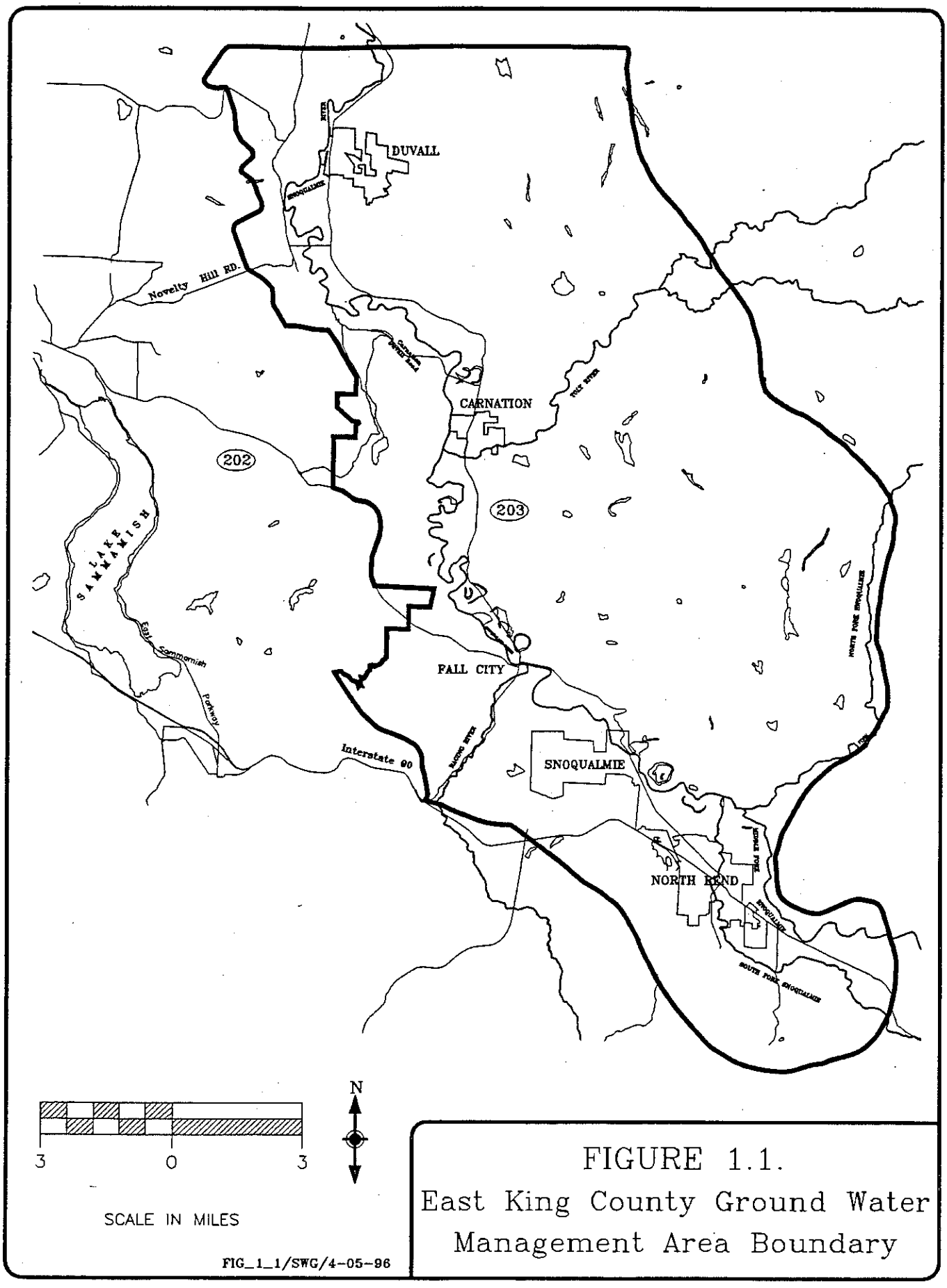


FIG_1_1/SWG/4-05-96

FIGURE 1.1.

East King County Ground Water Management Area Boundary

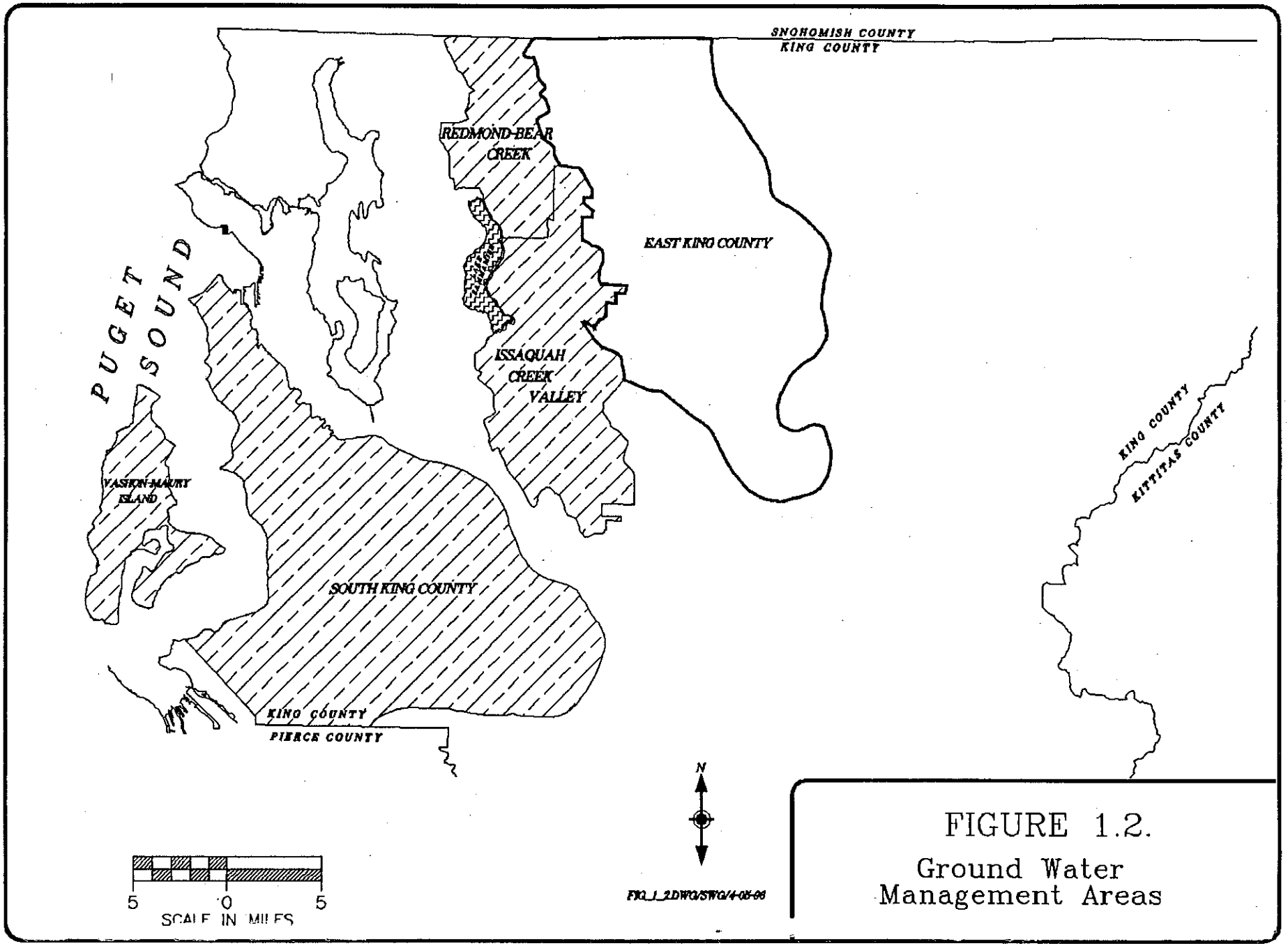


FIGURE 1.2.

Ground Water Management Areas

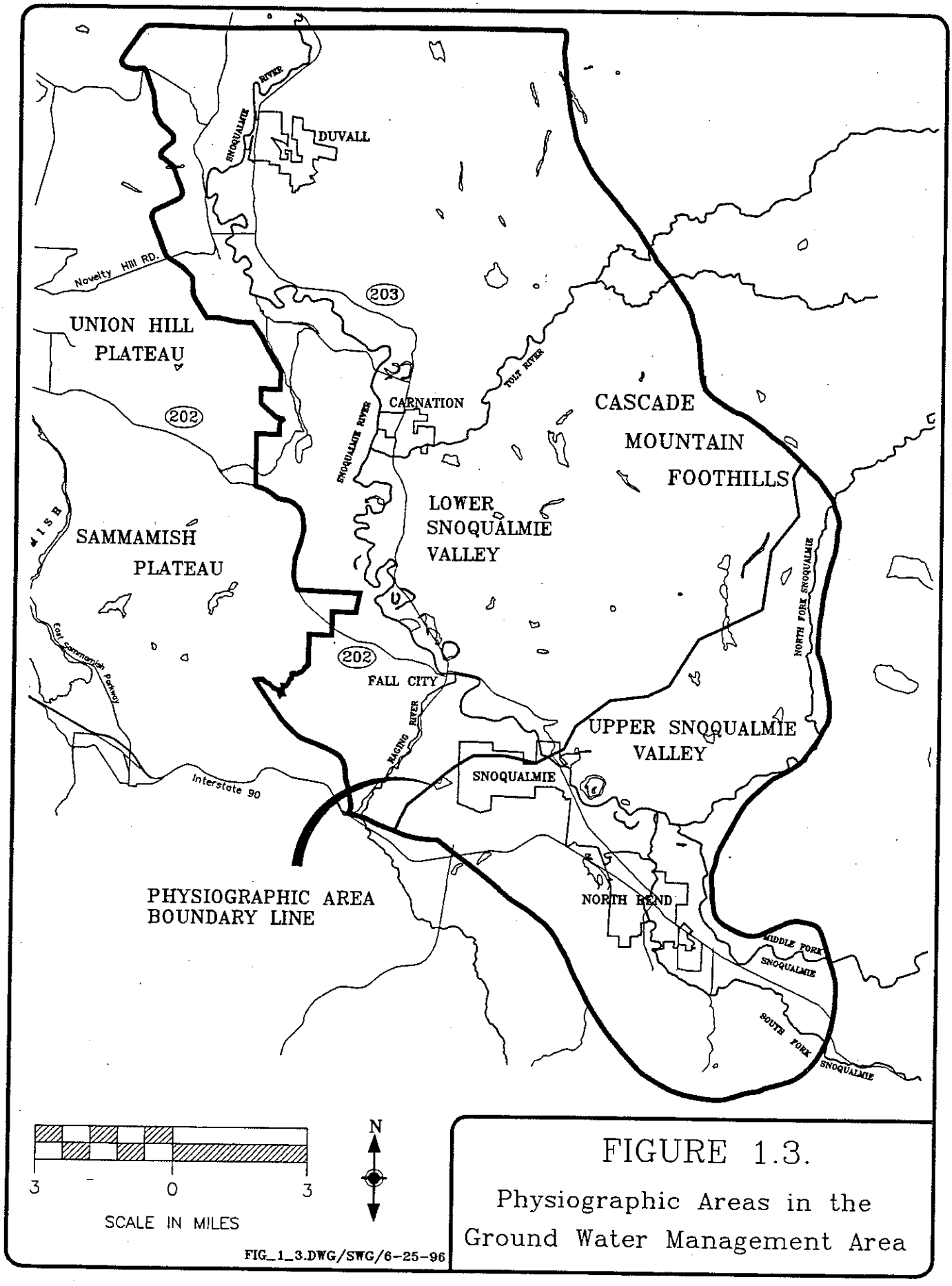


FIGURE 1.3.

Physiographic Areas in the Ground Water Management Area

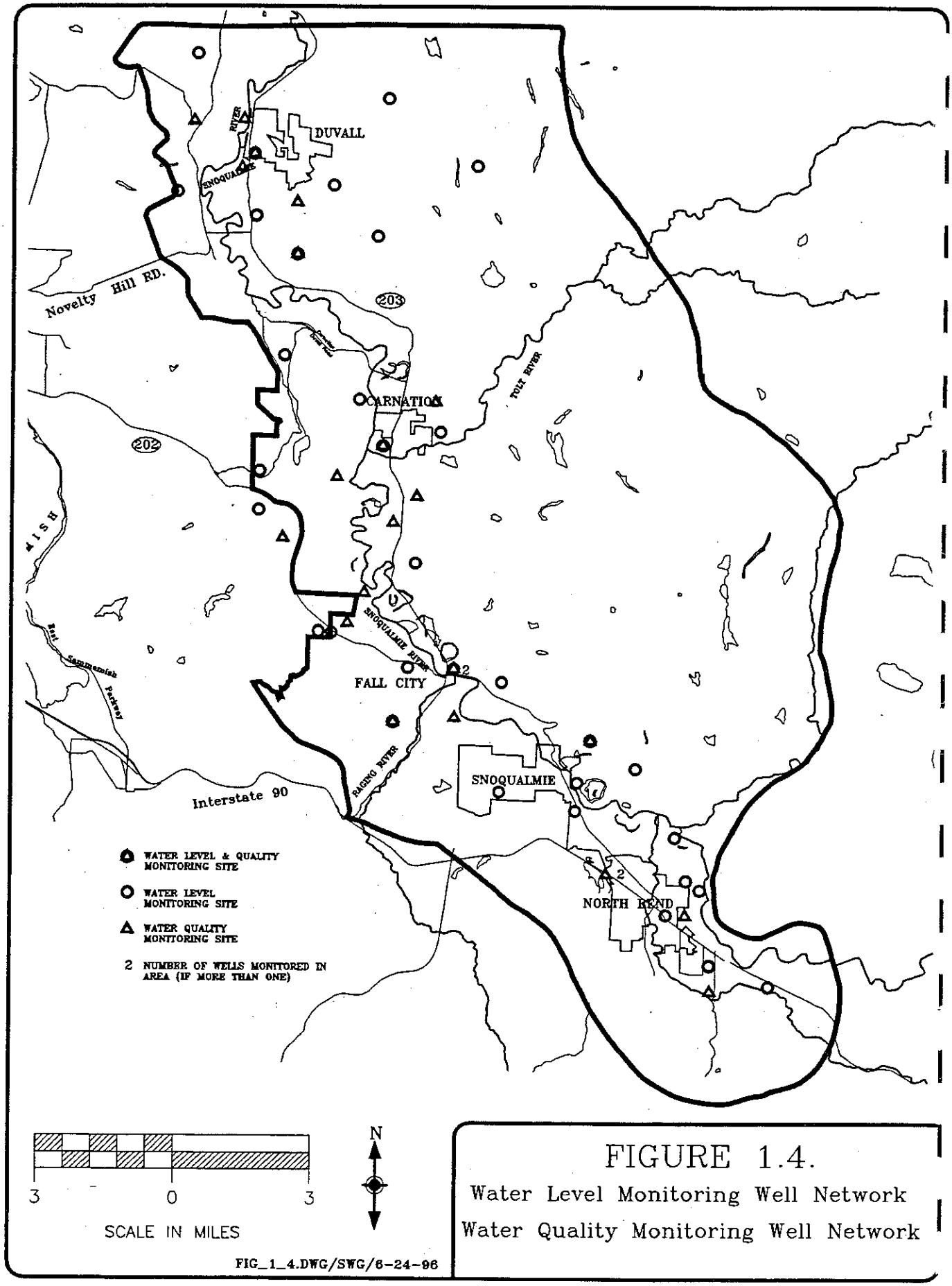


FIGURE 1.4.

Water Level Monitoring Well Network

Water Quality Monitoring Well Network

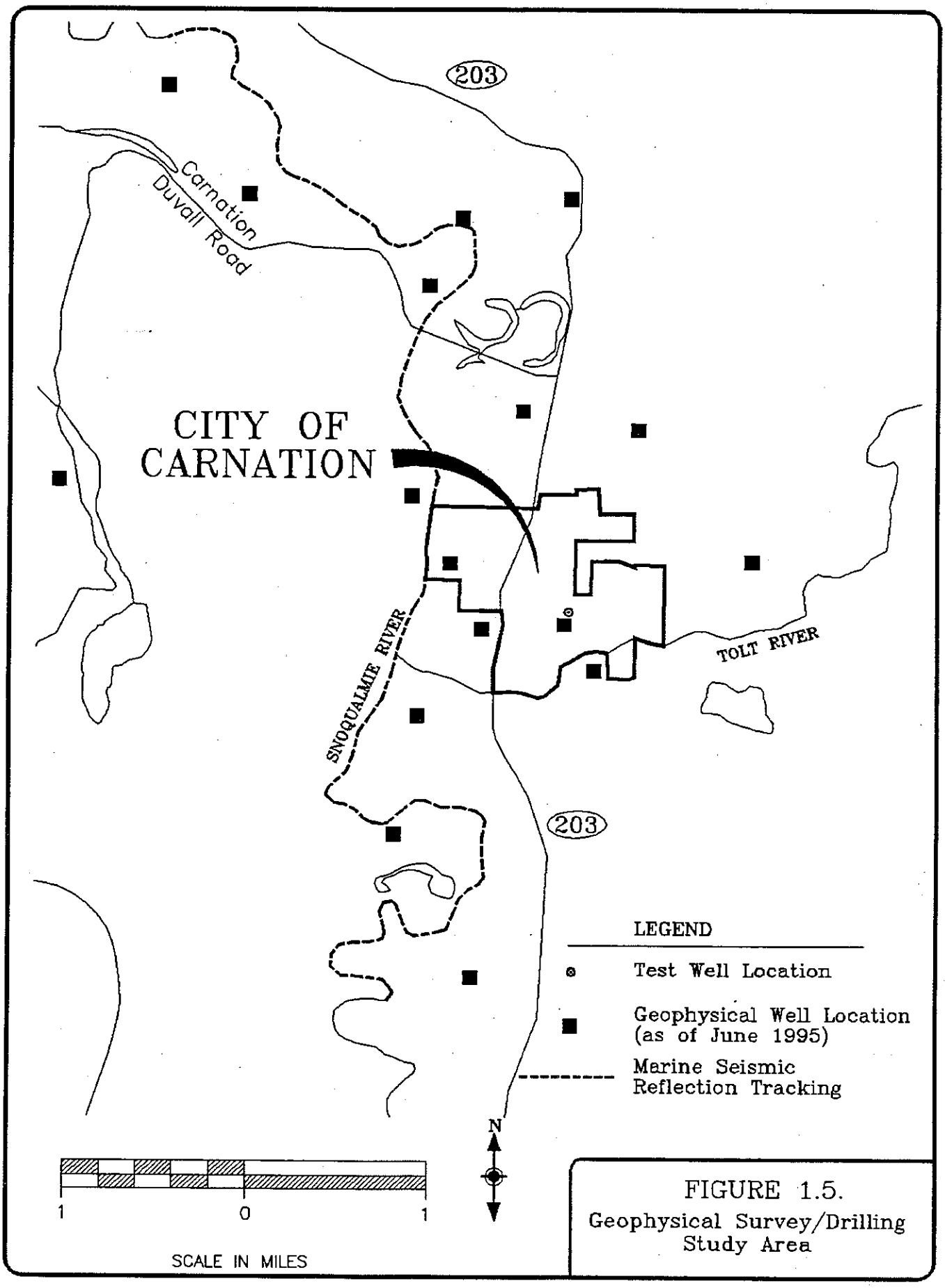


FIGURE 1.5.
Geophysical Survey/Drilling
Study Area

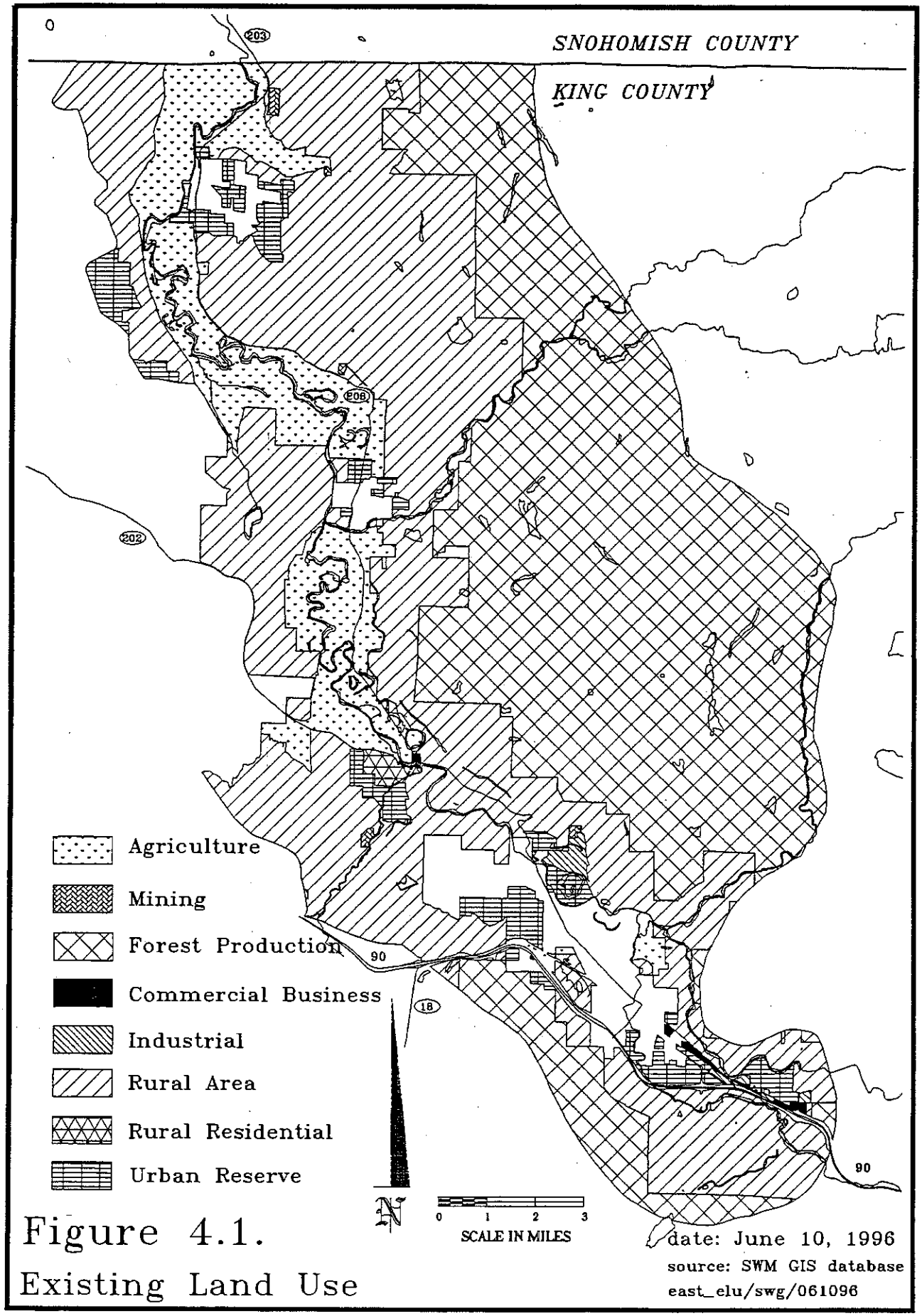


Figure 4.1.

Existing Land Use

date: June 10, 1996

source: SWM GIS database

east_elu/swg/061096

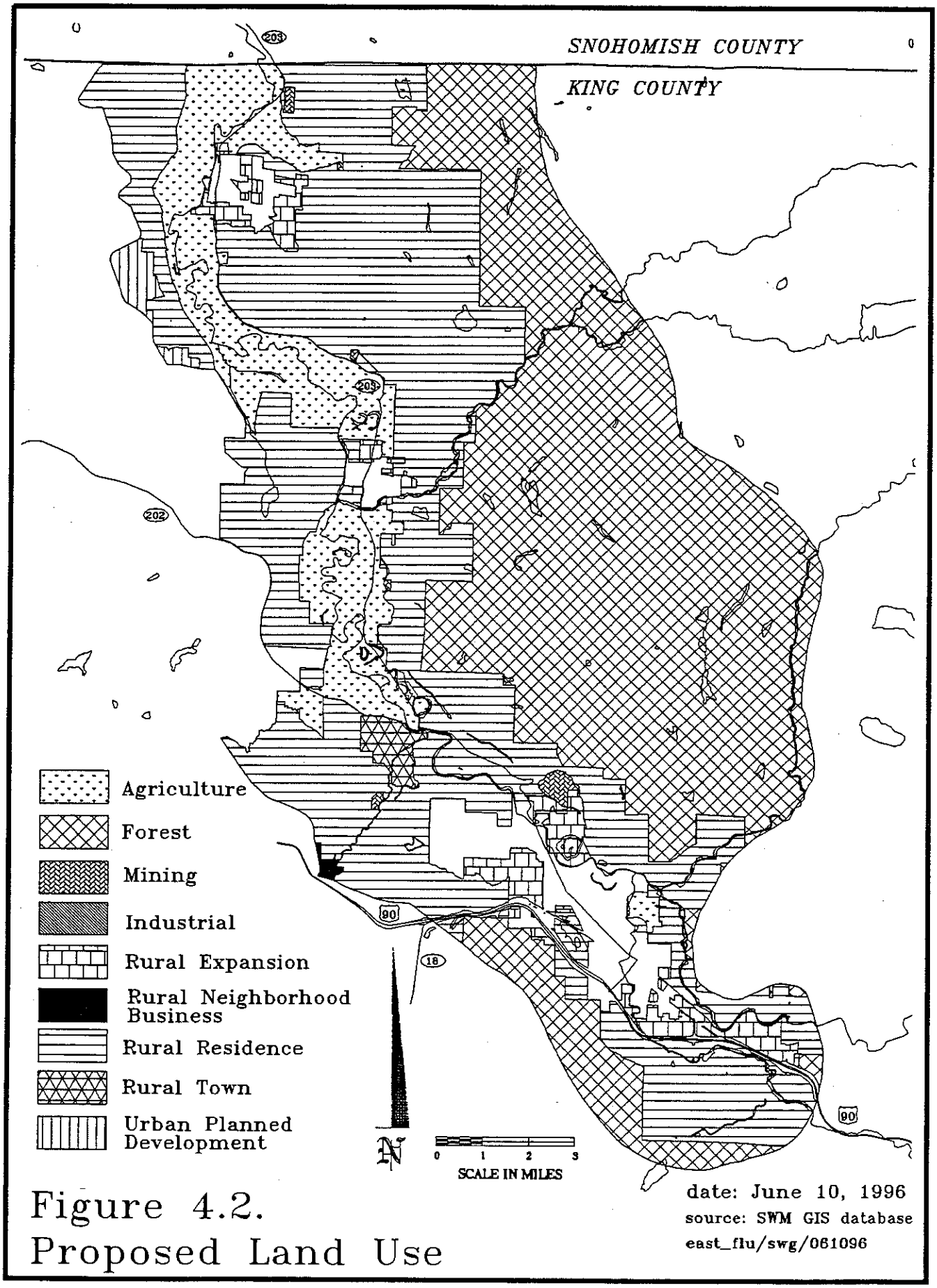


Figure 4.2.
Proposed Land Use

date: June 10, 1996
source: SWM GIS database
east_flu/swg/061096

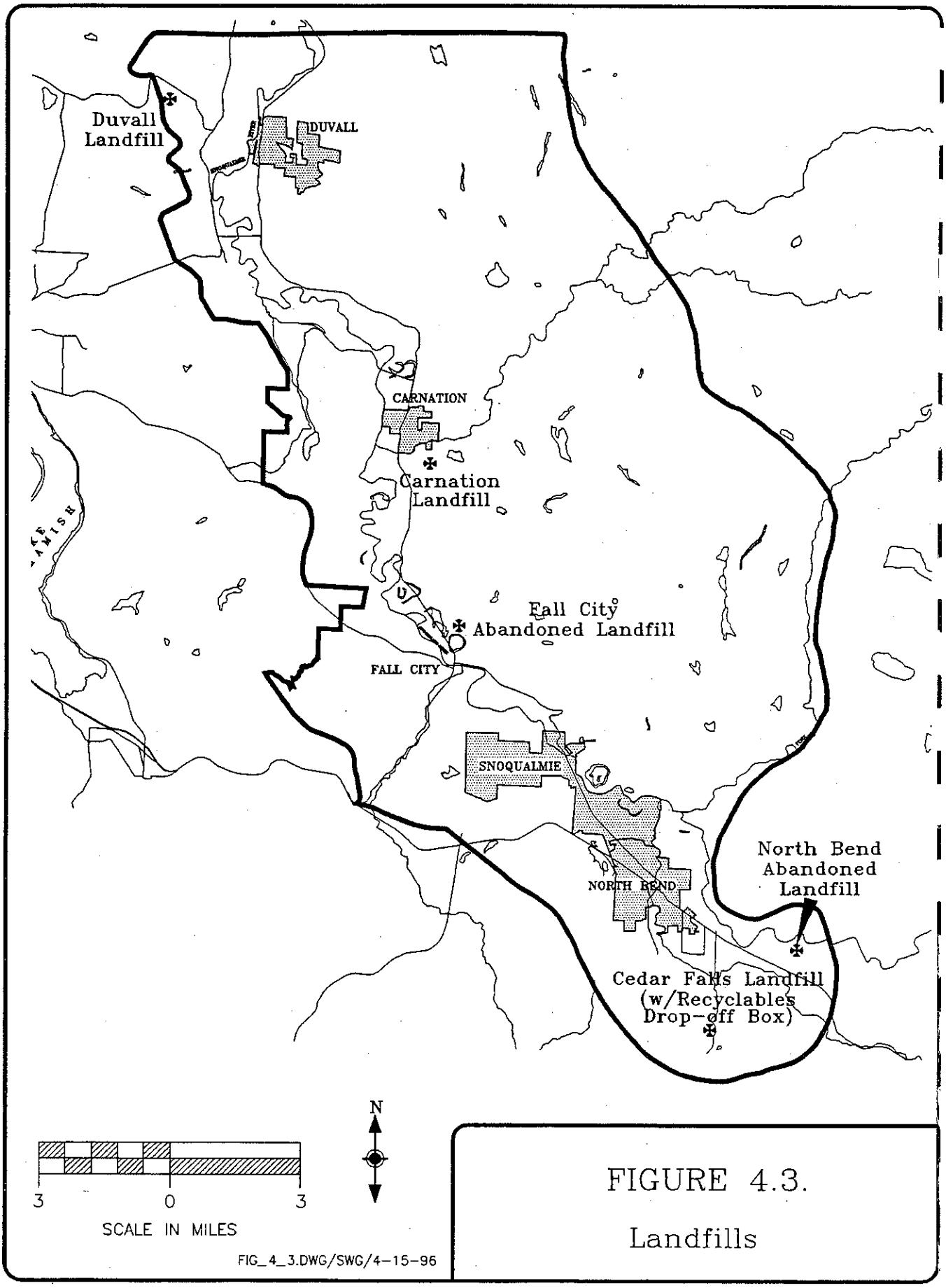


FIGURE 4.3.

Landfills

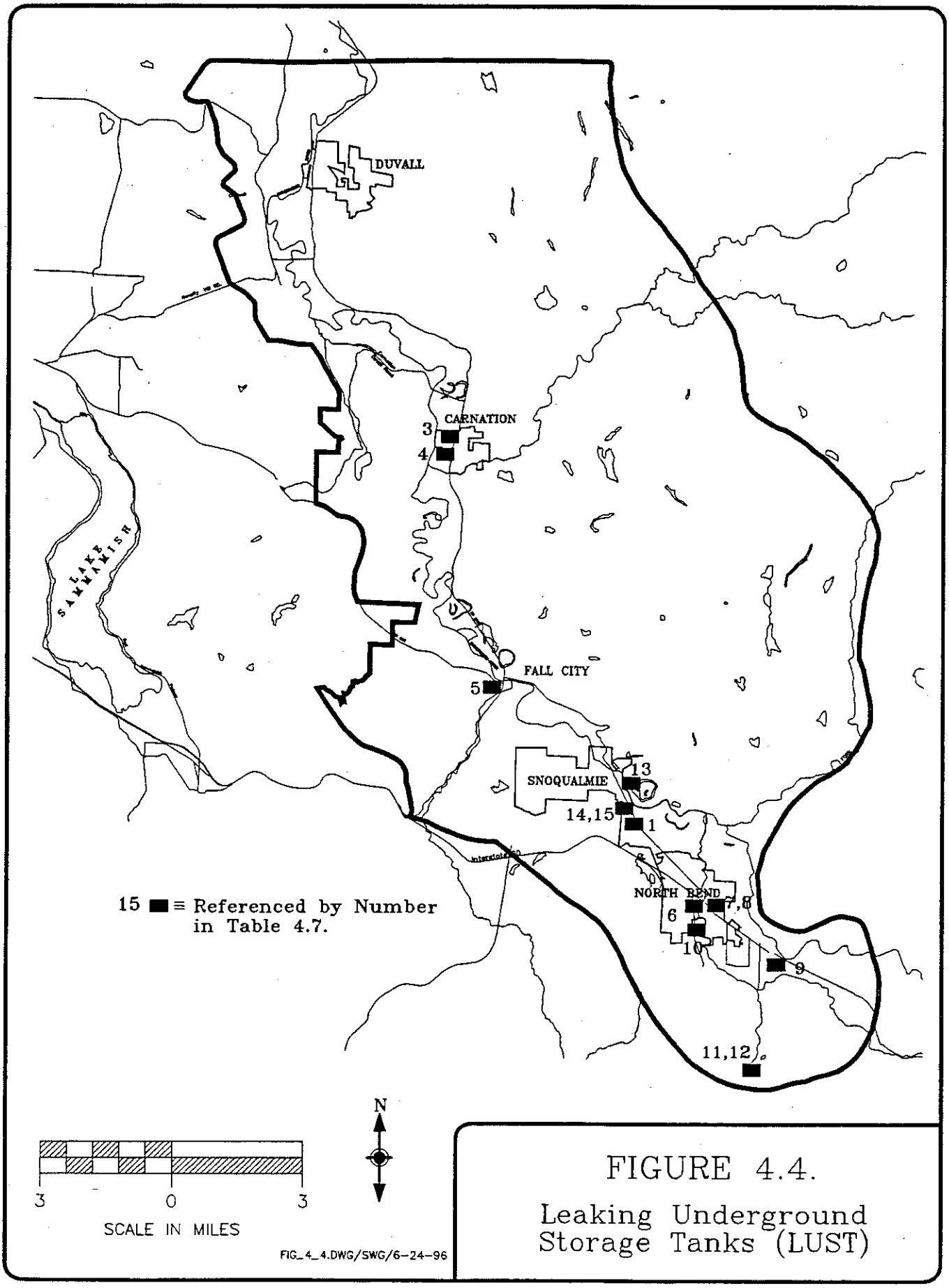


FIGURE 4.4.

Leaking Underground Storage Tanks (LUST)

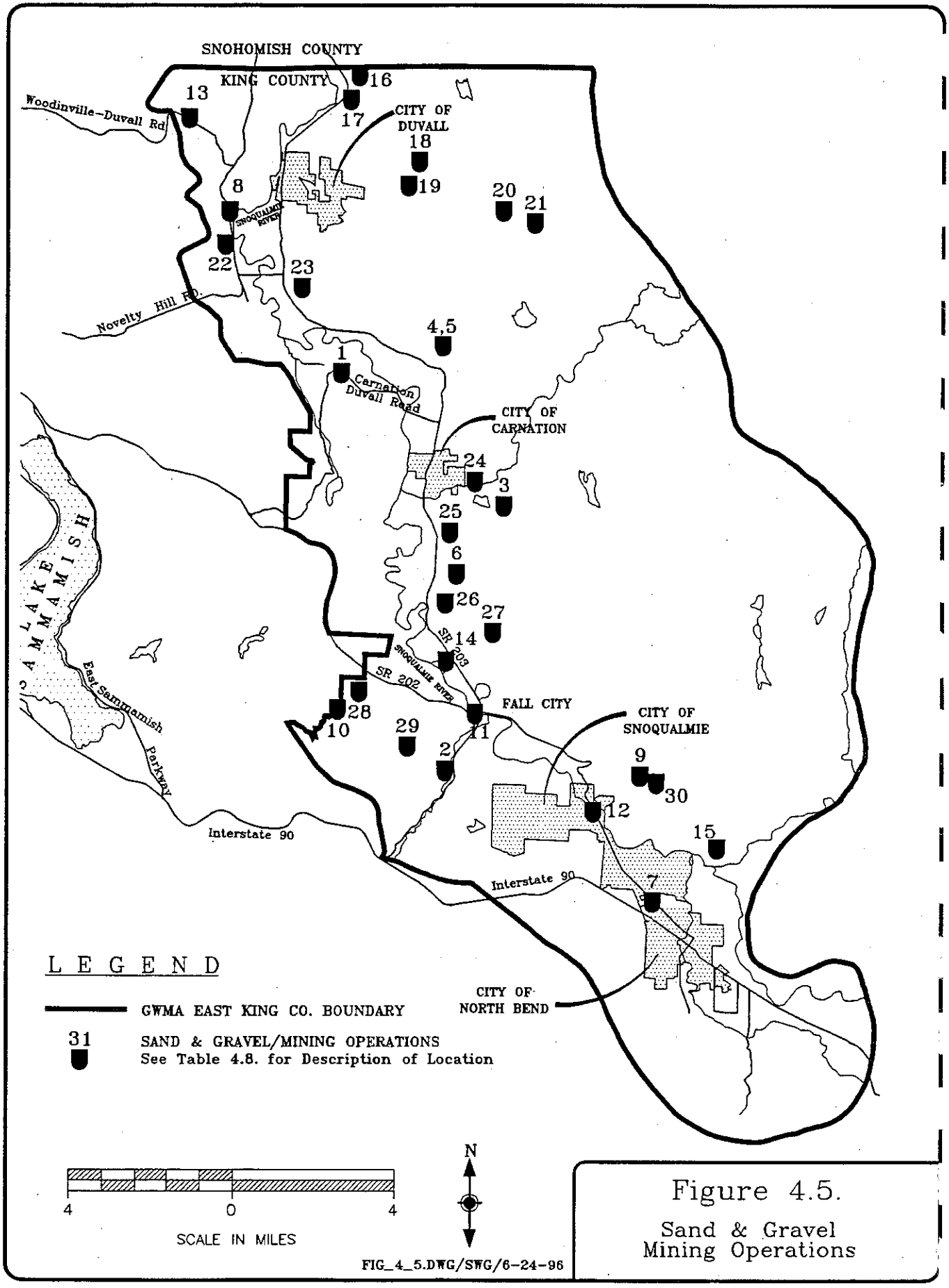


Figure 4.5.

Sand & Gravel Mining Operations

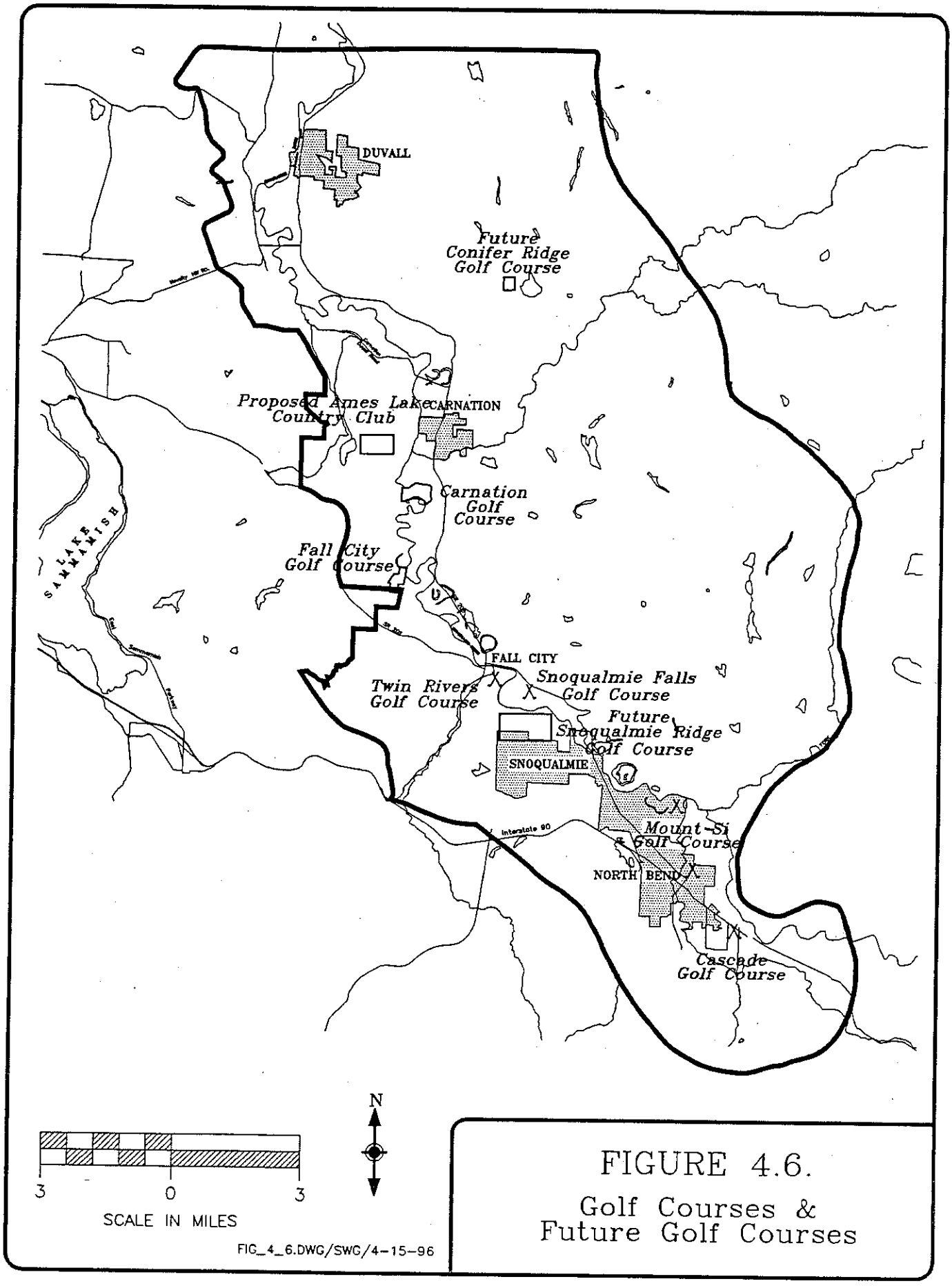


FIGURE 4.6.

Golf Courses & Future Golf Courses

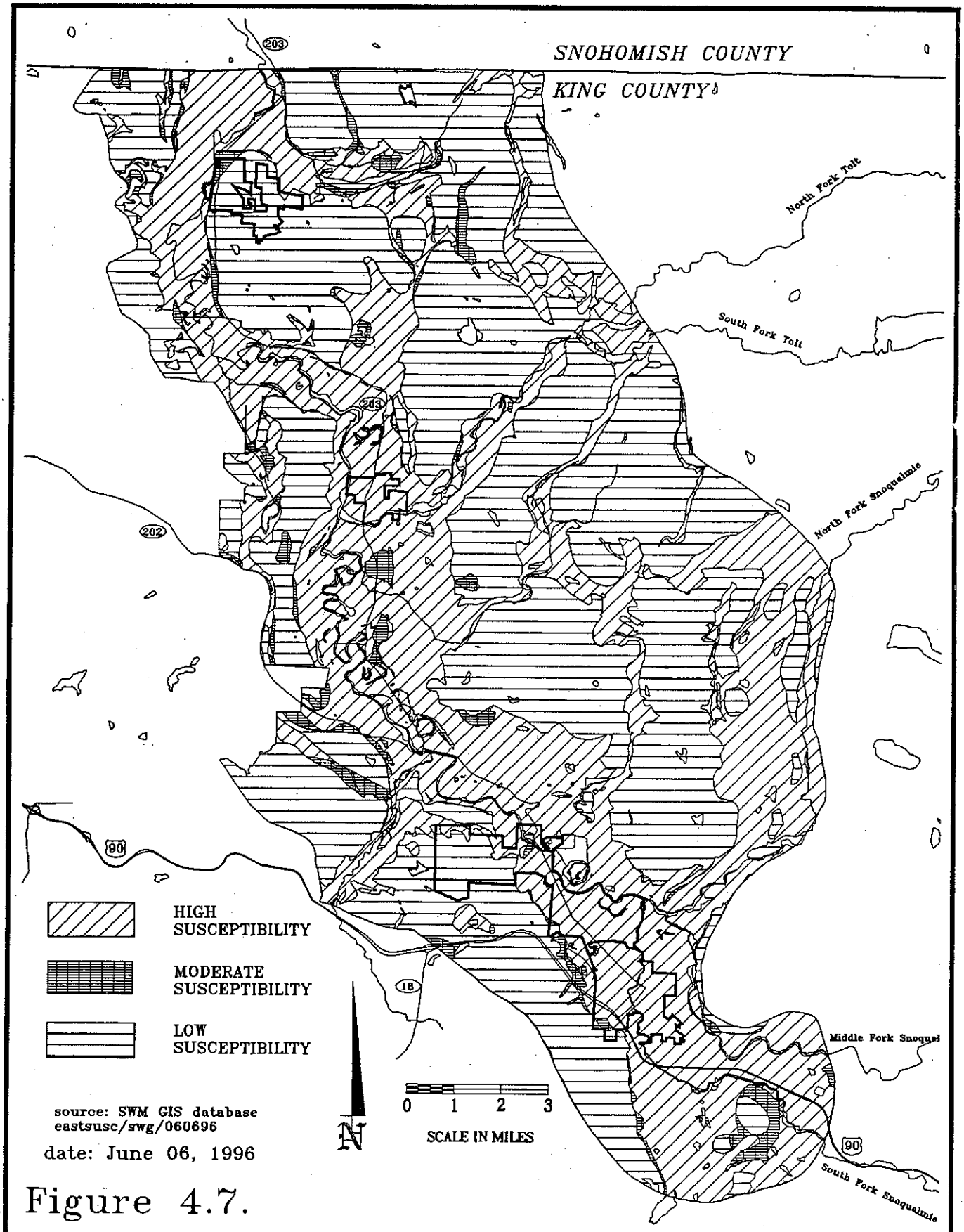


Figure 4.7.

Areas Susceptible to Ground Water Contamination

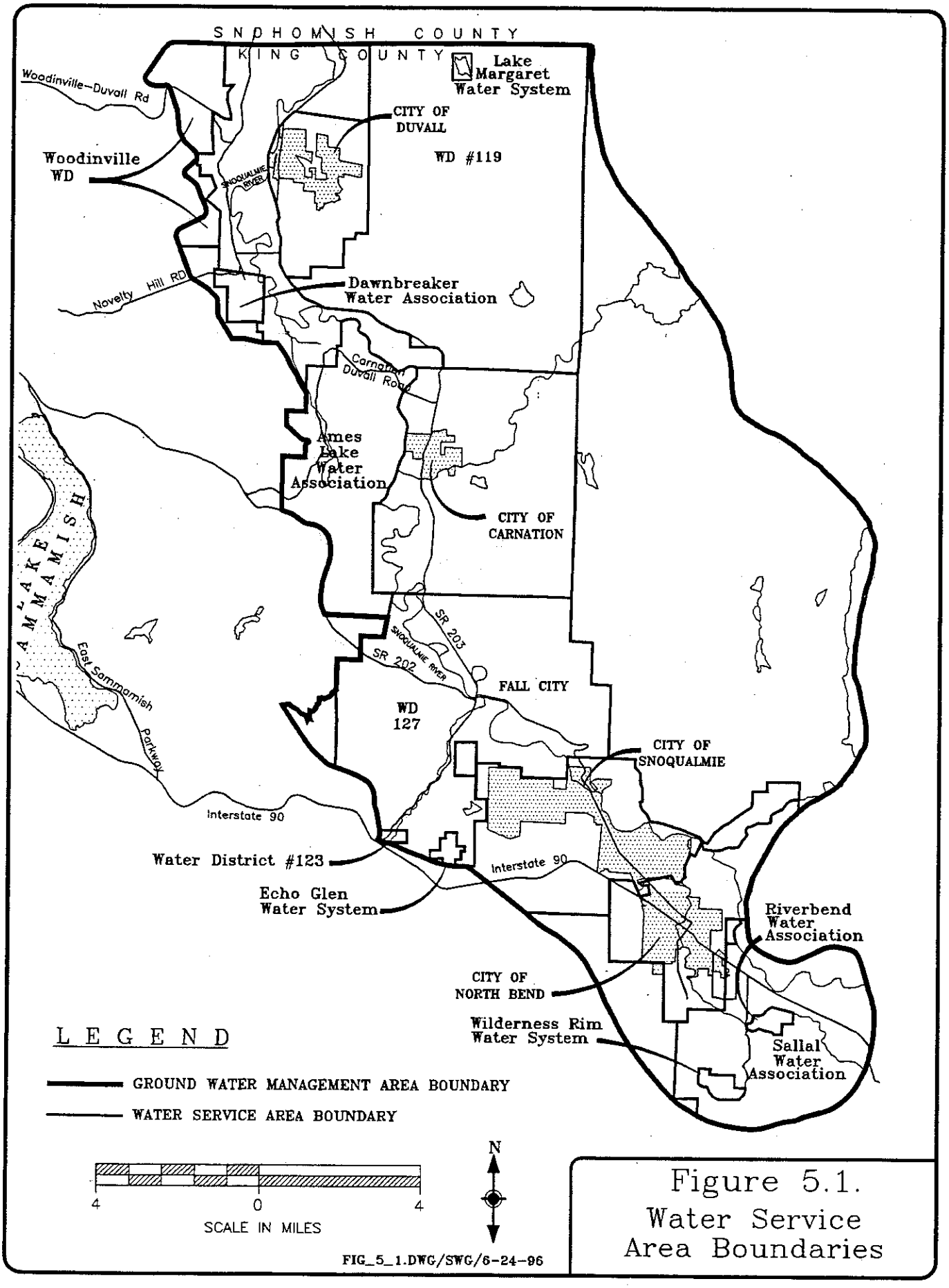


Figure 5.1.
Water Service
Area Boundaries

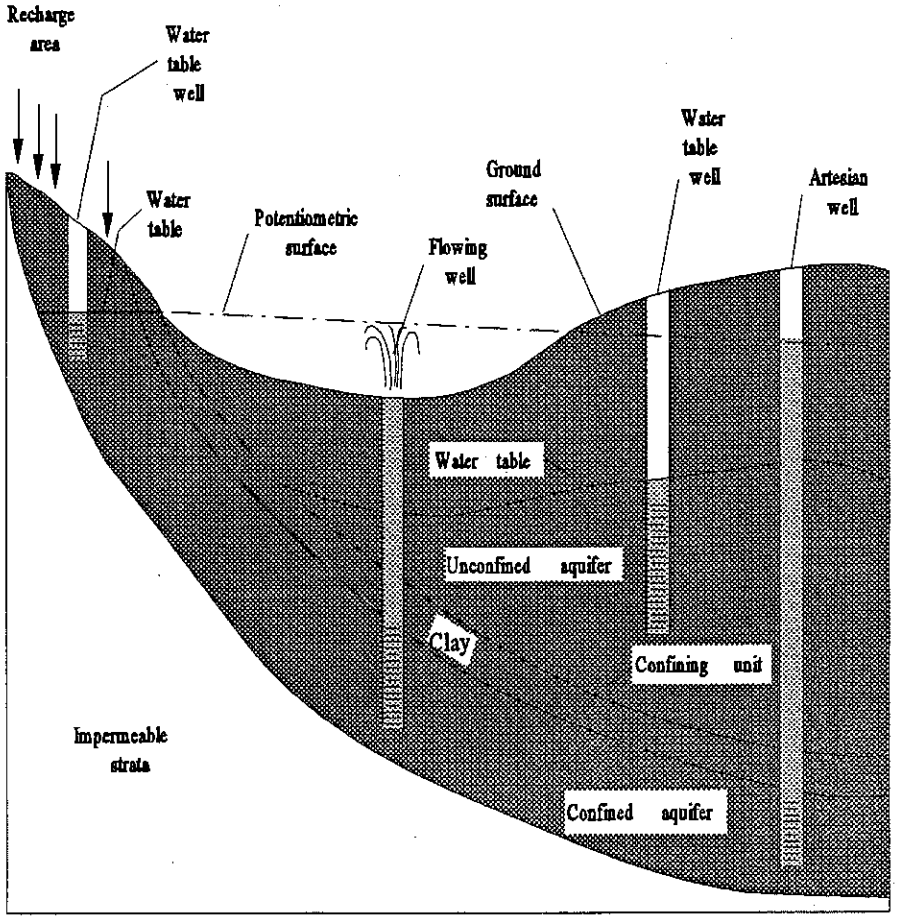


Figure 6.1 **Features of Unconfined and Confine Ground Water Systems.** (Modified from Todd, 1980).

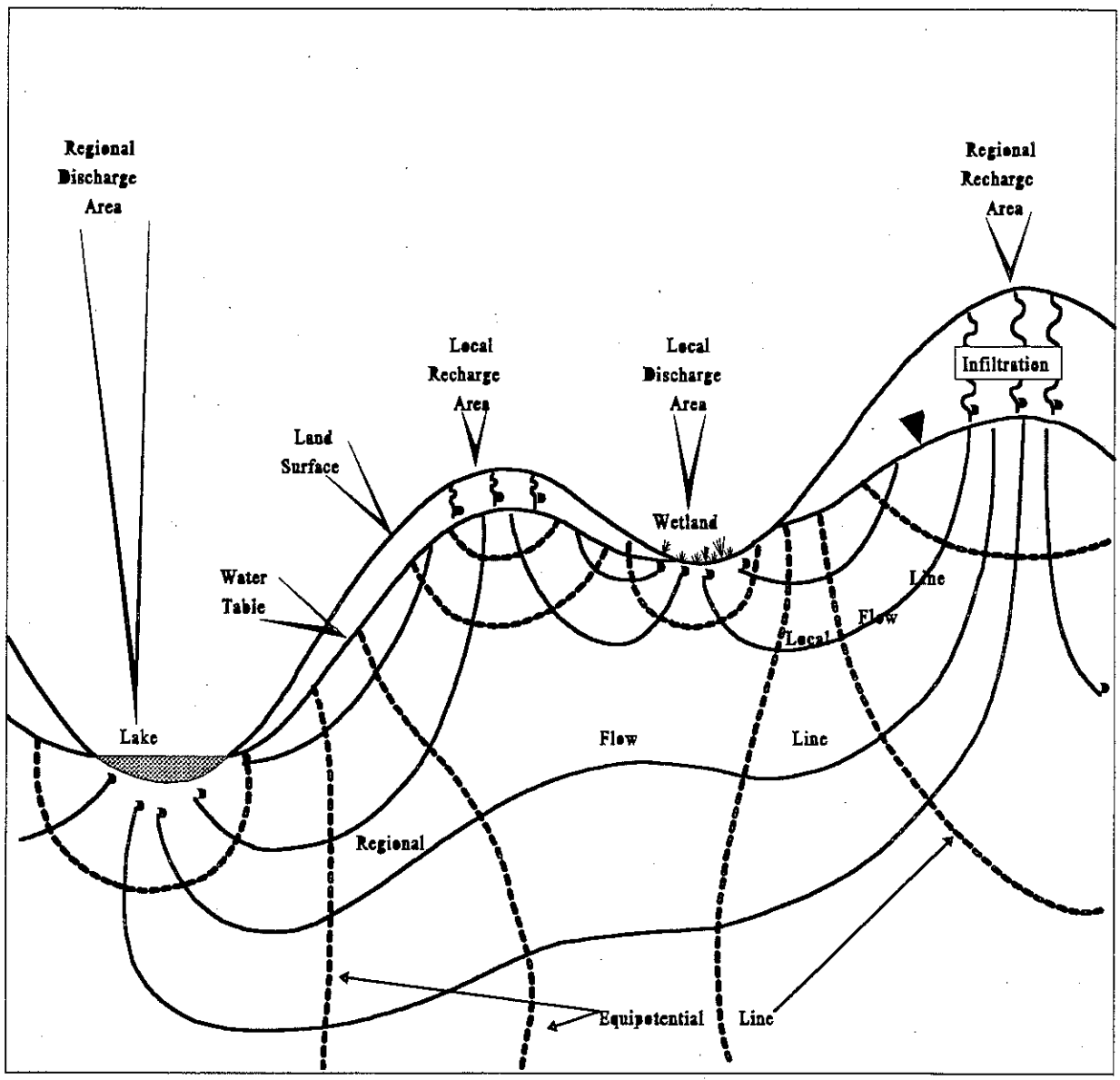


Figure 6.2 **Idealized Ground Water Flow Beneath an Area of Uniformly Permeable Material.** (Modified from Hubbert, 1940).

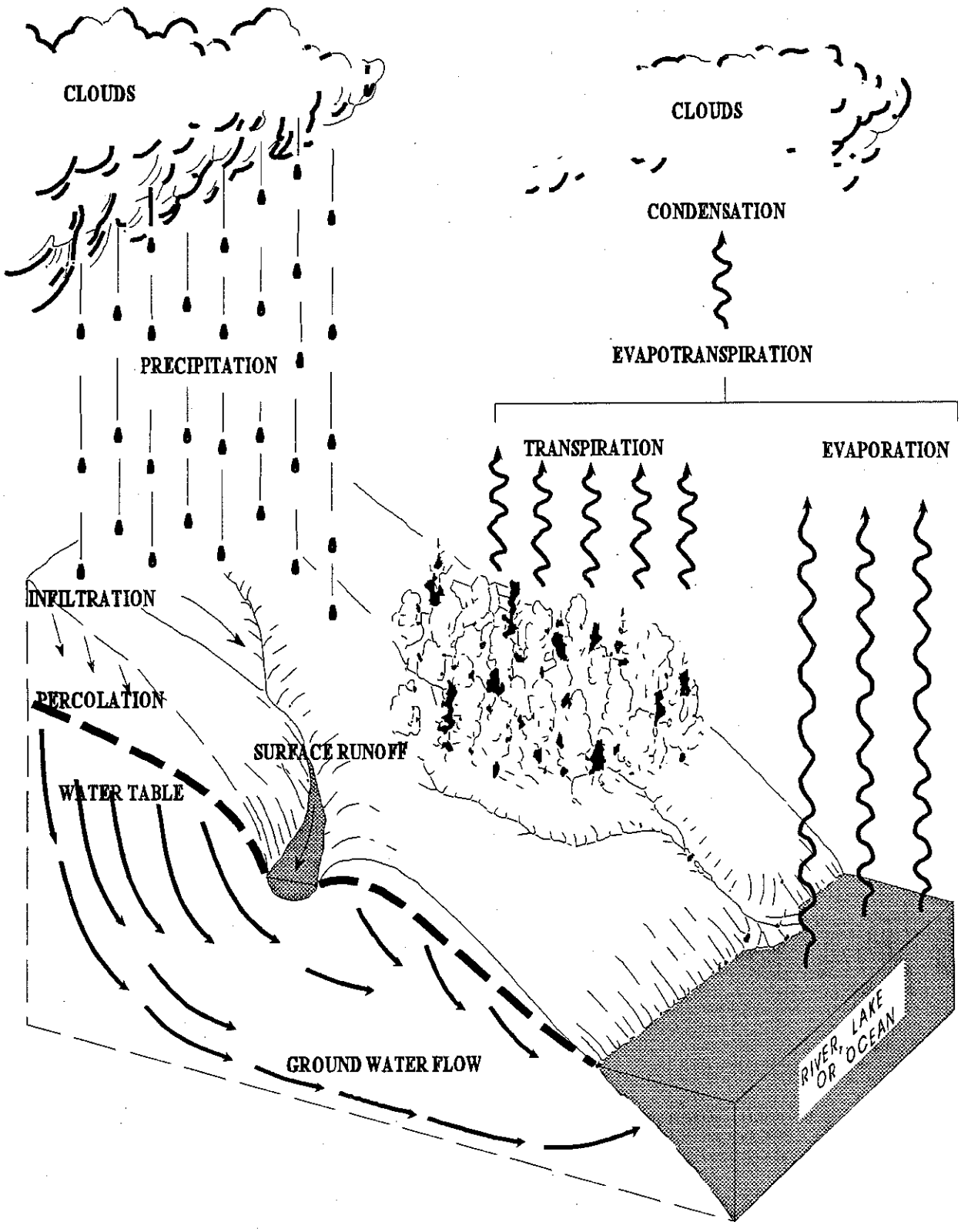
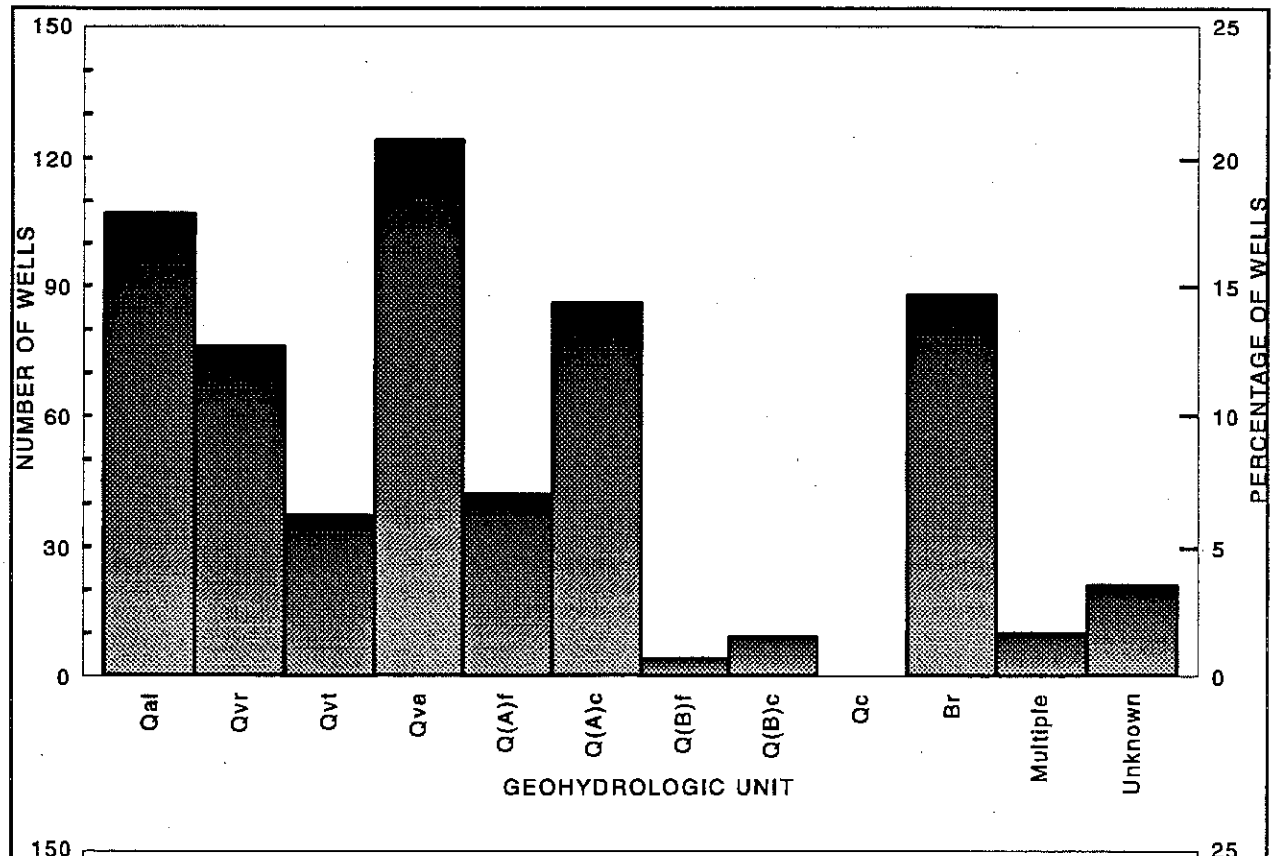


Figure 6.3 The Hydrologic Cycle.



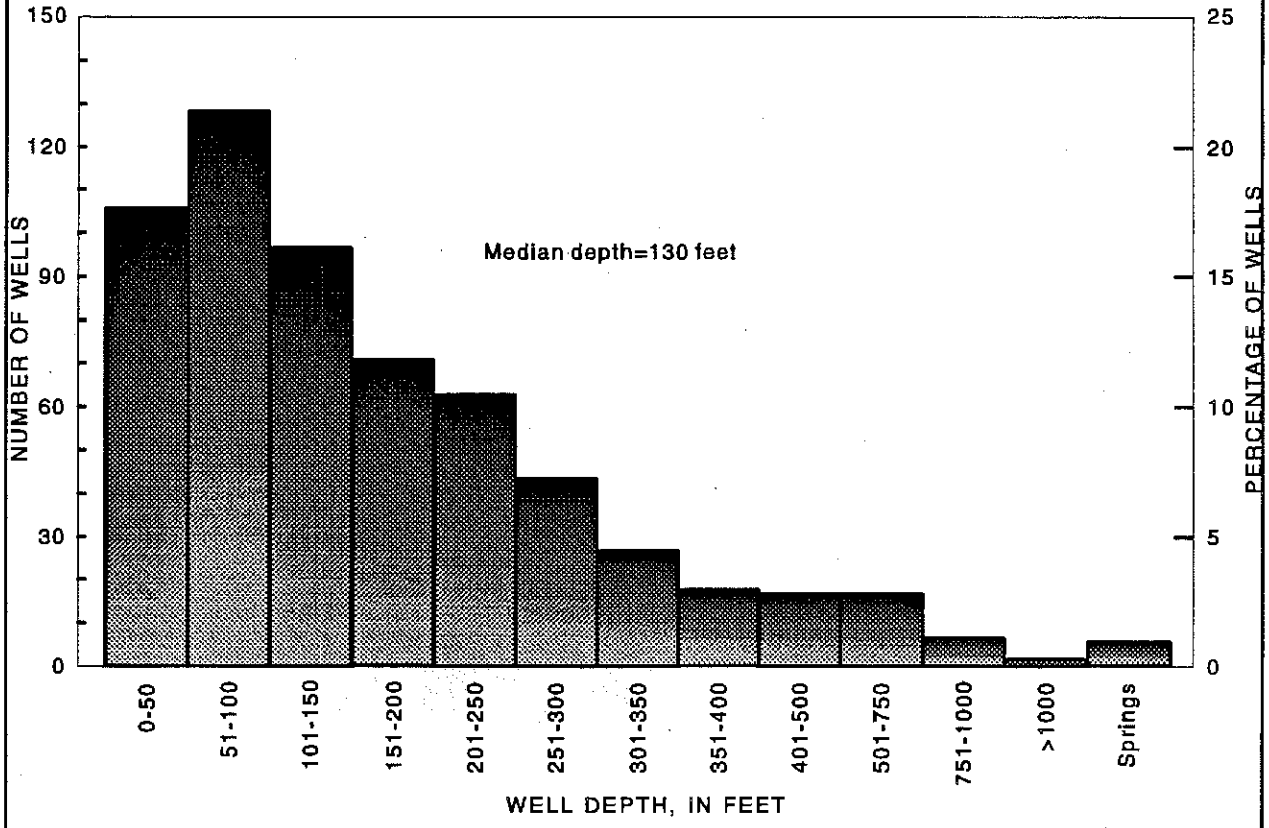


Figure 6.4 USGS Selection of EKC-GWMA Wells Based on Geohydrologic Unit and Well Depth.

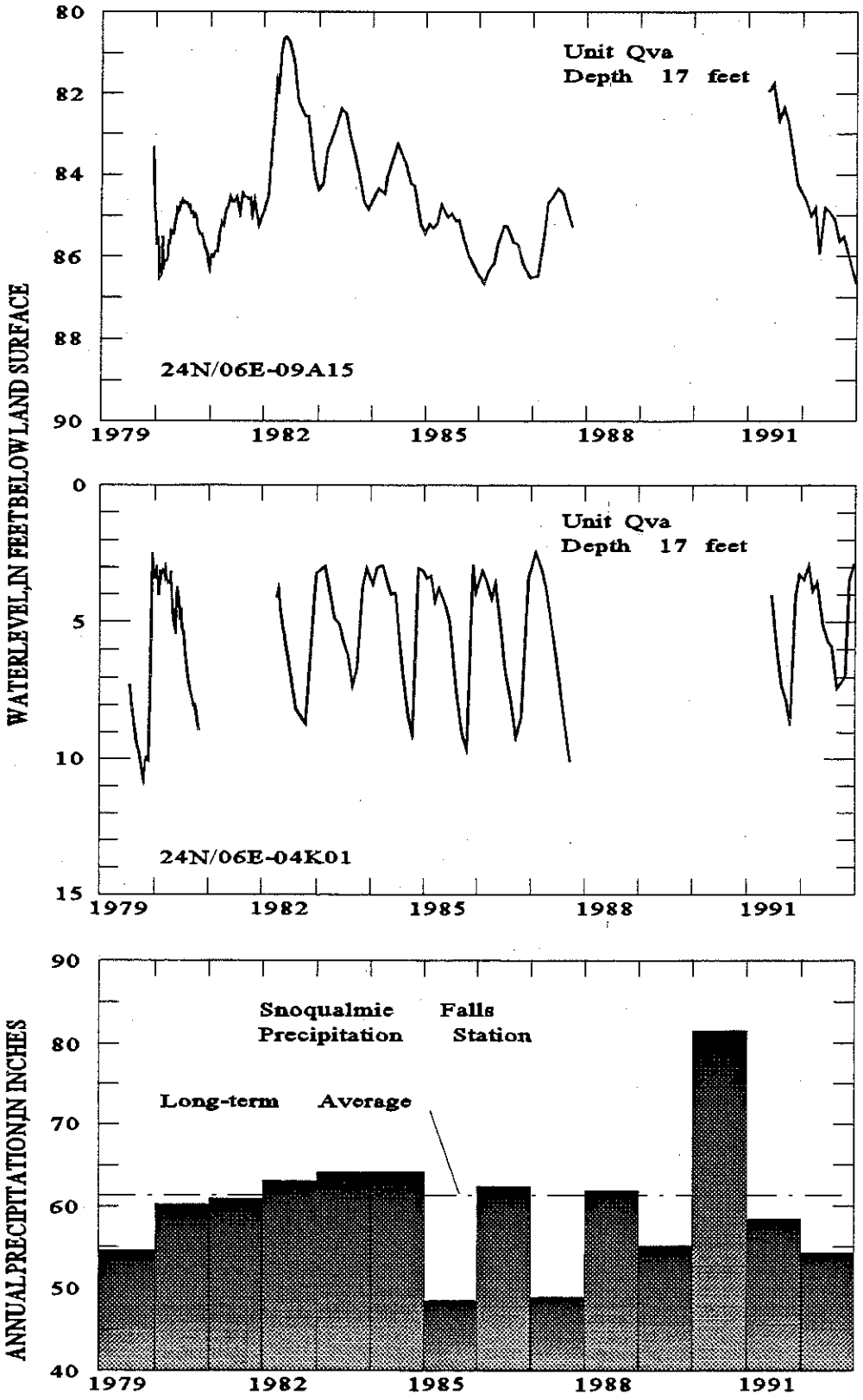


Figure 6.5 Water Levels iu Wells 24/N06E-09A15 and 24N/06E-04K01 and Annual Precipitation at Suoqualmie Falls.

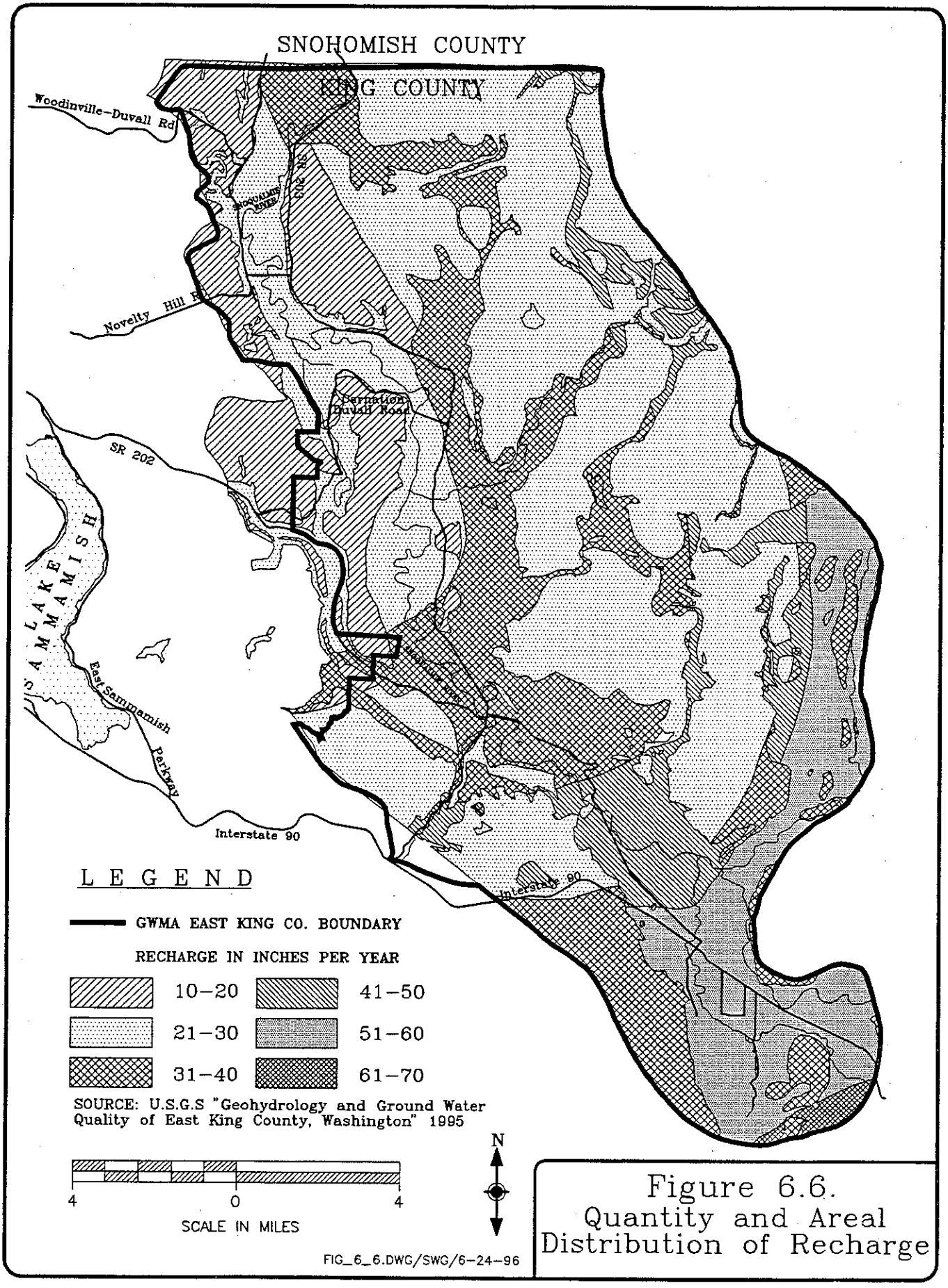


Figure 6.6.
Quantity and Areal Distribution of Recharge

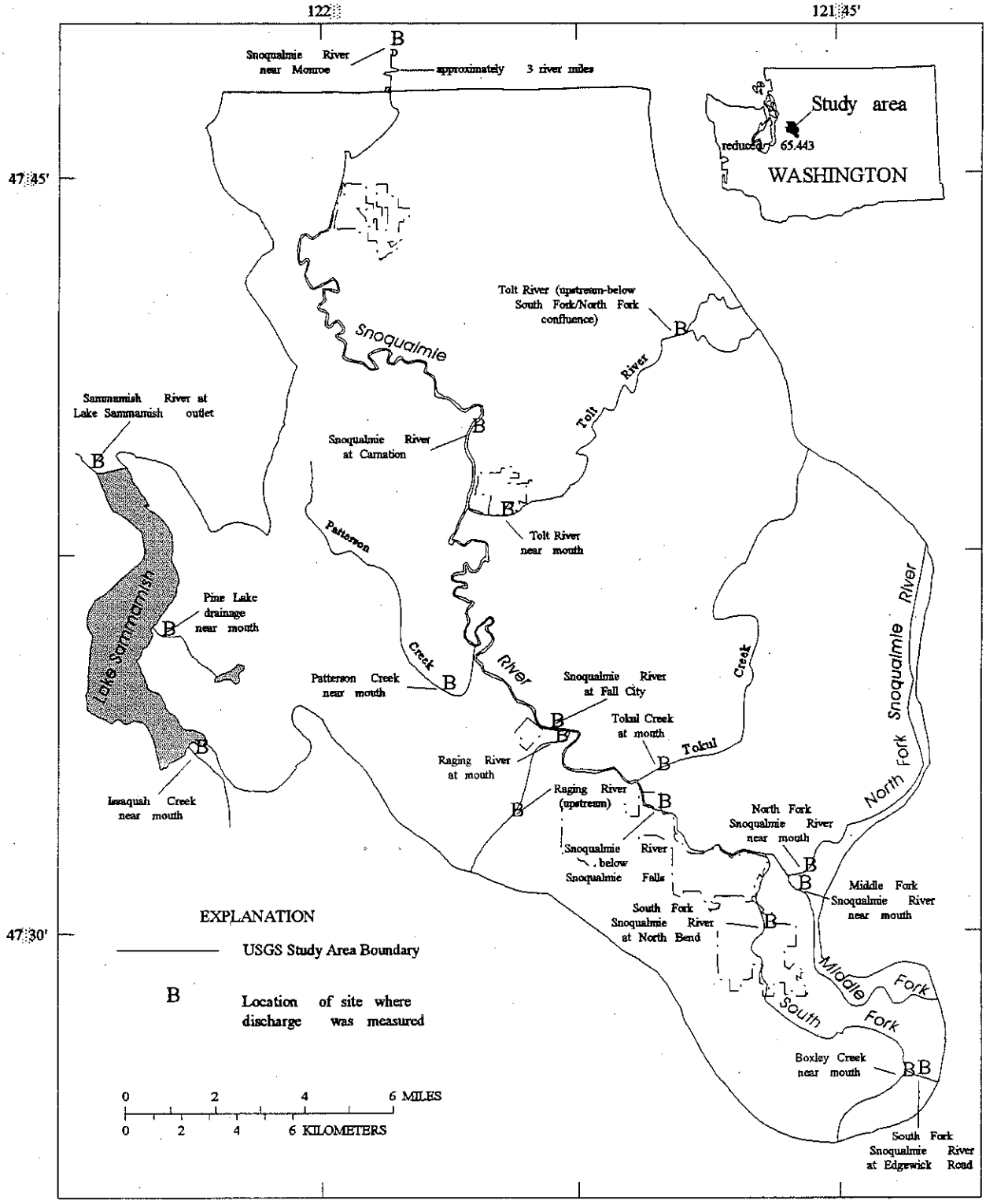


Figure 6.7 **Locations of Stream Sites Where Discharge was Measured to Determine Ground Water Seepage by the US Geological Survey.**

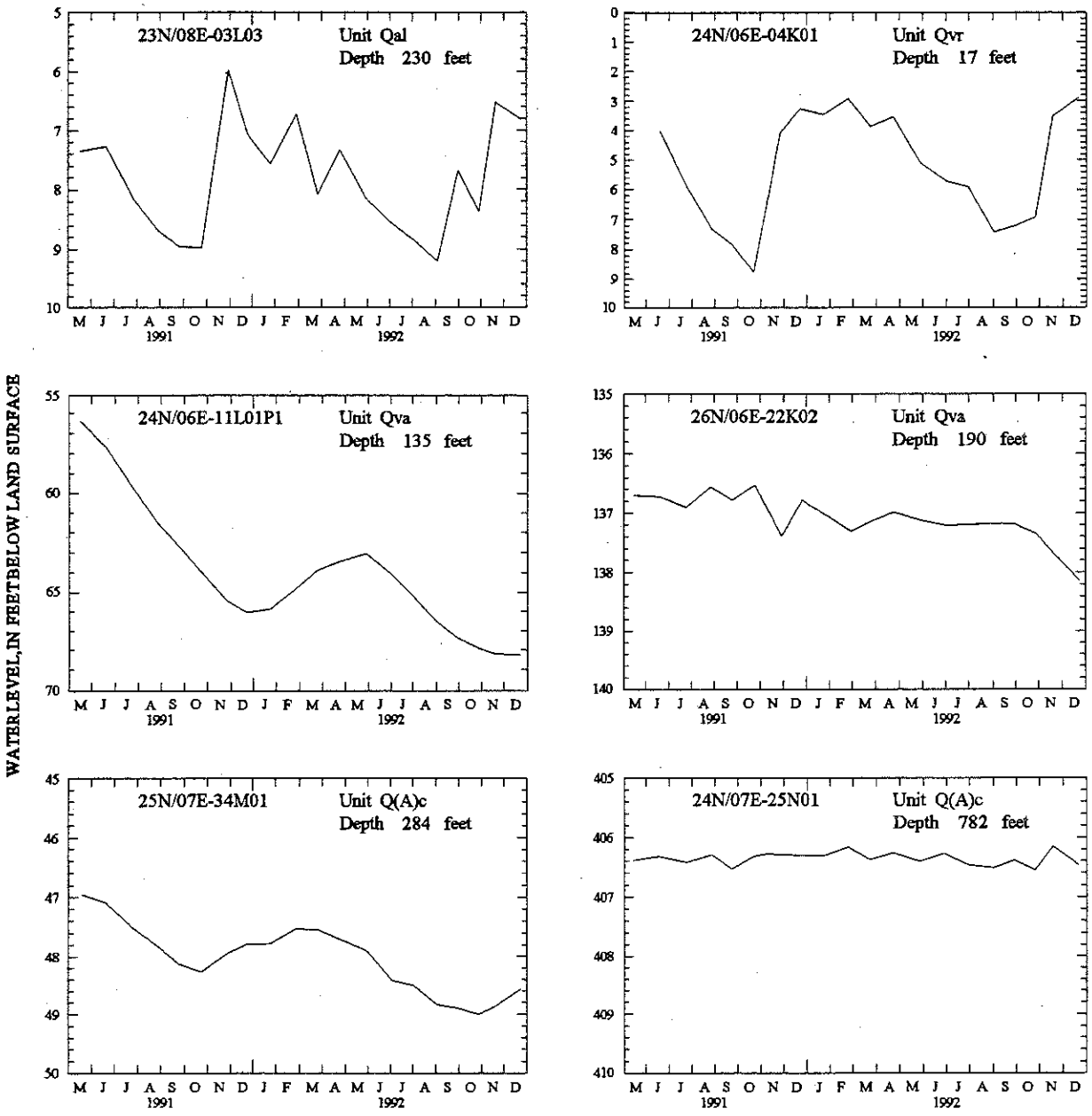
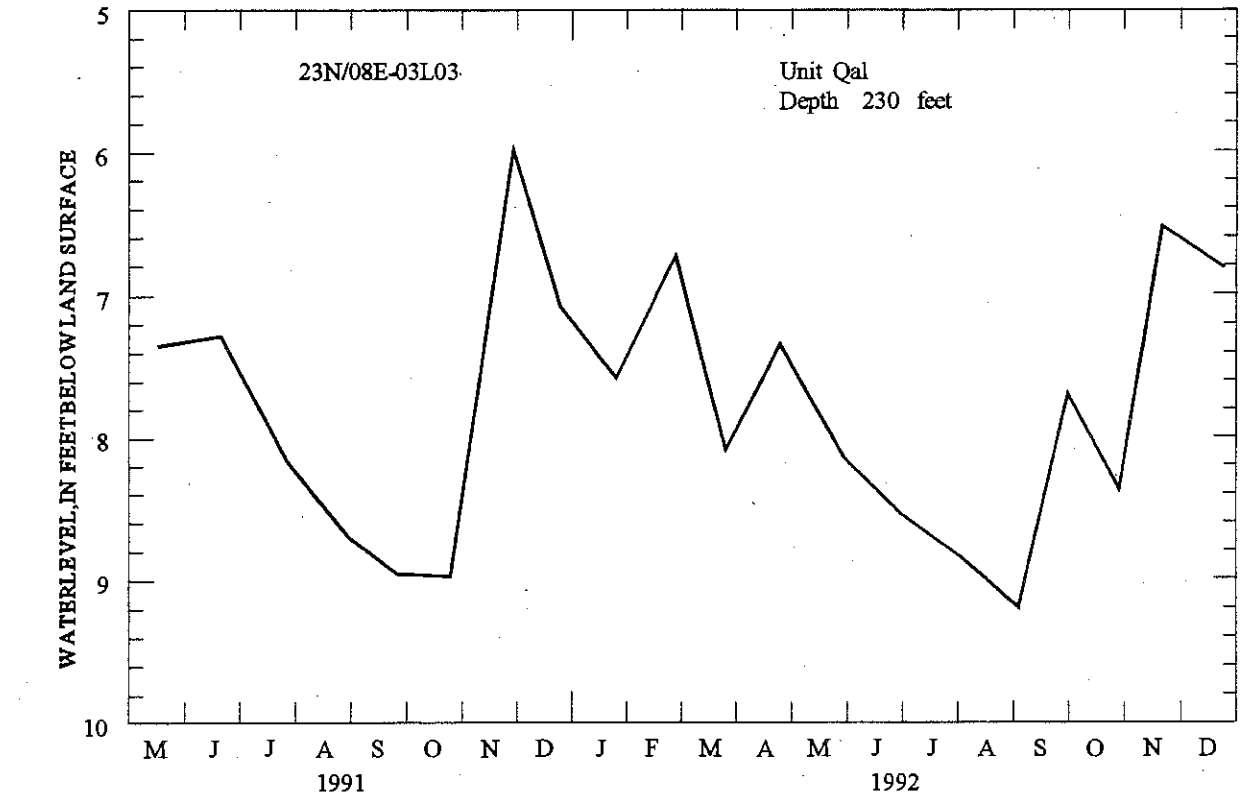


Figure 6.8 **Water Levels in Selected Wells in East King County.**



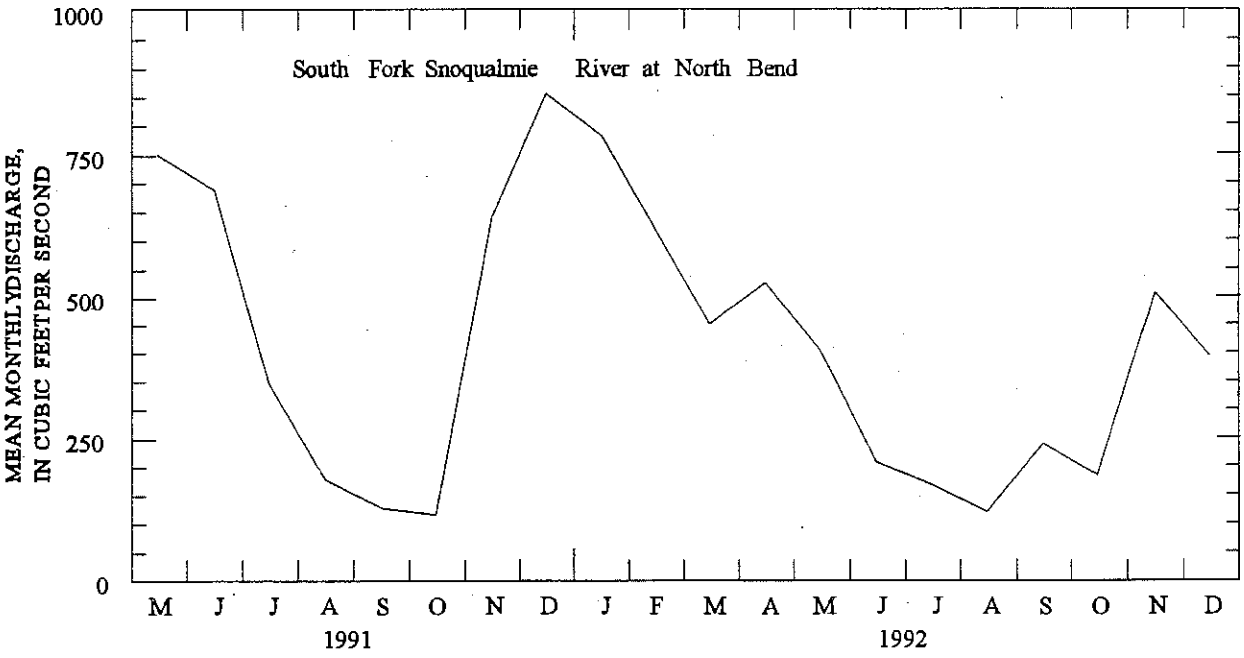
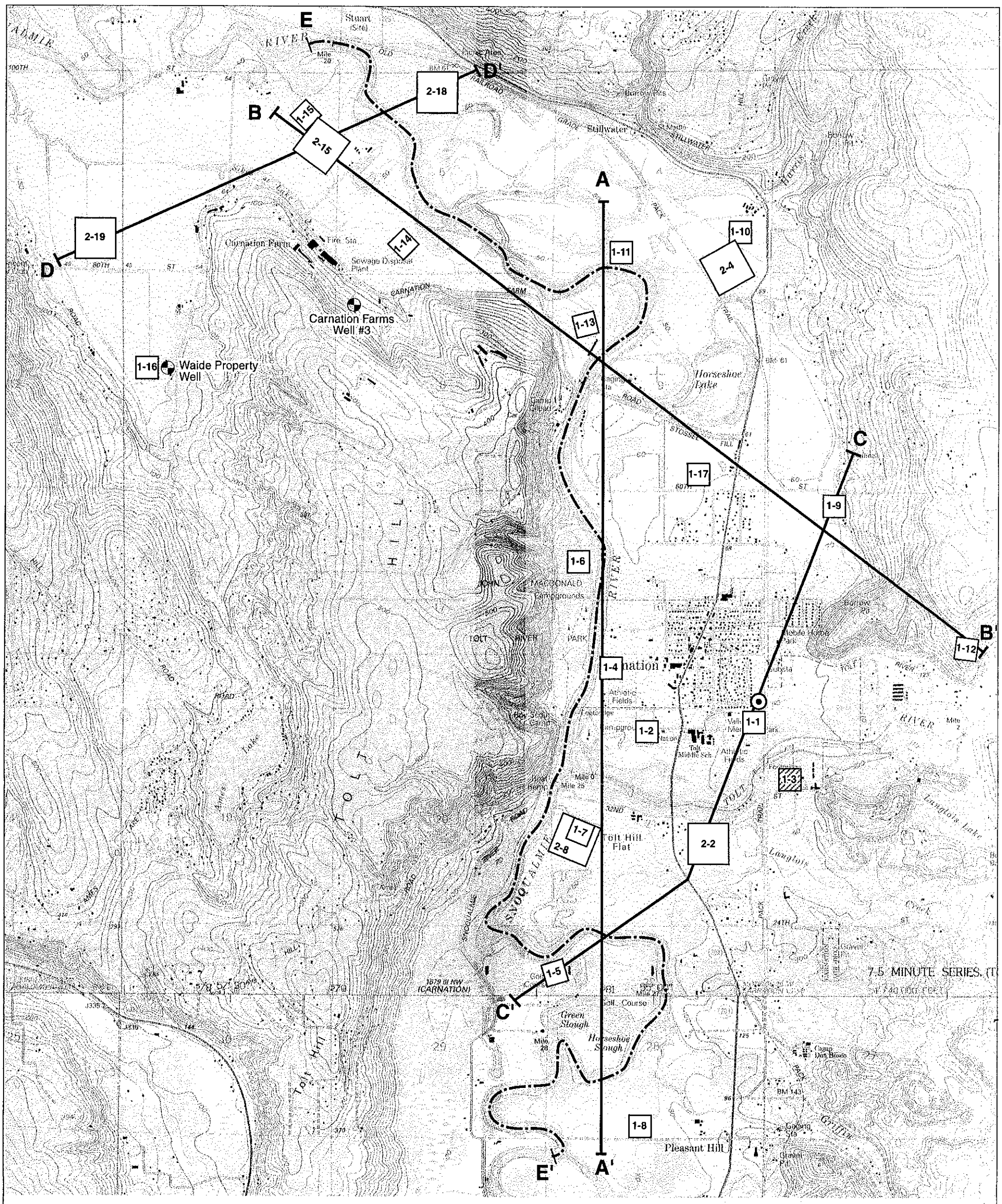


Figure 6.9 **Water Levels in Well 23N/08E-03L03 and Mean Monthly Discharge of the South Fork Snoqualmie River at North Bend.**



LEGEND

- A — A' Geo-electric cross section
- E — E' Marine seismic reflection trackline
- 1-6 100-meter TDEM sounding location and number, square indicates loop orientation
- 1-3 Data on this sounding not usable due to cultural interference from power lines
- 2-2 300-meter TDEM sounding location and number, square indicates loop orientation
- Existing well used as calibration for TDEM soundings
- Test well site (Loutsis Park, Carnation)

N

0 2500

FEET

FIGURE **6.10.**
BASEMAP WITH GEOPHYSICAL SURVEY LAYOUT
LOWER SNOQUALMIE RIVER VALLEY
CARNATION, WASHINGTON

EKC Figure 610.fh3 6/96 kjm

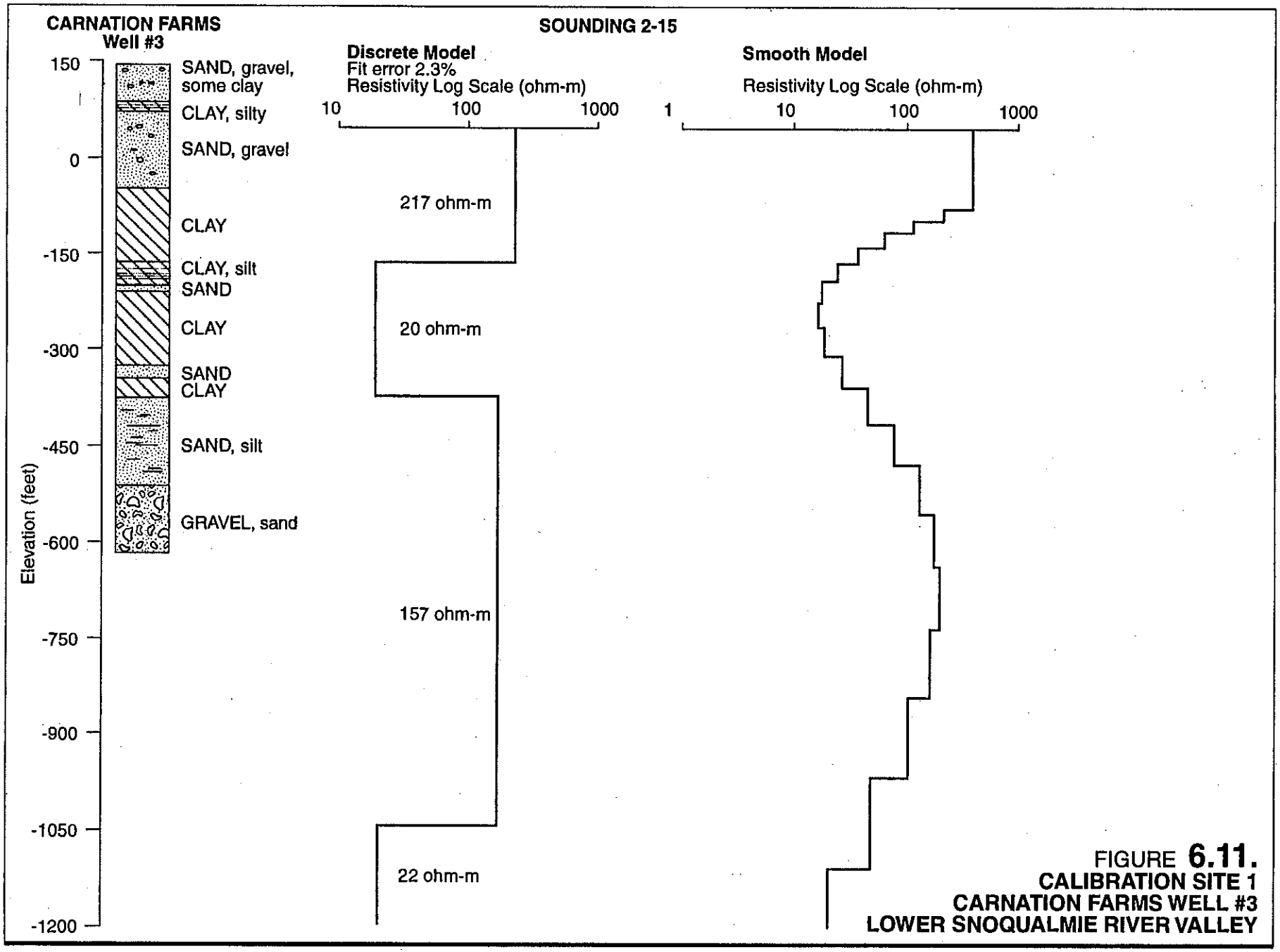


FIGURE **6.11.**
CALIBRATION SITE 1
CARNATION FARMS WELL #3
LOWER SNOQUALMIE RIVER VALLEY

EKC Figure 611.fh3 6/96 KJM

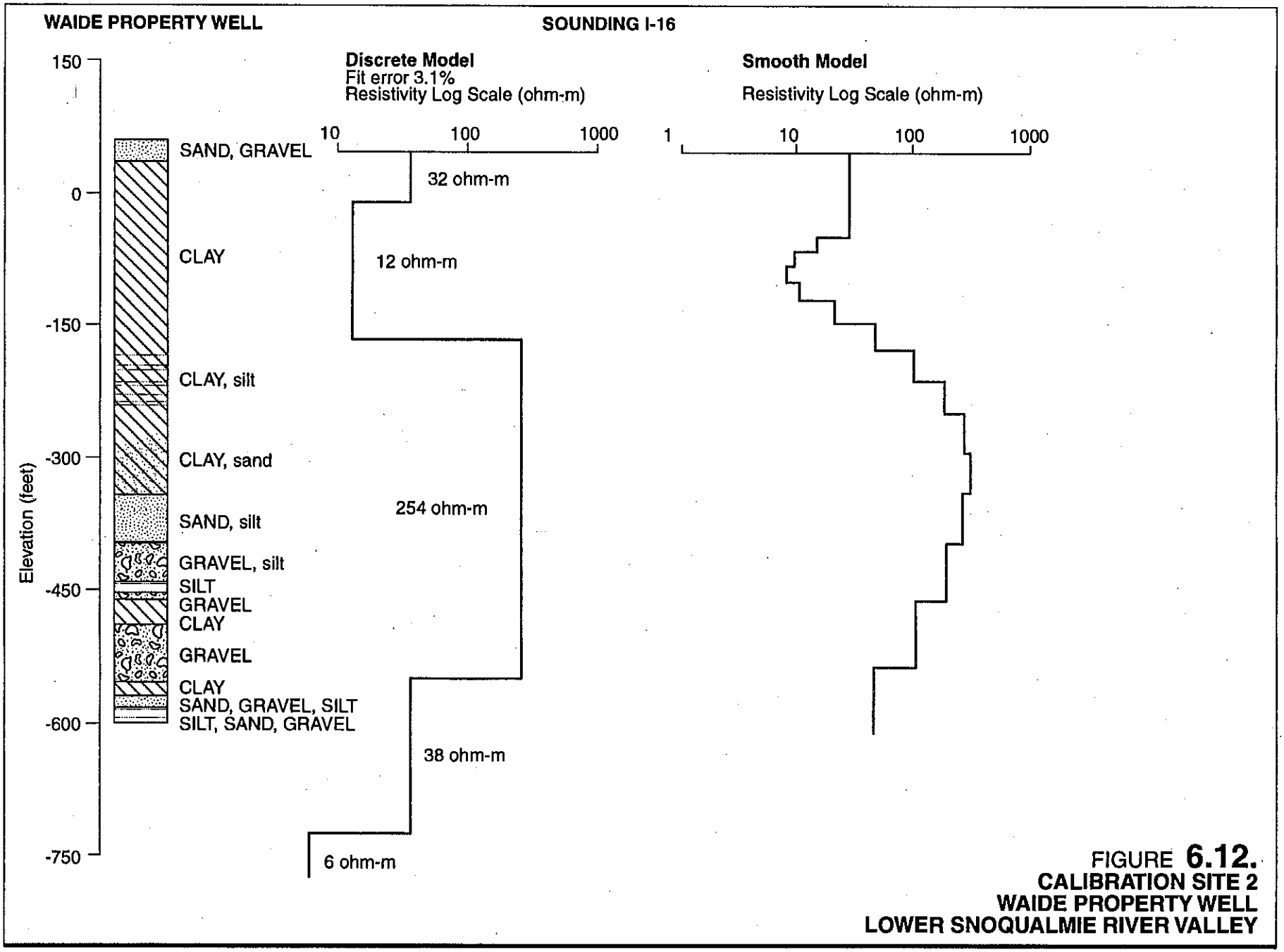


FIGURE **6.12.**
CALIBRATION SITE 2
WAIDE PROPERTY WELL
LOWER SNOQUALMIE RIVER VALLEY

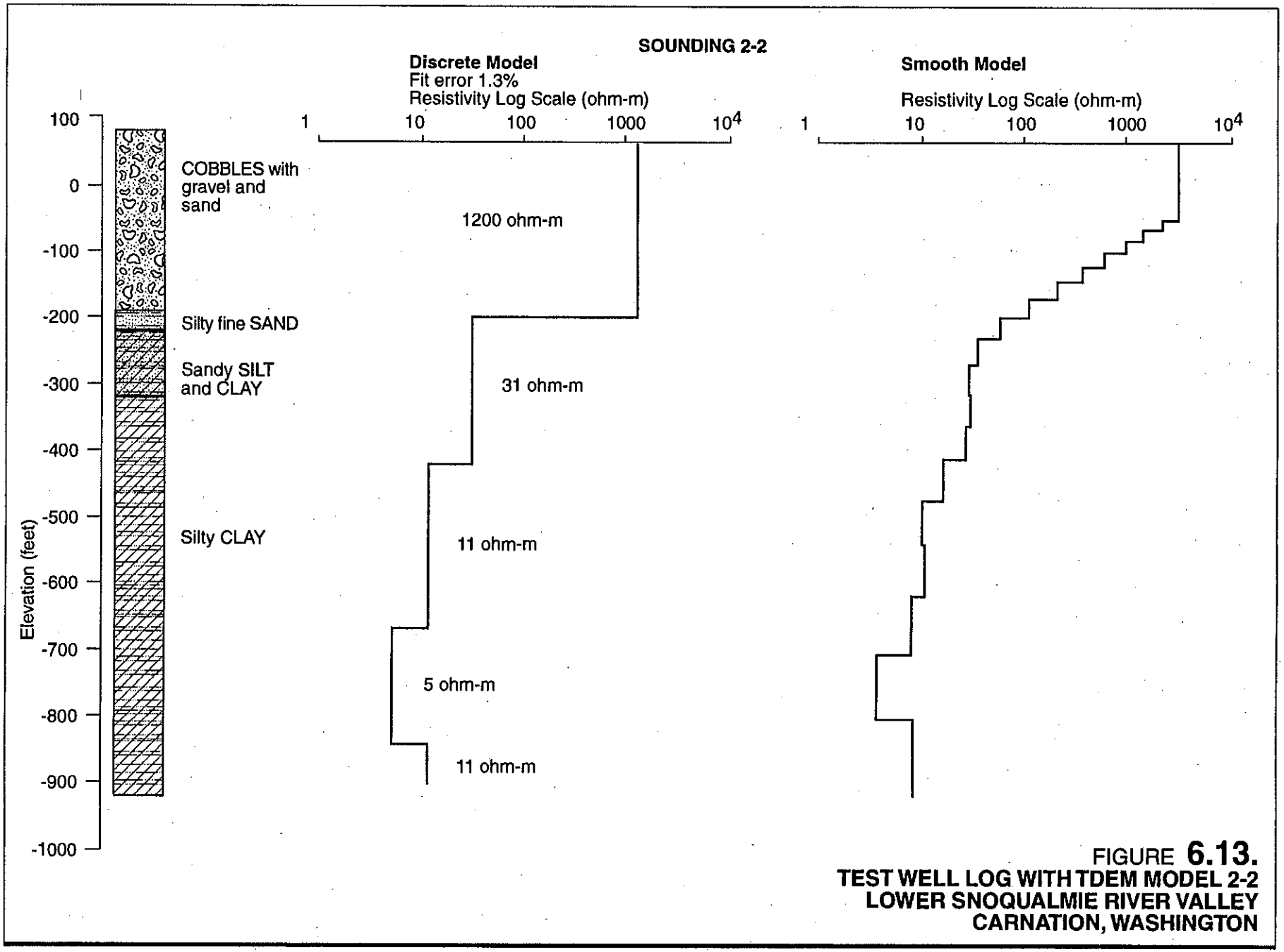
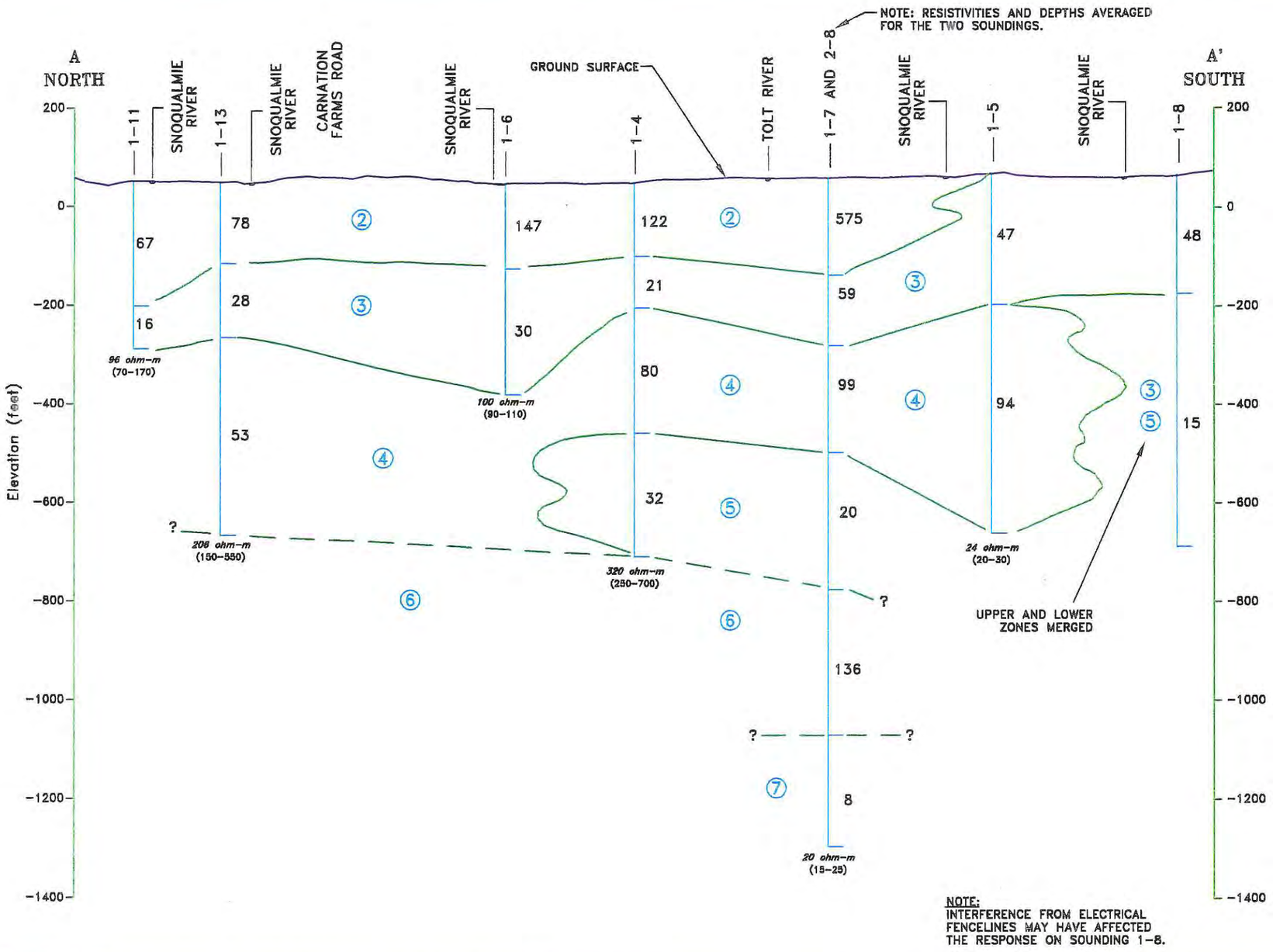
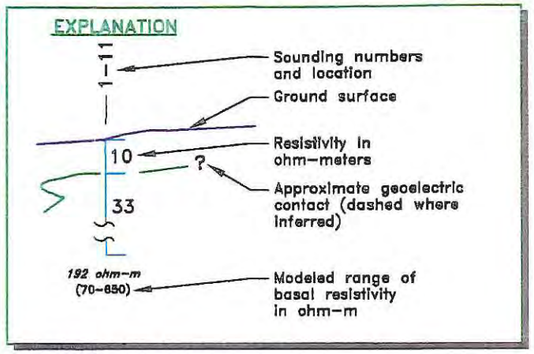


FIGURE **6.13.**
TEST WELL LOG WITH TDEM MODEL 2-2
LOWER SNOQUALMIE RIVER VALLEY
CARNATION, WASHINGTON

EKC Figure 613.fh3 6/96 KJM



EXPLANATION



Elevation (feet)

AQUITARD

② UPPER AQUIFER – Resistivity range 67–1200 ohm-m. Interpreted to consist predominantly of sand, gravel and cobbles.

③ UPPER ZONE – Resistivity range 10–59 ohm-m. Interpreted to consist predominantly of clay and silt. Aquitard interpreted to be extensive throughout the river valley portion of the survey area.

④ TRANSITION ZONE – Resistivity range 42–100 ohm-m. Less resistive than the Upper and Lower Aquifers and interpreted to contain more silt and clay. Lateral variability in resistivity values interpreted to indicate lateral heterogeneity.

⑤ LOWER ZONE – Resistivity range 5–32 ohm-m. Interpreted to consist predominantly of clay and silt. Interpreted to exist only in the southern portion of this section.

⑥ LOWER AQUIFER –Resistivity range 60–370 ohm-m. Interpreted to consist predominantly of sand and gravel.

⑦ DEEP AQUITARD – Resistivity range 8–22 ohm-m. Interpreted to consist predominantly of silt and clay.

0 2000 4000
FEET

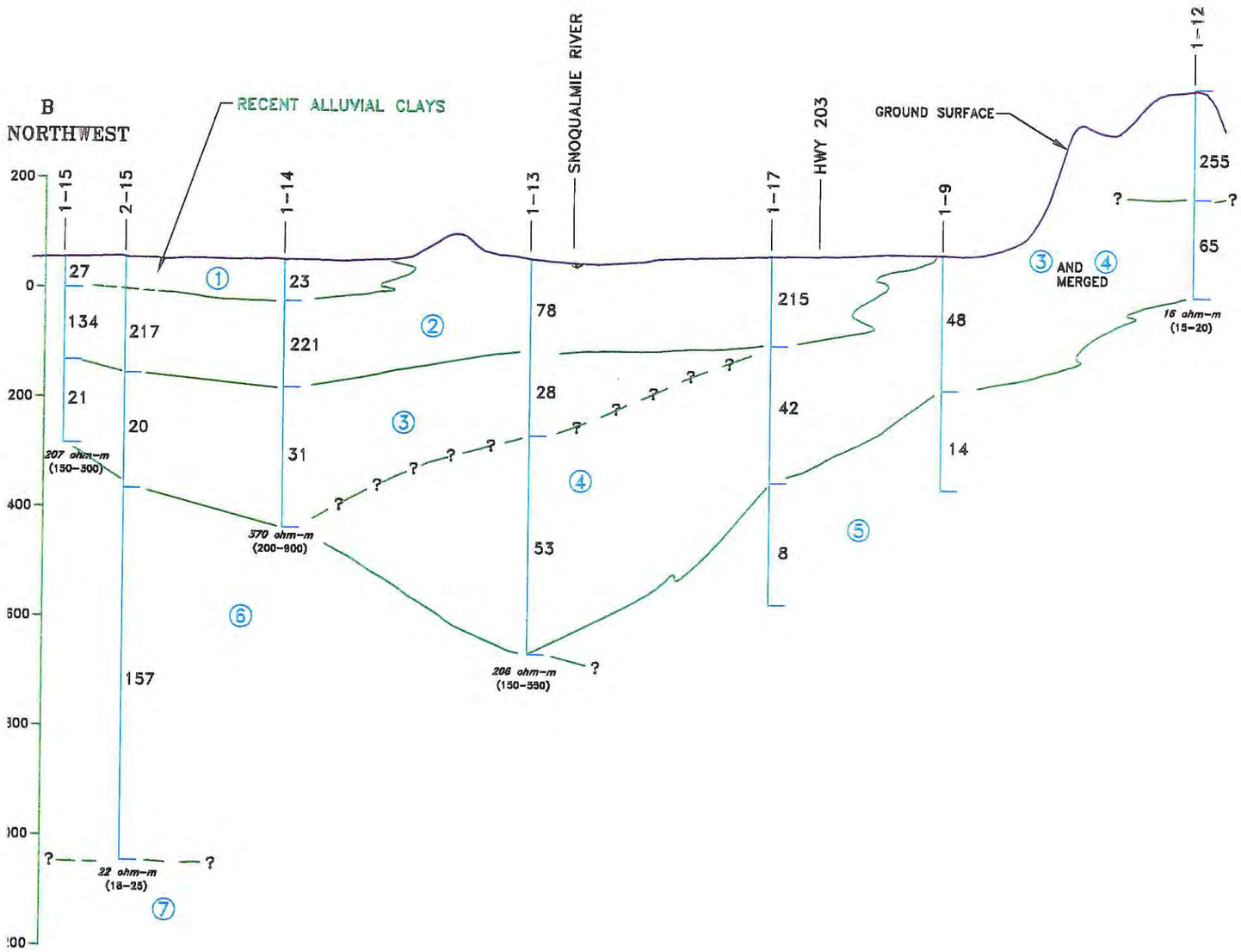
VERTICAL SCALE 1"=200'
VERTICAL EXAGGERATION 10:1

NOTE:
INTERFERENCE FROM ELECTRICAL FENCELINES MAY HAVE AFFECTED THE RESPONSE ON SOUNDING 1-8.

FIGURE 6.14.

GEO-ELECTRIC CROSS-SECTION A-A'
LOWER SNOQUALMIE RIVER VALLEY
CARNATION, WASHINGTON

ADCADD\CIVIL\F\9531100\100\63544 10-24-95 15:48 xrf: NONE H:\GWMAMAPS\EAST\FIG_655



EXPLANATION

1-11 — Sounding numbers and location

Ground surface

10 — Resistivity in ohm-meters

? 33 — Approximate geoelectric contact (dashed where inferred)

182 ohm-m (70-650) — Modeled range of basal resistivity in ohm-m

① RECENT ALLUVIAL CLAYS – Resistivity range 23–27 ohm-m. Interpreted to consist predominantly of silt and clay and exist only in the northwestern portion of the this section.

② UPPER AQUIFER – Resistivity range 67–1200 ohm-m. Interpreted to consist predominantly of sand, gravel and cobbles.

③ UPPER ZONE – Resistivity range 10–59 ohm-m. Interpreted to consist predominantly of clay and silt. Interpreted to be extensive in the river valley and pinch out at the eastern margin of the river valley.

④ TRANSITION ZONE – Resistivity range 42–100 ohm-m. Geometry is poorly defined on this section. Interpretation suggests possible hydrologic connection with the eastern ridge.

⑤ LOWER ZONE – Resistivity range 5–32 ohm-m. Interpreted to consist predominantly of clay and silt. Interpreted to exist only in the southern portion of this section.

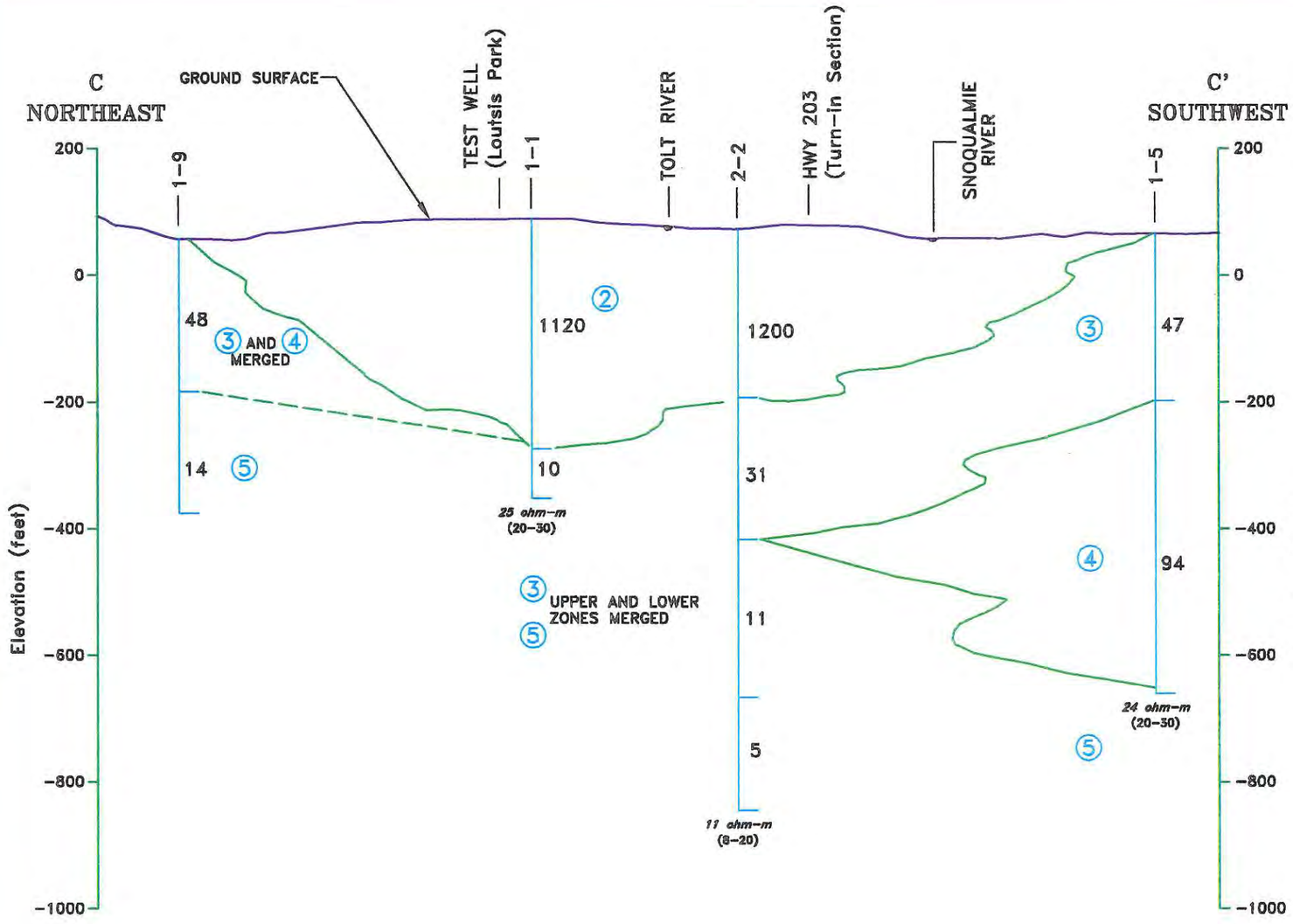
⑥ LOWER AQUIFER –Resistivity range 60–370 ohm-m. Interpreted to consist predominantly of sand and gravel.

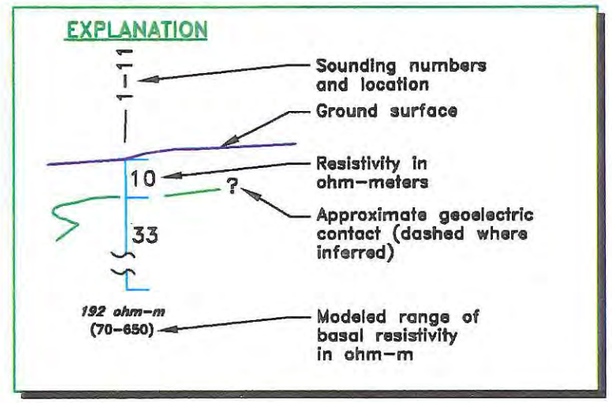
⑦ DEEP AQUITARD – Resistivity range 8–22 ohm-m. Interpreted to consist predominantly of silt and clay.

0 2000 4000
FEET

VERTICAL SCALE 1"=200'
VERTICAL EXAGGERATION 10:1

FIGURE 6.15.
GEO-ELECTRIC CROSS-SECTION B-B'
LOWER SNOQUALMIE RIVER VALLEY
CARNATION, WASHINGTON





AQUITARD

② UPPER AQUIFER – Resistivity range 67–1200 ohm-m. Interpreted to consist predominantly of sand, gravel and cobbles.

③ UPPER ZONE – Resistivity range 10–59 ohm-m. Interpreted to consist predominantly of clay and silt. Aquitard interpreted to be extensive throughout the river valley portion of the survey area.

④ TRANSITION ZONE – Resistivity range 42–100 ohm-m. Less resistive than the Upper and Lower Aquifers and interpreted to contain more silt and clay. Interpreted to pinch out or become contiguous with upper and lower zones to the northeast.

⑤ LOWER ZONE – Resistivity range 5–32 ohm-m. Interpreted to consist predominantly of clay and silt.

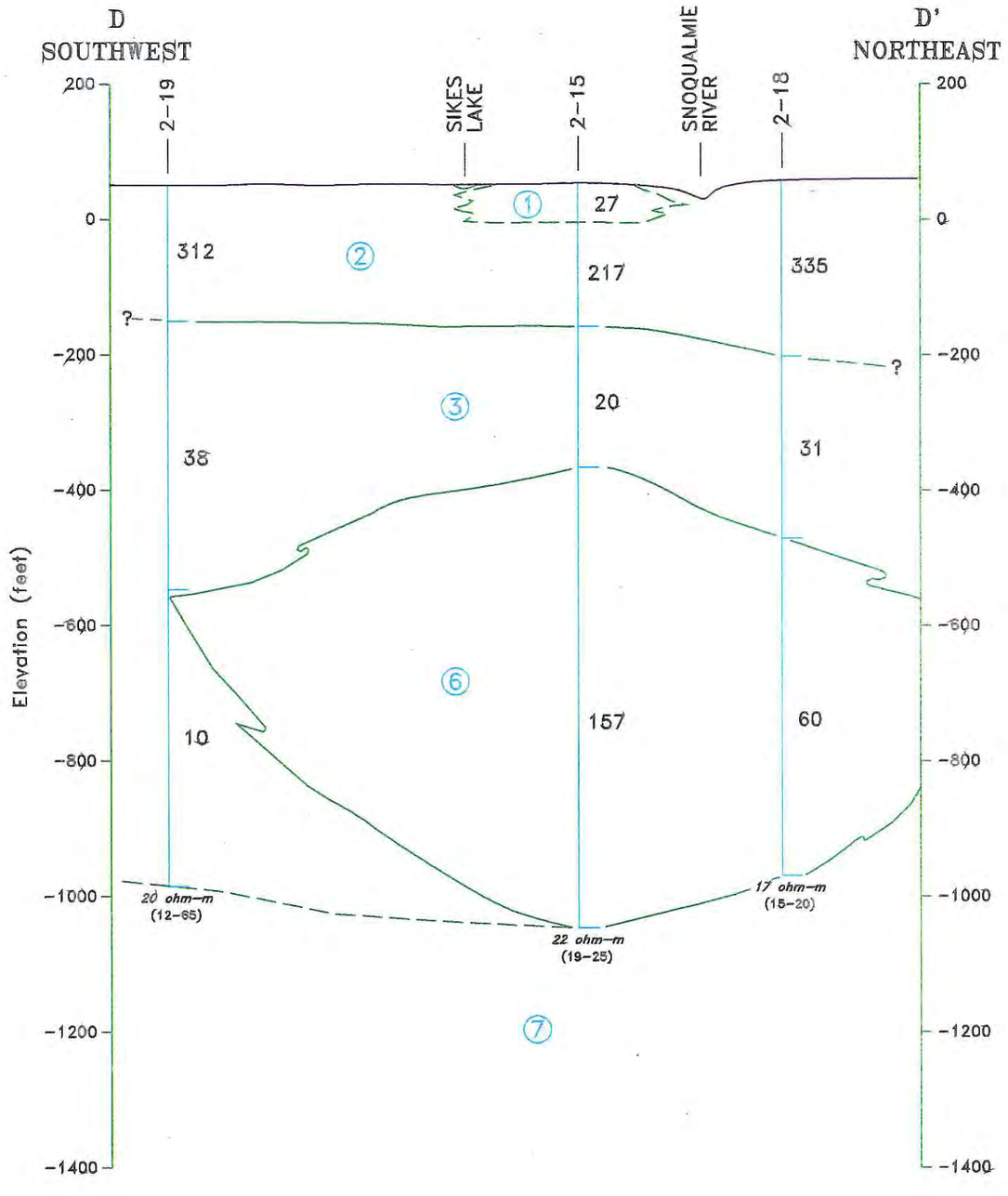
0 2000 4000
FEET

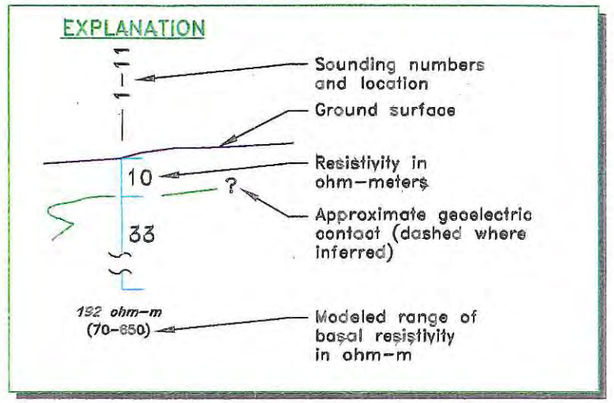
VERTICAL SCALE 1"=200'
VERTICAL EXAGGERATION 10:1

FIGURE 6.16.

GEO-ELECTRIC CROSS-SECTION C-C'
LOWER SNOQUALMIE RIVER VALLEY
CARNATION, WASHINGTON

C:\ADCADD\CIVIL\P\9531100\100\63546 10-24-95 16:53rf: NONE H:\GWMAPS\FAST\FIG_657





① RECENT ALLUVIAL CLAYS – Resistivity 23–27 ohm–m. Interpreted to consist predominantly of silt and clay. This unit was resolved on the 100–meter loop 1–15 and superimposed on this section.

② UPPER AQUIFER – Resistivity range 67–1200 ohm–m. Interpreted to consist predominantly of sand, gravel and cobbles. Interpreted to be extensive throughout survey area.

AQUITARD

③ UPPER ZONE – Resistivity range 10–59 ohm–m. Interpreted to consist predominantly of silt and clay. Aquitard interpreted to be extensive throughout the river valley portion of the survey area.

⑥ LOWER AQUIFER –Resistivity range 60–370 ohm–m. Interpreted to consist predominantly of sand and gravel with some silt.

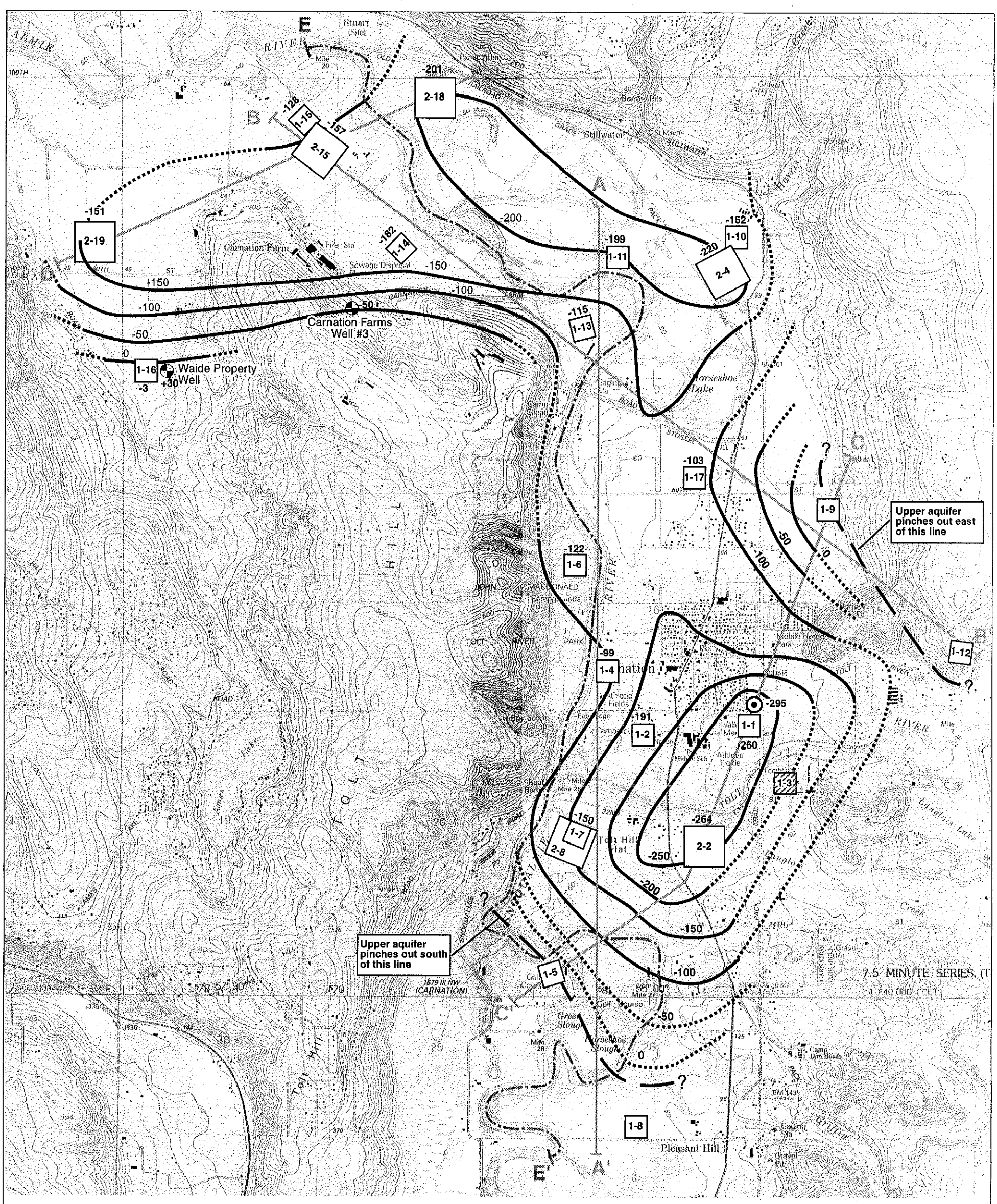
⑦ DEEP AQUITARD – Resistivity range 8–22 ohm–m. Interpreted to consist predominantly of silt and clay.

0 2000 4000
FEET

VERTICAL SCALE 1"=200'
VERTICAL EXAGGERATION 10:1

FIGURE 6.17.
GEO-ELECTRIC CROSS-SECTION D-D'
LOWER SNOQUALMIE RIVER VALLEY
CARNATION, WASHINGTON

C:\ADCADD\CIVIL\P\9531100\100\63547 10-24-95 16:54 xrf: NONE H:\GWMAMAPS\EAST\FIG_658



LEGEND

- A A' — Geo-electric cross section
- E E' — Marine seismic reflection trackline
- 1-6 — 100-meter TDEM sounding location and number, square indicates loop orientation
- 1-3 — Data on this sounding not usable due to cultural interference from power lines
- 2-2 — 300-meter TDEM sounding location and number, square indicates loop orientation
- Existing well used as calibration for TDEM soundings
- Test well site (Loutsis Park, Carnation)
- 200 — Elevation contour. Contour interval=50 ft. Dashed where inferred

NOTES

Numbers next to TDEM Loop symbols are elevations in feet above mean sea level for base of contoured unit.

N

0 2500

FEET

FIGURE **6.18.**
ELEVATION MAP OF BASE OF UPPER AQUIFER BASED ON TDEM SURVEY

EKC Figure 618.fh3 6/96 kjm

Lower aquifer not detected with TDEM west of this line

Lower aquifer not detected with TDEM east of this line

-470

-290

-366

-430

-375

Carnation Farms Well #3

-260 (average)

Waide Property Well

-250

-300

-350

-400

-450

-500

-550

-600

-650

-700

-750

-775

-761

-710

-670

2-18

1-15

2-15

1-14

2-19

1-16

1-11

1-10

2-4

1-13

1-17

1-9

1-6

1-4

1-2

1-1

1-12

1-3

1-7

2-8

2-2

1-5

1-8

Stuart Site

Carnation Farms

Sewage Disposal Plant

Horseshoe Lake

Tolt Hill Flat

Green Slough

Horseshoe Slough

Pleasant Hill

Golf Course

Athletic Fields

Mobile Home Park

Gravel Pit

Camp Dm Brown

Tolt River

Langlois Lake

Griffin Creek

7.5 MINUTE SERIES, (T

1679 III NW (CARNATION)

LEGEND

- A A' — Geo-electric cross section
- E E' — Marine seismic reflection trackline
- 1-6 — 100-meter TDEM sounding location and number, square indicates loop orientation
- 1-3 — Data on this sounding not usable due to cultural interference from power lines
- 2-2 — 300-meter TDEM sounding location and number, square indicates loop orientation
- Existing well used as calibration for TDEM soundings
- Test well site (Loutsis Park, Carnation)
- 400 — Elevation contour. Contour interval = 50 ft. Dashed where inferred.

NOTES

Numbers next to TDEM Loop symbols are elevations in feet above mean sea level for top of contoured unit.

N

0 2500

FEET

FIGURE **6.19.**
ELEVATION MAP OF TOP OF LOWER AQUIFER BASED ON TDEM SURVEY

EKC Figure 619.fh3 6/96 kjm