Boardman River Dams Committee (BRDC)

Detailed Analysis of Alternatives

Presentation Outline

- **Summary of Detailed Analysis**
- **Summary of Cost and Economic Impacts**
- **Public Opinion Survey**
- **Questions and Discussion**

Alternatives

- Alternative 1-Repair and retain all dams
- Alternative 25-Repair Union St. and Brown Bridge dams and remove Sabin and Boardman dams
- Alternative 41-Modify all the dams
- Alternative 41-Modify all the dams and generate electricity
- Alternative 43-Repair Union St., remove Sabin Dam, and modify Boardman and Brown Bridge dams
- Alternative 79-Repair Union St. and remove Sabin, Boardman, and Brown Bridge dams
- Alternative 81-Modify Union St. and remove Sabin, Boardman, and Brown Bridge dams

BRDC Engineering and Feasibility Study

- **Qualitative and quantitative analyses were conducted using widely accepted methods in:**
  - Engineering
  - Hydrology
  - Environmental Sciences
  - Economics
  - Law, and
  - Sociology

Categories Not Significantly Impacted

- **Historic status of dams and power houses**
- **Transportation and infrastructure**
- **Water supplies and on-site waste water treatment systems**
- **Property boundaries and rights**
- **Programs at the County's Natural Education Reserve**

Alternative 1-Repair And Retain All Dams

Effects

Category	Union St.	Sabin	Boardman	Brown Bridge	Total
Impoundment size (acres)	339	40	103	192	674
New upland habitat (acres)	0	0	0	0	0
New wetland habitat (acres)	0	0	0	0	0
New river length (miles)	0	0	0	0	0
Wildlife					
Fisheries					
Floodplain					
Recreational uses					
Property values					
Hydroelectricity					

Alternative 25-Repair Union St. and Brown Bridge dams and remove Sabin and Boardman dams

Effects

Category	Union St.	Sabin	Boardman	Brown Bridge	Total
Impoundment size (acres)	339	0	0	192	531
New upland habitat (acres)	0	7	25	0	32
New wetland habitat (acres)	0	28	69	0	97
New river length (miles)	0	0.7	1.2	0	1.9
Wildlife	↔	↑	↑	↔	↑
Fisheries	↔	↑	↑	↔	↑
Floodplain	↔	↓	↓	↔	↓
Recreational uses	↔	↑	↑	↔	↑
Property values	↔	↑	↑	↔	↑
Hydroelectricity	↔	↓	↓	↔	↓

↑ Increase
↓ Decrease
↔ No Change

Alternative 41-Modify all the dams

Effects

Category	Union St.	Sabin	Boardman	Brown Bridge	Total
Impoundment size (acres)	339	40	103	192	674
New upland habitat (acres)	0	0	0	0	0
New wetland habitat (acres)	0	0	0	0	0
New river length (miles)	0	0	0	0	0
Wildlife	⇔	⇔	⇔	⇔	⇔
Fisheries	↑	↑	↑	↑	↑
Floodplain	⇔	⇔	⇔	⇔	⇔
Recreational uses	⇔	⇔	⇔	⇔	⇔
Property values	⇔	⇔	⇔	⇔	⇔
Hydroelectricity	⇔	⇔	⇔	⇔	⇔

Alternative 41-Modify all the dams and generate electricity

Effects

Category	Union St.	Sabin	Boardman	Brown Bridge	Total
Impoundment size (acres	339	40	103	192	674
New upland habitat (acres)	0	0	0	0	0
New wetland habitat (acres)	0	0	0	0	0
New river length (miles)	0	0	0	0	0
Wildlife	⇔	⇔	⇔	⇔	⇔
Fisheries	↑	↑	↑	↑	↑
Floodplain	⇔	⇔	⇔	⇔	⇔
Recreational uses	⇔	⇔	⇔	⇔	⇔
Property values	⇔	⇔	⇔	⇔	⇔
Hydroelectricity	⇔	↑	↑	↑	↑

↑ Increase
↓ Decrease
⇔ No Change

Alternative 43-Repair Union St., remove Sabin Dam, and modify Boardman and Brown Bridge dams

Effects

Category	Union St.	Sabin	Boardman	Brown Bridge	Total
Impoundment size (acres)	339	0	103	192	634
New upland habitat (acres)	0	7	0	0	7
New wetland habitat (acres)	0	28	0	0	28
New river length (miles)	0	0.7	0	0	0.7
Wildlife	↔	↑	↔	↔	↑
Fisheries	↔	↑	↑	↑	↑
Floodplain	↔	↓	↔	↔	↓
Recreational uses	↔	↑	↔	↔	↑
Property values	↔	↑	↔	↔	↑
Hydroelectricity	↔	↔	↔	↔	↔

↑ Increase
↓ Decrease
↔ No Change

Alternative 79-Repair Union St. and remove Sabin, Boardman, and Brown Bridge dams

Effects

Category	Union St.	Sabin	Boardman	Brown Bridge	Total
Impoundment size (acres)	339	0	0	0	339
New upland habitat (acres)	0	7	25	25	57
New wetland habitat (acres)	0	28	69	156	253
New river length (miles)	0	0.7	1.2	1.5	3.4
Wildlife	↔	↑	↑	↑	↑
Fisheries	↔	↑	↑	↑	↑
Floodplain	↔	↓	↓	↓	↓
Recreational uses	↔	↑	↑	↑	↑
Property values	↔	↑	↑	↑	↑
Hydroelectricity	↔	↔	↔	↔	↔

↑ Increase
↓ Decrease
↔ No Change

Alternative 81-Modify Union St. and remove Sabin, Boardman, and Brown Bridge dams

Effects

Category	Union St.	Sabin	Boardman	Brown Bridge	Total
Impoundment size (acres)	339	0	0	0	339
New upland habitat (acres)	0	7	25	25	57
New wetland habitat (acres)	0	28	69	156	253
New river length (miles)	0	0.7	1.2	1.5	3.4
Wildlife	↑	↑	↑	↑	↑
Fisheries	↔	↑	↑	↑	↑
Floodplain	↔	↓	↓	↓	↓
Recreational uses	↑	↑	↑	↑	↑
Property values	↔	↑	↑	↑	↑
Hydroelectricity	↔	↔	↔	↔	↔

↑ Increase
↓ Decrease
↔ No Change

Effects Summary

	Alt. 1	Alt. 25	Alt. 41	Alt. 41 w/hydro.	Alt. 43	Alt. 79	Alt. 81
Category 	Repair all dams	Remove part of Sabin/Boardman repair Union/Brown Bridge	Modify all dams	Modify all dams for hydroelectricity	Repair Union; remove part of Sabin; modify Boardman/ Brown Bridge	Repair Union; remove part of all others	Modify Union; remove part of all others
Impoundment size (*acres)*	674	531	674	674	634	339	339
New upland habitat *(acres)*	0	32	0	0	7	57	57
New wetland habitat *(acres)*	0	97	0	0	28	253	253
New river length *(miles)*	0	1.9	0	0	0.7	3.4	3.4
Ecosystem *output (from USACE)*	17064		20208				28124
Wildlife	↔	↑	↔	↔	↑	↑	↑
Fisheries	↔	↑	↑	↑	↑	↑	↑
Floodplain	↔	↓	↔	↔	↓	↓	↓
Recreational Uses	↔	↑	↔	↔	↑	↑	↑
Property Values	↔	↑	↔	↔	↑	↑	↑
Hydroelectricity	↔	↔	↔	↑	↔	↔	↔

Cost Summary

	Alt. 1	Alt. 25	Alt. 41	Alt. 41 w/hydro.	Alt. 43	Alt. 79	Alt. 81
Category	Repair all dams	Remove part of Sabin/Boardman; repair Union/Brown Bridge	Modify all dams	Modify all dams for hydro-electricity	Repair Union; remove part of Sabin; modify Boardman/ Brown Bridge	Repair Union; remove part of all others	Modify Union; remove part of all others
Present Value (PV) of Cost *(Avg. of estimates, partial removal)*	$3,080,000	$4,451,000	$10,092,000	$16,768,000	$7,784,000	$4,741,000	$5,798,000
Recreation (PV)	$0	$112,000	$83,000	$83,000	$133,000	$241,000	$241,000
Tourism (PV)	$0	$1,380,000	$1,440,000	$1,440,000	$1,500,000	$1,580,000	$1,580,000
Property Values (PV)	$0	$1,040,000	$0	$0	$700,000	$1,180,000	$1,180,000
Hydroelectricity (PV)	$0	$0	$0	$9,100,000	$0	$0	$0

General Public Opinion Survey

Purpose: To give everyone another opportunity to participate in process.

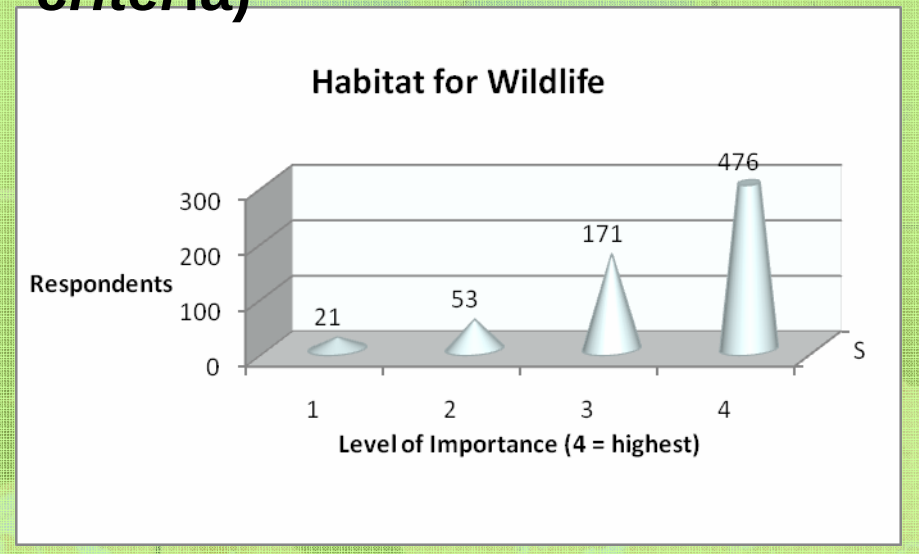
Distribution:

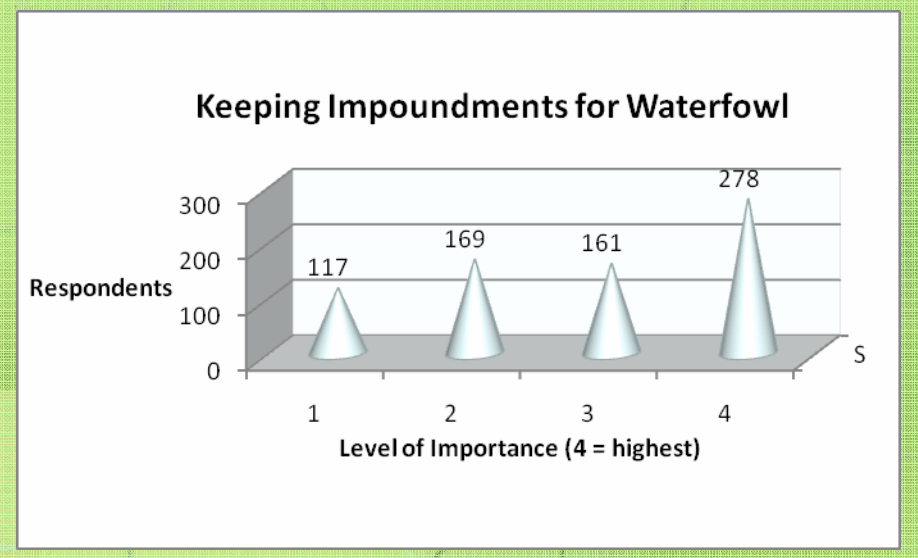
- **15,000 inserted in Traverse City Record Eagle.**
- **2,609 mailed w/stamped return envelope to randomly selected voters.**
- **391 mailed w/stamped return envelope to riparian property owners.**
- **180 (or so) handed out at public meetings.**
- **Open Access to Survey on web.**

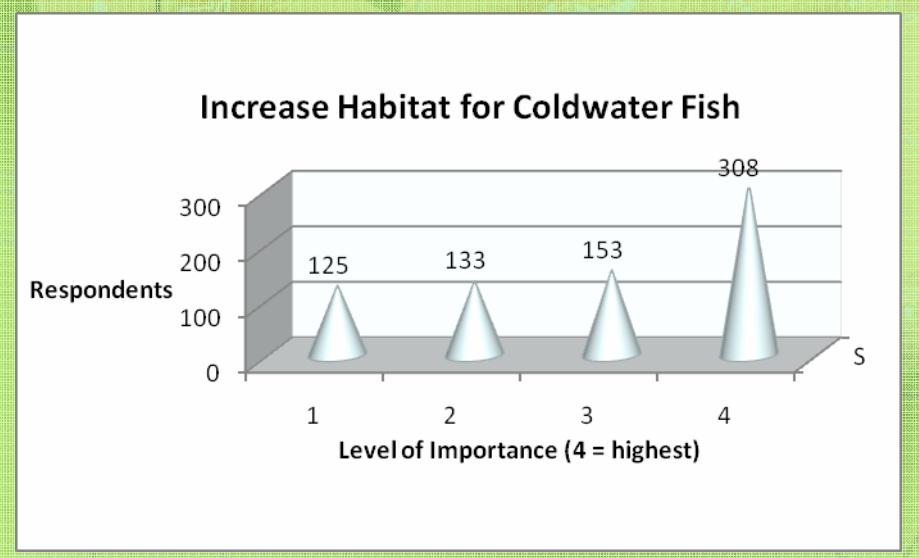
Response:

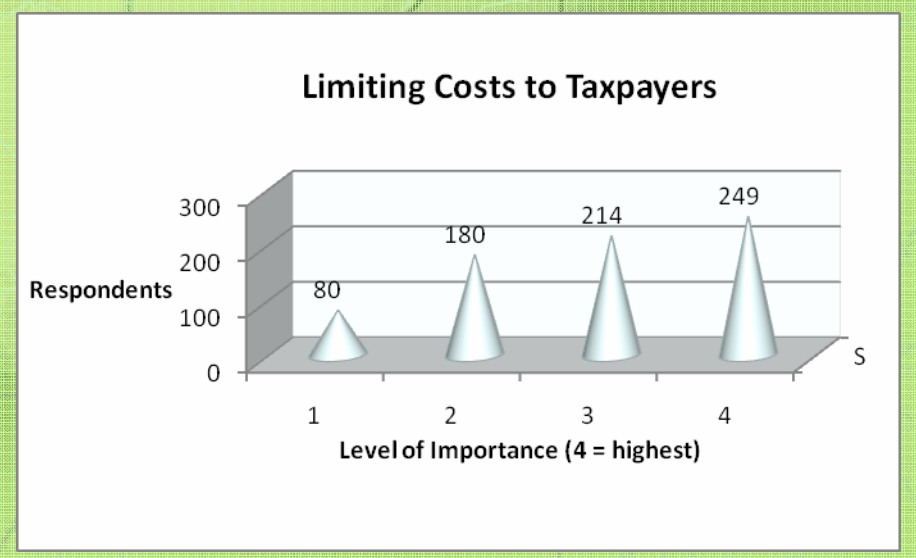
- **By October 10th, 749 completed surveys were returned (or online).**
- **82% of respondents were year-round residents.**
- **15% of respondents own riparian property.**
- **78 % of respondents were 45 years of age or older.**
- **Over 90% are Boardman River users & consider it an important resource.**

Considerations or Concerns in Making Decisions (i.e., *decision criteria*)

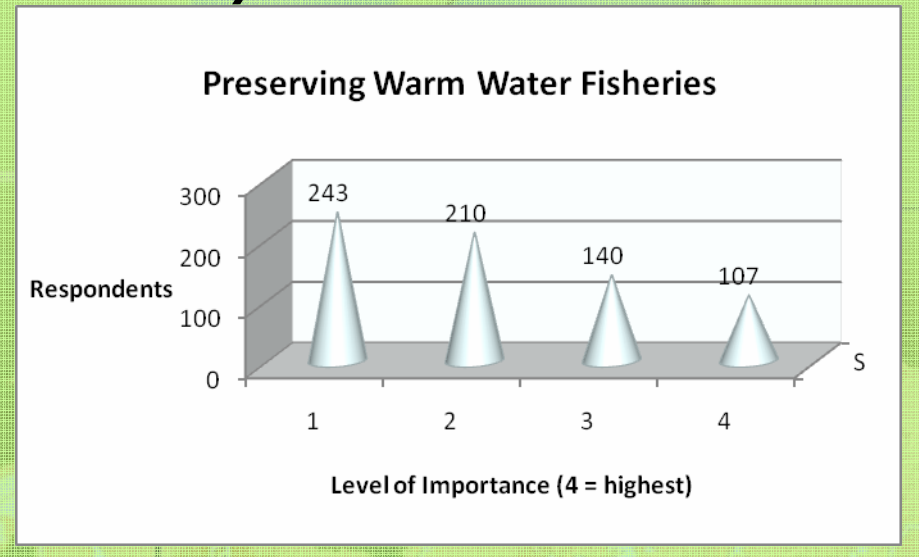


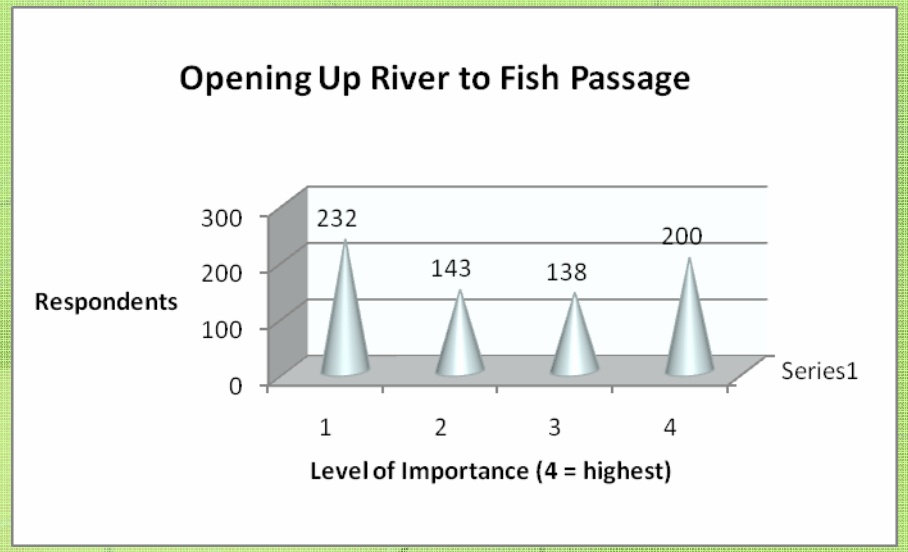


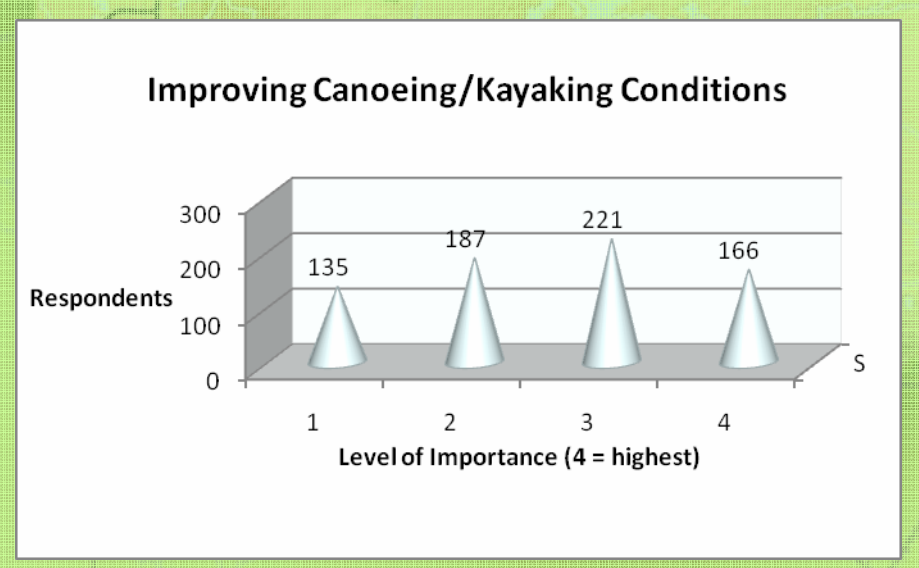


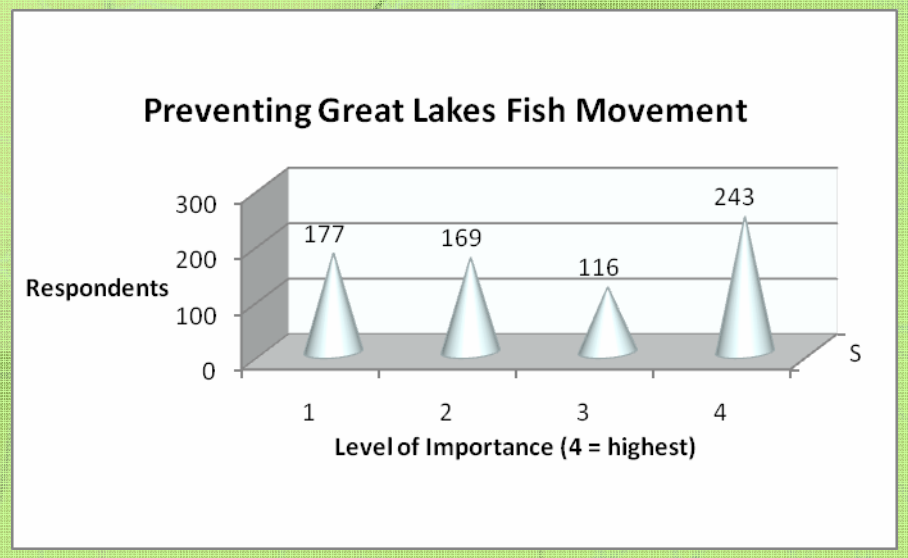


Considerations or Concerns in Making Decisions (i.e., *decision criteria*)









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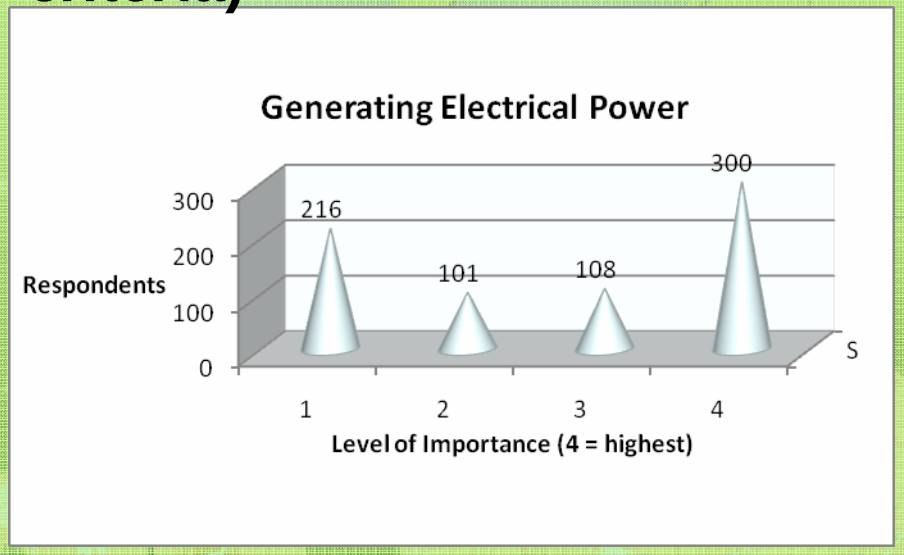
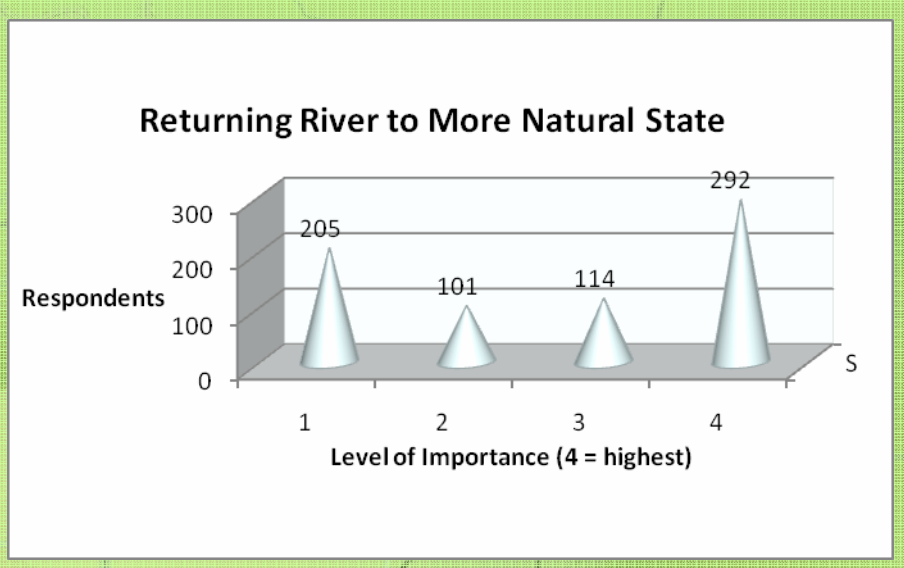
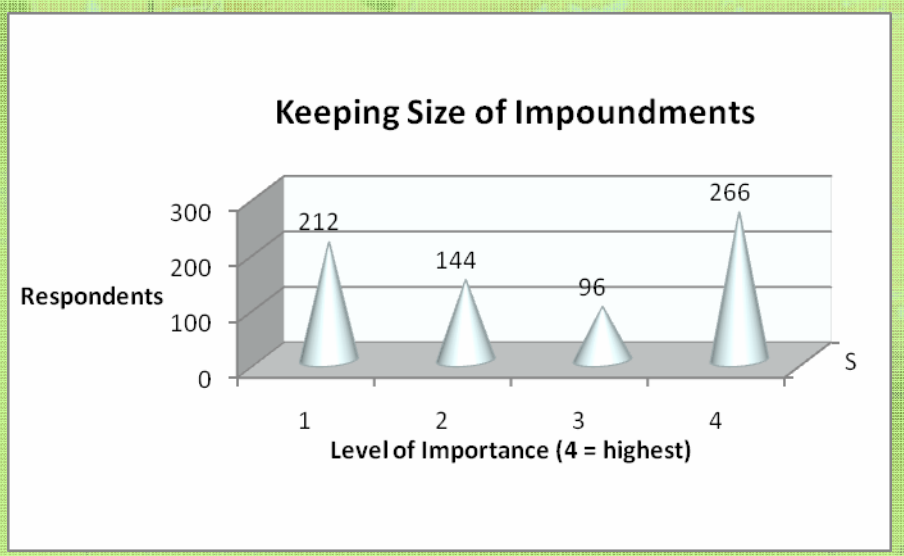
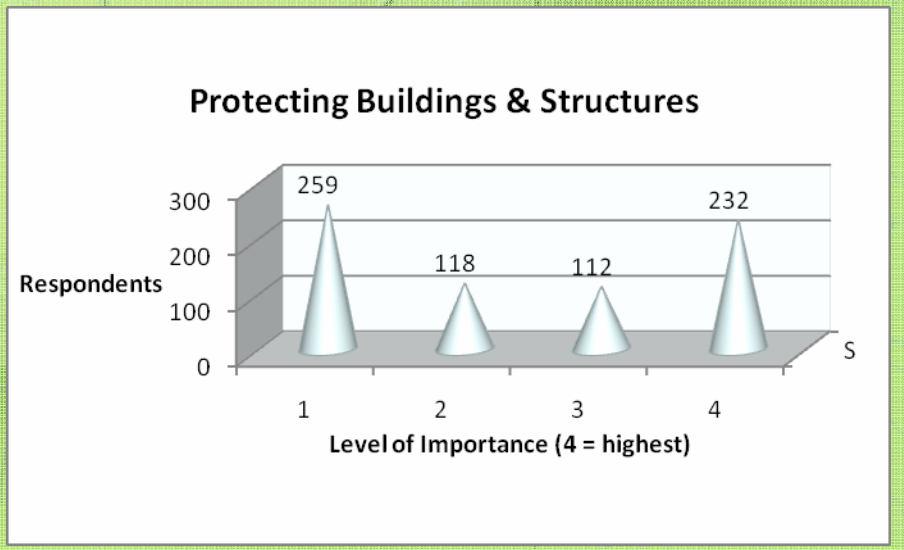
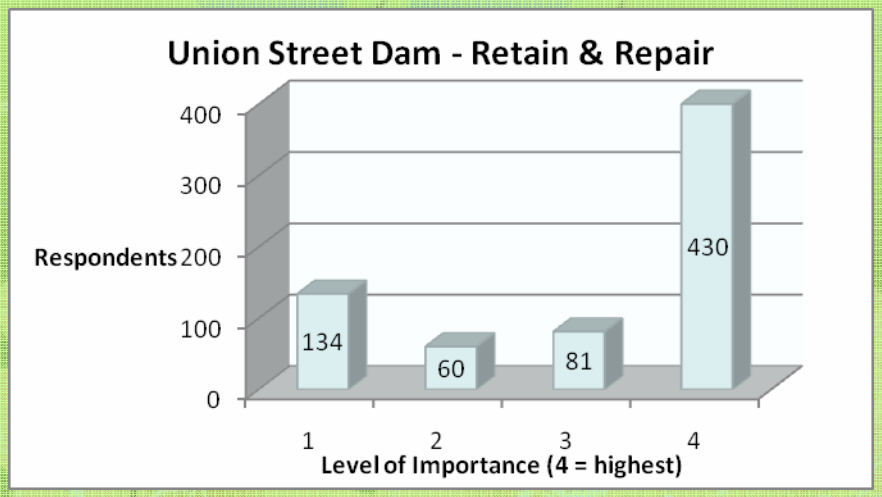


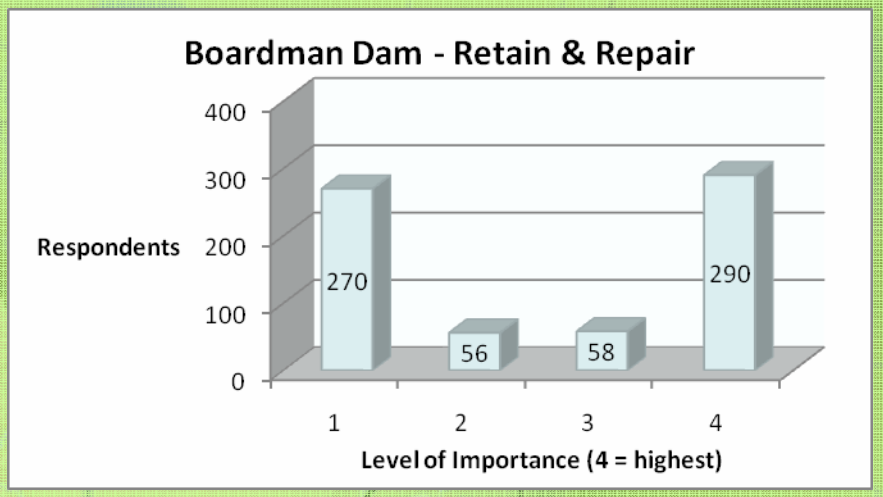


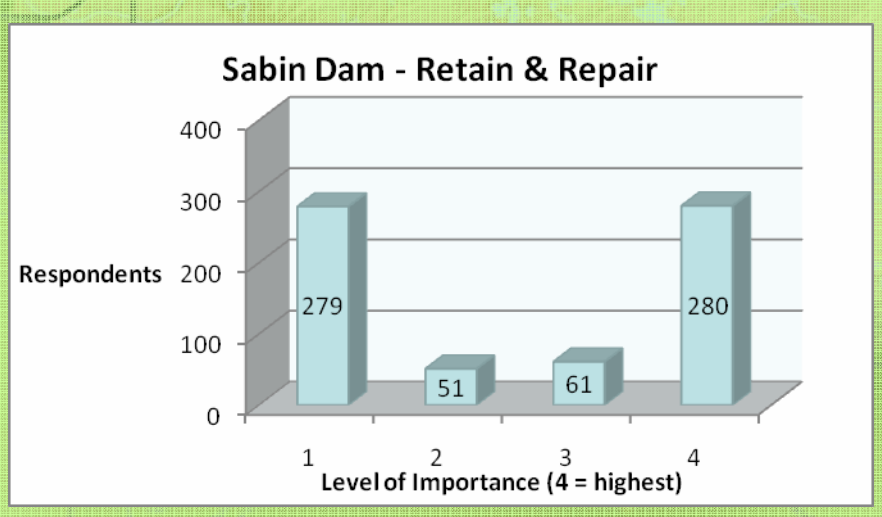


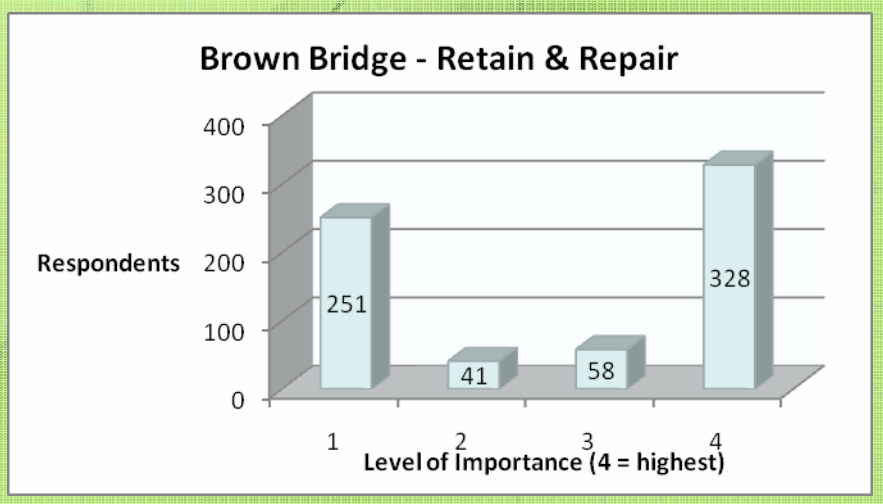


Alternative Management Options: Retain & Repair

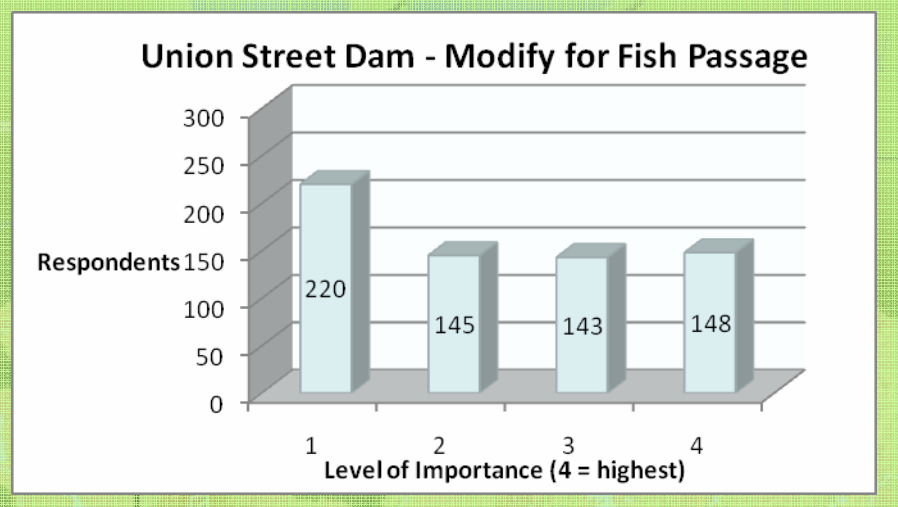


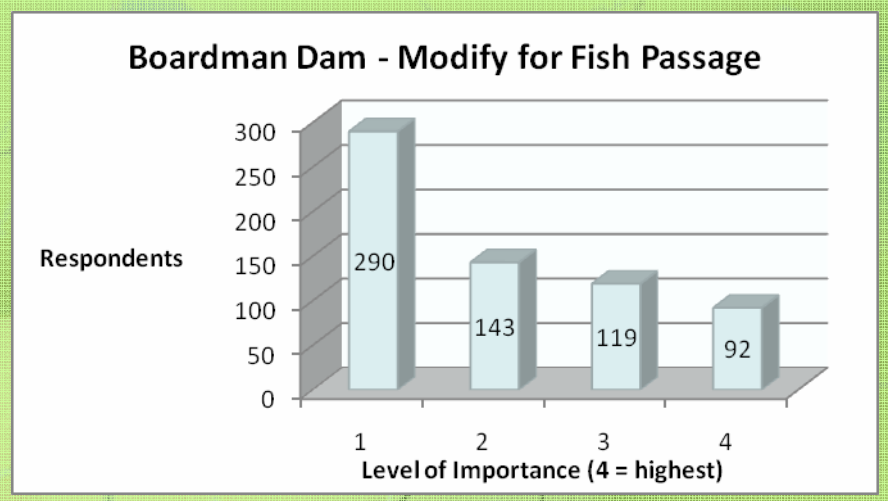


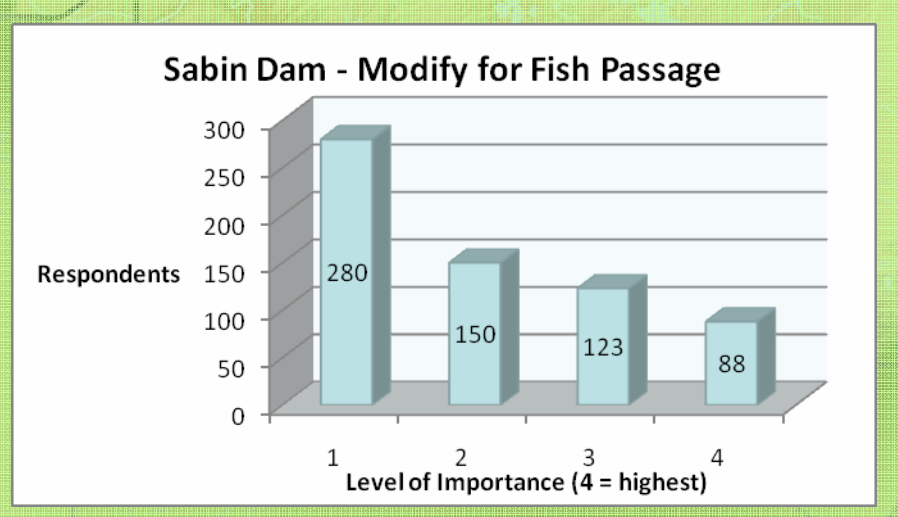


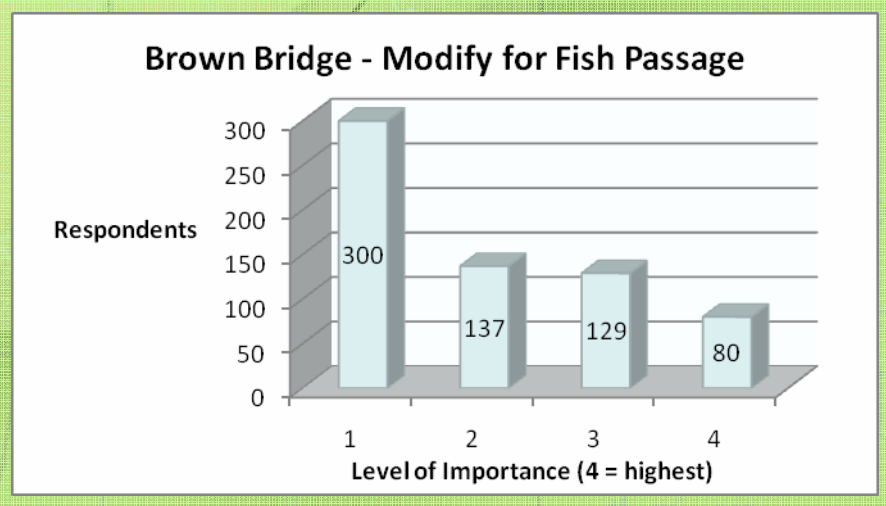


Alternative Management Options: Modify for Fish Passage

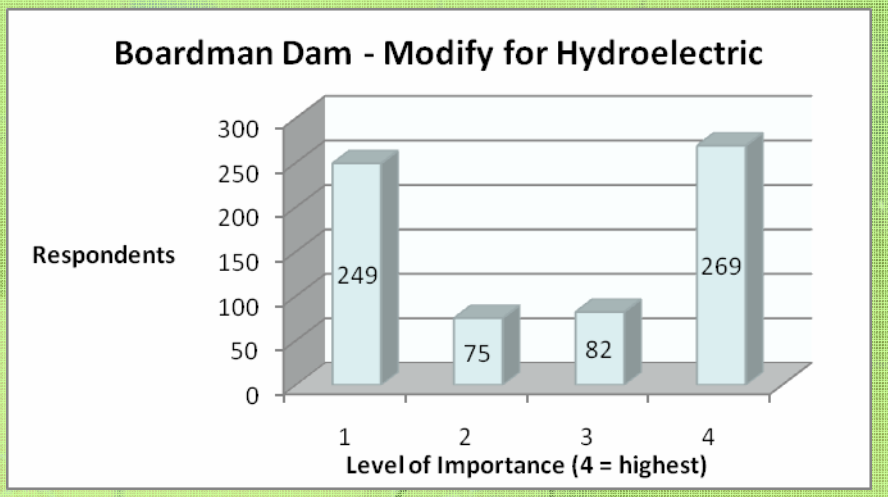


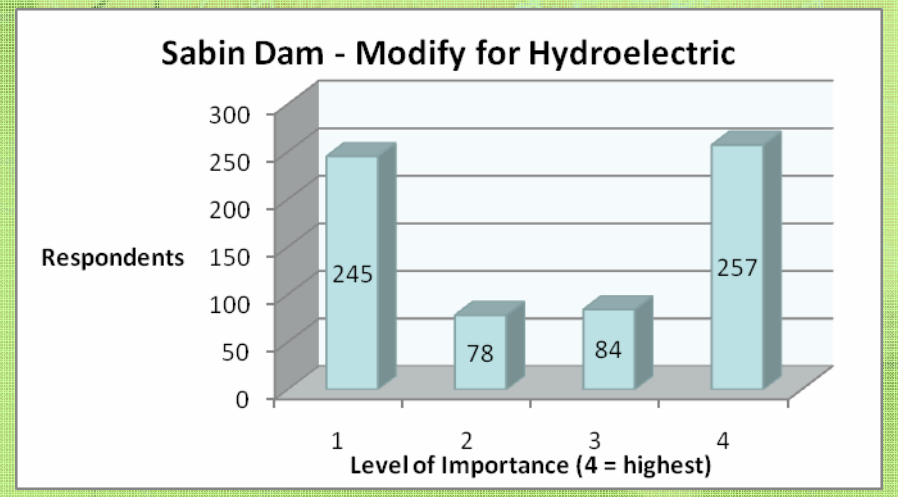


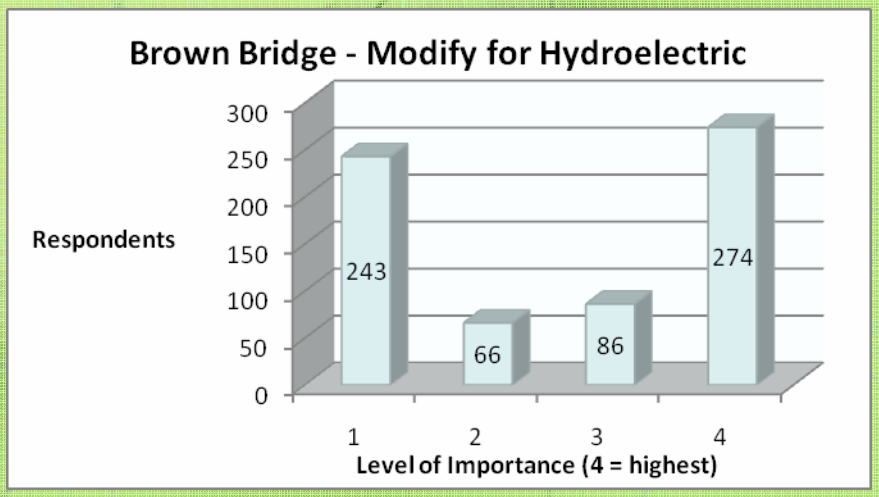




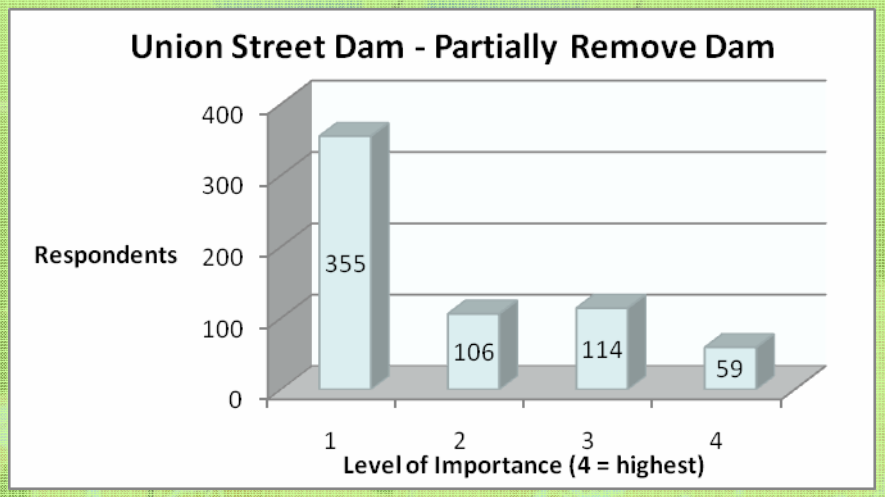
Alternative Management Options: Modify for Hydroelectric Production

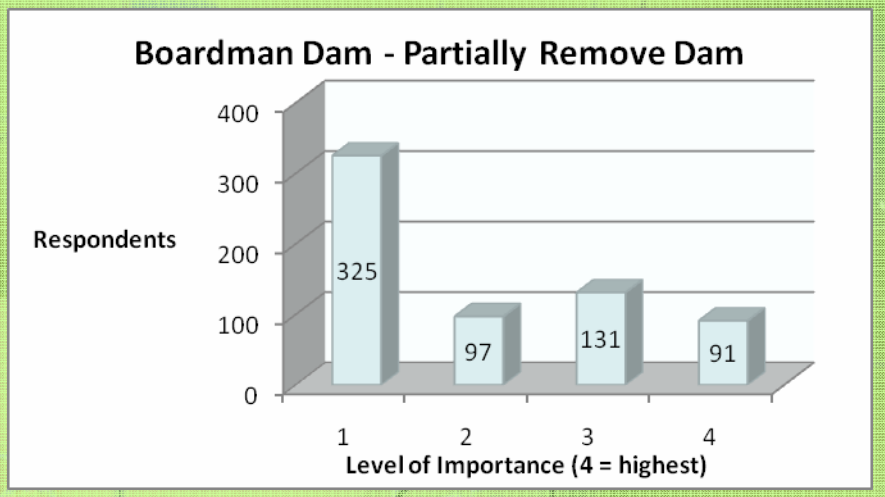


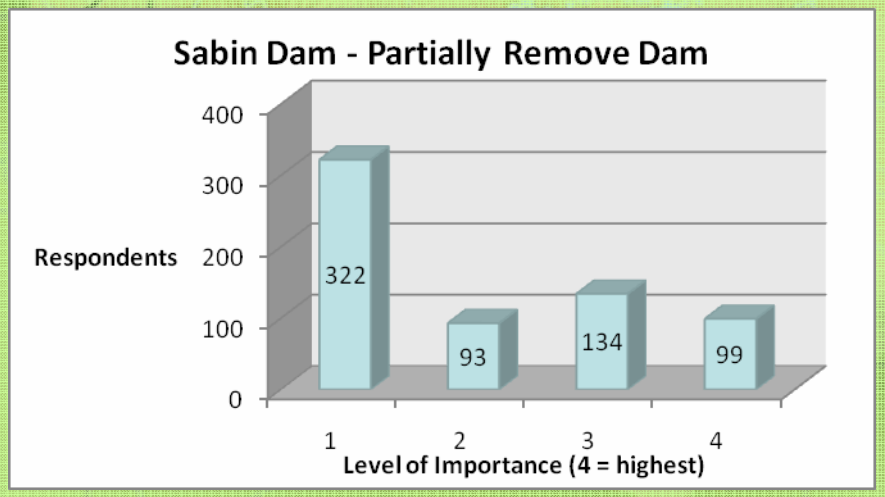


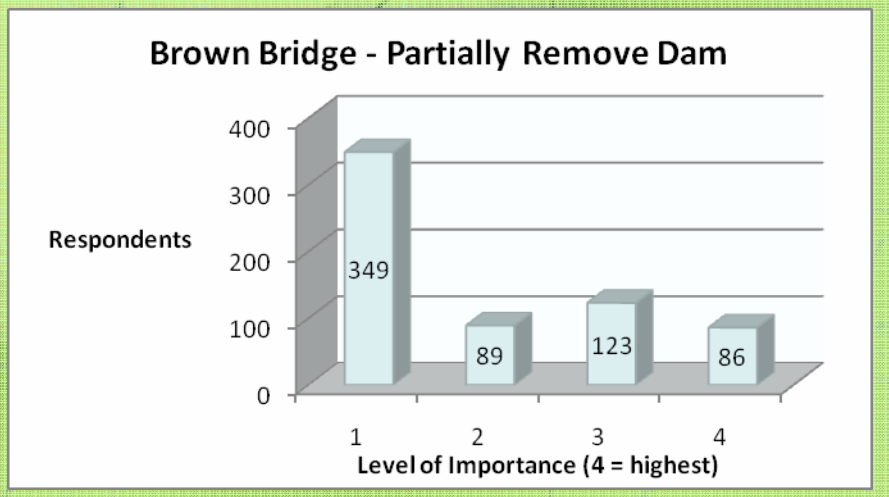


Alternative Management Options: Partially Remove Dam

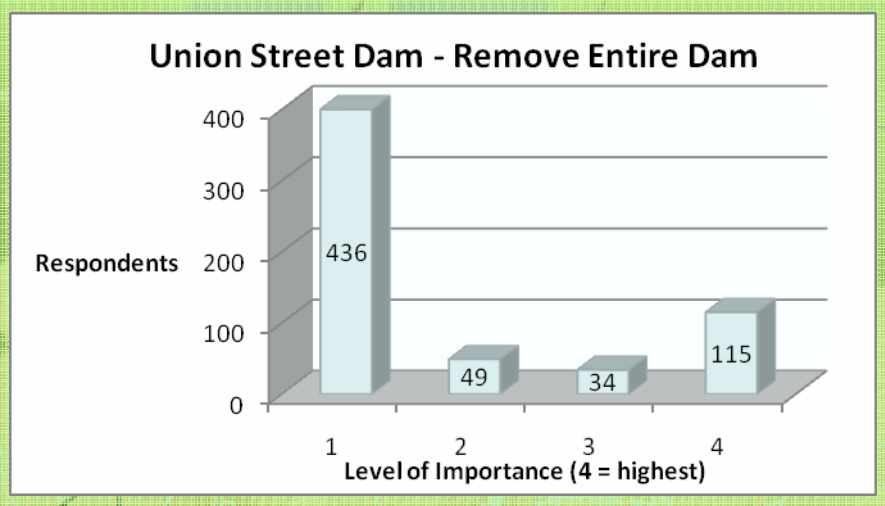


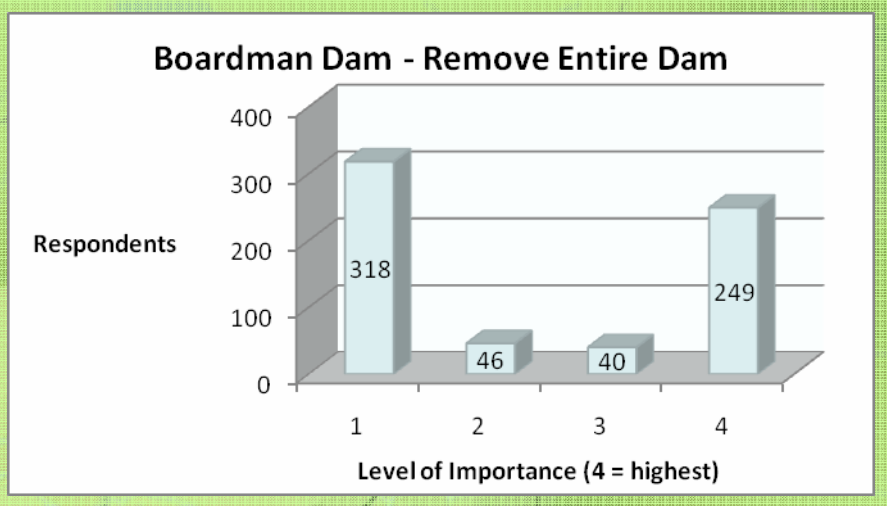


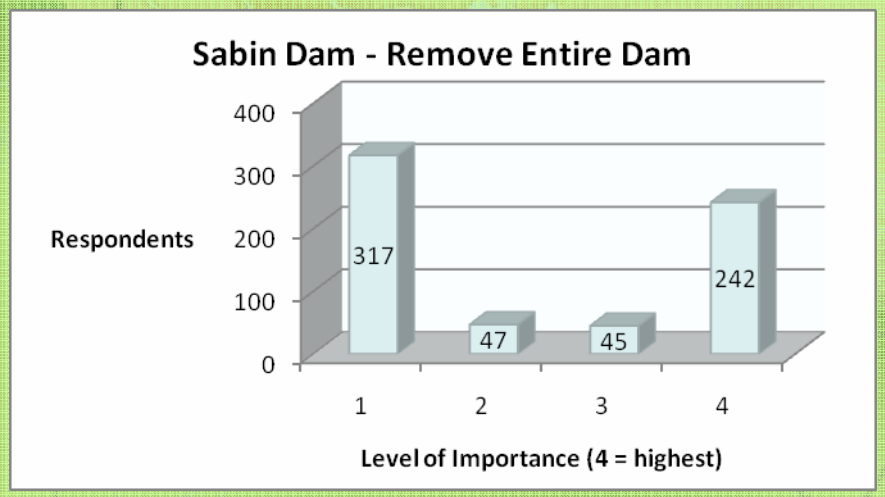


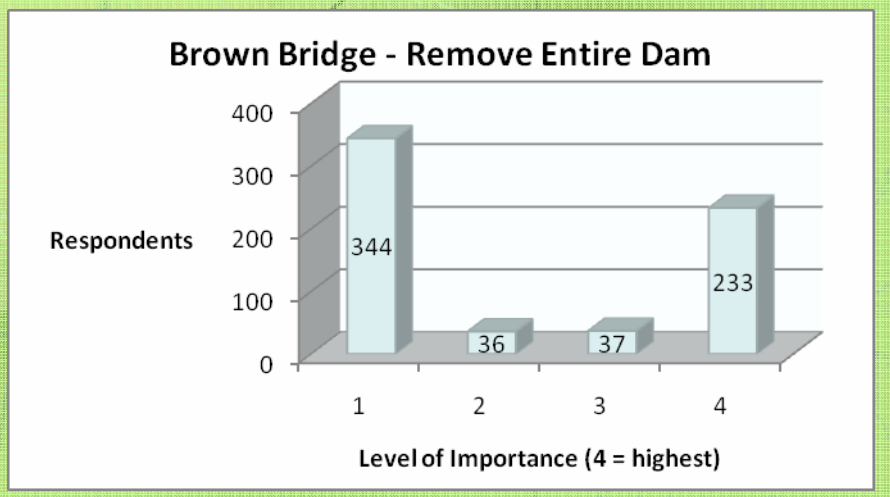


Alternative Management Option: Remove Entire Dam









Questions and Discussion