

Why a New Landfill?

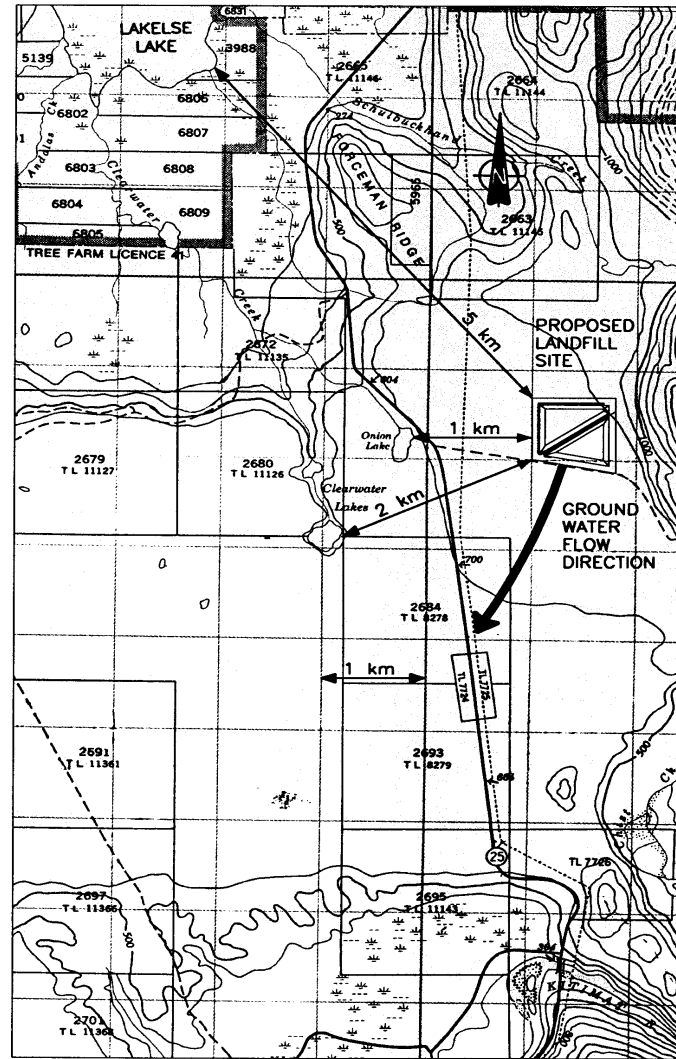
- The Terrace area is currently served by two landfills: the Terrace Landfill and the Thornhill Landfill.
- The Regional Solid Waste Management Plan (1995) contained a recommendation that the Terrace area would be better served by a single landfill for two main reasons:
 - Environmental: There were environmental concerns about the existing landfills, which are not up to current BC Environment standards.
 - Economic: A single, larger landfill can take advantage of economies of scale in its operation. In addition, the cost of bringing the existing landfills up to current standards and operating two sites would be more costly than development of a new landfill.
- Two options were considered for the regional landfill: Upgrade and expansion of the existing Thornhill site, or development of a new landfill at a different location.
- After finding a new landfill site, a comparison of both alternatives was made, and it was decided that development of a new landfill would be the best option to pursue.

Where is the Proposed Site Located?

- The Forceman Ridge Landfill would be located 1 km off Highway 37 along the Chist Creek "Main" logging road, approximately 30 km south of Terrace.

How was this Site Chosen?

- A local landfill siting advisory committee was established to assist with the site selection process.
- A landfill siting study was conducted using the following criteria:
 - Topography: The site should be relatively flat (<5% slope) and large enough to accommodate the operation and buffer area.
 - Land Use: Prescribed minimum distances to various land uses including residential, commercial, recreational, and First Nations areas.
 - Environmentally sensitive areas must be avoided.



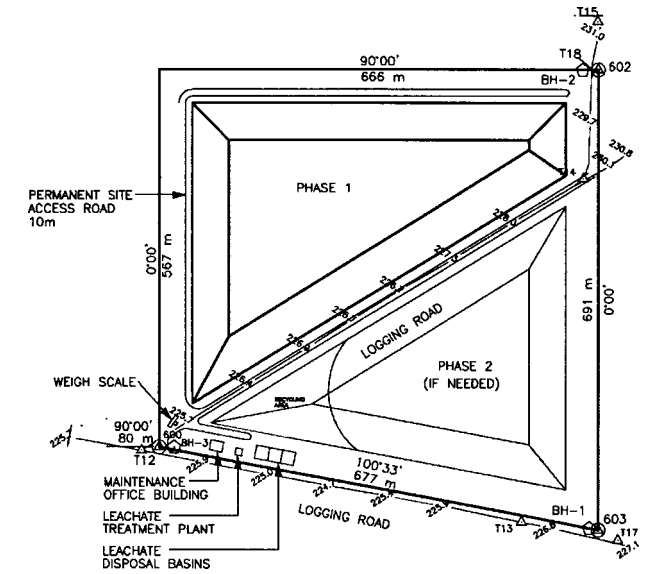
Proposed Forceman Ridge Landfill Site Location

- Provincial Land Reserve lands and known First Nations heritage sites must be avoided.
- Proximity to paved all weather roads and waste source(s) was important.
- A number of potential sites were initially selected, many of which were rejected based on the above criteria.
- A short list of candidate sites were test-pitted to investigate the soils for landfill compatibility.
- After consultation with the holders of local tree farm licenses and the Ministry of Forests, the current proposed site was chosen.
- Investigations of the proposed site were conducted, including:
 - Determination of fish and wildlife values of the site was made by Applied Ecosystems Management.

- Investigation of the underlying hydrogeology (soil type and depth of the water table) was made by AGRA Earth & Environmental, and Golder Associates.

Conceptual Forceman Ridge Landfill Design:

- The proposed landfill is intended to be a long term development, serving the Terrace area for a minimum of 50 years.
- Several factors were used in determining the required landfill capacity:
 - Population: For study purposes a population estimate of 21,051 was used for the Terrace area growing at an assumed rate of 1.2% per year, to an estimated 38,220 persons in 2050.
 - A per capita waste generation rate of 680 kg/person/year.
 - A compacted waste density of 600 kg/m³.
- Based on this information, and a desired operational life of approximately 50 years, the conceptual design was developed with a volume of 1,592,700 m³ and a capacity of 955,600 tonnes, covering a filling area of 18.5 hectares.
- This capacity is divided into 3 Phases:
 - Phase 1 occupies the northwest half of the site, north of an existing logging road.
 - Phase 2 will occupy the southeast half of the site, south of the logging road.
 - Phase 3 would involve filling the "valley" in between Phases 1 and 2, over top of the logging road. Before this phase is undertaken, the logging road would be rerouted around the landfill.
- Other features of the conceptual design include:
 - A recycling area for the sorting and storage of recyclable materials.
 - Yard and Garden waste composting facilities.
 - Weigh scales to track refuse quantities and calculate landfill tipping fees.



Development of the Forceman Ridge Landfill:

- Under the current design concept, development of Phase 1 will begin with excavation to a minimum depth of 5 meters and installation of the liner and leachate collection system. This will occur in stages over several years in order to spread out the capital cost of construction.
- Filling will take place in a series of broad trenches. Daily and intermediate cover will be added as filling progresses. Once Phase 1 has been filled to the level of the ground surface, filling above ground, to a height of 15 to 20 meters, will begin.
- Phase 2 will be developed in a similar manner as Phase 1.
- Once filling in each Phase is complete, a final cover layer and a layer of top soil will be added, with the top soil hydro-seeded to establish cover vegetation.

Expanded Refuse Collection Service

- Part of the development of the Forceman Ridge landfill will involve the closure of the Terrace and Thornhill landfilling operations. This will impact those who currently don't have collection service and normally self-haul to one of these two landfills.
- In order to minimize vehicle traffic travelling out to the new landfill as well as minimize the financial burden for the current self-haulers, the Regional District is proposing to provide expanded weekly refuse collection to service all homes in the Terrace area. This will include areas such as North

Terrace, Thornhill, Lakelse Lake, Usk and Jackpine Flats.

- This collection service for the area outside the City of Terrace would be made compulsory by the Regional District and would likely be provided by a private company or companies.
- It is estimated that this service would cost homeowners in the order of \$15 per month. While this could be thought to be costly, it is actually a reasonable fee for a valuable service and would be considerably less than the true cost of self-hauling, especially to the new landfill, which represents a round-trip of about 60 km from Terrace.
- City of Terrace residents would continue to receive their weekly municipal collection service.

Maintaining the Thornhill Landfill as a "Mini"-Transfer Station

- While the Thornhill landfill will be closed as a landfill, there is still a need to provide Terrace area residents with a location to drop off bulky goods and/or recyclables that cannot be collected as part of the expanded solid waste collection service.
- This drop-off service would be provided through the conversion of a portion of the Thornhill landfill into a "mini" transfer station. This transfer station will include large metal bins for waste as well as areas to drop recyclables and clean burnables.
- Typically, bulky goods would include furniture that can no longer be used, mattresses and household appliances like fridges, stoves, washers and dryers.
- Those goods that can be recycled will be marshalled in segregated areas for subsequent removal. Non-recyclables will be deposited into large metal bins which will be hauled to the new Forceman Ridge landfill.
- Materials that are clean and burnable, such as wood and yard trimmings may either be periodically open-burned (as they are now) or groundup and incorporated into the potential yard and garden waste composting program.
- This "mini" transfer station would likely be open only on weekends in order to accommodate public access, at the same time encouraging the use of the expanded collection service. Fees for

depositing waste materials at this "mini"- transfer system may be charged.

Access to the Forceman Ridge Landfill:

- Due to the distance to the landfill from Terrace, public access to the landfill will likely be restricted. Instead, public solid waste disposal needs will be met through the expanded collection system discussed above and the availability of the Thornhill "mini" transfer station. Private haulers will have access to the Forceman Ridge landfill but will not have access to the "mini" transfer station.

Environmental Protection:

- Leachate is formed when snow melt and rain pass through the waste.
- Typical contaminants in leachate include organic compounds, metals and chloride.
- Leachate containment and treatment is required to protect groundwater quality.
- Leachate will be contained by a high density polyethylene liner, and will be drained away through perforated pipes and pumped to the on-site treatment system.
- The leachate treatment system consists of four parts:
 - An aerated lagoon, where "friendly" bacteria consume organic contaminants and absorb some metallic contaminants contained in the leachate.
 - Precipitation of metal ions, if required.
 - A sedimentation pond, where solids are settled out of the leachate, removing the majority of the organic and metallic contaminants.
 - An infiltration basin, where treated leachate is discharged and allowed to infiltrate into the soil. Further remediation occurs due to the action of bacteria in the unsaturated zone of the soil, which extends 40 meters below the ground surface to the water table.
- A monitoring program will be established for the leachate treatment system to monitor leachate strength and treatment effectiveness.
- Six monitoring wells have already been installed for investigative purposes. These wells are currently being used to monitor existing groundwater depth and quality, and will be utilized in the future, should the landfill be developed, to continue to monitor groundwater conditions.

- Current data from the monitoring wells indicate that groundwater flow is to the south/southwest direction.
- Fencing around the landfill, including electric bear fencing around the filling area, will prevent wildlife from entering the landfill.

Costs of Developing the New Landfill:

- New costs associated with this project include the capital cost of developing the Forceman Ridge Landfill site, and the costs of closing the Terrace and Thornhill landfills.
- These costs will be spread out over the operational life of the Forceman Ridge Landfill, since development of the new landfill will take place in stages.
- Operational and maintenance costs will be minimized, since it is more cost effective to operate one larger landfill than two smaller landfills.
- These costs will be recovered through a combination of taxes and tipping fees.

The Next Steps:

- With the preliminary siting investigations and conceptual design complete, the next steps include permitting, detailed design and construction.
- The Regional District Board has only approved initiating the permitting process.
- Permitting includes a submission to BC Environment and referrals by technical agencies and community organizations.
- Permitting, if successful, could take upwards of 1 year.
- If permitting is approved, detailed design and construction could take 2 to 4 years.

For More Information:

If you would like more information about the proposed Forceman Ridge landfill, please contact:

Regional District of Kitimat-Stikine
#300 - 4545 Lazelle Avenue
Terrace, B.C.
V8G 4E1
Phone: (250) 615-6100
1-800-663-3208
Fax: (250) 635-9222

Proposed Forceman Ridge Regional Landfill

Information Brochure

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