Multi-Operator Water Plan (MOWP) Framework for Sharing Water Resources and Infrastructure in Unconventional Resource Plays in Alberta

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1.0 INTRODUCTION

Baseline Water Resource Inc. (Baseline Water) was retained by Petroleum Technology Alliance Canada (PTAC) to develop the framework of a multi operator water plan (MOWP). This report follows the Scope and Deliverables of Alberta Upstream Petroleum Research Fund (AUPRF) RFP #1802, issued August 31, 2017 by the PTAC Water Innovation and Planning Committee (WIPC) (Appendix A).

As a forward-thinking step towards increased water conservation, PTAC's WIPC commissioned the creation of a draft MOWP framework. This is a first step toward a more detailed implementation plan.

This report sets out the framework of a MOWP with input from the WIPC steering committee, the Alberta Energy Regulator (AER) and Alberta Environment and Parks (AEP). The Fox Creek area is then presented as a candidate site to implement draft MOWP concepts. The proposed implementation of a MOWP in the Fox Creek area would formalize current industry efforts on water and infrastructure sharing.

1.1 MOWP POLICY DIRECTION

The MOWP concept was introduced in the draft *Water Conservation Policy for Upstream Oil and Gas Producers* (Draft Policy) (Alberta Government (GoA) 2016) as an instrument to improve water conservation (Appendix B). The Draft Policy indicates the AER will provide regulatory oversight of a MOWP, but details have been lacking and to date there have been no approved MOWPs. The Draft Policy describes a MOWP as follows:

> *"Cooperation and collaboration between industry operators in a sub-regional area to minimize cumulative effects on water resources and improve water conservation."*

The Draft Policy (GoA 2016) recognizes that a MOWP will vary in scale, dependent on location-specific variables. According to the Policy, a MOWP would include the following components:

- Area-specific water conservation and management requirements,
- Optimization of development outcomes and minimization of cumulative impacts, and
- An effective community and stakeholder engagement plan

1.2 MOWP OBJECTIVES

Objectives and examples of water management collaboration cited in the Draft Policy (GoA 2016) are:

- Shared water management infrastructure (water distribution, storage, treatment, disposal)
- Sharing of area water sources
- Assessment of area water resources, and
- Selection of alternative water sources

The unconventional oil and gas sector view a MOWP as an opportunity to create a highly collaborative, participatory endeavor between industry and the AER and AEP to develop water management coordination recommendations and enhance public communication on water. The collaborative nature between industry and AER and AEP of both forming and operating a MOWP is emphasized. Therefore, additional objectives of a MOWP as proposed by the WIPC committee include the following:

- Enhanced operational oversight of water sharing and conservation
- A collaborative effort between industry and government to reduce cumulative impacts
- Regulatory flexibility with incentives to increase water sharing and efficiency
- Industry choice to opt in or out of a MOWP depending on development stage (or other factors)
- Effective data reporting available to the public by the Regulator

2.0 MOWP ELEMENTS

2.1 WHAT TRIGGERS A MOWP?

A MOWP trigger is proposed as,

> "*An interest between industry and government to enhance water conservation and efficiency within a sub-regional area to reduce cumulative effects*. "

'Interest' relates to water concerns expressed from the public, escalating water demand, neighbouring industry development areas, or other area-specific factors.

The trigger definition avoids specifying metrics such as a number of industry companies, volume of water allocation, or watershed extent. Clearly, the more companies operating in a specified area, the higher the potential for water sharing and

infrastructure collaboration. However, it is expected that local conditions and level of development will drive the need, and incentives, for a MOWP.

'Sub-regional' is interpreted to mean a watershed within a major basin, recognizing there are many scales of watershed size.

2.2 How to Start a MOWP

Industry-led is the preferred approach to start a MOWP, based on water sharing and planning (Section 2.4). However, a MOWP must realize improved efficiency to attract the interest of operators. MOWPs should incent change for the mutual benefit of industry, AER and AEP and public while conserving water and protecting the health of the aquatic environment.

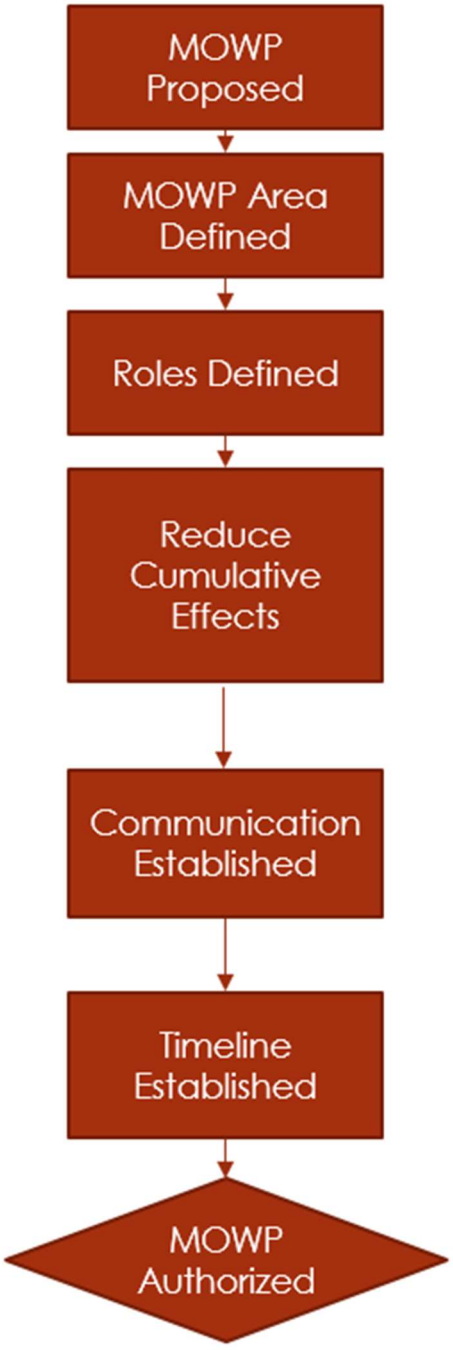
2.3 Draft MOWP Framework

Steps of a draft MOWP framework are proposed as follows:

1. Local conditions trigger an opportunity to form a MOWP between oil and gas companies, AER and AEP.
2. The MOWP geographic boundary (watershed) is established
3. Roles are clearly defined with incentives to create and maintain a MOWP
4. Assess and understand cumulative effects, and develop (if practical) area-specific objectives to reduce impacts
5. A communication strategy is created by the MOWP and Regulator, and communicated by the Regulator
6. A timeline strategy is developed when to start, how to operate, adapt, or stop a MOWP
7. A MOWP is authorized by the AER; companies elect to join in or opt out.

A flowchart of the draft framework is illustrated below, in Figure 1.

Figure 1. Draft MOWP Framework



Local conditions trigger an opportunity to form a MOWP between Industry, the AER & AEP. Incentives to collaborate on water conservation are defined.

Agreement on the geographic bounds of the sub-regional area.

Roles are clarified for industry and the AER & AEP, with incentives identified.

Water conservation objectives developed, which may change as development evolves. Objectives could include targets for sharing of infrastructure and water (non-saline, saline and alternate), recycle/re-use, water allocations, KPI's and setting basin water allocation limits.

A communication strategy is created by the MOWP and Regulator, communicated by the Regulator.

A strategy for when and how a MOWP starts, how it operates for continual improvement and under what conditions MOWP would end.

AER authorizes MOWP. Individual companies commit or opt out.

2.4 GUIDANCE ON SETTING MOWP OBJECTIVES

Objectives for water sharing and planning amongst operators is scalable depending, in part, on the level of watershed allocation, where 100% allocation is equal to 12% of mean annual yield (Alberta Environment and Parks, 2019).

Guidance for setting objectives below reflect a progression of escalating commitment to communication and water planning amongst industry based on increasing levels of watershed allocation:

- At low levels:
  - talk to each other,
  - discuss development and diversion plans, and
  - share water when feasible

- As watershed allocation increase, objectives increase to include:
  - sharing of allocations,
  - agreements with shared water infrastructure use (ponds, transfer lines)
  - shared PODs, possibly with permanent structures, and
  - plan to use alternative water sources such as recycle produced and flowback volumes, when viable

2.5 THE MOWP ADVANTAGE

Incenting change from *status quo* to a MOWP relies on developing a water plan that provides clear advantages to both industry, AER and AEP, each with an equity interest in the plan. Public and First Nations involvement are also included. Proposed MOWP advantages include:

Industry

- Improved regulatory certainty on water security and management
- Flexible regulatory tools to increase water sharing
- Simplified water reporting and monitoring to the Regulator
- Shared basin assessments
- Accelerated approvals for low risk activities
- Reduced regulatory burden by individual companies
- Increased collaboration with regulators

It is anticipated the industry group would coordinate tracking of objectives and communication amongst companies; the trade-off of this effort is regulatory flexibility to improve operational efficiency.

AER & AEP

- Enhanced operational oversight as a joint water gatekeeper shared with industry
- Water management attention is focused to a group instead of individual companies
- Opportunity to innovate regulatory tools to incent sustained development of the water resource
- Data reporting to the public
- Increased water efficiency; reduction in cumulative effects

The AER & AEP recognizes the substantial economic contribution that unconventional oil and natural gas brings to a prosperous Albertan economy and supports responsible development of this resource via MOWPs.

Public and First Nations

- Increased transparency of water conservation efforts, provided by the Regulator

2.6 Industry Commits to a MOWP or Opts Out

Industry members with or seeking a Licence commit to a MOWP with its operational and administrative incentives such as shared monitoring. MOWP commitments and responsibilities are included in Licence approval conditions at issuance, amendment or renewal stages; or as part of the MOWP itself. Companies may elect to opt out due to development uncertainties and continue to conduct business as usual with the AER under TDLs and be subject to basin allocation limits and water conservation objectives established by the MOWP, without the other incentives offered. Internal funding mechanisms will establish costs of joining and leaving a MOWP.

2.7 Environmental Impacts

A MOWP addresses the cumulative impact of water withdrawals within a basin relative to water conservation objectives. An example is reduced water footprint with infrastructure sharing. Adapted to challenges and opportunities within a sub-region, a MOWP therefore functions as a cumulative effects management system. The interdependence of water use with other resources is recognized, however, this broad relationship is outside the focus of a MOWP.

2.8 Regulatory Hurdles and Opportunities

Table 1 summarizes regulatory hurdles that currently prevent more water sharing and use of alternative water by industry and offers opportunities that a MOWP could provide. Opportunities are solutions to improve water sharing and operational efficiency such as faster regulatory amendments/approvals, and security of supply especially for low risk activities.

2.9 Coordination of Withdrawals

It is anticipated that the increased communication amongst industry companies and between industry and the AER in a MOWP will effectively mitigate the need for a priority call at low flows, when a numerically lower Licence holder has the right to withdraw before numerically higher Licence holders. Collaboration in co-ordinating water withdrawals combined with in-stream objectives should enable industry to modify plans as a group and minimize the need for companies to exercise the need to apply the first in time, first in right principle of the *Water Act*, regardless of the Licence number or order of entry into a MOWP.

2.10 Roles

A MOWP is essentially a number of water managers working together in a highly collaborative, participatory endeavor between industry and government. When jointly managed by industry and the AER and AEP there is amplified operational oversight on water conservation and basin management objectives. Proposed roles of a MOWP framework outlined in Table 2 reflect the collaborative nature of the initiative.

Table 1. Regulatory Hurdles and Proposed Collaborative Opportunities to Increase Water Sharing and Alternative Water Use (from ABR Recommendations Report 2017 and WIPC steering committee)

Hurdle	Impact	Collaborative Opportunity	Rationale
Regulatory delays (e.g. 5-10 days) to approve TDL sharing of unused water in storage structures	Slow and operationally cumbersome; TDL water use is typically double counted by AER.	No AER TDL review period required to access water from off-channel storage structures; simplify accounting and reporting procedure.	Very low risk to Province. All risk to replenish water rests with the owner of stored water.
Unused Licence Allocations[1].	Unused volumes not available to others.	Facilitate water transfers to other industry member or return allocations to the Crown via Policy or Directive (e.g. at Licence renewals).	Very low risk to Province at the basin scale as allocations were originally considered in individual applications.
Point of Use (POU) limits with Licences[1].	Restricts water use when mineral holdings change.	Adaptive POUs, for example, based on submissions of changes to mineral lands.	Very low risk to Province as there is no change to allocations. Avoids repetitive TDLs and perceived increase in water allocations.

1. May require change to *Water Act* to enact.

Table 2. Proposed MOWP Roles of AER & AEP and Industry

Group	Role
AER & AEP	Lead for ensuring MOWP concept is implemented
	Responsible, joint water partnership
	Active participation in incentives to industry participation
	Describes relationship of MOWP to other planning initiatives (Provincial, regional, local)
	Focused sub-regional attention to water management
	Develop flow thresholds to maintain aquatic environment
	Engagement of public and First Nations
	Collaborator on developing MOWP timelines, communication strategy, and MOWP objectives
	Regulatory integration as one body
	Provides annual water conservation report
	Establishes a single, clear communication portal with public
	Incorporates MOWP into web-based geospatial application (e.g. Alberta Water Tool or other application)
Industry	Focused operational and administrative effort towards meeting MOWP objectives
	Implement MOWP plan
	Collaborator on developing MOWP timelines, communication strategy, and MOWP objectives
	Track water sharing, trends and efficiency changes, and provides water data to AER

3.0 PILOT MOWP

The concept of a pilot MOWP is to test collaboration opportunities of the draft framework during an implementation phase before being more broadly applied elsewhere. At present, industry groups in Alberta are already working together to share water where feasible. These include the Fox Creek Operators Group, Montney Water Users Group and South Duvernay Producers Group. The watersheds in which these industry groups operate are potential candidate areas to test the draft MOWP framework and follow up with a MOWP implementation plan.

The implementation plan would tackle all framework steps and include area-specific details such as setting the downstream watershed point of interest.

Although any industry group could qualify to test the MOWP, the Fox Creek Operators Group (FCOG) is highlighted below because of the progressive, collaborative water management

approach adopted by industry members over the past six years. A MOWP in the Fox Creek area is a recommendation of the M.D. of Greenview Area Based Regulations (ABR) (GoA 2017).

3.1 FCOG IN FOX CREEK AREA

FCOG was formed in 2013 by industry with a broad mandate to "encourage a collaborative approach for the responsible development of natural resources in the Fox Creek Region" (http://www.foxcreekoperatorsgroup.com/). Substantial water sharing has occurred in the Fox Creek area but not publicly broadcast. FCOG members have been actively sharing saline and non-saline water for several years as well as water infrastructure, points of diversion, water lines, disposal wells and storage reservoirs.

FCOG presently has seven industry members. The FCOG water sub-committee meets monthly with a mandate to discuss how to:

- Develop collaborative relationships to enable cooperative water management in the Fox Creek region
- Share water resources, water infrastructure and water information
- Interface with regulators on water management practices
- Promote efficient water use within existing regulations and/or pilot projects
- Identify other collaborative groups and participate as appropriate

The water sub-committee has posted a public presentation at http://www.foxcreekoperatorsgroup.com/news on how members are collaborating on water management.

The area presents opportunities to develop and innovate flexible regulatory to increase water conservation activities listed in Table 2 and aligned with opportunities with the AER's ABR pilot project.

3.2 MOWP PILOT TIMELINE

The first step towards a MOWP pilot is an implementation plan. After agreement to an implementation plan from pilot stewards (e.g. AER) it is estimated that it would require one year to develop watershed specific MOWP details, followed by testing of the pilot itself. A two-year period is suggested to test the implementation pilot. It is hoped that results of the pilot could help inform a proposed policy review on water conservation (GoA 2016).

In point form, proposed steps towards the MOWP Pilot are:

- Agreement on draft framework by AER
- Year 1: Prepare implementation plan
- Year 2 and 3: Test plan with pilot

4.0 RECOMMENDATIONS

The steering committee recommends to table this report until further direction is provided by the finalization of the Water Conservation Policy, which is currently in draft form.

5.0 REFERENCES

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7.0 CLOSURE

Respectfully submitted,

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