



CSAP Society

Q&As Regarding Roster Submissions

I. Applicable Standards to The Site, Including No Water Use Designation

No Water Use Designation Approval From Ministry, September, 29, 2005

Question: I have a site which appears to have a "no water use" designation (AW and DW not applicable). The client would like the Ministry to approve the no water use designation prior to further remedial work. Does the Ministry do such approvals? If yes, what would I have to submit as a Rostered Professional to the Ministry to obtain such an approval?

Answer: Under section 12 of the Contaminated Sites Regulation, the Director may specify land, water and sediment uses at a site [see CSR 12 (3), (4), (4.1)]. Note that this is a discretionary power of the Director. Also please see CSR 12 (5) which lists the factors that the Director must consider when exercising the above discretionary power.

In the case of roster submissions, it is very unusual for the Director to exercise his/her power under CSR 12 since in the Director's view, rostered professional experts have demonstrated their ability to make such assessments by virtue of having passed their roster examinations.

Further, should your client wish to seek the Director's approval for a "no water use" designation at their site, your client should anticipate the Director requiring submission of a report detailing all relevant information under CSR 12 (5) prior to the Director making such a ruling.

If your client still wants to seek the Director's approval he/she should have the above report prepared and submit same in a formal letter of request for a ruling under CSR 12. The letter/report should be sent to Doug Walton. The Director will, as time and resources allow, provide a response. Be aware that the Director may elect not to exercise his discretionary authority under section 12 of the Contaminated Sites Regulation.

Travel Time to DW Aquifer, June 21, 2005

Question: What about the travel time to DW aquifer? In this case, the contamination is near the surface and the confining layer is thick. The resulting "travel time" to the aquifer is longer than 100 years, albeit in a vertical direction.

Answer: The Ministry does not recognize travel time estimates in the vertical direction. At this time the groundwater travel time calculation to determine applicable groundwater use is based on horizontal flow. This means that a groundwater drinking water use would apply at a site where a drinking water wells exists within 1.5km or 100 years horizontal travel time from the site. This is recognized as a conservative approach where the contaminated groundwater is shallow and there are confining layers of substantial thickness above the drinking water aquifer. However, it is necessary to have simple clear rules for the

application of regulatory standards and generally these rules tend towards conservatism. The horizontal flow assumption of the travel time calculation considers:

- the thickness, conductivity and continuity of underlying confining layers are often not investigated at sites;
- the conditions and continuity of confining layers between a site and the drinking water well(s) are typically not known;
- the extraction rate, zone of influence and construction details of the drinking water well(s) are typically not known;
- the integrity of the drinking water well, i.e. potential cross-connection between deep and shallow aquifer, are not known;
- the potential complexity, time and cost introduced in the investigation and the audit of investigations considering the above information.

In recognition of situations such as for the Surrey setting - thick regionally significant confining units - the Ministry has permitted, where these conditions have been satisfactorily demonstrated, that the groundwater use of the shallow aquifer be determined on the basis of receptors of the shallow groundwater alone. In such a situation, different groundwater uses for the shallow and deep aquifers have been permitted. To provide adequate protection of the deep aquifer and avoid the need to complex assessments of confining units, the groundwater use determined for the deep aquifer and by default the Schedule 5 soil standard to protect this groundwater use is applied to the overlying confining unit. The circumstance where this approach was taken was discussed with Ministry staff prior to the instrument application.

No NAPL Present, April 19, 2005

Question: I am involved with a site in which a hydraulic oil leak was discovered in the early 1990's. A product recovery system was installed to remediate a NAPL plume resulting from the leak. The system has been in operation for several years and NAPL is now at residual levels. We are now looking for a reasonable and acceptable remediation goal to assign that can be used to say remediation is complete. The site is an industrial use property and there is no groundwater use.

Protocol 7 states that VHW and EHW 10-19 concentrations greater 15000ug/L and 5000ug/L, respectively is proof that NAPL is present. The hydraulic oil is a heavy extractable hydrocarbon (EHW 19-32). The solubility concentrations provided in Protocol 7 therefore do not apply.

Review of the literature provides a variety of criteria used to define NAPL including:

- greater than 1 inch of product; based on the thickness accumulating and observed in wells being greater than actually is found in the formation;
- greater than 1 mm thickness based on the limitations of an interface probe to detect thicknesses less than this
- some dissolved concentration based on solubility of oil constituents
- observable product or sheen

Of these options the 1mm rule appears to me to be the most reasonable and simplest to apply. Can you

advise how the Ministry would apply "No NAPL Present" to a HEPH product on a no water use site? Does the Ministry apply one of the above criteria or has it developed its criteria?

Answer: The Schedule 6 NAPL not present standard carries with it the footnote "not present in quantities in excess of that acceptable to a director". The CSR standards which are not explicitly defined have proven to be problematic for us over the years. For DNAPLs the ministry has accepted 1% of the solubility limit, which works quite well for substances like tetrachloroethylene. When the VPH and LEPH standards were developed the derivation for LEPH was based on a 10% solubility limit of a surrogate mix representative of that carbon range. The 10% approach is based on the literature. For your site I would recommend a similar approach for the lubricating oil. I am not aware of any HEPH derivation precedents. I am hopeful for the future that we will get rid of narrative standards and replace them with a defined concentration. Alternatively for the current situation that there is an accepted definition of NAPL not present.

Rules for Allowing Different Groundwater Standards for Shallow Unconfined Aquifers and Deep Confined Aquifers, July 13, 2006

The following interim procedure sets out the purpose, rationale, rules of application, administrative process and decision basis by which groundwater standards that apply to a deep confined aquifer at a site may be deemed not to apply to an overlying unconfined aquifer. These rules derive from Section 12(4) and 12(5) of the CSR that grants discretionary authority to the Director to determine groundwater use. They expand upon and further clarify existing guidance around use determinations and applicable standards provided in Technical Guidance #6.

The strict interpretation of the travel time rules of Tech Guidance #6 is that travel time is calculated on the basis of horizontal advective flow in the aquifer of interest from the location of the plume front to the location of the nearest groundwater receptor. Definition of "groundwater travel time" and "plume front" can be found in Protocol 7. This strict interpretation and the rationale behind it is reviewed in Q&A response, Travel Time to DW Aquifer, dated June 21, 2005. This interim procedure has been developed for use until such time as a Screening Risk Assessment procedure that allows greater consideration of the full groundwater flow pathway (vertical and horizontal) is approved by the Director. Purpose: This interim procedure allows groundwater uses and applicable standards (and dependent matrix soil standards) for shallow unconfined aquifers to be determined on the basis of shallow groundwater uses alone and independent of groundwater uses that may apply to an underlying confined aquifer in circumstances where thick natural confining units separate the two. Groundwater use determinations made under this procedure will be on the basis of a formal submission to the Ministry. A determination so made can be used by an approved professional for purposes of completing regulatory reviews authorized under Protocol 6.

Rationale

Continuous natural confining units comprised of thick alluvial silts and clays can significantly impede groundwater flow velocities in the vertical direction and in some circumstances act as near-impermeable barriers to vertical flow. Present CSR guidance assigns the most sensitive groundwater use determined for all aquifers underlying a contaminated site to the entire hydrogeologic profile. In simple terms this means that a drinking water use determined for a deep groundwater aquifer at a particular site would render all groundwater underlying the site subject to the CSR drinking water standards and all soils subject to CSR soil standards protective of this groundwater use. This interim procedure establishes simple conservative rules to allow consideration of the significant reduction in groundwater flow velocities and travel times where thick natural confining units separate shallow contaminated soil horizons from deep confined aquifers.

Rules of Application

* the groundwater use (and Schedule 6 standards) that applies to the confined aquifer also applies to the full thickness of the overlying aquitard/aquiclude and likewise the Schedule 5 soil standards protective of this use; * the groundwater standard (and soil standard) determined for the shallow unconfined aquifer will be based on groundwater uses of that aquifer alone. Requisite Hydrogeological Conditions (Decision Basis) * the semi-confining unit must be a continuous mapable unit identifiable on a regional scale (>> square kilometre) and continuous across the site and between the site and nearest receptor of groundwater in the confined aquifer; * the semi-confining unit must be mapped as mainly silt to clay in composition with a maximum K of 10⁻⁷ m/s and must be reasonably determined to be absent sand interbeds and unfractured; * the unit must be mapped at 3 metres minimum in thickness across the site and reasonably determined to extend at this thickness between the site and nearest receptor of groundwater in the confined aquifer; * the above must be confirmed on the site of interest on the basis of detailed hydrogeological investigations and off-site on the basis of a search of available geological records, maps and reports (as might be available in GSC, provincial, municipal or other regional reports) as reasonably augmented by field investigations; * the calculated travel time to nearest receptor of groundwater in the regional aquifer considering advective flow along the entire flow path (vertical and horizontal) is greater than 50 years for an aquatic receptor and greater than 100 years for a drinking water, livestock watering or irrigation receptor. Process: * determinations of applicable water uses under this interim procedure will be made on the basis of a formal written application to the Ministry and supporting technical information; * supporting technical information to include a hydrogeological report prepared by a qualified hydrogeologist on the basis of detailed hydrogeological investigations and qualified hydrogeologist's statement that requisite hydrogeological conditions are satisfied; * Ministry reviews completed under this procedure will be subject to hourly review fees (\$150/hour under Table 3(2) of Schedule 3 of the CSR)

II. General Submission Questions

Requirements of LEPs When Poor or Prohibited Occurrences Noted, August 30, 2005

Question: During a meeting we recently had regarding the development of LEP practice guidelines, a question was raised regarding what should be required/expected of LEPs when they note the occurrence of poor or prohibited practices (i.e., dilution of hazardous waste, discharge in contradiction of a permit, or other poor practices) during remediation of a site that could potentially be in contravention of the EMA, but does not affect the final status of a site. Technically, it would appear that the LEP's scope of work is only to determine whether a site is contaminated (in the case of an application for a COC), and the recommendation for an instrument is independent to how the end result was achieved. Although the site may qualify for an instrument, does there need to be some separate reporting/documentation requirement of the poor practice, so that the Ministry can investigate further, if they so choose. If so, what should the process look like? It proceeds out of that, if there is a parallel reporting requirement, would the LEP potentially be subject to penalty through the EMA if they did not identify the practice or otherwise did not report it (this obviously has implications regarding LEP liability, aside from sanctions through an LEP audit process)?

Answer: If an LEP becomes aware of "poor or prohibited practices" related to any aspect of contaminated site management, the LEP should ASAP, bring these infractions to the attention of the Ministry (i.e. the Roster coordinator under the current RPE system or the CSAP Society "Ministry Director" under the future CSAP system). The Ministry official will provide instruction on a case by case basis related to how the LEP should proceed. In NO case should the LEP either "turn a blind eye" to the infraction or attempt to reach their own conclusion related to the significance/severity of the infraction. LEPs are not authorized to make regulatory decisions or make judgments related to legal infractions.

Cover Letter for Certificate of Compliance, July 5, 2005

Question: I have the template for the cover letter for the Certificate of Compliance. Is it a letter from the MOE signed by Doug Walton to the property owner? Who needs to be copied on this letter?

Answer: EMA s. 53 notes that the director may issue a certificate but does not specify to whom. The cover letter and Certificate are typically sent to the applicant noted on the CS Application form. The cc's vary but typically are those with some interest in the site which may include the consultant for the work and the Ministry's Regional office. Ministry staff review and often correct such details.

Roster Form Pack, May 10, 2005

Question: The Roster pack 4.5 Approved Prof Letter of Recommendation Form letter includes the following bullet:

- < for CSRA > in accordance with section 43 (2) of the Contaminated Sites Regulation, the soil to be relocated from the Site located at < civic address of originating site > to < civic address of receiving site > meets the Contaminated Sites Regulation Schedule 7 _____ use numerical soil standards and is suitable for relocation.

In my case we do not meet Schedule 7 but will be moving soil that exceeds the Schedule 7 Column II trigger levels and in many cases exceeds the Schedule 4 and 5 residential standards - the receiving site is a commercial land use golf course. I propose to revise the wording as follows.

- In accordance with section 45 (2) of the Contaminated Sites Regulation, the soil to be relocated from the Site located at X to the receiving site at X, meets the Contaminated Sites Regulation Schedule 4 and Schedule 5 Commercial land use numerical soil standards and is suitable for relocation to this commercial site.

Or perhaps I can just delete this bullet?

Answer: Please note that the Roster form pack templates are guidance only and can and should be revised for specific circumstances. In that regard, your suggested revision makes sense to me. I would not delete the bulleted item however, as it serves to both identify the standards used to make your recommendation and the recommendation itself.

Timing of Assessment of Fees, March 30, 2005

Question: When will the MWLAP fees be assessed? Am I reading Schedule 3 correctly that Table 3 fees will be assessed on top of the Table 2 Part 4(b) fees? For a submission with PSI/DSI/RCR report, that would add \$8,000 to the complex site CofC fee of \$6,000?

Answer: MWLAP fees are assessed once the cursory review of the submission is completed. You are correct that Table 3, 1 would apply to the report review fees, and that Table 2, 4 fees would be added for the CoC.

Submission of Required Electronic Documents, March 30, 2005

Question: Is CD acceptable for Protocol 5 and Word files etc. (Roster Form Pack states 'Diskette')?

Answer: CDR is fine for the submission of all the required electronic documents.

Ministry cc on Preliminary Determinations, July 21, 2004

Question: Is there any ministry contact that should be cc'd on preliminary determinations?

Answer: All roster instruments (preliminary/final determinations, AiP CoC etc.) are signed in Victoria. However, a copy should also always be provided to the Contaminated Sites Program staffer in the region that the site is situated.

Corrections and Fees for Corrections on Roster Submissions, May 20, 2004

Question: I received a call from "xx" at "xx" company. Apparently their Rostered submission contained an error. The COC was signed off for commercial land use when they had meant to say residential land use. They will ask that a correction be submitted. Can you quickly show me this process for a correction for Rostered submissions? What fee should be charged?

Answer: Typically experts are encouraged to voluntarily advise us of errors in their supporting submissions and instruments issued on their recommendation. To promote this type of responsible behaviour we usually do not levy fees related to the correction of such errors.

If an error is caught in a roster audit and it is sufficiently important to require a resubmission to correct it, then the Director may instruct that a resubmission fee be paid. If a similarly serious error is voluntarily reported by an expert and a re-submission fee (to cover the ministry's review cost). However, generally we waive the re-sub fee in such cases (as a kind of "reward" for acting responsibly and acting pro-actively to correct the error which otherwise we would know nothing about.)

In this case the error would seem relatively minor. I expect that "xx" will provide in his formal letter advising us of the error, a revised COC and his recommendation that it be re-issued. His letter should also contain a recommendation by him as to whether he believes the error is sufficiently minor that the issued COC can stand until such time as the new COC can be issued (this statement is necessary because at this point, as the ministry really has no detailed knowledge of conditions at the site, only the expert is in a position to make such a judgement).

Again we wish to encourage such responsible behaviour on the part of Rostered experts, so in general we would not require payment of a re-submission fee by experts who are pro-actively correcting their errors.

Contact Name and Address for Roster Submissions, December 10, 2003

Question: Are we still to forward Roster Submissions to Doug Walton? Also, should the signoff name on the Certificate be John Ward? It was for the last round I went through, but I know things are in flux.

Answer: You should send all roster submissions to:

Client Information Officer
Contaminated Sites Program
Ministry of Environment
PO Box 9342 Stn Prov Govt
Victoria BC V8W 9M1

Courier:

3rd Floor, 2975 Jutland Road
Victoria BC V8T 5J9

All roster instruments are now routinely signed off by:

Doug Walton,
Assistant Regional Waste Manager

Listing Substances in Roster-Prepared CoCs, June 10, 2003

Question: Does the Ministry have a preference as to how substances should be listed in Roster-prepared CoCs?

Answer: Yes we do! All of the various "approvals" (i.e. CoC, AiP, Determinations, etc.) which Roster members prepare contain a listing of substances for which essentially they are seeking certification, either in the body of the approval or as a separate schedule (e.g. Schedule C) to the approval.

There seems to be considerable confusion amongst rostered experts on just how to compile these lists. This confusion is not surprising in view of the complexity introduced by, for example, chemical class groupings in the CSR schedules, the need to address chemical forms/isomers listed in the footnotes to the schedules and the whole issue of NSTS.

Our preferred convention to list all these substances is as follows:

1. The substances (i.e. PCOCs) must be listed separately for soil/land use and for water/water use. So the first thing to do is compile soil and water substance lists.
2. For soil, we prefer the substances to be listed starting with the first substance in schedule 4 (i.e. antimony) for the first listed chemical class in the schedule (e.g. inorganic substances). Note that only those substances for which corresponding standards are listed should actually be named. **DO NOT** list substance chemical class names (i.e. inorganic substances or even worse "metals"). Legally, there are no standards for inorganic substances or metals per se, only for individual specific substances which happen to be grouped, based on common chemical class, into a collection of substances within the schedule which bears a common label (e.g. inorganic substances).
3. Once you have finished listing the applicable substances for the first chemical grouping (i.e. inorganic substances) in Schedule 4, turn to Schedule 5 and pick out those applicable substances which would also fall into the same chemical class/group and list them within the same bulleted grouping in your Schedule C. Then continue to group and list substances in the order in which they appear in all other labelled groupings in Schedule 4. Make sure to check the footnotes associated with some substances, in Schedules 4 and 5 and, if applicable (i.e. they were discretely assayed for), list those specific substances in the footnote in the order in which they appear in the footnote. **DO NOT** list substances for which there is no corresponding CSR standard (or which are not listed in a footnote to a CSR standard). Continue on until you have listed all of the applicable substances listed in Schedules 4 and 5.
4. Then, if you need certification for NSTSs, turn to the approved NSTS list and list in a separate section the applicable soil NSTS.
5. Essentially, follow the same procedure for water presenting the applicable Schedule 6 substances for each grouping in the schedule in the order in which they appear, remembering to consider additional substances specified in the footnotes (if analyzed for) and preparing a separate section for any applicable water NSTS. Also don't forget the Director's standards for MTBE. If applicable, create yet another section labelled Director's standards and list MTBE.

I've appended two hypothetical examples of:

1. the [wrong way](#) to list substances in a Schedule C; and
2. the [correct way](#) to do it.

Addressee for Form Pack v4.0 Recommendation Letter, June 6, 2003

Question: I note that the Version 4 "Recommendations Letter" is addressed to Regional Managers rather than to Doug Walton. Is this correct? Do you have a list of Regional Managers and their addresses you could send out?

Answer: Your question is quite timely since, as a result of our recent re-organization, it has recently been decided that, until further notice, all Roster "approvals" (CoC, AiP, Determination) should be signed-off by Doug Walton in his statutory role as Assistant Regional Waste Manager.

In regard to the "Recommendation Letter on Professional Expert's Letter" in Form Pack 4.0, it and all accompanying Roster submissions, should no longer be addressed to a Regional Pollution Prevention Manager but rather to our Client Services Officer:

Craig Rosser
Client Information Officer
Contaminated Sites Program
Environmental Management Branch
Ministry of Water, Land & Air Protection
PO Box 9344 Stn Prov Govt
Victoria, BC V8W 9M1
Courier:
2975 Jutland Road,
Victoria, BC V8T 5J9

III. Schedule 10, Formerly NSTS

Assertion for Non-Scheduled Toxic Substances for CoCs and AIP Applications, July 5, 2005

Question: The Certificate of Compliance form in Roster Pack 4.5 includes the following footnote: If appropriate include the following: "Includes *Required Responsible Person's Assertion* with respect to substances listed in Schedule 10 of the Contaminated Sites Regulation under the Ministry's Technical Guidance document 18. I have reviewed TG 18 and it does not appear to have been updated since Schedule 10 was established. Do we have to include a Responsible Person's assertion for non-scheduled toxic substances for the CoCs and AIP applications?"

Answer: The information provided is not sufficient to adequately respond. However, given some of the substances noted herein I would suggest the following. Substances like phenol are covered under Schedule 4 and no assertion is required. Formaldehyde, however, is a Schedule 10 listed substance. I am not aware of the uses hence standards that apply for the site. If I am correct that for groundwater the aquatic life use only applies (i.e. there are no drinking water wells) then the Schedule 10 water standards do not apply. It was indicated in #3 that no formaldehyde was detected - therefore it is not apparent which substances exceed the Schedule 10 standards. However, if the site has been remediated for a Schedule 10 substance to meet the human health standard then an ecological assertion by a qualified professional would need to be provided to verify that the residual concentrations are unlikely to impact the environment.

Schedule 10 New CSR, October 7, 2004

Question: I cannot seem to find Section 70 of the new CSR. Schedule 10 refers to BC Reg. 324/2004 s 70, but the Queens Printer version seems to end at section 67. What should be done to Roster a Schedule 10 substance for aquatic life. If the PQL is used for aquatic life then can a 10 times dilution factor be applied to is the effective standard simply the PQL. Can a site with groundwater exceeding the PQL be rostered?

For example: for cis 1,2 dichloroethene. Sechedule 10 gives:

Generic Numerical Soil 1 , 2 and Water 3 , 4 Standards 5

COLUMN I Substance	COLUMN II Chemical Abstract Service Number (CAS)	COLUMN III Agricultural, Urban Park, Residential Soil Standard	COLUMN IV Commercial, Industrial Soil Standard	COLUMN V Practical Quantification Limit (PQL) in Soil	COLUMN VI Drinking Water (DW) Water Standard	COLUMN VII Practical Quantification Limit (PQL) in Water
	156-59-2	0.1 10 5 11	50	NC 6	370	3
1,2-dichloroethene (cis) (1,2-dichloroethylene (cis))						

The site is an aquatic life site. Is prior approval of the Stabdards required for Rostering? If so would the drinking water standard be usable or 10 times the PQL (for dillution) or 3 ug/L the PQL?

Answer:

Schedule 10 has effectively changed much of the former NSTS procedure. For example the NSTS concept no longer exists. There is no longer any such thing as a NSTS under the CSR, only scheduled substances.

Schedule 10 contains only soil and DW standards. The PQLs are not standards for the purposes of determining if a site is a contaminated site. A site is only a contaminated site if Sch 10 listed substances exceed either the soil or DW standards.

Note that there are no aquatic life, irrigation or livestock standards for water in Schedule 10. This means that for Sch 10 listed substances aquatic life, irrigation or livestock watering are effectively NOT regulated under the CSR. The situation is analogous to the situation under Sch 6 for iron, aluminium and manganese.

Further the normal rules of "applicability" apply to the Sch 10 DW standards, i.e. the DW standard does not apply if there is no use of ground water as drinking water within 1.5 km of the site (or 100 year travel time).

If the Sch 10 DW standard applies to the site and the ground water exceeds the Sch 10 DW standard, the responsible person for the site has the option of cleaning the water to meet either the DW standard or the PQL for the substance. (As in most cases the Sch 10 DW standard is much greater than the corresponding PQL for the substance,Â the responsible person will likely elect to clean to the DW standard).

For your site, since NSTS no longer exist, there is no requirement under the CSR to consider aquatic life impacts of Sch 10 substances. Of course if there is blatant evidence of adverse aquatic life impact at a site

attributable to a Sch 10 substance (i.e. clear evidence of fish or fish fry mortality at the site) the ministry can address the impact under the other provisions available under the EMA (i.e. pollution abatement order, etc).

Technical Guidances #18 & #19, September 9, 2004

Question: are the textual explanations of Guidances #18 and #19 still relevant with respect to determining when and how to apply Schedules 9 and 10?

Answer: Yes, Technical Guidance 18 and 19 are still relevant to Schedule 10 and 9 respectively. In the case of Technical Guidance 18 (and possibly TG 19 or portions thereof) it will likely be converted to a Director's protocol to agree with EMA and the recently revised CSR provisions, as ministry staff time allows. In the meantime, please continue to use these guidance documents to guide application and use of the Schedule 9 and 10 standards.

IV. Contaminants/Parameters of Concern

Phenol and Formaldehyde as Contaminants of Concern, July 5, 2005

Question: A previous consultant conducted a remediation of resin that was visible in shallow soils. The chemicals used to make the resin are phenol and formaldehyde. The previous consultant cleaned up the visible resin and did confirmatory sampling but did not find phenols or formaldehyde above standards in any of the tested samples. An engineering firm took some samples for phenols and formaldehyde but the results did not exceed standards. Is it acceptable to not list phenol and formaldehyde as Contaminants of Concern because they have not been found in concentrations above standards at the Site?

Answer: The situation you describe is one where the resin material removed from the site had good visual properties which made its removal an easy process. But while the resin's composition is known from the manufacturer's information the specific substances were never detected in confirmatory samples from the site. Though in the current situation I would tend to consider this to not be a good investigative strategy I would consider it analogous to situations where a landfill or a layer of waste wood has been removed from a site and the material was not thoroughly characterized. Especially in the case of the landfill would this mean that a certificate subsequently issued would need to list off every substance deemed probable to be present in the landfill? This would argue for not including the phenol and formaldehyde as contaminants of concern at this site. However, a potential precedent would be set for circumventing the intent of the Regulation by undertaking "site maintenance" prior to intrusive investigations at a site. In the current situation, for completeness, it would be preferable to list phenol and formaldehyde as contaminants of concern for which remediation was confirmed to be undertaken at the site - which is essentially as the text would indicate.

LEPHw as a Contaminant of Concern in Groundwater, July 5, 2005

Question: Phase 2 has been the subject of remedial activities to remove petroleum-contaminated soil. There have been LEPHw groundwater exceedences in several wells dating back to 1998. Recent results indicate that LEPHw met standards in all existing wells in 2005 on two consecutive samples taken at least one month apart. It is believed that the LEPHw contamination was introduced during drilling and has cleaned up over time with further development and sampling. This is documented in the submission. Another possible interpretation is that there were low levels of LEPHw in groundwater that have naturally attenuated over time to acceptable levels. We don't plan to list LEPHw as a Contaminant of Concern for the Phase 2 CoC because the 2005 results indicate compliance with groundwater standards. LEPHw in groundwater will be the Contaminant of Concern for the AIP in Phase 2A. Is it acceptable to not list LEPHw as a contaminant of Concern because it is not currently present even though it was present historically?

Answer: The text above indicates that the investigative results demonstrated LEPHw exceedances in groundwater that no longer exist and it is suggested that this may be due to natural attenuation. Another possible explanation would follow on the opening statement in your text such that the Phase 2 area has been subject to the removal of petroleum contaminated soil. It would seem that the reduction in LEPHw concentrations may have resulted from these soil removals. In either case - natural attenuation or soil removal - both of these are remedial strategies that can result in an improvement in the groundwater quality. Therefore LEPHw would be listed as a substance for which remediation was undertaken.

Presence of Woodwaste as an Environmental Concern, June 30, 2005

Question: Does the presence of the woodwaste constitute an area of environmental concern? If so what are the PCOC's?

Answer: The site has a Schedule 2 activity - industrial woodwaste disposal. Although the wood waste may not have been treated you could find nonchlorinated phenols present in soil and/or groundwater as per CSR Schedules 4 and 6. It may also be worthwhile to check metals. A woodwaste landfill would be a contaminated site based on the presence of nonchlorinated phenols.

LEPH and HEPH Standards as Contaminants of Concern, June 15, 2005

Question: Situation: One is reporting on a Detailed Site Investigation of a site that is composed primarily of coal fill material (coal washing waste, analyzed it for LEPH and HEPH in the coal and found it above RL/PL but less than CL. Since coal, by definition, is not a "petroleum" hydrocarbon, and as petroleum hydrocarbons are not contaminants of concern in the coal, are the LEPH and HEPH standards Contaminants of Concern for the site?

Answer: The definition (see Schedule 6) for LEPH etc is for petroleum hydrocarbons so the intent of the parameter would be to not capture coal. Work at another site has shown PAHs and metals to be of concern and that is what is driving the remediation insofar as the coal is concerned. There would also be issues related to acid rock drainage and the former industrial operation itself. The latter may involve petroleum hydrocarbon issues so for that the CSR gross petroleum standards would be applicable.

Draft Sodium and Chloride Matrix Soil Standard, April 13, 2005

Questions: Can a Certificate of Compliance be issued for a site that exceeds the draft sodium and chloride matrix soil standards.

Answer: The draft sodium and chloride ion matrix soil standards are not in effect at this time. Consequently, other than providing ancillary information, they have no bearing on the certification of sites. Salt sites must either be cleaned to the PQL for sodium and chloride (see Tech Guidance 18 NSTS for a method by which you can determine appropriate PQLs for these substances) or be remediated using the RA/RM approach. Where-ever possible, we have been recommending that rp's for salt sites consider if a certificate is really necessary at this time and if not our advice has been to institute best practise management guidelines (if the site is a salt storage site - e.g. BCBC salt yard) and then let mother nature remediate the site for you over time. Depending on where the site is located (i.e. the amount of annual precipitation) this can take 2 - 5 years. Once mother nature has done her work, then the rp can move towards certifying the site.

Listing of Parameters, May 20, 2004

Question: I am finaling a roster submission for a site and have a question on how parameters are listed. At this site a number of hydrocarbon related parameters previously failed and will be listed on the COC. At one location there was a well that was analyzed for diss metals in 1999 and then was subsequently

destroyed. It had an arsenic concentration equal (hance an exceedance) the standard and a dissolved lead detection limit that was just above the standard. Replacement wells int he same area had dissolved metals concentrations less than the AW standard. At the well in question, metals would not have really been a PCOC (hole at a gasoline pump island) although the well had NAPL level VH concentrations.

I was planning on listing lead and arsenic as remediated substances as it doesn't really make any difference to us. Would you agree that they should be listed.

Answer: Typically if a substance exceeds before remediation and meets the standards after then it legitimately can be listed. Fro completeness in your package it is probably best to list them.

Salt as a PCOC, December 8, 2003

Question: We have a question with one of the RA reviews that we are working on. We're preparing the draft CCoC and have a salt issue to resolve. The issue defaults to a NSTS PCOC issue and therefore I've prepared the question as a roster website Q/A question. I imagine this question would apply to most sites in BC outside of the Lower Mainland and the Island.

The issue specific to the review we're doing is that sodium (1 of 3 substances that was risk assessed) was demonstrated to meet risk-based standards. However, chloride was not analyzed and if sodium and chloride are considered PCOCs then the applicant has not investigated the PCOCs (chloride) satisfactorily and supplemental data is required.

The roster question is as follows: My question relates to salt (sodium and chloride) as a NSTS and is further to the Sep. 26/03 Q/A operational question on the roster website. I am reviewing work done by others for a former service station site in Vernon, BC. The site is a somewhat atypical petroleum product dispensing facility in that it is not located on a street corner but it is however located adjacent to a roadway. The applicable land use is CL and the applicable water uses are AW (freshwater) and DW.

The consultant identified and investigated service station related PCOCs. Inorganic substances considered as PCOCs were lead (historic leaded fuel) and waste oil related metals (barium, copper, lead, zinc). However, early site investigation lab analyses were largely done as a full metals scan. As such, sodium was reported and the dissolved concentration in groundwater was greater than the DW standard. Dissolved chloride in groundwater was not analyzed. Sodium and chloride were not investigated in soil. The consultant has interpreted that the elevated dissolved sodium concentration in groundwater is related to road salt application on the adjacent roadway. There was no documented use of salt on the site itself. Evaluation of background concentrations has not been done.

The question is whether sodium and chloride need to be investigated as PCOCs with respect to the site or as PCOCs with respect to migration from other properties. The answer for the Sep. 26/03 operational question leads me to the interpretation that sodium and chloride are not PCOCs to the site in this case as there is no documented history of use related to CSR Schedule 2 activities for the site or adjacent roadway. Specifically, the site and adjacent roadway are not: E7 (road salt storage facilities); H22 (street or yard snow removal dumping, i.e., a snow dumping facility). If not PCOCs, then I would consider the elevated sodium concentration unrelated to site/off-site activities and the site certifiable if remediation of the other PCOCs (petroleum product related) can be demonstrated. If sodium and chloride are considered PCOCs in such a case, then it is my understanding that a risk-based standards approach would be required for these substances.

Answer: We agree that for this service station site, there would be no compelling reason to regard salt as a PCOC based on the history of use of the site or the prescribed activities listed in CSR Schedule 2.

Background Release for Cobalt in Groundwater, August 6, 2003

Advice: This email is with respect to your request for a background release for cobalt in groundwater at Site X. It is noted that one groundwater monitoring well at the site had exceedances (11 & 9.9 ug/L) of the current CSR Schedule 6 standard of 9 ug/L. Per the October 4, 2002, letter, which you enclosed, from the Director of Waste Management, Eric Partridge, to the Regional Waste Managers, the Ministry considers that the provincial background concentration for cobalt is 20 ug/L. It is therefore not necessary to have the Ministry pre-approve a site specific background cobalt estimate before making a Roster submission - reference to the 20 ug/L and the October 4, 2002, letter is all that is necessary.

V. Specific Site Types

Abandoned Well Sites, June 13, 2005

Question: One is to apply CSR AL and UL standards for abandoned well sites. However, the industry practice for operating sites is to consider these to be industrial activities and for spill work oil and gas companies use CSR IL standards as their remedial target. It can be understood that CSR AL and UL standards should be applied at all times as the remedial target for spills if these are the standards for the site after the well is decommissioned. The oil and gas companies often defer environmental cleanup of on-site contamination until well closure since the site could produce for another 40-50 years and the potential for additional spills is quite high. There is an underlying perception in the industry that these sites are industrial sites and IL standards should be applied. How should we be advising our clients on this issue?

Answer: In the absence of "wildland" standards for forested areas that for the remediation of well head sites that the most stringent of the standards in the Contaminated Sites Regulation would apply. Typically these would be from either the agricultural and urban park use standards for a particular substance. It is to be noted that should a well head site be on agricultural land then those land use standards would apply. In your email, the situation you are describing is for an operating site, not one where there is remediation leading to closure. An operating site for "petroleum or natural gas drilling" is captured within Schedule 2 of the CSR which lists Industrial and Commercial Purposes and Activities. The CSR land use definitions do not specifically include such drilling activities within either the Commercial or Industrial land uses. However, in considering the associated narratives, we do not consider a drilling activity as a commercial activity - so drilling therefore falls within the industrial land use category. I would recommend that for a petroleum well drilling site that the CSR IL land use standards be considered appropriate on site while the site is operating. Should there be a need for any remediation off site while the site is operating then other land use standards - such as the "wildlands approach" - would be appropriate. As indicated above, once the site has been shutdown and undergoing closure/remediation that the standards appropriate for the intended future land use would then apply.

Peat Farming - IL Definition, June 12, 2005

Question: This is with regards to a site that will be rostered for a CoC, where contaminated soils were transported off site inadvertently without a CSRA. The area it was taken to is zoned as IL (Delta confirmed) and is used as a peat farm. However, the CSR peat farms are not included in any of the land use definitions. A peat farm would be an industrial activity and that one has to get confirmation indicating what the future use of the area is. Please confirm the IL definition of the present land use.

Answer: Peat "farming" is more akin to peat "mining" and the best fit would be with industrial land use.

Former Dry Cleaning Site, June 10, 2005

Question: With regards to a former dry cleaning site, assume for now the following is true: 1) AW standards apply, 2) DW standards do not apply, 3) Soil quality meets CL standards for all substances listed in schedules 4, 5 and 10, 4) Groundwater meets AW standards for all substances listed in schedule

6 and 5) Groundwater does not meet all DW standards in Schedule 10. If these facts are true, is this site not a contaminated site? Previous information given indicated that a site had to be remediated to schedule 10 DW standards, even if DW standards did not apply.

Answer: The information in the question indicates that all applicable CSR standards are met at the site and consequently, the site would not be a contaminated site. The mere exceedance of a DW standard (whether in Sch 6 or 10) does not automatically render a site a contaminated site. The confusion stems from the fact that the definition of contaminated site in EMA. i.e. "contaminated site" means an area of the land in which the soil or any groundwater lying beneath it, or the water or the underlying sediment, contains: (a) a hazardous waste, or (b) another prescribed substance in quantities or concentrations exceeding prescribed risk based or numerical criteria or standards or conditions; is effectively re-defined in CSR 11 so that it is the exceedance of "applicable" standards that renders a site a contaminated site. CSR 12 then gives a series of considerations related to the applicability of the standards which in turn can be further elaborated by protocols, procedures etc. (e.g. Tech Guidance 6 which gives further advice related to distance and travel time rules when determining the applicability of the CSR's water standards).

The short answer is no, a site does not have to be remediated to meet the CSR Schedule 10 DW standards if the DW standards are not applicable at the site.

VI. CSRA

Soil Relocation Agreement, April 25, 2005

Question 1 The consultant has assessed receiving site soil pH in general compliance with Technical Guidance 5. The 21 samples tested ranged from pH 4.3 to 8.1. The consultant concluded that the average pH was 6.6. The consultant also provides stockpile soil pH values for the source site and the pH values range from 6.8 to 10.4 with a mean of 8.3 and compares the soil sample results (material to be moved) to the sources site pH of each individual soil sample. I assume that I must compare the soil analyses to standards using the pH value for the receiving site.

Answer Actually you will need to make comparisons to both the standards of CSR Schedule 7 and the generic and matrix standards of Schedule 4 and 5. The first step is to determine the landuse applicable at the receiving site. In your case the receiving site (golf course) is a commercial landuse site and I presume you have compared the analytical results for soil to be moved from the source site to the column II soil standards of CSR Schedule 7, and the results do not meet the Schedule 7 standards. This means that under CSR 40 (2) (a) the source site is a contaminated site in respect to relocating soil. At this point, EMA55 would apply (assuming EMA 55 (5) and CSR 40 (3), 41, and 43 (5) do not apply. Note that CSR 42 does not apply in your case since the soil to be relocated is going to a commercial site rather than to a landfill). So you need a XSRA to move the soil from your View Royal site to the golf course. To get one you need to meet the requirements of EMA 55 (1), (2) and most importantly (3). EMA 55 (3) requires that the CSRA " *must provide that prescribed standards and procedures apply in respect of the relocation and deposit and that.*" This means that the CSRA must ensure that the quality of the soil to be moved meets the standards relevant to its relocation and deposit (at the receiving site). In addition to the above, EMA 55 (3) goes on to say " *.and that (a) the quality of the soil at the receiving site is suitable for the use intended based on prescribed standards. or (b) the conditions at the receiving site are suitable for the use intended as documented by a risk assessment and environmental impact assessment conducted in accordance with the regulations and to the satisfaction of the director.*" Since rostered experts cannot make recommendations relating to risk assessment, we can ignore EMA 55 (3) (b). However, EMA 55 (3) (a) would require some characterization of the receiving site to ensure that the quality of the soil at the receiving site is suitable for the use intended. The standards to use to make this determination are referenced in CSR 45. In your case, I presume that you do not have any ministry approved site specific soil standards for the receiving site and that the quality of the soil to be moved exceeds local background concentrations at the receiving site and therefore CSR 45 (3) does not apply. Thus, the appropriate standards are those of CSR 45 (2). This means you will have to compare the quality of the soil to be

moved to the applicable generic numerical soil standards (CSR Schedule 4) and the lowest of the applicable matrix numerical soil standards (CSR Schedule 5) for the receiving site. The bad news is that you will have to actually determine which of the above soil standards are actually applicable at the receiving site, you cannot just rely on the standards provided in Schedule 7.

Question 2 Is it fair to use the average receiving site pH value for assessing soil suitability or should I be using the lowest value or the 25% quartile or some other measure?

Answer Tech Guide 5 says to use the median pH value. The question really has two parts. First, which of the pH dependant soil results for the source site should be compared to the standards of CSR Schedule 7 to determine if you are moving contaminated soil from the source site and second, which of the pH dependant soil results for the receiving site should be used to determine which generic and matrix soil standards at the receiving site should be used to judge if the contaminated soil can be relocated?

In regard to the first question, the other consultant should have determined the median pH of the soil to be moved in accordance with Tech Guide 5. The analytical results corresponding to the median pH for the source site would be compared with the column II standards of Schedule 7. Again, if these results exceed the column II Schedule 7 value, you will be moving contaminated soil and will need a CSRA. Similarly the median pH of the soil at the receiving site should have been determined in accordance with Tech Guide 5. If the Schedule 4 and/or Schedule 5 standards are pH dependent, then the standards to consider for the receiving site are those that correspond to the median soil pH of the receiving site. Note that the two sites may have completely different median pHs. However, for the CSRA, once you have confirmed that you are moving contaminated soil, it is the median pH of the receiving site that determines which Schedule 4 and 5 standards should be used.

Question 3 Based on my review of Section 55 of the EMA it appears that I need to check with the source and receiving municipalities to see if they have any bylaws restricting soil removal or deposit. Is this correct?

Answer Correct. However, this is really a formality as they should not have any such bylaws since local governments cannot under section 9 of the Community Charter legally establish such bylaws without the approval (sign-off) of the Minister of Water, Land and Air Protection. To our knowledge, the Minister has never endorsed (approved) such a bylaw for any municipality within the province.

Question 4 It also says that the municipalities must be provided notice before the soil is moved. Do I do this or does MWLAP provide notification?

Answer EMA 55 (9) requires as a condition of a director entering into a CSRA that the director provide notice of the agreement to the source and receiving site municipalities. CSR 44 requires that: a) prior to relocating the soil subject to a CSRA, the applicant for the CSRA provide a copy of the notice from the director required under EMA 55 (9) to the source and receiving site municipalities or b) wait 4 business days from the time of receiving the approved SCRA before moving the contaminated soil.

So, here's how to do it: obtain the signatures of the source and receiving site owners on the CSRA (i.e. CSR Schedule 8). Send it in with your CS Service application and recommendation to the director to sign it off, along with the names of the officials in the two municipalities that the director must give notice to under EMA 55 (9). The director will then sign it off, send notice to the contacts you identified for the two municipalities and send the now approved CSRA back to you. You can then either: a) send copies of the notice sent by the director to the two municipalities to satisfy your duty, on behalf of the applicant, under CSR 44 (and yes, this does mean that the two municipalities will receive the same notice from the director twice - once from the director and once again from you or b) simply wait 4 business days from receipt of the approved CSRA to move the soil without the need to send copies of the notice to

the two municipalities. Unless there is an extremely urgent need to execute the CSRA, most consultants/Rostered experts will simply wait the 4 business days prior to moving the soil.

Question 5 There are water hazards on the golf course but the nearest natural water body is marine so I assume that only marine aquatic life standards apply. Correct?

Answer I presume you are asking this question in the context of applicable Schedule 6 water use standards and therefore applicable Schedule 5 "groundwater flow to surface water used by aquatic life" standards at the receiving site. If so, you would be correct that the CSR Schedule 6 marine aquatic life standards would apply, if the nearest aquatic life supporting water body is marine and within a 50 year groundwater travel time (1 km) of the receiving site. Note that this assumes the golf course's water hazards do not support freshwater aquatic life (i.e. the traps do not serve two purposes, a water trap and a combination fish pond) and there is no potential for groundwater to impact freshwater aquatic life located within a 50 year travel time (1 km) of the receiving site. So you would want to be careful to ensure there really is no other freshwater water source on the receiving site that supports aquatic life (i.e. creeks, streams, etc.)

Question 6 There are irrigation wells on the golf course but the land use is commercial so irrigations standards for soil do not apply. Correct?

Answer Correct. There are no CSR Schedule 5 soil standards to protect irrigation water for the commercial or industrial landuses and there would be no need to consider the "groundwater used for irrigation watering" Schedule 5 standards in determining if the soil to be moved from the View Royal site is suitable for deposit at the golf course site.

Question 7 I have legal addresses for both sites but not a legal plan of the golf course. The consultant has provided UTM coordinates and a good aerial photograph 1:4000 site plan of the receiving site. Do I need a legal plan of the golf course? Do I need a metes and bounds survey of the small portion of the golf course that will receive the wastes?

Answer At this time we do not routinely require this data to process Roster CSRAs. However, you may wish to include in your submission some information characterizing the receiving site, which could include the locations on the receiving site where the contaminated soil will be deposited (see also answer to question 6 below). EMA 55 (2) (c.) requires consideration of "existing and future uses of the receiving site". Knowing where the relocated soil was deposited could be important if the golf course is included in the Agricultural Land Reserve and at some time in the future actually reverts to an agricultural landuse.

Question 7 A complete PSI, DSI, protocol 5, site registry search and checklists are available for the sources site. No CSR documentation (other than the soil pH report) is available for the receiving site. It is a Greenfield site. Do I need to do a site registry search and protocol 5 for the receiving site?

Answer At this time we do not routinely require such documentation to process Roster CSRAs. We do require a copy of all the analytical data related to the quality of the soil to be moved along with the expert's signed assertion that the soil is suitable for relocation and recommendation to the director to issue the CSRA. However, you will note that CSR 43 (3) provides you the option to include a "report" relating to the recommendation to issue the CSRA. You may wish to give careful consideration to the merits of including such a summary report supporting your recommendation. Roster CSRAs are subject to performance assessment and it has been our experience that lack of adequate documentation providing the reason and rationale behind and expert's recommendation often leads to difficulties for the expert under performance reviews. For your own comfort therefore, you may wish to consider providing supporting information approximately a PSI level of effort in any supporting report you may wish to include in your submission.

Municipal Zoning vs. Land Use, April 13, 2005

Question: I have been asked to recommend a soil relocation agreement for moving RL+ soil from an industrial site to a golf course that is reportedly zoned by the municipality as commercial. My concern is that golf courses are often put in the provincial agricultural reserve and I am wondering if the province considers them to be agricultural land use not commercial. Would provincial land use designation overrule municipal land use categories.

Answer: For CSR regulatory purposes, municipal zoning rulings have no bearing. This is because the various land uses are specifically defined in CSR section 1. Golf courses are specifically listed as a commercial land use in the regulation. If a golf course was to cease operation and revert to an agricultural use (as defined in the CSR), then a change in land use would have occurred and the site would re-enter the CSR process (i.e. submit new site profile, etc.). In this later circumstance, a Director under CSR 12 (3) would likely rule that the site was now an agricultural land use. If the golf course were to cease operations and revert to an agricultural zoning, but not actually conduct any of the activities used to define agricultural land use in CSR 1 (i.e. close operations and the municipality zones it agricultural but no agricultural activities are actually performed) then a Director under CSR 12 (6) might rule that the site is still a commercial land use site based on its historical former use.

In practise, all of the above lies in the realm of future considerations. For your circumstances at this time, the golf course (i.e. the receiving site for the soil) is a commercial land use. In determining the need to obtain a CSRA to move this RL+ soil, please carefully consider both Schedule 7 and section 40 of the CSR.

Using Regional Background and Statistical Approach for a Roster CSRA, October 22, 2003

Question: I'm looking at a potential Roster CSRA. There are a few particulars that I would like to run by you prior to going ahead.

The site is in the Greater Vancouver area. Former industrial activities (metals contamination) occurred at the site. A CoC was issued for the site in 2000. The applicable land and water use standards were RL and AW. A statistical approach was taken in the CoC application to demonstrate satisfactory investigation/remediation.

A land development company subsequently purchased the site and is proceeding with redevelopment for residential land use. Some soil will need to be removed as part of the redevelopment. As the site was cleaned up to RL, the client's objective is to be able to relocate the soil to a generic site in the Greater Vancouver area as residential quality. When assessed relative to Column II of Schedule 7, we have some hits for the soil that is proposed to be removed. This is essentially due to the fact that Column II uses the de minimus RL standards. So, we're in that catch where the soil is OK if it stays on the site but where we now have a contaminated site, for the purposes of a CSRA, if it is moved off-site.

The primary contaminant is lead. As some concentrations exceed the de minimus Column II standard (up to a factor of about 3), we are looking at using the regional background concentration for lead for the Greater Vancouver area of 300 ug/g. This appears to be allowed as per Protocol 4 (i.e., relocation of soil based on a background release) subject to provision of supporting information.

In reviewing Protocol 6, it also appears that we can do a CSRA using a regional background concentration via the Roster process.

The question is - can a statistical approach be taken (e.g., TGD2) to demonstrate conformance with the regional background concentration? We have to take the statistical approach because one of our concentrations exceeds the regional background concentration for lead of 300 ug/g.

Answer: As discussed with Doug Walton by phone yesterday, you can use a statistical argument to show suitability on a GVRD background basis for the soil you propose to relocate. There are a couple of caveats however:

1. the soil will need a CSRA and that instrument requires you to name and provide location details for both the originating and the receiving sites;
2. although the soil may meet the background regional estimate (300 ug/g) for lead, it may not meet the appropriate (i.e. residential) CSR matrix standards for lead at the receiving site (e.g. soil to aquatic life protection (150 - 40000 ug/g). Consequently, you will have to disclose this to the receiving site owner prior to him/her signing off the CSRA.

(Basically the receiving site owner needs to know that by accepting the background qualified soil for residential use, they may possibly in the future have to apply for a background release for their receiving site if one of the CSR triggers is activated.)

Information Requirements for Roster Submissions Related to Contaminated Soil Relocation Agreements, June 18, 2003

Question/Answer (In italics and embedded in question): For a submission by a Roster Expert for a Contaminated Soil Relocation Agreement, are the following items requirements:

- PSI report (*Yes, if available - see item 7 of Roster Form Pack 4.0*)
- DSI report (*Yes, if available - see item 7 of Roster Form Pack 4.0*)
- Completed checklists 10 and 11 (*Yes, see item 7 of Roster Form Pack 4.0*)
- Protocol 5s for each report (*Yes, see item 7 of Roster Form Pack 4.0*)

Please note that item 7 of the Roster Form Pack requires revision in view of new Contaminated Sites Services application form (i.e. no longer any need to include a cheque for fees with the CSRA, and that with new Protocol 6 there is no longer any need to include a "completed Table 1 of Protocol 6 for both source and receiving sites").

Is the "Site" the source site or does it refer to both source and receiving sites?

Typically "site" would refer to both source and receiving site - see item 4 of Roster Form Pack 4.0.

For example is a wide area search required for both source and receiving site?

Yes, see item 4 of Roster Form Pack 4.0 .

Does the receiving site also have to meet Table 1 requirements for low to moderate risk site?

Legally, under CSR section 43 (2), only the source site must be a low to moderate risk site. However, the last paragraph of section 3 of new Protocol 6 and the requirement related to the receiving site in footnote 5 of Table 1 of new Protocol 6 suggests that both the source and receiving sites should ideally be low to moderate risk sites. Consequently, the most conservative position for the expert to take would be to ensure that both source and receiving sites are low to moderate risk.

Is the Roster Expert required to review the PSI and DSI reports for each site to the same level of detail as for recommending a CoC or AiP for a site, as the recommendation letter requires that these reports meet Sections 1, 58 and 59 of CSR and sites have been satisfactorily investigated for all contaminants of concern. There is an "as Applicable" next to these issues but I am unclear as to the meaning of

"applicable" in this case. Is it not more reasonable to review the information pertaining just to the soil of issue and satisfy oneself that the soil has been adequately characterized?

This is a judgment call on the part of the expert. The emphasis of the expert's review and recommendation must reasonably pertain to the quality of soil to be relocated to the receiving site as you suggest. However, the expert also needs to be confident that the quality of the soil to be relocated has been adequately characterized such that an appropriate and comprehensive listing of PCOCs for that soil has been considered. Presumably the best way to achieve this is to review any PSI/DSI reports available for the two sites.

I ask the questions because when comparing the level of effort required to complete the above tasks, it does not equate to the fees set out in Schedule 3 of the CSR.

I would agree with you that the fee payable to the Ministry [Schedule 3 (3)(b)] seems very low in view of the extent of material required to be submitted by the expert (and potentially subject to review by a Ministry auditor). The expert however, is of course free to charge his or her client whatever he or she believes fair and appropriate to provide a "rostered" CSRA.

VII. Protocol 7

Requirement 4.2 of Protocol 7, April 8, 2004

Question: This item speaks to application of the requirement where a petroleum hydrocarbon plume intersects a preferential flow pathway. Cases may also exist where the plume has yet to reach a preferential flow pathway but may within a 50 year travel time. My understanding of how to apply this item is to only evaluate the former, i.e., only those pathways that are actually intersected by the plume and not prospective pathways located outside of the plume. Is this understanding correct?

Answer: This one is more of a judgement call than the first question and really depends on site-specific considerations. A scientific approach that conforms with the intent of P7 would say that you would calculate travel time through the aquifer to the pathway and then through the pathway to the receptor. So I guess my answer is that you do have to consider pathways, currently or predicatively intersected.

However, the effort one puts into the assessment again must weigh the significance of the problem and the likelihood of transport to and along the pathway. A similar approach to that outlined above would probably be reasonable.

Definition of a Preferential Flow Pathway and Requirement 4.2 of Protocol 7, April 8, 2004

Question: The definition referenced above indicates that one has to calculate the groundwater flow velocity in a potential preferential pathway in order to determine whether it is defined as a preferential flow pathway. My understanding of the current ministry guidance on calculating velocities in pathways is to calculate hydraulic gradients and conductivities within the pathways. This requires installation of monitoring wells within the potential pathways and water level monitoring (for calculation of hydraulic gradients) and well response tests (for calculation of hydraulic conductivities). Is my understanding correct of the level of investigation that is required or is a qualitative approach also acceptable?

Answer: Where groundwater contamination is significant and there is a reasonable possibility that groundwater could migrate along a preferential pathway to a receptor in less than 50 years (or 100 years for drinking water) appropriate hydrogeochemical information should be obtained.

Where groundwater contamination is marginal (less than 10% in excess of the standards) and migration distances along preferential pathways are large (greater than 500 metres) a more qualitative assessment may be acceptable.

And there are a myriad of possibilities that exist between these two ends of the spectrum that would dictate the extent of investigative effort needed to support a conclusion of no water use. In addition to issues of significance of contamination and likelihood of transport there are issues of technical difficulty and risk of working around underground utilities. All of these issues have to be taken into consideration when making decisions about the type and extent of intrusive investigations to be conducted around preferential pathways.

We have been hesitant to develop prescriptive guidelines for groundwater and preferential pathway investigations in recognition of these myriad possibilities of site conditions and limitations and to allow professionals the ability to make decisions most appropriate for the conditions of their site. However, in making those decisions, the professional is responsible for defending them on the basis of factual information, lines of evidence and proper scientific analysis and interpretation.

It is not mandatory to install a well in sewer backfill nor obtain water levels within the utility corridor or to conduct rigorous tests to determine hydraulic conductivity. However, you do need to know where the utilities are and where the point of discharge to surface is and the utility invert and preferably backfill invert elevations. And you should have a good idea if and how long (temporally) the regional water table intersects the utility corridor and the approximate gradient of the submerged portion. You can assume the water level of the surrounding aquifer at your site from wells nearest the utility and use reasonable assumptions about the gradient between the site and the receptor (from utility plans and topo maps). You can do a grain size K determination of the backfill or assume pea gravel or coarse sand and calculate a K from Hazen analysis.

If the pathway doesn't get you to the receptor but does get you to the neighbour, you should conduct sufficient investigations to assure yourself that contamination has not migrated offsite.

Other supporting lines of evidence that might be presented in a preferential pathway assessment, particularly where a more qualitative approach has been taken, include the time frame over which the contamination has existed on site, whether the source has been removed, chemical characteristics of the contaminant that affect transport and any trends data showing a stable or shrinking groundwater plume. These supporting factors are not considered in P7 but would lend strength to conclusions of no water use where preferential pathways have been discounted. This is getting into the pathway screening RA and we have some work to do yet (including developing the screening RA) to reconcile the standards vs the RA based determinations.

I would refer you also to the findings of Roster Audit #6 (audit submission #58) which dealt with a preferential pathway issue. I believe these findings are available through the Roster Steering Committee. To be safe, err on the side of more data rather than less and use conservative assumptions and always document your decision well.

VIII. AiPs

AiP Time Extension, August 3, 2004

Question: We have an existing AiP for a site whereby the 2 years will expire in October 2004. Does the time extension cover existing AiPs or will a time extension need to be filed for an extension from October 2004 to 2009?

Answer: The rostered expert should apply to have the AiP amended to keep the instrument up to date, including an explanation as to why the predicted two years was insufficient.

Two-Year Remediation Requirement for Roster AiPs, January 21, 2004

Question: The table 1 point score sheet for determining low to moderate risk sites says that a Roster AIP is conditional on the remediation being completed within 2 years. Is this still valid? Does this 2 year requirement apply to AIP's issued by MWLAP? Is there a clause in the CSR or elsewhere that documents this requirement?

Answer: Yes, a site holding a Roster process AiP has a 2 year window from the date of issue of the instrument, within which to meet the CSR numerical standards.

The 2 yr window is not a mandatory component of AiPs obtained through the ministry review process. The 2 yr window is a policy requirement, in the sense that it is not explicitly specified in legislation (WMA) nor in regulation (CSR) per se. The CSR's authority re: AiPs stems from WMA 58(1)(p). The Director's authority to establish various Protocols under the regulation can be found in CSR 53 (1), in the case of the 2 yr AiP window in Protocol 6, see CSR 53(1)(h).

Rostering an AiP for a Gas Station Site with Off-Site Plume, June 20, 2003

Question: This is a former gas station which has been remediated, but there is an off-site groundwater plume, mainly VPH. The municipality has been informed and step-out drilling is planned to delineate the plume. The question deals with rostering for an AiP. A water treatment system is planned, but it will likely take over two years to achieve compliance for the off-site plume. If the plume can be shown to be stable and/or declining and the site is now clear, is a Roster submission possible or would it have to go through a Ministry review.

Answer: The short answer is no, it cannot be rostered. Footnote 3 of Table 1 of Protocol 6 requires "the entire extent of contamination must be addressed", to roster an AiP. Footnote 4 of Table 1 of Protocol 6 requires "Site must meet applicable numerical standards within 2 years of issuance of an approval in principle". In your case, if you had (or were to get) an AiP in place (via the Ministry review process) for the offsite plume, you could then roster a CoC for the remediated gas station site. Also attached is a previous [e-mail string from John Ward](#) to another expert on this issue, which provides more detail.

IX. External vs. Roster Review

External vs Roster Review, April 11, 2005

Question: Can a submission that was previously reviewed by an external reviewer can later go to a rostered professional expert for subsequent review.

Answer: The ministry now requires applicants to use the roster process whenever possible. In a case where a submission was externally reviewed previously, we have no objections to a rostered professional expert subsequently making a recommendation on the site. As part of the roster review process, we would anticipate that all previous findings and information concerning the site are considered.

X. Property/Lot Ownership Relating to Obtaining a Regulatory Instrument

CoC/AiP re. Hot Spot Zone, July 5, 2005

Question: Soil contamination in the Phase 2 area has been remediated to Commercial standards and we are applying for a CoC. A small portion of the Phase 2 area (Phase 2A) has one well that still exceeds LEPHw, which is probably due to petroleum introduced during drilling. We have a Metes and Bounds survey of the Phase 2A and Phase 2 areas. Can we apply for a CoC for soil that includes all of Phase 2 (including Phase 2A) and at the same time apply for an AIP for the LEPH in groundwater for just Phase 2A? If not, does the AIP for Phase 2A then have to consider soil contamination (which has already been remediated), or can the AIP and supporting Remediation Plan only address the LEPHw in groundwater?

Answer: Phase 2 area has been remediated to the CSR standards and a CoC could be applied for. Phase 2 area currently the only CSR standard exceedances are for LEPHw in groundwater. An AiP could be applied for addressing these exceedances. Any subsequent CoC would need to list all substances addressed by the remediation. It would not be possible to have a CoC and an AiP issued for Phase 2a as you query in your text above. I would note that we have interpreted P6 footnote 4 as meaning that for sites like this that all of the site would have instruments processed at the same time.

Combination of Separate Lots into One, December 5, 2003

Question: We are working on a roster application to be submitted in December 2003. The application will be for a Determination that the site is not a contaminated site for 3 lots. My question relates to whether one or multiple applications will be required. The site was historically one large parcel that was subsequently subdivided into 4 lots. The lots are contiguous except that they are separated by roadways. Each lot has a separate legal description and associated PID. We are looking to secure Determinations for 3 of the 4 lots. Do we need to submit one application for each lot (and therefore a total of 3 applications) or can we submit only one application that encompasses the 3 separate lots? If the latter, would the fees payable be determined based on the sum total area of the 3 lots or the sum of the fees for each lot area?

Answer: As the 3 lots are all separate legal entities, as well as being separated by roadways, we would require that 3 separate applications be submitted. You are likely aware of the new fees that came into effect on December 1, 2003. Please note that site size no longer plays a role in determining site fees for roster or ministry review submissions. We now distinguish these applications simply by their complexity (simple or complex).

Estimated review fees based on our limited knowledge of this application would be: PSI - \$1000 and determination request - \$1000.

* Roster submissions receive 1 free hour of ministry staff time to process the application, thereafter an hourly fee of \$150.00 will be assessed.

Protocol 6: Property Ownership Issues, September 16, 2003

Case 1

Question: We have a former petroleum bulk storage site where there were offsite impacts. The offsite impacts included a private residential property and municipal/highways properties. The source site has been cleaned up as has the residential property. Some impacts remain on the municipal/highways property and it appears that this may take some time to resolve. In the interim, the client wishes to obtain a certificate of compliance for the offsite residential property via the Protocol 6 procedure. The client understands that they will not be able to obtain a certificate of compliance for the source site until they have addressed all other offsite impacts via either an AiP, or cleanup and CoC. However, as discussed some time ago, it would appear to be in keeping with the spirit of Protocol 6 to let us get a certificate of compliance for the innocent 3rd party residential property. Could you please confirm MWLAP would be OK with this?

Answer: A Certificate of Compliance for the "innocent 3rd party residential property" may be applied for provided:

1. the 3rd party site had no off-site issues related to contamination (i.e. was not contributing to off-site contamination of some other innocent property);
2. the 3rd party site was truly innocent (i.e. not a minor contributor to the contamination on their property); and
3. the 3rd party site had in fact been satisfactorily remediated in accordance with the requirements in CSR 49.

In summary provided there are "no other issues" (i.e. like those mentioned above) on the innocent 3rd party site, then that site could apply for (and get) a CoC.

Case 2

Question: In this case the source site and offsite impacted properties have been cleaned up. A certificate of compliance has been issued for the source site and municipal offsite property. The sole outstanding issue is a 3rd party commercial property whose owners have a claim against the source site owner. This party has cooperated with the clean up, but does not appear to be eager to get a certificate of compliance and our best guess is that they believe that it may affect their claim position. Regardless of the owners position, there does not appear to be a regulatory or procedural reason why we should hesitate to complete the certificate of compliance application under Protocol 6. Would you agree?

Answer: Our solicitor has confirmed that any person (not restricted to responsible persons) can apply for a C of C. In your case 2, I understand that the responsible person for the contamination originating on the source site has cleaned up to Ministry requirements the source site, and offsite impacted properties (i.e. the municipal off-site property and the third-party commercial property whose owners have a claim against the source site owner). Further, CoCs have been issued for the source site and the municipal off-site property, but the owner of the third-party commercial property is not seeking a CoC (for whatever reason) for their property. Again, provided the conditions described for case 1 apply for the third-party commercial property, I see no reason either in the CSR or in Protocol 6 why the source site owner (i.e. the responsible person) can not apply for a CoC for the third party commercial property.

XI. Determinations

Preliminary & Final Determinations, March 24, 2004

Question: Is the Rostered Expert responsible for forwarding the "Final Determination" draft document once the 30 day period following the issuance of the Preliminary Determination has expired?

Answer: Yes, it is the responsibility of the Rostered Expert to forward the "Final Determination" draft document once the 30 day period following the issuance of the Preliminary Determination has expired. The ministry will forward any comments received regarding the Preliminary Determination directly to the Rostered Expert so it can be addressed in the Final Determination along with any comments they may have received directly.

"Direct" Determination, July 7, 2003

Question: I am about to submit a Rostered Determination. I believe the site is uncontaminated (after much testing). Company A did the extensive Stage 1 and Stage 2 reports. There are two responsible parties: the owner and tenant, and both have been involved in the testing process. I believe both parties support Company A and my conclusions. What is a "direct" final determination? I plan to supply copies of both the Draft Preliminary and Final Determination with the submission.

Answer: A "direct" determination is one made under WMA 26.4 (3) where a responsible person can dispense with the need to do a preliminary determination and proceed directly to a final determination by:

- providing sufficient information to determine the site is a contaminated site; and
- agreeing to be a responsible person for the contaminated site.

In our experience, responsible persons usually only avail themselves of WMA 26.4 (3) in situations where they want the site to be ruled a contaminated site in order to facilitate either the identification of, or laying of, a lawsuit against other parties that they believe have some proportional responsibility or liability to remediate the site. For your situation, where proceeding to a direct determination does not apply, please do not submit both the preliminary and the final determinations at the same time. You should ensure that you (as the rostered expert) will be cc'd on any comments from interested parties regarding the preliminary determination. As the expert, you are expected to deal with any issues raised by the interested parties (and to document how any such issues were resolved) prior to submitting the final determination with your recommendation to issue.

Usually, very few if any comments are forthcoming from interested parties on preliminary determinations and typically the documentation from the expert is nothing more than a letter to the effect that no comment was received. However, this is not always the case and more substantive comments on preliminary determinations are on occasion received and must be dealt with prior to proceeding to the final determination stage.

Determinations Made Without Direct Investigation of Groundwater, July 13, 2006

Question: Can Determinations Be Made Without Direct Investigation of Groundwater?

Question Background: A stage 2 PSI has been completed on a parcel of land used for recycling. No soil exceedances were identified and groundwater was not encountered at the maximum depth investigated (4.5m). No wells were installed as part of the Stage 2 PSI, however, a portion of the Site was a former cardlock for which groundwater was investigated, flow direction and depth (12m) determined and a COC obtained in 2001 (same PCOC's analyzed). No new Schedule 2 activities have occurred on the site since that time. A groundwater investigation conducted in 1999 for a site located 50m downgradient also had no exceedances for the same PCOC's (metals and hydrocarbons) and exhibited a consistent flow direction. A third site located about 100m cross and down gradient had no exceedances for the same PCOCs.

Is the pre-existing groundwater information, prior COC on a portion of the site and lack of any current soil exceedances sufficient that a Determination can be made without the need for additional groundwater investigation on-site?

Answer: It is the Ministry's preference that groundwater be investigated at sites that have had Schedule 2 uses. However, there may be circumstances where the weight of indirect evidence that groundwater contamination does not exist is sufficiently compelling not to warrant direct analysis of groundwater. The following advice is general in nature because circumstances vary greatly between sites and professionals will have to draw their own conclusions around the strength of the indirect lines of evidence.

If a stage 1 and stage 2 PSI have satisfactorily demonstrated:

1. an absence of any on-site sources of contamination; and
2. absence of offsite sources of contamination, including ruling out migration via groundwater of contaminants that may have previously existed offsite, (e.g.. petroleum hydrocarbons) or that could occur

independent of observed soil conditions (e.g.: volatile hydrocarbons may be found in groundwater absent of observations of contamination in soil)

direct investigations of groundwater may not be necessary.

Your decision not to investigate groundwater in the assessment of your site should be fully rationalized and well documented in technical reports submitted with your Roster application. As in all circumstances, the decision whether or not to directly investigate groundwater will be subject to review in the event of random audit.

XII. Rosterable Conditions

Site Specific Standards and Groundwater, June 21, 2005

Question: Can site specific standards (SSS) be developed for groundwater? Footnote 2 implies that site specific standards may be used for schedule 6 exceedances. However, P2 is only for soil.

Answer: Currently we lack a protocol to establish SSS for water. Consequently, it is not possible at this time to develop SSS for groundwater.

Local Background Groundwater Quality, June 21, 2005

Question: Can local background groundwater quality developed under P9 be reviewed by an Approved Professional? Footnote 3 suggests this is acceptable but requires pre-approval (although the footnote is silent on whether this applies to both "soil" and "groundwater").

Answer: Ministry pre-approval of the background groundwater estimate under protocol 9 is required. Once a Rostered expert had such pre-approval the site could proceed under the Roster process.