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The Role of Place in Rural Policy: The Importance of Considering the Human Dimensions of Place

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Abstract

Agricultural water management is important to the development and success of agricultural production. The economies of many rural communities in Saskatchewan, Canada, rely on agricultural production, so agricultural water management and local rural economies are linked. However, the economy is not the only dimension of agricultural water management. Moving water off agricultural lands can result in habitat destruction, decreased biodiversity, increased flood risks, and decreased water quality, so physical and socio-economic factors influence agricultural water management as well. Many of these factors are locationally unique and linked to place. This paper explores the role of place in agricultural water management policy in Saskatchewan, Canada, by investigating the environmental, economic, and social manifestations of place and considering how they are reflected within existing agricultural water management policies.

We find that policies governing agricultural water management in Saskatchewan, Canada, lack explicit consideration for the human dimension of place. Our findings highlight a policy gap between place-based development concepts from the literature and the management of natural resources. There is a need for vertical and horizontal integration and coordination between different levels of government and actors to make the human dimension of place part of natural resource policy. This is especially true when policy makers (often in urban centres) are removed from the impacted setting (often rural). Designing and implementing policy based on the broad engagement of diverse stakeholders across rural communities is necessary to account for place. Specific recommendations for incorporating the human dimension into place-based agricultural water management policies are provided.

Keywords: place-based development; agricultural water management; drainage; Saskatchewan, Canada

Le rôle du lieu dans la politique rurale : l'importance de tenir compte des dimensions humaines du lieu

Resumé

La gestion de l'eau agricole est importante pour le développement et le succès de la production agricole. Les économies de nombreuses communautés rurales de la Saskatchewan, au Canada, dépendent de la production agricole, de sorte que la gestion de l'eau agricole et les économies rurales locales sont liées. Cependant, l'économie n'est pas la seule dimension de la gestion de l'eau agricole. Le déplacement de l'eau hors des terres agricoles peut entraîner la destruction de l'habitat, une diminution de la biodiversité, une augmentation des risques d'inondation et une diminution de la qualité de l'eau, de sorte que les facteurs physiques et socio-économiques influencent également la gestion de l'eau agricole. Bon nombre de ces facteurs sont uniques sur le plan géographique et liés au lieu. Cet article explore le rôle du lieu dans la politique de gestion de l'eau agricole en Saskatchewan, au Canada, en étudiant les manifestations environnementales, économiques et sociales du lieu et en examinant comment elles se reflètent dans les politiques existantes de gestion de l'eau agricole.

Nous constatons que les politiques régissant la gestion de l'eau agricole en Saskatchewan, au Canada, manquent de considération explicite pour la dimension humaine du lieu. Nos résultats mettent en évidence un écart politique entre les concepts de développement territorial de la littérature et la gestion des ressources naturelles. Une intégration et une coordination verticales et horizontales sont nécessaires entre les différents niveaux de gouvernement et les acteurs pour intégrer la dimension humaine du lieu dans la politique des ressources naturelles. Cela est particulièrement vrai lorsque les décideurs (souvent dans les centres urbains) sont éloignés du milieu touché (souvent rural). La conception et la mise en œuvre d'une politique fondée sur l'engagement élargi de diverses parties prenantes dans les collectivités rurales sont nécessaires pour tenir compte du lieu. Des recommandations spécifiques pour intégrer la dimension humaine dans les politiques territoriales de gestion de l'eau agricole sont fournies.

Mots-clés : développement territorial ; gestion de l'eau agricole; drainage; Saskatchewan, Canada

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1.0 Introduction

Water management in rural agricultural areas is complex. It has been described as a wicked policy problem, characterized by conflict, divergent values, the lack of a definitive solution, and—perhaps most critically—variation between places (Breen et al., 2018). Water management includes both a physical dimension (e.g., physiography, ecology, habitat, local hydrology), and a human dimension (e.g., economic factors, social interaction, culture). Place is where the human and physical dimensions of landscapes converge—and while features that create place may seem similar across a landscape, the way the human and physical dimension come together is unique to each location (Daniels et al., 2019).

This paper explores the role of place in the policies governing agricultural water management in Saskatchewan, Canada. This paper asks the question, how is place considered by policy makers in agricultural water management policies? By exploring how place is considered in existing policies, this paper identifies gaps in existing policies, the impacts of these gaps, and mechanisms to address them. Starting with background on agricultural water management, this paper provides an overview of agricultural water management in Saskatchewan and its links to rural development and place-based policy. It then presents an overview of research conducted in 2018–2019, including methodologies, results, discussion, and recommendations.

2.0 Background

2.1 Managing Agricultural Water

Managing agricultural water includes moving off or 'draining' surface water. Managing agricultural water has been an important part of development in Saskatchewan, across the Prairies, and in other agricultural regions in Canada (e.g., Southern Ontario; Minnes, 2020; Water Security Agency [WSA], 2017). The term 'drainage'[1] includes the act of moving off or 'draining' surface water through surface drainage (moving surface water off agricultural lands through practices like sloping, ditching, canals, and culverts) and tile drainage (removing excess water through the installation of subsurface works), with surface drainage being more common than tile drainage in Saskatchewan (Kokulan, 2019; Norris, n.d.).

There are many economic and social incentives for draining water from agricultural lands, such as increased efficiency and productivity of agricultural lands, economically benefiting producers and their communities (Weber & Cutlac, 2017). Agriculture and agri-food manufacturing are a foundational part of the rural economy and culture in Saskatchewan (Government of Saskatchewan, n.d.). Agriculture is a major contributor to the province's economy, providing 9.8% of Saskatchewan's gross domestic product (Statistics Canada, 2019), particularly in grain, oilseeds, and cattle (Olive, 2020). However, moving water off agricultural land can result in the destruction of habitat for waterfowl, decrease biodiversity, and can cause downstream issues such as increased flood risks and decreased freshwater quality (Badiou et al., 2018; Bethke & Nudds, 1995; Dumanski et al., 2015; Morton et al., 2015; Pattison-Williams et al., 2018). These types of changes in Prairie ecosystems can affect the traditional lands of Indigenous peoples, and impact socio-economic activities such as waterfowl hunting, as well as fishing, trapping, and subsistence agriculture (Wheater & Gober, 2013). As with the management of many natural resources, this is a multifaceted policy issue, important to every aspect of rural development. In Saskatchewan, conflict over moving water off agricultural land and management of the water occurs between different stake- and rights-holders, who often hold different sets of values and priorities (Minnes, 2020). This conflict came to a head in the early 2000s when downstream flooding in Saskatchewan resulted in the introduction of new legislation in the province, Saskatchewan's Agricultural Water Management Strategy.

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[1] Study participants, academics, and practitioners sometimes use the terms 'agricultural water management' and 'drainage' interchangeably—although technically, drainage is a subset of agricultural water management, and the two words are not synonymous.

2.2 Saskatchewan's Agricultural Water Management Strategy

Brought forward by the WSA[2] in 2015 and legislated by Bill 44 (Government of Saskatchewan, 2016), this new Agricultural Water Management[3] Strategy focuses on infrastructure approvals and coordination of networks in Saskatchewan. Through Bill 44, all drainage works, both existing and new, must go through a permitting process. At the time of writing (2020), the WSA aims to bring all drainage works in the province into compliance by 2027.

To receive a permit from the WSA to move water off agricultural land, there must be evidence that the water can be moved to a 'point of adequate outlet', an area where water can flow without having flooding impacts on lands outside of the crown-owned bed and shore (WSA, n.d.-b). 'Drainage networks' of landowners must agree on a drainage plan within the area upstream of the point of adequate outlet. These drainage networks differ in size, composition, and formality, and intend to create efficiencies and reduce impacts through coordinated activities. Networks can formalize into a Conservation and Development Area Authority, which, under *The Conservation and Development Act,* RSS 1978, c 27, have the legal authority to tax landowners to fund projects in the network that address water management issues or soil erosion (WSA, n.d.-b). Networks are guided by a 'qualified person', a professional engineer, professional agrologist, applied science technologist, or an individual accredited by the WSA. Qualified persons help network members apply for permits, gather the necessary technical information for the permits, and act as a liaison between the WSA, network members, and other stakeholders. Qualified persons are typically paid by the network members (WSA, n.d.-a). Network members only include those who own the land within the network area, as the WSA requires that any approval of drainage permits is conditional on permit holders to have land control over the impacted lands or have written approval from the landowner (WSA, n.d.-b).

We now shift our focus to exploring the background of place and place-based policy. This introduction is relevant because although the issue of moving agricultural water in Saskatchewan is about a natural resource, it is also about people and place.

2.3 Place and Place-Based Policy

Place is a concept familiar across social sciences, with both similarities and differences in how it is understood and applied. Place can be described as how people make meaning through the creation and assignment of significance to specific places and spaces (Tuan, 1977). Socially constructed perspectives of place focus on how factors like culture and identity relate to specific places. From a natural resource management perspective, these constructs can result in both disagreements over management approaches, as well as 'place-based' collaborations—where individuals with otherwise diverse backgrounds and opposing perspectives are bound together by a geographic place (Cheng et al., 2003).

Within regional and rural development literature, 'place' speaks not only to how people endow meaning upon spaces and locales of significance, but also to the various human and physical dimensions that vary from one locale to the next. This is how place is understood and applied within this paper. Places comprise numerous characteristics and assets that vary based on the fundamental features

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[2] The WSA is a government entity responsible for most of Saskatchewan's water management. For more about the WSA, see https://www.wsask.ca/About-WSA/About/

[3] Agricultural water management refers to the movement of surface water on agricultural lands.

of their biogeography and biocultural identity—physical (e.g., environmental) and human (e.g., social, political, cultural, and economic; Markey et al., 2015). Just as physical dimensions of landscapes differ, so too does the human landscape, as do the interactions between the two, resulting in the unique convergence and interaction of the characteristics of a physical location (Daniels, et al. 2019). Within the human dimension of place, economic manifestations of place include variables like access to capital and workforce, economic diversity, infrastructure, and the built environment (Markey et al., 2019). Also, within the human dimension, social manifestations of place include variables like identity, equity, community cohesion, and social networks—both as they are shaped by physical place, as well as how they manifest in that place differing from how they manifest elsewhere (Markey et al., 2019).

Taking a place-based management approach requires identifying the values, perspectives, history, and physical geography of a place in policy, planning, operations, and evaluation/monitoring (Minnes et al., 2018). Markey et al. (2015) summarize a place-based approach to policies in rural regions that includes embedding participation, engagement, and collaboration in the governance process; considering identity and sense of place; and having mechanisms to mobilize structures and initiatives (see Figure 1). This conceptual framework also puts the importance of contextual considerations (e.g., history, external threats, and interpersonal relationships) as the focus of all place-based policies (Brown et al., 2019). Markey et al. (2015) emphasize that including local knowledge and unique perspectives in the development process is important for local buy-in and addressing problems associated with top-down policies.

Figure 1. Place considerations for policies in rural regions.
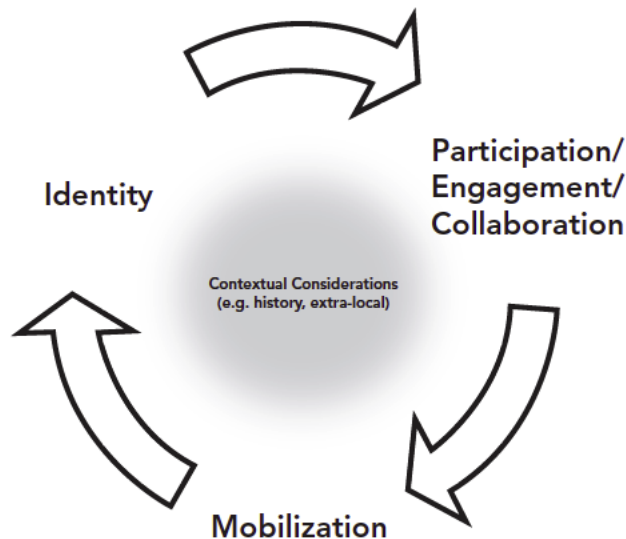
See Markey et al., 2015, p.881.

A review of existing academic literature on drainage found a clear emphasis on factors that make up the physical dimensions of place, such as the resource—water—and the ecological system (Norris, n.d.). Though research does exist on the economic and social aspects of the human dimensions of drainage—governance, actors, interactions, social, economic, cultural, and political aspects—it is not what dominates the available literature surrounding drainage (Norris, n.d.). However, research presented in various articles surrounding the economics of wetland drainage and valuing of various ecosystem services

provides interesting insights into socio-economic discussions surrounding drainage (see Cortus et al., 2011; Dias and Belcher, 2015; Yu & Belcher, 2011). In a study of the human conflict surrounding drainage in Saskatchewan, it was found, "conflict over agricultural drainage is complex and comprises a variety of diverse values, perspectives, and agendas" (Minnes et al. 2020, pg. 879). Minnes et al. (2020) explain that participants emphasized the human dimensions of the drainage processes as the source of the conflict, with emphasis on governance processes, people's actions, and interactions as the most central issues related to conflict about drainage. These conflict-related findings raise questions about the dimensions of place considered, and the dimensions of place not considered, in the design and implementation of agricultural water management policies in Saskatchewan. This paper shares conceptualizations of place first presented in Markey et al. (2015, 2019) and explores the findings of the research and the implementation of place in practice.

2.4 Summary

The management of agricultural water in Saskatchewan is a complex multifaceted natural resource management issue steeped in place. The policy governing the management of agricultural water in the province changed in 2015, and since then, the government body responsible for water management in Saskatchewan (the WSA) has been implementing the province's new policy dubbed the Agricultural Water Management Strategy. By exploring how place is considered in policy governing the management of agricultural water in Saskatchewan this paper identifies gaps in existing policies, the impacts of these gaps, and mechanisms to address these gaps.

3.0 Methodologies

3.1 Case Study Approach

This paper builds on the work of a multi-year project investigating governance of agricultural water management in Saskatchewan. This overarching project collected data from three case study regions. A case study approach allows researchers to study in-depth complex and dynamic situations in real time while exploring dynamic factors at play (Berg, 2009; Yin, 2009). By taking a qualitative case study approach, researchers identified and explored key actors and relationships within the landscape of agricultural water management, generating descriptive, narrative-based data (Martin & Sunley, 2014).

The three selected case studies are from southern Saskatchewan, allowing for observation and triangulation across different places within the Prairie Pothole Region where there has been significant wetland loss due to agricultural water management (Blann et al., 2009). Each case study is defined by the boundaries of a drainage network in the province as described in Saskatchewan's Agricultural Water Management Strategy. The three drainage networks chosen were: Black Bird Creek, Dry Lake, and Atwater-Kaposvar (see Figure 2). Consultations with provincial experts in drainage governance and response to community needs and interest led researchers to choose these specific drainage networks as case studies. Though all networks were similar in geography, they provided varying experiences with the drainage governance process in terms of approval status and interpersonal conflicts within the drainage networks. Primary data collection research methodologies for the overarching research project are in Minnes et al. (2020) and includes key informant interviews, stakeholder interviews, site tours, and community meetings. The University of Saskatchewan's Research Ethics Board approved this research. Researchers

recruited participants from all three drainage networks, as well from groups that operate provincially, such as conservation non-profits, industry groups, and provincial agencies.

Figure 2. Map of drainage networks.
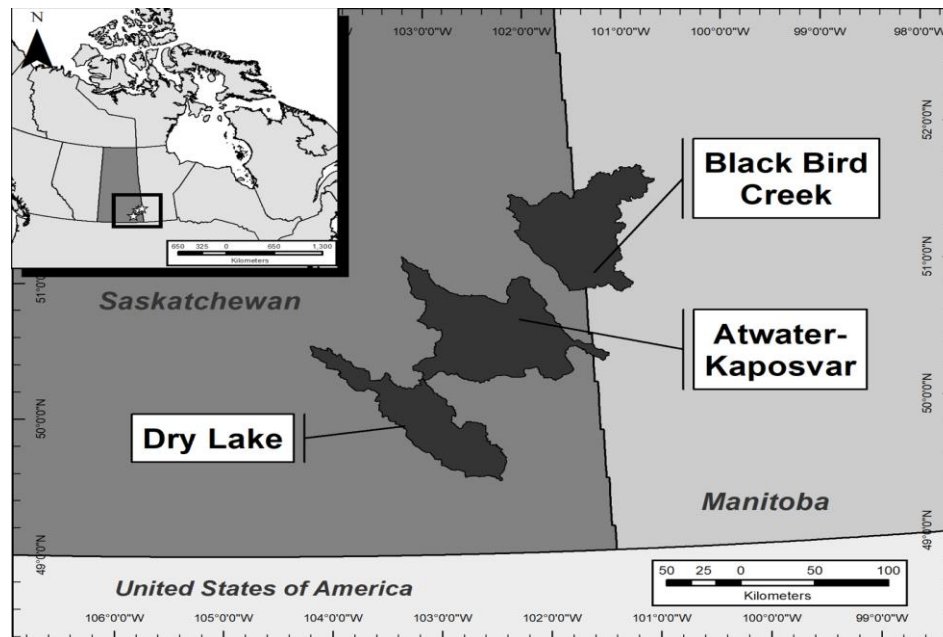
Source: Jared Wolfe, map contains information licensed under the Open Government Licence, Canada.

3.2 Interview Approach

From Summer 2018 to Spring 2019, we completed 32 interviews with 36 respondents from a variety of sectors and groups affected by agricultural water management decisions in Saskatchewan (see Table 1). To identify individuals within the case study regions, we first identified key stakeholder organizations with direct involvement in drainage or the drainage governance process. We contacted these organizations and then branched out from those initial informants, attempting to recruit a diverse, cross-section of parties through snowball sampling. Our goal with recruitment was to achieve representative diversity of perspectives. When conducting interpretivist research, a modest sampling of diverse experts can yield a strong understanding of the scope and variation of perspectives regarding the issue at hand (Guest et al., 2006). We included voices from different parties related to the drainage governance system in Saskatchewan, including (a) agricultural producers, engineers engaged in the permitting process, and representatives of government; (b) watershed associations; (c) conservation organizations; (d) trade organizations; and (e) rural municipalities. For the most part we did not include indirectly impacted parties since these groups are not presently—at the time of the writing of this paper—part of Saskatchewan's Agricultural Water Management Strategy (discussed in Section 2.2), and therefore would not be able to speak to their experience with the new governance system. However, we did include some of these indirectly impacted voices from outside of the drainage network table, including other rural municipalities, elected officials, academic experts, and Indigenous community representatives. Specific to Indigenous Rights and Title as it relates to drainage, it is important to note that this complex topic was not within the scope of this research and is deserving of its own study. This limitation of scope, combined with the focus on

dominant themes from the interviews mean that this paper should not be considered reflective of Indigenous perspectives.

Our sampling was purposive, where participants were identified by virtue of their capacity to provide richly textured information, relevant to the phenomenon under investigation (Luborsky & Rubinstein 1995). We continued to recruit new participants until data saturation—the point where it became evident that new interviews were unlikely to yield new information relevant to the research questions at hand—was reached (Saunders et al., 2018).

Table 1. *Breakdown of Interview Participants*

Participant Sex	Total
Male	27
Female	9
Drainage Network Participants	
Farmer	7
Qualified Person	4
Non-network (Broader Scale)	
Farmer	8*
Provincial Government	6
Indigenous Community	2
Agricultural Group	1
Environmental Stewardship Group	3*
Rural Municipality	1
Member of the Legislative Assembly	1
Technical Professional	4
	37*

One participant represented more than one participant type in their interview

Interview transcripts were analysed using a manual open coding process in NVivo qualitative analysis software. Interview transcripts were uploaded to the program and the open coding process began by identifying units of general meaning[4] from each transcript then grouping them into clusters based on themes. Results of the open coding process were calibrated between project

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[4] Defined by Hycner (1985) as, "those words, phrases, non-verbal or para-linguistic communications which express a unique and coherent meaning (irrespective of the research question) clearly differentiated from that which precedes and follows" (p. 282).

researchers and were considered in conjunction with participant ground truthing (Birt et al., 2016) completed for preliminary findings. Ground truthing activities included one community meeting with Atwater–Kaposvar stakeholders, two knowledge mobilization workshops with academic and academic-associated stakeholders, and several follow-up phone calls with individual informants.

Building on the open coding, we next performed a second round of coding using a deductive approach based on manifestations of place. We adapted a framework for understanding manifestations of place developed by Markey et al. (2019), which identifies three categories: environmental manifestations, economic manifestations, and social manifestations (see Table 6.1 page 110) to analyse place indicators specific to rural development in Canada. The analytical framework for this paper was designed with the intent of identifying manifestations of place throughout the completed interviews, and exploring those manifestations of place relative to existing agricultural water management policy to identify how key aspects of place are (or are not) reflected in policy. To identify manifestations of place within the interviews, we adapted the place-coding framework used by Markey et al. (2019) to assess the presence of place in Saskatchewan's agricultural water management policies. Using this framework as a guide, the open codes identified in the drainage interviews by Minnes et al. (2020) were reviewed to identify those that reflected indicators of place specific to the context of agricultural water management and situated within the broader categories of the physical dimensions of place—environmental—and human dimensions of place—economic and social.

4.0 Results and Discussion

Our results show evidence of environmental, economic, and social manifestations of place suggesting both the physical and human dimensions of place are present in agricultural water management. Table 2 presents results from the second round of coding which used the adapted deductive place-coding framework (Markey et al. 2019, Table 6.1, page 110). Coded data demonstrates case study interviewees articulated different aspects of place.

Since both the physical and human dimensions of place are present in agricultural water management, the presence and absence of these dimensions in agricultural water management policy is important. The physical variations in place were well accounted for in the policy governing agricultural water management in Saskatchewan, with the inclusion of the local drainage network approach in the new Agricultural Water Management strategy which allowed for local flexibility and locally created data to be used in determining appropriate drainage works.

The focus of our discussion is the human dimension of place-based considerations for agricultural water management. Below are themes of human dimension highlighted by interview participants: economics; engagement and participation; identity; and historic conflicts.

Table 2. *Results from Adapted Deductive Place-coding Framework*

Physical Dimensions

Environmental Manifestations	Geography (e.g., dry areas, wet areas)
	Location (e.g., how the location of the resource system influences agricultural water management activity)
	Physical expression of agricultural water management (e.g., flooding, a wetland no longer existing)
	Resource use (e.g., agricultural water management in connection to water use)
	Technical specifics (e.g., technical components of agricultural water management activities; planned or that have occurred, measuring water flow or aerial mapping)
	Technical innovations—as an idea for how other areas have found a solution to agricultural water management

Human Dimensions

Economic Manifestations	Building capacity (e.g., qualified person, conflict mitigation strategies so governance decisions can be made; capacity building of WSA with qualified person)
	Drainage activity (e.g., built infrastructure including ditches, drudging)
	Financial insecurities (e.g., business decisions based on mitigating the negative impacts of financial unknowns)
	Industry commentary (e.g., values and beliefs as identified through industry that influence drainage decisions)
Social Manifestations	Case study specifics (e.g., local dynamics about more than movement of water that impacts drainage decisions such as: rural development, local politics, and personal histories, etc.)
	Cost of governance (e.g., social costs of governance, increased time, and capacity, rooted in governance ideologies)
	Cyclical (e.g., 'it always happens', 'happened before, will happen again')
	Conceptualization (e.g., influence of social, economic, and political settings on conceptualization of agricultural water management)

Decision-making power (e.g., how to identify an adequate outlet is unclear, placement is entangled with power in system and pre-existing relationships)

Indigenous peoples and communities (e.g., discussions of land claim, cultural implications, historical land use, and land rights)

Programs (e.g., access to agricultural water management programs including drainage networks, and technical support)

Enforcement (e.g., who, what, when, why, and how agricultural water management is enforced)

Governance (e.g., system of identity/responsibility in agricultural water management)

Historic context (e.g., including high school quarrels, family histories, and interpersonal conflicts)

Information Sharing (e.g., about who has access to information and power [often data] and how it's shared)

Legislation (e.g., including place-based interpretations of legislation)

People including groups (e.g., identification and reinforcement and heightening of values and beliefs through groups; individual identities reinforced or heightened)

Qualified person (e.g., definition of role, experience of network members with qualified person)

Research (e.g., view of the role research and scientific studies have or should have in agricultural water management)

Understanding of compliance process and feelings of fairness (e.g., underlying power dynamics between groups subject to agricultural water management compliance process, 'not all areas are treated the same by WSA')

Water management process enforcement by WSA (e.g., how to comply, what the rules are, opposition to understanding of compliance process, implementation varies across the province)

Wording choices (e.g., wording choice is used to describe agricultural water management and other individuals (e.g., using draining versus agricultural water management)

Perceptions of Water Security Agency (e.g., including staff; institution as reflection of values, and beliefs; including beliefs held about the WSA)

4.1 Economics

Participants raised a variety of economic concerns, through discussions related to industry and financial insecurities. This is unsurprising given the relationship between drainage and economic features, including the potential for financial gain through the increase in harvestable lands. This is evident in participant statements like,

> Now you're dealing with larger corporate farms that are independent and don't need a lot of help. And with increasing technology and economic drivers, there's a push to develop more marginal land to make it profitable. (Provincial Participant)

The movement of water on or off land is often a business decision, determined by maximizing economic return. The interconnection of agricultural water management and the economic manifestations of the human dimensions of place are particularly clear to participants, equally to or—for some participants—more than environmental repercussions.

4.2 Engagement and Participation

Some participants clearly connected issues they had with the drainage application process to issues with the engagement and participation process of the drainage networks. Participants highlighted barriers to engagement and participation, such as the lack of available documentation and the lack of clear definitions in the application process. These requirements made it challenging for participants to actively engage in and understand the drainage application process. These difficulties effectively stopped or curtailed inclusion of the human dimensions of place in policy decisions. As explained by an Agricultural Group Participant, "there's, for one, lack of policy. There's a lack of transparency. The policy changes."

Furthermore, as enforcement of the agricultural water management strategy was not consistently being implemented by the WSA across the province due to staffing capacity issues, there were feelings of inequity among participants. It was explained, "Water Security just kind of showed up and so we were trying to figure out, 'Why are they picking on us?'…" (Farmer Participant).

Importantly, at the time of writing the agricultural water management strategy in Saskatchewan is prescriptive in terms of who is—and is not—included within the drainage network, and therefore, who can actively participate in the governance process. For example, only landowners who own land within the drainage networks are included in the drainage network and associated decision-making and outreach. Other stakeholders such as neighbouring Indigenous communities, downstream cabin owners, or the rural municipality were not included in the governance process. Efforts were undertaken to educate, particularly agricultural producers, about the new agricultural water management strategy. Regional staff at the WSA did host community events in some cases at the beginning of the process and did attend agricultural trade shows. However, while discussing participant engagement, a Provincial Participant made the point,

> …it's been an ongoing challenge because people really don't understand what we're trying to do. We're fighting the fight one person at a

> time…It's a very tough way to implement a program that has this kind
>
> of complexity and public attention. (Provincial Participant)

As the policy does not contain formal mechanisms or strategies built to engage voices and perspectives outside of the landowners directly involved, there is no way to account for variations between actors. Furthermore, there is no flexibility to recognize the unique situations of local social environments even within the governance process amongst landowners, as the focus of the process is finding an adequate outlet and deciding on physical aspects of the process, such as drainage works that will be employed.

4.3 Identity

Another characteristic of place is identity (Daniels et al., 2019), which can help or hinder a successful approach to resource management (Cheng et al., 2003). Our results show identity-related factors—such as religion—can affect perception of drainage decisions. For example, a participant cited another individual's Christianity as rationale for why they move water off agricultural lands. The participant explained, "in that part of the world there is absolutely a religious overtone that they believe they're doing God's work" (Environmental Group Participant). Mechanisms to constructively consider the place variations of human dimensions could help with buy-in and implementation, as when done well, creating space for the sharing of ideas and mental models impacting drainage decisions helps participants feel part of the governance process and ownership for the outcomes of the governance process.

We heard some participants make linkages between ideas they hold about certain groups and rationale they believe members of that group use to make decisions. For example, we heard participants link climate change denial to being pro-drainage and, conversely, we heard assumptions that individuals who believe climate change is real may be perceived to be inherently anti-agriculture. One participant explains,

> The Quill Lakes were flooding people out, houses and homes as well as
>
> thousands of acres, and they were still draining. Thinking—well two
>
> things. Denying climate change, denying that it was doing anything
>
> anyway. (Technical Professional Participant)

The place-specific connections to agricultural water management decisions expressed by participants are important for policy makers to understand because understanding participants who use the program creates an opportunity to address potential barriers to program implementation.

The current system for drainage permitting and agricultural water management in Saskatchewan does not create opportunities for actors to share diverse perspectives and learn from each other. This absence of a fundamental place-based policy mechanism has left participants in rural areas articulating feelings of being misunderstood by individuals making policy and decisions, further alienating some participants, and decreasing a sense of active engagement and ownership in others. For example, it was noted,

> I think just because they don't understand the sensitivity that farmers
>
> have, that kind of thing. It'd be like in the city, if you all of a sudden
>
> came into the city and said, "Okay we're going to put a housing

> development in your area. We didn't tell you, we didn't talk to you, but
> we're going to put a housing development right on the corner of your
> $3,000,000 dollar house." (Qualified Person Participant)

This missed opportunity for place-based connection often escalated feelings of urban–rural divides, with rural residents feeling that the policy makers situated in urban areas were not understanding the needs of rural residents.

4.4 Historic Conflicts

The human dimensions of place, such as historic conflicts, also influence a drainage network's ability to move the application process forward—the mobilization of policy. One participant explained, "Yes, they use the water and this complaint system to stick it to the guys that they don't like" (Qualified Person Participant).

The permitting process of one drainage network was stalled because an appropriate adequate outlet was not found. Choosing the location of an adequate outlet solely through a technical process, without consideration for the impact of placement, is a clear example of the absence of place—and particularly the social aspect of human dimensions—in the application process. One participant explains about this case,

> Shame on the government for putting the adequate outlet there, when
> we're talking about engineering works anyway. Route it to a different
> point. Don't put the guys who's been embattled with his neighbours for
> over a decade, even more into the spotlight. (Environmental
> Stewardship Group Participant)

After substantial conflict, community unrest, *and* the use of a professional mediator, this drainage network did eventually reach an agreement. However, it is worth questioning what, if any, differences in policy may have avoided the escalation of conflict.

Some participants expressed feeling that the existing policy, which allows for neighbours to 'request assistance' from the WSA through a formal complaint process regarding their neighbour's—generally unpermitted, illegal—drainage, was being used as a mechanism for neighbours to air social conflicts not always related to flooding issues. It was explained,

> …the way that the government structure Bill 44 and the consequence of
> request for assistance, which is the complaint process. It gave people
> license to attack people because there's no consequences. You could put
> a complaint in and WSA would come over and shut down the drainage.
> The guy who made the complaint, nothing happened to him, didn't have
> to pay any money. (Qualified Person Participant)

The place-specific influence of historic social tensions can influence the efficacy and adoptions of agricultural water management policies. This includes social tensions that manifest themselves in agricultural water management issues, such as a landowner signing off on the application. One farmer explained, "this holdout, there's two reasons he's holding out. One is

for money, and the other one is because my grandpa took his grandpa's girlfriend back in 1923 and they're still mad about that [laughs]" (Farmer Participant).

The importance of the human dimension is not unrecognized. As one provincial government staff member explains, "there's a huge amount of human dimensions to the work we do. And understanding that sometimes is actually more important than the actual technical pieces. (Provincial Participant)

However, according to participants involved in drainage in Saskatchewan and the actual legislation governing agricultural water management, there is an apparent lack of inclusion of, or support for, mechanisms to include and address local human dimensions in the governance process, as exemplified by data reflecting how human dimensions such as economics, engagement and participation, identity, and historic conflicts, are impacting the mobilization of agricultural water management policy in Saskatchewan.

5.0 Recommendations and Conclusions

Features of strong policy include considerations for resources (e.g., time and money), as well as information and expertise. Fragmentation—or the lack of integration—can weaken strong policy, and can occur across agencies (e.g., government agencies working in silos), as well as across subject areas (e.g., the separation of the physical environment from the human dimensions). Considering place variations of human dimensions supports buy-in and implementation of policy. Ignoring the human dimensions in natural resource policy can cause dysfunctionality (e.g., conflict, lack of implementation and uptake). Beyond the findings of this paper, policy fragmentation is prominent in water policy in general (Norris, n.d.), suggesting an ongoing disconnect between theory and practice.

To avoid this lack of coordination, policies should have mechanisms that support collaboration, enable, and encourage participation, including cross-sector connections and inclusions of various stakeholders (Breen et al., 2018). Data collected demonstrate the importance of the human dimensions of place within the context of agricultural water management, and the challenges caused by the lack of inclusion and guidance related to these variables in the drainage policies and processes.

The drainage network approach in Saskatchewan accounts for some physical variations in place that influence how drainage decisions are made in rural areas. However, data analysed from three agricultural water management case studies in Saskatchewan highlights a gap in the creation and implementation of agricultural water management policies that consider the human dimension of place. For example, qualified persons, as described in Section 2.2, while highly skilled from a technical perspective, are not required to have the training or expertise related to the human dimensions of drainage. Creating opportunities for qualified persons to access ongoing interpersonal training (e.g., active listening training, conflict management training) can help them navigate unique place-based situations. This policy gap links directly to fragmentation between the physical and human dimensions of place. This fragmentation is noted in research related to the causes of conflict within agricultural water management (Minnes et al., 2019), as existing policy has no direction or support related to socio-economic variables. Without this explicit, proactive inclusion of the human dimensions of place, there is nothing to prevent or address conflict that would arise when making a collaborative decision, forcing disputes into a reactive realm of compliance, enforcement, and the judicial system. This type of top-down system poses a problem in a province where capacity to take a heavy-

handed approach to blanket enforcement across the province is limited by factors such as human resources and time.

Results show evidence of environmental, economic, and social manifestations of place suggesting both the physical and human dimensions of place are present in agricultural water management. Our findings demonstrate the importance of the human dimensions of place which sometimes presents a stark contrast between stakeholder concerns and what is reflected in the policy, as well as the research literature, where again fragmentation between the physical and human dimensions are clear. As noted in Section 2.3 the drainage literature is lacking investigation into the human dimensions of agricultural water management, while at the same time, social factors are strongly influencing the actions and concerns of actors in the system. For example, social factors and interactions are important for influencing actions around drainage, including the decision to move water or not, and the decision to seek permits for drainage instead of just trying to fly under the radar of enforcement (see Minnes et al., 2020 for more information on these findings).

The findings of this research are not new to the literature surrounding place-based development and natural resource management. However, this research provides evidence that excluding the human dimensions of place in policy can result in the rejection of the policy by the actors the policy aims to govern. Properly managing agricultural water as well as other natural resources requires vertical and horizontal integration and coordination between different levels of government and actors in the system, this is especially relevant for natural resource management policy makers as integrated policy and practice are key concepts to address policy gaps for managing natural resources. In the case of agricultural water management, we see the lack of integration of other provincial and local policy actors—such as rural municipalities—as well as the lack of integration of other stakeholders—and their perspectives—in the process.

Based on our findings, combined with the findings reflected within the literature reviewed, we have summarized key considerations for creating place-based policies for natural resource management in rural areas. Key considerations include:

- Explicit inclusion of the human dimensions of place in policy. Policies need to be flexible in order to account for all place-specific considerations—including social ones (see Markey et al. 2012).

- Often policy makers in urban settings cannot predict these considerations in unfamiliar contexts, such as rural places. Additionally, the application of a rural lens (see Hall & Gibson, 2016) can assist policy makers to better consider the unique context of where the policies are taking place. Based on the findings of this research, this could improve agricultural water management policies in Saskatchewan, that due to the impossibility of province-wide enforcement in reality—at least given the Provincial capacity at the time of writing—requires substantial voluntary uptake.

- Legislation, policies, and regulation should be clear, transparent, and consistently enforced, so everyone knows their roles and responsibilities, and feels enforcement is done in an equitable manner.

- Policy makers and implementers can look to the lessons learned—both successful and not—from other collaborative watershed governance examples from other jurisdictions. One such collaborative governance example in Canada is Source Water Protection in Ontario under the *Clean Water Act*, which does have its limitations for rural areas, but

includes public participation and engagement, as well as capacity
building and shared learning opportunities amongst stakeholders in its
governance process (Minnes, 2019).

Some of these recommendations are likely beyond what is possible in the current
reality of most natural resource management policy makers and administrators,
including those in charge of agricultural water management in Saskatchewan.
Furthermore, no policy can be expected to be perfect. However, efforts to move
along the continuum of completely 'siloed' policies (e.g., those that consider
only physical dimensions of place variations) to more integrated policies that
consider all aspects of place creates an opportunity for more effective natural
resource management policies in rural areas, as seen with the example of
agricultural water management policies in Saskatchewan.

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