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## West Coast Environmental Law

# COALBED METHANE PRODUCED WATER CHECKLIST

### CHECKLIST FOR BC CODE OF PRACTICE FOR DISCHARGE OF PRODUCED WATER FROM COALBED GAS OPERATIONS

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#### CONTEXT

This checklist has been prepared in response to an invitation by the BC Government to comment confidentially on the Draft Code of Practice for Discharge of Produced Water from Coalbed Gas Operations. Because West Coast could not be bound by a confidentiality agreement and still work with members of the public to ensure a strong regulatory approach to coalbed methane produced water, we have not seen the Code of Practice, and instead, have framed our comments in the form of a checklist by which the public may evaluate the Code when it is released.

These comments have been compiled in less than a month over the course of August, the same time frame proposed by the BC Government for its confidential review; they are not as comprehensive as we would hope, given the time constraints, and the lack of availability of staff and colleagues to comment and review, particularly on the technical elements of this issue.

The proposed Code of Practice is being developed under the recently passed *Environmental Management Act*, and which replaced the *Waste Management Act* as BC's main pollution law. West Coast has commented extensively on this Act, and noted our concerns in other public documents, notably our Deregulation Backgrounder on the *Environmental Management Act 2003* ([www.wcel.org/deregulation/Bill57.pdf](http://www.wcel.org/deregulation/Bill57.pdf)) and our Response to the Proposed Waste Discharge Regulation ([www.wcel.org/wcelpub/2004/14096.htm](http://www.wcel.org/wcelpub/2004/14096.htm)).

We do not intend to reiterate those concerns here, except to note that the *Environmental Management Act* is intended to eliminate about 80% or so of existing waste permits, by limiting permitting requirements to industries identified as high risk in Schedule 1 of Waste Discharge Regulation under the *Act*. Medium risk activities identified in Schedule 2 of the Regulation are to be regulated by Codes of Practice, which are not site specific and will not provide for local input or concern in the same manner as a permit. Operations that do not appear in Schedules 1 or 2 are merely subject to the general requirement that a person must not introduce waste into the environment so as to cause pollution.

This Checklist contains 13 questions, divided into 3 sections:

- A. A Rigorous Regulatory Regime;
- B. Protecting Watercourses, Fish and Fish Habitat; and
- C. Meaningful Compliance and Enforcement.

## A. A RIGOROUS REGULATORY REGIME

1. Is the *Environmental Management Act* being used to its fullest potential to protect against a new and largely untested environmental challenge?

The highest level of environmental protection afforded by the *Act* is by requiring permits or other authorizations for activities identified in Schedule 1 as high risk. Individual permits provide an opportunity for site-specific concerns to be taken into account when authorizing waste discharges. Should the Ministry proceed to regulate coalbed methane produced water through a generic Code of Practice, it will not guarantee the maximum amount of rigour afforded by the *Act*, as the Code of Practice will likely not afford an opportunity to take into account site-specific concerns, nor have all of the recourses guaranteed by the *Act* in the event of a permit violation.

Coalbed methane development is new, largely untested, and is not being commercially produced in BC at this time. It has taken decades of bad experience in the US to begin to be remedied through the development of best management practices.<sup>1</sup> The Ministry should begin by regulating coalbed methane produced water in the most rigorous manner possible under the *Act*, and as experience with this pollution is gained, only then consider downgrading it to Schedule 2 of the Waste Discharge Regulation.

2. Are comprehensive valid baseline studies required in advance of development?

One of the key issues regarding coalbed methane produced water disposal is the need to gather comprehensive valid baseline information about the areas where coalbed methane produced water may be disposed of before development occurs. Where produced water is to be re-injected, the capacity of the receiving aquifer to handle the volume of water to be re-injected must be understood. In the event that produced water is not re-injected, comprehensive baseline data regarding the proposed receiving watercourse should be gathered. It is not valid to begin baseline studies during development start-up; the baseline state of affairs needs to be established before development begins so that variations from the norm can be measured.

Moreover, valid baseline information is that which is gathered over time, factoring in temporal variance. For example, both the quantity and quality of water varies in streams with the passing of seasons, the influx of snowmelt, etc. Where such information does not yet exist, development proponents must be required to gather it before proceeding.

According to a report prepared by Summit Environmental Consultants for the BC Energy of Ministry and Mines reviewing available information in the Crowsnest Coalfield in the East Kootenays, dated March 31, 2004, there is very little data available about water quality for the low-order streams that could be considered for the discharge of produced water resulting from the dewatering of the coalbeds, or for any industrial effluent from the development. According to the report, "(t)his is a potentially critical information gap and baseline water quality monitoring will very likely be needed for at least three years before CBG (coalbed gas) development."

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<sup>1</sup> For example, the *Coalbed Methane Best Management Practices Handbook*, Western Governors' Association, April 2004.

This is merely one example of the information gaps that need to be filled before large-scale coalbed methane development proceeds in BC.

Depending on the proposed disposal method for produced water, relevant baseline data may include local soil type and structure, vegetation, fish and wildlife, aquifer data and stream data – including water quantity and quality and physical stream structure (with particular attention to fish habitat). Regarding the scope of baseline data, this should correspond to the maximum scale of proposed development. If dozens or hundreds of coalbed methane wells will likely be planned, baseline data should be conducted on a watershed or even a regional level, since impacts will also be on this scale.

3. Is comprehensive produced water testing and monitoring required, and made available to the public in a timely manner?

Because the quality of produced water will vary from basin to basin, and possibly from project to project or well to well, comprehensive testing and monitoring of produced water must be conducted. This testing must test for a full range of potential pollutants. Further, this testing must also occur at frequent intervals over time, as produced water quality and quantity will likely change over the life of an exploratory or production project. Comprehensive testing is an important aspect of developing treatment plans for the water – in order to know how it needs to be treated, its composition needs to be well understood.

The approach that will be employed through codes of practice will invariably not be preventative. If permits are not issued, the Code will likely establish permissive levels of pollutants which can be emitted in the disposal process. Establishing whether these limits have been breached should be accomplished by ensuring that the results of these tests are made public in a timely manner. That way, the burden will be on the company to demonstrate that the produced water is clean and meets the standard, rather on the public to show that it is not.

A concern regarding this issue has already arisen in the East Kootenays, where the public learned that treated coalbed methane produced water was being disposed of in the Elk River several years after the treatment had begun. Confidentiality laws currently do not require the release of wastewater data for individual exploration wells, some post-treatment aggregate data has been made available for these wells. Test results have indicated that in its pure form, this treated water has, at times, proven lethal to rainbow trout.

Produced water – clean or not – belongs to the people of BC. Whether it is re-injected, treated, or in the event that it is disposed of via the surface, each of these pathways has implications for the public. Thus, testing and monitoring results should be made available to the public at the same time results are known to company or government officials, ideally in searchable databases on the internet.

4. Is produced water testing and monitoring independent and professional?

Protecting public resources from damage from produced water is a public duty, and we are concerned about a shift toward using “qualified professionals” to conduct core regulatory functions. We believe that the most effective way to carry out this duty is to employ professional public officials who are paid to enforce laws and regulations, not private sector professionals who may well have other economic motivators in addition to completing the regulatory functions.

If government officials are not to conduct the testing and monitoring themselves, then the task must be conducted by professionals who are clearly at arms-length from the company, who are fully trained, who will be liable for failure to perform their duties in the same way that government is for regulatory negligence, and who are legally accountable to a professional body.

5. Will the use of toxic materials in fracturing fluids be banned?

Toxic substances, such as the use of diesel, in hydraulic fracturing fluid injected directly into formations that could travel into groundwater should be banned. Trace quantities of toxic materials such as benzene can contaminate vast quantities of fresh water. Water based alternatives exist, are preferable to oil based fluids, and should be required in all cases.

## B. PROTECTING WATERCOURSES, FISH AND FISH HABITAT

6. Is produced water treatment mandatory?

In order to protect BC's increasingly valuable water resources, companies must be required to treat produced water and to adhere to disposal schedules that do not adversely affect water absorption of surrounding land, stream habitat structure, stream flow quantity or ground water quantity. There should be no exceptions, though levels of treatment should be adjusted to reflect different disposal options, keeping in mind that the preferred option is always going to be re-injection. For example, where it is possible that any produced water could be discharged on land, or into waterways, it should be treated to a standard comparable to local rainwater or snowmelt.

The provisions of the federal *Fisheries Act* should be kept in mind in this context. Should produced water – even when treated – come into contact with fish bearing streams or their tributaries, the provisions of the *Fisheries Act* prohibiting the harmful alteration, disruption or destruction of fish habitat become operative.<sup>2</sup> The existence of a Code of Practice must not excuse compliance with the *Fisheries Act* nor insulate against potential prosecutions under that *Act* should harmful alteration of fish habitat occur even when complying with the Code of Practice.

In the event that surface disposal is considered over re-injection, in or near fish-bearing streams or their tributaries, the Code of Practice should expressly refer to the requirements of the approval provisions of section 35(2) of the *Fisheries Act* before any disposal into waters that could affect fish or fish habitat.

7. Does the Code, or ideally, will a permit, clearly indicate that re-injection of the produced water is the default preferred option?

Coalbed methane production has a relatively short history, and the organic and inorganic chemistry of produced water has not been well studied. The long-term impacts of dissolved contaminants such as phenols or arsenic are not well understood, and the impacts of produced water on different aquatic ecosystems across the province could be significant if its disposal is allowed on the surface. There has been extensive documented negative impacts of surface disposal of coalbed methane produced water in the US.

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<sup>2</sup> R.S.C. 1985, c. F-14, s.35(1).

In this context, the default method of disposing of produced water must be re-injection back into the formation so that the public does not end up bearing the risk of operations generating profit for private gain.

The burden of proof to deviate from default reinjection must lie with the company to prove that re-injection is not possible for geological reasons, not for lack of technology or ability on the part of the company, and that where surface disposal is to occur, that it will not adversely affect the local receiving environment.<sup>3</sup> In order to ensure that those potentially affected are made aware of the possibility of surface disposal, the process whereby such approval is granted should be conducted in a transparent and accountable manner – an application should be made to the Ministry of Water, Land and Air Protection (NOT to the Oil and Gas Commission), and should be made available for public comment and review before a decision is made.

8. Where surface water disposal occurs, will it have a beneficial use? And at a minimum, will it not adversely impact environmental quality?

Ideally, where surface disposal occurs, the standard should go beyond mere *maintenance* of environmental quality, for this standard often brings with it measures of “acceptable” impacts that a company can often externalize onto the public, thereby shifting the burden onto the public to prove that these “acceptable” impacts are causing harm. This is of particular concern considering the significant cutbacks that the Ministry has endured over the past few years.

An example of “acceptable” impacts can be found in Schedule 1 of the July 8, 2002 Draft Standards for the Discharge of Produced Water From Coal Bed Methane Operations. These draft standards deem an up to 50% increase in Total Dissolved Solids (TDS) in a stream, as acceptable. In our view, a 50% increase in TDS heavy water discharge from a coalbed methane operation as a significant adverse alteration of habitat.

Surface disposal of produced water should only be allowed, or preferably, authorized by permit, where it is established that the surface disposal will not adversely affect the receiving (likely aquatic) environment. Ideally, surface disposal should only be permitted where it is proven to be environmentally beneficial, such as the case were a local rancher wishes to use treated produced water to for livestock, or where the water is suitable for irrigation. Or, this could also be the case should local fisheries officials need treated water in streams during dry times of the year, bearing in mind that fish habitat should not be created with a temporary source of water.

## C. MEANINGFUL COMPLIANCE AND ENFORCEMENT

9. Is the Code of Practice legally binding and therefore enforceable?

West Coast has already raised concerns about the enforceability of codes of practice, and the extent to which the Ministry will be able to ensure compliance and enforcement where the activity in

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<sup>3</sup> We do not equate this statement with not causing pollution under the *Environmental Management Act*, given that the *Act* defines pollution as “substances or contaminants that substantially alter or impair the usefulness of the environment”, as this definition clearly envisions impacts to the environment. The earlier comments about the application of the *Fisheries Act* are also relevant in this context.

question is not subjected to a “permit”. To this end, we reiterate our concern that this new form of potential pollution should be listed on Schedule 1 and subjected to permitting requirements instead of a code of practice.

We are concerned that the Code may be drafted as “permissive”, setting out preferred practices without enforceable requirements. Simply relying on prohibitions on causing pollution will likely be inadequate because simple prohibitions are difficult to enforce, particularly given the scope of Ministry budgetary cutbacks.<sup>4</sup>

As our report has made clear, there are currently not enough staff to adequately conduct field inspections and undertake compliance and enforcement responsibilities of the Ministry of Water Land and Air Protection. Specific capacity requirements must be identified and fulfilled in order to meaningfully enforce permits, or the provisions of the Code.

We are also concerned about the provision in the Waste Discharge Regulation that establishes a process whereby a company may apply for a substitution from the requirements of the Code, but no process whereby a member of the public or a person affected by the waste may apply for a substitution to “protect the public or the environment.”

**10. Will enforcement responsibility exist with the Ministry of Water, Land and Air Protection and NOT the Oil and Gas Commission?**

We have noted that a range of regulatory powers are increasingly being delegated to the Oil and Gas Commission, including Ministry of Water, Land and Air Protection powers, Agricultural Land Commission powers, Ministry of Forests powers and others. Yet the independence of the Commission has been compromised by recent legal changes, and there is emerging concern about the role of the Commission in responding effectively to public concern. For example, on at least 4 occasions, the Oil and Gas Commission’s independent Advisory Committee has conducted reviews of specific approvals and has recommended that approvals be reconsidered, yet in every instance, the OGC went ahead with the original approval.

The strength of a monitoring and enforcement system is based upon the checks and balances provided by other line agencies such as the Ministry of Water Land and Air Protection. As the primary ministry responsible for protecting BC’s environment, and the agency with primary expertise in this area, it is critical that this Ministry have responsibility for the enforcement of this Code, and that it not be delegated to the Oil and Gas Commission.

**11. Does the Code of Practice provide meaningful penalties for non-compliance?**

The Code should expressly confirm that the administrative monetary penalty regime envisioned in the *Environmental Management Act* will be meaningfully applied, and that the offence provisions of the Act will apply in the event of non-compliance with the Code.

In addition, the Ministry must be prepared to undertake meaningful enforcement. A 2001 West Coast Environmental Law study found that most penalties for environmental infractions in BC are

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<sup>4</sup> For more information on this, see *Please Hold. Someone Will Be With You: A Report on Diminished Monitoring and Enforcement Capacity in the Ministry of Water, Land and Air Protection*, West Coast Environmental Law, April 2004.

valued at \$220 or \$575, little more than a speeding ticket. Similar results have been found with Oil and Gas Commission compliance reviews.<sup>5</sup>

Finally, in order to ensure deterrence, the Ministry should reinstate non-compliance reporting, if not across the board, then for specific violations of this Code of Practice in order that local citizens can better understand the impacts of the development, and the corporate performance of the companies operating in their communities.

12. Will the Code of Practice allow for citizen prosecution of offenders?

The BC government has a current policy of staying private prosecutions commenced under federal or provincial environmental laws, including the federal *Fisheries Act*. This effectively stops violation charges from proceeding in the courts. At a time when the government itself is laying off monitoring and enforcement staff, allowing citizen prosecution of polluters to occur is a means to uphold its promises to “strengthen” enforcement.

West Coast opposes the policy of staying private prosecutions in BC, and believes that the threat of coalbed methane produced water impacting fisheries presents a prime opportunity to modify and ultimately reverse this policy. Since the Code of Practice potentially ventures into federal jurisdiction through the *Fisheries Act*, we recommend that the Code expressly recognize and respect the right to citizen prosecution under the *Fisheries Act*. This *Act* contains express incentives (through sharing of penalties) for citizen prosecution.

13. Given that this is a new and untested environmental challenge, will the Code provide for public review to evaluate the success of its implementation?

Implementation of this Code will be a “work in progress” for the first number of years, as coalbed methane production ramps up in BC. In order to ensure that it is meeting its goals, and the goals of the public in protecting the environment and quality of life for British Columbians, the Code should provide for regular, yearly, open, accountable, public reviews in order to evaluate its success. Citizen participation should be a component of these reviews, as it is the citizens in local communities who will gain real knowledge of the success or failure in implementation of the Code.

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<sup>5</sup> See *Undermining the Law: Addressing the Crisis in Compliance with Environmental Mining in BC*, West Coast Environmental Law, December 2001, p. 46; and *Oil and Gas in British Columbia: 10 Steps to Responsible Development*, West Coast Environmental Law, et al, April 2004, p.12.