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Waste Not Want Not: A Comparative Analysis and Critique of Legal Rights to Use and Re-Use Produced Water - Lessons for Alberta

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WASTE NOT WANT NOT: A COMPARATIVE ANALYSIS AND CRITIQUE OF LEGAL RIGHTS TO USE AND RE-USE PRODUCED WATER – LESSONS FOR ALBERTA

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I. INTRODUCTION

Produced water is water resulting from the process of bringing oil or gas from its source to the surface. In 2003, the volume of produced water in Alberta was 1.6 million cubic metres per day (“m³/day”) of water, which is about 10 million barrels per day (“bbl/day”), or nearly 1300 acre feet per day (“AF/day”).¹ About half of this amount (0.8 m³/day, or about 5 million bbl/day or 649 AF/day) was re-injected for reservoir maintenance purposes and enhanced recovery projects.² Injections into steam recovery projects, such as the steam assisted gravity drainage (“SAGD”) thermal recovery process used for in-situ bitumen projects, accounted for a smaller volume—16,000 m³/day or 0.1 million bbl/day or nearly 13 AF/day.³ The remaining 0.8 m³/day, or 5 million bbl/day or 649 AF/day, was deep well injected and arguably wasted.⁴

One can expect an increase in quantities of produced water in Alberta as coal bed methane (“CBM”—or natural gas in coal, “NGC”) exploration and production intensifies. According to the Alberta Department of Energy (“Department”), there is an immense amount of natural gas in Alberta’s coal beds. The Department estimates that Alberta’s coalbed resource could contain 500 trillion cubic feet (“tcf”) of natural gas.⁵ The Department figures that this unconventional source

1. FLORENCE HUM ET AL., UNIV. OF CALGARY INST. FOR SUSTAINABLE ENERGY, ENV’T, & ECON., ALTA. ENERGY FUTURES PROJECT PAPER NO. 19, REVIEW OF PRODUCED WATER RECYCLE AND BENEFICIAL REUSE 3 (Nov. 2006), available at <http://www.iseee.ca/images/pdf/ABEnergyFutures-19.pdf>.

2. *Id.*

3. *Id.*

4. *Id.*

5. ALTA. GEOLOGICAL SURVEY, ALBERTA COAL OCCURRENCES AND POTENTIAL COALBED METHANE (CBM) EXPLORATION AREAS I (Mar. 22, 2005), http://www.ab.ca/activities/CBMcoal_and_cbm_intro.shtml.

of natural gas could help supplement Alberta's recoverable conventional natural gas reserves of 39 tcf.⁶ Given that Alberta uses about 1.36 tcf per year,⁷ even though it is not known how much CBM is recoverable, it is clear that reserves could serve Alberta's and other's needs for the foreseeable future.⁸

CBM is a natural gas trapped in coal seams, a byproduct of the decomposition of organic matter.⁹ The CBM is adsorbed in the coal and, where a seam contains water, the water must be withdrawn to depressurize the reservoir to start production.¹⁰ CBM produced water is groundwater and, depending on depth and other factors, may be part of or connected to aquifers that service domestic, agricultural, commercial, or industrial needs. About ninety percent of the CBM wells drilled in Alberta in 2004 were dry coal seams; accordingly, these CBM wells did not require dewatering for production.¹¹ However, the remaining wells in the Province as of December 2004 mainly targeted seams that contained water.¹² Depending on the depth of the coal seam, the water may be saline or non-saline. Alberta experts have noted that in some cases it can even be fresh water of drinking water quality.¹³

In the western United States, where CBM production has been ongoing for some time, intense rifts have developed between landowners, environmentalists, operators, and governmental entities over water-related impacts from exploration or production. The dewatering and production process itself can impact and contaminate aquifers, and pollute groundwater supplies. Local landowners worry about long-term impacts from groundwater depletion. Land and water surface discharge of produced water comes with its own hosts of problems,

6. ALTA. GOV'T, DEP'T OF ENERGY, FREQUENTLY ASKED QUESTIONS ABOUT NATURAL GAS IN COAL (2004), <http://www.energy.gov.ab.ca/364.asp>.

7. ALTA. GOV'T, DEP'T OF ENERGY, ENERGY FACTS (2004), <http://www.energy.gov.ab.ca/1899.asp>.

8. Jason Gray, Allan Ingelson, & Angelo Rizzuto, Regulation of CBM Produced Water in British Columbia and Alberta, Tab 4, at 1 (Nov. 14-15, 2005) (unpublished materials from Insight Conference, Calgary, AB) (on file with author).

9. Thomas F. Darin, *Waste or Wasted? – Rethinking the Regulation of Coalbed Methane Byproduct Water in the Rocky Mountains: A Comparative Analysis of Approaches to Coalbed Methane Produced Water Quantity Legal Issues in Utah, New Mexico, Colorado, Montana and Wyoming*, 17 J. ENVTL. L. & LITIG. 281, 293 (2002).

10. CBM/NGC MULTI-STAKEHOLDER ADVISORY COMM., COALBED METHANE/NATURAL GAS IN COAL: FINAL REPORT 17 (2006), available at http://www.energy.gov.ab.ca/docs/naturalgas/pdfs/cbm/THE_FINAL_REPORT.pdf [hereinafter MAC FINAL REPORT].

11. *Id.*

12. *Id.*

13. Gray et al., *supra* note 8.

including erosion, soil salinization to the detriment of agriculture, and aquatic and land ecosystem impairment.¹⁴

In Alberta, although CBM production is relatively new, land-owner/operator problems are developing. One reason behind these problems is that Alberta officials regulate CBM like conventional natural gas with a few unique twists. Given the rather mind-boggling prospects for CBM production in the future and likelihood of production from wet coal, there are serious questions about the suitability of the conventional model. Conventional production results in fewer land impacts (because fewer wells are necessary) and conventional wells are typically much deeper than CBM wells, consequently there are fewer potential groundwater impacts. In response to concerns regarding the CBM regulatory framework, in 2003 the Province initiated a CBM regulatory review process headed by the Coalbed Methane/Natural Gas in Coal Multistakeholder Advisory Committee ("MAC").¹⁵ In January of 2006, MAC produced a Final Report.¹⁶ It is notable that fifteen of the Final Report's forty-three recommendations specifically dealt with water, and many others had a water-related component.¹⁷

There are numerous legal and policy issues concerning produced water in Alberta requiring clarification, including:

(a) Initial water rights issues regarding the right to bring produced water to the surface – Does the operator need a water right permit?

(b) Subsequent water rights issues such as:

- The right to deal with water after it is brought to the surface – Must it always be re-injected? Can the operator treat it and transfer it for a useful purpose (e.g. irrigation, stockwatering, industrial, or other) for monetary consideration?
- The nature of the operator's water rights vis-à-vis other water rights holders – Does the operator have any water right priority over produced water before or after it is treated?

(c) Aquifer impacts issues – What are the operator's common law and regulatory obligations and liabilities for impacts to aquifers that cause

14. See, e.g., Amy Beatie, Wyo. Outdoor Council, *U.S. EPA & Montana Join WOC in Concerns Over CBM Water Discharge* (2001), <http://www.wyomingoutdoorcouncil.org/news/newsletter/docs/2001a/h2o.php>; see also Powder River Basin Res. Council, *Coalbed Methane Development in Wyoming's Powder River Basin is Transforming the Landscape, PRBRC and Landowners Respond to Prevent Damage*, http://www.powderriverbasin.org/cbm/general_background_cbm.shtml (last visited April, 21, 2007).

15. MAC FINAL REPORT, *supra* note 10, at 3.

16. *Id.*

17. See generally *id.*

or potentially cause injury or damage to the environment or to other aquifer users?

(d) Water discharge issues – What are the operator’s common law and regulatory obligations and liabilities regarding water discharge?

Although all of these issues are of great interest to operators and those affected by oil and gas operations, this article focuses on (a) and (b) above. This article demonstrates inadequacies in Alberta’s legislative framework governing both the initial grants of water rights in respect of produced water and water right holders’ ability to put produced water to a purpose other than simply bringing a resource to the surface. This article draws conclusions following an analysis and assessment of two U.S. state water rights frameworks involving produced water. The analysis and assessment shed light on the best path forward for Alberta.

Part I describes water scarcity in the Province. It points out that, because of scarcity, Alberta should look at whether the use of produced water could alleviate water shortages. Part II cautions that Alberta should be careful using the expression “beneficial use of produced water” in Canada because this expression can lead to confusion given differences between western United States water law and western Canada water law. This Article uses the term “useful purpose” with respect to Alberta water rights and reserves the term “beneficial use” for western United States water rights. Part III describes and assesses how two U.S. states with considerable CBM production experience—Colorado and Wyoming—deal with the initial granting of rights to produce water, and rights to put produced water to a beneficial use. Part IV reviews Alberta’s legal and policy water rights framework involving produced water. It points out numerous shortcomings in the framework that make it difficult for the framework to accommodate or facilitate the re-use of produced water for a useful purpose. Part V considers the lessons learned from Colorado, Wyoming, and Alberta. It makes recommendations to begin to develop a suitable regulatory water rights framework for Alberta for the re-use of produced water.

II. WATER SCARCITY IN ALBERTA AND THE NEED FOR NEW SOURCES

Water is scarce in Alberta, especially in southern Alberta. According to background studies produced in connection with the Province’s South Saskatchewan River Basin (“SSRB”) Management Plan, there are currently about 20,000 statutory withdrawal allocation au-

thorizations with respect to the SSRB.¹⁸ The SSRB includes the sub-basins of the Red Deer, Bow, South Saskatchewan, and Oldman Rivers.¹⁹ The basin's urban centers include Calgary, Lethbridge, Red Deer, and Medicine Hat.²⁰ The basin contains all of the Province's thirteen irrigation districts, whose licences account for about seventy-five percent of the total volume of allocations.²¹ Because of actual and potential water scarcity, the Alberta government no longer accepts water allocation licence applications for the Bow, South Saskatchewan, and Oldman sub-basins in the SSRB.²² According to Alberta's water supply outlook, for August through September of 2006, natural runoff volumes were much below average.²³ Volumes in parts of the Bow River (which runs from the mountains in Banff east through Calgary) were the lowest recorded in ninety-one years.²⁴ Natural runoff volumes in the Oldman River basin ranged from thirtieth to fortieth lowest on record, except for a location in the Belly River where they were the lowest on record.²⁵ The Alberta government has acknowledged that, in some areas of the SSRB, all allocations cannot be satisfied and, accordingly, junior allocators—those whose licence applications were made later in time than more senior allocators—have frequent and even substantial deficits.²⁶ Assessment of thirty-three river reaches identified in the SSRB studies for riparian and aquatic condition revealed that thirty-one of those reaches range from near or approaching ecologically unacceptable values to below ecologically acceptable values.²⁷ There is not enough water in this basin to meet existing water allocations, not enough for the system itself, and not enough to at-

18. ALTA. ENV'T, SOUTH SASKATCHEWAN RIVER BASIN WATER ALLOCATION, at ii (2003, rev. 2005), available at <http://www3.gov.ab.ca/env/water/regions/ssrb/studies.asp>.

19. ALTA. ENV'T, APPROVED WATER MANAGEMENT PLAN FOR THE SOUTH SASKATCHEWAN RIVER BASIN (ALBERTA) I (2006), available at <http://www3.gov.ab.ca/env/water/regions/ssrb/plan.html> [hereinafter SSWB APPROVED WATER MANAGEMENT PLAN].

20. Alta. Env't, Alberta River Basins, <http://www3.gov.ab.ca/env/water/basins/BasinForm.cfm> (select "South Saskatchewan River Sub Basin" under first drop-down menu).

21. See *id.*; SSWB APPROVED WATER MANAGEMENT PLAN, *supra* note 19, at 4.

22. SSWB APPROVED WATER MANAGEMENT PLAN, *supra* note 19, at 6.

23. Alta. Env't, Water Supply Outlook for Alberta October 2006, <http://www3.gov.ab.ca/env/water/WS/WaterSupply/oct2006/octTOC.html>; Alta. Env't, Water Supply Outlook for Alberta, September 2006, <http://www3.gov.ab.ca/env/water/WS/WaterSupply/Sep2006/sepTOC.html>.

24. Alta. Env't, Water Supply Outlook for Alberta October 2006, *supra* note 23.

25. *Id.*

26. ALTA. ENV'T, SOUTH SASKATCHEWAN RIVER BASIN WATER MANAGEMENT PLAN, PHASE TWO: BACKGROUND STUDIES 11-12 (2003), available at http://www3.gov.ab.ca/env/water/regions/ssrb/pdf_phase2/SSRB%20Background%20Studies%20Web%20FINAL.pdf [hereinafter SSRB PHASE TWO: BACKGROUND STUDIES].

27. *Id.* at 16.

tract new users to this dry region.

Water conservation and moving from supply-side to demand-side management approaches will go some way towards addressing water shortages.²⁸ However, it is unlikely that these approaches alone will be sufficient. This is especially so when factoring in climate change. It makes sense to consider new sources in Alberta; produced water is an obvious source for consideration, especially produced water from CBM operations, which may be fresh or only marginally saline.

III. “USEFUL PURPOSE” VS. “BENEFICIAL USE”

A. “BENEFICIAL USE” – A U.S. CONCEPT

Discussions regarding the use of produced water for a purpose other than bringing a resource to the surface typically employ the idea of putting produced water to a “beneficial use.” The phrase is attractive because it captures the idea that users other than operators, such as irrigators, livestock producers, municipalities, industries, and other various users can benefit from water that did not previously go towards any beneficial purpose (except, perhaps in the limited sense that it can assist in oil and gas production). Nevertheless, it is not technically appropriate to use “beneficial use” in relation to Alberta and other western provinces’ water rights systems. Although the phrase “beneficial use” plays a critical role in U.S. water law, it has no formal role in statutory allocation rights systems in the Canadian prairies. Indeed, to understand, compare, and assess water rights models to use and re-use produced water, it is critical to correctly use and understand the notion of “beneficial use.” Hence, this Article only uses “beneficial use” with respect to U.S. water rights frameworks, and uses the term “useful purpose” for Alberta water rights frameworks.

Beneficial use plays a number of roles in western United States water law. Two key roles particularly relevant to produced water are:

(a) Beneficial use is the “measure and the limit of an appropriation right”;²⁹ and

(b) A licenced purpose is allowable only if law recognizes it as a beneficial use.

28. The Province’s *Water for Life* strategy set a goal of thirty percent improvement in the efficiency and productivity of water use between 2005 and 2015. WATER FOR LIFE, ALTA. ENV’T, ALBERTA’S STRATEGY FOR SUSTAINABILITY 27 (2003), available at www.waterforlife.gov.ab.ca/docs/strategyNov03.pdf.

29. JOSEPH L. SAX ET AL, LEGAL CONTROLS OF WATER RESOURCES: CASES AND MATERIALS 152 (4th ed. 2006).

Regarding (a), prior appropriation water rights systems in the western United States originally developed to meet the needs of miners on federal lands. Miners needed water, and water rights based on riparian ownership or occupancy did not facilitate mining development. A water rights system evolved based on the principle of prior appropriation—an earlier appropriator who put water to a beneficial use had prior rights to water for that use senior any later water appropriators. In time, prior appropriation rights extended to farmers and other users of water for use on public or private lands. In the United States, appropriation rights are common law rights that courts recognize and enforce as a species of property rights. The property right is perfected when water is taken from a natural stream or lake and is applied to a beneficial use, without waste, and with due diligence.³⁰ A water right does not come into being until a user puts the water to a beneficial use. Courts enforce appropriation rights as against other appropriators in accordance with the “first in time, first in right” principle (“FTFR”). Earlier appropriation rights have greater right, or priority, to water put to a beneficial use than later appropriation rights.

Regarding (b), in the western United States, what constitutes a “beneficial use” is primarily a product of court decisions. Although state legislation may list uses that are recognized beneficial uses,³¹ no appropriation-state legislation has shut the door to new beneficial uses recognized at common law.³² Historically, prior appropriation states recognized household, agricultural, municipal, and industrial uses as beneficial uses. Over time, lists grew. For example, many states now recognize—either statutorily or through case law—recreational or in-stream uses as beneficial uses.³³ The common law door is open for

30. *Id.* at 125.

31. *See, e.g.*, DAVID GETCHES, *WATER LAW IN A NUTSHELL* 98 (3d ed. 1997), for a chart setting out beneficial uses recognized in prior appropriation states by statute or case law.

32. For example, the Alaska legislature defined “beneficial use” to mean: [A] use of water for the benefit of the appropriator, other persons or the public, that is reasonable and consistent with the public interest, including, but not limited to, domestic, agricultural, irrigation, industrial, manufacturing, fish and shellfish processing, navigation and transportation, mining, power, public, sanitary, fish and wildlife, recreational uses, and maintenance of water quality. ALASKA STAT. § 46.15.260(3) (2006). According to the Arizona legislature, “‘beneficial use’ includes but is not limited to use for domestic, municipal, recreation, wildlife, including fish, agricultural, mining, stockwatering and power purposes.” ARIZ. REV. STAT. ANN. §45-181(1) (2006).

33. For a summary regarding states recognizing instream uses as beneficial uses, *see* TOM ANNEAR ET AL., *INSTREAM FLOWS FOR RIVERINE RESOURCE STEWARDSHIP* 74-75 (rev. ed. 2002).

states to recognize new beneficial uses, or possibly to eliminate existing uses as beneficial uses.³⁴

B. ALBERTA'S "PRIOR ALLOCATION" AND STATUTORY WATER DIVERSION RIGHTS

In contrast to the western United States, FTFR water rights in Alberta are statutory rights. The Alberta government *allocates* water to users pursuant to statutory authority in contrast to users in western United States who *appropriate* water in accordance with common law and legislation. Hence, statutory FTFR rights in Alberta are prior allocation rights, in contrast to western United States prior appropriation rights. Whether an Alberta statute that creates water rights confers a property right has not been settled by law, though legal scholars have suggested that they do not.³⁵ The point about property rights is not critical to this Article, but in any event, there is no case authority in the prairie provinces that recognizes prior allocation rights as property rights. What is critical to this discussion is the core nature of an Alberta prior allocation right. In Alberta "beneficial use" is *not* the *measure* or the *limit* of a prior allocation right. In fact, although historically an Alberta water rights statute mentioned "beneficial use," the notion plays no formal legal role in determining the nature of an Alberta water right.³⁶ There was likely no need to incorporate the notion of "beneficial use" into legislation since the legislation itself sets out the *measure* and *limits* of a prior allocation right. As explained in greater detail in Part IV, under Alberta legislation, the water right is *the right to divert*; the measure and limits are the quantity of water, rate, and diver-

34. SAX ET AL., *supra* note 29, at 156. Those authors raise the question of whether the rule "once a beneficial use always a beneficial use" is written in stone. The authors refer to an Idaho Supreme Court opinion in which the court stated "the concept of what is or is not a beneficial use must necessarily change with changing conditions. . . . [W]e cannot say that such uses will always be beneficial . . . [T]here is always a possibility that other uses beneficial in one era will not be in another. . . ." *Dep't. of Parks v. Idaho Dep't. of Water Admin.*, 530 P.2d 924, 931-32 (Idaho 1974) (Bakes, J., concurring). An interesting question is whether a determination that a use is no longer beneficial (*e.g.*, water-intensive agriculture in the desert) would constitute a taking of property. An argument against this is that because beneficial use is the measure and limit of an appropriation right, where a use is no longer beneficial the right is not taken away; it simply no longer exists.

35. *See, e.g.*, ALASTAIR R. LUCAS, *SECURITY OF TITLE IN CANADIAN WATER RIGHTS* 31 (1990). Note that this claim only is made of licenced water allocation rights and not of water rights generally. Riparian rights for domestic use—the limited common law right of riparian owners and occupiers to use water for household purposes—have to a degree survived water resource legislation. Riparian rights are property rights.

36. Water Resources Act, R.S.A., ch. 71, §§ 66 (a), (b) (1931). The original Alberta Water Resources Act gave the Minister the right to adopt measures to promote beneficial use and to examine studies of water sources to assist in determining potential beneficial uses.

sion point stated in the license, the express purpose or purposes for the diversion (if any), the stated conditions of use (if any), and the applicable rights and limitations under prevailing legislation.

IV. PRODUCED WATER AND BENEFICIAL USE IN THE WESTERN UNITED STATES – TWO KEY JURISDICTIONS

A. BENEFICIAL USE AND PRODUCED WATER

Produced water is invariably groundwater, even though its source may be connected to surface streams or bodies of water. Western United States may treat groundwater rights differently from surface water rights; therefore, the way in which “beneficial use” features with respect to groundwater rights may vary from state to state. This Part looks first at the way in which the water rights systems of two U.S. states—Colorado and Wyoming—treat the initial use of water involved in oil or gas production, and then at how they treat subsequent re-use of produced water for other purposes. In both of these states, considerable amounts of water are produced from oil and gas activities. Recent focus has been on produced water and CBM development owing to increased CBM development in these states.

The author chose these states for analysis because of a key difference in how each state’s water rights system initially deals with produced water. Colorado law does not consider producing water as part of oil and gas development to be a beneficial use, and accordingly, it must legally accommodate this use outside of its water rights regime. Wyoming takes a different tack. It considers that water facilitating or being part of bringing CBM (but not conventional gas) to the surface to be a beneficial use in and of itself. The following section discusses shortcomings and regulatory complexities of each approach in order to shed light on legal and policy issues involving the right to use and re-use produced water.

B. COLORADO

1. Produced Water as Waste

In 2002, there were over 2000 wells producing CBM in the two producing basins in Colorado (San Juan and Raton).³⁷ There were between 1000 and 2000 additional wells planned over the next 10 years.³⁸ A 2006 U.S. government report indicates that annual groundwater withdrawals from the CBM wells in Huerfano and Las Animas counties increased from 1.45 billion gallons (about 5.49 billion litres) from 480

37. Darin, *supra* note 9, at 308-09.

38. *Id.* at 309.

wells to 3.64 billion gallons (over 13 billion litres) from 1568 wells between 1999 and 2004.³⁹ The rapid increase in well development, coupled with future projections, indicates that CBM extraction will produce enormous amounts of water.

Colorado, like a number of other western U.S. states, treats water brought to the surface in oil and gas production as waste.⁴⁰ Produced water just happens. Under this view, produced water technically is not appropriated and therefore does not require application to a beneficial use. Such mental and legal gymnastics do not provide a sound basis for a legal water regime for produced water, especially where oil and gas extraction produce enormous quantities of water with numerous known—and a multitude of indefinite—environmental and social impacts.

From a water rights perspective, the way in which Colorado regards produced water depends on the classification of the source groundwater. In Colorado, there are five types of groundwater.⁴¹ Tributary and non-tributary groundwater are most relevant to this discussion:

(a) Surface or underground flows hydrologically connect tributary groundwater to a natural stream; and

(b) Non-tributary groundwater exists outside of any designated groundwater basin, where the withdrawal of the water will not, within 100 years, deplete the natural flow of a stream at an annual rate higher than one-tenth of one percent of the annual rate of withdrawal.⁴²

Colorado bases tributary groundwater rights on a modified system of prior appropriation.⁴³ Therefore, in order to obtain a tributary groundwater right in Colorado, an appropriator must put the water to a beneficial use.⁴⁴ However, Colorado bases non-tributary groundwater rights on the surface ownership of land overlying the non-tributary

39. KENNETH R. WATTS, A PRELIMINARY EVALUATION OF VERTICAL SEPARATION BETWEEN PRODUCTION INTERVALS OF COALBED-METHANE WELLS AND WATER –SUPPLY WELLS IN THE RATON BASIN, HUERFANO AND LAS ANIMAS COUNTIES, COLORADO, 1999-2004, U.S. DEP'T OF THE INTERIOR & U.S. GEOLOGICAL SURVEY SCIENTIFIC INVESTIGATIONS REPORT 2006-5109, at 1 (2006), available at <http://pubs.usgs.gov/sir/2006/5109/>.

40. DICK WOLFE & GLENN GRAHAM, COLO. DEP'T OF NATURAL RES., DIV. OF WATER RES., WATER RIGHTS AND BENEFICIAL USE OF COAL BED METHANE PRODUCED WATER IN COLORADO 5 (2002), available at http://water.state.co.us/pubs/Rule_reg/coalbed-methane.pdf.

41. Colorado recognizes tributary, non-tributary, not non-tributary, designated, and geothermal groundwater. For a discussion of all five types, see *id.* at 2.

42. *Id.*

43. COLO. REV. STAT. § 37-92-102(1)(a) (2006).

44. See *id.*

source.⁴⁵ In other words, Colorado recognizes the right to use non-tributary groundwater as a function of ownership of the overlying land, not prior appropriation. Where there are a number of landowners who own land above a non-tributary source, they have, roughly speaking, pro rata rights to use the groundwater.⁴⁶ Colorado law presumes groundwater is tributary; a person claiming that a source is non-tributary faces a “very rigorous” test.⁴⁷

This legal overview prompts a number of questions regarding the use and re-use of produced water:

(a) If the right to use tributary groundwater requires that an appropriator put the water to a beneficial use, how does an operator obtain a right to divert groundwater in oil and gas exploitation activities, where the operator has no plan to put the water to a beneficial use? That is, the operator simply wants to produce an energy resource and needs to divert water in order to do so.

(b) How does an operator put produced water from a tributary groundwater source to a beneficial use? That is, how does the legal character of the water change from waste to beneficially used water?

(c) When a source is non-tributary, how can an operator who does not own a surface interest obtain a right to produce water to exploit oil or gas resources?

(d) How can an operator who does not own a surface interest put non-tributary groundwater to a beneficial use?

Colorado has dealt with questions (a) and (c) in part by removing non-beneficially used produced water from the FTR water rights system.⁴⁸ Colorado accomplishes this by classifying produced water as waste water.⁴⁹ Produced water is not subject to the state water diversion authority, the state engineer, or the Colorado Division of Water Resources (“CDWR”), all of whom have jurisdiction over beneficial uses of water.⁵⁰ A person seeking a groundwater diversion right for a bene-

45. *Id.* § 37-9-102(2).

46. *See id.* § 37-90-137(4)(b)(II); *see also* Colo. Ground Water Comm'n v. N. Kiowa-Bijou Groundwater Mgmt. Dist., 77 P.3d 62, 72 (Colo. 2003) (en banc).

47. U.S. Bureau of Land Mgmt. Nat'l Science & Tech. Ctr., *Western States Water Laws: Colorado Water Rights Fact Sheet* (Aug. 15, 2001), <http://www.blm.gov/nstc/WaterLaws/colorado.html>.

48. *See generally* Darin, *supra* note 9, at 309-11, *cited in* JOSEPH L. SAX ET AL., *supra* note 29, at 414.

49. Darin, *supra* note 9, at 312.

50. *See id.* at 310-11; *see also* COLO. REV. STAT. § 37-90-107(1) (2006).

ficial use through a well must obtain a permit from CDWR.⁵¹ However, taking produced water outside of the beneficial use sphere and legally characterizing it as waste water removes CDWR jurisdiction.⁵² Instead, permits to extract produced water along with the sought resource and the disposal of produced water are subject to state energy resource authorities, the Colorado Oil and Gas Conservation Commission (“COGCC”), and water quality regulator, the Colorado Water Quality Control Division (“CWQCD”).⁵³

Applying COGCC rules to produced water leads to significant waste. Under the rules, there are five acceptable ways for one to deal with produced water: (1) re-injection; (2) putting it in evaporation/percolation pits; (3) disposal at approved commercial facilities; (4) road spreading; and (5) discharging it into state waters, provided one meets state water quality and other requirements.⁵⁴ The rules also allow for limited use for enhanced recovery and related purposes, or to provide an alternate domestic supply to surface owners within the oil and gas field.⁵⁵ However, the latter is limited and provides little incentive for operators to offer water for this use. The rules deem such use to inure solely to the benefit of local surface owners.⁵⁶ In other words, one may not attribute any beneficial use to the operator’s use but rather to the local surface user. The rules call this use “mitigation” and explicitly state that the mitigation in no way implies that dewatering processes have impacted the vested interests of local groundwater users.⁵⁷ Because the water is still waste from the operator’s perspective, COGCC retains its jurisdiction. If, however, it was the operator’s beneficial use, then the state engineer’s office acquires jurisdiction. The rules avoid jurisdiction shifting by deeming produced water used on local owners’ land to effectively replace local owners’ water (which dewatering might have depleted), without implying that the operator’s dewatering actually caused any such depletion! Practically speaking, this bending-over-backwards to enable limited beneficial use without a transfer of jurisdiction is not likely to result in much re-use of pro-

51. See COLO. REV. STAT. § 37-92-301(1) (“The state engineer shall be responsible for the administration and distribution of the waters of the state, and, in each division, such administration and distribution shall be accomplished through the offices of the division engineer as specified in this article.”); see also Darin, *supra* note 7, at 310, cited in SAX ET AL., *supra* note 29, at 414.

52. See Darin, *supra* note 9, at 313.

53. See COLO. REV. STAT. § 25-8-202(1)(d) (2006) (discussing CWQCD’s role); COLO. REV. STAT. § 25-8-503(6) (2006) (discussing CWQCD permits); Darin, *supra* note 9, at 313 (discussing COGCC’s role).

54. 2 COLO. CODE REGS. §§ 404-907(c)(2)(A)-(E) (2006), available at <http://oil-gas.state.co.us/> (follow “Rules” link to “900 Series Exploration and Production Waste Management”) [hereinafter COGCC Rules].

55. *Id.* §§ 404-907(c)(3)-(4).

56. *Id.* § 404-907(c)(4).

57. *Id.*

duced water. This is because the operator must first ensure that the water meets state water quality standards before putting the water to this use, which may require water treatment. However, because the operator may not sell or trade the water,⁵⁸ there is little or no incentive for this use, except to gain the good graces of the locals.

2. Putting Wastewater to a Beneficial Use

Determining how the operator may put produced water to a beneficial use addresses questions (b) and (d) above. Once an operator puts the water to a beneficial use, the water loses its character as "waste" and thus falls within the state's ordinary water appropriation rights system under the jurisdiction of the CDWR. The CDWR issues groundwater permits pursuant to the 1965 Colorado Ground Water Management Act.⁵⁹ If a source is tributary (for which, as mentioned above, there is a strong presumption), the applicant must demonstrate that unappropriated water is available.⁶⁰ If water were not available, then presumably existing water right holders would have rights to the produced water in accordance with their priorities. This would be the case even if the operator treated the water in order to bring it up to a quality sufficient for beneficial use. In addition, the state engineer must determine that no material interference with vested water rights would occur.⁶¹

Addressing question three above, where water is non-tributary, the legislation exempts operators from the land ownership requirement and provides that land ownership is not the sole basis for the operator's right to water use.⁶² Furthermore, the operator need not prove that there is unappropriated water available. However, the state engineer still must find that there is no material interference with vested water rights.⁶³ Unless a source is already established as non-tributary, the Colorado Ground Water Commission must make a determination whether the source is tributary or non-tributary.⁶⁴

3. Critique of the Colorado Approach

A significant problem with the Colorado approach is that it denies the CDWR initial jurisdiction. Given the huge amounts of produced water in the state, the fact that some of it is only marginally saline and

58. *Id.*

59. Colorado Ground Water Management Act, ch. 319, 1965 Colo. Sess. Laws 1246 (codified as amended at COLO. REV. STAT. §§37-90-101 to -143.

60. COLO. REV. STAT. §§ 37-90-137(1),(2)(b)(I).

61. *Id.* § 37-90-137(2)(b)(I).

62. See *id.* § 37-90-137(7)(a).

63. *Id.* § 37-90-137(7)(b).

64. *Id.* § 37-90-106.

some even potable, the potential for contamination of aquifers,⁶⁵ and impacts on holders of surface and groundwater rights including potential interferences with priority,⁶⁶ it is remarkable that the office regulating water rights is not involved when operators receive their initial authority to produce water.

Another problem is that classifying produced water initially as waste offers little incentive to move beyond this classification. In Colorado, water is scarce and a different regulatory climate might facilitate re-use of produced water to help address low supplies. Much of the state's CBM produced water is of low salinity; therefore, operators could easily make it suitable for beneficial use.⁶⁷ Surely if operators in Colorado had to consider, straight off, whether water that they produce could be put to a beneficial use—especially when it is of a low saline quality or better—less of this water would go to waste or to minimally useful purposes and more would go to beneficial uses.

Finally, the number of cooks involved in regulating produced water tend to spoil the broth. The COGCC, the CWQCD, and the CDWR all could have a vital role in regulating produced water in the public interest. However, conflicting mandates and overlapping jurisdiction almost guarantee the end-product will not be as palatable as it should be. From the perspective of industries, prior-water-right holders, and environmental interests, a one-window approach dealing with all agency concerns would be preferable.

C. WYOMING

1. Produced Water: Byproduct Water or Beneficially-Used Water

Most of Wyoming's CBM lies within the Powder River Basin, which it shares with Montana. The basin is one of the most productive CBM reservoirs in the United States.⁶⁸ The Wyoming State Geological Survey estimates Wyoming's share of total recoverable reserves is 31.7 tcf of gas.⁶⁹ From 1987 to 2004, cumulative water production was just over 380,000 AF (almost 469 million liters), most of which came from the

65. U.S. GEOLOGICAL SURVEY, ENERGY RES. SURVEYS PROGRAM, USGS FACT SHEET NO. FS-019-97, COALBED METHANE – AN UNTAPPED ENERGY RESOURCE AND AN ENVIRONMENTAL CONCERN (1997), <http://energy.usgs.gov/factsheets/Coalbed/coalmeth.html>; *see also* U.S. GEOLOGICAL SURVEY, COAL-BED METHANE: POTENTIAL AND CONCERNS (Oct. 2000), *available at* <http://pubs.usgs.gov/fs/fs123-00/fs123-00.pdf> [hereinafter USGS, CBM: POTENTIAL & CONCERNS].

66. *See* USGS, CBM: POTENTIAL & CONCERNS, *supra* note 65.

67. *See* Darin, *supra* note 9, at 313.

68. USGS, CBM: POTENTIAL & CONCERNS, *supra* note 65.

69. RUCKELSHAUS INST. OF ENVTL. & NATURAL RES., WATER PRODUCTION FROM COALBED METHANE DEVELOPMENT IN WYOMING: A SUMMARY OF QUANTITY, QUALITY AND MANAGEMENT OPTIONS – FINAL REPORT 6 (Dec. 2005), *available at* <http://www.uwyo.edu/enr/ienr/CBMWaterFinalReportDec2005.pdf> [hereinafter RUCKELSHAUS].

Powder River Basin.⁷⁰ Produced water quality in the Powder River Basin varies from relatively high (within or close to drinking water quality standards) to fairly saline.⁷¹ Along this spectrum, water is usable for a variety of applications, including irrigation and stockwatering.⁷²

The Wyoming water rights regime governing produced water is intriguing. Under Wyoming law, by-product water means “water which has not been put to prior beneficial use, and which is a by-product of some non-water related economic activity and has been developed only as a result of such activity.”⁷³ The state’s oil and gas agency, the Wyoming Oil and Gas Conservation Commission (“WOGCC”), regulates by-water that an operator has not put to a beneficial use, namely the “[d]isposal of salt water, nonpotable water, drilling fluids and other oil-field wastes which are uniquely associated with exploration and production operations. . . .”⁷⁴ The Wyoming Department of Environmental Quality (“WDEQ”) regulates water quality aspects relating to disposal of water.⁷⁵

Until 1997, Wyoming law considered all produced water to be by-product water. However, in 1997 the Wyoming State Engineer’s Office (“WSEO”) declared the production of water for CBM development to be a beneficial use.⁷⁶ Thus, Wyoming distinguishes between conventional water production and CBM non-conventional water production. This distinction, *prima facie*, makes sense from a water conservation point of view, as CBM produced water in Wyoming normally substantially exceeds conventional produced water quality. There is also more potential for CBM extraction to impact vested water rights than with the production of conventional oil and gas because conventional production wells are considerably deeper than CBM wells. Accordingly, it makes sense for a state to put CBM water initially under the auspices of the state engineer’s office, even if that water sometimes will be brackish. However, this initial plausibility breaks down upon examination of the nature of the beneficial use related to the dewatering of coal for CBM production.

An operator may put CBM produced water to a different beneficial use than conventional oil or gas produced by-product water, although the operator might lose all or part its water right. To appropriate by-product water for an existing or new beneficial use, the operator must obtain a permit from the WSEO.⁷⁷ Usually, this will be water that the operator has stored and upgraded as necessary to qualify for a benefi-

70. *Id.* at 10.

71. *Id.* at 17.

72. *Id.* at 20.

73. WYO. STAT. ANN. § 41-3-903 (2005).

74. *Id.* § 30-5-104(d) (ii) (D).

75. *See id.* § 35-11-302(a) (i).

76. RUCKELSHAUS, *supra* note 69, at 35.

77. WYO. STAT. ANN. § 41-3-904(a).

cial use or, in the case of CBM produced water, to change its beneficial use. The water is subject to the FTR system and the WSEO has the right to make an order establishing priorities. When a senior appropriator files a complaint stating that a junior appropriator has interfered with the senior water right, the WSEO determines whether the alleged interference exists.⁷⁸ If so, the WSEO can order the junior appropriator to cease appropriation until the senior water right is satisfied.⁷⁹ With respect to treated water, the SEO could, in theory, order that the senior appropriator's rights are superior to those of a junior appropriator.

2. Critique of the Wyoming Approach

One problem with the Wyoming approach is that the so-called "beneficial use" of water in the oil or gas production process is incongruous with commonly recognized beneficial uses such as stock watering, agricultural, municipal, instream, commercial, or industrial uses, all of which involve an appropriation (a claiming or taking of water) and subsequent application to a beneficial use. In contrast, under Wyoming law, the taking of water when dewatering is a beneficial use in itself. In an attempt to explain how releasing water from coal can be a beneficial use, WSEO documents state that after the initial "appropriation" in the dewatering process, if there is no subsequent beneficial use, the WSEO considers the water unappropriated.⁸⁰ This is similar to non-consumptive appropriations such as those for hydropower developments or for instream flows.⁸¹ This explanation leaves much to be desired. First, it borders on the perverse to compare CBM produced water with beneficial uses with a 100% return flow (*e.g.*, hydropower) or with uses that do not involve water leaving its source (*e.g.*, instream uses). Unless an operator puts CBM water to a subsequent beneficial use, except for any produced water discharged into Wyoming waterways, the operator will either re-inject it or otherwise substantially waste it. Water with a 100% return flow is available for further appropriation, and certain instream uses are themselves beneficial. Second, with hydropower or instream uses, there is both a claiming of water and a

78. *Id.* § 41-3-911(b).

79. *Id.* § 41-3-911(a).

80. Revised Memorandum from Patrick T. Tyrrell, State Eng'r, Wyo. State Eng'r's Office, to State Eng'r's Office 1 (Apr. 26, 2004), available at http://seo.state.wy.us/PDF/CBMpolicy_SW_2.pdf (outlining how the WSEO handles groundwater permits), cited in Response of Wyoming Outdoor Council to Attorney General Opinion No. 2006-01, Petition to Amend Wyoming Water Quality Rule, Chapter 2, Appendix H, No. 05-3102, at 13 nn. 31, 34 (June 16, 2006), available at <http://deq.state.wy.us/eqc/> (follow "EQC Docket" hyperlink; then follow "05-3102" hyperlink; then follow "Response to AG Opinion 2006-01" hyperlink) [hereinafter Wyoming Water Quality Rule Response].

81. RUCKELSHAUS, *supra* note 69, at 35. The Report bases this analogy on a personal communication with H. LaBonde of the SEO office on May 16, 2005. *Id.* at 61.

separate beneficial use. With hydropower, the production of electricity is the beneficial use; with instream uses, a variety of beneficial uses exist, such as pollution assimilation, recreation enhancement, aesthetic improvements, or aquatic habitat restoration.

Another problem is that considering CBM dewatering as a beneficial use encourages no further beneficial use. It takes effort and incentive to change the status quo. Moreover, calling the production of water a "beneficial use" gives the impression that CBM producers used water for a useful purpose when, in fact, they used the water for no purpose at all or for only minimally beneficial use following the extraction.

A further problem concerns the notion of "waste." In Wyoming, as in the other prior appropriation states, a key element of the notion of "beneficial use" is that water users must not waste water.⁸² Putting water to beneficial use means to put it to a legally recognized beneficial use without waste. In Wyoming, like the other prior appropriation states, the WSEO may ask the Attorney General to bring action against any appropriator who wastes water.⁸³ A potential problem for the beneficial use of conventional produced water or a change of beneficial use for CBM produced water is that, given the huge quantities of water, it is highly unlikely that there would be no waste.⁸⁴ Finally, as in Colorado, the number of agencies and overlapping, and sometimes inconsistent or conflicting, mandates involved in the regulation of produced water unnecessarily complicates the regulatory system and results in regulatory deficiencies. For example, the WOGCC's and the WDEQ's handling of the disposal of water has recently come under considerable fire. Numerous affected landowners commenced a petition to the Wyoming Environmental Quality Council ("WEQC") urging an amendment to rules under the State Environmental Quality Act to ensure that the WDEQ has the right to limit *quantities* of discharged water and not just the right to regulate the overall quality of discharged water without setting limits on dischargeable quantities.⁸⁵ The petitioners argued that they, their livestock, their farms and ranches, as well as wildlife and ecosystems suffered grievous damage because of the

82. See Darin, *supra* note 9, at 295-96; see also RUCKELSHAUS, *supra* note 69, at 35.

83. WYO. STAT. ANN. § 41-2-111(a).

84. See Darin, *supra* note 9, at 330. Darin points out that in the Powder River Basin there are a total of 500,000 cattle and sheep.

One cow, or seven sheep, drinks about 14.5 gallons [about 54.9 litres of water] per day. At peak production of 51,000 wells at 9.5 [gallons per minute], this will amount to nearly 700 million gallons [about 2650 litres] per day. At this rate, for this use alone to account for all of the produced water, the Powder River Basin would be overrun with over 45 million cows or 325 million sheep.

Id.

85. Petition to Amend Wyoming Water Quality Rule, Chapter 2, Appendix H, at 4-5, 15, No. 05-3102 (Dec. 7, 2005), available at <http://deq.state.wy.us/eqc> (follow "EQC Docket" hyperlink; then follow "05-3102" hyperlink; then follow "petition" hyperlink) [hereinafter Wyoming Water Quality Rule Petition].

lack of WDEQ quantity limitations.⁸⁶ The WDEQ, on the other hand, took the position that it lacks jurisdiction to impose quantity limits, arguing that this would interfere with WSEO jurisdiction, which its legislation prohibits.⁸⁷ The result is that the quality of water receiving discharged produced water is poor, with no agency willing to step up to the plate to address it.

V. THE ALBERTA SYSTEM AND LESSONS FROM THE UNITED STATES

A. HISTORICAL BACKGROUND ON ALBERTA WATER DIVERSION RIGHTS

Alberta and the other prairie provinces' water rights are based on two common law theories: the English riparian doctrine, and the American prior appropriation doctrine.⁸⁸ The former became applicable in Canada as part of the body of common law inherited from England;⁸⁹ the latter, though never a part of the Canadian common law, influenced the development of water legislation in the prairie provinces.

Prior to the prairie provinces' joining the Confederation (Manitoba in 1870; Saskatchewan and Alberta in 1905), the federal government solely regulated water rights in the prairies. The federal government realized early that riparian water rights system would not attract settlers to this arid region. In 1894, the United Kingdom Parliament passed the Northwest Irrigation Act which introduced a water rights system based largely on the principle of FTFR.⁹⁰ As mentioned in part III, the principle in Canada is called "prior allocation" in contrast to the United States' "prior appropriation" because, in Canada, governments *allocate* first in time first in right water entitlements in accordance with water legislation, whereas in the western states early users *appropriated* rights. Hence, in Canada the nature and scope of a water right largely is a matter of public law, in contrast to the western United States, where water rights developed at private law. In the prairie provinces,

86. *Id.* at 1, 7-8.

87. *See id.* at 8. The Environmental Quality Act provides that "nothing in this act . . . [l]imits or interferes with the jurisdiction, duties or authority of the state engineer" and a number of other agencies. *See* WYO. STAT. ANN. § 35-11-1104(a)(iii). In the Wyoming Outdoor Council's response to the Wyoming Attorney General's opinion concerning the jurisdiction of the state engineer and the Environmental Quality Council, the Wyoming Outdoor Council argues that WSEO jurisdiction in effect terminates once the initial appropriation – the dewatering – has occurred and therefore there can be no interference with WSEO jurisdiction. *See generally* Wyoming Water Quality Rule Response, *supra* note 80.

88. LUCAS, *supra* note 35, at 4.

89. DAVID R. PERCY, THE FRAMEWORK OF WATER RIGHTS LEGISLATION IN CANADA 3 (1988).

90. *See* The North-west Irrigation Act, 1894, 56 & 57 Vict., c. 30, § 8 (U.K.).

priority is based on date of completed application to the public authority, in contrast to the date of appropriation for a beneficial use.⁹¹

The federal government transferred ownership of public lands and resources to the prairie provinces through natural resources transfer agreements in 1930.⁹² The recipients then developed their own water rights legislation, based on the federal Act. For example, in 1931 the Alberta Legislature passed the Water Resources Act.⁹³ Although amended many times, this Act remained the law in Alberta until January 1, 1999, when the Legislature enacted the Water Act,⁹⁴ which repealed and replaced its predecessor.⁹⁵

B. ALBERTA WATER DIVERSION RIGHTS

As explained in Part II, it can be confusing to talk about the “beneficial use” of produced water in Alberta. Alberta’s water rights are statutory diversion rights and the notion of “beneficial use” plays no formal legal role. Accordingly, this article uses the term “useful purpose” when discussing legal uses of water in the province under a water right.

The key to understanding Alberta water rights is that they are *diversion* rights, not rights arising from already having diverted water and putting it to a beneficial use. The Water Act defines “diversion” to mean:

[T]he impoundment, storage, consumption, taking or removal of water for any purpose, except the taking or removal for the sole purpose of removing an ice jam, drainage, flood control, erosion control or channel realignment, and . . .

. . . any other thing defined as a diversion in the regulations for the purposes of this Act⁹⁶

Note that this definition does not even mention “use.” Under Alberta law, a diversion is not putting water to a use. It simply is the taking, removing, storing, or consuming of water from a source.

91. *See id.*

92. Constitution Act, 1930 (formerly British North America Act (1930)), 20-21 Geo. V, c. 26, app. II, scheds. 1, 2, 3 (U.K.), as reprinted in R.S.C., No 26 (Appendix 1985) (Can.).

93. Water Resources Act, R.S.A., ch. 71 (1931).

94. Water Act, R.S.A., ch. W-3 (2000).

95. The text in this “Historical background on Alberta Water Diversion Rights” portion of this article is adapted from Arlene J. Kwasniak, *Quenching Instream Thirst: A Role for Water Trusts in the Prairie Provinces*, 16 J. ENVTL. L. & PRACTICE 211, 218 (2006).

96. Water Act, R.S.A., ch. W-3, § 1(m). No other regulation further defines “diversion.”

1. Types of Water Diversion Rights

A right to divert under the Water Act can take a number of forms. The most common is a “licence” to divert water.⁹⁷ Licences gives the holder the right to divert water from a specified source for a purpose recognized in regulations under the Act,⁹⁸ in accordance with any licence conditions. There are a number of other diversion rights under the Act. A “registration” is a diversion right held by “traditional” agricultural users diverting up to 6250 cubic metres of water a year for pesticide application or stock watering prior to the Act coming into force in 1999 who registered their use prior to 2002.⁹⁹ A “preliminary certificate” is not a diversion right *per se*, but rather a virtual guarantee of a diversion right in the form of a licence if the user meets certain conditions.¹⁰⁰ A legislated “exemption” is a right to divert water without a licence or other further statutory authorization. The main exemption is the “household user” exemption that enables riparian owners and occupiers, or owners or occupiers with groundwater, to use up to 1250 cubic metres of water a year for household purposes without a licence.¹⁰¹ Another common exemption is for “exempt agricultural users.” This applies to farmers or agricultural producers who used up to 6250 cubic metres of water per year for pesticide application or stock-watering prior to the Act coming into force (January 1, 1999) who did not register their use by 2002.¹⁰²

Of particular interest to this Article are “regulatorily exempt diversions.” The authorizing provision states that “[a] person who commences or continues the diversion of water . . . that is designated in the regulations as exempt from the requirement for a licence . . . is not required to hold a licence for that diversion of water”¹⁰³ The regulations specify a number of exemptions, including the one discussed in the next section—diversions of saline water—an exemption that is of great relevance to the oil and gas industry.¹⁰⁴

2. Rights to Divert Saline Produced Water

In Alberta, the nature of the statutory right to divert produced water depends on whether the diverted water is saline. This is because the

97. *See id.* § 34.

98. *See id.* §§ 49-51; Water (Ministerial) Regulation, C.R.A. 205/98, § 11 (Alta.).

99. *See* Water Act, R.S.A., ch. W-3, §§ 73(1)-(3). The actual quantity of water users may divert (up to 6250 cubic meters per year) is based on the amount of water actually used for these purposes prior to the Act coming into force, and priority goes back to first use.

100. *See id.* §§ 66(1)-(2).

101. *Id.* §§ 21-23.

102. *Id.* § 24.

103. *Id.* § 49(2)(d).

104. *See* Water (Ministerial) Regulation, C.R.A. 205/98, §§ 5, sched. 3 (Alta.).

Water (Ministerial) Regulation (the "Regulation") under the Water Act provides that, "[t]he following diversions of water and any operations of works associated with those diversions do not require a licence: . . . a diversion of saline groundwater. . . ."¹⁰⁵

The Regulation defines "saline groundwater" to mean "water that has total dissolved solids exceeding 4000 milligrams per litre. . . ."¹⁰⁶ This means that users may divert saline groundwater through the exploration or production process from its source—normally a permeable geological formation—without a licence under the Water Act. It does not mean, as the author has often enough heard, that the Water Act does not apply to diversions of saline water. The Water Act does not cease to apply to water simply because a diversion is exempt from the licencing provisions. Under the Water Act, the "property in and the right to the diversion and use of all water in the Province is vested in Her Majesty in right of Alberta except as provided for in the regulations."¹⁰⁷

A number of provisions are relevant to regulatorily exempt diversions. For example, the purposes of the Water Act apply, which recognize "the need to manage and conserve water resources to sustain our environment and to ensure a healthy environment and high quality of life in the present and in the future. . . ."¹⁰⁸ The priorities and the enforcement of priorities provisions also apply. Under the Act, household users have no priority *vis-à-vis* each other, but have priority over licences and registrations.¹⁰⁹ Licencees and registrants have priorities among themselves in accordance with the priority number assigned to a licence or registration.¹¹⁰ The Act specifically states that exempted agricultural users have no priority.¹¹¹ Neither the Act nor the regulations specifically express whether other exempt diversions have a priority. In any case, even if they had some common law priority *vis-à-vis* each other (for which there is no evidence known to the author), for the purposes of administering priorities they certainly would be behind household users, registrants, and licencees. Accordingly, under the Act, if one of these diverters complains that an exempted saline water diversion has interfered with a diversion with a priority, under the Act the administrator could issue an order requiring the saline water diverter to cease diverting or:

105. *Id.* sched. 3(1).

106. *Id.* § 1(1)(z).

107. *See* Water Act, R.S.A., ch. W-3, § 3(2) (2000).

108. *Id.* § 2(a).

109. *Id.* § 27.

110. *Id.* § 30(1).

111. *Id.* § 19(1). The Act does provide priority for a diversion if the user has obtained an approval, licence, or registration with respect to that diversion. *Id.*

cause the works of the person responsible for the diversion of water to be closed, or take any other action that is necessary to ensure that the supply of water to which a household user, licensee or traditional agriculture user is entitled can be diverted by the household user, licensee or traditional agriculture user in accordance with the household user's, licensee's or traditional agriculture user's priority.¹¹²

3. Saline Diversions and Regulation by the Energy and Utilities Board

Where a diversion was exempt because the water contained more than 4000 parts per million ("ppm") total dissolved solids ("TDS"), although no Water Act licence is required, the Energy and Utilities Board ("EUB") must grant statutory authorization for production and disposal pursuant to the Oil and Gas Conservation Act.¹¹³ The EUB requires, as a matter of policy, the return of all produced saline water to the zone of origin, if that zone is below base of groundwater protection.¹¹⁴ Alberta Environment defines an aquifer containing usable groundwater as any "strata capable of producing water with a total dissolved solids content of less than 4,000 mg/L" (or ppm).¹¹⁵ If the zone of origin is above the base of groundwater protection, then the produced saline water must be returned to a lower zone than the base of groundwater protection.¹¹⁶

4. Non-Saline Diversions

Where water to be diverted in oil and gas operations is below 4000 TDS ppm, the operator must obtain a water diversion licence under

112. *Id.* § 32(5).

113. *See* Oil and Gas Conservation Act, R.S.A., ch. O-6, §§ 37, 39(1)(c) (2000); *see also* Tom Byrnes, Res. Applications, Presentation to CBM/NGC Water Working Group, EUB Requirements for Disposal of Produced Water (July 14, 2004), *available at* http://www.waterforlife.gov.ab.ca/docs/water_disposal_wwg.pdf.

114. ALTA. ENERGY & UTILS. BD., PRE-CONSULTATION BACKGROUNDER: NATURAL GAS IN COAL 11-12, *available at* http://www.energy.gov.ab.ca/docs/naturalgas/pdfs/cbm/GAM_AppB3_Backgrounder.pdf.

115. ALTA. GEOLOGICAL SURVEY, ALTA. ENERGY & UTILS. BD., BASE OF GROUNDWATER PROTECTION, http://www.ags.gov.ab.ca/activities/Groundwater/base_groundwater_protection.html.

116. *See generally* ALTA. ENERGY & UTILS. BD., DIRECTIVE 051: INJECTION AND DISPOSAL WELLS – WELL CLASSIFICATIONS COMPLETION, LOGGING, AND TESTING REQUIREMENTS (Mar. 1994), *available at* <http://www.eub.ca/docs/documents/directives/Directive051.pdf>; ALTA. ENERGY & UTILS. BD., DIRECTIVE 065: RESOURCES APPLICATIONS FOR CONVENTIONAL OIL AND GAS RESERVOIRS (Jan. 26, 2007), *available at* <http://www.eub.ca/docs/documents/directives/Directive065.pdf>; ALTA. ENERGY & UTILS. BD., EUB GUIDE ST-55: ALBERTA'S USABLE GROUNDWATER BASE OF GROUNDWATER PROTECTION INFORMATION (1995) (database of various groundwater levels throughout Alberta).

the Water Act.¹¹⁷ The operator must comply with the “Guidelines for Groundwater Diversion for CBM/NGC Development” (“Guidelines”).¹¹⁸ The Guidelines require the CBM/NGC operator to complete a preliminary groundwater assessment, a technical report, and an application.¹¹⁹ Public notice of the application is required and there are opportunities for participation by directly affected parties.¹²⁰ In addition to quantities diverted, the licence addresses the disposal of non-saline produced water.¹²¹ The Guidelines state that Alberta Environment and the EUB may consider surface discharge or re-injection of non-saline produced water.¹²² The Federal Department of Fisheries and Oceans may need to approve surface water body discharge.¹²³

VI. RE-USE OF PRODUCED WATER

Academics and scientists contend that much produced water can be treated and thus made acceptable for a variety of uses. Hum and Tsang describe a number of potentially available water treatment technologies that could upgrade produced water to various degrees of usability, including industrial, commercial, irrigation, agricultural, and human use.¹²⁴ Additionally, they note the need for the development of clear guidelines regarding both the ownership of produced water and the transfer of it for “beneficial use.”¹²⁵ Substituting the term “useful purpose” for “beneficial use,” Hum and Tsang thus note the need for the development of clear rules regarding the ownership of produced water and the its transfer for a *useful purpose*, such as irrigation application, commercial or industrial, livestock watering, replenishing aquatic systems for instream needs, and so on. However, being scientists and not legal academics, it is not surprising that Hum and Tsang do not provide an analysis of what is “unclear” about the current legislative framework for ownership and re-use of both non-saline and saline pro-

117. ALTA. ENV'T, GUIDELINES FOR GROUNDWATER DIVERSION FOR COALBED METHANE/NATURAL GAS IN COAL DEVELOPMENT 2 (Apr. 2004), *available at* <http://www3.gov.ab.ca/env/water/Legislation/Guidelines/groundwaterdiversionguidelines-methgasnatgasincoal.pdf> [hereinafter GUIDELINES FOR GROUNDWATER DIVERSION].

118. *Id.* at 1.

119. *See id.*

120. *Id.* at 3.

121. *Id.* at 2.

122. *Id.* at 3.

123. *Id.* The Department of Fisheries and Oceans approval may be necessary under section 35 of the Fisheries Act, which requires approval for an operation or works to legally that cause a harmful alteration, disturbance, or destruction of fish habitat, or section 36 which requires an approval (unless a regulation applies) for the release of any deleterious substance into water frequented by fish. Fisheries Act, R.S.C., ch. F-14, §§ 35, 36(5) (1985.).

124. HUM ET AL., *supra* note 1, at 17-25.

125. *Id.* at 35.

duced water. The following sections set out this framework and conclude that, indeed, there is serious need to develop clearer, more appropriate rules.

A. NON-SALINE WATER

1. Initial Authorization Allows Re-Use

One way for operators to have authorization to re-use non-saline water for a useful purpose would be for the operator initially to negotiate licence terms that allow re-use. The Guidelines for Groundwater Diversion for CBM/NGC Development already suggest that surface discharge may be acceptable.¹²⁶ This may accommodate re-use for irrigation and other agricultural purposes; however, for other re-use, government policy revisions would be necessary.

2. Amendment to Licence

What if an operator's licence requires re-injection or another undesired disposal method, and the operator wishes instead to provide the water (for a price, presumably) to others for useful purposes? The operator cannot do this without violating the Water Act, since the Water Act prohibits a person from knowingly or unknowingly commencing or continuing the diversion except in accordance with the licence.¹²⁷ Even though the diversion technically has ceased once the water has been diverted from its geological source, the licence condition regarding disposal continues to apply, just as any conditions in a licence that govern use of diverted water continue to apply after a diversion. May the operator apply to Alberta Environment to change the condition relating to disposal so that the operator can transfer the water to buyers for useful purposes?

The language of the Water Act poses difficulties for the operator. Nothing in the Water Act specifically enables a licensee to apply to a Director¹²⁸ to remove or change a condition of a licence, except those conditions relating to points, rates, or timing of diversions.¹²⁹ The Water Act also specifically enables a licensee to apply to amend a licence to "add terms or conditions to the licence."¹³⁰ A problem is that removing a disposal requirement is not adding a term or condition; it is removing a condition. Arguably, there is a measure of discretion in the amendment provisions such that a court might read into them a Direc-

126. See GUIDELINES FOR GROUNDWATER DIVERSION, *supra* note 117, at 3.

127. Water Act, R.S.A., ch. W-3, § 142(1)(n), (2)(e) (2000).

128. Directors carry out many key functions of the Water Act involving licences and other authorizations. See *id.* § 163 (enabling the Minister to designate Directors).

129. See *id.* § 54(1)(b).

130. *Id.* § 54(1)(b)(iii).

tor's right to remove a term and change the purpose of a licence.¹³¹ Ideally the Water Act would be more specific. In any event, a Director may *not* amend a licence if the Director believes that there could be an adverse effect on the rights of household users, other licencees, or traditional agricultural users, or if the change would adversely affect the "ability to conserve or manage a water body."¹³² Note that this provision does not mention priorities, and therefore applies whether the adverse impact could be on a licencee either more senior or more junior to the operator.

3. Transfer of a Licenced Non-Saline Allocation to a Useful Purpose?

Another possibility is that an operator might transfer an allocation so that another user may use the water for useful purposes. Although the Water Act enables transfers of all or part of an allocation,¹³³ the provisions clearly contemplate ongoing diversions where the activity of diverting water will be transferred from one parcel of land to another.¹³⁴ The provisions, as written, apply when a licencee who has an allocation relating to a parcel of land no longer needs all or part of the allocation, and transfers all or part of the allocation to someone else who will then use it at another location. The provisions do not contemplate a simple transfer of the already diverted water to other users. Accordingly, the transfer provision will not help an operator whose licence requires disposal, but who wishes to transfer diverted water for a useful purpose.

4. Assignment of a Licenced Non-Saline Allocation for Useful Purposes?

The Water Act enables a licencee or registrant to temporarily assign water under a licence or registration to another licencee or registrant where, because of limitations of water supplies, there is not enough water for the assignee to divert its entire allocation.¹³⁵ These provisions, like the transfer provisions, were not intended to apply to already diverted water. In fact, the section specifically states that, "an

131. *Id.* § 54(1)(b). The Director may, on application of the licencee, amend a licence "including but not limited to" the specific matters mentioned in the text of this Article. The use of "including" suggests that the Director may consider amendments of kinds other than those set out. However, by application of the statutory interpretation tool *expressio unius est exclusio alterius*, (expressing one thing, excludes another) the specificity of the provision that a Director may amend a licence to "add terms or conditions to a licence" suggests that the Director may not remove terms or conditions to a licence. *Id.*

132. *Id.* § 54(1).

133. *Id.* §§ 81, 82.

134. *See id.* § 82.

135. *Id.* § 33(1).

agreement to assign water may not be made with respect to water that has been previously diverted under a licence.”¹³⁶

5. Summary – Putting Diverted Non-Saline Water to a Useful Purpose

This discussion has shown that Alberta’s legislative scheme contains significant gaps in dealing with putting diverted non-saline water to a useful purpose. Unless the parties contemplated re-use for a useful purpose during the initial licencing, the Water Act does not adequately accommodate changes to allow re-use for useful purposes. As the next section will show, the legal situation is even more uncertain for diversions of saline water.

B. RE-USE OF SALINE WATER

As previously discussed, Colorado does not consider water produced in oil and gas operations as a beneficial use of water, which consequently exempts such water use from the permitting process of the state engineer. If the operator wants to put produced water to a beneficial use, the operator could apply to the state engineer for a water permit to do so. Wyoming initially characterizes mine dewatering as a beneficial use, and so an operator needs a water permit to produce water in the context of CBM operations. If the operator wants to put the water to another beneficial use, the operator must apply to the state engineer for a change of beneficial use relating to that water.

How does it work in Alberta? The main complexity and difficulty for an operator in Alberta who wants to put saline produced water, before or after treatment, to a useful purpose lies in the fact that the original diversion was exempt. Walking through the relevant provisions of the Water Act exposes the difficulties.

Subsection 3(2) of the Act provides that “[t]he property in and the right to the diversion *and use* of all water in the Province is vested in Her Majesty in right of Alberta except as provided in the regulations.”¹³⁷ The Water Act defines “water” to include groundwater.¹³⁸ The specification that the Crown owns the right to *use* water might suggest that the Crown regulates changes of use following an exempt diversion of saline water. Although the Crown may regulate in this manner, it has not yet done this in either the Water Act or regulations under it. This lacuna is the rub for operators.

Recall that subsection 49(1) prohibits a person from commencing or continuing “a diversion of water for any purpose...except pursuant to a licence unless it is otherwise authorized by [subsection 49(2)].”¹³⁹

136. *Id.* § 33(2).

137. *Id.* § 3(2) (emphasis added).

138. *Id.* § 1(1)(fff).

139. *Id.* § 49(1).

Clause 49(2)(d) provides that a “person who commences or continues the diversion of water or operates a works. . . that is designated or is part of a class of diversions or works that is designated in the regulations as exempt from the requirement for a licence. . . is not required to hold a licence *for that diversion*. . . .”¹⁴⁰ The regulations exempt diversions of saline water and therefore do not require a licence for a diversion of saline water in oil and gas activities.¹⁴¹ How does an operator move on to convert a water right arising from a saline diversion to a water right designated for a useful purpose?

If the exemption in the regulations stated a purpose for the exempt diversion, then subsection 49(1) would prohibit an operator from diverting water for any purpose other than the purpose of the exemption. However, the regulations do not specify a purpose. The exemption simply reads: “The following diversions of water . . . do not require a licence: . . . a diversion of saline groundwater. . . .”¹⁴² Once an operator diverts saline water from its underground source to the surface in connection with oil and gas activities, the water is diverted. There is no further diversion of water and nothing under the Water Act requires anything specific be done with the water. This is not like other exempt uses, such as a household exemption, where once water is removed from the source, it must be used for certain purposes, namely household purposes.¹⁴³ If a person with a household exemption wishes to use diverted water for some other purpose, the person would have to apply for a licence to use diverted water for the other purpose. There are no such restrictions with respect to the diversion of saline water.

Can an exempt diversion be transferred or assigned for a useful purpose? As mentioned earlier, the Water Act transfer provisions are very limited and are not appropriate for produced water situations. In any case, only an allocation under a licence is transferable.¹⁴⁴ Because an exempt diversion does not require a licence, the transfer provisions are inapplicable. Similarly, the Water Act assignment provisions are inapplicable to exempt diversions.¹⁴⁵ The assignment provisions are relevant only to diversions under licences or registrations.

Would the offence provisions prohibit an operator from using produced water for a useful purpose? Clause 142(1)(n) of the Water Act states that it is an offence to commence or continue a “diversion of water for any purpose . . . except under a licence or as otherwise authorized by this Act. . . .”¹⁴⁶ Clause 142(2)(e) is nearly identical except

140. *Id.* § 49(2)(d) (emphasis added).

141. Water (Ministerial) Regulation, C.R.A. 205/98, sched. 3, § 1(e) (Alta.).

142. *Id.*

143. *See* Water Act, R.S.A., ch. W-3, § 21.

144. *See id.* § 81(1)(d).

145. *See id.* § 33.

146. *Id.* § 142(1)(n).

that it applies to a person who *knowingly* commences or carries out a diversion without statutory authorization.¹⁴⁷ Except for the diversion of saline water, these provisions do not seem to apply to an exempt diversion that does not mention a purpose. Accordingly, a person would commit an offence if the person diverted non-saline water allegedly under the saline exemption. However, as long as an operator diverts saline water in accordance with an exemption, and then uses the water for some other purpose, it is hard to see how the operator could commit an offence. This puts operators in a particularly favored situation vis-à-vis other water users who would be committing an offence by using diverted water other than for authorized purposes.

Does this mean that an operator may treat saline water and transfer it for a useful purpose without worrying about further authorizations? Certainly the operator must get approval from the EUB to alter any previous disposal requirements set out in an EUB authorization. But does the operator need further authorization (in addition to the exemption) under the Water Act?¹⁴⁸ Review of the Water Act and the regulations set forth above suggests not. However, since the Crown owns the water and the right to use it, an inquiry to a Director under the Water Act regarding the permissibility of use of saline water or treated saline water for a useful purpose is prudent.

147. *Id.* § 142(2)(e).

148. A user may need a number of other statutory authorizations to upgrade and use the water or transfer the water for a useful purpose. For example, produced water could likely fall under the definition of "wastewater" in regulations under the Environmental Protection and Enhancement Act ("EPEA"), R.S.A., ch. E-12 (2000). Treated wastewater may be drinkable if it meets the treatment requirements in the federal Guidelines for Canadian Drinking Water Quality and the provincial Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems. See Potable Water Regulation, C.R.A. 277/2003 § 6(1) (Alta.). To use treated wastewater for irrigation, an operator must either comply with a Code of Practice under EPEA or the Wastewater and Storm Drainage Regulations, whose definitions provide:

"[I]ndustrial wastewater" means wastewater that is the composite of liquid and water-carried wastes from a plant; . . . "[P]lant" means all buildings, structures, process equipment, pipelines, vessels, storage and material handling facilities, roadways and other installations, used in and for any activity listed in section 2 of the Schedule of Activities in the Act, including the land, other than undeveloped land, that is used for the purposes of the activity; . . . "[W]astewater" means domestic wastewater and may include industrial wastewater. . . .

Wastewater and Storm Drainage Regulation, C.R.A. 119/93, § 1(f), 1(j), 1(r) (Alta.).

VII. GENERAL OBSERVATIONS, LESSONS LEARNED, AND RECOMMENDATIONS FOR ALBERTA

A. OVERALL APPROACH TO WATER RIGHTS

This Article has shown how none of the three jurisdictions has a water rights legal system that rationally accommodates and facilitates the re-use of produced water for a useful purpose. The author believes that the core reason for this is that these water rights systems were designed to or evolved to accommodate and facilitate diversions for useful purposes (or beneficial use in the United States), such as diversions for household uses, irrigation, livestock watering, industrial or commercial activities, hydropower production, or for enhancing recreation, tourism, aquatic ecosystem needs, or other instream uses. They were not designed to accommodate or facilitate diversions that simply happen in the course of some other activity. None of the three approaches examined—treating water production in oil and gas operations as being beyond water rights systems (Colorado and others), treating water production in these activities as a beneficial use (Wyoming), or making the diversion itself the basis of a water right (Alberta)—provides a reasonable and appropriate water management framework for produced water re-use rights.

It is beyond the scope of this article to make detailed recommendations on the basis of lessons learned from the regulatory frameworks reviewed. However, general observations and recommendations for law and policy reform in Alberta are in order.

THE INITIAL CHARACTERIZATION OF A WATER RIGHT TO PRODUCED WATER SHOULD NOT ACT AS A DISINCENTIVE TO PUTTING WATER TO A USEFUL PURPOSE

Colorado, like a number of other western U.S. states, considers water brought to the surface in oil and gas production to be waste. Wyoming considers producing water in connection with CBM operations to be a beneficial use of water. Alberta exempts saline water from the licensing provisions. In all three cases, the initial characterization suggests that there is only one purpose or use of the water (waste or accompanying resources to the surface). Changing this characterization in Wyoming and Colorado will take effort, and under Alberta law, for saline water, changing the characterization might not even be possible. Contemplating a useful purpose—or at least a potential useful purpose—in the initial characterization of the water right would help address this disincentive.

REGULATORY FRAMEWORKS THAT REQUIRE PERVERSE OR TWISTED INTERPRETATIONS TO MAKE PRODUCED WATER FIT SHOULD BE RECTIFIED

In all three jurisdictions, regulators and policy-makers perform mental gymnastics to fit produced water into frameworks designed for water rights issued for activities that are directly water-related. As suggested earlier, the reason for this perversion could be that with produced water, the economic activity involved with the diversion or use—resource development—is not directly water related. Surely there are ways to fit produced water into water rights frameworks in a straightforward, sensible manner. Legislators and policy makers should review and change the regulatory frameworks to remove distortions.

LEGISLATIVE APPROACHES SHOULD AVOID JURISDICTIONAL TUG-OF-WARS, CONFLICTING MANDATES, AND REGULATORY GAPS

The rights to produce and re-use produced water in all three jurisdictions involve a number of regulatory agencies. These agencies include: (1) an agency that issues water rights (state engineer in the states, Alberta Environment, Water Rights Division in Alberta); (2) an environmental agency that deals with water quality; and (3) a resource exploration and development agency. The Article has shown that conflicting mandates and overlapping jurisdiction almost guarantee unnecessary complexities and regulatory gaps. To avoid this, governments should ensure that all three agencies work together to provide proper resource management in the public interest. To better accommodate industry, governments should adopt a reasonable one-window approach to address all agency mandates and interests.

INVOLVE THE WATER RIGHTS AGENCY UP FRONT

Following up on the last observation, in Colorado and Alberta, problems can arise because the water rights agency is not involved up front. This is especially true where the activity of producing water could interfere with other water rights holders. Issues of potential priority impacts can be adequately dealt with only if the water rights agency considers the proposed water right before the right is granted or approved. To involve the rights agency up front, produced water—especially from shallow resource developments—should not be considered waste, nor should there be an exemption.

B. ALBERTA-SPECIFIC RECOMMENDATIONS

On the basis of the analysis in this Article, the author makes the following Alberta-specific recommendations:

LEGISLATORS SHOULD REVISIT BASING ALL (OR ANY) ALBERTA WATER RIGHTS ON DIVERSIONS OF WATER

This article has shown that Alberta's practice of basing water rights on diversions provides a major difficulty for operators. One problem involves obtaining a water right to put saline water to a useful purpose. Because Alberta bases water rights on diversions, once an exempt diversion is complete, there is no mechanism in the Water Act to enable the water to be licenced for a useful purpose. One way to address this difficulty might be to not base all (or any) water rights on diversions.¹⁴⁹ Water rights in the western United States are based on beneficial use.¹⁵⁰ In the Canadian prairies, only Alberta bases water rights on diversions of water. Water rights legislation in Manitoba enables the Minister to issue a licence "to any person who applies therefore, authorizing . . . the *use or diversion* of water for any purpose..."¹⁵¹ Accordingly, a Manitoba water right may be a right to use or a right to divert. Similarly, Saskatchewan legislation gives considerable discretion to its Administrator to grant licences and does not even mention purpose of use.¹⁵²

REVIEW THE SALINE WATER EXEMPTION

Where there is a reasonable possibility that a water diversion could impact other water users, whether the impact concerns quality or quantity, there should be no exemption for saline diversions. Although there may be a justification for the exemption with respect to conventional oil and gas because wells are very deep and there is, allegedly, little chance for aquifer impact, the same justification does not apply to shallower, unconventional CBM wells. Wherever there could be aquifer-dewatering impacts on other users, or quality impacts from migrating gas or other events, there should be no exemption, whether or not the produced water is saline. The entire schema of the Water Act depends on water rights with priority not being impacted by junior rights and there should be no exemptions from the licencing provisions where a junior right could impact a senior one.

149. Dropping the requirement for a diversion would also clearly open up the door for private instream licences. The current definition of "diversion" in the Water Act is ambiguous with respect to whether an instream use could be considered a diversion. See Kwasniak, *supra* note 95, at 224-27.

150. All prior-appropriation states require an appropriation, though not all states require that the appropriation involve a diversion.

151. Water Rights Act, R.S.M., ch. W80, § 5(1) (1988) (emphasis added).

152. See Saskatchewan Watershed Authority Act, S.S., ch. S-35.03, §§ 50-52 (2005) (amended 2006).

EXEMPTIONS MUST BE FOR A STATED PURPOSE

In any event, policy makers and legislators should amend the Water Act to ensure that all exemptions are for a purpose. This Article has shown that a shortcoming of the Water Act is that there is no regulatory way to manage exempt diversions that are not for a stated purpose. The legislation also should clarify that any use of water other than for the exempt purpose requires a licence.

LICENCED PRODUCED WATER DIVERSIONS MUST BE FOR A PURPOSE

Similarly, any licence issued in respect of produced water must set out the purpose for the diversion. This way the Water Act would prohibit any use other than for stated purposes.

CONTEMPLATE RE-USE IN INITIAL AUTHORIZATION

To avoid the initial characterization of a water right acting as a disincentive to re-use, legislators and policy makers should make appropriate legislative and policy changes so that the initial authorization contemplates re-use of licenced produced water diversions. The initial licence need not state the specific re-use, but could tie it to future regulations and guidelines.

REVISE GUIDELINES FOR GROUNDWATER DIVERSIONS FOR CBM/NGC DEVELOPMENT

Legislators should amend the Guidelines to allow for useful purposes of CBM produced water, and develop regulations and guidelines to ensure appropriate and safe use in the public interest.

AMEND WATER ACT TO ALLOW FOR LIMITED CHANGES

Legislators should amend the Water Act to allow for change of purposes and the removal of licence conditions to accomplish this.¹⁵³ This amendment should be carefully proscribed and limited, but it should enable an operator to put produced water to a useful purpose if the initial water right did not contemplate such authorization.

REVISE OFFENCE AND PENALTY PROVISIONS

Legislators should amend the offence and penalty provisions of the Water Act to make it an offence to use water subject to an exemption for any purpose other than the purpose for the exemption.¹⁵⁴ The Water Act also must be clear that an operator cannot use water diverted

153. See *supra* text accompanying notes 124-38.

154. See *supra* text accompanying notes - 50.

under an exemption for another purpose without a licence under the Water Act.

DEVELOP A WATER CONSERVATION GUIDELINE REGARDING WASTE

The government should develop a water conservation guideline respecting wastage of water. The guideline could set out standards and policies regarding the re-use of produced water.

CONSIDER A HOLDBACK MECHANISM

The government should consider whether there should be a holdback-type mechanism¹⁵⁵ where an operator “sells”¹⁵⁶ produced water for useful purposes. A holdback could achieve a number of purposes: it could reserve water to mitigate local impacts; it could help restore water to water systems to meet or enhance instream flow needs; and it could help address concerns (if any) that the industry is making a profit off of water—a public resource—without returning water to the system.

ALL MANDATES SHOULD BE ADDRESSED IN A ONE-WINDOW APPROACH

Alberta Environment (both water quality and water quantity divisions) and the EUB should, as far as possible, develop a one-window approach for water rights relating to produced water. It is essential that such an approach appropriately address mandates.

155. The transfer provisions of the Water Act enable conservation holdbacks of up to ten percent of the amount being transferred where allowed by Cabinet order or in an approved water management plan. Water Act, R.S.A., ch. W-3, § 83 (2000).

156. “Sells” is in quotes because underlying ownership of water remains in the Crown. *See id.* § 3(2).