

# Proposed Environmental Management Plan for the Sutherland Avenue Former Manufactured Gas Plant

# Summary

Manitoba Hydro is proposing a comprehensive environmental management plan for their Sutherland Avenue Facility. The management plan includes a monitoring strategy designed to:

- Provide on-going assurance that residual conditions do not pose a threat to human health or the environment;
- Detect and measure any potential changes in conditions on or off site in a time frame sufficient to allow appropriate response;
- trigger additional remedial actions, if warranted.

### Background

The property, located at 35 – 38 Sutherland Avenue in Winnipeg and currently owned and operated by Manitoba Hydro, was the location of a former manufactured gas plant (MGP) (Figure 1). The MGP produced a combustible gas from a process of heating coal, coke and oil. The "town gas", "coal gas" or "manufactured gas", which it was often referred to, was used in early Winnipeg for street lighting, space heating and cooking. The MGP operated from 1883 to 1957. MGP production ceased when natural gas was piped into Manitoba from western Canada, replacing the need to manufacture gas. The MGP had been owned by several different energy companies. Manitoba Hydro assumed responsibility for the site through the acquisition of Centra Gas Manitoba Inc. in 1999.

The MGP facility was decommissioned in two phases, during 1959-60 and 1969. Four new buildings were erected on the property, commencing in 1969, which are currently used by Manitoba Hydro to conduct customer service operations and employee training.

The Sutherland Facility was identified by Centra Gas Manitoba Inc. as a potential contaminated site in 1993. Of concern was that MGPs typically left a legacy of environmental contamination. These types of plants typically generated by-products such as coke, tar, tar liquors, oil sludge, sulphur, ash and other materials. Because of the potential for residual impacts, Centra Gas Manitoba commenced human health and environmental investigations in consultation with regulatory authorities.

Pursuant to the Contaminated Sites Act, Manitoba Conservation designated the Sutherland Avenue Facility as a "contaminated site" in 1997, noting that the primary risk is the potential impact to freshwater aquatic life.



#### Site Investigations

Manitoba Hydro / Centra Gas Manitoba Inc. has been voluntarily conducting environmental and human health studies at the site since 1993, in consultation with Manitoba Conservation. Other regulatory authorities such as the Public Utilities Board; Environment Canada; Fisheries and Oceans Canada; and the City of Winnipeg have been informed at various times. The local residents have also been notified prior to conducting off-site drilling operations and Manitoba Hydro employees have been informed of site conditions.

These extensive investigations have involved soils, groundwater, sub-surface vapors, indoor air quality and riverbed sediments, with the following findings and conclusions:

The principal chemical of concern is coal tar. Hydrocarbons are present at concentrations that exceed the CCME Tier 1 guidelines for soil, groundwater and sediment. The chemicals in the coal tar that have exceeded guideline values in some samples include polycyclic aromatic hydrocarbons (PAHs); monocyclic aromatic hydrocarbons such as benzene, toluene, ethylbenzene, or xylenes (BTEX); and aliphatic hydrocarbons/petroleum hydrocarbons (PHC).

The areas with the most significant impacts appear to be concentrated: within Manitoba Hydro property at the south end of the site and in the north parking lot; along the river bank located immediately north of the site; and in the Red River sediments.

### Manitoba Hydro Property

Pockets of soils located beneath the Sutherland Facility exceed CCME Commercial/Industrial soil quality guidelines. Impacted soils are located at depth but there is no evidence of surface contamination. Impacted soils and groundwater have not been identified as a significant source of contamination, nor as a significant source of off-site contaminant migration. There is limited groundwater impact beneath the site and it has not affected the underlying bedrock aquifer. There are also no groundwater users close to the site.

It is concluded that direct exposure of humans or terrestrial life to PAH-contaminated soils is precluded because of the lack of surface contamination and since much of the site is covered by pavement. Previously conducted indoor air quality measurements have been used to quantify possible exposures of employees working within the buildings on-site. The information indicates that there were negligible risks to employees from the soil and groundwater contamination on the site. Previously conducted soil vapour studies in areas adjacent to the site have indicated that subsurface conditions pose no threat to the human health of adjacent residents. The soil vapour concentrations will be monitored over time as an added precaution. A round of sampling and analysis is currently in progress.

### Riverbank

Soils beneath the riverbank, immediately north of the Sutherland Facility, and east and west of the Disraeli Bridge exceed the CCME Residential/Parkland soil quality guidelines. There are



limited areas of near surface contamination on either side of the bridge. It is concluded that there is no direct exposure to humans or terrestrial life.

#### Red River Sediments

The vast majority of coal tar contamination from the MGP resides in the sediments of the Red River channel. Contaminant concentrations exceed the CCME Probable Effects Level. These impacted sediments are largely the result of direct deposition of MGP residuals while the MGP was in operation, via storm sewers and direct run-off. An environmental aquatic risk assessment has concluded that the ecological health of the riverine environment adjacent to the site is not obviously impoverished in comparison with other portions of the urbanized Red River. This is a significant observation from a risk management perspective.

#### Environmental Management Plan

UMA Engineering Ltd. was retained by Manitoba Hydro in 2001 to examine and synthesize the results of the previous site investigations, continue examining the site and to develop a comprehensive management plan. The management plan fully considers the chemicals of concern; site and off-site conditions; potential chemical migration and exposure pathways; potential human and environment receptors; and the risk to human health and the environment.

Manitoba Hydro submitted a draft comprehensive management plan to Manitoba Conservation on February 14, 2005, made a formal presentation of the plan to Manitoba Conservation staff on October 27, 2005, and submitted the finalized plan to Manitoba Conservation on June 12, 2006.

Investigations to date support on-going monitoring as an appropriate remedial course of action, since there is no unacceptable human health or environmental risk resulting from the former MGP site. Monitoring is intended to provide on-going assurance that residual conditions do not pose a threat to human health or the environment, and to detect any potential changes in site or off-site conditions in a time frame that would allow for the implementation of additional remedial action if warranted.

The management plan proposes to monitor groundwater and river sediments annually, soil vapours quarterly, and the aquatic invertebrates living in the river sediments every five years.

Manitoba Hydro and UMA Engineering Ltd. continue to monitor the site and off-site conditions. Soils, groundwater and sub-surface vapours are being evaluated. There are current plans to re-sample river sediments during the winter of 2006/07 to confirm the lateral extent and PAH concentration of the contaminant plume.

The investigative results will be submitted to Manitoba Conservation in a timely manner for review and assessment of the management approach.



Figure 1 Sutherland Avenue Facility

