



NOTICE OF LAND USE DECISION

Coos County Planning
225 N. Adams St.
Coquille, OR 97423
<http://www.co.coos.or.us/>
Phone: 541-396-7770
Fax: 541-396-1022

This decision notice is required to be sent to the property owner(s), applicant(s), adjacent property owners (distance of notice is determined by zone area – Urban 100 feet, Rural 250 feet, and Resource 750 feet), special taxing districts, agencies with interest, or person that has requested notice. The development is contained within the identified property owners land. Notice is required to be provided pursuant to ORS 215.416. Please read all information carefully as this decision. (See attached vicinity map for the location of the subject property).

NOTICE TO MORTGAGEE, LIENHOLDER, VENDOR OR SELLER: ORS CHAPTER 215 (ORS 215.513) REQUIRES THAT IF YOU RECEIVE THIS NOTICE, IT MUST PROMPTLY BE FORWARDED TO THE PURCHASER.

Date of Notice: **Friday, October 09, 2020**

File No(s): FP-20-002/CD-20-085

Proposal: Request for a land use authorization for development within in a special flood hazard area

Applicant(s)/
Owner(s): Ray “Scott” & Rhonda Durrer

Staff Planner: Amy Dibble, Planner II

Decision: **Approved with Conditions.** All decisions are based on the record. This decision is final and effective at close of the appeal period unless a complete application with the fee is submitted by the Planning Department at 12 p.m. on **Monday, October 26, 2020**. Appeals are based on the applicable land use criteria. Development within a special flood hazard area are subject to Coos County Zoning and Land Development Ordinance (CCZLDO) Sections 3.3.700 *Development and Uses Permitted – Coquille River Estuary Management Plan – Exclusive Farm Use (CREMP-EFU) Shoreland Segments*; Policy # 13 4.11 *Special Development Considerations & Overlays*; 4.11.125 *Special Development Considerations*; 4.11.200 *Purpose – Floodplain*; 4.11.214 *Methods of Reducing Flood Losses*; 4.11.231 *Lands to Which This Overlay Zone Applies*; 4.11.235 *Establishing the Areas of Special Flood Hazard*; 4.11.243 *Duties and Responsibilities of the Floodplain Administrator*; 4.11.251 *General Standards in all areas of Special Flood Hazards*; 4.11.252 *Specific Standards in all Special Flood Hazards*; and 4.11.254 *Floodway*. **Civil matters including property disputes outside of the criteria listed in this notice will not be considered. For more information please contact the staff planner listed in this notice.**

Property Information

Account Numbers	895600
Map Numbers	28S130200-01100
Property Owners	DURRER, RAY SCOTT & RHONDA LEIGH 343 N DEAN ST COQUILLE, OR 97423-1713
Situs Addresses	96673 HWY 42 S COQUILLE, OR 97423
Acreages	14.00 Acres
Zonings	COQUILLE RIVER ESTUARY MGT PLN (CREMP) CREMP EXCLUSIVE FARM USE (CR-EFU) CREMP SHORELAND SEGMENT 44 (CRS44)

This notice shall be posted from October 9, 2020 to October 26, 2020

EXCLUSIVE FARM USE (EFU)

Special Development
Considerations and Overlays

FLOODPLAIN (FP)
NATIONAL WETLAND INVENTORY SITE (NWI)
NATURAL HAZARD - EARTHQUAKE - LIQUEFACTION (NHEQL)
NATURAL HAZARD - TSUNAMI (NHTHO)

The purpose of this notice is to inform you about the proposal and decision, where you may receive more information, and the requirements if you wish to appeal the decision by the Director to the Coos County Hearings Body. Any person who is adversely affected or aggrieved or who is entitled to written notice may appeal the decision by filing a written appeal in the manner and within the time period as provided below pursuant to Coos County Zoning and Land Development Ordinance (CCZLDO) Article 5.8. If you are mailing any documents to the Coos County Planning Department the address is 250 N. Baxter, Coquille OR 97423. Mailing of this notice to you precludes an appeal directly to the Land Use Board of Appeals.

Mailed notices to owners of real property required by ORS 215 shall be deemed given to those owners named in an affidavit of mailing executed by the person designated by the governing body of a county to mail the notices. The failure of the governing body of a county to cause a notice to be mailed to an owner of a lot or parcel of property created or that has changed ownership since the last complete tax assessment roll was prepared shall not invalidate an ordinance.

Staff tries to post all applications on the website at the following link:<http://www.co.coos.or.us/Departments/Planning/PlanningDepartment-Applications2020.aspx>.

The application and all documents and evidence contained in the record, including the staff report and the applicable criteria, are available for inspection, at no cost, in the Planning Department located at 225 North Adams Street, Coquille, Oregon. If you wish to view the application, please contact the department to make an appointment. Copies may be purchased at a cost of 50 cents per page. The decision is based on the application submittal and information on record. The name of the Coos County Planning Department representative to contact is Amy Dibble, Planner II and the telephone number where more information can be obtained is (541) 396-7770.

Failure of an issue to be raised in a hearing, in person or in writing, or failure to provide statements of evidence sufficient to afford the Approval Authority an opportunity to respond to the issue precludes raising the issue in an appeal to the Land Use Board of Appeals.

Reviewed by: *Amy Dibble* Date: Friday, October 09, 2020 .
Amy Dibble, Planner II

This decision is authorized by the Coos County Planning Director, Jill Rolfe based on the staff's analysis of the Findings of Fact, Conclusions, Conditions of approval, Application and all evidence associated as listed in the exhibits. Exhibits A and B are provided to all that are entitled to a notice of decision. Exhibits C through E are provided the applicant, decision makers and any of the applicant's representatives. To view all exhibits please contact staff.

EXHIBITS

Exhibit A: Conditions of Approval
Exhibit B: Vicinity Map
Exhibit C: Staff Report -**Findings of Fact and Conclusions**
Exhibit D: Comments Received
Exhibit E: Application and Geotechnical Report

EXHIBIT "A"
CONDITIONS OF APPROVAL

The applicant shall comply with the following conditions of approval with the understanding that all costs associated with complying with the conditions are the responsibility of the applicants and that the applicants are not acting as an agent of the county. If the applicant fails to comply or maintain compliance with the conditions of approval the permit may be revoked as allowed by the Coos County Zoning and Land Development Ordinance. Please read the following conditions of approval and if you have any questions contact planning staff.

1. All applicable federal, state, and local permits shall be obtained prior to the commencement of any development activity. If there were comments from any other agency were provided as part of this review, it is the responsibility of the property owner to comply.
2. Pursuant to CCZLDO § 5.9.100, a Zoning Compliance Letter shall be required prior to the commencement of construction of the addition to the existing dwelling. This will be issued after all the following conditions have been satisfied.
 - a. The property owner is responsible for ensuring compliance, and land use authorization shall remain recorded in the chain of title. The statement needs to include language that the purchaser of the property has been provided a copy of the land use approval containing all conditions or restrictions understands the obligation and agrees to fulfill the conditions, unless a modification is approved as provided in this ordinance. The property owner is responsible for ensuring compliance, and land use authorization.
3. Shall comply with comments received from the Oregon Department of State Lands, the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians, and the Coquille Indian Tribe, these comments can be found at Exhibit "D".
4. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.
5. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.
6. Electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
7. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.
8. Fully enclosed areas below the lowest floor was not included in this proposal and is not permitted with by this approval. If this is proposed in the future additional review will be required.

EXHIBIT "B"
VICINITY MAP



COOS COUNTY PLANNING DEPARTMENT

Mailing Address: 250 N. Baxter, Coos County Courthouse, Coquille, Oregon 97423

Physical Address: 225 N. Adams, Coquille Oregon

Phone: (541) 396-7770

Fax: (541) 396-1022/TDD (800) 735-2900



File: FP-20-002

Applicant/
Owner: Ray "Scott" & Rhonda Durrer

Date: August 26, 2020

Location: Township 28S Range 13W
Section 02 TL 1100

Proposal: Floodplain Review

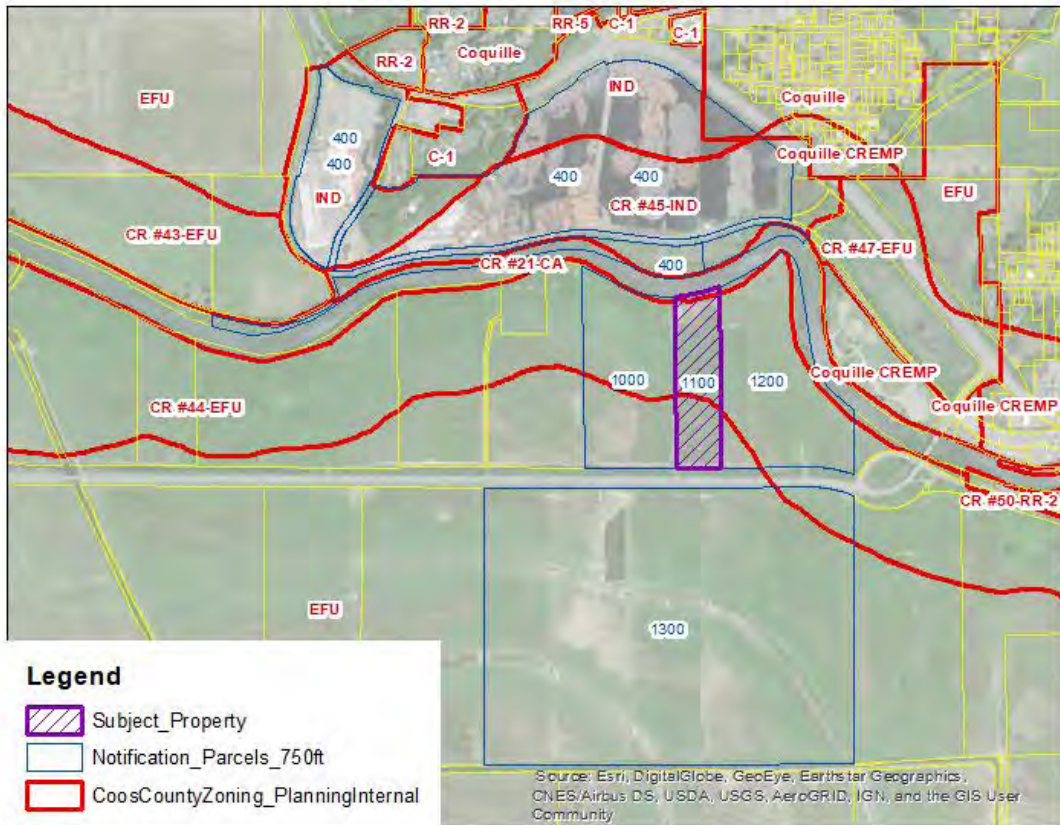


EXHIBIT "C"
STAFF REPORT

I. PROPOSAL AND BACKGROUND/PROPERTY HISTORY INFORMATION:

A. PROPOSAL: The proposal is to develop within a special flood hazard area by altering the existing dwelling by way if an addition.

B. BACKGROUND/PROPERTY HISTORY:

- October 12, 1989 – A Zoning Compliance Letter (VL-89-463) was issued providing authorization to have a septic site evaluation performed and to repair or replace the existing septic system. The Zoning Compliance Letter indicates that the existing improvements on the property include a dwelling, well, and a septic.
- October 9, 1992 - Approval of development within a special flood hazard area (FP-92-17), this was granting approval to construct a single family dwelling. October 27, 1992 – A Conditional Zoning Compliance Letter (92-518) was issued providing clearance to construct a single family dwelling per the floodplain application.
- November 15, 1994 – A Zoning Compliance Letter (94-659) was issued providing authorization to site a barn to be used exclusively for farm related uses to be sited subject to conditions set forth by Koos Engineering’s floodplain restrictions. Furthermore, the Zoning Compliance Letter mentioned that the applicants stated the pole barn would be at the same elevation as the dwelling. Subject to fire siting standards at that time where located in Section 4.9.600.
- April 20, 2004 - A letter was sent to the property owners in response to a Joint Permit Application that they had submitted to place riprap on the property. A Joint Permit Application was signed by the Planning Department stating that further review was required for placement of riprap.
- July 2005 – APR-05-02 was submitted to apply riprap to the riverbank to control erosion of the riverbank for the purpose of protecting the existing homesite and structures.
 - September 29, 2005 - The Notice of Decision to approve with conditions was mailed to the applicant and the surrounding property owners.
 - October 14, 2005 – No appeals were received, and the decision was rendered final.
- June 19, 2019 – A Waterway Structure Registration Application was submitted for a new dock.
 - Staff signed that additional review would be required in order to site a dock and that neither of these applications have been submitted at that time.

The applicant submitted the current request for review on June 8, 2020 and it was found to be complete for review on July 8, 2020. The process for review is governed by ORS 215.427 as codified in CCZLDO Section 5.0.200 Application Completeness. This allows for 150 days once an application has been deemed complete to receive a final decision. Staff turnaround time since the application was deemed complete is 91 days.

II. BASIC FINDINGS:

A. LOCATION: The subject property is located west of the City of Coquille. The property is accessed off Highway 42 South, with an address of 96673 Hwy 42S.

B. ZONING: The property is zoned Exclusive Farm Use (EFU) Coquille River Estuary Management Plan (CREMP) Exclusive Farm Use Segment 44 (44-EFU). The dwelling is located within the CREMP 44-EFU portion of the property.

C. SPECIAL DEVELOPMENT CONSIDERATIONS AND OVERALYS:

SECTION 4.11.125 Special Development Considerations: The considerations are map overlays that show areas of concern such as hazards or protected sites. Each development consideration may further restrict a use. Development considerations play a very important role in determining where development should be allowed In the Balance of County zoning. The adopted plan maps and overlay maps have to be examined in order to determine how the inventory applies to the specific site

SECTION 4.11.200 Purpose: Overlay zones may be super-imposed over the primary zoning district and will either add further requirements or replace certain requirements of the underlying zoning district. The requirements of an overlay zone are fully described in the text of the overlay zone designations. An overlay zone is applicable to all Balance of County Zoning Districts and any zoning districts located within the Coos Bay Estuary Management Plans when the Estuary Policies directly reference this section.

This property is within the Very Hight Liquefaction Potential, mapped in the National Wetland Inventory and contains flood hazard but the development is only located in the Very High Liquefaction which is the subject of this review.

D. SITE DESCRIPTION AND SURROUNDING USES:

The property is zoned Exclusive Farm Use (EFU) Coquille River Estuary Management Plan (CREMP) Exclusive Farm Use Segment 44 (44-EFU). The subject property is indicated in the map below as the property outlined in yellow and is fourteen (14) acres.

The subject property is bordered by Highway 42 South along the southern property boundary and Coquille River to the north. The property is flat with grassy vegetation that has tendency for flooding.



E. COMMENTS:

- a. PUBLIC AGENCY:** There were request for comments provided to Oregon Department of State Lands. Their response are located at Exhibit “D”.
- b. PUPLIC COMMENTS:** there were no public comments received.
- c. LOCAL TRIBE COMMENTS:** There were request for comments provided to the Coquille Indian Tribe and the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians. Their responses are located at Exhibit “D”.

F. LAWFULLY CREATED UNIT OF LAND: The unit of land was created pursuant to 6.1.125.1.e by deed or land sales contract, if there were no applicable planning, zoning, or subdivision or partition ordinances or regulations that prohibited the creation. Prior to 1986 properties were allowed to be created by deed or sale agreement and this property was created prior to 1986, *see* Deed Document 81-27856.

III. STAFF FINDINGS AND CONCLUSIONS:

a. SUMMARY OF PROPOSAL AND APPLICABLE REVIEW CRITERIA:

The proposal is for Planning Director Approval for alteration of the existing single family dwelling within a special flood hazard area.

b. Key definitions:

ACTIVITY: Any action taken either in conjunction with a use or to make a use possible. Activities do not in and of themselves result in a specific use. Several activities such as dredging, piling and fill may be undertaken for a single use such as a port facility. Most activities may take place in conjunction with a variety of uses.

DEVELOP: To bring about growth or availability; to construct or alter a structure, to conduct a mining operation, to make a physical change in the use or appearance of land, to divide land into parcels, or to create or terminate rights to access.

DEVELOPMENT: The act, process or result of developing.

USE: The end to which a land or water area is ultimately employed. A use often involves the placement of structures or facilities for industry, commerce, habitation, or recreation.

ZONING DISTRICT: A zoning designation in this Ordinance text and delineated on the zoning maps, in which requirements for the use of land or buildings and development standards are prescribed.

Definitions under section 4.11.220

“BREAKAWAY WALL” means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces, without causing damage to the elevated portion of the building or supporting foundation system.

“DEVELOPMENT” means any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures; mining; dredging; filling; grading; paving; excavation or drilling operations; or storage of equipment or materials located within the area of special flood hazard.

“FLOODWAY” means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

c. Criteria and standards for development within a special flood hazard area.

COQUILLE RIVER ESTUARY MANAGEMENT PLAN - EXCLUSIVE FARM USE (CREMP-EFU)
SHORELAND SEGMENTS

- *Exclusive Farm Use Shoreland Segments: 27 (27-EFUS), 28 (28-EFUS), 31(31-EFUS), 32(32-EFUS), 33 (33-EFUS), 34 (34-EFUS), 36 (36-EFUS), 37 (37-EFUS), 41 (41-EFUS), 42 (42-EFUS), 43 (43-EFUS), 44 (44-EFUS), 47(47-EFUS), 53(53-EFUS), 55 (55-EFUS), 56 (56-EFUS), 60 (60-EFUS), 62 (62-EFUS), 73 (73-EFUS), 75 (75-EFUS) shall be managed for the continuation of farm use as defined in ORS 215.203 (2)(a) and such other farm uses as are conditionally permitted in ORS 215.213.*

SECTION 3.3.700 DEVELOPMENT AND USE PERMITTED:

The following uses and activities are permitted outright in the in the CREMP-EFU.

2. *Alteration, restoration, or replacement of a lawfully established dwelling. A lawfully established dwelling is a single-family dwelling which:*
 - a. *Has intact interior walls and roof structure,*
 - b. *Has indoor plumbing consisting of a kitchen sink, toilet and bathing facilities connected to a sanitary waste disposal system;*
 - c. *Has interior wiring for interior lights; and*
 - d. *Has a heating system.*
 - e. *A replacement dwelling may be sited on any part of the same lot or parcel. A dwelling established under this subsection shall comply with all applicable siting standards. However, the standards shall not be applied in a manner that prohibits the siting of the dwelling. If the dwelling to be replaced is located on a portion of the lot or parcel not zoned for exclusive farm use, the applicant shall execute and record in the deed records, a deed restriction prohibiting the siting of a dwelling on that portion of the lot or parcel. The restriction imposed shall be irrevocable unless a statement of release is placed in the deed records. The release shall be signed by the County and state the provisions of this paragraph regarding the replacement dwellings have changed to allow the siting of another dwelling. The Planning Director shall maintain a record of the lots and parcels that do not qualify for the siting of a new dwelling under the provisions of this paragraph, including a copy of the deed restrictions and release statements filed under this paragraph. (OR 98-01-002PL 5/4/98)*
 - f. *Coos County does not allow conversion of mobile homes into accessory storage buildings or uses.*
 - g. *These uses must comply with Coastal Shoreland Boundary conditional use criteria in Policy 13.*

FINDING: The proposal is to alter the existing dwelling by way of an addition. The applicants provided photographic evidence that showing that the dwelling currently has intact interior walls and roof structure, indoor plumbing consisting of a kitchen sink, toilet and bathing facilities that are connected to a sanitary waste disposal system, has interior lights and has two (2) different heat sources.

Therefore, these criteria have been satisfied.

- *Policy #13: Overall Use Priorities Within Coastal Shorelands*

- I. *Local governments shall maintain the following priorities for the overall use of coastal shorelands (from highest to lowest):*
 - a. *promote uses which maintain the integrity of estuaries and coastal waters;*
 - b. *provide for water-dependent uses;*
 - c. *provide for water-related uses;*
 - d. *provide for non-dependent, non-related uses which retain flexibility of future use and do not prematurely or inalterably commit shorelands to more intensive uses;*
 - e. *provide for development, including non-dependent, non-related uses in urban areas compatible with existing or committed uses;*
 - f. *permit non-dependent, non-related uses which cause a permanent or long-term change in the features of coastal shorelands only upon a demonstration of public need.*

In addition, priority uses for flood hazard and floodplain areas shall include agriculture, forestry, recreation and open space and uses, which are water-dependent.

This strategy recognizes that the Coquille River Estuary Management Plan's shoreland designations and permitted uses and activities are based upon and establish general priorities for the use of coastal shoreland resources.

FINDING: The proposal is to alter the existing dwelling by way of an addition. This addition will take place over an existing cement pad and residential uses are permitted in this segment of the estuary. The proposal will not be more intrusive to the shorelands nor will it cause a change in the features of the coastal shorelands as it is compatible with the existing use. To further support this evidence was provided to Staff on October 9, 2019 from Justin Wilson, Registered Professional Engineer for JC Wilson Engineering & Consulting, LLC, stating that on June 29, 2019 a site visit was performed. During this site visit Mr. Wilson did not observe any signs of soil failures or geologic hazards, on or near the proposed future building site. Mr. Wilson stated that it is in his opinion liquefaction hazards do not exist at the proposed roof addition location, over an existing concrete slab on this parcel.

- **ARTICLE 4.11 SPECIAL DEVELOPMENT CONSIDERATIONS AND OVERLAYS**

The considerations are map overlays that show areas of concern such as hazards or protected sites. Each development consideration may further restrict a use. Development considerations play a very important role in determining where development should be allowed In the Balance of County zoning. The adopted plan maps and overlay maps have to be examined in order to determine how the inventory applies to the specific site.

- **SECTION 4.11.125 SPECIAL DEVELOPMENT CONSIDERATIONS:**

The considerations are map overlays that show areas of concern such as hazards or protected sites. Each development consideration may further restrict a use. Development considerations play a very important role in determining where development should be allowed In the Balance of County zoning. The adopted plan maps and overlay maps have to be examined in order to determine how the inventory applies to the specific site.

- **SECTION 4.11.200 Purpose:**

Overlay zones may be super-imposed over the primary zoning district and will either add further requirements or replace certain requirements of the underlying zoning district. The requirements

of an overlay zone are fully described in the text of the overlay zone designations. An overlay zone is applicable to all Balance of County Zoning Districts and any zoning districts located within the Coos Bay Estuary Management Plans when the Estuary Policies directly reference this section.

FINDING: The property is located within the Coquille River Estuary Management Plan and it is made clear that any Development Considerations or Overlays in this section only apply to Balance of County Zoning unless the estuary policy directly references the a Balance of County process it does not apply. In this case Policy #13 requires a flood hazard review.

• **SECTION 4.11.214 METHODS OF REDUCING FLOOD LOSSES**

In order to accomplish its purposes, this ordinance includes methods and provisions for:

- 1. Restricting or prohibiting uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;*
- 2. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;*
- 3. Controlling the alteration of natural flood plans, stream channels, and natural protective barriers, which help accommodate or channel flood waters;*
- 4. Controlling filling, grading, dredging, and other development which may increase flood damage;*
- 5. Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or may increase flood hazards in other areas; and*
- 6. Coordinating and supplementing the provisions of the state building code with local land use and development ordinances.*

• **SECTION 4.11.231 LANDS TO WHICH THIS OVERLAY ZONE APPLIES**

This Ordinance shall apply to all areas of special flood hazards within the jurisdiction of Coos County that have been identified on the Flood Insurance Maps dated March 17, 2014 as described in Section 4.11.232.

FINDING: The Proposed building and facility maintenance/improvements at this site include a 1,050-sf addition to be placed over an existing concrete foundation on westside of the existing residence at the elevation of the house main floor, more than 6' above ground elevation. Maintenance will also be performed to an existing dock structure (no impervious surface to be added for dock maintenance). It appears it will be constructed in the same manner as the original house shown below. The applicant has provided a hydrology report to specifically address the criteria. This project will take place in the flood way.



- **SECTION 4.11.235 ESTABLISHMENT OF DEVELOPMENT PERMIT**

1. Floodplain Application Required

A floodplain application shall be submitted and approved before construction or regulated development begins within any area of special flood hazard established in Section 4.11.232. The permit shall be for all structures including manufactured homes, as set forth in the "DEFINITIONS," and for all development including fill and other activities, also as set forth in the "DEFINITIONS."

2. Application

An application shall be made on the forms furnished by the Planning Department and may include, but not be limited to, plans in duplicate drawn to scale showing the nature, location, dimensions, and elevations of the area in question; existing or proposed structures, fill, storage of materials, drainage facilities, and the location of the foregoing. Specifically, the following information is required:

- a. Elevation in relation to mean sea level, of the lowest floor (including basement) of all structures which may be submitted by a registered surveyor;*
- b. Elevation in relation to mean sea level of floodproofing in any structure;*
- c. Certification by a registered professional engineer or architect that the floodproofing methods for any nonresidential structure meet the floodproofing criteria in Section 4.11.252; and*
- d. Description of the extent to which a watercourse will be altered or relocated as a result of proposed development.*
- e. Plot plan drawn to scale showing the nature, location and dimensions and elevation referenced to mean sea level, or NAVD 88, whichever is applicable, of the area in question including existing and proposed structures, fill, storage of materials, and drainage facilities. Applicants shall submit certification by an Oregon registered professional engineer or land surveyor of the site's ground elevation and whether or not the development is located in a flood hazard area. If so, the certification shall include which flood hazard area applies, the location of the floodway at the site, and the 100 year flood elevation at the site. A reference mark shall be set at the elevation of the 100 year flood at the site. The location, description, and elevation of the reference mark shall be included in the certification; and*
- f. Any other information required to show compliance.*
- g. Applications for variance, water course changes or staff determinations will be noticed with an opportunity to appeal in the same manner as a conditional use (see Chapter V). Non discretionary determination of compliance with the standards will be processed in the same manner as a Compliance Determination (see Article 5.10)*

- **SECTION 4.11.243 DUTIES AND RESPONSIBILITIES OF THE FLOODPLAIN ADMINISTRATOR**

Duties of the local floodplain administrator shall include, but not be limited to:

1. Application Review

- a. Reviews all applications to determine that the floodplain requirements of this Ordinance have been satisfied.*
- b. Review proposed development to assure that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334*
- c. Review all requested development to determine if it is located in the floodway. If located in the floodway, assure that the encroachment provisions of Section 4.11.254 are met.*

2. Use of Other Base Flood Data (In A and V Zones)

When base flood elevation data has not been provided (A and V Zones) in accordance with Section 4.11.232, BASIS FOR ESTABLISHING THE AREAS OF SPECIAL FLOOD HAZARD, the local administrator shall obtain, review, and reasonably utilize any base flood elevation and

floodway data available from a Federal, State or other source, in order to administer Sections 4.11.252, SPECIFIC STANDARDS, and 4.11.254 FLOODWAYS.

3. Information to be Obtained and Maintained

- a. *Where base flood elevation data is provided through the Flood Insurance Study, FIRM, or required as in Section 4.11.243(2), obtain and record the actual elevation (in relation to mean sea level) of the lowest floor (including basements and below-grade crawlspaces) of all new or substantially improved structures, and whether or not the structure contains a basement.*
- b. *For all new or substantially improved floodproofed structures where base flood elevation data is provided through the Flood Insurance Study, FIRM, or as required in Section 4.11.243(2):*
 - i. *Verify and record the actual elevation (in relation to mean seal level); and*
 - ii. *Maintain the floodproofing certifications required in Section 4.11.235(2)(c).*
- c. *Maintain for public inspection all records pertaining to the provisions of this ordinance.*

4. Alteration of Watercourses

- a. *Notify adjacent communities, the Department of Land Conservation and Development and other appropriate state and federal agencies, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance & Mitigation Administration.*
- b. *Require that maintenance is provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.*

5. Requirement to Submit New Technical Data

- a. *Base Flood Elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, the Floodplain Administrator shall notify the Federal Insurance Administrator of the changes by submitting technical or scientific data in accordance with Volume 44 Code Federal Regulations Section 65.3. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and floodplain management requirements will be based upon current data.*
- b. *The property owner shall be responsible for preparing the technical and scientific data required by FEMA under paragraph (5)(a) of this section, and for paying any processing or application fees associated with FEMA's review of the submitted data.*
- c. *The Floodplain Administrator shall be under no obligation to sign the Community Acknowledgement Form, which is part of the CLOMR/LOMR application, until the applicant demonstrates that the project will or has met the requirements of this code and all applicable State and Federal laws.*

6. Interpretation of FIRM Boundaries

The Floodplain Administrator shall make interpretations where needed, as to exact location of the boundaries of the areas of special flood hazards (for example, where there appears to be a conflict between a mapped boundary and actual field conditions). The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in Section 4.11.244.

• **SECTION 4.11.251 GENERAL STANDARDS**

In all areas of special flood hazards, the following standards are required:

1. Anchoring

- a. *All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure; and*

- b. *All manufactured homes must likewise be anchored to prevent flotation, collapse, or lateral movement, and shall be installed using methods and practices that minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors (Reference FEMA's "Manufactured Home Installation in Flood Hazard Areas" guidebook for additional techniques).*
2. Construction Materials and Methods
 - a. *All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage;*
 - b. *All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage; and*
 - c. *Electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding.*
 3. Utilities
 - a. *All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system;*
 - b. *New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters; and*
 - c. *On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding consistent with the Oregon Department of Environmental Quality.*

Finding: The proposal is a 1,050 square foot addition to be placed over an existing concrete foundation on the westside of the residence at the same elevation as the existing dwelling's main floor. The Base Flood Elevation (BFE) is 24 feet and the top of the bottom floor (including basement, crawlspace, or enclosure floor) is 25 feet.

The applicant did not provide evidence or address how the addition would be anchored, what type construction materials would be used, and whether or not the electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding; therefore this will be made a condition of approval.

The proposal does not include a replacement water supply or on-site disposal system; however, if these are replaced in the future the applicants shall comply with these criteria.

- **SECTION 4.11.252 SPECIFIC STANDARDS**

In all areas of special flood hazards where base flood elevation data has been provided (Zones A1-30, AH, and AE) as set forth in Section 4.11.232, BASIS FOR ESTABLISHING THE AREAS OF SPECIAL FLOOD HAZARD or Section 4.11.243(2), Use of Other Base Flood Data (In A and V Zones), the following provisions are required:

1. Residential Construction

- a. *New construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated to a minimum of one foot above the base flood elevation; and*
- b. *Fully enclosed areas below the lowest floor that are subject to flooding are prohibited, or shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:*

- i. *A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided;*
- ii. *The bottom of all openings shall be no higher than one foot above grade; and*
- iii. *Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.*

Finding: The addition will be constructed at the same elevation as the existing dwelling. The BFE is 24 feet and the top of the bottom floor of the dwelling is 25 feet. The proposal does not include any fully enclosed areas, the addition will be built up like the existing dwelling atop 8 x 8 wood posts. Due to the fact that this dwelling is within the floodway if any enclosures are proposed they would have to be breakaway walls but in this case there are no plans for enclosed areas. Therefore, as a condition of approval the area below the lowest floor shall not be enclosed unless a plan is submitted and approved by the Planning Department after it is determined to be consistent with this ordinance.

- **SECTION 4.11.254 FLOODWAY**

Located within areas of special flood hazard established in Section 4.11.232 are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of floodwaters which carry debris, potential projectiles, and erosion potential, the following provisions apply:

1. *Except as provided in paragraph (3), prohibit encroachments, including fill, new construction, substantial improvements, and other development unless certification by a registered professional civil engineer is provided demonstrating through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge;*
2. *If Section 4.11.254(1) is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of Section 4.11.251 et seq;*
3. *RESERVED*
4. *Temporary structures placed in the floodway: Relief from no-rise evaluation, elevation or dry flood-proofing standards may be granted for a non-residential structure placed during the dry season (June – October) and for a period of less than ninety (90) days. A plan for the removal of the temporary structure after the dry season or when a flood event threatens shall be provided. The plan shall include disconnecting and protecting from water infiltration and damage all utilities servicing the temporary structure; and*
5. *Temporary storage of goods and materials, not including hazardous materials, is allowed in the floodway for a period of less than ninety (90) days within the dry season (June – October).*

Finding: The applicant submitted a hydrological evaluation performed by Justin Wilson, Registered Professional Engineer for JC Wilson Engineering & Consulting, LLC stating he performed hydrologic calculations at this location and surrounding drainage areas using the Santa Barbara Unit Hydrograph (SBUH) method for the 2-yr and 100-yr rainfall events to determine impacts to rise in water surface elevation that could be caused by any development or added impervious surfaces. A conservative area of 160 acres surrounding this property was used for analysis (minimal impacts would be less if a larger area was utilized). Results in the attached hydrologic calculations show that there is 0.00' elevation rise for the 2-yr rainfall event, and a 0.00' rise for the 100-yr event. These zero rises are consistent with 0.0' allowed as outlined within SECTION 4.11.253 BEFORE REGULATORY FLOODWAY and Section 4.11.254 FLOODWAY of the Coos County Code for development within a floodway. As part of the report and evidence is a site plan/basin Map (Applicant's Attachment 1) and the SBUH hydrologic calculations (Applicant's Attachment 2). The proposal does not include any temporary structures.

Therefore, it is the opinion of the designated Floodplain Administrator the applicant has provided the correct information to show that they addition will not have no net rise on the flood elevation. The applicant shall comply with Section 4.11.251 General Standards for development within any floodplain.

DECISION:

The proposed addition to the existing single family dwelling within a special flood hazard area meets the requirements of the Coos County Zoning and Land Development Ordinance with conditions listed in Exhibit "A" of this report.

G. NOTICE REQUIREMENTS:

A notice of decision will be provided to property owners within 750 feet of the subject properties and the following agencies, special districts, or parties

A Notice of Decision and Staff Report will be provided to the following:

Applicants/Owners, Department of Land Conservation and Development, Planning Commission and Board of Commissioners.

Adjacent property owners will receive a Notice of Decision and maps but all other attachments can be found by contacting the Planning Department or visiting the website. If not found on the website the public may contact the department to view the official record.

EXHIBIT "D"
Comments Received

Amy Dibble

From: Courtney Krossman <ckrossman@ctclusi.org>
Sent: Tuesday, June 16, 2020 3:14 PM
To: Amy Dibble; Stacy Scott
Cc: Planning Department
Subject: Re: FP-20-002/CD-20-085 Durrer - Request for Comments

This Message originated outside your organization.

Good Afternoon Ms. Dibble,

The proposed work is outside of the Ancestral Territory of the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians. The Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians therefore, defer comments to the appropriate Tribe(s).
Please feel free to reach out if we can be of further assistance.

Sincerely,
Courtney Krossman

From: Amy Dibble <adibble@co.coos.or.us>
Sent: Monday, June 8, 2020 11:45 AM
To: Stacy Scott <sscott@ctclusi.org>; Courtney Krossman <ckrossman@ctclusi.org>
Cc: Planning Department <planning@co.coos.or.us>
Subject: FP-20-002/CD-20-085 Durrer - Request for Comments

Stacy and Courtney,

Attached please find a request for comments for applications FP-20-002/CD-20-085 submitted by Ray & Rhonda Durrer. The proposal is to alter the existing dwelling by way of an addition on property located at 96673 Hwy 42 S, in Coquille. Also attached please find the applications as submitted.

Please let me know if you have any further questions.

Thank you,
Amy Dibble

Disclaimer

The information contained in this communication from the sender is confidential. It is intended solely for use by the recipient and others authorized to receive it. If you are not the recipient, you are hereby notified that any disclosure, copying, distribution or taking action in relation of the contents of this information is strictly prohibited and may be unlawful.

This email has been scanned for viruses and malware, and may have been automatically archived by **Mimecast Ltd**, an innovator in Software as a Service (SaaS) for business. Providing a **safer** and **more useful** place for your human generated data. Specializing in; Security, archiving and compliance. To find out more [Click Here](#).

This email and its attachments are confidential under applicable law and are intended for use of the sender's addressee only, unless the sender expressly agrees otherwise, or unless a separate written agreement exists between Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians and a recipient company governing communications between the parties and any data that may be transmitted. Transmission of email over the Internet is not a secure communications medium. If you are requesting or have requested the transmittal of personal data, as defined in applicable privacy laws, by means of email or in an attachment to email, you may wish to select a more secure alternate



COQUILLE INDIAN TRIBE

3050 Tremont Ave. North Bend, OR 97459
Telephone: (541) 756-0904 ~ Fax: (541) 756-0847
www.coquilletribe.org

June 24, 2020

Coos County Planning Department
250 N Baxter
Coquille, Oregon 97429

Re: FP-20-002 & CD-20-085

Project location: 96673 Hwy 42 S, Coquille, Oregon 97423

Thank you for the opportunity to comment on the proposal to construct an addition to an existing structure at the above referenced location. Our records show known cultural resources within extremely close proximity to the project area.

Due to the close proximity to known cultural resources, we request that the landowner and/or contractor contact our office at (541) 808-5554 (Kassandra Rippee, Archaeologist/THPO) to schedule a Cultural Resource Monitor to be on site during all ground-disturbing activities. Please schedule the monitor a **minimum of 72 hours** in advance of anticipated project start time.

Please be aware that state statutes and federal law governs how archaeological sites are to be managed. 43 CFR 10 applies on tribal and federal lands, federal projects, federal agencies, as well as to federal actions and federally funded (directly or indirectly) projects. ORS 97.745 prohibits the willful removal, mutilation, defacing, injury, or destruction of any cairn, burial, human remains, funerary objects, or objects of cultural patrimony of a Native Indian. ORS 358.920 prohibits excavation, injury, destruction, or alteration of an archaeological site or object, or removal of an archaeological object from public or *private lands*. If archaeological materials are discovered, uncovered, or disturbed on the property, we will discuss the appropriate actions with all necessary parties.

Thank you again and feel free to contact me if you have any questions.

Best,

Todd Martin
Tribal Historic Preservation Specialist

CRT20172



Wetland Land Use Notice Response

Response Page

Department of State Lands (DSL) WN#*
WN2020-0388

Responsible Jurisdiction

Staff Contact	Jurisdiction Type	Municipality
Amy Dibble	County	Coos
Local case file #	County	
FP-20-002/CD-20-085	Coos	

Activity Location

Township	Range	Section	QQ section	Tax Lot(s)
28S	13W	02		1100

Street Address

96673 Hwy 42S

Address Line 2

City

Coquille

Postal / Zip Code

97423

State / Province / Region

OR

Country

Coos

Latitude

43.177426

Longitude

-124.20667

Wetland/Waterway/Other Water Features



- There are/may be wetlands, waterways or other water features on the property that are subject to the State Removal-Fill Law based upon a review of wetland maps, the county soil survey and other available information.
- The National Wetlands Inventory shows wetland, waterway or other water features on the property
- The county soil survey shows hydric (wet) soils on the property. Hydric soils indicate that there may be wetlands.
- The property includes or is adjacent to designated Essential Salmonid Habitat.

The property includes or is adjacent to state-owned waters.

Your Activity

A state permit will not be required for the proposed project because, based on the submitted site plan, the project avoids impacts to jurisdictional wetlands, waterways, or other waters.

Applicable Oregon Removal-Fill Permit Requirement(s)

A state permit is required for 50 cubic yards or more of fill removal or other ground alteration in wetlands, below ordinary high water of waterways, within other waters of the state, or below highest measured tide.

A state permit is required for any amount of fill, removal, and/or other ground alteration in Essential Salmonid Habitat and within adjacent off-channel rearing or high-flow refugia habitat with a permanent or seasonal surface water connection to the stream.

Closing Information

Additional Comments

As shown on the submitted site plan, a home addition west of the house will not impact wetlands. Please note that the Coquille River is jurisdictional and designated Essential Salmonid Habitat; any amount of soil disturbance or fill placement below the ordinary high water line would require a permit. There are likely jurisdictional wetlands elsewhere on the property south of the house. Also, the river is state-owned at this location, and occupancy of submerged and submersible lands may require a lease or registration from the state.

This is a preliminary jurisdictional determination and is advisory only.

This report is for the State Removal-Fill law only. City or County permits may be required for the proposed activity.

Contact Information

- For information on permitting, use of a state-owned water, wetland determination or delineation report requirements please contact the respective DSL Aquatic Resource, Proprietary or Jurisdiction Coordinator for the site county. The current list is found at: <http://www.oregon.gov/dsl/ww/pages/wwstaff.aspx>
- The current Removal-Fill permit and/or Wetland Delineation report fee schedule is found at: <https://www.oregon.gov/dsl/WW/Documents/Removal-FillFees.pdf>

Response Date

7/6/2020

Response by:

Lynne McAllister

Response Phone:

503-986-5300

EXHIBIT "E"
Application



**Coos County
Planning Department
Application to Develop in a
Special Flood Hazard Area**

	Official Use Only
Fee	\$875.00
Receipt No.	219279
Check No./Cash	1451
Date	4/8/20
Received By	A. D. [Signature]
File No.	FP-20-002

The undersigned hereby makes application for a permit to develop in a designated Special Flood Hazard Area ("floodplain"). The work to be performed is described below and in attachments hereto. The undersigned agrees that all such work shall be done in accordance with the requirements of the Coos County Comprehensive Plan, Coos County Zoning and Land Development Ordinance, and any other applicable Local, State, and Federal regulations. This application does not create liability on the part of the Coos County Planning Department or any officer or employee thereof for any flood damage that results from the reliance on this application or any decision made lawfully thereunder.

Ray "Scott" and

Owner(s): Rhonda Leigh Durrer Telephone: 209-737-16817
 Address: 96673 HWY 42 S P.O. Box 384
 City/State: Coquille, OR Zip Code: 97423

Agent(s): _____ Telephone: _____
 Address: _____

City/State: _____ Zip Code: _____
Situs Address: 96673 Hwy 42S, Coquille
 Township: 28S Section: 2
 Range: 13W Tax Lot: 1100
 Situs Address: 96673 HWY 42 S
 City/State: Coquille, OR Zip Code: 97423

A. Description of Work (Complete for All Proposals):

1. Proposed Development Description:

- | | |
|---|--|
| <input type="checkbox"/> New Building | <input checked="" type="checkbox"/> Improvement to Existing Building |
| <input type="checkbox"/> Manufactured Structure | <input type="checkbox"/> Fill |
| <input type="checkbox"/> Other _____ | |

2. Size and location of proposed development (a site plan must be attached):

3. Is the proposed development in a Special Flood Hazard Area (Zones A, AE, A1-A30, AH, AO, V, or VE)?

Yes Zone: AE
 No

4. Per the FIRM, what is the zone and panel number of the area of the proposed development?

Zone: AE
Panel Number: 0537

5. Have any other Federal, State, or Local permits been obtained?

Yes - Copies of all permits must be attached.
 No

6. Is the proposed development in an identified floodway?

Yes - A "No Rise Certification" with supporting data must be attached.
 No

B. Complete for New Structures and Building Site:

1. Base Flood Elevation (BFE) at the site (complete one):

NGVD 29 _____ feet Source: _____
 NAVD 88 24.0 feet Source: FIRM

2. Required lowest floor elevation, including basement (complete one):

NGVD 29 _____ feet Source: _____
 NAVD 88 25.0 feet Source: _____

3. Number and area of flood openings (vents): N/A

4. Enclosed area below BFE (in square feet): N/A

Application to Develop in a Special Flood Hazard Area
Revised February 2016
Page 2 of 4

C. Complete for Alterations, Additions, or Improvements to Existing Structures:

1. What is the estimated market value of the existing structure? Justification for the estimate must be attached and may include, but is not limited to, appraisals completed by private agencies or the County Assessor's office.

2. What is the cost of the proposed construction? Justification for the estimate must be attached. The estimate is required to include fair market value for any work provided by the property owner or without compensation.

3. If the cost of the proposed construction equals or exceeds 50 percent of the market value of the structure, then the substantial improvement provisions shall apply.

D. Complete for Non-Residential Floodproofed Construction:

1. Type of floodproofing method:

2. The required floodproofing elevation is (complete one):
 NGVD 29 _____ feet Source: _____
 NAVD 88 _____ feet Source: _____
3. Floodproofing certification by a registered engineer must be attached.

E. Complete for Land Divisions, Subdivisions, and Planned Unit Development:


1. Does the proposal contain 50 lots or 5 acres?
 Yes - The plat or proposal must clearly identify base flood elevation.
 No
2. Are the 100-year Floodplain and Floodway delineated on the site plan?
 Yes
 No

F. Authorization: All areas must be initialed by all applicant(s) prior to the Planning Department accepting any application.

Applicant | I hereby attest that I am authorized to make the application for Application to Develop in a Special Flood Hazard Area and the statements within this application are true and correct to the best of my knowledge and belief. I affirm that this is a legally created tract, lot or parcel of land. I understand that I have the right to an attorney for verification as to the creation of the subject property. I understand that any action authorized by Coos County may be revoked if it is determined that the action was issued based upon false statements or misrepresentation.

Applicant | I understand it is the function of the Planning Department to impartially review my application and to address all issues affecting it regardless of whether the issues promote or hinder the approval of my application. In the event a public hearing is required to consider my application, I agree I bear the burden of proof. I understand that approval is not guaranteed and the applicant(s) bear the burden of proof to demonstrate compliance with the applicable review criteria.

Applicant | As applicant(s) I/we acknowledge that is in my/our desire to submit this application and staff has not encouraged or discouraged the submittal of this application.


Applicant(s) Original Signature

Applicant(s) Original Signature

Date

Date

ELEVATION CERTIFICATE

Important: Follow the instructions on pages 1-9.

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

SECTION A – PROPERTY INFORMATION				FOR INSURANCE COMPANY USE	
A1. Building Owner's Name Ray Scott Durrer				Policy Number:	
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 96673 HWY 42 S				Company NAIC Number:	
City Coquille		State Oregon		ZIP Code 97423	
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.) 28-13-02 Tax Lot 1100					
A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) <u>Residential</u>					
A5. Latitude/Longitude: Lat. <u>43° 10' 38.88"N</u> Long. <u>124° 12' 23.97"W</u> Horizontal Datum: <input type="checkbox"/> NAD 1927 <input checked="" type="checkbox"/> NAD 1983					
A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.					
A7. Building Diagram Number <u>1B</u>					
A8. For a building with a crawlspace or enclosure(s):					
a) Square footage of crawlspace or enclosure(s) <u>N/A</u> sq ft					
b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade <u>N/A</u>					
c) Total net area of flood openings in A8.b <u>N/A</u> sq in					
d) Engineered flood openings? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
A9. For a building with an attached garage:					
a) Square footage of attached garage <u>N/A</u> sq ft					
b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade <u>N/A</u>					
c) Total net area of flood openings in A9.b <u>N/A</u> sq in					
d) Engineered flood openings? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION					
B1. NFIP Community Name & Community Number Coquille			B2. County Name Coos		B3. State Oregon
B4. Map/Panel Number 410042 0537	B5. Suffix F	B6. FIRM Index Date 12-07-2018	B7. FIRM Panel Effective/ Revised Date 12-07-2018	B8. Flood Zone(s) AE	B9. Base Flood Elevation(s) (Zone AO, use Base Flood Depth) 24.0
B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9: <input type="checkbox"/> FIS Profile <input checked="" type="checkbox"/> FIRM <input type="checkbox"/> Community Determined <input type="checkbox"/> Other/Source: _____					
B11. Indicate elevation datum used for BFE in Item B9: <input type="checkbox"/> NGVD 1929 <input checked="" type="checkbox"/> NAVD 1988 <input type="checkbox"/> Other/Source: _____					
B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Designation Date: _____ <input type="checkbox"/> CBRS <input type="checkbox"/> OPA					

ELEVATION CERTIFICATE

OMB No. 1660-0008
Expiration Date: November 30, 2018

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 96673 HWY 42 S			Policy Number:
City Coquille	State Oregon	ZIP Code 97423	Company NAIC Number

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: Construction Drawings* Building Under Construction* Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO.
Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.
Benchmark Utilized: NGS B 756 Vertical Datum: NAVD88

Indicate elevation datum used for the elevations in items a) through h) below.
 NGVD 1929 NAVD 1988 Other/Source: _____
Datum used for building elevations must be the same as that used for the BFE.

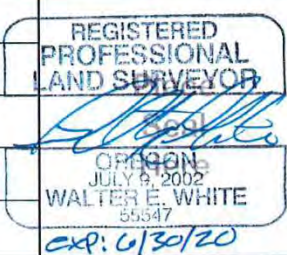

Check the measurement used.

a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	<u>15.4</u>	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters
b) Top of the next higher floor	<u>N/A</u>	<input type="checkbox"/> feet	<input type="checkbox"/> meters
c) Bottom of the lowest horizontal structural member (V Zones only)	<u>N/A</u>	<input type="checkbox"/> feet	<input type="checkbox"/> meters
d) Attached garage (top of slab)	<u>N/A</u>	<input type="checkbox"/> feet	<input type="checkbox"/> meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	<u>N/A</u>	<input type="checkbox"/> feet	<input type="checkbox"/> meters
f) Lowest adjacent (finished) grade next to building (LAG)	<u>14.9</u>	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters
g) Highest adjacent (finished) grade next to building (HAG)	<u>18.4</u>	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	<u>15.7</u>	<input checked="" type="checkbox"/> feet	<input type="checkbox"/> meters

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Were latitude and longitude in Section A provided by a licensed land surveyor? Yes No Check here if attachments.

Certifier's Name Walter White	License Number 55547		
Title Senior Surveyor			
Company Name SHN Consulting Engineers & Geologists, Inc			
Address 275 Market Avenue			
City Coos Bay	State Oregon	ZIP Code 97420	
Signature 	Date 12-10-2019	Telephone (541) 266-9890	Ext. 19

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

Comments (including type of equipment and location, per C2(e), if applicable)
This certification is for an existing concrete pad proposed for an addition to an existing structure built on top of 8"x8" wood posts. The space under the existing home is open with some lattice work. See separate certification.

ELEVATION CERTIFICATE

OMB No. 1660-0008
Expiration Date: November 30, 2018

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 96673 HWY 42 S			Policy Number:
City Coquille	State Oregon	ZIP Code 97423	Company NAIC Number
SECTION E – BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)			
<p>For Zones AO and A (without BFE), complete Items E1–E5. If the Certificate is intended to support a LOMA or LOMR-F request, complete Sections A, B, and C. For Items E1–E4, use natural grade, if available. Check the measurement used. In Puerto Rico only, enter meters.</p> <p>E1. Provide elevation information for the following and check the appropriate boxes to show whether the elevation is above or below the highest adjacent grade (HAG) and the lowest adjacent grade (LAG).</p> <p style="margin-left: 20px;">a) Top of bottom floor (including basement, crawlspace, or enclosure) is _____ <input type="checkbox"/> feet <input type="checkbox"/> meters <input type="checkbox"/> above or <input type="checkbox"/> below the HAG.</p> <p style="margin-left: 20px;">b) Top of bottom floor (including basement, crawlspace, or enclosure) is _____ <input type="checkbox"/> feet <input type="checkbox"/> meters <input type="checkbox"/> above or <input type="checkbox"/> below the LAG.</p> <p>E2. For Building Diagrams 6–9 with permanent flood openings provided in Section A Items 8 and/or 9 (see pages 1–2 of Instructions), the next higher floor (elevation C2.b in the diagrams) of the building is _____ <input type="checkbox"/> feet <input type="checkbox"/> meters <input type="checkbox"/> above or <input type="checkbox"/> below the HAG.</p> <p>E3. Attached garage (top of slab) is _____ <input type="checkbox"/> feet <input type="checkbox"/> meters <input type="checkbox"/> above or <input type="checkbox"/> below the HAG.</p> <p>E4. Top of platform of machinery and/or equipment servicing the building is _____ <input type="checkbox"/> feet <input type="checkbox"/> meters <input type="checkbox"/> above or <input type="checkbox"/> below the HAG.</p> <p>E5. Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown. The local official must certify this information in Section G.</p>			
SECTION F – PROPERTY OWNER (OR OWNER'S REPRESENTATIVE) CERTIFICATION			
<p>The property owner or owner's authorized representative who completes Sections A, B, and E for Zone A (without a FEMA-issued or community-issued BFE) or Zone AO must sign here. The statements in Sections A, B, and E are correct to the best of my knowledge.</p>			
Property Owner or Owner's Authorized Representative's Name			
Address	City	State	ZIP Code
Signature	Date	Telephone	
<p>Comments</p> <p style="text-align: right;"><input type="checkbox"/> Check here if attachments.</p>			

BUILDING PHOTOGRAPHS

See Instructions for Item A6.

OMB No. 1660-0008
Expiration Date: November 30, 2018

ELEVATION CERTIFICATE

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 96673 HWY 42 S			Policy Number:
City Coquille	State Oregon	ZIP Code 97423	Company NAIC Number

If using the Elevation Certificate to obtain NFIP flood insurance, affix at least 2 building photographs below according to the instructions for Item A6. Identify all photographs with date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8. If submitting more photographs than will fit on this page, use the Continuation Page.



Photo One

Photo One Caption West Side of Structure- Looking Northeast

Clear Photo One

Photo Two

Photo Two Caption

Clear Photo Two

ELEVATION CERTIFICATE

Important: Follow the instructions on pages 1-9.

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

SECTION A – PROPERTY INFORMATION				FOR INSURANCE COMPANY USE	
A1. Building Owner's Name Ray Scott Durrer				Policy Number:	
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 96673 HWY 42 S				Company NAIC Number:	
City Coquille		State Oregon		ZIP Code 97423	
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.) 28-13-02 Tax Lot 1100					
A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) <u>Residential</u>					
A5. Latitude/Longitude: Lat. <u>43°10'38.71"N</u> Long. <u>124°12'23.36"W</u> Horizontal Datum: <input type="checkbox"/> NAD 1927 <input checked="" type="checkbox"/> NAD 1983					
A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.					
A7. Building Diagram Number <u>5</u>					
A8. For a building with a crawlspace or enclosure(s):					
a) Square footage of crawlspace or enclosure(s) <u>N/A</u> sq ft					
b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade <u>N/A</u>					
c) Total net area of flood openings in A8.b <u>N/A</u> sq in					
d) Engineered flood openings? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
A9. For a building with an attached garage:					
a) Square footage of attached garage <u>N/A</u> sq ft					
b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade <u>N/A</u>					
c) Total net area of flood openings in A9.b <u>N/A</u> sq in					
d) Engineered flood openings? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION					
B1. NFIP Community Name & Community Number Coquille			B2. County Name Coos		B3. State Oregon
B4. Map/Panel Number 410042 0537	B5. Suffix F	B6. FIRM Index Date 12-07-2018	B7. FIRM Panel Effective/ Revised Date 12-07-2018	B8. Flood Zone(s) AE	B9. Base Flood Elevation(s) (Zone AO, use Base Flood Depth) 24.0
B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9: <input type="checkbox"/> FIS Profile <input checked="" type="checkbox"/> FIRM <input type="checkbox"/> Community Determined <input type="checkbox"/> Other/Source: _____					
B11. Indicate elevation datum used for BFE in Item B9: <input type="checkbox"/> NGVD 1929 <input checked="" type="checkbox"/> NAVD 1988 <input type="checkbox"/> Other/Source: _____					
B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Designation Date: _____ <input type="checkbox"/> CBRS <input type="checkbox"/> OPA					

ELEVATION CERTIFICATE

OMB No. 1660-0008
Expiration Date: November 30, 2018

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 96673 HWY 42 S			Policy Number:
City Coquille	State Oregon	ZIP Code 97423	Company NAIC Number

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: Construction Drawings* Building Under Construction* Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO.
Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.
Benchmark Utilized: NGS B 756 Vertical Datum: NAVD88

Indicate elevation datum used for the elevations in items a) through h) below.
 NGVD 1929 NAVD 1988 Other/Source: _____


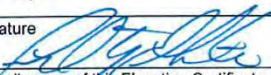
Datum used for building elevations must be the same as that used for the BFE.

		Check the measurement used.
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	<u>25.0</u>	<input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
b) Top of the next higher floor	<u>N/A</u>	<input type="checkbox"/> feet <input type="checkbox"/> meters
c) Bottom of the lowest horizontal structural member (V Zones only)	<u>N/A</u>	<input type="checkbox"/> feet <input type="checkbox"/> meters
d) Attached garage (top of slab)	<u>N/A</u>	<input type="checkbox"/> feet <input type="checkbox"/> meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	<u>25.0</u>	<input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
f) Lowest adjacent (finished) grade next to building (LAG)	<u>15.1</u>	<input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
g) Highest adjacent (finished) grade next to building (HAG)	<u>16.4</u>	<input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	<u>15.0</u>	<input checked="" type="checkbox"/> feet <input type="checkbox"/> meters

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Were latitude and longitude in Section A provided by a licensed land surveyor? Yes No Check here if attachments.

Certifier's Name Walter White	License Number 55547	
Title Senior Surveyor		
Company Name SHN Consulting Engineers & Geologists, Inc		
Address 275 Market Avenue		
City Coos Bay	State Oregon	ZIP Code 97420
Signature 	Date 12-10-2019	Telephone (541) 266-9890
		Ext. 19

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

Comments (including type of equipment and location, per C2(e), if applicable)
This certification is for an existing home built on top of 8"x8" wood posts. The space under the home is open with some lattice work.

ELEVATION CERTIFICATE

OMB No. 1660-0008
Expiration Date: November 30, 2018

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 96673 HWY 42 S			Policy Number:
City Coquille	State Oregon	ZIP Code 97423	Company NAIC Number
SECTION E – BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)			
<p>For Zones AO and A (without BFE), complete Items E1–E5. If the Certificate is intended to support a LOMA or LOMR-F request, complete Sections A, B, and C. For Items E1–E4, use natural grade, if available. Check the measurement used. In Puerto Rico only, enter meters.</p> <p>E1. Provide elevation information for the following and check the appropriate boxes to show whether the elevation is above or below the highest adjacent grade (HAG) and the lowest adjacent grade (LAG).</p> <p style="margin-left: 20px;">a) Top of bottom floor (including basement, crawlspace, or enclosure) is _____ <input type="checkbox"/> feet <input type="checkbox"/> meters <input type="checkbox"/> above or <input type="checkbox"/> below the HAG.</p> <p style="margin-left: 20px;">b) Top of bottom floor (including basement, crawlspace, or enclosure) is _____ <input type="checkbox"/> feet <input type="checkbox"/> meters <input type="checkbox"/> above or <input type="checkbox"/> below the LAG.</p> <p>E2. For Building Diagrams 6–9 with permanent flood openings provided in Section A Items 8 and/or 9 (see pages 1–2 of Instructions), the next higher floor (elevation C2.b in the diagrams) of the building is _____ <input type="checkbox"/> feet <input type="checkbox"/> meters <input type="checkbox"/> above or <input type="checkbox"/> below the HAG.</p> <p>E3. Attached garage (top of slab) is _____ <input type="checkbox"/> feet <input type="checkbox"/> meters <input type="checkbox"/> above or <input type="checkbox"/> below the HAG.</p> <p>E4. Top of platform of machinery and/or equipment servicing the building is _____ <input type="checkbox"/> feet <input type="checkbox"/> meters <input type="checkbox"/> above or <input type="checkbox"/> below the HAG.</p> <p>E5. Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown. The local official must certify this information in Section G.</p>			
SECTION F – PROPERTY OWNER (OR OWNER'S REPRESENTATIVE) CERTIFICATION			
<p>The property owner or owner's authorized representative who completes Sections A, B, and E for Zone A (without a FEMA-issued or community-issued BFE) or Zone AO must sign here. The statements in Sections A, B, and E are correct to the best of my knowledge.</p>			
Property Owner or Owner's Authorized Representative's Name			
Address	City	State	ZIP Code
Signature	Date	Telephone	
<p>Comments</p> <p style="text-align: right;"><input type="checkbox"/> Check here if attachments.</p>			

BUILDING PHOTOGRAPHS

See Instructions for Item A6.

OMB No. 1660-0008
Expiration Date: November 30, 2018

ELEVATION CERTIFICATE

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 96673 HWY 42 S			Policy Number:
City Coquille	State Oregon	ZIP Code 97423	Company NAIC Number

If using the Elevation Certificate to obtain NFIP flood insurance, affix at least 2 building photographs below according to the instructions for Item A6. Identify all photographs with date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8. If submitting more photographs than will fit on this page, use the Continuation Page.



Photo One

Photo One Caption North & East Side of Structure- Looking Southwest

Clear Photo One



Photo Two

Photo Two Caption South Side of Structure- Looking North

Clear Photo Two



JC Wilson Engineering & Consulting, LLC
Innovative - Practical - Strategic

LETTER

DATE: JANUARY 5, 2020

Reference: 1905

Scott & Rhonda Durrer
96673 Hwy 42S
Coquille, OR 97423

Subject: Hydrologic Evaluation, 96673 Hwy 42S, Coquille, OR

Dear Scott & Rhonda:

JCW met with you at this property on 6-29-19 to assess hydrological impacts of proposed improvements at this location. The property at the address listed in subject line is designated by Coos County to be within an AE zone on the communities FIRM.

Proposed building and facility maintenance/improvements at this site include a 1,050-sf addition to be placed over an existing concrete foundation on westside of the existing residence at the elevation of the house main floor, more than 6' above ground elevation. Maintenance will also be performed to an existing dock structure (no impervious surface to be added for dock maintenance).

JCW has performed hydrologic calculations at this location and surrounding drainage areas using the Santa Barbara Unit Hydrograph (SBUH) method for the 2-yr and 100-yr rainfall events to determine impacts to rise in water surface elevation that could be caused by any development or added impervious surfaces. A conservative area of 160 acres surrounding this property was used for analysis (minimal impacts would be less if a larger area was utilized). Results in the attached hydrologic calculations show that there is 0.00' elevation rise for the 2-yr rainfall event, and a 0.00' rise for the 100-yr event. This zero rise is consistent with 0.0' allowed as outlined within SECTION 4.11.253 BEFORE REGULATORY FLOODWAY and Section 4.11.254 FLOODWAY of Coos County Code for development within a floodway.

We are also including a Site Plan/Basin Map in (Attachment 1) and have included SBUH hydrologic calculations in (Attachment 2). Coos County hazard maps are shown for this area in (Attachment 3).

Please feel free to contact me at 541-266-9890 if you have any questions.

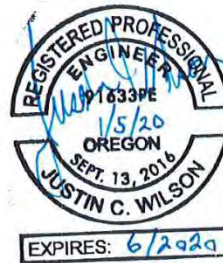
Respectfully submitted,

JC Wilson Engineering & Consulting, LLC

Justin C. Wilson, PE
Principal Engineer

JCW:jcw

- Attachments: 1. Site Plan/Basin Map
2. Hydrologic Calculations
3. County Hazard Maps



Site Plan/Basin Map **1**

C:\PROJECTS\1905-Durrer Addition\REPORTS\HYDRAULIC ANALYSIS REPORT\1905- HYDRO UPDATE LETTER.docx

HYDROLOGICAL ASSESSMENT

PARCEL #28S13W02-1100



HYDROLOGIC ANALYSIS:

2-IN RAIN RATE = 1.36"
 100-YR STORM RAINFALL = 5.97"
 PERCOLATION:
 TOTAL STORM AREA = 6.8422E+07
 WATERSHED AREA = 80233E+07
 PERFORMS AREA = 6.0728E+07
 2-IN RAINFALL VOLUME = 14.307+AF
 2-IN RAINFALL DEPTH = 18.91+DS
 100-YR PEAK RAINFALL VOLUME = 41.669+AF
 100-YR PEAK RAINFALL = 78.62+DS
 100-YR RAINFALL DEPTH = 3.12C
 SPECULATED LOSS:
 ADDED STORM AREA = 1.20E+07
 TOTAL STORM AREA = 6.9622E+07
 WATERSHED AREA = 82434E+07
 PERFORMS AREA = 6.0728E+07
 2-IN RAINFALL VOLUME = 14.307+AF
 2-IN RAINFALL DEPTH = 18.91+DS
 100-YR PEAK RAINFALL VOLUME = 41.669+AF
 100-YR PEAK RAINFALL = 78.62+DS
 100-YR RAINFALL DEPTH = 3.12C
 RESULTS:
 2-IN RAIN RAINFALL = 14.307"
 100-YR DEPTH RAINFALL = 18.91"

TOPOGRAPHIC NOTES:
 1. EXISTING TOPOGRAPHIC SURFACE MODEL IS DERIVED FROM DIGITAL DATA AND IS LIMITED IN THE PROJECT TO THE AREA SHOWN ON THIS MAP. ANY CHANGES TO THE DATA WILL BE MADE BY THE CLIENT. THE TOPOGRAPHY DATA IS PROVIDED AS-IS AND IS NOT GUARANTEED TO BE ACCURATE. THE CLIENT IS RESPONSIBLE FOR VERIFYING THE DATA BEFORE USE.
 2. DERIVED DATA IS PROVIDED AS-IS AND IS NOT GUARANTEED TO BE ACCURATE. THE CLIENT IS RESPONSIBLE FOR VERIFYING THE DATA BEFORE USE.

REVISION DATE BY	DATE: 10/08 SCALE: AS SHOWN DESIGNED BY: JCW DRAWN BY: JCW CHECKED: JCW REVIEW: COOS COUNTY	<p> JC WILSON ENGINEERING & CONSULTING, LLC FLOOR 102 NORTH BEASLEY DRIVE WILSON, OREGON 97150 WWW.JCWILSONCONSULTING.COM P: (503) 654-4741 </p>	BASIN MAP HYDROLOGIC ASSESSMENT COQUILLE, OR DURRER ADDITION
	BM		

Hydrologic Calculations **2**

C:\PROJECTS\1905-Durrer Addition\REPORTS\HYDRAULIC ANALYSIS REPORT\1905- HYDRO UPDATE LETTER.docx

1905 Durrer - PRE

Type IA 24-hr 2-yr Rainfall=3.80"

Prepared by {enter your company name here}

Printed 1/5/2020

HydroCAD® 10.00-25 s/n 11044 © 2019 HydroCAD Software Solutions LLC

Page 1

Summary for Subcatchment 1S: ROADWAY

Runoff = 18.91 cfs @ 8.11 hrs, Volume= 14.307 af, Depth> 1.08"

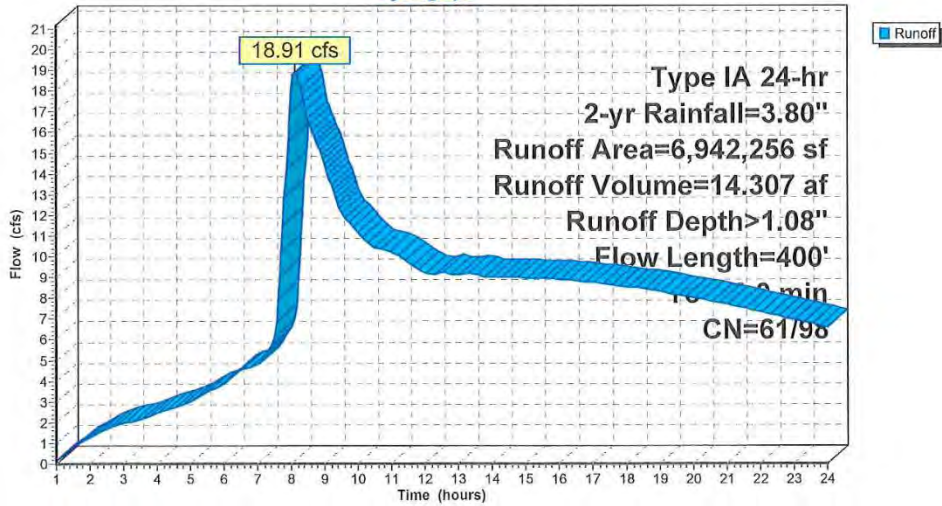
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2-yr Rainfall=3.80"

Area (sf)	CN	Description
6,012,661	61	>75% Grass cover, Good, HSG B
929,595	98	Paved parking, HSG B
6,942,256	66	Weighted Average
6,012,661	61	86.61% Pervious Area
929,595	98	13.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	300	0.0100	0.20		Sheet Flow, GRASS1 Grass: Short n= 0.150 P2= 5.00"
1.1	100	0.0150	1.53		Sheet Flow, IMPERV Smooth surfaces n= 0.011 P2= 5.00"
26.0	400	Total			

Subcatchment 1S: ROADWAY

Hydrograph



1905 Durrer - PRE

Type IA 24-hr 2-yr Rainfall=3.80"

Prepared by {enter your company name here}

Printed 1/5/2020

HydroCAD® 10.00-25 s/n 11044 © 2019 HydroCAD Software Solutions LLC

Page 2

Hydrograph for Subcatchment 1S: ROADWAY

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
1.00	0.08	0.00	0.01	0.17
1.50	0.13	0.00	0.03	0.77
2.00	0.19	0.00	0.06	1.27
2.50	0.25	0.00	0.11	1.69
3.00	0.31	0.00	0.15	1.95
3.50	0.37	0.00	0.21	2.12
4.00	0.44	0.00	0.26	2.43
4.50	0.51	0.00	0.33	2.69
5.00	0.59	0.00	0.40	3.02
5.50	0.68	0.00	0.49	3.48
6.00	0.78	0.00	0.58	3.88
6.50	0.90	0.00	0.69	4.56
7.00	1.02	0.00	0.81	4.83
7.50	1.18	0.00	0.96	6.18
8.00	1.62	0.02	1.39	18.18
8.50	1.82	0.04	1.60	16.68
9.00	1.98	0.07	1.75	14.47
9.50	2.09	0.09	1.86	12.19
10.00	2.19	0.11	1.97	11.19
10.50	2.28	0.14	2.06	10.43
11.00	2.37	0.16	2.14	10.19
11.50	2.45	0.18	2.22	9.76
12.00	2.52	0.20	2.29	9.22
12.50	2.60	0.22	2.37	9.25
13.00	2.66	0.25	2.43	9.09
13.50	2.73	0.27	2.50	9.15
14.00	2.80	0.29	2.57	8.98
14.50	2.86	0.31	2.63	8.99
15.00	2.92	0.34	2.69	8.98
15.50	2.98	0.36	2.75	8.94
16.00	3.04	0.38	2.81	8.89
16.50	3.10	0.40	2.87	8.83
17.00	3.16	0.43	2.93	8.75
17.50	3.21	0.45	2.98	8.66
18.00	3.27	0.47	3.03	8.55
18.50	3.32	0.49	3.09	8.44
19.00	3.37	0.52	3.14	8.31
19.50	3.42	0.54	3.19	8.17
20.00	3.47	0.56	3.23	8.02
20.50	3.51	0.58	3.28	7.87
21.00	3.56	0.60	3.33	7.70
21.50	3.60	0.62	3.37	7.53
22.00	3.65	0.64	3.41	7.35
22.50	3.69	0.66	3.45	7.16
23.00	3.73	0.68	3.49	6.97
23.50	3.76	0.70	3.53	6.76
24.00	3.80	0.71	3.57	6.56

1905 Durrer - PRE

Type IA 24-hr 100-yr Rainfall=6.90"

Prepared by {enter your company name here}

Printed 1/5/2020

HydroCAD® 10.00-25 s/n 11044 © 2019 HydroCAD Software Solutions LLC

Page 3

Summary for Subcatchment 1S: ROADWAY

Runoff = 78.62 cfs @ 8.06 hrs, Volume= 41.499 af, Depth> 3.12"

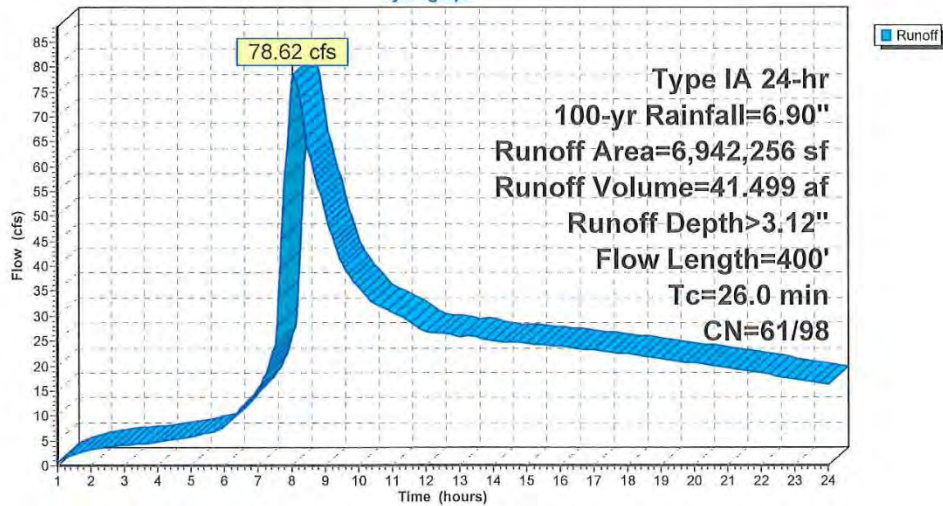
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100-yr Rainfall=6.90"

Area (sf)	CN	Description
6,012,661	61	>75% Grass cover, Good, HSG B
929,595	98	Paved parking, HSG B
6,942,256	66	Weighted Average
6,012,661	61	86.61% Pervious Area
929,595	98	13.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	300	0.0100	0.20		Sheet Flow, GRASS1 Grass: Short n= 0.150 P2= 5.00"
1.1	100	0.0150	1.53		Sheet Flow, IMPERV Smooth surfaces n= 0.011 P2= 5.00"
26.0	400	Total			

Subcatchment 1S: ROADWAY

Hydrograph



1905 Durrer - PRE

Type IA 24-hr 100-yr Rainfall=6.90"

Prepared by {enter your company name here}

Printed 1/5/2020

HydroCAD® 10.00-25 s/n 11044 © 2019 HydroCAD Software Solutions LLC

Page 4

Hydrograph for Subcatchment 1S: ROADWAY

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
1.00	0.14	0.00	0.03	0.90
1.50	0.24	0.00	0.10	2.33
2.00	0.35	0.00	0.18	3.19
2.50	0.46	0.00	0.28	3.84
3.00	0.57	0.00	0.38	4.17
3.50	0.68	0.00	0.48	4.36
4.00	0.80	0.00	0.60	4.86
4.50	0.93	0.00	0.72	5.26
5.00	1.08	0.00	0.87	5.82
5.50	1.24	0.00	1.03	6.62
6.00	1.42	0.00	1.20	7.98
6.50	1.64	0.02	1.41	11.86
7.00	1.85	0.05	1.63	15.49
7.50	2.14	0.10	1.91	24.36
8.00	2.93	0.34	2.70	76.87
8.50	3.31	0.49	3.08	63.63
9.00	3.59	0.61	3.35	50.96
9.50	3.79	0.71	3.56	40.62
10.00	3.98	0.80	3.75	35.77
10.50	4.15	0.89	3.91	32.35
11.00	4.31	0.97	4.07	30.86
11.50	4.45	1.05	4.21	29.02
12.00	4.58	1.13	4.35	26.96
12.50	4.71	1.20	4.48	26.68
13.00	4.84	1.27	4.60	25.87
13.50	4.96	1.35	4.72	25.75
14.00	5.08	1.42	4.84	25.01
14.50	5.19	1.49	4.96	24.79
15.00	5.31	1.56	5.07	24.53
15.50	5.42	1.63	5.18	24.23
16.00	5.53	1.70	5.29	23.90
16.50	5.63	1.76	5.39	23.55
17.00	5.74	1.83	5.50	23.18
17.50	5.84	1.90	5.60	22.78
18.00	5.93	1.96	5.69	22.36
18.50	6.03	2.02	5.79	21.93
19.00	6.12	2.09	5.88	21.48
19.50	6.21	2.15	5.97	21.01
20.00	6.30	2.21	6.06	20.53
20.50	6.38	2.27	6.14	20.04
21.00	6.46	2.32	6.23	19.53
21.50	6.54	2.38	6.30	19.01
22.00	6.62	2.43	6.38	18.48
22.50	6.69	2.48	6.45	17.94
23.00	6.77	2.53	6.53	17.39
23.50	6.83	2.58	6.59	16.83
24.00	6.90	2.63	6.66	16.26

1905 Durrer - POST

Prepared by {enter your company name here}
 HydroCAD® 10.00-25 s/n 11044 © 2019 HydroCAD Software Solutions LLC

Type IA 24-hr 2-yr Rainfall=3.80"

Printed 1/5/2020

Page 1

Summary for Subcatchment 1S: ROADWAY

Runoff = 18.91 cfs @ 8.11 hrs, Volume= 14.307 af, Depth> 1.08"

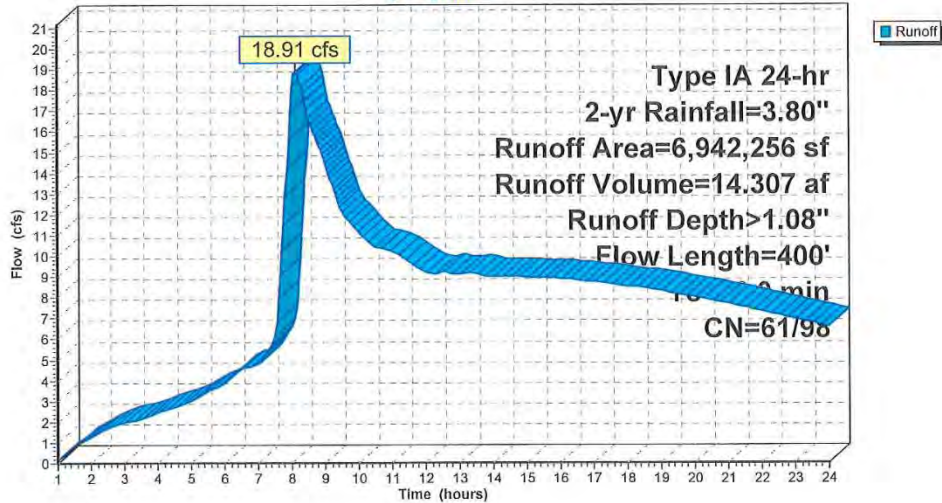
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
 Type IA 24-hr 2-yr Rainfall=3.80"

Area (sf)	CN	Description
6,012,661	61	>75% Grass cover, Good, HSG B
928,545	98	Paved roads w/curbs & sewers, HSG B
1,050	98	Roofs, HSG B
6,942,256	66	Weighted Average
6,012,661	61	86.61% Pervious Area
929,595	98	13.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	300	0.0100	0.20		Sheet Flow, GRASS1 Grass: Short n= 0.150 P2= 5.00"
1.1	100	0.0150	1.53		Sheet Flow, IMPERV Smooth surfaces n= 0.011 P2= 5.00"
26.0	400	Total			

Subcatchment 1S: ROADWAY

Hydrograph



1905 Durrer - POST

Type IA 24-hr 2-yr Rainfall=3.80"

Prepared by {enter your company name here}

Printed 1/5/2020

HydroCAD® 10.00-25 s/n 11044 © 2019 HydroCAD Software Solutions LLC

Page 2

Hydrograph for Subcatchment 1S: ROADWAY

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
1.00	0.08	0.00	0.01	0.17
1.50	0.13	0.00	0.03	0.77
2.00	0.19	0.00	0.06	1.27
2.50	0.25	0.00	0.11	1.69
3.00	0.31	0.00	0.15	1.95
3.50	0.37	0.00	0.21	2.12
4.00	0.44	0.00	0.26	2.43
4.50	0.51	0.00	0.33	2.69
5.00	0.59	0.00	0.40	3.02
5.50	0.68	0.00	0.49	3.48
6.00	0.78	0.00	0.58	3.88
6.50	0.90	0.00	0.69	4.56
7.00	1.02	0.00	0.81	4.83
7.50	1.18	0.00	0.96	6.18
8.00	1.62	0.02	1.39	18.18
8.50	1.82	0.04	1.60	16.68
9.00	1.98	0.07	1.75	14.47
9.50	2.09	0.09	1.86	12.19
10.00	2.19	0.11	1.97	11.19
10.50	2.28	0.14	2.06	10.43
11.00	2.37	0.16	2.14	10.19
11.50	2.45	0.18	2.22	9.76
12.00	2.52	0.20	2.29	9.22
12.50	2.60	0.22	2.37	9.25
13.00	2.66	0.25	2.43	9.09
13.50	2.73	0.27	2.50	9.15
14.00	2.80	0.29	2.57	8.98
14.50	2.86	0.31	2.63	8.99
15.00	2.92	0.34	2.69	8.98
15.50	2.98	0.36	2.75	8.94
16.00	3.04	0.38	2.81	8.89
16.50	3.10	0.40	2.87	8.83
17.00	3.16	0.43	2.93	8.75
17.50	3.21	0.45	2.98	8.66
18.00	3.27	0.47	3.03	8.55
18.50	3.32	0.49	3.09	8.44
19.00	3.37	0.52	3.14	8.31
19.50	3.42	0.54	3.19	8.17
20.00	3.47	0.56	3.23	8.02
20.50	3.51	0.58	3.28	7.87
21.00	3.56	0.60	3.33	7.70
21.50	3.60	0.62	3.37	7.53
22.00	3.65	0.64	3.41	7.35
22.50	3.69	0.66	3.45	7.16
23.00	3.73	0.68	3.49	6.97
23.50	3.76	0.70	3.53	6.76
24.00	3.80	0.71	3.57	6.56

1905 Durrer - POST

Type IA 24-hr 100-yr Rainfall=6.90"

Prepared by {enter your company name here}

Printed 1/5/2020

HydroCAD® 10.00-25 s/n 11044 © 2019 HydroCAD Software Solutions LLC

Page 3

Summary for Subcatchment 1S: ROADWAY

Runoff = 78.62 cfs @ 8.06 hrs, Volume= 41.499 af, Depth> 3.12"

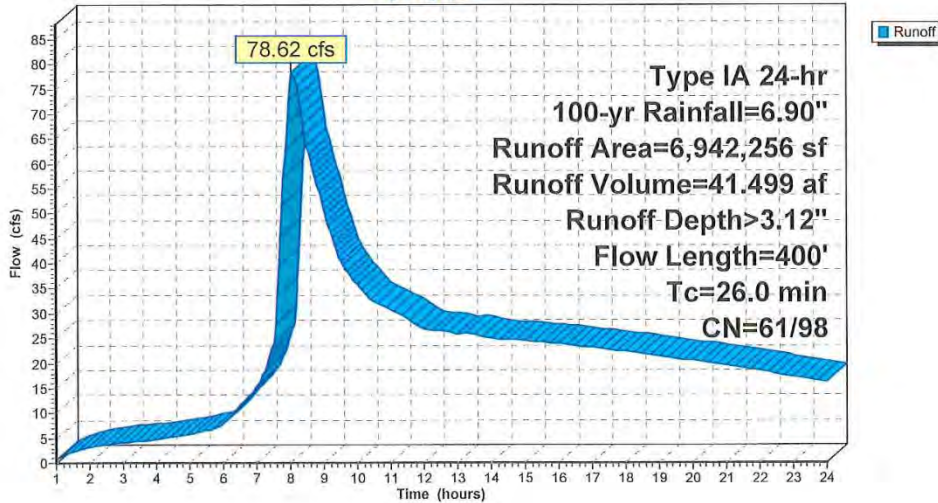
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100-yr Rainfall=6.90"

Area (sf)	CN	Description
6,012,661	61	>75% Grass cover, Good, HSG B
928,545	98	Paved roads w/curbs & sewers, HSG B
1,050	98	Roofs, HSG B
6,942,256	66	Weighted Average
6,012,661	61	86.61% Pervious Area
929,595	98	13.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	300	0.0100	0.20		Sheet Flow, GRASS1 Grass: Short n= 0.150 P2= 5.00"
1.1	100	0.0150	1.53		Sheet Flow, IMPERV Smooth surfaces n= 0.011 P2= 5.00"
26.0	400	Total			

Subcatchment 1S: ROADWAY

Hydrograph



1905 Durrer - POST

Type IA 24-hr 100-yr Rainfall=6.90"

Prepared by {enter your company name here}

Printed 1/5/2020

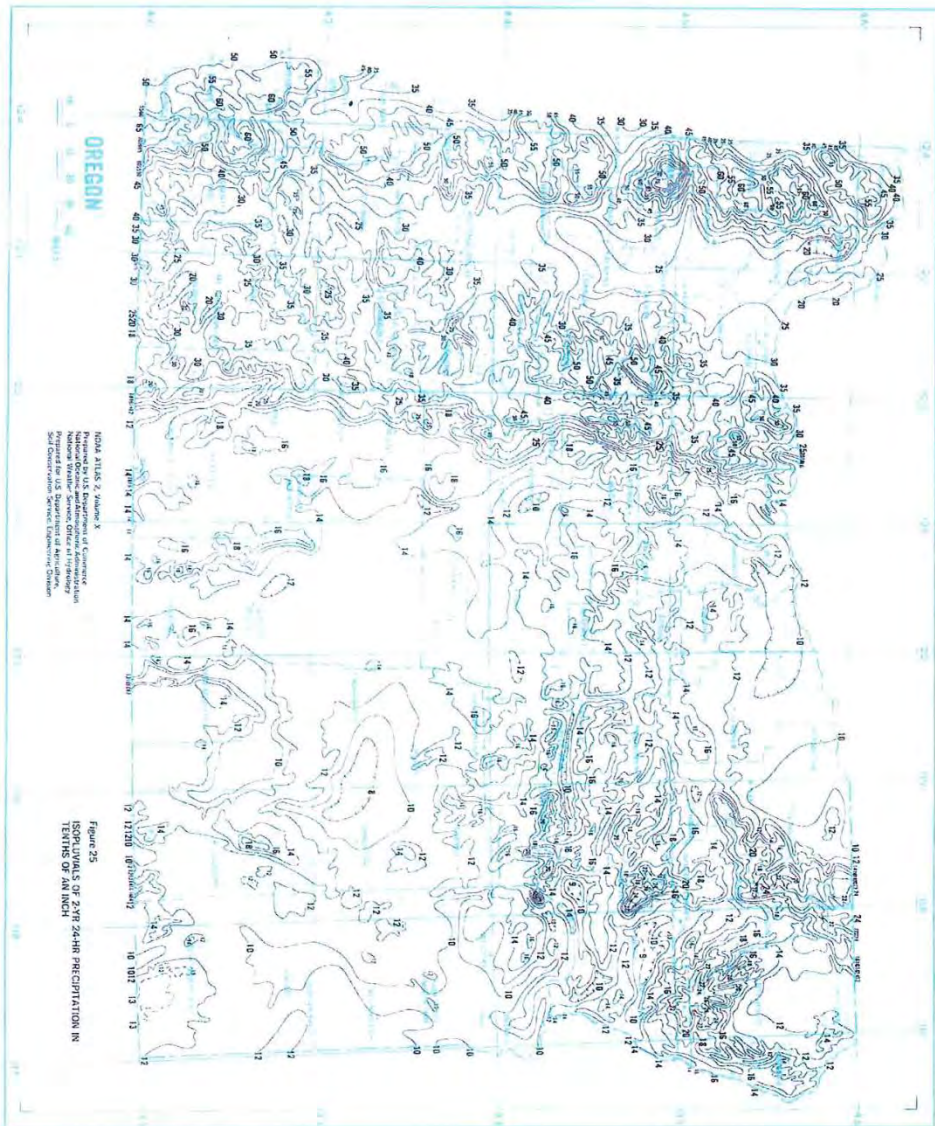
HydroCAD® 10.00-25 s/n 11044 © 2019 HydroCAD Software Solutions LLC

Page 4

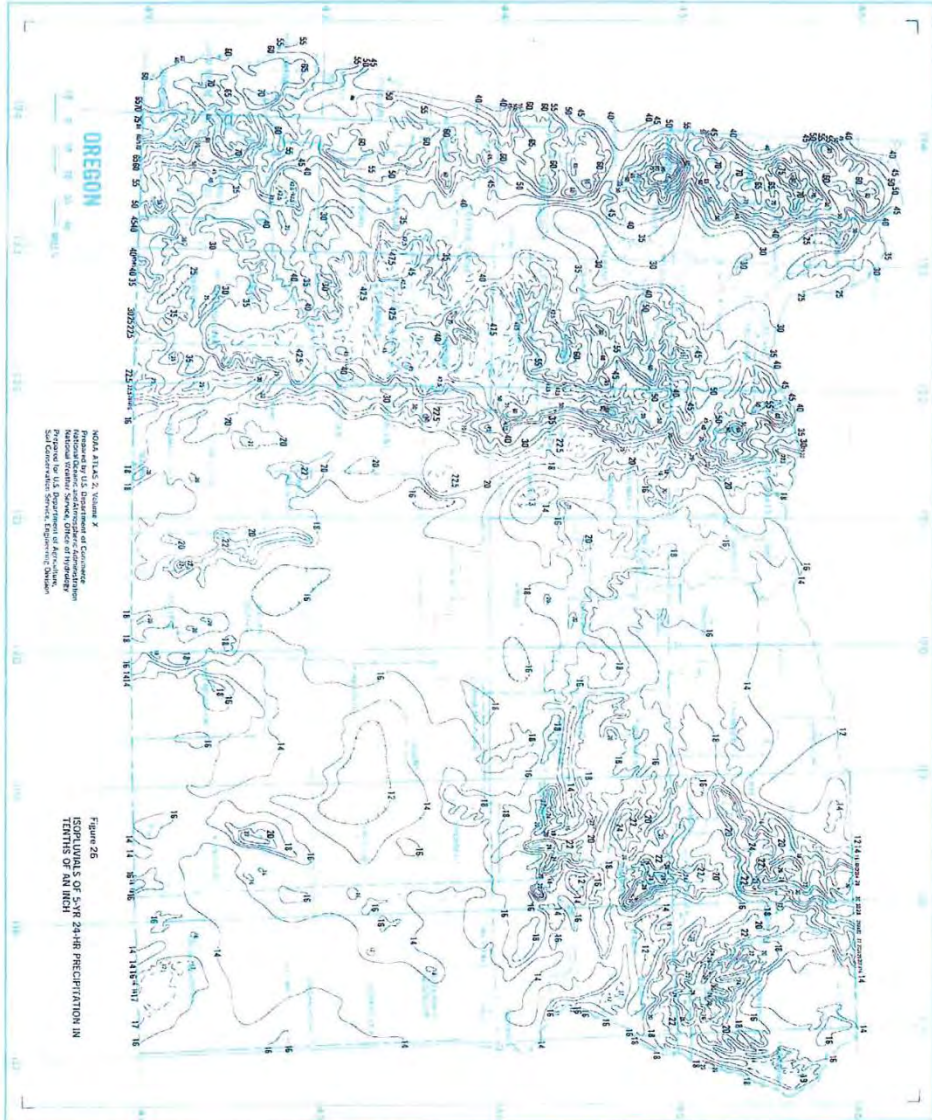
Hydrograph for Subcatchment 1S: ROADWAY

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
1.00	0.14	0.00	0.03	0.90
1.50	0.24	0.00	0.10	2.33
2.00	0.35	0.00	0.18	3.19
2.50	0.46	0.00	0.28	3.84
3.00	0.57	0.00	0.38	4.17
3.50	0.68	0.00	0.48	4.36
4.00	0.80	0.00	0.60	4.86
4.50	0.93	0.00	0.72	5.26
5.00	1.08	0.00	0.87	5.82
5.50	1.24	0.00	1.03	6.62
6.00	1.42	0.00	1.20	7.98
6.50	1.64	0.02	1.41	11.86
7.00	1.85	0.05	1.63	15.49
7.50	2.14	0.10	1.91	24.36
8.00	2.93	0.34	2.70	76.87
8.50	3.31	0.49	3.08	63.63
9.00	3.59	0.61	3.35	50.96
9.50	3.79	0.71	3.56	40.62
10.00	3.98	0.80	3.75	35.77
10.50	4.15	0.89	3.91	32.35
11.00	4.31	0.97	4.07	30.86
11.50	4.45	1.05	4.21	29.02
12.00	4.58	1.13	4.35	26.96
12.50	4.71	1.20	4.48	26.68
13.00	4.84	1.27	4.60	25.87
13.50	4.96	1.35	4.72	25.75
14.00	5.08	1.42	4.84	25.01
14.50	5.19	1.49	4.96	24.79
15.00	5.31	1.56	5.07	24.53
15.50	5.42	1.63	5.18	24.23
16.00	5.53	1.70	5.29	23.90
16.50	5.63	1.76	5.39	23.55
17.00	5.74	1.83	5.50	23.18
17.50	5.84	1.90	5.60	22.78
18.00	5.93	1.96	5.69	22.36
18.50	6.03	2.02	5.79	21.93
19.00	6.12	2.09	5.88	21.48
19.50	6.21	2.15	5.97	21.01
20.00	6.30	2.21	6.06	20.53
20.50	6.38	2.27	6.14	20.04
21.00	6.46	2.32	6.23	19.53
21.50	6.54	2.38	6.30	19.01
22.00	6.62	2.43	6.38	18.48
22.50	6.69	2.48	6.45	17.94
23.00	6.77	2.53	6.53	17.39
23.50	6.83	2.58	6.59	16.83
24.00	6.90	2.63	6.66	16.26

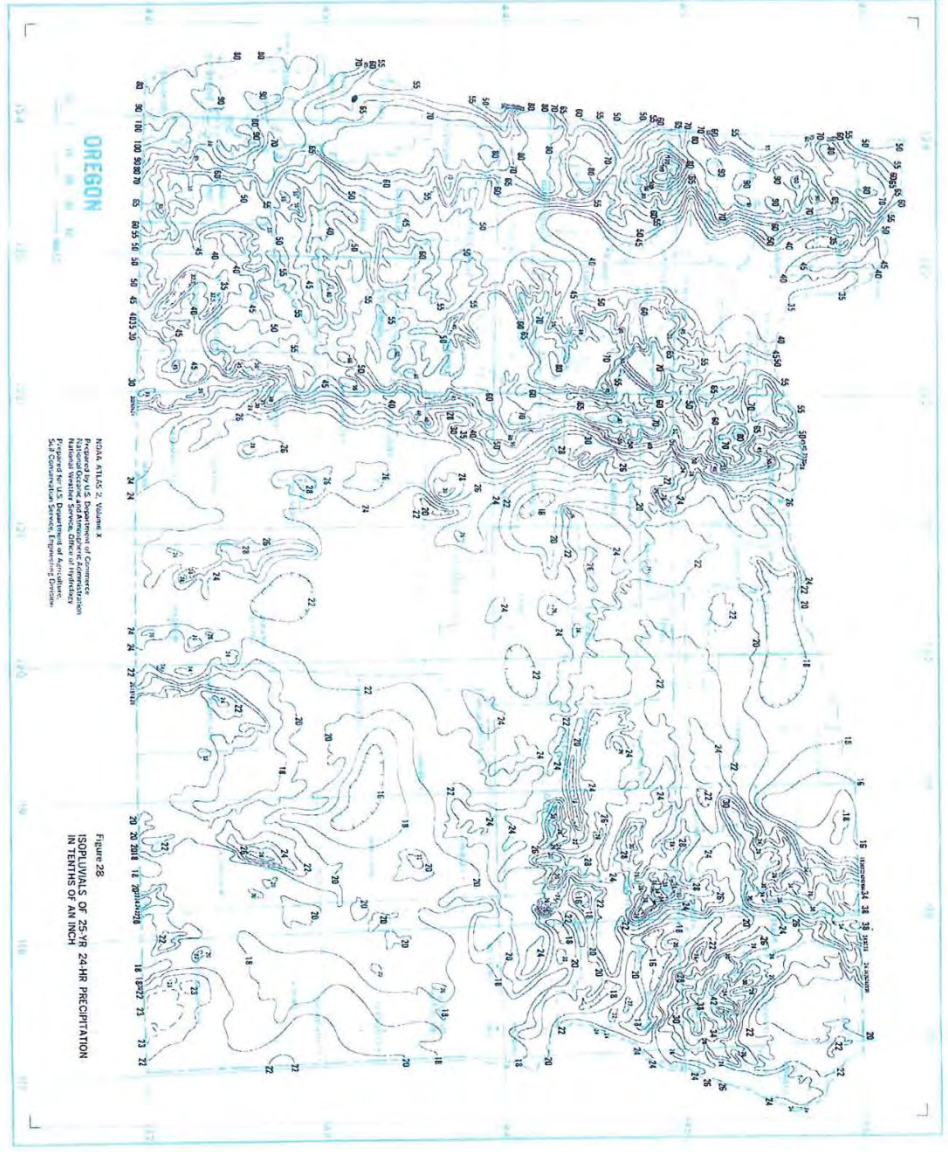
2 YR
COWVILLE = 3.8"/24 HR



5 YR
CONVILT = 4.9" / 24 HR



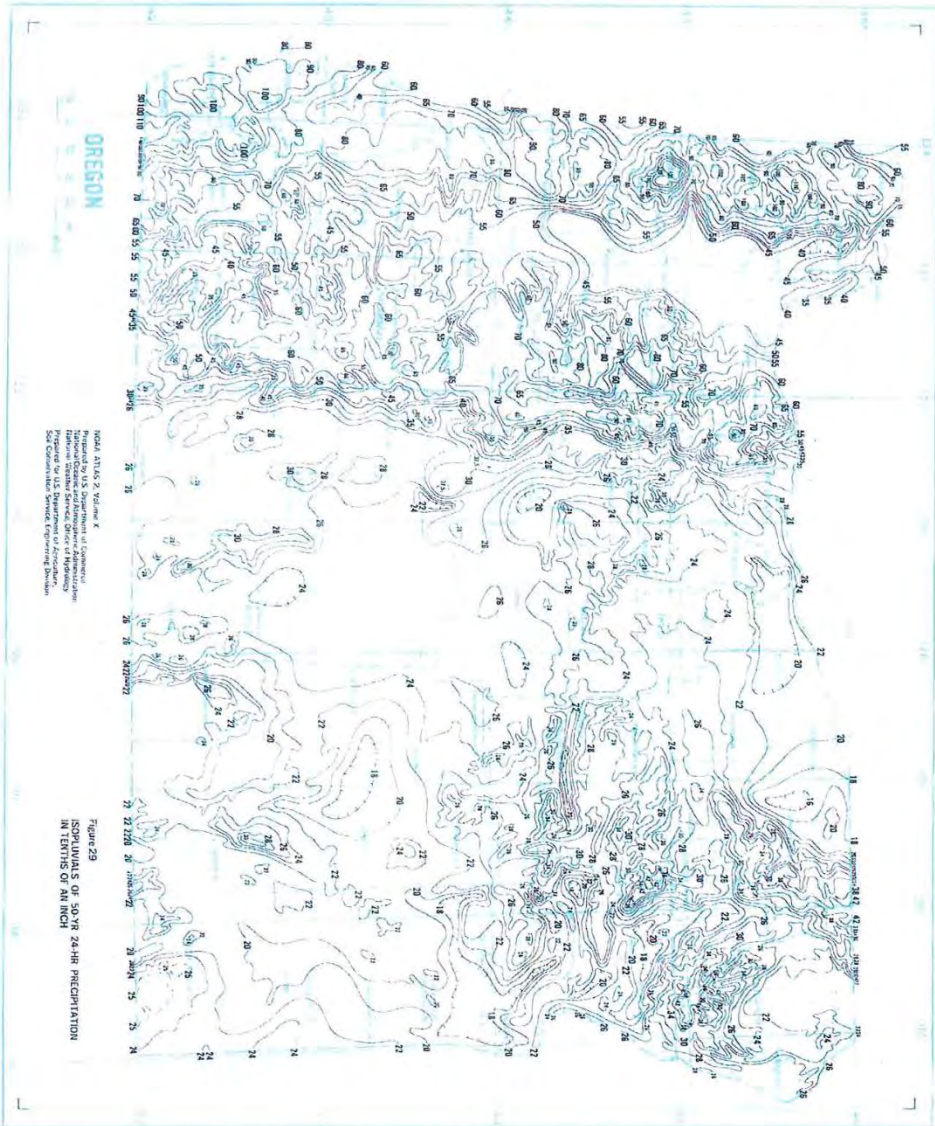
2.5 HR
Contour = 6.0" / 2.5 HR



NOTE: FIGURE 2, Volume 3
Prepared by U.S. Department of Commerce
National Oceanic and Atmospheric Administration
Prepared for U.S. Department of Agriculture
Soil Conservation Service, Engineering Division

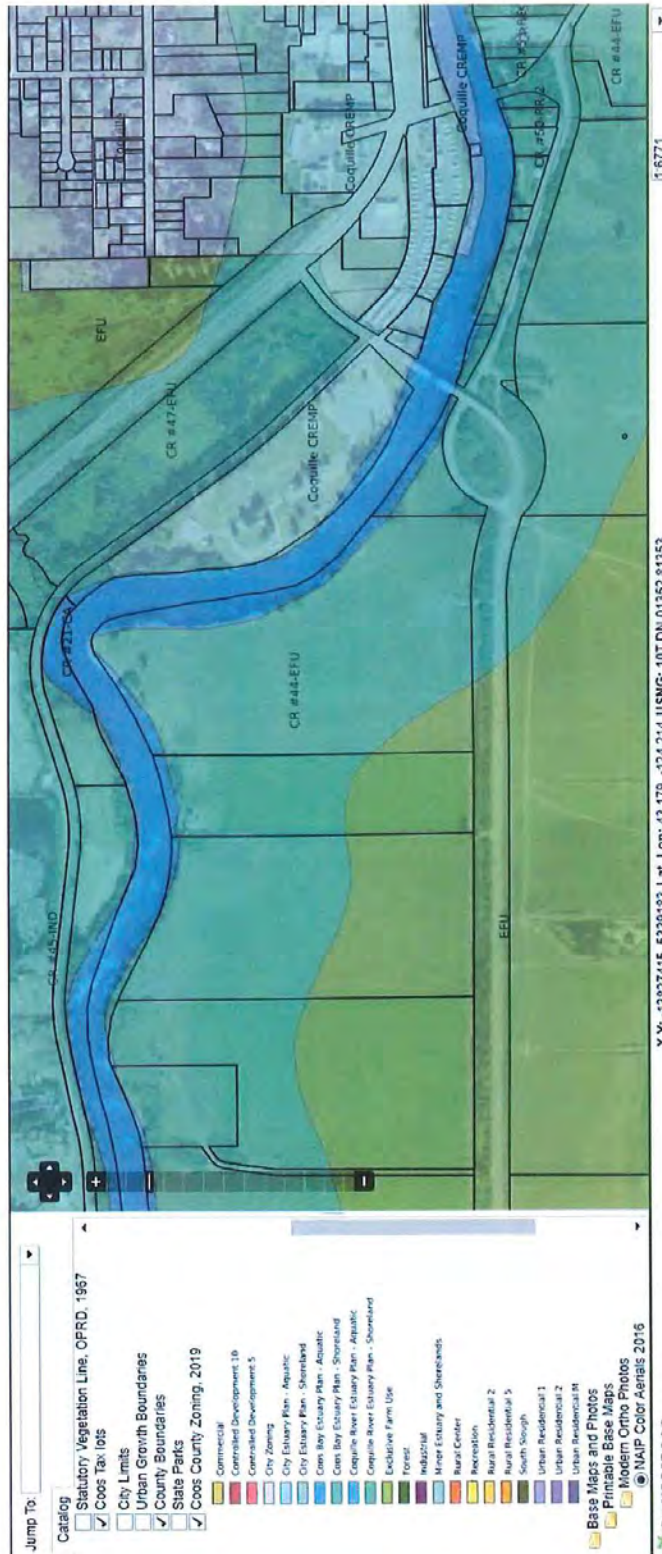
Figure 2B
ISOBARS OF 2.5 HR 24 HR PRECIPITATION
IN TENTHS OF AN INCH

50 YR
CROWVILLE = 6.5" / 24 HR



Coos County Maps **3**

C:\PROJECTS\1905-Durrer Addition\REPORTS\HYDRAULIC ANALYSIS REPORT\1905- HYDRO UPDATE LETTER.docx





JC Wilson Engineering & Consulting, LLC
Innovative - Practical - Strategic

LETTER

DATE: OCTOBER 9, 2019

Reference: 1905

Scott & Rhonda Durrer
96673 Hwy 42S
Coquille, OR 97423

Subject: Geologic Hazard Evaluation, 96673 Hwy 42S, Coquille, OR

Dear Scott & Rhonda:

JCW met with you at this property on 6-29-19 to assess any potential geologic hazards at this location. The property at the address listed in subject line is designated by Coos County to have very high liquefaction susceptibility throughout the region of this parcel, as shown on DOGAMI map images (Attachment 2).


JCW did not observe or witness any signs of soil failures or geologic hazards, on or near the proposed future building site. **It is our opinion, per criteria found under Section 5.11.100.2.c, that Liquefaction Hazards do not exist at this proposed roof addition location, over an existing concrete slab on this parcel.**

We are also including some site photos with Hazard Maps in (Attachment 2) and have included a generated USDA Soil Report that corresponds with this and neighboring properties as (Attachment 3). A project site map with proposed delineated roof addition site is shown as (Attachment 1).

Please feel free to contact me at 541-266-9890 if you have any questions.

Respectfully submitted,

JC Wilson Engineering & Consulting, LLC


Justin C. Wilson, PE
Principal Engineer

JCW:jcw

- Attachments:
1. Site Plan
 2. Site Photos
 3. USDA Soils Report



Site Plan **1**

C:\PROJECTS\1905-Durrer Addition\REPORTS\GEO-ASSESSMENT REPORT\1905 - Geo Assess LETTER.docx

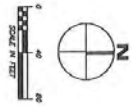
GEOLOGIC ASSESSMENT

PARCEL #28S13W02-1100



TOPOGRAPHIC NOTES:

1. EXISTING TOPOGRAPHIC SURFACE, PARCEL & ADJACENT AREAS ARE SHOWN AS DOTTED LINES. ALL SURFACE ELEVATIONS ARE BASED ON THE DATUM OF 1985. ELEVATIONS MAY VARY SLIGHTLY FROM ACTUAL DUE TO TERRAIN CHANGES AND SETTING FROM ACTUAL SURFACE.
2. PROPOSED SURFACE, CONTOUR, AND DRAINAGE MARK ARE SHOWN AS DASHED LINES AS DISCUSSED ABOVE IN ITEM 1.



PROJECT: **SP**

DATE	REVISION


**JC WILSON
ENGINEERING &
CONSULTING, LLC**
11100 N. 110th St. Suite 100
Eden Prairie, MN 55324
www.jcwilsonengineering.com
P (952) 553-6732

SITE PLAN
GEOLOGIC ASSESSMENT
COQUILLE, OR
GEORGE MONTGOMERY

Site Photos & Geo Maps

2

JC Wilson Engineering & Consulting, LLC - PO Box 162, North Bend, OR 97459













USDA Soils Report **3**

C:\PROJECTS\1905-Durrer Addition\REPORTS\GEO-ASSESSMENT REPORT\1905 - Geo Assess LETTER.docx



A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Coos County, Oregon



October 8, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface	2
How Soil Surveys Are Made	5
Soil Map	8
Soil Map (Durrer Addition).....	9
Legend.....	10
Map Unit Legend (Durrer Addition).....	11
Map Unit Descriptions (Durrer Addition).....	11
Coos County, Oregon.....	13
12—Coquille silt loam.....	13
34—Langlois silty clay loam.....	14
40—Nehalem silt loam.....	15
41—Nestucca silt loam.....	17
57—Udorthents, level.....	18
62—Willanch fine sandy loam.....	19
W—Water.....	20
Soil Information for All Uses	21
Soil Reports.....	21
AOI Inventory.....	21
Water Quality Index (WQI) Soil Factors (Durrer Addition).....	21
Soil Physical Properties.....	24
Engineering Properties (Durrer Addition).....	24
Physical Soil Properties (Durrer Addition).....	29
References	34

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



MAP LEGEND

<p>Area of Interest (AOI)</p> <ul style="list-style-type: none"> Area of Interest (AOI) <p>Soils</p> <ul style="list-style-type: none"> Soil Map Unit Polygons Soil Map Unit Lines Soil Map Unit Points <p>Special Point Features</p> <ul style="list-style-type: none"> Blowout Borrow Pit Clay Spot Closed Depression Gravel Pit Gravelly Spot Landfill Lava Flow Marsh or swamp Mine or Quarry Miscellaneous Water Perennial Water Rock Outcrop Saline Spot Sandy Spot Severely Eroded Spot Sinkhole Slide or Slip Sodic Spot 	<ul style="list-style-type: none"> Spoil Area Stony Spot Very Stony Spot Wet Spot Other Special Line Features <p>Water Features</p> <ul style="list-style-type: none"> Streams and Canals <p>Transportation</p> <ul style="list-style-type: none"> Rails Interstate Highways US Routes Major Roads Local Roads <p>Background</p> <ul style="list-style-type: none"> Aerial Photography
---	---

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.sc.egov.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
 Survey Area Data: Version 14, Sep 11, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Sep 15, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Durrer Addition)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
12	Coquille silt loam	93.1	36.7%
34	Langlois silty clay loam	8.9	3.5%
40	Nehalem silt loam	59.0	23.2%
41	Nestucca silt loam	37.9	15.0%
57	Udorthents, level	12.0	4.7%
62	Willanch fine sandy loam	14.1	5.6%
W	Water	28.6	11.3%
Totals for Area of Interest		253.7	100.0%

Map Unit Descriptions (Durrer Addition)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

Custom Soil Resource Report

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Coos County, Oregon

12—Coquille silt loam

Map Unit Setting

National map unit symbol: 21m5
Elevation: 0 to 40 feet
Mean annual precipitation: 50 to 80 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Coquille and similar soils: 75 percent
Minor components: 19 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Coquille

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 14 inches: silt loam
H2 - 14 to 36 inches: silty clay loam
H3 - 36 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Available water storage in profile: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Forage suitability group: Very Poorly Drained (G004AY019OR)
Hydric soil rating: Yes

Minor Components

Langlois

Percent of map unit: 7 percent
Landform: Flood plains

Custom Soil Resource Report

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Chetco

Percent of map unit: 6 percent
Landform: Flood plains, deltas
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Clatsop

Percent of map unit: 6 percent
Landform: Tidal flats
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

34—Langlois silty clay loam

Map Unit Setting

National map unit symbol: 21nm
Elevation: 0 to 40 feet
Mean annual precipitation: 50 to 80 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Langlois and similar soils: 80 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Langlois

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 10 inches: silty clay loam
H2 - 10 to 28 inches: silty clay
H3 - 28 to 60 inches: clay

Custom Soil Resource Report

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Forage suitability group: Very Poorly Drained (G004AY019OR)
Hydric soil rating: Yes

Minor Components

Chetco

Percent of map unit: 7 percent
Landform: Flood plains, deltas
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Coquille

Percent of map unit: 6 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

40—Nehalem silt loam

Map Unit Setting

National map unit symbol: 21p0
Elevation: 0 to 40 feet
Mean annual precipitation: 50 to 80 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Nehalem and similar soils: 80 percent
Minor components: 13 percent

Custom Soil Resource Report

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

Description of Nehalem

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 29 inches: silt loam
H3 - 29 to 60 inches: silty clay loam

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: About 36 to 72 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B
Forage suitability group: Well Drained <15% Slopes (G004AY014OR)
Hydric soil rating: No

Minor Components

Coquille

Percent of map unit: 7 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Langlois

Percent of map unit: 6 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

41—Nestucca silt loam

Map Unit Setting

National map unit symbol: 21p1
Elevation: 0 to 40 feet
Mean annual precipitation: 50 to 80 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Nestucca and similar soils: 80 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nestucca

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 14 inches: silt loam
H2 - 14 to 40 inches: silty clay loam
H3 - 40 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Forage suitability group: Somewhat Poorly Drained (G004AY017OR)
Hydric soil rating: No

Custom Soil Resource Report

Minor Components

Chetco

Percent of map unit: 4 percent
Landform: Flood plains, deltas
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Coquille

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Langlois

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

57—Udorthents, level

Map Unit Composition

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

Description of Udorthents

Setting

Landform: Flood plains, tidal flats, marshes
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium, dredging spoil, dune sand, and wood chips

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

62—Willanch fine sandy loam

Map Unit Setting

National map unit symbol: 21qg
Elevation: 10 to 40 feet
Mean annual precipitation: 50 to 80 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Willanch and similar soils: 75 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Willanch

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 13 inches: fine sandy loam
H2 - 13 to 35 inches: sandy loam
H3 - 35 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water storage in profile: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Forage suitability group: Poorly Drained (G004AY018OR)
Hydric soil rating: Yes

W—Water

Map Unit Composition

Water: 100 percent

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

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

AOI Inventory

This folder contains a collection of tabular reports that present a variety of soil information. Included are various map unit description reports, special soil interpretation reports, and data summary reports.

Water Quality Index (WQIag) Soil Factors (Durrer Addition)

This table shows the soil factors used in the *Water Quality Index for Runoff Water from Agricultural Fields (WQIag)*. The WQIag web interface is at <http://wqiag.sc.egov.usda.gov/>.

Slope gradient is the difference in elevation between two points and is expressed as a percentage of the distance between those points. For example, a difference in elevation of 1 meter over a horizontal distance of 100 meters is a slope of 1 percent.

Hydrologic group is a group of soils having similar runoff potential under similar storm and cover conditions. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate.

Kw factor is an erosion factor for the surface mineral horizon that indicates the susceptibility of the soil to sheet and rill erosion by water. Factor Kw is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on

Custom Soil Resource Report

percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity. Values of K_w range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter in the surface mineral horizon.

Custom Soil Resource Report

Water Quality Index (WQIag) Soil Factors—Coos County, Oregon						
Map symbol and soil name	Pct. of map unit	Slope gradient	Hydrologic group	Kw factor (surface horizon)	Organic matter (surface horizon)	Pct
12—Coquille silt loam						
Coquille	75	0 - 1 - 1	C/D	.32	4.0 - 7.0 - 10.0	
34—Langlois silty clay loam						
Langlois	80	0 - 1 - 1	C/D	.32	5.0 - 6.5 - 8.0	
40—Nehalem silt loam						
Nehalem	80	0 - 2 - 3	B	.37	5.0 - 7.5 - 10.0	
41—Nestucca silt loam						
Nestucca	80	0 - 2 - 3	C/D	.37	4.0 - 6.0 - 8.0	
62—Milanch fine sandy loam						
Milanch	75	0 - 2 - 3	A/D	.20	2.0 - 3.5 - 5.0	

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Engineering Properties (Durrer Addition)

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007 (<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell

Custom Soil Resource Report

potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

Custom Soil Resource Report

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Custom Soil Resource Report

Absence of an entry indicates that the data were not estimated. The asterisk "*" denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007 (<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties—Coos County, Oregon															
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments			Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200			
12—Coquille silt loam Coquille	75	C/D	0-14	Silt loam	ML	A-4	0-0-0	0-0-0	100-100	100-100	95-98-100	75-83-90	30-33-35	NP-3-5	
			14-36	Silty clay loam, silt loam	ML	A-4	0-0-0	0-0-0	100-100	100-100	95-98-100	85-90-95	36-38-40	5-7-10	
			36-60	Silty clay, silty clay loam	MH, ML	A-7	0-0-0	0-0-0	100-100	100-100	95-98-100	90-93-95	45-50-55	15-18-20	
34—Langlois silty clay loam Langlois	80	C/D	0-10	Silty clay loam	CL	A-6	0-0-0	0-0-0	100-100	100-100	95-98-100	85-90-95	35-38-40	15-18-20	
			10-28	Silty clay loam, silty clay	CL	A-6, A-7	0-0-0	0-0-0	100-100	100-100	95-98-100	85-90-95	35-40-45	15-20-25	
			28-60	Clay, silty clay	CH	A-7	0-0-0	0-0-0	100-100	100-100	90-95-100	75-85-95	50-55-60	25-28-30	
40—Nehalem silt loam Nehalem	80	B	0-12	Silt loam	CL-ML, ML	A-4	0-0-0	0-0-0	100-100	100-100	90-95-100	70-80-90	25-30-35	5-7-10	
			12-29	Silt loam, silty clay loam	CL	A-6, A-7	0-0-0	0-0-0	100-100	100-100	90-95-100	75-85-95	30-38-45	10-15-20	
			29-60	Silty clay loam, silt loam, loam	CL, CL-ML	A-4, A-6	0-0-0	0-3-5	85-93-100	80-90-100	75-85-95	55-73-90	25-33-40	5-10-15	

Custom Soil Resource Report

Engineering Properties—Coos County, Oregon																
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments			Percentage passing sieve number—					Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200				
41—Nestucca silt loam			In													
Nestucca	80	C/D	0-14	Silt loam	CL, CL-ML	A-4	0-0-0	0-0-0	0-0-0	100-100	100-100	90-95-1	75-85-95	20-25	5-8	
			14-40	Silty clay loam, silt loam	CL	A-6, A-7	0-0-0	0-0-0	0-0-0	100-100	100-100	95-98-1	85-90-95	35-40	15-18-20	
			40-60	Silty clay, clay loam, loam	CL	A-6, A-7	0-0-0	0-0-0	0-0-0	100-100	95-98-1	85-93-1	65-80-95	30-40	10-18-25	
62—Willanch fine sandy loam																
Willanch	75	A/D	0-13	Fine sandy loam	SM	A-4	0-0-0	0-0-0	0-0-0	100-100	100-100	65-75-85	35-43-50	0-5-10	NP	
			13-35	Sandy loam, leamy sand, leamy fine sand	SM	A-2, A-4	0-0-0	0-0-0	0-0-0	90-95-1	85-93-1	55-70-85	30-40-50	0-5-10	NP	
			35-60	Loamy fine sand, loamy sand, sandy loam	SM	A-2	0-0-0	0-0-0	0-0-0	90-95-1	85-93-1	55-68-80	25-30-35	0-5-10	NP	

Physical Soil Properties (Durrer Addition)

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (*K_{sat}*), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (K_{sat}) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (*K_{sat}*) is considered in the design of soil drainage systems and septic tank absorption fields.

Custom Soil Resource Report

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Custom Soil Resource Report

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service.
National soil survey handbook, title 430-VI. (<http://soils.usda.gov>)

Custom Soil Resource Report

Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Physical Soil Properties—Coos County, Oregon													
Map symbol and soil name	Depth In	Sand Pct	Silt Pct	Clay Pct	Moist bulk density g/cc	Saturated hydraulic conductivity micro m/sec	Available water capacity In/In	Linear extensibility Pct	Organic matter Pct	Erosion factors		Wind erodibility group	Wind erodibility index
										Kw	Kt		
12—Coquille silt loam													
Coquille	0-14	-9-	-66-	20-25-30	1.00-1.10-1.20	4.00-9.00-14.00	0.19-0.20-0.21	0.0-1.5-2.9	4.0-7.0-10.0	.32	.32	5	48
	14-36	-7-	-63-	25-30-35	1.20-1.25-1.30	1.40-3.00-4.00	0.19-0.20-0.21	0.0-1.5-2.9	1.0-2.5-4.0	.37	.37		
	36-60	-8-	-56-	35-38-60	1.25-1.30-1.35	0.42-0.91-1.40	0.15-0.16-0.17	3.0-4.5-5.9	0.5-0.8-1.0	.43	.43		
34—Langlois silty clay loam													
Langlois	0-10	-19-	-48-	27-34-40	1.20-1.25-1.30	1.40-3.00-4.00	0.19-0.20-0.21	3.0-4.5-5.9	5.0-6.5-8.0	.32	.32	5	48
	10-28	-8-	-51-	35-41-45	1.10-1.18-1.25	1.40-3.00-4.00	0.19-0.20-0.21	6.0-7.5-8.9	0.5-3.3-6.0	.28	.28		
	28-60	-23-	-29-	40-48-55	1.25-1.30-1.35	0.42-0.91-1.40	0.07-0.08-0.09	6.0-7.5-8.9	0.5-3.3-6.0	.20	.20		
40—Nehalem silt loam													
Nehalem	0-12	-11-	-69-	15-20-25	1.10-1.15-1.20	4.00-9.00-14.00	0.19-0.20-0.21	0.0-1.5-2.9	5.0-7.5-10.0	.37	.37	5	48
	12-29	-9-	-66-	20-25-35	1.20-1.25-1.30	4.00-9.00-14.00	0.19-0.20-0.21	3.0-4.5-5.9	1.0-2.5-4.0	.43	.43		
	29-60	-7-	-65-	20-28-35	1.25-1.30-1.35	4.00-9.00-14.00	0.19-0.20-0.21	0.0-1.5-2.9	0.1-0.6-1.0	.43	.43		

Custom Soil Resource Report

Physical Soil Properties—Coos County, Oregon														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
41—Nestucca silt loam														
Nestucca	0-14	-10-	-68-	18-23-27	1.10-1.16-1.25	4.00-9.00-14.00	0.19-0.20-0.21	0.0- 1.5- 2.9	4.0- 6.0- 8.0	.37	.37	5	6	48
	14-40	- 7-	-63-	25-30- 35	1.25-1.33-1.40	1.40-3.00-4.00	0.19-0.20-0.21	3.0- 4.5- 5.9	1.0- 1.5- 2.0	.43	.43			
	40-60	- 8-	-51-	20-41- 45	1.35-1.40-1.45	0.00-2.00-4.00	0.15-0.16-0.17	3.0- 4.5- 5.9	0.0- 0.3- 0.5	.32	.32			
57—Udortheintis level														
Udortheintis														
62—Willanch fine sandy loam														
Willanch	0-13	-65-	-27-	5- 8- 10	1.30-1.35-1.40	14.00-28.00-42.00	0.13-0.14-0.15	0.0- 1.5- 2.9	2.0- 3.5- 5.0	.20	.20	5	3	86
	13-35	-69-	-24-	5- 8- 10	1.30-1.35-1.40	14.00-28.00-42.00	0.12-0.13-0.14	0.0- 1.5- 2.9	0.5- 1.3- 2.0	.28	.28			
	35-60	-81-	-16-	0- 3- 5	1.40-1.43-1.45	14.00-28.00-42.00	0.09-0.11-0.12	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.28	.28			
W—Water														
Water														

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelpdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf