GEOLOGIC MAP GM-14

STATE OF WASHINGTON

DEPARTMENT OF NATURAL RESOURCES

BERT L. COLE, Commissioner of Public Lands
DON LEE FRASER, Supervisor

DIVISION OF GEOLOGY AND EARTH RESOURCES

VAUGHN E. LIVINGSTON, JR., State Geologist

**GEOLOGIC MAP GM-14**

# PRELIMINARY SURFICIAL GEOLOGIC MAP OF THE EDMONDS EAST AND EDMONDS WEST QUADRANGLES, SNOHOMISH AND KING COUNTIES, WASHINGTON

**By**

**MACKEY SMITH**

Prepared in cooperation with
UNITED STATES GEOLOGICAL SURVEY

WASHINGTON DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND EARTH RESOURCES

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GEOLOGIC MAP
GM-14

# PRELIMINARY SURFICIAL GEOLOGIC MAP

# of the

# EDMONDS EAST and EDMONDS WEST QUADRANGLES,

# SNOHOMISH and KING COUNTIES, WASHINGTON

By
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1975

EXPLANATION

QUATERNARY

HOLOCENE

**af** — Artificial fill

**ml** — Modified land

Original topography disturbed by removal of some Pleistocene deposits, grading, and artificial fill of unknown quality.

**Qp** — Peat

Accumulations of organic material. May contain small amounts of sand, silt, clay, and volcanic ash deposited in swamps and bogs.

**Qal** — Alluvium

Mostly sand and gravel deposited by streams. May contain some silt, clay, and organic material.

**Qls** — Landslides

Deposits of active slumps, slides, and areas of flowage. May include some deposits of old landslides. Shows evidence of recent movement.

**Qols** — Old landslides

Large slumps that occurred during the ablation of the Puget Lobe of the Vashon Ice sheet by lowering of water-table level. Slides may have been active since original movement; lacks evidence of recent movement.

PLEISTOCENE

FRASER GLACIATION
VASHON STADE

**Qvr** — Vashon recessional outwash

Light-brown loosely compacted sand and gravel. Dry gravel seeks angle of repose of 35°; wet gravel will stand in near-vertical cliff. Sorting varies; particle size varies from medium sand to cobbles. Stones are usually covered with a light-brown dusty coating and are well rounded from stream transportation. Contains some ice contact deposits.

**Qvt** — Vashon till

Poorly sorted, nonstratified lodgment till deposited as ground moraine. Mixture of clay, silt, sand, pebbles, and cobbles with occasional large boulders. Appears gray to blue on fresh surface; may weather to brown or yellow. Extremely compact, will stand in near-vertical cliffs; generally lacks surficial cracks or joints. Stones are subangular to rounded. Some larger clasts show striations and faceting. Vertical faces sometimes spall off in large blocks. Some areas of Qvt are covered by a thin veneer of loosely consolidated, nonsorted ablation till and(or) thin outwash.

**Qva** — Vashon advance outwash

Fresh, light-gray, stratified, compact sand and gravel. Will stand in near-vertical cliff. Sorting varies; particle size varies from fine sand to coarse pebbles.

**Qe** — Esperance Sand

Thinly bedded (from 2 to 6 inches), fresh, light-gray sand layers. Particle size varies from medium to coarse sand (with 10 percent pebbles); small pebbles often occupy the base of each individual bed or lens. Occasional lenses of coarse gravel occur. Usually sloughs to angle of repose on exposed slopes.

**Qw** — Whidbey Formation

Generally medium-bedded (2 to 4 feet) sand, silt, and clay. Color varies from light brown to gray. Particle size varies from clay to coarse sand with a few lenses of small pebbles. Sorting is generally good within each individual bed. Clay and silt beds can be as thin as 2 inches. Nonglacial river flood-plain deposits. May show tectonic deformation.

**Qdb** — Double Bluff Drift

Contains: (1) iron-oxide cemented gravel, consisting of small to medium pebbles well cemented in a grit matrix; (2) pebbly glaciolacustrine silts; and (3) massive silt and lesser beds of sand and gravel. Well compacted and will stand in a near-vertical cliff. Pebbly silts display desiccation cracks at the surface. May show tectonic deformation.

**Qcl** — Clay of unknown age

Compact silt and clay, beds vary from 2 inches to massive in thickness.

Geology by Mackey Smith 1974

Base map from U.S. Geological Survey
Edmonds East and Edmonds West
7½ minute Quadrangles

SCALE 1:24,000

1 ½ 0 1 MILE

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D.C.—1975