

UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

MAP SHOWING SURFICIAL GEOLOGY OF PARTS OF THE LOWER SKAGIT AND BAKER  
VALLEYS, NORTH CASCADES, WASHINGTON

By

Paul L. Heller

Open-File Report

79-964

This report is preliminary and  
has not been edited or reviewed  
for conformity with Geological  
Survey standards or nomenclature

MAP SHOWING SURFICIAL GEOLOGY OF PARTS OF THE LOWER SKAGIT AND BAKER  
VALLEYS, NORTH CASCADES, WASHINGTON

by Paul L. Heller

Appendix A Measured Sections

The following measured sections are keyed to locations labled on the geologic map. Stratigraphic units at each site are consecutively numbered, number one being the lowest unit. Percent of gravel in deposits was determined by visual estimation in the field. Interpretations are shown to the left of deposit descriptions.

# Measured Section 1

Location: Landslide scar, NW¼ of NW¼, section 13, T. 35 N., R. 5 E.

Date Measured: July 19, 1976

	Description	Thickness	Elevation
Vashon Till	5. Silt; brown, massive with occasional cobbles	more than 3 m	
	4. Clayey till; dark grey; massive; compact; pebble count	4 m. approx.	
	3. Silt and clay; grey; stratified	less than 1 m.	
	2. Coarse sand; brown; stratified flat lying; sorted; pebble-gravel layer one grain thick at bottom of each bed	1 m.	
	1. Silt and clay; grey and brown; bedded; contains minor sand layers	more than 1 m.	
			36 m.

## Measured Section 2

Location: Roadcut, Prevedell Road, boundary between sections 8 and 17,  
T. 35 N., R. 6 E.

Date Measured: October 30, 1977.

	<u>Description</u>	<u>Thickness</u>	<u>Elevation</u>
			94 m.
Vashon Recessional Glaciolacustrine Drift	10. Clayey soil; buff brown	2 m.	
	9. Silt and clay with rare cobbles; buff brown; massive with some blocky structure.	3-4 m.	
	8. Silt and clay with rare cobbles; buff brown; grades upward from flat lying to convolute laminations.	3 m.	
	7. Clay and silt; grey	1 cm.	
	6. Clay and silt; brown; laminated	1 m.	
Vashon Till	5. Clayey till; grey; very compact; massive; 15 to 20% gravel; pebble count (Appendix B, samples B and C)	4-5 m.	
Pre-Vashon Alluvium	4. Sand, sand and gravel with intercalated silt beds; sand, and sand and gravel beds are cross-bedded, have scoured bases, channel fillings and coarsen up section; silt beds are grey to dark brown, mostly laminated and decrease in thickness and frequency up section.	35 m.	
	3. Fine sand to pebble gravel with minor silt lenses; reddish brown; compact; poorly developed bedding; gravels have strong fabric; about 30% gravel with a few moderately weathered stones; sand contains many small, very oxidized pockets.	5 m.	

# Measured Section 2 (Cont.)

Evans Creek (?) Till or Mudflow	<u>Description</u>	<u>Thickness</u>	<u>Elevation</u>
	2. Clayey diamicton; grey with some oxidized lenses; compact; massive; about 25% gravel, mostly subrounded; many stones weathered or have oxidized coatings; pebble count (Appendix B, sample D)	2 m.	
	1. Covered	5 m.	
			30 m.

### Measured Section 3

Location: Roadcut, SW $\frac{1}{4}$  of SE $\frac{1}{4}$ , section 29, T. 36 N., R. 6 E.

Date Measured: August 16, 1977

	<u>Description</u>	<u>Thickness</u>	<u>Elevation</u>
Vashon Glaciolacustrine Recessional Drift ——— Outwash —	3. Terrace top, floor of abandoned channel		220 m.
	2. Coarse sand to boulder gravel; well stratified, poorly sorted; 20-25% gravel; erosional base; pebble count (Appendix B)	4 m.	
	1. Clay and silt; dark grey; massive contains less than 10% pebble and cobble gravel	more than 6 m.	

# Measured Section 4

Location: Roadcut and adjacent quarry, SE¼ of NE¼, section 2, T. 35 N.  
R. 6 E.

Date Measured: October 15, 1976

	<u>Description</u>	<u>Thickness</u>	<u>Elevation</u>
	10. Terrace top		212 m.
Late Vashon Alluvium ↓	9. Coarse sand to boulder gravel; poorly sorted, poorly stratified; about 30% gravel; boulders reach 1 m. in maximum diameter.	more than 2 m.	
	8. Medium to coarse sand lens; light brown; well sorted; cross-bedded.	2-4 m.	
	7. Coarse sand to boulder gravel; poorly sorted, poorly stratified, about 30% gravel; some contorted stratified sand lenses.	10 m.	
	6. Coarse sand to cobble gravel; poorly stratified; fining downward to medium and coarse sand; fairly well sorted; cross-bedded, contorted bedding in places.	6 m.	
	5. Sand to cobble gravel; poorly stratified.	19 m.	
	4. Silt and clay; light brown; well bedded.	7 m.	
	3. Clay and silt; grey to brown; bedded.	more than 2 m.	
	2. Silt; light brown; bedded; fining upward.	9 m.	
	1. Sand to cobble gravel; moderately stratified; some graded beds	more than	
			152 m

# Measured Section 5

Location: Grandy Creek stream cut, NW¼ of SE¼, section 2, T. 35 N., R. 7 E.

Date Measured: September 9, 1976

	<u>Description</u>	<u>Thickness</u>	<u>Elevation</u>
Post-Vashon Baker River Alluvium	8. Terrace Top		155 m.
	7. Coarse sand to boulder gravel with minor bedded, brown, silt lenses; stratified, poorly sorted; some cross-bedded sand and channel fills; scoured base	6-8 m.	
Vashon Advance Outwash	6. Fine to medium sand; stratified, cross-bedded, downward fining	5-6 m.	
	5. Silt and clay; grey; stratified	2 m.	
	4. Fine sand; cross-bedded	3 m.	
Vashon Advance Glaciolacustrine Drift	3. Silt and clay; grey; stratified	3 m.	
	2. Fine sand; cross-bedded	15 m.	
	1. Clay and silt; blue grey; well developed, flat lying strata	more than 4 m.	
			117 m.



# Measured Section 6

Location: Roadcut, NE¼ of SE¼, section 4, T. 35 N., R. 8 E.

Date Measured: August 16, 1977

	<u>Description</u>	<u>Thickness</u>	<u>Elevation</u>
Vashon till	7. Sandy till; grey; massive; 25-30% gravel; upper 2/3 of exposure is slightly weathered; pebble count (Appendix B)	1 m.	335 m.
	6. Clay; grey	less than 1 cm.	
	5. Fine sand with about 10% pebble gravel; downward fining	8 cm.	
	4. Silt; grey; laminated	1 cm.	
Vashon Drift	3. Fine sand; grey to reddish brown; downward fining	2 cm.	
	2. Sandy diamicton; reddish brown; about 20% gravel; pebble count (Appendix B)	2 m.	
Vashon Advance	1. Medium to coarse sand; buff brown; well stratified, foreset beds dipping to northeast	more than 2 m.	

## Measured Section 7

Location: Roadcut, NW $\frac{1}{4}$  of SW $\frac{1}{4}$ , section 16, T. 35 N., R. 8 E.

Date Measured: November 19, 1977

	<u>Description</u>	<u>Thickness</u>	<u>Elevation</u>
	4. Terrace top		326 m.
Vashon Advance └─ Outwash ─┐ Vashon Till ┐	3. Sandy diamicton; brown with some grey streaks; massive; contains up to 35% pebble to boulder gravel; soil developed to .5 m.	1.5 m.	
	2. Diamicton; grey; massive; clay to cobble gravels; thins to a few centimeters; pebble count (Appendix B)	less than 1 m.	
	1. Fine sand; tan; well-sorted	over 2 m.	

## Measured Section 8

Location: Roadcut and adjacent landslide scar, NW¼ of NE¼, section 22,  
T. 35 N., R. 8 E.

Date Measured: April 19, 1977 and January 28, 1978

	<u>Description</u>	<u>Thickness</u>	<u>Elevation</u>
Everson (?) Glaciomarine or Glaciolacustrine drift	6. Ground surface (terrace?)		97 m.
	5. Silt and clay; light brown; blocky structure; contains less than 5% pebbles; soil developed in upper .5 m.	1 m.	
	4. Silt and clay; brown with grey laminations; contorted bedding; contains less than 1% pebble and cobble gravel, some sand along lower contact	1.5-2.5 m.	
	3. Sandy diamicton lens; brown with a few grey streaks; contains less than 10% pebble and cobble gravel; pebble count (Appendix B, sample J)	0-1 m.	
	2. Road		94 m.
	1. Silt and clay; brown with some grey streaks and carbonaceous smears; massive; contains less than 10% pebble and cobble gravel	more than 5 m.	

# Measured Section 9

Location: Landslide scar, SW $\frac{1}{4}$  of SW $\frac{1}{4}$ , section 24, T. 35 N., R. 8 E.

Date measured: April 10, 1977

	<u>Description</u>	<u>Thickness</u>	<u>Elevation</u>
Vashon Advance Outwash ↑	7. Road		198 m.
Vashon Advance Drift ↑	6. Sand; light brown; with minor pebbles	more than 3 m.	
Vashon Advance Drift ↑	5. Silt and clay; blue grey; massive contains less than 15% pebble to cobble gravel decreasing in abundance down-section; pebble count (Appendix B)	10 m.	
Vashon Advance Drift ↑	4. Silt and clay; blue grey; blocky structure; contains less than 1% gravel	more than 7 m.	
Glaciolacustrine Drift ↑	3. Covered	5 m. approx.	
Glaciolacustrine Drift ↑	2. Clay and silt; blue grey; thinly laminated, flat lying	more than 10 m.	
Pre-Vashon Alluvium ↓	1. Sand; light brown; cross bedded	more than 10 m.	

# Measured Section 10

Location: West facing landslide scar, NW¼ of NE¼, section 28, T. 36 N.,  
R. 8 E.

Date Measured: September 26, 1976

Vashon Recessional Drift	Description	Thickness	Elevation
7.	Medium sand; north dipping beds	more than 3 m	
6.	Road		370 m.
5.	Fine sand and silt; buff brown; flat lying bedded	more than 27 m	
4.	Silt and clay; blue grey; well bedded flat lying	8.5 m	
3.	Coarse sand and pebble gravel; loosely packed	11 m.	
2.	Silt and clay; blue grey, bedded, flat lying	more than 15 m.	
1.	Covered		307 m.

# Measured Section 11

Location: Bear Creek, stream cut, SE¼ of SE¼, section 10, T. 36 N., R. 8 E.

Date Measured: August 18, 1977

	<u>Description</u>	<u>Thickness</u>	<u>Elevation</u>
	5. Terrace top		284 m.
Vashon └recessional outwash┐ mudflow└	4. Fine to coarse sand and cobble to boulder gravel; sand is reddish brown; poorly sorted, massive; about 50% gravel, mostly very angular; largest boulder 45 cm. in maximum diameter; pebble count (Appendix B, sample N)	2.7 m.	
	3. Fine to medium sand; grey, reddish brown at upper and lower contact; massive; pinches out in places	0-30 cm.	
	2. Coarse sand to cobble and boulder gravel; orange brown; poorly sorted, poorly stratified; boulders up to 30 cm. in maximum diameter; contain lithologies similar to those in nearby till	more than .75 m.	
	1. Bear Creek		280 m.

## Measured Section 12

Location: Landslide, NE¼ of NE¼, section 13, T. 36 N., R. 8 E.

Date Measured: September 26, 1976

	<u>Description</u>	<u>Thickness</u>	<u>Elevation</u>
Vashon advance glaciolacustrine drift	4. Terrace top		285 m.
	3. Clayey diamicton; reddish brown; loose; massive	2 m.	
	2. Clayey till; grey; massive; compact	9 m.	
	1. Silt and clay; grey; stratified	more than 15 m.	

### Measured Section 13

Location: Landslide scar, NW¼ of NW¼, section 1, T. 36 N., R. 8 E.

Date Measured: September 19, 1976

	<u>Description</u>	<u>Thickness</u>	<u>Elevation</u>
Vashon advance glaciolacustrine drift	4. Terrace top		300 m.
	3. Clayey till; grey; massive; compact; contains boulders up to 1.5 m. in maximum diameter	13 m.	
	2. Silt and clay; grey; bedded	more than 30 m.	
	1. Bedrock		250 m.