CURRY COUNTY COMMUNITY DEVELOPMENT
94235 MOORE STREET, SUITE 113
GOLD BEACH, OREGON 97444

Phone (541) 247-3304
FAX (541) 247-4579

22-000097

File # AD-2206 Fee $ 2000 Receipt # _____ Accepted by _____

LAND USE DECISION APPLICATION FORM

Application Type (Check One)

☐ Comp Plan/Zone Change ☑ Conditional Use ☐ Variance ☐ Partition ☐ Subdivision ☐ Development Permit

Application Date: _____ Hearing / Decision Date: _____

APPLICANT: Please complete all parts of this form. The attached application checklist will be marked by staff to reflect the information and supporting items required for this request. Please return this prepared checklist, the completed application form and required fee at the time of submission. Please note that your application cannot be reviewed or processed until all the required items have been provided.

1. PROPERTY OWNER OF RECORD

Name Floyd Foster, Carl Foster, Marla Hedman, Madelyn Jackson and Mary Torres

Mailing Address: _____

City, State, ZIP: _____

Telephone #: _____ E-Mail _____

2. APPLICANT

Name Coos Curry Electric Cooperative, Inc

Mailing Address: 43050 Hwy 101, PO Box 1268

City, State, ZIP: Port Orford, OR 97465

Telephone #: 541-332-3931 or contact agent E-Mail contact agent

3. AGENT (If Any)

Name: Matt Mjelde

Mailing Address: 43050 Hwy 101, PO Box 1268

City, State, ZIP: Port Orford, OR 97465

Telephone # 541-332-6179 or 541-661-4003 (cell) E-Mail matt.mjelde@cooscurryelectric.com

4. BASIC PROPOSAL (Briefly describe your proposed land use)

The project proposes the relocation of an existing communication facility to avoid active quarry (jetty rock) atop Stone Butte. Actions proposed include the installation of a 180 foot-tall steel self supporting tower and associated equipment within a fenced compound, plus extending the underground power. New site will be located approximately 1000 ft east from the existing Stone Butte site.

5. PROPERTY INFORMATION

Assessor Map # 31S15W Tax Lot (s) 3115-00-2302

Zoning: _____ Total Acreage 701.59

RECEIVED 3/1/2022

6. **PROPERTY LOCATION**

Address (if property has a situs address) Not Available (See Figure 1, Site Plan)

Description of how to locate the property The project is located in the northwest portion of Curry County just east of Stone Butte, roughly 1.5 miles east of U.S. Highway 101, 3.4 miles southeast of Floras Lake and 4 miles north of Sixes River. Access to the site is from the south using the Stonecypher road or from west using a private mining rd from Hwy 101.

7. **EXISTING LAND USE** (briefly describe the present land use of the property)

☐ Vacant ☑ Developed; Describe existing development

The area north of the proposed tower site is developed with a rock quarry and with various communications towers which have been dismantled due to expansion of the quarry operations. The remainder of tax 2302 is being used for timber and grazing.

8. **SURROUNDING LAND USES** (Briefly describe the land uses on adjacent property)

Adjacent properties land use: timber, grazing and communication tower sites.

9. **SERVICE AND FACILITIES AVAILABLE TO THE PROPERTY**

Please indicate what services and facilities are available to the property. If on-site sewage disposal and/or water source is proposed, a copy of the approved site evaluation or septic system permit and a copy of any water rights or well construction permit must be submitted with this application.

Water Source not applicable

Sewage Disposal not applicable

Electrical Power underground power from Coos Curry Electric

Telephone Service not applicable

Fire Department/District Langlois Rural Fire District or Coos Forest

School District not applicable

10. **ROAD INFORMATION**

Nearest Public Road US Highway 101

Private Roads Serving the Property mine access road.

Road Condition gravel

Legal Status

Ownership: I own the road ☐ Easement on others property ☑ Joint Owner ☐

Please submit record of ownership (i.e. deeds, easement, plat dedication, etc)

Proposed New Roads/Driveways (Briefly describe any new road construction related to this application

New driveway (gravel) is proposed to access the communication site from an existing unimproved road located on the property.

11. PHYSICAL DESCRIPTION OF THE SUBJECT PROPERTY

Topography (Briefly describe the general slope and terrain of the property)

The property is located on the westerly mountainous slope of the coastal hills located north east of Cape Blanco. The project site located on an east trending ridge outside the mining area.

Vegetation (Briefly describe the vegetation on the property)

Wooded with Sitka spruce and lodgepole pine surrounded by partially cleared and disturbed areas with stumps, slash piles, and ground rutted by heavy equipment.

12. FINDINGS OF FACT

Oregon Statute and the zoning ordinance requires that land use decisions be supported by factual findings. The burden of proof is on the proponent therefore it is required that the application provide findings to support the request in this application. The standards and criteria that are relevant to this application will be provided by the staff and are considered to be a part of this application form. Please read the standards and criteria carefully and provide factual responses and evidence to address each standard. These findings must be sufficiently specific to allow the decision maker to determine whether your request meets the relevant standard. Please attach your written findings and supporting evidence to this application.
FAILURE TO PROVIDE THE REQUIRED FINDINGS WILL PREVENT THE APPLICATION FROM BEING PROCESSED AND IT WILL BE RETURNED AS BEING INCOMPLETE.

13. APPLICANT'S SIGNATURE AND STATEMENT OF UNDERSTANDING

(Please read the statement below *before* signing the signature blank)

I (We) Matt Mjelde ;
Coos Curry Electric Cooperative
_____ ;
_____ ; have filed this application for
Coos Curry Electric Cooperative, Inc.

With the Curry County Department of Community Development-Planning Division to be reviewed and processed according to State of Oregon and county ordinance requirements. My (our) signature (s) below affirms that I (we) have discussed the application with the staff, and that I (we) acknowledge the following disclosures:

(a) I (we are stating all information and documentation submitted with this application is true and correct to the best of my (our) knowledge.

(b) I (we) understand that if false information and documentation has been submitted and the decision is based on that evidence, the decision may be nullified and the county may seek all legal means to have the action reversed.

(c) I (We) understand any representations, conclusions or opinions expressed by the staff in pre-application review of this request do not constitute final authority or approval, and I (we) am (are) not entitled to rely on such expressions in lieu of formal approval of my (our) request.

(d) I (We) understand that I (we) may ask questions and receive input from staff, but acknowledge that I (we) am (are) ultimately responsible for all information or documentation submitted with

this application. I (We) further understand staff cannot legally bind the county to any fact or circumstance which conflicts with State of Oregon or local ordinance, and in event a conflict occurs, the statement or agreement is null and void.

(e) I (We) understand that I (we) have the burden of proving that this request meets statutory and Ordinance requirements, and I (we) must address all of the criteria that may apply to the decision being made. The criteria for approving or denying this request have been provided to me (us) as a part of the application form.

(f) I (We) understand the staff is entitled to request additional information or documentation any time after the submission of this application if it is determined as such information is needed for review and approval.

(g) I (We) understand this application will be reviewed by the Oregon Department of Land Conservation & Development (DLCD) and possibly other state agencies as part of the statewide land use coordination process. I (We) understand that agencies that participate in the review process have the legal right to appeal the approval of the request.

(h) I (We) understand that it is my (our) responsibility, and not the county's, to respond to any appeal and to prepare the legal defense of the county's approval of my (our) request. I (We) further realize it is not the county's function to argue the case at any appeal hearing.

(i) I (We) understand that I (we) am (are) entitled to have a lawyer or land use consultant represent me (us) regarding my application and to appear with me (or for me) at any appointment, conference or hearing relating to it. In light of the complexity and technical nature of most land use decisions, I (we) understand that it may be in my best interests to seek professional assistance in preparation of this application.

(j) The undersigned are the owner (s) of record for the property described as:

Assessor Map(s) 31S15W

and Tax Lot(s) 3115-00-2302

in the records of Curry County.

This application MUST BE SIGNED BY ALL PROPERTY OWNERS OF RECORD, or you must submit a notarized document signed by each owner of record who has not signed the application form, stating that the owner has authorized this application. REFERENCE ATTACHED COMMUNICATIONS SITE LEASE AGREEMENT

(1) Signature _____

Print Name _____

(2) Signature _____

Print Name _____

(3) Signature _____

Print Name _____

(4) Signature _____

Print Name _____

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(1) Signature Marla J Hedman

Print Name Marla J. Hedman

(2) Signature Madelyn Jackson

Print Name Madelyn Jackson

(3) Signature Carl Foster

Print Name CARL FOSTER

(4) Signature Mary E. Torres

Print Name Mary E. Torres

RECEIVED 4/4/22

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(1) Signature Floyd B. Foster

Print Name Floyd B. Foster

(2) Signature _____

Print Name _____

(3) Signature _____

Print Name _____

(4) Signature _____

Print Name _____

FEBRUARY 28, 2022

CURRY COUNTY COMMUNITY DEVELOPMENT
ATTN PLANNING DIVISION
94235 MOORE STREET, SUITE 113
GOLD BEACH OR 97444

SUBJECT: COOS CURRY ELECTRIC COOPERATIVE RADIO SYSTEM
STONE BUTTE COMMUNICATION SITE RELOCATION PROJECT

Coos-Curry Electric Cooperative, Inc. (CCEC) has been directed to relocate our Stone Butte Communication Facility to avoid conflicts with the planned expansion of the rock quarry operations. Because the Stone Butte site is a critical repeater point for CCEC radio operations, the landowners are allowing CCEC to relocate our Communication Facility to a new site which is approximately 1,000 ft to the east of the existing site and outside the mining perimeter.

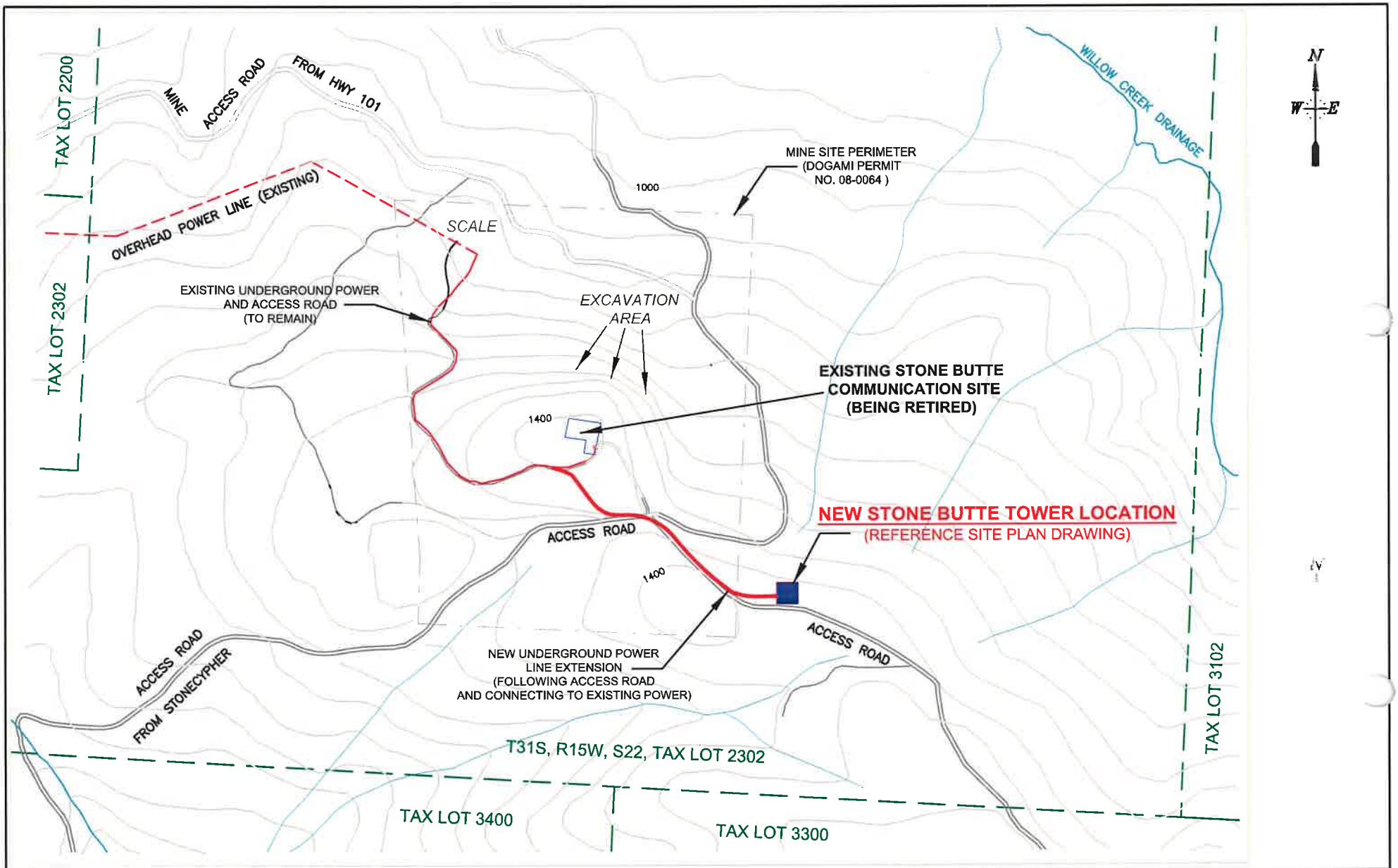
It is our understanding that a conditional use permit is required to move our Communication Facility the new site. Please find the attached documents to assist with the approval process.

- Curry County Land Use Decision Application
- Stone Butte Communication Facilities New Tower Vicinity Map SB-VMAP
- Stone Butte Communication Facilities New Tower Site Plan SB-PLAN
- Stone Butte Communication Site – Curry County Tax Lot Map
- Stone Butte Radio Site topo map
- Communication Site Lease Agreement with landowner signatures.

Thank you for your help and timely consideration. If you have any questions or need additional information, please feel free to call me at 541-332-6179 or 541-661-4003 (cell).

Sincerely,

Matt Mjelde
Engineering Manager



NOTES

1) CONTOUR INTERVAL IS 40FT. MAP DATA IS GATHERED FROM USGS AND AERIAL MAPS.

2) STONE BUTTE TOWER SITE LAT/LONG COORDINATES
N 42°52'14" W 124°25'57", ELEV 1400FT
PORT ORFORD OREGON 97465

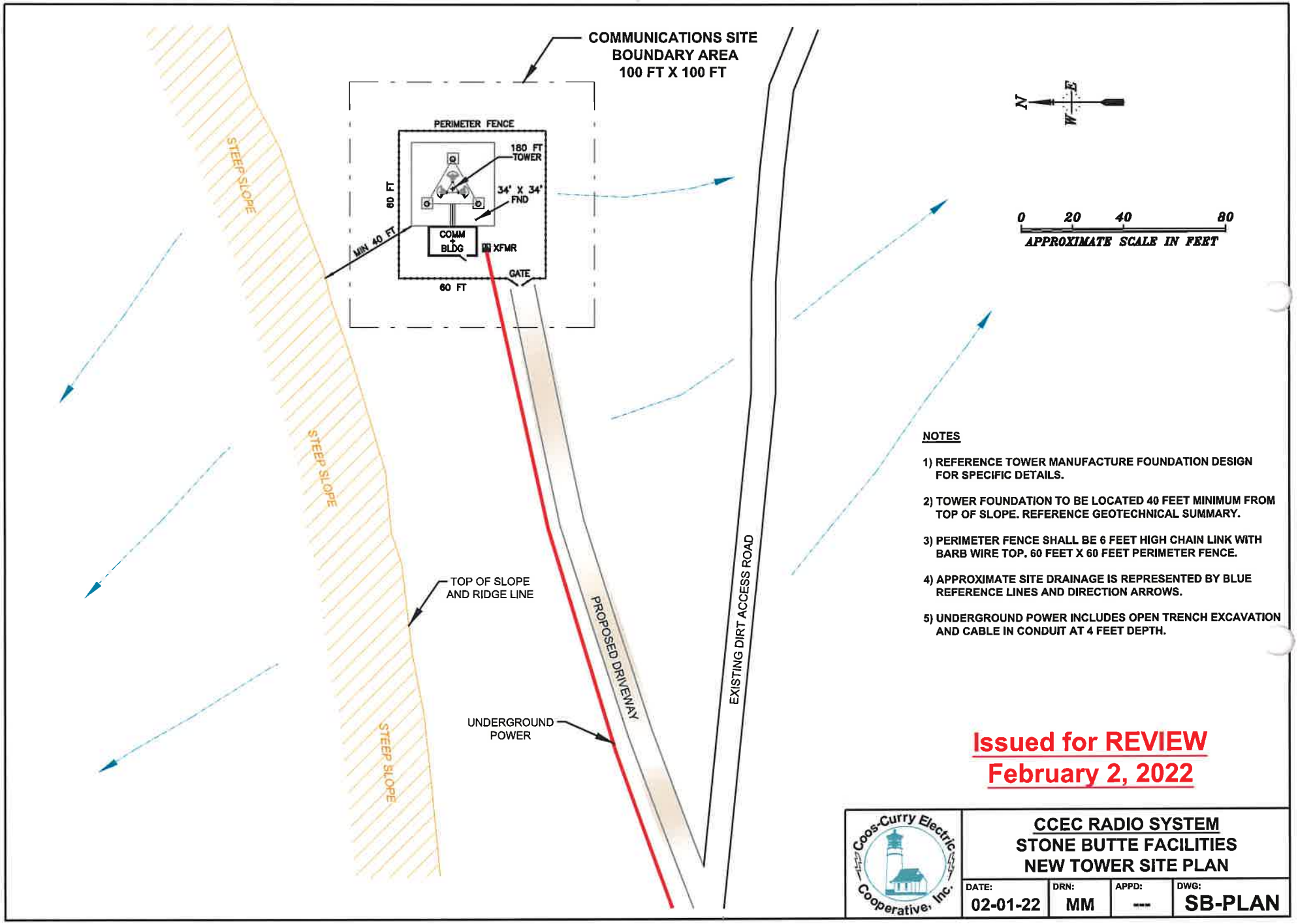
0 250 500 1,000
APPROXIMATE SCALE IN FEET

Issued for REVIEW
February 2, 2022

Coos-Curry Electric Cooperative, Inc.

CCEC RADIO SYSTEM
STONE BUTTE FACILITIES
NEW TOWER VICINITY MAP

DATE:	DRN:	APPD:	DWG:
02-01-22	MM	---	SB-VMAP



NOTES

1) REFERENCE TOWER MANUFACTURE FOUNDATION DESIGN FOR SPECIFIC DETAILS.

2) TOWER FOUNDATION TO BE LOCATED 40 FEET MINIMUM FROM TOP OF SLOPE. REFERENCE GEOTECHNICAL SUMMARY.

3) PERIMETER FENCE SHALL BE 6 FEET HIGH CHAIN LINK WITH BARB WIRE TOP. 60 FEET X 60 FEET PERIMETER FENCE.

4) APPROXIMATE SITE DRAINAGE IS REPRESENTED BY BLUE REFERENCE LINES AND DIRECTION ARROWS.

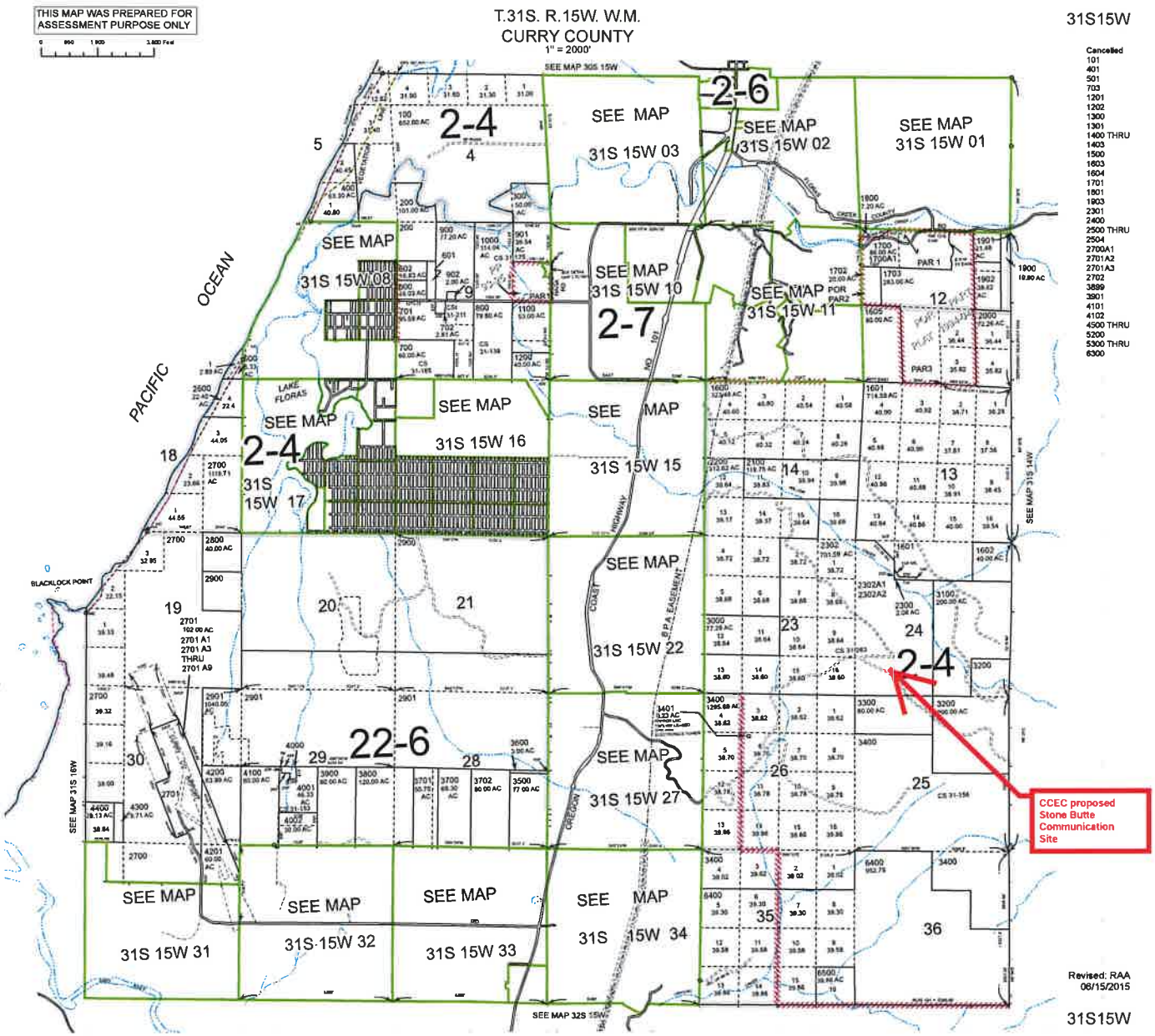
5) UNDERGROUND POWER INCLUDES OPEN TRENCH EXCAVATION AND CABLE IN CONDUIT AT 4 FEET DEPTH.

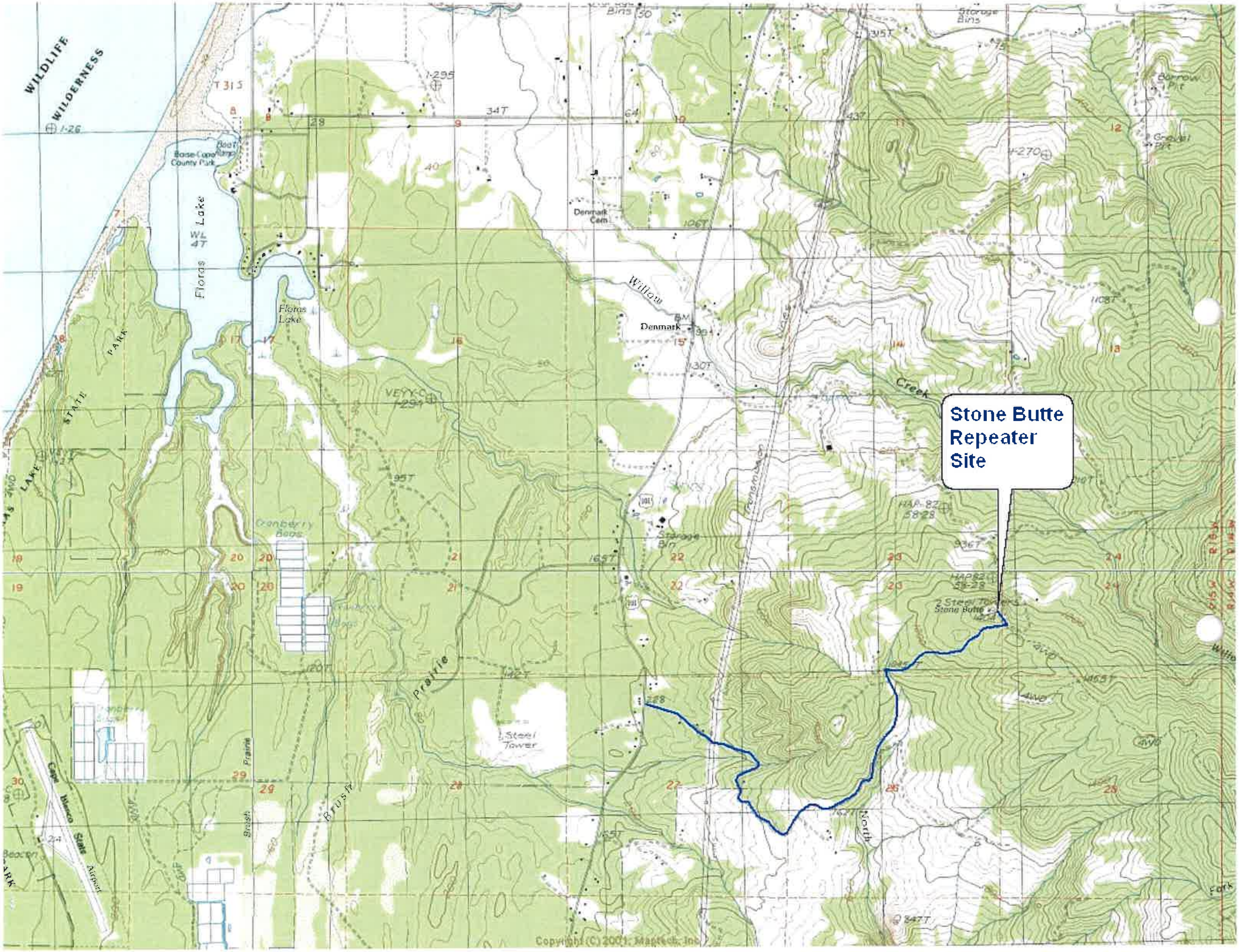
Issued for REVIEW
February 2, 2022

Coos-Curry Electric Cooperative, Inc.

CCEC RADIO SYSTEM
STONE BUTTE FACILITIES
NEW TOWER SITE PLAN

DATE:	DRN:	APPD:	DWG:
02-01-22	MM	---	SB-PLAN


THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY
T.31S. R.15W. W.M.
CURRY COUNTY
1" = 2000'
31S15W
Cancelled
101
401
501
703
1201
1202
1300
1301
1400 THRU
1403
1500
1603
1604
1701
1801
1903
2301
2400
2500 THRU
2504
2700A1
2701 A2
2701 A3
2702
3899
3901
4101
4102
4500 THRU
5200
5300 THRU
6300
SEE MAP 30S 15W
2-6
SEE MAP 31S 15W 02
SEE MAP 31S 15W 01
2-4
SEE MAP 31S 15W 03
SEE MAP 31S 15W 08
SEE MAP 31S 15W 10
2-7
SEE MAP 31S 15W 11
OCEAN
PACIFIC
LAKE FLORAS
SEE MAP 31S 15W 16
SEE MAP 31S 15W 15
2-4
31S 15W 17
SEE MAP 31S 14W
BLACKLOCK POINT
SEE MAP 31S 15W 22
2-4
22-6
SEE MAP 31S 15W 27
SEE MAP 31S 16W
SEE MAP 31S 15W 31
SEE MAP 31S 15W 32
SEE MAP 31S 15W 33
SEE MAP 31S 15W 34
SEE MAP 32S 15W
CCEC proposed Stone Butte Communication Site
Revised: RAA 06/15/2015
31S15W


Stone Butte
Repeater
Site
WILDLIFE
WILDERNESS
Floras Lake
Floras Lake
Boise-Cope County Park
Denmark
Denmark Cem
Willow
Creek
Cranberry Bogs
Prairie
Brush
Steel Tower
2 Steel Towers
Stone Butte
North
Fork
STATE
PARK
Cape Blanco State Airport
Storage Bins
Storage Bin
Borrow Pit
Gravel Pit
Copyright (C) 2001, Maptech, Inc

COMMUNICATIONS SITE LEASE AGREEMENT

This agreement ("Agreement") made and entered into this 6th day of January, 2022, by and between Floyd Foster, Carl Foster, Marla Hedman, Madelyn Jackson and Mary Torres, 94912 Hwy 42 S, Coquille, OR 97423 ("Lessor") and Coos-Curry Electric Cooperative, Inc., PO Box 1268, Port Orford, OR 97465, an Oregon cooperative corporation ("Lessee").

WITNESSETH:

WHEREAS, Lessor is the owner of certain real property situated in Curry County, Oregon, commonly referred to as the Stone Butte Communication site and at the location of the Curry County communications facilities and more particularly described, to wit:

> A parcel of land (tax lot number 2302) located in the NE ¼ of the SE ¼ of section 23, Township 31 South, Range 15 West of the Willamette Meridian, County of Curry, State of Oregon

("Premises"); and,

WHEREAS, Lessee wishes to use a portion of said Premises for the uses hereinafter set forth, and the parties wish to reduce such use to a written agreement,

NOW, THEREFORE, for and in consideration of the covenants, conditions, stipulations and agreements hereinafter set forth, and the sums of money to be paid as rent, it is understood and agreed as follows:

1. PREMISES LEASED.

Lessor does hereby let and rent unto Lessee that portion of the above, described Premises, on which Lessee will place and operate a permanent communications facility (building, tower, fence enclosure, antennas, etc.) and equipment. The leased premises shall consist of that portion of the Premises occupied by Lessee's equipment, together with a right of ingress and egress therefrom.

2. TERM OF AGREEMENT.

This Agreement shall be for an initial term of twenty (20) years and shall renew automatically for one (1) additional five (5) year term unless Lessee gives Lessor written notice of Lessee's intention not to renew the Agreement not less than thirty (30) days or more than ninety (90) days prior to the initial term's termination date.

3. RENT.

Lessee shall pay to Lessor the rent [redacted] per year.

Rent amount for each year shall be paid in advance on an annual basis due January 31st of each year. Any rent for an annual period of less than a complete twelve (12) month period shall be prorated. All rental payments shall be made to Lessor at Lessor's Coquille address or at such other place or places as Lessor may from time to time designate in writing to Lessee.

[redacted]

4. UTILITIES.

All applications and connections for necessary utility services used exclusively by Lessee on the Premises, in excess of the ordinary services provided by Lessor or its other tenants, shall be made in the name of Lessee. Lessee shall be liable for such Lessee exclusive use utility charges as they become due.

5. INSURANCE.

Lessee, at its sole cost and expense, shall maintain insurance coverage on equipment owned by Lessee.

6. TAXES.

Lessee shall pay personal property taxes assessed against Lessee's Facilities, and Lessor shall pay when due all real property taxes and all other taxes, fees and assessments attributable to the Premises and this Lease Agreement.

7. INDEMNITY.

To the extent any harm by Lessor or Lessee's action or inaction is caused exclusively by one party or its agents (collectively "culpable party"), the culpable party agrees to indemnify the other innocent party against all expenses, liabilities, and claims of every kind, including reasonable counsel fees, arising out of the culpable party's: (1) failure to perform any of the terms or conditions required of such party under this Agreement; (2) injury or damage to any party caused by the culpable party on the Premises; (3) failure to comply with any law of any applicable governmental authority; or (4) lien or security interest filed against the Premises.

8. DEFAULT.

Each of the following events shall constitute a default or breach of this Agreement:

8.1 Failure to pay rent within ten (10) days following written notice of nonpayment.

8.2 Failure to perform or comply with any of the conditions of this Agreement and said non-performance shall continue for a period of thirty (30) days after written notice; provided, however, to the extent the default cannot reasonably be completed within such 30-day period, no default shall exist if curative

action is begun within such time period and continued to completion.

9. EFFECT OF DEFAULT.

In the event of any default hereunder, the parties shall have the following rights:

9.1 To cancel and terminate this Agreement by giving the other party not less than thirty (30) days written notice of cancellation and termination.

9.2 To seek such other and further legal and equitable relief as may be just and equitable.

10. EQUIPMENT REMOVAL FOLLOWING TERMINATION.

In the event of termination, Lessee shall have a period of one year (365 days) (allowable time to re-license and re-locate the communication site) within which to remove the facilities, equipment and any of Lessee's other improvements from the Premises.

11. ASSIGNMENT OR SUB-LEASE.

Lessee shall not assign or sub-let the Premises in whole or in part or permit the Premises to be used or occupied by others without the prior consent of Lessor.

12. NON-EXCLUSIVE USE.

Lessee shall not have exclusive right to the use of the Premises. Lessor shall have the right to lease or use portions of the Premises not occupied by Lessee's facilities, equipment or other improvements so long as such additional use would not interfere with the maintenance and operation of Lessee's facilities and/or equipment.

13. SUBJECT TO LEASE AND PRIOR AUTHORIZATION

Lessee shall be allowed to keep the communication path(s) clear of vegetation for the purpose of operating a microwave communication system (line-of-sight). The Lessee shall not proceed with the cutting of trees and vegetation without prior approval from the Lessor. The Lessee shall compensate the Lessor for the loss of merchantable timber based on a harvestable product. The Lessee shall also be responsible for all costs associated with the clearing and clean-up effort.

14. SPECIAL CONDITION

[redacted]

15. SUCCESSORS.

Lessor agrees that, upon any sale or transfer of the premises, the Lessor will inform any purchaser or transferee of the terms and conditions of this Agreement. Upon request, Lessor shall provide written evidence to the Lessee that such sale or transfer is subject to the terms and conditions of this Agreement and that the purchaser or transferee has accepted and assumed the Lessor's obligations hereunder. Lessee may record this lease or a memorandum of lease.

15. ATTORNEY'S FEES.

In the event suit or action arising out of or relating to this Agreement, the prevailing party shall be entitled to reasonable attorneys' fees and costs at trial and on any appeals.

16. AUTHORIZATION

The representatives for both Lessor and Lessee represent that they have the authority to execute this Agreement, and that all necessary approvals required to create terms, conditions and agreements hereof as covenants running with the land have been obtained so as to bind the respective parties to this Agreement.

17. BINDING EFFECT.

It is mutually agreed by and between the parties hereto that the conditions, terms, and covenants of this Agreement shall be binding upon and shall inure to the benefit of the heirs, executors, administrators, successors and assigns of the respective parties hereto.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date written below.

By: Floyd B Foster
Floyd Foster

This instrument was acknowledged before me on Feb. 3, 2022
by Floyd B Foster

Notary Public State of: Oregon, Coos County
My Commission Expires: Sept. 03, 2022

Notary Seal

OFFICIAL STAMP
STACEY RAE CHRISTENSEN
NOTARY PUBLIC - OREGON
COMMISSION NO. 978863
MY COMMISSION EXPIRES SEPTEMBER 03, 2022

By: Carl Foster
Carl Foster

This instrument was acknowledged before me on February 3, 2022
by Carl Foster

Stacey Rae Christensen
Notary Public State of: Oregon, Coos County Notary Seal
My Commission Expires: 9-03-2022

OFFICIAL STAMP
STACEY RAE CHRISTENSEN
NOTARY PUBLIC - OREGON
COMMISSION NO. 978863
MY COMMISSION EXPIRES SEPTEMBER 03, 2022

By: _____
Marla Hedman

This instrument was acknowledged before me on _____, _____
by _____

Notary Public State of: _____ Notary Seal
My Commission Expires: _____

By: _____
Carl Foster

This instrument was acknowledged before me on _____, _____

by _____

Notary Public State of:_____ *Notary Seal*

My Commission Expires:_____

State of Idaho
County of Shoshone

By: Marla J. Hedman
Marla Hedman

This instrument was acknowledged before me on January 20th, 2022

by Marla Hedman

Notary Public State of: Idaho *Notary Seal*

My Commission Expires: 06/11/2024

GIANA DEBOER
COMMISSION NO. 20181059
NOTARY PUBLIC
STATE OF IDAHO

State of Oregon
Coos County

By: Madelyn Jackson
Madelyn Jackson

This instrument was acknowledged before me on February 3, 2022
by Madelyn Jackson

Stacey Rae Christensen

Notary Public State of: Oregon

Notary Seal

My Commission Expires: Sept. 03, ~~2023~~ 2022

OFFICIAL STAMP
STACEY RAE CHRISTENSEN
NOTARY PUBLIC - OREGON
COMMISSION NO. 978863
MY COMMISSION EXPIRES SEPTEMBER 03, 2022

By: Mary E. Torres
Mary Torres

This instrument was acknowledged before me on February 7, 2022
by Mary Torres

Stacey Rae Christensen

Notary Public State of: Oregon

Notary Seal

My Commission Expires: Sept 03, 2022

OFFICIAL STAMP
STACEY RAE CHRISTENSEN
NOTARY PUBLIC - OREGON
COMMISSION NO. 978863
MY COMMISSION EXPIRES SEPTEMBER 03, 2022

For Coos-Curry Electric Cooperative, Inc.

By: _____
Brent Bischoff

Title: General Manager/CEO

State of Oregon)
County of Curry)

This instrument was acknowledged before me on January 6th, 2022
by Brent Bischoff, as the General Manager/CEO
of Coos-Curry Electric Cooperative, Inc.

_____

OFFICIAL SEAL
Angel Ashdown
NOTARY PUBLIC - OREGON
COMMISSION NO. 994286
MY COMMISSION EXPIRES December 1, 2023

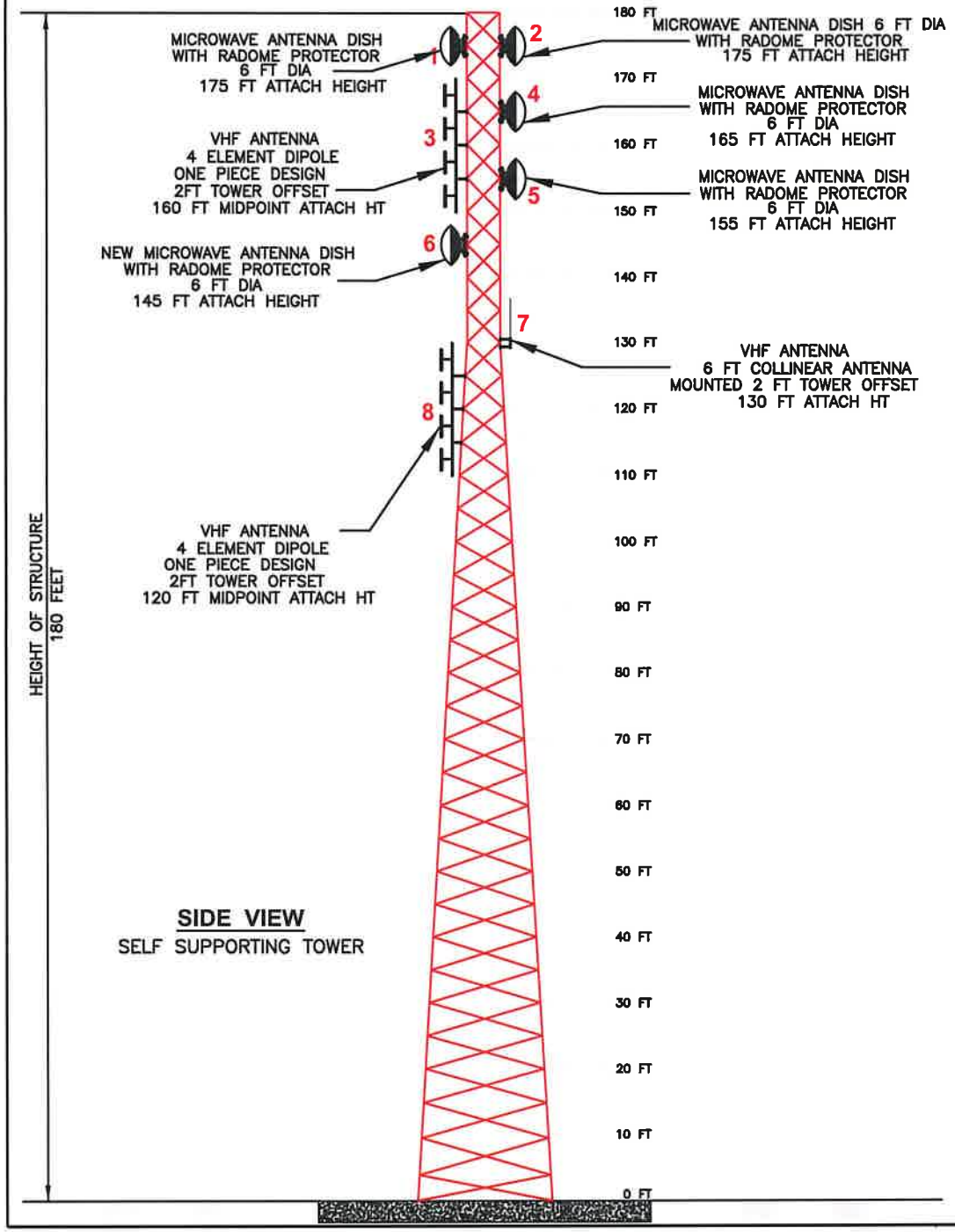
Notary Public State of Oregon

My Commission Expires:

Notary Seal


Existing
CCEC
Stone Butte
Radio Tower


New Tower Site
Tower Site 2
Tower Site 1
Stone Butte CCEC
Stone Butte USCell



ANTENNA INFORMATION

ANT NO.	TWR LEG	TWR FACE	PARABOLIC ANTENNA SIZE (DIA), TYPE, RADOME	ANTENNA DIRECTION APPROXIMATE AZIMUTH	ANTENNA MFG & CAT NO.	ANTENNA ATTACH HT AT CENTER
1	C	C-B	6 FT,SOLID,W/RADOME,HP	NORTH,0° AZ	RADIOWAVES,HPDG-6NS	175 FT
2	A	A-B	6 FT,SOLID,W/RADOME,HP	SOUTH,180° AZ	RADIOWAVES,HPDG-6NS	175 FT
3	A	A-C	VHF,4 BAY,DIPOLE	WEST,270° AZ	SINCLAIR, SD214-HF2P4LDF	160 FT
4	A	A-C	6 FT,SOLID,W/RADOME,HP	WEST,270° AZ	RADIOWAVES,HPDG-6NS	165 FT
5	B	B-A	6 FT,SOLID,W/RADOME,HP	EAST,90° AZ	RADIOWAVES,HPDG-6NS	155 FT
6	C	A-C	6 FT,SOLID,W/RADOME,HP	SOUTHWEST,200° AZ	RADIOWAVES,HPDG-6NS	145 FT
7	B	B-C	6 FT COLLINEAR	EAST,90° AZ	TELEWAVE,ANT180-225F2	130 FT
8	C	B-C	VHF,4 BAY,DIPOLE	WEST,270° AZ	SINCLAIR, SD214-HF2P4LDF	120 FT

NOTES

1) PREVAILING WIND DIRECTION IS FROM THE WEST.

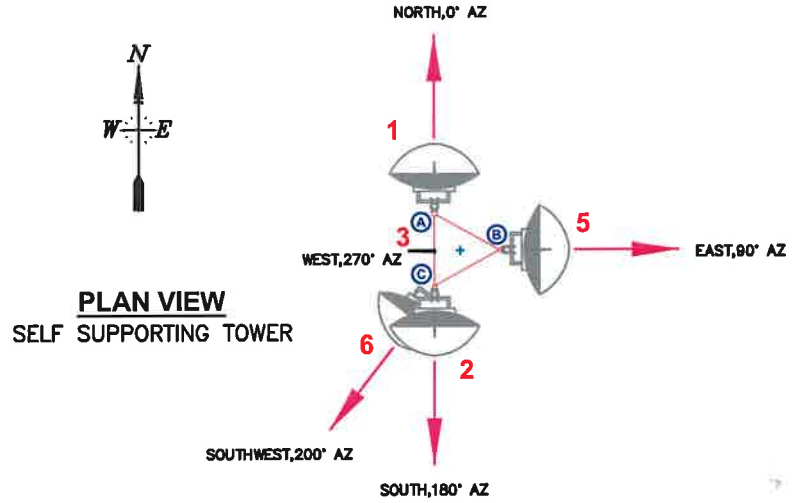
2) STRUCTURE DESIGN CRITERIA:
PER ANSI/TIA-222-G. SEISMIC CRITERIA ASCE-16 STANDARD FOR A RISK CATEGORY IV STRUCTURE
110 MPH 3-SEC BASIC WIND (NO ICE) AND 50 MPH 3-SEC (0.25" ICE)
STRUCTURE RELIABILITY CLASS III, EXPOSURE C, TOPOGRAPHICAL CAT 3.

3) ANTENNA MANUFACTURE MAY VARY. USE SIMULAR LOADING FOR SIZE AND TYPE.

4) STONE BUTTE TOWER SITE LAT/LONG COORDINATES
N 42°52'14.00" W 124°25'55.50", ELEV 1410FT (Google Earth Coordinates)
PORT ORFORD OREGON 97465

5) TOWER LADDER TO BE INCLUDED AND LOCATED INSIDE OF LEG STRUCTURE, ENTIRE LENGTH OF TOWER.

6) CABLE FEED TO ALL ANTENNAS USING 1/2" HELIAX. TRANSMISSION LINE LADDER LOCATED INSIDE OF LEG STRUCTURE, ENTIRE LENGTH OF TOWER.



PLAN VIEW
SELF SUPPORTING TOWER

Issued for REFERENCE
February 2, 2022

Coos-Curry Electric Cooperative, Inc.

CCEC RADIO SYSTEM
STONE BUTTE FACILITIES
NEW TOWER ARRANGEMENT

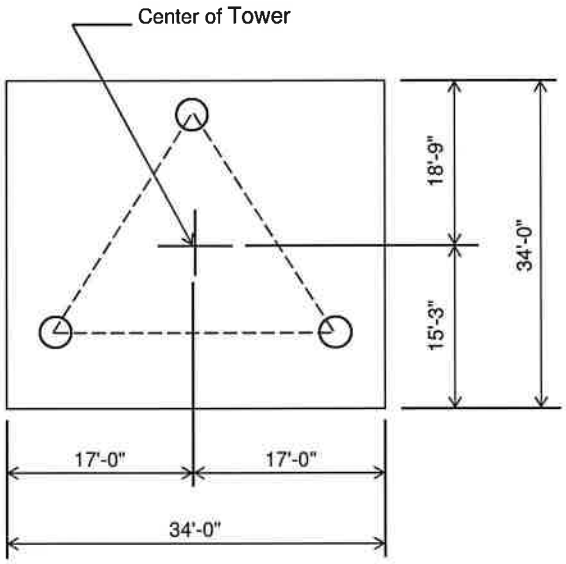
DATE:	DRN:	APPD:	DWG:
04-12-21	MM	---	SB-TWR

Sabre Industries
INNOVATION DELIVERED

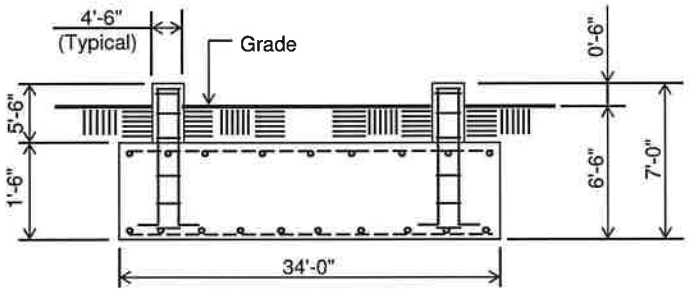
No.: 21-4497
Date: 01/18/2022
By: DO

Customer: COOS-CURRY ELECTRIC COOPERATIVE
Site: Stone Butte Tower, OR
180 ft. Model S3TL Series HD1 Self Supporting Tower

PRELIMINARY -NOT FOR CONSTRUCTION-



PLAN VIEW



ELEVATION VIEW

(73.9 cu. yds.)
(1 REQD.; NOT TO SCALE)

CAUTION: Center of tower is not in center of slab.

Notes:

1) Concrete shall have a minimum 28-day compressive strength of 4,500 psi, in accordance with ACI 318-14.
2) Rebar to conform to ASTM specification A615 Grade 60.
3) All rebar to have a minimum of 3" concrete cover.
4) All exposed concrete corners to be chamfered 3/4".
5) The foundation design is based on the geotechnical report by CGS Project No. 20117, Date: 02/02/2021
6) See the geotechnical report for compaction requirements, if specified.
7) 5' of soil cover is required over the entire area of the foundation slab.
8) The bottom anchor bolt template shall be positioned as closely as possible to the bottom of the anchor bolts.
9) Tie overlaps shall be staggered with a nominal 180° separation.

Rebar Schedule per Mat and per Pier	
Pier	(24) #7 vertical rebar w/ hooks at bottom w/ #4 rebar ties, two (2) within top 5" of pier then 4" C/C
Mat	(61) #9 horizontal rebar evenly spaced each way top and bottom. (244 total)
Anchor Bolts per Leg	
(6) 1.5" dia. x 78" F1554-105 on a 15.5" B.C. w/ 9.5" max. projection above concrete.	

7101 Southbridge Dr - P.O. Box 658 - Sioux City, IA 51102-0658 - Phone 712.258.6690 - Fax 712.258.8250

REVIEW FINDINGS FOR ADEQUACY

Conditional Use Permit Findings

Coos-Curry Electric Cooperative (CCEC)
Stone Butte Communication Facility Relocation Project
Communications Tower Installation
March 15, 2022

Referencing the Curry County Zoning Ordinance

Curry County Zoning Ordinance (Amended August 2018)

Addressing the following items

Section 3.050 Forestry Grazing

Section 3.050. Forestry Grazing Zone (FG).

The proposed Stone Butte Communication site will be located on properties zoned for Forestry and Grazing. The new site will be located adjacent to the mining area that is affecting the forestry and grazing on the property. The new self-supporting tower site will be gated and fenced for livestock protection, and Coos-Curry Electric Cooperative does not foresee conflicts with forestry and grazing activities.

Conditional Use Permit Findings

Coos-Curry Electric Cooperative (CCEC)
Stone Butte Communication Facility Relocation Project
Communications Tower Installation
March 15, 2022

Referencing the Curry County Zoning Ordinance

Curry County Zoning Ordinance (Amended August 2018)

Addressing the following items

Section 3.052 Conditional Uses Subject to Administrative Approval
Section 3.052 #3 Television, microwave, and radio communication facilities and

Section 3.052. Conditional Uses Subject to Administrative Approval by the Director.

3. Television, microwave, and radio communication facilities and transmission antenna towers.

The proposed (relocated) Stone Butte Communication site is a critical microwave and radio communication facilities for Coos-Curry Electric Cooperative. This radio site provides system communications between several power substations and the CCEC northern electric service area. With the upcoming, fast-tracked mining activities in place for Stone Butte, CCEC has been directed to relocate to a new site approximately 1,000 ft to the east and within the existing landowner tax lot.

Coos Curry Electric Cooperative is favoring Conditional Use Permit approval by the director for of the following reasons:

1) Acquiring CUP approval and a building permit in a timely manner will help fast-track the construction schedule and minimize radio service disruptions.

2) The new communication site is a relocation of an existing site and therefore keeping the same conditional use at the same property. Zero facility count change.

Conditional Use Permit Findings

Coos-Curry Electric Cooperative (CCEC)
Stone Butte Communication Facility Relocation Project
Communications Tower Installation
March 15, 2022

Referencing the Curry County Zoning Ordinance

Curry County Zoning Ordinance (Amended August 2018)

Addressing the following items

Section 7.040	Standards for Governing Conditional Uses
Section 7.040 #1	Conditional Uses Generally
Section 7.040 #5	Utility Facilities Necessary for Public Service
Section 7.040 #17	Uses on Resource Land

Section 7.040. Standards Governing Conditional Uses.

1. Conditional and Permitted Uses Generally

a) Coos-Curry Electric Cooperative will comply with set-back and building height restrictions. The communication building will be a one story at 12 ft max height and the tower height will be 180 ft. The new communication site is located at the interior of the property and therefore avoids property line set-back issues.

b) Access to the site is over private property. Ingress and Egress is granted by the landowner with special permission. The structure foundation and tower location is very site specific and critical to CCEC communication paths. Coos-Curry Electric Cooperative will comply with this item.

c) Coos-Curry Electric Cooperative will comply with the Curry County construction standards.

d) The proposed conditional use will require extending the underground power 1,200 ft from the existing Stone Butte terminus to the new communication site. Coos-Curry Electric Cooperative is the electric service provider and facility approval is granted by easement.

e) The proposed conditional use does not require water systems.

f) The proposed conditional use does not require water systems.

Conditional Use Permit Findings

Coos-Curry Electric Cooperative (CCEC)
Stone Butte Communication Facility Relocation Project
Communications Tower Installation
March 15, 2022

g) The proposed conditional use does not require water systems

5. Utility facilities necessary for public service.

a) New communication site is not in a residential zone. However, Coos-Curry Electric Cooperative will comply with equipment storage in the enclosed communications building.

b) The communication site will be located on private property and closed to public access. No storage will be needed at this site. Coos-Curry Electric Cooperative will install a perimeter fence surrounding the compound to provide animal and livestock (grazing) protection, and tower security.

c) Noise or other detrimental effects to adjacent properties is not anticipated. The radio tower will operate passively and will not have any moving parts.

d) The proposed communication site is located and designed to minimize conflict with the property owners' adjacent uses. Coos-Curry Electric Cooperative does not anticipate any conflicts with surrounding properties.

e) The power generation facility requirement does not apply.

17. Uses on resource land.

a) Coos-Curry Electric Cooperative does not foresee a significant change or increase cost of accepted farming or forest practices on the agricultural or forest land.

b) The communication site tower is constructed of metal and will operate as a stand-alone passive structure. The communication building will be located within the fenced compound, providing a fire break around the shelter. The site will consist of concrete pads and graveled landscape providing fire break. The proposed use will not significantly increase fire suppression costs or significantly increase the risks to fire suppression personnel.

Conditional Use Permit Findings

Coos-Curry Electric Cooperative (CCEC)
Stone Butte Communication Facility Relocation Project
Communications Tower Installation
March 15, 2022

c) The proposed use should not conflict with nearby landowners' ability to conduct forest operations. Coos-Curry Electric Cooperative has made arrangements with the landowner to construct and operate the communication site in concurrence with the owner's land use requirements.

Section 3.050. Forestry Grazing Zone (FG).

Purpose of Classification: The Forestry Grazing Zone is applied to resource areas of the county where the primary land use is commercial forestry with some intermixed agricultural uses for livestock uses. The purpose of the Forestry Grazing Zone is:

(a) to implement the forest land policies of the Curry County Comprehensive Plan; and

(b) to implement Statewide Planning Goal 4 with respect to forest lands in the county.

(c) to implement the agricultural land policies of the Curry County Comprehensive Plan with respect to livestock grazing and related farm uses which are intermixed with forest land in some parts of the county; and

(d) to implement Statewide Planning Goal 3 with respect to intermixed farm and forest land in the county.

If the subject tract was predominantly in agricultural (farm) use on January 1, 1993 then uses as specified under Sections 3.070 to 3.078 of this ordinance are applicable.

Section 3.051. Uses Permitted Outright.

The following uses and their accessory structures and uses are permitted outright.

1. Forest operations or forest practices including, but not limited to, reforestation of forest land, harvesting of any forest tree species, road construction and maintenance, application of chemicals and the disposal of slash.

2. Temporary portable facility for the primary processing of forest products.

3. Temporary forest labor camps.

4. Temporary on-site structures which are auxiliary (see NOTE below) to and used during the term of a particular forest management operation.

5. Physical alterations to the land auxiliary (see NOTE below) to forest practices, including but not limited to, those made for purposes of land-based exploration, mining, commercial gravel extraction and processing, landfills, dams, reservoirs, road construction or recreational facilities.

   NOTE: "Auxiliary", for purposes of this zoning designation, means a use or alteration of the land which provides help or is directly associated with the conduct of a particular forest management operation or practice. An auxiliary structure is located on site, temporary in nature, and is not designed to remain for the forest's entire growth cycle from planting to harvesting. An auxiliary structure or use is removed when a particular forest management operation or practice has been completed.

6. Uses to conserve soil, air and water quality on forest lands and to provide for wildlife and fisheries resources.

d) has a heating system; and

e) in the case of replacement, is removed, demolished or converted to an allowable nonresidential use within three months of the completion of the replacement dwelling.

17. Caretaker residences for public parks and fish hatcheries.

18. Uninhabitable structures accessory to fish and wildlife enhancement.

Section 3.052. Conditional Uses Subject to Administrative Approval by the Director.

The following uses may be allowed provided a land use application is submitted pursuant to Section 2.060 of the Curry County Zoning Ordinance and the Planning Director approves the proposed use based upon relevant standards for review in this ordinance. Numbers in parenthesis following the uses indicate the standards described in Section 7.040 that must be met to approve the use.

1. Permanent logging equipment repair and storage facilities. (1,16)

2. Log scaling and truck weigh stations. (1,16)

3. Television, microwave, and radio communication facilities and transmission antenna towers. (1,5,16)

4. Fire stations for rural fire protection. (1,16)

5. Aids to navigation or aviation. (1,16)

6. Water intake facilities, water treatment facilities, pumping stations, and distribution lines. (1,16)

7. Utility facilities for the purpose of generating power which do not preclude more than 10 acres from use as a commercial forest operation unless an exception is taken. (1,16)

8. Reservoirs and water impoundments. (1,16)

9. Cemeteries. (1,16)

10. Forest management research and experimentation facilities as referenced by ORS 526.215 or where accessory to forest operations. (1,16)

11. New distribution lines (e.g. electric, telephone, natural gas, etc.) with rights-of-way fifty (50) feet or less in width.

12. Home occupations as defined in ORS 215.448. (1,7,16)

13. Private seasonal accommodations for fee hunting operations subject to compliance with the Section 3.055 and Section 3.056 of this ordinance and the following requirements:

a) accommodations are limited to no more than fifteen (15) guest rooms as that term

b) State Department of Geology and Mineral Industries (mining and mineral extraction only)

c) State Department of Energy (generating and other energy facilities only)

d) Department of Economic Development (docks, industrial, and port facilities, and marinas only)

e) State Office of the Historical Preservation (historical structures and archeological sites)

f) State and Federal Scenic Waterways agencies (for all developmental permits within scenic river corridors).

Section 7.040. Standards Governing Conditional Uses.

In addition to the standards of the zone in which the conditional and permitted use is located and the other standards in this ordinance, conditional permitted uses must meet the following standards:

1. **Conditional and Permitted Uses Generally.**

a) Set-backs and building height. The County may require property line set-backs or building height restrictions other than those specified in this Ordinance in order to render the proposed conditional use compatible with surrounding land uses.

b) Off-street parking, additional lot area and buffering. The County may require access to the property, off-street parking, additional lot area, or buffering requirements other than those specified in in this Ordinance to render the proposed conditional or permitted use compatible with surrounding land uses.

c) More restrictive construction standards. The County may require that the development be constructed to standards more restrictive than the Uniform Building Code or the general codes in order to comply with the Comprehensive Plan and specific standards established and conditions imposed in granting the Conditional Use Permit for the proposed use.

d) Utility statement requirements. If the proposed conditional or permitted use involves development that will use utility services, the applicant shall provide statements from the affected utilities that they have reviewed the applicants' proposed plans. These statements shall explicitly set forth the utilities' requirements, terms and conditions for providing or expanding service to the proposed development and shall be adopted by the Commission or Director as part of the Conditional or Permitted Use Permit.

e) Water right permit requirement. If the proposed conditional or permitted use involves the development or expansion of a community or non-community public water system, the applicant shall submit a water right permit(s) or

documentation that a permit is not required from the Oregon Water Resources Department which indicates that the applicant has the right to divert a sufficient quantity of water from the proposed source to meet the projected need for the proposed use for next twenty year planning period.

f) Raw water supply flow monitoring device. If the proposed conditional or permitted use involves the development or expansion of a community or non-community public water system, the applicant shall install a raw water supply flow monitoring device (flow meter) on the water system and shall record the quantity of water used in the system on a monthly basis. The monthly record of water usage shall be reported to the Curry County Community Development Department and the Oregon Department of Environmental Quality and Curry Community Health on an annual basis.

g) Service area requirements. If the proposed conditional or permitted use included the development or expansion of a community or non-community public water system and the use is located within the service area of a city or special district water system the applicant shall utilize the city or special district water system rather than developing an independent public water system. An independent community or non-community public water system can be developed for the use if the applicant can prove that it would be physically or economically not feasible to connect to the city or special district water system. The city or special district must concur in the conclusion that connection of the proposed use is not feasible.

2. **Dwelling not served by community water or sewer service.**

a) A dwelling not served by community sewer may be authorized as a conditional use only after the individual sewage disposal system site has been approved in writing by the Oregon Department of Environmental Quality or other agent authorized to regulate sewage disposal systems in the County. If the Board, Commission or Director has been informed as to a possible environmental hazard if the Conditional Use Permit were approved, or if records show past environmental violations on the part of the applicant; the Board, Commission or Director shall request that this conditional use be reviewed by the Department of Environmental Quality and that a sewage disposal system plan shall be approved for this conditional use before the permit is granted.

b) A dwelling not served by community water may be authorized as a conditional use only after the description of the proposed method of supplying domestic water to the proposed dwelling have been approved by the decision maker. If the proposed method involves the creation of a community water system; the plans, approved by a licensed engineer, and other related documents including water rights, water quality test(s), water quantity test(s), and letters of approval from the appropriate agency shall be provided to the decision maker. If the proposed method involves the extension of an existing water supply system a statement from the agency that controls the system indicating that it can and will supply water to the proposed dwelling shall be provided to the decision maker. If the proposed water source is an individual on-site source a description of the water source and quantity of flow shall be provided to the decision maker. If the water source is to be a proposed well the

5. **Utility facilities necessary for public service.**

a) In any residential zone, all equipment storage on the site shall be within an enclosed building.

b) The use shall be fenced and provided with landscaping if there is to be outside storage at the site.

c) The minimum lot size for a public utility facility may be waived on finding that the waiver will not result in noise or other detrimental effect to adjacent property.

d) As far as possible, transmission tower, poles, overhead wires, pumping stations, and similar gear shall be so located, designed, and installed as to minimize their conflict with adjacent uses.

e) A power generation facility shall not preclude more than 12 acres from use as a commercial agricultural enterprise on high value farm land or 20 acres from use as a commercial agricultural enterprise on other farm land unless an exception to Statewide Planning Goal 3 is approved.

17. **Uses on resource land.**

a) The proposed use will not force a significant change in, or significantly increase the cost of, accepted farming or forest practices on agricultural or forest land.

b) The proposed use will not significantly increase fire suppression costs or significantly increase the risks to fire suppression personnel.

c) Uses listed authorized in Section 3.041 or Section 3.051 are also subject to this section, A written statement be recorded with the deed or written contract with the County or its equivalent shall be obtained from the land owner which recognizes the rights of adjacent and nearby land owners to conduct forest operations consistent with the Oregon Forest Practices Act and related Oregon Administrative Rules.

Curry County Planning Department

94235 Moore St., STE 113
Gold Beach, OR 97444
541-247-3284
Fax: 541-247-4579
planning@co.curry.or.us

Transaction Receipt

Record ID: 221-22-000097-PLNG

IVR Number: 221038251221

Receipt Number: 31475

Receipt Date: 4/5/22

www.co.curry.or.us

Parcel: 311500 0230200

Fees Paid

Transaction date	Units	Description	Account code	Fee amount	Paid amount
4/5/22	1.00 Ea	Administrative Land Use Decision by Planning Director	1.10-419-10-341.30-000-00	$2,000.00	$2,000.00

Payment Method: Check number: 522901

Payer: COOS CURRY ELECTRIC COOPERATIVE

Payment Amount: $2,000.00

Cashier: Penny Hudgens

Receipt Total: $2,000.00

CULTURAL RESOURCES SURVEY FOR THE COOS-CURRY ELECTRIC COOPERATIVE STONE BUTTE COMMUNICATIONS TOWER PROJECT, CURRY COUNTY, OREGON

By
Michael Smith, B.A. and
Alexander Gall, M.A., RPA

Prepared for:
Matt Mjelde
Coos Curry Electric Cooperative
PO Box 1268 / 43050 Hwy 101
Port Orford, OR 97465
541-332-6179
matt.mjelde@cooscurryelectric.com

County: Curry
Township: 31 South
Range: 15 West
Section: SE ¼ of Sec 23, SW ¼ of Sec 24
USGS Quad.: Sixes, OR (1996)
Project Acreage: ~1.34 acres
Permit: N/A
Determination: **No historic properties affected**

February 4, 2022

Archaeological Services Report No. 22170

ARCHAEOLOGICAL SERVICES LLC
601 Officers Row, Vancouver, WA 98661 (360) 260-8614 www.archaeologicalservices.com

Executive Summary

Archaeological Services, LLC (ASCC) has completed a cultural resources literature review, pedestrian survey, subsurface investigation, and visual impact assessment for the CCEC Stone Butte Communications Tower project, located in Curry County, Oregon, Township 31 South, Range 15 West, Willamette Meridian, in the SE ¼ of Section 23 and the SW ¼ of Section 24.

The project proposes the relocation of an existing communication facility to avoid active quarry operations atop Stone Butte. Actions proposed in the project's direct area of potential effects (APE) include the installation of a 180-foot-tall steel self-supporting tower and associated equipment within a fenced compound, plus underground power routing extending for approximately 445 meters (1,460 feet) to tie into an existing line near the summit of Stone Butte. The project's direct APE covers an estimated 1.34 acres. The project's indirect (visual) APE measures 0.5 miles in all directions from the tower location.

ASCC conducted this investigation to help inform federal project review under Section 106 of the National Historic Preservation Act (NHPA). During the background research and field investigation, ASCC identified no historic properties (including archaeological sites) that are listed on, or eligible for listing on, the National Register of Historic Places (NRHP). In terms of the project's Section 106 compliance, ASCC therefore recommends a finding of ***no historic properties affected*** and recommends no further cultural resources work. An inadvertent discovery plan (IDP) is appended to this document for recommended use during construction.

Introduction and Project Background

Under contract with the Coos-Curry Electric Cooperative, Inc. (CCEC), Archaeological Services, LLC (ASCC) has completed a cultural resources literature review, field investigation, and visual impact assessment for the Stone Butte Communications Tower project, located in Curry County, Oregon, Township 31 South, Range 15 West, Willamette Meridian, in the SE ¼ of Section 23 and the SW ¼ of Section 24 (Figure 1).

This investigation was carried out in order to assist the lead federal agency in fulfilling their obligations under Section 106 of the National Historic Preservation Act (NHPA) of 1966. Telecommunications projects require permits from the Federal Communications Commission (FCC). Any federal nexus triggers compliance with Section 106 of the National Historic Preservation Act (NHPA) as it pertains to assessing the effects of proposed projects on historic properties, including archaeological sites, within the APE for both direct effects and visual effects (CFR Title 36, Section 800).

The project APE is located in the northwestern portion of Curry County atop Stone Butte, roughly 1.5 miles east of U.S. Hwy 101, 3.4 miles southeast of Floras Lake, and 4

miles north of the Sixes River. The direct APE is contained within Tax Lot 3115-00-02302-00, a 701.59-acre, privately owned parcel on the summit of Stone Butte. The parcel currently contains an active rock quarry (the Stone Butte Rock Quarry) along with a radio facility built in 1976 and upgraded by CCEC in 2006, plus the downed structures of two cellular towers installed in the 1980s or 1990s. Both of the latter towers were recently dismantled. The existing CCEC radio facility consists of a steel tower with associated equipment located at the southwestern boundary of the current mining operations. The facility is needed to maintain existing critical link communication paths for CCEC utility operations. CCEC proposes to relocate this facility roughly 1,000 feet (305 meters) eastward to put it outside the mining permit boundary.

The new CCEC radio facility will center on a 180-foot tall self-supporting steel tower equipped with microwave and VHF antennas, built within a fenced compound along with an equipment shelter building and related appurtenances. Electrical power will be routed underground from the tower for roughly 445 meters (1,460 feet) to tie into existing utilities near the summit of Stone Butte. Vehicular access to the tower will be via existing mine roads from the west except in the woods at the eastern end of the APE, where approximately 60 meters (200 feet) of new access road will be graded to the tower compound along the underground powerline route. Currently available plans are provided in Figure 2 through Figure 4.

The project's direct APE encompasses the footprint of the proposed communication facility plus the linear route for underground power, which includes the roughly 60-meter/200-foot segment of new road grade. The communications facility is proposed within a 100 x 100-foot (30 x 30-meter / 0.23-acre) boundary area. Within this area, the tower, equipment shelter, and transformer will be installed within a 60 x 60-foot (18 x 18-meter) perimeter fence. The tower foundation will measure 34 x 34 feet (10.4 x 10.4 meters) and is expected to require excavation to a depth of up to 10 feet (3 meters) below ground surface. The entire compound area will presumably be subject to surface grading and spreading of fill material. Underground power will be installed by open trench excavation to a depth of 4 feet (1.2 meters) below ground surface. Direct effects along the power/access route are expected to be contained within a 10-meter-wide (33-foot) corridor, allowing room for staging and ancillary impacts. In total, this makes for a direct APE measuring roughly 1.34 acres.

The size of the project's indirect APE is dependent on factors such as the visual prominence of a given project, the topography, vegetation and previous disturbances. The final height of the tower, including all planned antennae and branches, will be 180 feet above ground surface (Figure 4). Pursuant to the *Nationwide Programmatic Agreement*, Section VI.C.4.a, the APE for indirect effects for towers measuring less than 200 feet is 0.5 miles in all directions (Federal Communications Commission 2004). ASCC accordingly carried out a literature review to identify any potential impacts to NRHP-eligible historic properties (including archaeological sites) within 0.5 miles of the proposed tower location.

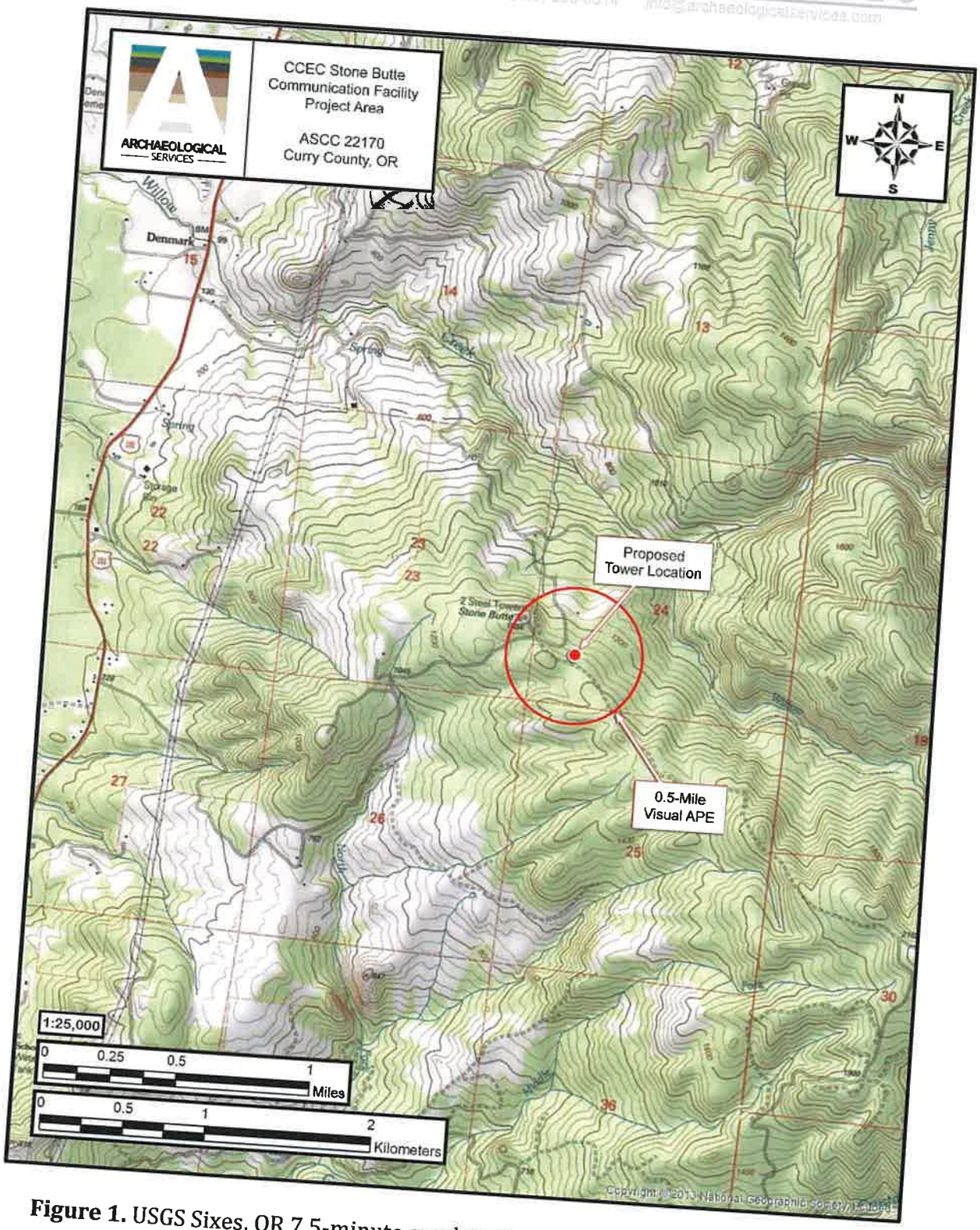


Figure 1. USGS Sixes, OR 7.5-minute quadrangle overlaid with the location of the proposed communications tower and the approximate limits of the visual APE.

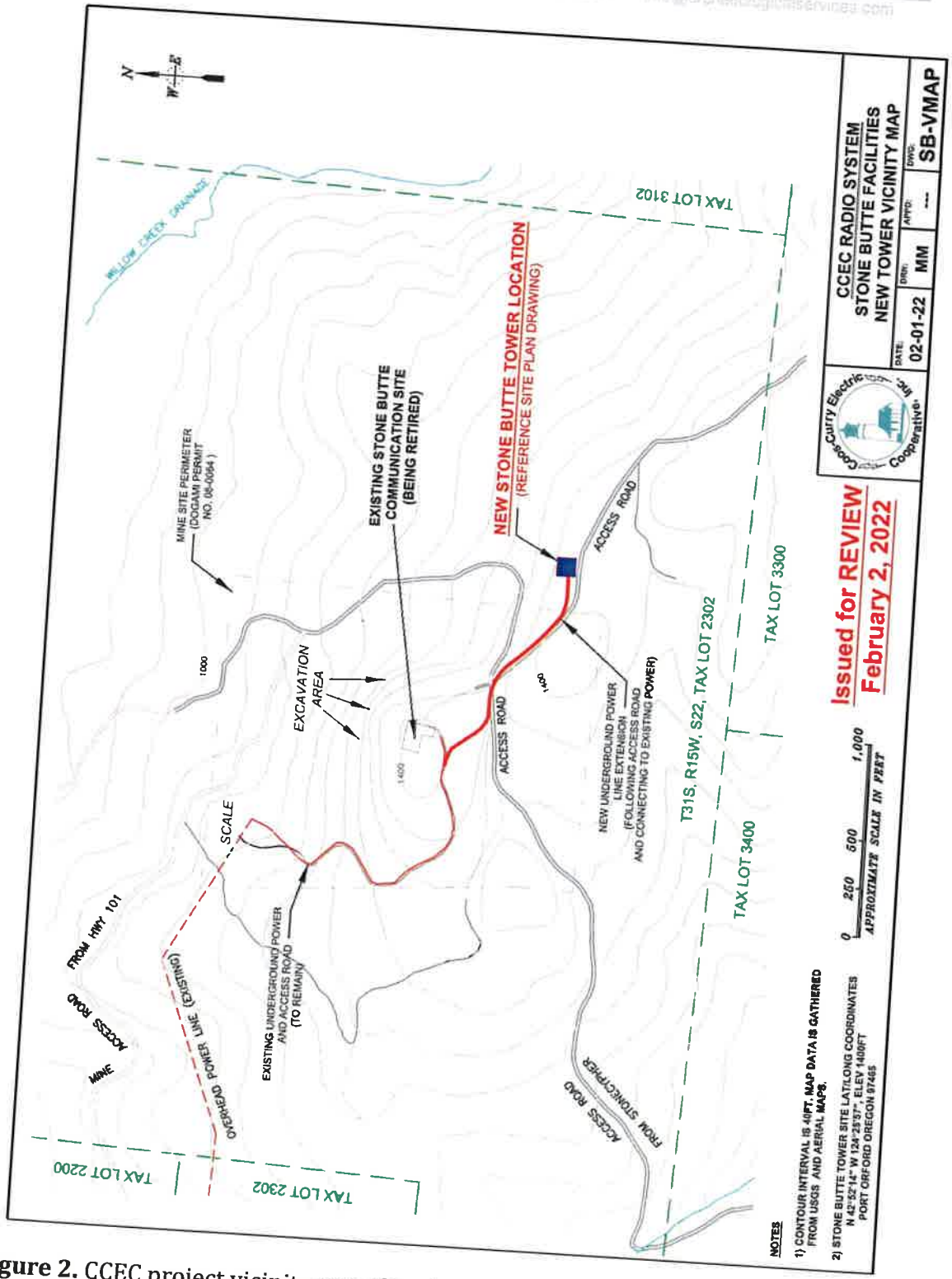


Figure 2. CCEC project vicinity map showing locations of the proposed tower, access, and power routing.

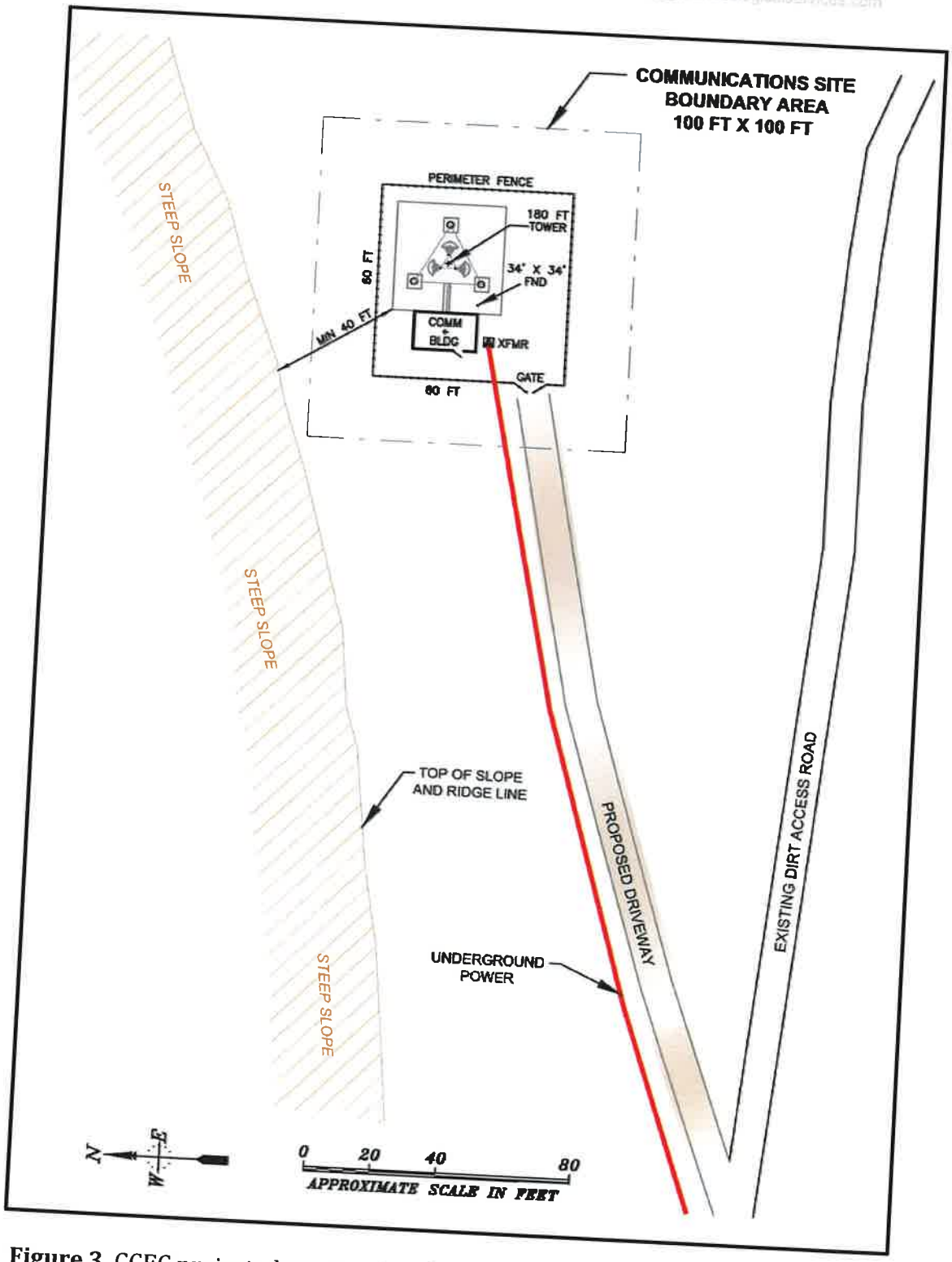


Figure 3. CCEC project plans showing the proposed layout of the communications facility, access driveway, and underground power.

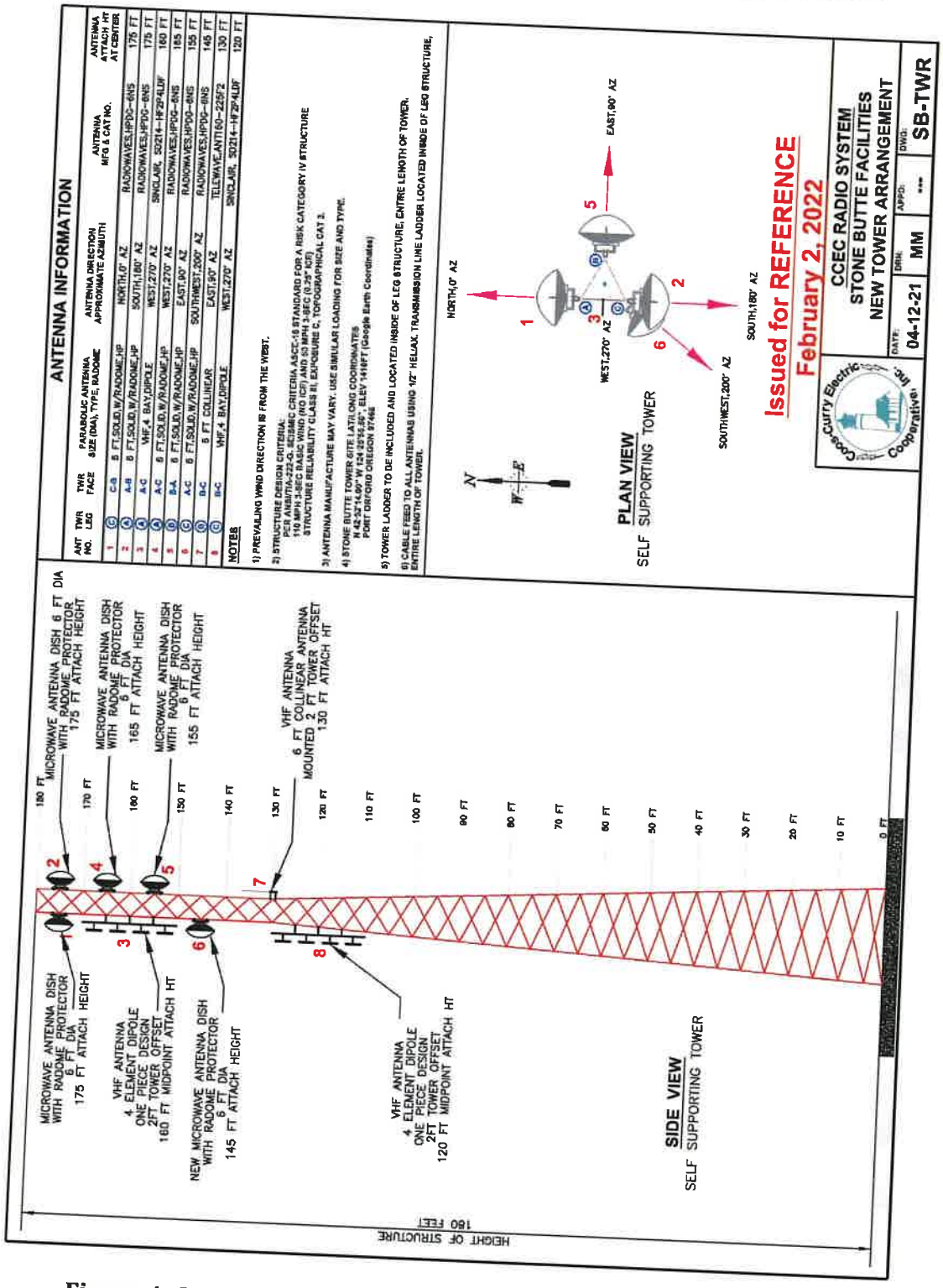


Figure 4. Currently available elevation plans for the proposed tower.

Project Area Description

The project area is set in the uplands of northwestern Curry County on Stone Butte, surrounded by mountainous terrain used for rock quarrying (Figure 5). Most of the active quarry operations are located to the north of the APE on the north flank of Stone Butte. An expanse of impacted land also borders the APE to the south, evidently surface-mined ca. 2019 and used more for stockpiling, equipment storage, and slash piles today. The APE is reached by graveled or unimproved roads from the west.

The prosed tower location lies roughly 305 meters (1,000 feet) east-southeast of the summit of Stone Butte on an east-trending ridge at roughly 1,410 feet above mean sea level (AMSL) (Figure 6). Currently wooded with Sitka spruce and lodgepole pine, the proposed tower location is surrounded by partially cleared and disturbed areas with stumps, slash piles, and ground rutted by heavy equipment (Figure 7). The terrain to the north of the proposed tower location drops steeply (Figure 8); to the south it declines more moderately to a dirt road.

The proposed power/access route, leading generally westward from the proposed tower location, follows this dirt road to a low of roughly 1,360 feet AMSL along the northern boundary of the 2019 mining area. Vehicular access to the APE here splits off from the proposed power route, leading west along an existing road. The proposed power route leads to the northwest, side-sloping up the south flank of Stone Butte. Terrain here was recently logged and cleared, leaving a broad swath of churned-up bare soil and gravels. The proposed power route ends at roughly 1,405 feet AMSL along a new dirt road where underground power was recently installed.

On the summit of Stone Butte, west-northwest of the proposed tower location and east of the northwestern power/access terminus, two recently downed cell towers lie near the existing CCEC radio tower (Figure 9).

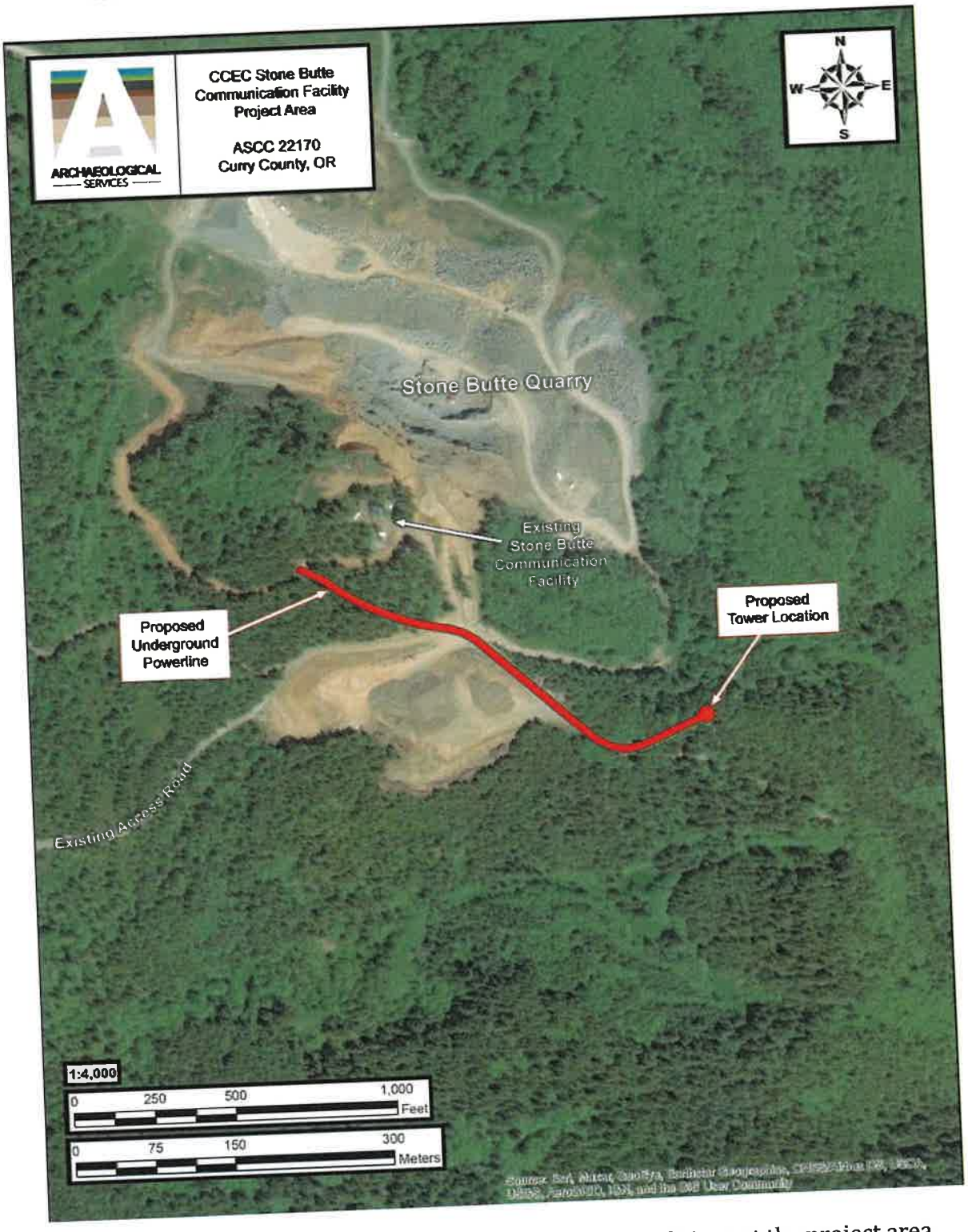


Figure 5. Aerial photomap showing roughly current conditions at the project area, overlaid with the locations of the proposed tower compound and power/access route which comprise the direct APE.

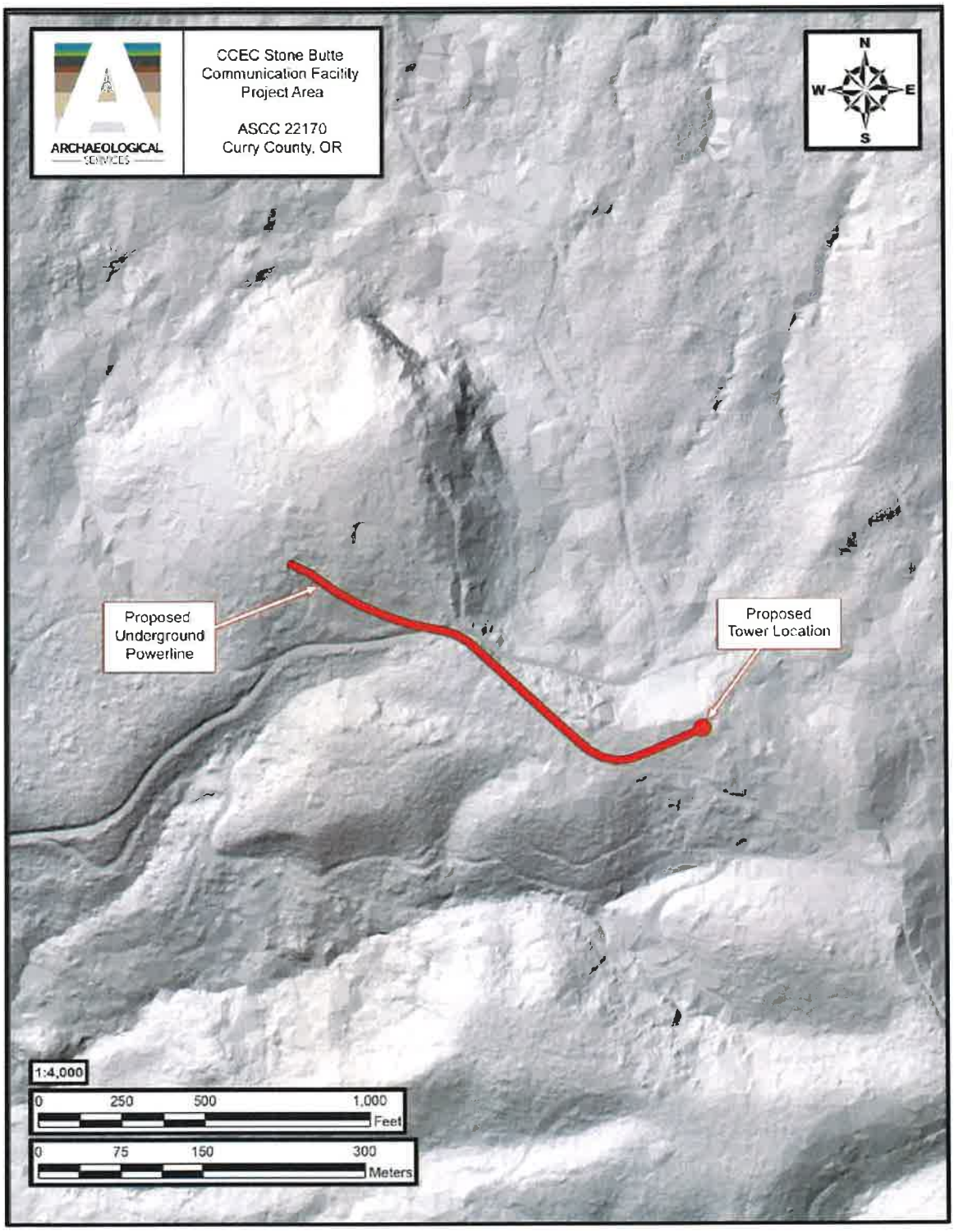


Figure 6. Hillshaded LiDAR imagery of the project area showing topography.

Figure 7. North-facing overview of the proposed tower location.

Figure 8. Northwest-facing view showing the steep drop-off located ~20 meters north of the proposed tower location.

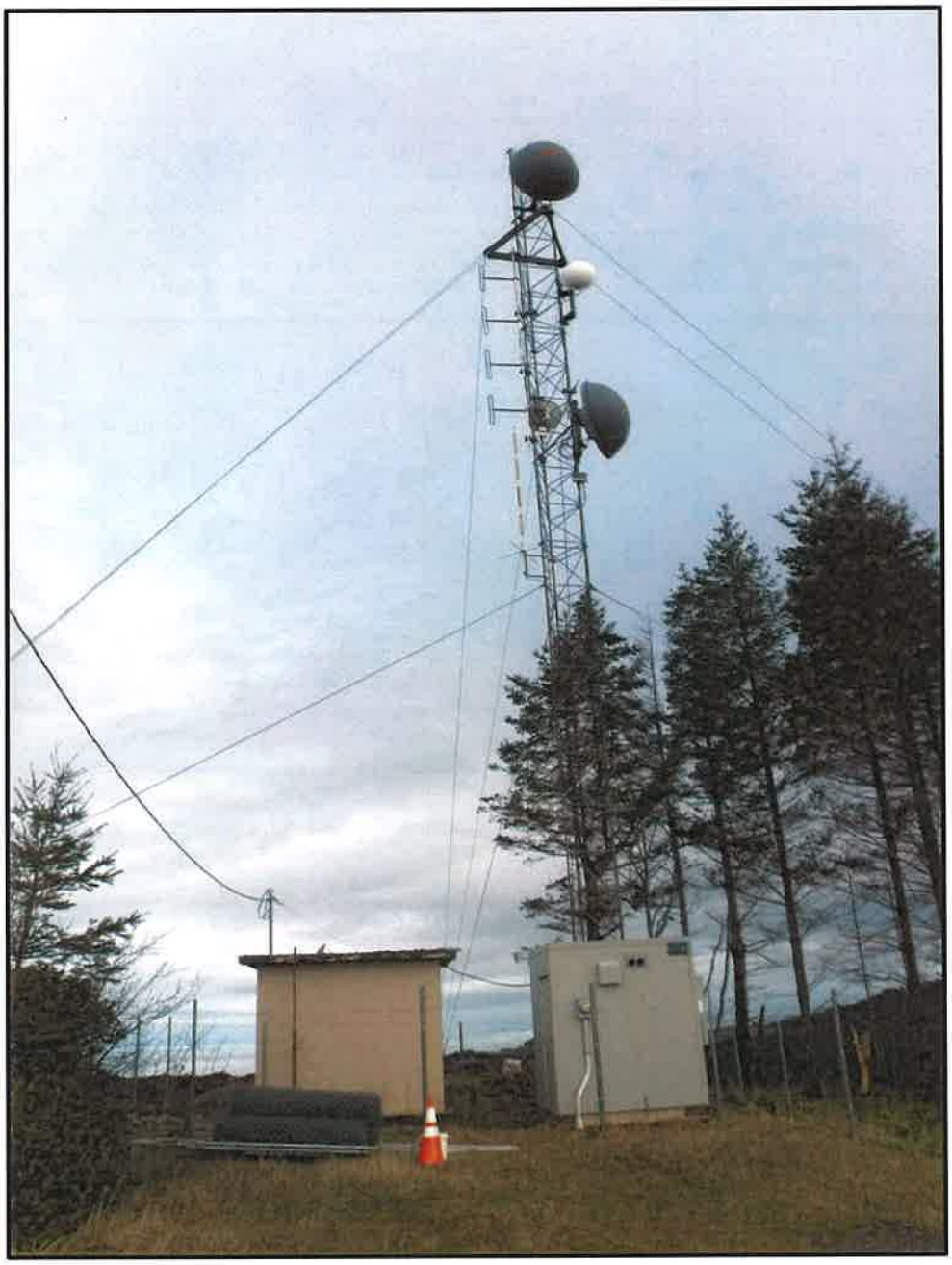


Figure 9. North-facing view atop the summit of Stone Butte showing the existing CCEC radio facility, which was installed in 1976 and upgraded by CCEC in 2006.

Environmental Context

Franklin and Dyrness (1988) map the project area within the Klamath Mountains Physiographic Province. The northern extent of the Klamath Mountains Province, the portion located within Oregon, is often identified as the Siskiyou Mountains (Franklin and Dyrness 1988:13). The province is characterized by rugged, deeply dissected terrain, eroded from steeply folded and faulted marine terraces that were deformed in the Cretaceous period and uplifted in the Miocene. The project area is on the westernmost terrane of the province, which is made up of Jurassic silts and sands mixed with lavas, breccias, and schists and overlain with Cretaceous-era sandstone and siltstone.

Franklin and Dyrness (1988) map the project area at the transition between two vegetation zones. To the west, the *Picea sitchensis* (Sitka spruce) vegetation zone follows the Pacific Coast and is characterized by a generally wet and mild climate. Overstory species in this zone typically include Sitka spruce, western red cedar, Douglas fir, grand fir, western hemlock, red alder, and shore (lodgepole) pine, along with Sequoia, laurel, and Port Orford cedar. To the east is the *Tsuga heterophylla* (western hemlock) vegetation zone, a widespread forested zone dominated by Douglas fir, western hemlock, and western red cedar (Franklin and Dyrness 1988). In the upland setting of the project area, native vegetation include Douglas fir, tanoak, Pacific rhododendron, evergreen huckleberry, Oregon grape, salal, western sword fern, hairy manzanita, and western bracken fern.

Soils in the project area are mapped by the Natural Resources Conservation Service (NRCS) as *Skookumhouse-Hazelcamp complex, cool, 0 to 30 percent slopes.* These are mountaintop soils formed from metasedimentary or metavolcanic colluvium and residuum. Skookumhouse is found in concave areas of mountain summits; Hazelcamp occurs in convex areas. These soils typically consist of reddish brown to red clay loam, silty clay, silty clay loam, and gravelly silty clay. Weathered bedrock generally lies as high as 36 inches (91 cm) below the ground surface (NRCS 2021).

Cultural Context

ASCC carried out ethnographic, historic, and archaeological background research using materials from the Oregon State Historic Preservation Office (SHPO) as well as resources located at the ASCC library and online. These materials included archaeological and historic property inventories, cultural resource survey reports, General Land Offices (GLO) survey maps, various county road maps, tax assessor maps, and the Oregon SHPO's Oregon Archaeological Records Remote Access (OARRA) database. The goal of this research was to establish a cultural context for the project area, facilitating the interpretation of any findings in the field.

Ethnographic Overview

Any attempt at a broad ethnographic overview is complicated by many factors, e.g., Euro-American historical bias, overlapping traditional territories, complexities of language, and complex histories both before and after the arrival of Euro-Americans in the region. With that caveat, the following narrative draws on available ethnographic and archaeological records.

In the early nineteenth century, the various indigenous groups of southwestern Oregon shared a fluid social landscape (Cohen and Tveskov 2008). Territories overlapped due to shared resource areas, intermarriage, and extensive trade networks. The fundamental political, social, and economic unit of identity for any individual would have been at the household or village level. Societies were trans-egalitarian, with each village headed by one or more prominent families. Villages had a high degree of autonomy but ties between them and groups of villages were reinforced through trade, marriage and shared resource areas. Critical to the subsistence base was maintenance of seasonal mobility and household autonomy.

At this time, the Southern Oregon Coast between the California border and the Coquille River and the adjacent interior mountains were inhabited by speakers of Upper Umpqua, Tututni and Galice-Applegate—all languages associated with the Pacific branch of the Athabaskan linguistic family (Zenk 1990). Tututni was a chain of dialects spoken by groups between the Chetco River and Two Mile Creek.

The project area was part of the traditional territory of the *Qua-to-mah* (*Kwatami*) people, a Tututni-speaking group who lived along the Oregon Coast from Humbug Mountain to Two Mile Creek, nearly as far north as the Coquille River (Byram and Ivy 2004:18; Parrish 1854). Indian agent Josiah L. Parrish (Parrish 1854), and the *Map of Curry County, Oregon, Showing Location and Holdings of Early Indian Tribes* (Moore 1927) identify three villages within Qua-to-mah territory in the mid-1800s: one at Floras Creek (called Qua-to-mah or Horse Creek by Parrish), one at the mouth of the Sixes River, and one at Port Orford. Translated as "by the inside water," *Qua-to-mah* may refer to the bays, lakes, and inlets—the "inside waters"—that characterize this area of the coast (Byram and Ivy 2004:18).

The Qua-to-mah practiced a complex subsistence pattern based on the seasonal availability of plant and animal resources. Permanent winter villages such as Tseriadun afforded access to a variety of marine, shoreline, freshwater, and terrestrial resources, but during the warmer months, people moved farther inland to procure camas, acorns, berries, epos, tarweed, lamprey, salmon, elk, and other important foods (ibid.). Ethnographies suggest strong social ties between the northern Qua-to-mah and the people of the Coquille River (Byram and Ivy 2004:20).

Like other groups in the Pacific Northwest, the Qua-to-mah were devastated by European-introduced diseases during the historic period. The toll taken by waves of smallpox, malaria, influenza, and measles was catastrophic, and by the mid-1800s,

Tututni lifeways were heavily impacted by depopulation, Euro-American immigration, and the increasing presence of the U.S. Government.

In 1850, Anson Dart was named as the first Superintendent of Indian Affairs of Oregon Territory and he began treaty negotiations the next year with tribes from the northern Willamette Valley, along the lower Columbia River down to Tillamook Bay, and from Sixes River to the mouth of the Rogue (Confederated Tribes of Siletz Indians 2021). The treaties negotiated by Dart were never ratified or honored. Beginning in 1853, another series of treaties was negotiated and signed, ceding roughly 15 million acres between the Columbia River and the summits of the Siskiyous, and from the Summit of the Cascades to the summit of the Coast Range. In 1855, President Franklin Pierce signed an Executive Order establishing the Siletz (or Coast) Reservation. As originally established, this reservation comprised roughly 1.1 million acres, extending nearly 125 miles along the Oregon Coast from Cape Lookout to the Siltcoos River (Beckham 1990; Confederated Tribes of Siletz Indians 2021).

As the discovery of gold crowded the region with Euro-Americans, conflicts between the immigrant and indigenous populations became increasingly frequent, culminating in the 1855-1856 Rogue River Wars (Cohen and Tvseskov 2008; Confederated Tribes of Siletz Indians 2014). In the wake of the Rogue River Wars, the U.S. Army established Indian internment camps around Fort Lane and Fort Orford—the latter making use of the village site of *Tseriadun*—and began moving refugees to reservations (Cohen and Tveskov 2008).

By the end of 1856, the Siletz Reservation had absorbed most of these displaced Southern Oregon Coast peoples. Coos and Lower Umpqua peoples were relocated to the Siletz Reservation by 1860. Over the next twenty years, the Siletz Reservation was reduced by a series of congressional and presidential acts. As these lands were taken away, some Athabaskan-speaking people left to return south to traditional territories, but most remained within the reservation (Beckham 1990; Confederated Tribes of Siletz Indians 2021). The Siletz Reservation today encompasses 3,666 acres in Lincoln County, Oregon. The Confederated Tribes of Siletz Indians are made up of people from more than 30 tribes and bands, including Tututni-speaking groups such as the Port Orford band of *Kwatami* (Qua-to-mah) (Confederated Tribes of Siletz Indians 2021).

The Coquille Indian Tribe consists of Miluk Coos and Upper Coquille people, with over 1,100 members and a land base of over 10,000 acres (Coquille Indian Tribe 2021). The 1989 Coquille Restoration Act recognized the sovereignty of the Tribe and its authority as tribal government to manage and administer political and legal jurisdiction over its lands, businesses, and community members. The Coquille Indian Tribe continues to have affiliations with other Oregon Indian reservations, including the Confederated Tribes of Siletz Indians, Confederated Tribes of Grande Ronde, and the Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians.

Historic Overview

European seafarers began to record sightings of the Southern Oregon Coast in the sixteenth century. In in 1603, Cape Blanco evidently received its name from Spanish navigator Martin de Aguilar, but the "white cape" was rarely noted again by Europeans until late in the following century. In 1775, Spanish explorer Juan Francisco Bodega named it Cabo Diligencias, and in 1792, British naval Captain George Vancouver christened it Cape Orford, a name later applied to harbor to the south (LaLande 2018).

By the late 1700s, more Spanish, Russian, and British navigators were plying the ocean off the Southern Oregon Coast. Early contacts between these maritime Europeans and the Athabaskans of the southern coast are not well documented. In 1792, American merchant sea captain Robert Gray, sailing out of Boston, evidently traded with the people living around Port Orford Heads. That same year, Captain George Vancouver recorded "many smokes on shore" along the cove, where he also anchored and engaged in trade (Beckham 1974).

In the early 1800s, the booming fur trade fueled Euro-American exploration of Oregon via the Columbia, Willamette, and Umpqua valleys. In 1827, Hudson's Bay Company employee Alexander McLeod, charged with finding a navigable route into southern Oregon, passed through the Port Orford area. Along the journey, McLeod wrote of a number of villages, including one he called *Toototenez*—likely an interpretation of *Tututni* (Hall 1995).

During the first years of the California gold rush, William Tichenor captained a small steamer, the *Sea Gull,* on a route between San Francisco and Portland. As the gold rush piled money and prospectors into the region, Captain Tichenor saw the deep-water harbor at Port Orford as a potentially valuable supply point for the unexploited territory of southern Oregon and northern California. On June 9, 1851, he dropped anchor and sent ashore a small party tasked with establishing a townsite, led by J.M. Kirkpatrick.

As the *Sea Gull* continued on to San Francisco, interactions between Kirkpatrick's party and the Qua-to-mah Tututni quickly turned violent. For more than two weeks, the would-be settlers held a defensive position on Battle Rock, then known as *Mah-Nah-Xhey-sah*, killing a number of Tutuni people with gun or cannon fire. With ammunition running low, Kirkpatrick's party escaped on foot. They reached a native village near Coos Bay, where they were given food and help, then continued on to white settlements in the Willamette Valley.

Euro-American interest in the anchorage at Port Orford Heads remained strong. In July of 1851, Tichenor and the *Sea Gull* returned in force, landing enough men, arms, and provisions to establish a settlement. This seaport became Port Orford, the first Euro-American settlement on the Southern Oregon Coast. Oregon Territorial Governor John P. Gaines quickly made the case that the U.S. Army should build a

garrison there to secure the harbor. Troops sailed from Astoria on September 14, 1851, and Fort Orford was founded on their arrival. By the end of October, more than 200 soldiers were stationed at Fort Orford (Minor et al. 1980). These troops marched on villages of the Coquille River, where member of the William T'Vault expedition had recently been killed. After this show of military force, troops at Fort Orford were scaled back to less than 100 (and less than ten, in the winter of 1853-1854) until 1856, when the Rogue River Wars spilled into the Port Orford area (ibid.).

The news of gold in the Rogue River Valley brought a rush of miners to the region in the mid-1850s. By the fall of 1855, conflicts between the immigrants and Indigenous peoples of the valley had erupted into open warfare, with bloodshed nearing Port Orford by January of 1856. The post's surgeon, Dr. Rodney Glisan, reported massacres and the reinforcement of Port Orford's defenses, noting that "most of the buildings are made of cedar plank, and are consequently very inflammable" (Glisan 1879). Civilians built a temporary blockhouse, "Citizen's Fort," on Fort Point, separate from the U.S. Army post.

Fort Orford's ranks grew from 47 to 175 in March 1856, and the fort became the U.S. Army's principle supply depot on the Southern Oregon Coast for the duration of the Rogue River Wars. Neighboring grounds—including the *Tseriadun* village site—were used as a makeshift internment camp for refugee and imprisoned combatant Indians. Dr. Glisan estimated that 1,400 Indians passed through the area before being moved to the new Siletz Reservation in June and July of 1856 (Glisan 1879). After the Rogue River Wars, Fort Orford was dismantled and abandoned.

The discovery of gold along the beaches and rivers of Curry County spurred placer mining on the drainages of the Siskyou Mountains. By the 1860s, homesteaders were claiming land on the Sixes and Elk rivers. The rush to exploit the territory further pushed native peoples from traditional lifeways, as forests were logged and salmon-bearing streams became contaminated from mining. The gold mines dried up in short time, but other industries had become established, including commercial fishing, shipping, logging, milling, and dairy farming (Beckham 1971; Nelson 2010).

Roads, trails, and a few homesteads are mapped in the vicinity of Stone Butte beginning in the 1890s. The 1891 General Land Office (GLO) cadastral map of the township labels a northwest-southeast road through Section 24 as "Sled Road to Eight Mile Prairie" (Figure 10). Several homes and farms are mapped to the southwest of Stone Butte (here "Stony Butte") in Sections 23 and 26, including those of J.E. Hawkins, W.P. Lenfesty, and a "widow woman."

The 1903 USGS Port Orford, OR 1:250,000 topographic map labels the community of Denmark in Section 15 and several buildings reached by roads in the uplands (Figure 11). The only feature mapped within the visual APE is the old sled road (unlabeled), which follows the northeast side of Stone Butte.

The 1954 USGS Sixes, OR quadrangle shows new unimproved roads on Stone Butte, with a junction to the west of the proposed tower and three non-residential buildings to the north, at least 200 feet below the ridgetop (Figure 12). A 1951 aerial photo does not clarify what these buildings are. In short, except for a few meandering roads, the review of historic maps and aerial photos shows no development atop Stony Butte prior to the mid-1970s.

In 1976, the General Telephone Company of Northwest Inc. installed a microwave station atop Stone Butte. CCEC acquired the facility from Curry County in 2006 and upgraded it, replacing the tower and installing a new fence and additional shelter (Matt Mjelde, personal communication 2/3/2022). Two additional towers were built on the summit in the 1980s or 1990s for use by telecom companies. Only two of the three towers are mapped atop Stone Butte on the 1986 USGS Sixes, OR quadrangle.

Permits for surface mining on Stone Butte were in process in 1982 and 1989, but the extent of mining that initially took place is unclear (Anon 2015) (Figure 13). Aerial photography shows patches of surface mining in the 1990s. Mining increased to the north of the towers by May 2013 (Google, Inc. 2022; USGS 2022). This mining area appears to have expanded considerably in 2019, evidently for re-rocking coastal jetties (Matt Mjelde, personal communication 1/19/2022).

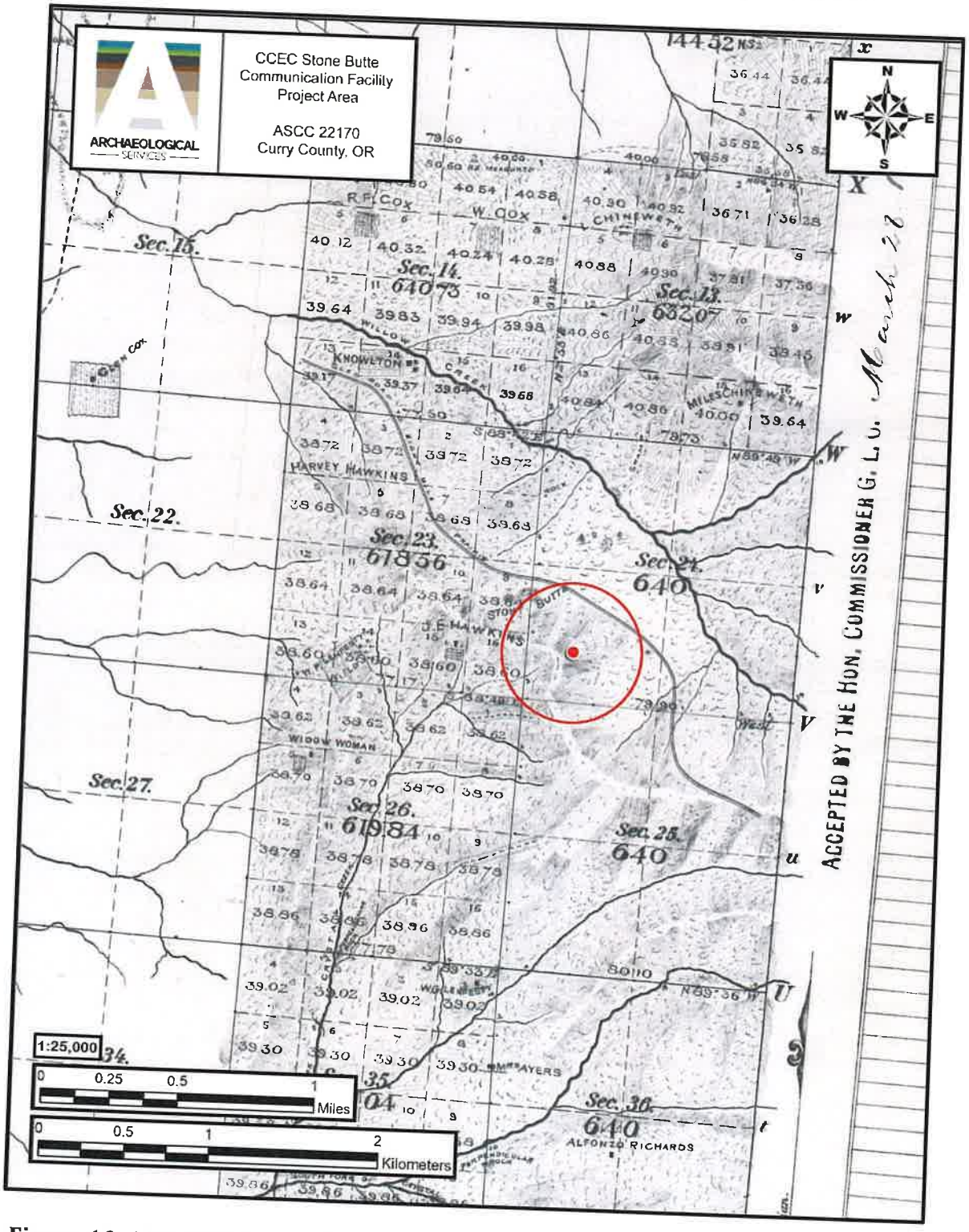


Figure 10. 1891 GLO map of the township overlaid with the proposed tower location and the approximate visual APE of the project.

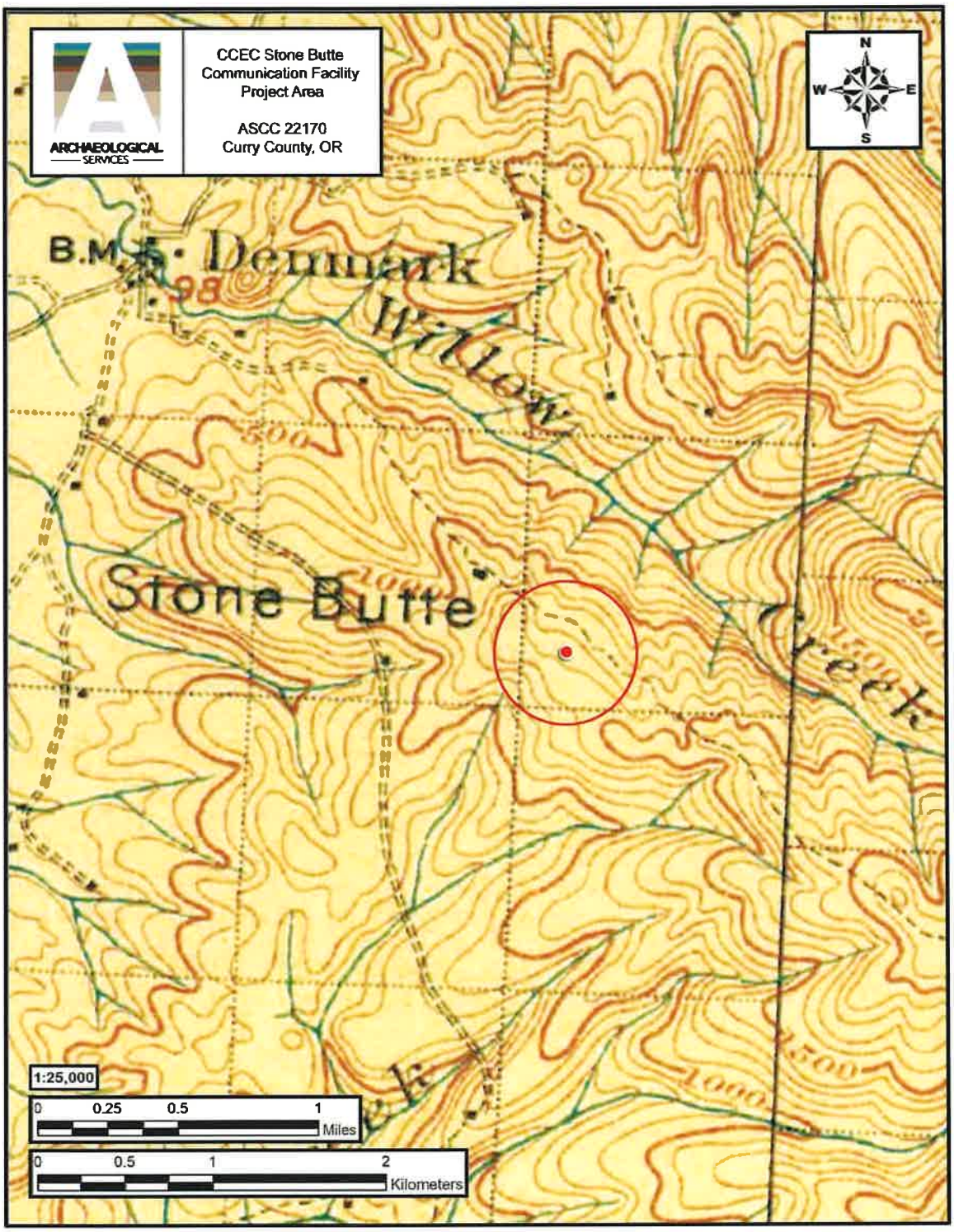


Figure 11. 1903 USGS Port Orford, OR 1:250,000 topographic map overlaid with the proposed tower location and the approximate visual APE of the project.

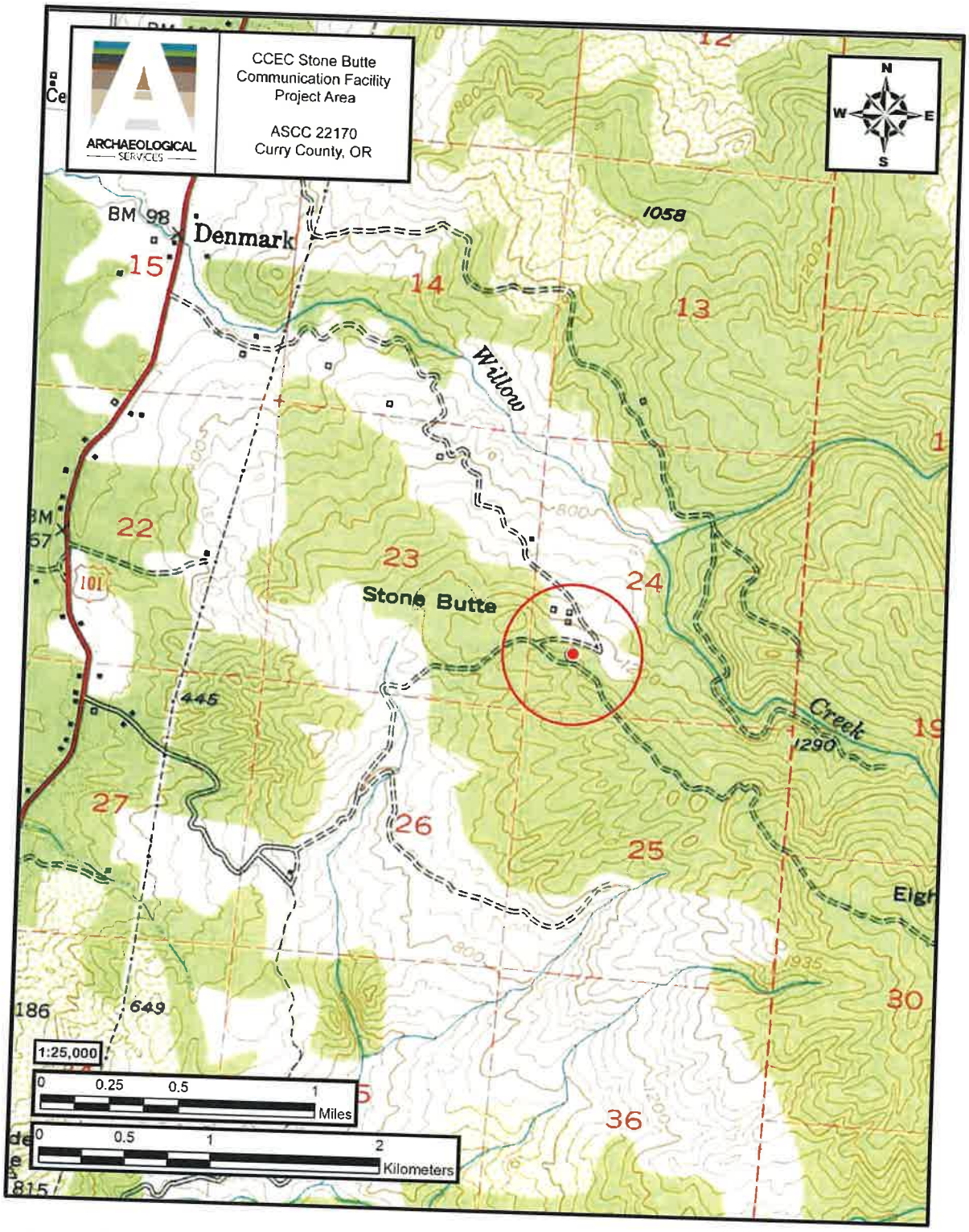


Figure 12. 1954 USGS Langlois, OR 1:62,500 map overlaid with the proposed tower location and the approximate visual APE of the project.

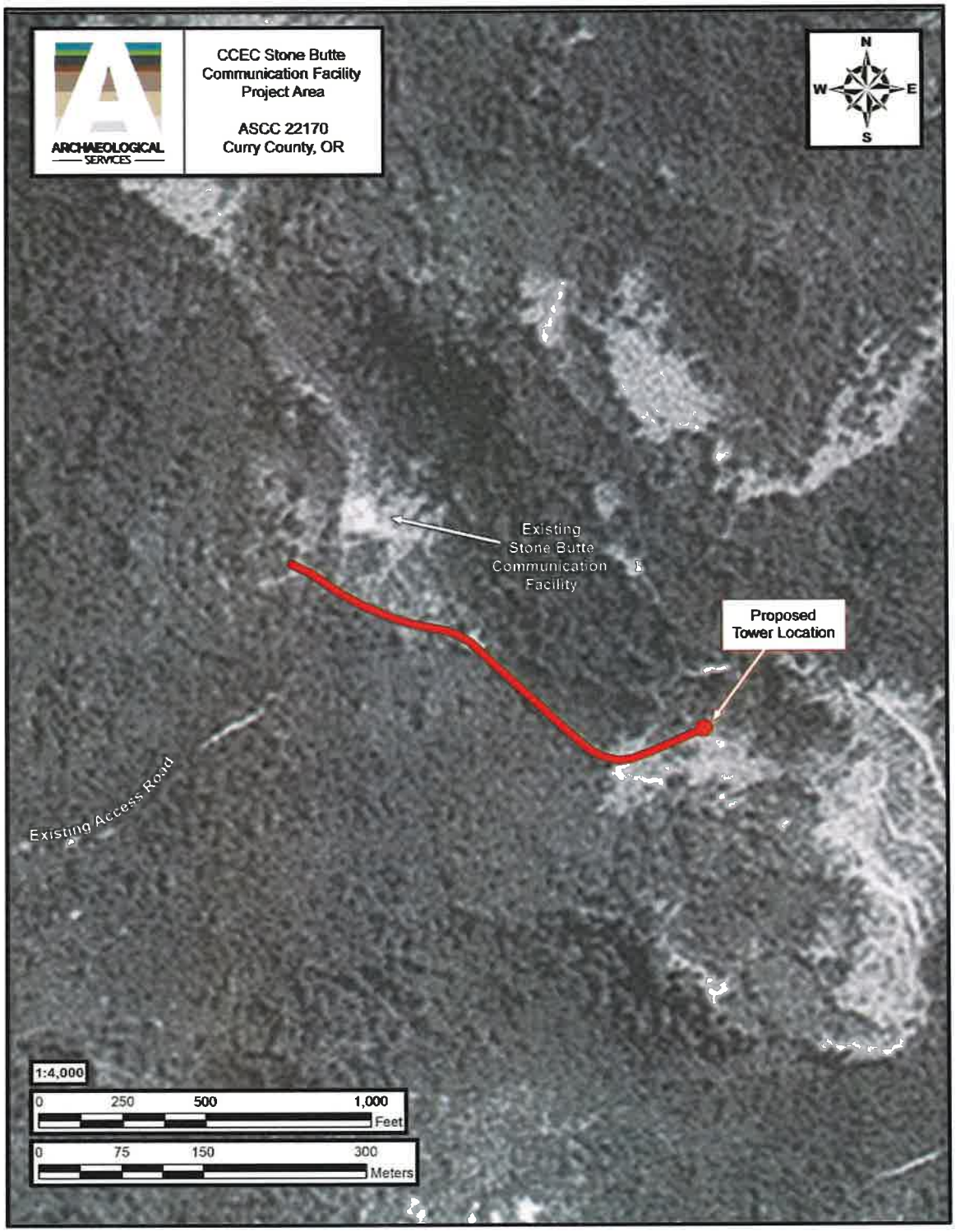


Figure 13. 1985 aerial photomap of Stone Butte overlaid with the current project area.

Previous Archaeological Research

Archaeological exploration of Port Orford began in 1875 when Paul Schumacher, representing the Smithsonian Institution, surveyed the Oregon Coast and excavated at a number of village sites, which he termed "rancherias" (Schumacher 1877). Major surveys from the 1930s on (e.g. Berreman 1935) mostly focused on coastal sites. Work by former BLM archaeologist Reg Pullen in the 1970s and 80s, Moss and Erlandson (e.g. Moss and Erlandson 1996), Cohen and Tveskov (Cohen and Tveskov 2008), and others helped to form our current understanding of regional projectile point typology, coastal site chronology, and precontact site distribution.

Evidence for the exploitation of marine resources on the Southern Oregon Coast has been radiocarbon dated to as early as 8,975 years BP (Moss and Erlandson 1994), but the vast majority of known sites on the Oregon Coast date from the Late Holocene. In large part, this reflects the complex taphonomic and erosional processes that affect coastal sites. Much of the region's early archaeological record was presumably lost before post-glacial sea levels stabilized in the Middle Holocene. Early sites may have been destroyed by erosion, reduced to palimpsests, or deeply buried in dunes. At points along the Cascadia Subduction Zone, however, tectonics have enabled the preservation of old archaeological deposits on uplifted marine terraces, including Pioneer Terrace deposits in the Port Orford area.

A major distinction in site types on the Oregon Coast is between shell midden sites and "bluff sites." Shell middens sites are characterized by thick accumulations of marine shell, often with other faunal material (e.g. bones from fish and pinnipeds), possibly containing lithic artifacts. The oldest known, extant shell middens on the Oregon Coast date to ~5,000 years BP, around the time that sea levels stabilize. The extent to which these early middens correlate to the general coastal adaptation from inland to marine-oriented subsistence is unclear, as many older midden deposits have surely eroded away.

Bluff sites, also referred to as lithic sites, are dominated by lithic artifacts, often present as deflated scatters, with little or no faunal material. Bluff sites in the region have been found in two basic geomorphic settings: first on stabilized sand dunes dating from the Middle to Late Holocene and second on older marine terraces. The "type site" for lithic sites on the Southern Oregon Coast is 35CU75, at Blacklock Point, which like several of the Port Orford-area sites is elevated on a high marine terrace (Minor and Greenspan 1998). Radiocarbon dating has largely discounted the hypothesis that bluff sites represent a "pre-marine" pattern on the Oregon Coast. It instead appears that bluff and shell midden sites were contemporaneous, representing terrestrial versus marine affiliations respectively, possibly as two aspects of the same subsistence-settlement system (Moss and Erlandson 1994).

Chronologies developed for the region focus on the apparent shifts in subsistence between marine, intertidal, and terrestrial resources over time. Studies of changes in

settlement, subsistence, and social patterns over time have included efforts to shed light on the arrival of Athabaskan and Algic-speaking peoples to the region.

Archaeological Overview

Glade Tradition

Within the larger pre-contact cultural landscape of southwestern Oregon and northern California, the Glade Tradition is described as a conservative and stable cultural/technological tradition of great antiquity and long duration. Based on comparative statistical analysis of 47 assemblages from southwestern mountains of Oregon and adjacent California, Connolly (1986) suggests the Glade Tradition began some 9,000 years ago and persisted into late precontact times in the Umpqua and Coquille river basins.

Through the Middle and early Late Holocene, cultural material style and technology appears to have been remarkably stable (Aikens et al. 2011; Connolly 1986). Common tools include stemmed and foliate projectile points, broad-necked side-notched and stemmed projectile points, globular stone bowl mortars, hammer/anvil stones, edge-faceted cobbles, and thick-bit end scrapers. Winthrop (1993:253) suggests these assemblages indicate a highly mobile foraging economy whereby small groups moved frequently in order to seasonally exploit widely scattered resource patches using generalized tool kits. Glade Tradition sites lack evidence for substantial dwellings, and few sites are characterized as village sites (Tveskov and Cohen 2006; Winthrop 1993). Evidence shows the Glade Tradition finally blending with Siskiyou and Gunther patterns between ~2,000 and 1,000 years ago (Aikens et al. 2011; Connolly 1986).

Siskiyou Pattern

Beginning about 1,700 years ago a substantial shift occurs in settlement and land use in southwestern Oregon and northern California. Although a degree of seasonal mobility was retained, the Siskyou Pattern a greater emphasis on residential sedentism (Tveskov and Cohen 2006). This shift corresponds to increasing population densities and the "first documented appearance of nucleated pithouse villages" (Connolly 1991). This more residentially sedentary settlement system continued into the ethnohistoric period.

The Siskiyou Pattern largely replaced the long-lived Glade Tradition, although not at the same time or degree throughout the region. Distinguishing elements of Siskiyou Pattern assemblage structure include an increase in proportions of metates and hopper mortars, proliferation of small side-notched, corner-notched, and basal-notched points, and an increase in amounts of exotic materials such as obsidian from the east and marine shell from the west. The increase in import of exotic goods suggests a "renewed florescence in long-distance trade" (Aikens et al. 2011).

Potentially the result of population pressure, Connolly (1986) suggests an influx of people from Klamath-Modoc country in the Northern Great Basin may have been at least partially responsible for population growth, settlement reorganization and changes in assemblage structure. Indeed, some researchers see the material manifestations of the Siskiyou Pattern as most closely affiliated with Penutian and Kootenay speaking peoples from the east side of the mountains. As described in Aikens et al. (2011:348), "In the interrelated set of small interior valleys between the Cascades and Coast Range that links the Klamath, Rogue, Upper Coquille, South Umpqua and North Umpqua river systems, the Siskiyou Pattern is most recognizably linked with the ethnohistoric period cultures of Klamath, Shasta, and Takelma peoples."

Gunther Pattern

The Gunther Pattern appears suddenly in southwestern Oregon at about the same time as the Siskiyou Pattern, or perhaps somewhat later. Artifacts that distinguish the Gunther Pattern include distinctive triangular concave-based points (e.g., Gunther Barbed), bone harpoon points, shallow steatite oil lamps, large ceremonial obsidian blades, baked clay figurines, flanged pestles, bell-shaped mauls, zoomorphic stone clubs, and a variety of bone and shell ornaments (Aikens et al. 2011:349). The Gunther Pattern has been interpreted as "the remains of a river- and coastal-oriented people living in permanent villages practicing seasonal movements essentially indistinguishable from those described ethnographically" (Tveskov 2000).

While maintaining the possibility that the Gunther Pattern is an *in situ* local coastal development, based on its sudden appearance and distinctness from earlier assemblages, and a strong linguistic affiliation between the historical inhabitants of the western California-Oregon borderlands and Athabaskan speakers of southeast Alaska, the Gunther Pattern is posited as the cultural material manifestation of a late period Athabaskan immigration (Connolly 1986). This is estimated to have occurred approximately 1,500 to 1,300 years ago. Archaeological and linguistic data suggest these relative newcomers to southwest Oregon "...landed first on the coast of Northern California and thereafter spread northward up the Oregon coast and eastward into the southwestern valleys and mountains, establishing the range they occupied in ethnographic times" (Aikens et al. 2011:350). Archaeological data from the Port Orford area show a significant population surge beginning ca. AD 1200, possibly reflecting the arrival of these Athabaskan-speaking communities (Connolly et al. 2021).

Known Archaeological Sites and Historic Properties

The literature research indicates that no previous cultural resource surveys have been conducted within the project's 0.5-mile APE for visual effects. The visual APE also contains no known archaeological sites or historic properties (Oregon SHPO 2022). The nearest recorded archaeological site, 35CU290, is located roughly 1.5 miles northwest of the proposed tower location, well outside the project's visual APE.

The nearest historic properties on the Oregon Historic Sites Map are located more than 2.5 miles to the north along Floras Creek near Langlois.

Field Investigation

ASCC inspected the project area on January 19, 2022. The fieldwork was carried out by Michael Smith, B.A., while Alexander Gall, M.A. oversaw and directed the project. Weather conditions at the time of fieldwork were mostly cloudy, with no precipitation.

Surface Investigation and Visual Impact Assessment

During the surface investigation, ASCC walked parallel, adjacent transects spaced no more than two (2) meters apart across the project area, except where prohibited by vegetation. ASCC inspected all exposed soils for cultural materials. Soil visibility in the woods at the proposed tower location was poor (<10%) due to a heavy cover of duff, vegetation, and logs and branches. Roughly 15 to 25 meters from the proposed tower location, soils were 50-60% visible due to ground disturbance from recent tree-clearing activities, which left large ruts and piles amid the stumps. Approximately 60 meters southwest from the proposed tower location, the proposed power/access route met the existing dirt road. Soil visibility throughout the remainder of the APE was excellent, ranging from 75-95% as the route followed active roadway and a disturbed side-slope up a heavily logged ridge-side. The western terminus of the utility route was at a recently installed underground line in a roadway with >95% soil visibility.

ASCC documented the project setting using field notes, GPS data, and digital photography. Coupled with background research, photo documentation was the primary means of assessing the project's potential for indirect (visual) effects. Figure 14 and Figure 15 show the locations and directions of photos presented below, with photos 1 through 9 recording the tower setting and photos 10 through 16 showing conditions along the proposed access/utility route. All photographs were taken on January 19, 2022.

ASCC observed no precontact or historic cultural material during the surface investigation. ASCC also observed no clear lines of sight to known or likely historic properties.

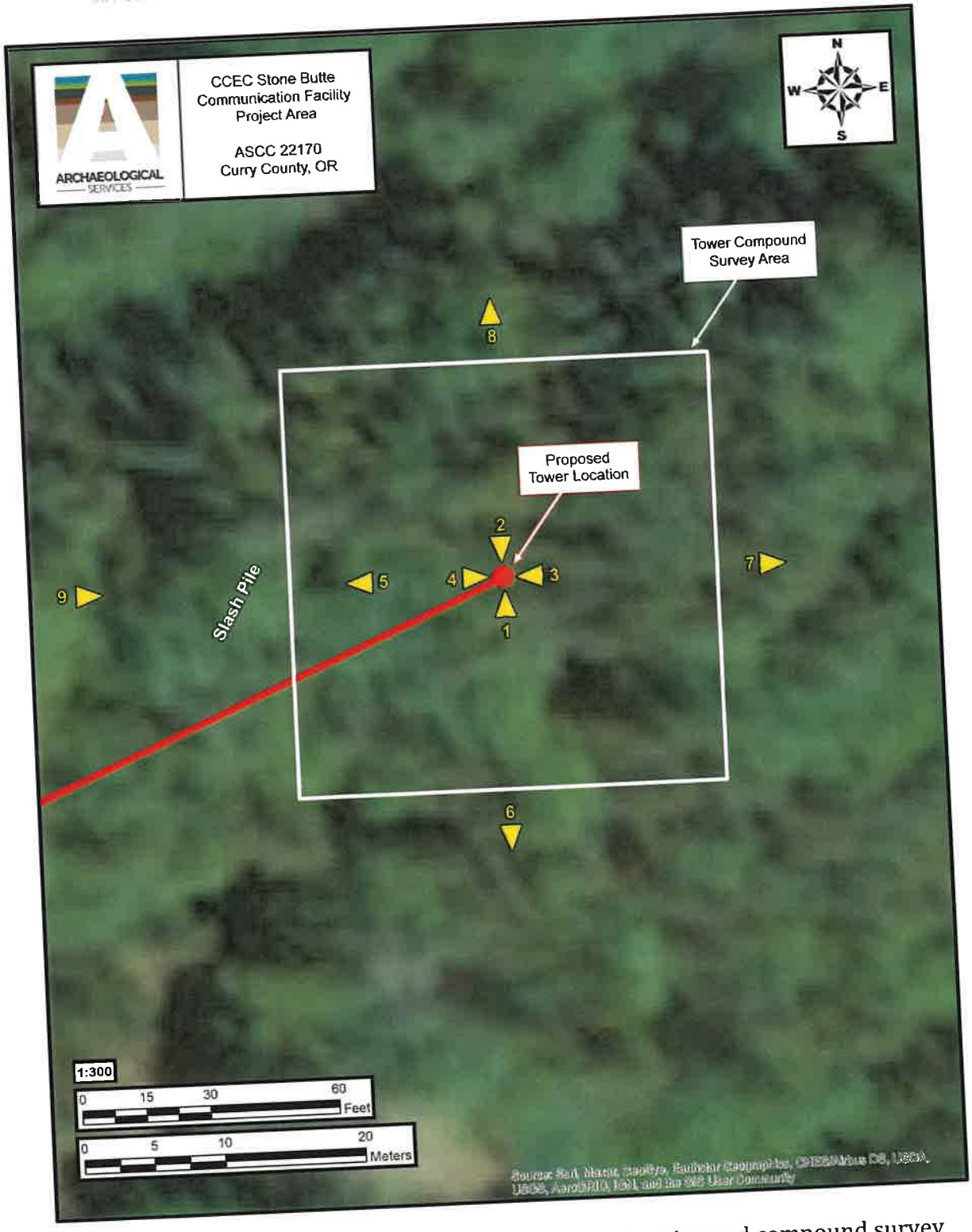


Figure 14. Aerial photograph of the proposed tower location and compound survey area, with locations and directions of photos 1-9 indicated in yellow. See following table for photos and descriptions.

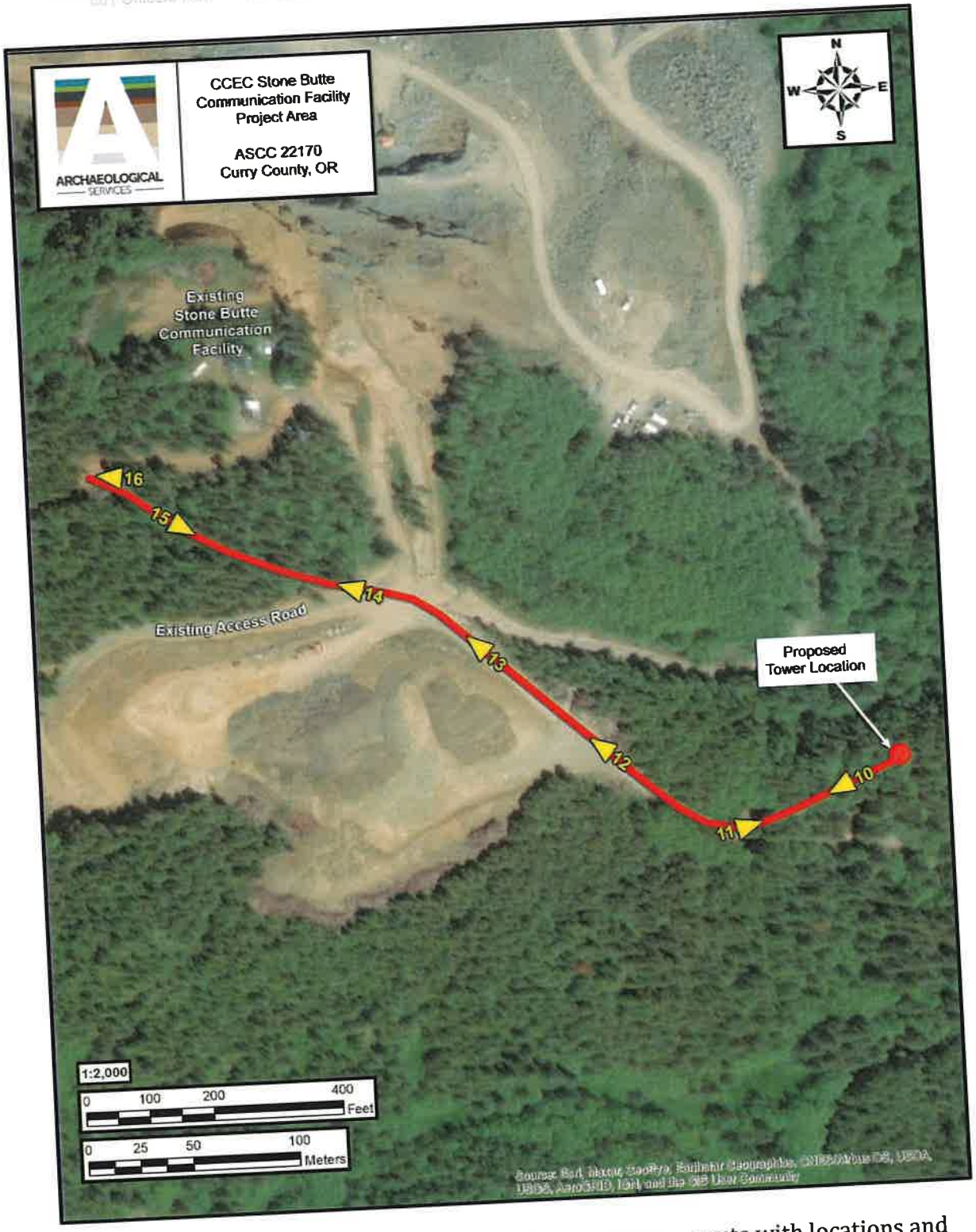


Figure 15. Aerial photomap of the proposed power/access route with locations and directions of photos 10-16 indicated in yellow. See following table for photos and descriptions.

1. North-facing view of proposed tower location, marked by pink flag at photo center.

2. South-facing view of proposed tower location, marked by pink flag at photo center.

	**3.** West-facing view of proposed tower location, marked by pink flag at photo center.
	**4.** East-facing view of proposed tower location, marked by pink flag at photo center.

	**5.** West-facing view from roughly 10 meters west of proposed tower location.
	**6.** South-facing view from roughly 20 meters south of proposed tower location.

7. East-facing view from roughly 20 meters east of proposed tower location.

8. North-facing view from roughly 20 meters north of proposed tower location.

9. East-facing view of disturbance and slash pile, taken from roughly 30 west of meters proposed tower location.

10. Southwest-facing view along power/access route from proposed tower location toward existing road.

	**11.** East-northeast-facing view along proposed power/access route, taken from existing road toward proposed tower location.
	**12.** Northwest-facing view along proposed power/access route.

13. Northwest-facing view along proposed power/access route, with existing CCEC radio tower in background atop summit.

14. Northwest-facing view along proposed utility route where it diverges from existing roadway.

15. East-southeast-facing view along proposed utility route where it side-slopes along south side of summit.

16. West-facing view of northwestern terminus of proposed underground powerline.

Subsurface Investigation

ASCC excavated two shovel test probes (STPs) within the project area, placing the first at the proposed tower location and the second roughly 25 meters to the southwest along the proposed underground power/access route (Figure 16). Placement was dictated by poor surface visibility in locations where ground impacts will occur. As noted above, soil visibility in all other areas of the APE was excellent.

Each STP was excavated by shovel as a circular hole measuring approximately 50 cm at the surface. Excavation proceeded in arbitrary 10 cm levels to terminal depths of 63 and 70 cm below ground surface (BGS) respectively. The termination of STP 1 at 63 cm BGS was due to a rock impasse.

All excavated matrix was screened through nested 1/4-inch and 1/8-inch (6-mm and 3-mm) stainless steel hardware cloth. Each excavation was documented using digital photography and GPS data. Notes on the color, composition and gravel content of the soils were kept in field notes.

Soils encountered in both STPs were essentially consistent with the NRCS description of the Skookumhouse-Hazelcamp complex, with an upper stratum of dark brown, organic-heavy gravelly loam and a lower stratum of yellow-brown gravelly clay loam. STP 2, which was surrounded by logging disturbance, appeared somewhat truncated. Gravel content ranged from roughly 40% to 70% except in the lower portions of STP 2, where it dropped to roughly 20%. All excavated rock was consistent with surface gravels observed throughout the project area: sub-round to sub-angular, pea- to cobble-sized, and made up mostly of sandstone and blueschist with lesser amounts of shale, white quartz, and other stone.

The subsurface investigation was documented using field notes, digital photography, and GPS data. Representative photos follow in Figure 17 through Figure 20. ASCC recovered no cultural material from either STP.

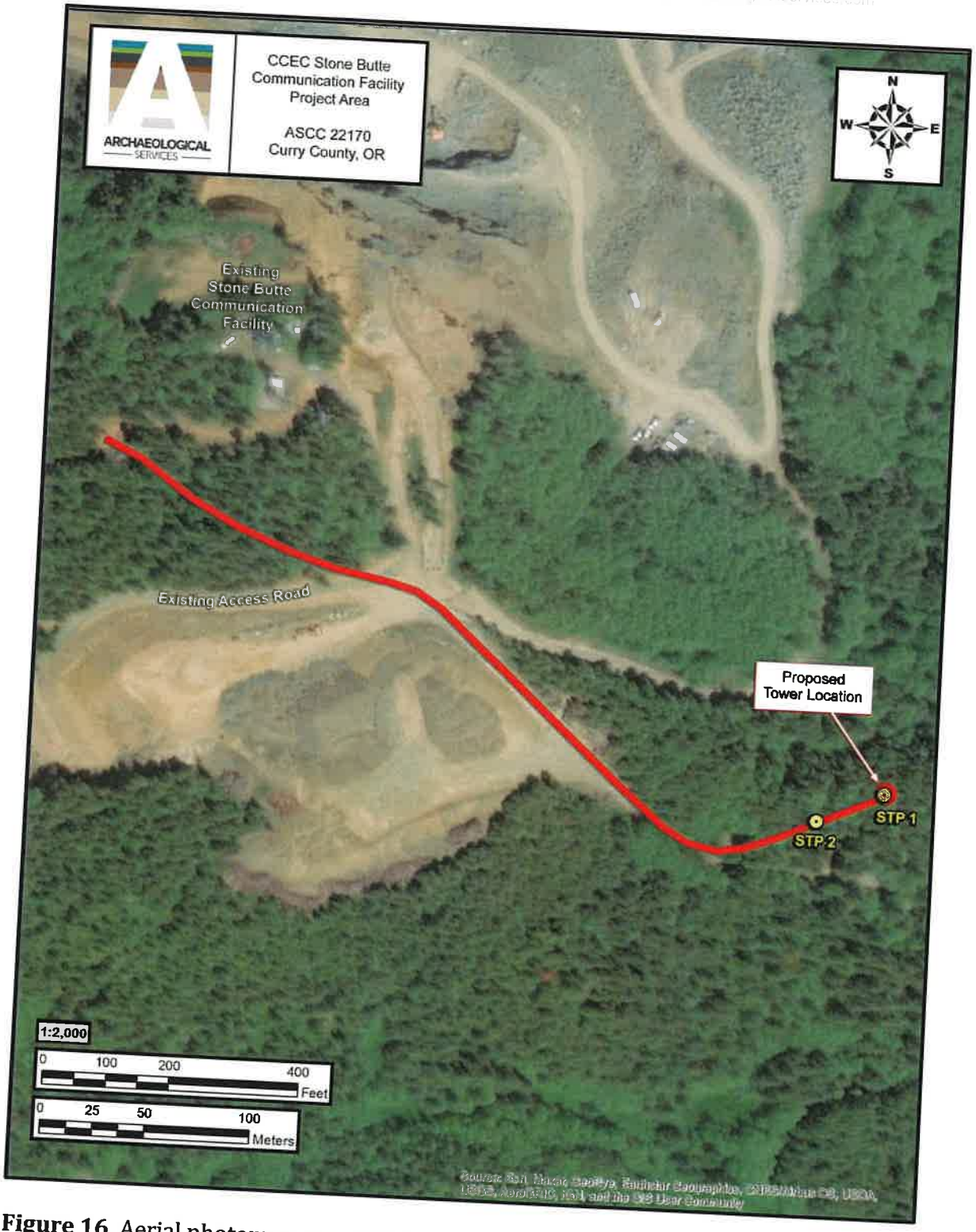


Figure 16. Aerial photomap compound overlaid with the locations of the two negative STPs excavated by ASCC during the subsurface investigation.

Figure 17. North-facing overview of STP 1 in progress at the proposed tower location.

Figure 18. Northeast-facing overview of STP 2 in progress along the proposed power/access route, facing toward the proposed tower location in background.

Figure 19. Soil profile of STP 1 at 63 cm BGS.

Figure 20. Soil profile of STP 2 at 70 cm BGS.

Results and Recommendations

Background research revealed that there are no previously recorded historic properties within the 0.5-mile APE for visual effects. No archaeological materials or historic properties were identified during the field investigation, and observed soils were interpreted as native. ASCC's recommendation is therefore that the proposed CCEC Stone Butte Communication Tower Project, as it is currently designed, receives a determination of ***no historic properties affected.*** No further cultural resource work is recommended in association with the proposed work.

Project coordinators should bear in mind that a survey is, by definition, a sampling process that cannot completely rule out the presence of archaeological materials. To prepare for the possibility that archaeological resources are discovered during project activities, ASCC recommends that project coordinators adhere to an inadvertent discovery plan (IDP) such as the one appended to this report (Appendix A).

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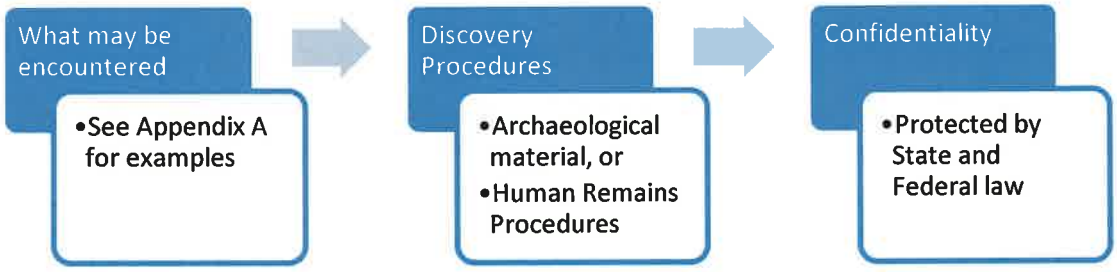
Appendix A

Archaeological Inadvertent Discovery Plan

ARCHAEOLOGICAL INADVERTENT DISCOVERY PLAN (IDP)
COOS-CURRY ELECTRIC COOPERATIVE STONE BUTTE COMMUNICATIONS TOWER PROJECT, CURRY COUNTY, OR

2/4/22

HOW TO USE THIS DOCUMENT



Archaeology consists of the physical remains of the activities of people in the past. This IDP should be followed should any archaeological sites, objects, or human remains are found. These are protected under Federal and State laws and their disturbance can result in criminal penalties.

This document pertains to the work of the Contractor, including any and all individuals, organizations, or companies associated with the Coos-Curry Electric Cooperative Stone Butte Communications Tower Project in Curry County, OR.

WHAT MAY BE ENCOUNTERED

Archaeology can be found during any ground-disturbing activity. If encountered all excavation and work in the area MUST STOP. Archaeological objects vary and can include evidence or remnants of historic-era and precontact activities by humans. Archaeological objects can include but are not limited to:

- **Stone flakes, arrowheads, stone tools, bone or wooden tools, baskets, beads.**
- Historic building materials such as **nails, glass, metal** such as cans, barrel rings, farm implements, **ceramics, bottles, marbles, beads.**
- Layers of **discolored earth** resulting from hearth fire
- Structural remains such as **foundations**
- **Shell** Middens
- **Human skeletal remains** and/or **bone fragments** which may be whole or fragmented.

For photographic examples of artifacts, please see Appendix A. (Human remains not included)

If there is an inadvertent discovery of any archaeological objects see procedures below.

If in doubt, call it in.

DISCOVERY PROCEDURES: WHAT TO DO IF YOU FIND SOMETHING

1. Stop ALL work in the vicinity of the find
2. Secure and protect area of inadvertent discovery with 30-meter/100-foot buffer—work may continue outside of this buffer
3. Notify Project Manager and Agency Official
4. Project Manager will need to contact a professional archaeologist to assess the find.
5. If archaeologist determines the find is an archaeological site or object, contact SHPO. If it is determined to *not* be archaeological, you may continue work.

HUMAN REMAINS PROCEDURES

1. If it is believed the find may be human remains, stop ALL work.
2. Secure and protect area of inadvertent discovery with 30-meter/100-foot buffer, then work may continue outside of this buffer with caution.
3. Cover remains from view and protect them from damage or exposure, restrict access, and leave in place until directed otherwise. **Do not take photographs. Do not speak to the media.**
4. Notify:
    - Project Manager
    - Agency Official
    - Oregon State Police - **DO NOT CALL 911**
    - SHPO
    - LCIS
    - Appropriate Native American Tribes
5. If the site is determined not to be a crime scene by the Oregon State Police, do not move anything! The remains will continue to be *secured in place* along with any associated funerary objects, and protected from weather, water runoff, and shielded from view.
6. Do not resume any work in the buffered area until a plan is developed and carried out between the State Police, SHPO, LCIS, and appropriate Native American Tribes and you are directed that work may proceed.

CONTACT INFORMATION

- Contracted Archaeologist, Alexander Gall, ASCC: 360-590-8614
- Oregon State Police, Lt. Craig Heuberger: 503-508-0779 cheuber@osp.oregon.gov
- Oregon State Historic Preservation Office (SHPO),
    - Asst. State Archaeologist, John Pouley: 503-480-9164
    - GIS Archaeologist, Jamie French: 503-979-7580
- LCIS, Mitch Sparks: 503-986-1086
- Appropriate Tribes
    - **Coquille Indian Tribe**
      Kassandra Rippee, THPO
      541-808-5554 KassandraRippee@coquilletribe.org
    - **Confederated Tribes of Siletz Indians**
      Robert Kentta, Cultural Resources Director
      541-444-8244 kentankyla@outlook.com
    - **Cow Creek Band of Umpqua Tribe of Indians**
      Jeremy W. Johnson, THPO
      541-677-5575 ext. 5577 jjohnson@cowcreek.com

Confidentiality

All associated with the project shall make their best efforts, in accordance with federal and state law, to ensure that its personnel and contractors keep the discovery confidential. The media, or any third-party member or members of the public are not to be contacted or have information regarding the discovery, and any public or media inquiry is to be reported to Oregon SHPO. Prior to any release, the responsible agencies and Tribes shall concur on the amount of information, if any, to be released to the public.

To protect fragile, vulnerable, or threatened sites, the National Historic Preservation Act, as amended (Section 304 [16 U.S.C. 470s-3]), and Oregon State law (ORS 192.501(11)) establishes that the location of archaeological sites, both on land and underwater, shall be confidential.

Appendices and Supplementary Materials

A. Visual reference and examples of archaeology

APPENDIX A

VISUAL REFERENCE GUIDE TO ENCOUNTERING ARCHAEOLOGY

Figure 1: Stone flakes

Figure 2: Stone tool fragments

Figure 3: Cordage

Figure 4: Shell midden

Figure 5: Historic glass artifacts

Figure 6: Historic metal artifacts

Figure 7: Historic building foundations

Figure 8: 18th-Century ship

Cascadia Geoservices, Inc.
190 6th Street
PO Box 1026
Port Orford, Oregon 97465
D. 541-332-0433
C. 541-655-0021
Email: info@cascadiageoservices.com
www: CascadiaGeoservices.com

Geotechnical Site Evaluation
Stone Butte Radio Tower Site
Curry County, Oregon
T31S, R15W, Tax Lot 2302

Mr. Matt Mjelde, Engineering Manager
Coos-Curry Electric Cooperative, Inc.
43050 Hwy 101
Port Orford, OR 97465

February 25, 2021
CGS Project No. 20117

Table of Contents

INTRODUCTION

Cascadia Geoservices, Inc. (CGS) is pleased to submit this Geotechnical Site Evaluation report to Coos-Curry Electric Cooperative, Inc. (CCEC) for a portion of the Stone Butte Radio Tower site (subject property) located in Curry County, Oregon (Figure 1, Location Map). The purpose of this site investigation is to determine the geologic suitability of the subject property to site a steel communications tower and small auxiliary building. This report was preceded by a Summary Report dated February 2, 2021. This Geotechnical Site Evaluation report summarizes our project understanding, site investigation, and subsurface explorations and provides our conclusions and recommendations.

PROJECT UNDERSTANDING/BACKGROUND

Our understanding is based on telephone conversations and email correspondence with you beginning in November 2020, and on a preliminary site visit with you in November 2020. And, our understanding is based on a second site visit on December 9, 2020, at which time a geologic reconnaissance of the site was completed, and two test pits were excavated and sampled.

We understand that you are proposing to site a steel radio tower and a small CMU building at the site. The tower and building will be supported on a concrete foundation. We further understand that you are working with a civil engineer who will design the foundation and that the precise configuration and location of the tower have not yet been determined.

SITE DESCRIPTION

The site is within the Klamath Mountain physiographic region of southwestern Oregon and is located on a ridgeline in northern Curry County at an elevation of 1,410 feet above mean sea level (AMSL). The ridgeline borders Stone Butte on the east, a prominent landform in northern Curry County, and forms the divide between the Willow Creek drainage to the north and the north fork of Crystal Creek drainage to the south. The ridgeline where the subject property is located is broad and generally level to gently sloping to the southeast and is covered with immature evergreens and brush (Photo 1). The ridgeline where the site is located measures approximately 240 feet

across and is flanked on both the north and south by steep descending slopes. The area tested for this evaluation was, at the closest point, 45 feet south of the northern break-in-slope and approximately 200 feet north of the southern break-in-slope. The ridgeline is well vegetated with evergreen and deciduous trees and brush, and is poorly drained with areas of hydric plants and hydric soils observed.

Based on mapping done by others,[1,2] surficial soils at the site have been identified as loam and clay loam (44E—Burnthill loam, 15 to 30 percent slopes). These soils are well drained and are derived from marine sediments. These overlie interstratified marine sand and pea gravel grading upward to mostly clay altered, pebble-cobble alluvium of the Pleistocene Poverty Ridge marine terrace sediments. These sediments are deeply dissected by steep-gradient drainages and form a broad structurally warped platform which caps this region.

Based on our site evaluation, the site appeared stable with no fresh scarps, ground cracks, or areas of settlement noted.

SUBSURFACE EVALUATION

CGS observed the excavation of two exploratory test pits during our December 9, 2020 site visit. The test pits were excavated by Charlie Valentine and Son of Langlois, Oregon, using a track-mounted excavator, and were logged by an Oregon certified engineering geologist from our south coast office.

The test pits were located north of the access road, approximately 165.0 feet apart, and near the to-be-determined location of the tower site. They were excavated to observe the composition and physical characteristics of the soils present and to collect soil samples for later classification and lab analysis. The test pits were each excavated to a depth of 10.0 feet below ground surface (bgs), and the locations are shown on

[1] United States Department of Agriculture (USDA). Natural Resource Conservation Service Web Soil Survey. Retrieved May 15, 2017 from http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx
[2] Wiley, T. J. et al. (2014). Geologic map of the southern Oregon coast between Port Orford and Bandon, Curry and Coos Counties, Oregon. Oregon Department of Geology and Mineral Industries (DOGAMI) Open-File Report O-14-0.

Figure 2, Site Map. Detailed logs for the test pits are included at the end of this report as Attachment 1.

In general, the test pits encountered similar material. Both test pits TP-1 and TP-2 encountered, from 0 to 2.0 feet bgs, soft, dark-brown, silty organic silts. These soils had abundant roots and organic matter and were described as moist. We infer that these soils are clay and clay loam topsoil as mapped by others.[1] Below this, from 2.0 to 10.0 feet bgs, we encountered medium-dense-to-dense, tan-brown clayey alluvium consisting of rounded pebbles and cobbles to 2.0 feet in diameter (Photo 1). These surficial deposits were observed to be moist and had varying amounts of clay and cobbles. At 6.0 feet bgs, these soils had less clay and became medium-dense-to-dense, coarse, sandy, fine gravel and cobbles: moist. We further observed that these sediments maintained a vertical cut to the depth of the test pits and that no seepage from the side walls of the test pits was observed (Photo 2). Based on mapping by others,[2] we infer that these sediments are pebble-cobble alluvium of the Poverty Ridge marine terrace deposits.

Upon completion, the test pits were refilled with uncompacted excavated material. The locations were surveyed and plotted using GPS.

LABORATORY ANALYSIS

Select samples were packaged in moisture-proof bags and transported to our office where they were classified in general accordance with the Unified Soil Classification System, Visual-Manual Procedure. In addition, select samples were analyzed, where applicable, for water content (ASTM D698) and percent fines (ASTM D1140). The results are summarized below in Table 1. The Lab Analysis Reports for the samples are provided at the back of this report as Attachment 2.

Table 1: Laboratory Analysis

Sample Number	Test Pit	Depth Feet (bgs)	Soil Description	Moisture Content (%)	Percent Fines (%)	USCS[3]
SS-1	TP-1	2.0	Clayey Pebbles and Cobbles	35.0	47	GC
SS-2	TP-1	6.0	Sandy, Fine Gravel	58.0	64	GP
SS-3	TP-2	2.0	Clayey Pebbles and Cobbles	27.0	51	GC
SS-4	TP-2	8.0	Sandy, Fine Gravel and Cobbles	25.0	23	GP

We note that the clay samples have a high moisture content and attribute this to the physical characteristics of these cohesive soils.

SOIL PROPERTIES

Table 2 provides physical properties of the soils.

Table 2: Soil Properties

Type of Soils	Depth below Surface (feet)	Effective Unit Weight (pcf)	Drained Friction Angle, φ' (degrees)	Drained Cohesion, c' (psf)
Clayey Pebbles and Cobbles	2.0	115 to 151	30 to 40	0
Sandy, Fine Gravel	6.0	90 to 155	33 to 43	0

[3] Unified Soil Classification System

Provided that the foundation sites are prepared accordingly, then all footings should be designed for an allowable bearing pressure of 2,000 pounds per square foot (psf). If greater loads are anticipated, we will need to evaluate the specific load scenario individually. The recommended allowable bearing pressure applies to the total of dead plus long-term-live loads, and this bearing pressure may be doubled for short-term loads, such as those resulting from wind or seismic forces. Lateral loads on footings can be resisted by passive earth pressure on the sides of the structures and by friction at the base of the footings. An allowable passive earth pressure of 150 pounds per cubic foot (pcf) may be used for footings confined by the dense, clayey, subrounded pebbles and cobbles and new structural fills. For footings in contact with granular structural fill, use a coefficient of friction equal to 0.30 when calculating resistance to sliding.

GROUNDWATER

Groundwater was not encountered in either test pit during our site visit. Evidence of surface water was observed in the form of hydric plants and poorly drained areas. We infer that the primary aquifer is less than 50.0 feet bgs and that the hydraulic gradient is variable. We also infer that perched aquifers occur at shallower depths and form above confining layers of clay. We believe that near-surface groundwater will rise during periods of sustained rainfall and that the hydraulic gradient follows topography and is toward the east.

It is our opinion that the drainage around the tower site can be improved by elevating the site and by grading. We include these recommendations in the **DISCUSSION AND RECOMMENDATIONS** section of this report.

GEOLOGIC HAZARDS

A review of the State Landslide Inventory Database on DOGAMI's Statewide Geohazards Viewer[4] (HazVu) indicates that the site and adjoining areas along the ridgeline are not impacted by landslides, earthflows, or debris flows. In addition, the site has been classified as having a moderate susceptibility to future landslides. Conversely,

[4] (HazVu). Oregon Department of Geology and Mineral Industries (DOGAMI) Oregon HazVu: Statewide Geohazards Viewer, viewed at https://www.oregongeology.org/hazvu

the steep slopes which flank the ridge on the north and south have been identified as having a high susceptibility to future landslides.

A review of LIDAR for the area (a surveying technology that reveals topography by illuminating the ground with laser light) indicates that the top of the ridgeline, which includes the site, is generally level with small mounds, indentations, and irregularities. The steep slopes on either side of the ridge are uneven and more indicative of landslide or earthflow topography. Based on this review, the site appears stable with no anomalous landforms.

Based on a review of U.S. Geological Survey maps,[5] the site is not impacted by geologically young faults. As with other folds and faults located in the Cascadia forearc, it is suspected that great megathrust earthquakes along the subduction zone will cause future displacement on these structures.

SEISMIC DESIGN CRITERIA

The subject property is located in an area that is highly influenced by regional seismicity due to the proximity to the Cascadia Subduction Zone (CSZ). Current studies[6] indicate that the southern CSZ has generated maximum credible earthquakes with a moment magnitude (Mm) of 8.7 or greater every 200 to 300 years. Time-dependent probabilities are currently 37 percent that a megathrust earthquake of 7.1+ magnitude along the Cascadia Subduction Zone will occur in the next 50 years.

The seismic design criteria for this project are based on ASCE 7-16 Standards for a Risk Category IV structure and are summarized in Table 3 below.

[5] U.S. Geological Survey (USGS), Quaternary Faults Web Mapping Application, viewed at http://earthquake.usgs.gov
[6] Goldfinger, C., et al. (2012). Turbidite Event History—Methods and Implications for Holocene Paleoseismicity of the Cascadia Subduction Zone. U.S. Geological Survey (USGS), Professional Paper: 1661-F.

Table 3: ASCE 7-16 Standard Seismic Design Parameters

Seismic Design Parameters	Short Period	1 Second
Maximum Credible Earthquake Spectral Acceleration	S_s = 2.1 g	S_1 = 0.994 g
Site Class	D = Stiff Soil	
Site Coefficient	F_a = 1.2	F_v = null
Adjusted Spectral Acceleration	S_{MS} = 2.1 g	S_{M1} = null
Design Spectral Response Acceleration Parameters	S_{DS} = 1.4 g	S_{D1} = null
Peak Ground Acceleration	PGA = 1.033 g	

LIQUEFACTION

Liquefaction potential was assessed based on the information obtained from our borings and using the parameters provided by Idriss & Boulanger.[7] According to our seismic analysis, the site will experience a peak ground acceleration (PGA) of 1.033 g during a subduction zone earthquake. Based on our analysis, by removing the surficial organic topsoil and the upper 2.0 feet of medium-dense, clayey, subrounded pebbles and cobbles, and adding 2.0 feet of compacted granular fill, settlement due to liquefaction of the soils will be less than 1.0 inch and lateral spread will not occur. Susceptibility to liquefaction will be improved further by removing additional material and deepening the excavation.

TSUNAMIS

Based on recent mapping and modeling done by the state of Oregon,[8] the site is not within the Tsunami Inundation Zone. We note that regionally, access roads may be impacted by a local-source Cascadia Subduction Zone earthquake of 9.0 or larger.

[7] Probabilistic Standard Penetration Test-Based Liquefaction-Triggering Procedure, October 2012. Journal of Geotechnical and Geoenvironmental Engineering, volume 138, issue 10.

[8] Oregon Department of Geology and Mineral Industries (DOGAMI) Tsunami Inundation Map (TIM) Series. Viewed at www.oregongeology.org

Because of this, we strongly recommend that you check local resources and the state of Oregon's Department of Geology and Mineral Industries (DOGAMI) Tsunami Resource Center for current information regarding tsunami preparedness and emergency procedures.

SETBACK

The 2019 Oregon Structural Specialty Code,[9] section R.1808.7.1, requires that buildings adjacent to descending slope surfaces be founded in firm material with an embedment and setback from the slope surface sufficient to provide vertical and lateral support for the footing without detrimental settlement. When determining setbacks, the code recommends a minimum setback of at least the smaller of H/3 and 40 feet for descending slopes.[10] We recommend that you adhere to these setback requirements when siting the radio tower and building and that the tower and building be sited no closer than 45.0 feet from the break-in-slope of the north-facing ascending slope.

DISCUSSION AND RECOMMENDATIONS

It is our opinion, based on our surface reconnaissance and subsurface evaluation, that the site is suitable for siting the radio tower and building, provided the site is prepared in accordance with CGS's recommendations.

As discussed, in order to prepare the site and to limit settlement due to liquefaction, we recommend that you remove the surficial organic topsoil and a minimum of 2.0 feet of the upper medium-dense, clayey, subrounded pebbles and cobbles from under both the radio tower foundation and the building foundation and for 5.0 feet around the perimeter of both footings. We understand that additional deepening of the foundation under the tower will be required which will further lessen settlement due to liquefaction. Please prepare the site in accordance with **Appendix 1: GENERAL CONSTRUCTION CONSIDERATIONS** included in the back of this report.

[9] Oregon Code Adoption at www.oregon.gov
[10] H = the height of the slope

After excavating the foundations and prior to adding granular fill, the bottom of the excavations should be compacted with a hoe pac (or similar) to an unyielding condition. Imported granular fill should meet specifications as provided in the 2018 ODOT *Oregon Standards Specifications for Construction* (ODOT SS, 2018)[11] under SS 00330.13 – Selected General Backfill. In addition, the imported granular material should also be well-graded between coarse and fine material and have less than 5 percent by weight passing the U.S. Standard No. 200 Sieve. The granular fill should be placed in lifts with a maximum uncompacted thickness of 8 to 12 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D698. During the wet season or when wet subgrade conditions exist, the initial lift should be approximately 18 inches in uncompacted thickness.

Provided that the foundation sites are prepared accordingly, then all footings should be designed for an allowable bearing pressure of 2,000 pounds per square foot (psf). If greater loads are anticipated, we will need to evaluate the specific load scenario individually. The recommended allowable bearing pressure applies to the total of dead plus long-term-live loads, and this bearing pressure may be doubled for short-term loads, such as those resulting from wind or seismic forces. Lateral loads on footings can be resisted by passive earth pressure on the sides of the structures and by friction at the base of the footings. An allowable passive earth pressure of 150 pounds per cubic foot (pcf) may be used for footings confined by the dense, clayey, subrounded pebbles and cobbles and new structural fills. For footings in contact with granular structural fill, use a coefficient of friction equal to 0.30 when calculating resistance to sliding.

We recommend that the closest edge of the footing be set back a minimum of 40.0 feet from the break-in-slope of the descending slope on either the north or south side of the ridge. And we recommend that the site be graded to provide positive drainage away from the foundation. Depending upon where the tower and building are

[11] View online at https://www.oregon.gov

ultimately located, the site may need to be elevated using compacted granular fill to ensure adequate drainage around the site.

WET-WEATHER/WET-SOIL CONDITIONS

The cohesive soils at the site are susceptible to disturbance during the wet season. Trafficability or grading operations within the exposed soils may be difficult during or after extended wet periods or when the moisture content of the soils is more than a few percentage points above optimum. Soils disturbed during site-preparation activities, or soft or loose zones in the haul road or staging area, should be removed and replaced with compacted structural fill.

CONSTRUCTION OBSERVATIONS

Satisfactory pavement and earthwork performance depends on the quality of construction. Sufficient monitoring of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. We recommend that a representative from CGS be retained to observe general excavation, stripping, and subgrade preparation.

Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated.

PROFESSIONAL QUALIFICATIONS

Our professional qualifications may be viewed on our website at www.CascadiaGeoservices.com.

LIMITATIONS

This report has been prepared for the exclusive use of the addressee, and their agents, and is intended for their use only. It is not to be photographed, photocopied, or similarly reproduced, in total or in part, without the expressed written consent of the Client and Cascadia Geoservices, Inc.

The opinions, comments, and conclusions presented in this report are based upon information derived from our literature review, historical topographic map and aerial photograph review, and on our site observations. Conditions between, or beyond, our site observations may vary from those encountered. It is possible that soil, rock, or groundwater conditions could vary between or beyond the points explored.

The scope of services for this subsurface exploration and report did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous substances in the soil, surface water, or groundwater at this site.

If there is a substantial lapse of time between the submission of this report and the start of work at the site, if conditions have changed due to natural causes or construction operations at or adjacent to the site, or if the basic project scheme is significantly modified from that assumed, this report should be reviewed to determine the applicability of the conclusions and recommendations. Land use, site conditions (both on and off site), or other factors may change over time and could materially affect our findings. Therefore, this report should not be relied upon after two years from its issue, or in the event that the site conditions change.

The southern Oregon coast is subject to intense Pacific Ocean storms, subduction zone earthquakes, and tsunamis. As such, we cannot predict nor preclude the possibility of a catastrophe. By necessity, the current and future owners of this property must assume the risks associated with any "act of God" and hold harmless their realtors, professional consultants, contractors, and involved regulatory agencies.

We appreciate the opportunity to provide our services and trust that this report meets your requirements at this time. Please contact us at 541-655-0021 so we can further assist in any way.

Sincerely,
Cascadia Geoservices, Inc.

Eric Oberbeck, RG, CEG
Expires June 1, 2021

PHOTOS

PHOTO 1

Photo 2

FIGURES

Figure 1: Location Map

Figure 2: Site Map

ATTACHMENTS

Attachment 1: Test Pit Logs

Attachment 2: Lab Analysis Reports

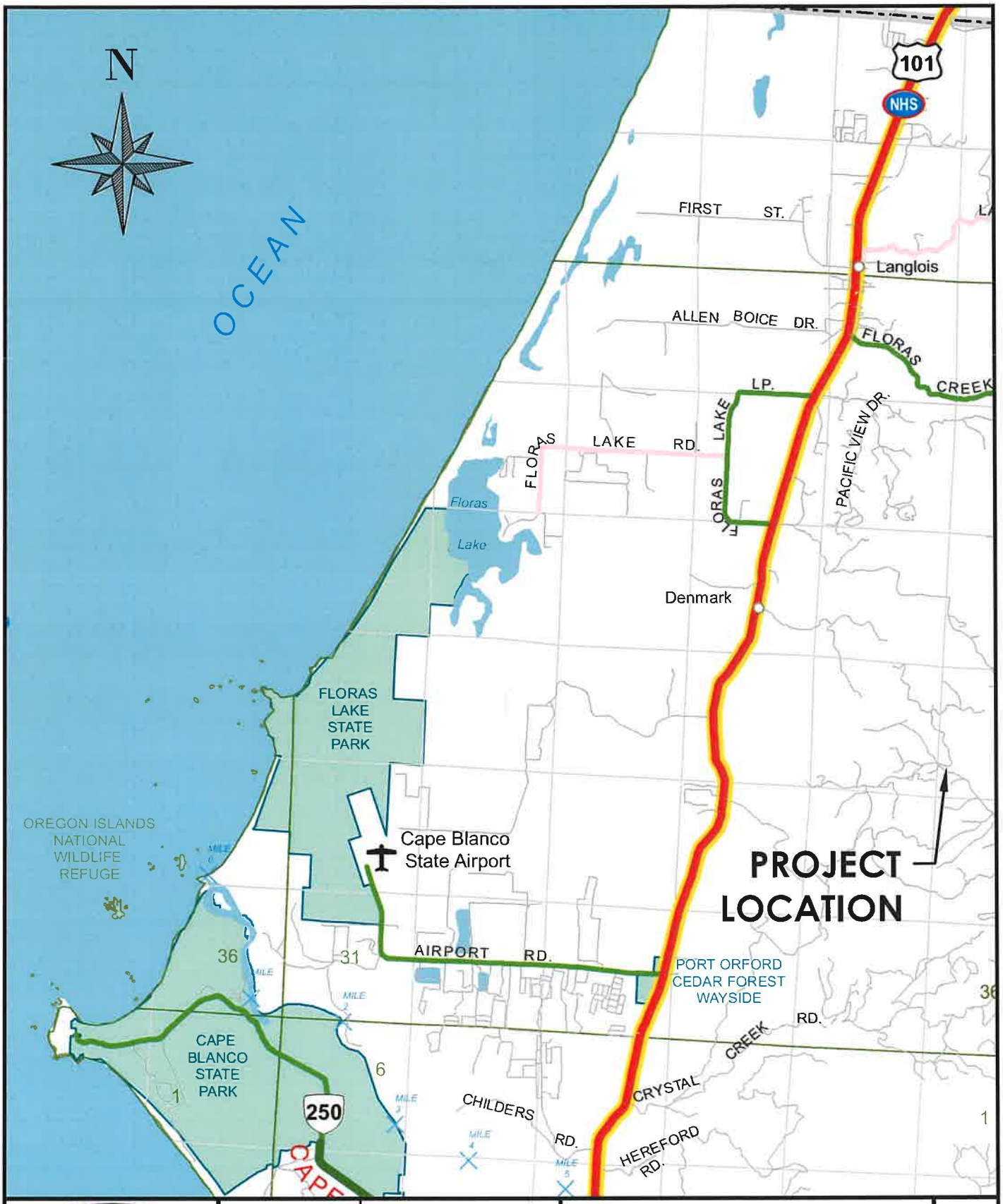
APPENDICES

Appendix 1: General Construction Considerations

CASCADIA Geoservices — Geologists and Engineers	Stone Butte Radio Tower Site Curry County, Oregon T31S, R15W, Tax Lot 2302	**Photographic Log**
	Date: Feb, 2021	Cascadia Geoservices, Inc. Project No: 20117

Photo No:	**1**
Direction Photo is Taken:	
Photo Description:	
We encountered in our test pits medium dense to dense, tan-brown clayey alluvium consisting of rounded pebble and cobbles to 2.0 feet in diameter	

Photo No:	**2**
Direction Photo is Taken:	
Photo Description:	
Test pits maintained a vertical cut to the depth of the test pits and no seepage from the sidewalls of the test pits was observed	



CASCADIA Geoservices, Inc. Geologists & Engineers	Drawn By: SRS Date: 2/15/2021	0 1" = 1 MILE 1"	LOCATION MAP	FIGURE
	STONE BUTTE RADIO TOWER		31S-15W-00-2302 LANGLOIS, OR 97450	1

CASCADIA Geoservices, Inc. Geologists & Engineers	Drawn By: SRS Date: 2/15/2021	0 1" = 100' 1"	**TEST PIT MAP**	FIGURE
	STONE BUTTE RADIO TOWER		31S-15W-00-2302 LANGLOIS, OR 97450	2

FIELD CLASSIFICATIONS

SOIL DESCRIPTION FORMAT	
(1) consistency,	(9) structure,
(2) color,	(10) cementation,
(3) grain size,	(11) reaction to HCL,
(4) classification name [secondary PRIMARY additional];	(12) odor,
(5) moisture,	(13) groundwater seepage,
(6) plasticity of fines,	(14) caving,
(7) angularity	**(15) (unit name and/or origin),**
(8) shape,	

Note: Bolded items are the minimum required elements for a soil description.

1. CONSISTENCY - COARSE-GRAINED

TERM	SPT (140-LB. HAMMER)[1]	D & M SAMPLER (140-LB. HAMMER)[1]	DYNAMIC CONE PENETROMETER PENETRATION RATE SAMPLER (DCP)[4,5,6]	FIELD TEST (USING ½-INCH REBAR)
Very loose	0 – 4	0 – 11	0 – 2	Easily penetrated when pushed by hand
Loose	4 – 10	11 – 26	2 – 5	Easily penetrated several inches when pushed by hand
Medium dense	10 – 30	26 – 74	6 – 31	Easily to moderately penetrated when driven by 5 lb. hammer
Dense	30 – 50	74 – 120	32 – 42	Penetrated 1-foot with difficulty when driven by 5 lb. hammer
Very dense	>50	>120	>43	Penetrated only few inches when driven by 5 lb. hammer

1. CONSISTENCY - FINE-GRAINED

TERM	SPT (140-LB. HAMMER)[1]	D & M SAMPLER (140-LB. HAMMER)[1]	DYNAMIC CONE PENETROMETER PENETRATION RATE SAMPLER (DCP)[5,6]	POCKET PEN.[2]	TORVANE[3]	FIELD TEST
Very soft	<2	<3	<2	<0.25	<0.13	Easily penetrated several inches by fist
Soft	2 – 4	3 – 6	2 – 3	0.25 – 0.5	0.13 – 0.25	Easily penetrated several inches by thumb
Medium stiff	5 – 8	7 – 12	4 – 7	0.50 – 1.0	0.25 – 0.5	Can be penetrated several inches by thumb with moderate effort
Stiff	9 – 15	13 – 25	8 – 16	1.0 – 2.0	0.5 – 1.0	Readily indented by thumb but penetrated only with great effort
Very stiff	16 – 30	26 – 65	17 – 27	2.0 – 4.0	1.0 – 2.0	Readily indented by thumbnail
Hard	>30	>65	>28	>4.0	>2.0	Difficult to indent by thumbnail

1 Standard penetration resistance (SPT N-value); Dames and Moore (D & M) sampler, number of blows/ft. for last 12" and 30" drop. Unconfined
2 compressive strength with pocket penetrometer; in tons per square foot (tsf).
3 Undrained shear strength with torvane (tsf).
4 Up to maximum medium-size sand grains only.
5 Dynamic cone penetration resistance; number of blows/inch.
6 Reference: George F. Sowers et. al. "Dynamic Cone for Shallow In-Situ Penetration Testing of In-Situ Soils, ASTM STP 399, ASTM, , pg. 29. 1966.

2. COLOR

Use common colors. For combinations use hyphens. To describe tint use modifiers: pale, light, and dark. For color variations use adjectives such as "mottled" or "streaked". Soil color charts may be required by client. **Examples:** red-brown; or orange-mottled pale green; or dark brown.

3. GRAIN SIZE

DESCRIPTION		SIEVE*	OBSERVED SIZE
boulders		–	>12"
cobbles		–	3" – 12"
gravel	coarse	¾" – 3"	¾" – 3"
	fine	#4 – ¾"	4.75 mm (0.19") – ¾"
sand	coarse	#10 – #4	2.0 – 4.75 mm
	medium	#40 – #10	0.425 – 2.0 mm
	fine	#200 – #40	0.075 – 0.425 mm
fines		<#200	<0.075 mm

4. CLASSIFICATION NAME

* Use of #200 field sieve encouraged for estimating percentage of fines.

	NAME AND MODIFIER TERMS	CONSTITUENT PERCENTAGE	CONSTITUENT TYPE
Coarse grained	GRAVEL, SAND, COBBLES, BOULDERS	>50%	PRIMARY
	sandy, gravelly, cobbley, bouldery	30 – 50%	secondary
	silty, clayey*	15 – 50%	
	with (gravel, sand, cobbles, boulders)	15 – 30%	additional
	with (silt, clay)*	5 – 15%	
	trace (gravel, sand, cobbles, boulders)		
	trace (silt, clay)*	<5%	
Fine grained	CLAY, SILT*	>50%	PRIMARY
	silty, clayey*	30 – 50%	secondary
	sandy, gravelly		
	with (sand, gravel, cobbles, boulders)	15 – 30%	additional
	with (silt, clay)*		
	trace (sand, gravel, cobbles, boulders)	5 – 15%	
	trace (silt, clay)*		
Organic	PEAT	50 – 100%	PRIMARY
	organic (soil name)	15 – 50%	secondary
	(soil name) with some organics	5 – 15%	additional

* For classification and naming fine-grained soil: dry strength, dilatancy, toughness, and plasticity testing are performed (see Describing Fine-Grained Soil page 2). Confirmation requires laboratory testing (Atterberg limits and hydrometer).

TABLE 1
FIELD CLASSIFICATIONS

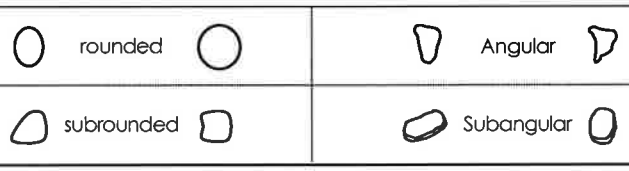
SOILS

5. MOISTURE	
TERM	FIELD TEST
dry	absence of moisture, dusty, dry to touch
moist	contains some moisture
wet	visible free water, usually saturated

6. PLASTICITY OF FINES

See "Describing fine-grained Soil" on Page 2.

7. ANGULARITY



8. Shape	
TERM	OBSERVATION
flat	particles with width/thickness ratio >3
elongated	particles with length/width ratio >3
flat and elongated	particles meet criteria for both flat and elongated

9. STRUCTURE	
TERM	OBSERVATION
stratified	alternating layers >1 cm thick, describe variation
laminated	alternating layers <1 cm thick, describe variation
fissured	contains shears and partings along planes of weakness
slickensides	partings appear glossy or striated
blocky	breaks into lumps, crumbly
lensed	contains pockets of different soils, describe variation
homogenous	same color and appearance throughout

10. CEMENTATION	
TERM	FIELD TEST
weak	breaks under light finger pressure
moderate	breaks under hard finger pressure
strong	will not break with finger pressure

11. REACTION TO HCL	
TERM	FIELD TEST
none	no visible reaction
weak	bubbles form slowly
strong	vigorous reaction

12. ODOR

Describe odor as organic; or potential non-organic*
*Needs further investigation

13. GROUNDWATER SEEPAGE

Describe occurrence (i.e. from soil horizon, fissures with depths) and rate:
slow (<1 gpm); moderate (1-3 gpm); fast (>3 gpm)

14. CAVING

Describe occurrence (depths, soils) and amount with term

Test Pits	minor (<1 ft³)	moderate (1-3 ft³)	Severe (>3 ft³)

15. (UNIT NAME/ORIGIN)

Name of stratigraphic unit (e.g. Willamette Silt), and/or origin of deposit (Topsoil, Alluvium, Colluvium, Decomposed Basalt, Loess, Fill, etc.).

DESCRIBING FINE-GRAINED SOIL

	FIELD TEST			
NAME	PLASTICITY (A BELOW)	DRY STRENGTH (B BELOW)	DILATANCY REACTION (C BELOW)	TOUGHNESS OF THREAD (D BELOW)
SILT	non-plastic, low	none, low	rapid	low
SILT with some clay	low	low, medium	rapid, slow	low, medium
clayey SILT	low, medium	medium	slow	medium
silty CLAY	medium	medium, high	slow, none	medium, high
CLAY with some silt	high	High	none	high
CLAY	high	very high	none	high
organic SILT	non-plastic, low	low, medium	slow	low, medium
organic CLAY	medium, high	medium to very high	none	medium, high

A. PLASTICITY

TERM	OBSERVATION
non-plastic	A 1/8" (3-mm) thread cannot be rolled at any water content.
low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be re-rolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
high	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be re-rolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

B. DRY STRENGTH

TERM	OBSERVATION
none	Dry specimen crumbles into powder with mere pressure of handling.
low	Dry specimen crumbles into powder with some finger pressure.
medium	Dry specimen breaks into pieces or crumbles with considerable finger pressure.
high	Dry specimen cannot be broken with finger pressure. Will break into pieces between thumb and a hard surface.
very high	Dry specimen cannot be broken between thumb and a hard surface.

C. DILATANCY REACTION

TERM	OBSERVATION
none	No visible change in the specimen.
slow	Water appears slowly on surface of specimen during shaking and doesn't disappear or disappears slowly upon squeezing.
rapid	Water appears quickly on the surface of the specimen during shaking and disappears quickly upon squeezing.

D. TOUGHNESS OF THREAD

TERM	OBSERVATION
low	Only slight hand pressure is required to roll the thread near the plastic limit. The thread and lump are weak and soft.
medium	Medium pressure is required to roll the thread to near the plastic limit. The thread and lump have medium stiffness.
high	Considerable hand pressure is required to roll the thread to near the plastic limit. The thread and lump have very high stiffness.

TABLE 2

KEY TO TEST PIT AND BORING LOG SYMBOLS

SAMPLE NUMBER ACRONYMS/WATER SYMBOLS

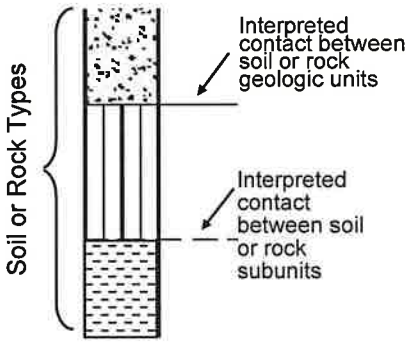
DM - Dames & Moore Sampler
GR - Grab or Bulk Samples
OS - Osterberg (Piston) Sampler
C - Rock Core
SA - Screen Air Sampling
SW - Screen Water Sampling
SS - SPT Standard Penetration Drive Sampler (ASTM D1586)
ST - Shelby Tube Push Sampler (ASTM D1587)

Water Level During Drilling/ Excavation

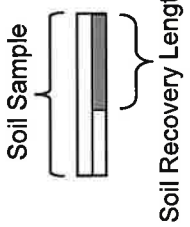
Water Level on Date Measured

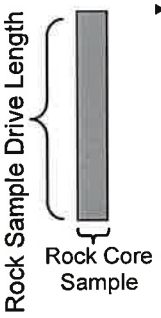
LOG GRAPHICS/INSTALLATIONS

Soil and Rock

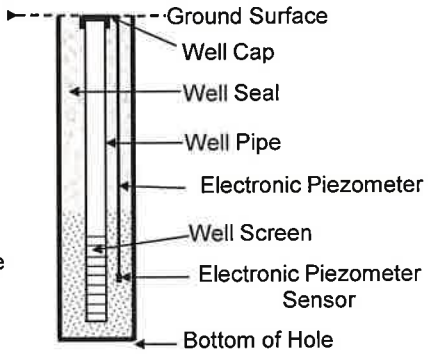


Soil and Rock Sampling Symbols





Instrumentation Detail



GEOTECHNICAL FIELD & LABORATORY TESTING/ACRONYM EXPLANATIONS

ATT	Atterberg Limits	OC	Organic Content
AMSL	Above Mean Sea Level	OD	Outside Diameter
BGS	Below ground surface	P200	Percent Passing U.S. Standard No. 200 Sieve
CBR	California Bearing Ratio	PI	Plasticity Index
CON	Consolidation	PL	Plasticity Limit
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer
DD	Dry Density	RES	Resilient Modulus
DS	Direct Shear	SC	Sand Cone
GPS	Global Positioning System	SIEV	Sieve Gradation
HCL	Hydrochloric Acid	SP	Static Penetrometer
HYD	Hydrometer Gradation	TOR	Torvane
kPa	kiloPascal	UC	Unconfined Compressive Strength
LL	Liquid Limit	VS	Vane Shear

ENVIRONMENTAL TESTING/ACRONYM EXPLANATIONS

ATD	At Time of Drilling	ND	Not Detected
BGS	Below ground surface	NS	No Sheen
CA	Sample Submitted for Chemical Analysis	PID	Photoionization Detector Headspace Analysis
HS	High Sheen		
MS	Moderate Sheen	PPM	Parts Per Million

ATTACHMENT 1

TEST PIT TP-1

Page 1 of 1

STONE BUTTE QUARRY TOWER
STONE BUTTE
CURRY COUNTY, OREGON

1087 Lewis River Road #309
Woodland, WA 98674
D. 360-225-3945
C. 971-201-7359

190 6th Street
Port Orford, OR 97465
D. 541-332-0433
C. 541-655-0021

COORDINATES/LOCATION:
Lat: 42° 52' 13.342"N Long: -124° 25' 58.115"W
(See Figure 2)

CASCADIA GEOSERVICES
PROJECT NUMBER:
20117

DEPTH (FEET)	GRAPHIC LOG	MATERIAL DESCRIPTION SURFACE CONDITIONS: Moist	DEPTH (FEET)	TESTING	SAMPLE TYPE / SAMPLE ID	◆ DYNAMIC CONE PENETROMETER (DP/DCP) ■ STATIC PENETROMETER (SP) ● MOISTURE CONTENT (%) ▲ BLOW COUNT (N-VALUE) INDEX PROPERTIES (IP) NUCLEAR DENSITY (ND) DRY DENSITY (DD) SIEVE (SIEV) 0 50 100	COMMENTS
0.0		Soft, brown, organic SILT (TOPSOIL)	0.0				
2.0		Medium dense, tan, clayey subrounded PEBBLES and COBBLES; moist **QUATERNARY MARINE TERRACE DEPOSITS**	2.0	P200	SS-1	●	P200 = 47% W% = 34.9%
4.0							
6.0		becomes medium dense to dense, coarse, sandy, fine GRAVEL; moist		P200	SS-2	●	P200 = 64% W% = 58.3%
8.0							
10.0		Final depth 10.0 feet bgs; test pit backfilled with non-compacted excavated material	10.0				No seepage or caving observed to the depth explored
12.0							
14.0							
16.0							
18.0							

0 50 100

ALL EXPLORATIONS 100% SCALE STONEBUTTEQUARRYTOWER.CGS TP1-2.GPJ PRINT DATE 2/24/21

DRILLING METHOD: Excavator
DRILLED BY: Charlie Valentine

LOGGING COMPLETED: 12/09/20
LOGGED BY: E. Oberbeck

TEST PIT TP-1
Page 1 of 1

TEST PIT TP-2

Page 1 of 1

STONE BUTTE QUARRY TOWER
STONE BUTTE
CURRY COUNTY, OREGON

1087 Lewis River Road #309
Woodland, WA 98674
D. 360-225-3945
C. 971-201-7359

190 6th Street
Port Orford, OR 97465
D. 541-332-0433
C. 541-655-0021

COORDINATES/LOCATION:
Lat: 42° 52' 13.681"N Long: -124° 25' 56.926"W
(See Figure 2)

CASCADIA GEOSERVICES
PROJECT NUMBER:
20117

DEPTH (FEET)	GRAPHIC LOG	MATERIAL DESCRIPTION SURFACE CONDITIONS: Moist	DEPTH (FEET)	TESTING	SAMPLE TYPE / SAMPLE ID	◆ DYNAMIC CONE PENETROMETER (DP/DCP) ■ STATIC PENETROMETER (SP) ● MOISTURE CONTENT (%) ▲ BLOW COUNT (N-VALUE) INDEX PROPERTIES (IP) NUCLEAR DENSITY (ND) DRY DENSITY (DD) SIEVE (SIEV)	COMMENTS
0.0		Soft, dark brown, silty ORGANICS; moist	0.0				
2.0		Very dense, tan-brown, clayey subrounded PEBBLES and COBBLES; moist **QUATERNARY MARINE TERRACE DEPOSITS**	2.0	P200 PP	SS-3	0 50 100	PP = 3.5 tsf W% = 27.1% P200 = 51%
4.0							
6.0		becomes tan, medium to coarse sandy fine GRAVEL to COBBLE		P200	SS-4		P200 = 23% W% = 24.7%
8.0							
		Final depth 9.0 feet bgs; test pit backfilled with non-compacted excavated material	9.0				No seepage or caving observed to the depth explored
10.0							
12.0							
14.0							
16.0							
18.0							

ALL EXPLORATIONS 100% SCALE STONEBUTTEQUARRYTOWER CGS TP1-2.GPJ PRINT DATE 2/24/21

DRILLING METHOD: Excavator
DRILLED BY: Charlie Valentine

LOGGING COMPLETED: 12/09/20
LOGGED BY: E. Oberbeck

TEST PIT TP-2
Page 1 of 1

CASCADIA GEOSERVICES, INC.
Material Laboratory
1099 S 4th Street
Coos Bay, Oregon 97420
P.541-294-6915

Project No.: 20117- CCEC Stone Butte Tower
Testing Date:
Tests Performed: Water Content, Soil Finer Than 75µm
Standards Followed: D2216, D1140
Performed By:

Notes:

Water Content (D2216)

Sample Name	SS-1	SS-2	SS-3	SS-4					
Pan Letter	E	F	D	X					
M_c = Mass of Container, g	1.87	1.87	1.84	1.85					
M_{cms} = Mass of Container and Moist Specimen, g	22.88	24.99	22.50	22.58					
M_{cds} = Mass of Container and Dry Specimen, g	17.44	16.48	18.10	18.48					
Ms = Mass of Oven Dry Specimen = Mcds - Mc, g	15.57	14.61	16.26	16.63					
M_w = Mass of Water = M_{cms} - M_{cds}, g	5.44	8.51	4.40	4.10					
w = Water Content = M_w/M_s X 100%	35%	58%	27%	25%					

% Finer Than 75µm (D1140)

Sample Name	SS-1	SS-2	SS-3	SS-4					
Pan Letter	E	F	D	X					
Ms = Mass of Oven Dry Specimen = Mcds - Mc, g	15.57	14.61	16.26	16.63					
Mc = Mass of Container, g	1.87	1.87	1.84	1.85					
Mcrs = Mass of Container and Retained Specimen, g	25.89	18.13	23.62	25.43					
Mcds = Mass of Container and Oven Dry Specimen, g	10.13	7.06	9.80	14.72					
M = Mass of Oven Dry Specimen = Mcds - Mc, g	8.26	5.19	7.96	12.87					
% Finer Than 75µm = (Ms - Mcds)/Ms X 100%	47%	64%	51%	23%					

1.0 APPENDIX 1: GENERAL CONSTRUCTION CONSIDERATIONS

Site Preparation

Site preparation should include removal of existing structures and foundations. Underground utility lines, vaults, or tanks should be removed or grouted full if left in place. The excavations resulting from removal of footings, buried tanks, etc., should be backfilled with compacted structural fill. The base of these excavations should be excavated to firm subgrade before filling with sides sloped to allow for uniform compaction.

Materials generated during demolition of existing improvements should be transported off-site or stockpiled in areas designated by the owner. Organic and clay rich soils are typically not suitable for use as structural fill but may be used for landscaping and general backfill. Asphalt, concrete, and base rock materials may be crushed and recycled for use as general fill.

Trees and shrubs should be removed from all pavement and improvement areas. In addition, root balls should be grubbed out to the depth of the roots, which could exceed 3 feet bgs. Depending on the methods used to remove the root balls, considerable disturbance and loosening of the subgrade could occur during site grubbing. Soil disturbed during grubbing operations should be removed to expose firm undisturbed subgrade. The resulting excavations should be backfilled with structural fill.

The existing topsoil zone should be stripped and removed from all proposed building pads, pavement, and improvement areas and for a 5-foot margin around such areas. Please review **Discussion Section** of this report to ascertain the actual stripping depth. All loose fill and organics soils should be removed. Greater stripping depths may be required to remove localized zones of loose or organic soil. Greater stripping depths may be anticipated in areas with thicker vegetation and shrubs and where fill is present. The actual stripping depth should be based on field observations at the time of construction.

Stripped organic material should be transported off-site for disposal or used in landscaped areas.

Following stripping and prior to placing fill, pavement, or building improvements, the exposed subgrade should be evaluated by probing or proofrolling. The subgrade should be proofrolled with a fully loaded 10 yard or larger dump truck or similar heavy rubber-tire construction equipment to identify soft, loose, or unsuitable areas. A member of CGS's staff should observe the proofrolling. Soft or loose zones identified during testing should be compacted to an unyielding condition or excavated and replaced with structural fill, as discussed in the "Structural Fill" section of this appendix.

Wet-Weather Conditions

Trafficability on the near-surface soils may be difficult during or after extended wet periods or when surface soils become saturated. Soils that have been disturbed during site-preparation activities, or soft or loose zones identified during probing or proofrolling, should be removed and replaced with compacted structural fill.

The thickness of the granular material for access roads and building areas will depend on the amount and type of construction traffic. A 12- to 18-inch-thick mat of imported granular material is sufficient for most staging areas. The granular mat for haul roads and areas with repeated heavy construction traffic typically needs to be increased to between 18 to 24 inches. The actual thickness of haul roads and staging areas should be based on the amount and type of traffic anticipated and the type of underlying soils present. Imported granular material should be placed in one lift over the undisturbed subgrade and compacted using a smooth-drum, non-vibratory roller. Additionally, a geotextile fabric should be placed as a barrier between the subgrade and imported granular material in areas of repeated construction traffic.

2.0 MATERIALS SECTION

Structural fill should be placed over subgrade that has been prepared in conformance with the "Site Preparation" and "Wet-Weather Conditions"

sections of this report. A wide range of material may be used as structural fill; however, all material used should be free of organic matter or other unsuitable materials and should meet the specifications provided in the 2018 ODOT *Oregon Standards Specifications for Construction* (ODOT SS, 2018)[1] depending on the application. A brief characterization of some of the acceptable materials is provided below.

Native Soils

Native soils are suitable for use as general fill only if they meet the requirements of ODOT SS 00330.12 – Borrow Material. Laboratory testing is required to determine if the moisture content of the near-surface soils is greater than the soils' optimum moisture content required for satisfactory compaction. To adequately compact the soil, it may be necessary to moisture condition the soil to within 2 to 3 percentage points of the optimum moisture content. In most instances, moisture conditioning will be difficult due to the fine-grained nature of the soil.

Imported Granular Material

Imported granular material used during periods of wet weather or for haul roads, building pad subgrades, staging areas, etc., should be pit or quarry run rock, crushed rock, or crushed gravel and sand and should meet the specifications provided in ODOT SS 00330.12 – Borrow Material and ODOT SS 00330.13 – Selected General Backfill. In addition, the imported granular material should also be well-graded between coarse and fine material and have less than 5 percent by weight passing the U.S. Standard No. 200 Sieve.

Imported granular material should be placed in lifts with a maximum uncompacted thickness of 8 to 12 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D 698. During the wet season or when wet subgrade conditions exist, the initial lift should be approximately 18 inches in uncompacted thickness and should be compacted by rolling with a smooth-drum roller without using vibratory action.

[1] View online at https://www.oregon.gov

Where imported granular material is placed over soft-soil subgrades, we recommend a geotextile be placed as a barrier between the subgrade and imported granular material. Depending on site conditions, the geotextile should meet ODOT SS 2320.10 – Geosynthetics, Acceptance, for soil separation or stabilization. The geotextile should be installed in conformance with ODOT SS 0350.40 – Geosynthetic Construction.

Trench Backfill

Trench backfill placed beneath, adjacent to, and for at least 2 feet above utility lines (i.e., the pipe zone) should consist of well-graded granular material with a maximum particle size of 1.5 inches and less than 10 percent by weight passing the U.S. Standard No. 200 Sieve and should meet the standards prescribed by ODOT SS 405.12 – Pipe Zone Bedding. The pipe zone backfill should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D 698, or as required by the pipe manufacturer or local building department.

Within roadway alignments or beneath building pads, the remainder of the trench backfill should consist of well-graded granular material with a maximum particle size of 2.5 inches, less than 10 percent by weight passing the U.S. Standard No. 200 Sieve, and should meet standards prescribed by OSSC 405.14 – Trench Backfill, Class A or B. This material should be compacted to at least 92 percent of the maximum dry density, as determined by ASTM D 698, or as required by the pipe manufacturer or local building department. The upper 2 feet of the trench backfill should be compacted to at least 95 percent of the maximum dry density, as determined by ASTM D 698.

Outside of structural improvement areas (e.g., roadway alignments or building pads), trench backfill placed above the pipe zone may consist of general fill materials that are free of organics and materials over 6 inches in diameter and meet ODOT SS 00330.12 – Borrow Material and ODOT SS 00405.14 – Trench Backfill, Class C, D, or E. This general trench backfill should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D 698, or as required by the pipe manufacturer or local building department.

Stabilization Material

Stabilization rock should consist of imported granular material that is well-graded, angular, crushed rock consisting of 4- or 6-inch-minus material with less than 2 percent passing the U.S. Standard No. 4 Sieve. The material should be free of organic matter and other deleterious material.

Retaining Wall Backfill

Backfill material placed behind retaining walls and extending a horizontal distance of 0.5H, where H is the height of the retaining wall, should consist of select granular material meeting ODOT SS 00510.12 – Granular Wall Backfill. We recommend that the select granular wall backfill be separated from general fill, native soil, and/or topsoil using a geotextile fabric which meets the requirements provided in ODOT SS 02320.10 – Geosynthetics, Acceptance. The geotextile should be installed in conformance with ODOT SS 00350.40 – Geosynthetic Construction.

The wall backfill should be compacted to a minimum of 95 percent of the maximum dry density, as determined by ASTM D 698. However, backfill located within a horizontal distance of 3 feet from the retaining walls should only be compacted to approximately 90 percent of the maximum dry density, as determined by ASTM D 698. Backfill placed within 3 feet of the wall should be compacted in lifts less than 6 inches thick using hand-operated tamping equipment (such as, a jumping jack or vibratory plate compactors). If flat work (sidewalks or pavements) will be placed atop the wall backfill, we recommend that the upper 2 feet of material be compacted to 95 percent of the maximum dry density, as determined by ASTM D 698.

Trench and Retaining Wall Drain Backfill

Backfill in a 2-foot zone against the back of retaining walls and for subsurface trench drains should consist of drain rock meeting the specifications provided in ODOT SS 00430.11 – Granular Drain Backfill Material. The drain rock should be wrapped in a geotextile fabric that meets the specifications provided in ODOT SS 02320.10 – Geosynthetics, Acceptance, for soil separation and/or stabilization.

The geotextile should be installed in conformance with ODOT SS 00350.40 – Geosynthetic Construction.

Footing Base

Imported granular material placed at the base of footings should be clean crushed rock or crushed gravel, and sand that is well-graded between coarse and fine. The granular materials should contain no deleterious materials, have a maximum particle size of 1.5 inches, and meet ODOT SS 00330.14 – Select Granular Backfill. The imported granular material should be placed on one lift and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D 698.

Floor Slab Base Aggregate

Base aggregate for floor slabs should be clean crushed rock or crushed gravel. The base aggregate should contain no deleterious materials, meet specifications provided in ODOT SS 00330.14 – Select Granular Backfill, and have less than 5 percent weight by passing the U.S. Standard No. 200 Sieve. The imported granular material should be placed in one lift and compacted to at least 95 percent of the maximum dry density, as determined by ASTM D 698.

Pavement Base Aggregate

Imported granular material used as base aggregate (base rock) along roadway alignments should be clean crushed rock or crushed gravel and sand that is fairly well-graded between coarse and fine. The base aggregate should meet the gradation defined in ODOT SS 02630.10 – Dense-Graded Aggregate 1"-0", depending upon application, with the exception that the aggregate has less than 5 percent passing a U.S. Standard No. 200 Sieve. The base aggregate should be compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D 698.

3.0 PERMANENT SLOPES

SETBACK

The 2017 Oregon Residential Specialty Code , Section R. 403.1.9.1 (code) requires that buildings adjacent to descending slope surfaces be founded in firm material with an embedment and setback from the slope surface sufficient to provide vertical and lateral support for the footing without detrimental settlement. When determining setbacks, the code recommends a minimum setback of at least the smaller of H/3 and 40 feet for descending slopes and the smaller of H/2 and 15 feet from ascending slopes. For slopes steeper than 100%, the setback shall be measured from an imaginary plane 45 degrees to the horizontal projected upward from the toe of the slope. We provide our setback recommendations in our **DISCUSSION AND RECOMMENDATIONS** section of this report.

Permanent cut and fill slopes up to 15 feet high may typically be built to a gradient as steep as 2 Horiziontal:1Vertical (2H:1V) dependent upon the type of soils and or rock present. However, cut slopes over 15 feet tall should be limited to a gradient of 2.5H:1V or should be partially retained by a retaining wall. Slopes that will be maintained by mowing should not be constructed steeper than 3H:1V. Newly constructed fill slopes should be over-built by at least 12 inches and then trimmed back to the required slope to maintain a firm face.

Access roads and pavements should be setback a minimum of 5 feet from the top of cut and fill slopes. Slopes should be covered with erosion control netting and planted with appropriate vegetation to provide protection against erosion as soon as possible after grading. A mixture of perennial and annual grasses works well. Surface water runoff should be collected and directed away from slopes to prevent water from running down the face of the slope.

4.0 DRAINAGE CONSIDERATIONS

The contractor shall be made responsible for temporary drainage of surface water and groundwater, as necessary, to prevent standing water and/or erosion at the working surface. The ground surface around the structures should be sloped to create a minimum gradient of 2 percent away from the building foundations for a distance of at

least 5 feet. Surface water should be directed away from all buildings into drainage swales or into a storm drainage system. "Trapped" planting areas or ponds should not be created next to any building without providing means for drainage. The roof downspouts should discharge onto splash blocks or paving that direct water away from the building or into smooth-walled underground drain lines that carry the water to appropriate discharge locations at least 10 feet away from any buildings. If built on a sloped or cut fill building site, drainage should not be directed onto the descending slope.

Foundation Drains

CGS recommends that foundation drains be installed around the perimeter foundations of all structures including buildings and tanks. The foundation drains should be at least 12 inches below the base of the slab. The foundation drain should consist of perforated collector pipes embedded in a minimum 2-foot-wide zone of angular drain rock. The drain rock should meet specifications provided in the "Structural Fill" section of this report. The drain rock should be wrapped in a geotextile fabric. The collector pipes should discharge at an appropriate location away from the base of the footings. Unless measures are taken to prevent backflow into the wall's drainage system, the discharge pipe should not be tied directly into the stormwater drain system.

The contractor should refer to the following 2008 *Oregon Standards Specifications for Construction* (ODOT SS, 2008) sections with regard to backfill materials and geosynthetics. Local or municipal standards may also apply. The contractor should check with the jurisdictional permitting office to determine applicability of local or municipal standards.

5.0 WET-SOIL CONDITIONS

If cohesive soils are present on the site, they will be susceptible to disturbance during periods of sustained rainfall. Trafficability or grading operations within the exposed soils may be difficult during or after extended wet periods or when the moisture content of the soils is more than a few percentage points above optimum. Soils disturbed during

site-preparation activities, or soft or loose zones identified during probing, should be removed, and replaced with compacted structural fill.

6.0 EXCAVATION

Trench cuts in native materials should stand vertical to a depth of approximately 4 feet, provided no groundwater seepage is present in the trench walls. Open excavation, which may be used to excavate trenches with depths deeper than 4 feet and shallower than 8 feet, can be done with the walls of the excavation cut at a slope of 1H:1V, provided groundwater seepage is not present and with the understanding that some sloughing may occur. The trenches should be flattened to 1.5H:1V if excessive sloughing occurs or seepage is present.

Water levels may fluctuate during the wet months of the year. If shallow groundwater is observed during construction, the use of a trench shield (or other approved temporary shoring) is recommended for cuts that extend below groundwater seepage or if vertical walls are desired for cuts deeper than 4 feet. The ultimate type and design of the shoring and dewatering systems used for this project should be the responsibility of the contractor who is in the best position to choose systems that fit the plan of operation. All excavations should be made in accordance with applicable Occupational Safety and Health Administration and State regulations.