

Executive Summary

Environmental Appraisal Document

Proposed Vancouver Harbour Ready Mix Concrete Plant Vancouver, BC

August 2001

Prepared for:



The Proposed Project

Lafarge Canada Inc. (Lafarge) is making an application to the Vancouver Port Authority (VPA) to build a ready mix concrete plant at the site of the old Sterling Shipyard, on Commissioner Street, in the heart of Vancouver's industrial port.

The Vancouver Harbour Ready Mix Concrete Plant being proposed for the VPA's industrial waterfront includes:

- a concrete mixing facility with silos;
- aggregate storage bins (for sand, crushed stone and gravel);
- a barge berthing and unloading facility;
- materials handling conveyors; and
- an office and maintenance building.

What is concrete?

Just like the concrete you might mix in your wheelbarrow in your backyard to set your fence posts, ready mix concrete is simply sand, gravel, cement and water.

The process of making concrete, which is the purpose of a batch plant, involves mixing cement with aggregate (i.e., sand and gravel) and water. The cement is transported to the site by truck while the aggregate is transported by barge.

The 4.06-acre site has been used since 1949 for industrial purposes, including lumber sorting and processing; ship building; and as a works yard for City of Vancouver Public

Works. At the moment the site is idle, with the exception of a small area used to store excess cargo containers.

Construction of the Proposed Vancouver Harbour Ready Mix Concrete Plant should be completed in an estimated six to eight months, working between the hours of 7:00 a.m. and 6:00 p.m., six days a week. Many of the components will be prefabricated off-site and assembled at the site.

The expected life of the Proposed Vancouver Harbour Ready Mix Concrete Plant is about 50 years but, with proper maintenance and care, it could last longer. At the time it is no longer required, the plant will be dismantled according to municipal, provincial and federal development plans and regulations in effect at that time.

The Proposed Vancouver Harbour Ready Mix Concrete Plant, during normal demand times, will operate from 7:00 a.m. to 6:00 p.m., up to six days a week. Cleanup and maintenance will be complete by 10:00 p.m. Unloading of aggregate from barges and unloading of cement may occur any time of day or night.

Lafarge's demanding environmental standards, tried and tested in actual applications around the world, will be followed in the construction and operation of the Proposed Vancouver Harbour Ready Mix Concrete Plant.

Lafarge contracted Hemmera Envirochem Inc. to coordinate environmental studies with specialist consultants to produce an Environmental Appraisal Document (EAD) that meets the requirements of both the VPA and the Burrard Environmental Review Committee (BERC).

It is clear that local residents see their neighbourhood as one that has a high quality of life and they are committed to maintaining and improving it. Lafarge acknowledges resident's concerns about the potential effects of the Proposed Vancouver Harbour Ready Mix Concrete Plant, especially those that relate to traffic, noise and air quality. The EAD considers and reviews existing conditions adjacent to the site of the Proposed Vancouver Harbour Ready Mix Concrete Plant, and identifies potential adverse effects as well as planned mitigative and preventive measures to address potential adverse effects.

The EAD is supported by a number of technical studies including:

- Environmental Baseline;
- Air Quality;
- Site Effluent Water Management Plan;
- Acoustical Evaluation;
- Traffic Study;
- Terrestrial Habitat and Wildlife Assessment;
- Intertidal Habitat Survey;
- Views;
- Real Estate Appraiser's Opinion on Neighbouring Property Values; and
- Landscape Concept.

The Findings

The following summarizes the conclusions of the various technical studies and outlines how potential adverse effects, identified by local residents, will be prevented or mitigated.

Soil, Sediment and Groundwater Quality

The site of the former Sterling Shipyard was created from fill material comprised of sand and gravel, clayey material, wood waste and trace amounts of construction waste such as bricks, ceramic and asphalt. Analysis of the soil samples indicates concentrations of metals such as copper, lead and zinc, in excess of the Contaminated Sites Regulation (CSR) Industrial Land Use standards.

A considerable amount of metal debris, concrete, asphalt and wood material is strewn throughout the intertidal region of the entire property.

An analysis of groundwater on the site indicates a higher than CSR (Aquatic Life standard) approved concentration of anthracene, benzoanthracene, fluoranthene, phenanthrene and pyrene.

Based on recent and historic soil investigations at the site, Lafarge has a good understanding of the location of soil contaminants across the site. As a result, Lafarge can take proactive steps to ensure that disturbance of those pockets is avoided where possible and, where it is not possible, that the contaminated soil, sediment or groundwater is removed, treated and disposed of in an appropriate manner.

Air Quality

A study of existing wind conditions adjacent to the site indicates the most frequent wind direction is from the east, both on a monthly average and on an annual average basis, although the wind conditions at the site may differ somewhat from adjacent areas.

The anecdotal observations of residents suggest that air flow from Burrard Inlet onto land may occur more frequently at the project site compared to the Second Narrows monitoring station. As such, anticipated site-specific variations in wind flow have been taken into account in developing a model to anticipate how any particulate emissions would be dispersed.

Construction of the Proposed Vancouver Harbour Ready Mix Concrete Plant is expected to generate some dust, although natural precipitation and, where necessary, the use of environmentally benign dust suppressants will minimize dust from blowing off during construction.

A study undertaken to estimate the impact of the operation of the Proposed Vancouver Harbour Ready Mix Concrete Plant on air quality suggests that relative to other industrial sources around the Port of Vancouver, it is expected that the proposed development will not have a significant impact on air quality. The particulate emissions associated with the Proposed Vancouver Harbour Ready Mix Concrete Plant are estimated to range from 6 t/year (average production) to 15 t/year (design maximum production). Particulate emissions of 15 t/year are 0.095% of the total regional particulate emissions based on the most recent Greater Vancouver Regional District (GVRD) emission inventory (August 2000, for 1999). Fugitive emissions of cementitious material from the plant are estimated to be 0.5% of total particulate emissions from the plant, with the rest being primarily aggregate dust. A number of measures are proposed to minimize potential sources of air emissions.

There are understandable concerns about the possibility of dust, including fugitive cement, aggregate dust and dust associated with truck traffic, from the Proposed Vancouver Harbour Ready Mix Concrete Plant. Plant operations will comply with Schedule D1 of the GVRD's Air Quality Bylaw, the new Emission Regulation for Ready Mix Concrete and Concrete Products Industries.

In order to comply with this bylaw, cement to be used in making concrete will always be contained inside the plant or in bulker trucks, in both the wet and dry processes used in the plant. Both the wet and dry processes will use a shroud to surround the loading area, also located inside the plant.

The silos for both cement and fly ash and the two production lines will be controlled using state-of-the-art pulse-jet cleaning mechanisms coupled with automatic materials recycle systems for cement dust. These systems have an efficiency rating of 99.9%, virtually eliminating dust emissions leaving the inside of the plant.

Lafarge also plans to contain dust from trucks by loading them inside the plant tower, using a dedicated fabric filtration system on-site. Most of the concrete batches will be prepared using the wet system.

Lafarge has also planned a number of measures to prevent dust arising from the sand and coarse aggregates used in the concrete process. These include:

- the use of washed aggregate with high moisture levels;
- immediate unloading of aggregate from the barge on which it arrives;
- the use of a covered conveyer to transfer the aggregate from barges to the storage locations;
- the use of a high vertical wall to block any wind from blowing over the aggregate; and
- the use of a partial roof and a misting system as part of the conveyer infrastructure.

Measures to be undertaken in order to address on-site traffic-related dust include limiting speed on-site, sweeping paved areas regularly and spraying paved areas with water or other dust suppressants to decrease dust emissions. In addition, it is expected that shifting concrete production, to serve the downtown market, from Lafarge's East Kent Avenue facility to the proposed site will provide some benefit to air quality related to reduced travel times though it is difficult to precisely quantify this benefit.

Compliance with air emissions guidelines will be monitored by on-site personnel trained and qualified to collect emissions readings, who will daily assess the effectiveness of preventive and mitigative measures.

Water Quality

Overall, the Ministry of Water, Land and Air Protection (MWLAP) considers the existing water quality in this area of Burrard Inlet, between First and Second Narrows, to be “fair”. Existing potential sources of contamination in the area include three bulk loading facilities, a sugar refinery, the public aquarium, urban runoff and combined sewer overflows.

There are potential impacts on water quality associated with construction of the Proposed Vancouver Harbour Ready Mix Concrete Plant. These include an increase in sedimentation and turbidity in the intertidal environment. Construction in the intertidal environment is estimated to take two to three months and will also be managed proactively and monitored by an independent third party environmental monitor who will have authority to stop work if any detrimental effects are observed.

Other potential impacts on water quality associated with construction of the Proposed Vancouver Harbour Ready Mix Concrete Plant include those associated with soil densification activities. However, the densification technique being used has been chosen because it has little effect on groundwater and will not mobilize potential soil contaminants. Other measures to be taken to address potential adverse effects associated with construction activities include erecting silt fences in any areas along the foreshore where there might be some chance of surface water flowing off-site.

Outside of densification, there will be some disturbance to nearby water during the removal of existing wood and creosote piles and installation of new steel piles for the berthing facility. Most of the work will be done at low tide and if, for example, removal of the existing piles proves to be extremely disruptive to the seabed they will be cut off at the base instead.

Lafarge will take a proactive approach to ensuring there are no spills of fuel or breakages of equipment that might affect groundwater or surface water by ensuring all equipment is properly maintained. In addition, a spill contingency plan will ensure that Lafarge is equipped to respond to accidental spills that might occur during construction.

Lafarge will keep an independent third party environmental monitor on-site at all times through the marine phase of construction. The monitor will document all activities and provide summaries to BERC as required. Any non-compliance issues will be reported to the appropriate government body immediately. The monitor will have the authority to stop work immediately if environmental damage is occurring.

With respect to operation of the Proposed Vancouver Harbour Ready Mix Concrete Plant, a number of measures have been taken to reuse water used in making concrete and recycle unused concrete that is brought back to the site. These measures will help reduce water use and the requirement for water treatment.

Effluent discharges to Burrard Inlet will range between approximately 129,000 L/month (driest month) and 1,000,000 L/month (wettest month).

All water generated at the site (i.e., storm water and process water) will be collected and treated before discharge into Burrard Inlet. The quality of all water being discharged into Burrard Inlet will be monitored to ensure that the Total Suspended Solids (TSS), oil and grease, and pH are within the limits required by the VPA permit.

Noise

Local residents have expressed concern about increased noise levels associated with the construction and operation of the Proposed Vancouver Harbour Ready Mix Concrete Plant. It is important to note that a similar plant exists on Granville Island, an area that many consider to be a thriving and vibrant part of the city. This example serves to support the idea that such facilities can be part of mixed-use urban communities with a high quality of life.

During the construction phase, there will be some normal, construction-related noise but those activities will be restricted to the hours between 7:00 a.m. and 6:00 p.m. and all municipal noise bylaws will be adhered to.

Noise coming from the operation of the Proposed Vancouver Harbour Ready Mix Concrete Plant will not have a significant impact on adjacent residences. This is

the conclusion of a study that specifically measured noise on and around Lafarge's East Kent Avenue facility, and compared that to existing noise levels in the neighbourhoods adjacent to the Sterling site. It is important to note that the East Kent Avenue plant does not use shrouding or cladding, as is planned for the new Proposed Vancouver Harbour Ready Mix Concrete Plant. The reduction of noise from the Proposed Vancouver Harbour Ready Mix Concrete Plant is expected to be markedly better because of the cladding that will shroud the silos.

Noise on the East Kent Avenue plant site measured 62.5 decibels (dBA). At the Proposed Vancouver Harbour Ready Mix Concrete Plant, noise would be expected to diminish significantly (i.e., below the bylaw requirement) by the time it reaches adjacent residences.

Existing noise levels measured on the residences along Wall Street ranged from 64 to 71 dBA on weekdays and 62 to 69 dBA on weekends. As such, the noise of the proposed facility will be largely indistinguishable from the noise that already exists, and will be well within the limits set by the City of Vancouver (COV) Noise Bylaw.

To ensure that its operations do not contravene the COV Bylaw, Lafarge is committed to minimizing noise by:

- restricting idling of concrete mixer trucks;
- obtaining the best available mufflers for front-end loaders on-site;
- using stationary blowers inside acoustically designed enclosures; and
- working with regulatory officials to substitute strobe lights as safety backup signals at night, rather than the standard audible backup alarms most commonly used.

Traffic

While there will be an incremental increase in traffic on roadways adjacent to the site, a study of traffic patterns in the area concludes most of the key intersections operate efficiently and could accommodate the additional traffic associated with the plant.

The study also noted that there are currently a small number of intersections that do not operate efficiently and cause some congestion and delays for local residents and commuting traffic. The traffic study has determined that measures proposed by Lafarge to accommodate traffic associated with the Proposed Vancouver Harbour Ready Mix Concrete Plant would also address these existing traffic concerns.

Lafarge is committed to working with the appropriate government agencies to ensure that the required preventive and mitigative measures that relate to traffic concerns are implemented.

All truck traffic will travel on designated truck routes, as mandated by the COV's Street and Traffic Bylaw, unless the ultimate delivery location is off such a route, for example, in the case of a residential construction project in a residential neighbourhood.

While the Proposed Vancouver Harbour Ready Mix Concrete Plant will make use of the port to barge in aggregate, the modest amount of marine traffic associated with this activity is not considered to have a significant impact on overall commercial marine traffic in the area. The port is zoned to support marine transportation and currently supports a number of operations that provide or require it.

Community Concerns

Residents of areas adjacent to the site of the Proposed Vancouver Harbour Ready Mix Concrete Plant have communicated concerns regarding the potential adverse effects on the community to Lafarge. These concerns largely relate to potential adverse effects associated with noise, traffic, air quality, and human health and safety.

Based on the concerns raised by residents, Lafarge has proposed a number of preventive and mitigative measures to address specific issues (i.e., traffic, air quality, etc.). By doing so, Lafarge has demonstrated that they take the concerns of residents seriously and are committed to addressing the concerns of residents. In addition, Lafarge is committed to ongoing dialogue with community interests through the construction and operation of the Proposed Vancouver Harbour Ready

Mix Concrete Plant in order to address, where possible, concerns that are raised by the residents of adjacent neighbourhoods.

Human Health and Safety

Human health and safety concerns raised by local residents include potential adverse effects of the Proposed Vancouver Harbour Ready Mix Concrete Plant related to air quality, traffic and site access issues. A number of measures have been proposed to address specific concerns (i.e., air quality and traffic) and ensure that the health and safety of local residents is not compromised by the construction and operation of the Proposed Vancouver Harbour Ready Mix Concrete Plant.

Views

The development of the Proposed Vancouver Harbour Ready Mix Concrete Plant will improve the local viewscape as it will entail removal of the large walls of stacked cargo containers that currently block any view of the harbour. Construction of the Proposed Vancouver Harbour Ready Mix Concrete Plant will also lead to cleanup of debris associated with previous activities on the site and improve views of the intertidal zone and marine/terrestrial interface.

Neighbouring Property Values

The VPA manages operations all along the southern shores of Burrard Inlet between the foot of Main Street and the Second Narrows Bridge. All these operations are industrial in nature and the view corridors through the subject area are already restricted with the present operations on the subject site and established uses of adjacent lands. The VPA provides ample warnings to the COV and prospective developers about their use of waterfront lands and the lack of synergies interfacing with adjacent residential use. The VPA also objects regularly to rezoning or development proposals on adjacent lands if they believe that the uses are incompatible with their operations. The current market value of residential properties adjacent to the subject site takes the above factors into account. The Proposed Vancouver Harbour Ready Mix Concrete Plant operation on the subject site is consistent with other industrial uses along the VPA's waterfront and is not expected to have any added impact on adjacent property values.

Wildlife and Fish

Given the highly modified nature of the site and its history of industrial use, very little terrestrial wildlife habitat is available. The most sensitive habitats within the property are intertidal and marine habitats that are primarily of significance to wintering water birds. The only mammals observed in the area were harbour seals, but other species common to the region may be found.

Similarly, there is little vegetation in the area, the only exception being a row of black cottonwood trees, some blackberry patches along the edges of the property and the ubiquitous weed and grass species. Bald eagle, northwestern crow and some other species use the cottonwoods for perching.

Although there is very little vegetation on the site, the cottonwoods that grow along the shoreline of the site are significant to a few bald eagles as perch sites. Lafarge proposes to remove these deciduous trees because they can impact the production quality of the concrete through the introduction of organic material, primarily leafy matters, into the aggregate. While loss of the trees would not seriously harm wintering populations of bald eagles in Burrard Inlet, the eagles would most likely no longer frequent the site. However, Lafarge plans to build two artificial eagle perches at the site prior to removal of the cottonwoods to help ensure there are perching opportunities for eagles while replacement vegetation matures. Use of the eagle perching habitat will be monitored over time to determine its effectiveness. The deciduous trees will immediately be replaced with native coniferous trees such as Sitka spruce and western red cedar.

Diversity and abundance of intertidal organism species is considered to be low throughout the site, largely based on the type of debris fill used to extend the historical foreshore. When compared with other Burrard Inlet sites, this site appears to have a lower biodiversity and low population sizes of those species that do exist here. The strong odour of hydrogen sulphide and the black coloured sand suggests this area may be negatively affected by local storm sewer outfall and/or the Victoria Drive combined sewer outfall that enters Burrard Inlet near the site.

The potential negative effects of pile driving on fish will be addressed by using appropriate type and angle of piling and, where necessary, the use of a bubble

curtain. This technique was used by the VPA during construction of Canada Place Pier and was very effective in mitigating the impacts on fish. The technology has been shared with other pile driving firms in Vancouver since that time, and is proving to be standard practice in many sites.

Adjacent Industrial Land Uses

While many of the preventive and mitigative measures proposed in this document focus on potential adverse effects on adjacent residential areas, Lafarge has also taken a number of steps to ensure that adjacent industrial land uses are not adversely affected by the Proposed Vancouver Harbour Ready Mix Concrete Plant. For example, steps taken to minimize aggregate dust emissions will address potential adverse affects on industrial as well as residential land uses. During construction of the Proposed Vancouver Harbour Ready Mix Concrete Plant, Lafarge will monitor, as necessary, soil densification activities to ensure there are no adverse impacts on neighbouring properties. With respect to traffic issues, steps have been taken to ensure that there is no reduction in parking for adjacent properties. Changes proposed to address potential adverse effects related to increases in traffic will benefit Lafarge's neighbours on adjacent VPA lands. Steps have been taken in the design of the barge unloading facilities to minimize congestion and potential safety concerns related to other marine traffic.

Public Consultation

Lafarge is committed to community dialogue and input, and has actively sought the suggestions and opinions of neighbourhood stakeholders through:

- small meetings;
- one-on-one discussions;
- an extensive mail-out of information;
- market research;
- an open house with all technical consultants available;
- a public meeting open to public presentations, moderated by Ted Hughes, Q.C., and with all consultants available to answer questions; and
- creation of a publicly-accessible Web site containing relevant material.

In creating the proposed plant configuration and technology, Lafarge has taken into account the key social and environmental values relayed by residents and adjacent businesses. This document has integrated the comments and suggestions of the public and regulators that were provided in past review processes. As such, the current proposal improves on the scientific, technical and operational approaches of an earlier proposal.

Lafarge is committed to monitoring the potential effects of the Proposed Vancouver Harbour Ready Mix Concrete Plant, starting with construction and continuing through its operational life. The company intends to work with the public and the regulatory bodies to ensure it is meeting the needs of all interested parties.

Conclusion

In its assessment of the Proposed Vancouver Harbour Ready Mix Concrete Plant, Lafarge has completed a detailed technical review of the site and surrounding environment, taken into account social and environmental values that are of concern to residents and adjacent businesses, and worked to ensure that the plant design, layout construction and operation will avoid adverse effects on these values.

In addition to measures that prevent or mitigate potential adverse effects, activities associated with the development of the Proposed Vancouver Harbour Ready Mix Concrete Plant will also provide some benefits. Some of these benefits include a reduction in truck traffic on regional roads and in sources of associated air contaminants, though it is difficult to precisely quantify these benefits. In addition, development of the site of the Proposed Vancouver Harbour Ready Mix Concrete Plant as outlined in this document will help improve upland and intertidal habitat for most wildlife. Finally, measures proposed to address current traffic challenges in the area will benefit local residents and businesses as well as accommodate the traffic associated with the Proposed Vancouver Harbour Ready Mix Concrete Plant.

Lafarge is encouraged that the Proposed Vancouver Harbour Ready Mix Concrete Plant is consistent with the contemporary urban landscape of the port and accommodates both residential and industrial activity. Lafarge continues to be committed to monitoring the potential effects of the project, starting at the construction stage of the plant and continuing throughout the life of the project. Lafarge is committed to continuing to work with the public and regulators to ensure that all issues surrounding the plant can be addressed in a manner that meets the needs of all interests.