WHY REMEDIATION PROGRESS DIFFERS AMONG

GREAT LAKES AREAS OF CONCERN:

FACTORS THAT ENABLE AND CONSTRAIN

MICHIGAN PUBLIC ADVISORY COUNCILS

By

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Abstract

There are 14 designated "toxic hotspots," or "Areas of Concern" (AOCs), around Michigan's coasts where legacy contamination impairs water quality. The State's Office of the Great Lakes manages the Remedial Action Planning (RAP) process and engages stakeholders through local Public Advisory Councils (PACs). Michigan began Remedial Action Planning in 1985, but to date, only two AOCs have completed cleanup. The overarching objective of this study is to determine: why does RAP implementation progress differ among AOCs? This study asks the research question: what factors enable and constrain a PAC's ability to influence RAP implementation progress? The existing literature solicits responses from state and federal agency participants, and the dominant explanatory narrative is that maximum public representation on PACs facilitates RAP implementation progress. Semi-structured interviews were conducted with 29 past and current PAC participants in a representative set of five Michigan AOCs (Kalamazoo River, Lower Menominee River, Saginaw River and Bay, St. Clair River, and White Lake). Among the factors that enable progress, PACs benefit from: motivated, engaged individuals from the community; consistent and flexible funding; strong leadership; and perceptions of independence and influence. Constraints to a PAC's influence on RAP implementation progress include: poorly managed meetings; inconsistent commitment from community members and organizations; and inconsistent state and federal commitment and engagement. Factors that help explain why AOCs differ in their progress include: clearly delineated state agency roles; a balanced membership with network connections to resources and support; state and federal agency commitment and engagement; and effective PAC leadership. Recommendations for agencies to cultivate the process of community-based collaborative ecosystem management include collaborating with PACs on agendas, criteria, and roles, and supporting the PAC's membership transitions and strategic outreach.

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Acronyms

3CM	Conceptual Content Cognitive Mapping
AOC	Area of Concern
BPAC	Binational Public Advisory Council (St. Clair)
BUI	Beneficial Use Impairment
CAC	Citizen Advisory Committee (Menominee)
CAG	Community Advisory Group (Superfund)
CRIC	Canadian RAP Implementation Committee (St. Clair)
CWA	Clean Water Act
EPA	Environmental Protection Agency
FOSCR US	Friends of the St. Clair River (United States)
GLNPO	Great Lakes National Program Office (EPA)
GLRI	Great Lakes Restoration Initiative
IJC	International Joint Commission
KRWC	Kalamazoo River Watershed Council
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
NWI	National Watershed Initiative
OGL	Office of the Great Lakes (Michigan)
OMOE	Ontario (Canada) Ministry of the Environment
PAC	Public Advisory Council
PCBs	Polychlorinated Biphenyls
PSBW	Partnership for the Saginaw Bay Watershed
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
SPAC	Statewide Public Advisory Council
TAC	Technical Advisory Committee (Menominee)
WDNR	Wisconsin Department of Natural Resources

Chapter 1

Introduction

In 1987, the United States and Canada renegotiated the 1978 Great Lakes Water Quality Agreement (the Agreement). The amended Agreement focused its objectives on an "ecosystem approach" and directed states to cooperate with responsible federal agencies and create Remedial Action Plans (RAPs) for the 42[1] most polluted waterways of the Great Lakes (Canada and The United States of America 1987). The Agreement defines these toxic hotspots of water contamination as Areas of Concern (AOCs). Federal authorities charged state government agencies with consulting the public in the RAP process, including the planning, implementation, and monitoring of each AOC's cleanup (Canada and The United States of America 1987, 25; Botts and Muldoon 2005, 130). **Figure 1.1** illustrates the location and status of every AOC site as of October 2014.

There are fourteen designated AOCs around Michigan's coasts (**Figure 1.2**) where legacy contamination impairs water quality. At the time of this study, the State's Office of the Great Lakes (OGL) manages the RAP process and engages the public in each AOC's RAP process through local Public Advisory Councils (PACs).

This study investigates the influence of PACs on the RAP implementation process and its progress in Michigan's AOCs. In other words, this study explores these public groups' influence on advancing the cleanup of pollution in their local waterways.

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[1] In 1991 one site was added, thus there are now 43 total AOCs.

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Figure 1.1: Canadian and US Areas of Concern in the Great Lakes Basin As of October 2014. (United States Environmental Protection Agency and Environment and Climate Change Canada 2019)

Figure 1.2: Michigan's Areas of Concern (Michigan Department of Natural Resources 2018, 4)

Clinton River
Deer Lake
Detroit River
Kalamazoo River
Manistique River
Menominee River
Muskegon Lake
River Raisin
Rouge River
Saginaw River/Bay
St. Clair River
St. Marys River
Torch Lake
White Lake
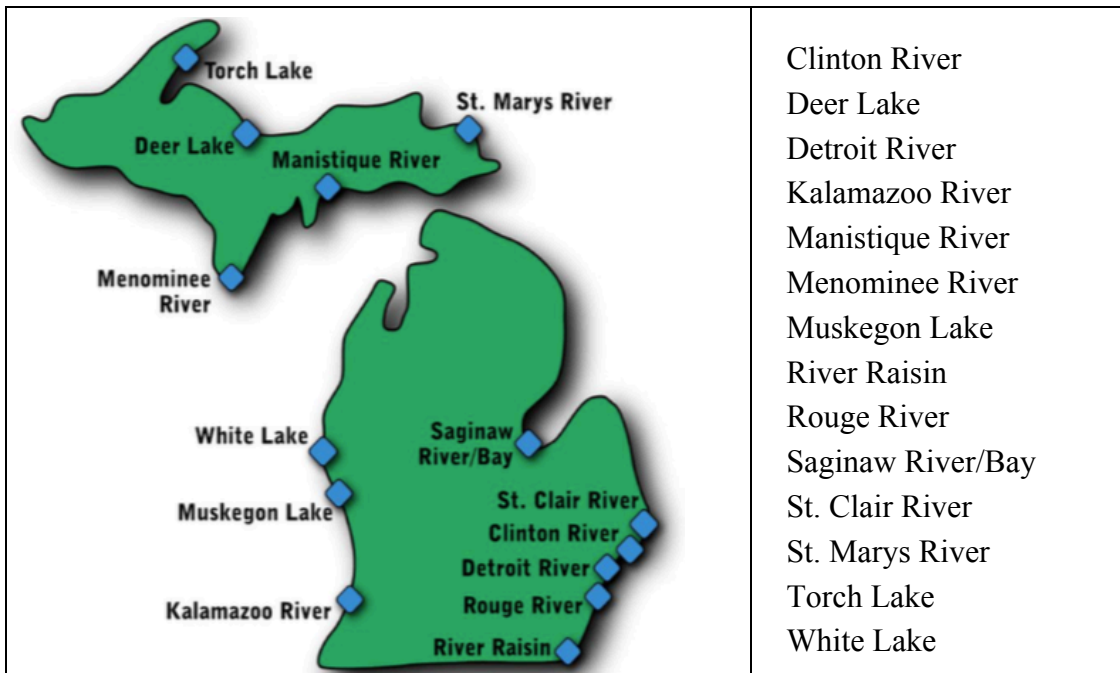
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The International Joint Commission (IJC)[2] designated Beneficial Use Impairments (BUIs) for each AOC where many, or all, of the fourteen BUIs, were known or suspected. **Table 1.1** lists the impairments. The 1987 Agreement required each AOC's RAP follow three stages: the Stage 1 RAP defines the BUIs and identifies their causes; the Stage 2 RAP identifies the selected remedial and regulatory actions for implementation; and the Stage 3 RAP documents the monitoring indicators that demonstrate the use restoration (Canada and The United States of America 1987,

Table 1.1: Definition of Beneficial Use Impairments (BUIs)

(Canada and The United States of America 1987, 24)

> **BUI:** "a change in the chemical, physical, or biological integrity of the Great Lakes System sufficient to cause any of the following:
>
> (i)   restrictions on fish and wildlife consumption;
> (ii)   tainting of fish and wildlife flavour;
> (iii)   degradation of fish wildlife populations;
> (iv)   fish tumors or other deformities;
> (v)   bird or animal deformities or reproduction problems;
> (vi)   degradation of benthos;
> (vii)   restrictions on dredging activities;
> (viii) eutrophication or undesirable algae;
> (ix)   restrictions on drinking water consumption, or taste and odour problems;
> (x)   beach closings;
> (xi)   degradation of aesthetics;
> (xii)   added costs to agriculture or industry;
> (xiii) degradation of phytoplankton and zooplankton populations; and
> (xiv) loss of fish and wildlife habitat."

26). Today, instead of one final Stage 3 report, individual reports document the 'removal,' or repair, of each beneficial use. Once every designated BUI in an AOC is 'removed,' the state and federal governments submit a final report to the IJC demonstrating BUI restoration. Once approved, an AOC is considered 'delisted.'

The implementation progress of the RAPs for each Michigan AOC widely varies. Notably, to date only two AOCs in Michigan have removed all their BUIs and are delisted (Deer Lake, White Lake); another AOC (Menominee) is currently in the final documentation stage, and its delisting is imminent. Two AOCs have not removed any of their BUIs (Rouge River, Clinton River). Government agencies' common metric for measuring RAP progress is counting the number of BUIs removed. **Figure 1.3** illustrates the status of each BUI designated for Michigan's fourteen AOCs to date.

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[2] The Great Lakes Water Quality Board is the primary advisor to the International Joint Commission under the Agreement. The Water Quality Board's reports on Great Lakes toxic hotspots informed the definition and identification of BUIs and AOCs in the Agreement.
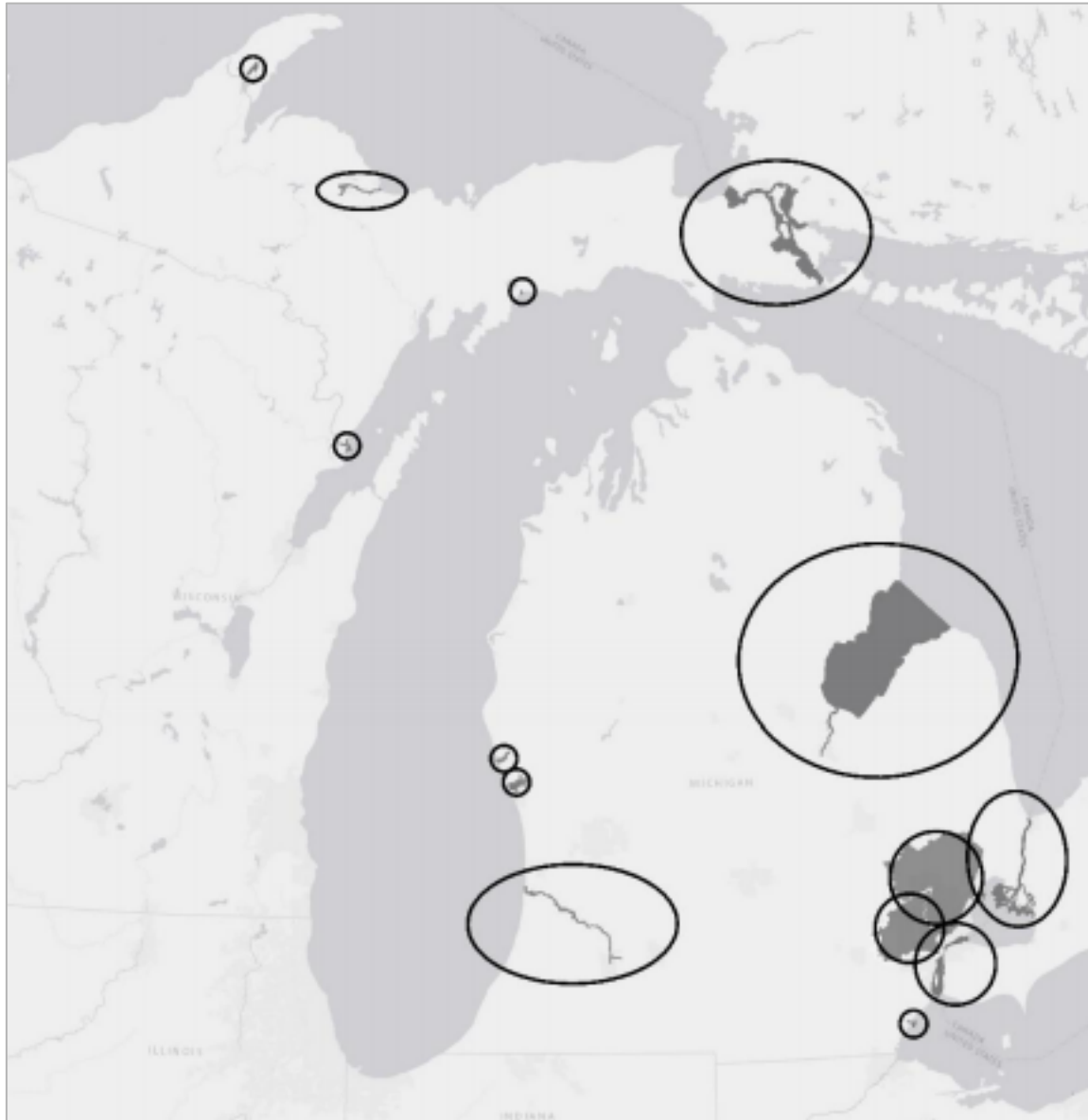
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Area of Concern	Restrictions on fish and wildlife consumption	Degradation of benthos	Loss of fish and wildlife habitat	Restrictions on dredging	Beach closings	Degradation of fish and wildlife populations	Degradation of aesthetics	Eutrophication or undesirable algae	Bird or animal deformities or other reproductive problems	Restrictions on drinking water consumption or taste and odor problems	Fish tumors or other deformities	Tainting of fish and wildlife flavor	Added costs to agriculture or industry	Degradation of phyto- or zooplankton populations	Original Total	Remaining Today
Saginaw Bay/River	☐	☐	☑	☐	☐	☐	☐	☐	☐	☑		☑		☐	12	9
Detroit River	☐	☐	☐	☐	☐	☐	☐		☐	☑	☐	☑			11	9
St. Clair River	☐	☑	☑	☑	☑		☑		☑	☐		☑	☑		10	2
St. Marys River	☐	☐	☐	☑	☑	☐	☑	☑	☑		☐				10	5
Muskegon Lake	☑	☐	☐	☑	☑	☐	☐	☐		☑					9	5
River Raisin	☐	☐	☑	☐	☑	☑	☑	☑	☐						9	4
Rouge River	☐	☐	☐	☐	☐	☐	☐	☐				☐			9	9
Clinton River	☐	☐	☐	☐	☐	☐	☐	☐							8	8
Kalamazoo River	☐	☐	☐	☐	☑	☐	☑		☐						8	6
White Lake	☑	☑	☑	☑		☑	☑	☑		☑					8	0
Menominee River	☑	☑	☑	☑	☑	☑									6	0
Manistique River	☐	☑	☑	☐	☑										5	2
Deer Lake	☑						☑	☑							3	0
Torch Lake	☐	☐									☑				3	2
Original Total	14	13	12	12	11	10	10	8	7	5	4	3	1	1	**111**	
Remaining Today	10	9	6	7	4	7	5	4	4	1	3	0	0	1		**61**

☐	Beneficial Use Impaired
☑	Beneficial Use Restored
	Not Applicable to this Area of Concern

Each AOC is unique in the cause and extent of its pollution; two Michigan AOCs have three BUIs, another has a dozen. AOCs also vary in the environmental complexity of their BUIs. As **Figure 1.4** illustrates, each 'Area' also differs in its geographic scope. Due to this variability, it is not reasonable to compare RAP implementation progress among AOCs based on removing BUIs, because one AOC's BUI might have eight miles of shoreline to remediate while another AOC has eighty miles. Distinguishing AOCs by their BUIs is not an apples-to-apples comparison.

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Figure 1.4: The Varied Boundaries and Geographic Scope of Michigan AOCs AOC Boundaries are dark gray; black circles (original to image source) do not define any boundary and serve to highlight the relative location and size of each AOC. Some AOC boundaries are exclusive to the surface water of the river, lake, or bay; two AOCs (Rouge and Clinton) have official boundaries that include the entire watershed of the river. (Michigan Department of Natural Resources, 2018, 1)

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This study does not 'measure' RAP implementation progress by the number of BUI removals nor does it compare AOCs to each other by BUIs removed. Similarly, 'management action'[3] completion is not a suitable metric to compare progress between AOCs because these interventions occur at different ecological scales. The fact that there is no fitting standard metric to compare between AOC's RAP implementation progress exemplifies the compelling need for this study to provide a nuanced understanding of the concept of RAP implementation progress. On the other hand, due to the lack of a standard definition for RAP implementation progress, a limitation of this study is that it relies upon PAC participants' intuitive perception of progress. Broadly defined, progress is the perception that the RAP implementation process is moving forward. This study aims to understand what enables progress while it is happening, where it is happening, and to explain the differences in rates of progress among AOCs, not to compare between them.

Purpose

The purpose of this study is to understand the reasons why AOCs differ in their RAP implementation progress. When it comes to identifying the factors that shape a PAC's influence on RAP implementation progress, past and present studies mainly examine technical or governance dimensions. A preponderance of this AOC literature solicits responses from state and federal agency participants. The dominant explanatory narrative is that maximum public representation on PACs facilitates RAP implementation progress. These studies focus on form, analyzing what is happening in an AOC, or how a PAC came to operate in a certain way. There are limits to analyzing progress when the government agency is the unit of analysis because it is missing the perspectives and evaluations of the PAC members. Therefore, the unit of analysis of this study is the individual members of the PAC group, rather than the representatives from state or federal government agencies. Furthermore, the objective of this study is for PAC participants to identify the factors enabling and constraining their group's ability to influence RAP implementation progress.

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[3] A 'management action' is a project that implements part of a BUI restoration.

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Research Questions

The overarching objective of this study is to determine: why does RAP implementation progress differ among AOCs? Each AOC's story is unique in part because the 1987 mandate for public involvement made the state agencies responsible for engagement without prescribing a specific participation process (Canada and The United States of America 1987, 25). However, an AOC's chronological story of who-did-what-when fails to explain why AOCs differ in their progress. Therefore, another purpose of this study is to construct each case study AOC's narrative to describe, from the members' perspectives, both how and why their PAC influences RAP implementation progress.

This study asks the research question: what factors enable and constrain a Public Advisory Council's ability to influence Remedial Action Plan implementation progress? To answer the research question, this study identifies external factors by probing the following sub-questions:

1. In what ways does community context enable or constrain a PAC's influence on progress?
2. In what ways does community capacity enable or constrain a PAC's influence on progress?
3. In what ways do state and federal actors and actions enable or constrain a PAC's influence on progress?

The study also investigates the following sub-questions to identify internal factors:

1. In what ways does the PAC origins, structure, and function enable or constrain a PAC's influence on progress?
2. In what ways does the PAC process and management enable or constrain a PAC's influence on progress?
3. In what ways do PAC participant perceptions and attitudes enable or constrain a PAC's influence on progress?

Figure 1.5 situates these research sub-questions within the framework for research inquiry.

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Figure 1.5: Framework for Research Inquiry

Why does RAP implementation progress differ among AOCs?			
What factors ENABLE a PAC's ability to influence progress?		**What factors CONSTRAIN a PAC's ability to influence progress?**	
External Factors	**Internal Factors**	**External Factors**	**Internal Factors**
Community context	PAC origins, structure, and function	Community context	PAC origins, structure, and function
Community capacity	PAC process and management	Community capacity	PAC process and management
State and Federal actors and actions	Participant perceptions and attitudes	State and Federal actors and actions	Participant perceptions and attitudes

Significance

The need for this study is compelling because it not only includes analyses of governance form, or the "tangible, replicable" (Wondolleck and Yaffee 2017, 9) process infrastructure of the PACs, it also systematically probes "intangible" (9) process attributes and asks PAC participants to elaborate on the function of the PAC groups as they work to influence RAP implementation progress. The available literature on public engagement in the RAP process predominantly applies theories of participatory governance deductively to AOC cases to generalize themes that explain public participation. Whether in peer-reviewed journals (Krantzberg and Houghton 1996; Lino Grima 1997; Sproule-Jones 2002; Krantzberg 2003, 2006), books (Sproule-Jones 2003; Grover and Krantzberg 2012), documents from government entities (United States General Accounting Office 2003), or academic theses (Becker 1996; Van Alstyne 2013), the field of AOC research focuses dominantly on form, analyzing what is happening in an AOC, or how a PAC came to operate in a certain way.

Other research that investigates factors that influence RAP implementation progress inductively analyzes why values, motivations, and perceptions are relevant to

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progress in delisting AOCs. However, most of this research has relied on the perspectives and evaluations of government officials. These functional research investigations that do ask why factors such as values, motivations, and perceptions are relevant to AOC progress, are written by, or are surveys of, managers and agencies, and do not include primary information from PAC-level participants in their evaluations (Landre and Knuth 1993; Hartig and Law 1994; Gurtner-Zimmermann 1995; Krantzberg and Houghton 1996; Hartig et al. 1998; Beierle and Konisky 2001; Krantzberg 2003, 2006; Hall et al. 2006). Research that has tapped PAC participants for their perspectives is limited; those that have are studies of psychological or sociological dimensions (Lertzman 2012; Van Alstyne 2013; Williams 2015), position statements from PAC participants (Boyer 1997; Dworsky 1997), and a survey limited to PAC members from the "delisted" AOCs (Mandelia 2016).

Finally, there is a paucity of analytical literature, besides technical assessments, on Michigan's fourteen AOCs, including a lack of analysis of PAC-level factors. One advantage to limiting the scope of this study to Michigan's AOCs is the ability to 'control' for federal and state-level factors, as they are more alike across AOCs in Michigan than they would be comparing AOCs across a state or national boundary. All Michigan AOCs and their PACs are subject to the state's delisting guidelines (Michigan Department of Natural Resources 2018) and held to the same standards to qualify for state funding support. With the longest Great Lakes coastline of any state or province in the basin, Michigan's AOCs also constitute one-third of the total AOCs, and so there is pressure on Michigan to push for progress as it represents a significant proportion of the sites in the entire AOC program.

One under-unexamined dimension of AOC progress is the influence of the PAC on RAP implementation progress. Existing research into AOCs insufficiently addresses factors at the PAC level and their impact on RAP implementation progress. There is an emerging body of literature filling the research gap by analyzing the perspectives of PAC participants (Holifield and Williams 2018). This study seeks to contribute novel insights from semi-structured interviews with the PAC members of five case study AOCs in Michigan. Therefore, it is helpful to advance the understanding of the PAC's influence on RAP implementation progress by systematically analyzing and comparing observations

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from PAC members. Through a systematic, rather than anecdotal, analysis of the factors impacting a PAC's ability to influence RAP implementation progress, lessons from Michigan's AOC program can inform PACs and state agencies working on RAP implementation in AOCs throughout the Great Lakes.

Methodology

Case Study Selection

A representative set of five Michigan Areas of Concern are the case study sites: Kalamazoo River, Lower Menominee River, Saginaw River and Bay, St. Clair River, and White Lake. To ensure the comparison among case study sites can be meaningful and generalizable, this set of five cases endeavors to represent the variety of traits among all fourteen Michigan AOCs. The first group of selection criteria focuses on the community and geographic variety of the AOCs: whether the AOC is in Michigan's Upper or Lower Peninsula; whether the AOC region is (overall) urban, rural, or mixed; the geography of the AOC; and whether the PAC is domestic (Michigan-only) or transboundary (joint with another state or province). The second group of selection criteria focuses on the differing evidence of RAP implementation progress vis-à-vis BUI removal: whether the AOC had greater or fewer BUIs designated initially, and whether they removed fewer than half, more than half, or all of the BUIs. These criteria were selected based on the status of each AOC's BUIs as of April 2018. **Table 1.2** illustrates that the collection of five case study sites selected represent every dimension of these case study selection criteria.

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Table 1.2: Selection Criteria for Case Study Sites

	White Lake	Kalamazoo River	Saginaw Bay	Menominee River	St. Clair River
Community and geographic variety					
Upper Peninsula				■	
Lower Peninsula	■	■	■		■
Urban					
Rural	■			■	
Urban/rural mix		■	■		■
AOC is river (lower)				■	
AOC is river (middle and lower)		■			■
AOC is lake	■				
AOC is mixed			■		
Transboundary PAC				■	■
Domestic PAC	■	■	■		
Differing evidence of progress					
6 or fewer BUIs initially designated				■	
7 or greater BUIS initially designated	■	■	■		■
Half or more BUIs removed				■	■
Fewer than half BUIs removed		■	■		
Delisted - all BUIs removed	■				

Interview Protocol

Interviews are the most suitable method for collecting data on PAC participants' perceptions due to the absence of systematic program evaluation reporting at the PAC, state, federal, or international level. Semi-structured, open-ended interview methods solicit open-ended responses from individuals in a private setting. The framework in **Figure 1.5** (page 8) guides the interview protocol design. In addition to open-ended interview questions, the protocol includes a modified conceptual content cognitive mapping (3CM) method, selected for its accessibility for the public to characterize their knowledge (Kearney and Kaplan 1997). The maps are a facilitative mechanism to help PAC members convey concepts and factors through the open-ended interview protocol, and are not substantively analyzed.

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Under the auspices of a related, community-based research assignment conducted for graduate coursework, interviews with five PAC participants piloted the first draft of the interview protocol and suitability of the modified 3CM technique. The interview questions did not undergo further refinement after use in the pilot case study interviews, but the instructional portion of the protocol for administering the 3CM activity became less scripted. The mapping activity was optional if interview subjects opted out. The refined interview protocol and an amended 3CM process are exempt from review by the University of Michigan Institutional Review Board (HUM 00143811).

Over the course of four months in 2018, 29 PAC participants across five case study sites contributed interviews ranging from 60 to 160 minutes long. In all but one case (video conference administered), interviews were conducted face-to-face in a discreet setting, often selected by the participant, in a place they expressly acknowledged that they were able to speak freely. Subsequently, the audio recordings of the interviews were transcribed into text files. Metadata generated includes field notes from interviews and transcribed post-interview audio memos. Other metadata includes field notes taken during observations of six separate meetings of the PAC groups. There are also data captured for background research but not for analysis, including field notes from a version of the protocol administered during unrecorded conversations with ten government officials. **Table 1.3** enumerates interview participants by case study site. The interview questions are provided in **Table 1.4**.

Table 1.3: Interview Participation by Case Study Site

Case study	Kalamazoo	Menominee	Saginaw	St. Clair	White Lake	**Total**
# Interviews	4	5	7	6	7	29

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1. Please introduce yourself with your name, where in the region you live, and your occupation.
2. Tell me about [AOC location], what is important about this community?
3. What is your connection to water quality in [AOC location]? Please describe why you got involved in the Area of Concern work here.
4. From your perspective, what is the goal of the PAC?
5. You said you joined [date as mentioned above]. Tell me about the how the PAC was working toward completing management actions back then.
6. You mentioned the PAC was working with [examples of other organizations and people mentioned by the respondent], please list them on the paper in front of you.
7. How does the PAC currently work toward completing management actions? Please add to the list for new partners and indicate with an X the partners from before no longer involved.
8. Where does the local, state, and federal government fit into the PAC's work toward completing management actions? Please add each agency or office to your list.
9. How does the capacity of the community influence the PAC's work? Please add groups or individuals to your list.
10. To help me better understand how the PAC helps to make progress toward completing management actions, on the paper in front of you please illustrate a model, such as a flow chart, Venn diagram, or whatever way you see fit, to describe the interactions between people and organizations you have listed. Let's start by putting the PAC on the paper, and please talk me through the process of completing a management action.
11. What parts of this organization do you feel work well and enable the PAC's ability to make progress completing management actions? Why do you feel this enables the PAC?
12. What parts constrain the PAC's ability to make progress? Why do you feel this constrains the PAC?
13. From your perspective, who or what else should be involved to make this system work more effectively?
14. What would you change about this illustration in order to improve the PAC's ability to make progress toward completing the management actions in [AOC location]?
15. [If applicable] I will be attending your PAC's next meeting. Sometimes in the presence of an observer, participants are on their best behavior, or on the other extreme, sometimes they try to stir the pot more than usual. From your experience what should I be looking for when I observe your meeting that will help me understand the factors that influence your PAC's ability to make progress?
16. Finally, is there anything else about your experience we haven't yet discussed that you would like to share?

Analytical Approach

This study applies a "grounded theory" (Timmermans and Tavory 2012) analytical approach to discern factors through the iterative review of interview transcripts, 3CM diagrams, primary documents, and literature from the collaborative watershed management and AOC research domain. The steps of this analytical process include: writing post-interview memos, commenting on transcriptions, initially reviewing transcripts and notes, writing memos about each case study, systematically coding transcripts with Nvivo software, and writing case study profiles, findings, and synthesis chapter drafts. During each iteration of analysis, existing frameworks and theories dovetail with salient and analytical reviews of data and metadata, building an amalgamated set of "novel theoretical insights" (176). Therefore, many terms and concepts from interviews overlap with factors noted in the literature; for example, PAC members identified the enabling factor of having a common goal, which the literature also emphasizes (Wondolleck and Yaffee 2000, 2017; Sproule-Jones 2003).

Thesis Outline

This first chapter introduces the issue, the significance of the study, and its research methods. Chapter 2 provides an analytic narrative profile of each of the five case study sites, highlighting the context, PAC genesis, function, and current status of each AOC. Next, Chapter 3 describes the analysis of factors across cases per the framework for research inquiry outlined in **Figure 1.5**. Chapter 4 provides a synthesis of the factors that distinguish PACs' ability to influence RAP implementation progress. The synthesis provides the foundation for the recommendations and conclusions in Chapter 5.

Throughout the rest of this study, *italicized text* is used to distinguish where PAC participants are directly, anonymously, quoted from their interviews.

Chapter 2
Case Study Profiles

What is a typical PAC? The variety across the five case studies suggests the Menominee and White Lake PACs are more typical PACs insofar as they exclusively serve as a voluntary advisory committee to the agency-led RAP process, compared to the Kalamazoo, Saginaw, and St. Clair PACs that have evolved, in part or in whole, into independent 501(c)3 nonprofit organizations. However, this organizational distinction is not enough to explain differences in RAP implementation progress. Each case study profile that follows details other important and unique characteristics of each AOC and the story of its PAC group.

The profiles begin with more 'typical' PACs: the 'delisted' AOC of White Lake and its PAC, followed by the shared Michigan-Wisconsin AOC of the Lower Menominee River Citizens Advisory Committee. Next are the profiles of less 'typical,' incorporated, PACs: the Partnership for the Saginaw Bay Watershed which serves as PAC for the Saginaw River and Bay AOC, the Kalamazoo River Public Advisory Council, which is 'doing business as' the Kalamazoo River Watershed Council, and the binational Michigan-Ontario St. Clair River Binational Public Advisory Council, which inspired and shares membership and mission with two Friends of the St. Clair River non-governmental organizations, one in each country. The narrative of each PAC could fill volumes; the following profiles serve as a synopsis of the much longer, richer stories of each group's 30- or 40-year evolution.

White Lake

Context

The summer sun warms the sandy beaches where the White River channel outflows to eastern Lake Michigan's windy dune shores. The channel enables navigation to and from Lake Michigan and White Lake, the drowned river mouth lake of the White River. Flowing 70 miles from its headwaters in Manistee National Forest through Oceana, Newaygo, and Muskegon Counties in central western Michigan, the White River is a protected Natural River (Michigan Department of Natural Resources 1975). The White River divides the towns of Whitehall from Montague around the White River Marsh at the head of White Lake, and three more townships abut the lake. White Lake is home to year-round families, local businesses, agriculture, and multiple industries.

Several past industrial activities have severely degraded the water quality of White Lake. From 1840-1940, logging and leather tanning dumped debris into the lake, followed by chlorinated chemical manufacturing (Michigan Department of Environmental Quality 2014, 12). In the 1940s, unmitigated chemicals and other industrial wastes flowed into White Lake at up to 150,000 gallons per day (Ruck 2003). Chemicals manufactured at three facilities around White Lake discharged directly into surface water, and toxic waste piles on land swiftly leached through the region's sandy soils into the groundwater (Michigan Department of Natural Resources 1987b).

PAC Genesis

In 1960s, residents penned a report that identified municipal effluent pollution sources (The Murder of a Lake, 1967). A decade later, a whistle-blowing saga exploded when a local chemical worker revealed their employer's egregious pollution (United States Department of Health Education and Welfare Office of Environmental Education 1978). The response was dramatic and litigious, and one offending manufacturing plant shuttered that same year (Michigan Department of Environmental Quality 2014, 12). This history of activism was important when it came to White Lake's designation as an AOC in 1985 (Restoring White Lake 2018a). After two public meetings to develop the Stage 1

RAP published 1987, it became clear by 1989 that the Michigan Department of Natural Resources (MDNR) had no plans to continue citizen input to guide Stage 2 RAP development (Michigan Department of Environmental Quality 1995, 1). In 1991 residents self-organized the White Lake Public Advisory Council (PAC) with the help of the local office of a non-profit group, the Lake Michigan Federation (1). The PAC's self-organizing genesis is key because *"the community was the first to figure out the direction to go... to have that community connection, that grassroots part is the important part."* Overall in the White Lake region *"people are more aware"* and have *"greater knowledge of environmental issues."* The White Lake community is full of knowledgeable residents: *"we had a lot of resources educationally... people with historical knowledge."*

Function

The PAC works to provide "information, services, and project which will improve the environmental quality of White Lake and its affiliated watersheds" and "advise agencies, express views and voice the concerns of the local community" (Restoring White Lake 2018a). The PAC *"helped ensure there was good publicity"* which enabled communication through *"support of the local paper:"* *"there was a mechanism there to ensure the public could be aware... and knew how to provide that input."*

However, the challenge for PAC leadership was to focus the *"broad spectrum of expectations"* of PAC participants. One PAC leader noted: *"I was kind of addressing the topic of the day... like popcorn."* PAC participants' expectations varied, and members resisted accepting *"a certain level"* of pollution, so there was disagreement over defined, attainable BUI removal criteria. Before governments set BUI removal criteria, the White Lake PAC *"kind of struggled to find focus;"* they wrestled with *"setting how clean is clean?"* The internal agreement suffered, discussion in meetings *"wasn't always very friendly,"* but despite the occasional tensions, it was *"a good dialogue"* that was consistently open to the community since the beginning of the PAC in 1992. Internal agreement shifted when the PAC relationship shifted away from blame-and-complain to separating the people from the problem and focusing on solutions: *"people got to realize*

that [the industry representative was] a good person too." It took a long time to build this trust and focus because *"it takes a lot of talking, it takes a lot of reflection."*

For many BUIs, the PAC accepted the state criteria as an objective standard. For the other BUIs, the PAC negotiated with the state to approve unique local indicators and removal thresholds. However, this level of PAC autonomy possessed a transaction cost: *"there was a scenario where, if you didn't accept the state's criteria then you'd have to come up with funding on your own"* to do the research and set a scientifically- and locally- justifiable BUI removal criteria. The PAC relied on state PAC Support Grant funds and community resources to fund their local partnership projects that enabled progress in the AOC. The Muskegon County Conservation District is a "quasi-governmental entity" (Michigan Department of Agriculture & Rural Development 2018) with staff who served as PAC participants, and frequently as PAC leaders. The PAC members also had a good relationship with researchers at the nearby Annis Water Research Institute of Grand Valley State University: *"we could always go down there, make an appointment, and say what do you think about this... they would take the time to do that."* The White Lake PAC also had the in-kind support of community institutions: *"I'm talking the Chamber of Commerce, at least three city or township governments, and support of the local paper, the editorials, those were all key factors."* The White Lake PAC benefitted from the generosity of their neighbors: capacity came from *"community resources, it's surprising. Given the opportunity, people come forward."*

Current Status

The White Lake PAC successfully delisted the AOC in 2014 (Michigan Department of Environmental Quality 2014, 4). The delisting was not without controversy. The AOC program definition of BUI criteria exclude aspects of groundwater. The White Lake Drinking Water BUI was removed over stakeholders' objections that their drinking water sourced from groundwater remained contaminated from the same source of pollution (62). The issue of groundwater contamination remains a major hot-button issue today because the White Lake AOC delisted without the cleanup of all its groundwater contamination sites.

In hindsight, PAC participants recognized the constraining factor of *"personality conflict"* because *"interpersonal conflict and differences can impede progress."* To deal with the *"tough debates from time to time,"* the White Lake PAC group chose majority rule, rather than consensus, to enable the group to move forward and not dwell on fundamental disagreements. This did not satisfice all White Lake interests: *"they just persisted in that it's a majority."* The *"organizational dynamics"* of majority rule are destructive to organizations: *"if you allow the minority group to prevail consistently, it ultimately results in the disbanding of the group because people are going to say, why am I here?"* But, in the end, majority rule enabled progress in the White Lake AOC. In hindsight, PAC leadership thought an outside mediator for arbitration *"would have been effective,"* because *"there's underlying things that are going on here that we need to address, because we're spending too much energy addressing it the wrong way."* Furthermore, *"the PAC doesn't exist today."* While the PAC group established the White Lake Environmental Network after delisting the AOC (Restoring White Lake 2018b), participants shared meek, measured optimism that the initiative might re-activate after years of dormancy.

Lower Menominee River

Context

Part of the boundary that demarcates the northeast corner of Wisconsin from Michigan's Upper Peninsula is the 116-mile long Menominee River that feeds into Green Bay on northwestern Lake Michigan. Its densely forested rural upstream was prime spawning habitat supporting a productive Green Bay fishery before industry and dams interfered with proliferation. While the forests have rebounded from historical, intensive logging, the fishery has not fully recovered from similar impairments. The development of Menominee, Wisconsin, and Marinette, Michigan destroyed the marshes that once grew abundant wild rice at the river's slow-flowing mouth. Sediments containing arsenic and coal tar restricted dredging in the lower river's federal navigation channel, while flotsam and jetsam like paint sludge or fibers from many different manufacturing discharges floated in its waters and littered its shores (Wisconsin Department of Natural Resources and Michigan Department of Natural Resources 1990). The culture of the Marinette-Menominee region centers around individual liberty: *"the people, they love their woods, they love their rivers... but they don't want anybody else telling them what to do."* There are *"not any environmental groups in Marinette-Menominee."* The industrial base of the economy is important for residents' jobs and livelihoods.

PAC Genesis

The local Chambers of Commerce discovered in the late 1980s that the Michigan and Wisconsin Departments of Natural Resources (MDNR and WDNR, together referred to as the DNRs) did not intend to incorporate ongoing public input into the RAP. Industry interests were

> *really concerned when [the DNRs] thought they didn't need a community committee... [there was a] strong feeling that the local community needed to be involved and the DNRs were not just going to come in and start dictating.*

The state DNRs honored the Chambers' request for a citizen's committee on one condition: *"if you want local involvement then you're going to have to do the work to*

make that happen." The Lower Menominee River Citizens Advisory Committee (CAC) began in 1988 (Wisconsin Department of Natural Resources and Michigan Department of Natural Resources 1990, 7), and initially operated under the leadership of a representative of the Chambers. However, the context of the communities meant the PAC *"has always been real light on the environmental end of it because there aren't a lot of people up here that are involved in that sort of thing."* At this time the DNRs also organized a separate Technical Advisory Committee (TAC) of experts that prompted inter-agency communication for technical review of the RAP and subsequent documents. The CAC thus focuses more on ensuring the RAP met local priorities than technical, environmental research review or advice.

Function

The CAC's most recent bylaws state the group's primary objective is to "seek to determine the status of the [BUIs] identified for the Lower Menominee River, with the ultimate goals of removing those impairments and delisting the [AOC]" (Lower Menominee River Citizens Advisory Committee 2016). The Stage 1 RAP process united competing interests under a broad common goal and participants were motivated because *"there was an end in sight. That was the carrot; you're not going to be an Area of Concern."* One of the CAC's earliest tasks was to jointly articulate a "Desired Future State" for the 1990 Stage 1 RAP (Wisconsin Department of Natural Resources and Michigan Department of Natural Resources 1990, 181). Economic concerns are a preponderance of the CAC's shared interests, "a healthy economy" (182) is the priority of the desired future state. The Chambers, representing the industry and business interests, *"wanted to make sure that their interests were being protected during this whole [AOC] process."* Demonizing industry was not in the group's shared interest: *"the value of those jobs were important, and [the CAC was not] there to shut people down or run them out."* The CAC needed industry at the table to make progress: *"having the people who could fix the problems at the table, and treating them as co-concerned people, [we were] able to accomplish more."*

The CAC participants *"pretty much argued point by point until we could all say, yes, we can support that... [over] many, many, many, very long meetings, we stayed at the table… until we reached consensus."* Ultimately, the consensus was to:

> encourage the companies and encourage the agencies to work through the RCRA *[federal Resource Conservation and Recovery Act] process and the other [regulatory] processes to come to solutions.*

The CAC stopped meeting and temporarily disbanded in the late 1990s, partly because of "the loss of funding for Remedial Action Planning" (Uvaas et al. 2013, 395), and partly because the next steps of the RAP were held up waiting for the legal process of negotiations through these other federal regulatory programs. The CAC was hamstrung waiting on the other regulatory program's opaque negotiation process: *"nobody can say a lot. EPA [Environmental Protection Agency] couldn't say a lot, [industry] couldn't say a lot. So we were... left hanging while a lot of that was going on."*

Thus, when the CAC reconvened in 2008 (Uvaas et al. 2013, 395), participants were in a position to begin working on a Stage 2 RAP to formulate implementation plans that would achieve their agreed-upon goals for delisting the AOC (Wisconsin Department of Natural Resources and Michigan Department of Environmental Quality 2011). The challenge of the Stage 2 RAP was that not all participants were interested in the whole package of implementation goals. *"The makeup of the group and who would be attending [meetings] changed dramatically depending on what particular issue we were focused on."* As problems were solved many of those CAC participants, *"mainly industry members, were dropping off [the CAC] because they had taken care of their issues."* There were also changes in the AOC program as the IJC-initiated three-stage process was phased out and the Great Lakes Restoration Initiative (GLRI) introduced federal funding dollars available to the AOC program. Some CAC participants perceived these changes as moving the goalposts on the end points the CAC previously agreed upon, *"and it began to look like there was never going to be an end."*

2. Case Study Profiles – Menominee

Current Status

The common motivation of today's core group of CAC participants is an *"interest in the community and the other issues around the whole RAP. The folks that have really hung on have more than that very specific issue."* However, this has also contributed to the CAC dwindling to a core group as single-interest participants get their problems resolved and drop out of the CAC. While the CAC may not have ever had representation from many organized *"environmentalists,"* it has always had environmentally-minded participants from many sectors who have a strong sense of place: they have *"many ties to the river, so that's the glue that's held this group together, a real genuine interest in this river and the land around it."* The common goal of the CAC has shifted away from an exclusive focus on delisting: *"delisting has come to mean something much more significant to all of us. So we don't want to just delist and walk away."*

Additionally, the Menominee CAC group lost a key leader in 2017 with the unexpected death of their Michigan co-chair, who was "involved since the 1980s" and a key CAC cheerleader (Eggleston 2016). The PAC is now operating with Wisconsin-based chair and vice-chair, instead of one co-chair from each state, as there is not a suitable Michigan replacement for the co-chair position. During the course of this study, the "Loss of Fish and Wildlife Populations" and "Degradation of Fish and Wildlife Habitat" BUIs were removed for the Lower Menominee River AOC (United States Environmental Protection Agency 2019). One remaining BUI, "Restrictions on Wildlife Consumption," is currently being assessed. While the CAC has the impression they will delist in 2020, members are getting impatient that the state and federal agencies seem to postpone their delisting date indefinitely. The CAC agenda also occasionally includes discussion of what the PAC will transition into once delisting occurs.

Saginaw River and Bay

Context

Michigan's iconic 'hand' shape owes its ubiquity largely to the Saginaw Bay of Lake Huron; the land around the shoreline of the bay forms the inside of Michigan's 'thumb.' The Saginaw Bay's largest tributary is the Saginaw River that receives its water flows from an extensive network of rivers that drain water off most of the land of mid-Michigan, including agricultural, urban and industrial land uses. In the mid-20th Century, the Saginaw River experienced degradation from nutrient and sewage inputs similar to most waterways of the Great Lakes. However, the concentration of industrial chemical manufacturing and use along the rivers feeding into the Saginaw meant that unmitigated industrial effluent polluted the sediments and water column for decades with an alphabet soup of contaminants (Michigan Department of Natural Resources 1988). The Tittabawassee and Saginaw rivers are also under Superfund jurisdiction (United States Environmental Protection Agency 2018a). Flooding is also an important environmental management concern. The residents of the Bay region live at the *"bottom of the bathtub"* of a traditionally swampy area. While not optimal for human development, the natural features of the region are ideal coastal habitat: Saginaw Bay's tens of thousands of acres of coastal wetlands are unofficially national treasures (Bredin and Goudy 1995).

PAC Genesis

In 1986, MDNR contracted the East Central Michigan Planning and Development Region to prepare the first draft RAP and coordinate the Saginaw Basin Natural Resources Steering Committee (Michigan Department of Natural Resources 1988, xxxiv). That year, a destructive flood drew further local and federal government attention, and Congressional support materialized as the EPA's National Watershed Initiative (NWI) pilot in the Saginaw River basin which combined the efforts of the Saginaw Bay Soil Erosion and Sedimentation Control Program and the Saginaw River/Bay RAP. The Initiative granted federal funds to MDNR "to develop a comprehensive program for addressing problems in the watershed" (Bredin and Goudy

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1995, 314) through coordinating the state agency's efforts with two local river basin organizations. According to one PAC member:

> *The Saginaw Basin Watershed Council [Watershed Council] was one of the predecessor organizations... [and] the Saginaw Basin Alliance was a citizen-based group, and were actually the designated Public Advisory Council, although they didn't quite have that name hammered out yet.*

Current PAC members recall these early years (1991-1995) as the *"golden age of the public advisory group."* Congress funded the Initiative for four years, and during that time, the program focused resources and *"facilitated tons of communication"* between the two local organizations, Saginaw Valley State University, the MDNR, and the EPA. Through the NWI, the groups consulted the MDNR on the Stage 1 RAP when it underwent a comprehensive update culminating in the 1995 Biennial Report (Michigan Department of Natural Resources 1994). When Congressional support for the Initiative ended in 1995, the groups merged into the Partnership for the Saginaw Bay Watershed (PSBW) as a 501(c)3 organization (Public Sector Consultants 2015, 1). As one charter member explained, the move was financially motivated: when *"both of those organizations were about to dry up, we merged those organizations into what the PSBW is today."*

Function

The PSBW's stated goal is "to coordinate efforts and monitor progress toward restoration goals with an ultimate goal of removing the Saginaw River and Bay from the list of AOCs" (Partnership for the Saginaw Bay Watershed 2019). However, becoming a multi-purpose local involvement group changed the organizational structure of two existing groups, and that negatively affected the PSBW's ability to sustain itself. The loss of government funds went *"on a pretty steep downward track; we lost staff fairly quickly after that."* During the decade of wide-scale government austerity (1996-2006), with no staff and a modest grant, PSBW hired a contractor to fill the organization's technical capacity gap. The consultant developed indicator criteria for the Saginaw River/Bay RAP. In this way, PSBW members were *"a leader early on in the program in developing*

the 2000 Measures of Success report that informed, I think, the AOC program in Michigan specifically in setting criteria" (see also: Public Sector Consultants 2000).

Six years afterward, the state established its criteria (Michigan Department of Environmental Quality 2005; Final guidance for delisting Michigan's Great Lakes Areas of Concern 2006), but PSBW members found that state and federal criteria diverged from their *Measures of Success* criteria, and *"new issues emerged by trying to impose the statewide delisting criteria in the Saginaw AOC."* The PSBW members then began to wrestle with whether or not the state standards were clean enough to satisfy local interests. Members were faced with the choice of going the *"easy"* route to accept state standards, or *"find ways to modify [local] criteria so we could try to accomplish something, to be more suited with what makes sense."* However, in the pursuit of promulgating local criteria, PSBW struggled to agree on another objective standard, Disagreements are because *"everybody seems to want it to be perfect instead of saying this is a conceptual thing."* Members lamented that this lends itself to *"talking about this [BUI] forever"* and that *"when all is said and done, there is a lot more said than done."*

Sometime in the early 2000s, the PSBW stopped meeting regularly; communications and visibility to the public had atrophied: *"there were no meetings, no membership, even though you couldn't be a member unless you paid, but there was no website, no nothing."* After a few years, the PSBW came under external criticism for becoming inaccessible: *"external stakeholders were saying [the PSBW] does not have enough people at the table, they are not going through a good public engagement process."* It took several more contentious years for the PSBW to re-establish consistent, open meetings, eliminate membership dues, and resume regular communications.

Current Status

The PSBW has reconciled these issues, but their relationship with the state through OGL has become one of distrust, and members *"feel like they're not being taken seriously"* by the state. There is *"some built-in friction"* regarding the division of authority balanced between the state and the PSBW. Members *"are clearly frustrated with the state AOC Coordinator saying that the state will be the arbiters of what is going to be the final answer here on whether this is able to get delisted or not."* The nature of

the relationship between members and state representatives is *"a push-me-pull-you kind of thing."* PSBW members describe their influence as weak, and with *"very little role in the food chain, that results in a bit of a disconnect between our wishes for things and how much we actually get or find out from the agencies that are out there doing work."*

Thus, funding priorities are drivers of the PSBW's priorities; *"as long as it makes the state happy and the Office of the Great Lakes and the EPA ultimately, that's what we care about."* One PSBW member quipped about *"the old golden rule: they got the gold, so they make the rule; so whatever we want to do here, we still have to get their permission."* The perceptions of PSBW members of the RAP process is that *"it's pretty set as a take-it-or-leave-it thing, which is frustrating, I would like to feel that we're more of a full partner."* It becomes a challenge for the state to walk the fine line between being a wanted facilitator, and a capricious arbiter because of *"the state's role in having to say no sometimes upsets [members]."* The most recent BUI removed in Saginaw is the 2014 removal of "Loss of Fish and Wildlife Habitat" (United States Environmental Protection Agency 2014). Today, Saginaw has nine remaining BUIs to remove (Michigan Office of the Great Lakes 2019).

Kalamazoo River

Context

The immense length of the 131-mile-long Kalamazoo River in Southwest Michigan matches the immense extent of its PCB contamination, a legacy from the de-inking process of the paper mills that operated, and operate, on the riverbanks. Paddlers can float down the Kalamazoo through vast stretches of undeveloped riparian land; the Kalamazoo is a "Natural River" under Michigan law (Hartig and Zarull 1992, 251). Dams and cities impinge on the watercourse as it flows from its headwaters east of Battle Creek, through Marshall, Kalamazoo, Allegan, to the dune shores of Saugatuck on Lake Michigan. Because of polychlorinated biphenyls (PCBs) in the sediment, the lower 80 miles of the system is a designated AOC (Michigan Department of Natural Resources 1987a, 1) and also a Superfund site on the National Priority List (United States Environmental Protection Agency 2018b).

There is a *"very active environmental and recreational river user community"* in the Kalamazoo region. Early on, residents made *"a lot of noise in public meetings,"* sounding the alarm on PCBs in the river and its fish. As the issues of legacy contamination progressed, so did the concerns of civil society. Residents self-organized, including more recent groups opposing the siting of contaminated dredge spoils in a local riverfront waste dump. Groups in the community have formed around other single-issue water quality problems, including the 2010 pipeline leak of heavy crude oil into the watercourse. There are township water resource councils, sub-watershed associations, universities, and land conservancies all operating with jurisdiction and interests overlapping in the Kalamazoo River watershed.

PAC Genesis

Many policy mechanisms work to clean up the river, including the Area of Concern program, the Superfund program, and Michigan's Act 307; all three policies mandate public participation in some way (Hartig and Zarull 1992, 260), but there was no formal public engagement institution created after the 1989 disbandment of the

government-convened Kalamazoo River Basin Strategy Committee (15). Vocal citizens and local leaders concerned about PCB contamination organized enthusiastic residents into the Kalamazoo River Watershed Public Advisory Council (PAC) that the state then recognized formally under their AOC program in 1993 (Kalamazoo River Watershed Public Advisory Council 1998, 5). The original goal of the PAC was the "wise balance and management" (5) of competing interests affecting the river's improvement and protection. In 1998 the PAC incorporated as a 501(c)3 nonprofit (Kalamazoo River Watershed Council 2018).

The early group of staunch advocates worked in the 1990s on updating and producing their own RAP in 1998, including conducting interviews with community leaders to gather input on visions for the future of the river (Kalamazoo River Watershed Public Advisory Council 1998, 21). This early strategic planning diversified the scope of the PAC's work beyond PCBs because *"a lot of people thought we [the PAC] were too specialized in PCBs and Superfund... it's dealing with stormwater and nutrient effluent pollution, so it's broader."* The strategic changes to expand the PAC's scope beyond the AOC and Superfund programs came at a time when leadership and membership transitioned to more of *"the science people that came in and the engineering professionals that came in."* An amalgamation of the existing regional watershed and environmental groups strategically convened in 2005 to designate an umbrella organization to coordinate sub-basin and sub-watershed group efforts. From that point on, the PAC decided to begin "doing business as" the Kalamazoo River Watershed Council (KRWC) (Kalamazoo River Watershed Council 2018).

Function

The mission of the KRWC is to "work collaboratively with the community, government agencies, local officials, and businesses to improve and protect the health of the Kalamazoo River, its tributaries, and its watershed" (Kalamazoo River Watershed Council 2018). KRWC *"engage[s in] a broader array of activities, and does some of the whole-system coordination"* which has the group *"functioning better"* than its' early PCB-focused days. However, the KRWC role as an AOC PAC now occupies a smaller portion of their overall agenda because their umbrella approach necessitates that toxic

substance priorities balance with other regional human and ecosystem priorities. While the KRWC has a part-time paid Watershed Coordinator and volunteer Board of Directors, the Watershed Coordinator and less than half the members are engaged in AOC program priorities and RAP implementation.

When conducting PAC business, the KRWC is a neutral broker of technical information and the liaison between the regulatory agencies and the public:

When you think of [KRWC] in that conceptual model, we're kind of in the center, and you've got regulatory agencies at the state and federal levels, they've got industry or a [water pollution discharge] permittee, and then you've got the public and the other environmental groups, and we're trying to walk that balance between all these different stakeholders.

KRWC members said they are involved because they *"care about seeing the agencies do right."* There is also a consensus among KRWC members to represent the group as a science-based advisory body, as *"not just an angry citizenry but an informed spokespeople."* When it comes to advocacy for singular, adversarial, or positional bargaining, *"this organization is not taking those roles… this group is oriented around what we can do. And because of that, it is trusted."* The group's balanced approach to AOC PAC business and other priorities bolsters the local credibility of the KRWC as the liaison: *"the PAC is sort of a hub."*

Current Status

Because the KRWC's PAC role is as a liaison, participants must interface with many stakeholders and deliver messages two ways between the public and governments. The full-time staff, along with the *"consistent presence of the PAC"* enables the KRWC as an organization to act as an effective liaison, not only for the AOC PAC program but also for other regulatory and non-regulatory government programs: *"it's that you can call our office, and someone will call you back."* The KRWC is unique to how it has *"cobbled together"* sufficient funds for dedicated and independent staff from multiple regulatory government programs and regional philanthropic organizations. For example,

after the 2010 oil spill, the KRWC was the community liaison group for the cleanup process and received funds to support its work in this capacity.

Membership continuity is an asset because longtime participants *"have some of that institutional memory;"* the benefit is remembering past lessons learned. Continuous member participation means the group's PAC liaison services have been consistently available to their watershed communities since 1993. However, many KRWC longtime members have dropped out of the group; the attrition of institutional knowledge from those *"who have been around through all of [the PAC's iterations]"* means that the KRWC organization relies on just a few key individuals to anchor the group members' focus on its long-term watershed-scale priorities. Moreover, with a paid Executive Director, a lot of the time-consuming relationship building and networking is now centralized. The full-time staff possesses many of the KRWC's relationships and institutional knowledge; however, over the course of this study, the KRWC Watershed Coordinator position turned over to a new staff person.

The last BUI removed from the Kalamazoo River AOC was the "Degradation of Aesthetics" in 2012, and to date, six beneficial uses remain impaired (United States Environmental Protection Agency 2012). Most recently, the KRWC assisted EPA with public input and outreach for an emergency dam removal coordinated with contaminated sediment removal and habitat restoration in Otsego. The KRWC holds annual paddling events, green infrastructure education, disseminates fish consumption advisory information, serves in an unofficial capacity as the Superfund Community Advisory Group (CAG), works on the Lake Allegan Total Maximum Daily Load, and multiple other projects; RAP implementation is one of the KRWC's many agenda items.

St. Clair River

Context

Lake Huron outflows into the St. Clair River forming a 40-mile strait that creates the largest freshwater delta in North America at the St. Clair Flats on the northern shores of Lake St. Clair (Friends of the St. Clair River (US) 2018, 2). The border between the United States and Canada bisects the length of the river stem, and six of ten islands in the Flats are among two First Nations' riparian jurisdiction. At the northern mouth of the river, the cities of Port Huron, Michigan and Sarnia, Ontario connect at the Blue Water Bridge. The region embraces the river and the community is *"proud of, and known for,"* their Blue Water brand. As early logging and extractive industry boomed along the strait in the early 20th Century, families earning more wealth began developing residential neighborhoods along the shoreline. However, these homes were built *"with their backs to the filthy water"* where freighters and barges cruise by, belching soot into their backyard air. As technology and the economy modernized in the mid-1900s, the availability of salts and fossil fuels in Ontario with access to shipping led to an intense cluster of petrochemical and refinery operations in Sarnia called 'Chemical Valley' (Ford 2015).

Drinking water, human health, and industrial spills are the top hot-button issues in the Blue Water region. In the years leading up to the formation of the Binational Public Advisory Council for the AOC, several public drinking water emergencies recurred. Toxic chemical *"blob"* spills captured local headlines. In Wallaceburg, Ontario, two citizen activist groups started organizing. Public passions about chemical spills and drinking water were strong, but *"there were personal perceptions about the impairments [to the water quality] that were different on the two sides of the river."*

PAC Genesis

The St. Clair River is a binational Area of Concern because the AOC boundaries include both the US and Canadian sides of the river. In 1985 the Ontario and Michigan governments agreed to a "joint RAP process and providing for Ontario to take the lead role" for the AOC (St. Clair River AOC RAP Team 1991, 6). Governments organized a

"RAP Team comprised of federal, state and provincial representatives" (6) assembled in 1987 to write the draft Stage 1 RAP. The Ontario Regional Conservation District is the regional quasi-governmental office that provides a full-time employee to implement secretarial and administrative programs for the RAP. The Ontario Ministry of Environment (OMOE) "oversees" (37) this process for Canada's AOC program.

When multiple, opposing local interests accepted the OMOE's invitation to attend the first St. Clair AOC Binational Public Advisory Council (BPAC) organizing meeting in 1988, it started *"like a revolution."* The drama played out in front of local news cameras when, at the first BPAC meeting, the Canadian public, labor unions, citizen watchdogs, and industry clashed. The early contention led to nasty fighting about control over BPAC chairmanship and membership because *"you don't want to sit with your enemy... it was like the battle lines were drawn."* In response to a walkout citizen watchdog members had staged in the early BPAC days, OMOE committed funding for a RAP Coordinator. However, Michigan's agency support was *"totally insincere in the beginning."*

The tense situation required professional facilitation, and OMOE "hired a consultant to assist in the development of a public participation program plan" (St. Clair River AOC RAP Team 1991, 37). The benefits of this facilitated strategic planning were critical for the BPAC helping moving progress forward because the facilitators:

> *taught this large, diverse, and mostly inexperienced group how to focus, and how to make decisions, and how to set goals. We needed that third party to be able to say to these people, that's fine, that's important, but it's not in the AOC.*

Function

The BPAC abides by its original 1988 charge to:

> advise the RAP Team on key aspects of the Remedial Action Plan Preparation and Adoption... the goal of all concerned should be to arrive at planned recommendations upon which the RAP Team and the Advisory Council agree, and for which there is broad public support (Friends of the St. Clair River (Canada) 2010).

After initial facilitation, the RAP Team spent three years consulting with the BPAC and published the St. Clair AOC Stage 1 RAP in 1991. Without US funding, BUI removal came first *"on the Canadian side of the river, way ahead of things that were done on the American side of the river."* Rather than binationalism and operating with one set of criteria, bilateralism is how the BPAC's members from each country work *"simultaneously towards the same goal, but we do it in our own way."* Each side of the border had its own list of BUIs with criteria conforming to guidance from Michigan and EPA or Ontario and Environment and Climate Change Canada.

Drinking water protection and chemical spill accidents draw residents' attention to the BPAC's work: *"the occasional spill and crisis actually provide a motivation, a focal point."* The drinking water BUI and issue of spill monitoring reporting and response is a key motivation that gets reactions from the community and local media:

> *it became immediately became obvious that some of the impairments were going to have to be listed, not because there was any science backing them up, but because there was such a strong public perception.*

There is a keen interest from the Canadian side to ensure citizen watchdog groups have a seat at the BPAC table because Canadians do not have the same toxic accident citizen right-to-know privileges that Americans have under the Superfund Amendments and Reauthorization Act Title III (Michigan Department of Environmental Quality 2018).

One unique challenge for the BPAC is the financial barrier of being a binational council as the non-entity organizational status, because *"all the industrial reps said we have funds for this type of thing but we cannot support a binational group."* The solution was *"two totally independent 'Friends of' groups. So there's a Friends of the St. Clair (FOSCR) Ontario [Canada] and there's a Friends of the St. Clair, Michigan."* In 2008, a couple of US BPAC participants identified the BPAC's need to receive grant funds, and *"started FOSCR US to serve in the capacity of a watershed council, as an environmental entity for any organization in the county that needed a fiduciary."* They modeled FOSCR US after the FOSCR Canada organization that had been around for a few years prior. However, the BPAC is a distinct entity from the Friends' groups, as the Organization Flow Chart from FOSCR US depicts in **Figure 2.1**.

2. Case Study Profiles – St. Clair

Figure 2.1: Friends of the St. Clair River (US) Organization Flow Chart (Friends of the St. Clair River (US) 2018)

Current Status

The BPAC relationship with the OGL improved once GLRI increased State of Michigan AOC program budget, and thus capacity, in the mid-2000s. The attention, engagement, and *"active involvement"* by OGL were *"key"* for the BPAC. With PAC support grant money, FOSCR US as a fiduciary can attract the time and support from local governmental staff at the County Health Department or the Wastewater Treatment Plant, through sub-contracting. The BPAC coordinates with the Canadian agencies through the Canadian RAP Implementation Committee (CRIC) and the BPAC advises agency representatives from the Four Agency Managers Work Group.

FOSCR US conducts many project-based activities to achieve RAP objectives for enhancing public education about the river's water quality. The group's Sturgeon Festival is a popular and well-attended annual event (see http://www.sturgeonfestival.com).

However, the need for the BPAC to retain its watchdog role has undermined some areas of its work: *"having that public perception perhaps of being an activist group makes it a little more difficult for us to get information."* Similarly, the BPAC has dwindled to a core group now that it has delisting within sight. As crises came and went, industry participation dwindled because some contentious issues around transparency reduced cooperation. Now as drinking water and toxic spill plan criteria are developed and tested, success is becoming the enemy of vigilance: *"the worst thing that we could do would be to succeed, because that might produce a feeling of it's all fixed, and we don't have to worry about it anymore."* The issues of spill emergencies on the St. Clair River AOC is challenging for the BPAC because crises can be distracting and aren't a reliable source of new long-term membership to support the group.

Most recently, the EPA removed the "Loss of Fish and Wildlife Habitat" and "Bird or Animal Deformities or Reproduction Problems" BUIs from the US side of the AOC in 2017 (United States Environmental Protection Agency 2017a, 2017b). To date, two BUIs remain impaired on the US side.

Chapter 3
Research Findings

Whereas the previous case study profiles embedded influential factors into the narrative context of each case study site, the goal of this analysis is to articulate the factors PAC members identified as enabling or constraining their group's ability to influence the RAP progress. The purpose of this analysis is to derive generalizable lessons and understand the implications of these factors as they relate to public engagement and remedial implementation in Michigan's AOC program. The objective of this analysis is to make sense of the various enabling and constraining factors identified by PAC members across these five cases. The study design framework guided the systematic identification and classification of factors as they emerged from the interview data. **Figure 3.1** outlines the framework once again:

Figure 3.1: Framework for Research Inquiry (same as Figure 1.5)

Why does RAP implementation progress differ among AOCs?			
What factors ENABLE a PAC's ability to influence progress?		**What factors CONSTRAIN a PAC's ability to influence progress?**	
External Factors	**Internal Factors**	**External Factors**	**Internal Factors**
Community context	PAC origins, structure, and function	Community context	PAC origins, structure, and function
Community capacity	PAC process and management	Community capacity	PAC process and management
State and Federal actors and actions	Participant perceptions and attitudes	State and Federal actors and actions	Participant perceptions and attitudes

Tables 3.1 and **3.2** summarize each factor in the framework, followed by detailed descriptions of the salient and unique internal and external factors PAC members described.

3. Findings

Table 3.1: Summary of All Enabling Factors

What factors **ENABLE** a PAC's ability to influence progress?	
External Factors	**Internal Factors**
Community context • Strong community identification with the water resource • Active water user community • Parallel actions through other local, state, or federal programs • Cohesive community networks and relationships	**PAC origins, structure, and function** • Bottom-up origins • Engaged and committed Board of Directors • Dedicated, paid point of contact for PAC • PAC open membership • PAC meeting accessibility
Community capacity • Motivated, engaged, and connected individuals • Accessible, credible community experts • Strong local media presence and coverage • Private sector engagement • Local government investment	**PAC process and management** • Strong leadership • Membership continuity • Detailed, attainable Remedial Action Plan • Consensus-building strategy • Common goal • Future planning • Facilitation • Clear endpoint
State and Federal actors and actions • Consistent, flexible funding • Clear criteria • Forums for cross-PAC learning • Dedicated and involved state agency coordinator • Committed, supportive agency sponsor • Coordination between state and federal agencies • Defined roles and responsibilities	**Participant perceptions and attitudes** • Empowered by autonomy • Dedicated individuals • Motivated by holistic vision • Camaraderie within the PAC • Effective public education • Recognition of accomplishments

3. Findings

Table 3.2: Summary of All Constraining Factors

What factors **CONSTRAIN** a PAC's ability to influence progress?	
External Factors	**Internal Factors**
Community context • Differing levels of environmental understanding and awareness • Large watershed geography • Lack of control over or connection to parallel outside actions • Short-term problems or crises	**PAC origins, structure, and function** • Inconsistent Board of Directors engagement and communication • Ambiguous membership definition • Inaccessible PAC meetings • Unclear organizational structure
Community capacity • Local government lack of commitment • Local government resource constraints • Lack of private sector engagement • Unreliable local media presence and coverage • Lack of interested individuals • Communities disconnected from experts	**PAC process and management** • Poorly managed meetings • Participant attrition • Demanding workload • Unclear Remedial Action Planning process • Lack of clear endpoint • Majority rules
State and Federal actors and actions • Lulls in funding • Consternating caveats and strings attached to funding • Silos • Bottlenecks in communication between PACs and agencies • Lack of clear criteria • Lack of clear roles and responsibilities	**Participant perceptions and attitudes** • Limited by state control • Public apathy • Tiresome, lifelong process • Philosophical division within the PAC • Strained interpersonal relationships • Diminishing interest

3. Findings

External Factors

Community Context

No AOC community is alike; each PAC is the product of a combination of factors influenced by the situational context of the community. PAC members noted that the geography and social fabric of the watershed influence the community's understanding of, and care for, their local water quality. The constellation of water users and other ecosystem management activities influences whether and how the community mobilizes to protect their interests and prioritize remediation. **Table 3.3** summarizes the community context factors PAC members identified in their interviews; detailed descriptions of each follow.

Table 3.3: Summary of Community Context Factors

	Enabling Factors	Constraining Factors
Community context	• Strong community identification with the water resource • Active water user community • Parallel actions through other local, state, or federal programs • Cohesive community networks and relationships	• Differing levels of environmental understanding and awareness • Large watershed geography • Lack of control over or connection to parallel outside actions • Short-term problems or crises

Enabling Factors

Strong community identification with the water resource

In all cases, the AOC communities' identity has strong ties to the water resource. PAC members attested that their community's *"identity is tied up in the fact that we have access to the water," "it's something we're proud of, and we're known for."* The waters are not simply in the background of the community but are *"a part of the social fabric*

in" their region, and the whole *"community culture is very tied to the [waters]."* Most PAC members shared the sentiment that their waterway is the defining attribute of the community: *"most of what attracts people to live here, [and] most of what enhances the quality of life here has to do with the [waters] and is directly tied to water quality."* PAC members identified that water quality improvements reinforce their communities' connection to the resource: *"water quality is what defines our quality of life around here, so having clean water allows people to enjoy what they have."*

When people in an AOC community have a strong connection to the water resource, it enables *"a little more buy-in in those natural resources"* and their improvement. PACs benefit by getting buy-in from local institutions that are *"very supportive in terms of [recognizing] the value of cleaning up."* Some PACs focus their goals on strengthening the community connection to the resource because *"getting that community responsibility, that community ownership for ongoing stewardship is going to be a real[ly] important part of how we move forward."* One PAC member describes community buy-in to the RAP process as *"the desire to make the communities whole, to restore the community, to do something positive."*

Active water user community

Many PAC members mentioned that an *"active [water] user community"* enables the PAC's ability to influence RAP implementation progress. When *"you have people interested in the outdoors… [that] makes a big difference"* because visible water quality improvements have a positive effect when there is an active community observing the changes in the waters they frequently use and enjoy. For example, in St. Clair, *"kayaking has really changed focus in a lot of ways"* because the active user community helps the PAC spread the message about RAP implementation achievements: *"we have this great new paddling, and conditions have improved on the St. Clair River, it's a great place to paddle, the water quality is great."* Participants noted that visible water quality improvements influence community buy-in for ensuring post-delisting support. Visible remedial projects that emphasize public access, and benefit the active water users, have *"gotten a lot of folks in the town excited about the possibilities of what can be done if*

folks work together on it. And so I think it's the one that's most likely to sustain an effort to continue to clean up."

Parallel actions through other local, state, or federal programs

In all of the cases studied, there were, or are, parallel remedial actions occurring in the AOC through other local, state, or federal water quality programs. Many PAC members explained that RAP progress has happened in their AOC through these parallel programs—Superfund, RCRA, Clean Water Act (CWA) or otherwise. For example, with the CWA, local public sector compliance enabled RAP implementation progress because *"cities were changing their stormwater, and they were putting in retention basins, and they were building new waste treatment plants."* The cities' attention on compliance *"ties into the city's focus on the river."*

Other regulatory programs also influenced RAP progress by facilitating industrial cleanup actions and changes to industrial management:

> *We would not be that far ahead if [the industries] had not made that initial push to reduce discharge and spills, et cetera. And we're not talking just spills, we're talking about their normal discharge that was going in… it was [because of a] regulatory [change].*

In other cases, part of the PAC's RAP implementation strategy was to stay out of these different regulatory processes. For example, in White Lake *"one big initial decision that the PAC made was to… accept, if that's the right word, [a chemical company's] plans for dealing with the persistent pollution."* Regulatory-based management actions enable PAC groups because *"things happened externally, and they piggybacked"* off the progress made through the regulatory channels. Other PAC members noted that these regulatory programs are the only processes that communities *"have any faith [in] that the cleanup is going to be always moving forward."*

Some other regulatory programs have enabled the PAC's organizational capacity by providing an alternative source of funding. For example, in Kalamazoo:

> *It's fair to say that almost all the operating expenses of the KRWC since 2000, most base operating expenses have been 319 grants, or related watershed*

implementation grants, for pollution runoff correction, stream bank revitalization, [and] project grants.

Several PACs augment their organizational resources through strategic participation in these other, regulatory, water quality programs by *"making use of the various processes in their area and being very successful about it."*

Cohesive community networks and relationships

In several of the cases, PAC members highlighted that their community networks are established and cohesive where *"everybody knows everybody else."* Notably, *"there was a lot of communication"* between individuals and institutions in these well-connected networks. Often related to small communities, participants noted the benefits of *"a very close, tight-knit community, I mean, people stay here for life."* Even AOC communities where the state or national line is *"running right down the middle of it, which is also the river... it functions as a single community."* PAC members noted the benefit of *"work[ing] back and forth"* across community lines. The PAC becomes a valuable table to convene around because *"it [is] an opportunity to maintain some of those relationships… to continue those [professional] associations"* in the community network. These *"personal relationship[s] and the, kind of friendly neighbor"* factor enables PACs to *"have some credibility that we can bring to the table… because of our roles and working with all these people."*

Constraining Factors

Differing levels of environmental understanding and awareness

There can be friction when users lack ecosystem understanding: *"People that live here don't necessarily have a good connection to ecological issues and their problems,"* and *"there's not a lot of awareness."* In some cases, while community members may have an awareness of the water resources, they have *"just that gut feeling of things are worse than they are."* When community awareness was driven by *"emotional thinking,"* then *"there were some real urban legends about the contamination."* The challenge of

different levels of understanding and awareness about the environmental problems is that the waterways do not *"have much of a positive image in a lot of people's minds,"* and PAC members acknowledged that *"bucking that mindset is frustrating."* PAC members noted that differing levels of environmental understanding and awareness meant their PAC needed to spend more time and resources on public education. For example, at one AOC habitat restoration site, project managers:

> *often hear complaints about the height of the vegetation… 'I can't get to the water,' or 'I can't see the water because there's vegetation in the way…' So the challenge is explaining first of all why we need habitat in the first place, and then why are native plants important in a habitat project, and why do they need to be so tall.*

In several AOC cases, there is a need for raising watershed consciousness. However, not all PACs have the capacity, or funding, or interest to implement ecosystem-based watershed education and awareness projects.

In other cases, a different understanding of environmental problems created additional work to address misplaced concerns. Public insistence on including unverified BUIs during the Stage 1 RAP created this issue: *"It became immediately obvious that some of the impairments were going to have to be listed, not because there was any science backing them up, but because there was such a strong public perception."* Part of the extra work involved included gathering information and, despite the misunderstanding, address public concerns *"by making sure that the information is included. You don't just say, well, they didn't understand, and cross it off the list—you don't want to do that. You want the public to be confident in the process."* Therefore, raising awareness through education instills public confidence in the RAP process.

Large watershed geography

Many PAC members mentioned that the large size of the AOC boundary or the watershed, often referred to as the *"geography"* of the place, is a constraining factor itself. However, PAC members' rationale connected the factor of geography to

underlying challenges of the logistics, disparate community interconnections that instill inherent distrust among a plurality of interests, and a lack of urgency.

The primary constraining influence of a watershed's geography is that its large physical scale impedes the PAC's logistics and *"full ability to interact with, provide services for, and take advantage of the full watershed."* Specifically, members noted that *"geographically [it] is hard to convene people."* It is a hassle to travel; it takes considerable time to travel across a large area to a less-than-central location where the PAC conducts its business meetings. One member noted that *"it's not that [another organization in the watershed is] not willing to work with [us, but] they're far enough away it would be hard for them to actually be members."* PAC members also noted the *"distance thing"* influences the PAC's ability to coordinate with state agency officials because the travel time constrains *"getting bodies… here to run things from the [M]DNR side of it."* For some, the barriers to travel disproportionately discourages public participants from attending the PAC's meetings:

> *If you're working for [a] government, if you're representing an industry, you just shrug, and you put up with that kind of crud. But if you're a citizen-at-large and you're taking time out of your personal life to contribute or participate, you don't need that [travel hassle].*

PAC members also cited the challenge of managing the RAP implementation process with a large plurality of interests. One member attested: *"It's too big, how do you get all these people on the same page? How do you get participation from everybody?"* Another PAC member alleged that such an endeavor would *"be a major conference, and almost impossible to get anybody to agree."* Members pointed to the large geographic scope of the watershed as the cause of a *"less highly developed… interconnectivity, a sense of common purpose"* throughout the watershed. Large geography constrains the PAC's ability to facilitate progress because members assert that upstream and downstream users *"don't want to interact with [the PAC] tree-huggers"* because *"a lot of them don't trust hanging out with those upper-class white people. That's a problem… both ways."* One challenge is that stakeholders from different communities with differing

interests do not find it easy to identify with one another cohesively, and this is exacerbated when the geography of an AOC site is large.

Finally, large geographic areas with complex environmental challenges are difficult issues to organize people around because the problem is not urgent:

> *as soon as that issue gets really big and broad and takes on multiple components like all the elements of watershed management, you no longer have sort of, the urgency of the issue of the day.*

Lack of control over or connection to parallel outside actions

When an AOC's RAP implementation progress relies upon piggybacking on other regulatory programs, PAC members *"feel like they don't have as much ownership or power over what to do"* about advancing remedial progress. Most of these parallel regulatory processes do not have a role for the PAC (i.e., no 'official' Superfund CAG in Kalamazoo), so PAC interests are disconnected from these actions and are *"not part of that [regulatory] discussion."* There would not be funding to implement remediation until the conclusion of regulatory litigation or negotiations. As a consequence, *"until that funding source was there to do the cleanup, there wasn't a lot that could happen."* Therefore, some PACs pressed pause on the AOC process entirely while they waited for other regulatory processes to *"churn"* along. PAC members noted that remaining RAP implementation was contingent upon these regulatory cleanups: *"we were kind of hamstrung trying to resolve those other issues."* Implementation aside, the PAC did not need to convene in the meantime because *"there wasn't really a whole lot for this committee to do until that process got through the whole negotiation."* The overall effect constrained the PAC's ability to influence RAP implementation due to exclusion from these regulatory programs.

Further, the legal rigidity of the regulatory process produces *"uncertainty in the actual plans"* for remedial regulatory actions which makes it a challenge for the PAC *"to see where you're going, [so] it's really hard to organize and be prepared for those sorts of things and talk about them"* with PAC constituents. The lack of a formal connection to

other regulatory processes constrains a PACs' ability to influence RAP implementation through parallel outside actions.

Short-term problems or crises

Water quality degradation in an AOC is not the only water-related problem facing these communities, and these other issues can create distractions or confusion about the PAC's focus. One-off environmental problems or crises create distractions for the PAC when community members are *"showing up at our meetings and wondering why we weren't addressing that [specific concern]. And you'd have to explain to them, it's not what we're about."* To minimize distractions, PACs demarcate *"a boundary around our activities… [because] we can't expand out in every direction."* Maintaining boundaries is key to keep their RAP implementation progress focused: *"we're not saying we're not interested, do we think it's not important, but we've got to stay focused, or we'll never get this thing done."*

3. Findings

Community Capacity

Each AOC community has a similar set of stakeholders: individuals and interest groups, experts, the media, the private sector, and local government. However, players vary in the degree of personal and organizational motivation, interest, and commitment that constitute the community's unique capacity to engage in the AOC program. **Table 3.4** summarizes the community capacity factors PAC members identified in their interviews; detailed descriptions of each follow.

Table 3.4: Summary of Community Capacity Factors

	Enabling Factors	**Constraining Factors**
Community capacity	• Motivated, engaged, and connected individuals • Accessible, credible community experts • Strong local media presence and coverage • Private sector engagement • Local government investment	• Local government lack of commitment • Local government resource constraints • Lack of private sector engagement • Unreliable local media presence and coverage • Lack of interested individuals • Communities disconnected from experts

Enabling Factors

Motivated, engaged, and connected individuals

PAC members from every case noted that motivated and engaged individuals in the community are a vital factor enabling progress. Particularly, interested individuals who are *"professionally engaged"* and *"actively employed"* at regional organizations. As one member noted:

I think it comes down to, somebody from an organization or municipality… if they have an interest, then they get on board and they bring some participation. But if there's no interest… from anybody in that group, they ain't coming.

The professional relationships shared between AOC community institutions can promote *"regional cooperation"* that benefits RAP implementation. PAC members described the engaged individuals in their community as having well-developed professional relationships with each other. PAC members emphasized that *"a lot of the same faces [show] up in different iterations of a lot of organizations,"* and that *"there's lots of groups [in the community and] everybody knows each other."* The professional relationships among interested individuals in the community help to bridge these institutions: *"some of the other entities had those personal connections already… and they start talking because they already know each other… so there was a lot of that connection."*

PAC members emphasized the communication benefits of PAC members building relationships with representatives of community institutions: *"what works well is that right now, we have regular communication between all of these partners."* Institutions in an AOC that *"all work really well together"* have an advantage because they have experience cooperating.

Motivated and engaged individuals can also bring their institution's resources to bear on solving water quality problems of mutual interest. Institutional support is essential to PACs because *"we need those key [community] resource people… [to] support these projects to get to the end outcome."* Support and resources are particularly enabling when they come from local government institutions. It always helps a PAC when individuals who are *"really stalwart advocates for improvements to"* local water quality occupy the regional units of government.

It was helpful because the individual had the passion to bring it back [to their office] and to see what that organization could do for [the] common goal. Versus, I'm here [on the PAC], representing the City, so I want to see how this is going to impact the City. It was kind of the opposite way, of the individual then trying to go

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back to these entities and saying, OK, Here's what's going on, how can we help? How can we impact? So it was less, you know, 'just' a board member.

Accessible, credible community experts

PAC members noted that their work towards RAP progress benefitted from access to credible experts from within the community. In several cases, local academic institutions supplied accessible water quality experts: *"our sophistication comes from people we know, like the [local university]. So if you want to consider them a part of local capacity, then, they're a big deal."* For example, in White Lake, without expert contacts at the local college:

We wouldn't have had that, walk in the door, sit down for a half an hour and talk something through with a knowledgeable expert… these folks are easy to talk to… helpful and sympathetic to local concerns. I thought that was all real important.

The community's local experts are a source of *"information we [PAC members] could trust… We were absolutely sure that we were going to get whatever the data shows; it wasn't being massaged."* Participants expressed trust in the credibility of their local technical partners: *"they do a great job… those folks believe in what they do."*

Some PAC members noted the *"local technical expertise"* of individuals from the community is also *"instrumental"* to the PAC's efforts to make RAP implementation progress. Their strategy was to recruit these professionals by *"getting people from the committee reaching out and saying, you have this expertise… how can you help us, or how can we help you?"* Some PACs have successfully recruited these locals with *"reliable expertise"* without necessarily contracting them for services. These local experts serve on the PAC as at-large participants: *"we never have a problem getting technical people on our board, they are mostly… representatives of the community."*

Strong local media presence and coverage

The community press is a vital communication link between the AOC program and the communities affected by BUIs. Local media helps to reduce the deficit of knowledge in communities where, allegedly, 90% of members have *"never heard"* of the

3. Findings – External Factors: Community Capacity

AOC program. When regional media partners are engaged and covering AOC program progress, the PACs experience a community awareness breakthrough: *"now people know what the PAC is!"* PAC members, therefore, attest that *"support of the local paper, the editorials… were factors in the success."*

PAC members also attested that a good relationship with the press enables progress toward RAP implementation because it makes the process visible: *"I think there was good visibility of this process in the press [and] in the local community."* The *"continued coverage"* of water quality issues in the local media is essential to keep the AOC, the PAC, and the RAP process all in the public eye because it facilitates public awareness.

> *It's media coverage… People read about it, and they become more aware, so as much as you can get in the media with some good news, that people are aware that things are improving, and you're doing good things, and so then they have support for it.*

Media coverage also can facilitate public input into the process:

> *So they helped ensure there was good publicity with respect to what was going on and what the next steps were and if we needed public involvement on a particular matter. The press coverage was there to help ensure that that happened… there was a mechanism there to ensure that the public could be aware of it and knew how to provide that input.*

Finally, media coverage is said to enable a PAC because it adds to the *"perceived momentum"* of RAP implementation progress.

> *The more that there is a perceived momentum from the press, from local organizations, from [the] government, the more it's easier to get that support and to move forward. You don't have to fight a battle every day with some naysayer who is [saying]: 'Why are we doing this and why is it taking so long?' It just reduces the barriers and the friction of the process, and I think that's important any time you're trying to do big things like we were with [our AOC].*

Private sector engagement

The private sector's initiative and institutional investment in the AOC program influences the PAC's ability to help RAP implementation progress because their effort materialized as in-kind benefits for the PAC:

> *Some of the paper companies gave us some in-kind support, helped us with some publications. They helped us with some technical information. They would go out of their way to host meetings. For a while, we were struggling to find locations and venues, and they would always step up.*

The voluntary character of the AOC program emphasizes the benefits of private sector engagement: *"Fortunately we had industrial actors who were willing to take that step and be innovative as they're going along and found that… we can see a way to actually finish this up."* In a couple of cases, the local industry was central to the community because *"the value of those jobs was important"* to the economy. This community context shaped the PAC approach to the RAP process:

> *We weren't there to shut [companies] down or run them out, and so we found ways to be encouraging for agencies and companies to work together towards a solution, and so I really feel that was an important part in why we were able to keep moving forward.*

When industry participated in other regulatory programs, the resulting *"investment by the polluting industries"* facilitated funding for remedial actions. Some private sector engagement funded AOC RAP implementation, and as a result of the regulatory processes playing out: *"the companies stepped up, probably because they didn't have any other choice, but they did step up."*

Local government investment

In some AOCs, local government and quasi-governmental organizations (i.e., Conservation Districts, Councils of Government, County Community Foundations) possess the resources to make water quality remediation a priority. Government capacity translates into dedicated local resources for supporting RAP implementation. For example, in St. Clair, the County Community Foundation not only committed land and

sought funds to develop riparian habitat, but also their connections to the Binational PAC facilitated cooperation:

> *[St. Clair County] asked us, what do they need environment-wise, how does that work into our [RAP] plan? And we told them, we need habitat, we need in-water, shallow-water habitat. And they made that part of their plan.*

RAP implementation progresses when local government capacity includes investments dedicated to water quality priorities, such as through funding, land, human resources, and capital resources. For example, one PAC member noted the benefit of having *"the support of the Health Department where I can use all of this ["electronic infrastructure"] and get [PAC] work done really quickly and easily and efficiently."*

Constraining Factors

Local government lack of commitment

Many PAC members felt the individuals in local government positions were not committed to water quality issues and as a result, *"they weren't attending the meetings regularly."* The constraining effect this had on the PAC was that *"they didn't prevent things from happening, [but] they turned a blind eye to what was going on."* Without passionate individuals occupying official seats in the local government, *"participation was fairly haphazard."* At one extreme, local government units actively ignore PAC requests for collaboration:

> *[The County agency reps] don't have to answer our phone calls. There is nothing that we bring to the process except a bunch of blah-blah that they probably think gets in their way, and we don't always agree with their view about how things are working, or what would be most important.*

Local government officials not committed and engaged in water quality remedial activities do not fully understand or see the value in supporting AOC program efforts and are thus not supportive of the PAC's work toward RAP implementation progress.

Institutional relationships and investment were sporadic when individual interest did not align with the AOC program: *"there's not anybody that's doing any writing any checks anywhere."* In most cases, this lack of commitment became a point of frustration that discouraged PAC members: *"They just weren't interested. None of us could understand that if the pollution is on your property, why aren't you here talking about resolution?"* On the other hand, local units of government that had once participated have exited the PAC process as soon as 'their' issue was resolved: *"they don't come to meetings. They weren't part of the board, but they're not called upon because everybody just assumes that issue's fixed. So they were there, but [now] they're gone."* PAC members expressed that the lack of commitment and support from local government was a missed opportunity to advance RAP implementation progress: *"having some support like that from the local municipalities probably would have helped and expedited some things."*

Local government resource constraints

Some PAC members noted that the small scale of their local government units constrained investment in remedial activities, because *"there was no deep pocket."* Furthermore, local government units did not necessarily have the budget or bandwidth to commit funds or full-time equivalents to contribute to remedial actions:

> *The availability of funds of the local government has definitely become more limiting, especially since the economic downturn… [the] staff has been cut, [and] funding is more lean for environmental programs.*

Not all constraints of local government resources are financial. For example: *"we couldn't get those communities to provide people or participation, in some cases, information, and that is very frustrating."* Therefore, local government austerity limits the resources available to support RAP implementation progress in many AOCs.

Lack of private sector engagement

In several cases, key private sector corporations responsible for the legacy pollution are not engaged with the community: *"generally they haven't been very enthusiastic about engaging the community, they'd rather just fly low under the radar as much as possible."* In these constraining cases, certain companies *"were trying to avoid*

everything" and engaged only through regulatory means. As a result, there is limited support and resources for remediation: *"industries do not want to invest in this; they fought for so long that it will go away somehow."*

Unreliable local media presence and coverage

Local media presence is a crucial mechanism for the PAC's information-sharing ability, so when local press is unreliable, the PACs' dissemination capacity diminishes. With media conglomeration and corporate austerity came *"the demise of environmental journalism."* Consequently, PAC relationships with the press suffered:

> *[At] the local newspaper where you know somebody on staff who covered the river for years and years and years… and was deeply knowledgeable about the history, and been to all the meetings... And we didn't always agree with their assessment, but they were no doubt very knowledgeable. They retired and then we ended up getting like a different person every three months.*

Without a local media mechanism, *"it's almost hamstrung us as far as information sharing."* Unreliable media coverage reduces RAP process visibility and constrains the public's awareness of the AOC program.

Many communities' local media capacity has greatly diminished in the social media era. However, the reliance on social media and personal networks is not an effective substitute for a strong local media presence. PAC members noted struggling to communicate with the public through social media because it's *"done in narrow silos."* Communication between the PAC and the community is constrained when it relies on personal relationships: *"It's all, 'I missed that email' or 'I didn't get that email.'"*

PAC members also expressed concerns that local press coverage is not always honest or fair in its characterizations of the problems, players, and progress in their AOC. In some cases in the past, *"the press had also been extremely unhelpful by unfairly characterizing some of the existing industries."* For example, when CSO discharges get reported in Saginaw, the reports do not inform the public that discharges are adequately treated to protect public health: *"and to this day you read in the newspapers… people believe that the Saginaw River is full of sewage."* The problems have been *"grossly*

overstated" by the press, particularly in times of crisis, to the point that PAC members have been discouraged from seeking publication: *"You're reluctant to discuss it with them, because you'd read the article and you didn't even recognize the description [you gave]."* Finally, PAC members expressed concerns that local media decline to report on PAC successes: *"it is really difficult to get them to report on positive activities."*

Lack of interested individuals

When interested individuals in a community are no longer active in the institutions they represent, the bridges between organizations built by personal relationships do not rebuild automatically. Often, *"people retired and continued their involvement on the PAC, so it stayed with the individual rather than the entity,"* because the individual's replacement may not be interested in participating in the same professional networks of their predecessor. One frequent refrain of PAC members was that some critical contacts to larger organizations retired, and their organizations never sent a replacement. A retiring community network weakens the institutional bonds PAC members have forged with community partners, both present and prospective.

When it came to interested individuals in government organizations, part of the lack of interest was attributed to the challenge of elected official turnover:

> *People aren't around in state offices long enough to develop these associations, or develop these interests, or develop these commitments. They're either getting re-elected, or they're gone.*

Turnover adds to the PAC's workload because now *"you're educating new people instead of maintaining relationships."*

Communities disconnected from experts

AOC sites in some cases are well-studied, but by research institutions without local ties. One PAC member listed universities from three states outside of Michigan *"that came up and did investigations"* on aspects of water quality in the AOC. PAC members noted that the research by external experts lacks a strategy or systematic thread to tie many efforts back to RAP implementation. There is not always good

communication and notification between researchers and PAC members whose decisions can be influenced and benefitted by reading a copy of published studies. Researchers collecting data in the AOC *"don't have a constant presence here, but they have done a few key studies, kind of swoop in, take some measurements, and swoop back out."* Outcomes of external research are not disseminated systematically to players in the AOC program at the community level.

3. Findings

State and Federal Actors and Actions

The state and federal government agencies directing the AOC program have shaped each PAC group's ability to influence progress. State and federal agencies control funding, define criteria and process endpoints, delineate responsibilities, and delegate inter-governmental cooperation in different ways across AOCs. **Table 3.5** summarizes the state and federal actor and action factors PAC members identified in their interviews; detailed descriptions of each follow.

Table 3.5: Summary of State and Federal Actor and Action Factors

	Enabling Factors	**Constraining Factors**
State and federal actors and actions	• Consistent, flexible funding • Clear criteria • Forums for cross-PAC learning • Dedicated and involved state agency coordinator • Committed, supportive agency sponsor • Coordination between state and federal agencies • Defined roles and responsibilities	• Lulls in funding • Consternating caveats and strings attached to funding • Silos • Bottlenecks in communication between PACs and agencies • Lack of clear criteria • Lack of clear roles and responsibilities

Enabling Factors

Consistent, flexible funding

Every PAC member interviewed for this study mentioned, at least once, the federal GLRI funding for AOC programs and the state's administration of those funds through their PAC support grants. Before GLRI funding came online, the AOC program was an unfunded mandate. The introduction of the GLRI funds *"sure helped to kind of grease the skids, get things moving."* While PACs often undertook planning during the decades before federal funding, there did come the point when plans were collecting dust, and PAC meeting agendas were sparse. After the inception of GLRI, the subsequent

consistency in the funding enabled PAC groups to implement the remedial plans they had ready to go. The GLRI prioritized RAP implementation for PACs that had plans and partners but no funds: these are the *"bucket-ready, shovel-ready"* plans for management actions. PAC members noted that progress on RAP implementation required such GLRI funding: *"I don't think [OGL] would have accepted our [Stage 2] plans without having some [GLRI] money there… if they didn't have the money to do those they weren't going to put themselves in that kind of box… until they knew that it was do-able."* These proposals were no surprise to the agencies when it came time for bureaucratic approval to release the GLRI funds. Due to cooperation and connections, PACs are enabled to make progress because *"there was some backing before it was sent off for final review."*

While consistent GLRI funds accelerated implementation of fully developed, agency-backed plans, it is crucial that GLRI funding for remedial actions not be overly rigid concerning implementing funded plans. PACs *"could get the money you would need to finish it, and it allowed modification of plans and improvement of plans as the process went on."* The consistency of GLRI funding has enabled PAC groups to gather steam as they move through RAP implementation:

> *It wasn't until we knew that GLRI funding was going to come along that we could see how much progress you can truly make… We've been getting these PAC grants for a very long time, which has helped… keep [up] momentum.*

The PAC support grants are valuable to the group because the consistency and flexibility of the funds enable continuity in the PAC's organizational capacity. Consistent PAC support grants have been a source of *"sustainable funding"* invested in supporting PACs' organizational capacity include *"small packets of money… [that] have gotten them through some lean periods."* The money from PAC support grants enables PACs to fulfill their needs for technical capacity, outreach, and continuity in assets like staff and contractors. PACs can direct the funds to *"hire consultants if we needed to specialize in doing certain tasks"* that enhances the technical capacity of their work. Grant monies may flow to partner or umbrella organizations to provide community outreach capacity to the PAC's work: *"so we're able to build a website, we're able to put out brochures, we're able to put out swag items. That's part of keeping the community engaged."*

Clear criteria

For many years early in the AOC program, PACs and states lacked a specific, uniform standard or threshold for attaining restoration of an impaired beneficial use. The agency-set standards were enabling to PAC groups:

> *[If you] never really quantify or clarify and just… be present and come to lots of meetings and say we need money to fix all of our problems, we need money to fix all our problems… you'll never get any clarity or end point on anything… [Defining the criteria] was a really big step, and good.*

At the behest of GLNPO, the OGL defined criteria for BUI removal in the published delisting guidance, which are currently in a revised format. PAC members highlighted the *"top-down move" "driven by the agencies,"* where the state *"actually put criteria together"* for how to remove a BUI, and published its guidance. The criteria were enabling because *"the agencies, state and federal, worked together enough to force the local citizen groups to write down, finally, what exactly the impairments are or are not."* In many cases, PAC members noted that many great benefits accrued when PACs accepted state criteria or at least used them as reference points for developing their tailored local criteria. Either way, this move helped to keep PAC groups *"focused on the AOC."*

Clear criteria also helped orient the PAC towards defined goals, and shifted the mindset of the members to:

> *look at this from the standpoint from trying to define the endgame. How do we win this game? As opposed to, what the heck are we trying to do here? And that really did change the mentality of what this whole effort felt like. And that's why I think it bought into fairly quickly, and so you see that process having been followed.*

The unambiguous criteria for the endpoint of the process were important for engaging private sector stakeholders who wanted certainty: *"But the idea of the industry is 'OK, we'll clean it, we'll do that. We'll take responsibility. But you've got to tell us exactly*

[what to do].'" Clear criteria helped define the endpoint and incentivize industry to buy into the RAP process.

Forums for cross-PAC learning

The cooperative federal and state support convening the Statewide Public Advisory Council, or SPAC, is *"a worthwhile investment"* because the SPAC is instrumental in providing PACs with opportunities to learn from one another and interact with their elected officials. During times of slow progress, SPAC provided solace to PAC members: *"It was somewhat helpful to go to the SPAC meetings because… all of a sudden you weren't alone. Everybody was suffering at the same level you were."* Learning from one another's experiences scraping resources together was *"valuable,"* as was the opportunity to educate *"our elected officials about a local issue that they could easily ignore, and we're actually selling it."* SPAC also became a venue that strengthened federal and state communications with PAC members.

Dedicated and involved state agency coordinator

Numerous PAC members recognized their OGL AOC Coordinators are markedly *"dedicated and excited," "more responsive,"* giving *"excellent participation"* and finding *"a lot of synergy,"* contributing *"a positive influence"* as a *"key player,"* and are a *"steady person"* who is *"very involved" "without being overbearing"* and who is *"an affable individual… want[ing] a good working relationship."* Many participants characterized this as a trusting, appreciative relationship. In several cases, PAC members attested that the OGL and their AOC Coordinator are equally committed to RAP implementation progress, and part of that equanimity in the relationship stems from the two-way communications between the PAC and the AOC Coordinator: *"the feedback between [the] state agency and [the] PAC… goes back and forth; that's really important."*

While it's not a comfortable position because it occasionally entails telling the PAC no when they want to hear yes, PAC members noted that AOC Coordinator leadership is beneficial: *"the OGL have shown up and provided oversight and feedback and maybe a reality check."* A strong relationship between the AOC Coordinator from

the OGL and the PAC enables the group to focus on making progress: *"You have to have somebody that brings the sides in on to identify the problem, or it just kind of goes everywhere."*

Committed, supportive state agency sponsor

Over the course of the AOC program, the Michigan state agency sponsoring the AOC program varied in its commitment and support for RAP implementation and PAC engagement. PAC members identified that the OGL is now a supportive state agency sponsor with interests the PAC shares: *"we've had that support to work cooperatively towards our mutual goals of cleaning up the river."* PAC members across most cases commented positively about the OGL's commitment and support as the AOC program guardians: *"It was like a curtain opened. The Director of the OGL and the Assistant Director attended our SPAC meeting and said: 'What are you doing? How can we help?' And we're like... Oh?!... We're not the voice in the wilderness anymore."*

The value of the PAC's relationship with both federal (GLNPO) and state (OGL) agencies is apparent in PAC members' statements about concerns for life after delisting: *"we just don't want all of the attention and money just to completely disappear and walk away."* The benefit of a committed and supportive agency is that PAC members remarked the agencies are responsive to the needs of the group:

> *[When] the state said we want to support this [AOC], we want to move it forward, not only could they provide some technical support, but they worked through some of the minutiae of getting grants, and here is what the state's looking for, and here's the direction we're heading.*

Coordination between state and federal agencies

PACs benefit when state and federal representatives coordinate across program and agency boundaries on AOC programming. PAC members noted that it was helpful when their AOC Coordinators were active liaisons, bringing the resources of other state and federal agencies to the PAC as a joint search for answers or to implement solutions: *"they would be a liaison to ensure that we had access to the state experts."* A few PAC members described being *"lucky"* to have connections of their own to other state and

federal agencies. For the rest, AOC Coordinators are in a position of a natural fit to be the *"conduit"* between the PAC and the constellation of government bureaucracy: *"they have the ability to gain information that's been extremely helpful in the delisting process."* AOC Coordinators have valuable insight, relationships, and contacts that contribute to coordination between government units.

RAP progress is enhanced with intergovernmental cooperation because *"communication has improved greatly"* among all the players. In one example, communication between the PAC and EPA facilitated improved environmental outcomes of a management action:

> *the habitat's better than when we came in, that has been some pressure we've put on EPA saying, thinking about what the habitat looks like… And to EPA it was a really good engineering solution… so there has been some back and forth.*

In many instances, PAC members would reflect jointly on OGL and GLNPO in consideration of their partnership or teamwork. PAC members primarily evaluated their relationship with GLNPO in the same breath as relationships with the state: *"that close relationship we have with [OGL] and EPA is helpful. They're really involved,"* asking: *"How can I help? What do you need? What can we do? What are you looking to do? I think that helped out a ton and expedited the process."* PAC members characterized the federal/state teamwork as *"cheerleading"* for the PAC's progress. PAC members noted that physical attendance at meetings demonstrated both agencies' commitment to being an equally committed partner around the table.

Defined roles and responsibilities

The extent to which the State's roles and responsibilities are unambiguously defined and delineated from the PAC's roles and responsibilities influences PAC members' sense of progress. PAC members benefit from the clear division of labor: *"we're not supposed to be doing the work. We're just supposed to be advising,"* where the PAC approves *"OGL-written documents"* when their group is satisfied with the documentation.

Constraining Factors

Lulls in funding

PAC members explained that *"lulls of funding"* caused inertia and set PACs up for contrarian bickering. Without funding, PACs claimed they would *"still just be kind of sitting here; we'd basically be just holding a meeting as a debating society because that's about what it was for a while."* To have plans with no way to move forward *"made getting anything done almost impossible. All you could do is complain… it just fostered people sitting around and complaining."*

Lulls in funding also may disrupt continuity in hiring part- or full-time staff because PACs are *"grants-based, we live hand to mouth."* Inconsistent funding constrains the PAC's organizational capacity, for example:

> *We've gone through at least one lean period where we had to drop down to a part-time volunteer, one of the board members manning the office… they did a good job, but we couldn't do nearly as much. We almost became semi-dormant for a year until we got grant money again, so that's always a limiting factor.*

Consternating caveats and strings attached to funding

PAC members noted that PAC support grants have some consternating caveats and strings attached: *"The state is in the driver's seat, and stuck with the responsibility of doing this, and limited to being able to work within the constraints of the federal funding that drives all of that."*

Some bitterness remains about the decades when *"Michigan's commitment was totally insincere"* because they did not put their money where their mouth was. In the absence of state support, an all-volunteer committee had to rely on the resources of member organizations. However, not all partners were so generous or endowed to support the PAC with needed resources: *"There was a time that some of us involved in the process were getting in trouble for using resources from our own facilities to keep the process running because you couldn't even buy [some] paper."* PAC members noted that luck was the only difference between PACs with and without organizational capacity

during the unfunded era: *"the only reason a few of us had any funding was because we were either talented or lucky at getting grants, or someone got lucky and got a big donor for a few years."*

There is also frustration with the OGL's rationale behind PAC support grant deadlines and priorities, which reflects an asymmetric relationship between OGL and the PAC: *"[OGL is] pretty much set on [PAC support grants] as take-it or leave-it thing, which is frustrating for a group that… would like to feel that we're more of a full partner."* Some PAC members asserted that the OGL is making *"seemingly arbitrary decisions"* about funding and priorities. OGL rejecting PAC funding requests discourages PAC members and undermines their relationship with the OGL:

> *There's the whole frustration and the old golden rule, well they got the gold, so they make the rule, so whatever we want to do here, we still [have] got to get their permission… [so] there's some built-in friction.*

Silos

PAC members in several cases mentioned there are *"silos that are always hard to overcome"* in pursuit of inter-agency coordination. PAC members recognize that state and federal AOC program agents do not automatically get attention from other agency programs, recognizing the *"turf block"* there. In one case, PAC members were highly aware that other agencies *"don't pay attention to another program called the Area of Concern program."* Their experience was that federal representatives from another regulatory agency department *"didn't even really connect that"* their waterway was also an AOC. PAC members noted that other agency programs do not *"really understand"* the AOC program.

Bottlenecks in communication between PACs and agencies

Several PAC members expressed the sense that their AOC Coordinator as their point of contact to the world of government bureaucracy was somewhat of a bottleneck: *"because everything has to go through them, that one person, so that was a challenge."* PAC members are primarily looking to access technical assistance through interagency coordination. On the one hand, some want the AOC Coordinators to *"act on [the PAC's]*

behalf" to bring in government experts for assistance. On the other hand, others feel that going exclusively through AOC Coordinators for intergovernmental communication bogs down progress. Members claimed the formal channels are slow: *"it was OGL or DEQ saying to DNR we need you to do this and they'd say, oh, get on our five-year monitoring cycle, and we'll do it,"* which PAC members expressed would be too long to wait for new monitoring results.

In many cases, the PAC members do not regularly communicate directly with other agencies, and the bottleneck of working only through OGL translates into missed opportunities:

> *They don't use us as well as they could, I think if they recognized us as a positive communication force more than they do, or recognize how they could use us, I think they could benefit, advancing all of our goals of restoring the [AOC]. So, we felt a bit underutilized over the years… it can be hard to get regulatory agencies to take the time and trouble to use us as a resource.*

Lack of clear criteria

PACs were *"struggling with figuring out a target"* when there were no criteria enumerated by GLNPO or OGL. Once the governments ironed out their standards, in several cases, community members were not always satisfied with the criteria as going *"far enough."* However, despite aspirations for cleaner criteria:

> *if you didn't accept the state's criteria, then, you'd have to come with funding on your own. So they kind of said, here's our state criteria. You can accept them, or if you don't, you're kind of on your own to get funding to fix the problem.*

Lack of clear roles and responsibilities

PAC members had different perspectives on whether the state agency is obligated to seek PAC advice on RAP implementation. One PAC member observed the obligation of consulting the PAC is a *"push-me-pull-you kind of thing. It's a requirement of the AOC program, so to some extent, the [M]DNR, or OGL, needs to have us there because they have to work with Advisory Councils."* While there may be a requirement for

agencies to work with PACs, members have observed agencies lacked interest in managing public input: *"everybody involved would agree that, sure, that's a legitimate thing… doesn't make it any more pleasant."* Some PAC members are dissatisfied with the involvement of, and their relationship with, their AOC Coordinator.

Questions arise not only about who is responsible for completing management actions but also about who is responsible for tracking progress, for driving the RAP implementation agenda, for running the PAC? *"There seems to be some tension with this PAC… [about] the State's roles and responsibilities and who is ultimately responsible for the cleanup?"* Some PAC members feel *"the [M]DEQ [and] OGL, could be and should be doing much, much more,"* while another posited: *"the [State OGL] reps, at that time, had personal agendas."*

In two cases, PAC members identified *"some dysfunctionality between the PAC and the State"* AOC Coordinators: *"there isn't always agreement on priorities and projects"* past or present. From the perspective of one PAC member: *"I started to see where [other PAC members and the Coordinator] were just at odds… I guess I see a little bit of distrust…"* Distrust relates to the challenge the OGL faces because *"their role in having to say no sometimes maybe upset [PAC members]."* PAC members' dysfunctional relationship with their OGL AOC Coordinator may have deeper roots for some participants, depending on their view of government: when *"you have somebody in the room who knows better you ought to listen to them, but you don't trust them either."*

The relationship that PACs have with the GLNPO/OGL through the AOC program is based on the AOC designation. PAC members have fears about the future when delisting means the agencies are no longer obligated to fulfill their roles and responsibilities to focus on and communicate with the PAC, *"so you almost lose a little bit of like, your safety net there."*

3. Findings

Internal Factors

PAC Origins, Structure, and Function

Across the AOC program, PACs originated in unique ways, created by, or responding to, state initiatives to begin the RAP process. Subsequently, the PACs have evolved their organizational structure, and functionality over time as their group leaders, members, and visions change. A PAC's origins, structure, and functions all uniquely shape the group's ability to influence RAP implementation progress. **Table 3.6** summarizes the factors about the internal organization of the PAC that members identified in their interviews; detailed descriptions of each follow.

Table 3.6: Summary of PAC Origins, Structure, and Function Factors

	Enabling Factors	**Constraining Factors**
PAC origins, structure, and function	• Bottom-up origins • Engaged and committed Board of Directors • Dedicated, paid point of contact for PAC • PAC open membership • PAC meeting accessibility	• Inconsistent Board of Directors engagement and communication • Ambiguous membership definition • Inaccessible PAC meetings • Unclear organizational structure

Enabling Factors

Bottom-up origins

When members of the AOC communities lead a PAC's formation, or subsequent operation, PAC members identified their group's structure as bottom-up:

> *I think the PAC also became a trusted partner to the public, or a trusted entity*
> *because it was made up of community members, people that were interested,*
> *people that were here. It wasn't top-down. It was classic grassroots. I think that*
> *had a huge influence on the quick progress and having positive progress in the*

community. Rather than waiting for Superfund or whatever, like, it's our community. Let's take care of it.

Members from PACs that identify as bottom-up groups mentioned that it was important for the process to be community-oriented. In several cases, the community's bottom-up structure originated in response to the state's AOC program, and part of what unites the group is the pursuit of accountability: *"having the citizenry, the PAC people, the watershed council people, shepherd the whole thing, and watch-dog it, I think, is probably the glue that holds it together."*

PAC members expressed that fulfilling the watch-dog role is essential as a bottom-up group to *"be vigilant and paying attention and playing by what we know to be right and wrong;" "some [PAC members] care about seeing the agencies do right… [to] hold peoples' feet to the fire."*

In other cases of bottom-up PAC groups, the *"community piece has to be strong"* because the trust of the community enabled the PAC to represent them as liaisons. One PAC member noted that *"serving as a liaison between the regulatory agencies and the public"* is the PAC group's *"most important role."* These PACs are a conduit to agencies involved in the AOC process: *"people count on [the PAC] to play the role that we play… keeping this in the public eye locally"* as the *"voice of the community."*

> *We tell people what's going on. We're sort of the conduit to the public because I don't think the public would know much about what's going on, on a regular basis, if it weren't for the PAC.*

Bottom-up PACs were able to secure community buy-in for the RAP implementation process: *"I think that because the [PAC] members are mostly from the communities, that made it pretty smooth."* It was important that PAC members were relatable to their community audience:

> *It was great to see someone who was able to explain why [the cost of a remedial action is] worth 176 million dollars in ten years and ripping up all the streets… it was good to have someone like [member name] there who is like: 'I have to live here, too. Yeah, I have to drive around all these detours. Yeah, I want to be able*

> *to drink this water. Yes, I want to be able to fish here. I want my grandchildren to*
> *have that same option.'*

The messenger matters as much as the message when it comes to soliciting community buy-in for remedial plans and their management actions; communities regard bottom-up PACs as credible messengers.

Engaged and committed Board of Directors

In every case study, the PAC composition is an *"all-volunteer Board of Directors"* that makes decisions. PAC members noted the benefits of an *"active and engaged"* Board. A *"good group of regulars"* serves as a stable foundation for the PAC's Board of Directors: *"the leadership itself was fairly the same group of individuals in that regard, so I think that helped."* The benefit of a tight-knit circle of engaged, committed Directors is that it enables understanding of the perspectives of all the members: *"we all know who or where each other is coming from… some things don't need to be said, at least among the core group."* For groups with larger boards, subcommittee formats enable communication: *"and we just meet regularly and communicate regularly and work together."*

Dedicated, paid point of contact for PAC

Members noted that a dedicated, paid point of contact was a key factor for enabling RAP implementation progress. One PAC, incorporated as a 501(c)3 non-profit organization, directly employs a full-time staff. Another 501(c)3 incorporated PAC has fiduciary capabilities to pay their own part-time staff and hire contractors. These dedicated paid personnel endow the PAC with the human resources capacity to make progress on RAP implementation. PAC members emphasized that these paid, dedicated individuals make a big difference to organizational capacity because they undertake PAC business and keep the group's work on RAP implementation organized and visible. Paid staff or contractors enables *"organizational stability"* because they can facilitate PAC planning, including *"lots of strategic plans, communication plans, outreach… all these different things to help us… function."* PAC support grants enable the groups to compensate staff for their time.

3. Findings – Internal Factors: PAC Origins, Structure, and Function

A dedicated point of contact is vital for the PAC to fulfill its role as the voice of the public. For example, in Kalamazoo, their staff is a more reliable contact for the public than a volunteer board member filling that role:

> *It's really staff. It's that you can call our office. We have an office number, and you can call, and someone will call you back. Whether I hand that off to a board member, but they aren't engaged the same ways as... a full-time employee.*

Not all formally incorporated PACs directly hire full-time staff for their organizational capacity, communication, and technical needs. Other PACs contract consultancy firms to do heavy lifts for specialized tasks, which is enabling because consultancies are time- and money-efficient: *"far more effective than a bunch of volunteers meeting once a month if they happen to all show up at the same time."*

For the other cases where PACs are intangible, the PAC has established a fiduciary partnership with a local incorporated nonprofit group. A fiduciary enables the PAC to outsource some of its administrative burden to staff at these partner organizations. For example, another local water quality group would act as an *"arm"* of the PAC and fund a paid coordinator or part-time secretary to work on a subset of RAP implementation and PAC meeting tasks. PAC members noted the benefits of a fiduciary. The PAC *"needed an agency to receive grant funds"* and began utilizing the human and capital resources of another group to function as an 'arm' of the PAC. For example, in the St. Clair River BPAC: *"we realized that as funding was decreasing, we were going to look outside for funding so that we needed a fiduciary arm... that's why [US non-profit arm of BPAC] Friends of the St. Clair River was formed."* These fiduciary arrangements enable the PAC to rely on and contract out certain administrative, technical, and community engagement work to these special partners linked to the PAC. In several PACs, an 'arm' group *"manages all the grants and staff"* and *"most of the technical resources"* for the PAC. Examples of PAC fiduciaries in the case studies here include Conservation Districts and 'Friends of' non-profits.

3. Findings – Internal Factors: PAC Origins, Structure, and Function

PAC open membership

Many PAC members noted that community participation enables RAP implementation. Some explained that their PAC promotes public participation by codifying membership openness:

They suspended the membership requirements, that was discretionary within the bylaws. There were also the geographic-based classes [of representatives on the PAC], I think they just got rid of that altogether. Now anyone can go.

The elimination of membership barriers is important to public accessibility and facilitates participation. One PAC leader explained, *"I really wanted to make sure that we did it so that when people were done, they felt like they were a part of it."* Their members confirmed, *"Anybody could come to a meeting at any time… I felt very welcome when I joined."*

PAC meeting accessibility

Of the four cases with BUIs still listed, three hold their PAC meetings on weekdays after bank hours. Public access to PAC business is a crucial mechanism for ensuring viable public input. Accessibility is vital to the PAC *"because then you have people participate… And you're in the room, and you're finally talking about this stuff."* Open membership enables the public input mechanism for the RAP process.

Constraining Factors

Inconsistent Board of Directors engagement and communication

When the Board of Directors convene and communicate inconsistently, the function of the group suffers and progress stalls. Early in the process, several of the PACs had a large Board of Directors that constituted a *"robust organization."* Over time, however, these PACs *"dwindled"* to a *"core group"* of committed and engaged Directors. In one case, *"things died down [to] where the executive committee effectively became the board. They stopped doing external communication,"* and when meetings

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"kind of dropped off, things had stopped working." The Board's communication with itself, as well as to the public, is critical to fulfilling the obligation of public input in RAP implementation. Several PACs stopped conducting meetings over long stretches of time.

Directors sometimes disengage from their positions because their contributions are voluntary and unpaid. Progress and decision-making are slower, but the Board volunteers cannot be coerced into decisions: *"when it's a volunteer, it's a volunteer. You're appreciative if they give you a little bit of time, but you can't make them do anything."* Participation from the volunteer Board of Directors is enabling, but it is not a top priority for every volunteer: *"as an organization… [we] have a lot of people who bring specific and useful skills and talents to the table, but we don't get paid to work together."* The transaction cost of participating on the Board can outweigh the incentives to participate because *"one of the tricky parts…when you're trying to participate at the [PAC is that] sometimes you've got your own work to do."*

A disengaged volunteer Board constrains a PAC group's ability to act nimbly and decide swiftly. For individuals working on RAP implementation, the PAC Board decisions delay progress: *"if [the Board] doesn't decide this week it doesn't matter. But I have a grant that I need to show progress on, so sometimes I would like it to work a little quicker than the rest [of the Board]."* Therefore, when Directors are not engaged and communicative, it constrains the consultants, staff, and agency Coordinators working with the PAC, in their ability to plan ahead for RAP implementation.

Ambiguous membership definition

PAC structures and membership definitions vary across cases and over time. While some PACs have clear membership definitions that facilitate progress, in other PACs at other times, ambiguous membership has the opposite effect and constrains progress. In most cases, the PACs are directorship groups and membership is unambiguous because all members serve as Directors. In other cases, the PAC is a membership organization and the membership at-large elects Directors to the Board. In cases where the PAC is a membership-type group, the membership definition was or is ambiguous. In one case, the PAC has an online application form for membership, but

PAC members noted the way the Board handles membership is far less formal: *"I think we're at a point now where basically you can just say I want to be a member."*

In this case, it was unclear how the PAC would discern interested parties from voting members who elect the Board. Vague membership definitions spark disagreements about the commitment of the voting members: *"They want to make sure that people are vested in decision-making. That you can't just show up for a meeting once and then drastically change the path that the [PAC] has been working on for decades."*

In the past, the PAC generated income from membership dues, but membership through required contributions became *"a pinch point for some board members."* Many PAC members believe that membership dues are a barrier to public participation in the PAC. The value of paying dues to participate in the PAC is unclear: *"What do we get out [of participating]? What is this money here doing?"* One PAC was considering transforming from a directorship to a membership organization, but *"we always worried that we would not be able to sustain interest in people paying dues."* Ambiguity in the value of participation and actual costs to participate are both considered a barrier to public involvement in the PAC.

Inaccessible PAC meetings

Not all PACs hold their meetings after bank hours when most members of the public are free to attend. PAC members acknowledged their group meetings are relatively inaccessible: *"Just this whole business of meeting in our little room over there… ok, sure, it's open to the public—if they can find it."* When PACs hold meetings during the weekdays, the PAC participants tend toward retirees and individuals with professional interests. Some participants get paid through their job for their time attending PAC meetings. For example, participation is *"easier for [the government and industry] because they have the people. That's their job; that's what they do."* Conducting business during typical working hours constrains broader public participation in the PAC.

3. Findings – Internal Factors: PAC Origins, Structure, and Function

Unclear organizational structure

      Other members expressed some concern that their PAC's organizational structure was nebulous, unclear, and did not lend itself to clear accountability to the public: *"it was never properly constituted… I just felt that it would have been much more transparent and accountable."*

PAC Process and Management

Across the AOC program, several factors shape how and why PACs handle their part of the RAP implementation process in different ways. Progress is influenced by how leaders manage, how they make decisions, (if and) how the group defines when their waters are clean enough, and the continuity of members' engagement in the process. **Table 3.7** summarizes the influential factors of the PAC's process and management that members identified in their interviews; detailed descriptions of each follow.

Table 3.7: Summary of PAC Process and Management Factors

	Enabling Factors	**Constraining Factors**
PAC process and management	• Strong leadership • Membership continuity • Detailed, attainable Remedial Action Plan • Consensus-building strategy • Common goal • Future planning • Facilitation • Clear endpoint	• Poorly managed meetings • Participant attrition • Demanding workload • Unclear Remedial Action Planning process • Lack of clear endpoint • Majority rules

Enabling Factors

Strong leadership

Many PAC members said a strong group leader helps to focus on objectives and fosters mutual respect among PAC members, which helped settle differences and enabled the process to move forward. PAC members described the leader(s) of their group as their *"keystone,"* because *"they have a very good sort of guiding presence."* PAC members describe their leadership as action-oriented individuals: *"a champion that has a passion to see things get done."* Keystone leaders are highly committed and engaged in the PAC; one member noted that their PAC leadership is *"more than just chairing a meeting... They're involved."*

3. Findings – Internal Factors: PAC Process and Management

Leaders run PAC meetings and conduct PAC business as *"true professionals,"* which helps focus the group on their objectives:

> *I think we had really effective leadership… they definitely provided the leadership to ensure that the group stayed focused and stayed on task… [the] leadership of a group like [the PAC] is certainly very important.*

Strong leaders enable PAC members to accept decisions out of respect for the leader and the process: *"[Our leader] was fantastic… even though I didn't always agree with [them]… they were great. They did a good job. They kept us chugging along."* Another member noted their leader was diplomatic:

> *And I know that they're very responsible about keeping our meetings on track, or on task. So if you ask a question that's distracting, they'll say, good question. But it's not part of the agenda at this time. So we'll get back to that at the end.*

Membership continuity

The *"long-term consistency"* of PAC members endows the group with *"institutional memory."* The institutional memory of a group's participants enables their decision-making to be informed by the group's history: *"to have that historical perspective and to know… what we've already done and what we've already tried… that's very valuable."* Continuity of membership enables the current group to focus on their objectives: *"Just the experience factor… we know that this isn't going to work because we talked about that before... [It] provides a more of a focus as to what's do-able."*

Detailed, attainable Remedial Action Plan

PAC members noted that a clearly articulated RAP enabled progress because the plans clearly defined the problem and focus of remedial actions. When RAP documents are sufficiently self-explanatory, PAC members benefit from enhanced understanding: *"you had a very clear idea [from the RAP] of what exactly we needed to do."* Detailed RAP documents enable progress because members have *"an incredible base to work with;"* when *"you write a good Remedial Action and everything else just kind of falls into*

place." Detailed plans facilitated RAP implementation because *"if you have a plan, your chances of getting money are a lot better."* Thus, remedial plans most likely to get support and resources were the attainable, *"reasonable RAPs"* that were detailed and implementation-ready. As one member emphasized:

> *I credit the fact that we were there at the table still working, still developing these plans, with the fact that now we've made all this progress. Because then when the money finally did become available, we had… [a] plan ready to go.*

Consensus-building strategy

In some cases, PAC groups benefit from a consensus-seeking approach to the RAP process. PAC members described meetings where *"we discuss until we all agree,"* and *"arrive at the best path, jointly."* Reaching consensus took many long, sometimes testy, meetings to understand each others' perspectives:

> *We put together that committee and had many, many, many, very long meetings. And we stayed at the table—and I'm very proud of this—until we reached consensus. And we didn't vote on everything. We stayed and we discussed and we brought all the different points of view into one spot.*

PACs benefitted from focusing on solutions and disengaging from positional negotiation or blame-seeking: *"we weren't there to shut people down or run [polluting industries] out."* The solution-focused management of the RAP process *"helped keep [the] industry at the table."* The PAC was *"not trying to have a forum where [the] industry has to come in and be yelled at,"* because *"we did not feel that was our role. So I think we were more of a let's fix the problem than anything else."*

Common goal

Many PAC members stressed that their group's focus on a common goal enabled their perseverance and progress:

> *The reasons why I think that we've been successful is that I have seen what can happen when different stakeholders, private industry, public agencies, concerned citizens… when they all define common goals and work towards them.*

3. Findings – Internal Factors: PAC Process and Management

PAC members described their groups as *"very goal-oriented"* and that these goals united them. *"I think there truly was a lot of glue to reach those goals"* and keep the participants at the table pursuing solutions: *"A big reason for that… [is] the people who come to join this group are doing it because we want to actually do things… this group… is oriented around… what can we do."*

Future planning

In several cases, PAC members discussed their strategies and lessons for the future *"to get ahead of some of the issues"* they face as a group. Planning for the future may concern queuing up *"implementation-ready plans for addressing the remaining BUIs"* with future federal funding. Other planning also includes looking ahead to life after delisting: *"and so a lot of our PAC grant activities now are transition activities."*

Facilitation

In one case, professional facilitation was hired to aid the launch of the PAC, *"and these people were excellent. They taught this large, diverse, and mostly inexperienced group how to focus, how to make decisions, and how to set goals."* In a couple of the other cases, PAC members expressed the potential benefits of facilitation, noting that their group could have benefitted from such a conflict-management intervention during challenging times.

Clear endpoint

PAC members identified that the clear Stage 1, 2, 3 approach to the RAP process was easier to follow than the OGL's current piece-meal RAP update approach: *"it was like, write the plans, come up with the solutions, and begin to remove the impairments… there was no mystery about the process. It was just how you accomplished it."*

For some members, the top-down process that PACs had to follow helped with coordinating the RAP implementation: *"having a prescribed process, having everybody singing from the same songbook about what needed to be done."*

Constraining Factors

Poorly managed meetings

Some PAC members reflected on their PAC meetings and noted that distractions, sidebars, or other issues could get the agenda *"off the rails relatively quickly."* Procedural rules may exist in bylaws but are scarcely or capriciously enforced in meetings. Poorly managed meetings distract the PAC from focusing on its objectives. Leadership would *"ideally minimize any kind of digressions"* in meetings, but PAC members noted that not all distractions are intended to disrupt, some people are just talkers by nature. *"Because they start talking about a subject and all of the sudden we get into all of the minutiae that's around it, they don't look at the key points… But… people like to chat!"*

Some digressions can include hours of discussion about the particular business of a single BUI topic. In-depth conversation at PAC meetings is *"not going to be very relevant to people"* and members with other interests, who may tune out or drop out of the PAC process.

Another challenge of *"loosey-goosey"* meetings is that a lack of procedural order can perpetuate misunderstandings between participants. One PAC member explained their PAC's indecorous conduct at a meeting:

> *[Members] kept butting in and talking over the top of other people who were trying to express themselves. I think that's very unproductive when that happens… We have a lot of knowledge, and a lot of talent, and a lot of experience in that room… [but] we could be taking a lot better advantage… if [members] would just take the time [to] talk and listen to each other.*

The PAC meetings also use the *"clunky lexicon"* of AOC jargon in communications. One PAC member, a university professor, admitted that during the early years of their participation, the PAC meetings *"might as well have been in Mandarin… because I had no idea what they were talking about. And I had a pretty good background in some of this stuff."*

3. Findings – Internal Factors: PAC Process and Management

Participant attrition

Significant membership declines constrain PACs because RAP implementation cannot occur through unilateral action by a lone participant; PACs need their members to be effective at reaching out to their organizational networks for resources, expertise, and support. Participation by members and leaders of a PAC's *"core group"* are essential *"because this type of work is much, much too big for a couple [of] people."* The PAC *"need[s] that core group. If they start to falter, you're on your own now, and it's really bad. So you can't do it alone."*

However, that's precisely the predicament many PAC members find their group in today, due to their loss of members over time. One member expressed concern *"because so many of us have been doing this for so long, and we're getting old."* PAC members noted that the group's participant attrition rate over the long-term disrupts the PAC's institutional memory. One challenge associated with participant attrition is the loss of institutional memory: *"you lose the continuity of what's happened in the past."*

Participant attrition also disrupts the continuity of the PAC's organizational capacity. For example, PAC members identified the challenge of recruiting their replacements:

> *I think that going forward, those of us who… have been doing [this] for so long, you know, we're going to be hard to replace… I worry about the next generation of advocates, are they going to be there?*

One PAC member noted that they were ready to step away, but they are worried their departure will leave a leadership vacuum: *"I wish there was somebody else that would be or could be [involved in the PAC]. But I'm afraid that's not going to be the case, I don't know."*

However, some leaders just had to walk away from the PAC, without securing a replacement or preparing junior leadership: *"there [was] a vacancy there."* The PAC's organizational capacity suffers when participants leave the group without a replacement: *"we're very low on membership… [it is difficult] keeping up that stamina on the membership, it's been a long haul."*

3. Findings – Internal Factors: PAC Process and Management

Demanding workload

The demanding workload of the RAP process constrains PAC members value participating in the process. Particularly for volunteer members, the workload of conducting PAC business sometimes makes the cost of working greater than its benefits. For example, fulfilling the terms of grants can be a time-intensive endeavor:

> *These grants that we get have pretty specific mandates. It's pretty hard for an all-volunteer Board of Directors with people that have jobs or other responsibilities… to actually put a lot of time into these things.*

PAC participants also lose focus because of the tedium of the workload: *"it's a pretty tedious group. I mean it's... tedious work."* For example, in one case, *"we probably spent the last six months editing and re-editing a two-page document."* Even the most dedicated, long-term PAC members noted the constraints of such a workload: *"for me, it was awful because… I'm involved in so many things… To sit and read these [reports]… I dread them."*

Additionally, the PAC workload *"is not spread throughout"* the membership evenly, *"so some people definitely carry more."* For those PAC members, including leaders, carrying heavier workloads for RAP implementation, it can be a lot to juggle:

> *I wouldn't say the workload is huge, but [there are] a lot of different aspects to it. Keeping all those straight… keeping all the parts together. And not forgetting something you committed to do… is really, really tough.*

One PAC leader observed: *"[There are] so many… ups and downs involved in keeping the organization alive from the time that this happened to the time that something gets completed. [It]… involves a lot of stomach lining."*

In the course of 30 plus years, the history, accomplishments, and track record of a PAC group is long and complicated, *"unless you're intimately and continually involved in it, it's really easy to get lost."* Keeping track of PAC business over time is not easy, even for 'core group' members in PACs: *"to be honest over a while it gets sort of overwhelming."* For one PAC member in White Lake, the demanding workload of

delisting eliminated any interest in continuing the work after delisting: *"I'm not busting my ass to do it like I did before. It's just too much."*

Unclear Remedial Action Planning process

When prompted to diagram or sketch out the RAP process, most PAC members replied along the lines of: *"I'm not sure I can give you a clear description of that process;"* and: *"I'm sure there's a very well-defined process… [but] I don't' know what it is."* Members who joined their PAC more recently, and were not involved in Stage 1 or 2 RAP problem identification and planning phases, seemed to have a less clear understanding about the RAP implementation process than their long-term member counterparts. PAC members noted the challenge of understanding the thread of the AOC process as it progresses over time: *"I think sometimes that if you miss a meeting, or if you aren't engaged, or if you may not know the whole process… you can be constrained in how much you understand, how much information's provided to you."*

PAC members observed that the government agencies' share of RAP implementation tasks is a slow-going and opaque part of the process. For example, PAC members do not all understand the need for waiting on additional studies: *"I mean, we've got to study it some more. And some more. And some more. And it's like, when is this going to end? Perhaps I don't understand."* PAC members noted that they were not clear on the details of the many phases of the RAP implementation process: *"to be honest with you, this group here, from what I'm seeing… we're just here to be informed. And what's going on is behind the scenes… we're not involved at all."* In this case, PAC members noted delays are inexplicable: *"I'm not even sure why it's a slow process, because we're just on the waiting end. You know, I don't know what's happening back here."* Agencies are not communicating information to the PAC that provides members clarity about the process, and this lack of transparency in the process constrains PAC members' understanding about the process and status of the underlying environmental problems.

Lack of clear endpoint

Another constraint of RAP implementation is the repeated postponement of delisting, the endpoint of the process. One PAC member remarked: *"I think most people*

when they work on a project see a beginning and an end. And it began to look like there was never going to be an end." This PAC member attested that the GLRI funds incentivized the state agency to *"chase"* opportunities for projects that were outside the AOC scope, but they *"couched"* projects in BUI terms to get superfluous projects funded. *"I think it just it changed from being something that had… a real concern, a beginning, and an end, to something that was just gonna go on forever as long as there was funding available."* Without a definitive endpoint, the PAC's focus expanded past its original objectives, reducing the value of the process for many participants.

Majority rules

Some PACs relied on majority rule to guide decision-making when consensus was unattainable:

> *Ultimately the majority rules… whatever the majority of the group felt made the most sense is the way that the PAC proceeded. That doesn't mean that there weren't some ruffled feathers and some hurt feelings… some real disagreements about things… ultimately it was there was a vote, and whoever prevailed, that was the way we proceeded.*

Making decisions through majority rule helped move progress when the group faced impasse, but this left participants of the minority unhappy with the outcomes: *"everybody told the dissenters that this is the best you're going to get."* The majority rule made the participants in the minority dissatisfied with the process, but members recognized that, despite its drawbacks, majority rules was better than minority rules:

> *If you allow the minority to prevail consistently, it's going to ultimately result in the disbanding of the group because people are going to say why am I here? So I think people recognize that... we've got to deal with whatever the majority feels is the most appropriate way to proceed, but certainly there were some tough debates from time to time.*

PAC Participant Perceptions and Attitudes

Every PAC member shared perceptions, attitudes, and other 'subjective' factors that influence their group's ability to make progress. Factors include the personal dedication and motivation of members, the degree of perceived independence of the PAC, the relationships between PAC members, and members' sense of accomplishment. **Table 3.8** summarizes the influential factors of the PAC participants' perceptions and attitudes that members identified in their interviews; detailed descriptions of each follow.

Table 3.8: Summary of PAC Participant Perception and Attitude Factors

	Enabling Factors	**Constraining Factors**
PAC participant perceptions and attitudes	• Empowered by autonomy • Dedicated individuals • Motivated by holistic vision • Camaraderie within the PAC • Effective public education • Recognition of accomplishments	• Limited by state control • Public apathy • Tiresome, lifelong process • Philosophical division within the PAC • Strained interpersonal relationships • Diminishing interest

Enabling Factors

Empowered by autonomy

PAC members expressed different perceptions about their autonomy and authority in the RAP implementation process. In many cases, the PAC members' conviction is that their group *"has control over the RAP and over the PAC process."* Several PAC members identified their groups' high level of autonomy and authority as enabling their ability to drive the RAP implementation agenda: the *"PAC is important because they're the overarching umbrella, setting the goals and kind of dictating the direction."* PAC members appreciate that they are *"given some autonomy to decide exactly what [our priorities are]."* PAC members explained that they were empowered to set the agenda

and keep implementation progress consistent with their priorities. PACs are enabled to *"set the tone for whether an impairment is going to be removed or not."* Where the PAC disagreed with the agencies, *"they would gently lead [the agencies] in the direction they wanted them to go."*

The PACs' perceived autonomy is also important to their ability to maintain credibility in their communities because agencies primarily underwrite the PACs:

> *It's a bit of a contract in that way. They're not just going to give us money to exist and do whatever we want... And, to that extent, we get pushed by the needs of [the] granting agencies a little bit... But we don't feel like we can't speak our mind because we get funding from the DEQ or EPA. We've always been unafraid to take a position on something.*

In two cases, PAC members recognize that their perceived autonomy depends on their relationship with the state agencies: *"give credit to the agencies… I appreciate their guidance and everything. But they do respect our point of view."* The respect and equanimity in relationships between the PAC and government agencies are particularly important to the PAC's ability to influence the RAP implementation process. One member noted that the state agency is responsible for the RAP, but they will also *"consult with us, we may be able to have some input or push to look at certain topics… the state is writing it; we're influencing it."*

Dedicated individuals

Dedicated individuals volunteering on the PAC enabled the groups to persistently focus on solutions. PAC members' attitudes across the board reflected the *"driving force behind"* the PAC is the *"very dedicated local citizens."* Participants described their dedication as attributable to their *"tenacity,"* even *"stubbornness."* Other members noted that a sense of duty moved them: *"you really feel like you're doing something important and if you don't do this nobody else will."* PAC members noted that dedicated individuals were action-oriented and focused on solutions: *"we really wanted to get something done."*

Motivated by holistic vision

One PAC member described their holistic motivation to participate on the PAC:
*"I'm looking at the entire thing, the entire ecosystem… how it affects… our communities,
in tourism, in beauty… in outdoor recreation, all those things."* PAC members noted the
importance of participants who are motivated by a holistic connection to the resource:
*"that's the glue that's held this group together, it's an interest in something around the
AOC."* A common refrain from PAC members about their motivation is the desire to *"do
the right thing."* Some members considered these motivations genuine: *"a real divine
interest in what's happening,"* without ulterior motives or personal agenda. Some PAC
members perceived that private sector participants chose to make their resources
available to the AOC program because *"they were trying to do the right thing."* PAC
members observed that participants with motivations to do the right things for the right
reasons stay involved with the PAC over the long-term *"because the folks that have
really hung on have more than just [a] very specific issue."*

Camaraderie within the PAC

Camaraderie among PAC members enables communication and promotes
participants' understanding of one another's perspectives through dialogue. PAC
members noted that camaraderie between PAC members is important: *"we work very
well with our counterparts."* One PAC member explained: *"We all work well together,
and [we have] known each other for a long time, and we just have a good relationship…
That's important that you like the people that you have to work with. And we all do."*

PAC members noted that it's always helpful when *"the camaraderie has been
good,"* because *"we're all pulling for the same common cause."* Friendly relationships
are key because they enable regular communications between PAC meetings and enhance
the groups' teamwork capacity: *"we just meet regularly and communicate regularly, and
work together, you know. We're not working in silos."*

Communication is essential for *"reflection"* and it creates an opportunity for
"dialogue about talking about the lake and getting different perspectives and addressing

concerns." Good relationships foster mutual understanding: *"we realize well, we're all trying to get the same answer here."*

Effective public education

The foundation of PACs' public education efforts starts with public engagement: *"it's that public awareness… and therefore broader participation."* PAC members noted that early on when PACs were still defining the problems, increasing public knowledge of the AOC program and understanding of the environmental problem became a key PAC activity:

> *I think early on it was [building] the knowledge base… [Getting] people to know what was happening in the community, or what happened in the community. Why we were listed as this Area of Concern. And so even a lot of the early meetings and activities were to get the information out there, the community meetings, flyers… outreach components.*

After the PAC's public education activities targeted public awareness, then PAC education activities *"really did shift to say, it's nice that everybody knows what's going on, but let's start doing something about it."* Effective public engagement activities enabled the PACs to focus on solutions. As one PAC member remarked:

> *I think it was important for the local community people… to heighten the awareness. To say we do have these issues and we do need to care for this river. And we do need to you know, do the things that we need to do to protect it.*

Recognition of accomplishments

Many PAC members reflected positively on the value of their time spent with the PAC. One of the ways participation felt valuable was when success is recognized and celebrated, because *"it's fun to be in an organization that is moving forward, that is accomplishing something and is being recognized for the accomplishment."* Participation was worthwhile *"because it was dynamic… we were actually doing something, and we thought we were accomplishing something."*

Recognizing and communicating about the accomplishments of the PAC can be a source of pride and motivation for PAC participants: *"I think that's kind of one of the reasons why we've held together, is because the group is proud of the fact that we've communicated the successes we've had."* As they say, nothing succeeds like success: *"so you get stronger, and each one you do reinforces your confidence in being able to do more of [the tasks]."* Several PAC members emphasized that the value of engaging in the process and recognition of accomplishing progress was well worth the wait:

> *When it works, it's very rewarding... once we had the wheels greased by funding and everything, and things to start moving, it was just a marvelous… feeling. And I think those type of rewards take a while to really realize.*

Constraining Factors

Limited by state control

Many PAC members explained that federal and state governments control the AOC program, and implementation is the agencies' ultimate responsibility. PACs perceive the limitations of the state's control over the process to slow the momentum of progress. For example, one PAC member noted that the process is *"heavily dependent upon the activities of the agencies. And I really felt like… it's completely taken out of our hands, and we're just waiting to hear back from them."* Some PAC members described *"the wait on the agencies to get through their part"* as a *"bureaucratic nightmare,"* while others were understanding, though frustrated:

> *I get the workings of the government, and the agencies, and how things tend to not move as fast as people want them to move. I get it… it hasn't been awful. But, there's been times where I think things could have moved along quicker, from the agency end of things.*

The perception of the state's control of the RAP process is that it constrains the momentum of progress. Working through government bureaucracy *"created some bottlenecks as far as just getting the process pushed along."* For example, progress itself

is a motivator, and it is difficult to demonstrate value to participants in the process when progress is slow. When the state has control of the process, and it slows down, at times *"there's nothing else [for the PAC] to do except wait and wait."*

> *A lot of it is just sitting around and doing a lot of paperwork. And sorry, you know, but that's the way it works. And a lot of it is actually… pushing things slowly through this process. That can seem painfully, painfully slow.*

PAC members also mentioned the limitations of agencies' control over funding decisions. One effect of the state's funding control is that it constrains the PAC's power to set the agenda: *"whatever we want to do here, we still have got to get their permission."* In this case, the PAC's agenda is driven by agency priorities for funding, which is *"a constraint in that it requires that our activities... coincide with the goals of the granting organizations... we really are driven by our interest in the availability of grant money."*

Public apathy

Some PACs employed public engagement strategies, but the outcome was not sufficient for capturing public attention and spreading awareness and understanding about the AOC problems and solutions. The most common explanation was public apathy: *"we've tried about everything... for some reason, people aren't interested."* PAC members described attempts to solicit public input into the RAP process: *"We gave them all the information we could give. And once in a great while, somebody would show up. And most of the time they didn't."* Many PAC members described a *"benign community involvement"* in the RAP implementation process, writ large. PAC members' attitude was that public apathy constrains public participation in PAC business.

In most cases, PAC members desired greater levels of public interest and engagement than what their group has been able to achieve: *"certainly would have been helpful to have more people involved who had a role, or who were impacted by decisions of the PAC… and more community involvement."* One member noted that public apathy constrained the PAC's ability to facilitate public input into the RAP process: *"I guess*

that the [PAC] could be stronger if they had… more input from the public. And had a
public there to educate a little bit, disseminate some of the details of the issues to."

In one case, even other regional organizations were apathetic to the AOC
program. When the state reached out on behalf of the PAC to establish a fiduciary partner
with a local organization, they *"didn't get any kind of response… apparently they just*
didn't have any luck trying to find somebody willing to do it."

Tiresome, lifelong process

Many PAC members, particularly long-serving members, noted that participation
has become tiresome as the timeline appears indefinite in several cases: *"A lot of folks…*
didn't think that when they showed up for the first meeting, they were signing for a
lifetime appointment." PAC members noted their expectations early on were not to carry
forth a multi-decade project; they committed because they were told: *"the whole thing*
would be over in two to three years, no problem!"

PAC members across every case discussed whether or not they would even be
alive when their AOC was delisted: *"I've always said it's never going to occur in my*
lifetime, basically. Because it's so big and complex;" "I don't know that any of us believe
it will happen in our lifetime." There is a resigned optimism to this attitude because many
PAC members feel good about the incremental progress achieved to date: *"we can all go*
home and feel good about what we did… but don't get too impatient about going to see
[the waters] cleaned up in our lifetime." After several decades of participating without
an end to the AOC problem, many PAC members are *"tired"* of staying at the table.

Some PAC members admitted to questioning, at some point, *"why am I wasting*
my time" with the PAC? PAC members across cases noted a tricky paradox: participation
declines as progress increases *"because it seems like there is not as much to do anymore,*
so there is not that big motivating factor to get people to come." PAC members
speculated that members from business or interest groups no longer had an issue on the
table, so they stopped participating: *"I think that there were people or groups that simply*
said… there isn't anything… that's going to benefit us directly, and this process has gone
on way too long."

Philosophical division within the PAC

Divisions within the PAC over philosophical differences constrain the group's ability to resolve these underlying conflicts. Divisions within the PAC are not a matter of personal intention because PAC members affirmed that *"there was no lack of goodwill on anyone's part."* However, several PAC members explained that divisions exist between PAC members on matters of principle because there are *"different philosophies"* represented around the PAC table. Some PAC members were of the opinion that other parties *"didn't necessarily have water quality as an agenda."* Others are of the mind that private sector involvement in the AOC program was because *"they wanted to make sure that their interests were being protected during this whole process."* PAC members did not always see eye to eye, with some PAC members characterizing others as: *"not narrow-minded, just narrow-focused on one particular issue."* Some PAC members viewed other parties' expectations for solutions as *"extremely unrealistic."* Other PAC members acknowledged that there were constraints when *"the public perception [is] perhaps of [the PAC] being an activist group."* Others felt slighted because some water quality issues *"get kind of swept under the rug."*

The division within the PAC about the principle or philosophy of an issue fosters disagreement and may lead to conflict. For example, after the White Lake AOC delisted, the PAC wrestled with the division between members over the principle of whether the group should compensate its leader. The PAC divided, and several members stopped engaging in organizing efforts after delisting, because they disagreed, on principle, that leaders should not be *"doing well by doing good."* When PAC members noted they or other individuals were divided, these disagreements on fundamental principles constrained the group's ability to navigate and resolve such conflicts.

Strained interpersonal relationships

Some PAC members noted that they did not trust other members because of friction from *"personality issues."* This was particularly true early on in the RAP process: *"there was a lot of angry words, and intemperate things said in public meetings and threats made."* Some members find others *"frankly, difficult to partner with,"* while

others felt the strain of conflicts had inflicted *"damaging impacts"* on their reputation in the community. There were also instances where dysfunctional interpersonal relationships made some members feel *"left out or not engaged."* In these cases, PAC members explained that impaired relationships constrain the groups' mutual understanding: *"you don't understand where somebody's coming from."*

In several cases, past and present, positional bargaining and blame-seeking priorities of members constrain the PAC's focus on solutions:

> *If you close the door by blaming [other participants] for everything, without qualifying it… They may have an interest in protecting the water quality and [if you] just say well [they] don't care… then you've closed the door to any kind of solutions.*

Diminishing interest

Some members noted they lost the interest that inspired their dedication to the PAC in the first place: *"you have to be enthusiastic about what you're doing or you better walk away. Because people read that everywhere you go."* In several cases, participants' *"interest wanes and rises"* depending on the issues on the PAC's agenda. Some PAC members' interest diminishes as the process drags on: *"My personal thing, I'm ready for it to be done, let's put it that way… but I also don't want to be really involved in it either."* Diminishing interest constrains PAC members' dedication to action and their focus on solutions: *"what was left is not people I would call movers and shakers. People who cared but who didn't have [the] chutzpah to make things happen."*

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Chapter 4
Synthesis: Why Areas of Concern Differ in their Progress

The previous chapter identified the factors that shape a PAC's ability to influence progress and why. The overarching question of interest in this chapter is to understand what factors explain why RAP implementation progress differs among Areas of Concern? In this context, progress is a multifaceted concept that varies depending on who assesses progress and the metrics they apply. For example, comparing AOCs on a single dimension—how quickly they delist—misses important aspects of progress. Factors that, in the eyes of PAC members, enable quality progress may be seen as factors that slow down progress from the perspective of state or federal agencies. The removal of a BUI is not always celebrated as a success by PAC members when some perceive that more could have been done, yet state and federal agencies regard BUI removals as significant progress. Therefore, 'good' progress may take longer than 'acceptable' progress. This study constructs progress as 'time well spent,' which is both a quantitative and qualitative heuristic.

This chapter proposes nine overarching factors that help explain why progress differs among the AOCs. As summarized in **Table 4.1**, these factors include elements of governance infrastructure like roles and objective criteria, and also more intangible factors like effective leadership and commitment.

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Table 4.1: Factors that Explain Why Progress Differs Among AOCs

1. PAC's perceived independence and influence
2. Clearly delineated state agency roles
3. Clear criteria for delisting
4. Balanced and sustained PAC member networks
5. State and federal agency resource commitment
6. State and federal actor engagement
7. PAC's robust translational capacity
8. Public understanding and support
9. Effective PAC leadership

1. PAC's perceived independence and influence

The first factor that helps explain differences among AOC's progress is the PAC's independence and influence. A PAC's independence is a requisite for earning the trust of the community as a legitimate voice for, and guardian of, the public interest. A PAC's perceived independence enables the community to trust the PAC to hold the process accountable to the public interest. Participants in PACs that have a higher degree of independence are often motivated by their sense of responsibility to ensure the RAP process holds government and polluters accountable to the public interest; to make sure, as one interviewee put it, they *"do the right thing."*

A PAC's perceived independence is a function of the PAC's origins. For example, when PACs originate independently from the grassroots, the communities are accepting of the PAC as representative of the public interest. PACs that started as community groups (Kalamazoo, St. Clair, and White Lake) noted that community members trusted the PAC to hold governments' and polluters' *"feet to the fire."* PAC members from bottom-up groups noted that being *"unafraid to take a position on something"* enabled the group's legitimacy in the region as the watchdog. The public trusts that the

representatives in these PACs will maintain independence and hold the agencies and polluters accountable for the cleanup throughout the RAP process.

A PAC's perceived influence over the RAP agenda enables participants' ownership of the RAP process. When the state agency empowers the PAC with shared control of the agenda, it enables members' ownership of the process because they are "heard" by the agency. In the case of the St. Clair Binational PAC, the OGL AOC Coordinator is empowering the Binational PAC with greater influence in the process of criteria definition for their hot-button drinking water BUI. In the case of Saginaw, PAC members do not feel their OGL AOC Coordinator is *"taking them seriously"* as an equal partner. In Menominee, some participants felt their PAC is too dependent on the state's control of the RAP agenda, which constrains progress because greater PAC dependence on state agency control undermines PAC members' ownership of the process. Further, when the state controls the RAP agenda, often the hurry-up-and-wait delays endemic to government bureaucracy are perceived by PAC members to constrain progress. Overall, PAC members described their ideal balance of shared control as having an *"equal partnership"* with the state agency. While control is not exactly a 50/50 split between PACs and the state agency, the state agency can empower a PAC by listening to members and enabling their influence on the agenda.

A PAC's perceived influence over the agenda is a function of the inherent interdependence of the PAC and the state agency; neither side can unilaterally control the RAP process. No PAC can independently undertake the entire RAP process for their AOC. The state and federal governments depend on the cooperation of the PAC to help plan and implement remedial actions in partnership with local stakeholders and institutions. However, while interdependent, the federal and state agencies are ultimately responsible for RAP implementation and can exercise significant control of the RAP agenda. A PAC group's perception of their influence over the RAP agenda is contingent on the discretion of the agencies to empower the PACs with shared control in the process.

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2. Clearly delineated state agency roles

Among these case study sites, progress occurs where there is a clear delineation between the agency's dual roles as RAP convener and stakeholder. The first role of the state agency is to convene the RAP process. In every case, the state agency serves as the convener of the RAP process because the agency is ultimately responsible for soliciting public input in each AOC. The second role of the agency is to participate as a stakeholder implicated in the outcomes of the RAP process. The state agency has an interest in the agenda and substantive outcomes of the RAP process and is a stakeholder in every case.

The level of trust in the PAC-agency relationship is shaped by how the agency distinguishes between its dual roles in the RAP process. Trust can erode when there is an unclear distinction between when the AOC Coordinator represents the interest of the state-as-stakeholder and when they represent the interests of the state-as-convener and try to influence the agenda to help focus and maintain progress momentum. With one state agency representative in both roles of RAP process convener and stakeholder, there can be misperceptions of governmental bias steering the RAP agenda toward certain interests, and thus distrust of the agency. For example, CAC members in Menominee explained that the group initially formed out of distrust of the agency handling the RAP without any public input. The CAC members in Menominee developed a trusting relationship with the state agency once their motives were clearly understood and their roles and responsibilities clearly articulated.

PAC members' misunderstanding of the state agency's motives can foster distrust in the PAC-agency relationship. Without a mechanism to let the PAC members know which 'hat' the AOC Coordinator is wearing and motivating their statements or decisions throughout the process, misunderstanding of the state's motivations can foment distrust. For example, in Saginaw, distrust of the OGL AOC Coordinator stems from the misunderstanding of the state's motivations for denying some of the PAC's requests. Similarly, Congress and the EPA have intensified pressure on the states to remove BUIs and delist AOCs and PAC members perceive the state's motivations are a function of this external pressure, which in some cases has exacerbated misunderstandings of the state agency's motives.

3. Clear criteria for delisting

AOCs are making progress where the group and the agencies are *"singing from the same songbook,"* and there are clear criteria for BUI removal and delisting. At the beginning of Remedial Action Planning, the PACs had no reference point for how the state defined beneficial use impairments or thresholds for their removal. The PACs were on their own, *"struggling with figuring out a target."* The state agency issued the first of its delisting guidance documents in 2006 (Michigan Department of Environmental Quality 2005; Final guidance for delisting Michigan's Great Lakes Areas of Concern 2006) which defines the target levels the state will accept to consider a BUI 'removed.' Overwhelmingly, PAC members commented that the state's delisting guidance enabled their group to make progress because participants bought into the clearly defined BUI removal goals, and allowed the groups to focus their objectives on solutions.

Clear criteria enable progress because they allow all the participants to commit to, and focus with certainty on, a specific, definitive endpoint for the process of removing BUIs and delisting. Participants, particularly those representing the private sector, value the AOC program when there is more certainty about the remedial outcomes than there would be if they participated in an alternative process. Some PAC members observed that an open-ended RAP process introduces uncertainty, which creates a disincentive to engage, particularly for private stakeholders and local governments. The RAP process is, therefore, less valuable to PAC members when the criteria are unclear or undefined because PAC members may perceive that the standards for removing BUIs or delisting the AOC are arbitrary or unfair. Clear criteria help to instill a sense of fairness in the process when the participants agree that the criteria are an objective standard for removing BUIs and delisting their AOC.

However, where there is clarity, there is not always agreement. Clear criteria are a function of the degree to which the PAC agrees with the state's definition of 'attainable.' A PAC may opt to set unique, local criteria for a BUI instead of accepting the state criteria, usually because PACs perceive a cleaner standard is needed and 'attainable.' In these cases, PACs are negotiating with the agency about the definition of how clean is clean enough? PACs can propose their definition of attainable criteria and then engage in

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a back-and-forth negotiation with the state agency until both are satisfied with the attainability of the local criteria standards. Similarly, the state acknowledges that the 'attainability' of some criteria is inherently contextual; for example, the OGL has not issued specific criteria for the "Loss of fish and wildlife habitat" BUI, recognizing that the conditions and feasibility of remedial actions are highly site-specific.

The PAC's and the state's definitions of 'attainable' change over time with new members, new agency priorities, or changes in the context of the AOC. For example, due to the hot-button nature of spills and drinking water safety in St. Clair, the Binational PAC has been in a years-long back-and-forth negotiation with the state to define their local criteria for the drinking water BUI. A chemical spill crisis demonstrated to the Binational PAC members that the spill response plans portion of their BUI criteria was inadequate, and they subsequently pursued higher standards for their local criteria because of what they learned from the response to the spill crisis.

PAC members value investing additional time in the RAP process to negotiate with the state over local criteria. Where PACs disagree with the state's criteria, establishing and defending their local criteria adds more work and time to the RAP process. This does not necessarily equate to a constraint on progress, per se, because during these steps for defining local criteria, the PAC is working diligently toward empirically supporting their proposal, and thus are making progress. From the PAC perspective, disagreements over the attainability standards for criteria may lengthen the AOC delisting timeline, but contributes to the quality of the progress outcomes. Spending the time negotiating a higher standard for criteria is valuable to PAC members because they benefit if they can negotiate setting cleaner standards for removing BUIs. Spending time negotiating local criteria that end up to be similar to the original state criteria may appear to be a less valuable use of time, but in these cases, it is important to the PACs that the PAC define the criteria. For example, in Saginaw, the negotiation for the beach closing BUI criteria took over a year. While the resulting local criteria do not substantially differ from the state's criteria, the PAC members emphasized it was a valuable use of time because it enabled the PAC's ownership of the criteria.

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However, in other cases, if the PAC disagrees with the state criteria, the state can still remove the BUI according to the state criteria, even over the objections of the PAC. For example, in White Lake, the PAC issued a "stipulation"[1] with their acceptance of the removal of their drinking water BUI because of disagreements over the state's criteria. While this scenario meant BUI removal was sooner than it might have been had the PAC engaged in negotiations for amending the criteria, PAC members discounted the quality of this progress; members perceived the criteria had set the bar too low.

4. Balanced and sustained PAC member networks

PACs can leverage resources and support to enable progress when they have and maintain a balance of members with social and interorganizational networks. PACs have more influence to advance progress when the group has connections to, and support from, other organizations, agencies, and institutions with a shared interest in improving water quality. The balance of a PAC's member network is a function of the membership composition of the group. Where progress occurs, PACs have a membership composed of a balanced mix of both individual and organizational members that connect the PAC to their social and interorganizational networks in the AOC region. The balance of a PAC's member network matters because it shapes the PAC's capacity by defining the group's access to funding, intergovernmental cooperation, and partnerships. PACs influence progress when their group does not exclusively rely on the social networks of individual members but also has access to the interorganizational networks of professionally affiliated organizational members.

The preponderance of membership in several PAC cases is individual stakeholders who represent themselves or a sector of community members (i.e., 'recreational fishers'). Most PAC members described making connections through members' social networks. PACs that connect to members' social networks do so

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[1] The main issue was that AOC BUI criteria exclude aspects of groundwater. Therefore their Drinking Water BUI was removed over stakeholders' objections that their drinking water sourced from groundwater remained contaminated from the same source of pollution that contaminated the surface waters of White Lake. (Michigan Department of Environmental Quality 2014, 62)

primarily to implement public input and education/outreach tasks. However, PAC members explained that relying on their personal social networks is a limiting factor that constrains the efficacy of the PAC's public input and education/outreach activities. Relying on personal social media networks or email updates to personal contacts limits the 'reach' of the PAC to connect with and educate individuals and organizations throughout the AOC region.

PACs vary in the degree to which their membership also includes organizational representatives, such as those representing a Conservation District, local government, or private sector corporation. Several members noted that regional institutions were not sending representatives to their PAC. Without an interested employee, many organizations do not volunteer to represent their organization on the PAC: *"if there's no interest… from anybody in that group, they ain't coming."* PACs with fewer professionally affiliated members are less connected to regional institutions and therefore have less capacity to influence progress. The greater access a PAC has to both social and interorganizational network connections, the greater the PAC's organizational capacity. Most PACs have individual members, but the PACs that are distinguishable by their progress also have organizational members that serve the PAC in a professional capacity. Therefore, PAC membership composition determines the connections the group can make to other organizations that will support the PAC's capacity through (1) funding, (2) intergovernmental cooperation, and (3) partnerships.

First, professional members are essential to a PAC's organizational capacity because they provide the group with connections to potential funding sources. The organizational members' professional connections expand the potential sources the PAC can tap to solicit funding for RAP implementation. Similarly, access to interorganizational networks expands the possible sources of funding a PAC can access to underwrite its organizational capacity needs, such as to compensate members or staff for spending their time on PAC administration, fundraising, and membership recruitment and training. Organizational members can thus help the PAC to attract diverse funding sources to support RAP implementation capacity and PAC organizational capacity.

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Second, a PAC is better equipped to influence progress when the group has organizational members professionally connected to other state and federal agency programs within and beyond the AOC program jurisdiction. RAP implementation requires the attention of other government agencies that work on the AOC program. Some PACs' professional members can help to broker intergovernmental cooperation and accelerate progress. These PACs have members with contacts at other government agencies. PAC members reasoned that brokering intergovernmental cooperation through their members' professional connections enabled progress more effectively (and quickly) than relying on the bureaucratic channels when the AOC Coordinators serve as the intermediary.

Third, PACs benefit from professional members utilizing their interorganizational network connections to build partnerships that facilitate RAP implementation. Members described engaging the contacts in their interorganizational networks to develop partnerships with institutions in the region to accomplish tasks including hosting PAC meetings, public education and outreach activities, soliciting public input, conducting investigations, and planning remedial actions. PAC members affirmed that funding is awarded most readily to projects where the PAC members have leveraged partnerships to prepare implementation-ready watershed management or habitat restoration plans.

Because the balance of a PAC's member network is a function of the membership composition of the group, progress is constrained when a PAC depends on a single member's network connections for its capacity, and then the PAC loses that individual. Membership turnover can cut the group off from members' network connections to funding and support from partners. In the past, many PACs had robust representation from professional representatives of a diversity of institutions. In most cases, many of these members are retired, so PAC members are less professionally connected to potential partner organizations than they were previously. In these cases, only one or a few remaining organizational members can provide the PAC with contacts for building capacity through funding, intergovernmental cooperation, and partnerships.

Relying on a single member's professional connections to support the PAC's organizational capacity can create a bottleneck, impacting the PAC's influence on

progress. Some PACs benefit from the part- or full-time dedication of a staff person, contractor, or strong leader. In several instances, these critical individuals maintain the majority of the PAC's interorganizational network connections. A challenge arises when these individuals leave the PAC. Because the PAC's connections were concentrated in the key person, losing that individual means the group is cut off from the individual's interorganizational network connections. The loss of a leader or key individual deals a less severe blow to the PAC's capacity where the PAC membership has a greater balance of organizational representatives as members because the group's professional connections are spread out across multiple organizational members.

5. State and federal agency resource commitment

State and federal agency resource commitment contributes to PAC capacity and progress. Nearly every PAC member noted that consistent, flexible agency funding enables the PAC to influence RAP progress. In contrast, when there is a lack of resource commitment, the PAC capacity to function is constrained. For example, immediately following the creation of the St. Clair Binational PAC, the Michigan agency committed neither financial nor human resources to support the Binational PAC, leaving Michigan members to pirate resources from their home organizations to keep the RAP process moving along. The commitment from their Canadian counterparts' agency to fund a secretariat for the Binational PAC was the key reason the group could function at the outset. Additionally, when the state and federal agencies commit resources to the PAC, the commitment is a demonstration to the PAC that the agency values the PAC's role in the process. Similarly, a lack of resource commitment signals to the PAC that the agencies do not value the PAC's contributions enough to invest in them.

The commitment from state and federal agencies is a function of the budgets and priorities of the departments and administrations that control the AOC program. Funds for PAC support grants come from the federal GLRI funds funneled through the EPA. However, the GLRI is contingent upon Congressional support for sustained funding to the AOC program, and while it appears that this support will continue, there is no

guarantee. PACs must submit grant applications to the OGL that explains the designated use of the funds they request. The OGL exercises discretion over what PAC support grants can fund, but the state must also comport with federal restrictions imposed on PAC support grant funded activities. For example, PAC support grant spending excludes food and beverages. PAC support grants are not for 'unrestricted' expenses, but they do serve to underwrite many technical, communication, and administrative capacity needs of the PAC.

6. State and federal actor engagement

Another factor that differentiates progress among AOCs is the engagement of state and federal actors—the individuals representing their agency. State and federal actor engagement matters because it embodies the agency's attentiveness and commitment to PAC needs and priorities. Agency representatives' engagement through their physical presence at PAC meetings helps demonstrate that the agencies are putting skin in the game; taking the time and expense to be in the room with the PAC is an investment of sweat equity. When representatives show up in person for a PAC meeting, this signals to the PAC that members' participation is an important and valuable part of the RAP process. Members noted that AOC Coordinators' and OGL and GLNPO program managers' absence from PAC functions signals to the PAC the agencies' lack of commitment to the PAC. In many cases, PAC members noted that OGL and GLNPO program managers usually only show up at the end of the process, such as at BUI removal or delisting celebrations. On the other hand, when the OGL program managers began giving PACs attention, members explained that they felt their interests were an agency priority: *"we're not the voice in the wilderness anymore."*

In some cases, the AOC Coordinator's engagement goes beyond the call of duty, and they broker intergovernmental cooperation within and beyond the AOC program purview. Brokering collaboration with other government agencies matters because it enables communication among the AOC program and between these agencies to help coordinate RAP research, documentation, and implementation. For example, in

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Menominee and St. Clair, PAC members described their AOC Coordinator[2] as the primary, and legitimate, broker of communication, information sharing, and coordination with other AOC program agencies. When an AOC Coordinator brokers cooperation within the AOC program, they help keep track of the status of the planning, assessment, management, and monitoring actions that other agencies conduct. By coordinating, the state agency representatives can share information and communicate with their counterparts in other agencies to avoid delays and hasten progress.

Progress also occurs under the auspices of other government programs beyond the jurisdiction of the AOC program. There is a vast constellation of federal and state bureaucrats overseeing water quality improvement programs that overlap with AOC program objectives. However, the other agencies and departments administering these programs have no formal connection to, or communication with, the OGL AOC program office. Because of their legitimacy as a government employee, AOC Coordinators can be active in generating intergovernmental cooperation and bring the RAP implementation agenda to the attention of other government agencies. Because of their professional network connections to, and rapport with, the representatives of other government agency programs, the AOC Coordinators may, therefore, be credible brokers of intergovernmental coordination.

State and federal actor engagement is a function of the formal mechanisms for intergovernmental communication. The St. Clair AOC has a Canadian RAP Implementation Committee (CRIC) and Four Agency Managers Work Group, and the Menominee AOC has a Technical Advisory Committee (TAC). However, in the cases studied here where the AOC is exclusively under Michigan's jurisdiction, there are no formal mechanisms for intergovernmental communication between and among state and federal agencies. In these cases, state and federal actor engagement is a function of the individual agent's discretion. As some PAC members recognized, there is *"turf"* among government agencies and programs, and there is not a natural tendency for intergovernmental cooperation to occur without effort above and beyond the expectations of the AOC Coordinator's role. Similarly, try as they may, an AOC Coordinator cannot

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[2] Including the AOC Coordinator equivalent representatives from Wisconsin and Ontario for Menominee and St. Clair

coerce the cooperation of other agencies, and brokering intergovernmental coordination is beyond the OGL's control.

7. PAC's robust translational capacity

Progress occurs where PACs have robust translational capacity because participants with technical and communication skills enable the PAC to effectively advise agencies about the criteria for, and progress of, the RAP process. The RAP process revolves around documenting the need for, and outcomes of, remediation, and thus PAC participants must understand the documents at each step of the process. RAP documents can include Stage 1 and 2 RAPs, BUI removal criteria and reports, RAP updates, studies and assessments, fact sheets, research reports, and letters. The *"clunky lexicon"* of the AOC program's specialized terminology can impede members' engagement in the process, and people can lose interest when RAP documents are inaccessible or filled with meaningless jargon. Dense or complex RAP documents take more time for PAC members to understand and deliberate; PAC members described the workload of reviewing RAP documents as tedious and slow, even *"dreadful."* Other obstacles include losing valuable time in meetings to sidebars or arguments stemming from members' lack of understanding of documents under discussion.

On the other hand, communicating complex technical documents in accessible terms makes it possible for members to understand and discuss the problem objectively. PACs can keep membership more engaged in deliberations when they translate their documents into plain, meaningful language. Everyone in the group understands the substance of what they are deliberating and advising when their group's collective skill set encompasses the technical know-how needed to translate the complexities of the issues and their solutions.

The PAC's ability to advise the state agency is a function of the PAC's membership composition and the technical and communication capacity of its members. PAC members with the technical and communication skills to interpret RAP documents are more commonly organizational representatives with professional training and

background. Participants with technical and communications knowledge enhance the PAC's effective performance as an advisor to the state agency because they can contribute informed advice themselves. More importantly, skilled members can translate their understanding to enhance other members understanding. While one professional member may be able to explain technical details of one BUI, for example about the ecology of wetlands, they may not necessarily have the technical background to translate details for other BUIs, for instance about the chemistry of drinking water quality. Thus both the technical and communication skills of members shape the PAC's translational capacity and thus efficacy to function as an advisor on RAP development and implementation.

The group's translational capacity is also a function of the financial assets available to a PAC to compensate contributors for their time spent conducting technical evaluations or translating complex documents into accessible communications. A PAC's efficacy as an advisory body is enhanced when it has the funds to invest in activities beyond RAP implementation per se and can invest in hiring members or third parties as contractors to translate technical documents. Most commonly, PACs underwrite their translational capacity through OGL PAC Support Grants. These grants mostly fund: contractors compiling technical reports, compensation for member or staff time spent administrating PAC meeting business, public education activities, and certain aspects of delisting celebrations. For example, in Saginaw, grant funds were used to hire Public Sector Consultants to write the "Measures of Success" (2000) report that initially set targets for their BUI delisting criteria. PAC members in some cases noted that lulls in AOC program funding precluded hiring contractors and staff to perform these necessary translational functions.

A PAC's translational capacity is a function of the state agency's technical assistance to the PAC, where it occurs. In St. Clair and Menominee, there are separate government committees that focus on technical aspects of RAP development and implementation. However, the AOC Coordinator is typically the only overlapping member between the PAC and the interagency technical body. At PAC meetings, the

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AOC Coordinator[3] answers members' questions, gives presentations, and generally helps to clarify RAP documents produced by the technical committee. Sometimes the AOC Coordinator interprets technical RAP document details for the PAC as the main point of contact between the PAC and government agencies. State AOC Coordinators possess the knowledge to understand the scientific complexity of the environmental problems in AOCs. The AOC Coordinators face the challenging task of ensuring RAP documents conform to the highest standards of scientific quality and accuracy, while also communicating plain-language interpretations of complex technical information so that PAC members can make educated decisions and provide the state with informed advice.

Finally, the state's translation for PACs is a function of the PAC's trust in the agency. Where the PACs can trust the state agency, PAC members may accept or review only the 'translated' documents provided by their AOC Coordinator. However, where the PAC members distrust the government, the group may not accept abridged or summary documents and need the AOC Coordinator to provide the PAC with the raw data, research findings, or official report drafts for their independent review.

8. Public understanding and support

Public understanding enables community support for AOC remediation and stewardship projects. PAC public education and outreach initiatives help to foster this public understanding and community support. In most AOCs, there are striking differences in public understanding and awareness of the environmental problems, which undermines local support for remedial solutions. Presently, PACs vary in prioritizing such outreach initiatives. PAC members from Kalamazoo, St. Clair, and White Lake evaluated the effectiveness of their public education positively and observed that focusing on *"building the knowledge base"* in the community enabled public support for the process. For example, White Lake PAC members emphasized that their public education efforts were integral to attaining community buy-in that enabled their swift

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[3] And, where applicable, ex-officio state agency members

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RAP progress. On the other hand, some PACs do not have any public outreach initiatives of their own.

Public understanding is a function of the interaction the public has with the water resource. PAC members explained that a local population of active water users enables local support because of the visibility of the problems and their improvements. The community support for remedial solutions is greater where active water users directly benefit from visible restoration. Firsthand water users are the most aware of the visible water quality improvements and get *"excited"* about stewarding the resource into the future. However, due to differences in understanding about the environmental problems in the AOC, public support favors *"showy"* remedial actions over *"invisible"* ones. It is insufficient to rely on water users' firsthand experiences with visible impairments and improvements to enable understanding of the problem and ownership of the solutions. For example, in St. Clair, even with a supportive user community and local sense of place tied to the waters, there are public complaints about restored habitat sites because they are perceived to impede human use of the riverside. One St. Clair Binational PAC member noted the importance of PAC's role to focus public awareness about these 'invisible' problems because they are complex to understand, the effects are out of sight, and the solutions occur mostly underwater. PACs that work to shed light onto the invisible issues through their education campaigns help to build public support for and make progress on important BUIs that may otherwise be out of sight and out of mind.

A PAC's public outreach efforts are also critical for building local support for long-term remediation into the future beyond AOC delisting. For example, the St. Clair Binational PAC has delegated many public education tasks to its non-profit organization 'arm,' Friends of the St. Clair River (FOSCR US). Binational PAC members explained that building public awareness is important to gain community buy-in that will sustain the FOSCR group's efforts into the future, after the St. Clair AOC delists and the Binational PAC (presumably) dissolves.

The PAC's capacity to undertake public education initiatives that build public understanding and support for remediation is a function of PAC membership composition. For example, several PACs created community-friendly versions of their

Stage 2 RAP: like the White Lake Community Action Plan (White Lake Public Advisory Council 2002), or the Kalamazoo Beauty and the Beast report (Kalamazoo River Watershed Public Advisory Council 1998). These PAC-authored documents were made possible because of the technical and communication capacity of PAC members at the time. A PAC's ability to translate technical information into accessible and clear communications that are disseminated through the group's public education initiatives enables the public to understand the problems and support the solutions under consideration.

9. Effective PAC leadership

Progress occurs in AOCs where PACs have effective leadership because they effectively manage the process. PAC members across all cases commented that a key reason for their progress was their group's leadership, most often the Chair of the Board or paid staff. They noted their leadership is the *"keystone"* holding the PAC together, making it strong by fostering respect of the process and respect among the participants. PAC members respect the RAP process when the PAC leadership fairly enforces the rules of procedure. Effective leadership creates an incentive for stakeholders to participate because members know the leader will protect and respect every interest around the table by ensuring the ground rules of the process are respected. Effective leaders can provide focus in PAC meetings and reel in members that may take the agenda off track. Conversely, PAC members noted that leaders that are not effective process managers have loose reins on meeting decorum that undermines the group's capacity to stay focused on objectives and listen to one another.

Effective PAC leadership is a function of "separating the people from the problem" (Fisher and Ury 1981) by focusing on a common goal instead of on assigning blame for the problems. PAC members credited their progress to leaders who keep the group's focus on articulating, and then achieving, the PAC's common goal. As several members also noted, PAC participants do not all have to agree with the leader on the substance of the issues for the leader's guiding presence to focus the group on its

common goal. By effectively facilitating and managing the process, leaders enable participants' faith that their interests will be represented in the group's common goal. For example, Menominee PAC members attested that their leadership facilitated an effective consensus process for jointly writing up their common goals.[4]

Discussion

What these nine factors have in common is that they are all dynamic and impermanent. Over the course of three decades, each PAC may have had many of these factors at some point, but over time these factors have come and gone in response to changes in the internal or external context in which they operate. Factors PACs possess today may not be sustained into the future. Therefore, the key to progress is not the mere presence or absence of these factors. Instead, progress occurs where PACs and agencies have mechanisms in place that are attentive to the changes in these dynamic factors, where their focus is not only on the goal of RAP implementation and water quality improvements but also on these key process factors that shape the PACs' ability to influence progress. Progress occurs where PACs and agencies cultivate these nine dynamic factors as they change over time, and are deliberate about, and attentive to, the process of community-based collaboration, not only the technical mechanisms and outcomes of RAP implementation.

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[4] This became the "Lower Menominee Desired Future State" and "Ecosystem Goals and Objectives for Restoration of Impaired Uses" sections of their 1990 Stage 1 RAP (Wisconsin Department of Natural Resources and Michigan Department of Natural Resources 1990, 181)

Chapter 5
Conclusions and Recommendations

In 1987, the vision of including public input to guide the remediation of Great Lakes Areas of Concern was one of "ecological democracy" (Hartig and Zarull 1992). Early literature focused on principles for convening PACs and emphasizes the "essential" (17) role of maximizing "broad-based" (Hartig and Law 1994, 858) stakeholder involvement as the venue for "substantive local participation" (Mackenzie 1997, 177). These early studies examined the AOC program just as PACs were forming and provide a theoretical framing of factors believed to influence public participation in the RAP process. In contrast, this study draws on empirical results from 30-plus years of Michigan PACs' experience in the implementation of this community-based collaborative ecosystem management. While the early literature focused on the initial phase of convening PACs, these theoretical studies accurately anticipated several of the factors identified by PAC members in this study as shaping their ability to influence implementation progress. Many of the themes identified in the early literature focused on what would bring stakeholders to the table, but some also described factors that would keep stakeholders at the table during the implementation phase.

This chapter discusses the consonant themes from the early AOC literature that PAC members identified as factors, as well as the novel insights from this study not previously recognized in past studies. It reflects more broadly on lessons learned from the AOC program and implications that apply to a range of community-based collaborative ecosystem management initiatives. Finally, it provides recommendations to the State of Michigan's Area of Concern program, organized according to the nine findings from the previous chapter. Several recommendations echo the advice posited in the early literature more than two decades ago, while other recommendations focus on implications derived from the novel insights provided by PAC members participating in this study.

5. Conclusions and Recommendations

Themes and implications

Early studies anticipated the vital role of, and challenge to, coordination across a large geographic area with complex government jurisdictions and multiple community networks. In theory, PACs could provide a mechanism to link networks of community organizations working on different facets of water quality in an AOC. While the early vision was for the PAC to serve as a locus for building coalitions among regional organizations, participants in this study acknowledged that these linkages are a function of individuals within these organizations that have a personal interest in participation. Similarly, early literature noted this coordination would take a concerted effort that "needs to be complemented with governmental commitments to intra- and inter-agency coordination" (Hartig and Law 1994, 861). Hartig and Zarull (1992) recognized the importance of coordinating other local, state, and federal remedial actions: "the greatest short-term progress is achieved when the effectiveness and coordination of existing state, provincial, and federal pollution control programs is improved" (28). More than twenty years later, PAC members noted water quality benefits accrued to their AOC from government actions beyond the AOC programs, but that silos and turf between government departments are constraints to coordination among these programs. Absent a clear mechanism, remedial actions across these multiple agencies over the course of 30 years has lacked institutionalized coordination and as a result, have been challenging to track. Where this coordination occurred, it has been a function of the individuals in the PAC and their interorganizational network connections, or their AOC Coordinator's discretion serving in a brokering role.

Early studies emphasized the critical role of government commitment and engagement from the local, state, and federal agencies and noted that support primarily exists "at the individual level rather than the institutional level" (Mackenzie 1997, 178). PAC members in this study noted that this lack of institutional commitment persisted for two more decades and that the Great Lakes Restoration Initiative (GLRI) in the mid-2000s institutionalized and invigorated state and federal commitments, while local government engagement continues to lag. Landre and Knuth (1993) noted the role of the "local economy... as a factor influencing the success of public involvement in remedial

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action planning" (160), and PAC members in this study similarly identified issues of austerity that have influenced local governments' ability to commit resources to the implementation of remedial actions.

Interestingly, past literature overlooked the role of private sector commitment and engagement in the PACs, which members in this study identified as a constraint to influencing RAP implementation progress where it is lacking, and a boon where it is present. Much like the involvement and coordination across multiple government departments and community networks is a function of interested individuals rather than institutional commitment, this pattern is also present in the participation of the private sector. Engagement of industry and commercial stakeholders in the non-regulatory AOC program is a function of the interest of individuals more so than the commitment of the corporation. More often, other regulatory programs catalyze private sector investment in the implementation of remedial solutions.

Much of the early literature overlooked the internal factors influencing the PAC groups' origins, structure, function, process, and management. Part of this gap is a function of collecting data from agency representatives rather than PAC members themselves; this is reflected in the literature's focus on issues like facilitation by state agencies, government accountability to the public, and generalizations about public stakeholders' inertia and lack of hope for cleanup. Similarly, the vision of the PACs as operationalizing an ecosystem approach to management posited a paradigm wherein all participants were equal members of a team. The PAC model would, in theory, empower all stakeholders with "sufficient authority" as a mechanism to increase "individual and collective responsibility" for the RAP process (Hartig and Law 1994, 859).

PAC member perceptions from this study provide novel insights into the reality of the challenges to shared control among PACs and state and federal agencies, as well as factors like the PAC's internal leadership, the commitment of PAC members, their motivations and incentives for getting and staying involved. One phenomenon not foreseen in early literature is the membership attrition that occurs over the course of a long process. While a stake in the problems may have drawn participants to the table, many leave the PAC following the resolution of 'their' single issue; thus PACs have

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dwindled to small core groups of interested individuals motived by a holistic, ecosystem-level vision for the AOC.

The thirty-plus year natural experiment of the Great Lakes Areas of Concern program reinforces lessons from the broader literature on community-based collaborative ecosystem management, as well as provides some novel implications for the field. It affirms the imperative for balancing government control and authority, recognizing that both process and people matter, and ensuring that those involved in the collaborative process have network connections that help inform and enable the process.

Community-based collaboration is a mechanism for enabling government accountability to the public, provided "two process prerequisites [are] met: affected groups need to be able and willing to participate, and norms of good process management need to be followed" (Wondolleck and Yaffee 2000, 238). This implicates not only the convening agencies as the ultimate decision-makers, but all the participants: "the burden for achieving a representative, inclusive, productive, and credible process is shared by the parties to the process" (239). The challenge then lies in balancing government accountability to the public interest with the inherent government responsibility and control derived from their statutory authority over the decision points of the process. PAC members in this study articulated in their own words many of these norms that appear in the literature, including "facilitation" (108), "well-managed meetings" (110), and "an efficient organizational structure" (112). The experience of PAC members over 30 years of community-based collaboration reinforces the literature's stated importance of crafting and attending to a well-designed process that respects the governments' obligations as decision-makers while at the same time empowers participants' "direction-setting" (Gray 1985, 927) of the implementation agenda. The difference between typical top-down government decision-making with limited, one-way public input and community-based collaborative efforts, such as PACs, empowers participants with the "trinity of voice:" access to the potential for being heard, standing to be a "heard" and respected voice in the process, and influence to change the outcomes of the process (Walker, Senecah, and Daniels 2006, 194). The key to balancing government control with mechanisms for accountability to the public interest lies in the empowerment of participants to participate in a well-managed, and therefore valuable, process.

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The emphasis of the literature on collaborative processes notes that the norms of good process management manifest in both tangible procedural structures and intangible elements associated with the people involved. An effective community-based collaborative process that promotes government accountability to the public is comprised of the tangible "bricks" (Wondolleck and Yaffee 2017, 9): the foundational structure of the process like organizational structures, resources, roles, and responsibilities. Effective process is also comprised of intangible "mortar" (9) that holds the process together, such as the relationships among participants, their individual and collective motivations for participating, and their commitment to the process (9). The collaborative process itself is conceived as "dependent on a virtuous cycle between communication, trust, commitment, understanding, and outcomes" (Ansell and Gash 2008, 558). PAC participants in this study noted all of these elements as critical to their group's ability to influence implementation progress, noting that communication, trust, commitment, understanding, and successes along the way are a function of both institutional and individual impetus. Matters of process and of people are mutually reinforcing: promoting interaction, learning, and recognition of success codified through structural mechanisms like formalized intergovernmental coordination and systematic program evaluation adds to the value individuals see in the process, enabling greater trust, commitment, and respect for each other and inspiring hope for progress into the future.

One somewhat novel insight gleaned from PAC members' experience in the AOC program is the importance of the membership composition of the group. Specifically, members that serve the group as representatives of regional organizations play a key role in linking the PAC to their interorganizational networks. The literature on community-based collaboration posits that a groups' access to community networks contributes to progress: "by developing new networks or tapping into existing ones, collaboratives can significantly improve their ability to translate consensus [among the group] into results [on the ground]" (Margerum 2011, 35). The associations of individuals matter, and participants that bridge PACs with other community networks are considered "boundary-spanning" (Edelenbos et al. 2013, 8). The findings from PAC participants in this study suggest that who PAC members are is a factor that contributes to implementation progress in a community-based collaborative ecosystem management process. A PAC's

membership composition influences the group's ability to forge partnerships, broker intergovernmental cooperation, and solicit strategic funding. Certain PAC members that connect the PAC to interorganizational networks in their community can bring the resources of these other regional institutions to the PAC through their connections. Boundary-spanning PAC members who supply the group with connections to both their social and interorganizational network contacts can help immensely with building the PAC's capacity to sustain its efforts, and enabling an enduring process. The literature on collaboration notes the role of "the network of relationships" in helping to "maintain the collaboration" (Wondolleck and Yaffee 2000, 115), and the findings of this study also suggest these network connections play a central role to the efficacy of a collaboration to succeed and endure.

One new insight from this study is the notion that there is power in numbers when it comes to boundary-spanning participants. PAC participants noted that relying on just one member to provide the group with linkages to interorganizational networks in the region creates a bottleneck. Groups with a balanced membership are less vulnerable than groups with only one member as their connection to regional organizational networks and their resources and support. Like the AOC program, many community-based collaborative ecosystem management initiatives are not self-contained and rely on leveraging partnerships for implementation. Therefore a critical element of making progress is to attract and retain a variety of members that can broker linkages and span boundaries to help orchestrate the efforts of a broader coalition of interests for the goals of the ecosystem management initiative.

Just as an ecosystem relies on the structure, function, and composition of the biotic and abiotic elements in the system, so, too, do community-based collaboratives require structural elements of a well-planned process, functional elements of the relationships among participants, and a balance of the diversity and abundance of participants, contributing individually and collectively toward a productive and sustainable outcome.

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Recommendations for the AOC Program

  The following nine recommendations directly relate to the nine findings from the previous chapter, as summarized in **Table 5.1**. The emphasis of each recommendation is on strategies and management options that the State of Michigan's Area of Concern program might consider for addressing these nine factors, and not a prescription of details for how the state's AOC program should go about operationalizing change.

Table 5.1: Recommendations for the AOC Program

	Recommendations for the AOC Program	**Factor addressed**
1.	Assess and address shared control	PAC's perceived independence and influence
2.	Separate roles to build trust	Clearly delineated state agency roles
3.	Strive to collaboratively negotiate local criteria	Clear criteria for delisting
4.	Support the PAC's membership balance and strategic recruitment	Balanced and sustained PAC member networks
5.	Navigate expectations of, and fluctuations in, funding	State and federal agency resource commitment
6.	Support AOC Coordinator and program manager engagement	State and federal actor engagement
7.	Assess and invest in translation	PAC's robust translational capacity
8.	Engage in strategic planning for outreach	Public understanding and support
9.	Lead the process by example	Effective PAC leadership

1. Assess and address shared control

  PACs need to have an independence of voice and feel that the OGL is taking them seriously as an equal partner. The PAC's perceived influence and shared control are imperative for their community to view their group as a legitimate guardian of the public's interest in the RAP process.

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The OGL could strategically address the balance of control between the PAC and agency to match the needs of the PAC according to the context of the community and BUIs under consideration. Steps that could help address a PAC's perceived independence and influence may include:

- Working collaboratively with PACs to co-develop agendas;
- Discussing expectations for shared control and articulating roles and responsibilities accordingly;
- Discussing issues of public perception to enhance a shared understanding of the issues that may benefit from empowering the PAC with greater influence on the agenda;
- Providing a deliberate mechanism for PAC feedback to continue assessing and addressing the dynamic need for shared control on an ongoing basis; and,
- Maintaining communication with PACs throughout the process, even during times when the state agency may be constrained by lulls in funding.

Some AOC coordinators already do these things on an informal, ad-hoc basis, and the state's AOC program can benefit from expanding this to become a systematic practice.

2. Separate roles to build trust

The state agency is both convener and stakeholder in the RAP process, and clear delineation of these dual roles enables PAC trust of their AOC Coordinator and supports implementation progress.

In Michigan's AOCs, a single OGL AOC Coordinator comes to the PAC table and serves the capacity of both the state's convener and stakeholder roles. There are differences among AOCs in the clarity of PACs' understanding about the motivations of their AOC Coordinators because of the two 'hats' they wear. There are a variety of strategies the OGL may consider, including:

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- Clarifying within the state's AOC program the expectations of the dual roles and responsibilities of AOC Coordinators;

- Working jointly with each PAC to develop a "PAC Charter" that clearly articulates both the state and the PAC's distinct roles and responsibilities (one example from Wondolleck and Yaffee (2017, 176) is the Advisory Council Charters used by the National Marine Sanctuary Program);[1]

- Enabling the OGL AOC Coordinators to focus on one role by designating separate staff to represent the state's other role;

- Ensuring convener role staff can regularly attend PAC functions, potentially working out of a regional office nearby the AOC; and,

- Exploring the opportunity for stakeholder role staff to serve multiple AOCs and occupy a high-level policy coordination position.

A jointly-developed PAC Charter and the separation of roles can help to build PAC trust in the agency. For example, in Menominee, there is a Wisconsin state agency secretariat for the PAC and a separate ex-officio state agency representative to the PAC. Separate staff for the state's dual roles may not be needed for every PAC but can be a strategy to build PACs' trust of the agency in cases where it is lacking.

3. Strive to collaboratively negotiate local criteria

Clear criteria for BUI removal and delisting enable PAC participants to commit to, and focus on, specific endpoints to the RAP process, and are valuable because they enable certainty in the outcome of the process. Where PACs define local criteria instead of accepting state criteria, deliberations over the 'attainability' of local criteria can become adversarial negotiations between the state and the PAC.

The PAC members' view is that negotiating local criteria adds value to the RAP process, but adversarial negotiations over local criteria can become counter-productive to

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[1] See: http://channelislands.noaa.gov/sac/pdfs/sac_charter_072114.pdf as an example.

progress. Some steps the OGL might consider for handling the negotiation process for defining local criteria include:

- Striving to collaboratively negotiate local criteria, approaching the negotiations from a win-win (not win-lose) perspective;
- Acknowledging that negotiating local criteria adds value to participating in the RAP process;
- Supporting the PACs' technical or other resource needs for proposing and negotiating evidence-based, research-backed criteria; and,
- Enhancing the transparency of the state's evaluation process for determining and negotiating the attainability of proposed local criteria.

Negotiating local criteria is not the 'scenic route' to delisting; rather, it is an important component of the RAP process because it enables PAC members' incentive to remain engaged in the process. While it may take more time to take extra steps in the RAP process for determining attainable local criteria, the state can find opportunities to make negotiations more efficient by taking a collaborative, win-win approach.

4. Support the PAC's membership balance and strategic recruitment

PACs derive much of their RAP implementation and organizational capacity from the funding, cooperation, and partnerships sourced from the network connections of their organizationally affiliated members. Progress among AOCs occurs where PACs have a balanced composition of individual and organizational members, and where that balance sustains over time.

The OGL has an opportunity to attend to the balance of the PAC's membership composition, including strategies such as:

- Assessing present PAC membership, including detailed attributes of participants such as:
    - Affiliation (i.e., individual vs. organizational representative),
    - Role in PAC,

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- o Skills and technical background,
- o Demographic attributes (i.e., age, race, gender), and
- o Represented location in the watershed/AOC;
- Requiring PACs to systematically track membership and submit official member records to the OGL;
- Encouraging PACs to clarify organizational capacity needs, including defining membership criteria and identifying gaps in membership balance;
- Supporting PAC activities that build and implement strategic membership recruitment;
- Providing resources to PACs for member training and team building to facilitate sustained membership into the future;
- Constructing historical records of PAC membership to identify organizations that could resume PAC membership in the future;
- Prioritizing resources and support for PACs where membership composition lacks balance or shows a pattern of shrinking down and possibly not sustaining into the future; and,
- Managing membership transitions to help the PAC maintain its organizational network connections and balanced membership composition.

Systematically tracking membership changes over time is a norm of good process management and a responsibility that PACs and the state shares. One of the early obstacles to this study was that there is a dearth of public information about PAC membership. Presently, the OGL Coordinators and PAC leaders have different means for keeping membership records. Sharing best practices from the experiences of those already doing so can help to establish a practical, systematic mechanism for tracking the balance of PAC membership composition. The OGL might also consider taking a more proactive role to attend to the PAC's membership composition and help PACs anticipate membership changes and manage transitions to ensure that institutional memory is not lost.

5. Navigate expectations of, and fluctuations in, funding

GLRI funding to PACs through OGL support grants enables PAC capacity through AOC Coordinator commitment and resources for some administrative, technical, and public outreach needs. However, there is no guarantee of federal funding in perpetuity, strings attached to funding create gaps for funding other PAC capacity needs such as PAC members' time spent fundraising or recruiting and training members, and issues with funding cycles and timing can leave PACs without funding for weeks or months at a time. While some PACs have had success with *"cobbling"* together other sources of funding to support their capacity, the deliverables and projects for other funding sources can sometimes distract PACs from RAP implementation priorities.

Strategies the OGL might consider to ensure state commitment to the PACs, could include:

- Maintaining communication and transparency with the PACs throughout the process to help them navigate their expectations of, and fluctuations in, funding that supports the state's commitment to PACs;
- Ensuring continuity for state AOC Coordinators, even through times of lean federal funding;
- Supporting PACs to strategically pursue other, diverse funding sources that maintain their focus on AOC program priorities;
- Insulating PACs from the uncertainty and timing of GLRI funding;
- Funding essential PAC activities such as administration and technical contractors;
- Compensating PAC members' time spent on fundraising efforts focused explicitly on securing income to support the PAC as a self-sustaining organization beyond AOC delisting;
- Underwriting PAC capacity needs that the GLRI does not (or cannot) fund, such as membership recruitment, member onboarding and training, team-building and site visits;

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- Expanding state funding to local governments specifically to support their participation on the PAC and their partnership in RAP implementation activities;

- Keeping the PACs appraised of the state agency's resource constraints in a forthcoming and timely manner; and,

- Pursuing opportunities at SPAC legislative meetings to build political support among legislators to appropriate state funds to the AOC program.

Funding is critical for sustaining the state agency's financial and human resource commitments to the PACs, but helping to manage PAC's expectations of funding commitment may be even more critical to progress.

6. Support AOC Coordinator and program manager engagement

In a sense, Michigan AOC Coordinators have two jobs in one: first, to attend PAC functions (serving the dual convener and stakeholder role). PAC members explained that in-person agency participation is part of what makes the RAP process valuable for PAC participants. AOC Coordinators' second job is to be the AOC's point of contact for communications with related agency programs across multiple government departments. PAC members explained that formal mechanisms for intergovernmental coordination helps progress; in the absence of these mechanisms, progress occurs where AOC Coordinators take the initiative to go above and beyond the call of duty to actively broker intergovernmental coordination.

Fulfilling these two jobs in one is a significant undertaking. The focus is to find opportunities for synergy and provide support to AOC Coordinators and program managers to optimize their engagement with their counterparts at other government agencies and with the PACs. For example, the OGL could take steps such as:

- Expanding the strategy currently in place for Southeast Michigan where AOC Coordinators work out of the field offices located close to the AOC site so that consistent attendance at PAC functions is practical;

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- Exploring options for partnerships with other agency departments that have field offices near AOCs as a liaison to the OGL AOC program where it is impractical to station a dedicated AOC Coordinator locally;

- Dedicating resources for OGL and GLNPO program managers to demonstrate skin-in-the-game with more frequent attendance at PAC functions (far in advance of when agencies "need" to be there for project implementation or delisting);

- Promoting and supporting AOC Coordinators to spend their time communicating and coordinating with other government programs beyond the AOC program;

- Convening a forum for regular, transparent intergovernmental coordination within and among local, state, and federal agency programs (such as the TAC model used in Menominee); and,

- Considering creative solutions that transcend traditional departmental boundaries in other agency water quality programs to promote awareness and understanding of AOC program priorities.

The intention of these recommendations is not to add to the already-full workload of AOC Coordinators or complicate the existing system of bureaucratic decision-making, but to make efficient use of existing resources through coordination and communication.

7. Assess and invest in translation

PAC participants' understanding of their AOC's issues and solutions is the foundation of their effective advice and input, and participants depend on each others' ability to translate complex science across a wide range of ecosystem management topics. AOC Coordinators can also provide translation and enhance understanding, but some groups require more transparency from the government due to lack of trust. Sometimes PACs hire contractors to help translate technical information to fulfill their advisory role effectively.

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The OGL AOC program may consider taking steps to build a PAC's translational capacity, such as:

- Working together with the PAC to assess the group members' current technical and communication skills to identify what areas of technical expertise each group possess and needs;
- Assessing the extent to which PACs trust or distrust AOC Coordinators' assistance with translation;
- Building the PAC's understanding of the agency's positions by enhancing transparency in the state's translations of technical information;
- Promoting cross-PAC learning by supporting technical experts from different AOCs to provide assistance and guidance to other PACs; and,
- Investing in technical contractors to provide translations and promote understanding to ensure effective PAC advice and input.

A PAC's translational needs are context-specific and may change over time with changes to membership or depending on the issues. The focus of these strategies is on maximizing PAC members' informed deliberation of the issues and understanding of the problems and solutions.

8. Engage in strategic planning for outreach

Public understanding of the environmental problems and their solutions enables community buy-in for supporting remedial actions in AOCs, but invisible problems and solutions are more challenging to build public understanding and support. Public outreach was an early priority articulated in many AOC's Stage 1 RAP document. However, for many PACs, their subsequent efforts have prioritized developing the Stage 2 RAP and drawn their focus toward implementation and away from public education and outreach initiatives. Similarly, the introduction of GLRI funds for remediation creates an incentive to focus on implementing remedial actions to remove BUIs. As interviewees in this study noted, progress occurs where PACs engage directly, or with partners, to promote public understanding and build support through education and outreach initiatives.

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The OGL AOC program may consider strategies that address the PACs' need for public understanding and support, including:

- Supporting PACs with engagement and investment in strategic planning for public outreach and education initiatives;
- Encouraging PACs to identify and engage in partnerships with local and regional organizations to include AOC program priorities into existing public education and outreach initiatives addressing water quality;
- Investing in the implementation of a PAC's strategic public outreach plan; and,
- Prioritizing education and outreach activities that can evolve into self-sustaining or fundraising opportunities so that PACs can continue these efforts beyond delisting when AOC program investment is no longer available to the PAC.

Some of these strategies are already in place in some PACs, but the AOC program could benefit from making these a priority for every AOC. For example, the FOSCR Canada and FOSCR US organizations are a product of the St. Clair River Binational PAC's strategic approach to accomplishing public outreach. As the St. Clair Binational PAC discovered with the FOSCR US group's annual Sturgeon Festival, some public outreach activities that begin as expenses can evolve into self-sustaining or even fundraising opportunities.

9. Lead the process by example

Effective PAC leadership is an important factor because it enables effective process management. Where leaders manage the process effectively, participants with divergent interests and goals can focus together on a common goal because the process is perceived to be fair and all participants have a chance to be heard. While the state agency is not, and should not be, the leader of the PAC, the state agency plays a leadership role insofar as they serve as the convener of the RAP process. Furthermore, each PAC has

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differing levels of expectations of the degree to which the state agency should have leadership in the RAP process.

The OGL AOC Coordinators have the opportunity to lead the RAP process by example and provide a robust baseline of leadership to help sustain the RAP process during times of PAC leadership transitions or challenges. Another opportunity for enhancing progress in AOCs is to support PAC leaders to ensure effective process management. Steps the OGL AOC program might consider include:

- Supporting PAC leaders and members with opportunities for training and assistance for effective process management;
- Creating opportunities for PAC dialogue and feedback to provide trouble-shooting that supports effective process management by PAC leadership;
- Assessing PAC members' expectations for the state's leadership role in the process and calibrating the level of state leadership accordingly,
- Assisting PACs with clarifying and articulating ground rules for meetings, and adhering to these ground rules;
- Encouraging the PACs to undertake consensus (rather than majority-rules) decision-making;
- Providing PACs with training or support for developing and abiding by consensus rules;
- Articulating details about the steps in, or requirements of, the RAP process; and
- Providing PACs with advance notice and opportunity for feedback when federal or state agencies modify RAP process steps or requirements.

The state agency does not have authority over the PAC's leadership, therefore leading the process by example and supporting PAC leadership's effective process management are strategies that can enable the state to help the PACs address their leadership needs without interfering with the PAC's autonomy.

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Looking back, looking forward

This study provides insights from PAC participants' experiences over the past three decades and provides a current analysis of the AOC program from the PAC participants' vantage point. As discussed earlier, several consonant themes emerge from both the perspectives of government officials from the early AOC literature and the PAC participants' perspectives in this study. However, the literature provides the perspectives of government officials from 20 years ago. Further, the unit of analysis in this study is at the individual PAC participant level, and not officials at the government level. Given the emergence of consonant themes across units of analysis and eras in time, this is a compelling reason for future research to explore common and divergent perspectives on AOC progress including both the individual PAC participant level and government official level units of analysis. It would be informative to understand how government officials' perspectives have or have not changed over time and to understand the contemporary themes and factors shared among PAC participants and government officials.

While this study provides many insights into the factors that influence the efficacy of public engagement in the progress of environmental decision-making exclusive to the AOC program, several broader questions remain for future research, such as:

- What lessons can be drawn from understanding the similarities and differences between AOC PACs and other models of public advisory entities for community-based collaborative ecosystem management processes?
- Are there differences in implementation progress where local government representatives are or are not included in a community-based collaborative process?
- Are there differences in environmental outcomes of remediation where private sector representatives are or are not included in a community-based collaborative process?

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By looking back at the past three decades of Michigan's Area of Concern program, this study provides an opportunity for the State of Michigan's AOC program to learn from the experiences and perspectives of PAC participants and carry these lessons into the future of the AOC program's management and priorities. Looking forward there are opportunities not only for the AOC program to make changes that better enable PACs to influence progress, but also for other government programs to undertake community-based collaborative ecosystem management initiatives. As governments continue to react to emergent water quality issues, and as the public increasingly demands accountability, transparency, and democracy in the processes to improve water quality, the AOC program is both an exemplary and cautionary tale of how to manage the process of community-based collaborative ecosystem management initiatives.

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