
A Primer on Surface Water Quality Management Frameworks

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Environmental
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A Primer on Surface Water Quality Management Frameworks

Regulatory Opportunities and Challenges

What are surface water quality management frameworks?

Surface water quality management frameworks (SWQMF) are a subset of policy tools referred to as “environmental management frameworks” (EMF) focused on monitoring and managing pollution in surface water. The EMF operates by establishing quantitative triggers and limits and links them to management responses in an effort to keep pollution levels below prescribed levels. The frameworks attempt to deal with regional environmental quality and cumulative effects.¹

The legal nature of EMFs is set out in regional plans under the *Alberta Land Stewardship Act*.² The frameworks are supported by companion documents, the *South Saskatchewan Region: Surface Water Quality Management Framework* for the Main stem Bow, Milk, Oldman and South Saskatchewan Rivers (Alberta)(SWQMF) for example.³

This primer summarizes the legal aspects of *SWQMFs* and canvasses the regulatory basis for management actions and identifies some challenges in implementing regional environmental management.

- A) [Regulatory approach to SWQMF](#)
- B) [What management directions are possible?](#)
- C) [Challenges in using the SWQMF approach](#)

¹ See Alberta Environment and Sustainable Resource Development, “Environmental Management Frameworks”, online: ESRD <https://landuse.alberta.ca/CumulativeEffects/EnvironmentalMgmtFrameworks/Pages/default.aspx>.

² *Alberta Land Stewardship Act*, S.A.2009, c. A-26.8.

³ Alberta Environment and Sustainable Resource Development, online: <http://esrd.alberta.ca/focus/cumulative-effects/cumulative-effects-management/management-frameworks/documents/SSRP-SurfaceWaterQuality-Jul21-2014.pdf>.

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A) Regulatory approach to SWQMF

i. The players

Designated Minister

- is the minister responsible for *Environmental Protection and Enhancement Act* (EPEA)

Official

- an official duly authorized by the Designated Minister

Person responsible

- owner or previous owner of a substance, someone who has management and control of a substances and successors, executors, trustees and agents. (This is not a complete list and some exceptions apply, see s. 1(tt) of EPEA.)

Decision-maker

- a person who, under an enactment or regulatory instrument, has authority to grant a statutory consent, and includes a decision-making body; (ALSA)

Local government body

- local authorities such as a municipality, Métis council or the board or council of other delegated local bodies (such as Irrigation districts, drainage districts and grow management boards)

The regulatory details of SWQMFs are prescribed in regional plans, two of which have been approved to date, the Lower Athabasca Regional Plan⁴ and the South Saskatchewan Regional Plan.⁵

ii. The regulatory process and government obligations

The regulatory plan sets out the powers and duties of the Minister and related players in the EMFs.

a. Setting triggers and limits⁶

The Minister **determines**:

1. Measurement of substances of concern;
2. Trigger or limit exceedances (and whether it relates to a specific monitoring area); and
3. Duration of the exceedance or limit.

The determinations above are “final and binding” on the Crown, decision-makers, local government bodies and all other persons (unless a variance is granted).

⁴ Government of Alberta, online: ESRD <https://www.landuse.alberta.ca/LandUse%20Documents/Lower%20Athabasca%20Regional%20Plan%202012-2022%20Approved%202012-08.pdf>.

⁵ Government of Alberta, online: ESRD https://www.landuse.alberta.ca/LandUse%20Documents/SSRP%20Final%20Document_2014-07.pdf.

⁶ See Part 5, s.36 (SSRP).

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b. Programs⁷

The Minister **must** establish and maintain programs:

1. Manage water quality triggers and limits for substances of concern.
2. Monitor and evaluate the water quality
3. Evaluate the effectiveness of the framework

The Minister must issue a notice if it has been determined that a limit has been exceeded. This notice must specify:

- a) applicable limit or limits in respect of the activities or activities in (b) that have been exceeded,
- b) the activity or types, classes of activities...reasonably expected to have or have had a direct or indirect effect on the exceedance,
- c) the relevant areas of the region where an exceedance has occurred,
- d) the decision maker (s) affected by the notice,
- e) the local government body affected by the notice,
- f) the anticipated duration of the effect of the exceedance on the activit(ies) (on decision-makers or local government),
- g) the action to be taken by affected decision-makers and local government bodies in response,
- h) the direction that no statutory consent be issued in relation to subject matter of the exceedance.

Notice must be provided to decision-makers and affected local government bodies through personal service, registered mail or fax.⁸ The contents of the notice are binding on the recipients upon receipt of the notice.⁹ The notice must also be made publicly available.¹⁰

⁷ See Part 5, s.37.

⁸ ALSA at s.38(3).

⁹ ALSA at s. 38(4).

¹⁰ ALSA at s.38(5).

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It should be noted that this notice provision is discretionary in the South Saskatchewan Regional Plan where the Minister determines that non-point source pollution is “reasonably expected to have...a significant effect on the exceedance”.¹¹

c. Management response¹²

Where the Minister determines that a trigger or limit has been exceeded, an official must initiate a **management response**.

1. The management response must be consistent with the framework
2. The Minister **may** specify actions to be taken by **decision-makers** in relation to the management response
3. A **person responsible** shall comply with the lawful directions of an **official** in respect of a management response
4. The **official responsible** shall report (as soon as practicable) to the Minister the details and the effect of the management response.
5. Report must be publicly available.

d. Considerations of the Minister in decision making¹³

The Minister may consider information deemed material to:

- 1) A particular activity or class that are being undertaken or that are reasonably expected to occur in the planning region
- 2) The relevant area or part of the area in which the activity is to occur
- 3) Relevant area where effects are responsibly expected to occur
- 4) The period or duration of effects (reasonably expected)
- 5) Any other matters that the Minister considers advisable.

¹¹ ALSA at s.38(2).

¹² See ALSA, Part 5, s.39.

¹³ See ALSA, Part 5, s.40.

B) What management directions are possible?

A central component of the framework approach is the ability and intent to direct a management response. A key question then becomes, if a regulatory response is required (assuming voluntary mechanisms fail) to reduce pollution, how must the response be justified, if at all?

There is significant government discretion built into the regulatory system around SWQMFs, including:

- i. The nature of the monitoring program, including what substances are monitored and how they are monitored and evaluated,
- ii. What constitutes an exceedance of a trigger or limit,
- iii. The management actions that should be used to address the exceedance, and
- iv. Whether non-point source pollution was a significant contribution (particularly for the SSRP).

This discretion of government is constrained however, and officials will need to look to the legislation to enable their “lawful directions” to undertake specific management actions (by “persons responsible”).

What is the basis for a lawful direction?

The *Alberta Land Stewardship Act (ALSA)* states that a regional plan may include one or more thresholds and may specify actions and measures to meet the objectives of a regional plan.¹⁴ The regional plans themselves may amend, affect or rescind a statutory consent or its conditions to achieved or maintain an objective (at s.11 of *ALSA*).¹⁵

Where regional plans do not expressly change a statutory consent the management directions may be lawfully made under existing powers in related enactments, such as the *Environmental Protection and Enhancement Act (EPEA)*.

The SSR-SWQMF indicates that management actions may require amendments to existing approvals and that these amendments would be made in accordance with existing authority under the *EPEA* “including Director-initiated amendments to monitoring or reporting requirements, or amendments arising from

¹⁴ *ALSA* at s.8 (2) (b)(d) & (f). The definition of “threshold” in the act includes limits and triggers s.2 (1)(ff).

¹⁵ See sections 11 and 13 of *ALSA*. Reasonable notice, an opportunity to propose an alternative approach and notice of potential compensation is all required under the Act (s.11).

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unforeseeable effects”.¹⁶ Jurisdiction to order management changes may also be found in the conditions of an approval or licence.

Where an environmental enactment has narrow discretion to amend an authorization the government may rely on the powers and process of under s.11 of ALSA.¹⁷

Amendments under EPEA

The Director may amend a term or condition of an approval or registration:

- 1) where an adverse effect has occurred, is occurring or may occur, that was not reasonably foreseeable (in the opinion of the Director) at the time the approval was issued, or
- 2) if the term or condition relates to a monitoring or reporting requirement¹⁸

The Director may also cancel or suspend an approval or registration (with notice).¹⁹

What effects will be considered “reasonably foreseeable at the time of the approval” is unclear. The provision relies on the opinion of the Director and so long as the opinion is reasonably justified, transparent and intelligible the government’s decision is likely to stand.²⁰

Where no approval or registration is required for a polluting activity a regulatory response would largely be limited to the issuance of environmental protection orders (EPO). Specifically, the Director can issue an EPO against a person responsible for a substance that is or may cause an “adverse effect”.²¹ For nonpoint sources of pollution, being largely unregulated, lawful directions may take the form of EPOs.

¹⁶ See SSR-SWQMF – at p. 43.

¹⁷ On a practical level it has been noted that the ALSA provisions related to compensation may create a “regulatory chill”. Nigel Banks, “Regulatory chill, weak regional plans and lots of jobs for lawyers: the proposed amendment to the *Alberta Land Stewardship Act*”, ABlawg.ca March 4, 2011. This regulatory chill may translate to general management directions under enactments like *EPEA*, where new arguments regarding compensation are made, although time limits on seeking compensation make this less likely (see *infra*).

¹⁸ Section 70(3) (among others).

¹⁹ See section s.70(3)(b) and the *Approvals and Registrations Procedure Regulation*, Alta Reg, 113/1993.

²⁰ See *Canada (Minister of Citizenship and Immigration) v. Vavilov*, 2019 SCC 65, online: <https://decisions.scc-csc.ca/scc-csc/scc-csc/en/item/18078/index.do>. Also see for example *Adam v. Canada (Environment)*, 2011 FC 962 (CanLII), <<http://canlii.ca/t/fmkj2>> retrieved on 2015-05-13. More recently the standard of decisions making was updated in.

²¹ *Environmental Protection and Enhancement Act*, R.S.A. c. E-12 at s.113. The nature of activities and remediation that can be ordered is quite broad (see s.113(3)).

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Clearly identifying the polluters who are causing the “adverse effect” may undermine the use of these administrative orders where nonpoint source pollution is the cause.

What lawful directions will be justified?

Where a polluter is confronted by a management direction that results in additional costs (for updating technology, for example) it seems likely that they will look to government to provide justification for the management direction. This justification process is supported by the SSR-SWQMF system of investigation and evaluation undertaken by government (see Appendix A).²² Using this process the government should avoid arbitrary decisions regarding management directions.

Nevertheless, the pressure to justify management responses may trigger a process of increasingly detailed monitoring and evaluation by government to establish a causal link between the polluter’s activity and the impacts observed. While a strict standard of proof is unlikely to apply to the management directions, there is a need to ensure there is sufficient proof to justify the management direction. The line has yet to be drawn in terms of the level of environmental harm, the polluter’s contribution and the nature of the management response required.

Retroactive application of standards

The SSR-SWQMF may lead to changes in environmental standards. Will these changed standards apply to polluting activities retroactively or retrospectively?²³ For example, if an updated code of practice imposes new standards on previously registered projects, there will be the need to address, as a practical and policy matter, whether some level of grandfathering of activities occurs or standards are retrospective in nature.

Impacts on vested rights to pollute will be an ongoing consideration whether the government relies on ALSA (s.11) or related environmental enactments.²⁴ It should be noted that any claim for a “compensable taking” however must be sought within 12 months of the regional plan coming into force.²⁵

²² See *South Saskatchewan Region Surface Water Quality Management Framework for the Main stem Bow, Mil, Oldman and South Saskatchewan Rivers (Alberta)* <http://esrd.alberta.ca/focus/cumulative-effects/cumulative-effects-management/management-frameworks/documents/SSRP-SurfaceWaterQuality-Jul21-2014.pdf>.

²³ For example, an Environmental Protection Order under *EPEA* may be used retrospectively. See *McColl-Frontenac Inc. v. Alberta (Minister of Environment)*, 2003 ABQB 303 (CanLII), <<http://canlii.ca/t/5c00>> retrieved on 2015-05-19.

²⁴ This despite the fact that *ALSA* has provisions related to limits remedies that can be sought in courts as a result of harm inflicted by a regional plan. (See s.15-17 of *ALSA*).

²⁵ See s.19.1(2) of *ALSA*.

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C) Challenges with SWQMFs

Environmental management is complicated with a seemingly endless need to increase monitoring capacity. SWQMFs are likely to provide a partial answer to effective environment management but on their own are insufficient.

Monitoring intensity

SWQMFs are guided by monitoring at specific points along water ways. The frameworks are not aimed at ensuring environmental outcomes at all points in a region. The frameworks focus on aggregating environment impacts at specific monitoring points (at specific time scales). The number and location of monitoring points are important for several reasons.

- 1) SWQMFs do not directly manage towards non-impairment of tributaries. Pollution may exceed triggers and limits in tributaries only to be diluted by the time monitoring occurs downstream. For the SSRP this means environmental quality may be assured along the various monitoring points of main stem rivers. In contrast the LARP monitoring sites (linked to potential management responses) is limited to one monitoring station (Old Fort). This creates both a significant information gap and may undermine targeted management actions.
- 2) The fewer the points of monitoring the more difficult it will be to determine sources of pollutants (both anthropogenic and natural) and geographic areas of concern. This in turn may add to the difficulty in justifying a management response by specific polluters in certain areas. If, through the process, there is an identified need to increase monitoring upstream to effectively and accurately identify relevant polluters this will likely result in significant delays in determining an appropriate management action. This is particularly the case for non-point source pollution.

Data limitations frustrate cumulative effects management

Environmental monitoring and management, particularly for managing cumulative effects, requires a significant amount of scientific knowledge. Several challenges in our knowledge of ecological systems and impacts may prevent effective application of the SWQMFs.

- 1) Accurately identifying the “carrying capacity” of ecological systems is scientifically intensive and is often accompanied by significant uncertainty. Similarly, the information/data needs to identify acute, chronic and cumulative effects on aquatic organisms are significant. For this reason, the triggers and limits must undergo evaluation and adaptation on an ongoing basis.

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- 2) Environmental triggers in the frameworks are set relative to a reference or baseline condition (for both the SSRP and the LARP). These baselines were derived by limited data sets and therefore may not be reflective of the cumulative effects on the landscape. Without conducting modelling to back-cast to a pre-development condition there is the risk of grandfathering of some pollutants (and polluters) into the system. This in turn raises policy questions about fairness in pollution mitigation measures. It also assumes a given reference condition is acceptable.
- 3) Some pollutants are relevant to environmental quality but have not been included due to data or knowledge gaps or technical capacity to measure these substances at relevant concentrations. (Examples of such pollutants include endocrine disruptors, some chemicals such as naphthenic acids and polycyclic aromatic hydrocarbons, pharmaceuticals and some pesticides).
- 4) There is significant uncertainty about chemical interactions and synergistic effects within and among various pollutants (and other natural or anthropogenic chemicals).²⁶ When these interactions are discovered there will be a need to revisit the triggers and limits for surface water quality.

Constraints on management actions

The opportunities to direct management actions related to authorizations may be constrained in some instances. For instance, if diminished water quantity is a key issue that requires addressing the *Water Act* may inhibit a management response. Specifically, the preservation of the priority of a licenced water diversion may undermine management actions as there are limited statutory mechanisms to curtail diversions.²⁷ Similarly the opportunities to influence unregulated activities may be limited (for example, managing nonpoint source phosphorus pollution).

The nonpoint source pollution dilemma

The SSRP approach to nonpoint source pollution may create a significant gap in cumulative effects management. Where the Minister determines that nonpoint source pollution “is reasonably expected to have, or have had, a significant effect on the exceedance of the limit” the minister is not required to

²⁶ For example see Hernandez, A.F. et al, “Toxic effects of pesticide mixtures at a molecular level: their relevance to human health” (2013) *Toxicology* 307: 136. <http://www.sciencedirect.com/science/article/pii/S0300483X12002260>. Also see Solecki, R. et al. “Paradigm shift in the risk assessment of cumulative effects of pesticide mixtures and multiple residues to humans and wildlife: German proposal for a new approach” *Journal of Consumer Protection and Food Safety* 9:329-331 <http://link.springer.com/article/10.1007%2Fs00003-014-0914-8#page-1>.

²⁷ See section 54 of the *Water Act*, R.S.A., 2000, c. W-3.

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issue a notice.²⁸ By virtue of this provision the Minister has the discretion to continue to issue statutory consents even though an exceedance has occurred.²⁹

Re-active vs. proactive management

A risk exists that the SWQMF system will remain primarily reactive, allowing approved pollution to incrementally overwhelm the triggers and push towards limits.

The current approach:

Approve → Monitor/Measure → Respond as triggers and limits are reached.

In contrast a more proactive approach may enable a pollution prevention approach:

Forecast pollution and impacts of land use on water quality → Establish mechanisms or programs to prevent pollution at its source → Manage land use to manage pollution inputs and conditional approval with pollution prevention embedded in permits and reductions across all polluters.

A pollution prevention approach may require conditions on approvals that prohibit net increases in pollutant loading.³⁰

²⁸ SSRP, supra note 2 at s.38(2). This provision only appears in the South Saskatchewan Regional Plan but does not appear in the LARP.

²⁹ The notice provision in s. 38 becomes discretionary, if no notice is required than the “direction” to cease issuance of statutory consents under s.38(1)(h) is also not required.

³⁰ This is reflective of a “maintaining or restoring” water quality rather than allowing water quality movement away from business as usually. This approach has been considered for the North Saskatchewan Regional Plan but has yet to be approved.

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Conclusions

SWQMFs are a welcome addition to the tools used to more systemically translate monitoring into regulatory and non-regulatory responses to protect the environment. EMFs offer a path beyond “approvals as usual”.³¹

It appears that implementation of management responses will first be pursued through voluntary measures. If such management responses fail changes to approvals and licence may be required, leading to an increased likelihood of litigation.

Key actions to counteract some of the challenges in the EMF system include:

- 1) Ensure sufficient capacity exists to investigate and respond to reach specific or pollutant specific issues that may arise outside the scope of the SWQMF; and
- 2) Implement pollution prevention programs and embed conditions in authorization to allow for proactive pollution management.

³¹ While the discretion always existed to refuse to issue an approval or licence due to environmental impacts there appeared to be institutional barriers that prevented government from saying “no more pollution”.

Appendix A

Management Response (ESRD, 2014)³²

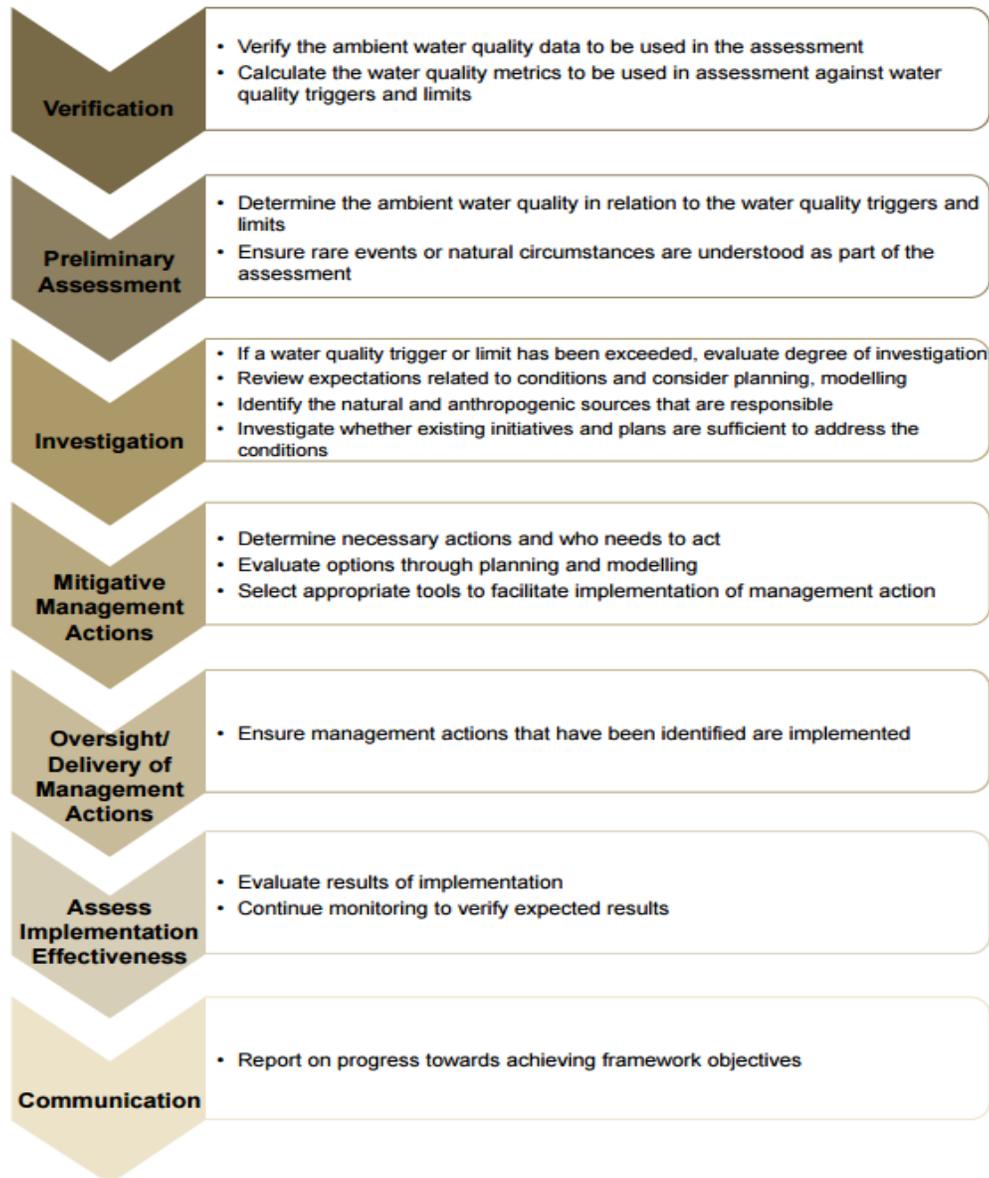


Figure 8: Management Response

³² *Supra* note 3 at 41.