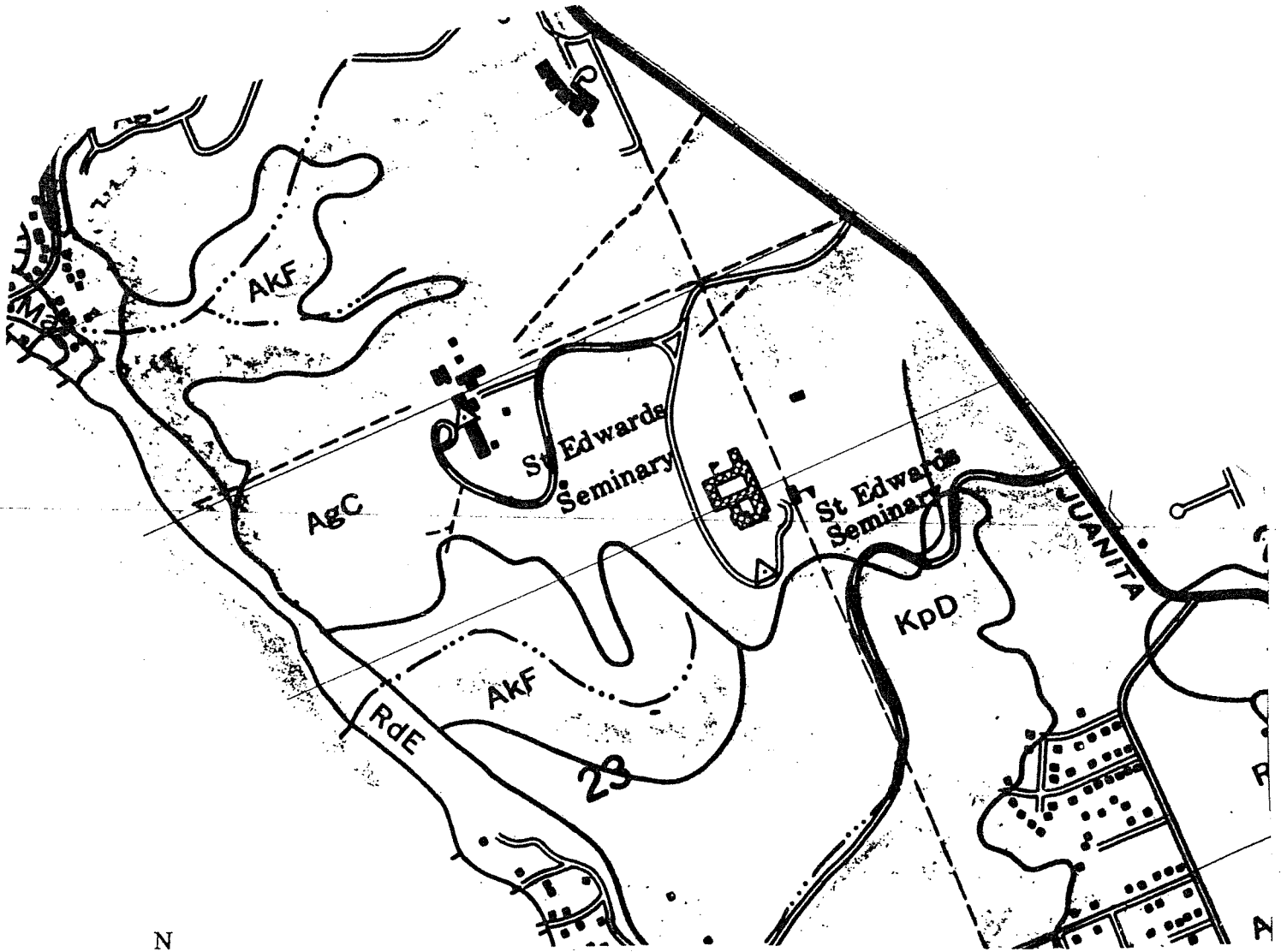


SOIL MAP at St. Edward State Park



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Scale 1:12 000 120m

LEGEND

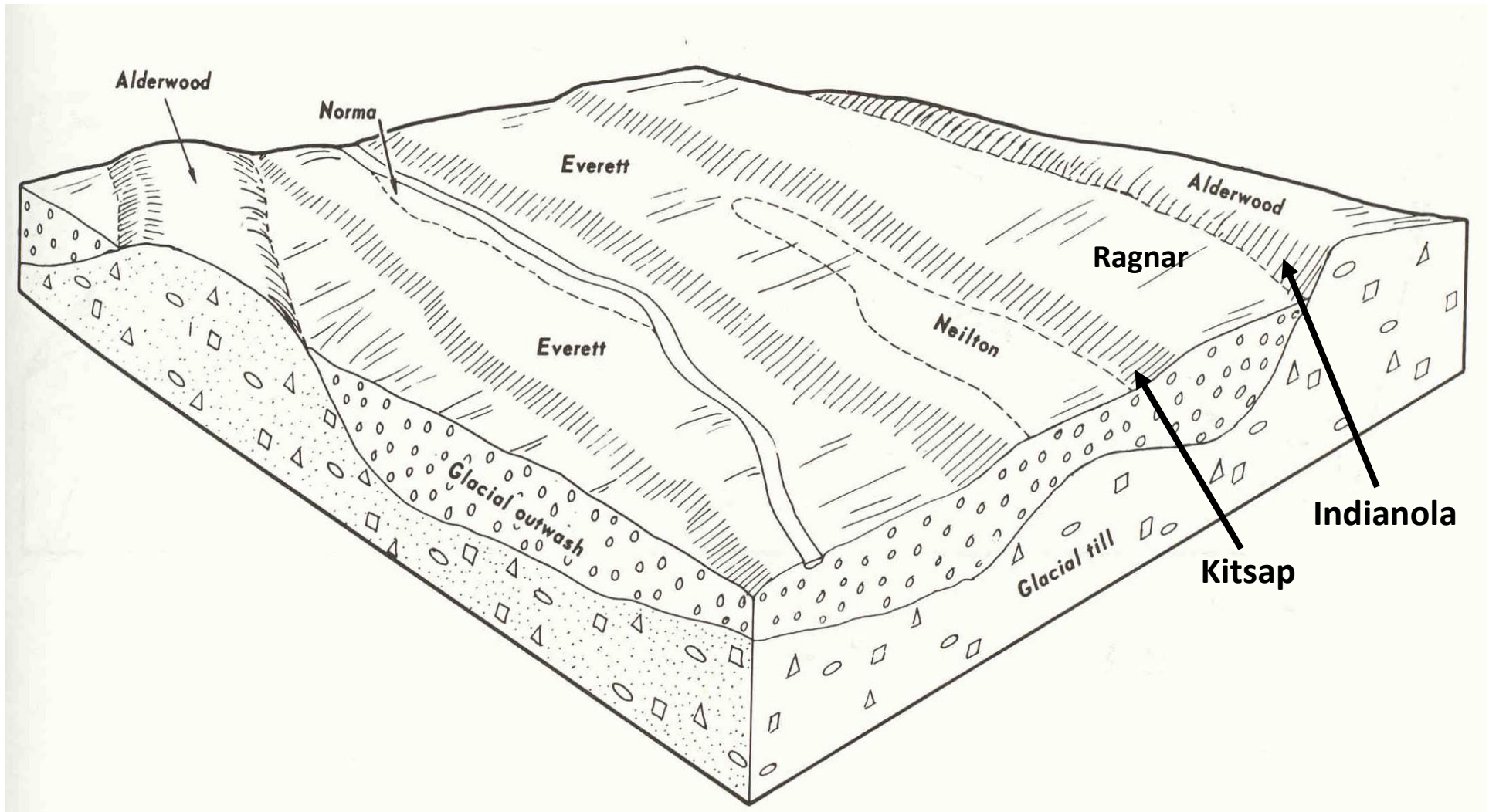
AgC Alderwood gravelly sandy loam,
6 to 15 percent slopes,
AkF Alderwood and Kitsap soils, very steep
KpD Kitsap silt loam, 15 to 30 percent slopes

RdC Ragnar - Indianola association, sloping
RdE Ragnar - Indianola association,
moderately steep

References: SOIL SERVEY, King County Area, Washington

Additional Specific Soil Information Available at:
<http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdhome.cgi>

Soil types and Landscape Patterns



A soil association common in the Puget Sound area showing soil type relative to different glacial deposits

LOCATION ALDERWOOD

WA

Established Series
Rev. AD/RJE
01/2000

ALDERWOOD SERIES

The Alderwood series consists of moderately deep to a cemented pan, moderately well drained soils formed in glacial till. Alderwood soils are on glacially modified foothills and valleys and have slopes of 0 to 65 percent. The average annual precipitation is about 40 inches, and the mean annual temperature is about 50 degrees F.

TAXONOMIC CLASS: Loamy-skeletal, isotic, mesic Vitrandic Dystrocherepts

TYPICAL PEDON: Alderwood gravelly ashy loam - forested. (Colors are for moist soil unless otherwise noted.)

Ap--0 to 7 inches; very dark grayish brown (10YR 3/2) gravelly ashy sandy loam, brown (10YR 5/3) dry; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; few fine irregular pores; slightly acid (pH 6.2); abrupt smooth boundary. (3 to 7 inches thick)

Bs1--7 to 21 inches; dark yellowish brown (10YR 4/4) very gravelly ashy sandy loam, yellowish brown (10YR 5/4) dry; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many fine roots; many fine tubular and irregular pores; 35 percent pebbles; diffuse smooth boundary; slightly acid (pH 6.2).

Bs2--21 to 30 inches; dark brown (10YR 4/3) very gravelly ashy sandy loam, pale brown (10YR 6/3); dry; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; few very fine tubular pores; 40 percent pebbles; slightly acid (pH 6.2); clear wavy boundary. (Combined Bs1 and Bs2 horizons are 15 to 30 inches thick)

2Bs3--30 to 35 inches; 50 percent olive brown (2.5Y 4/4) very gravelly sandy loam, light yellowish brown (2.5Y 6/4) dry and 50 percent dark grayish brown (2.5Y 4/2) cemented fragments with strong brown (7.5YR 5/6) coatings on fragments, light brownish gray (2.5Y 6/2) and reddish yellow (7.5YR 6/6) dry; massive; slightly hard, very friable, nonsticky and nonplastic; few fine roots; common fine tubular and interstitial pores; 45 percent pebbles; moderately acid (pH 6.0); abrupt wavy boundary. (0 to 15 inches thick)

2Bsm--35 to 43 inches; dark grayish brown (2.5Y 4/2) cemented layer that crushes to very gravelly sandy loam, light brownish gray (2.5Y 6/2) dry; dark yellowish brown (10YR 4/4), reddish brown (5Y 4/4), yellowish red (5YR 4/8) and strong brown (7.5YR 5/6) in cracks; massive; extremely hard; extremely firm, nonsticky and nonplastic; few fine roots; few fine tubular pores; 40 percent pebbles; moderately acid (pH 6.0); abrupt irregular boundary. (5 to 20 inches thick)

2Cd--43 to 60 inches; grayish brown (2.5Y 5/2) compact glacial till that breaks to very gravelly sandy loam, light gray (2.5Y 7/2) dry; massive; extremely hard, extremely firm, nonsticky and nonplastic; 40

LOCATION INDIANOLA

WA

Established Series
Rev. RFP/FJE
11/88

INDIANOLA SERIES

The Indianola series consists of deep, somewhat excessively drained soils formed in sandy glacial drift and minor amounts of volcanic ash. Indianola soils are on terraces, terrace escarpments, eskers, and kames at elevations of near sea level to 1,000 feet. Slopes are 0 to 90 percent. The mean annual precipitation ranges from 30 to 55 inches and the mean annual temperature is about 50 degrees F.

TAXONOMIC CLASS: Mixed, mesic Dystric Xeropsamments

TYPICAL PEDON: Indianola loamy sand-forested. (Colors are for moist soil unless otherwise stated.)

A--0 to 6 inches; dark reddish-brown (5YR 3/3) loamy sand, brown (10YR 5/3) dry; weak coarse and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and few coarse and medium roots; common fine tubular pores; neutral (pH 6.8); abrupt smooth boundary. (1 to 9 inches thick)

Bw--6 to 13 inches; dark reddish-brown (5YR 3/4) loamy sand, pale brown (10YR 6/3) dry; weak coarse and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few medium roots; few fine tubular pores; neutral (pH 6.8); clear smooth boundary. (3 to 10 inches thick)

BC--13 to 25 inches; dark brown (10YR 4/3) loamy sand, pale brown (10YR 6/3) dry; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; 5 percent rounded pebbles; neutral (pH 6.6); clear smooth boundary. (3 to 12 inches thick)

C1--25 to 35 inches; dark yellowish-brown (10YR 4/4) sand, light brownish gray (2.5Y 6/2) single grain; loose; few very fine roots; few very fine tubular pores; 5 percent rounded pebbles; neutral (pH 6.8); gradual wavy boundary. (4 to 24 inches thick)

C2--35 to 60 inches; olive brown (2.5Y 4/4) sand; light brownish-gray (2.5Y 6.2) dry single grain; loose; few very fine roots; many fine interstitial pores; 5 percent rounded pebbles; neutral (pH 6.6).

TYPE LOCATION: Thurston County, Washington; about 2 miles southeast of Tumwater, north end of Munn Lake near Department of Game boat launching site; 2,200 feet east and 2,550 feet north of the southwest corner sec. 1, T. 17 N., R. 2 W.

RANGE IN CHARACTERISTICS: These soils are usually moist but are dry in the moisture control section for 60 to 75 consecutive days following summer solstice. The mean annual soil temperature is estimated to range from 47 to 52 degrees F. Reaction ranges from neutral to strongly acid throughout. The particle-size control section contains 0 to 15 percent rock fragments.

LOCATION KITSAP

WA

Established Series
Rev. JPE/AZ/RJE
01/2000

KITSAP SERIES

The Kitsap series consists of very deep, moderately well drained soils formed in lacustrine sediments. Kitsap soils are on terraces and terrace escarpments and have slopes of 0 to 70 percent. The mean annual precipitation is about 37 inches. The mean annual temperature is about 50 degrees F.

TAXONOMIC CLASS: Fine-silty, isotic, mesic Aquandic Dystrochrepts

TYPICAL PEDON: Kitsap silt loam - pasture. (Colors are for moist soil unless otherwise noted.)

Ap--0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; moderately acid (pH 5.8); abrupt smooth boundary. (3 to 6 inches thick)

Bw1--6 to 10 inches; dark brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; few very fine pores; many 2 to 5 mm light brown (7.5YR 6/4) concretions; moderately acid (pH 6.0); clear wavy boundary. (3 to 12 inches thick)

Bw2--10 to 17 inches; brown (10YR 4/3) silty clay loam, pale brown (10YR 6/3) dry; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; many very fine roots; common very fine pores about 3 percent fine pebbles; few 2 to 5 mm light brown (7.5YR 6/4) concretions; few silt balls; few krotovinas; slightly acid (pH 6.4); clear wavy boundary. (4 to 22 inches thick)

BC--17 to 32 inches; grayish brown (2.5Y 5/2) silty clay loam, light gray (2.5Y 7/2) dry; many large prominent strong brown (7.5YR 5/6) redox concentrations; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few very fine roots; common very fine pores; slightly acid (pH 6.5); clear irregular boundary. (0 to 35 inches thick)

C--32 to 60 inches; light olive brown (2.5Y 5/4) silt loam and silty clay loam, light brownish gray (2.5Y 6/2) dry; very fine and fine stratification; hard, firm, moderately sticky and moderately plastic; few roots; few very fine pores; tongues of grayish brown (2.5Y 5/2) material like the B3 horizon; neutral; (pH 6.6).

TYPE LOCATION: Pierce County, Washington; 100 feet north of corner of 104th St. and 80th Ave.; 2,050 feet west and 2,750 feet south of the northeast corner of sec. 5, T. 19 N., R. 4 E.

RANGE IN CHARACTERISTICS: These soils are usually moist but are dry in the moisture control section for 45 to 60 consecutive days following summer solstice. The mean annual soil temperature is estimated to range from 50 to about 53 degrees F. These soils range from moderately acid to neutral throughout. Coarse fragments in the control section average 0 to 5 percent by volume. Depth to

LOCATION RAGNAR

WA

Established Series

Rev. CLP/RJE

01/2000

RAGNAR SERIES

The Ragnar series consists of very deep, well drained soils that formed in glacial outwash. Ragnar soils are on rolling areas of esker and kame relief and have slopes of 0 to 70 percent. The average annual precipitation is about 47 inches and the mean annual temperature is about 50 degrees F.

TAXONOMIC CLASS: Coarse-loamy over sandy or sandy-skeletal, isotic over mixed, mesic Vitrandic Dystrochrepts

TYPICAL PEDON: Ragnar fine sandy loam, forested. (Colors are for moist soil unless otherwise noted.)

Oe--0 to 1 inch; black (10YR 2/1) partially decomposed leaves and twigs; many roots; abrupt smooth boundary. (1 to 2 inches thick)

A--1 to 5 inches; very dark grayish brown (10YR 3/2) and very dark gray (10YR 3/1) fine sandy loam, grayish brown (10YR 5/2) dry; massive; slightly hard, very friable, nonsticky, nonplastic; many roots; many very fine pores; NaF pH 10.5; moderately acid (pH 6.0); abrupt wavy boundary. (3 to 9 inches thick)

Bs--5 to 18 inches; dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) fine sandy loam, brown (10YR 5/3) dry; massive; slightly hard, very friable, nonsticky, nonplastic; many roots; many very fine pores; NaF pH 11.5; moderately acid (pH 6.0); clear smooth boundary. (5 to 13 inches thick)

2BC--18 to 28 inches; yellowish brown (10YR 5/4) loamy fine sand, brown (10YR 5/3) dry; massive; slightly hard, very friable, nonsticky, nonplastic; common roots; many very fine pores; NaF pH 10.5; slightly acid (pH 6.2); clear smooth boundary. (6 to 12 inches thick)

2C--28 to 41 inches; olive brown (2.5Y 4/4) loamy sand, yellowish brown (10YR 5/3) dry; massive; loose; few roots; many very fine pores; NaF pH 10.0; slightly acid (pH 6.2).

TYPE LOCATION: King County, Washington; 330 feet north, 230 feet east of center of section 3, T.21N., R.5E.

RANGE IN CHARACTERISTICS: The mean annual soil temperature is 47 to 53 degrees F. These soils are usually moist, but are dry in all parts between depths of 8 and 24 inches for 60 to 80 consecutive days in most years. The upper part of the 10 to 40 inch control section contains 2 to 10 percent clay. The lower part of the control section is loamy sand or sand. Depth to the 2C horizon ranges from 20 to 35 inches. Rock fragments in the control section range from 0 to 15 percent by volume. Reaction is moderately acid or slightly acid.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 moist, 4 or 5 dry, and chroma of 1 through 3