

Cox Quarry

Regional Impact Overview



Prepared for

Fraser Valley Regional District & City of Abbotsford

What Is Cox Quarry

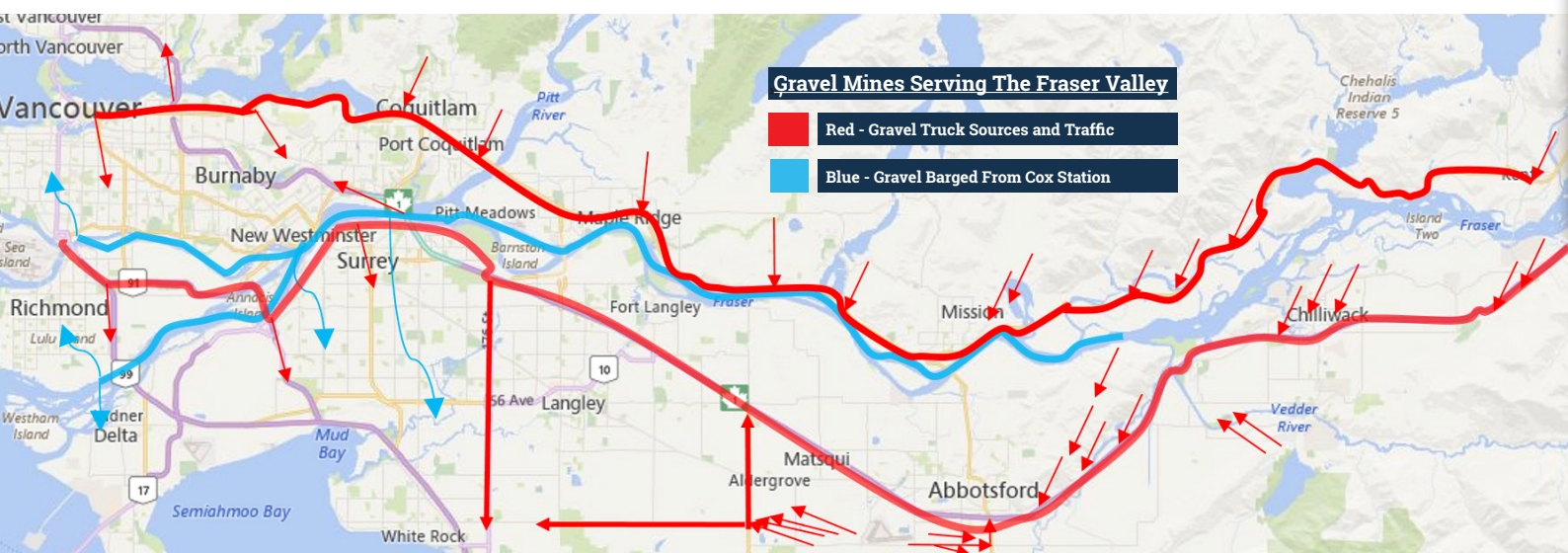


Gravel barge leaving Cox Quarry
(One barge equivalent to +/- 100 truck loads)



Cox Quarry is a large aggregate mine, located on the back side of Sumas Mountain. The mine straddles the border of the Fraser Valley Regional District and, the City of Abbotsford. In its current form, it has operated for over 35 years (though historic deeds trace its mining history back to 1901). Material mined from this location helped built the CN Rail Way, the South Fraser Perimeter Road, the Port Mann and Golden Ears Bridges, the new runway at the Abbotsford Airport, the McCallum overpass, hundreds of kilometers of roads, thousands of house foundations and dozens of hospitals, schools, playfields and high-rises.

What makes Cox Quarry unique, and regionally important is that 98% of that gravel was shipped from Abbotsford/FVRD to Langley, Surrey, Richmond, Delta and Vancouver by barge, not truck. Each barge removes nearly 100 trucks from Highway 1. On average, three barges leave Cox Quarry every day.



The equipment at Cox Quarry is aging and, in need of replacement. The costs to operate the old equipment are high, and trucking costs are low, causing more and more material to be shipped via truck instead of barge. The operators of Cox Quarry are looking to invest \$40 million dollars in new, cleaner, quieter and 39% more energy efficient equipment; however that equipment and this mine straddle two jurisdictions requiring a unique collaboration between the City of Abbotsford and the Fraser Valley Regional District.

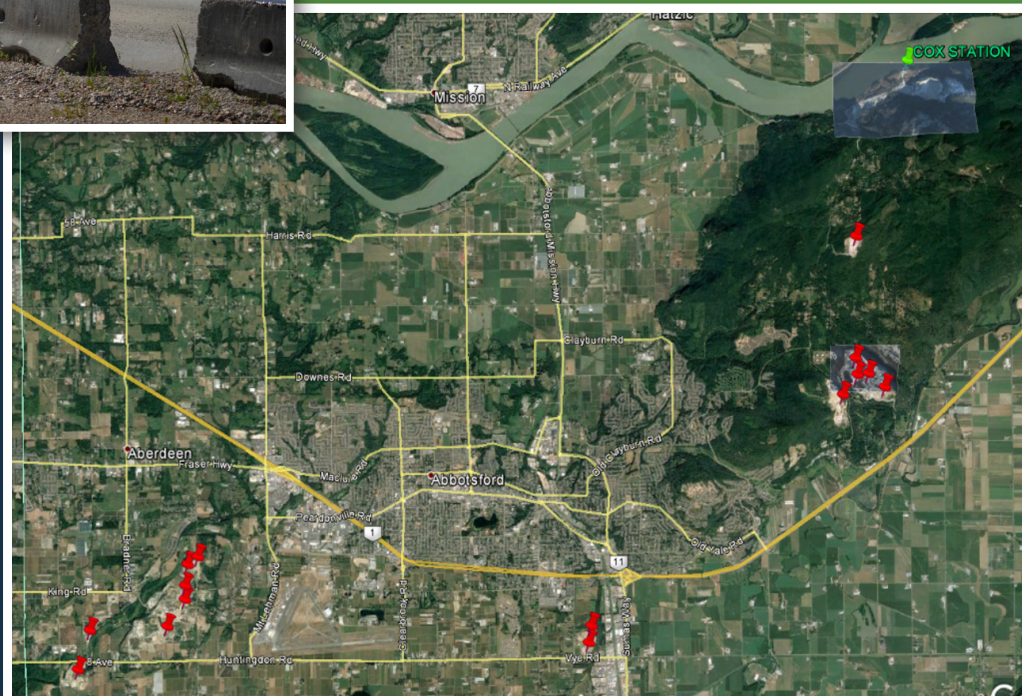
Neighborhood Impacts

Cox Quarry is the largest aggregate mine in Abbotsford (over 500 acres), but, probably the least noticed. On top of the permitted mine acreage, the landowner also purchased 165 acres of property adjoining the mine to ensure a large buffer between neighbours. Truck traffic on average is less than 6 trucks per day. The nearest neighbour is over 1 kilometer away from crushing or mining activity. Crown lands buffer the east, the Fraser River buffers the north and, the landlord, Laurmel Holdings Ltd. has purchased every adjoining private parcel south and west (and many beyond that). Cox Quarry employs about 40 full time employees at skilled trade wages. Many of them are Abbotsford residents, some live right on Sumas Mountain.

Cox Quarry protects its workers from dust and noise to below levels acceptable for on-site workers, full time, for a life time. This ensures the safety of our off-site neighbours as well.



There are over a dozen other aggregate operations in the City of Abbotsford. The map to the right indicates their location (red). Aside from Cox Quarry, most are 100-150 acres and, have residents within half a kilometer. Everyone but Cox Quarry, ships all of their product by truck, most will see between 50 and 100 trucks a day and most employ less than six people.



Community Safety



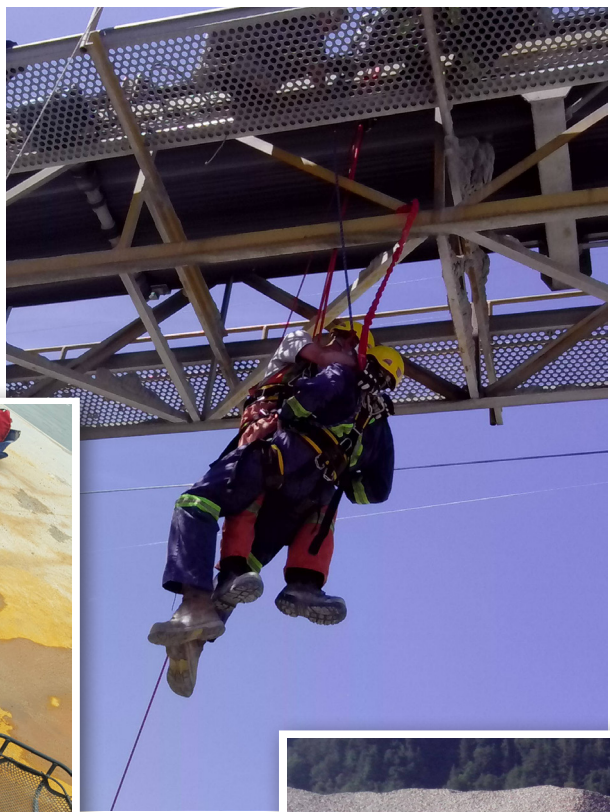
Geography limits the number of neighbours, or even passing vehicles on the municipal gravel road which leads the mine's gate. While this keeps Cox relatively 'out of the way' – being remote has always been a hazard for both employees, and the other mountain residents.

Because of the mine's size and specialized equipment it has been able to assist the fire department with a medical distress call in the snow, and is now on the Abbotsford Fire Department 'call list' for response to interface fires on Sumas Mountain.

- Cox Teams have pulled out dozens of stranded drivers, and picked up motorcyclists who failed to safely navigate the steep gravel road.
- Rescued lost hikers, dogs, and assisted in the occasional police matter.
- Maintain a swift-water rescue team, a high-angle rescue team, and an off-road water truck with fire cannon also.



In case of an emergency in their neighbourhood, Cox Teams are often the first responders and they are always glad to be of service to our community.



Environmental Impacts

Cox Quarry prides itself on its environmental program. Construction aggregates are an essential, non renewable building block of society and Cox Quarry is a prime example of responsible mining.

- The use of barge transportation reduces diesel exhaust emissions. Truck transport creates 371% more diesel emissions than barge. Cox ships 98% of its sales by barge, eliminating 6,532 Tonnes of CO2 emissions every year.
- The mine is also serviced by BC hydro, eliminating the need for diesel generators.
- Cox Quarry's "Bowtie" shape is due to the spawning stream that bisects the mine. In a 2015 fish count over 500 returning Chum passed through the mine to spawning grounds on the property.
 - Bear, bobcat and cougar have been seen to frequent this food source and co-exist on site with the mine without conflict.
 - Deer are regular visitors in the spring, when fawns are deposited on site (presumably for safe keeping from predators) while mom forages nearby. Employees typically spot two to three families on site a year and have had no orphaned fawns to date.
- The mine features three nesting poles, two occupied by Osprey one by a red tailed hawk. Employees have had the pleasure of watching 8 babies fledge on site, so far.
- Laurmel Holdings – (the landlord) constructed an off-channel over-wintering pond for salmon survival. This was an offset for the destruction of an on-site trout pond, however it provides a far more rare habitat type, Fraser River clear water side channel.
- Several beavers are active on about 50 acres of our foreshore, some of the last 'un-diked' and forested areas along the Lower Fraser.

This mine is used as an open-air school. Each year, in partnership with MineralsEd, Cox hosts several hundred school children for tours. They learn about construction, environmental protection, mining jobs and the social, economic and environmental impact of aggregates. Much like our food, "shop local" has a huge impact on the affordability of our public infrastructure, as well as the air we breathe and the water we drink. Cox Quarry is a showcase of what is possible in an industry not typically known as "sustainable", or "green".





Future Plans

Cox Quarry has been running much of the same crushing equipment in the same location for 20 or so of the last 35 years. It is starting to show its age. Breakdowns are more common, more work is required to keep it clean and a growing number of stairs, railings, guards and other safety items require repair or replacement.



Repairing the existing equipment just well enough to make it last another ten years has been estimated to cost over \$12,000,000. Replacing it will cost more, but provides an opportunity to move the equipment a kilometer closer to the mining face, and a half a kilometer farther from the nearest neighbour. The new equipment will also have a 25 year life, and will be more energy efficient.

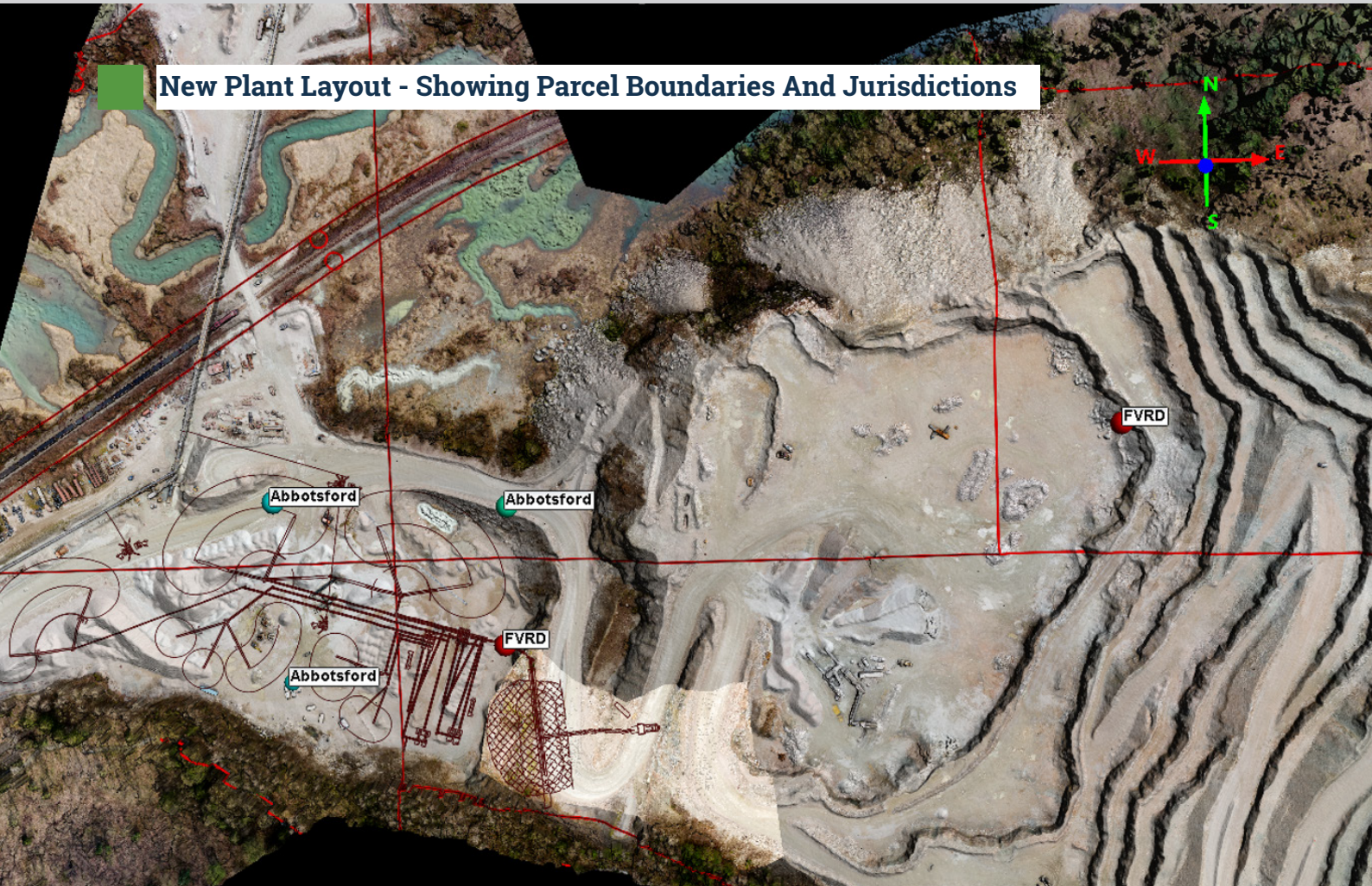
This move will also reduce air emissions. Currently Cox Quarry uses 8 large, off road mine haul trucks to move rock approximately 2KM (round trip) to the crushing plant and then conveys it another 1.5 KM to the barge. Based on the current air pollution modeling, the reduction in truck travel distance alone will reduce dust emissions from 51 tonnes, to approximately 5. Diesel exhaust from the haul trucks will also be reduced by 90% just in shorter travel distance, but more still because the oldest trucks, with the lowest emission controls will be decommissioned.



Permitting

This mine began wholly within the Fraser Valley Regional District and is made up of 20 legal parcels. It has maintained a Provincial Mines Permit since 1985. When Sumas Mountain was annexed to the City of Abbotsford in the late 2000's the boundary adjustment split the mine along certain lot lines, not the provincially permitted mine boundaries.

New Plant Layout - Showing Parcel Boundaries And Jurisdictions



Both Abbotsford and the FVRD have since passed bylaws to regulate the extraction and processing of gravel. While municipal level permit discussions have been ongoing, the jurisdictional issues, along with the long history and low impact of the location had made issuing permits a challenge. With little truck traffic and few neighbours, this mine has enjoyed a long and quiet existence. The operator did not wish to generate negative attention due to public hearings or information sessions which are typically for new mines, and typically are used by a small but vocal group as a public venue to oppose mining in general.

The contemplated upgrade however represents a major capital expenditure, which will also move processing operations directly on top of the jurisdictional boundary. The landlord does not wish at this time to pursue any jurisdictional realignments, and the operator, considering the magnitude of proposed investment is pressing to obtain permits in both jurisdictions to ensure that a 25 year, multi-million-dollar investment is not misplaced.

A Smaller Carbon Footprint

Inland barge transportation produces far fewer emissions of carbon dioxide for each ton of cargo moved compared to transport by truck or rail, according to a recent study conducted by the Texas Transportation Institute. Comparing transport emissions per ton-mile (emissions generated while shipping one ton of cargo one mile), researchers calculated that transport by rail emits 39% more CO₂, and transport by truck emits 371% more CO₂, than transport by inland barge.

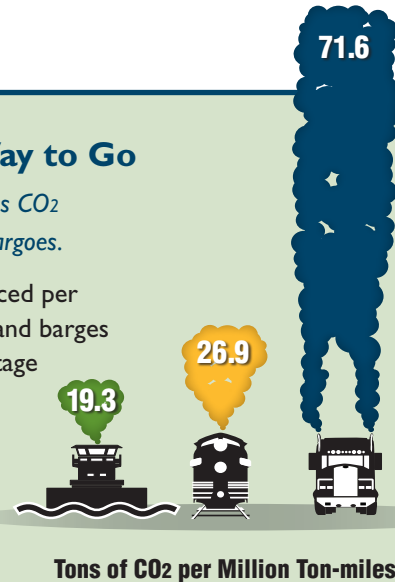
According to the study, if the 274.4 billion ton-miles of activity on America's inland waterways in 2005 were shifted to rail or truck, rail transport would have generated 2.1 million additional tons of CO₂ and truck transport would have generated 14.2 million additional tons of CO₂. This assumes these modes had the capacity to handle the additional cargo with no change in efficiency.



The Greener Way to Go

Inland barges produce less CO₂ while moving America's cargoes.

In terms of CO₂ produced per ton of cargo moved, inland barges have a significant advantage over trains and trucks.



Transport on America's Waterways Means Fewer Emissions

Following a scientific review ordered by the U.S. Supreme Court, the EPA recently issued a proposed finding that "greenhouse gases contribute to air pollution that may endanger public health or welfare."^{*} The agency estimates that 33% of our nation's annual carbon dioxide emissions come from transport-related activity.^{**} Compared to rail or truck, inland barges offer America a more fuel efficient, safer and *carbon friendly* transportation alternative. Our inland waterways are a sound investment in America's future.



From a study titled "A Modal Comparison of Domestic Freight Transportation Effects on the General Public," November 2007, amended March 2009, by the Texas Transportation Institute, Center for Ports and Waterways. For the full report, visit our website: www.nationalwaterwaysfoundation.org. This study was a joint project of the National Waterways Foundation and the United States Maritime Administration.

^{*} Environmental Protection Agency - *Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act* - <http://epa.gov/climatechange/endangerment.html> (24 April, 2009)

^{**} Environmental Protection Agency - *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007* <http://www.epa.gov/climatechange/emissions/usinventoryreport.html> (20 April, 2009)



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