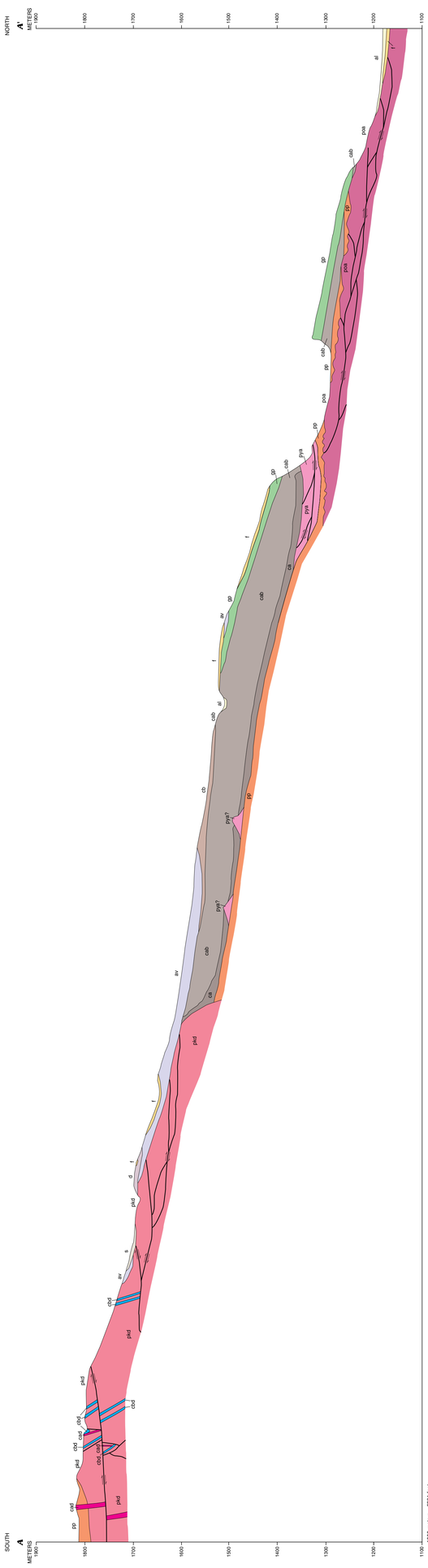
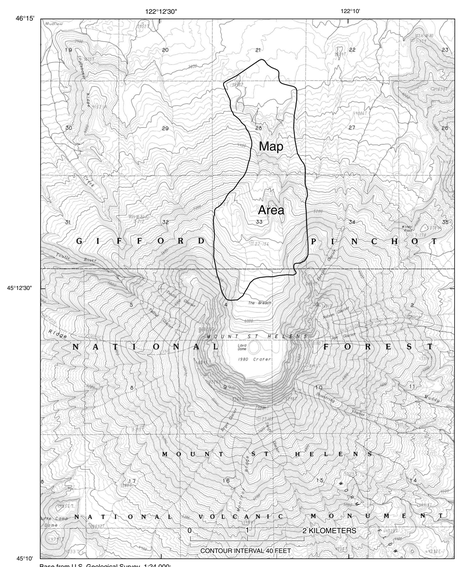
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY





Base from U.S. Geological Survey, 1:24,000;
Mount St. Helens, provisional edition, 1983

AREA OF GEOLOGIC MAP

Table 1. *Eruptive history of Mount St. Helens, Washington*
[from Crandell, 1987]

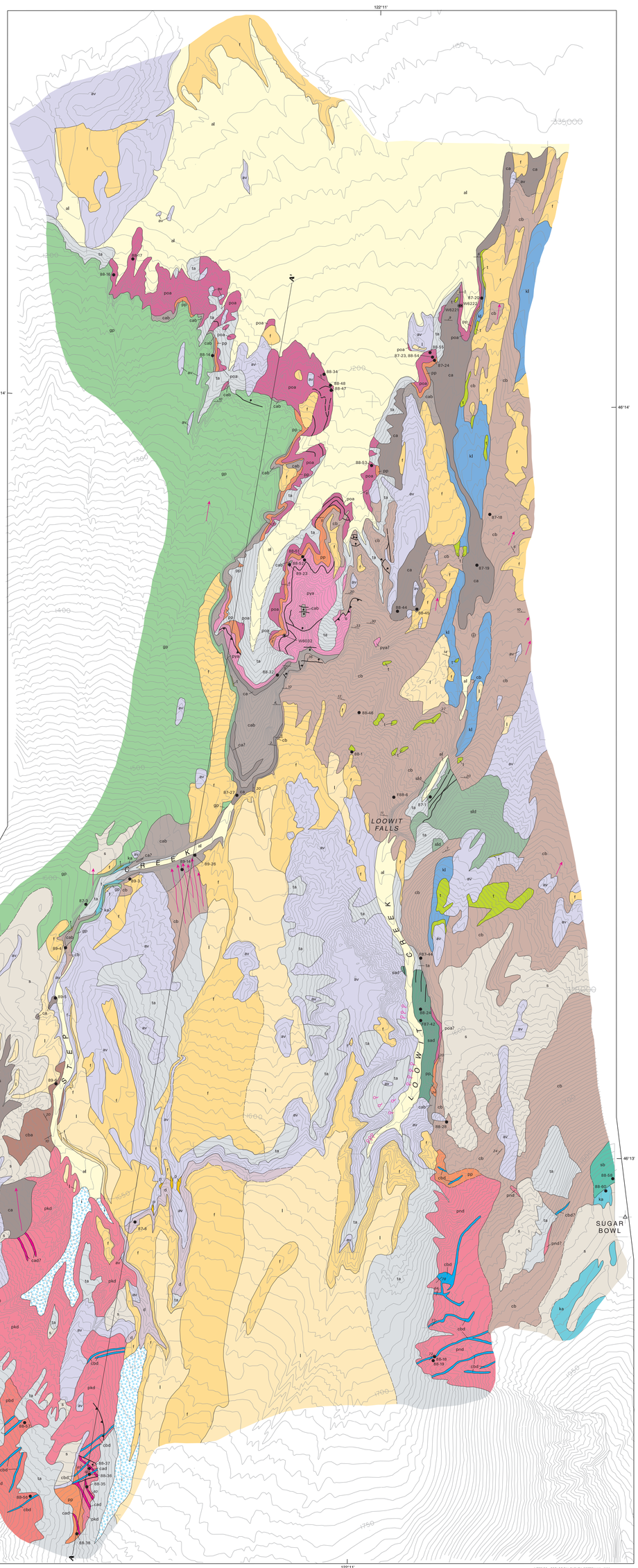
Eruptive Stages, Periods, and Dormant Intervals	Approximate ^{14}C Age in Years Before A.D. 1950	Tephra Unit	Nature of Volcanism
Eruptions that began in 1980		1980	Laterally directed blast from cryptodome followed by eruptions of dacite tephra and pyroclastic flows and development of dome in new crater.
(Dormant interval of 123 years)			
Goat Rocks eruptive period	[1]180–123	T	Eruptions of dacite tephra, andesite lava flow, dacite dome.
(Dormant interval of about 200 years)			
Kalama eruptive period	[2]500–350	X W	Eruptions of dacite and andesite tephra, dacite dome(s) and pyroclastic flows, andesite lava flows.
(Dormant interval of about 650 years)			
Sugar Bowl eruptive period	1,150	unnamed	Eruption of dacite dome, laterally directed blast, pyroclastic flow(s), air-fall tephra.
(Dormant interval of about 600 years)			
Castle Creek eruptive period	2,200–1,700	B	Eruptions of andesite, dacite, and basalt tephra, andesite and basalt lava flows, andesite and dacite pyroclastic flows.
(Apparent dormant interval of about 300 years)			
Pine Creek eruptive period	3,000–2,500	P	Eruption of dacite tephra, dacite domes, pyroclastic flows.
(Apparent dormant interval of about 300 years)			
Smith Creek eruptive period	4,000–3,300	Y	Eruptions of dacite tephra, dacite domes, pyroclastic flows; probably included dormant intervals as long as several centuries.

[1]Years before 1980, based on tree-ring dates and historic records.
[2]Years before 1980, based on tree-ring dates and ^{14}C dates.

Table 2. *Radiocarbon ages of samples from Mount St. Helens, Washington*
[Analyses by Meyer Rubin, USGS, Reston, VA. See map for sample locality]

Map No.	Material	Radiocarbon age (years)	Eruptive period	Map unit [1]
W6221	Charcoal	1,940±90	Castle Creek	**ca**
W6032	Wood	2,590±120	Pine Creek	**pya**
W6222	Charcoal	2,840±90	Pine Creek	**ca/poa**

[1]See Description of Map Units



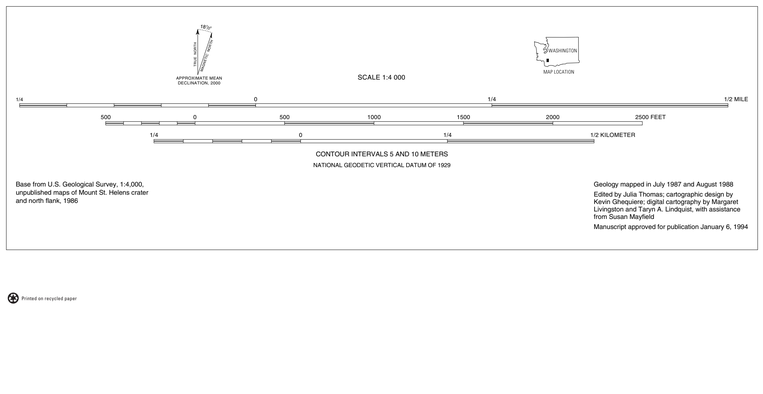
[Hyphenated compositio adjective: lithic-pumiceo compositional terms are deposits with blocks mak years before 1950]

Deposits

- **al** — **Alluviu** Include Depos
- **Ice (Qu** deep s Thickn
- **ta** — **Talus (** 18, 19
- **l** — **Lahar** consol bedded geneou suppor commo dacite with, b 1980. Thickn
- **s** — **Pyrocla 1980** lapilli large d lithic mostly Sugar recogn ashy m
- **f** — **Pyrocla (Quat** block, units 0 suppor are co has a horizo dacitic breadc andesi cuts in include of blue ash su the Sa during 16–18
- **d** — **Debris-nary)**— matrix lithic a are irr coarse the we porphy banded lesser shatter and p debris northw Steps. overlie by San (photo Thickn
- **p** — **Pumice** lensoid m thic are ma is lami Lapilli lower f litholo are su minor wester lying u presen may be or Jun
- **av** — **Debris-nary)**— compo contain diamet Blocks contor predom minor ably g from p of the Striatio units g units g loose b upper

Deposits

- **gp** — **Pyrocla (Quat** gray d 1–3 m thick.



SCALE 1:4 000

1/4 0 1/4 1/2 MILE
500 0 500 1000 1500 2000 2500 FEET
1/4 0 1/4 1/2 KILOMETER

CONTOUR INTERVALS 5 AND 10 METERS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Base from U.S. Geological Survey, 1:4,000, unpublished maps of Mount St. Helens crater and north flank, 1986

Geology mapped in July 1987 and August 1988
Edited by Julia Thomas; cartographic design by Kevin Ghequiere; digital cartography by Margaret Livingston and Taryn A. Lindquist, with assistance from Susan Mayfield
Manuscript approved for publication January 6, 1994

Printed on recycled paper

INTERIOR—GEOLOGICAL SURVEY, RESTON, VA—2000