

Environmental Remediation Activities: Bamberton Lands

Site Description

From 1912 – 1982, Bamberton was the site of a small town and cement manufacturing facility established by the British Columbia Cement Company.

The Bamberton lands consist of 17 legal land lots and one water lease lot located on the east shore of Saanich Inlet. In addition, there is a rock quarry within the industrial area. Although the quarry has not been in use for many years, a mine permit administered by the provincial Ministry of Energy and Mines is still in place.

A landfill under permit with the Ministry of Environment is still located onsite, outside of the industrial area to the northwest of the site office. The permit allows land-filling of cement process waste such as clinker, cement kiln dust, kiln feed (slurry), smaller amounts of off-specification/waste cement, brick fragments from the lining of the cement kilns, and unused raw materials such as alumina, iron and silica.

The site also has two other old landfills that are not under permit. One is located south of the industrial area on a slope that faces Saanich Inlet. In 1990, prior to Three Point Properties' involvement, a small earthquake triggered a slide, dumping landfill materials in the ocean. The south landfill has remained in this unstable condition since that time. The other landfill is centrally located in a relatively flat area adjacent to the main access road.

Environmental Concerns: Lingering Remains of Industrial Activity

Industrial activities left behind a number of environmental impacts that required attention before any development or rezoning of the property could be considered. These include:

- Asbestos had been used as insulation in underground piping throughout the site. Over time, asbestos exposure can cause serious disease including cancer and asbestosis, an illness that destroys lung capacity—construction workers are at particular risk of exposure.
- There is a large volume of contaminated soil located in old landfills and on the sites of the industrial buildings. These soils are primarily contaminated with metals as a result of the cement manufacturing process.

A Four-Pronged Remediation Plan to Restore the Land

“Remediation” is defined under the BC Environmental Management Act (EMA) as “action to eliminate, limit, correct, counteract, mitigate or remove any contaminant or the adverse effects on the environment or human health of any contaminant”. The Bamberton remediation effort is being led by SEACOR Environmental who have identified the following four priorities:

a) Building Deconstruction: Removing the old buildings has been a massive task—some buildings had six-foot thick concrete walls, thanks to a convenient and plentiful supply of concrete. Approximately 30 large structures have been safely removed.

Despite initial forecasts that the work would take two- three years, the deconstruction job was largely completed by February of 2006, just eight months from when it first began. Over 2800 tonnes of scrap metal was removed from the buildings and has barged to a recycling facility in Tacoma Washington. Concrete rubble has been removed to the existing quarry on site. Where possible, deconstructed building materials will be recycled or re-used on site.

b) Asbestos Removal: Asbestos removal took place under the guidance of North West Environmental Ltd., asbestos-removal specialists, who followed current WCB guidelines to protect worker safety. In total 40 tonnes of asbestos was removed.

c) Old Fuel Removal: Some of the underground piping had been remediated by previous owners. In January 2006, the remaining fuel lines were flushed of residual fuel and the 7100 liters of oily water was removed from the property.

d) Soil Remediation: Remediation of the contaminated soil is now almost complete. Affected soil (approximately 400,000 m³ which is the equivalent of 90,000 dump truck loads) was excavated from the three existing landfills and removed to a newly engineered landfill in the quarry. The new landfill was created using the best design practices possible and provides a means of reducing leaching into groundwater and surface water. In addition, the new landfill includes controls to test runoff water quality. This technology is seen as superior to landfill “capping”, which requires covering an old landfill with impermeable soil or pavement.

The design of the soil storage facility inside the quarry includes a crushed rock base and perimeter wall drain layer. The contaminated soil will be placed inside the rock layer, minimizing water contact with the contaminated soil. The quarry is open at the east end only, where a rock dam has been constructed to retain the soil. The remaining three quarry walls are intact.

Geotechnical engineers are responsible for design calculations and placement of the soil within the facility. Water leaving the rock drain layers of the soil storage facility is directed through one controlled discharge point at the mouth of the storage facility. This water is tested for quality on a regular basis.

Remediation of contaminated soil is directed by the BC Environmental Management Act, which directs applicants to seek “permanent solutions” to the maximum extent practicable. A letter of acknowledgement has been received from the Ministry of Environment, indicating that the Ministry is “satisfied at this time that the excavation of soils and placement in the storage/landfill facility in the former quarry is an acceptable approach.” Also included is approval and an agreement from the Ministry of Energy, Mines and Petroleum Resources (MEMPR).

Provincial Legislation Governing Contaminated Sites

The Contaminated Sites Regulation under the Environmental Management Act is the principal regulatory document defining requirements for contaminated sites in British Columbia. In addition, the Hazardous Waste Regulation comes into play when hazardous materials, such as asbestos are involved. These documents can be found on-line at http://www.qp.gov.bc.ca/statreg/stat/E/03053_00.htm.

The Environmental Management Act and Contaminated Sites Regulation outlines the procedures for *site assessment, remediation (numerical and risk-based)* and documenting environmental closure for a property.

For *site assessment*, the provincial guidelines provide standards and guidance for investigating potentially contaminated sites. The purpose is to ensure that potential concerns are identified, investigated and, if required, remediated. It is the responsibility of the landowner to prove that all potential sources of contamination are identified and addressed through investigation and remediation.

For *numerical remediation*, soil standards are divided into categories that vary for agricultural, residential, park, commercial and industrial land uses. Applicable uses are based on several factors including the current or anticipated use and zoning. In the case of Bamberton, if the current industrial area is to be used for anything other than industrial land uses (for instance commercial or residential uses), the site must be remediated to the higher standards.

Risk based site remediation may be used when it is not possible to remove contamination but it is scientifically proven that it is safe to manage it in-place. Safety is determined in three ways: potential receptors (e.g. people, plants, animals); the pathway by which contamination can reach a receptor; and the potential exposure of receptors to contamination. A common example of risk based remediation involves leaving contaminated soil in the ground and capping it to prevent exposure of site users to the contaminants and possibly also to minimize leaching and downward migration of substances to groundwater.

Completion of Remediation

Upon completion of remediation activities, the landowner must apply for confirmation documents from the government. These may include a Determination, Certificate of Compliance or an Approval in Principle for a Remediation Plan.

A Determination may be issued when there is no evidence of current or historical uses or activities causing contamination and investigations have confirmed no contamination is present. Ten of the legal lots included in the Bamberton property currently have a Determination that they are not contaminated. These lots are primarily the undeveloped forested parts of the property.

A Certificate of Compliance may be issued upon completion of remediation and may include conditions. For instance, a condition may require ongoing site monitoring if contaminants are managed in-place via the risk based standards approach.

A Determination, Certificate of Compliance or Approval in Principle is required under the Local Government Act before proceeding with subdivision, rezoning, a development permit and/or demolition permit.

Background: Bamberton & Three Point Properties

The historic Bamberton Lands are located approximately 40 kilometers from Victoria, BC and include 1500 acres of land and approximately 5 kilometers of Saanich Inlet oceanfront. Now abandoned, the site has played an important role in the industrial history of British Columbia.

The Bamberton Lands sprang to life in 1912 with a cement manufacturing plant and distribution facility. The site offered a protected deep-sea port, a limestone supply and reliable source of water from Oliphant Lake. A small town grew around the industrial operation and thrived until 1982. Since then, a variety of businesses have utilized the site for industrial operations, storage, barge handling and truck loading.

In March 2005, Three Point Properties completed the purchase of the Bamberton lands. Building deconstruction and environmental remediation planning began in July 2005. While Three Point Properties is not the first team to envision an exciting new future for the Bamberton Lands, its vision for the property promises to take a measured and patient approach to any redevelopment to ensure the right uses and the right timing. The first step in this process was the facilitation of deconstruction and environmental remediation for the site, now in the final stages of completion.

Three Point Properties is a local company that specializes in signature properties and seeks to create developments that are a credit to the community and friendly to the environment. The company is locally owned and operated. For more information people may go to www.threepointproperties.com.