the attached Sign-In Roster for listing and details regarding participants).

2. The objective of this meeting was to discuss the planning models to be used for the ROPE Study and to begin to get user information from the downstream citizens volunteers group regarding the uses of the river reaches. The agenda used for the meeting is shown below:

AGENDA

1. Status of ROPE Study
    a. Overall Study
    b. Structures Inventories
2. Overview on Planning Models to be used to formulate operating plans
    a. Optimization Model (see handouts on optimization)
    b. Simulation Model
3. Specific Modeling Nodes Identified
4. Discussion about nodes (see nodes file attached for details)
    a. Additional nodes needed
    b. Inputs and reference elevations/flow
    c. Qualitative inputs about uses/problems at selected nodes
5. Planned Future Citizen Group Activities

3. There were a number of noteworthy discussions and points which were raised and discussed at this meeting:

- The Corps and Forest Service have now entered into a partnership for completion of the ROPE Study. This means that both Federal agencies will be funding the study and will be using the ROPE Study and associated EIS as their decision document for operation of their Headwater Reservoir/s.
- After considerable exploration of possible planning models for use in the ROPE Study, two models have now been selected for application on the ROPE Study. These are the HEC-PRM optimization models (supported by the Corps Hydraulic Engineering Center in Davis, CA) and the STELLA

simulation model (supported by the Institute for Water Resources in Fort Belvoir, VA). A workshop will be held the last week of April to take advantage of the expertise of the IWR and HEC model expert skills and at the end of that week a working HEC-PRM and STELLA model will be prepared for the Headwaters. This will be a rough/skeleton model which will be fleshed-out over the next year to identify, evaluate, and compare a variety of systemwide Headwater operating plans. Uses and acceptability inputs from each of the volunteer citizen and task forces will be sought to flesh-out these models.

- There are 46 geographic nodes that have been identified up to this point where data for input into the models will be sought (see the attached nodes map and spreadsheet with hydrographs for more details). Additional nodes that may be useful to capture problem areas or opportunities in the study area are being sought and this group was asked to evaluate the nodes and identify others that may be added. There was discussion about how these nodes were identified and also discussion about the sample hydrographs that were provided as handouts (see the hydrograph handout attached for more information). These hydrographs represent monthly elevations (for the lakes) or flow (for river reaches) and were prepared using a period of record from 1930-1976.
- One additional area that could have hydraulic significant was identified by Mr. Fox. That location, which could be added to the nodes, is the Pine Knoll Ledge. This is a rock-lined constriction in the Mississippi River thought to be downstream of the diversion channel at Aitkin. This natural feature was described as a hydraulic constriction that impacts the effectiveness of the existing diversion and also would be a channel feature that could be altered to improve flood stages in Aitkin. Channel modifications at this site would be carefully evaluated as part of the proposed Section 205 Flood Control study at Aitkin -- which is likely to be getting underway this fall.
- It was identified that the hydrographs for the Aitkin area were not accurate as shown because they did not take into account the Corps diversion channel that was installed in the early 1950's. A footnote to account for this problem is, at a minimum, needed. It was mentioned that these hydrographs would be revised and enhanced with additional information that helps to identify key elevations related to use of the lakes (e.g., the current Corps and Service operating range, interconnecting channel elevations, etc. would be added to the hydrographs). This will be incorporated into a handout that will be provided to the group prior to the next meetings in June.
- There was considerable discussion about the flowage rights that were acquired at the time the Federal dams were constructed. The question that was posed was why doesn't the Corps and the Service utilize more fully the flowage rights at the lakes to hold water during flooding events and thereby further reduce flooding affects downstream. It was explained that the extent of the flowage rights is not consistent with the current operational plans that are now in place. But, <u>in theory</u> the entire flowage rights areas could be flooded without compensation for damages if the ROPE Study were to result in a

higher operating band. In practice, much of the flowage rights area are not now and will not later be utilized for normal pool operations…

- There was considerable discussion about economic justice associated with upstream cabins verse downstream homes. It was mentioned that the modeling that will be done as part of the ROPE study will fully evaluate economic and environmental justice as part of the evaluation of alternatives.

4. This meeting was productive, well attended by diverse stakeholder representatives, and accomplished its intent. It also was useful in preparing for other upcoming task force and citizen group meetings.

5. Our next group meeting will likely be scheduled for the first part of June. Pre-meeting handout information and specific meeting logistics information will be distributed to volunteers in advance of the next meeting to help them to prepare for that meeting. At the upcoming meeting, we should be able to run the STELLA and HEC-PRM models to better understand them and also start to get node use inputs for incorporation into the planning models.

/ s /

Ed McNally
Project Manager &
Downstream Citizens Group Champion

Encls. 2

Sign-in Sheet
Meeting Handouts (a number of enclosures attached)

Subject: Downstream Citizens Group Meeting - 14 April 2003 – Gull Lake Recreation Area
RE: Headwaters ROPE Studies

Sign-In Roster

	Name	Organization	Email and/or Telephone
1.	Ed McNally	Corps	edward.l.mcnally@usace.army.mil
2.	Rick Carlson	COE	651-290-5255 richard.d.carlson@usace.army.mil
3.	Jim Murphy	COE	james.j.murphy@usace.army.mil
4.	Dan Seifert	Audubon	dseifert@audubon.org
5.	Gregg Struss	COE-Gull Dam	218-829-2797
6.	Bill Fox		FOXDEN@EMILY.NET 218 927-3453
7.	Jeff Hardamp		2189274189
8.	Sandy Holm	LARA Audubon	rns holm@brainerd.net 218-765-3309
9.	Tracy Nikkila	Audubon	
10.	Bob Hermanson	✓	
11.	Catherine McCalvin	TNC	(608)534-6514 cmccalvin@tnc.org
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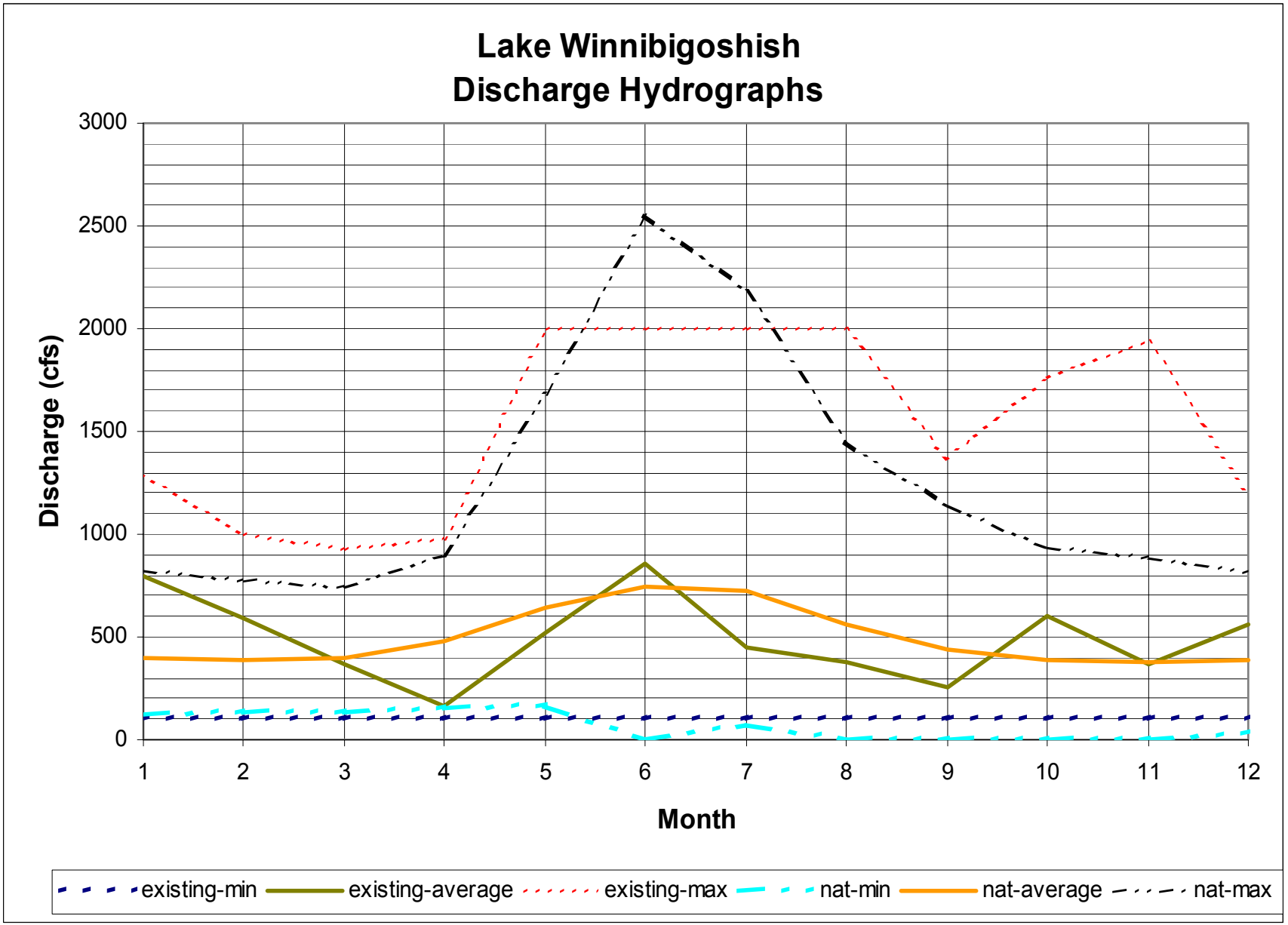
Nodes and Water Use Demands

Node No.	Node Description	Wild Rice Penalty/ Reward	Flood Control & Drawdown Penalty/ Reward	Hydropower Penalty/ Reward	Erosion Control Penalty/ Reward	Recreation Penalty/ Reward	Environmental For Lake StagesPenalty / Reward	Environmental For Link/ river Discharge Penalty/ Reward	Tribal Interest Penalty/ Reward	Cultural Interest Penalty/ Reward	Navigation, Waste Assimilation, and Water Supply Penalty/ Reward
1	Bemidji /Irving Lakes			X	X	X	X	X		X	
2	Wolf Lake		X		X	X	X			X	
3	Andrusia & Big Lakes		X		X	X	X		X	X	
4	Cass Lake		X		X	X	X	X	X	X	
5	Winnibigoshish Lake	X	X		X	X	X	X	X	X	
6	Little Winni Lake	X			X	X	X		X	X	
7	Leech Lake	X	X		X	X	X	X	X	X	
8	Big Boy Lake	X	X		X	X	X		X	X	
9	Mud & Goose Lakes	X				X	X	X	X	X	
10	Confluence Miss & Leech Rivers	X	X		X	X		X	X	X	
11	Confl. Miss & Ball Club Rivers	X	X		X	X		X	X	X	
12	Ball Club Lake	X	X		X	X	X		X	X	
13	White Oak Lake	X	X		X	X	X		X	X	
14	Little White Oak Lake	X	X		X	X	X		X	X	
15	Days High Landing Gage	X	X		X	X		X	X	X	
16	Pokegama Dam and Lake		X		X	X	X	X	X	X	X
17	Blandin Dam at Grand Rapids			X		X	X			X	
18	Lawrence Lake	X			X	X	X			X	
19	Prairie Lake and Dam	X		X	X	X	X		X	X	
20	Confl. Miss & Prairie Rivers		X			X		X	X	X	
21	Miss near Sandy Lake		X		X	X		X	X	X	
22	Big Sandy Lake	X	X		X	X	X	X		X	
23	Begin Aitkin Diversion		X			X		X		X	
24	City of Aitkin		X			X		X		X	
25	End Aitkin Diversion		X			X				X	
26	Confl. Miss & Pine Rivers		X			X		X		X	
27	Big Pine Lake	X	X		X	X	X	X		X	
28	Whitefish (Cross Lake & Pine Dam)		X		X	X	X			X	
29	Gull Lake Dam and Chain		X		X	X	X	X		X	
30	Confl. Gull & Crow Wing (Sylvan Dam)		X	X	X	X				X	
31	Confl. Miss & Crow Wing Rivers		X		X	X		X		X	
32	City of Brainerd and Potlatch Dam			X	X	X				X	X
33	City of Little Falls and Dam			X	X	X				X	X
34	Town of Royalton			X	X	X				X	
35	Town of Sartell			X	X	X				X	X
36	City of St. Cloud			X	X	X		X		X	X
37	City of Elk River				X	X		X		X	
38	City of Coon Rapids and Dam			X	X	X				X	X
39	Town of Monticello				X	X				X	X
40	Town of Becker				X	X				X	X
41	Brooklyn Center				X	X				X	X
42	Upper St. Anthony Falls Dam			X	X	X		X		X	X
43	Lock and Dam No. 1			X		X		X		X	X
44	High Bridge Power Plant					X				X	X
45	Metro Waste Control					X				X	X
46	City of St. Paul					X		X		X	X

	Location	DA	DA Ratio	Local Flow Computation (multiply by DA ratio)	Total Flow Computation
1	Bemidgi Lakes & Irving lakes	562			
2	Wolf Lake	45.3			
3	Andrusia & Big lakes	40.3			
4	Cass Lake	1088		Winni Inflow	Route thru Cass Lake
5	**Winni**	**1442**			
6	Little Winni	-		Same as Winni	Same as Winni
7	Big Boy Lake	342	0.294	Leech Inflow	Winni Outflow + Local Flow
8	**Leech**	**1163**			
9	Mud/Goose	1287	1.107	Leech Inflow	Leech Outflow + Local Flow
10	Miss/Leech Conf	2899	1.113	Winni + Leech Inflows	Winni + Leech Outflows + Local Flow
11	Miss/Ball Club Conf	2945	0.515	Poke Inflow - (Leech + Winni Outflow)	Winni + Leech Outflows + Local Flow
12	Ball Club (46.5)	2945			
13	White Oak	3031	0.645	Poke Inflow - (Leech + Winni Outflow)	Winni + Leech Outflows + Local Flow
14	Little White Oak	3042	0.662	Poke Inflow - (Leech + Winni Outflow)	Winni + Leech Outflows + Local Flow
15	Day High Landing Gage	3050	0.674	Poke Inflow - (Leech + Winni Outflow)	Winni + Leech Outflows + Local Flow
16	**Pokegama Dam**	**3265**			
17	Blandin Dam/Gr Rapids	3370	1.032	Poke Inflow	Poke Outflow + Local Flow
18	Lawrence Lake	-			
19	Prairie Lake Dam	519			
20	Miss/Praire R Conf	3859	0.331	Libby Flow - PokeOutflow	Poke Outflow + Local Flow
21	**Big Sandy**	**421**			
22	**Miss at Libby**	**5060**			
23	Aitkin Divn (begin)	5960	0.833	Aitkin Flow - Libby Flow	Libby Flow + Local Flow
24	**Aitkin**	**6140**			
25	Aitkin Divn (end)	6247	1.099	Aitkin Flow	Local Flow
26	**Pine River Dam**	**562**			
27	Big Pine Lake	576	1.025	Pine River Inflow	Pine Outflow + Local Flow
28	Miss/Pine R Conf	7135	0.182	Royalton Flow - Aitkin Flow	Aitkin Flow + Local Flow
29	Brainerd/Potlatch Dam	7320	0.216	Royalton Flow - Aitkin Flow	Aitkin Flow + Local Flow
30	**Gull Lake Dam**	**287**			
31	Gull/Crow Wing R Conf	3687			
32	Miss/Crow Wing R Conf	11037	0.897	Royalton Flow - Aitkin Flow	Aitkin Flow + Local Flow
33	Little Falls Dam	11520	0.985	Royalton Flow - Aitkin Flow	Aitkin Flow + Local Flow
34	**Royalton**	**11600**			
35	Sartell	12680	0.144	Anoka Flow - Royalton Flow	Royalton Flow + Local Flow
36	St Cloud	13320	0.229	Anoka Flow - Royalton Flow	Royalton Flow + Local Flow
37	Monticello	13740	0.285	Anoka Flow - Royalton Flow	Royalton Flow + Local Flow
38	Elk River	14410	0.375	Anoka Flow - Royalton Flow	Royalton Flow + Local Flow
39	**Anoka**	**19100**			
40	Coon Rapids Dam	19220	0.007	St Paul Flow - Anoka Flow	Anoka Flow + Local Flow
41	Brooklyn Center	19560	0.026	St Paul Flow - Anoka Flow	Anoka Flow + Local Flow
42	USAF Dam	19680	0.033	St Paul Flow - Anoka Flow	Anoka Flow + Local Flow
43	L/D No1	19680	0.033	St Paul Flow - Anoka Flow	Anoka Flow + Local Flow
44	High Br. Power Plant	36800	1.000	Same as St. Paul	Same as St. Paul
45	**St. Paul**	**36800**			
46	Metro Waste	36800		Same as St. Paul	Same as St. Paul


Lake Winnibigoshish
Discharge Hydrographs
Discharge (cfs)
3000
2500
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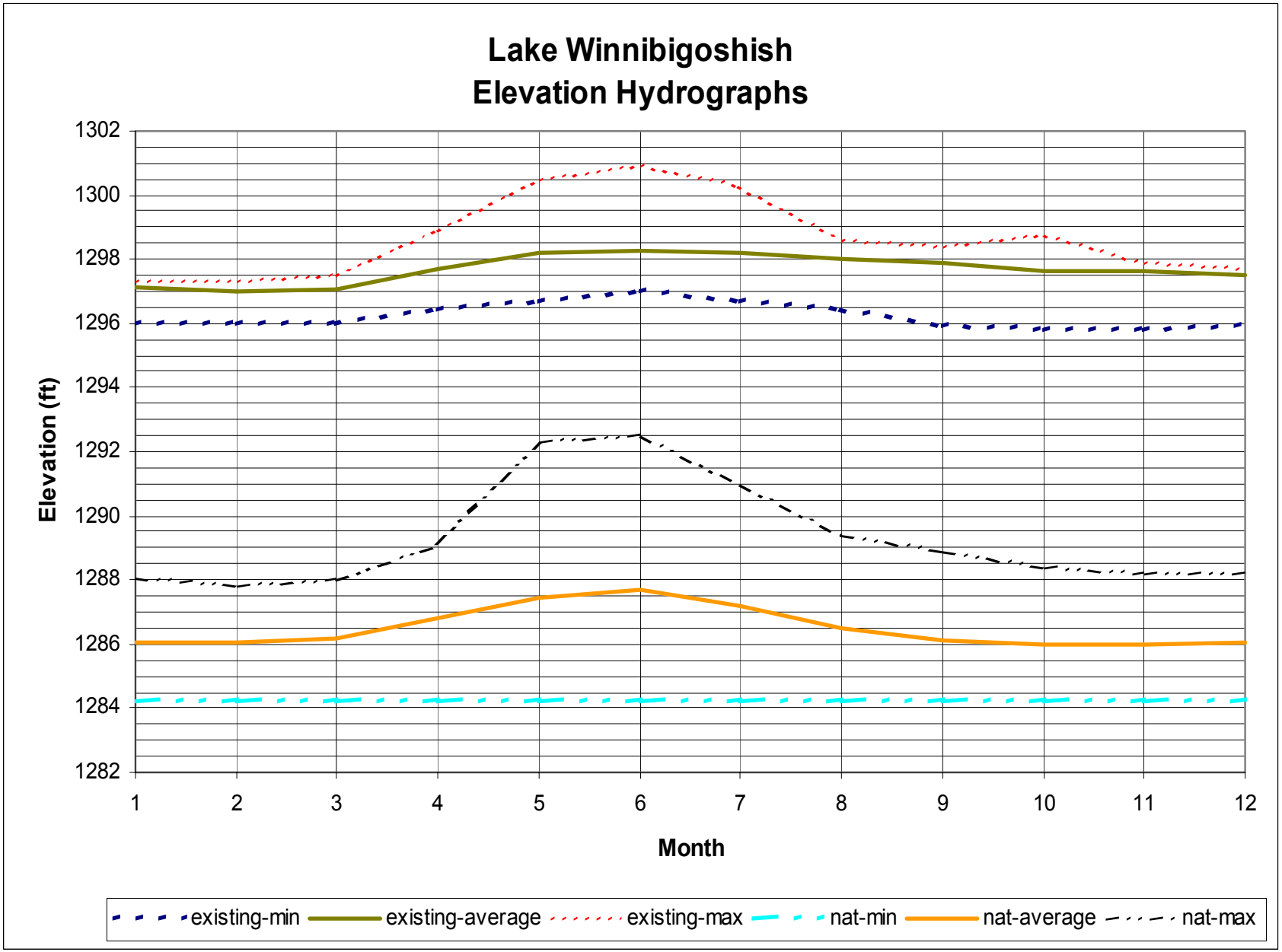
Lake Winnibigoshish
Elevation Hydrographs
Elevation (ft)
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1300
1298
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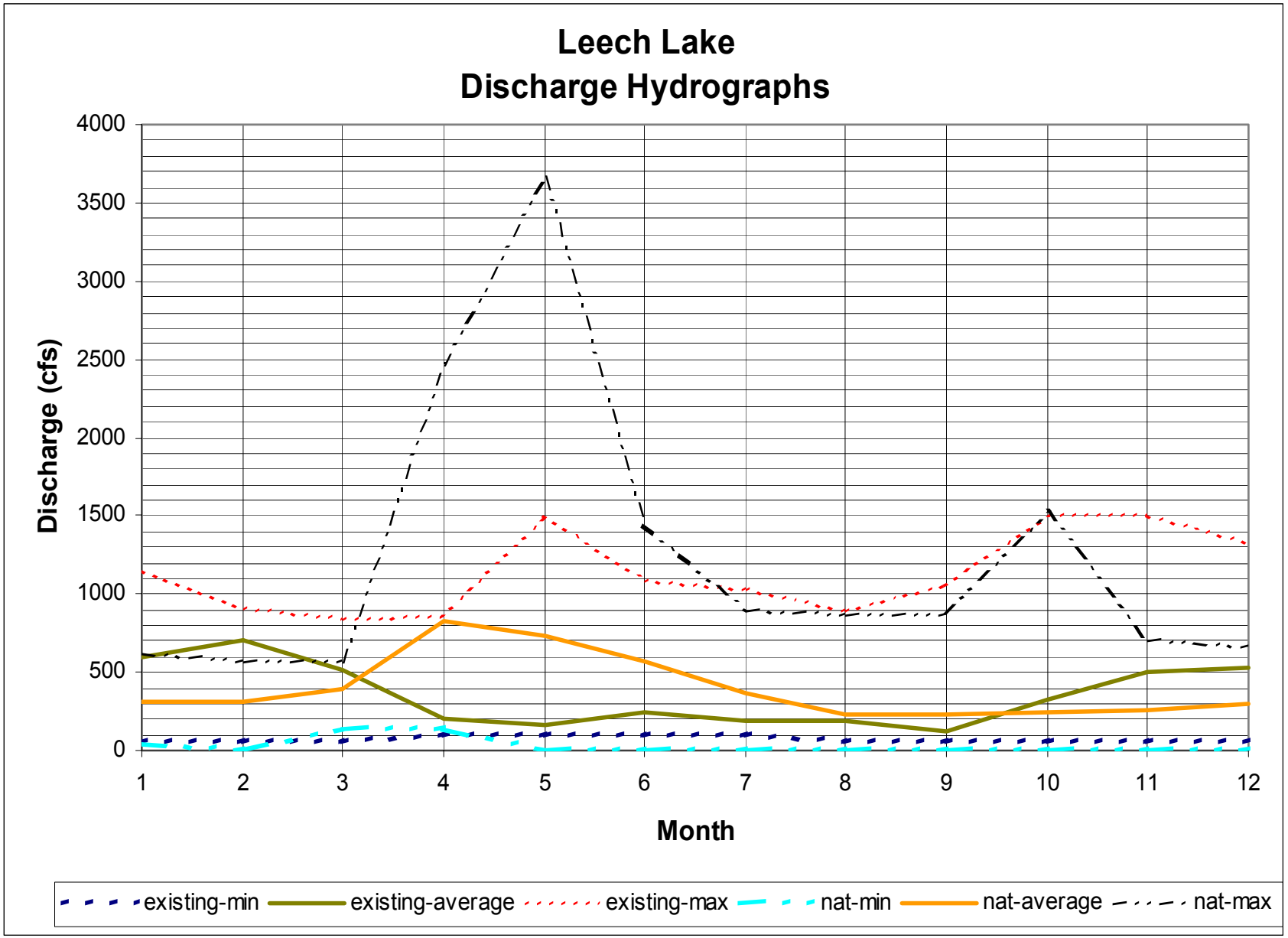
Leech Lake
Discharge Hydrographs
Discharge (cfs)
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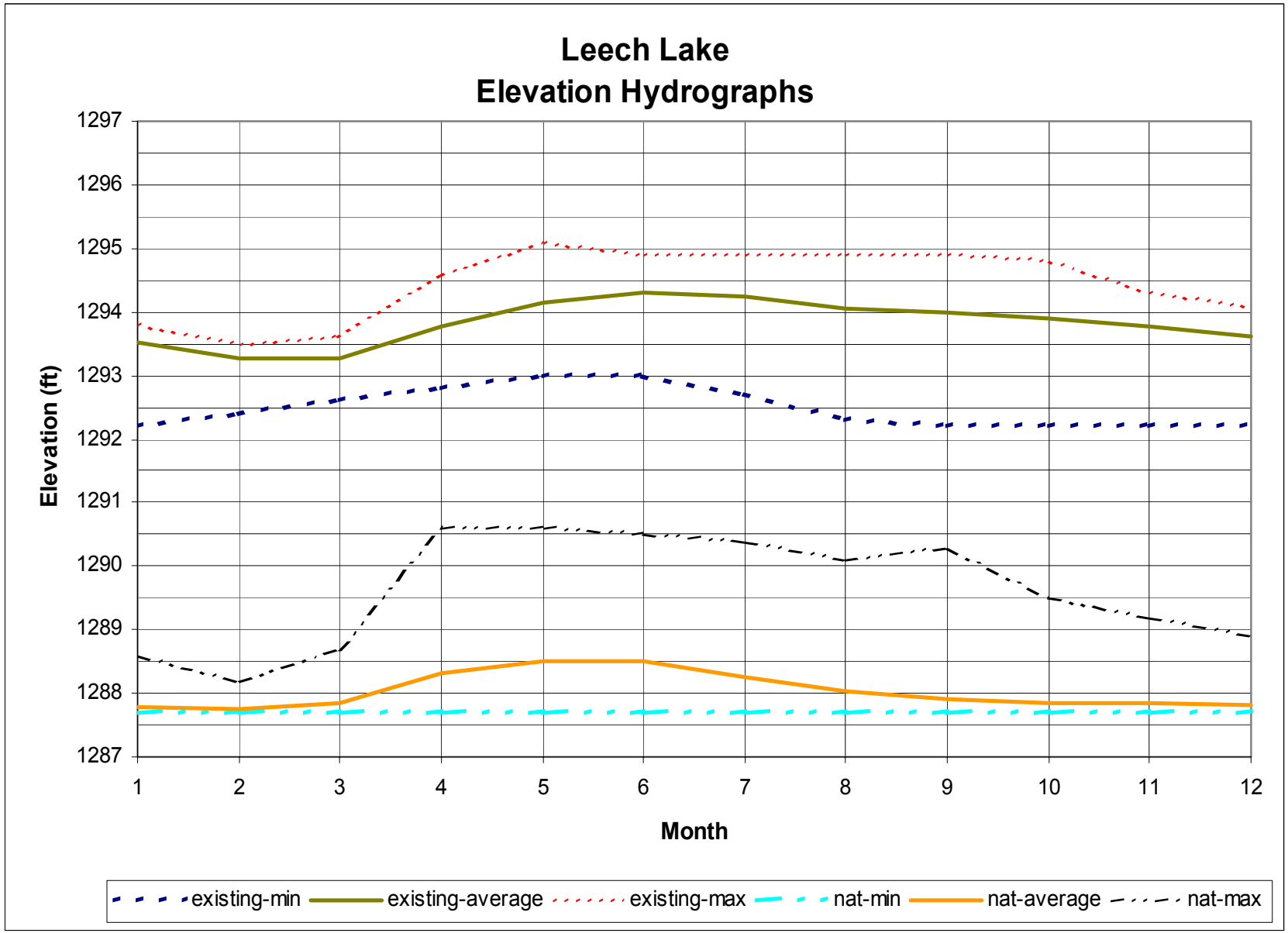
Leech Lake
Elevation Hydrographs
Elevation (ft)
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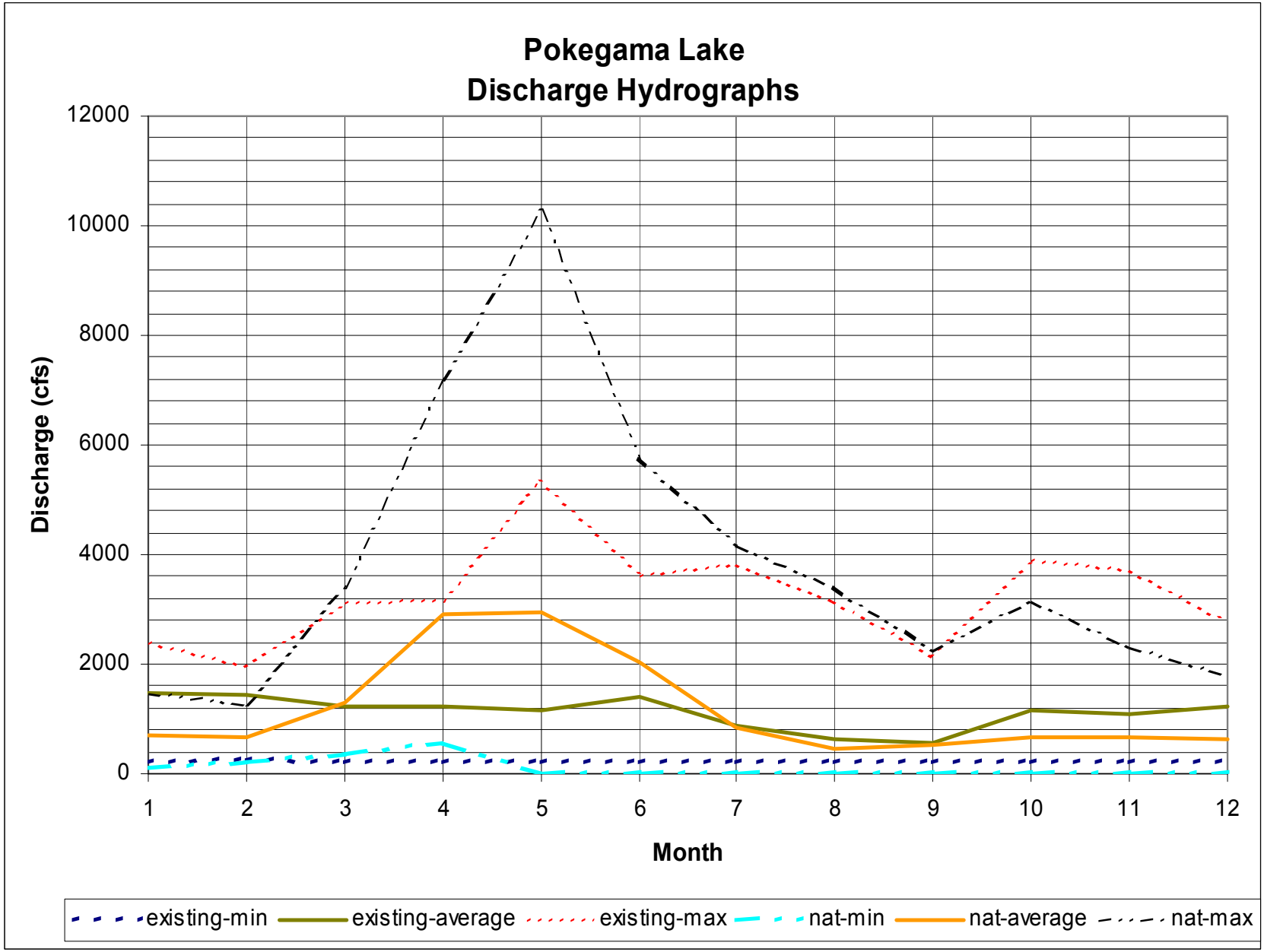
Pokegama Lake
Discharge Hydrographs
Discharge (cfs)
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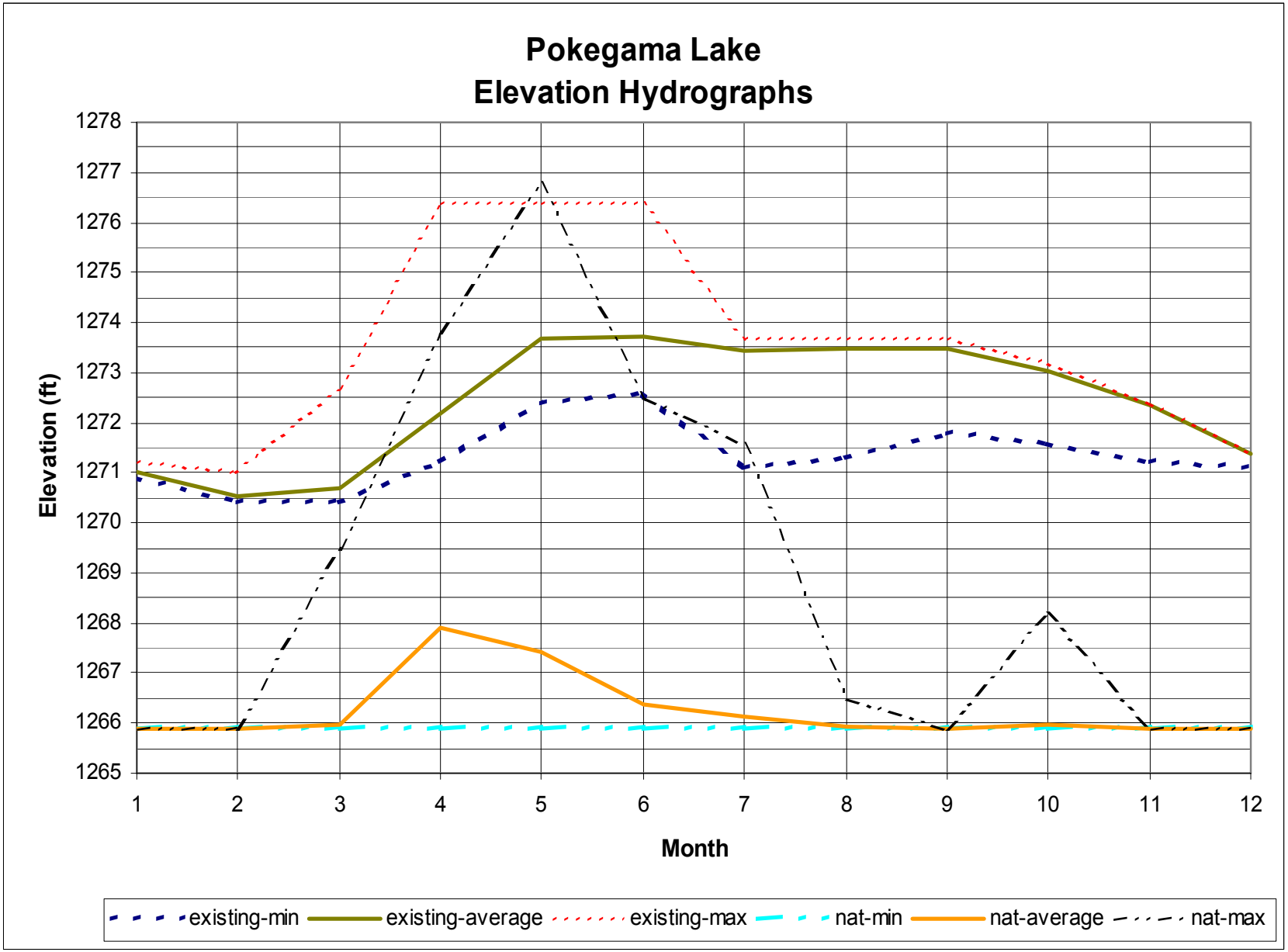
Pokegama Lake
Elevation Hydrographs
Elevation (ft)
1278
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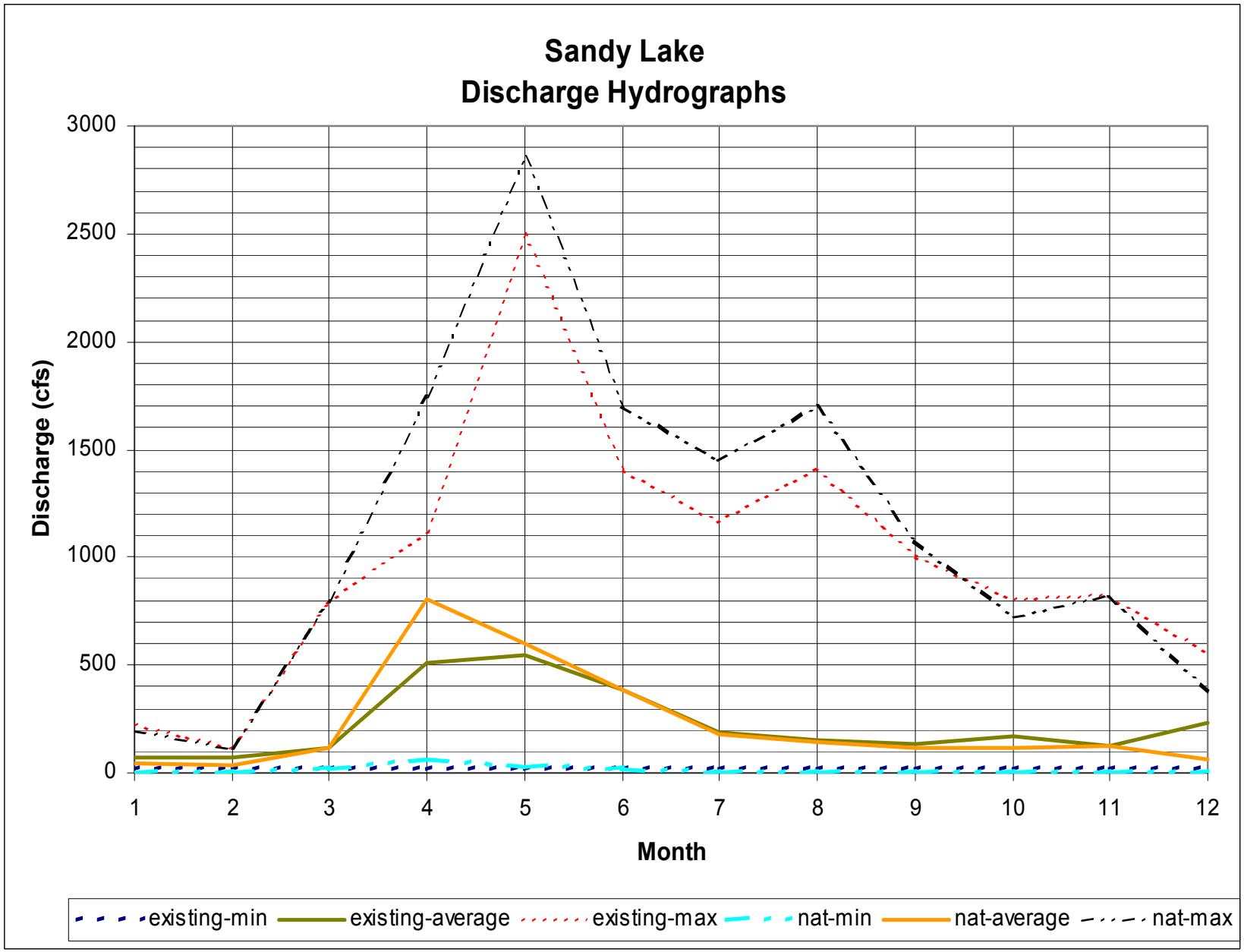
Sandy Lake
Discharge Hydrographs
Discharge (cfs)
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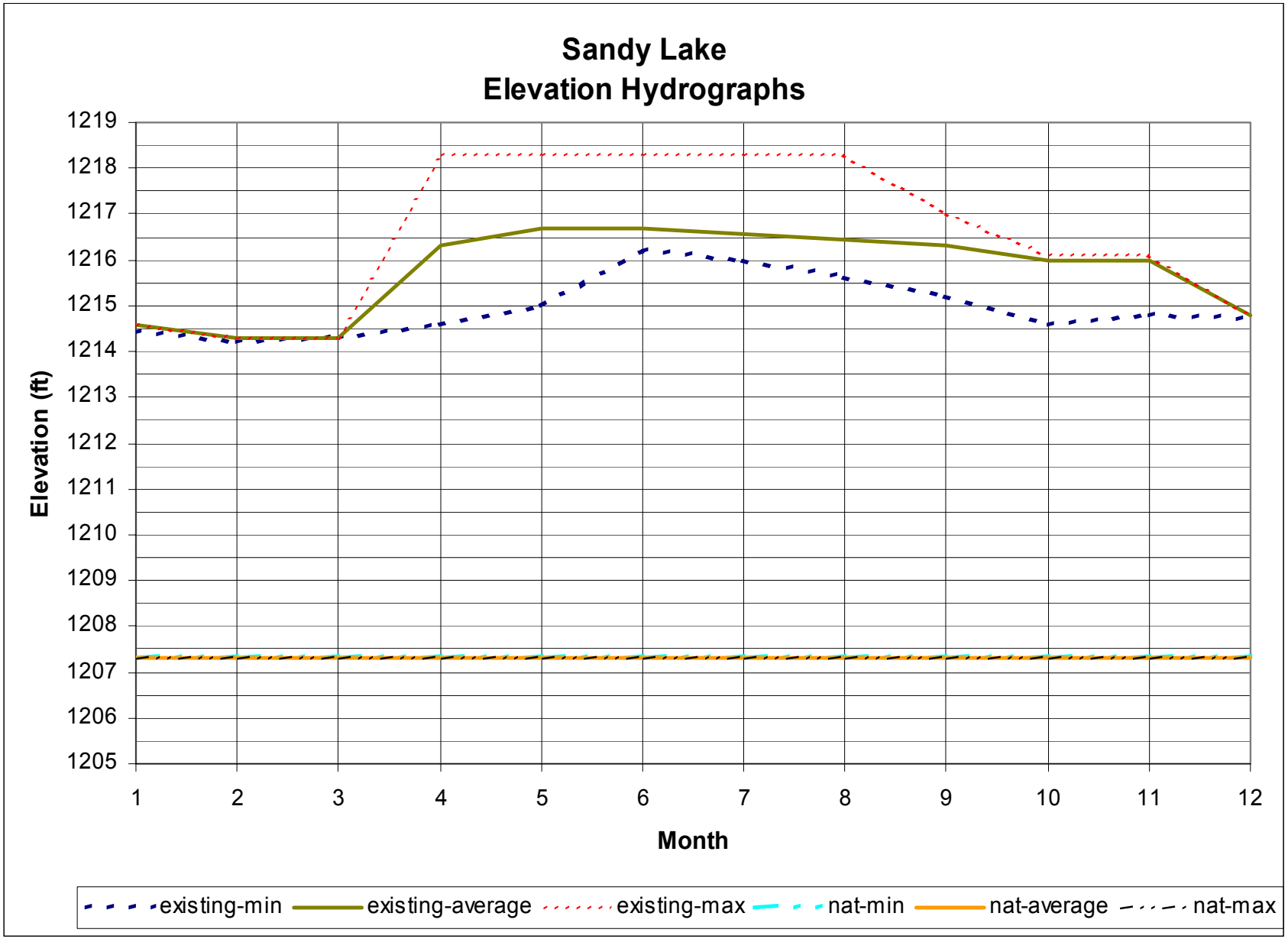
Sandy Lake
Elevation Hydrographs
Elevation (ft)
1219
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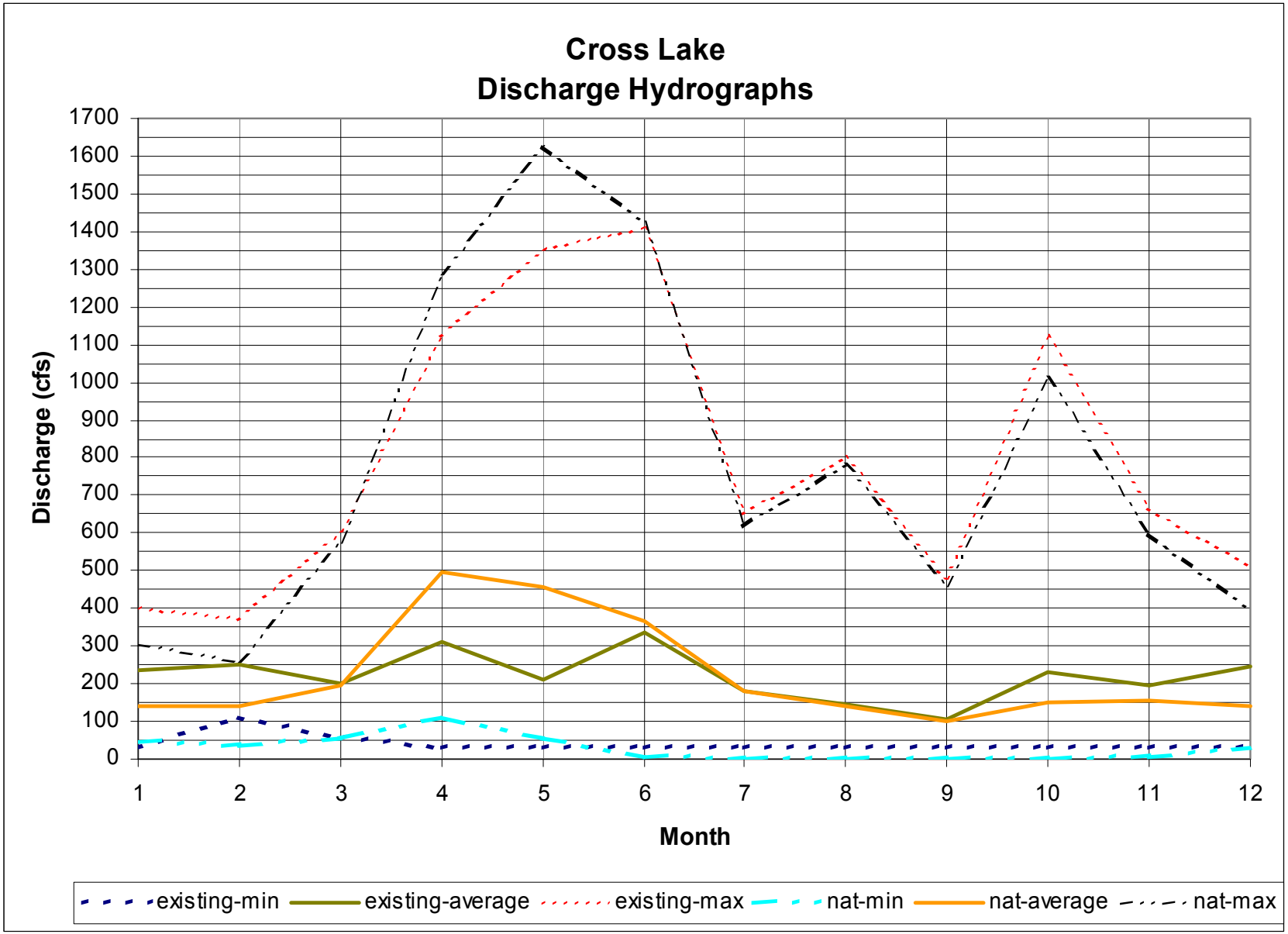
Cross Lake
Discharge Hydrographs
Discharge (cfs)
1700
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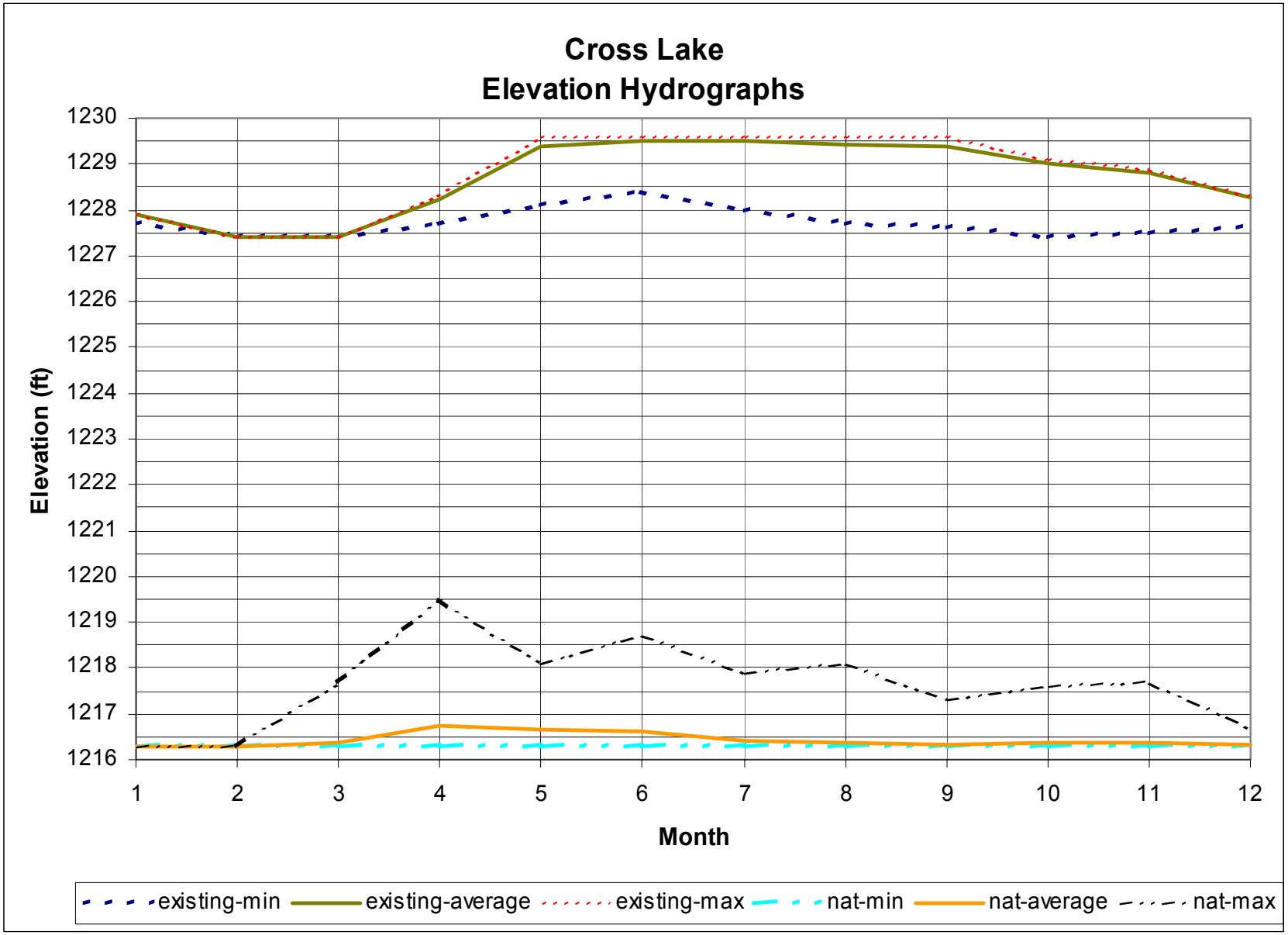
Cross Lake
Elevation Hydrographs
Elevation (ft)
1230
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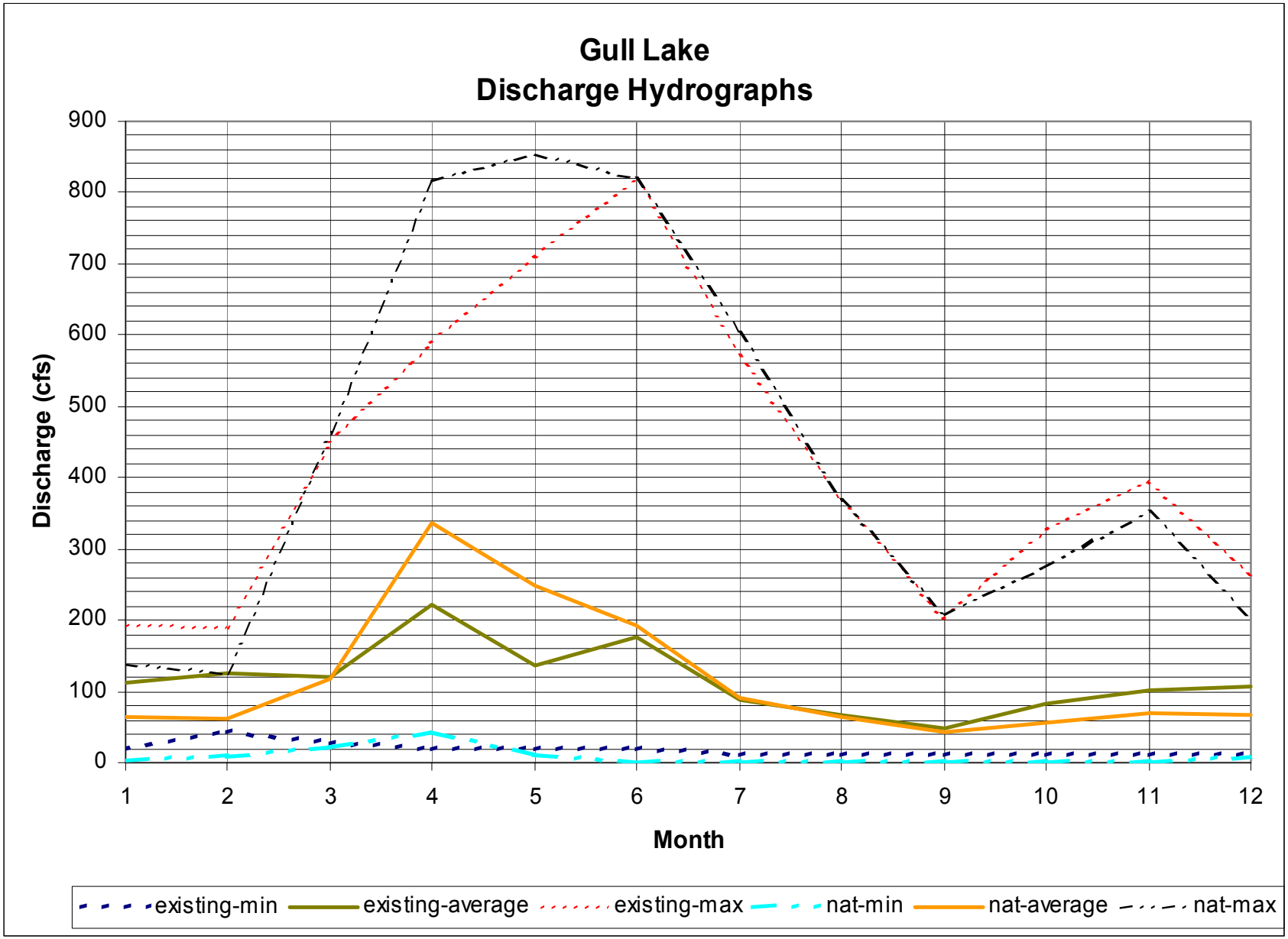
Gull Lake
Discharge Hydrographs
Discharge (cfs)
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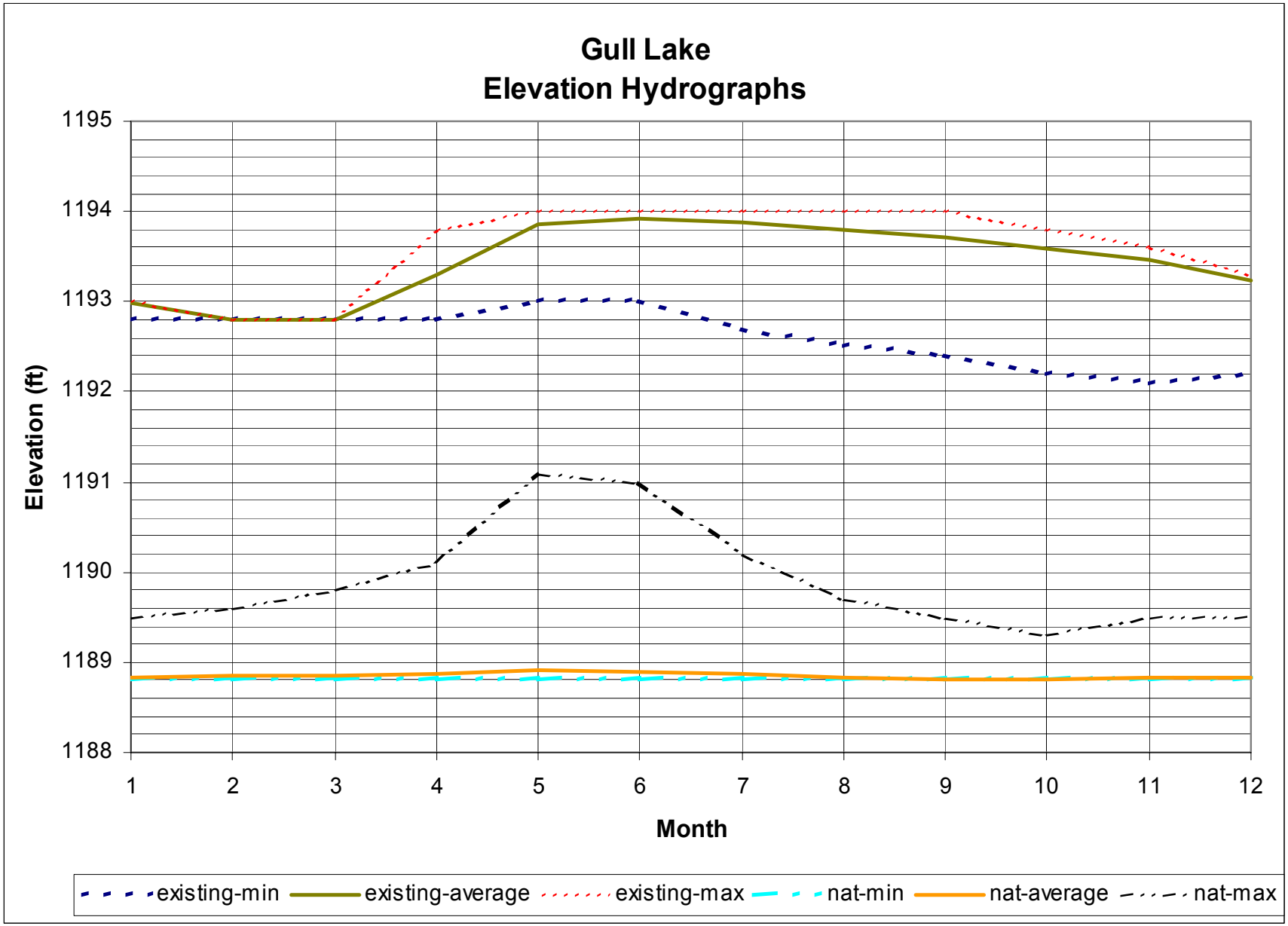
Gull Lake
Elevation Hydrographs
Elevation (ft)
1195
1194
1193
1192
1191
1190
1189
1188
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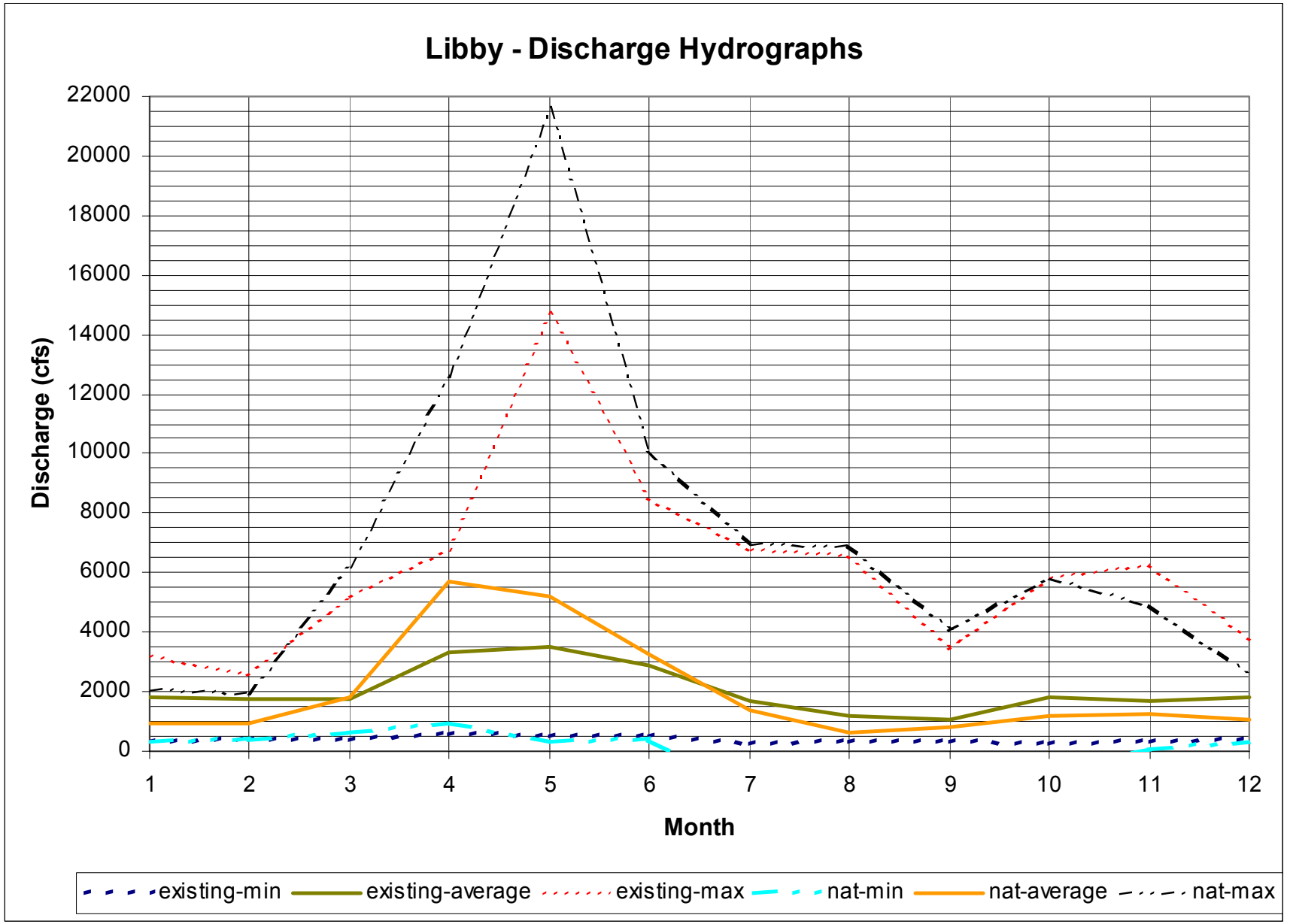
Libby - Discharge Hydrographs
Discharge (cfs)
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
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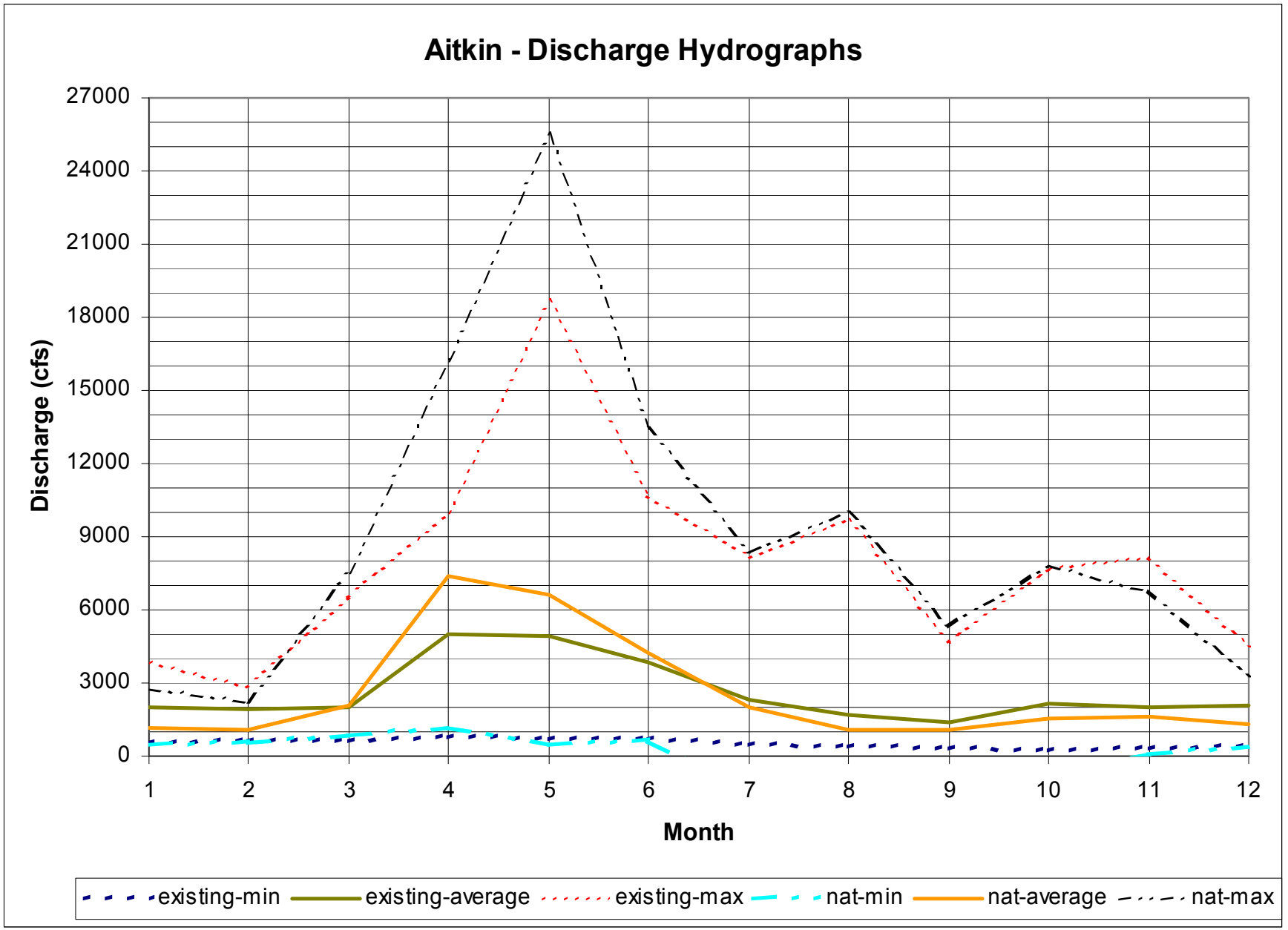
Aitkin - Discharge Hydrographs
Discharge (cfs)
27000
24000
21000
18000
15000
12000
9000
6000
3000
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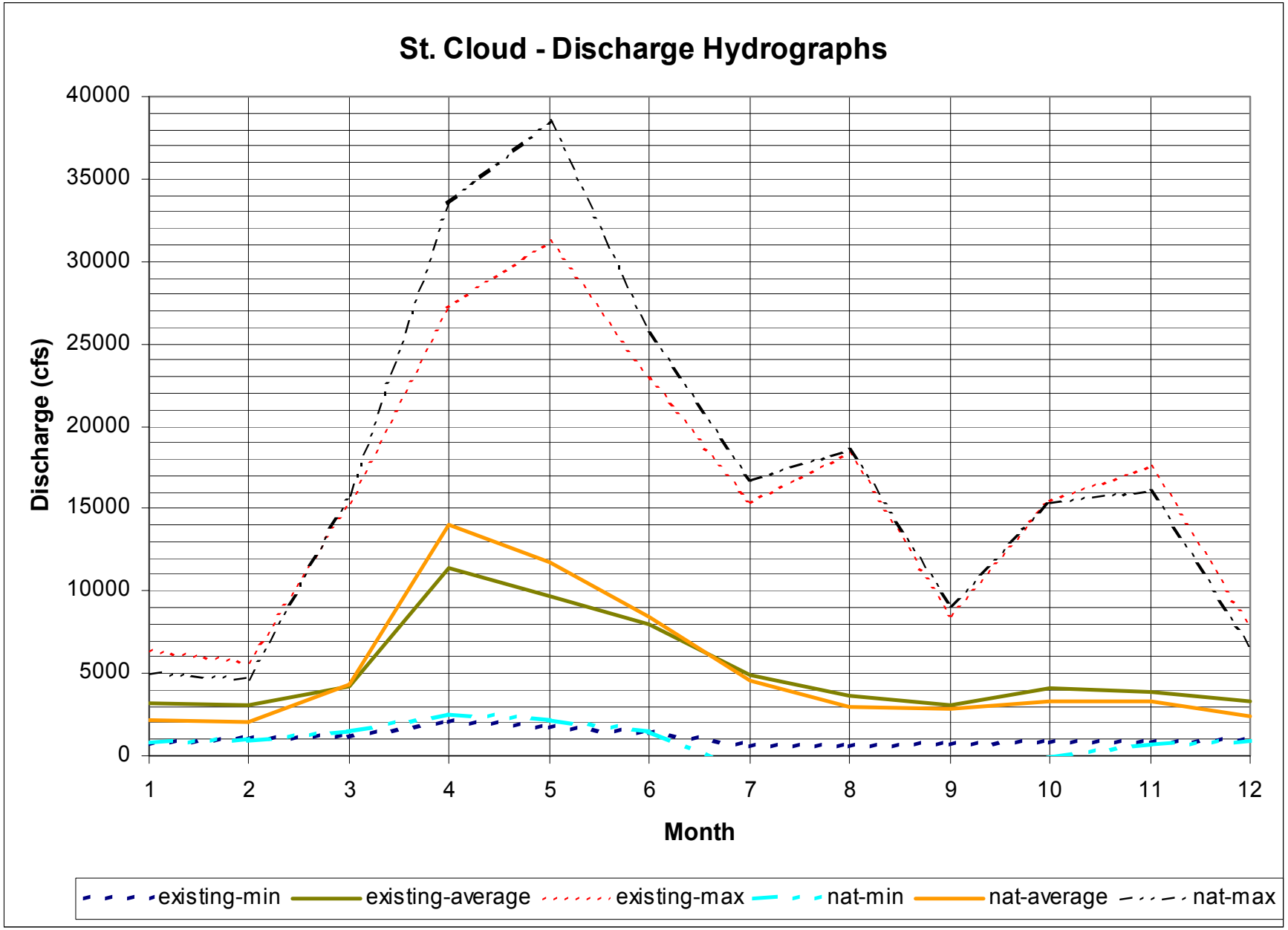
St. Cloud - Discharge Hydrographs
Discharge (cfs)
40000
35000
30000
25000
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15000
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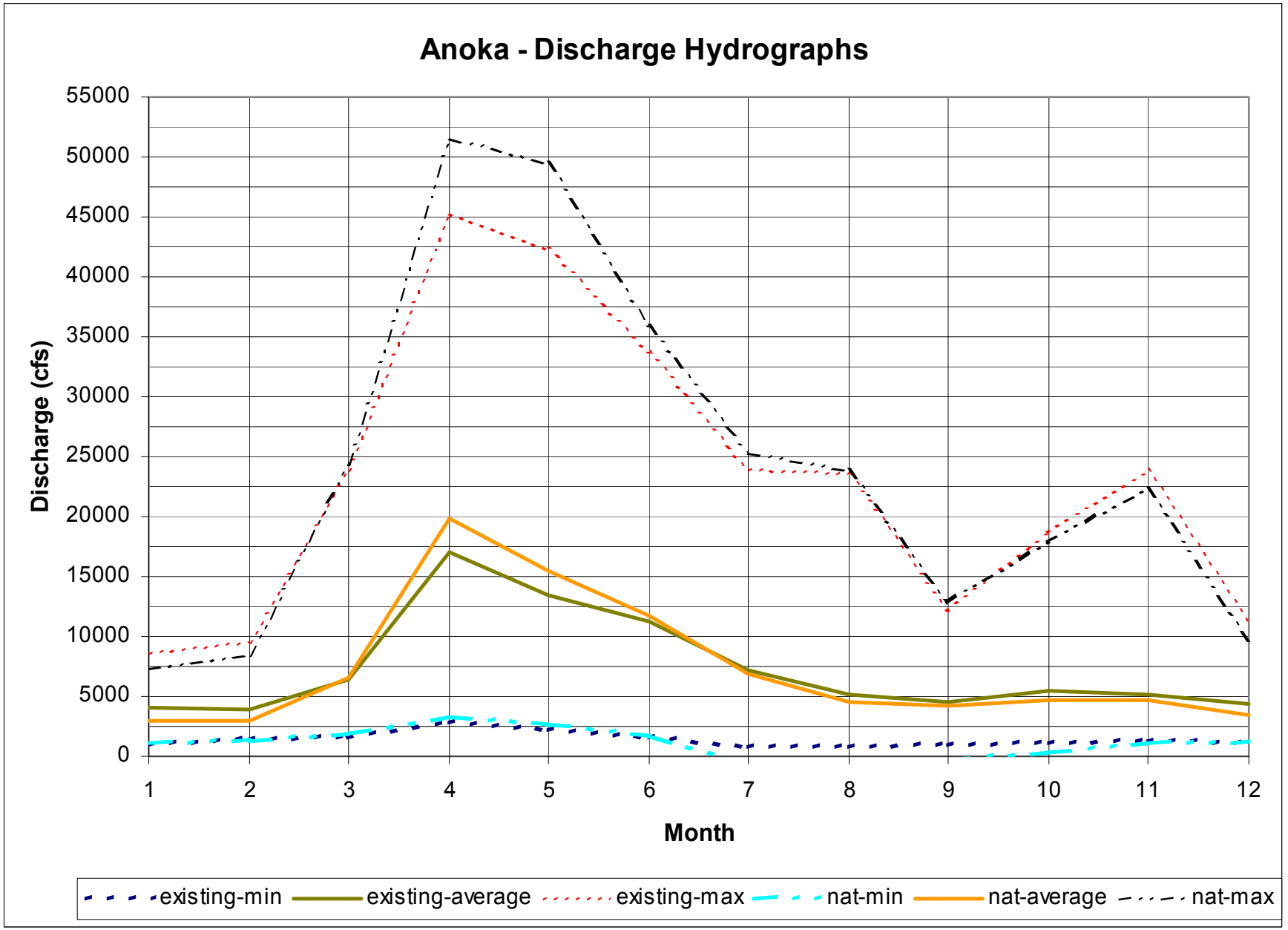
Anoka - Discharge Hydrographs
Discharge (cfs)
55000
50000
45000
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25000
20000
15000
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5000
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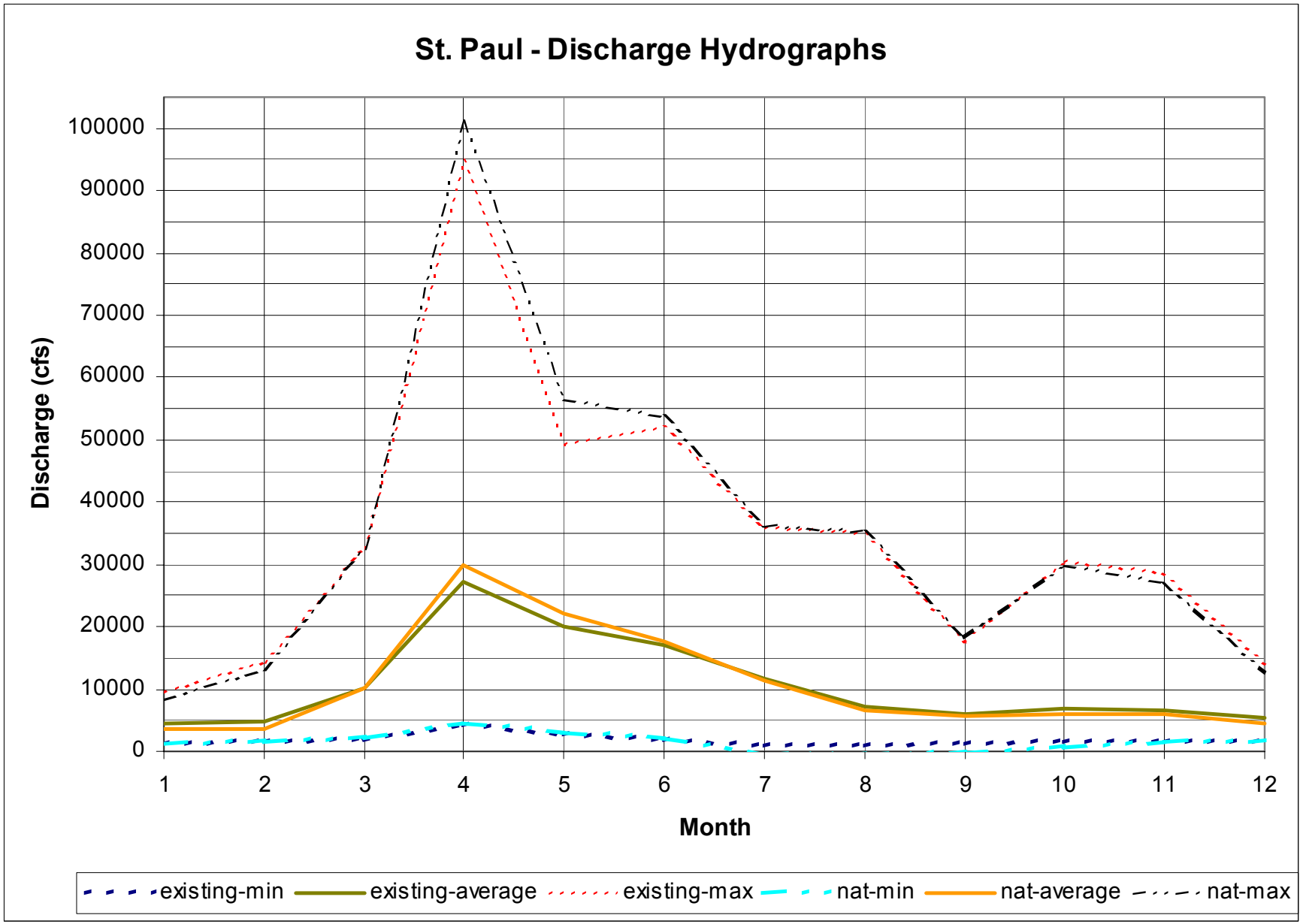
3
4
5
6
7
8
9
10
11
12
Month
existing-min
existing-average
existing-max
nat-min
nat-average
nat-max


St. Paul - Discharge Hydrographs
Discharge (cfs)
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
1
2
3
4
5
6
7
8
9
10
11
12
Month
existing-min
existing-average
existing-max
nat-min
nat-average
nat-max