THE NATURAL HISTORY OF TROUT LAKE

"All is born of water, all is sustained by water." – Goethe

Wetlands are the slimy in-between places where earth and water meet and mix. They are edges, ecotones, places of vast diversity. They stink with the sharp, sulfurous smell of life's beginning. Light transforms into life. Every tablespoon of water contains millions of organisms: phytoplankton, zooplankton, bacteria. Wetlands stabilize soil and clean water. They are vital habitat.

The history of the European occupation of North America is a history of the devastation and elimination of wetlands. Estuaries were buried, and dredged to create harbors. Bogs were drained, marshes were filled, swamps were turned into farms and suburbs. The fur trade eliminated millions of acres of beaver-built wetlands. Water was diverted, dammed, ditched, and captured for irrigation, sanitation and electric power.

Trout Lake today is mostly a landscape manufactured by people, for people. Grass, playing fields, beach, shoreline, trees and sidewalks are all constructed landscape features. But along the lakeshore, there are narrow ribbons of life that evoke the lake's natural history: complex, boggy, wetland areas of marsh and swamp. These small areas sustain all the birds, animals and insects at Trout Lake.

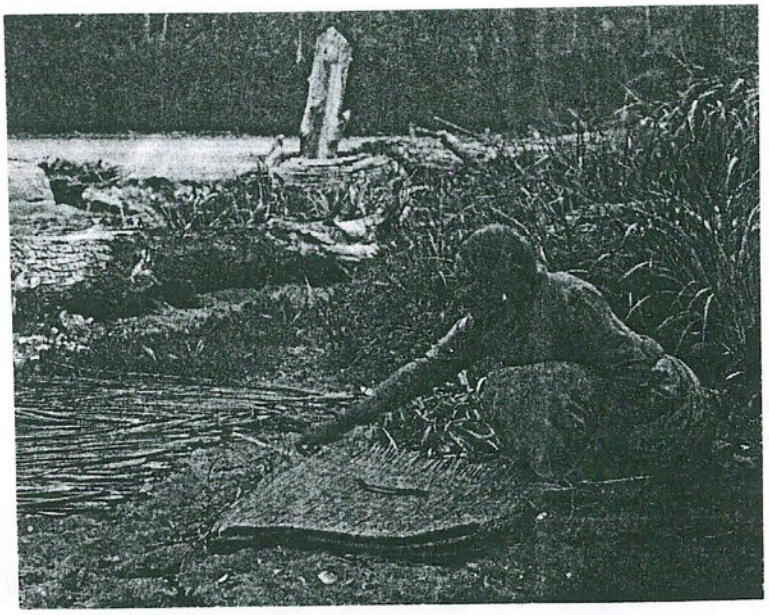
In 1867, Trout Lake was at the centre of a gigantic wetland. Marsh and swamp extended for hundreds of acres around the lake. Creeks flowed into the lake at the south end, and out from the lake at the north end, down to sea at the nearby estuary and salt marsh. All this flow of water is buried today. The estuary has been filled in, and now is industrial and residential land. Creeks are captured in the Vancouver sewer system.

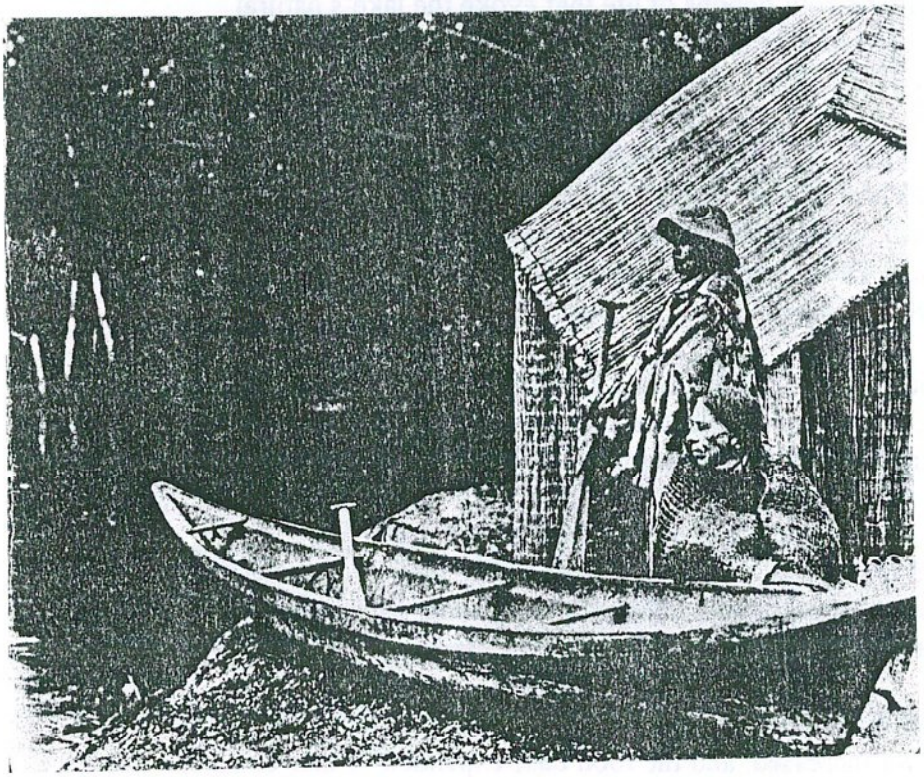
Salmon and Trout once were born in the creeks around Trout Lake, and they would return to the creeks to spawn and die. Eagles and Black Bears would feast on the spawned out salmon. Fish bones nourished trees in the surrounding forest.

Beavers at Trout Lake created an ecological system that enriched the land. They continually built and maintained their dams, replacing shifted sticks, patting on more mud, and digging canals to float trees in. Beaver dams enlarged the wetland, where warm, shallow water nourished plankton, insects, fish and birds.

When beavers built dams and streams were trapped in ponds, the water became quiescent and warmer, plankton populations increased, and the food base expanded. Water detained in the wetlands behind a beaver dam was more likely to percolate down to the groundwater, raising the water table and creating springs and freshets throughout the watershed.

Coast Salish woman demonstrating cattail mat making. Photograph by Harlan I. Smith, Washington, 1900. American Museum of Natural History, New York: 12134 and temporary summer house of cat-tail mats, Puget Sound, Washington, Photo: E.S. Curtis (c. 1912). Provincial Archives of British Columbia.





In shallow wetland areas around Trout Lake, cattails flourished. First Nations people harvested them. Salish people made cattails into many things including summer houses, mats and baskets. Other plants that grew around the lake – such as Silverweed and Bog Blueberries – were important food. Red Cedar trees, which thrived in the wet acidic soil near the lake, were a most important resource for Salish people. They cut planks for their houses from cedar trees. They used cedar bark to make clothing, and cedar wood for boxes. Whole trees were made into canoes. Because the lake attracted so many animals, it was an important hunting area. Trout Lake may have had special spiritual significance to local First Nations people, who practiced spiritual swimming, and saw many lakes as home to *stl'a'lequem* – dangerous beings.

Animal icons from Naturescape British Columbia publication: "Caring for Wildlife Habitat at Home."

Loon and Grebe once were common at Trout Lake. Elk and Deer once visited often, as did Cougar, Wolf, and Trumpeter Swan. Woodpeckers were important to the ecology of wetland. As they feasted on bugs in the huge old trees, they excavated cavities that ducks would nest in. Small mammals like Martens denned in hollow logs in the old growth forest around the lake. Nine species of amphibians depended on decaying wood for food and habitat.

The first negative human impact on Trout Lake occurred early in the history of the non-native settlement of Vancouver. In the 1870's Hastings Sawmill constructed a flume to carry lake water to the mill, lowering the water level in the lake and creeks. Beavers kept blocking the flume, and they were trapped and killed.

When the beavers disappeared, trap by trap and hat by hat, old dams collapsed, and streams were released from the series of ponds and impoundments the beaver dams created. Without wetlands, creeks became laden with silt. Muddy water blocked sunlight from the algae, plankton was not so populous, fewer minnows and insects found food, and so birds and animals went hungry. There were fewer places for ducks to breed – muskrats and otters were flooded or frozen out from their homes without the beaver dams that maintained the lake at a constant level. Mink and Raccoon, Moose and Deer, Turtle and Salamander lost habitat.

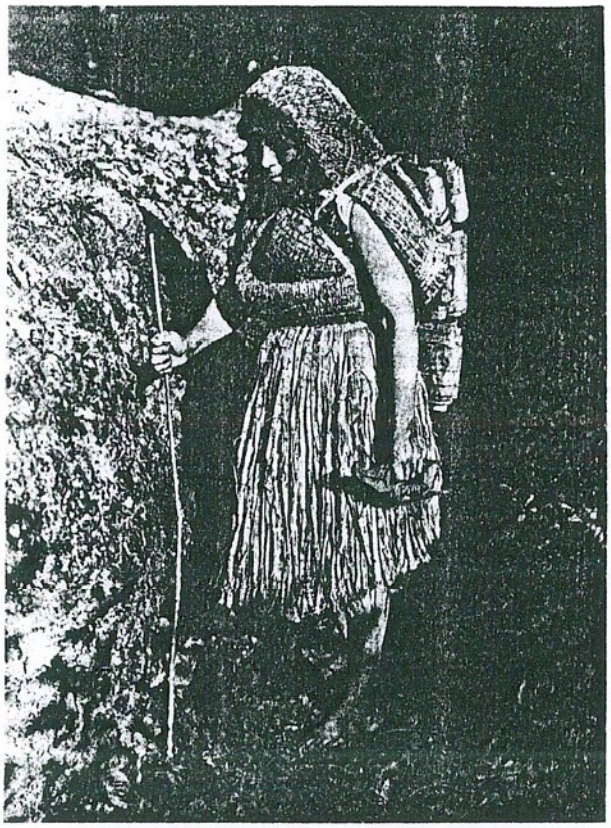
As the forest around the lake was logged away, another vital component of the environment was lost. Farms were established on the cleared and drained land, and people began to settle all around the lake. Sewage, no longer filtered by a tangle of tree roots, was washed straight into the water. China Creek, the major creek flowing out of Trout lake to the sea, eventually became choked with pollution, and area residents considered it a menace. The creek was buried in a large sewer pipe in the early 1950's.

Today the waters of the Trout Lake watershed are discharged into the ocean at the Iona treatment plant with city sewage. The remaining swamp around the lake has been largely replaced by turf.

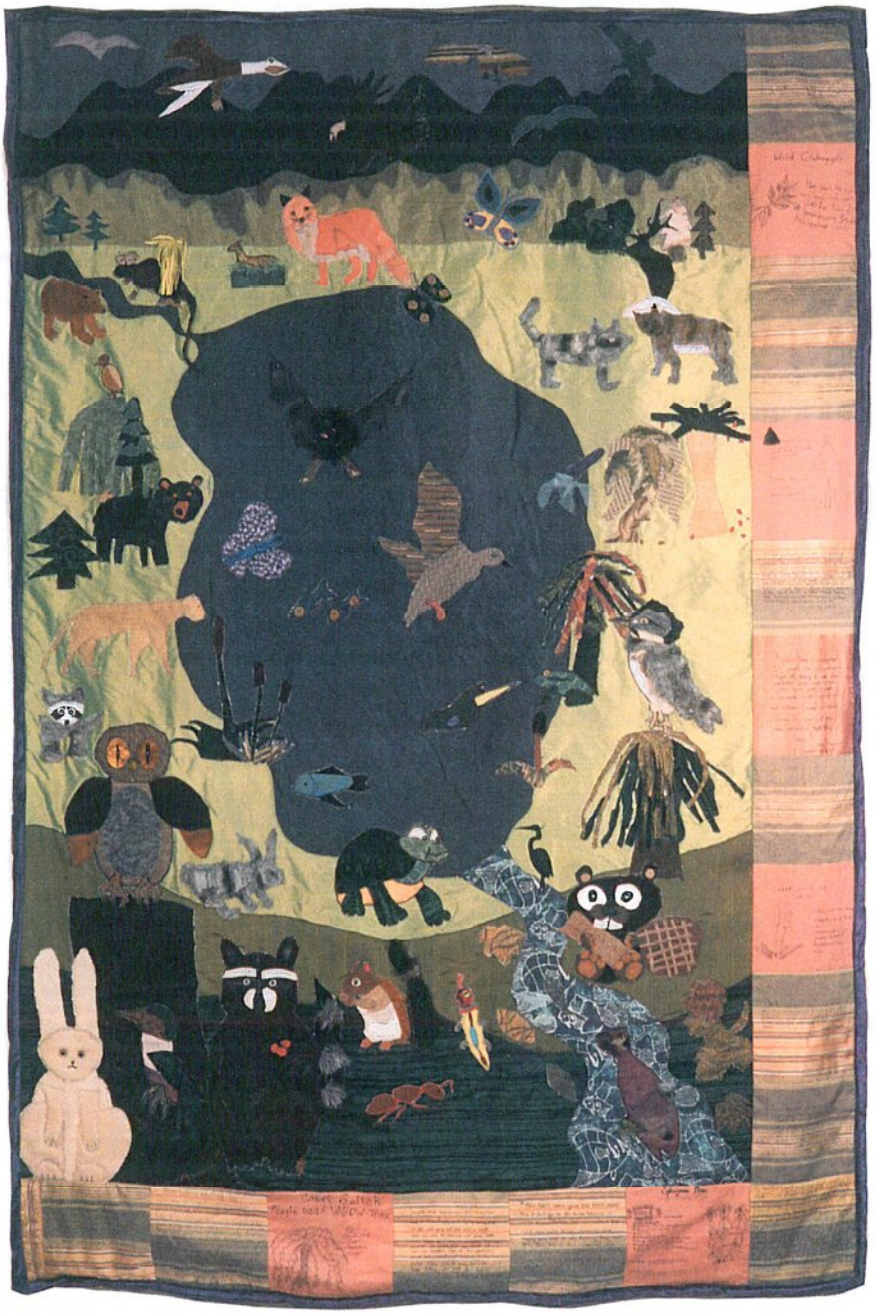
As we studied the history of the area, we came to see the present environment as radically simplified. The past was characterized by complexity – an intricate web of relationships between various species and the elements. And for all that is lost, we can still see and cherish the echoes of the past that persist, with incredible resilience, at the lake today.

Students at Gladstone Secondary School Montessori Program (Grades 8 and 10) and community participants created a beautiful quilt exploring the past at Trout Lake. They included pictures of many birds and animals, as well as information on First Nations use of plants, and excerpts from oral histories of the area.

Students at Tyee Elementary School (Debbie Adam's Grade 4, 5 and 6 class) created a separate quilt. They also made a timeline depicting the lake's history, and exploring its future.



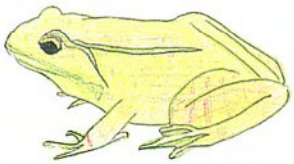
A red cedar bark gatherer; note the adze in the woman's hand, the bundles of bark on her back, and her clothing made of red cedar bark. Photo by E. S. Curtis (*ca.* 1915), courtesy Provincial Archives of British Columbia.



Map of the Past at Trout Lake, quilt, mixed fabric appliqué, pieced and quilted, created by Gladstone Secondary School Montessori Program Grade 8 and 10 students, and community members at the Trout Lake Community Centre

Jamie King at work on her Kingfisher appliqué, with drawing and quilt detail showing various stages in the creative process.

Student drawings, Gladstone Montessori students, quilt detail



FROG

Frogs are smooth-skinned unlike the toad. They mate in the spring. They are usually found around water. When frogs croak together it sounds like a chorus.

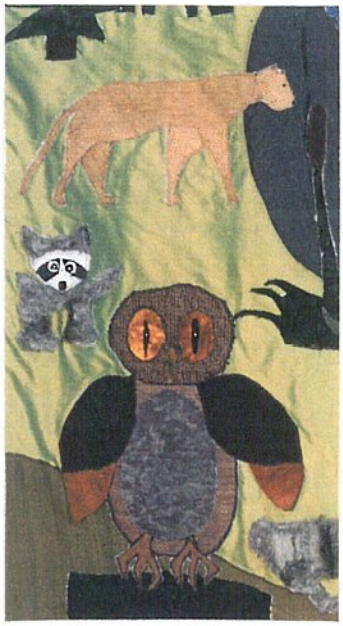
By Kate

Cougar

- The territory of a cougar is about 100 sq. miles.
- Cougars avoid humans.
- They make a wide variety of sounds including regular house-cat sound
- Only the females can scream

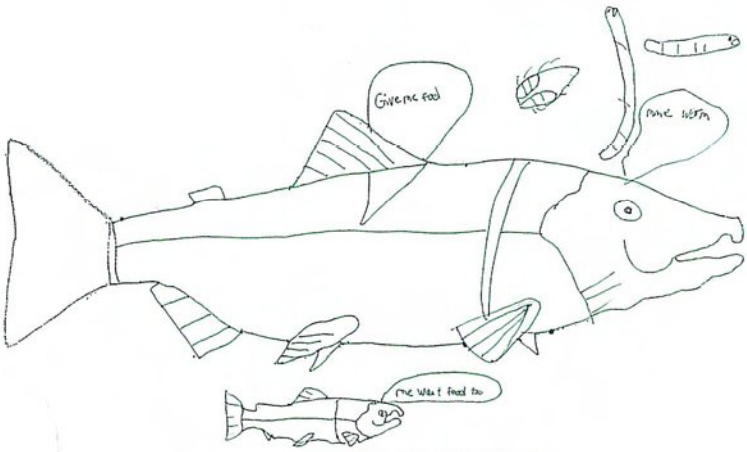
By Tobi

Bat fur is typically long, silky, and gray. The faces of bats vary considerably. Some bats have long, narrow, and fox like or doglike faces, while some possesses pig like snouts. Some bats have long ears and some have short ears. The long ear bat's ears are as long as their whole body. While the black bearded tomb bat has small ears. Some bats have large eyes, while some have small eyes. Bats have large teeth.. Bats have long wings that attach to the side of the body. Bat's body size ranges from 3 cm to as much as 16inches.



Edmond

A dare grayish yummy fish. Salmon's eat bugs, worms, and smaller fish



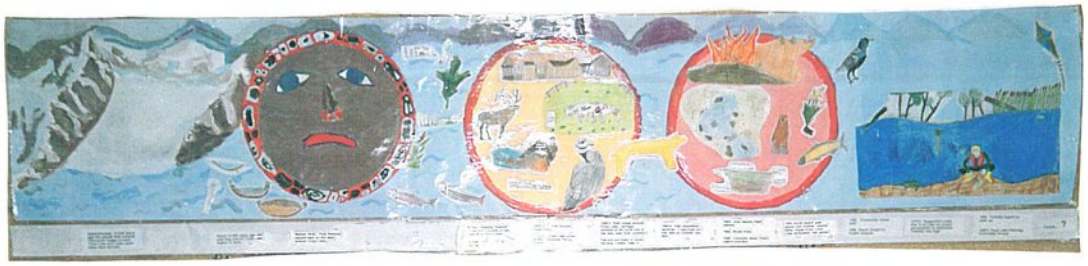
Woodpecker

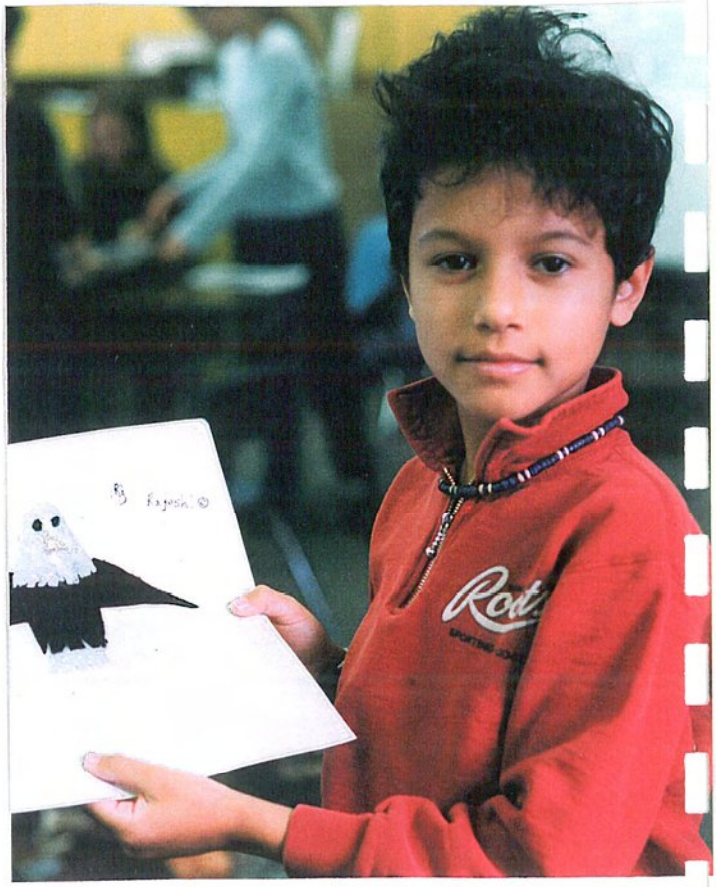
The woodpecker tongue is long, sticky and barbed. It helps the woodpecker to get insects from small holes in the tree. woodpeckers makes many roosting holes in trees.

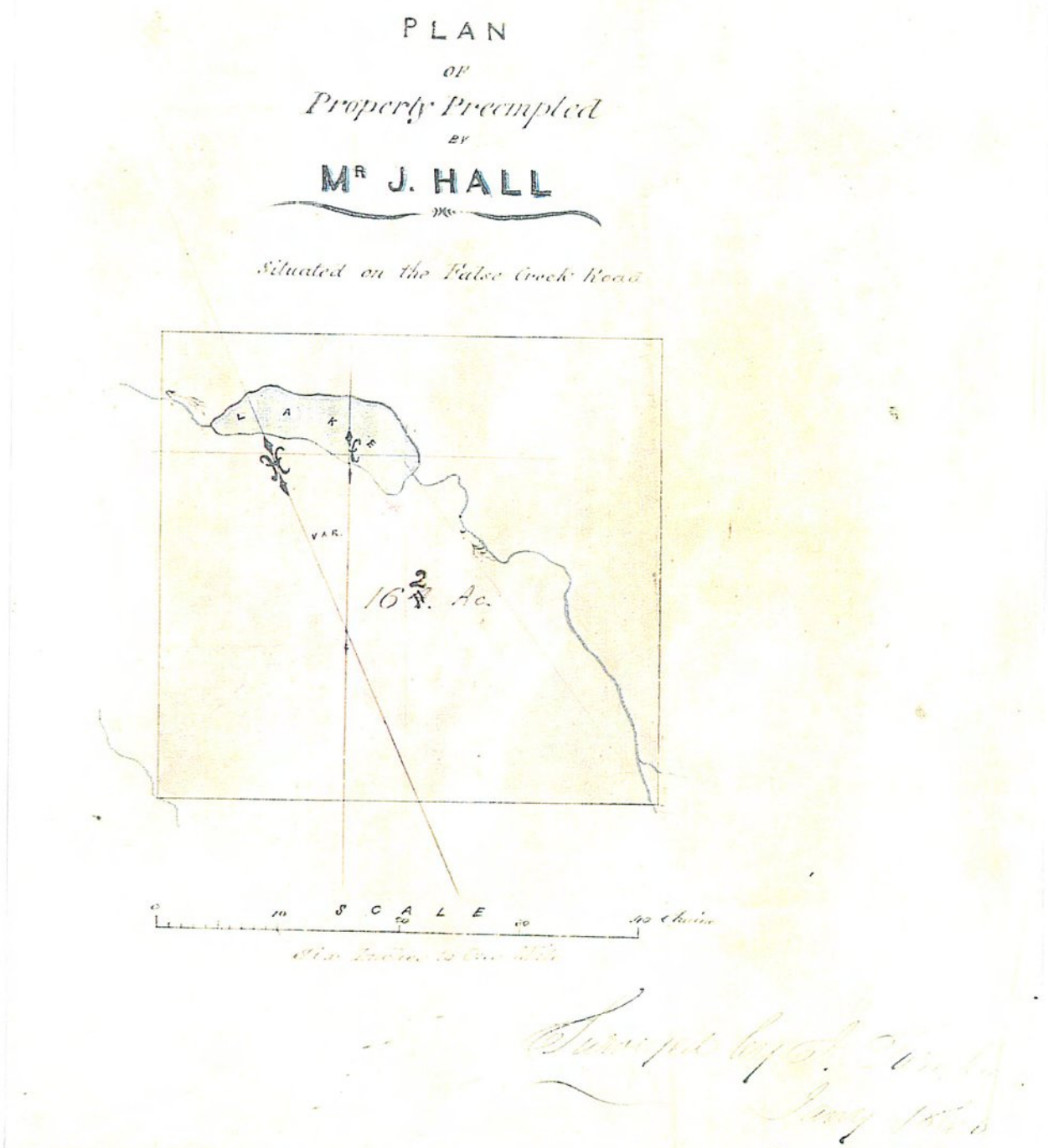
below: *Natural History Quilt* by Tyee Elementary students, mixed fabric appliqué with collaged paper and mixed media

Trout Lake Timeline by Tyee Elementary students; collage and paint on paper, laminated

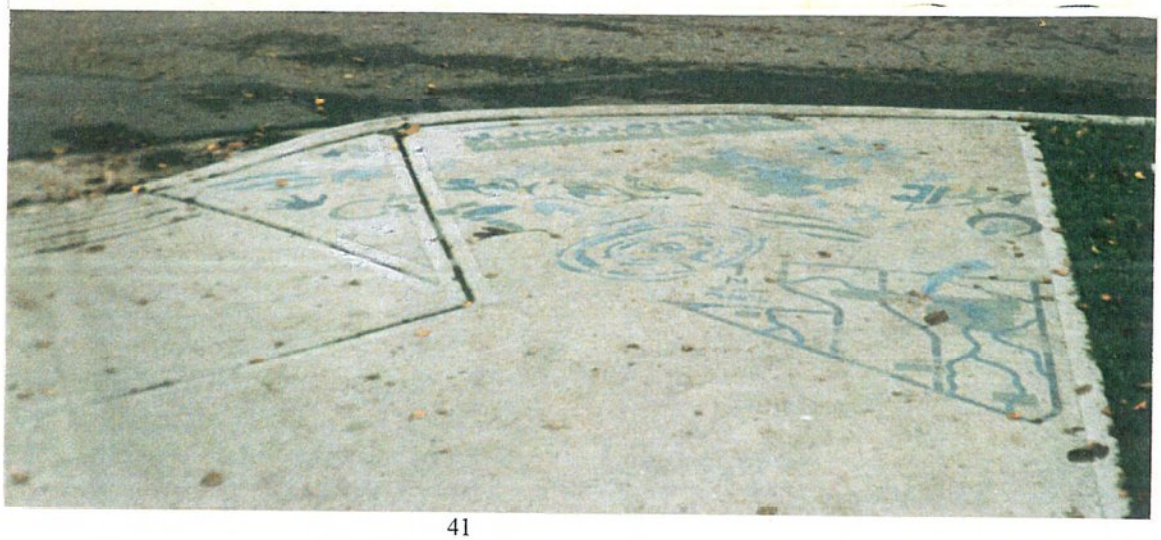
below and overleaf: Tyee students at work







original survey map for DL 195, 1867, courtesy of the Surveyor General's Archives, Victoria;

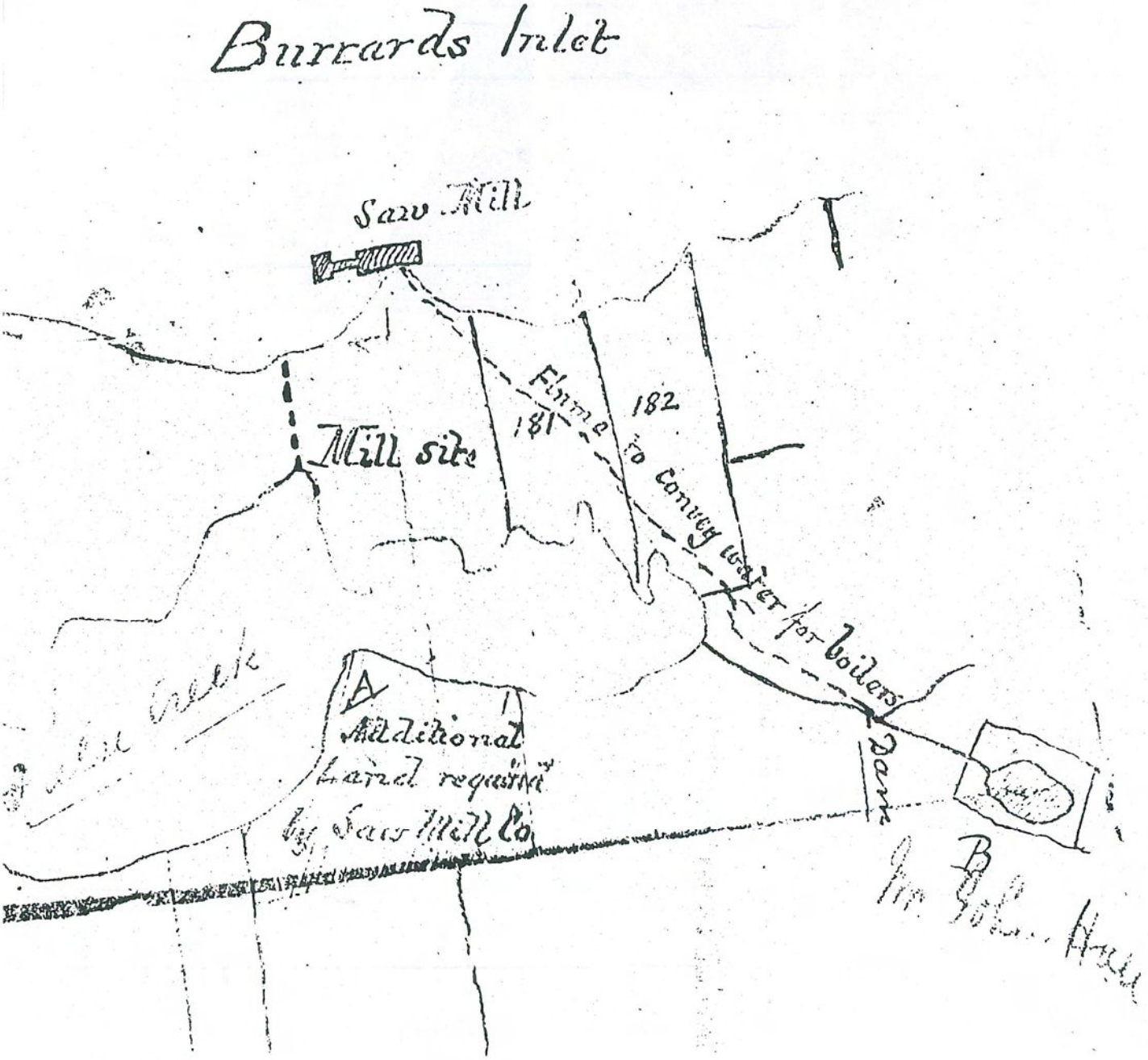


"Water-mark" map of original streams of Trout Lake, graffiti on the sidewalk at 14th Avenue and Victoria Drive, 2001

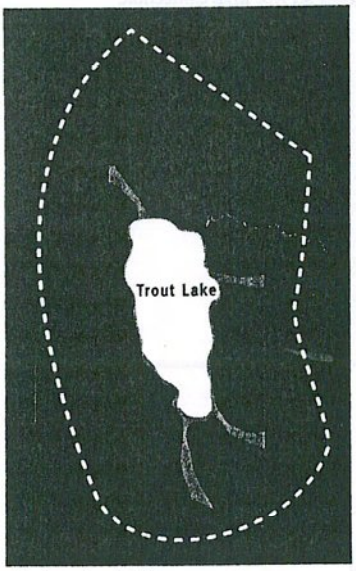
above: aerial Photo of John Hendry Park and Trout Lake, July 24, 1979, prior to "Duck Pond" restoration. © Allen Aerial Photos, Main Street, #29548

left: Trout Lake 2001, photo © Karen Stanley

Map c. 1870, showing flume built from Trout lake to carry water to Hastings Mill, B.C. Archives and records service Map Collection, Negative number 363610

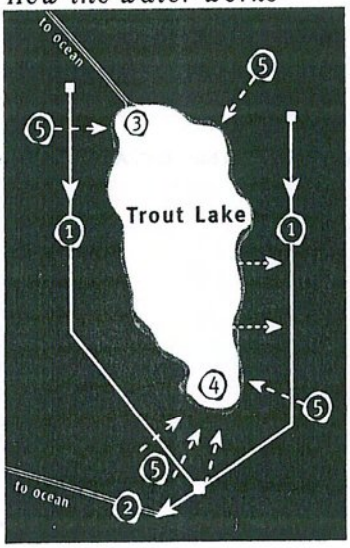


Trout Lake Restoration Project maps, 1995
below: map showing the extent of peat deposits and groundwater flow around Trout Lake by EBA Environmental Ltd. (1992)



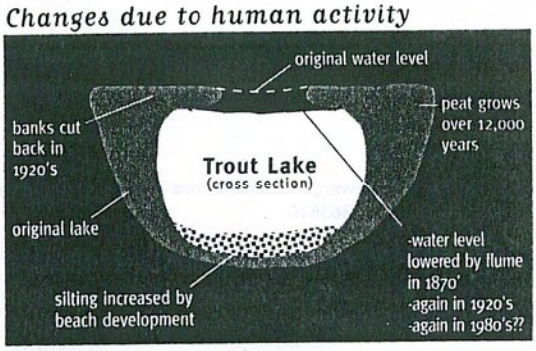
Extent of the peat
(original lake size)

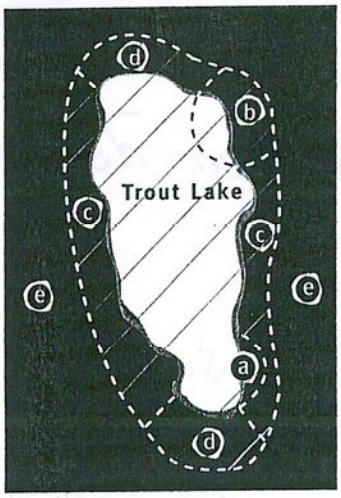
How the water works



1. Drainage pipes: collect water from land surrounding the lake and overflow from the lake.
2. Water drained from the lake and park enters this combined sewage pipe.
3. The former China Creek outlet, now functions as an overflow outlet only.
4. Fountain and underwater pipe, supplies lake with city water.
5. Old drains that fed runoff into lake.

Changes due to human activity



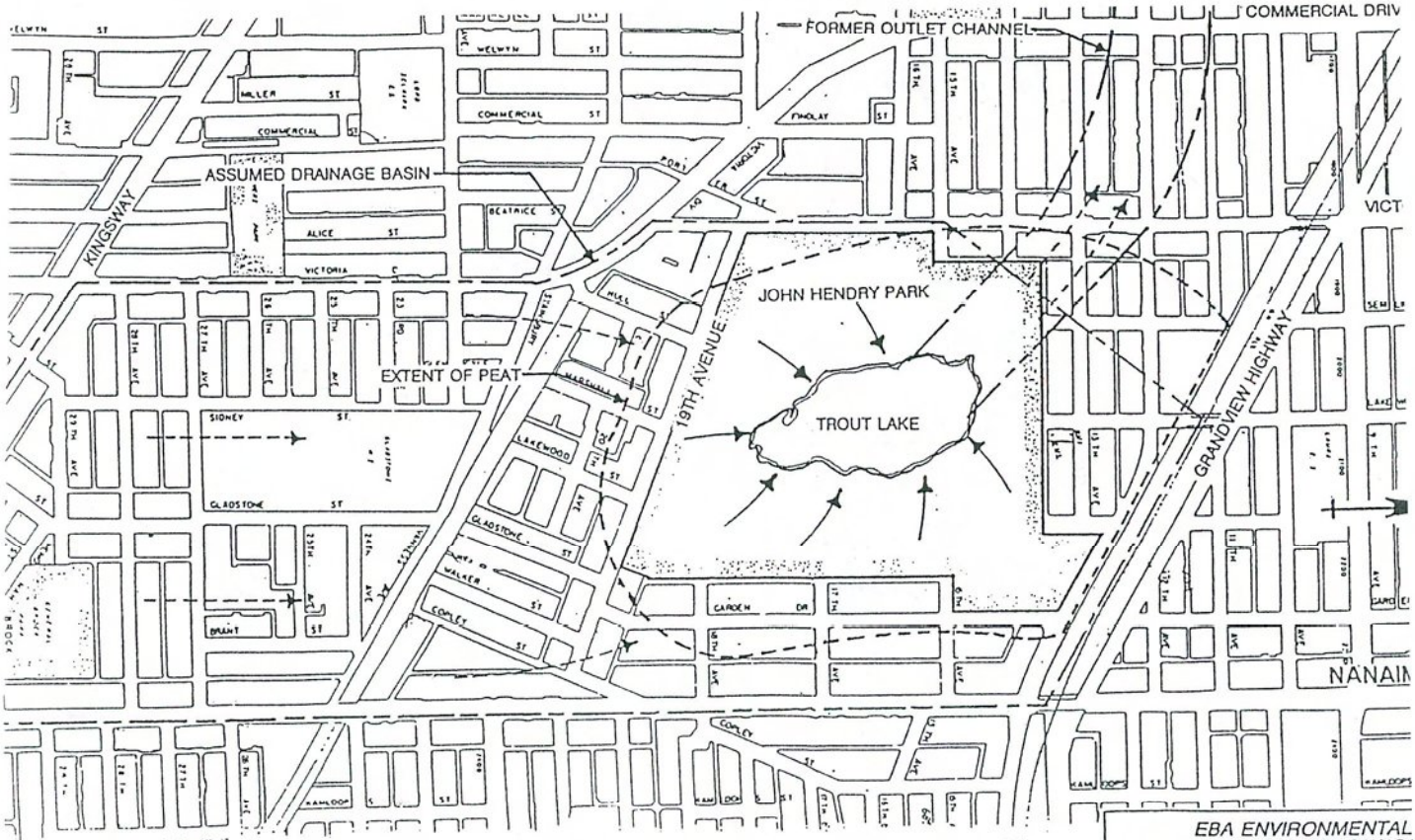


Action plan

MANAGEMENT AND PLANNING ZONES

- (a) Preservation zone Fragile peat bog remnant
- (b) Preservation zone Duck pond
- (c) Naturalization zone
- (d) Intensive Recreation zone
- (e) Beaches, lawns, playing fields and trees

Environmentally sensitive area



GROUNDWATER FLOW

GROUNDWATER AND OVERLAND FLOW

NOTES:

1) EXTENT OF PEAT DEPOSITS BASED ON PEAT MAP BY CITY OF VANCOUVER ENGINEERING DEPARTMENT (DATED AUGUST 31, 1987)

metres

EBA ENVIRONMENTAL
VANCOUVER, CANADA

VANCOUVER BOARD OF PARKS AND

TROUT LAKE FECAL COLIFORM IN

STUDY AREA PLAN

SCALE: As shown

DATE: Nov/92


VANCOUVER'S OLD STREAMS
Revised 1989
This map shows the natural drainage of Vancouver, as it was before the City was built. Based on old maps, Archival records and interviews with pioneers, it continually changes as additional sources of information emerge or as people dig new holes in the ground.
Origional shore line
Rivers and streams
Educated guess of waterways
Brewery Creek
China Creek
Trout Lake
JOHN HENDRY PARK
GREAT NORTHERN RAILWAY
CANADIAN NATIONAL RAILWAYS
KINGSWAY
CLARK PARK
BREWERS PARK
TECHNICAL SCHOOL
BRITANNIA HIGH SCHOOL
MEMORIAL PARK SOUTH

Map from Kyle Algae, et. al. (1995) "Trout Lake Educational Walk Teacher's Kit."