

RECLAMATION

Managing Water in the West

Understanding Incentives and Disincentives for Conflict Prevention and Mitigation: A Case Study Examination of the Bureau of Reclamation's Response to the Endangered Silvery Minnow in the Middle Rio Grande Basin

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Disclaimer:

The findings and conclusions in this report are those of the author(s) and do not necessarily represent the views of Reclamation.

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1 Executive Summary

This research grew out of a collaborative research effort between the Bureau of Reclamation (Reclamation) and Oregon State University that seeks to develop a set of specialized tools and teaching modules for the Reclamation water managers. These tools will aid Reclamation in detecting, preventing and mitigating water-related conflicts, as well as to foster collaboration. This case study serves as a companion document to the study of incentives and disincentives for conflict prevention and mitigation in Reclamation (see report titled, “An Investigation of Incentives and Disincentives for Conflict Prevention and Mitigation in the Bureau of Reclamation’s Water Management”). This case study examines how those various incentives and disincentives influenced decision making in Reclamation in the case of the Middle Rio Grande silvery minnow.

After the Middle Rio Grande silvery minnow was listed as an endangered species in 1994 under the Endangered Species Act (ESA), Reclamation and other federal agencies were presented with challenge to determine how it should work to protect the endangered silvery minnow. The conflicting messages of the ESA and Reclamation’s dedication to prioritizing water delivery to people over the environment set the stage for conflict over how ESA should be implemented by Reclamation.

This study set out to answer the question: Within the Institutional Analysis and Development (IAD) framework (Ostrom, 1998, 2005, & 2011), what incentives and disincentives for conflict prevention and mitigation influence Reclamation (the actor) and its decision making regarding the endangered Middle Rio Grande silvery minnow? To answer the research question, the IAD framework was applied to a case study of Reclamation decision making at the policy level. The IAD framework provides a structured way to determine how informal institutions affect the incentives experienced by individuals and their resultant behavior (Sabatier, 2007). This paper set out to answer the question: Within the IAD framework, what incentives and disincentives for conflict prevention and mitigation influence Reclamation and its decision making regarding the endangered Middle Rio Grande silvery minnow? In this case study two key Reclamation decision points/actions are analyzed, 1) the decision to claim it lacked discretion over water allocation, and 2) the formation of the Middle Rio Grande Endangered Species Collaborative Program.

These two actions explored in this case study illustrate both conflict and cooperation in the Middle Rio Grande basin. The theory of institutional rational choice (Smith & Frederickson, 2003 and Hall & Taylor, 1996) when applied within the IAD framework provides insight into why Reclamation (the actor)

might have acted in the way that it did. Specifically, the attributes of the community and rules-in-use help provide a possible explanation of Reclamation decisions and actions in regards to protecting the silvery minnow.

Incentives for conflict mitigation, such as a desire to avoid litigation, pressure from upper management, and the availability of funding, explain why the Middle Rio Grande Endangered Species Collaborative Program (MRGESCP) may have been formed. On the other hand, the decision to assert that Reclamation lacked discretion, despite knowing that this might result in conflict, can be attributed to disincentives for conflict prevention. In this case, while Reclamation has a formal requirement for conflict prevention, other informal rules indicate the opposite and thus conflict prevention was not seen as a rule when determining how to proceed with the ESA lawsuit. Also, a lack of acknowledgement of the importance of conflict prevention and a culture that favors the old mission of Reclamation, which focuses on water provision as the ultimate measure of success may have contributed to Reclamation's decision to assert that it lacked discretion over water allocation.

Based on the minor conflict that occurred after the 1996 drought over the death of thousands of minnows, Reclamation was aware that claiming to lack discretion over water allocation in the San Juan Chama and Middle Rio Grande Projects might result in conflict. However, the fact that Reclamation reaffirmed this position in its 1999 biological assessment indicates that it ignored the possible consequences of that action (or viewed them as inconsequential). This can be attributed to disincentives for conflict prevention that exist within Reclamation. A lack of acknowledgement of the importance of conflict prevention (a rule of thumb within Reclamation) and a culture that favors the old mission of Reclamation, which focuses on water provision as the ultimate measure of success may have contributed to Reclamation's decision to assert that it lacked discretion over water allocation. On the flip side, how a collaborative program emerged amidst contentious litigation can be explained by looking at the incentives for conflict mitigation within Reclamation. A desire to avoid litigation, pressure from upper management, and the availability of funding explain why the MRGESCP was formed.

2 Introduction

In the absence of a formal national level water management policy or statute in the United States, some have called the Endangered Species Act of 1973 (ESA) the de facto national water policy for the United States (Cody & Carter, 2009). While this characterization of the ESA can be contested on either side, the influence of the ESA on water management is indeed great. One particular example of its influence is on Reclamation's water management in the Middle Rio Grande basin. The silvery minnow was listed as an endangered species in the Middle Rio Grande under the ESA in 1994 (U.S. Fish and Wildlife Service, 2010). In subsequent years, conflict emerged between the groups advocating on behalf of the minnow and the federal agencies tasked with protecting and recovering the species, including Reclamation (Katz, 2007).

A key area of policy debate was Reclamation's ability to reallocate water in order to avoid jeopardizing or harming the silvery minnow and its critical habitat in light of its contractual obligations to deliver water to users (Benson, 2008). At the same time as this contentious litigation on Reclamation's discretion, a unique collaborative initiative emerged in the basin to help with conflict mitigation and prevention (Katz, 2007; Kelly & McKean, 2011; Pak, 2011). While other studies have looked at the case of the silvery minnow, an explanation of why varying degrees of conflict and cooperation occurred has not previously been investigated. This case study attempts to fill this research gap.

2.1 Background

As it prepares to manage and deliver water, as well as generate power in the western United States, Reclamation recognizes that it is in its best interest to promote proactive conflict prevention/mitigation and cooperation (Bureau of Reclamation, 2006; National Research Council, 2006). These efforts will allow Reclamation to accomplish its mission to "manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public" with greater efficiency and at reduced costs due to decreased project delays and litigation actions ("Bureau of Reclamation: About Us," 2010). This raises the question: is Reclamation currently promoting conflict prevention/mitigation and collaborative programs, as it intends?

This report is part of a larger collaborative effort between Reclamation and Oregon State University (OSU) that seeks to develop a set of specialized tools and teaching modules for Reclamation water managers. These tools will aid Reclamation in detecting, preventing and mitigating water-related conflicts, as well as to foster collaboration. This case study serves as a companion document to

the study of incentives and disincentives for conflict prevention and mitigation in Reclamation (see report titled, “An Investigation of Incentives and Disincentives for Conflict Prevention and Mitigation in the Bureau of Reclamation’s Water Management”). While that report identified incentives and disincentives, this case study examines how those factors influenced decision making in Reclamation in the case of the Middle Rio Grande silvery minnow. A short summary of the previous report’s findings are presented below to provide context for the case study at hand.

2.2 Inventory of Incentives and Disincentives

Thus, researchers at Oregon State University (OSU) investigated the incentives and disincentives for conflict prevention and mitigation in Reclamation’s water management (Brown et al., 2009; Ogren et al., 2012). Those studies queried Reclamation employees through surveys and focus groups to determine what incentives and disincentives exist in the agency. In the inventory done by Ogren et al. (2012) twenty one Reclamation employees participated in the survey and focus groups at two conflict management courses in Sacramento, California and Boise, Idaho.

The two dominant disincentives for conflict prevention (and to some extent mitigation) were identified: a lack of resources and Reclamation’s organizational culture (specifically its reliance on crisis management, water delivery tunnel vision, and being slow to change). The two are linked in a cyclical fashion. In the view of the study participants the reactive culture in Reclamation leads to a lack of resources for more proactive initiatives as resources were reallocated to conflict mitigation from conflict prevention. Without proactive efforts geared toward conflict prevention, conflicts will continue to arise and consume time, money, and human resources. Other disincentives identified include a lack of forward planning, the existence of an acceptable bandwidth or level of conflict, a perception that conflict is unavoidable or entrenched, politics, and limits on acceptable actions associated with the legal authorization of Reclamation projects. Fewer incentives for conflict prevention and mitigation were identified, but include, pressure from higher management, the promotion of collaboration within Reclamation, and a desire to avoid litigation (Ogren et al., 2012). A summary of the incentives and disincentives identified in the final report is presented below (Table 1).

Table 1. Summary of incentives and disincentives identified (Ogren et al. 2012)

	Incentives	Disincentives
Conflict Prevention	<ul style="list-style-type: none"> • Pressure from higher management • Promotion of collaboration with others outside of Reclamation • Desire to avoid litigation 	<ul style="list-style-type: none"> • Culture of Reclamation (i.e., crisis-driven, water delivery focused, slow to change) • Limited availability of funding, time, and staff • Reallocation of financial resources (i.e., from projects with prevention efforts to projects with conflict) • Reallocation of other resources (i.e., from projects with prevention efforts to projects with conflict) • Politics • Acceptable bandwidth of conflict • Perception that conflict is unavoidable or entrenched in all projects
Conflict Mitigation	<ul style="list-style-type: none"> • Allocation of financial resources • Allocation of human resources • Pressure from higher management • Pressure from outside Reclamation (e.g., Congress or stakeholders) • Desire to resolve ongoing litigation 	<ul style="list-style-type: none"> • Culture of Bureau (i.e., crisis-driven, water delivery focused, slow to change) • Discomfort associated with actions needed and lack of skills to pursue those actions • Limited availability of funding, time, and staff
General	<ul style="list-style-type: none"> • Trust/relationships created from collaboration, conflict prevention, and conflict mitigation efforts 	<ul style="list-style-type: none"> • Legal authorization and other legal constraints • Lack of strong leadership

While the identification of incentives and disincentives is important for helping Reclamation promote conflict prevention and mitigation, it is also critical to explore how these factors influence decision making. With a list of incentives and disincentives gathered from a survey and focus groups of Reclamation employees, the next step in answering the question above is to examine how those incentives and disincentives factor into Reclamation decision making. This report focuses on completing this second step through a case study employing the Institutional Analysis and Development (IAD) framework.

This case study aims to provide insight into how incentives and disincentives for conflict prevention and mitigation factor into Reclamation decision making. That is, the incentives and disincentives listed above are used to explain why Reclamation made its decisions regarding the protection of the Middle Rio Grande silvery minnow. It will also serve to explain the varying degrees of conflict and cooperation.

The IAD framework is applied to a case study of Reclamation decision making at the policy level. Specifically, this report seeks to answer the research question: Within the IAD framework, what incentives and disincentives for

conflict prevention and mitigation influence Reclamation (the actor) and its decision making regarding the endangered Middle Rio Grande silvery minnow?

To address this research question, first the framework and theory which will be used for the analysis of the policy—the IAD framework and the theory of institutional rational choice—are described. Next an overview of the policy—from agenda setting through policy implementation—is provided. This includes both a description of the actual policy as well as background on the ESA and Reclamation. Then the policy is analyzed describing and discussing the physical conditions, attributes of the community, rules-in-use, action arena, patterns of interactions, and outcomes as outlined by the IAD framework.

3 Analytical Framework

The fields of public policy and public administration provide a theory and framework for analyzing how different incentives and disincentives factor into Reclamation’s decision making through the IAD framework and institutional rational choice theory. The IAD framework provides a means by which to identify the elements of a policy and relationships between those elements in an effort to better understand and explain policy processes and outcomes. The theory of institutional rational choice is used as the underlying theory to identify which elements of the framework offer an explanation for the policy outcomes. The following subsections provide a description of the framework and theory used to analyze the policy subject of this study.

3.1 Institutional Analysis and Development Framework

The beginnings of what would become the IAD framework was first published in 1982 and sought to provide a structured way to determine how institutions (both formal organizations and informal rules and norms) affect the incentives confronted by individuals and their resultant behavior and actions (Sabatier, 2007). After two decades of further development, the IAD framework provides a means by which to answer the question of how incentives and disincentives impact decisions within Reclamation concerning conflict prevention and mitigation.

The IAD Framework is a general systems theory approach to understanding policy processes (McGinnis, 2011). It is a multi-tier conceptual map. While in theory the framework can serve to offer predictions of what may happen, it is much better used for “clarifying what to think about when we are observing a phenomenon having to do with people’s resources and lives in the workday world” (Blomquist & deLeon, 2011, pp. 1–2). The following paragraphs provide a brief description of each of the components of framework (Figure 1).

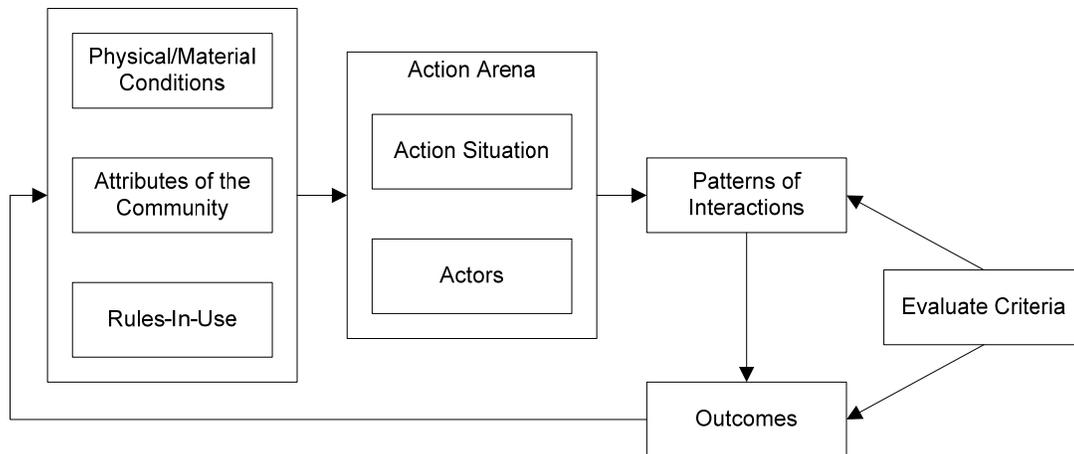


Figure 1. IAD Framework. In this policy framework Ostrom and others argue that the action arena is impacted by external factors such as the physical conditions, attributes of the community in which an issue occurs and the formal and informal rules that structure individual and organizational behavior. This results in a pattern of interactions which produce various outcomes (Sabatier, 2007).

The primary focus of the IAD framework’s analysis of policy is the action arena, which is comprised of the action situation and actor. Seven clusters of variables are used to characterize an action situation in the IAD Framework: 1) participants, 2) positions, 3) outcomes, 4) action-outcome linkages, 5) the control exercised by participants, 6) information, and 7) the costs and benefits of the outcomes (Figure 2). The actor is an individual or a group of individuals acting as one and their actions are their behaviors. Reclamation has been selected as the actor that is analyzed in this case study. For analysis of behaviors, such as those demonstrated by Reclamation in the Middle Rio Grande basin, a theory or model must be used as a foundation for four necessary assumptions: 1) resources held by the actors, 2) value actors assigned to actions and the state of the world, 3) method by which actors “acquire, process, retain, and use knowledge and information,” and 4) the way an actor chooses a course of action (Sabatier, 2007). In this study, the theory of institutional rational choice is used (see section 3.2 for an explanation of this theory).

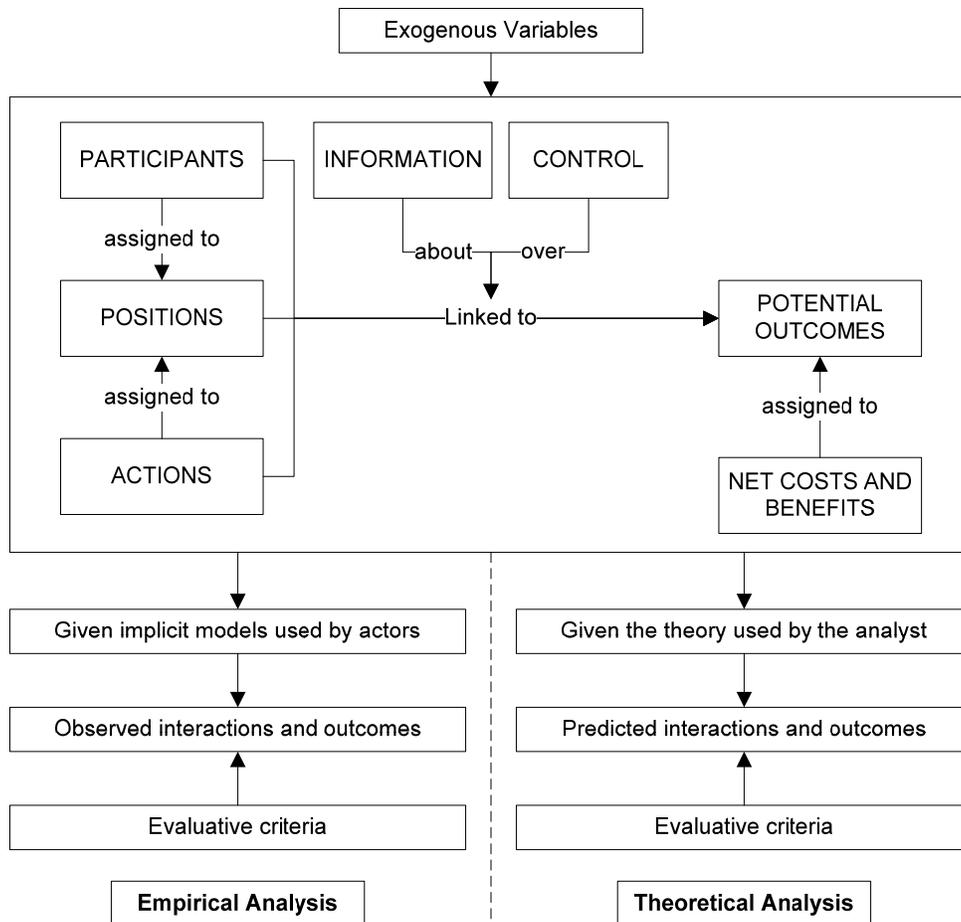


Figure 2. Internal components of the action situation. This diagram illustrates what occurs within the action situation in the IAD framework. It highlights how participants can pursue different positions and actions that are linked to various outcomes. The diagram also illustrates how that linking of participants, positions, actions, and outcomes can be analyzed empirically and theoretically (Ostrom, 2005).

The IAD framework posits that a number of factors influence the action arena as independent variables, including: the physical and material conditions present, the attributes of the community, and the rules-in-use. Physical and material conditions serve as constraints on what is physically possible. The process of taking into account the physical and material conditions includes how the world in which the policy is being developed, adopted, and implemented impacts the possible actions, outcomes, and information available.

Attributes of the community that influence the action arena include the norms of behavior generally accepted in the community, the level of common understanding shared among actors, the extent of homogeneity in the preferences of those in the community, and the distribution of resources among those impacted by the policy (Sabatier, 2007). This group of attributes is often called the “culture” of the community. The attributes of the community provide structure to the action arena along with the rules-in-use.

Rules-in-use guide the behavior of actors in the arena and order their relationships with one another. Rules-in-use are not limited to formal rules, but include informal institutions, which are “shared concepts used by humans in repetitive situations organized by rules, norms, and strategies” (Sabatier, 2007). Those informal institutions are defined as follows:

- *Rules* – “shared understandings that certain actions in particular situations must, must not, or may be undertaken and that sanctions will be taken against those who do not conform” (Ostrom, 1998, p. 1)
- *Norms* – “internal valuations that an individual associates with an action or choice, often learned through interactions with others” (Ostrom, 1998, p. 1)
- *Strategies* – “regularized plans that individuals make within the structure of incentives produced by rules, norms, and expectations of the likely behavior of others in a situation affected by relevant physical and material conditions” (Sabatier, 2007, p. 23)
- *Heuristics* – “rules of thumb that are learned over time through experiences, which may also influence the actions and decisions of individuals” (Ostrom, 1998, p. 1)

Ostrom presents three levels of rules: *operational rules* (which directly affect day to day decisions made by the participants in any setting), *collective choice rules* (which affect operational activities by dictating who is eligible and which rules are to be used in changing the operational rules), and *constitutional choice rules* (which affect operational activities also by dictating who is eligible as well as the rules to be used in crafting the set of collective choice rules). While emphasizing the importance of rules, Ostrom notes in her article that anticipated consequences (and rational choice) also influence decision making (Sabatier, 2007). All three levels of rules are touched on and altered in the debate over the silvery minnow and Reclamation discretion over project water, but this case study focuses on collective choice rules. The incentives and disincentives identified in the previous chapter serve as rules-in-use and attributes of the community and are the focus of the analysis in this case study.

Partnered with these different levels of rules, the IAD framework can be used to analyze three different tiers of decision making (Figure 3):

- *Constitutional* – decisions are made regarding the rules of policy making who is eligible to participate in the policy making process
- *Policy or collective choice* – decisions are made within the constraints of collective choice rules
- *Operational* – decisions are made based on incentives present and result in outcomes with direct impact on the world (Sabatier, 2007)

This case study evaluates a problem in the collective choice.

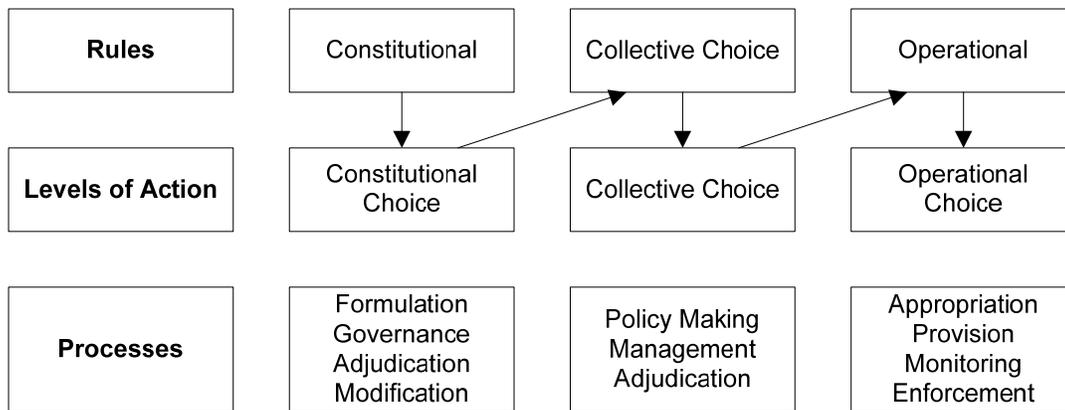


Figure 3. Levels of actions and outcomes (Hardy & Koontz, 2009)

What results from the action arena are the patterns of interactions between the action situation and actor(s) as well the outcomes (Figure 1). Those patterns of interactions and outcomes can then be analyzed using a number of evaluative criteria, such as economic efficiency, fiscal equity, redistributive equity, accountability, conformance to general morality, and adaptability (Sabatier, 2007). Ostrom argues that in addition to analyzing outcomes, an analyst can make predictions about what outcomes may result (Sabatier, 2007). However, Blomquist and deLeon disagree and state the real value of the framework is its explanatory (versus predictive) ability (Blomquist & deLeon, 2011). This study utilizes the explanatory power of the IAD framework to analyze Reclamation policies and their associated decision making processes.

Based on the disincentives and incentives for conflict prevention and mitigation listed in Table 1 from the inventory study of incentives and disincentives each can be categorized as either an attribute of the community or rule-in-use (Tables 2 and 3). This information is used later in the case study (section 5.4) to explain Reclamation decision making regarding the Middle Rio Grande silvery minnow.

Table 2. Incentives and disincentives for conflict prevention as attributes of the community and rules-in-use

	Incentives	Disincentives
Attributes of the Community	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Culture of Bureau (i.e., crisis-driven, water delivery focused, slow to change) • Limited availability of funding, time, and staff • Reallocation of financial resources (i.e., from projects with prevention efforts to projects with conflict) • Reallocation of other resources (i.e., from projects with prevention efforts to projects with conflict)
Rules – In-Use	<ul style="list-style-type: none"> • Pressure from higher management • Promotion of collaboration with others outside of Reclamation • Desire to avoid litigation • Trust/relationships created from collaboration, conflict prevention, and conflict mitigation efforts 	<ul style="list-style-type: none"> • Politics • Acceptable bandwidth of conflict • Perception that conflict is unavoidable or entrenched in all projects • Legal authorization and other legal constraints • Lack of strong leadership

Table 3. Incentives and disincentives for conflict mitigation as attributes of the community and rules-in-use

	Incentives	Disincentives
Attributes of the Community	<ul style="list-style-type: none"> • Allocation of financial resources • Allocation of human resources 	<ul style="list-style-type: none"> • Culture of Bureau (i.e., crisis-driven, water delivery focused, slow to change) • Limited availability of funding, time, and staff
Rules – In-Use	<ul style="list-style-type: none"> • Pressure from higher management • Pressure from outside Reclamation (e.g., Congress or stakeholders) • Desire to resolve ongoing litigation • Trust/relationships created from collaboration, conflict prevention, and conflict mitigation efforts 	<ul style="list-style-type: none"> • Discomfort associated with actions needed and lack of skills to pursue those actions • Legal authorization and other legal constraints • Lack of strong leadership

3.2 Institutional Rational Choice

Public administration offers institutional rational choice (IRC) as a theory that can be employed in the IAD framework when analyzing what factors influence decisions and actions in the action arena. The use of the theory is necessitated by the IAD framework in that it is needed to make assumptions about how actors behave and act in a certain way. IRC is based on rational choice theory, which argues that individuals (or actors) pursue actions and outcomes that maximize their own utility; however, it seeks to expand upon that idea offering that institutions influence and guide individuals to act in a way that benefits the

collective. In this sense individuals make decisions with bounded rationality. Through heuristics, norms, rules, and strategies which structure the interactions of individuals, institutions, both formal and informal, can direct individuals to make decisions and choose actions which benefit the collective group (Sabatier, 2007; Smith & Frederickson, 2003). IRC theory argues that institutions influence the actions and choices of individuals by structuring the interactions and choices of individuals, affecting the alternatives available, or by providing information and enforcement mechanisms that reduce uncertainty about the corresponding behavior of others and allow gains from exchange (Ostrom, 2011; Sabatier, 2007; Smith & Frederickson, 2003).

Hall and Taylor (1996) identify four key features of IRC. First, IRC is based on three assumptions: actors have a fixed set of preferences, the actors will behave in a way that will allow them to attain those preferred outcomes (maximize them so to speak), and this behavior and action is strategic and done with extensive calculations. Second, politics is a series of collective action dilemmas. Third, rational choice institutionalism emphasizes the role of strategic interaction in how actors make decisions. Finally, fourth, institutions are created in order to realize certain values that can be identified by looking at the function of an institution (Hall & Taylor, 1996).

4 Policy Background and Overview

Three pieces of background information are necessary for understanding the context of the policy issue at hand with the case of the silvery minnow and Reclamation's decision making. The first subsection describes the federal agency at the focus of this policy debate, the Bureau of Reclamation. Then the following subsection provides a brief description of the ESA and what it requires of federal agencies. These two sections serve to explain the emergence of the topic of Reclamation's discretion on project water—the agenda setting of the policy. The final subsection lays out a narrative history of the case of endangered Middle Rio Grande silvery minnow and Reclamation, including the development, adoption, and implementation of the policy. An evaluation of the policy is addressed in the next section, Analysis.

4.1. Bureau of Reclamation

The Bureau of Reclamation, an agency of the United States Department of Interior (DOI), was established in 1902 through the Reclamation Act. When first formed, Reclamation's mission was to serve as a water developer in the western United States, helping to promote economic activity through its various projects including dams, canals, and power plants. Over time that mission has changed. Today, the role of Reclamation is that of a water manager, rather than its original

role as a water developer (Bowersox, 2000). The formal mission of the federal agency is to “manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public” (Bureau of Reclamation, 2010).

To accomplish its mission, Reclamation has identified two primary tasks, “(1) the operation, maintenance, and rehabilitation of existing structures and systems and (2) the creation and nurturing of brokered agreements among a variety of players affected by the management of water resources” (National Research Council, 2006, p. 71). While distinguished as two tasks, Reclamation realizes their interdependence, understanding that operation, maintenance, and rehabilitation of existing structures and facilities may necessitate the creation and implementation of agreements with customers and stakeholders (National Research Council, 2006).

Reclamation projects are governed by both the general statutes for the agency as well as specific authorizing statutes for a project. Under these statutes, “project water” is managed for a number of uses including irrigation. This water is legally distinct from other kinds of water in that rights to naturally flowing water is obtained through the state, while project water is managed at the federal level. Irrigators and other water users obtain project water through two types of agreements with Reclamation: repayment contracts (where Reclamation uses water as means for paying for services such as help operating or maintaining a project) and water service contracts (where Reclamation is paid to deliver water annually for a certain number of years). The specific terms of the agreement may vary from contract to contract but all contain a provision that excuses the government of liability in the case where it is unable to deliver the water dictated in the contract (Benson, 2008).

In the Middle Rio Grande basin, the Middle Rio Grande Conservancy District (MRGCD) has contracts with Reclamation to receive project water from two Reclamation projects: the Middle Rio Grande Project and the San Juan-Chama Project. This water irrigates more than 60,000 acres south of Santa Fe, New Mexico. Reclamation also has contracts with water users for this project water (Benson, 2008). It is the delivery of this water that is at the center of the debate of how Reclamation should protect the Middle Rio Grande silvery minnow.

4.2 The Endangered Species Act of 1973

The ESA establishes policies and procedures for identifying, listing, and protecting species that are endangered or threatened with extinction. A species can be listed as endangered (“any species which is in danger of extinction throughout all or a significant portion of its range”), threatened (“any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range”) or a species of concern (U.S.

Fish and Wildlife Service, 2010, p. 1). Five factors, found in section 4(a)(1) of the Act, are considered when listing a species:

- The present or threatened destruction, modification, or curtailment of its habitat or range
- Overutilization for commercial, recreational, scientific, or educational purposes;
- Disease or predation
- The inadequacy of existing regulatory mechanisms
- Other natural or manmade factors affecting its continued existence (U.S. Fish and Wildlife Service, 2010)

ESA section 7(a)(2) requires each federal agency to “insure that any action authorized, funded, or carried out” by the agency is not likely to cause jeopardy to a listed species or adversely affect a designated critical habitat. Section 7(b)(3)(A) lays out the consultation process for determining if an action may jeopardize a listed species or its critical habitat. This process consists of three steps: 1) determine if the species or critical habitat is present, 2) prepare a biological assessment, and 3) conduct a formal consultation with DOI resulting in a Biological Opinion (BO). The third step is only completed if the first two reveal that the species/habitat is present and is likely to be affected. A BO is a formal decision as to whether the proposed federal action jeopardizes the species or its designated critical habitat. If the BO states that it jeopardizes the species and/or its critical habitat it also lays out reasonable prudent alternatives (RPAs) the federal agency can do to reduce jeopardy and protect the agency from the liability of a taking¹ of the species (Benson, 2008; U.S. Fish and Wildlife Service, 2010).

While the federal statute dictates that all federal agencies must follow this process, ESA implementing rules limit the strength of this policy. The implementing rules codified in 50 CFR 402.03 state “Section 7 and the requirements of this part apply to all actions in which there is discretionary federal involvement or control.” However, discretionary was left undefined, leaving the rule open to interpretation. This later becomes a key area of debate in the case of the silvery minnow and Bureau of Reclamation, as the agency claims it lacks discretion and various environmental groups sue to challenge that claim (Benson, 2008).

4.3 The Silvery Minnow and the ESA

Historically one of the most abundant fish in the Rio Grande, ranging roughly 2,400 miles from Espanola in northern New Mexico to the Gulf of Mexico, the silvery minnow (*Hybognathus amarus*) was listed as endangered under the Endangered Species Act (ESA) in 1994. At the time of its listing, the minnow was only present in a 174-mile stretch of the Middle Rio Grande between

¹ To take a species includes to harass, harm, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. Those guilty of taking a species are subject to criminal and civil charges (U.S. Fish and Wildlife Service, 2010).

Cochiti Dam and the headwaters of Elephant Butte Reservoir in New Mexico—only 7% of its historical range (Benson, 2008; U.S. Fish and Wildlife Service, 2010) (Figure 4). The decline of the minnow is primarily attributed to a lack of water in the Rio Grande leading to destruction of the species’ habitat. The river is managed through a series of dams and irrigation projects which divert the water for irrigation and municipal use including Reclamation projects (Benson, 2008; O’Connor, 2002; U.S. Fish and Wildlife Service, 2010). In times of drought, such as in 1996 and 2000, thousands of silvery minnows were killed and the species was brought close to extinction (O’Connor, 2002). In addition to habitat loss, competition and predation by introduced non-native species as well as declines in water quality may also contribute the decline of the species (U.S. Fish and Wildlife Service, 2010). In the years following its listing, the silvery minnow became the focal point of a multi-year lawsuit (Table 4).

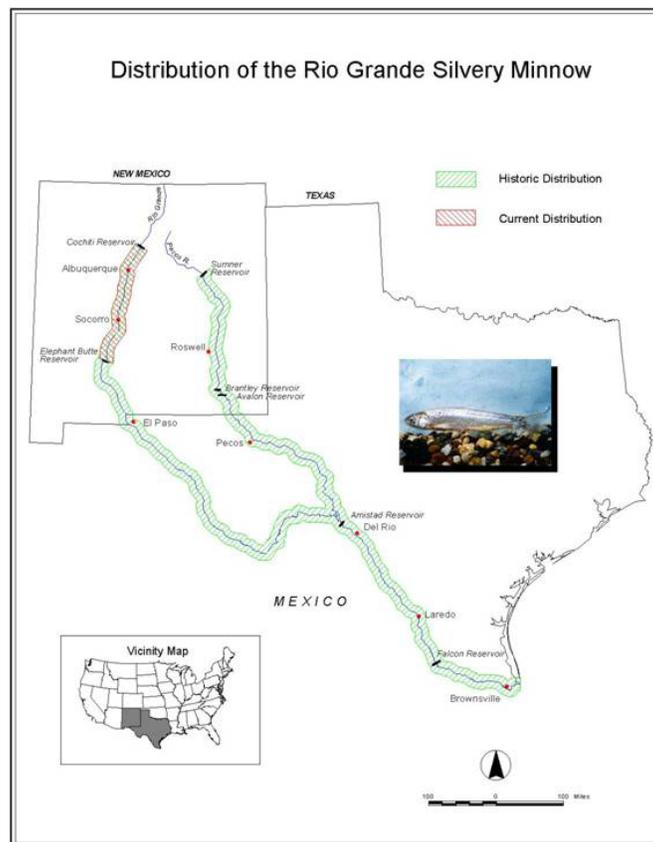


Figure 4. Historical and current range of silvery minnow in Rio Grande (U.S. Fish and Wildlife Service, 2010)

Table 4. Timeline of endangered Middle Rio Grande silvery minnow* (Benson, 2008; Bureau of Reclamation, 2010; Drake, 2001; Eidem, 2005; Katz, 2007; Kelly & McKean, 2011; O'Connor, 2002; *Rio Grande Silvery Minnow v. Bureau of Reclamation*, 2010; U.S. Fish and Wildlife Service, 2010)

Year	Event
1994	Middle Rio Grande Silvery Minnow listed as endangered under the ESA
1996	<ul style="list-style-type: none"> • Beginning of a severe drought • River diverted to San Acacia to meet MRGCD contract, resulting in minnow kill • Reclamation starts San Juan-Chama supplemental water program to meet irrigation contracts while keeping water in river for minnow • District officials insisted federal river managers were responsible for the minnow kill by not releasing enough reservoir water; the managers said the water was reserved for other users; no charges were filed • MRGCD and Fish and Wildlife Service (FWS) later reconciled this issue in a settlement in which the district agreed to cooperate to protect the minnow but did not admit responsibility for the fish kill
1999	<ul style="list-style-type: none"> • FWS publishes Middle Rio Grande Silvery Minnow Recovery Plan which includes designation of critical habitat • Reclamation publishes biological assessment in accordance with ESA Section 7 requirements; argues it lacks the discretion to manage water to protect minnow due to commitments in water contracts • Environmental groups file lawsuit on behalf of minnow against Reclamation and Army Corps of Engineers (ACE) claiming the two federal agencies failed to complete the ESA Section 7 consultation process and thus jeopardized existence of species (<i>Rio Grande Silvery Minnow v. Bureau of Reclamation</i>) • MRGCD sues the Department of Interior over the designation of critical habitat (<i>Middle Rio Grande Conservancy District vs. Babbitt</i>; a case that is later combined with the previously listed lawsuit) • City of Albuquerque, MRGCD, New Mexico, and Rio Chama Acequia Association add themselves as or interveners to protect water claims
2000	<ul style="list-style-type: none"> • Another drought hits the basin • Court-ordered mediation produces two agreements which include provisions to increase captive population of minnows and pay MRGCD and the City of Albuquerque for water to stay in the river to maintain continuous flows • A MOU between federal and non-federal entities creates the Middle Rio Grande Endangered Species Collaborative Program
2001	<ul style="list-style-type: none"> • Reclamation and ACE finish consultation process • FWS releases Biological Opinion (BO) • Lawsuit plaintiffs challenge BO, arguing that the federal agencies did not meet the ESA Section 7 consultation requirements and that Reclamation did have the discretion to use project water (specifically from the San Juan-Chama Project) for the protection of the minnow
2002	<ul style="list-style-type: none"> • Federal district court ruling upholds 2001 BO but agrees with plaintiffs that Reclamation does have the discretion to use water from the San Juan-Chama and Middle Rio Grande Projects for ESA purposes (it was also determined that ACE did not have the same discretion in its projects) • State of New Mexico and US sign a Water Conservation Agreement that provides for up to 100,000 acre feet of water from the Rio Grande Compact for minnow protection (Rio Grande Compact Commission supports agreement and allows for operational changes needed to store water for minnow use) • FWS releases 2002 BO in light of significant drought; plaintiffs challenge • Court rules that 2002 BO is arbitrary and capricious but also imposes flow standards with lower flow levels than 2001 BO • Defendants and interveners appeal court decision to the Court of Appeals

Year	Event
2003	<ul style="list-style-type: none"> • FWS issues 2003 BO (March) • Tenth Circuit Court of Appeals reaffirms lower court's decision (June) • Federal defendants and interveners petition for a rehearing • Congressional House Committee on Natural Resources holds hearing in New Mexico to assess the minnow's impact on the state • State of New Mexico and US enter into an "Emergency Drought Water Agreement" (which was effectively an amendment to the 2002 agreement that provided for an additional 217,500 acre feet of Rio Grande Compact water) • Tenth Circuit Court of Appeals agrees to reconsidered June 2003 ruling • New Mexico Senators Bingaman and Domenici attach a rider to the Energy and Water Development Appropriations Act that extended the applicability of the 2003 BO and divested Reclamation of its newly acknowledged discretion as stop gap measures
2004	<ul style="list-style-type: none"> • Tenth Circuit Court of Appeals rules that its June 2003 ruling is moot since the time frame covered by the district court's 2002 ruling had passed; the court also orders the federal district court to determine if any other issues still need to be resolved • Congress permanently limits Reclamation's discretion on the San Juan-Chama project water and extends the applicability of the 2003 BO to 2013 in the Consolidated Appropriations Act • Plaintiffs file a motion to dismiss remaining claims and then later withdraw request
2005	<ul style="list-style-type: none"> • Plaintiffs, the City of Albuquerque, and the Albuquerque-Bernalillo County Water Utility Authority (Water Authority) enter into negotiations and reach an agreement that establishes a 30,000 acre feet "Environmental Pool" of water for the minnow • Federal district court rules that Reclamation discretion over San Juan-Chama project water was moot due to the legislation passed in 2003 and 2004; however the previous decisions are not vacated, therefore, they still serve as precedent for future cases • Federal district court also rules that since no legislation was passed for the Middle Rio Grande project water previous court rulings still held • Federal defendants, MRGCD, and Water Authority appeal decision to Tenth Circuit Court of Appeals
2007	Draft Revised Recovery Plan released by FWS
2010	<ul style="list-style-type: none"> • Revised Recovery Plan finalized • 10th Circuit Court of Appeals overrules 2005 district court rulings, stating that the applicability of the 2003 BO as affirmed in the 2003 & 2004 legislative acts mooted the claims of the environmental groups for both the San Juan-Chama and Middle Rio Grande projects

* Over the course of the policy debate 171 discrete actions occurred. This list of events on the timeline includes the most relevant to the analysis in this paper (Eidem, 2005).

As previously stated, federal agencies must follow Section 7 of the ESA for all listed species and go through the consultation process to ensure that none of their actions jeopardize the species. Reclamation started this process for the silvery minnow in the late 1990s to determine if its operations of the Middle Rio Grande and San Juan-Chama projects jeopardized the species. Reclamation's 1999 biological assessment stated that its operating discretion for these projects was limited in two ways and therefore ESA Section 7 requirements did not apply to project operations and allocation of water (Benson, 2008; Drake, 2001; O'Connor, 2002).

The biological assessment's first argument was that Reclamation had an obligation to meet water orders from users in accordance with their water service contracts (Benson, 2008; Drake, 2001). Reclamation argued that to meet its water contract obligations it "exercises discretion in how water is stored in system reservoirs and released through federal facilities, but that discretion is narrowed by the contract requirements and delivery schedules" (Benson, 2008, p. 34). Second, Reclamation stated that its operating discretion was also limited by the project authorizing statutes and the general laws governing the agency. The project authorizing statements limit discretion in that they state that the Middle Rio Grande Project was authorized by Congress for domestic, municipal, and irrigation purposes only, not for fish habitat. General statutes governing Reclamation state "[W]ater can only be stored and released from Reclamation reservoirs for valid beneficial uses, and consequently must be released at a time and in a way to meet water delivery calls" (Benson, 2008, p. 34). US Fish and Wildlife Service (USFWS) agreed with Reclamation's assessment that, regardless of the ESA, it could not reduce deliveries of water from the San Juan-Chama Project or Middle Rio Grande Project to those with contracts for the water and incorporated that information into a 2001 BO (Benson, 2008).

A number of environmental groups, including the Defenders of Wildlife, National Audubon Society, and the Sierra Club, contested this claim and sued Reclamation (along with the Army Corps of Engineers, or ACE) for failing to adhere to the ESA by not properly completing the consultation process. Specifically, the groups claimed that Reclamation did have the discretion to operate its projects and allocate water to instream flows to protect the endangered silvery minnow. Over 15 years the lawsuit was heard and ruled on in a number of courts (Table 2). While the case, *Middle Rio Grande Silvery Minnow vs. Bureau of Reclamation*, worked its way through the courts, Congress passed legislation (riders in the Energy and Water Development Appropriations Act of 2003 and the Consolidated Appropriations Act of 2004) to further limit Reclamation's discretion with the San Juan-Chama project. This legislation directly impacted the court proceedings. In 2005, Federal District Court ruled:

- The charges regarding Reclamation's discretion over San Juan-Chama project water was moot due to the legislation passed in 2003 and 2004
- The previous decision about Reclamation's discretion over San Juan-Chama project was not vacated, therefore, still served as precedent for future cases
- Since no legislation was passed for the Middle Rio Grande project water, previous court rulings still held

In 2010, the Tenth Circuit Court of Appeals overruled the 2005 Federal District Court decision, stating that the 2003 BO mooted the claims of the environmental groups for both the San Juan-Chama and Middle Rio Grande projects (Drake, 2001; Katz, 2007; O'Connor, 2002).

While the lawsuit unfolded, a cooperative initiative also emerged. In 2000, Reclamation with other agencies established the Middle Rio Grande Endangered Species Collaborative Program (MRGESCP). Federal and non-federal organizations signed a Memorandum of Understanding (MOU) to develop the program, which seeks to protect endangered species, including the minnow, while preserving other water uses in a manner that complied with state and federal laws. The MRGESCP contributed to the 2003 Biological Opinion, which still governs water management in the basin today. It initiated the use of new communication tools including daily morning operational conference calls between the water managers help to manage water supply and demand on the daily basis and keep the stakeholders updated on what is going on in the river. In addition to helping with daily water management the MRGESCP also helps build personal relationships amongst agencies and stakeholders, fostering a collaborative spirit. As the USFWS drafts a new Biological Opinion for 2013, the process includes greater engagement of non-federal entities through the MRGESCP (Pak, 2011).

5 Analysis

Having provided a background and the context of the listing and protection of the silvery minnow as well as having described the IAD framework, two actions by Reclamation—its decision to claim it had limited discretion over project water and its creation of the collaborative partnership—are analyzed by working through the various components of the IAD framework. While all pieces of the framework are addressed, particular focus is placed on the factors that structured the action arena in an effort to understand the incentives and disincentives for conflict prevention and mitigation that influence Reclamation (the actor) and its decision making regarding the endangered Middle Rio Grande silvery minnow. Though atypical for most analyses, the action arena, patterns of interactions, and outcomes are described first. Then the independent variables structuring the action arena are described and used to explain how various incentives impacted Reclamation's decisions.

5.1 The Action Arena: Evaluating the Action Situation and Actor

Several groups of participants are present in this action situation, including federal agencies, environmental groups, Congress, and other parties that have a stake in how water is allocated in light of the ESA (Table 5). The participants take the position that either Reclamation does or does not have discretion to reallocate water for the silvery minnow. Within those two positions there are some slight variations (e.g., Reclamation has discretion in some projects but not others). For the sake of this analysis the position is left as an answer of yes or no.

Table 5. Participants and their positions (Katz, 2007; Kelly & McKean, 2011; *Rio Grande Silvery Minnow v. Bureau of Reclamation*, 2010)

Participant	Plaintiff	Defendant	Appellee	Appellant	Intervenor	MRGESCP*	Other	Discretion	
								Yes	No
Albuquerque-Bernalillo County Water Utility Authority		X	X		X				X
Army Corps of Engineers		X		X		X			X
Bureau of Reclamation		X		X		X			X
City of Santa Fe					X				X
Congress							X		X
Defenders of Wildlife	X		X					X	
Department of Interior		X		X					X
Federal District Court							X	X**	X**
Fish and Wildlife Service						X	X		X
Forest Guardians	X		X					X	
Middle Rio Grande Conservancy District		X		X	X	X			X
National Audubon Society	X		X					X	
New Mexico Audubon Council	X		X					X	
Rio De Chama Acequia Association					X				X
Rio Grande Silvery Minnow	X		X					X	
Sierra Club	X		X					X	
Southwest Environmental Center	X		X					X	
Southwestern Willow Flycatcher	X		X				X	X	
State of New Mexico		X		X	X	X			X
Tenth Circuit Court of Appeals							X		X

*Other members of the MRGESCP, not part of the lawsuit, include the New Mexico (NM) Interstream Commission, NM Department of Game and Fish, NM Department of Environment, NM Department of Agriculture, Alliance for Rio Grande Heritage, City of Albuquerque, US Department of Agriculture, NM State University, University of NM, NAIOP (a commercial real estate development association), Bureau of Indian Affairs, Pueblo of Isleta, Pueblo of Sandia, Pueblo of Santa Ana, and Santo Domingo Tribe
 ** The federal district court ruled Reclamation had discretion in some cases but not others.

Information available about the structure of the action arena includes:

- Reclamation has contracts for the San Juan-Chama and Middle Rio Grande Project water
- All contracts contain a provision that excuses the government of liability in the case where it is unable to deliver the water dictated in the contract
- Under ESA Section 7 Reclamation is required to avoid any action that may jeopardize or harm the silvery minnow or its critical habitat
- After 2003, Reclamation discretion regarding San Juan-Chama Project is further limited in the Energy and Water Development Appropriations Act of 2003 and the Consolidated Appropriations Act of 2004
- The 2003 BO remains the official recovery action plan until 2013

- Alternate agreements can reallocate water from other sources for the silvery minnow

With this information the following allowable actions emerged:

- Water delivered as required under contracts without regard for the minnow
- Water is reallocated to protect the silvery minnow
- Other water agreements are developed to set aside water for the silvery minnow
- Reclamation must work with other federal agencies to draft a biological assessment, which USFWS considers when drafting the biological opinion

These actions result in a number of potential outcomes with a number of different costs and benefits (Table 6).

Table 6. Costs and benefits of outcomes

	Costs	Benefits
Reclamation Has Discretion	<ul style="list-style-type: none"> • Dissatisfied customers (water users not receiving water) • Potential lawsuits from water users requesting compensation for failure to meet contractual obligations • Precedent for water allocation in other Reclamation projects 	<ul style="list-style-type: none"> • Means by which to allocate water to protect and recover silvery minnow • Other environmental benefits from increased water instream • Downstream users have more water available outside silvery minnow habitat
Reclamation Does NOT Have Discretion	<ul style="list-style-type: none"> • Death and possible extinction of species • Potential lawsuits from environmental groups requesting compensation for failure to meet contractual obligations or ESA requirements 	<ul style="list-style-type: none"> • Satisfied Reclamation customers • Continuation of business as usual in regards to how Reclamation allocates water (no changes in precedent)
Creation of MRGESCP	<ul style="list-style-type: none"> • Coordination costs (i.e., human and financial resources needed to run program) 	<ul style="list-style-type: none"> • Decreased likelihood of future conflict • Improved relationships between parties • Infrastructure to write future BOs and develop other cooperative agreements for water management • Increased institutional capacity²

Based on this information alone it is not clear what the outcome may be. This is in part due to questions in control over choice. The actor (Reclamation) has limited control at various stages of the lawsuit. While Reclamation thought it had control in the choice to list in the biological assessment that it did not have full discretion over project water, the environmental groups thought otherwise and were able to in part control/restrict its operations for a couple of years through the lawsuit. Even during the course of the lawsuit, the courts held the power to make

² Institutional capacity is defined as the components of the human system that help the entire system mitigate for and adapt to change.

decisions (though Reclamation could and did appeal). Congress also exercised its control through the 2003 and 2004 legislation it passed. Yet at the same time, Reclamation asserted some control over how the silvery minnow is protected by forming the MRGESCP and taking on a more proactive approach to managing endangered species issues.

A number of actors are present in this action arena, including Reclamation, other federal agencies, environmental groups suing Reclamation, the lawsuit intervenors, the courts, and Congress. However, Reclamation has been chosen as the actor for this analysis.

5.2 Patterns of Interactions

The patterns of interactions were centered around the ongoing litigation, but it included a number of cooperative actions. A study by Eidem et al. (2008) reveals the patterns of cooperation and conflict affected by the case of Reclamation and the endangered silvery minnow (Figure 5). Eidem catalogued all of the events related to the silvery minnow that occurred and rated them on a conflict-cooperation intensity scale of -5 to 5, with -5 indicating the most conflictive events and 5 the most cooperative. Cooperation was at its peak in 2000 with the creation of the MRGESCP (B). In some instances conflict was highest when, when the region experienced extreme drought (A and C), but that was not always the case. Rather the situation was most conflictive when there was movement in the case—rulings by the court, appeals, etc. The most common pattern is then whenever a court offers a decision, that ruling is immediately appealed (Eidem et al., 2008).

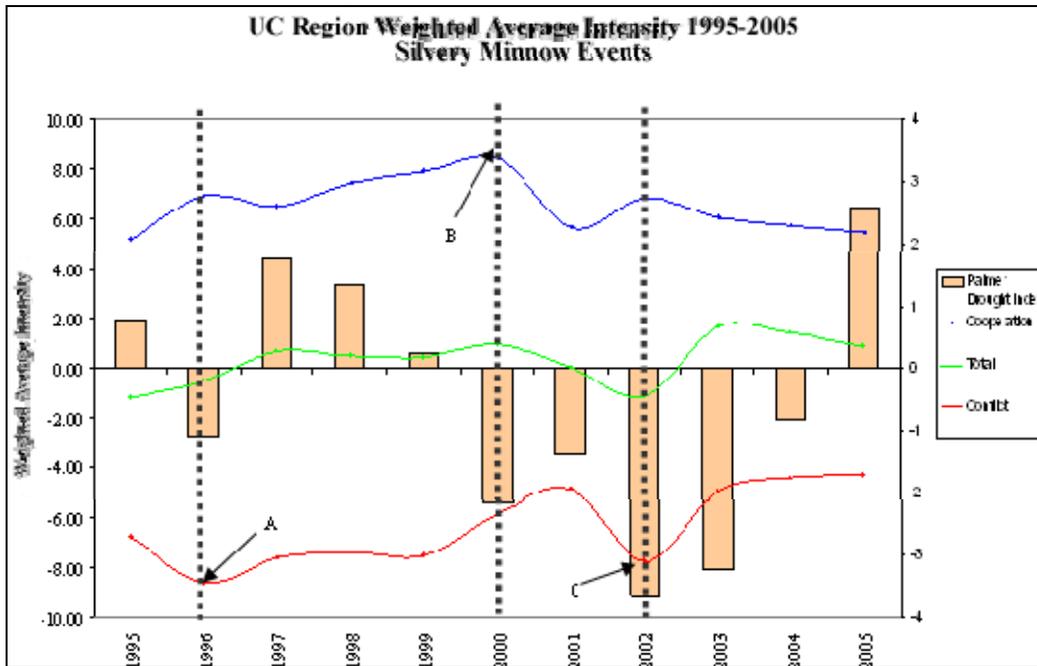


Figure 5. Patterns of cooperative and conflictive events (Eidem et al., 2008)

5.3 Outcomes

In 2010, the Tenth Circuit Court of Appeals overruled the 2005 Federal District Court decision on *Rio Grande Silvery Minnow v. Bureau of Reclamation*. The final outcome of the court case was that the 2003 BO and the legislation passed in 2003 and 2004 mooted the claims of the environmental groups for both the San Juan-Chama and Middle Rio Grande projects (Drake, 2001; Katz, 2007; O'Connor, 2002; *Rio Grande Silvery Minnow v. Bureau of Reclamation*, 2010). Thus, Reclamation did not have the discretion to reallocate project water for the silvery minnow. In addition to this outcome, several cooperative agreements were reached to provide water for the minnow (Kelly & McKean, 2011; Pak, 2011; U.S. Fish and Wildlife Service 2010). Reclamation also formed a collaborative program for management of the water in the Middle Rio Grande which would work to protect and improve the status of endangered species along the Middle Rio Grande of New Mexico while simultaneously protecting existing and future regional water uses (U.S. Fish and Wildlife Service, 2010).

5.4 Influencing the Action Arena and Actor

In the IAD framework exogenous (or independent) variables include the physical conditions, attributes of the community, and rules-in-use, which shape the action situation and incentives for the actor (Figure 1). Therefore, these variables influence the decisions and outcomes of the policy process (by influencing the action arena and actor). In the case of Reclamation and the silvery minnow, these factors provide one possible explanation of how the policy outcomes came to be. Based on IRC theory, individual's decisions are impacted by informal institutions such as rules, norms, and strategies. The attributes of the community and rules-in-use function as the informal institutions driving Reclamation decision making regarding the silvery minnow.

5.4.1 Physical Conditions

Physical conditions that contributed to the debate over Reclamation's discretion over the San Juan-Chama and Middle Rio Grande Project water include the fact that water is a limited resource. In the dry desert climate there is often not enough water to meet both the contractual obligations to water users as well as to provide for adequate instream flows to protect the silvery minnow. This is seen in the decline of the minnow population as the result of lack of water and the two severe droughts resulting in large minnow kills. Lack of water can also be seen as a potential trigger for the formation of the MRGESCP. With the knowledge that droughts will continue to occur in the region and the federal agencies need to protect the minnow, it is logical to assume some action was needed to work to protect the species. While the limited resource suggests the need for an agency to pursue protection of the species, it does not explain why Reclamation chose to create a collaborative program with other agencies. That is explained by the rules-in-use.

5.4.2 Attributes of the Community

The conflicting attributes of the community and lack of homogeneity in the preferences of the community can help explain the conflict over Reclamation's discretion regarding project water and ESA requirements. One culture values the spirit of western water law and the desire to allocate water according to Reclamation water service contracts. The other values the protection of endangered species and the environment. While the two value different water uses both are founded on a culture that places high value on water and are willing to go to great lengths to protect their claims to water.

As reported by the employee participants in the previous chapter of this study, the culture of Reclamation is geared toward fulfilling its contracts and providing water to irrigators and other users. Meeting contractual obligations is very central to the core values and mission of the agency (Bureau of Reclamation, 2010). Based on the culture of water provision and the sanctity of water rights system, preservation of the corporate culture and dedication to the historical mission of the Bureau may have served as an incentive to take on the position that Reclamation lacked discretion over reallocating water for endangered species.

The New Mexico Senators, Jeff Bingaman and Pete Domenici, also shared this view with Reclamation as demonstrated by their efforts to pass legislation to reinforce the importance of the Reclamation's duty to provide water. Likewise, in naming themselves intervenors on behalf of Reclamation, the City of Albuquerque, MRGCD, state of New Mexico, and Rio Chama Acequia Association also demonstrated they shared the opinion of Reclamation. These positions are founded in the belief that water rights and any contract one holds for water is akin to a private property right and something one fiercely protects. On the other hand the ESA promotes species protection above all other efforts and values (Benson, 2008; Drake, 2001). The environmental groups filing the lawsuit on behalf of the silvery minnow value the protection of the species and believe that the duties of Reclamation as a federal agency with responsibilities under the ESA trumps its obligations to deliver water. The clash of these two cultures set the stage for the conflict over water allocation to occur.

5.4.3 Rules-In-Use

Within Reclamation a number of rules-in-use exist as incentives and disincentives for conflict prevention and mitigation (Table 2 and Table 3). In the formation of the MRGESCP, a number of these incentives shed light on factors that might have directed Reclamation to pursue this course of action. They include:

- Desire to avoid future litigation
- Political pressure and pressure from upper management
- Availability/allocation of resources to conflict mitigation efforts

The desire to avoid future conflict, including litigation is clearly a reason for the signing of the MOU that formed the MRGESCP. The MOU states that the signatories "recognized the potential conflicts between recovery efforts for

endangered species and existing and future water uses in the Middle Rio Grande” and realized that a “collaborative effort offered a path towards resolving such conflicts” (Bureau of Reclamation et al., 2000, p. 1). The desire to reduce conflict is linked with the second rule-in-use listed above. A theme reiterated in the research conducted by Brown et al. (2009) and this study was that upper management pushes for Reclamation employees to work to avoid any future litigation, including litigation regarding endangered species, because it drains resources and hurts public relations. A heuristic within Reclamation is that financial resources are allocated to conflict mitigation efforts. With the knowledge that this is a high profile case, the signatories did not have to be concerned with convincing the federal agencies and Congress about the importance of funding the initiative.

Rules-in-use may also provide insight into why conflict was not prevented in the first place. One norm within Reclamation is the fact that conflict prevention is not often discussed within Reclamation (Brown et al. 2009). This is seen in how despite the fact that the federal water managers (including Reclamation) were blamed for the 1996 fish kills, the agencies did not identify this as an indication of future conflict they should work to prevent. While Reclamation formally wishes to promote conflict prevention an informal rule within Reclamation indicates that those actions are not necessary (Brown et al. 2009; Bureau of Reclamation, 2006). Therefore, in some situations, while Reclamation has a formal requirement for conflict prevention, other informal rules may indicate the opposite and, thus, conflict prevention is not seen as a rule.

6 Discussion

6.1 Summary of Findings

This study set out to answer the question: Within the IAD framework, what incentives and disincentives for conflict prevention and mitigation influence Reclamation (the actor) and its decision making regarding the endangered Middle Rio Grande silvery minnow? To answer the research question, the IAD framework was applied to a case study of Reclamation decision making at the policy level. In the case study the IAD framework was employed in a structured analysis of how informal institutions affected the incentives experienced by Reclamation and explained its resultant behavior. Two key actions were evaluated in this paper: 1) the decision to claim it lacked discretion over water allocation, and 2) the formation of the MRGESCP.

These two actions illustrate both conflict and cooperation in the Middle Rio Grande basin. The theory of institutional rational choice when applied within the IAD framework explains why Reclamation might have acted in the way that it

did. Specifically, the attributes of the community and rules-in-use help provide a possible explanation of Reclamation decisions and actions. The IAD framework in this case study simply illustrates how factors such as organizational culture, lack of regard for conflict prevention, desire to avoid litigation, pressure from management, and a sense of what programs get funded served as incentives in Reclamation's decisions regarding how it would work to protect the Middle Rio Grande silvery minnow. In this case, while Reclamation has a formal rule in which conflict prevention is recommended in order to avoid conflict in the management of western water, other informal rules may indicate the opposite and thus conflict prevention was not seen as a rule when determining how to proceed with the ESA lawsuit.

Based on the minor conflict that occurred after the 1996 drought over the death of thousands of minnows, Reclamation was aware that claiming to lack discretion over water allocation in the San Juan Chama and Middle Rio Grande Projects might result in conflict. However the fact that Reclamation reaffirmed this position in its 1999 biological assessment indicates that may have it ignored the possible consequences of that action or viewed them as inconsequential.³ This can be attributed to disincentives for conflict prevention that exist within Reclamation. A lack of acknowledgement of the importance of conflict prevention (a rule of thumb within Reclamation) and a culture that favors the old mission of Reclamation, which focuses on water provision as the ultimate measure of success may have contributed to Reclamation's decision to assert that it lacked discretion over water allocation. On the flip side, how a collaborative program emerged amidst contentious litigation can be explained by looking at the incentives for conflict mitigation within Reclamation. A desire to avoid litigation, pressure from upper management, and the availability of funding explain why the MRCESCP was formed.

6.2 Limitations of Analysis

By utilizing institutional rational choice, the IAD framework allows for one to investigate and explain motivating factors in the policy process. However, there are limitations associated with this theory and framework, which must be considered as caveats to this study. Both rely on the assumption of bounded rationality. The two are based on rational choice theory, which argues that individuals (or actors) pursue actions and outcomes that maximize their own utility. Both IRC and the IAD framework expand upon that idea offering that institutions influence and guide individuals to act in a way that benefits the collective. While this approach avoids some of the critiques regarding the assumptions made by rational choice it still adopts other assumptions of its own. This includes 1) actors have a fixed set of preferences, 2) the actors will behave in

³ Other information not available for this study may indicate there were other reasons for Reclamation's decision (e.g., Reclamation may have felt legally compelled to take the action it did).

a way that will allow them to attain those preferred outcomes (maximize them so to speak), and 3) this behavior and action is strategic and done with extensive calculations. Another limitation of the IAD framework is its inability to predict what will happen (Blomquist & deLeon, 2011). So while it offers insight in retrospect, it lacks the predictive capacity that would help Reclamation determine what incentives and disincentives would lead to the agency's desired outcomes.

In addition, this case study provides only a glimpse into why Reclamation was involved with conflict prevention and conflict mitigation. While these factors discussed in this chapter may explain Reclamation's decisions and actions, it is important to note that these conclusions are based on the information available. To confirm the actual drivers for these specific actions, one would need to interview/survey the decision makers at Reclamation who worked on the silvery minnow lawsuit and participated in the formation of the MRGESCP. It is also important to note that this research is not claiming to explain every facet of the decisions in each case study. The incentives and disincentives offer one possible explanation of certain aspects of the decision/action being analyzed.

A third limitation of this case study is the fact that the analysis focuses on events from a decade ago while the incentives and disincentives used in the analysis are from employees working in 2011. While many of the employees have been working at Reclamation more than 10 years this study does assume that the incentives and disincentives have not changed extensively since the early 2000s. The basis for this assumption is the fact that many of the incentives and disincentives identified in this study were also identified in previous reports on Reclamation culture and decision making in 2004 and 2006 (Bureau of Reclamation, 2004; National Research Council, 2006).

7 Conclusion

The IAD framework offers some insight into how these incentives and disincentives factored into Reclamation's decision to assert its lack of discretion over the allocation of water for the silvery minnow in the Middle Rio Grande, the formation of the Middle Rio Grande Endangered Species Collaborative Program, and the implementation of the Water 2025 Initiative. As attributes of the community and rules-in-use, incentives and disincentives such as organizational culture, funding availability, the desire to avoid litigation, the promotion of collaboration within the agency, and a lack of planning effort offered a possible explanation of why Reclamation chose to act as it did.

In the case of the silvery minnow and the Middle Rio Grande, Reclamation's decision presents a clash of cultures (western water law/prior appropriation and the ESA) that set the stage for conflict over allocation of water to meet ESA requirements. On the other hand, a desire to avoid future litigation,

the promotion of collaboration within the agency, and the availability of funds for mitigation efforts contributed to the formation of the MRGESCP, a conflict mitigation effort that hopes to become a conflict prevention oriented program. In regards to Reclamation's decision of how to initially implement Water 2025, a number of the incentives and disincentives identified in the surveys and focus groups may explain the implementation of the program. Reclamation's organizational culture, particularly its engineering and supply driven focus provide a possible explanation of the technology and water conservation heavy efforts. Other factors which one would expect to hinder conflict prevention and mitigation were not evident. These factors include the availability of funding and a lack of Reclamation planning for future water delivery.

This case study provides an example of conflict prevention and mitigation in Reclamation and the conclusions of this analysis offer a basic or partial understanding of what conditions and factors contributed to conflict prevention and mitigation within Reclamation. Understanding these factors provides insight into how Reclamation can continue to incentivize conflict prevention and mitigation. Additional case studies investigating incentives for policy decisions would create a body of evidence that could 1) help Reclamation and other agencies identify what incentives they should promote internally in order to increase conflict prevention and mitigation and 2) in the long term strengthen the predictive power of the IAD framework. A study of the conflict mitigation efforts in the Klamath basin from 2001 on would provide a good case study for comparison with the Middle Rio Grande case study presented here. Both represent a conflict in water allocation and involve the ESA.

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