

“CALL TO ACTION”

Findings from Farmland Drainage Roundtable Initiative

Saskatoon, SK
June 6-7, 2018



EXECUTIVE SUMMARY

In early June 2018, a series of roundtable discussions were held to enable participants, from a wide range of interests and backgrounds concerned about drainage issues, to come together to discuss the many issues that are emerging related to farmland drainage and propose actions. In total, 36 participants from across Saskatchewan and Manitoba participated in the roundtable discussions on June 6 and 7, 2018.

To facilitate discussions participants self identified their issues and concerns prior to participating in the roundtable. These were:

- Wetland Loss Through Farmland Drainage
- Downstream Flooding Effects of Farmland Drainage
- Effects of Farmland Drainage on Indigenous Rights
- Environmental Assessment (EA) of Farmland Drainage
- Illegal Farmland Drainage
- Effects of Farmland Drainage on Water Quality
- Public Policy on Farmland Drainage: Ag Water Management Strategy
- Legislation, Regulations, Compliance, and Enforcement of Farmland Drainage
- Cumulative Effects of Farmland Drainage
- Research on Environmental Effects of Farmland Drainage

Participants expressed concern that the Water Security Agency (WSA) is not considering loss of wetland functions such as the loss of groundwater recharge areas, downstream hydrological flooding mitigation, water quality impacts including man-made nutrients (nitrogen and phosphorus) and pesticides, fish and wildlife habitat loss and degradation, carbon release and subsequent contribution to climate change and the overall cumulative effects on our environment from these farmland drainage projects. The Water Security Agency has not required any proponent to submit their proposal for evaluation as to whether it triggers an environmental review under the Saskatchewan Environmental Assessment Act or the Canadian Environmental Assessment Act.

KEY FINDINGS

Land Ownership

- Participants note a common mentality among producers is “it’s my land, I can do what I want with it.” This mentality does not account for activities performed on one person’s

land potentially impacting outcomes on other people's land or recognize that water is a crown resource and not the landowners right to drain away.

- A general lack of responsibility for the impacts of farmland drainage and loss of community were also noted as detrimental outcomes of this mentality.
- Having an enforcement system that heavily relies on complaints only further disrupts communities and neighbour relationships and can leave whistleblowers vulnerable to threats and bribes.
- Participants agree that regulatory processes and enforcement of illegal drainage should not rely on individuals within a community. This is a critical area in need of change within the regulatory process environment.

Perceptions of Drainage

- Roundtable participants feel there is an absence of broadscale awareness of the negative impacts of farmland drainage to the public, Indigenous communities, and producers.
 - Some feel drainage is perceived as a rural problem and there is little motivation from urban populations to become involved in pushing for changes to drainage practices.
 - Many say they do not believe the public has a good understanding of the ways in which they are impacted by drainage activities including; impacts to source water and their tax dollars being put toward remediation activities associated with drainage incidents.
 - Participants acknowledge that the intent should not be to cause detriment to the agriculture industry, as there are many producers who engage in responsible production practices and follow the regulations for drainage. Rather, those who experience economic gains from irresponsible, or even illegal, drainage activities should not be protected by commonly portrayed view as being wholesome, trustworthy and responsible industry.
 - Participants identified the lack of effective use of science to communicate the impacts of farmland drainage as an area to improve upon. Better connecting the dots between drainage research and a larger societal context will help frame drainage issues to be relevant to the general public.
 - Many producers are either not aware of or do not believe in the role wetlands have in resilience and adaptation. Educating farmers, and potentially those who play an advisory role to them such as retailers, agronomists, etc. on the benefits of wetlands could help bring greater perceived value to wetland retention.
 - Continued efforts to include Indigenous communities and leaders in wetland protection activities and striving to build trustworthy partnerships with Indigenous organizations are frequently suggested.

Environmental Impacts of Farmland Drainage

- Agriculture is held to different environmental standards than other industries despite having larger environmental impacts in many cases. According to participants there is no known concrete strategy for licencing drainage projects and determining what needs protection and what can be drained. As such, the existing policies are not adequately protecting the environment nor wildlife and aquatic habitats.
 - Aquatic Habitat Protection aims to prevent temporary and permanent habitat alteration and drainage applications are in direct conflict with such efforts.
 - Several tables highlight the natural carbon storage properties of wetlands, which is a key point in the argument for wetland retention given the agriculture industry's large contribution to CO2 emissions in Saskatchewan.
 - Roundtable participants are unanimous regarding the need to establish criteria for triggering Environmental Impact Assessments for farmland drainage projects which would ideally have a method to account for the cumulative effects of the drainage project. Water quality and quantity, habitat, wildlife, aquatic species and climate change should all be considered when approving drainage projects.
 - Some participants suggest an oversight committee for WSA is necessary to help bring focus back to source water protection.

FARMLAND DRAINAGE POLICIES, LEGISLATION & ENFORCEMENT

- Participants note that there is a general lack of responsibility and leadership in addressing drainage issues.
 - There are rarely penalties for not getting a drainage approval and a lack of monitoring of illegal activities. Several groups feel the WSA is not doing enough to enforce regulations, although this is believed to be partially due to funding deficiencies and inadequate staffing.
 - Several participants point out that government is not following its own legislation and some feel this could be grounds for civil action. Others feel that making violations a fineable offence without needing to go to court would help to enforce illegal drainage activities.
 - Organizations and government bodies intended to be accountable for environment, habitat and water protection, each have their own philosophies and mandates and thus there is a lack of one primary independent regulator to oversee drainage related issues.

- A multi-dimensional approach to addressing key issues related to farmland drainage is proposed. Critical avenues that should be considered when acting on farmland drainage include education and communication to change perceptions surrounding the issue, as well as building partnerships and lobbying for greater policy enforcement and changes.

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BACKGROUND

This event was organized by an ad hoc group of citizens concerned with farmland drainage and its effects on the environment. Several groups had been involved in addressing issues around farmland drainage for many years. During discussions on specific regional problems organizers felt that past water management workshops had identified the problems and had suggested workable solutions. However, past participants left and returned to their organizations without any action plan or follow up. It was the purpose of this workshop to discuss and address those major issues related to farmland drainage with the end result that an action plan is developed by the participants. Individuals were invited to participate because of their critical thinking, specific knowledge, and/or past involvement in farmland water issues and concern for the future of Saskatchewan's environment.

Of particular concern was ongoing and existing illegal drainage and the future licencing of farmland drainage without knowledge of potential environmental impacts and due consideration of those impacts both projects specifically and cumulatively.

The format of the workshop was to enable participants, from a wide range of interests and backgrounds in drainage issues, to come together to propose actions that they could use when addressing the many issues that are emerging related to farmland drainage. The Roundtable was in response to concerns over farmland drainage and to the feeling that there were a lot of conferences that provide presentations and group discussions yet lacked any opportunity to explore and propose actions to the issues. This was accompanied by a growing concern with the provincial approach to drainage through the Agricultural Water Management Strategy.

The current approach from the government, related to farmland drainage, has been to promote drainage with little, if any, regard to its environmental effects, source water protection, or maintaining wetland and watershed integrity. The Water Security Agency (WSA) is presently involved with the process of licencing all existing farmland drainage in Saskatchewan as a part of the Agricultural Water Management Strategy. The first WSA licenced Dry Lakes project has a total wetland loss of 90% and the proposed Blackbird Creek drainage network estimates over 90% of all wetlands being lost. These are just two examples of more than eight WSA farmland drainage projects presently underway.

As part of their stated licensing process, WSA may require drainage works to mitigate for water quantity, water quality, and habitat loss. However, WSA has not yet defined what mitigation is required other than the installation of culverts to reduce potential soil erosion/sedimentation and for the reduction of peak flows during high runoff.

Participants were concerned that WSA is not considering loss of wetland functions such as the loss of groundwater recharge areas, downstream hydrological flooding mitigation, water quality impacts including nutrients (nitrogen and phosphorus) and pesticides, fish and wildlife habitat

loss and degradation, carbon release and subsequent contribution to climate change and the overall cumulative effects on our environment from these farmland drainage projects.

The Water Security Agency has not required any proponent to submit their proposal for evaluation as to whether it triggers an environmental review under the Saskatchewan Environmental Assessment Act or the Canadian Environmental Assessment Act.

The provincial government has not assessed the impacts of licencing the province's existing illegal farmland drainage on Aboriginal or Treaty rights or engaged in any legal duty to consult Aboriginal peoples as duly obligated. The provincial government and proponents are not planning any public consultation for any individual projects or the network drainage licencing process.

In effect, the WSA seems to have set aside its commitment to support source water protection and the conservation of wetlands in favor of allocating resources to Watershed Stewardship Associations to be involved in the licencing of drainage projects.

METHODOLOGY

PLANNING PROCESS

The planning for this workshop began in early January 2018. It was decided that to be consistent with action-oriented discussions that the focus would be on participant interaction without formal presentations. Most of the meetings and all preliminary contact with organizers was conducted through email and conference call (See **Appendix 1: About the Organizers** for further information).

A list of ten topics (see list to follow), directly related to farmland drainage issues, was developed by reviewing concerns that had discussed in other workshops dating back to 2010. The organizing committee generated a list of invitees with over eighty names of people from around the province who were involved with or had knowledge of farmland drainage issues

Topics for Discussion:

- Wetland Loss Through Farmland Drainage
- Effects of Farmland Drainage on Indigenous Rights
- Downstream Flooding Effects of Farmland Drainage
- Environmental Assessment (EA) of Farmland Drainage
- Illegal Farmland Drainage
- Effects of Farmland Drainage on Water Quality
- Cumulative Effects (CE) of Farmland Drainage

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- Public Policy on Farmland Drainage
- Legislation, Compliance, and Enforcement of Farmland Drainage
- Research on Environmental Effects of Farmland Drainage

(For full description of topics, see **Appendix 2: Topic Parameters for Discussions**)

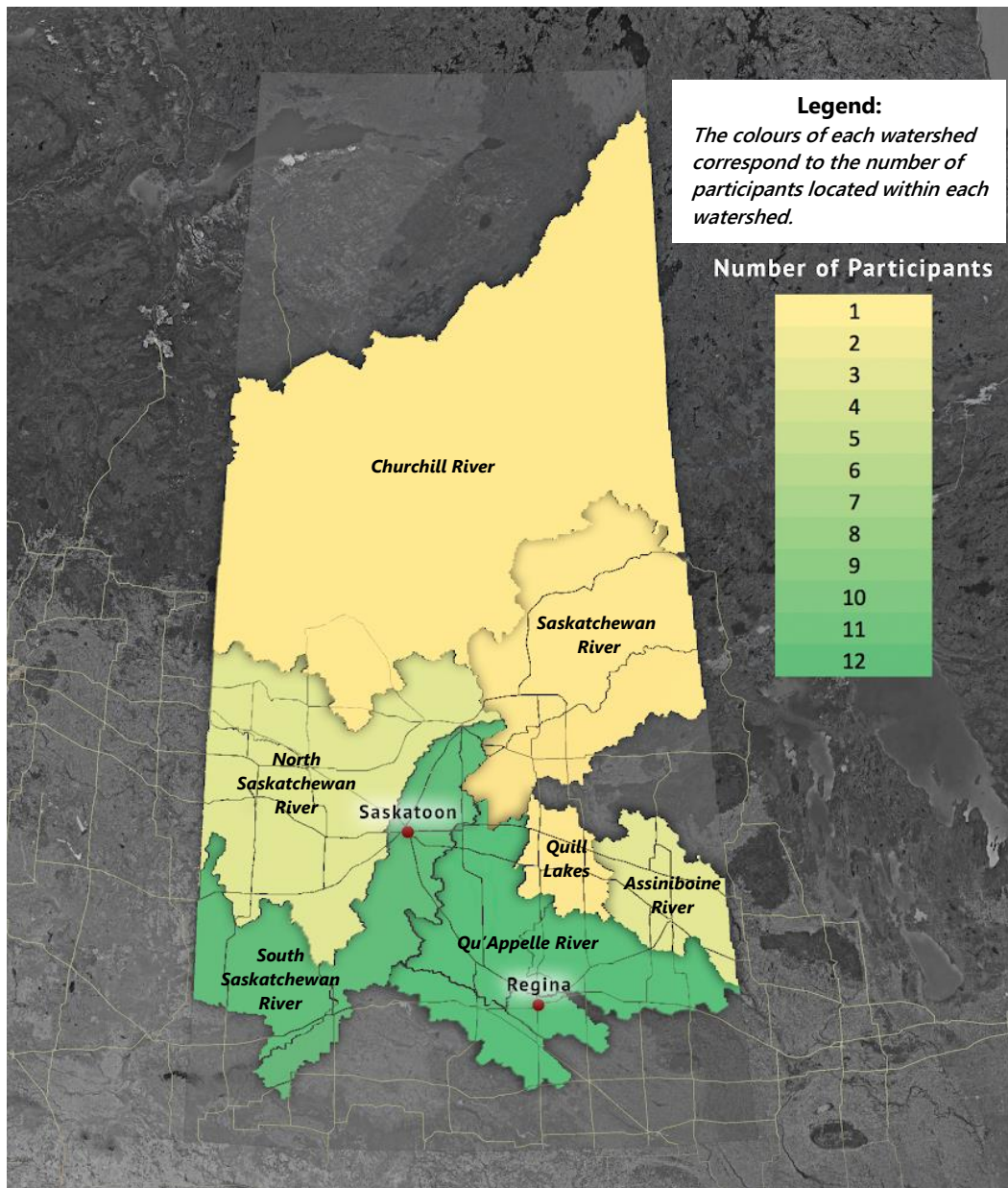
ROUNDTABLE FORMAT

The organizing committee selected the roundtable format as being the most appropriate structure to meet the purpose. Roundtables, as a technique, arose out of a need for consensus-building to identify problems and seek solutions in the relationship between formal decision makers (such as governments and judiciaries) and other sectors of society (such as environmental groups, community groups and other interest groups). It was emphasized that the roundtable was not a public meeting and was focused on dealing with issues not people.

The premise on which the idea of roundtables is based is simple – participants, be they business people, local authority employees, farmers, environmentalists, members of community-based organisations or members of the public, are seen as being of equal stature. There is no ‘leader’ as such, but there is a facilitator to ease the work process and to maintain focus and scribes to record the process, decisions and actions. Nobody is at the head of the table, everyone has an equal voice and can speak mind freely on the subject¹.

PARTICIPANT PROFILE

A profile detailing the regions participants are from, their interests and/or occupations and the watersheds they fall within is included below. Participants backgrounds included urban, rural, farmer, conservationist, downstream landowner, Manitoba producers, recreational users, and cabin owners.



Round Table Participants' Locations by Watershed

ANALYSIS OF CRITICAL ISSUES

A condensed list of the most common and critical issues expressed during the roundtable discussions was compiled by the session facilitators on day one to act as the basis for discussion on day two. An accompanying list of challenges was also composed for day two for discussion on the potential implications and suggestions to help overcome each challenge.

PERCEPTIONS OF DRAINAGE

Issue: Lack of Knowledge by General Public, Farmers, Indigenous People, and Urban People

Roundtable participants feel there is an absence of broadscale awareness of the negative impacts of farmland drainage to the public, Indigenous communities, and producers. It is also expressed that some feel drainage is perceived as a rural problem and there is little motivation from urban populations to become involved in pushing for changes to drainage practices. Many say they do not believe the public has a good understanding of the ways in which they are impacted by drainage activities including; impacts to source water and their tax dollars being put toward remediation activities associated with drainage incidents.

It is not just a rural problem, we are all responsible.

The lack of consideration for drainage issues is further supported by traditional perceptions of Saskatchewan agriculture, in that it is commonly portrayed as a wholesome, trustworthy and responsible industry. Participants acknowledge that the intent should not be to cause detriment to the agriculture industry, as there are many producers who engage in responsible production practices and follow the regulations for drainage. Rather, those who experience economic gains from irresponsible, or even illegal, drainage activities should not be protected by commonly held perceptions while abiding producers see no economic gain nor recognition for doing the right thing.

People who have legally drained their land shouldn't be left out of the conversation. For example, someone who took six years to get a legal approval for drainage, meanwhile their neighbours are illegally draining and seeing an economic reward much quicker.

How do you adjust societal perceptions of drainage without damning farmers?

It is like driving through a clear cut (forest) in B.C. and saying "I don't know anyone who would want to live in B.C."

Several participants feel the impacts of drainage activities to Indigenous land may not be well understood by Indigenous communities, particularly the ways in which downstream effects of farmland drainage can affect communities and drainage impacts to habitat.

Lastly, participants feel the benefits of wetlands are not being communicated to producers and there is a general disconnect between the role of wetlands in managing water under climate change and in larger agriculture management strategies. Select participants raise the question of whether producers are even aware of how wetlands are classified or not, and that some may be unknowingly draining “nuisance water” which are wetlands.

Public communication is revisited several times over to address the lack of awareness and educate Saskatchewan residents on drainage related issues. Communication efforts will largely depend on both human and financial resources available to create and distribute such materials and information.

Issue: Lack of Effective Use of Science and Lack of Communication

Participants identify the need to better connect the dots between drainage research and a larger societal context. Focusing on tailoring the research findings to the intended audience will help people buy into the idea that drainage issues are impacting them and that they have a role to play in finding the solution. The absence of a public platform to exchange information is also noted. Some feel that having an open-source platform could help promote contributions from multiple stakeholders and avoid one-sided information.

LAND OWNERSHIP

Issue: Private Land Values Versus Public Benefit,

The economic incentives fall in favour of farmland drainage and farmers are encouraged to put as much of the land into production as possible to maximize their financial return. As discussed in the sessions it is believed that producers largely do not consider the wetlands on their property as a public asset. Further to this, as mentioned earlier, the benefits of wetlands and the role they play in resilience to climate change are underrealized and undervalued by most producers.

Is there a way to make the grain guys see the environmental benefits of wetlands?

Issue: Feeling the Owner of the Land Can do With as They Wish

Participants note a common mentality among producers is “it’s my land, I can do what I want with it.” This mentality does not account for activities performed on one person’s land potentially impacting outcomes on another person’s land. A general lack of responsibility for the impacts of farmland drainage and loss of community are noted.

We have lost a sense of community and working together for common solutions.

Having an enforcement system that heavily relies on complaints only further disrupts communities and neighbour relationships.

Issue: Non-Local Ownership Driving Farming Practice

Non-local ownership is believed to be further contributing to the problems associated with land ownership. It is believed that the trend in the province is migrating away from family operated farms and is headed toward larger, more industrialized farms with higher proportions of land leased by non-local owners. Some feel the result is having greater pressure to drain and less inclination to care for the land and its impact on the community.

Land is an investment. Non-farmers owning land want to see it developed for financial gain.

Leased land impacts the fabric of the community. There seems to be less pride or care for the land and the owner may not live anywhere nearby.

Issue: Lack of Effective Connections with Indigenous Leaders in Addressing Farmland Drainage Issues

Some express concern that there are many other, highly prevalent, issues affecting Indigenous communities and that drainage-related problems may not be a top priority. Continued efforts to include Indigenous communities and leaders in wetland protection activities and striving to build trustworthy partnerships with Indigenous organizations are frequently suggested. Most commonly, it is expected that partnerships would fulfill an advocacy role for Indigenous rights and push to have Indigenous rights considered when reviewing drainage applications and the impacts of drainage networks.

Indigenous people need to know there are common interests and that you won't use their knowledge and relationship to work against their interests.

ENVIRONMENTAL IMPACTS OF FARMLAND DRAINAGE

Issue: Resilience and Adaptation

As previously highlighted, it is believed that many producers are either not aware of or do not believe in the role wetlands have in resilience and adaptation. Educating farmers, and potentially those who play an advisory role to them such as retailers, agronomists, etc. on the benefits of wetlands could help bring greater perceived value to wetland retention. Another avenue one table explored is linking drought proofing and drainage to crop insurance to help translate wetlands into a true economic benefit.

Issue: Climate change needs to be part of discussion of values of wetland and its buffering capacity

Several tables highlight the natural carbon storage properties of wetlands, which is a key point in the argument for wetland retention given the agriculture industry's large contribution to CO2 emissions in Saskatchewan, as well as the highly publicized federal carbon tax controversy.

Select groups point out that impacts of draining are also becoming more severe with climate change including faster and more frequent flooding. When lobbying federal government involvement in wetland retention initiatives, research in wetlands' carbon storage benefits could serve as a critical argument against farmland drainage.

FARMLAND DRAINAGE POLICIES, LEGISLATION & ENFORCEMENT

Issue: Lack of transparency when deciding on drainage projects

Agriculture is held to different environmental standards than other industries despite having larger environmental impacts in many cases. According to participants there is no known concrete strategy for licencing drainage projects and determining what needs protection and what can be drained. Many organizations, including government organizations, indirectly enable drainage activities where there could be a check in place instead (such as requiring a proof of drainage approval in order to complete an underground utility line locate).

The bureaucracy and the government's job are to enforce the legislation. If they don't like it, they don't have the option to not follow it.

Issue: Lack leadership and independent regulation

Participants note that there is a general lack of responsibility being taken to address drainage issues. Organizations and government bodies who are, at least in-part, intended to be accountable for environment, habitat and water protection each have their own philosophies and mandates. While many of their activities overlap, there is a lack of one overseeing body or independent regulator for drainage related issues.

I cannot wrap my head around a regulatory body paying for a group of proponents to do pro drainage work. It's a conflict of interest.

It is very politicized and not a fair process. You should have an independent regulator to enforce and interpret laws regardless of the government.

Issue: Source water protection is no longer a priority for local watersheds due to funding deficiencies

Several groups feel the WSA is not doing enough to enforce their regulations, although this is believed to partially be due to funding deficiencies and inadequate staffing. Some participants note that the costs for new water treatment facilities outweigh the costs associated with source water protection and thus neglecting source water protection activities could result in large infrastructure costs in the future. Select groups suggest starting water quality sampling in cooperation with WSA and lobbying to have water quality a condition of drainage permits could be helpful for source water protection. Further, some participants suggest an oversight committee for WSA is necessary to provide much needed direction and could help bring focus back to source water.

Issue: Drainage impacts on the environment are not adequately being addressed

Existing policies are not adequately protecting the environment nor wildlife and aquatic habitats. Among other things, Aquatic Habitat Protection aims to prevent temporary and permanent habitat alteration and drainage applications are in direct conflict with such efforts. Further to

this, there are rarely penalties for not getting a drainage approval and a lack of oversight and monitoring illegal activities. As such, several participants point out that government is not following its own legislation and some feel this could be grounds for civil action. Others feel that making violations a fineable offence without needing to go to court would help to enforce illegal drainage activities negatively impacting the environment.

Issue: Need for local involvement in addressing illegal drainage

As previously identified, the enforcement for illegal drainage activity is largely believed to be in the hands of local affected landowners. This is commonly attributed to a lack of resources available to properly proactively police illegal drainage activities resulting in a largely complaint-based system. Key problems identified with the current system is that it pits neighbours against one another and can leave whistleblowers vulnerable to threats and bribes. Participants agree that regulatory processes and enforcement of illegal drainage should not rely on individuals within a community and there is a clear need for change within the regulatory process environment.

Addressing resource constraints and systemic problems with passive enforcement of drainage legislation is proposed. Using media to call out the prevalence of illegal drainage and the extent to which it has been deprioritized is also suggested to add pressure to illicit a government response.

Additionally, having a working example of positive drainage activity for which proper consultation with the community has occurred could help to encourage neighbours to consider a similar approach if the precedent has already been set.

Develop a working model; an adaptive water management experiment. Take a drainage project and consult conservation experts to try to find a compromise zone. Then take this to a larger organization and use it as an example for the standard you hope to have going forward.

Issue: Environmental Impact Assessment process lacking a statement of critical factors needed to trigger an Assessment

The absence of a statement of critical factors in a drainage application further supports the notion that the current process is not well regulated nor standardized. Roundtable participants are unanimous regarding the need to establish criteria for triggering EIAs for farmland drainage projects which would ideally have a method to account for the cumulative effects of the drainage project. Further research and expert consultation may be required to establish the set of critical factors to be met for triggering an EIA, as assigning the level of impact caused by a specific drainage project within a broader network could prove difficult.

ADDRESSING KEY CHALLENGES

Challenges	Actions
<p>1. Making a commitment to taking action (personal and organizational)</p>	<p>Identify and work with those who have the capacity to take on an advocacy role, and whose livelihoods will not be jeopardized by doing so.</p>
<p>2. Addressing the challenge of “Fatalism” - How to move through Impossible to probable to Inevitable?</p>	<p>Publicly communicating the successes (small or big) related to drainage to provide examples of conservation efforts and appropriate drainage activities (i.e. focus on bringing attention to the positives).</p>
<p>3. Capacity building at the local/personal level? Spearheading initial leadership initiatives. Work on successes.</p>	<p>Mobilize existing resources, identifying potential funding sources to enable other action items (formation of a coalition, model watershed project, etc.)</p>
<p>4. Need to break down elements of education and use of science to become more relevant to a specific issue.</p>	<p>Inventory available research and identify where gaps exist. Create educational materials (in consultation with academia) that translate larger research findings and make them applicable on a personal level.</p>
<p>5. Complaint process is very personal in rural areas. Causes neighbor conflict that most of us don’t need.</p>	<p>Strength in numbers: create a movement and support network rather than having complainant take on the brunt of the conflict on their own</p>
<p>6. Agriculture seems to be treated separately from other industries in terms of requirements for assessment of environmental impact. Policy conflict between Environment/WSA and Agriculture. Farmers look for public support for drainage off their lands but show little, if any, concern for others downstream.</p>	<p>The divisive “us vs. them” mentality needs to be eliminated. Identify a point of unity (perhaps clean drinking water) that is relevant to everyone as a starting point to target and tie back to the impact of drainage projects. Develop incentives for good behaviour to highlight that, although not all producers are being good stewards, many are, and this should be recognized. This should include involvement from the public to create demand for responsible production practices and work with Ag industry to turn social demand into an economic advantage (social licence or certification for responsible production, i.e. more valuable product)</p>
<p>7. Challenge of Watershed Advisory Boards and Saskatchewan Association of Watersheds following their initial mandate of source water protection and related wetland preservation.</p>	<p>Demonstrate the connection between source water protection and drainage. Need to have current state of the watershed reports produced.</p>
<p>8. There is a need to look at research related to change in the culture in rural land and water management.</p>	<p>Address the industry purchasing and distributing crops, producers carrying out drainage activities, and public perceptions in the research to establish a comprehensive baseline, then track perceptions and behaviours of each overtime.</p>

9. There is a gap in the consultation process for urban people who are directly impacted through insurance and tax support for rural drainage.	Highlight the “hidden” incentives and drainage costs covered by urban dollars (i.e. tax support for things like fixing washed out roads) to encourage the urban population to become involved.
10. The challenge of how Indigenous and Rural and urban communities can work together in a collaborative governance model.	Build trusting relationships and formal partnerships with Indigenous communities, consider traditional knowledge when addressing drainage issues, encourage and support Indigenous communities in exercising their rights.

CONCLUSIONS

A multi-dimensional approach to addressing key issues related to farmland drainage is proposed. Critical avenues that should be considered when acting on farmland drainage include education and communication to change perceptions surrounding the issue, as well as building partnerships and lobbying for greater policy enforcement and changes.

Public awareness activities focused on addressing the impact drainage activities have on the public should be used to help shift perceptions. Messages directed to this stakeholder group should be supported by research that has been translated into costs most relevant to the average consumer.

The objectives of public engagement in drainage issues should include making the public aware of the ways in which they are impacted by drainage issues and empowering them to use public demand to drive industry and policy change. Examples of successful societal influences on behavioural and policy change could be examined to guide the strategy for addressing farmland drainage (GMOs, rainforest protection, and burrowing owls are some examples noted by roundtable participants). Public engagement is likely a good starting point to help garner support and a sense of urgency when bringing drainage issues to the political stage.

In the formation of an alliance or coalition for overall implementation it will be crucial to ensure that the scope and objectives of those involved are clearly defined and in alignment with one another.

Changing attitudes and making it socially acceptable to maintain wetlands on farmland requires a long-term strategy and efforts.



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For example, the inclusion of larger water management issues in the coalitions mandate or restricting it to farmland drainage as the targeted behaviour to change. Additionally, identifying and agreeing upon what “responsible drainage” looks like will be crucial in unifying the coalition and starting with a strong foundation. Forming valuable and mutually beneficial partnerships by focusing on the common goals for each organization will help build capacity and resources for tackling farmland drainage issues.

Lobbying for change in industries who influence agricultural producers’ activities is another possible angle to explore. Some also discussed that if insurance companies, chemical companies, and grain buyers/distributors were to initiate internal responsibility standards aimed at supporting retention activities, it is likely to have some economic market triggers for change on the producers.

APPENDICES

APPENDIX 1: ABOUT THE ORGANIZERS

The workshop was organized by Jeff Olson and Murray Hidelbaugh both of which are retirees, and which have over 80 combined years of experience in water related issues.

Jeff graduated from the Renewable Resources program and is a certified Environmental Professional in the field of Natural Resource Management. Much of Jeff's knowledge was gained through his work as a Conservation Officer stationed throughout Saskatchewan, as well as a Wetlands Specialist and a Watershed Planner with the Water Security Agency.

For his work in environmental protection he was presented with Saskatchewan Environment's "Award of Excellence" in 2002 and nominated for Saskatchewan's "Premier's Award for Excellence in the Public Service" in 2007 for his work in watershed management.

Jeff is the principal of Mind's Eye Consulting (Saskatchewan) which is involved in watershed management, environmental law enforcement, and present environmental water issues in Saskatchewan. He is also the founder of the Saskatchewan Environmental Alliance a group of citizens concerned with environmental issues of today. Jeff also ranches in east central Saskatchewan.

Murray has a Master of Science Degree and is a member of the Board of Directors with the Saskatchewan Environmental Society. Murray conducted survey work for Conservation & Development Authorities and Government of Canada, Prairie and Farm Rehabilitation Agency on drainage works design and development throughout Northeast Saskatchewan. He is a charter member of the North Saskatchewan River Basin Council over its first seven years of development. He was involved in dam studies at Wintego Falls, on the Churchill River, the Nipawin Dam and Codette Lake project, as well as a series of dams proposed for the Saskatchewan River.

Murray is currently involved in working with groups who are interested in promoting land and water uses that are environmentally, socially, and economically sustainable. Murray operates a small tree farm south of Saskatoon.

"Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has." – Margret Mead

APPENDIX 2: TOPIC PARAMETERS FOR DISCUSSIONS

Topic: Wetland Loss Through Farmland Drainage

The loss of wetlands and their functions is the highest ranked concern by participants of this workshop. Values of wetlands as a result of the functions of hydrologic flux and storage include: water quality improvement, stable water supply, flood control, erosion control, wildlife (including fish) habitat, recreation, culture, and commercial benefits. Farmland drainage can reduce or eliminate these public benefits mainly for private economic benefits. Only relatively recently have we begun to understand the many ecological functions associated with wetlands and their significance to society. Wetlands were once considered useless, disease ridden places that were to be avoided. Wetlands are among the most productive ecosystems in the world.

Society typically places a monetary value on wetlands based on their ability to produce saleable goods such as livestock feed or recreational opportunities. While the societal benefits of wetlands are significant, a tangible financial payment for these services is lacking.

Topic: Effects of Farmland Drainage on Indigenous Rights

Indigenous rights, as defined under the Canadian legal system, consist of a broad spectrum of legal rights possessed by Indigenous people in Canada. While the rights defined to date are not exhaustive, courts have recognized the right to occupy the land, to fish, hunt, trap, and generally use the "products" of the rivers, forests, and streams. This also includes the Indigenous right to protect both water quality and quantity, on behalf of both humans and the ecosystem.

Indigenous rights to water are a complex and contentious issue amongst Federal and Provincial governments and First Nation and Metis communities. Many court cases have resulted, and new court cases have been initiated. This roundtable discussion is not intended to debate any asserted Indigenous title or right to water and associated resources or for interpretation of the Treaties. The purpose here is to identify the issues participants around the table see that farmland drainage creates related to Indigenous rights. And then to suggest actions they think would be effective in addressing those issues.

Topic: Downstream Flooding Effects of Farmland Drainage

The draining of water off farm land has become a common occurrence as equipment has become more efficient in digging trenches. With larger farm equipment there is a perceived need to drain areas so that land work can progress without delay caused by wetlands and potholes. One of the results of drainage has been downstream flooding. While the results of drainage in an upstream area might be evident due to the efficiency of the ditch removing water, the downstream effects may not be as obvious as they may happen many kilometres away. What is also not always immediately evident is the cumulative results when multiple drainage ditches are constructed and the amount of water moving downstream is magnified.

To legally drain water from land in agricultural Saskatchewan the landowner requires a licence from the Water Security Agency. Theoretically this licencing process would include an evaluation of what the downstream results of the drainage would be. The application for a drainage licence rarely happens which circumvents the bigger picture assessment and in turn can result in downstream flooding of land and infrastructure.

Because everyone is downstream from someone else, even though they may be in an adjacent municipality, or even another province it is important to address this.

Topic: Environmental Assessment (EA) of Farmland Drainage

The Ministry of Environment (SE) is responsible for reviewing the environmental impacts of developments under the legislation in the *Environmental Assessment Act*. Proponents conduct a self-assessment of their project to consider whether it is necessary to contact the EA Branch of SE. No projects for Ag Drainage have been submitted to SE or referred to them by WSA.

The new *Network Approach*, licencing of whole sub-watersheds for farmland drainage, has also not resulted in any referrals to SE by proponents or to the Water Security Agency, which is the farmland drainage licencing agency. It is expected that a few hundred of these sub-watersheds will be going through the licencing process in the next 10 years.

Federal government environmental assessment is carried out under *Canadian Environmental Assessment Act 2012* (Presently under review). This review focuses on potential adverse environmental effects within federal jurisdiction, including: fish and fish habitat; other aquatic species; migratory birds; federal lands; effects that cross provincial or international boundaries; effects that impact on Aboriginal peoples, such as their use of lands and resources for traditional purposes; and, changes to the environment that are directly linked to or necessarily incidental to any federal decisions about an individual project. Presently the Federal government has not recognized the cumulative effects of farmland drainage as a trigger under the current legislation.

Topic: Illegal Farmland Drainage

Drainage is often associated with economic growth and wasn't recognized as a water management issue until the 1970's at which time existing drainage was grandfathered and new drainage required an approval. Organized farmland drainage was conducted under Conservation and Development Authorities (C&D's). Projects involving the mainstream drainage works were licenced but not the individual drainage running into them. Since the time when government approval was first required only the smallest of percentage of farmers applied for and received approval. It has been estimated that over 95% of all drainage is unlicensed and is therefore illegal. New legislation in 2016 now requires that all farmland drainage requires an approval. This includes drainage grandfathered in the past and built within a C&D development area.

Drainage includes pumping, tile drainage, V-ditching, channeling, dyking, and infilling of wetlands. WSA is responsible for and determines what compliance and enforcement activities it undertakes. It works with the Ministry of Environment Conservation Officers who provide support when requested. WSA is under no obligation legally to assist anyone who reports or complains about illegal drainage unless they provide a signed written complaint. If illegal drainage works are present WSA informs the landowner who complained and tells them to obtain the necessary land control and approvals or close the works with 90 days. If the complaint is withdrawn, then no further action is taken by WSA. The economic gains realized by drainage combined with the lack of enforcement and fines and a reliance on a written complaint process that pits neighbour against neighbour all continue to encourage illegal drainage.

Topic: Effects of Farmland Drainage on Water Quality

Farmland drainage results in negative downstream impacts to water quality. Most wetlands exist as isolated basins or potholes and act as natural filters that improve water quality and neutralize a number of different contaminants. Wetlands remove pathogens (fecal coliform, E Coli bacteria), nutrients (e.g. Nitrates and Phosphorus), pesticides (insecticides, fungicides, herbicides) and sediment (field runoff, bank failures, landscaping) from water and prevents them from flowing into lakes, rivers, and groundwater. Eliminating wetlands reduces the ability of the environment to naturally mitigate for poor water quality.

The most referenced example of nutrient loading is Lake Winnipeg which receives runoff from much of the prairies. Economic impacts to the lake are significant and the federal government has committed over \$60 million dollars since 2008 to try to improve the watershed.

WSA regulations state that mitigation may be required for water quality but has not defined what is required, including testing, or what standards need to be achieved. However, mitigation measures are often not included in an assessment. It appears the goal of source water protection is in conflict with the goal of farmland drainage.

Topic: Cumulative Effects (CE) of Farmland Drainage

Farmland drainage has been continuing and accelerating over time. Concerns are often raised about the long-term changes that may occur not only as a result of a single action but the cumulative effects of nutrient loading, pesticide deposits, and siltation. Assessing for cumulative effects in general has been recognized since the 1980's and various methodologies to assess cumulative effects have been developed in the late 1990's and early 2000's. However, under the *Environmental Assessment Act*, drainage development projects are on a project by project basis and their cumulative effects are not included.

Federal government environmental assessment is carried out under *Canadian Environmental Assessment Act 2012* (presently under review). This focuses on potential adverse environmental effects that are within federal jurisdiction, including: fish and fish habitat; other aquatic species;

migratory birds; federal lands; effects that cross provincial or international boundaries; effects that impact Aboriginal peoples, such as their use of lands and resources for traditional purposes; and, changes to the environment that are directly linked to or necessarily incidental to any federal decisions about an individual project. Presently the Federal government has not recognized the cumulative effects of farmland drainage as a trigger under their current legislation.

Topic: Public Policy on Farmland Drainage

WSA's new policy for farmland drainage is the Ag Water Management Strategy. Besides a drainage approval, all drainage works require an Aquatic Habitat Protection Permit (AHPP) which is intended to prevent; habitat alteration, impacts to water quality and impacts on aquatic organisms and Species-at-Risk. The compliance process relies heavily on voluntary participation in drainage networks and on a complaint process (*Request for Assistance*) for infractions.

WSA relies on landowners and those living downstream to decide what wetlands will be drained. For example, WSA approved landowners draining 90% of the wetlands on their land through the *Dry Lakes Drainage Network Project*. If a small number of landowners object to granting land control to their neighbours, the drainage proponents or RM's can form a Watershed Association or Conservation & Development Authority and expropriate the necessary land control. Landowners downstream of the point of "adequate outlet" identified by WSA are not required to provide land control and are not normally consulted.

Landowners granted drainage approvals realize significant financial gains from increased acres to seed or to lease and through increased land values when the land is sold. This has led to a practice where less costly marginal lands are purchased then drained. Other than a drainage application fee (\$25 for an individual) WSA does not charge any other fee.

Topic: Legislation, Compliance, and Enforcement of Farmland Drainage

Since 1981, the WSA Act has required all new drainage to have an approval and license. Drainage constructed prior to 1981 was exempt for licencing but could still be complained against. Water is a crown resource, and the Water Security Agency (WSA) is responsible for the government's core water management responsibilities: managing the province's water supplies, protecting water quality, ensuring safe drinking water and treatment of wastewater, reducing flood and drought damage, protecting aquatic habitat, and representing Saskatchewan on transboundary water issues.

Despite legislation prohibiting farmland drainage without a licence, prosecutions are very rare. Despite legislation that requires all drainage to have an approval which comes at a cost (need to hire a Qualified Person to prepare a drainage application and install flow reducer culverts), no penalties typically result if the legislation is ignored and drainage is done illegally.

WSA approval process does not seek input from other provincial or Federal departments (i.e. Fisheries) and focuses mostly on hydrology. No environmental assessment is required pre and post approval for the impacts to water quality or habitat.

WSA's past reliance on a complaint-based process was ineffective in controlling illegal drainage. The current *Agricultural Water Management Strategy* has not demonstrated that it addresses the overall impacts that drainage has on water quality, quantity, loss of habitat or other environmental impacts.

Topic: Research on Environmental Effects of Farmland Drainage

Research on farmland drainage has been conducted in some form or another since the 1960's. Often the study would be motivated by public pressure after a flood event or a prolonged wet period that increased the number of landowner disputes. As a result, a study would be initiated by one of Saskatchewan's resource management agencies.

Despite the findings of the Upper Assiniboine River Basin study for example, the Drainage and Flood Control Committee stopped short of identifying any negative environmental effects of agricultural drainage because the topic was deemed to be too controversial for the scope of the study. Government agencies have been hesitant to engage interest groups in any debate around farmland drainage whether or not research has proven the resulting negative effects. Many observers think this because this represents a risk in which the government of the day could lose the support of the agricultural community in Saskatchewan.

Research does show that there is a reduction in plant and animal diversity in wetlands that collect water runoff from agricultural land. USD researcher Jake Kerby noted, "If you're introducing things like fertilizers from the fields, the nitrogen and the phosphorus have big inputs into the systems, which changes a lot of the aquatic vegetation, and that works up the food chain. So, things that are eating that vegetation are affected and things that are eating them. You can get a lot of different parts of the wildlife impacted by even just small chemicals leaching into the system."

APPENDIX 3: SUMMARY OF ROUNDTABLE ISSUES & ACTIONS

The roundtable participants express a high degree of agreement regarding drainage issues. Based on the participant feedback, it is clear many of the issues regarding farmland drainage are interrelated and were considered in multiple topics of discussion. Recurrent themes include:

- The negative impacts of farmland drainage are significant
- Lack of awareness and education across the different groups on farmland drainage issues
- Social, economic and political environments encourage farmland drainage, and are directly and indirectly enabling drainage activities
- Lack of communication on the benefits and values of wetlands
- Desire to strengthen and build partnerships among the various stakeholder groups to work towards a mutually beneficial solution (producers, protection agencies, environmental stewardship groups, Indigenous communities, public, government, etc.)

Select differences did exist among roundtable participants. While select participants tend to lean towards an evidence-based approach to build a convincing argument for those who are pro-drainage, others believe change is more likely to be driven by market or consumer demand and public pressure. That said, many participants fall somewhere in the middle. The scope of what should be considered when tackling drainage issues is another point of contest from the sessions. Some feel the focus should primarily remain on farmland drainage activities (narrowed) and some feel a broadened focus including larger water management issues is a better approach. Defining what “appropriate drainage” is also highlighted differing views on the extent to which drainage should be accepted.

The following summary expands on the most common issues related to the topics selected for discussion and proposed actions. Despite being encouraged to provide actions that could be executed by those attending the roundtable, many offered suggestions of a larger scale to be executed by someone else.

Issue Statements and Discussions

Wetland Loss Through Farmland Drainage (Groups 1 – 6)

Issues:

- ***Current systems, perceptions and processes enable farmland draining:***
 - Lack of recognition that water is a Crown resource and that it does not belong to the landowner.
 - There is a lack of enforcement of policies and legislation by provincial and federal governments, and by enforcement and protection agencies.
 - Systemic failures and inefficiencies including a complaint-based enforcement system, lack of enforcement resources, little use of fines, and long processing times for drainage applications do not promote producers to complete the formal drainage application process.
 - Producer norms favour increased food production over conservation and environmental protection.

Call to Action: Findings from Farmland Drainage Roundtable Initiative

- There are perceived economic incentives for increased grain production and the perception that drainage adds land value without consideration of the societal and environmental costs.
- ***Lack of awareness and education on the value of wetlands:***
 - Gaps exist regarding the quality, availability and quantity of information on farmland drainage
- ***The cumulative effects of farmland drainage are not being considered, particularly impacts to:***
 - Downstream neighbours
 - Water quality and quantity
 - Climate change
 - Drought resistance
 - Bird, fish and other wildlife habitats and populations
 - Economic impacts: infrastructure maintenance, insurance costs, water treatment costs, etc.



Actions:

- Several groups suggest changes to the drainage application process and standards such as requiring Environmental Assessments for drainage projects via lobbying or legal action. Others suggest trying to shift the perception that drainage is commonplace and accepted by calling out illegal drainage activities and rewarding producers who abide by the laws and regulations or make conservation efforts.
- Public education and determining ways to bring environmental concerns to the same level of importance and consideration as economic concerns. Potential avenues could include, the formation of groups at the local level to inform the public, distributing fact sheets regarding the benefits of wetlands, partnering with conservation organizations to help push information and drainage communications to the public.

Call to Action: Findings from Farmland Drainage Roundtable Initiative

- Establish some type of wetland inventory, as well as drainage limitations and conservation goals. Aggregate research and collaborate to initiate research on the costs and impacts of cumulative effects of farmland drainage.
- Several different stakeholder groups are identified as target groups to further educate and communicate with including; the general public, producers/landowners, urban residents, rural residents & municipalities, and Indigenous community

Effects of Farmland Drainage on Indigenous Rights (Group 1)

Issues:

- ***Lack of meaningful consultation***
 - Indigenous population is largely unaware of the Agriculture Water Management Strategy and their indigenous rights regarding farmland drainage
- ***Indigenous philosophies differ from that of non-indigenous***
 - The people do not own the land, the land owns the people
- ***Impacts to indigenous land***
 - Federal jurisdiction adds complexity to the issue
 - Drainage reduces wildlife and fish populations
 - Flooding and downstream impacts to water quality on Indigenous Land

Actions:

- Those with relationships with the Indigenous community should be encouraging and advocating for Indigenous people to seek provincial and federal government consultation regarding drainage issues and on Agriculture Water Management Strategy.
- Meet with Federation of Saskatchewan Indigenous Nations and Metis Nation of Saskatchewan to discuss the issues and build alliances, possibly leading to an Memorandum of Understanding to work together on the issues.
- Provide funding support to research the impacts of farmland drainage to Indigenous lands and rights.

Downstream Flooding Effects of Farmland Drainage (Group 1)

Issues:

- ***Impacts to infrastructure and property***
 - Roadways washed out
 - Flooding of communities, individuals' land, grasslands, hay lands, pastures, etc.
 - Increase in insurance rates
- ***Compromised water quality***
 - Sedimentation
 - Loss of recharge/discharge areas
 - Concentration of field runoff contaminants
 - Contaminated intakes and reservoirs

Call to Action: Findings from Farmland Drainage Roundtable Initiative

Actions:

- Respect Manitoba's right not to be flooded and support Manitoba in taking legal action on the downstream impacts of Saskatchewan drainage projects.
- Aggregate and determine gaps in the research on downstream flooding effects of farmland drainage. Assess both the financial costs to the system as well as non-financial costs of the degradation of water quality.

Environmental Assessment (EA) of Farmland Drainage (Group 2)

Issues:

- ***Cumulative effects are not considered in Environmental Assessments***
 - Environmental assessments are applied only to specific projects and only one component of a larger drainage system is assessed
 - Drainage works do not operate in isolation but rather in a network, so it should not be assessed in an isolated manner
- ***Lack of consistency and transparency in Environmental Assessment process***
 - Farmland drainage is not classified/considered a development, so WSA or the proponent do not require an EA review of drainage projects
 - Participants feel there is a general lack of oversight on both provincial and federal levels regarding determining the environmental impacts of drainage projects
 - Thresholds are avoided so that EAs are not triggered, rather the onus is on the producer to follow the regulations

Actions:

- Draw a comparison between the impacts of the Agriculture industry to other industries requiring EAs to demonstrate that the Agriculture industry is not being held accountable for their much larger environmental footprint.
- Seek EAs on both new networks and C&Ds, as well as take cumulative effects into account (may require establishing a way to calculate cumulative effects for drainage projects).
- Complete a review of current drainage policies and practices and determine if they are in alignment with the legislation.
- Encourage and recognize producers for doing the right thing and being good stewards.

Illegal Farmland Drainage (Group 2)

Issues:

- ***Incentives are in favour of draining rather than complying***
 - Crop insurance rewards drainage
 - Regulator is slow to respond to drainage applications
 - Drainage is seen as being socially acceptable
- ***General lack of oversight, monitoring and enforcement***
 - Little to no ramifications or penalties for not receiving approval

Call to Action: Findings from Farmland Drainage Roundtable Initiative

- enforcement of illegal drainage relies on complaints (which can be withdrawn with bribes and intimidation)
- Conservation is seen as “someone else’s responsibility”
- Conflicts with Aquatic Habitat Protection (i.e. aquatic system that will be cultivated is not being protected)

Actions:

- Work to publicize drainage issues to have the media highlight the shortcomings of the application and enforcement processes.
- Seek out operational efficiencies with drainage regulators to help move applications through more quickly and encourage producers to comply with rather than bypass the application process.
- Lobbying activities to push for all levels of government and regulation to comply with the law and to hire more enforcement officers with the ultimate goal of eliminating the need for a complaint-based enforcement system.
- Make drainage violations a fineable offense without needing to go to court.



Effects of Farmland Drainage on Water Quality (Group 3)

Issues:

- *Citizens are not concerned about their water quality*
 - Lack of awareness of potential risks
 - Mindset that we can engineer ourselves out of problems
 - No baseline data on water quality
 - Lack of inventory of wetland areas
 - Habitat is also at risk but tends to be more difficult to protect
- *Source water protection is no longer a priority for local watersheds due to funding deficiencies*
 - Assess the costs associated with source water protection versus costs for new water treatment facilities
 - The link between quantity and quality is being missed and how ground water recharge is happening

Actions:

- Educate public on wetland values and water treatment costs associated with water quality degradation, and how wetlands can help with flooding concerns, water quality, ground water recharge.
- Put resources in place to map wetland areas and loss, and measure impacts of drainage networks to water quantity/quality.

Call to Action: Findings from Farmland Drainage Roundtable Initiative

- Begin process for water quality sampling in cooperation with WSA and lobby to have water quality a condition of drainage permits. Focus back on source water and develop an oversight committee for WSA. Engage with organizations like SUMA and SARM to assist with monitoring upstream water quality.

Cumulative Effects (CE) of Farmland Drainage (Groups 3, 4, 5, & 6)

Issues:

- ***Measuring cumulative effects (CE) should be required as a part of the approval process***
 - Regulator is not playing a large enough role in considering CE.
 - WSA requires proper resourcing to enable enforcement and management of water resources.
 - Impacts to ecosystem services and resilience to climate change are not considered.
 - Drainage is not considered development and therefore does not trigger an Environmental Assessment.
- ***Lack of incentives for positive practices such as retention and restoration***
 - No quantitative baseline data or objectives for wetland retention and water quality protection exist.
- ***Lack of public resources and information to be able to assess cumulative effects***
 - The threshold of irreversible damages is unknown.

Actions:

- Lobby provincial and federal governments to require an Environmental Assessment for drainage projects and engage federal government in monitoring CE of water flowing out of province. Additionally, require a strategic environmental plan for issuing drainage network approvals.
- Document scientific research on capacity of natural systems to provide ecosystem services and resilience to climate change. Measure the costs, both tangible and in tangible, of the CE of drainage.
- Look to work with other organizations. Publicize Saskatchewan water issues internationally (UN, RAMSAR). Find local producers to collaborate with on retention and restoration projects and build relationships and work with conservation partners to support a watershed stewardship group and programs.
- Look to other jurisdictions for possible solutions and examples. Create a public database that includes a list of projects in a watershed, so CE can be considered.

Public Policy on Farmland Drainage (Group 4)

Issues:

- ***Current policies pit one producer against the other***
 - Complaint based system encourages a lack of enforcement of negative drainage activities until they are problematic to another neighbouring or downstream producer.
 - Mitigation policies seen in other sectors are not present for agriculture sector/drainage networks.

Call to Action: Findings from Farmland Drainage Roundtable Initiative

- ***Current policies do not encompass the value of wetlands and water quality***
 - Need more research capacity both independently and in government to support the consideration of wetlands and water quality in policy decision making.

Actions:

- Establish a broad-based coalition of ENGOs, public, Indigenous communities, to engage in a public participatory process using examples and existing research (including local and traditional knowledge) to create and promote a comprehensive provincial wetland policy.

Legislation, Compliance, and Enforcement of Farmland Drainage (Group 5)

Issues:

- ***WSA is not doing a good enough job in enforcing the lack of compliance***
 - Lack of human and monetary resources
- ***General lack of strategy, goals and regulations to account for cumulative effects and mitigation***
 - Provincial rights and obligations to other jurisdictions are ignored
 - No overarching drainage plan or strategy for assessing cumulative effects, and mitigation is not a part of the legislation.

Actions:

- Increase WSA resourcing to allow for more human resources and financial support in enforcing drainage policies and regulations.
- Legal action could be taken against government for not following its own legislation regarding farmland drainage. Drainage issues could also be included in future political campaigns (SAWS has already started in this direction).
- Lobby other jurisdictions so they understand their water management issues are being influenced by upstream or neighbouring activities.

Research on Environmental Effects of Farmland Drainage (Group 6)

Issues:

- ***Lack of funding for research***
 - Lack of long-term monitoring, accessible data, and data sharing
 - Gaps in existing research including; geographical water quality thresholds, and a complete cost-benefit analysis of wetlands and wetland loss including both the tangible and intangible costs and benefits.
- ***Poor communication and coordination of research findings between government, NGOs and water agencies***

Call to Action: Findings from Farmland Drainage Roundtable Initiative

Actions:

- Build capacity to support execution of proposed actions.
- Establish water quality thresholds on a geographical basis and complete a comprehensive cost-benefit analysis.
- Build relationships with stakeholders of all interests. Work to include traditional/indigenous knowledge, local knowledge of farmers and ranchers and academia in the collection and scope of research.
- Create a public database to publicly distribute and access research findings of all forms (scientific and traditional/local knowledge).



The following table outlines the issues, actions and challenges summarized after each session.

Issue	Actions	Challenges
Perceptions of Drainage		
1) Lack of knowledge of the effects of farmland drainage on the environment by general public, farmers, Indigenous people, and urban people	1) Distribute targeted information on impacts of farmland drainage 1) Publicize/bring media attention to drainage events	1) There is a gap in the consultation process for urban people who are directly impacted through insurance and tax support for rural drainage
2) Lack of effective use of science to communicate the negative impacts of farmland drainage	2) Work to include traditional/indigenous knowledge, local knowledge of farmers and ranchers and academia in the collection and scope of research on Environmental Effects of Farmland Drainage 3) Create a public database to publicly distribute and access research findings of all forms (scientific and traditional/local knowledge)	2) Need to break down elements of education and use of science to become more relevant to a specific issue
Land Ownership		
4) Feeling the owner of the land can do with as they wish	3) Identify efficiencies with drainage regulators to help move applications through more quickly and encourage	3) and 4) Issues seem too complex to tackle, and it is difficult to address the challenge of "Fatalism"

Call to Action: Findings from Farmland Drainage Roundtable Initiative

	producers to comply with rather than bypass the application process	How to move through impossible to probable to inevitable?
4) Issue of private land values versus public benefit	4) Public education and determining ways to bring environmental concerns to the same level of importance and consideration as economic concerns	
5) Foreign ownership driving farming practice	5) Encourage and recognize producers for doing the right thing and being good stewards	5) Complaint process is very personal in rural areas. Causes neighbour to neighbour conflict
6) Effective connections with Indigenous leaders in addressing farmland drainage issues	6) Meet with Federation of Sovereign Indigenous Nations and Métis Nation Saskatchewan to discuss the issue and build alliances, possibly leading to an M.O.U. to work together on the issue	6) The challenge of how First nations and Rural and urban communities can work together in a collaborative governance model
Environmental Impacts of Farmland Drainage		
7) Climate change needs to be part of discussion of values of wetland and its buffering capacity	7) Work with Prairie Climate Centre in Manitoba 7) Bring issues to the media to highlight shortcomings	Overall challenge in addressing Environmental Impacts of Farmland Drainage (7 & 8): Challenge of Watershed Advisory Boards and SAW following their initial mandate of source water protection and related wetland preservation
8) Resilience and adaptation	8) Document scientific research on capacity of natural systems to provide ecosystem services and resilience to climate change	
Drainage Policies, Legislation and Enforcement		
9) Lack of transparency when deciding on drainage projects	9) Complete a review of current drainage policies and practices and determine if they are in alignment with the legislation	9) Agriculture seems to be treated separately from other industries in terms of requirements for assessment of environmental impact
10) EIA process lacking statement of critical factors needed to trigger an EIA	10) Draw a comparison between the impacts of the Agriculture industry to other industries requiring EAs to demonstrate that the Agriculture industry is not being held accountable for their environmental footprint	10) Policy conflict between Environment/WSA and Agriculture. Farmers look for public support for drainage off their lands but show little, if any, concern for others downstream
11) Need for local involvement in addressing illegal drainage	11) Model on what can be done as an alternative 11) Take the Qualified Person training	11) Making a commitment to taking action (personal and organizational) 11) Capacity building at the local/ personal level 11) Spearheading initial leadership initiatives

APPENDIX 4: TOPIC RESOURCES FOR PARTICIPANTS

1. Wetland Loss Through Farmland Drainage

a) What Is Ag Drainage (WSA Fact Sheet):

<https://www.wsask.ca/Global/About%20WSA/Quill%20Lakes/FS319%20What%20is%20Drainage%2017x11%20for%20Web%20low%20res.pdf>

b) Dr. John Pomeroy Webinar: The Effects of Drainage on Prairie Hydrology

<https://www.aswm.org/98-watersheds/natural-floodplain-function-alliance/7033-2014-recorded-nffa-webinars>

c) Wetlands Got the Goods: PCAP Webinar Series:

<https://www.youtube.com/watch?v=QfMPal7a4HE>

2. Effects of Farmland Drainage on Indigenous Rights

a. The Rule and Role of Law - The Duty to Consult, Aboriginal Communities, and the Canadian Natural Resource Sector Dwight Newman May 2014

<https://www.macdonaldlaurier.ca/files/pdf/DutyToConsult-Final.pdf>

b. Federation of Saskatchewan Indigenous Nations Duty to Consult Policy

<https://www.fsin.com/overview/duty-to-consult/>

c. Government of Saskatchewan First Nation and Metis Consultation Policy

<http://publications.gov.sk.ca/documents/313/98187-Consultation%20Policy%20Framework.pdf>

3. Downstream Flooding Effects of Farmland Drainage

a. Dr. John Pomeroy Webinar: The Effects of Drainage on Prairie Hydrology

<https://www.aswm.org/98-watersheds/natural-floodplain-function-alliance/7033-2014-recorded-nffa-webinars>

b. The Drain Game (Video):

<https://www.youtube.com/watch?v=FTRD6VHNkoQ>

4. Environmental Assessment (EA) of Farmland Drainage

a. Saskatchewan EA Process:

<https://www.saskatchewan.ca/business/environmental-protection-and-sustainability/environmental-assessment>

b. Canada EA Process:

<https://www.canada.ca/en/environmental-assessment-agency/services/environmental-assessments/basics-environmental-assessment.html>

5. Illegal Farmland Drainage

a. Drain Game Video:

<https://www.youtube.com/watch?v=FTRD6VHNkoQ>

b. What Is Ag Drainage (WSA Fact Sheet):

<https://www.wsask.ca/Global/About%20WSA/Quill%20Lakes/FS319%20What%20is%20Drainage%2017x11%20for%20Web%20low%20res.pdf>

c. Politics - Gov't must take on tough drainage issue - Murray Mandryk / Yorkton This Week March 23, 2017

<http://www.yorktonthisweek.com/opinion/editorial/politics-gov-t-must-take-on-toughdrainage-issue-1.12562810>

d. Caught Between a Slough and a Floodplain — Why Drainage is Western Canada's Next Big Fight – Real Agriculture Magazine – October 2014

<https://www.realagriculture.com/2014/10/caught-bog-floodplain-drainage-westerncanadas-next-big-fight/>

6. Effects of Farmland Drainage on Water Quality

a. How do Wetlands remove nutrients:

<http://www.wetlands-initiative.org/nutrient-removal/>

b. Destruction of small wetlands leads to more algal Blooms News Article:

<https://www.nationalobserver.com/2017/07/24/news/destruction-small-wetlands-leads-more-algal-blooms-ontario-study-finds>

- c. Pesticides contaminating Prairie Wetlands: CBC News:
<http://www.cbc.ca/news/canada/saskatchewan/pesticide-contaminating-prairie-wetlandsscientist-1.2482082>

7. Cumulative Effects of Farmland Drainage:

- a. Dr. John Pomeroy Webinar: The Effects of Drainage on Prairie Hydrology
<https://www.aswm.org/98-watersheds/natural-floodplain-function-alliance/7033-2014-recorded-nffa-webinars>

8. Public Policy and Farmland Drainage

- a. 25 Year Water Security Plan:
https://www.wsask.ca/Global/About%20WSA/25%20Year%20Water%20Security%20Plan/WSA_25YearReportweb.pdf
- b. 25 Year Water Security Plan:
<https://www.wsask.ca/Global/Water%20Programs/Agricultural%20Drainage/Agricultural%20Water%20Management%20Strategy/Water%20Management%20Fact%20Sheet%20Low%20Res%20for%20Web%20June%202017.pdf>
- c. Dry Lake Project News Release:
<https://www.wsask.ca/About-WSA/News-Releases/2017/February/Water-Security-Agency-Issues-Historic-Drainage-Approval/>
- d. How to File a Complaint:
<https://www.wsask.ca/Global/Water%20Programs/Agricultural%20Drainage/Agricultural%20Water%20Management%20Strategy/FS325%20Request%20for%20Assistance%20Interactive%20Low%20Res%20for%20Web.pdf>
- e. Ombudsman 2016 Report on WSA's handling of a Drainage Complaint:
https://www.ombudsman.sk.ca/documents_and_files/recommendation-reports
- f. Drainage Approval Process:
<https://www.wsask.ca/Water-Programs/Agricultural-Drainage-/Drainage-Approvals-Three-Steps/>
- g. The Role of Qualified Persons in Drainage Approval Process:
<https://www.wsask.ca/Water-Programs/Agricultural-Drainage-/Qualified-Persons/>

9. Legislation, Compliance, and Enforcement of Farmland Drainage

a. Aquatic Habitat Protection:

<https://www.wsask.ca/Water-Programs/Aquatic-Habitat-Protection/>

b. WSA Act:

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APPENDIX 5: ACKNOWLEDGEMENTS

1. Riggas, Dimitris, Shan Ashton, Kylene de Angelis, Christine Graf: Written in 2010/2011. Licensed under a Creative Commons Attribution 3.0 Unported License.
2. All photos within the report are credited to Jeff Olson.