Concerns and Mechanism Choice Under a Mandate for Inter-agency Coordination

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Abstract
Inter-agency coordination can provide a variety of benefits, including increasing capacity; leveraging of resources; capturing benefits from economies of scale; and mitigating or avoiding externalities. Yet agencies frequently have concerns about autonomy and the potential risks of coordination. Differing coordination mechanisms may serve to reduce or exacerbate those concerns. Thus, a critical question in relation to inter-agency coordination is not only whether to coordinate, but how to coordinate. This question is particularly salient when agencies are subject to a top-down mandate to coordinate. This research examines choices made by agencies as they implement California's Sustainable Groundwater Management Act in order to develop new insights on the mechanisms used for inter-agency coordination. Specifically, the research investigates concerns agencies have about inter-agency coordination and the protections provided by the coordination mechanisms they choose. In doing so, the research delineates agency concerns in relation to autonomy, divisional, defection, and performance risks and examines how combinations of these concerns influence the specific coordination mechanisms adopted by agencies. It then evaluates the influence of those choices on structures and processes for decision-making across the groundwater basin. Research findings serve to increase explanatory power of theories of inter-agency coordination by delineating the influence of risk aversion in coordination processes. The research also provides insights that explain variation in agency responses to mandates for coordination.

Keywords: Interagency coordination; autonomy; coordination risks; groundwater

1. Introduction

The ubiquity of polycentric and/or nested multi-level institutional structures in environmental governance means that inter-agency coordination is essential for addressing today's environmental challenges (Freeman & Rossi, 2012; Marks & Hooghe, 2004; McAdams, 2008; Peters, 2013; Thomann & Sager, 2017). Coordination, which refers broadly to processes and practices that aim to synergize the activities of multiple agencies, is needed to reduce redundancies, inconsistencies, and contradictions in laws, policies, and actions (Kwon & Feiock, 2010; Peters, 2013; Scott & Thomas, 2017). Coordination can lead to real-world gains, by increasing capacity through shared knowledge and expertise; facilitating leveraging of resources; capturing benefits from economies of scale; and mitigating or avoiding externalities (Lindsay et al., 2008; Watson, 2015). Yet even while there are many potential gains from inter-agency coordination, it does not always emerge spontaneously (Kwon & Feiock, 2010; Moseley & James, 2008).

Agency reluctance to coordinate may stem from a variety of concerns about the implications of coordination on agency functioning (Peters, 1998, 2018). Agencies have their own missions, responsibilities, resources, and bureaucratic and administrative processes. Agencies thus consider how coordination will affect their own resources, authorities and policies (Bardach, 1996; Feiock, 2007). This includes the extent to which coordination impacts the agency's self-determination and

the agency's ability to ensuring the interests the organization represents are carried into and served by decision-making processes (Bjurstrøm, 2019; Bolleyer & Börzel, 2010; Overman et al., 2014; Watson, 2015). It also includes the extent to which coordination may affect perceptions of the agency's legitimacy amongst those it serves and the agency's own sense of identity (Oliver, 1990; Peters, 2013)

Coordination concerns can, at least to some extent, be mitigated through the mechanisms adopted for coordination (Feiock, 2013). In determining the process to be used for coordination, agencies negotiate and delineate the procedures that will govern how agencies interact, including how decisions are made, commitments, responsibilities, and absolutions of them. Agencies thus can choose to implement coordination mechanisms that provide assurances or reduce the risks of coordination. While coordination mechanisms may be selected to alleviate specific coordination concerns, these choices can create 'policy feedbacks' (Moynihan & Soss, 2014, p. 321) – meaning that they can change constitutional, collective choice, and operational rules; shift power relationships; redistribute resources, and otherwise affect culture, identity, and motivation. Thus when selecting their approach coordination, agencies may also be renegotiating structures for governance.

To date, studies of inter-agency coordination have focused predominantly on identifying conditions under which coordination emerges and the extent to which coordination achieves the expected outcomes. When coordination mechanisms have been examined, it is generally been with an eye towards explaining formal versus informal mechanisms (Park et al., 2020; Terman et al., 2020; Yi et al., 2018) or predicting the depth of collaboration based on contextual conditions, such as population size, agency capacity, etc., (see e.g., Bel & Fageda, 2006; Hulst et al., 2009; Krause et al., 2019). Greater knowledge is needed as to the variation and nuances in the mechanisms used to coordinate, including how those mechanisms relate to specific coordination concerns and the implications of those mechanisms for broader governance. (Kim et al., 2020),

Such knowledge is particularly of concern when inter-agency coordination occurs in response to a top-down mandate. Most of understandings of inter-agency coordination are derived from examination of the voluntary emergence of inter-agency coordination. In such instances, it can be presumed that the benefits of coordination outweighed costs and concerns and agencies were able to address their coordination concerns. Where coordination does not in emerge independently, higher levels of government may seek to steer coordination among lower levels of governments through mandates (Moseley & James, 2008; Saz-Carranza et al., 2016; Schafer, 2016). These mandates change the calculus of coordination, as agencies must then negotiate coordination mechanisms to address mandate compliance, as well as inter-agency coordination risks.

To fully understand the potential for and impacts of mandated coordination, we need to more thoroughly examine agency choice of coordination mechanisms, as well as the cumulative impact of those choices. This research addresses this gap by examining decision-making by 100 local governmental agencies in California as they seek to coordinate planning and implementation of groundwater sustainability, under California's Sustainable Groundwater Management Act (SGMA). As described in more detail below, this legislative act (top-down mandate) requires agencies that share a groundwater basin coordinate to shared knowledge, develop sustainability metrics, and take actions to achieve ground sustainability.

Specifically, we investigate the coordination mechanisms adopted by agencies under SGMA and how those mechanisms address agency concerns about coordination risks and autonomy. We begin with an analysis of concerns agencies have about coordination, identifying the types of concerns and how those manifest. Next, we examine the range of coordination mechanisms adopted by agencies, with an eye towards the types of concerns those mechanisms address and whether adoption of them opens greater space for other risks. Lastly, we examine the impacts of coordination decisions made for governance in the groundwater basin, comparing the structures resulting from formalizing coordination to see how those structures address or protect the broad set of concerns across the basin.

The research draws on data collected while agency deliberations about coordination were on-going, thus capturing agency perspectives directly. Our research is thus able to provide more nuanced understandings of inter-agency coordination than can be attributed by statistical ex-post analyses. Our findings serve to illustrate how varying approaches to coordination serve to reduce differing forms of coordination risks. Such knowledge can provide greater explanatory power in research on inter-agency coordination, as it can help explain how agencies seek to protect themselves when coordinating. Pragmatically, it can also indicate how mandates could include requirements or protections that will facilitate agency coordination by reducing (or increasing) the risks that may ensue from coordination. Further, our research highlights how coordination choices have effects not only on the agencies involved, but also on broader processes of governance. This result intimates the need for research to evaluate the effects of coordination mechanisms on processes that extend beyond the coordinating agencies.

2. Theorizing Inter-agency Coordination

Inter-agency coordination entails the intentional alignment of activities and efforts of agencies. Coordination may be aimed at avoidance of negative impacts by ensuring actions undertaken by agencies are not countervailing, or coordination may seek to take advantage of synergies to achieve positive gains, such as improved effectiveness and efficiency (Bjurstrøm, 2019). To achieve these ends, agencies must develop relationships with one another. Inter-agency coordination can occur through a variety of mechanisms, ranging from information to formal, each of which entails varying forms of communicating, reaching an agreement and ensuring coordination occurs (Alexander, 1995; Rogers & Whetten, 1982). Differing mechanisms for coordination also vary in the extent of collaboration it entails.[1]

Several theoretical frameworks have been developed and used to explain and understand inter-agency coordination (see e.g., Ivery, 2008; Rossignoli & Ricciardi, 2015). Perhaps the most commonly applied in governmental contexts is the Institutional Collective Action (ICA) Framework (Feiock, 2013). The ICA brings together public/rational choice theory, transaction costs economics, and agency theory to explain the voluntary emergence of inter-agency coordination as resulting from bounded rational-economic decisions. As described by ICA framework, in deciding whether and how to coordinate agencies (guided by the actors within them and their existing norms) weigh the costs and benefits of coordination, including the transaction costs required to negotiate, implement monitor and enforce coordination efforts, as well as the potential costs risks of coordination failures, as well as its impacts on agency functioning and autonomy (Feiock, 2013; Kim et al., 2020; Scott &

[1] The terms collaboration and coordination are used inconsistently in the literature (for varying definitions see e.g., (Gulati et al., 2012; McNamara, 2012) among others). In this paper, coordination refers to the synergizing of activities across agencies while collaboration refers to the depth of integration that occurs.

Thomas, 2017). Agencies then select mechanisms for coordination, which, in turn, have implications for the net benefits of coordination.

Under this model of coordination, agency selection of coordination mechanism is primarily a response to the risks inherent in coordination (Kim et al., 2020). The ICA framework defines three types of coordination risks (Feiock, 2013). Coordination risks are related to ex-ante ability to reach an agreement about how to coordinate or collectively take action. Division risks are related to establishing agreement on the distribution of collective benefits and costs, including concerns about equity and fairness. Defection problem are related to the likelihood that one or more of the coordinating agencies will not follow through on the coordination agreed upon.

While these three categories are extensive, as our research depicts below, they do not encompass all of the risks of coordination. Additional risks include those related to the impacts of coordination on responsiveness to change, including the potential to get locked into an arrangement that is no-longer appropriate or that limits the ability of agencies to act in the best interests of their constituents, as well as the risk that coordination does not achieve its intended outcome (Hansen et al., 2020; Schafer, 2016). Further, under mandated coordination, there is also the risk of compliance failure, i.e., the risk that the coordination process or performance will not meet the requirements of the mandate.

Coordination risks are of high concern, yet agency decisions related to coordination are also driven by considerations about the impacts of coordination on autonomy (Bjurstrøm, 2019; Rodríguez et al., 2007). In addition to being mission-oriented, agencies can be seen as self-serving agents and coordination can be viewed as a treat to turf or as reducing an agency's power and control (Bardach, 1996; Peters, 2018). Autonomy, which refers to the extent an agency's self-determination, stems from two freedoms. The first is the discretion for an agency to decide for itself about policy and administrative matters. The second is an agency's exemption from constraints on the actual use of an agency's decision-making competencies, meaning an agency's decision-making is not restricted by hierarchy or permissions, fiscal dependence, legal constraints, or reporting requirements (Verhoest et al., 2004). Mechanisms for coordination may affect decision-making authority and may impose constraints on decision-making competencies. Thus, in making determinations about inter-agency coordination, agencies are thus challenged with developing relationship structures that both preserve autonomy and address coordination risks.

How the selection of coordination mechanisms relates to and involves tradeoffs between autonomy and varying coordination risks has been insufficiently interrogated. Most studies of inter-agency coordination focus on determinants of whether or not coordination occurs (see e.g, Feiock et al., 2017; Krause et al., 2019) among others). Where coordination mechanisms have been examined, it is often seeking to identify either the choice of informal, formal, hierarchical mechanisms (see e.g. Park et al., 2020; Tavares & Feiock, 2018; Terman et al., 2020; Yi et al., 2018). Coordination risks are considered in so much to test the hypothesis that that higher coordination risks lead to more formal coordination mechanisms (Hansen et al., 2020; Park et al., 2020; Terman et al., 2020). Where autonomy has been considered, it is primary to with an eye towards explaining the choice of inter-agency coordination over privatization (see e.g., Hefetz & Warner, 2012; Hefetz et al., 2014).

Coordination mechanisms address coordination risks and autonomy concerns in varying ways. Mechanisms for coordination may impose differing forms of outcome controls – related to expected performance and monitoring, and behavior controls – related to rules and procedures to be followed

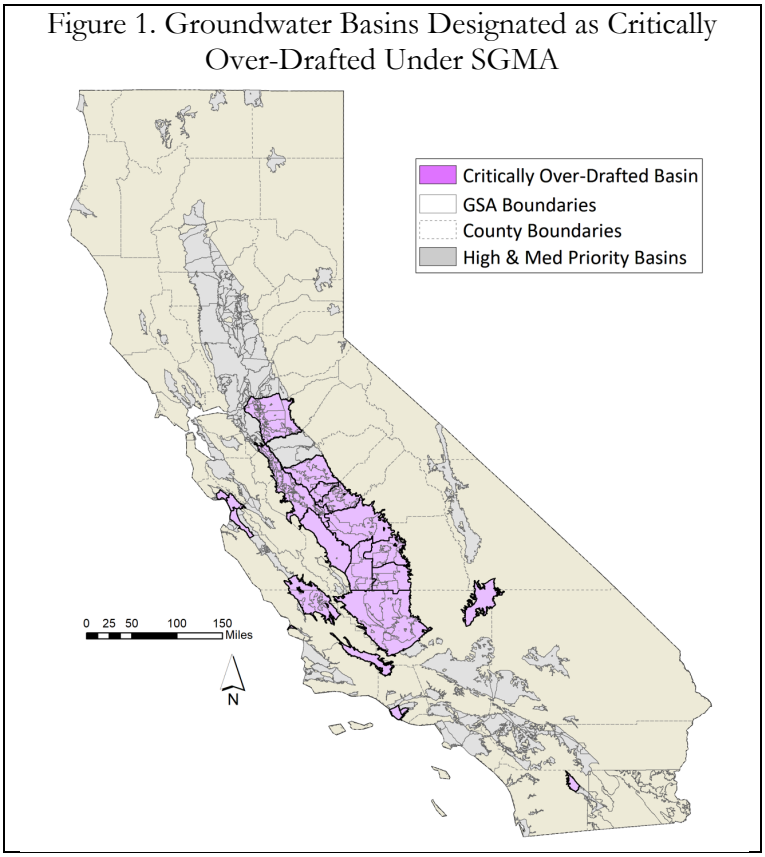
(Dekker, 2004). While in general mechanisms that are informal and voluntary have lower impacts autonomy and mechanisms with that have more authority or are more coercive lead to greater loss of autonomy (Kim et al., 2020), autonomy can also be protected through procedural arrangements (Moran et al., 2020). Differing coordination mechanisms likely protect against some concerns more than others and, reducing coordination risks may also involve cession of some autonomy. The choices made thus restructure relationships between agencies in multiple ways. Thus, in examining interagency coordination, a critical question is not only whether or not agencies coordinate, but how, when under a mandate, agencies make coordination choices and the influences of those choices on the structures and processes for decision-making within as well as beyond the agencies involved.

3. California's Sustainable Groundwater Management Act: Mandated Coordination with Choice of Mechanisms

In 2014, California passed of the Sustainable Groundwater Management Act (Cal. Water Code §10720-10737), which included a statewide requirement for the sustainable management of groundwater resources. SGMA requires groundwater sustainability be achieved at the basin scale, with the expectation and option that this will be achieved through local-level management, though with the threat of state-level intervention should the local-level not achieve this goal.

Any existing city, county, public utility, special district, or combination thereof subject to formal recognition by the state, could decide to become or join together to for a 'Groundwater Sustainability Agencies' (GSAs) – which is a new legal governmental organization, charged with responsibility for groundwater sustainability and delegating those agencies new powers to be used in achieving it. Multiple GSAs could form within a basin, so long as they do not overlap. SGMA requires GSAs develop and implement groundwater sustainability plans (GSPs) that will lead to groundwater sustainability within 20 years of plan adoption. Where multiple GSAs formed within a basin, SGMA requires they either work together to develop a single GSP for the entire basin or coordinate in developing and implementing separate GSPs. In coordinating, agencies must ensure use of the same data and methodologies for developing a hydrologic conceptual model, water budgets and estimating sustainable yield. Agencies must also demonstrate how their coordinated plans, which include quantitative sustainability goals and projects and management actions for achieving those goals, when implemented together, satisfy the requirements of SGMA. Notably, under SGMA agencies have substantial discretion in compliance

Figure 1. Groundwater Basins Designated as Critically Over-Drafted Under SGMA



with this mandate. As described below, agencies can choose whether and how they want to partner with to achieve basin-level sustainability. Key is that they demonstrate that their collective efforts meet the standards set by SGMA. Failure to do so will result in takeover of groundwater management by state government and the imposition of fees to cover the costs of state intervention.

4. Methods

Our research examines coordination across the 19 groundwater basins (Figure 1) identified by the California Department of Water Resources as critically over-drafted that were required to develop GSPs were by January 2020.[2] Across these basins, 234 agencies formed 96 GSAs and participated in development of 44 GSPs.

A mixed methods approach was adopted to obtain data on agency coordination concerns and coordination mechanisms selected. Interviews were conducted with 55 GSA staff representatives and with 5 consultants working closely with GSAs. Interviews included multiple individuals from differing GSAs within every basin, though not every agency or GSA. To protect anonymity, we have assigned a number to each agency and GSA and report results using that number. Data was also collected through participant observation, including attendance (in person, virtual or review of recordings) of more than 50 public meetings. Information was also collected through a review of secondary data, including meeting minutes, inter-agency agreements (memorandum of understandings, joint powers agreement, memorandums of intent, inter-agency coordination agreements) and the groundwater sustainability plans developed. To identify agency coordination concerns, interview, participant observation and secondary data was coded using a priori codes to identify agency concerns about coordination. Emerging patterns and secondary coding were then applied to further identify recurring themes to categorize concerns. Information on coordination mechanisms selected by each agency and for each basin was compiled through an analysis of the layered agreements and plans within the basin.

5. Results

Under SGMA, agencies are required to coordinate to develop shared knowledge (hydrogeologic conceptual model of the groundwater basin and monitoring); set compatible policy objectives (quantitative and measurable metrics of groundwater sustainability); and policies and management to achieve the policy objectives (activities that will lead to groundwater sustainability across the basin). As noted in Section 3, while SGMA mandates coordination, it allows flexibility in approach – agencies can choose how they formally structure their relationships with one another in order to achieve the mandated coordination. Each of the agencies being tasked with coordination pre-dated SGMA, and has some existing responsibilities related to either water or land management. As such, each agency also has a non-SGMA related objectives and jurisdiction, including its own procedures, constituents, and set of relationships. SGMA expands upon these existing conditions, granting additional authorities along with additional responsibilities to agencies choosing take-on the role of manage groundwater. Many agencies implementing SGMA have reservations over the implications of coordination and mitigating those concerns were important considerations when selecting the forums for coordinating. Below we delineate the perspectives of agencies related to their concerns about coordination under SGMA and summarize the coordination approaches taken by agencies. We then analyze the resulting structures governing groundwater sustainability planning in each of the 19 basins in our study.

[2] Only 19 or the 21 basins identified as critically over-drafted were required to submit GSPs. One was exempted due to submission of an approved 'alternative' plan and another as groundwater pumping in the basin was fully adjudicated.

5.1. Agency Concerns: Autonomy and the Risks of Coordination

In discussing their coordination choices, agencies described a number of concerns about coordination. These concerns are categorized in Table 1. While many of the concerns mentioned are familiar to the ICA framework, some, including concerns about impacts on autonomy and the potential risks of lock-in the relationship between coordination mechanisms and agency performance are less well addressed in theories of inter-agency coordination.

Particularly prominent, were concerns about the potential impacts of coordination on agency autonomy. Agencies expressed concerns about effects of coordination on their abilities to make their own decisions. These concerns manifest in varying ways. Agencies described their autonomy concerns in relation to the effectiveness of policy and management, stating that agencies have situated knowledge of their jurisdictional areas and they need to ensure they are able to apply that knowledge to make the best decisions for their jurisdiction. Agencies also expressed concerns about autonomy in terms of a desire to be able to follow one's own vision as to how to achieve sustainability – including choices related to projects, control over groundwater extraction, fees, spending and more. As one interviewee explained:

> *"There wasn't one cohesive view on what the best path forward was, so I don't think anyone was ready to relinquish that autonomy."* (Interviewee Agency #210).

Further agencies expressed concerns about autonomy as the desire for independence, including not having other entities control the way they operate. For example, one interviewee commented:

> *"I think that's the nexus of basically every single GSA - to maintain autonomy and not have somebody else tell them how to manage your groundwater. So it kind of goes back to the autonomy thing. Because they didn't want another group or agency making decisions on their finances and stuff like that and telling them how to do their things."* (Interviewee Agency #46)

Agencies also described concerns regarding the divisional, defection, lock-in and performance risks that the ICA framework suggests can occur as a result of coordination. Divisional risks include concerns about having to make up for the shortcomings of other agencies or unfair distribution of costs and benefits. These concerns arose particularly in relation to how coordination relate to each agencies access to surface water or responsibilities for reducing pumping. Apprehensions in relation to divisional risk are reflected in the words of one interviewee who explains a coordination choice:

> *"the differences lie in the fact that the, you know - the haves and the have-nots - are so great.... I think those that have [surplus] water look at us as somebody that is gonna pay them as much money as they can expect to help solve our problem rather than looking at it as a whole basin... So that's how we ended up with separate GSPs"* (Interviewee Agency #155).

Within concerns about divisional risks are considerations about how differences across agencies could lead to increased transaction costs. This included concerns about the burden of making up for variation in the technical or administrative expertise of others, as well as the added complication of reaching agreement across diverse entities.

Associated, though separate from concerns about divisional risks, were concerns about defection. Agencies described the potential for moral hazard in coordination, expressing concerns that a partnering agency may not reduce its groundwater pumping or implement projects and management actions as planned. Other defection concerns include the fear that agencies would not enter into the agreement in good faith and differences between agencies would impede progress in plan development and implementation. For example, one interviewee described his/her agency's concern that partnering agencies would not make an effort to find common ground, and instead would

leverage their power to holding up the rest of the basin by not agreeing to any decisions. This interviewee explained

> *"everything [decision] has to be made on this unanimous decision. So, any one of us at any point time can just scuttle the process. Makes it a little bit concerning."* (Interviewee Agency #46)

While the inability to prevent defection was a concern, too much control was also seen as a risk. Agencies described their fears that coordination might lock the agency into a particular path, reducing flexibility to take necessary future actions or adapt to changing knowledge and conditions. Concerns about lock-in included both broad concerns about being tied the partnership as well as concerns about committing to fixed details, such as an agreed upon allocation of groundwater yield or overdraft responsibility. Uncertainty was a big driver of this concern, as one interviewee explained when referring to other agencies in the basin:

> *"those two [agencies] basically wanted to become GSAs so that they could – they didn't know what was going to happen, and that [becoming a GSA] gave them more flexibility and control in terms of making future decisions, kind of punt it down the line"* (Interviewee Agency #46).

Lastly, agencies expressed concerns about how coordination would relate to agency performance, both in terms the risk that they may not achieve the intended outcomes of coordination and the risk that they may not be in compliance with the state requirements for coordination. In terms of outcome, agencies were concerned as to whether coordination would lead to groundwater sustainability. Some agencies held the tenet that the outcomes could only be achieved through in-depth collaboration while others had the perspective that the coordination required was a concrete specification of each agency's responsibility. Agency concerns about outcomes are largely related to specific undesirable results already creating negative impacts. For example, one agency described its concern that other agencies plan ramp down pumping slowly would exacerbate subsidence already affecting a key surface water canal (Interviewee Agency #262).

While longer term sustainability outcomes were a concern among some agencies, more frequently agencies expressed concerned about compliance with the requirements of SGMA. Although outcomes are a component of compliance, here the focus of agencies was about how state review of groundwater sustainability plans rather than achievement of the objective of addressing groundwater depletion. Agencies interpreted the role of coordination in relation to compliance risks in differing ways. Some agencies saw insufficient coordination as increasing the risk of noncompliance. One interviewee explained his/her agency fears that the agencies would not satisfy state requirements as:

> *"we didn't want to be at the 11th hour and then we're at an impasse. Because we also understood that the state is not going to accept our plans unless there's a coordination agreement"* (Interviewee Agency #139)

Whereas other agencies considered the risk of noncompliance to be higher under greater coordination. These agencies held the view that operating independently would help ensure compliance, as the state would only intervene in a portion of the basin that was in non-compliance rather than the basin as a whole.

Concerns are not mutually exclusive; agencies often expressed more than one concurrent concern. The two concerns most frequently described by interviewees – autonomy and divisional risks – often occur in tandem, reflecting the close connection between decision-making and resulting distributions of the costs and benefits of coordination. Both concerns are also connected with a priori differences across agencies and how that relates to power-dynamics. For example, agencies frequently mentioned autonomy and divisional concerns in relation to control over surface water, as agencies with surface water rights sought to protect control over that water against any threat (real

or perceived) of co-option by agencies without surface water rights. Concerns about lock-in were also frequently discussed in conjunction with concerns about autonomy, as a motivator for agencies maintaining autonomy is prevention of any potential constraints on future actions. Where interviewees described their agencies as concurrently concerned about autonomy and lock-in, generally these concerns arose either due to awareness of a priori of differences in perspectives between agencies, a preoccupation about potential effects on past investments, or the specter of legal challenges.

Partner selection can reflect either perceived coordination risks or autonomy concerns. Coordination concerns are a specific to each potential coordinating partner. An agency may have certain concerns about coordination with some entities and other, or no concerns, about coordinating with others. Consequently, agencies selected separate mechanisms to coordinate with differing agencies. Further, agencies coordinated with some agencies as a way to alleviate concerns related to other agencies. As one interviewee explained

> *"we kind of saw an opportunity early on to join together and be able to write our own [joint] plan and hopefully have a little bit more control over our own destiny*" (Interviewee Agency #127)

As described below, this variation in concerns influences the resulting governance structures that emerge as a result of coordination choices.

Table 1. Concerns of Agencies Tasked with Coordinating under SGMA

CONCERNS ABOUT COORDINATION	EXAMPLES
AUTONOMY	
Decision -Making Competencies - The agency's freedom to exercise its discretion and authority in making decisions within the agency's defined jurisdiction. This includes: ▪ *Policy*: the ability of the agency to choose the structure and content of policy instruments, objectives and outputs within an agency's own service area or jurisdiction. ▪ *Management:* the ability of the agency to make day-to-day operational decisions related to both policy implementation and broader agency functioning.	▪ Agency #191 was concerned if they participated in a joint GSP, their district would have to abide by the same pumping restrictions as the area governed by the county. ▪ Agency #55 was concerned that if they were part of a larger GSA their interests, which largely consist of banking water and distributing, would be co-opted by the interests of other agencies.
Exemptions from Constraints on Decision-Making Competencies - The agency's freedom to steer decision-making and operate without constraint within a defined organizational environment. This includes: ▪ *Structural*: the ability of the agency to appoint/elect/hire key decision-makers, advisors, or experts within the organization or otherwise control the structure of the organization. ▪ *Interventional*: the ability of govern and manage without ex-post reporting, evaluation or audit provisions.	▪ Agency #44 was concerned joining a multi-agency GSA with an multi-member board would lead to loss of control over management of their surface water supplies. ▪ Agency #45 was advised by their legal counsel to become a GSA, rather than join a multi-agency GSA, so they could retain their authority under SGMA to regulate groundwater within their jurisdiction. ▪ Agency #24 didn't want agencies in another part of the basin imposing limits on the agency's groundwater pumping or regulating their groundwater/surface water trading
RISKS OF COORDINATION	

Divisional - Risks related to the benefits and costs of coordination and how those are distributed. ▪ *Relational:* The concern that an agency might be unable to capture its fair share of the rents generated by an alliance. This concern is often expressed as a concern related to power disparities between participating entities. ▪ *Transaction Cost:* The concern that additional financial or resource costs will be incurred as a result of coordinating with other agencies. This concern is also expressed as a concern that coordinating may increase the timeframe required to complete and action or impede meeting deadlines.	▪ Agency #161 did not want to be in a position where they had to make up for the "unsustainability" of the parts of the basin that did not have surface water rights and that they thought had historically contributed the most to groundwater depletion. ▪ Agency #24 thought the other agencies in the basin did not have the expertise and data to get a plan done on time.
Defection – Risks related to moral hazard. The concern that one or more of the coordinating agencies will not follow through with the agreed upon path of action.	▪ GSA#63 was concerned that the another agency in the basin would not undertake sufficient actions to address groundwater overdraft. ▪ Agency #187 was concerned other agencies in the basin would part way through decide to develop independent GSPs rather than follow through on development of a joint basin-wide GSP.
Lock-in - Risks related to the possibility that coordination will constrain future action. The concern that coordination will bind an agency to a path that compromises its ability to respond to future shocks or respond to future changes.	▪ Agencies in the GSA #50 were concerned coordination would lock them into using the groundwater analysis prepared by consultants from another GSA. ▪ GSA #86 was concerned coordination would bind it to using a water accounting framework. It was also concerned coordination might constrain future export of groundwater from the basin, affecting its ability to serving current customers located in a neighboring basin. ▪ Agency #190 wanted to have option of an immediate exit from an agreement without incurring any costs during the exit period.
Performance - Risks related to achievement of the mandated coordination. ▪ *Outcome*: The concern that the objective of coordination will not be achieved. ▪ *Compliance:* The concern that agencies' efforts will not satisfy the requirements of the mandate.	▪ GSA #64 was concerned that other GSAs in the basin would not develop plans that met the state requirements. ▪ GSA #61 was concerned other agencies would not be able to meet the statutory deadline for GSP development. ▪ Agency #161's main concern the threat that the basin may not be in compliance and the state would take over management of their surface water rights. ▪ Agency #85 was concerned a collaborative approach in the basin would not be able to achieve long-term sustainability

5.2. Agency Level Structuring Relations to Address Autonomy/Risks of Coordination

Under SGMA, agencies had the liberty to choose how to structure coordination. As such, agencies could mitigate their concerns by choosing to structure their relationships with one another in ways that limit the extent to which coordination would affect agency control over decision-makings,

resources, actions and outcomes or that would otherwise reduce dependencies of one agency upon another.

Coordination occurred through, and thus protections were formalized via, two sets of decisions. The first decision was how to structure the formal legal body or organization that would be responsible for carrying out coordinated policies. Agencies had to decide whether to become a GSA, and if so, whether to do so as a single agency or as a joint venture. Not forming a GSA is akin to granting full groundwater management control to the county or any other agency that decides to form a GSA that geographically spans the jurisdiction. Whereas forming a GSA entails taking on responsibilities and authorities, though those can later be ceded to partnering GSAs through GSP development and implementation. Forming a GSA is a form of sovereignty protection, as even if GSP are developed jointly, at any future point, the GSA can choose to become fully responsible for its own jurisdictional area.

The second decision was how to structure the process of policy formation and implementation. Agencies that formed GSAs next to decide how they wanted to structure the process of GSP development. GSPs are knowledge-policy documents. Development of them involves determining the state of knowledge on the basin, defining sustainability, and developing an action plan for achieving sustainability. Agencies forming GSAs could choose to create their own independent GSPs or work together to produce joint GSPs. If the GSP produced would not span the full basin, agencies also had to decide how to coordinate separately developed knowledge and policies. Development of a separate GSP provides greater autonomy to work under one's own timeframe and in the selection of analysis methods and policies, yet development of a separate GSP has mixed effects on performance risk, as it provides less influence over the actions taken by GSAs that may affect achievement of sustainability across the basin. This risk can be partly abated if agencies producing separate GSPs agree to performance targets, such as when agencies formally divide sustainable yield or overdraft responsibility across GSPs.

In each of these steps (GSA formation; GSP development and coordination), where an agency selects to formally join together with other agencies, choices had to be made regarding how the structure the governance of the multi-agency effort. These include choices at the constitutional level related to how agencies will be represented in decision making processes (i.e., number of delegates and weighting of votes by delegates), rules guiding how decisions will be reached (i.e., consensus, supra majority, majority vote), and whether group decisions are binding or require secondary ratification at the agency level. Representation reflects how agencies have negotiated the distribution of voice in deliberative forums and decision-making processes. Decision rules reflect the how parties will address disagreement, including how minority opinions should addressed and whether dispute resolution procedures are specified. In addition to constitutional-level decisions, when formalizing mechanisms for coordinating, agencies may also choose to include no-effect clauses, processes for termination or exit from an agreement, and specify financial commitments. Through no-effect clauses, agencies place boundaries on the extent to which their joint-efforts affect one another's jurisdiction and management. Through termination or exit mechanisms, agencies define a process through which the arrangement can be ended. Lastly, through financing commitments, agencies address divisional concerns and define responsibilities for costs ensued by coordination.

Table 2. Agency-Level Choices of Mechanisms to Structure Coordination and Effects on Autonomy Concerns and Coordination Risks

Mechanisms	How Autonomy Concerns or Coordination Risks are Addressed

Formation of single-agency GSA	Protects agency ***decision-making competencies*** and ensures ***exemption from constraints*** by making the agency the sole decision-maker
Development of independent GSP	Protects agency ***decision-making competencies*** and ensures ***exemption from constraints*** by making the GSA the sole decision-maker
GSA decisions must be ratified by member-agencies	Protects agency ***decision-making competencies*** by giving the agency veto power
GSP decisions must be ratified by GSAs	Protects agency ***decision-making competencies*** by giving the agency veto power
Choice of projects and management action within GSP	Protects agency ***decision-making competencies*** by giving the agency control over policy-decisions
Allocation of sustainable yield /overdraft responsibility	Reduces ***performance*** risk by specifying responsibilities through the setting of performance targets
Representation within the decision-making forums	Addresses voice and power within the decision-processes, thus protecting ***decision-making competencies***, and influence over ***divisional risks***
Decision rules	Addresses voice and power within the decision-processes, thus protecting ***decision-making competencies***, and influence over ***divisional risks***
Exit or termination process	Provides a mechanism to prevent ***lock-in***, controls against ***defection*** by specifying terms for dissolution of agreements
No-effect clauses	Protects agency ***decision-making competencies*** and ensures ***exemption from constraints*** by placing limits on what decisions can affect
Financial commitments	Addresses ***divisional risks*** by explicitly agreeing to expected contributions

In structuring their coordination decisions, agencies adopted diverse approaches. Figure 2 depicts the potential coordination arrangements, including the number of agencies making each choice. Appendix A includes more details on combination of choices made by each agency. Strategies adopted range from strong independence – with 9 agencies forming their own GSAs that then formed their own independent GSPs, to instances in which an agency almost entirely cedes its authority to another agency – with 16 agencies partnering in such a way that another agency takes on full responsibility for development and implementation of the GSP. The most commonly adopted strategy for coordination, one that was undertaken by 58 agencies, strongly protects autonomy and against all of the coordination risks. This strategy entailed participation in a multi-agency GSA with collective decision-making that developed its own independent partial-basin GSP with agency choice of projects and an allocation of sustainable yield with other GSPs in the basin.

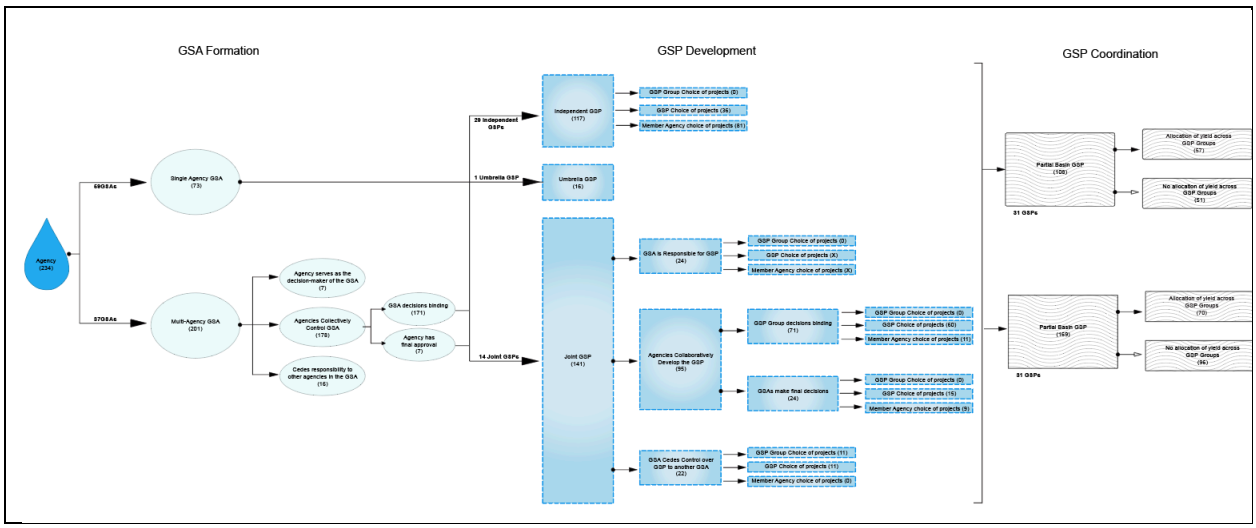
While our data do not enable attribution rationales for agency choices on an agency-by-agency basis, some notable patterns emerge.[3] The predominance of the agencies forming single-agency GSAs are irrigation districts with surface water rights. Many of the multi-agency GSAs are comprised of a mix of agencies, often including a water district, a county and some form of municipal provider, such as a city or a community service district. All 10 of the agencies ceding their authority in multi-agency GSAs are very small community service, public utility or resource conservation districts. The 21 GSAs ceding their authority in GSP development are all single agencies and either counties that will have a role in land-management (12 GSAs), small cities with low capacities (5 GSAs), or small water districts (4 GSAs) that only span a small portion of the land area in a basin. These findings suggest

[3] See (Milman et al., 2018) for a deeper exploration of GSA formation decision-making.

agencies most willing to cede autonomy are those that lack broader water resources expertise, have low capacity, or have minimal roles in the basin.

Agency decisions as to how to structure coordination are interdependent. For example, the agencies that are part of the same multi-agency GSA will necessarily utilize the same coordination structures for development of a GSP. Further, an agency cannot assume either joint or full responsibility if another agency does not cede some or all of its autonomy. Consequently, coordination patterns emerge, with GSAs in the same groundwater basin tending to adopt similar or complementary strategies.

Figure 2: Coordination Mechanisms Selected by Agencies in the Critically Over-drafted Groundwater Basins. Each stage of decision-making: GSA formation, GSP Development, and GSP coordination is reflected. The number[4] of agencies making each choice for each stage is indicated in parentheses. A includes a detailed listing of agencies selecting each possible combination of coordination mechanisms.



5.3. Basin-Level ICA Institutional Structures

Agency decisions regarding how to coordinate result in new structures for governance within each basin. These structures vary in the extent to which they involve changes to pre-coordination governance practices. Across the 19 basins in the study, six types of governance structures emerged (Table 3).

[4] Some agencies and some GSAs span multiple basins. Further, some agencies participate in multiple GSAs and multiple GSPs within a basin. Thus an agency may engage in more than one form of coordination. The number of aWhere a GSA spans more than one basin, it is counted once for each basin

Table 3. Six Types of Basin-level Governance Structures that Resulted from Agency-Level Coordination Choices

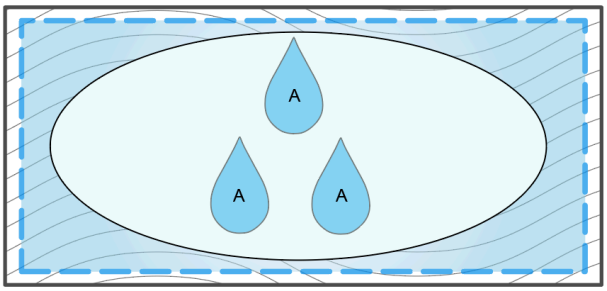
Legend: A Agency | GSA | GSP | Basin

(A) Centralized with Integrated Decision-making

A multi-agency GSA governs the full basin. Member agencies jointly make decisions for the GSA, and in doing so, commit to those decisions. Major decisions either require supermajority voting or consensus. The basin will implement a pumping allocation for individual pumpers.

Basins:

- Indian Wells Valley Basin
- Cuyama Valley Basin
- Borrego Springs Basin



Implications - Autonomy

Decision-Making Competencies & Exemption from Constraints: Rescinds substantial control to joint decision-making. Some managerial decisions and freedoms from constraints protected by no-effect clauses.

Implications – Coordination Risks

Divisional: Joint decision-making reduces control over the distribution of costs and benefits, yet risks are tempered by voting requirements that protect minority opinions and the adoption of an allocation of groundwater pumping in the basin.

Defection: Unified GSA structure and collaborative policy choices reinforce commitment to responsibilities.

Lock-in: The strong inter-agency connections and performance targets may constrain future flexibility.

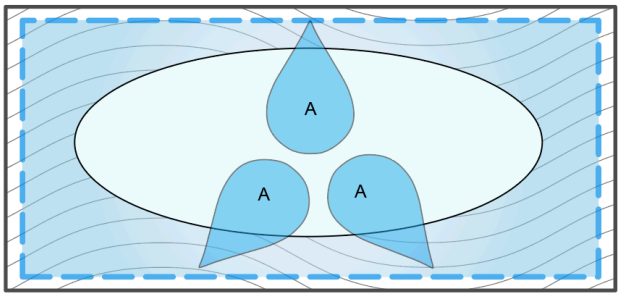
Performance: High oversight and joint decision-making, combined with pumping allocations reduce risks of non-compliance or goal non-attainment.

(B) Centralized with Devolution of Implementation

A multi-agency GSA governs the basin. Member agencies jointly make decisions, though each has strong voice and influence. Unanimous votes are required for key decisions (fees, pumping limits, approval of GSP elements) and supra-majority for decisions related to agency management and authorities. Non-affect clauses protect agency authority. Under the GSP, each member agency will select and implement its own projects and management actions.

Basins

- Santa Cruz Mid-County Basin



Implications - Autonomy

Decision-Making Competencies & Exemption from Constraints: Rescinds some control to joint decision-making yet retains power through voting structure and policy-choice. Some managerial decisions and freedoms from constraints protected by no-effect clauses.

Implications – Coordination Risks

Divisional: Joint decision-making reduces control over the distribution of costs and benefits, yet risks are tempered by voting requirements that protect minority opinions and policy-choice.

Defection: Unified GSA structure reinforce commitment to responsibilities though policy-choice increases the potential for free-riding.

Lock-in: The strong voting perfections and policy-choice protect future flexibility.

Performance: High oversight and joint decision-making reduce risks while policy choice increases risks of non-compliance or goal non-attainment.

(C) Centralized with Exit Options

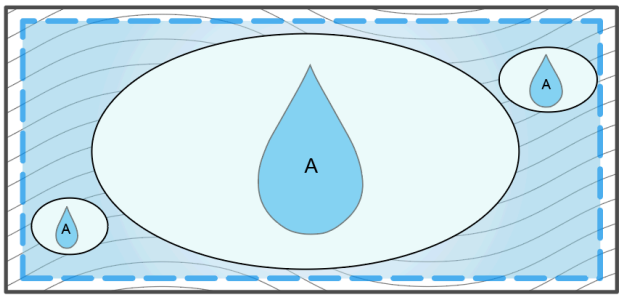
Single and in some instances, multi-agency GSAs govern the basin. GSAs collaborate through a joint full-basin GSP. Responsibility for GSP development and implementation has been delegated to one of the GSAs, with other GSAs having minimal responsibilities. No-effect clauses protect agency

Implications - Autonomy

Decision-Making Competencies & Exemption from Constraints: Most agencies have rescinded control to the lead-agency, though retain input role. No-effect clauses

authority, processes for termination of the joint GSP efforts are well defined and no financial commitments are required.

Basins
- 180/400 Foot Basin
- Oxnard Basin
- Pleasant Valley Basin
- Westside Basin



protect against constraints on most agency competencies.

Implications – Coordination Risks
Divisional: Delegating to the lead agency could produce divisional risks, yet the lead-agency has primary responsibility for implementation, reducing risks to partnering agencies.

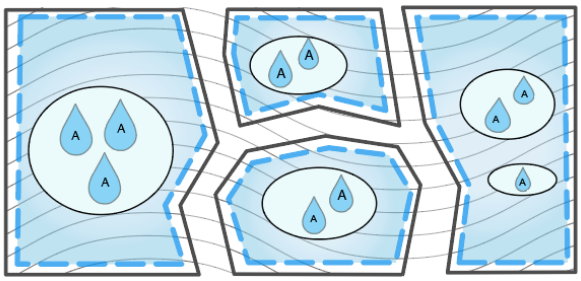
Defection: Agreement does not address the potential for free riding and moral hazard.

Lock-in: Each agency forming its own GSA protects future flexibility.

Performance: Consolidation of most decisions and implementation as the responsibility of one agency limits performance risk.

(D) Regionalization with Coordinated Performance Targets:
Multiple multi-agency GSAs govern the basin. Each GSA is either producing its own GSP or has its own section within the GSP. Most GSAs include no-effect clauses that protect member agency authority and water right. Varying no-effect clauses at the basin, GSP, and GSA level protect agency authority and water rights. Within each GSP all decisions require unanimous votes. GSPs are coordinated through an allocation of yield to each GSP.

Basins
- Kings Basin
- Kaweah Basin
- Merced Basin
- Tulare Lake Basin



Implications - Autonomy
Decision-Making Competencies & Exemption from Constraints: Agencies rescind some control only to selected partnering agencies within a GSA, yet the groups formed each retain autonomy in policy and implementation. No-effect clauses provide protections of autonomy within groups.

Implications – Coordination Risks
Divisional:. Allocation of groundwater yield across GSPs reduces divisional concerns across groups of partnering agencies. Within group divisional risks vary by GSP group, with many GSPs developed by a single agency.

Defection: Allocation of groundwater yield reduces defection risk across groups of partnering agencies by clearly articulating roles and creating a mechanism for accountability. Defection within groups remains a risk.

Lock-in: Allocation of yield across groups may contribute to lock-in if renegotiation of the allocation is needed.

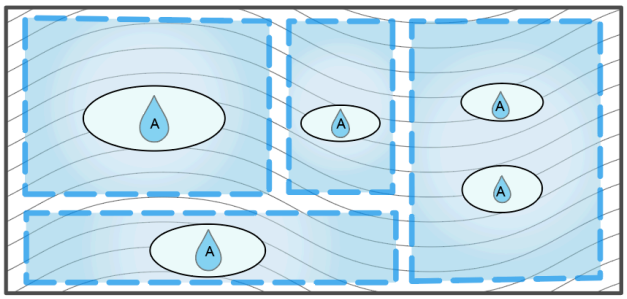
Performance: Allocation of yield aims at reducing both outcome and compliance aspects of performance risk.

(E)Regionalization with Strong Independence:
Multiple single and multi-agency GSAs govern the basin. Some of these GSAs are producing their own GSPs, others are collaborating on joint GSPs. Partnering within GSAs and GSPs varies, with some decisions binding and other decisions requiring agency approval.

Basins
- Delta Mendota Basin
- Tule Basin
- Kern Basin
- Madera Basin

Implications - Autonomy
Decision-Making Competencies & Exemption from Constraints:. Agencies rescind some control only to selected partnering agencies either within a GSA or a GSP group, yet each group retain autonomy in policy and implementation from other groups. No-effect clauses provide protections of autonomy within groups.

Implications – Coordination Risks



Divisional:. Agreements do not address division across or within groups. In some instances, financial commitments have been agreed upon.

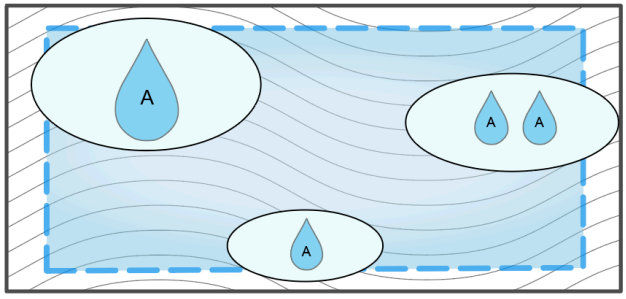
Defection:. Agreements do not address the potential for free riding and moral hazard.

Lock-in: Each GSA and GSP group has high flexibility regarding future decisions.

Performance: Agreements do not address performance risk.

(F) Formalization of the Status Quo:
Multiple GSAs govern the basin. The GSAs are primarily comprised of single agencies. GSAs are jointly developing a single GSP that spans the entire basin. Within the GSP, agencies have agreed to shared knowledge and goals, yet otherwise remain independent in policy, management and implementation. Varying no-effect clauses at the GSA and basin level protect agency authority, water rights, and finance decisions.

Basins
- Eastern San Joaquin Basin
- Paso Robles Basin
- Chowchilla Basin



Implications - Autonomy
Decision-Making Competencies & Exemption from Constraints: Agencies predominantly retain full control over decision-making, ceding some autonomy in regards to knowledge development and goal setting. No effect clauses protect against constraints on most agency competencies.

Implications – Coordination Risks
Divisional: Agreements do not address division across or within groups. Some financial commitments for development of the joint GSP been agreed upon.

Defection: Agreements do not address the potential for free riding and moral hazard.

Lock-in: Each GSA and GSP group has high flexibility regarding future decisions.

Performance: Development of a full-basin GSP provides some protection against compliance risk, yet does not address outcome risk.

In many basins, choices made by agencies in structuring coordination results in a centralized governance structure. Here there are three variations: (A) ***centralized with integrated decision making***, (B) ***centralized with devolution of implementation,*** and (C) ***centralized with exit options***. In the first two types of governance structures, agencies together work collectively under the auspices of a newly formed multi-agency GSA to make decisions in development of a full basin and highly integrated GSP. For the centralized governance with integrated decision-making governance structure, the decisions made collectively are binding upon all agencies. In centralized with devolution governance structure, each member agency makes decisions related to projects and management implementation within its own boundaries, though decisions related to fees and regulation of groundwater pumping are made collectively. The third type of centralized governance structure also entails joint basin-level decision making, however agencies formed multiple GSAs, and thus each GSA could at any point in the future, decide to operate more independently. None-the-less, in basins with this governance structure, one GSA is primarily responsible for GSP development and implementation on behalf of the entire basin.

In other basins, agency choices about how to structure coordination result in polycentricity that entails some reordering of prior governance. In basins for which coordination choices led to a

governance structure of (D) ***regionalization with performance targets***, multi-agency GSAs formed, bringing together sets of agencies together in new collective decision-making structures. Each of these new GSAs engaged independently in policy formulation, developing its own GSP. However, to ensure basin-level performance goals are achieved, agencies in the basin formally allocated sustainable yield targets across the GSPs. The basins in which coordination choices led to a governance structure of (E) ***regionalization with independence,*** agencies adopted a similar approach yet did not set performance targets for the GSPs. However, GSP development and GSAs structures in these basins have more variation, with some GSAs making binding decisions for their member agencies and others having more selection of choice. In these basins, there is at least one agency that sought to maintain autonomy throughout, creating its own single-agency GSA and developing its own GSP.

Lastly, in several basins, coordination occurs in a manner that primarily reproduces and formalizes the status quo of dispersed decision-making and authority. In the basins for which coordination structures serve to (F) ***formalized the status quo***, agencies formed their (mostly) their own GSAs yet worked together during policy formation to develop a joint GSP that spans the entire basin. Yet notably, the approach taken to GSP development is one in which results in policies that allot strong discretion and choice to member agencies. Each GSA, and within multi-agency GSAs often each member agency, can choose its own projects and management actions. Further, most of the potential policies that will be considered, as the GSPs do not entail commitments to projects, are ones that were already planned by those agencies prior to SGMA.

5.4. Basin-Level Governance, Concerns, and Protections

The coordination mechanisms selected by agencies, and consequently, the resulting basin governance structures, provide varying protections to address the collective concerns about autonomy and coordination risk within each basin. Table 4 depicts concerns about authority and the risks of coordination within each basin. As noted in the table, not all agencies within the basin hold the same concerns. While the concerns of each agency influence that agency's individual coordination choices, not all concerns influence basin-level structures and decisions. Below we compare the relationships between basin-level concerns and basin-level coordination choices.

Table 4. Concerns about Autonomy and Coordination Risks, by basin and basin governance structure type. The relative strength of concerns is denoted with '+' reflecting a noted a lower-level concern and '+++' reflecting a strong concern. Rankings are qualitative and based on the emphasis given to the concern by interviewees and as raised during public meetings.

		Autonomy		Coordination Risks			
GOVERNANCE APPROACH	BASIN	Decision-making Competencies	Freedom from Constraints	Divisional	Defection	Lock-In	Performance
Centrailized with Integrated Decisi	Borrego Valley						
	Cuyama Valley		+			++	
	Indian Wells Valley		++				++
Centralized with Devolution of Implementation	Santa Cruz			+			
Centralized with Exit Options	180/400	+		++		++	+
	PV	+				+	
	Oxnard	+				+	
	Westside						
Regionalized with Coordinated Pe	Kings	+++	++	+++	++		++
	Kaweah	+++	+++	++		+	+++
	Merced	+++	+	++			
	Tulare Lake	+++	+	+		++	
Regionalized with Strong Indepen	Delta Mendota	+++	+++	+++	++	+	+
	Tule	+++	++	++			+++
	Kern	+++	++	++			++
	Madera	++	+++	+++	++	++	
Formalization of the Status Quo	Chowchilla		+	+			+
	Paso Robles		+++	++			
	ESJ	+++	+++	+		+	

+++ The concern is shared across the majority of agencies in a basin and is attributed by at least one agency as a primary reason for the selection of institutional arrangements in the basin. OR The concern is attributed by a majority of agencies as having had a strong influence on coordination choices even if the concern was not shared across all agencies in a basin.

++ The concern is not shared across the basin yet at least one agency views this as a strong concern and that agency had substantial control in shaping other agency choices. OR The concern is shared by a majority of agencies yet none of the agencies attribute the concern as having a great deal of influence in shaping agency choices.

+ The concern is isolated to one or a minority of agencies yet, even though the concern was high for those agency(ies), that agency/those agencies had limited influence in shaping coordination choices across the basin. OR A minority of agencies have the concern, yet there is no indication the concern had much influence in shaping coordination choices.

5.4.1. Basins in which Coordination led to Centralized Governance Structures

Overall, agencies in the basins that adopted centralized governance structures had comparatively fewer concerns about autonomy and the risks of coordination.

Concern about loss of autonomy by agencies in the basins that adopted ***(A) centralized with integrated decision-making*** or ***(B) centralized with devolution of implementation*** governance structures are limited in number and level of intensity. In part, this is likely because coordination under SGMA poses few changes to prior policy and management regimes. In all four basins, the agencies primarily include counties, a municipal or residential supplier, and one primary[5] water district. Counties have historically only managed well permits or regulations but otherwise have not engaged in groundwater management. In Cuyama Valley basin, prior water management responsibilities were especially limited, as the water district did not exist prior to SGMA. In Santa Cruz-Mid County, prior water management responsibilities were higher, given the agencies had long battled sea-water intrusion, and through that had reached understandings about each other's roles.

[5] Santa Cruz Mid-County is only basin in this category with two water districts, yet one of those water districts only pumps a very small percentage of water from the basin.

Concerns about coordination risks in the basins that adopted centralized governance structures are also relatively low. In the basins adopting ***(A) centralized with integrated decision-making*** or ***(B)centralized with devolution of implementation*** governance structures, the relatively limited access to surface water supplies means that agencies have smaller divisional concerns about how each agency's water rights might be used to address groundwater depletion. Further, the decision to apply pumping allocations to each groundwater user,[6] addressed divisional concerns on a user rather than an agency basis. In Santa Cruz mid-county, the basin that adopted a ***(B) centralized with devolution of implementation*** governance structure, the main sustainability concern is seawater intrusion, not groundwater depletion. The reason agencies in that basin chose to retain control over projects and management was based on the shared perspective that agencies, rather than the GSA, would be better positioned for implementation. The decision was not driven by autonomy concerns and coordination risks.

In the four basins that adopted a ***(C)centralized with exit options*** governance structure***,*** concerns about autonomy and coordination risks are slightly higher***.*** Preoccupation about the ability to protect prior investments and about lock-in drove selection of coordination mechanisms that would allow for greater adaptability. In all four basins, responsibility for GSP development and implementation was placed primarily with a single lead agency. The lead agencies in these basins were the largest water users and had jurisdiction over much of the extent of the basin. For example, in the Oxnard Basin, Fox Canyon GSA extends across 94% of the basin. Due to its outsized jurisdictional authority, the lead agency had few concerns about autonomy and limited concerns about coordination risks. While partnering agencies in these basins had concerns, they represent relatively small components of the groundwater sustainability issue, and thus their concerns did not have as much influence in shaping governance approaches for the basin. For the subordinate agencies, their choice to form independent GSAs was based in a desire to have the flexibility to adopt a greater role in SGMA implementation in the future, should they so desire.

In selecting coordination mechanisms, agencies in the basins with centralized governance structures accepted greater reductions in autonomy, yet adopted arrangements designed to reduce performance risks. In the ***(A)centralized with integrated decision-making*** governance structure, divisional risks are addressed through voting that requires unanimity or supra-majority and by setting of unified performance targets across the basin. Defection is reduced due to the unified structure of the GSA, which has the effect of increasing lock-in risks. The ***(B) centralized with devolution of implementation*** governance structure has the similar effects, with the exception that agencies retain autonomy to select their own projects/management thus opening space for some potential defection risks. The effects of the ***(C) centralized with exit option*** governance structure on autonomy and coordination risks varies by agency. The lead agency retains high autonomy and the ceding agencies giving up much of their autonomy, though bounding that cession with no-effect clauses. In these basins, the divisional and defection risks are low, as the agencies have agreed the lead agency will shoulder most of the effort and the rescinding agency has few obligations. Lock-in risks are addressed through the exit option of having formed independent GSAs.

5.4.2. Basins in which Coordination led to Regionalized Governance Structures

[6] In Indian Wells Valley and Cuyama Valley, the allocation will be imposed through the GSP. The Borrego Springs Basin is in the process of undergoing a stipulated judgement process, through which groundwater rights in the basin will be adjudicated. The result is a de factor allocation, as the amount each groundwater user can pump will be quantified.

Agencies in the basins that adopted coordination mechanisms leading to regionalized governance structures had more substantial concerns about autonomy and the risks of coordination.

In the four basins where agencies' choice of coordination mechanisms led to a ***(D) regionalization with performance targets*** governance structure, agencies all recognized the need to take action to address groundwater depletion, yet had strong concerns about autonomy and divisional risks. These concerns stem from one or more agencies in the basin having surface water rights and existing policy and management regimes they do not want disrupted. Many of those agencies also ascribed the groundwater depletion problem to agencies in the basin that did not have surface water and were concerned about ensuring they would not be responsible for the effects of pumping by those other entities. Notably, those concerns do not apply uniformly across all agencies. Some agencies in close geographic proximity to one another, either adjacent, interlocking, or with overlapping jurisdictions (generally counties, community service districts or other suppliers in relation to water districts) have fewer concerns about autonomy due to their history of interactions. Concerns about defectors were isolated to the Kings basin, where the majority of the agencies are irrigation districts with surface water rights. Those agencies were concerned that groundwater dependent agencies in the basin would not accord to the majority perspective and might potentially use veto power to negotiate more favorable arrangements. Some agencies within these basins also had concerns about lock-in. Agencies in both Kaweah and Tulare Lake had concerns about being compelled to use methods for developing water budgets or accounting frameworks that they did not agree with. Performance risk was less of a concern. Many agencies viewed it quite possible to achieve groundwater sustainability, over a portion, if not all of the basin. Further, many agencies in the basin expected the state would address compliance on localized basis, only intervening in the portions of the basin rather than the basin as a whole. As such, these agencies thought that so long as they met the requirements of the law, they did not have to be preoccupied with their neighbors.

Agency concerns in the four basins where agencies' choice of coordination mechanisms led to a ***(E) regionalization with independence*** governance structure are quite similar to those in the basins in the ***(D)regionalization with performance targets*** category, with a few notable additions. In each basin, at least one agency had quite intense autonomy and divisional concerns, and those agencies constrained the range of potential coordination mechanisms in the basin, as it was clear they would not participate in joint GSAs or joint GSPs. As the SGMA requires basin-level coordination, whichever GSA was most averse to coordination was able to leverage disproportionate influence over the coordination structure. For example, irrigation districts in the Tule basin made clear to other agencies they would never consider forming a single GSA or developing a joint GSP. Another distinction in these basins is that a greater diversity of groundwater management concerns across agencies motivated autonomy concerns. For example, in some parts of the Delta Mendota and Kern basins, subsidence is a particularly strong groundwater sustainability problem, yet it is not an issue in other parts of the basin. Agencies in those basins expressed a particular need for autonomy to address their distinctive groundwater sustainability problems. In addition to concerns related to decision-making competencies, a majority of agencies in these basins wanted to avoid selecting coordination mechanisms that would place another agency or group of agencies in a supervisory role. The concern about being dictated to by another agency stems from a lack of trust between agencies and the desire to maintain as much autonomy as possible throughout GSP development and implementation. Lastly, terms of concerns about performance, similar to the ***(D) regionalization with performance targets basins***, the basins in this category believed they could achieve sustainability in parts or all of the basin while maintaining independence. In the event a portion of the basin was not able to comply with the regulatory requirements, agencies believed

those areas would be singled out and would not impact the jurisdictional authority of other agencies. Further, even while some agencies (particularly the agencies with less secure water portfolios) had performance concerns, there was little political will to work out performance target agreements given the short time frame agencies had to develop GSPs and negotiate coordination agreements.

In selecting coordination mechanisms, agencies in the regionalized basins accepted reductions in autonomy and divisional risks only with selected parties in the basin and maintained autonomy in relation to the remainder of the basin. Choosing coordination partners is a risk-reduction tactic. In the ***(D) regionalized with performance target*** governance structure, the basin-wide policy decision to allocate groundwater yield serves to address divisional, defection, and lock-in risks across regionalized groups that joined together to form GSPs. The allocation clearly specifies either GSA or GSP group responsibilities while providing each the freedom to determine how to achieve that target. While some agencies in the basins had concerns about the lock-in risk associated with setting an allocation, they were willing to accept that risk relative to the other benefits of this mechanism. Further, for agencies that expected the state will intervene in basins on a localized basis, the allocation also has the effect of reducing concerns about compliance risks.

In contrast, the ***(E) regionalization with strong independence*** governance structure provides little protection for divisional, defection, or performance risks, but counters those greater exposures by having lower lock-in risks. The effects of this structure vary within and across the regionalized groups of agencies. All agencies in this structure have high performance risks. There are no mechanisms to ensure actions in the basin will achieve sustainability or ensure compliance with the requirements of the statute, though in all but the Madera basin, the agencies agreed upon procedures for deliberation on coordination across the GSPs in the basin. The agencies that formed a single-agency GSA and produced an independent GSP, retain almost full autonomy, and many, though not all of their GSPs include little consideration of actions being taken by others in the basin. Their risks under this governance structure are primarily related to performance. Whereas for agencies in the basin that joined together in multi-agency GSAs or joint GSPs, divisional, defection and lock-in risks vary with the coordination mechanisms adopted by each regional group.

5.4.3. Basins in which Coordination led to Institutionalization of the Status Quo

Agencies in the basins that adopted coordination mechanisms leading to governance structure that reflects an ***(F)formalization of the status quo*** had mixed concerns. While concerns vary between the basins, what is notable is that these agencies navigated coordination in a manner that obviated most concerns by ensuring coordination would have minimal impact on agencies and that the plans developed would nominally be in full compliance with the statutory requirements. In essence, this approach entails coordination of knowledge creation and goal setting, while not coordinating at all on actions. In part this was possible due to the minimal concern of many agencies in the basin about outcome risks – either because they saw few barriers to obtaining their definitions of sustainability, such as in the Paso Robles Basin or because they viewed agencies as already planning the actions needed to achieve sustainability (both Eastern San Joaquin and Chowchilla Basins). The one exception is the Chowchilla basin whose lead agency had concerns about the ability of the basin to reach sustainability and entertained the idea of requesting a basin boundary modification to align with the lead water district's jurisdiction, but this concern was never acted upon and consequently didn't change the coordination dynamic in the basin.

Within each of the three basins, agencies worked together to create a joint GSP that spans the entire basin, yet with the exception of two multi-agency GSAs that formed in the Eastern San Joaquin

Basin, all agencies had full decision-authority and freedom from constraints. The joint GSP required some joint-decision-making in relation to sharing knowledge and setting sustainability goals, yet the GSP is structured such that no coordination is envisioned to achieve of those goals. Rather each agency will voluntarily decide the projects, management actions it will seek to achieve. In this sense, the structure entails little changes to pre-SGMA governance. Divisional, defection, and lock-in risks are minimal, as beyond the developing the basin setting and setting goals, agencies operated independently. The compliance aspect of performance risk is also low as the development of a unified GSP meets SGMA requirements for basin-wide planning, though outcome risk remains a concern, as no obligations or commitments ensure agencies will take suitable actions to address sustainability.

6. Discussion

Examination of the choices made by agencies as they complied with the coordination mandate of SGMA provides a number of insights in relation to the role of agency concerns in influencing the adoption of coordination mechanisms in response to a top-down coordination mandate.

Our findings reveal that agencies have the multiple concurrent apprehensions agencies in relation to inter-agency coordination. Quite commonly, coordination evokes concerns about autonomy (both decision-making competencies and freedom from constraints) and divisional risks. Yet agencies also worry about defection, lock-in and performance outcomes. Moreover, there arise questions about compliance with the requirements of the mandate. Concerns may reinforce one another, as for example, when concerns about lock-in magnify a desire for autonomy. Concerns can also push agencies in opposing directions. For example, under mandated coordination, mechanisms to address concerns about performance (outcome and compliance) can come into tension with preferences for independence.

Our findings also demonstrate that, when agencies are tasked with coordination, yet have discretion in how to do so, they choose mechanisms for coordination that can serve to reduce their concerns. As described above, variety of coordination mechanisms are available that help address concerns. These mechanisms are often not mutually exclusive, often agencies adopt multiple strategies concurrently. Doing so is a form of redundancy in protection; adopting multiple strategies also enables protection at differing stages and choice in how to respond should the issue the agency was concerned about manifest as a problem the agency wishes to address. Yet as our analysis shows, there can be tradeoffs between the protections provided. For example, protecting autonomy may increase outcome risks, while protecting against defection may increase lock-in risks.

Agencies in the study adopted a variety of approaches to coordination, ranging from some entering into fully integrated decision-processes while others maintained complete independence in a manner that reflects little to no coordination, and the vast majority adopted approaches that involved mix-forms of decision-making combined with varying protections. Notably, a substantial portion (73 of 274) of the agencies in the study chose to become independent GSAs, yet all but 13 then partnered in GSP development. This finding in part reflects a staged approach to decisions, where early-on concerns about lock-in gave future flexibility, yet still enabled more in-depth collaboration in GSP formation.

Our analysis indicates that when multiple agencies are tasked with coordinating, it is their collective that guides the coordination structures developed. This finding is most apparent in the regionalized basins, where the decision of one agency to remain independent influences the choice set of options

available to other agencies seeking to coordinate. It is further illustrated by regionalized groups of multi-agency GSAs and joint GSPs emerged in those basins, as in those basins some agencies bond together as a way of addressing their collective concerns about other agencies. For example, agencies in the Tule, Kaweah, and Kern basins formed partnerships based on their shared understandings of the problems associated with groundwater depletions and more importantly, who is at fault for causing the problem. Secondary to these, were shared concerns about how inclusion of some agencies might increase transaction costs or slow down the momentum of an established group of agencies with a history of collaboration.

While nature and extent of agency concerns clearly influences coordination mechanisms selected, they do not provide full explanation of selection of coordination mechanisms. In part, the selection of coordination mechanisms is affected by equifinality - differing combinations of coordination mechanisms can provide relatively similar protections. For example, a coordination mechanism that requires unanimity for joint decision-making; a coordination mechanism that has a two-step process that requires separate approval from each member-agency; and a mechanism that delegates choices of all decisions and projects/policy to member agencies all share many similar protections to operating as an independent agency.

Under mandated coordination, selection of coordination mechanisms also depends on interpretation of what is required for compliance. As our research indicates, agencies had differed in these interpretations. As mentioned above, agencies in the ***(F) formalization of the status quo*** basins viewed SGMA compliance more likely with integrated GSP, even if that GSP included full autonomy and less coordination implementation. In contrast, many agencies in the ***regionalized*** basins expected compliance would be evaluated on a GSP-by-GSP basis. These differences in agency perspectives arose because although SGMA requires coordination to achieve basin-wide sustainability planning, and explicitly calls out coordination requirements for data, methods, and sustainability goals, SGMA includes ambiguity as to how coordination across groundwater sustainability plans will be evaluated as well as how sanctioning would be implemented.

Variation in selection of coordination mechanisms also arises because concerns are not the only considerations of agencies when determining how to coordinate. While agencies have many concerns about coordination, agencies also benefit from coordination. Potential gains are important to the calculus of choice of coordination mechanism. These gains manifest quite prominently in the GSAs and GSPs in which one agency took the lead and was responsible for most GSP development and the bulk of implementation. This is true all of the ***(C) centralized with exit options*** basins, as well as several multi-agency GSAs and joint GSPs in the regionalized basins. Greater research is needed to identify the diverse benefits from coordination and how agencies weigh tradeoffs between varying benefits and concerns about autonomy and coordination risks.

Lastly, the fact that a range of approaches to coordination were implemented in response to the same mandate is illuminating. Agencies only sought to coordinate through integration of planning and decision-making when autonomy concerns were low. This suggests that top-down mandates for coordination will only sometimes lead to coordination through centralized efforts. Yet the ***(D) regionalized with performance targets basins*** illustrate that even where agencies may be unwilling to coordinate through integrative decision-making, they may be able to coordinate through development of plans that apportion collective responsibilities, thus allowing greater independence while also explicitly delineating how the goals of coordination will be achieved. Lastly, the ***(F) formalization of the status quo*** basin governance structure is indicative of how integration of

development of knowledge and goals may be more tenable for agencies than coordination of implementation actions.

7. Conclusions

Our findings have important implications for both for theories of inter-agency coordination as well as for policy making. First, while autonomy and coordination risks are recognized in theories of inter-agency coordination, our research highlights the importance of distinguishing the variety of concerns agencies have with respect to coordination, as the potential barriers and facilitators of coordination will vary depending on the exact nature of agency concerns. Greater elaboration of the concepts can help in identifying potential avenues through which agencies can alleviate their concerns while achieving the benefits of coordination. This added nuance will also serve to improve explanatory power as to why some agencies choose some coordination pathways over others.

Secondly, our research points to the need for further examination of mandated coordination. The ICA Framework usefully identifies the role of perceive coordination risks in agency choices about collective action, and much of that applies in this instance even though the coordination is mandated. However, it appears from our comparative analysis of basins subject to SGMA that mandated coordination is likely to exhibit different dynamics than those that emerge from voluntary coordination. While transaction costs remain a key driver, the mandate means that agencies concerns have to be negotiated in order to comply. In addition to perhaps changing the calculus of coordination, the mandate also adds to agency concerns the need to address performance risk.

Our research also illustrates that as agencies work through autonomy concerns and coordination risks, they can craft coordination structures in a variety of ways, including combinations of structural and procedural safeguards. There may be different sequencies by which those safeguards are sequenced—structural safeguards put in place initially (e.g., remaining independent as an agency) may allow an agency to accept more coordination risk when it comes to decision-making procedures or implementation measures, or joining a centralized structure initially may raise the salience of procedural safeguards related to decision making and implementation. Either way, autonomy concerns will find institutional expression. Further exploration is needed to better understand which approaches have which effects.

Lastly, in terms of coordination-mandates, our findings highlight that mandates allowing agencies choice in how to coordination will result in diverse approaches. Discretion may be quite valuable, in that agencies can tailor coordination mechanisms to their respective contexts. Yet discretion can, and in the case of SGMA did, create heterogeneity in governance structures. The result is inconsistency in approaches within a state, as well as potentially increasing the challenge of steer agency actions in the future, as unified steering policies will be difficult to apply. Moreover, it is possible that some coordination structures are more effective in achieving the long-term desired goals of coordination. As such, greater understandings as to how varying coordination arrangements translate into outcomes is needed to inform whether or not allowing discretion achieves state steering goals.

The complexity of existing jurisdictional arrangements, the potential for externalities, and the potential gains, in terms of economies of scale, shared expertise, and effectiveness of actions point to the many possible benefits of inter-agency coordination. Yet coordination need not be a one size fit all model. Our research contributes initial understandings of the relationships between agency concerns and coordination mechanisms. Further understandings of strategies that can be used

address agency concerns while achieving the desired outcomes is critical for addressing the wealth of challenges facing society today.

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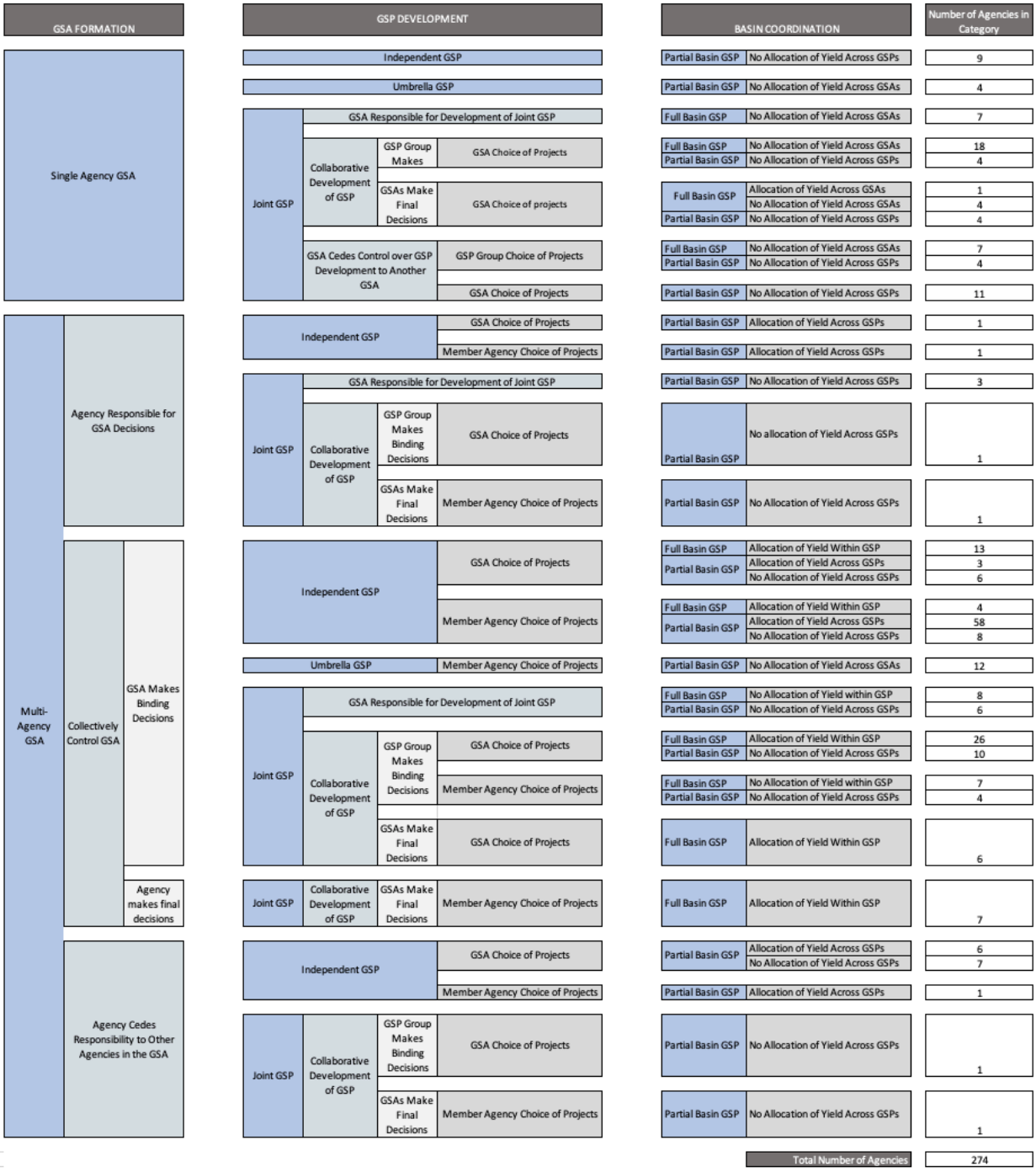
Appendix A: Flow Chart Depicting Agency Choice of Coordination Mechanism
Agencies had multiple choices when deciding how to coordinate. The left columns reflect decisions made about GSA formation. Those decisions set the stage for decisions made about GSP development, which then lead to decisions about GSP coordination. Vertically connected boxes reflect decision points, that then branch into differing pathways. There are total of 234 agencies in the basins, yet some span multiple basins, and some are engaged in more than one coordination role for differing portions of the basin. The diagram counts each instance of coordination, thus reflects 274 agency coordination roles. Only pathways that were selected by agencies are depicted in the chart. Pathways that were possible, yet not adopted by any agency are not included. Within any multi-agency decision, representation, decision-rules, and no-effect clauses were also selected. Due to the vast number of potential options, those are not included in the diagram.



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