



**Conservation**

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October 13, 2010

Bob Gill  
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360 Portage Avenue  
Winnipeg MB R3C 0G8

Dear Mr. Gill:

**Re: Former Centra Gas Manufactured Plant, 35 Sutherland Avenue, Winnipeg, Manitoba  
– Technical Advisory Committee Comments regarding the Comprehensive  
Environmental Management Plan**

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Further to the September 2, 2010 memorandum circulated by Tracey Braun, Chair of the Technical Advisory Committee (TAC) tasked with reviewing the Comprehensive Environmental Management Plan for Residuals from Historical Operations at the Sutherland Avenue Former Manufactured Gas Plant Report (CEMP), please find the consolidated comments from the TAC regarding the environment component of the CEMP. Comments on the human health component will be forwarded under a separate letter at a later date.

Specific comments from Manitoba Water Stewardship, Surface Water Quality Management and Manitoba Conservation, Environmental Operations are included below for your information and review.

Manitoba Water Stewardship, Surface Water Quality Management

The proposal to not disturb the coal-tar deposits in river sediments at this point in time appears reasonable based upon:

- the assessment of data collected to-date from upstream and downstream of the sediment area in the river considered to be most contaminated;
- water sampling results;
- the proposed water quality/sediment quality monitoring in the remedial monitoring plan;
- the intent to establish a communication strategy and reporting plan; and
- the risk to human exposure to contaminated sediments was determined to be low.

.../2

The proposed remedial monitoring plan in Table 5-3 appears reasonable with comments/suggestions as follows:

- the benthic monitoring should be similar to the bioavailable PAHs analyses, i.e., next in 2009, then three years to 2012, and then five years to 2017 unless bioavailability analyses or benthos community assessment indicates toxic effects have occurred. Increased frequency or magnitude and extent studies may be needed if significant effects are found;
- the statement on page 93 that monitoring of the benthic invertebrate community would be in accordance with the methodologies prescribed in the EEM program. This should include the types of analyses used such as Total Density (number/m<sup>2</sup>), Taxa Richness, Simpson's Diversity Index, Bray-Curtis Index, and Simpson's Evenness Index; and
- the proposal to advance monitoring frequency of deep sediments and benthos after major flood events such as a 100 year or greater event is crucial.

The communication and reporting plan is vital for this site to ensure proponents of activities taking place on or near these sediments are aware of the issue and the activity gets properly screened through an environmental review process.

Page 43 – Water quality data was compared to Canadian Water Quality Guidelines (CWQG) but elements such as arsenic, copper, and zinc have been elevated to objective status in the Manitoba Water Quality Standards, Objectives, and Guidelines (MWQSOG 2002). Future studies and evaluations also need to include comparisons with criteria in the MWQSOG where they differ from the CWQG.

There is merit in the approach for using the US EPA ASTM (2007) method (D-7363-07) in assessing potential PAH toxicity in sediments instead of basing it solely on the CCME Interim Sediment Quality Guidelines (ISQG) and Probable Effects Level (PEL). It is more site-specific. However, this methodology still appears to be relatively new and additional information would need to be gathered and evaluated before the ISQG or PEL are totally replaced for this area. Reasons include:

- The large range in what would be considered to have toxic effects between the PAH16 concentrations under the US EPA ASTM method (> 66 mg/Kg) and the sum of PEL concentrations of the same PAH variables from the CCME guidelines (~ 6.91 mg/Kg); and
- While the ISQG and PEL may be considered very conservative, observed adverse biological effects in studies cited or graphs shown in the CCME guidelines appeared to have occurred in a low percentage of observations for some individual variables such as phenanthrene, pyrene, benzo(a)anthracene, etc. at concentrations as low as 10 mg/Kg. These concentrations on individual PAH16 variables would probably be much lower than what would occur under the US EPA ASTM method;

It is not fully accepted that higher (almost five times) PAH sediment concentrations at downstream sites compared to upstream sites result from urbanized storm water or wastewater treatment inputs over PAH mobilization from coal-tar sediments. Reasons include:

- The stretch of river that contains upstream sites, downstream sites, and contaminated sediment appears to only be about 1300 m that limits the number of storm water inputs;
- The major wastewater treatment facility discharge for Winnipeg is well downstream; and
- While the report deduction about the difference in relative abundance between the proportions of PAH16 variables in sediments to the reference sites has some merit, the relationship also does not appear to be that straightforward (Figure 4.12, pages 67-68). For example:
  - o the concentration of PAHs at upstream sites were slightly higher than downstream for the first six PAHs (naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene);
  - o naphthalene and phenanthrene concentrations were considerably higher in sediments than at either upstream or downstream site and they were the two PAHs with the greatest proportion in coal-tar sediments;
  - o however, concentrations for the next seven PAHs (fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene) were higher at downstream sites than upstream sites;
  - o this coincided with lower concentrations of these PAHs in the coal-tar sediment than at either upstream or downstream location;
  - o this included fluoranthene and pyrene that had the third and fourth highest proportion in coal-tar sediment; and
  - o Figure 4.10, page 65 shows relative proportion of PAH16 in coal-tar sediment and it shows naphthalene and phenanthrene is highest followed by fluoranthene and pyrene.

The remediation option to curtail potential upland transport of PAHs through groundwater appears to be something that should be considered/evaluated further in the foreseeable future.

#### Manitoba Conservation, Environmental Operations

As an overall comment on the CEMP, this letter reiterates that Manitoba Conservation supports the concept of in-situ risk management for the contaminants at this site and more specifically the monitored natural attenuation/natural recovery approach being proposed. This approach is consistent with established national protocols and with provincial guidelines and legislation pertaining to management of contaminants at contaminated sites.

Specific comments include:

Page vii/pages 11 to 20 – soil vapour monitoring methodology has evolved over the past decade. Recent data (CCME - Geosyntec, 2008) have identified substantial differences in approaches utilized across Canada. This report also recommends flexibility in protocols for sampling methodology to allow for site specific conditions. It is recommended that the final monitoring plan for the site include site specific protocols for installation of soil vapour monitoring probes and field protocols for monitoring of soil vapours to ensure consistency in future monitoring.

Page vii/page 38 – While agreeing with the overall conclusion that the potential for the contaminants on the site to migrate to the bedrock aquifer is slight, there is evidence from other sites in the Winnipeg area where similar contaminants (DNAPL's) have migrated downward vertically through the overburden despite upward gradients in the groundwater.

Section 5.3 of the report includes a discussion of monitored natural recovery/natural attenuation and the statement is made that “a monitored natural recovery approach is appropriate for the Red River sediments adjacent to the Site...” (emphasis added)

The discussion then moves, in section 5.3.2, to discuss the concept of natural attenuation (not recovery) with a limited discussion about attenuation processes in sediments. Sections 5.3.3 and 5.3.4 focus on groundwater and include a highly technical discussion on partitioning and degradation. However, the discussion lacks any focus on the types of contaminants present in the Red River sediments and no further mention of natural attenuation or natural recovery is made. It is recommended this section be re-worked to include separate discussions on what monitored natural attenuation and monitored natural recovery are, why they are appropriate for this site, and specifically how they might be applied on the upland portions of the site (soil and groundwater) and the river portion of the site (sediments and surface water). In addition a general conclusion summing up the discussion and demonstrating that MNA/MNR is indeed appropriate may also be warranted.

Subject to any modifications to the proposed monitoring program recommended in this letter and/or those made by Manitoba Hydro and your consultants since the submission of the CEMP, the proposed monitoring program outlined in Sections 5.5, 5.6 and 5.7 is deemed acceptable. It is recommended a final proposed monitoring program be submitted under separate cover for final approval by the director.

In addition to the monitoring proposal contained in Sections 5.5 to 5.7, the final proposed monitoring program should also include field methods and protocols to ensure consistency over time as the monitoring work is undertaken. As previously discussed, it is anticipated the proposed monitoring program once accepted and approved will form the basis of a Director's Remediation Order pursuant to the Contaminated Sites Remediation Act.

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Bob Gill  
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If you have any questions regarding this matter, please do not hesitate to contact me at 945-7053.

Yours truly,

***Original signed by***

Randy Webber  
Regional Supervisor

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