

Appendix 10.5

Historical Research Documentation

North Ferry Area, Washington

GIE—Goosmus very stony sandy loam, 0 to 45 percent slopes

Map Unit Setting

National map unit symbol: 2bxg

Elevation: 1,800 to 3,500 feet

Mean annual precipitation: 15 to 19 inches

Mean annual air temperature: 43 degrees F

Frost-free period: 100 to 130 days

Farmland classification: Not prime farmland

Map Unit Composition

Goosmus and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Goosmus

Setting

Landform: Terraces

Parent material: Volcanic ash mantle over coarse sandy glacial till

Typical profile

H1 - 0 to 7 inches: very stony ashy sandy loam

H2 - 7 to 14 inches: ashy loam

H3 - 14 to 23 inches: gravelly ashy sandy loam

H4 - 23 to 60 inches: gravelly coarse sand

Properties and qualities

Slope: 0 to 45 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 5 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Other vegetative classification: ponderosa pine-Douglas-fir/bluebunch wheatgrass (CDG311)

Hydric soil rating: No

Data Source Information

Soil Survey Area: North Ferry Area, Washington
Survey Area Data: Version 14, Sep 5, 2017

North Ferry Area, Washington

Ma—Malo silt loam

Map Unit Setting

National map unit symbol: 2byh
Elevation: 1,500 to 1,700 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 46 degrees F
Frost-free period: 100 to 120 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Malo and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Malo

Setting

Landform: Flood plains
Parent material: Alluvium from acid igneous rocks and volcanic ash

Typical profile

H1 - 0 to 16 inches: silt loam
H2 - 16 to 28 inches: silt loam
H3 - 28 to 51 inches: sandy loam
H4 - 51 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2c
Hydrologic Soil Group: B
Other vegetative classification: ponderosa pine-Douglas-fir/
bluebunch wheatgrass (CDG311)

Hydric soil rating: No

Data Source Information

Soil Survey Area: North Ferry Area, Washington
Survey Area Data: Version 14, Sep 5, 2017

North Ferry Area, Washington

Mb—Malo sandy loam, coarse subsoil variant

Map Unit Setting

National map unit symbol: 2byj

Elevation: 1,280 to 2,920 feet

Mean annual precipitation: 14 to 19 inches

Mean annual air temperature: 46 degrees F

Frost-free period: 100 to 130 days

Farmland classification: Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Malo variant and similar soils: 90 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Malo Variant

Setting

Landform: Flood plains

Parent material: Recent alluvium

Typical profile

H1 - 0 to 7 inches: sandy loam

H2 - 7 to 29 inches: sandy loam

H3 - 29 to 60 inches: stratified very gravelly coarse sand to sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): High
(1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: Occasional

Frequency of ponding: None

Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): 3w

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: A

Other vegetative classification: ponderosa pine-Douglas-fir/
bluebunch wheatgrass (CDG311)

Hydric soil rating: No

Data Source Information

Soil Survey Area: North Ferry Area, Washington

Survey Area Data: Version 14, Sep 5, 2017

North Ferry Area, Washington

Mo—Mires loam

Map Unit Setting

National map unit symbol: 2byy
Elevation: 1,800 to 3,500 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 95 to 120 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Mires and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mires

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Parent material: Volcanic ash over glacial outwash

Typical profile

H1 - 0 to 14 inches: ashy loam
H2 - 14 to 21 inches: very gravelly ashy sandy loam
H3 - 21 to 60 inches: very gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: B
Ecological site: LOAMY 16-24 PZ (R043AY102WA)

Hydric soil rating: No

Data Source Information

Soil Survey Area: North Ferry Area, Washington
Survey Area Data: Version 14, Sep 5, 2017

North Ferry Area, Washington

MrC—Mires sandy loam, alkaline subsoil variant, 0 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2bz0
Elevation: 1,770 to 3,580 feet
Mean annual precipitation: 14 to 17 inches
Mean annual air temperature: 43 degrees F
Frost-free period: 100 to 130 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Mires variant and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mires Variant

Setting

Landform: Terraces
Parent material: Alluvium

Typical profile

H1 - 0 to 9 inches: sandy loam
H2 - 9 to 22 inches: sandy loam
H3 - 22 to 32 inches: loamy sand
H4 - 32 to 60 inches: gravelly coarse sand

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: LOAMY 16-24 PZ (R043AY102WA)

Hydric soil rating: No

Data Source Information

Soil Survey Area: North Ferry Area, Washington
Survey Area Data: Version 14, Sep 5, 2017

North Ferry Area, Washington

Rv—Riverwash

Map Unit Composition

Riverwash: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riverwash

Setting

Landform: Flood plains

Parent material: Recently deposited coarse sand and gravel alluvium

Typical profile

H1 - 0 to 60 inches: Error

Properties and qualities

Slope: 0 to 4 percent

Depth to water table: About 0 to 24 inches

Frequency of flooding: Frequent

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: North Ferry Area, Washington

Survey Area Data: Version 14, Sep 5, 2017

North Ferry Area, Washington

VrE—Vallan-Rock land complex, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2c1n

Elevation: 3,000 to 5,500 feet

Mean annual precipitation: 15 to 25 inches

Mean annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 120 days

Farmland classification: Not prime farmland

Map Unit Composition

Vallan and similar soils: 55 percent

Rock land: 35 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vallan

Setting

Landform: Mountains

Landform position (three-dimensional): Mountaintop

Parent material: Residuum weathered from andesite mixed with glacial till and volcanic ash

Typical profile

H1 - 0 to 2 inches: ashy loam

H2 - 2 to 16 inches: loam

H3 - 16 to 20 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 50 percent

Depth to restrictive feature: 6 to 20 inches to lithic bedrock

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

Ecological site: DRY STONY 16-24 PZ (R043AY201WA)

Hydric soil rating: No

Description of Rock Land

Properties and qualities

Slope: 15 to 50 percent

Depth to restrictive feature: 0 inches to lithic bedrock

Interpretive groups

Land capability classification (irrigated): None specified

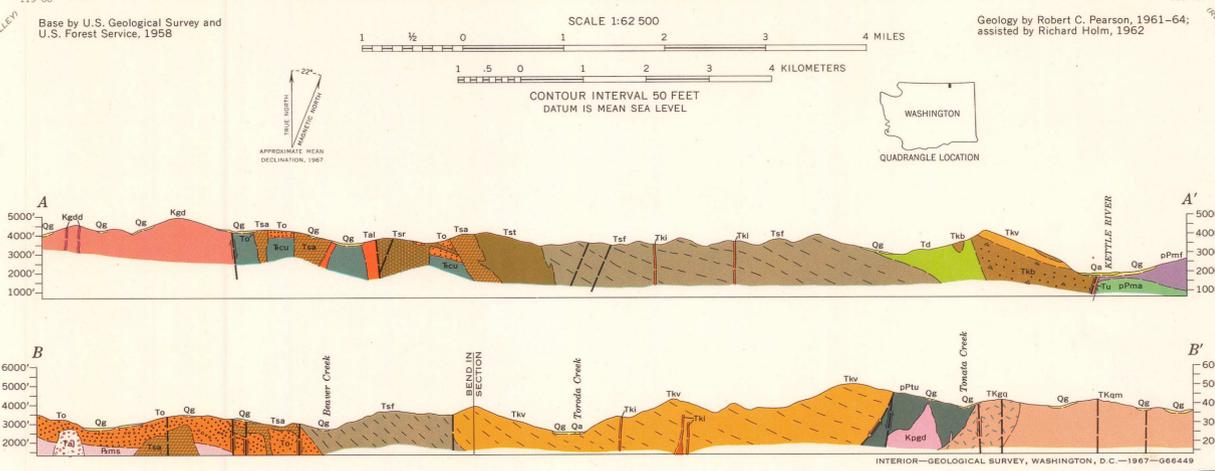
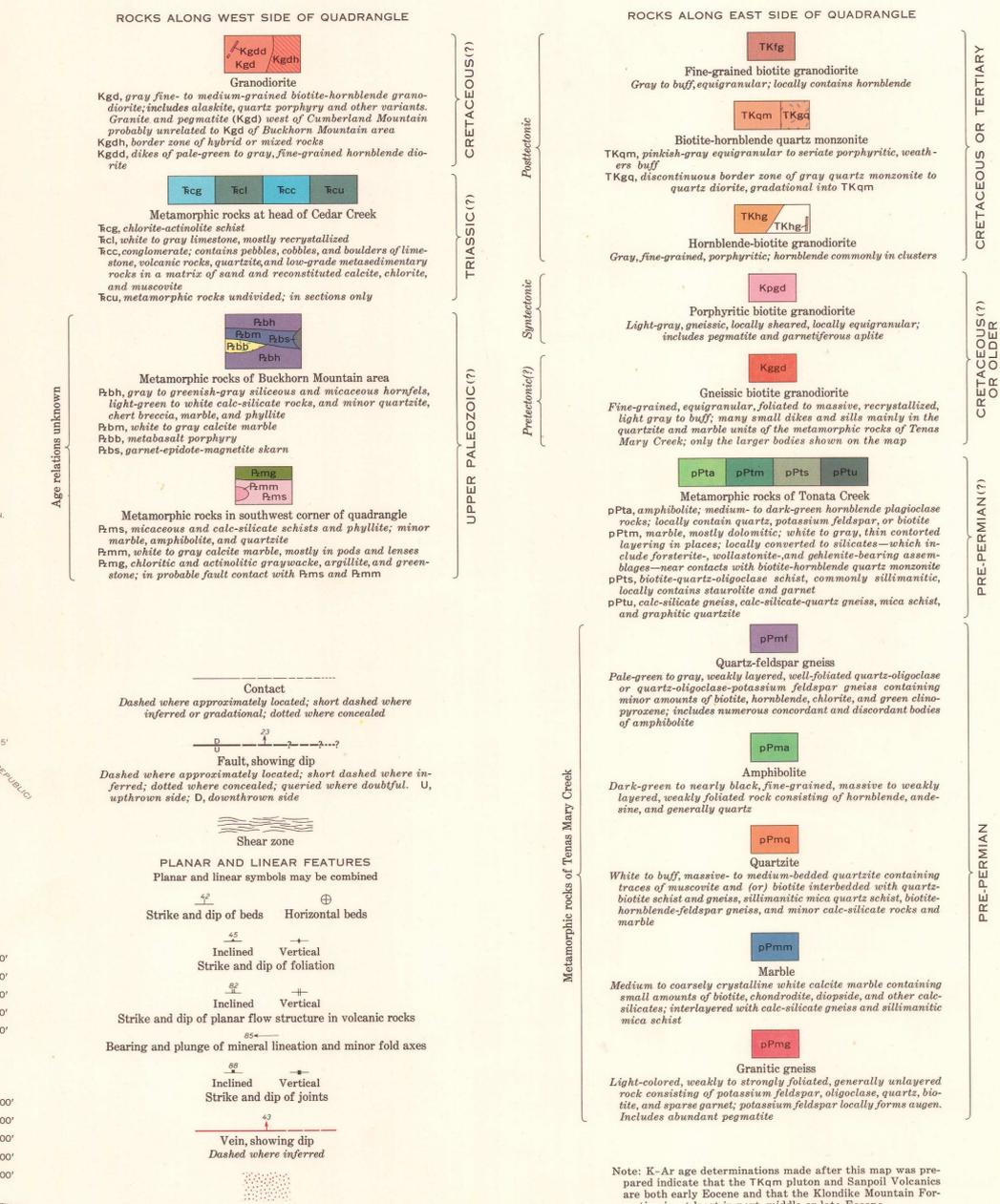
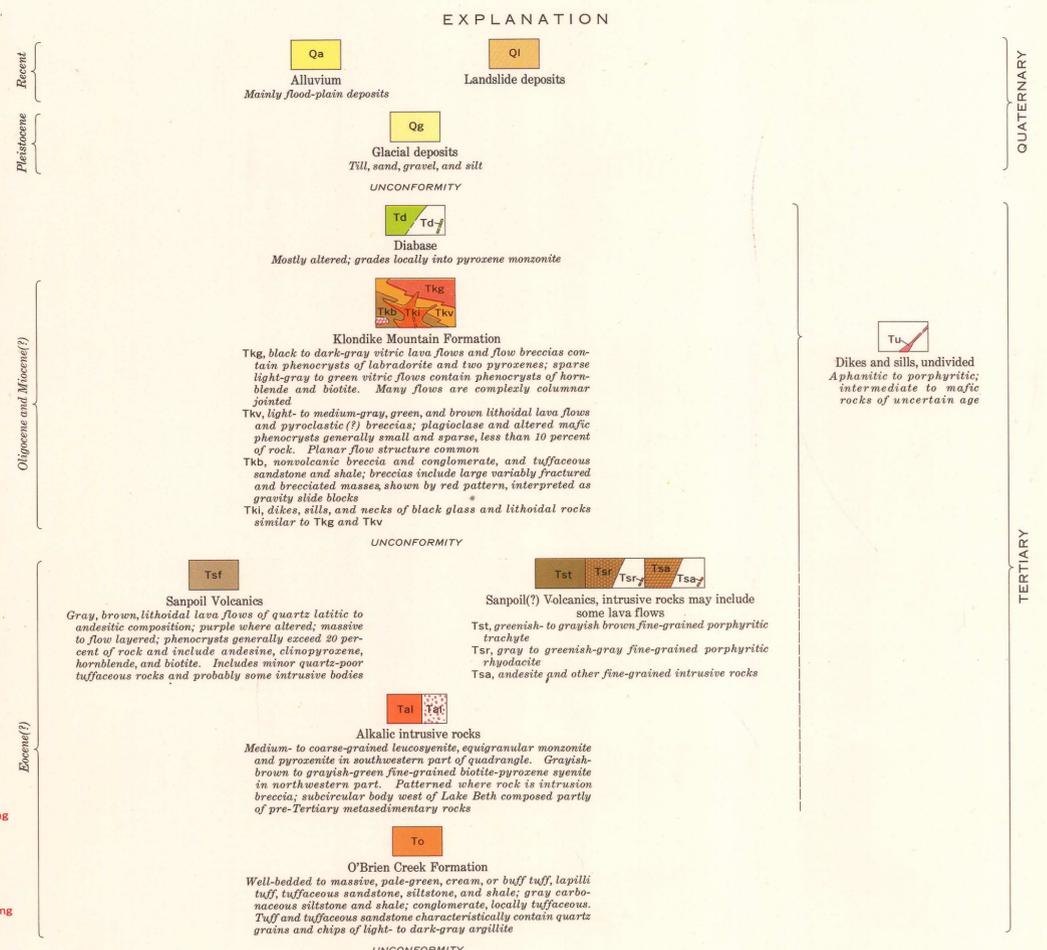
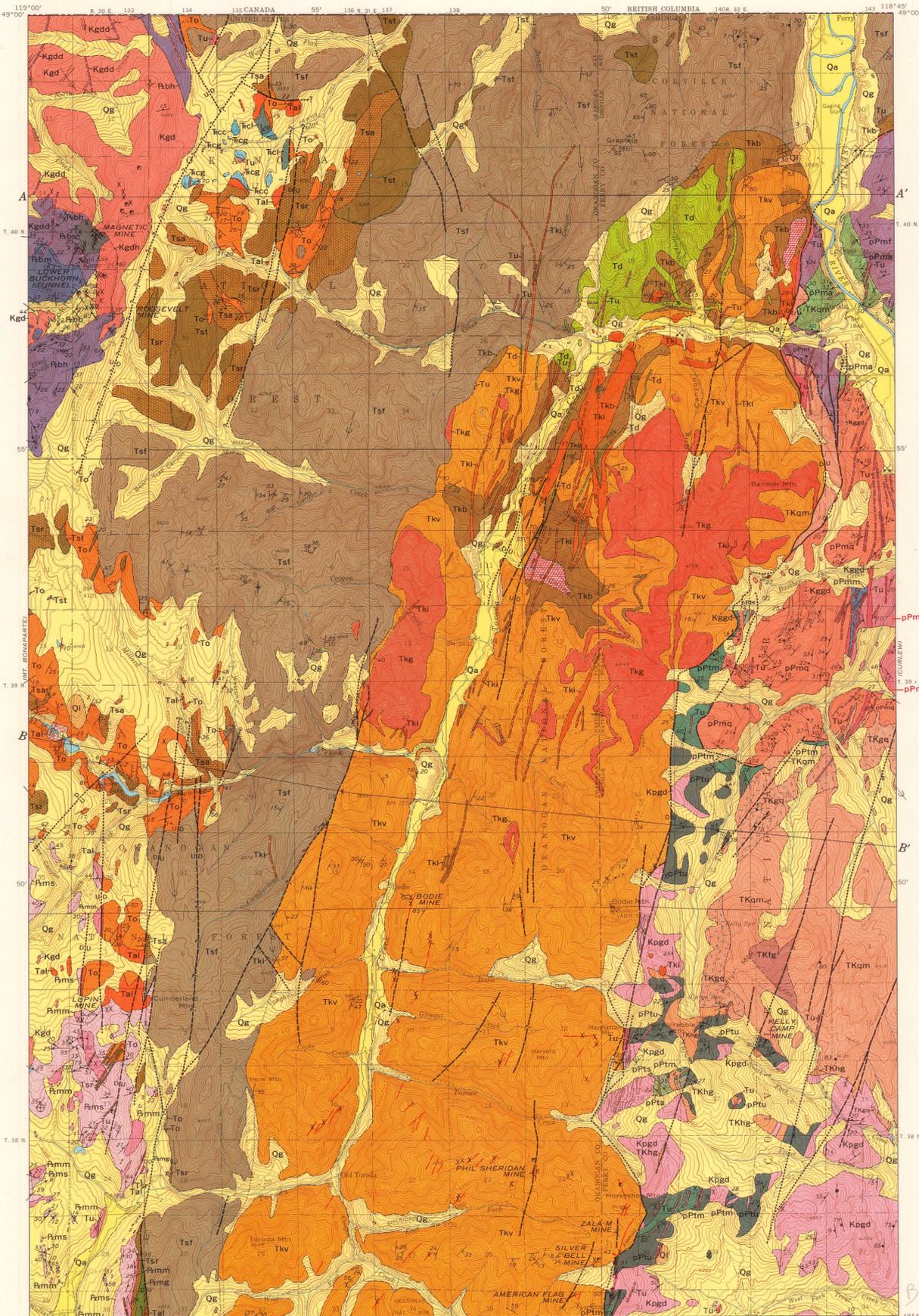
Land capability classification (nonirrigated): 8s

Hydric soil rating: No

Data Source Information

Soil Survey Area: North Ferry Area, Washington

Survey Area Data: Version 14, Sep 5, 2017



**GEOLOGIC MAP OF THE BODIE MOUNTAIN QUADRANGLE
FERRY AND OKANOGAN COUNTIES, WASHINGTON**

By
Robert C. Pearson
1967



Washington State (Bodie Mountain quadrangle) Geol. 1:62,500 1967.
no. 1636
C.1
For sale by U.S. Geological Survey, price \$1.00

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

Construction
 Decommission ORIGINAL CONSTRUCTION Notice of Intent Number 180695

PROPOSED USE: Domestic Industrial Municipal
 DeWater Irrigation Test Well Other

TYPE OF WORK: Owner's number of well (if more than one)
 New Well Reconditioned Method: Dug Bored Driven
 Deepened Cable Rotary Jetted

DIMENSIONS: Diameter of well 6 inches, drilled 58 ft.
 Depth of completed well 58 ft.

CONSTRUCTION DETAILS
 Casing Welded 6" Diam. from 1 1/2 ft. to 53 1/2 ft.
 Installed: Liner installed _____" Diam. from _____ ft. to _____ ft.
 Threaded _____" Diam. from _____ ft. to _____ ft.

Perforations: Yes No
 Type of perforator used _____
 SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.

Screens: Yes No K-Pac Location 53
 Manufacturer's Name JOHNSON
 Type STAINLESS Model No. _____
 Diam. 6 Slot Size 20 from 53 ft. to 58 ft. ft.
 Diam. _____ Slot Size _____ from _____ ft. to _____ ft. ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____
 Materials placed from _____ ft. to _____ ft.

Surface Seal: Yes No To what depth? 18 ft
 Materials used in seal BENTONITE AND 6" CASING
 Did any strata contain unusable water? Yes No
 Type of water? _____ Depth of strata _____
 Method of sealing strata off _____

PUMP: Manufacturer's Name _____
 Type: _____ H.P. _____

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
 Static level 19 ft. below top of well Date 9-13-05
 Artesian pressure _____ lbs. per square inch Date _____
 Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level.
 Was a pump test made? Yes No If yes, by whom? _____
 Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Recovery data (time taken as zero when pump turned off)(water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

 Date of test _____
 Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Airtest 65+ gal./min. with stem set at 57 ft. for 1 hrs.
 Artesian flow _____ g.p.m. Date _____
 Temperature of water _____ Was a chemical analysis made? Yes No

CURRENT Notice of Intent No. W209515

Unique Ecology Well ID Tag No. ALC 367

Water Right Permit No. _____

Property Owner Name Richard Wauters

Well Street Address 56 Customs Rd.

City Cullum County: Fluky

Location NE 1/4 SW 1/4 Sec. 3 Twn 42 32 EWM circle or one WWM

Lat/Long: (s,t,r still REQUIRED) Lat Deg _____ Lat Min/Sec _____
 Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

CONSTRUCTION OR DECOMMISSION PROCEDURE
 Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.
 (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
COBBLES, SAND, BRN, MED	0	
LARGE GRAVELS		21
SAND, BRN, MED, GRAVEL	21	
SOME WATER		33
SAND, BRN, MED, GRAVEL	33	
W/ WATER		58

RECEIVED

SEP 28 2005

DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

DEPT. OF ECOLOGY
FISCAL & BUDGET
105 SEP 26 10 51

OCT - 3 2005

DEPARTMENT OF ECOLOGY
EASTERN REGION

Start Date 9-13-05 Completed Date 9-13-05

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller Engineer Trainee Name: (Print) TEN RICARD
 Driller/Engineer/Trainee Signature Ten Ricard
 Driller or Trainee License No. 2341

Drilling Company Clear Water Drilling
 Address P.O. Box 155
 City, State, Zip Malo, WA 99150

If trainee, licensed driller's Signature and License no. _____

Contractor's Registration No. CLEARWD974QC Date 9-13-05
 Ecology is an Equal Opportunity Employer. ECY 0-0-1-20 (Rev 4/01)