HEARINGS EXAMINER MEETING AGENDA
Thursday, June 2, 2016, 5:00 PM
City Municipal Center, 616 NE 4th Avenue

I. CALL TO ORDER

II. INTRODUCTION AND INSTRUCTIONS

III. HEARING ITEM

A. Public Hearing for Prune Hill Wireless Communications Facility (City File No. CUP15-01)
Details: The applicants propose construction of a wireless communications facility, which will include: a 175 foot monopole; three panel antennas; seven microwave antennas; and ground equipment on a concrete pad, all within a fenced area. The site is located at 2829 NW 18th Avenue, Camas, which is also described as Tax Parcel No. 124979-000.
Presenter: Sarah Fox, Senior Planner
Recommended Action: Staff recommends that the Hearings Examiner conduct a public hearing, accept testimony, deliberate and render a decision.

Staff Report - Wireless Facility on Prune Hill (CUP15-01)

A - Narrative

B - Photo Exhibits

C - Microwave Path Analysis

D - National Environmental Policy Act (NEPA)

E - Geotechnical Report

F - Critical Areas Report

G - FAA Approval

H - Freewire Coverage Analysis

I - Site Plan Drawings

J - Signed Consent

K - Structural Engineering Drawings

L - Letter from Glenn Watson

M - Email from Glenn Watson

N - Email from City Public Works - Eric Levison

O - Notification to Wireless Companies

P - Email from Thomas Atkins

Q - Letter from Don Chaney

IV. DECISION

V. ADJOURNMENT

NOTE: The City of Camas welcomes and encourages the participation of all of its citizens in the public meeting process. A special effort will be made to ensure that persons with special needs have opportunities to participate. For more information, please call (360) 834-6864.

STAFF REPORT
WIRELESS FACILITY ON PRUNE HILL
FILE NO. CUP15-01

TO:	Hearings Examiner	**HEARING DATE**: June 2, 2016
BY:	Sarah Fox, Senior Planner	
PROPOSAL:	To construct a 175 foot monopole; three panel antennas, seven microwave antennas; and ground equipment on a concrete pad, all within a 40' x 40' fenced area.	
LOCATION:	The site is located at 2829 NW 18th Avenue, Camas, which is also described as Tax Parcel #124979-000.	
APPLICANTS:	PI Telecom Infrastructure, LLC 4601 Road East, Bldg. 300, Ste. 3200 Jacksonville, FL 32246	Freewire 5465 SW Western Ave., Ste. E Beaverton, OR 97005

APPLICATION SUBMITTED: June 18, 2015	**Technically Complete: May 13, 2016**
STATE ENVIRONMENTAL POLICY ACT (SEPA):	The City issued a SEPA Determination of Non-significance (DNS) May 17, 2016, with a comment period that ends on May 31, 2016.
PUBLIC NOTICE:	Notice of application and public hearing was mailed to property owners within 300 feet of the site on May 16, 2016, and published in the Post Record on May 17, 2016, legal publication #560587.

APPLICABLE LAW: The application was submitted on June 18, 2015, and the applicable codes are those vested and in effect through Ordinance # 15-005. Camas Municipal Code Chapters (CMC): Title 16 Environment, Title 17 Land Development; and Title 18 Zoning; Specifically (not limited to): Chapter 16.53 Wetlands; Chapter 16.61 Fish & Wildlife Habitat Conservation Areas; Chapter 17.19 Design & Improvement Standards; Chapter 18.07 Use Authorization, Chapter 18.35 Telecommunications Ordinance, Chapter 18.43 Conditional Use Permits; and Chapter 18.55 Administrative Provisions.

[Note: Citations from Camas Municipal Code (CMC) are indicated with ***italicized type***.**]**

I. SUMMARY

The proposed telecommunications facility will be located on five acres of residentially zoned property at 2829 NW 18th Avenue. The property and adjacent properties are zoned Residential 12,000 (R-12). There is an existing single family home on the site. To the west is a church, and all remaining sides to the north, south, and east are developed single family lots. The property is generally landscaped with grass

with a group of mature trees surrounding the existing home. The applicants have leased a portion of the parcel for development of the wireless facility.

The application included the required information per CMC§18.55.110. The supporting documentation per CMC§18.35.140 included the following: a collocation analysis (Exhibits C and H), feasibility analysis (Exhibit C), and lease agreement. Due to environmentally sensitive areas on site, the application also included a critical areas report (Exhibit F), archaeological report, and a geotechnical report (Exhibit E). Companies proposing to erect wireless facilities must also comply with the federal National Environmental Policy Act (NEPA) regulations, in addition to local regulations. Federal regulation 47 C.F.R. § 1.1308(a) requires consideration of the potential environmental effects from construction of antenna facilities (Exhibit D).

The applicant requested a consolidated decision to include approval for a Wireless Communications Conditional Use Permit, Wetland permit, and Archaeological Review.

Note: Title 47, Section 332(c)(7)(B)(iv) of the Federal Communications Act preempts local decisions premised directly or indirectly on the environmental or health effects of radio frequency (RF) emissions.

II. CRITERIA OF APPROVAL FOR WIRELESS CONDITIONAL USE PERMIT (CMC§18.35.110)

Collocation feasibility evaluation as prescribed by CMC Section 18.35.140, "Application Requirements" conditions. In addition to the conditions of approval of Chapter 18.43, the permit may include requirements which:

1. Require the use of concealment technology, including, but not limited to fencing, landscaping, strategic placement adjacent to existing buildings or vegetation, and "stealth" designs to minimize adverse aesthetic and visual impacts;

Discussion: At page 6 of the applicant's narrative, is a request that the application "be held to the same standards as the existing" facilities across the street. A development application is subject to the codes that are in effect on the date of application, per CMC§18.55.130(E), not pre-existing standards.

An existing wireless facility is located to the south, and behind a row of single family homes, which front NW 18th Avenue. The facility is publically-owned and contains two water towers. The row of homes adjacent and across NW 18th Avenue from the subject parcel are approximately 145 feet deep, and act as a partial visual buffer to the facility behind them. The nearby wireless facility does not comply with current standards, and as such is considered to be nonconforming. CMC Chapter 18.41 Nonconforming Lots, Structures and Uses, provides limits to the expansion of nonconforming uses and structures. The proposed development must be evaluated by current standards.

The applicant did not propose stealth designs for the monopole, however, fencing and landscaping was proposed. The fencing and landscaping that is proposed is the minimum standard for new facilities within any zone as required per CMC§18.35.120. Stealth design features as specified in this criterion are suggested as a means to better conceal the facility in areas where the use is not outright permitted, and are in addition to the minimum requirements.

Stealth designs for monopoles are typically monopoles that are designed to look like trees (See Figure 1), but there can be other possibilities depending on the particulars of an area. Examples include silos in farming areas or a church spire if adjacent to a church. To evaluate the effectiveness of specific stealth

Figure 1- Example of stealth design of cell tower

designs, staff reviewed the surrounding areas and the photo analysis submitted by the applicant (Exhibit B).

The property includes a mixture of mature evergreens and deciduous trees surrounding the residence, otherwise the property is mostly grass. The roadway is not improved to current standards, and as such there are no sidewalks or street trees along the frontage. The adjacent property to the west (church) includes a perimeter of evergreen trees.

The trees on the property could be considered an effective visual buffer from the east, and the trees on the church property serve the same effect from the west (Exhibit B, pages 3 and 4). The photos in Exhibit B that view the property to the north (street view) and south were not as compelling given that they were taken at a skewed angle rather than perpendicular. The north and south elevations also do not have a treed buffer. Given that the applicant did not propose a stealth design of the monopole, conditions to better conceal the development from the street view and south view are warranted.

Findings: The current development standards are applicable to this proposal and staff does not support waiving the use of concealment technology.

2. Require compatibility with key design elements in the surrounding area; for example, in single-family residential zones, use of peaked roof lines, painted surfaces, and wooden fences;

Discussion: The applicant proposes to provide chain link fencing and evergreen shrubs around the perimeter of the facility. As noted above, the proposed landscape and fencing are the minimum requirements for all wireless facilities, and does not address additional requirements necessary for conditional use permit approval, and this subsection. Staff concurs that the existing wireless facility is visible from the subject property over the rooflines of the residential homes, however it is set back from NW 18th by approximately 145 feet, and is not "surrounding" the subject site. The properties surrounding the subject site include single family homes and a church, which all have gable roofs (See Figure 2).

Figure 2 - Church adjacent and to the west.

Property perimeters in the surrounding area include vegetation of bushes and trees, chain link fencing, and wood fencing.

This criterion indicates that "*peaked roof lines, painted surfaces and wooden fences*" are measures that could provide design compatibility. The proposed chain link fencing and the (likely) ground equipment being boxy metal containers, would be inconsistent with this criterion. Also, the proposed landscaping around the perimeter of the facility will take several years to be an effective visual buffer. More appropriate measures include requiring that the equipment cabinets have gabled roofs, and the fencing be vinyl coated, or something less industrial, such as a wooden fence would be more consistent. The exterior surfaces of the monopole and the ground equipment cabinets should also not be reflective metal, and as such be painted in a pallet similar to the surrounding properties. A condition to this effect is warranted and recommended with this report.

Findings: Staff finds that key design elements of the surrounding area should be integrated into this project.

3. Minimize the cumulative aesthetic, visual, or safety impacts of additional wireless communication facilities in the surrounding area.

Discussion: The applicant proposes to build a wireless facility due to the lack of capacity at the adjacent site, and a need for a taller structure. The application provides a summary of their colocation efforts at page 8 of the narrative, in response to the application requirements of CMC18.35.140.

This criterion is specific in regards to the cumulative effect of "additional wireless communication facilities". Consistent with this criterion, the proposed monopole has been designed to accommodate additional antennas for the future.

The application narrative and Sheet T-1.0, state that there will be three panel antennas and seven microwave antennas (10 antennas with no sizes provided). However, Sheet A-3.0 shows eight microwave antennas at 4 foot diameters, four panel antennas, and three panel antennas at 2 foot diameters (15 antennas). Sheet A-3.0 also noted that two rows of four panel antennas and two additional microwave antennas would be for "future" carriers. According to Sheet A-3.0 the total capacity of the monopole at full build out would include 23 antennas. The inconsistency should be remedied.

Engineering reports are required with the submittal to evaluate safety impacts The geotechnical report (Exhibit E) provides recommendations for construction of the monopole, but did not include engineering for the structure. This is typically submitted with building permits. It is recommended that the applicant submit a report that verifies that the 23 antennas (current and future) can be safely accommodated on the monopole.

Details regarding the antennas (size and weight) are also to comply with zoning regulations, which limit the number and size of antennas that can be added to structure per CMC§18.35.100. For this reason, the details in regard to antenna size and number must be part of this decision, otherwise all additional antennas will require a CUP approval.

Findings: Staff finds that there are inconsistencies in the application as to the total number of antennas proposed with the initial development.

III. CRITERIA OF APPROVAL FOR CONDITIONAL USE PERMITS (CMC§18.43.050)

A. The proposed use will not be materially detrimental to the public welfare, or injurious to the property or improvements in the vicinity of the proposed use, or in the district in which the subject property is situated;

Discussion: CMC 18.35.030 Definitions, defines Wireless communication support structure as "*a structure erected to support wireless communications antennas and connecting appurtenances. The primary purpose is to elevate an antenna above the surrounding terrain or structures and may be attached to an existing building or other permanent structures or as a freestanding structure which may include, but are not limited to monopole support structures and lattice support structures, and may have supporting guyed wires and ground anchor*s." The applicant has proposed a 175-foot monopole, which is consistent with this definition and the use that is conditionally allowed in the zone.

The height of the monopole is limited by the distance to residential structures both on and off site. The limitation to height per CMC18.35.080, is intended to reduce the potential for a development being "materially detrimental" and "injurious". The application demonstrates at Sheet A-1.0 that existing residential structures off site are greater than 175-feet from the proposed monopole, which would

reduce the possibility that the monopole could fall on those homes. The on-site residence is closer than that distance and for that reason a waiver was submitted in accordance with CMC18.35.080(C) (Exhibit J).

Findings: The proposed use is located greater than the height of the proposed height from existing off site residential structures, which will minimize the potential for damage to adjacent properties.

B. The proposed use shall meet or exceed the development standards that are required in the zoning district in which the subject property is situated;

Discussion: The minimum design standards for wireless facilities relate to height, landscaping and screening. As noted previously, the minimum design standards were proposed with this application and the minimums were met on site. However, there are public improvements that are specific and required within residential areas.

The subject property is located north of and adjacent to NW 18th Avenue which is designated as an Arterial Street. NW Cascade Street is located east of and adjacent to the subject property and is designated as a Collector Street. Both streets are currently developed to a rural standard and do not meet the current urban requirements for minimum right-of-way (ROW) width or minimum half width street improvements.

If the development was proposing a use outright permitted in the zone, such as a residential subdivision, then in accordance with the provisions of CMC 17.19, Design and Improvement Standards, the applicant would be required to dedicate a minimum 37 foot wide half width right-of-way, and construct a minimum 23 foot half width street improvement. The engineering Design Standards Manual and CMC 17.19.020 (A) require that street improvements include street lighting, stormwater control, sidewalks and other appropriate urban improvements for both NW 18th Avenue and NW Cascade Street.

A note within the Critical Area Report at page 3, stated that the property owner intends to subdivide the property in the future. At this time, dedication of sufficient land to provide a minimum half width street ROW of 37 feet along NW 18th Avenue and along NW Cascade Street would be sufficient until such time that the property is fully developed, or the level of service along this corridor dictates improvements are necessary in advance of the private development occurring.

The proposed new entrance to the site with a gravel driveway and apron does not conform to engineering design standards, and is not safe adjacent to an arterial. There is approximately 120 feet of frontage from the proposed driveway to the western property limit. For these reasons, the applicant should be required to construct a minimum 23 foot wide half width street improvement on NW 18th Avenue from the proposed access location west approximately 120 feet, to the westerly property boundary of the site.

Findings: Staff finds that dedication of sufficient right-of-way to allow for future level of service considerations, and construction of a portion of the improvements is warranted.

C. The proposed use shall be compatible with the surrounding land uses in terms of traffic and pedestrian circulation, density, building, and site design;

Discussion: The proposed use will not generate similar traffic and pedestrian impacts as a residential development. With that said, the dedication of ROW and construction of that portion of the roadway fronting the development area, will at the minimum, not hinder future full build out of the site or future road improvements.

The compatibility of building design was discussed earlier in this report at Section I (#2).

Findings: The development can be compatible with the surrounding land uses with conditions.

D. Appropriate measures have been taken to minimize the possible adverse impacts that the proposed use may have on the area in which it is located;

Findings: Staff has proposed conditions of approval to minimize potential adverse impacts.

E. The proposed use is consistent with the goals and policies expressed in the comprehensive plan;

Discussion: The land use policy, Policy LU-4 requires compatibility of use and design of the surrounding and built environment. Throughout this report, staff has discussed how the project can be conditioned to be more compatible with the surrounding land uses and current built environment.

F. Any special conditions and criteria established for the proposed use have been satisfied. In granting a conditional use permit the hearings examiner may stipulate additional requirements to carry out the intent of the Camas Municipal Code and comprehensive plan.

Findings: **Staff has proposed conditions that will carry out the intent of the CMC and the comprehensive plan.**

IV. CRITICAL AREAS REVIEW

Wetlands – CMC Chapter 16.53

The criteria for approval of a wetland permit can be found at CMC§16.53.050.

DISCUSSION: The review of compliance with the critical area ordinance was based on the Critical Area Report that is dated October 5, 2015, prepared by Cascade Environment Group. The report stated that there are two wetlands on the subject property. Wetland 1 that is located to the east of the residence was categorized as a Category IV and is approximately 0.26 acres in size. Wetland 2 located on the western side of the property is a Category III and is approximately 0.72 acres in size. The development is located within the 80-foot buffers of Wetland 2.

The applicant provided a discussion of avoidance measures at pages 5 and 6 of the report. The measures included locating the developed area further from the south to provide a buffer of 60-feet, which is 75% of the total buffer width. The buffer averaging as proposed is consistent with CMC16.53.050(C)(2) as the impacted area of the buffer will not diminish the total buffer area. The reduction will not exceed the threshold of 75%. As described at pages 6 and 7, the functions and values of the wetland can be protected through fencing, the recording of the proposed conservation covenant, and mitigation planting of the diminished buffer width area. These measures can be included in a final wetland mitigation plan and conditions to this effect are warranted.

A preliminary mitigation plan in conformance with the CAO was not submitted however a description of the proposed mitigation at pages 6 and 7, verified that on site mitigation is feasible.

Although the critical area ordinance provides guidance as to the required substance of a Final Wetland Mitigation Plan, conditions of approval specific to this site are warranted. CMC§16.53.050 (I) states, "*The responsible official shall issue final approval of the wetland permit authorizing commencement of the activity permitted thereby upon: a. Submittal and approval of a final mitigation plan pursuant to subsection (E)(3) of this section; b. Installation and approval of field markings as required by Section 16.53.040(C)(2); c. The recording of a conservation covenant as required by Section 16.53.040(C)(3) and included on the plat, short plat, or site plan as required by Section 16.53.040(C)(4); d. The posting of a performance assurance as required by subsection (H)(3) of this section."*

FINDINGS: Staff finds that the project can comply with onsite mitigation measures to protect wetlands after submittal and approval of a Final Wetland Mitigation Plan, and posting of assurances as required by code.

Archaeological Resource Preservation – CMC Chapter 16.31

The criteria for approval of archaeological review can be found at CMC§16.31.140.

DISCUSSION: The applicant provided an archeological survey that is consistent with CMC§16.31.120. The applicant provided notification and copies of the report to tribes on May 2, 2016, as required per CMC§16.31.160. The report and findings are not subject to the open public records act and as such, the city cannot disclose the report. However, no additional archaeological work will be required.

PUBLIC COMMENTS

Staff received a comment by telephone from Glen Watson on May 24, 2016, on whether the city can consider the potential for property depreciation as a reason to deny the permit.

VII. CONCLUSIONS OF LAW

Based on the above findings and discussion provided in this report, staff concludes that the consolidated application for a Wireless Facility on Prune Hill (File #CUP15-01) should be approved, because it does or can comply with the applicable standards.

- The application materials included all pertinent information in accordance with CMC§18.35.140 Application Requirements, and are included with this report as exhibits.
- The application materials are in conformance with CMC Chapter 18.55, Article III Application Requirements.
- The development can comply with CMC§18.35.110 Wireless communications ---Conditional use permits, and CMC§18.35.110(A)(3) as conditioned.
- As conditioned, the development can comply with the requirements of CMC§16.53.050(I) Wetland Permit – Final Approval.
- As conditioned, the development can satisfy the Design and Improvement Standards of CMC Chapter 17.19.
- As conditioned, the development can satisfy the requirements of CMC§18.43.050 Conditional Use Permits.

VIII. RECOMMENDATIONS

Staff recommends APPROVAL of the consolidated application for a Wireless Facility on Prune Hill (File #CUP15-01). The recommendation is based on the application meeting the minimum requirements of Camas Municipal Codes, and conditioned as follows:

PROPOSED CONDITIONS

The following conditions are in addition to any conditions required from other permits or approvals issued to this project. Unless otherwise waived or modified in this decision, the development must comply with the minimum requirements of the Camas Municipal Code.

1. Applicant shall submit engineering drawings for review and approval from the City for the required half-width frontage improvements.
2. The applicant shall dedicate sufficient land along NW 18th Avenue and along NW Cascade Street to provide for a minimum 37 foot half width right-of-way.
3. Site improvements shall include the following residential features (a or b):
    a. If vinyl coated chain link fencing is installed, then equipment cabinets shall be painted earth tone colors with gabled roofs; or
    b. If wood fencing is installed, then the equipment cabinets must be painted earth tone colors, and gabled roofs would not be required.
4. Monopole, antennas, and other equipment mounted on the monopole shall be painted earth tone colors---not metallic or reflective.
5. This permit authorizes the installation of a total of ____ panel antennas and ____ microwave antennas on a 175 foot monopole. The total combined surface area of all antennas approved with this decision is _____ (Note: measured by width and height of the outward face of the antenna, not depth). If replacement antennas increase the total combined surface area more than ____ square feet, then the size would exceed the minor modification permit threshold, and approval of a conditional use permit will be required.
6. A Final Wetland Mitigation Plan consistent with CMC§16.53.050(E)(3) shall be submitted prior to final engineering approval. The final plan will include (at a minimum) detailed construction plans, maintenance, monitoring, and contingency plans. Fencing shall be installed at the perimeter of the buffer area, with signs at the south and west edges that provide required wetland information.
7. Required fencing, landscaping, and mitigation plantings shall be included on engineering plan set for approval.
8. Towers shall be designed and constructed in accordance with section 3108 of the IBC and the provisions of TIA-222. Towers shall be designed for seismic loads; exceptions related to seismic design listed in Section 2.7.3 of TIA-222 shall not apply. In Section 2.6.6.2 of TIA 222, the horizontal extent of Topographic Category 2, escarpments, shall be 16 times the height of the escarpment.
9. The structural drawings and calculations shall be prepared and stamped by a Professional Engineer licensed by the State of Washington. Category IV, 140 mph wind speed.
10. A Washington State licensed engineer will provide reports to the Building Division as follows:

- Prior to pier or foundation installation, a letter that confirms that subsurface conditions are suitable for placement of structural fill, rebar, or concrete for the structure.

- A final letter of geotechnical compliance, wherein the engineer of record has observed pier installation, foundation subgrades prior to concrete being poured.

11. Prior to issuance of building permit, the applicant shall record a conservation covenant over westerly Wetland 2 and buffer area. A copy of the recorded covenant shall be provided to the city.
12. Prior to receiving final approval from the Building Division, wetland mitigation plantings shall be installed.
13. The applicant shall provide financial assurances for mitigation in accordance with CMC§16.51.180 (D) and CMC§16.53.050(J) prior to earth disturbing activities.
14. The approved landscaping shall be maintained in a manner as to ensure plant survival for three years after installation. A watering system (permanent or temporary) shall be required during dry months. If plantings fail to survive, they must be replaced promptly.
15. Landscaping shall be installed prior to receiving final approval from the Building Division.
16. This permit shall expire in two years of the date of the final decision per CMC§18.55.260.

Exhibit A
CUP15-01

Parallel Infrastructure Wireless Tower
Narrative in Support of Conditional Use Permit (CUP15-01) and Wetland Permit
City of Camas Community Development Department
Submitted February 2016

Introduction

Applicant Parallel Infrastructure proposes a new monopole of 175' in height with accompanying 40' X 40' equipment compound at 2829 NW 18th Avenue, Camas WA 98607.

The monopole is planned to support antennas for both Freewire and T-Mobile immediately upon construction. Freewire is a Pacific Northwest provider of high-reliability fixed wireless broadband connectivity, Internet, WiFi, and wireless backhaul service. Freewire's services are based on fixed wireless links, so they will not be affected by fiber cuts, cable failures, or other problems affecting multiple connections in the same underground pipe. Freewire can also quickly deploy connectivity to locations that cable and fiber connections cannot reach. The service requires a Line of Sight (LOS) connection between Freewire's antennas and each customer's microwave rooftop link.

Both Freewire and T-Mobile have exhausted potential opportunities for collocation/upgrades in the vicinity. Freewire has been looking for a suitable location on Prune Hill since 2010. It evaluated a potential location on the City's water tower at 2822 NW 18th Avenue, and it found the 80-foot available height to be insufficient to reach Freewire customers to the south and west, particularly due to existing trees in that direction. T-Mobile has been providing service from the 180-foot CRESA (Clark Regional Emergency Services Agency) tower, also at 2822 NW 18th Avenue, but the CRESA tower is not structurally capable of supporting T-Mobile's new antennas and technology. T-Mobile has been unable to upgrade its technology at this location with replacement antennas (replacing the two existing antennas with two new ones) or to improve its coverage by adding a sector. In addition, Parallel Infrastructure inquired with the City of Camas Public Works Director about siting a new tower on the same parcel as the existing utilities, and City staff indicated that the City wasn't interested in leasing space for, among other reasons, a lack of ground space on the parcel; Parallel Infrastructure wanted its typical 50'x50' space for an equipment compound, but that would consume the City's access and maintenance area around the water tanks and existing CRESA tower. Overall, the City's water tower is nearly fully occupied with antennas at the higher elevations; the CRESA tower is not structurally capable of supporting additional weight; and adequate ground space is not available for a supporting equipment compound at this location.

The Applicant's site design will impact a wetland buffer around a Category III wetland, and after redesigning the proposed site layout to minimize this impact, the Applicant is proposing buffer averaging and adjustment to compensate for the project's impact, as described in more detail later in this narrative.

The Applicant's proposal meets the requirements of the City's code for a conditional use permit, site plan review, and a wetland permit, and the Applicant respectfully requests approval of the project as proposed.

Project Description

This is a proposal for a new 175' tall monopole to be located at 2829 NW 18th Avenue. Parallel Infrastructure will design, build, and manage the overall facility. It will work with other wireless carriers to ensure that they have a viable location for their future network needs. The tower will be designed for at least three total carriers. The first two proposed users are Freewire and T-Mobile

The monopole will be supported by a 40' by 40' equipment compound and access drive. The equipment compound is designed to contain equipment for Freewire, T-Mobile, and any future carrier. The equipment compound will be enclosed with a fence and screened with evergreen shrubs in accordance with the City's landscaping requirements.

The equipment compound is partially within a wetland buffer. The impact to the wetland buffer is limited to 1,384 square feet of area, and there will be no direct impact to the delineated critical area itself. The wetland is a lower quality (Category III) wetland and regular mowing has degraded the existing buffer area, which has limited vegetation to pasture grasses. Critical Areas Report, pp. 3-4. As explained in the Critical Areas Report, the proposed project is not expected to degrade the ecological functions of the nearby wetland. Critical Areas Report, p. 4. The Applicant will compensate for the impact to the wetland buffer through buffer averaging and other measures as allowed by the City's wetland code.

Compliance with the City' s Code

The Applicant's proposal complies with the following relevant sections of the City's code:

Chapter 18.35 Telecommunications Ordinance
Section 18.43.050 Conditional Use Permit Criteria
CMC 18.18.060 Site Plan Review
Chapter 16.53 Wetlands

Each relevant section is addressed below.

Issues Raised at Pre-Application

Parallel Infrastructure has considered and responded to input from City staff, made at the pre-application conference and in the Pre-Application Report dated April 16, 2015. Specific issues of note are addressed as follows:

- **Wetland Impacts**. As explained in detail later in this narrative, the Applicant proposes buffer averaging and other measures to compensate for an impact (1384 SF) to the wetland buffer of a Category III wetland, as expressly permitted under CMC 16.53.050(C). Because no direct impacts to wetlands are proposed, the sequencing criteria of CMC 16.53.050(D), cited in the pre-application report, are not applicable to this project. *See* detailed code interpretation in the wetland ordinance section of this narrative.

Chapter 18.35 - TELECOMMUNICATION ORDINANCE

18.35.010 - Purpose.

The purpose of this chapter is to minimize the exposure to potential adverse impacts of radio frequency radiation, to preserve the aesthetics of residential, commercial, and light industrial areas, and to minimize interference by telecommunication transmissions and radio frequency signals with manufacturing and industrial processes, and with emergency and residential communication equipment.

This is a proposal for a new 175' tall monopole, with an accompanying 40 x 40 equipment area, designed to meet the requirements of Chapter 18.35 CMC.

18.35.050 - Scope.

The following facilities shall be subject to the regulations set forth in this chapter:

A. All wireless communication support structures, antennas, equipment structures, and uses accessory to an antenna.

The proposal is for a new wireless communication support structure.

18.35.060 - Use authorization.

Major and minor telecommunication facilities may be authorized as provided under CMC Chapter 18.07 Use Authorization. Wireless communications structures and antennas shall be permitted, prohibited or conditionally allowed as indicated in Table 18.35-1.

Table 18.35-1

KEY:	P = Permitted Use	C = Conditional Use
	X = Prohibited Use	T = Temporary Use

Use	NC	DC	CC	RC	LI/BP	LI	HI	R	MF
Wireless communication-support structures (no lattice)	C	C	C	C	P	P	P	C	C
Lattice support structures	X	X	X	X	X	X	C	X	X
Antenna and add-on antennas	P	P	P	P	P	P	P	P	P

This is a proposal on a property zoned R-12. Through a conditional use process, monopoles are allowed in residential zones.

18.35.080 - Height limitations.

A. The height of a wireless communications facility shall mean to include the support structure and any antennas proposed at the time of application. A lightning rod, not to exceed ten feet, or FAA required lighting shall not be included within the height limitations.

This is a proposal for a 175' tall monopole.

B. The maximum height of wireless communications support structures and their antennas may vary from the standards of the underlying zone.

The proposed height does vary from the standard of the underlying zone, as permitted by this subsection.

C. The allowable overall height of a structure associated with a wireless communication facility or major telecommunication facility shall be no greater than the distance from any point at the base of the support structure to any point of a residential building, located on- or off-site and existing on the date of application, unless the owner of such residential building(s) consent in writing to such tower location.

The proposed monopole will be 175' in height and is set back no less than 175' at the base of the support structure to any point of any off-site residential buildings, located to the south across NW 18th Avenue. These setbacks are dimensioned on the site plans submitted with this application. The owner of the on-site residence has consented to a setback waiver, to reduce that setback to 103 feet, in order to minimize the project's impact to the wetland buffer around the Category III wetland on site. See written consent provided with this application.

D. A variance to the height standard shall be subject to CMC Chapter 18.45 Variances of this title. In addition to the criteria of Chapter 18.45, the application must demonstrate the variance is necessary for wireless coverage to exist in a specific identifiable area that could not feasibly be covered by locating at a different location in the vicinity.

The proposal meets the height and setback requirements above. No variance is being requested.

18.35.90 - General provisions.

The following general provisions shall apply to all wireless communications facilities:

A. All wireless communications support structures and required fencing shall be equipped with appropriate anti-climbing devices.

The proposed tower will implement fencing and be equipped with appropriate anti-climbing devices.

B. All wireless communication support structures and antennas which are located at a wireless communication facility shall be identified with a sign not exceeding four square feet. The sign shall list the wireless service provider's name and emergency telephone number, and shall be posted in a place visible to the general public.

The proposed equipment compound will have a sign that does not exceed four square feet and will list the wireless service provider's name and emergency telephone number, and it will be posted in a place visible to the general public.

C. Wireless communication support structures and antennas locating on any site or existing building that is on a historic register or in a historic district shall require a conditional use permit. If the proposed site or existing building is on the local historic register, the wireless communication support structure and antenna design shall be subject to the applicable design standards prescribed by the Clark County historic preservation commission. If the site is on the national historic register, the wireless communication support structure and antenna shall be subject to the applicable design standards prescribed by the Secretary of the Interior.

The proposed location is not on an historic register and not within an historic district.

D. Wireless communication support structures not regulated by the FAA shall have a finished surface that minimizes the visibility of the structure.

The proposed monopole will have a finished surface that minimizes the visibility of the structure.

E. Wireless communication support structures shall not be illuminated, except when required by the FAA.

The FAA's Determination of No Hazard to Air Navigation dated September 3, 2015, concludes that no marking or lighting is required.

18.35.110 - Wireless communications—Conditional use permits.

Wireless communications support structures shall be subject to the conditional use permit provisions of CMC Chapter 18.43 Conditional Use Permits, as a Type III procedure, except within an industrial or light industrial zone where they shall be subject to a Type I decision subject to notice, be submitted on application forms and in the manner set forth by the city, with the following additional requirements:

A. Collocation feasibility evaluation as prescribed by CMC Section 18.35.140, "Application Requirements" conditions. In addition to the conditions of approval of Chapter 18.43, the permit may include requirements which:

1. Require the use of concealment technology, including, but not limited to fencing, landscaping, strategic placement adjacent to existing buildings or vegetation, and "stealth" designs to minimize adverse aesthetic and visual impacts;

The proposed equipment compound will be concealed and screened by a landscape buffer. There are existing large utility towers (for water and emergency response services) across the street that have already altered the existing view scape. Photo simulations have been submitted with the application materials to illustrate views.

2. Require compatibility with key design elements in the surrounding area; for example, in single-family residential zones, use of peaked roof lines, painted surfaces, and wooden fences;

There are existing utility equipment areas and towers across the street. This application is requesting to be held to the same standards as the existing similar visual elements in the surrounding area.

3. Minimize the cumulative aesthetic, visual, or safety impacts of additional wireless communication facilities in the surrounding area.

The existing nearby utility towers have no capacity and/or ability to support T-Mobile and Freewire's antennas, either because the tower (CRESA)

is unable to bear additional weight and/or because the tower (water) is of insufficient height. The proposed facility will accommodate the needs of at least one additional carrier in the future, consistent with the City's preferences for collocation.

18.35.120 - Landscaping and screening standards.

The following landscaping and screening standards shall apply to all wireless communication support structures, major or minor telecommunication facilities, accessory equipment structures, and any other accessory facilities located on the ground:

A. The perimeter of the wireless communication support structure, and any guyed wires and anchors shall be enclosed by a fence or wall subject to CMC Chapter 18.18 Site Plan Review of this title. The outside perimeter of the fence or wall shall have a five-foot buffer, and be landscaped with six-foot high evergreen shrubs that provide a screen that is seventy-five percent opaque year around.

The proposed equipment area will be enclosed by a 6' tall chain link fence, and the site includes a landscape buffer that will be landscaped with six-foot high evergreen shrubs that provide a screen that is seventy-five percent opaque year around.

B. Landscaping shall be installed in compliance with CMC Chapter 18.13 Landscaping.

The proposed landscaping will be installed in compliance with CMC Chapter 18.13 Landscaping.

C. Add-on antennas to existing structures that require the ground installation of equipment structures and accessory equipment shall be landscaped with a five-foot buffer around the perimeter of the facility.

This standard does not apply; no add on antennas are being proposed at this time.

18.35.130 - Federal requirements.

All wireless communications support structures must meet or exceed current standards and regulations of the FAA, the FCC, and any other agency of the federal government with the authority to regulate wireless communications support structures and antennas. If such standards and regulations are changed, owners of the wireless communication support structure, antennas, and electronic equipment governed by this chapter shall bring such wireless communication support structure, antennas, and electronic equipment into compliance with such revised standards and regulations within the compliance schedule of the regulatory agency. Failure to bring wireless communications support structures and antennas into compliance with such revised standards and regulations shall constitute grounds for the removal of the wireless communication support structure, antenna, or electronic equipment at the owner's expense. The owners of such wireless communications support structures, antennas, and electronic equipment shall provide the city with copies of all environmental assessments (EAs) required to be submitted to the FCC or FAA regarding locations within the city simultaneously with any filing with the federal agencies pursuant to 47 CFR Part I.

All proposed users of the facility are regulated by the FCC and meet the FCC criteria.

For compliance with NEPA, Parallel Infrastructure's consultant Adapt Engineering prepared an analysis concluding that a environmental assessment (EA) is not necessary

for this project (a copy of this NEPA review is provided with this application for the City's information).

18.35.140 Application requirements.

In addition to other the requirements in this code, the applicant shall provide the following where applicable as deemed by the director:

A. Collocation evaluation study, which includes the following:

1. Certification that the notice at subsection (A)(2) of this section was mailed to all other wireless providers.

2. Pursuant to the requirements of CMC Chapter 18.35 Telecommunications Ordinance, (insert wireless provider) is hereby providing you with notice of our intent to apply to the City of Camas to construct a wireless communication support structure that would be located at (insert address). In general, we plan to construct a support structure of _____Feet in height for the purpose of providing (cellular, PCS, etc.) service.

Please inform us whether you have any wireless facilities located within_____feet of the proposed facility, which may be available for possible collocation opportunities. Please provide us with this information within_____days after the date of this letter. If no response is received within that time, we shall assume you do not wish to pursue collocation at such site. Sincerely, (pre-application applicant, wireless provider).

Applicant provided the notices required by this subsection to AT&T, Sprint, and Verizon on September 30, 2015. See copies of correspondence submitted with this application. Applicant received no responses.

The nearby utility towers are across the street from the proposal, on City- owned property. The towers are a 100-foot water tower owned by the City (with antennas attached at 80 feet) and a 180-foot lattice tower owned by CRESA. Parallel Infrastructure approached the City's Public Works Director about available space for additional wireless facilities on this City property. The City declined the opportunity for additional wireless facilities at the city owned property, for among other reasons, a lack of ground space on the parcel; Parallel Infrastructure wanted its typical 50'x50' space for an equipment compound, but that would consume the City's access and maintenance area around the water tanks and existing CRESA tower.

Freewire has been evaluating locations on Prune Hill since 2010. The City's water tower (which is approximately 100 feet high), does potentially have space at the 80-foot elevation, but this height is not sufficient to clear the tall trees to the south and east of the water tower, thus making service to Freewire's customers in that direction not feasible. See the Microwave Path Analysis prepared by Centerline Solutions, which shows the need for 175 feet in height from this area on Prune Hill.

T-Mobile is currently located at the 150-foot elevation on the CRESA tower. Over the past few years, T-Mobile has evaluated the CRESA tower for structural capacity to support the replacement antennas needed to upgrade its network. An analysis prepared in June 2015 by Vector Engineering considers a 2013 analysis by NorthWest Tower Engineering and concludes that the CRESA tower is not structurally capable of supporting the weight of T-Mobile's replacement

antennas and technology. See June 30, 2015 analysis by Vector Engineering. The 2015 analysis concludes further that not only is the CRESA tower not adequate to support the replacement antennas, but it is not feasible to structurally upgrade the tower to have adequate structural capacity to support the proposed antennas. By locating on the Parallel Infrastructure tower, T-Mobile will be able to catch up to its latest technology and upgrade its network as needed today, as well as be able to support future upgrades.

B. Certification from a licensed radio engineer indicating whether the necessary service is technically feasible if provided by collocation at the identified site(s) by the other provider(s).

The Microwave Path Analysis prepared by Centerline Solutions shows Freewire's need for 175 feet in height from this area on Prune Hill. In addition, the Applicant has provided an engineering report showing that the CRESA tower is not structurally capable of supporting the additional weight of T-Mobile's new antennas. See report from Vector Engineering.

C. If applicable, evidence that the lessor of the site(s) identified by the other provider(s) agrees to collocation on their property.

Not applicable.

D. Certification by a licensed radio engineer that adequate site area exists or does not exist at the site(s) identified by the other provider(s) to accommodate needed equipment and meet all of the site development standards.

Not applicable.

E. If applicable, evidence that adequate access does exist at the possible collocation site(s) identified by the other provider(s).

Not applicable.

F. A copy of the applicant's license issued by the FCC.

A copy of Freewire's FCC license has been submitted with the application materials.

G. A copy of the findings from the FAA's "Aeronautical Study Determination" regarding the proposed wireless communication support structure.

The FAA issued a Determination of No Hazard to Air Navigation on September 3, 2015.

H. A report from a licensed professional engineer indicating the anticipated capacity of the wireless communication support structure, including the number and types of antennas which can be accommodated.

The engineering for the proposed monopole has been submitted with this application. The engineering shows that the tower will be designed to have a capacity of 3 total antenna arrays as well as multiple large microwave dishes.

I. Proof of liability insurance coverage for the proposed wireless communication support structure or antenna. Liability insurance shall be maintained until the wireless communication support structure or antenna is dismantled. Failure to maintain insurance coverage shall constitute a violation of this chapter and grounds for revocation of a permit.

Insurance is in the process of being obtained.

J. In the case of a leased site, a lease agreement which shows on its face that it does not preclude the site owner from entering into leases of the site with other providers.

A copy of the lease agreement has been submitted with the application materials. The lease will not preclude the site owner from entering into leases of the site with other providers.

18.35.160 - Removal of antennas and support structures.

Any antenna or wireless communication support structure that is not operated for a continuous period of twelve months shall be removed by the owner of the property on which the wireless communication support structure or antenna is situated, or by the owner or lessee of the wireless communication support structure or antenna, within ninety days of receipt of notice to remove from the city. If the antenna and/or wireless communication support structure is not removed within such ninety days, the city may remove the antenna or wireless communication support structure at the owner's expense. If there are two or more wireless communications providers on a single wireless communication support structure, this provision shall not become effective until all providers cease using the wireless communication support structure for a continuous period of twelve months. The provider shall submit a notice to the city informing the city that the antenna or wireless communication support structure is no longer in use or in operation. Such notice shall be submitted within thirty days that the facility becomes unused or inoperable.

Read and understood.

CMC 18.43.050 – CONDITIONAL USE PERMIT CRITERIA

The hearings examiner shall be guided by all of the following criteria in granting or denying a conditional use permit:

A. The proposed use will not be materially detrimental to the public welfare, or injurious to the property or improvements in the vicinity of the proposed use, or in the district in which the subject property is situated;

The proposed wireless use will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity or district. As described earlier in this narrative, this area is already characterized by utility facilities (water and emergency response towers) to meet the needs of surrounding residents and area businesses. The proposal promotes the public welfare by providing substantially better coverage to the residents in the event of emergency and making new wireless services available, particularly fixed wireless broadband service for existing and future businesses in Camas and the surrounding area. Furthermore, the project has been designed to minimize the intrusion into the wetland buffer and is located to insure that the tower is at least 175' (height of tower) away from off-site residences.

B. The proposed use shall meet or exceed the development standards that are required in the zoning district in which the subject property is situated;

The proposal meets all applicable development standards, except for the tower-height setback from the existing residence on site, for which the Applicant has obtained a consent/waiver

C. The proposed use shall be compatible with the surrounding land uses in terms of traffic and pedestrian circulation, density, building, and site design;

The proposal is compatible with the utility towers in this location in terms of structure and site design. Wireless facilities generate almost no traffic (the impact is expected to be one

vehicle trip per month after construction) and their demand on other public services is minimal (typically limited to electric and emergency services).

D. Appropriate measures have been taken to minimize the possible adverse impacts that the proposed use may have on the area in which it is located;

Possible adverse impacts have been mitigated through compliance with the City's code sections applicable to wireless communication support structures. Because a portion of the project lies in a wetland buffer, the applicant has had several reports prepared that address this matter to minimize the impacts. Mitigation measures are proposed in the form of buffer averaging and adjustment as permitted by the City's wetland ordinance.

E. The proposed use is consistent with the goals and policies expressed in the comprehensive plan;

While the City's 2004 Comprehensive Plan does not have specific goals and policies related to wireless infrastructure, it does have several important economic development goals policies that are furthered by the proposal, including:

- **Goal EC-13: Build infrastructure in advance of its demand by industrial and commercial development.** Economic Development Element, p. XI-5.
- **Goal EC-9: Keep and attract businesses that sustain a strong economy and are supportive of the community.** Economic Development Element, p. XI-5.

With regard to the City's land use policies, Policy LU-4 requires compatibility of use and design of the surrounding and built environment. Land Use Element, p. IV-3. **Again, there are existing utility towers in the area; thus, this proposal is in kind with what is built in the neighborhood. Although wireless is not listed as an essential public facility (some jurisdictions have expressly recognized it as such), Policy LU-3-A and Strategy LU-4-A recognize the need for siting services that are in demand and used by the residents on a daily basis.** Land Use Element, p. IV-4. **Wireless facilities are needed not only for emergency purposes, but many citizens work from their residence and need to have a fully functional carrier to meet the demands of their employer and/or customers.**

F. Any special conditions and criteria established for the proposed use have been satisfied. In granting a conditional use permit the hearings examiner may stipulate additional requirements to carry out the intent of the Camas Municipal Code and comprehensive plan.

Applicant's proposal meets the special conditions and criteria established for wireless communication support structures in Chapter 18.35.

Chapter 18 Site Plan Review -- 18.18.060 - Criteria for approval.

The city shall consider approval of the site plans with specific attention to the following:

A. Compatibility with the city's comprehensive plan;

As explained above under conditional use criteria, this project is consistent with the goals

and policies of the City's comprehensive plan.

B. Compliance with all applicable design and development standards contained in this title and other applicable regulations;

This project is compliant with all applicable design standards in Chapter 18.35 for wireless facilities.

C. Availability and accessibility of adequate public services such as roads, sanitary and storm sewer, and water to serve the site at the time development is to occur, unless otherwise provided for by the applicable regulations;

The project is adequately served by NW 18th Avenue and requires no connections to storm, water, and/or sewer services.

D. Adequate provisions are made for other public and private services and utilities, parks and trails (e.g., provide copies of private covenant documents);

The project's public service needs are limited to electrical and emergency services, both of which are adequate to serve the project.

E. Adequate provisions are made for maintenance of public utilities; and

Not applicable.

F. All relevant statutory codes, regulations, ordinances and compliance with the same. The review and decision of the city shall be in accordance with the provisions of CMC Chapter 18.55 Administration and Procedures.

Understood.

CHAPTER 16.53 – WETLANDS ORDINANCE

Project's Impact to Wetland Buffer

Applicant Parallel Infrastructure proposes a monopole tower and equipment compound partially within a wetland buffer. The impact to the wetland buffer is limited to 1,384 square feet of area, and there will be no direct impact to the delineated critical area itself. The wetland is a lower quality (Category III) wetland and the existing buffer area has been degraded by regular mowing, which has limited vegetation to pasture grasses. Critical Areas Report, pp. 3-4. As explained in the Critical Areas Report, the proposed project is not expected to degrade the ecological functions of the nearby wetland. Critical Areas Report, p. 4.

The Applicant proposes to compensate for its impact to the wetland's buffer via the buffer averaging and adjustment allowed under the City's code in CMC 16.53.050(C).

Applicant's Consideration of Alternatives and Minimization of Impacts

In response to direction from City staff, in designing this proposed project, the Applicant considered alternative locations and designs both off of the site and within the property owner's larger parcel. After finding that an alternative off-site location was not feasible, the Applicant

focused on revising its site design to minimize impacts to the buffer.

Off-Site Alternatives Considered

Potential off-site locations were not feasible for the following reasons:

- Collocation at a facility across the street is not a feasible option for Freewire's coverage needs, and for T-Mobile, upgrading its antennas at the CRESA tower was not structurally feasible, as shown elsewhere in this narrative and application. Location of a new tower across the street is also not feasible due to a lack of ground space to locate an equipment compound to serve a new tower.
- Given the City's tower-height setback requirements, no other site within the search area was both large enough and available for lease.
- While not technically "off-site," City staff asked that the Applicant consider a location on the east side of the property owner's parcel. The property owner has confirmed that the east side of the parcel is not available for lease (see Appendix E to Critical Areas Report), so such a location is similarly not a feasible option.

Design Considerations and Revisions to Minimize Impacts

One of the most important parameters for designing the proposal is that the proposed height is necessary to meet the needs of the service providers, particularly Freewire. As addressed in the Microwave Path Analysis prepared by Centerline Solutions, 175 feet of height (allowing a 173-foot high RAD center) is needed to reach Freewire's customers and potential customers in four likely locations. As can be seen by the height of the terrain between host and customer (on pages 5-8), the requested tower height is necessary in order to clear obstructions that would otherwise prevent the customer from receiving service

The proposed height drives the available locations on the site because the City requires a tower-height setback from existing residences.[1] Thus, a tower-height setback from houses located to south across NE 18th Avenue must be maintained. As shown in the proposed site plan (Sheet A-1.0), the Applicant is maintaining the required setbacks from the homes to the south.

The Applicant minimized the impact to the wetland buffer by obtaining a setback waiver for the existing residence on site (which reduces the setback to 103 feet), as permitted by CMC 18.35.080(C). This allowed the Applicant to move the proposal to the south and east of its originally proposed location so that none of the access drive is in the buffer and only a portion of the equipment compound is in the buffer.

The Applicant further minimized the impact to the buffer by:

- Placement of the monopole within the upper northwest corner of the equipment compound so the tower setback can be maintained with less of an impact from the equipment compound.
- Decreasing the Applicant's usual equipment compound area in size from 2,500-ft² (50'x50') to 1,600-ft² (40'x40').
- Choosing a location oriented to the "notch" in the wetland's boundary to maintain the greatest distance from the wetland boundary.

Criteria for Wetland Permit

[1] CMC 18.35.080(C).

The City's code prohibits activities in a wetland buffer "except as provided in this chapter."

> Activities and uses shall be prohibited from wetlands and wetland buffers, except as provided for in this chapter.
> CMC 16.53.040(A)(1).

The City requires a wetland permit for any development activity within wetland buffers. CMC 16.53.050(A)(1). Buffer standards and activities authorized in buffers are specifically outlined in CMC 16.53.050(C).

Generally, an applicant's proposed activity (whether in a wetland or in a wetland buffer) must not cause significant degradation of wetland functions and values:

> Standards—General. Wetland permit applications shall be based upon a mitigation plan and shall satisfy the following general requirements:
>
> 1. The proposed activity shall not cause significant degradation of wetland functions;
>
> 2. The proposed activity shall comply with all state, local, and federal laws, including those related to sediment control, pollution control, floodplain restrictions, stormwater management, and on-site wastewater disposal.
>
> CMC 16.53.050(B).

As explained in the Critical Areas Report, the proposed project is not expected to degrade the functions and values of the wetland, much less "significantly" degrade them. Critical Areas Report, p. 4. And, the Applicant will comply with all state, local and federal laws, including those incorporated by reference in the City's wetland code. As explained in the Critical Areas Report, because the proposed proposal will have no direct impact to either wetland on the property, federal or state wetland fill permits are not required. Critical Areas Report, p. 5.

Specifically for activities in wetland buffers, the applicant must show consistency with one or more of the subsections of CMC 16.53.050. In this case, the Applicant's proposed buffer averaging is subject to the following criteria:

> Buffer Standards and Authorized Activities. The following additional standards apply for regulated activities in a wetland buffer to ensure no net loss of ecological functions and values:
>
> [*** ***** ***]
>
> 2. Buffer Averaging. Averaging buffers is allowed in conjunction with any of the other provisions for reductions in buffer width (listed in subsection (C)(1) of this section) provided that minimum buffer widths listed in subsection (C)(1)(c) of this section are adhered to. The community development department shall have the authority to average buffer widths on a case-by-case basis, where a qualified wetlands professional demonstrates, as part of a critical area report, that all of the following criteria are met:
>
> a. The total area contained in the buffer after averaging is no less than that contained within the buffer prior to averaging;
>
> b. Decreases in width are generally located where wetland functions may be less sensitive to adjacent land uses, and increases are generally located where wetland

functions may be more sensitive to adjacent land uses, to achieve no net loss or a net gain in functions;

c. The averaged buffer, at its narrowest point, shall not result in a width less than seventy-five percent of the required width, provided that minimum buffer widths shall never be less than fifty feet for all Category I, Category II, and Category III wetlands, and twenty-five feet for all Category IV wetlands; and

d. Effect of Mitigation. If wetland mitigation occurs such that the rating of the wetland changes, the requirements for the category of the wetland after mitigation shall apply.

CMC 16.53.050(C)(2).

As explained in the Critical Areas Report (pp. 6-7), Applicant's proposal meets the criteria for buffer averaging as follows:

- After buffer averaging, the total square footage of the wetland buffer would be equal to the square footage of buffer prior to averaging.
- The proposed new wider buffer area would be located on the southwestern portion of the parcel, near NW 18th Avenue, which can be considered an area more sensitive to adjacent land use, given the close proximity to the road and potential for increased contaminants and storm water runoff.
- The buffer area shall not be reduced to less than seventy-five percent (60-ft) in width through buffer averaging.
- The proposed mitigation is unlikely to result in a significant change to the wetland's rating as a Category III wetland because the wetland scored the lowest points available for this category (16 points on a total score of 16-19 points). This wetland scored low on water quality functions and hydrological functions. It is unlikely that buffer averaging alone would result in a significant change to water quality or hydrological functions on the site.

In addition to buffer averaging, Applicant proposes an additional reduction to 50 feet in width with mitigation as allowed for buffer adjustments under CMC 16.53.050(C)(1).

The Applicant's proposal thus qualifies for a wetland permit under CMC 16.53.050(C).

Strict Avoidance of Buffers is Not Required by the City's Code

The City's strict mitigation sequencing requirements only apply when an activity is proposed to be located *within the wetland itself*. CMC 16.53.050(D). The standards for a wetland permit to authorize activities *within* wetlands begin as follows:

Standards—Wetland Activities. The following additional standards apply ***to the approval of all activities permitted within wetlands*** under this section:

1. Sequencing. Applicants shall demonstrate that a range of project alternatives have been given substantive consideration with the intent to avoid or minimize impacts to wetlands. Documentation must demonstrate that the following hierarchy of avoidance and minimization has been pursued:

a. Avoid impacts to wetlands unless the responsible official finds that:

i. For Categories I and II wetlands, avoiding all impact is not in the public interest or will deny all reasonable economic use of the site;

ii. For Categories III and IV wetlands, avoiding all impact will result in a project that is either:

(A) Inconsistent with the city of Camas comprehensive plan;

(B) Inconsistent with critical area conservation goals; or

(C) Not feasible to construct.

b. Minimize impacts to wetlands if complete avoidance is infeasible[.]

CMC 16.53.050(D)(1)(emphasis added).

The standards in Subsection (D) do not apply to buffers; instead, Subsection (C) applies to buffers. The buffer standards *already include* the required mitigation measures as part of their criteria.

This distinction is also made clear in the portion of the City's wetland ordinance that describes what is required in a conceptual mitigation plan. The requirements for buffers are listed in CMC 16.53.050(E)(2)(b)(ii) and the requirements for wetland impacts are separately listed at CMC 16.53.050(E)(2)(b)(iii). Only in the requirements for wetland impacts is a sequencing analysis listed as a required element of the wetland mitigation plan. There is no such requirement listed for buffers.

As a result, the conclusion that the strict sequencing requirements do not apply to this project is supported by a plain reading of the ordinance, and to the extent any provisions of the ordinance are determined to be ambiguous, by the rules of statutory construction:

- **Plain meaning:** When interpreting a statute or ordinance, the first step is to consider the plain meaning of the relevant provisions.[2] Here, "wetland," and "wetland buffer" are defined separately[3] and regulated separately and differently. The separate treatment of buffers in Subsection (C) is consistent the purpose of a buffer – it protects the wetland, but it is not the wetland itself.
- **Rules of Statutory Construction:** According to well-established Washington case law, the specific provisions of the code rule the general provisions, in the event a provision of the code is determined to be ambiguous and subject to statutory construction.[4] In this case, the City's buffer standards most specifically authorize and control the limits of impacts in the buffer. Everything that Applicant proposes is consistent with the City's specific buffer provisions.

Applicant's proposal meets the criteria applicable to this project, namely those standards authorizing certain activities in a wetland buffer.

Even if the mitigation sequencing applicable to *wetland* impacts did apply to *wetland buffer* impacts, the applicant has avoided the impacts to the extent feasible and minimized the buffer impacts through careful design as follows:

---

[2] "The surest indication of the legislature's intent is the plain meaning of the statute, which we glean 'from all that the Legislature has said in the statute and related statutes which disclose legislative intent about the provision in question.'" *Five Corners Family Farmers v. State*, 173 Wn.2d 296, 305 (2011).

[3] CMC 18.03.050.

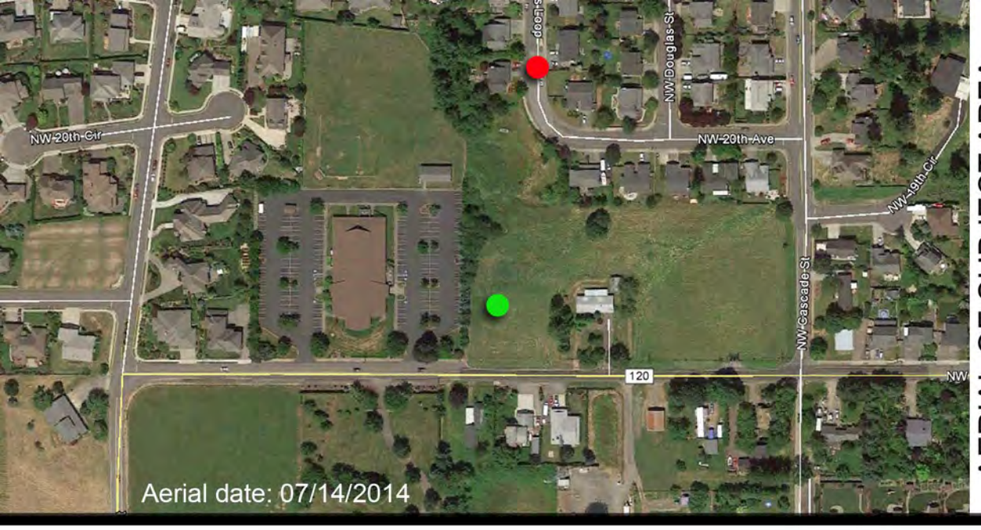
[4] *Residents Opposed to Kittitas Turbines v. State Energy Facility Site Evaluation Council (EFSEC),* 165 Wn.2d 275, 309 (2008).

- Avoiding all direct impacts to the wetland;
- Considering alternative sites;
- Relocating the lease compound to the south and east so it is further away from the wetland;
- Obtaining a setback waiver from the property owner;
- Locating the proposed tower in the northwest corner of the equipment compound; and
- Reducing the compound area from the Applicant's usual 50' by 50' to 40' by 40'.

Applicant made every effort to minimize the project's impact on the wetland buffer and proposes development activities in the buffer as specifically authorized by the City's wetland ordinance.

Conclusion

The Applicant's proposal meets the requirements of the City's code for a conditional use permit, site plan review, and a wetland permit, and the Applicant respectfully requests approval of the project as proposed.



AERIAL OF SUBJECT AREA

N

APPROX. PHOTO LOCATION

APPROX. PROPOSED MONOPOLE LOCATION

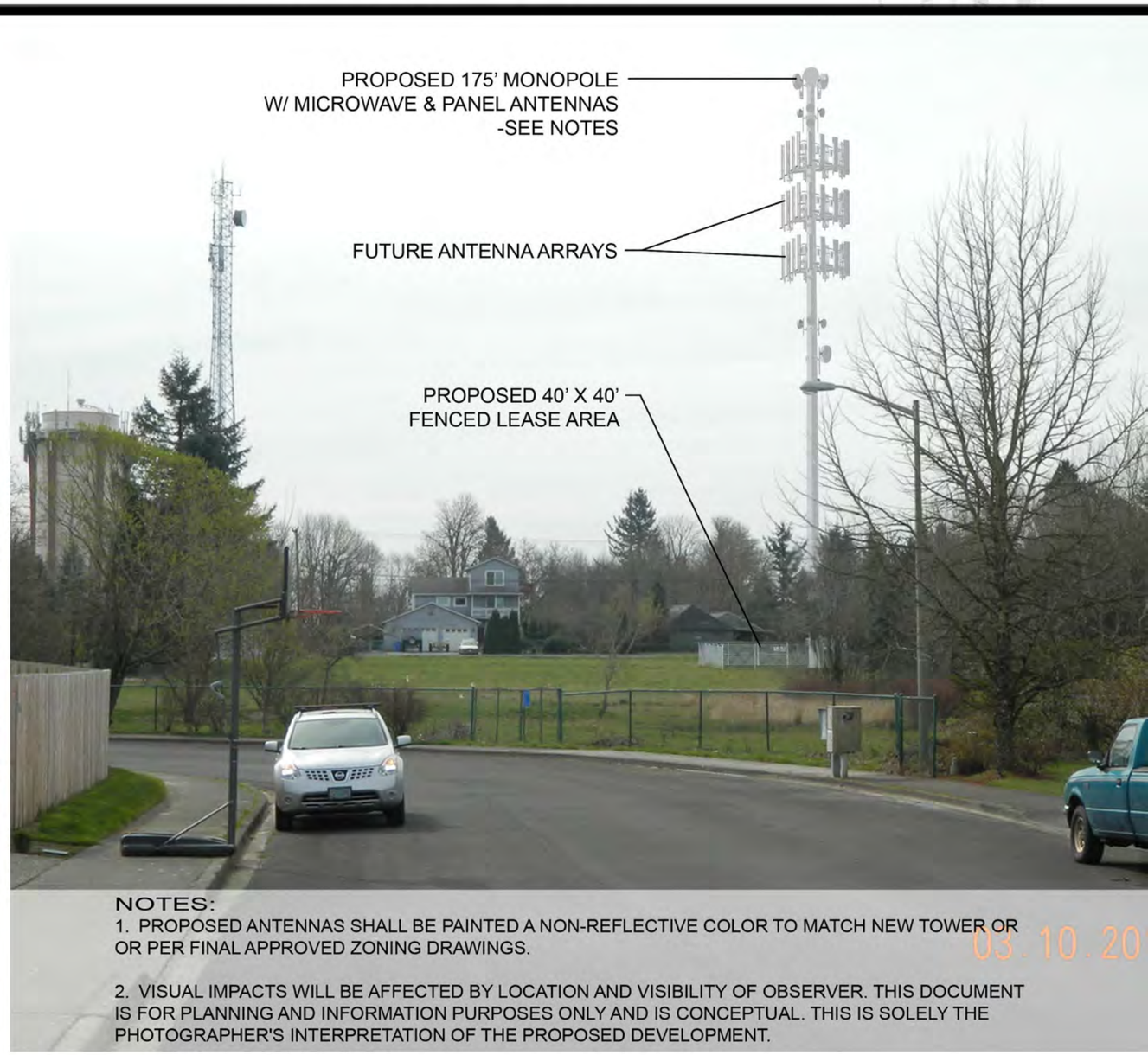
Parallel INFRASTRUCTURE

Prune Hill

Looking South

Exhibit B
CUP15-01

1



NOTES:

1. PROPOSED ANTENNAS SHALL BE PAINTED A NON-REFLECTIVE COLOR TO MATCH NEW TOWER OR OR PER FINAL APPROVED ZONING DRAWINGS.

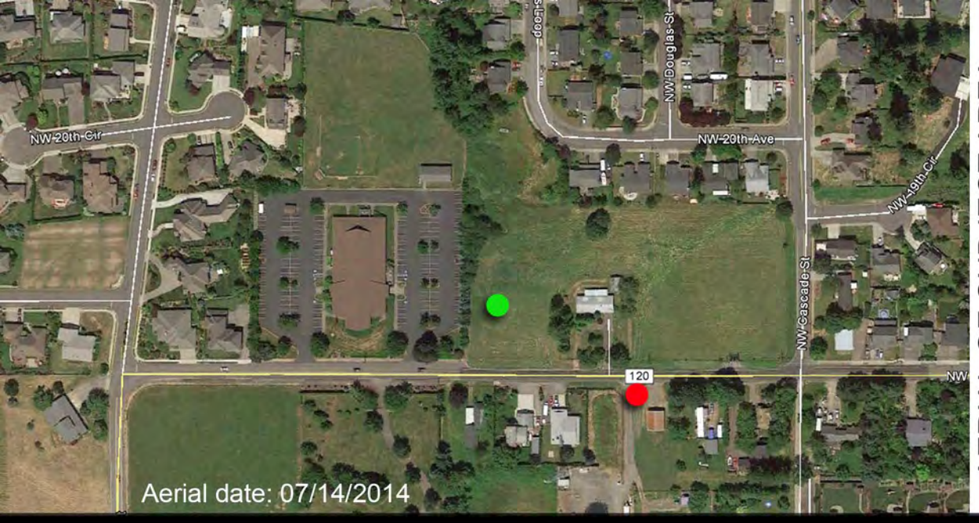
2. VISUAL IMPACTS WILL BE AFFECTED BY LOCATION AND VISIBILITY OF OBSERVER. THIS DOCUMENT IS FOR PLANNING AND INFORMATION PURPOSES ONLY AND IS CONCEPTUAL. THIS IS SOLELY THE PHOTOGRAPHER'S INTERPRETATION OF THE PROPOSED DEVELOPMENT.

Existing

Proposed

PHOTO SIMULATION

Prepared by CASCADIA PM
Precision Program Management



AERIAL OF SUBJECT AREA

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APPROX. PHOTO LOCATION

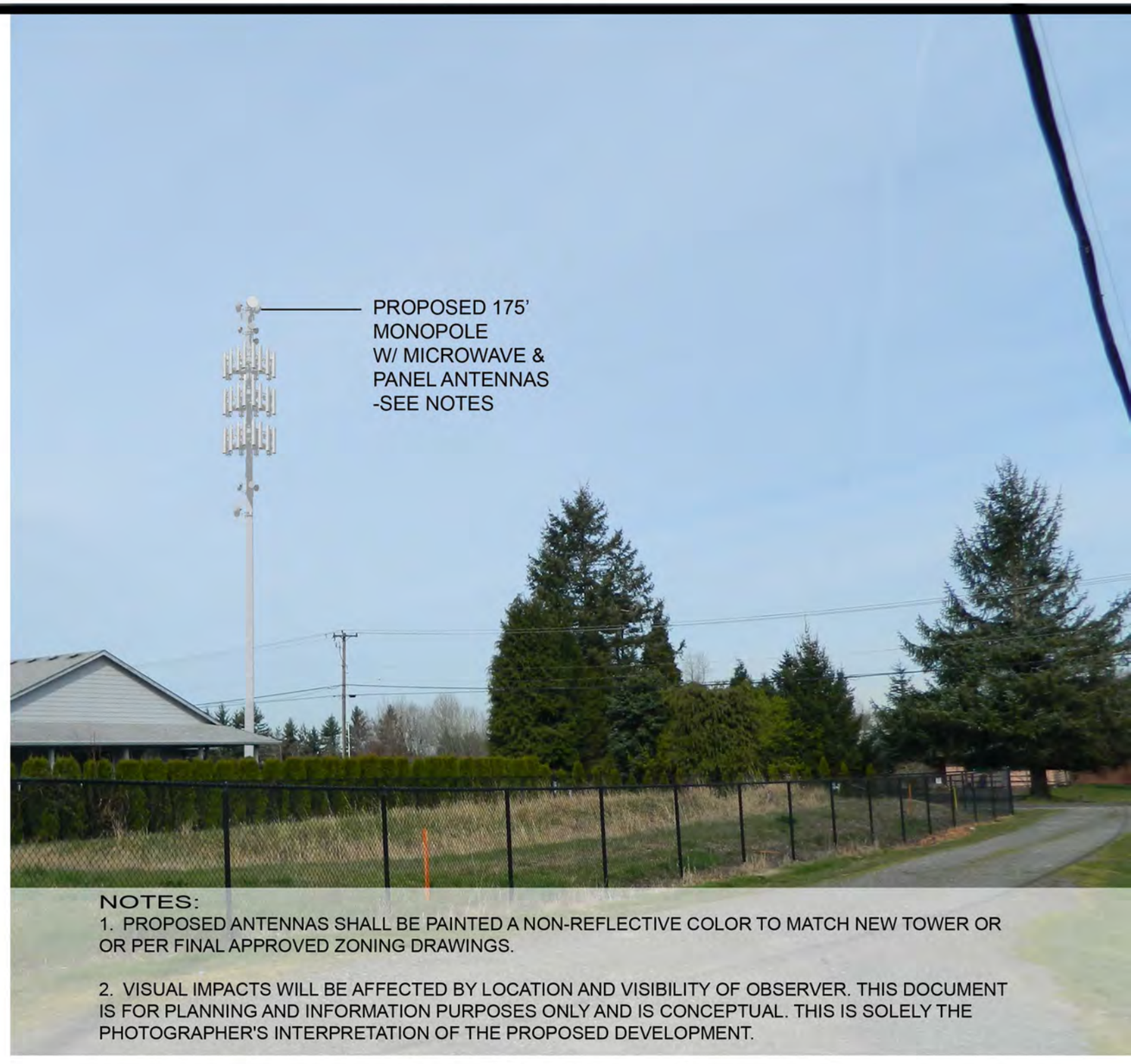
APPROX. PROPOSED MONOPOLE LOCATION

Parallel INFRASTRUCTURE

Prune Hill

Looking Northwest

Existing



Proposed

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PHOTO SIMULATION

Prepared by CASCADIA PM
Precision Program Management

AERIAL OF SUBJECT AREA

N

APPROX. PHOTO LOCATION

APPROX. PROPOSED MONOPOLE LOCATION

Parallel INFRASTRUCTURE

Prune Hill

Looking East

Existing

NOTES:

1. PROPOSED ANTENNAS SHALL BE PAINTED A NON-REFLECTIVE COLOR TO MATCH NEW TOWER OR OR PER FINAL APPROVED ZONING DRAWINGS.

2. VISUAL IMPACTS WILL BE AFFECTED BY LOCATION AND VISIBILITY OF OBSERVER. THIS DOCUMENT IS FOR PLANNING AND INFORMATION PURPOSES ONLY AND IS CONCEPTUAL. THIS IS SOLELY THE PHOTOGRAPHER'S INTERPRETATION OF THE PROPOSED DEVELOPMENT.

Proposed

PHOTO SIMULATION

Prepared by CASCADIA PM
Precision Program Management

AERIAL OF SUBJECT AREA

N

- APPROX. PHOTO LOCATION
- APPROX. PROPOSED MONOPOLE LOCATION

Parallel INFRASTRUCTURE

Prune Hill

Looking West

Existing

NOTES:

1. PROPOSED ANTENNAS SHALL BE PAINTED A NON-REFLECTIVE COLOR TO MATCH NEW TOWER OR OR PER FINAL APPROVED ZONING DRAWINGS.

2. VISUAL IMPACTS WILL BE AFFECTED BY LOCATION AND VISIBILITY OF OBSERVER. THIS DOCUMENT IS FOR PLANNING AND INFORMATION PURPOSES ONLY AND IS CONCEPTUAL. THIS IS SOLELY THE PHOTOGRAPHER'S INTERPRETATION OF THE PROPOSED DEVELOPMENT.

Proposed

PHOTO SIMULATION

Prepared by CASCADIA PM
Precision Program Management

Exhibit C
CUP15-01

ADVANCING WIRELESS NETWORKS

Parallel
INFRASTRUCTURE

MW Path Analysis
Site: Prune Hill
February 15, 2016

DESIGN BUILD MODIFY MAINTAIN

Introduction

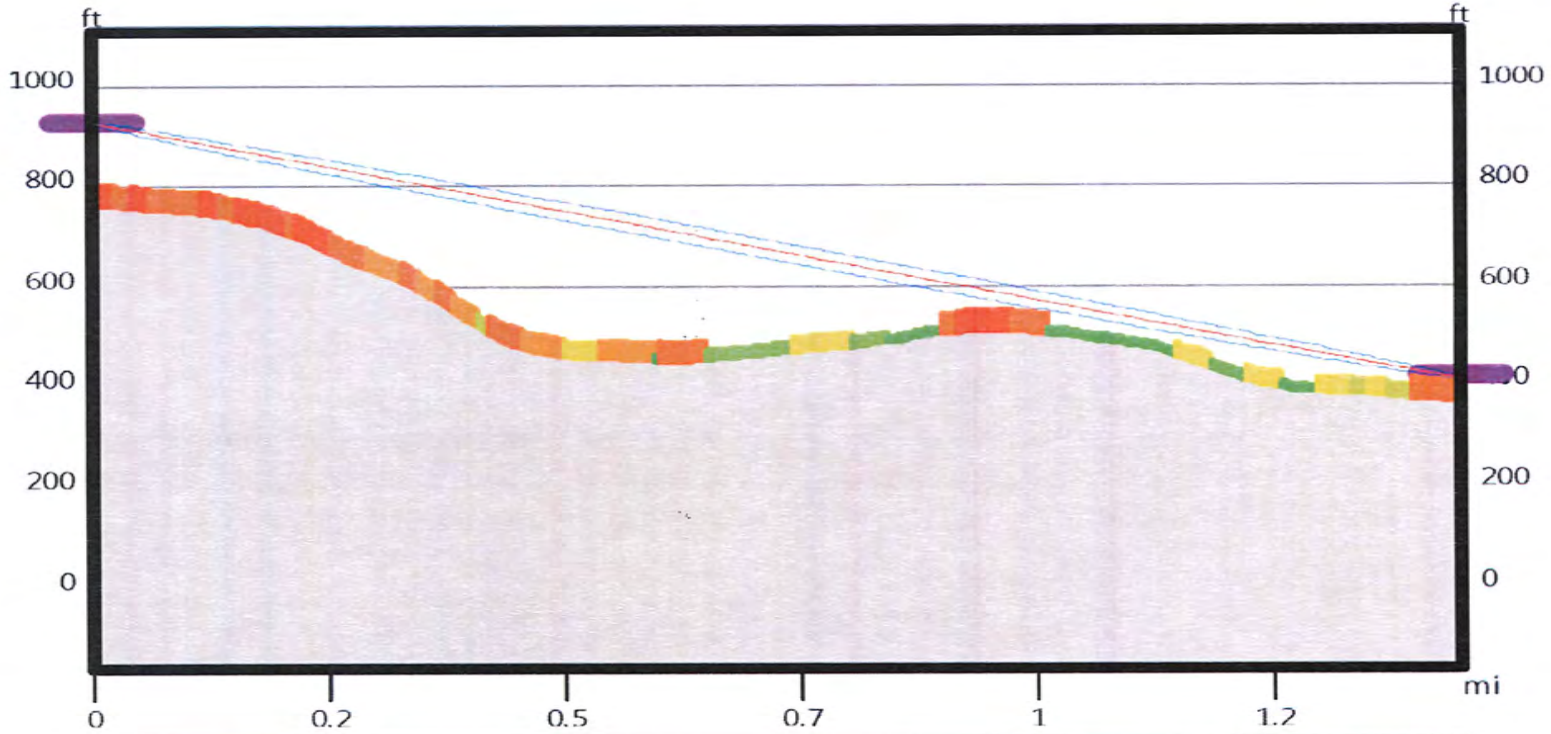
The overhead map on page 4 shows the proposed location of our Parallel Infrastructure site at Prune Hill (the yellow "flag"), and the green area shows the potential coverage allowed by having the tower / Freewire microwave (MW) installed at the proposed height. The grey color shows areas that would not have a signal due to the blockages of terrain, trees, etc. The MW signal can cover a significant distance, but depends on line-of-sight clearance between the host site and the customer.

Also on the overhead map, there are a few "sample" sites that show potential likely Freewire customer locations that could be served by the dishes on the proposed tower. The following pages show the MW line-of-sight along with an approximation of the terrain in between the host site and the customers. As can be seen by the height of the terrain between host and customer, the requested tower height is necessary in order to clear obstructions that would otherwise prevent the customer from receiving service.

Table of Contents

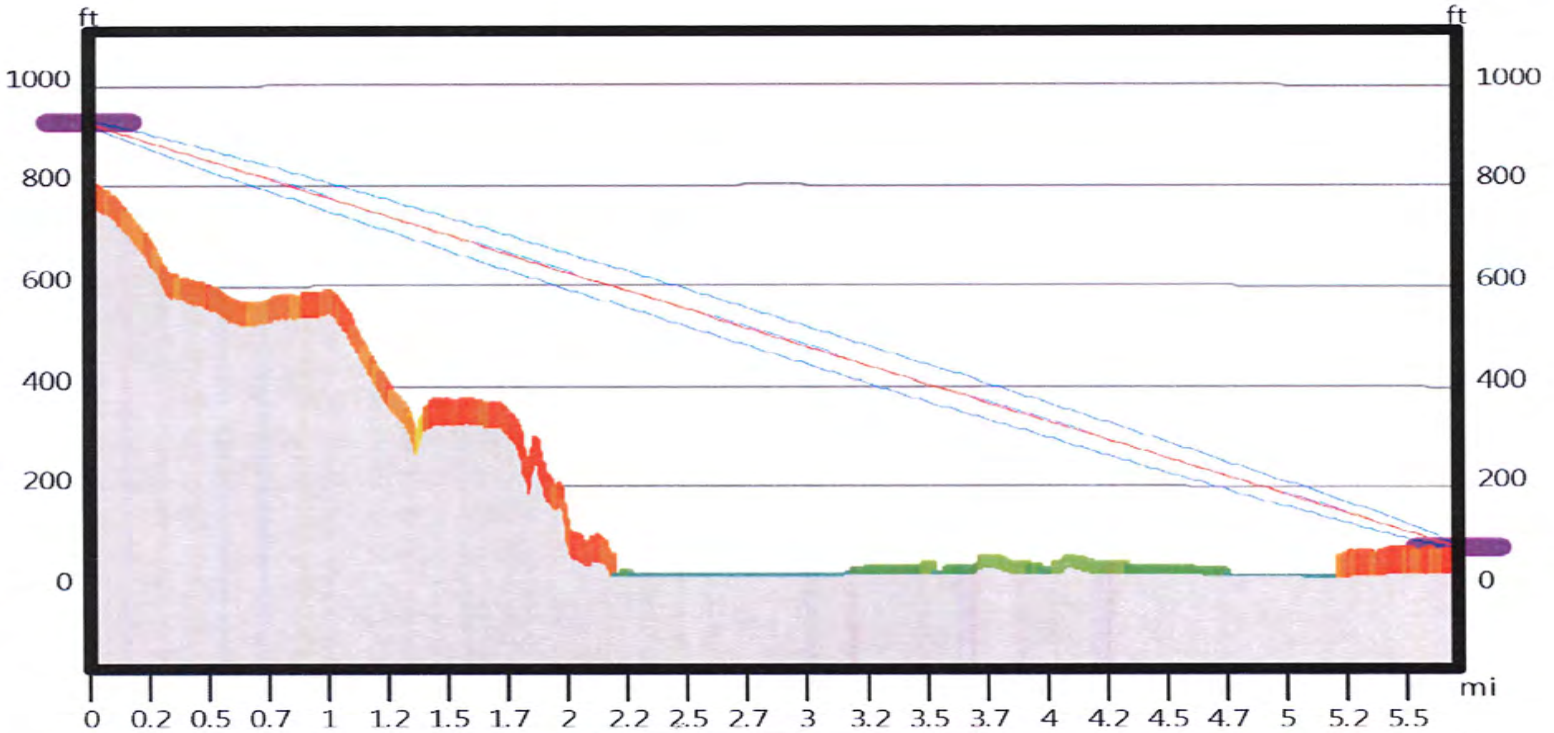
Line of Sight Overview Map

Business Park Profile Analysis



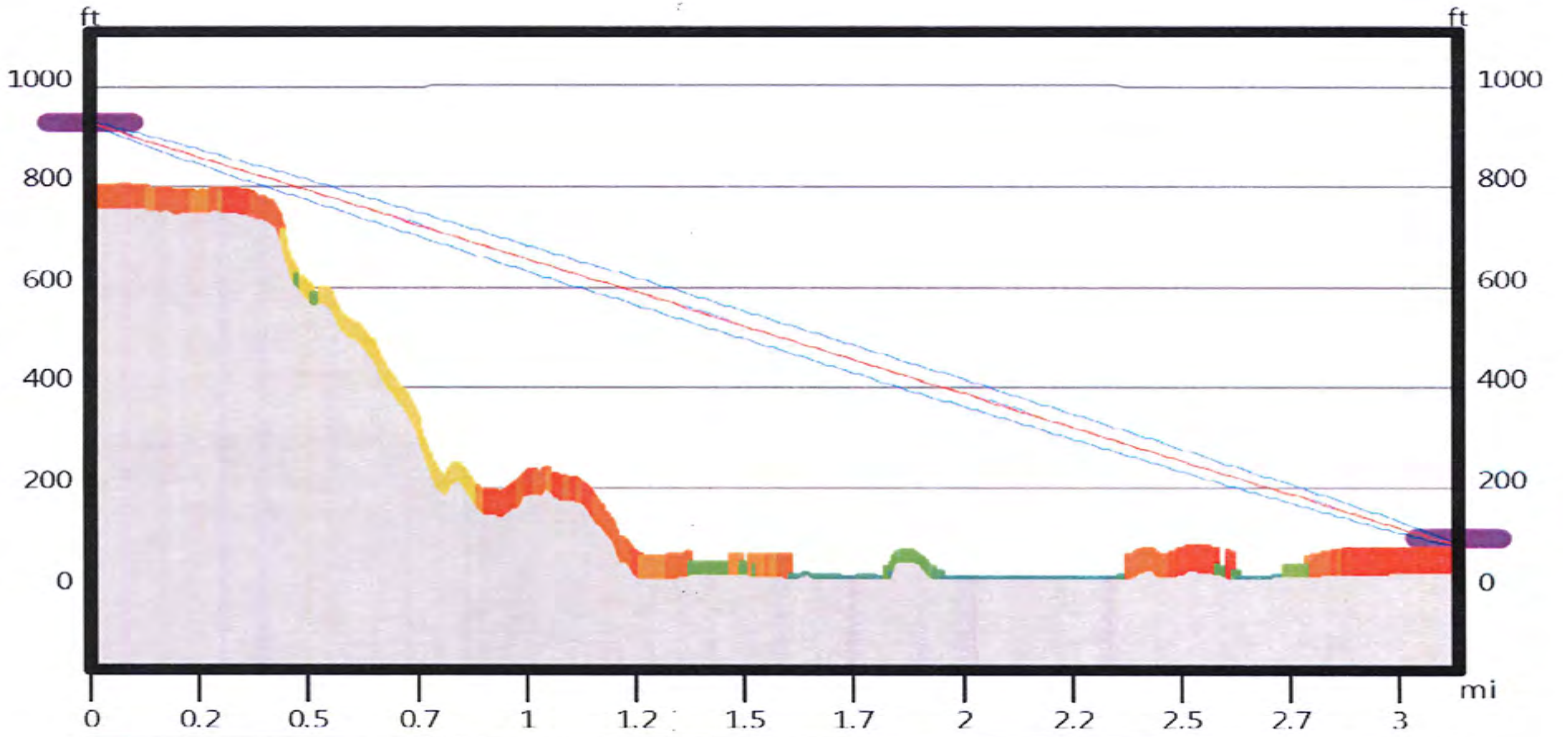
Site A : Camas	Link : Camas - Business Park	Site B: Business Park
Longitude : -122.4396998	Frequency : 5,300 MHz	Longitude : -122.4692139
Latitude : 45.592611145	k1= 1.33	Latitude : 45.595221506
Altitude : 754.4 ft	k2= 0.88	Altitude : 360.8 ft
Height : 173 ft		Height : 52.48 ft

IKEA Profile Analysis



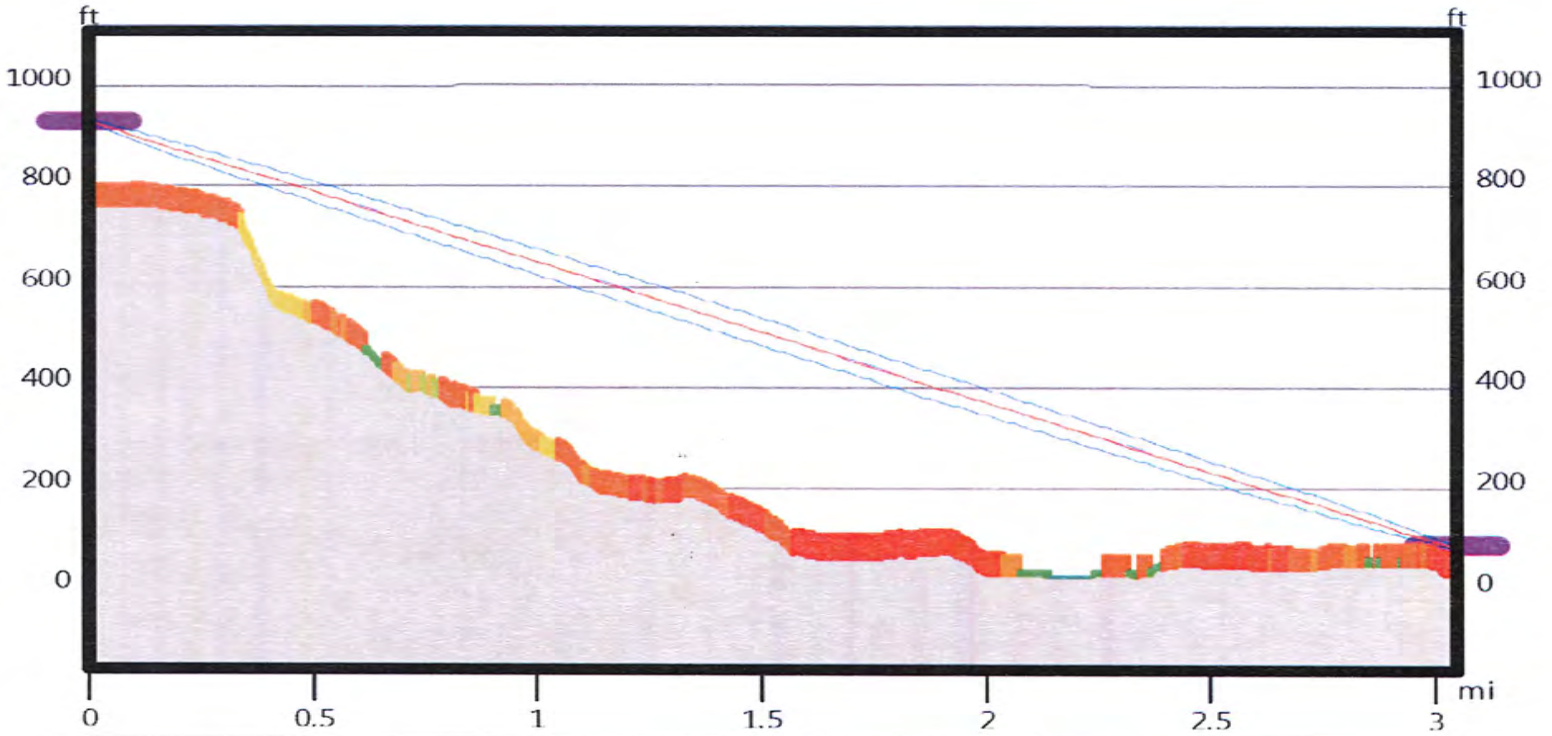
Site A : Camas	Link : Camas - IKEA	Site B: IKEA
Longitude : -122.4396998	Frequency : 5,300 MHz	Longitude : -122.5534294
Latitude : 45.592611145	k1= 1.33	Latitude : 45.571206795
Altitude : 754.4 ft	k2= 0.88	Altitude : 26.24 ft
Height : 173 ft		Height : 55 ft

Shipping Facility Profile Analysis



Site A : Camas	Link : Camas - Shipping Facility	Site B: Shipping Facility
Longitude : -122.4396998	Frequency : 5,300 MHz	Longitude : -122.4008365
Latitude : 45.592611145	k1= 1.33	Latitude : 45.556481838
Altitude : 754.4 ft	k2= 0.88	Altitude : 29.52 ft
Height : 173 ft		Height : 55.76 ft

Port of Camas-Washougal Analysis



Site A : Camas	Link : Camas - Port of Camas-Washougal	Site B : Port of Camas-Washougal
Longitude : -122.4396998	Frequency : 5,300 MHz	Longitude : -122.3802948
Latitude : 45.592611145	k1= 1.33	Latitude : 45.578284307
Altitude : 754.4 ft	k2= 0.88	Altitude : 19.68 ft
Height : 173 ft		Height : 62.32 ft

Qualifications

I am a Radio Frequency (RF) Engineer with over 20 years of experience working as a contractor and for various commercial wireless operators.

- Bachelor of Science in Electrical Engineering, Portland State University, 1996
- More than 20 years of radio system design and operational experience
- Current Employer – Centerline Solutions, LLC
- Past Employers – VoiceStream (T-Mobile), Sprint-Nextel, Verizon Wireless
- Past Contractors – Telecommunication Wireless Solutions (TWS) and TEK Systems – AT&T Mobility

Son Tran
Senior RF Engineer

Exhibit D
CUP15-01

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) REVIEW CHECKLIST

Site Number: N/A	**Site Name:** Prune Hill
Site Address: 2829 Northwest 18th Avenue, Camas, Washington 98607	

Federal Communications Commission NEPA Category	**Potential Impact**	
	Yes	**No**
1. Is the facility located in an officially designated wilderness area?		✓
2. Is the facility located in an officially designated wildlife preserve?		✓
3. Will the facility likely affect threatened or endangered species or designated critical habitats?		✓
4. Will the facility affect districts, sites, buildings, structures, or objects significant in American history, architecture, archeology, engineering or, culture that are listed, or potentially eligible for listing in the National Register of Historic Places?		✓
5. Will the facility affect Indian religious sites? Inadvertent Discovery Plan Requested		✓
6. Will the facility be located in a flood plain?		✓
7. Will construction of the facility involve significant change in surface features (e.g. wetlands, deforestation, or water diversion)?		✓
8. Is the facility located in a residential neighborhood and required to be equipped with high intensity white lights?		✓

Based on the "No" responses to all of the above eight categories, it is not necessary to prepare and file an Environmental Assessment with the Federal Communications Commission for the proposed undertaking.

Preparer's Signature: Beth Belanger

Preparer's Name (Printed): Beth Belanger

Preparer's Title: Senior Environmental Compliance Manager

Company Name: Adapt Engineering

Date: September 29, 2015

Adapt Engineering
10725 SW Barbur Blvd., Ste. 200
Portland, Oregon 97219

Tel (503) 892-2346
Fax (503) 892-2348
www.adaptengr.com

September 29, 2015

Adapt Project No. WA15-19957-NEPA

Parallel Infrastructure c/o
Cascadia PM, LLC.
5501 NE 109th Court, Suite A-2
Vancouver, WA 98662

Attention: Jeff Colantino

Subject: National Environmental Policy Act Review
Prune Hill
2829 NW 18th Ave
Camas, WA 98607

Dear Mr. Colantino:

Adapt Engineering (Adapt) is pleased to present the results of the National Environmental Policy Act (NEPA) review for the above-referenced project. Authorization to perform this project was given in the form of the Cascadia PM purchase order number 73707.

1.0 INTRODUCTION

The NEPA review addresses whether the "facility" may have a significant environmental effect on eight actions or categories as outlined in the Federal Communications Commission (FCC) NEPA Rules [47 CFR Part I, 1.1307 (a) (1) through (8)]. The eight actions include: wilderness areas; wildlife preserves; threatened-endangered species and critical habitats; historical properties; Indian religious sites; flood plains; surface features including wetlands, deforestation, and water diversion; and high intensity white lights.

2.0 FACILITY DESCRIPTION

The project site is located at 2829 NW 18th Ave, Camas, Clark County, WA 98607 (Section 04-Township 01 North-Range 03 East, Willamette Meridian). The property is under the jurisdiction of The City of Camas. The parcel number is 124979000.

The rectangular shaped host parcel covers 5 acres in area, and is developed with one residential house, constructed in 1965. The remainder of the property is undeveloped and consists mostly of pasture grasses that are mowed regularly during the growing season. Clark County has zoned the host parcel as Residential (R12). The property is bordered by NW 18th Ave to the south, NW Cascade Street to the east, a residential development to the north and the Church of Jesus Christ Latter Day Saints to the west. The 1A Survey indicates that the surveyed ground elevation at the project site is 749.2 feet amsl.

Parallel Infrastructure proposes to construct a 175' monopole tower on the southwest quadrant of the host parcel. The proposed tower and associated equipment will be located within a 40-foot x 40-foot lease area. An approximately 50-foot long by 12-foot wide gravel access road will be installed to connect the lease area to NW 18th Ave. The gravel access road and utility corridor will be within the same 20' easement. The utilities (power and telco) will be routed along the access road and then turn west at a 90° angle to connect to the nearest utility pole on NW 18th Ave. A fiber optic line will also follow the access easement, and then cross over to the southern side of NW 18th Ave.; from there it will continue easterly to the nearest fiber optic hookup. The total length of the fiber optic trench route will be approximately 600' long.

(Appendix A—Project Maps, Appendix B—Construction Drawings)

3.0 NEPA REVIEW ACTIONS

The eight FCC NEPA actions are presented below in the form of questions.

1. **Will the facility be located in an officially designated wilderness area?**

   No. The project site is not within the boundaries of an officially designated wilderness area, according to information on Wilderness.net. The nearest wilderness area is the Mark O. Hatfield Wilderness, approximately 15 miles east of the project location.

2. **Will the facility be located in an officially designated wildlife preserve?**

   No. The project site is not within the boundaries of an officially designated wildlife preserve. According to information on the US Fish and Wildlife Service (USFWS) website the nearest wildlife refuge is the Ridgefield National Wildlife Refuge located approximately 20 miles northwest of the project site.

3. **May the facility affect listed threatened or endangered species or designated critical habitats; or likely jeopardize the continued existence of any proposed endangered or threatened species or likely result in the destruction or adverse modification of proposed critical habitats?**

   No. Adapt completed a Biological Assessment to evaluate potential impacts on threatened or endangered species, critical habitats and migratory birds. The assessment concluded the proposed project will have no effect upon any threatened or endangered species or migratory birds that may be located within, or in the vicinity of, the project site. In general, we do not believe that the host parcel contains any designated critical habitat for any of the threatened and endangered species considered. (Appendix C—Biological Assessment)

4. **May the facility affect districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering or culture that are listed or are eligible to be listed in the National Register of Historic Places?**

   No. Adapt completed a Section 106 Review of the National Historic Preservation Act of 1966 and 36 CFR 800 to assess whether the proposed facility will have an effect on properties listed on, or eligible for listing on, the National Register of Historic Places (National Register). The review included the submittal of an FCC Form 620 and cover

report to the Washington Department of Archaeology and Historic Preservation (DAHP) that addressed the effect of the proposed undertaking on historic properties within direct and visual Areas of Potential Effect (APE).

The review concluded there were no historic properties within the APE for direct effects and no adverse effect to historic properties, eligible historic properties, or possible historic properties within the visual effects APE. In conjunction with the historical resources survey, an Archaeological Survey was performed by a registered professional archaeologist and it was determined that the project was unlikely to affect archaeological resources. Adapt submitted an FCC Form 620 (dated July 31, 2015) to DAHP with those conclusions. DAHP sent a concurrence letter, dated August 04, 2015 concurring with the defined APEs and the conclusion that the proposed project would have "No Adverse Effect" on historic properties, eligible historic properties, or potentially eligible historic properties and archaeological resources.

The site location moved approximately 50' to the southeast, on the host parcel. The new proposed tower and lease area location were resurveyed by a registered professional archaeologist and it was concluded that the new location would also have a low probability of encountering archaeological resources. The revised archaeological report was submitted to DAHP for review on September 28, 2015. No comments have been received at this time.

The National Park Service's National Trail System website was utilized to determine that the project is not occurring within one mile of any National Scenic Trails. The Pacific Crest Trail is approximately 30 miles east of the project location.

The City of Camas Planning Division was notified of the proposed project on June 17, 2015. A public notice was issued in *The Columbian* on July 06, 2015. To date, no responses have been received.

(Appendix D—DAHP Concurrence, Appendix E-- Historical Survey, Appendix F—Archaeological Report, Appendix G—Form 620, Appendix H—Local Government Correspondence, Appendix I—Public Notice Affidavit)

5. May the facility affect Indian religious sites?

No. Section IV of the *Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the FCC* (Nationwide Agreement) addresses the responsibility to carry out consultation with any Indian tribe that attaches religious and cultural significance to an historic property if the property may be affected by an FCC undertaking.

On behalf of Parallel Infrastructure, Adapt input information for the project into TCNS on June 17, 2015 and received a confirmation email indicating the project was assigned the Notification ID: 128201. TCNS subsequently sent a June 26, 2015 email stating the following Indian tribes were notified of the proposed Parallel Infrastructure undertaking:

1. Eastern Shoshone Tribe
2. Confederated Tribes of the Grand Ronde Community
3. Confederated Tribes of the Warm Springs Reservation
4. Yakama Nation
5. Nez Perce Tribe

6. Cowlitz Indian Tribe

The Eastern Shoshone Tribe responded with no interest on July 15, 2015. The Confederated Tribes of the Grand Ronde and Confederated Tribes of the Warm Springs both responded with no interest on July 13, 2015. However, the Warm Springs has requested that an Inadvertent Discovery Plan (IDP) be written for the project, in the event that tribal artifacts or remains are encountered during construction. The Cowlitz Tribe also responded on July 24, 2015 and requested an IDP. The Yakama Nation and Nez Perce Tribes have a TCNS exclusion that has been satisfied.

Parallel Infrastructure has fulfilled its responsibility under Section IV of the Nationwide Agreement to carry out consultation with Indian tribes concerning the proposed undertaking.

It should be noted that DAHP requires that during construction activities, if archaeological or historic materials are discovered, work in the immediate area must be discontinued, the area secured, and the appropriate Indian tribe(s) and DAHP notified. (Appendix J—Tribal Consultation)

6. Will the facility be located in a flood plain?

No. Based on a review of the Federal Emergency Management Agency (FEMA) Digital Q3 Flood Data (Map #53011C0529D) the facility is in a Zone X, which is defined as follows:

> *Zone C and X (Unshaded) – Area of minimal flood hazard, usually depicted on FIRMS as above the 500-year flood level. Zone C may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.*

(Appendix K—Flood Determination)

7. Will the construction of the facility involve significant change in surface features such as wetland fill, deforestation, or water diversion?

No. A wetland delineation was completed for the host parcel. Professional Wetland Scientists performed a field survey on March 23, 2015 and provided a completed delineation report on April 08, 2015. The delineation followed the methodology prescribed in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (Corps 2010) and the *1997 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987). It was determined that there are two jurisdictional wetlands on the parcel. The proposed tower and lease area will not be within the boundaries of either of the delineated wetlands on the host parcel.

Additionally, the project area is not forested and will not involve deforestation or require water diversion. (Appendix L—Wetlands Map)

8. Will high intensity white lights, if required by the Federal Aviation Administration (FAA), affect residential neighborhoods?

No. High intensity white lights are required by FAA for aviation avoidance marking on towers over 499 feet above ground surface. Towers less than 499 feet are not equipped with high intensity white lights.

4.0 CONCLUSIONS

Adapt responded "No" to each of the eight FCC NEPA actions-questions. In conclusion, it is Adapt's opinion the proposed Parallel Infrastructure facility will have no significant environmental effect on the eight FCC NEPA actions thus in accordance with 47 CFR Part I, 1.1307, the preparation of an Environmental Assessment is not necessary.

5.0 REFERENCES

- United States. Department of Agriculture. Soil Survey Staff, Natural Resources Conservation Service. Web Soil Survey. 01 April 2015 <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.

- United States. Department of the Interior Fish and Wildlife Service. National Wetlands Inventory. Wetlands Mapper. 01 April 2015. <www.fws.gov/wetlands/Data/mapper.html>.

- United States. Department of the Interior Fish and Wildlife Service. National Wildlife Refuge System. Refuges. 15 July 2015. <http://www.fws.gov/refuges/index.html>

- United States. Federal Emergency Management Agency. Map Service Center. 01 April 2015. <www.msc.fema.gov>.

- University of Montana. College of Forestry and Conservation. Wilderness Institute. Wilderness.net. 15 July 2015. <http://www.wilderness.net/index.cfm>.

6.0 LIMITATIONS

The NEPA review is intended to specifically satisfy the requirement of 47 CFR Part I, 1.1307, and should not be solely relied upon to satisfy federal, state, or local permitting requirements. Further, the NEPA review questions apply only to the "facility" defined as the areas of the host parcel that Parallel Infrastructure will lease and develop such as a tower compound and access road.

Adapt appreciates the opportunity to be of service to you on this project. Should you have any questions concerning this report, or if we can assist you in any way, please contact us at (503) 892-2346.

Respectfully Submitted,

Adapt Engineering

Beth Belanger
Senior NEPA Compliance Manager

Elizabeth Torrey
NEPA Specialist

Attachments:

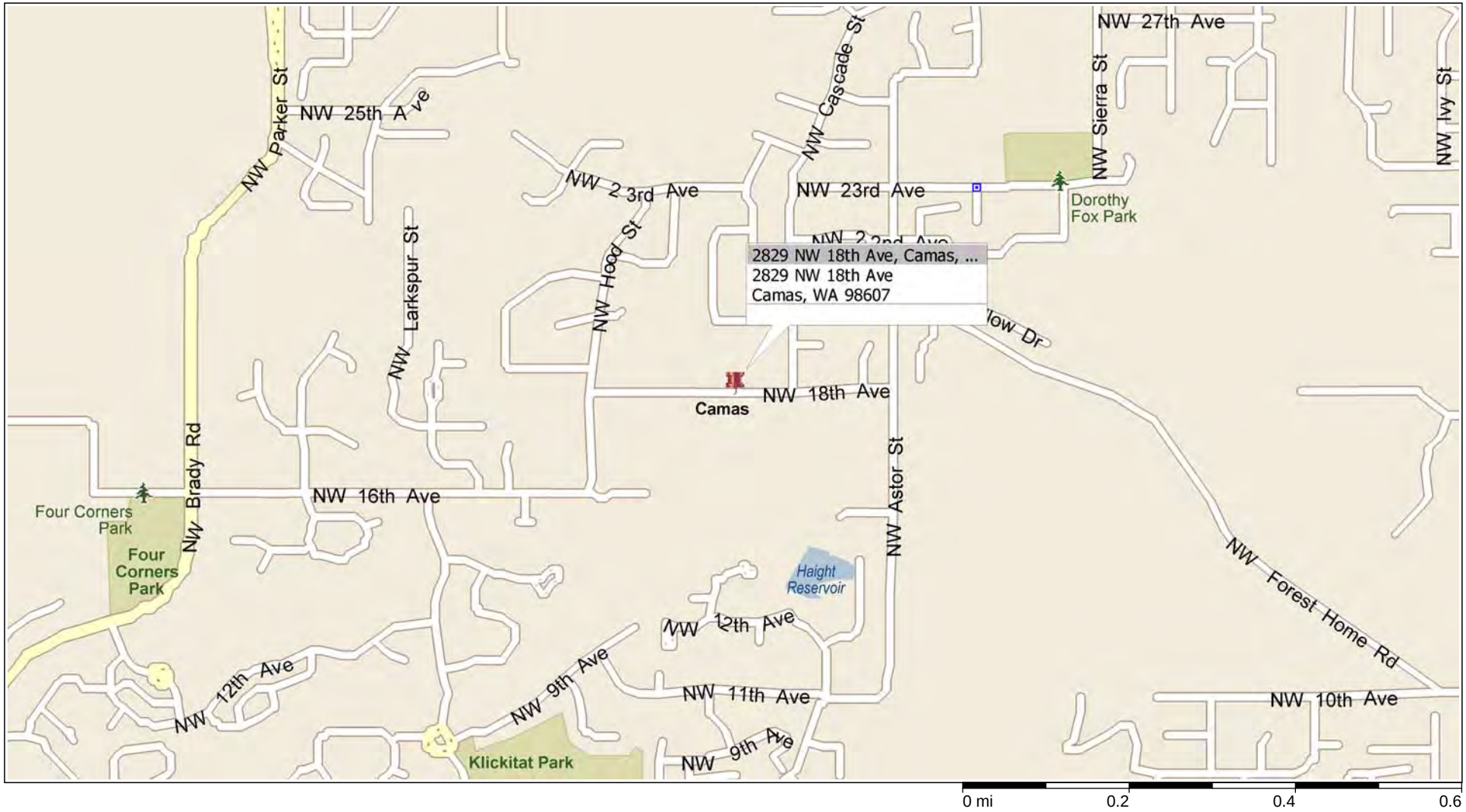
Appendix A	Location Maps
Appendix B	Construction Drawings
Appendix C	Biological Assessment
Appendix D	DAHP Concurrence
Appendix E	Historical Survey Report
~~Appendix F~~	~~Archaeological Report~~ Exempt from public disclosure
Appendix G	Form 620
Appendix H	Local Government Correspondence
Appendix I	Public Notice
Appendix J	Tribal Consultation
Appendix K	Flood Plain Determination
Appendix L	NWI Map
Appendix M	Preparer's Qualifications

APPENDIX A

LOCATION MAPS

Vancouver, Washington, United States

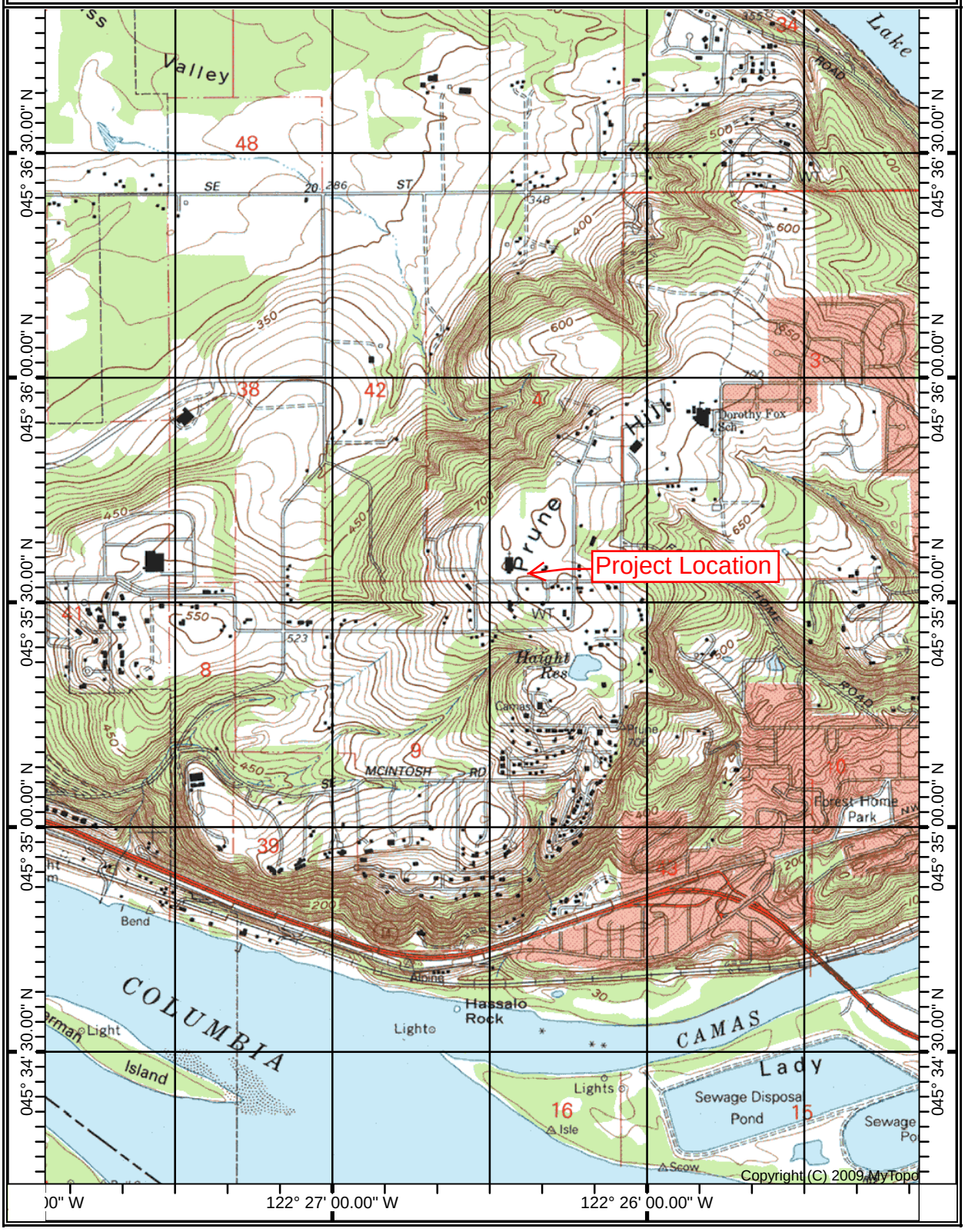
Washington, United States, North America



Map Name: CAMAS
Print Date: 06/17/15

Scale: 1 inch = 2,000 ft.
Map Center: 045° 35' 33.49" N 1

Horizontal Datum: NAD27



SCALE 1:24000

0 1000 2000 3000 4000 5000 6000 7000

FEET

APPENDIX B

CONSTRUCTION DRAWINGS

PRUNE HILL
ZONING DRAWINGS

2829 NW 18TH AVE
CAMAS, WA 98607

PROJECT SUMMARY

THIS PROJECT INCLUDES THE FOLLOWING SCOPE OF WORK:

1. PROPOSED INSTALLATION OF WIRELESS TELECOMMUNICATIONS FACILITY ON A PARCEL OF LAND.

2. PROPOSED FREEWIRE OUTDOOR RF EQUIPMENT TO BE INSTALLED ON 7'-0" X 7'-0" CONCRETE PAD WITHIN A 40'-0" X 40'-0" PARALLEL INFRASTRUCTURE FENCED LEASE AREA.

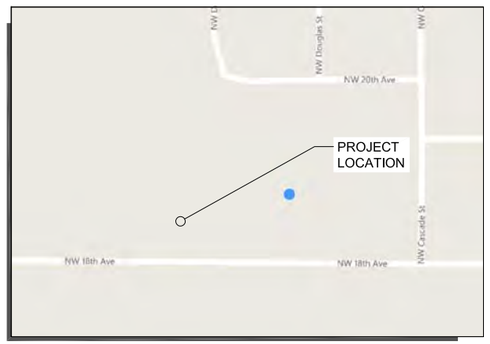
3. PROPOSED INSTALLATION OF (3) PANEL ANTENNAS AND (7) MICROWAVE ANTENNAS ON A NEW 175'-0" MONOPOLE.

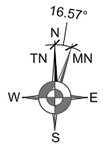
4. PROPOSED INSTALLATION OF 800A ELECTRICAL AND FIBER SERVICE FOR FREEWIRE WIRELESS EQUIPMENT.

SITE INFORMATION

SITE ADDRESS:	2829 NW 18TH AVE CAMAS, WA 98607
LATITUDE:	45° 35' 33.4" N (45.592611)
LONGITUDE:	122° 26' 22.9" W (122.439694)
SOURCE:	1A
DATUM:	NAD 83
JURISDICTION:	CLARK COUNTY
TAX ID NUMBER:	124979-000
ZONING CLASSIFICATION:	R-12
GROUND ELEVATION:	749.2' AMSL
TOP OF (N) MONOPOLE:	175' AGL
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B

PROJECT VICINITY & AREA MAPS





DRIVING DIRECTIONS

FROM SEATAC INTERNATIONAL AIRPORT:

1. TAKE RAMP RIGHT FOR I-5 S (143.5 MI)
2. AT EXIT 7, TAKE RAMP RIGHT FOR I-205 SOUTH TOWARD SALEM (10.1 MI)
3. AT EXIT 27, TAKE RAMP RIGHT FOR WA-14 EAST TOWARD CAMAS (4.3 MI)
4. AT EXIT 10, TAKE RAMP RIGHT AND FOLLOW SIGNS FOR SE 192ND AVE (0.2 MI)
5. TURN LEFT ONTO SE 192ND AVE (0.2 MI)
6. TURN RIGHT ONTO SE BRADY RD (0.8 MI)
7. ROAD NAME CHANGES TO NW BRADY RD (0.5 MI)
8. TURN RIGHT ONTO NW 16TH AVE (0.5 MI)
9. TURN LEFT ONTO NW HOOD ST (0.1 MI)
10. TURN RIGHT ONTO NW 18TH AVE (0.2 MI)
11. ARRIVE AT 2829 NW 18TH AVE, CAMAS, WA 98607

ESTIMATED TIME: 2 HOUR AND 40 MINUTES
ESTIMATED DISTANCE: 162.6 MILES

LEGAL DESCRIPTION

SEE SV-1 SHEET.

UTILITY COMPANIES

POWER: CLARK PUBLIC UTILITIES
MIKE BROWN
PH: 360.992.8836

TELCO/FIBER: TBD

GOVERNING CODES

GOVERNING CODES

IBC-2012, INTERNATIONAL BUILDING CODE W/ LOCAL AMENDMENTS

NEC-2008, NATIONAL ELECTRICAL CODE

A.D.A. COMPLIANCE
INSTALLATION IS UNMANNED AND NOT FOR HUMAN HABITATION.
HANDICAP ACCESS IS NOT REQUIRED PER A.D.A.

PROJECT CONTACTS

APPLICANT
PARALLEL INFRASTRUCTURE
4601 TOUCHTON ROAD EAST, BLDG. 300
SUITE 3200, JACKSONVILLE, FL 32246
PH: 904.450.4830

CO-APPLICANT
FREEWIRE
5465 SW WESTERN AVE, SUITE E
BEAVERTON, OR 97005

CO-APPLICANT
T-MOBILE
19807 NORTH CREEK PKWY N
BOTHELL, WA 98011

PROPERTY OWNER
JEAN M NAGEL
1020 SE COFFEY RD
WASHOUGAL, WA 98671

PRINCIPAL ENGINEER,
NETWORK CONSTRUCTION
RYAN SAUVAGEAU
PH: 971.678.0228
blackstorm.ryan@gmail.com

ZONING AND PERMITTING CONSULTANT
CASCADIA PM
5501 NE 109TH CT, STE A-2
VANCOUVER, WA. 98662
NOAH GRODZIN
PH:360.567.3794

SITE ACQUISITION CONSULTANT
CASCADIA PM
5501 NE 109TH COURT, SUITE A-2
VANCOUVER, WA 98662
JEFF COLANTINO
PH: 360.450.8697

SURVEYOR
AMBIT CONSULTING
245 SAINT HELENS AVE, SUITE 3A
TACOMA, WA 98406
PH: 602.463.0472

STRUCTURAL ENGINEER
VECTOR STRUCTURAL ENGINEERS
9138 S STATE ST., SUITE 101
SANDY, UT 84070
ROGER T. ALWORTH, S.E.
PH: 801.990.1775

DRAWING INDEX

APPROVAL LIST

TITLE	SIGNATURE	DATE
PROPERTY OWNER		
VERIZON REPRESENTATIVE		
PROJECT MANAGER		
SITE ACQUISITION		
ZONING		
CONST. MANAGER		
RF ENGINEER		
AAV MANAGER		

Parallel INFRASTRUCTURE

CASCADIA PM
Precision Program Management

VECTOR engineers

CPM PROJECT NO.: 8842

PRELIMINARY

NO.	DATE	D/C	DESCRIPTION
1	07-01-15	JG/JG	CLIENT COMMENT
2	07-07-15	JG/JG	CPM COMMENT
3	08-06-15	GS/GS	CLIENT COMMENT

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION
0	06-17-15	JG/JG	LU SUBMITTAL
1	08-25-15	JC/GS	LU COMMENTS
2	09-16-15	JC/GS	LU COMMENTS

SITE NAME
PRUNE HILL

TAX ID NO.:
124979000

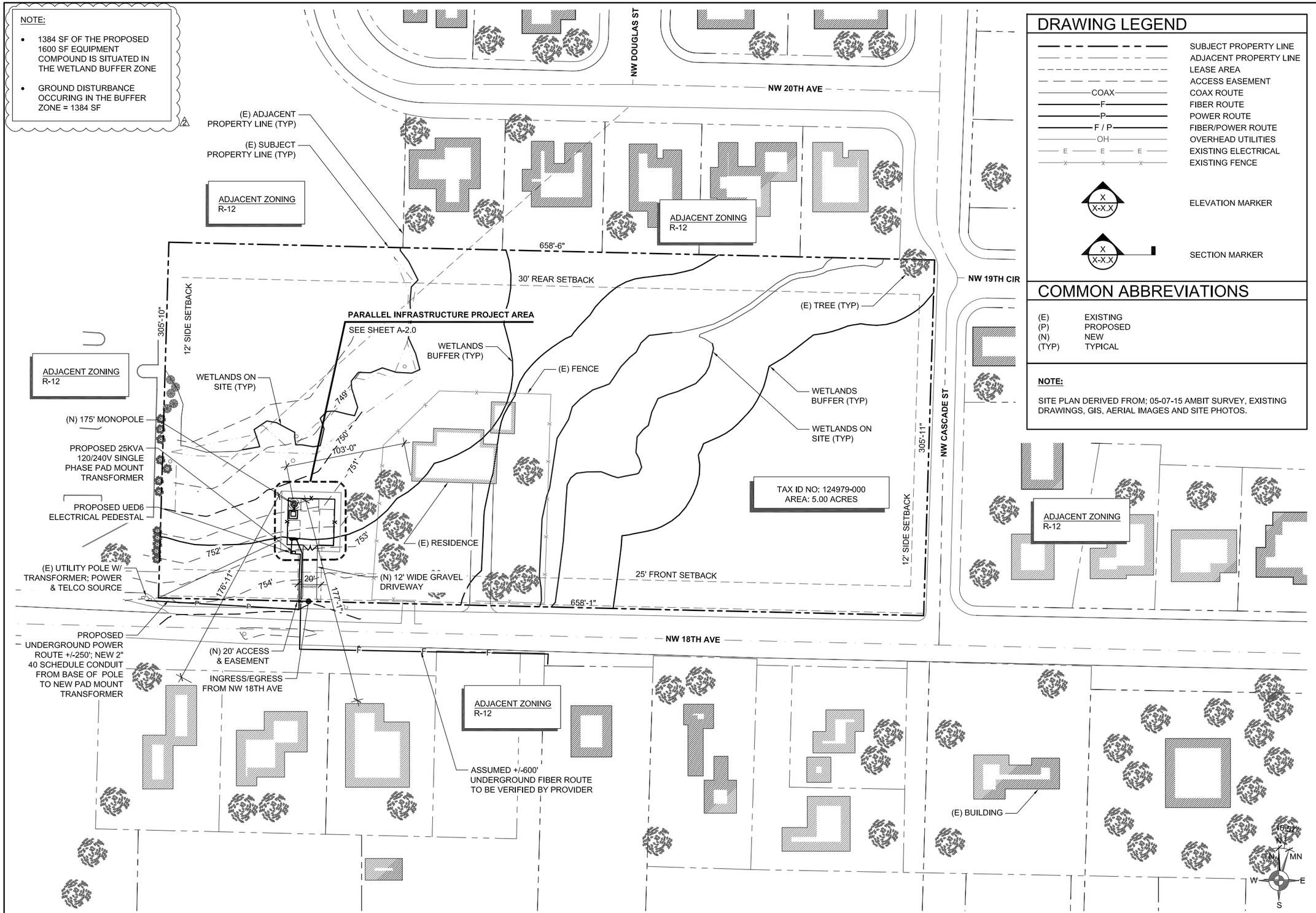
SITE ADDRESS
2829 NW 18TH AVE
CAMAS, WA 98607

SHEET TITLE
TITLE SHEET

SHEET NO.
T-1.0

NOTE:

- 1384 SF OF THE PROPOSED 1600 SF EQUIPMENT COMPOUND IS SITUATED IN THE WETLAND BUFFER ZONE
- GROUND DISTURBANCE OCCURING IN THE BUFFER ZONE = 1384 SF



DRAWING LEGEND

	SUBJECT PROPERTY LINE
	ADJACENT PROPERTY LINE
	LEASE AREA
	ACCESS EASEMENT
COAX	COAX ROUTE
F	FIBER ROUTE
P	POWER ROUTE
F / P	FIBER/POWER ROUTE
OH	OVERHEAD UTILITIES
E E E	EXISTING ELECTRICAL
X X X	EXISTING FENCE
X / X-X.X	ELEVATION MARKER
X / X-X.X	SECTION MARKER

COMMON ABBREVIATIONS

(E)	EXISTING
(P)	PROPOSED
(N)	NEW
(TYP)	TYPICAL

NOTE:

SITE PLAN DERIVED FROM; 05-07-15 AMBIT SURVEY, EXISTING DRAWINGS, GIS, AERIAL IMAGES AND SITE PHOTOS.

Parallel INFRASTRUCTURE

CASCADIA PM
Precision Program Management

VECTOR engineers

CPM PROJECT NO.: 8842

PRELIMINARY

NO.	DATE	D/C	DESCRIPTION
1	07-01-15	JG/JG	CLIENT COMMENT
2	07-07-15	JG/JG	CPM COMMENT
3	08-06-15	GS/GS	CLIENT COMMENT

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION
0	06-17-15	JG/JG	LU SUBMITTAL
1	08-25-15	JC/GS	LU COMMENTS
2	09-16-15	JC/GS	LU COMMENTS

SITE NAME
PRUNE HILL

TAX ID NO.:
124979000

SITE ADDRESS
2829 NW 18TH AVE
CAMAS, WA 98607

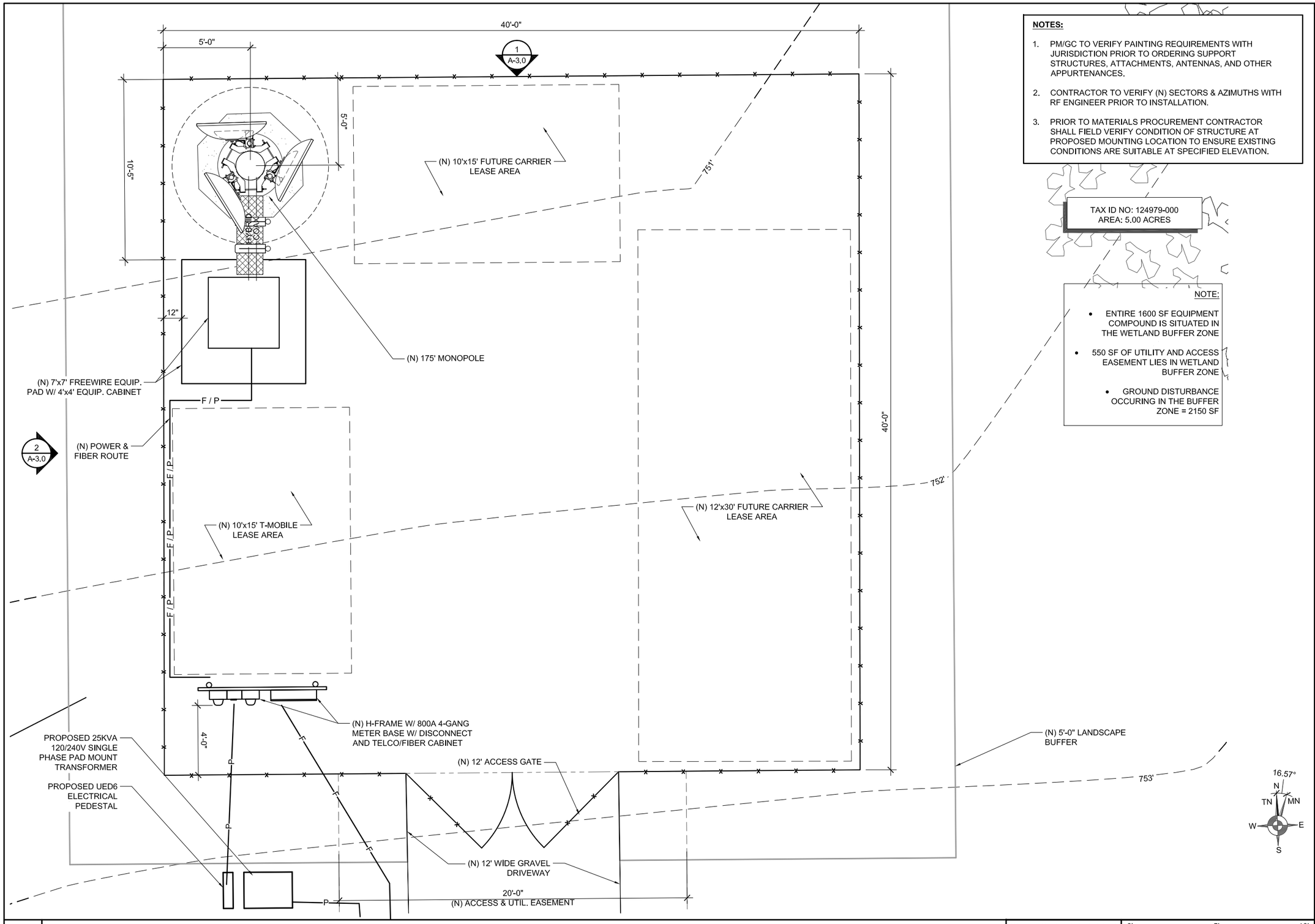
SHEET TITLE
OVERALL SITE PLAN

SHEET NO.
A-1.0

1 OVERALL SITE PLAN

SCALE: 1" = 80'-0" (11X17)
SCALE: 1" = 40'-0" (22X34)

0' 40' 80' 160'



NOTES:

1. PM/GC TO VERIFY PAINTING REQUIREMENTS WITH JURISDICTION PRIOR TO ORDERING SUPPORT STRUCTURES, ATTACHMENTS, ANTENNAS, AND OTHER APPURTENANCES.
2. CONTRACTOR TO VERIFY (N) SECTORS & AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.
3. PRIOR TO MATERIALS PROCUREMENT CONTRACTOR SHALL FIELD VERIFY CONDITION OF STRUCTURE AT PROPOSED MOUNTING LOCATION TO ENSURE EXISTING CONDITIONS ARE SUITABLE AT SPECIFIED ELEVATION.

TAX ID NO: 124979-000
AREA: 5.00 ACRES

NOTE:

- ENTIRE 1600 SF EQUIPMENT COMPOUND IS SITUATED IN THE WETLAND BUFFER ZONE
- 550 SF OF UTILITY AND ACCESS EASEMENT LIES IN WETLAND BUFFER ZONE
- GROUND DISTURBANCE OCCURING IN THE BUFFER ZONE = 2150 SF

Parallel INFRASTRUCTURE

CASCADIA PM
Precision Program Management

VECTOR ENGINEERS

CPM PROJECT NO.: 8842

PRELIMINARY

NO.	DATE	D/C	DESCRIPTION
1	07-01-15	JG/JG	CLIENT COMMENT
2	07-07-15	JG/JG	CPM COMMENT
3	08-06-15	GS/GS	CLIENT COMMENT

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION
0	06-17-15	JG/JG	LU SUBMITTAL
1	08-25-15	JC/GS	LU COMMENTS
2	09-16-15	JC/GS	LU COMMENTS

SITE NAME
PRUNE HILL

TAX ID NO.:
124979000

SITE ADDRESS
2829 NW 18TH AVE
CAMAS, WA 98607

SHEET TITLE
ENLARGED SITE PLAN

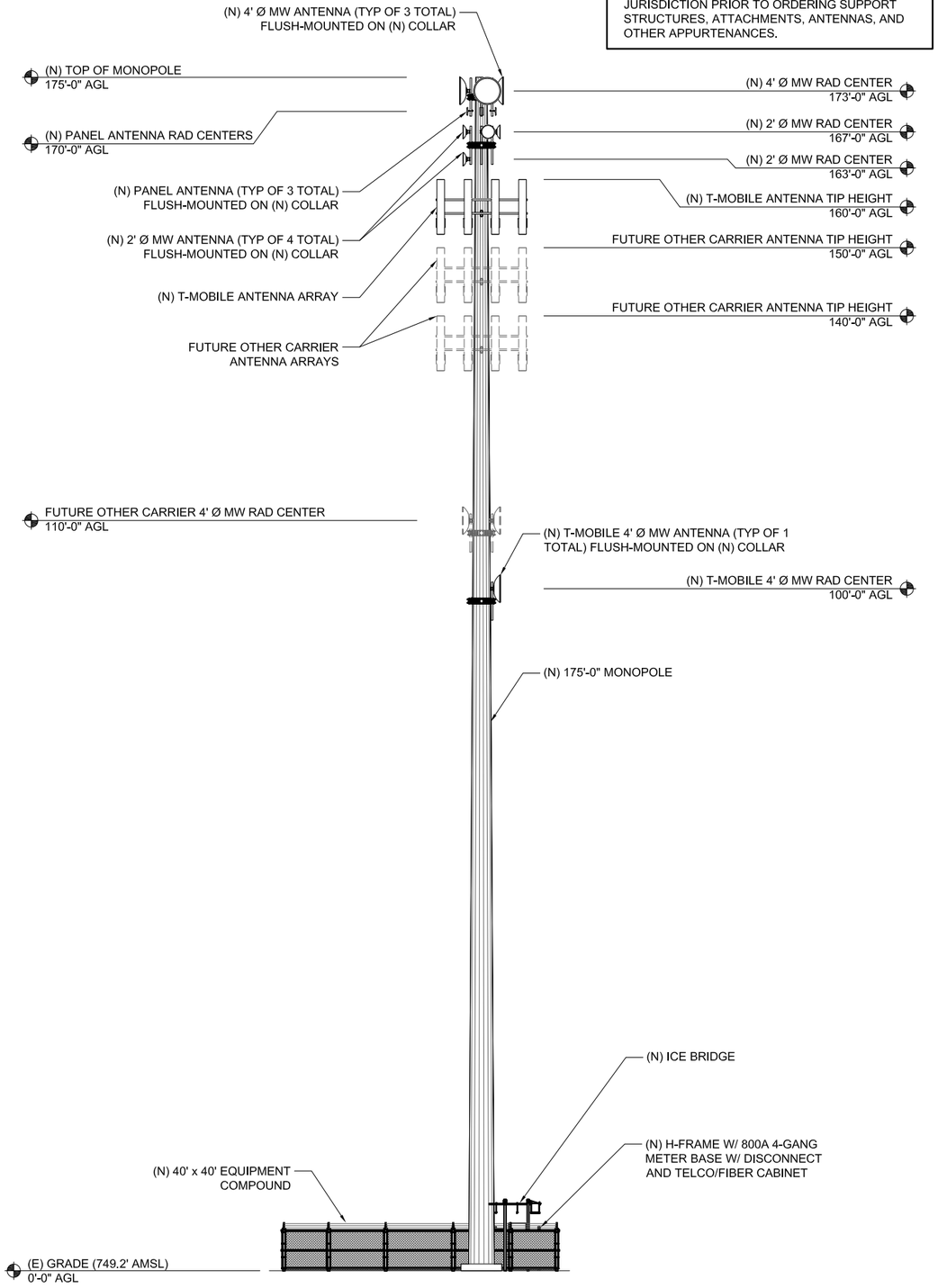
SHEET NO.
A-2.0

1 ENLARGED SITE PLAN

SCALE: 3/16" = 1'-0" (11X17)
SCALE: 3/8" = 1'-0" (22X34)

0' 5' 10'

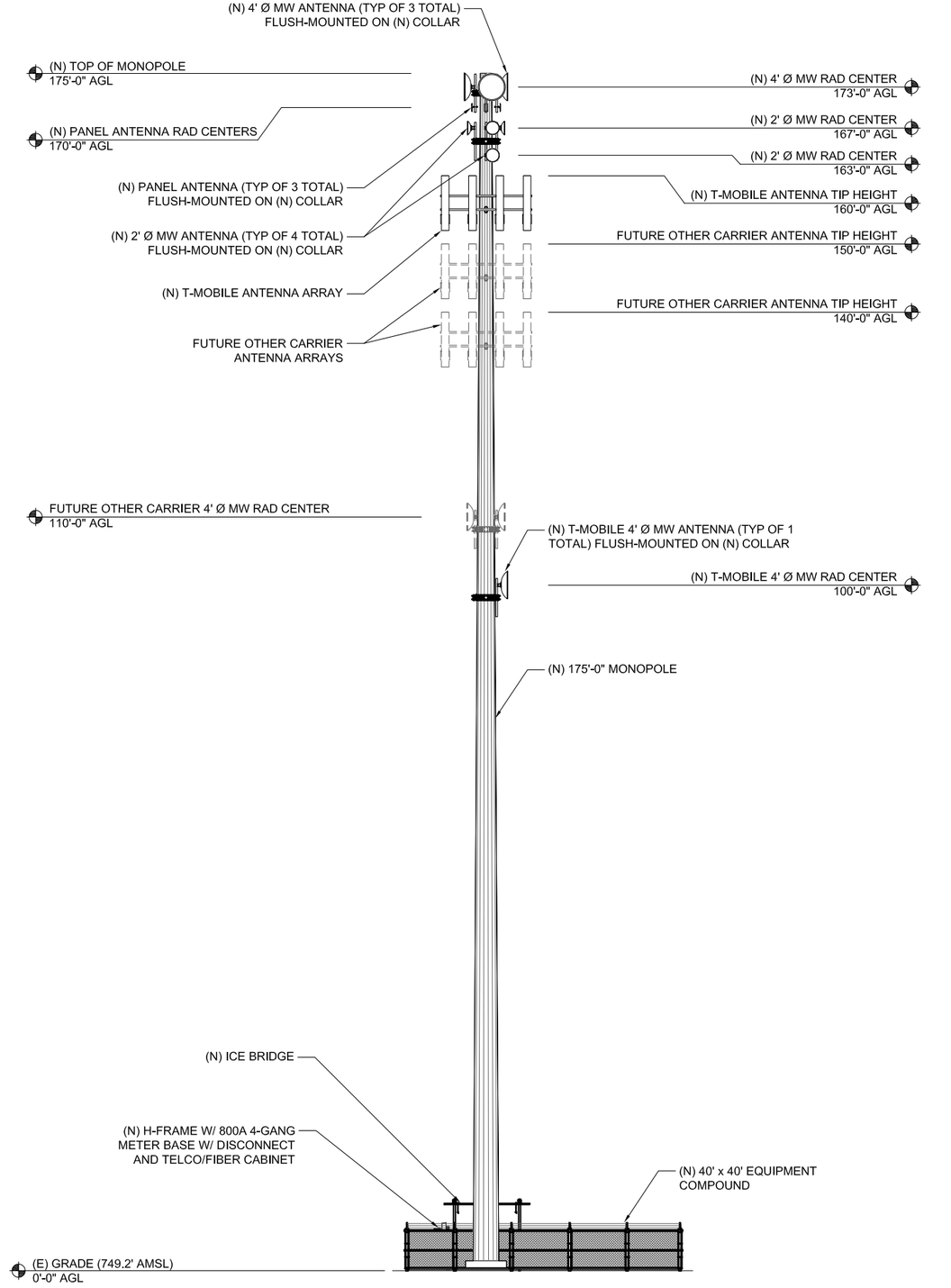
NOTE:
PM/GC TO VERIFY PAINTING REQUIREMENTS WITH JURISDICTION PRIOR TO ORDERING SUPPORT STRUCTURES, ATTACHMENTS, ANTENNAS, AND OTHER APPURTENANCES.



1 NORTH ELEVATION

SCALE: 1/16" = 1'-0" (11X17)
SCALE: 1/8" = 1'-0" (22X34)

0' 8' 16' 32'



2 WEST ELEVATION

SCALE: 1" = 20'-0" (11X17)
SCALE: 1" = 10'-0" (22X34)

0' 10' 20' 40'

Parallel INFRASTRUCTURE

CASCADIA PM
Precision Program Management

VECTOR engineers

CPM PROJECT NO.: 8842

PRELIMINARY

NO.	DATE	D/C	DESCRIPTION
1	07-01-15	JG/JG	CLIENT COMMENT
2	07-07-15	JG/JG	CPM COMMENT
3	08-06-15	GS/GS	CLIENT COMMENT

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION
0	06-17-15	JG/JG	LU SUBMITTAL
1	08-25-15	JC/GS	LU COMMENTS
2	09-16-15	JC/GS	LU COMMENTS

SITE NAME
PRUNE HILL

TAX ID NO.:
124979000

SITE ADDRESS
2829 NW 18TH AVE
CAMAS, WA 98607

SHEET TITLE
NORTH AND EAST ELEVATIONS

SHEET NO.
A-3.0

APPENDIX C

BIOLOGICAL ASSESSMENT

Adapt Engineering
10725 SW Barbur Blvd., Ste. 200
Portland, Oregon 97219

Tel (503) 892-2346
Fax (503) 892-2348
www.adaptengr.com

U.S. FISH & WILDLIFE SERVICE
BIOLOGICAL ASSESSMENT

Proposed Parallel Infrastructure Project
Prune Hill
2829 NW 18th Ave
Camas, WA 98607

Prepared on Behalf of:

Parallel Infrastructure c/o
Cascadia PM, LLC.
5501 NE 109th Court, Suite A-2
Vancouver, WA 98662

Prepared by:

Adapt Engineering
10725 SW Barbur Blvd., Ste. 200
Portland, Oregon 97219

September 29, 2015

Adapt Project No. WA15-19957-NEPA

1.0 INTRODUCTION

Adapt Engineering (Adapt), on behalf of Parallel Infrastructure c/o Cascadia PM has performed an informal biological assessment for a proposed telecommunications tower installation project. This assessment has been conducted per Federal Communication Commission's (FCC) National Environmental Policy Act (NEPA) requirements to evaluate potential impacts on threatened or endangered species and critical habitats. The Informal Biological Assessment is being conducted in conjunction with an FCC NEPA review and in accordance with 47 CFR 1.1.307(a)3.

Based on the results of the biological assessment, Adapt has made a determination that the proposed tower construction project will have no effect on any listed threatened or endangered species or designated critical habitats, and that the project will not significantly affect migratory birds.

As per an agreement with the US Fish & Wildlife Service's (USFWS) Washington office and the National Marine Fisheries Service (NMFS) and in accordance with FCC guidelines on USFWS reviews, biological assessments with "no effect" determinations do not require review by the USFWS or NMFS in order to fulfill FCC NEPA reporting requirements.

2.0 SITE DESCRIPTION

Proposed Project:	175' Monopole Tower
County:	Clark County
Host Parcel Address:	2829 NW 18th Ave Camas, WA 98607
Section-Township-Range:	Section 04-Township 01 North-Range 03 East, W.M.
Latitude-Longitude (NAD 83)	Exact coordinates undetermined at this time
Host Parcel Use:	Residential Property

The rectangular shaped host parcel covers 5 acres in area, and is developed with one residential house, constructed in 1965. The remainder of the property is undeveloped and consists mostly of pasture grasses that are mowed regularly during the growing season. Clark County has zoned the host parcel as Residential (R12). The property is bordered by NW 18th Ave to the south, NW Cascade Street to the east, a residential development to the north and the Church of Jesus Christ Latter Day Saints to the west. The 1A Survey indicates that the surveyed ground elevation at the project site is 749.2 feet amsl.

3.0 PROPOSED ACTION

Parallel Infrastructure proposes to construct a 175' monopole tower on the southwest quadrant of the host parcel. The proposed tower and associated equipment will be located within a 40-foot x 40-foot lease area. An approximately 50-foot long by 12-foot wide gravel access road will be installed to connect the lease area to NW 18th Ave. The gravel access road and utility corridor will be within the same 20' easement. The utilities (power and telco) will be routed along the access road and then turn west at a 90° angle to connect to the nearest utility pole on NW 18th Ave. A fiber optic line will also follow the access easement, and then cross over to the

southern side of NW 18th Ave.; from there it will continue easterly to the nearest fiber optic hookup. The total length of the fiber optic trench route will be approximately 600' long.

4.0 THREATENED AND ENDANGERED SPECIES / HABITATS DATA

The USFWS Information, Planning and Conservation System (IPaC) was utilized in determining what species in the region are protected under the Endangered Species Act. See Table 1 for a list of species and a determination of effects. The proposed project is not expected to have any effects on Federal Listed endangered, threatened or proposed species. (Attachment A—Federally Listed Endangered and Threatened Species)

Information from the Office of Protected Resources (OPR), a division of the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS), was evaluated to determine if the project would have any impact on listed marine species, such as anadromous fish that migrate between saltwater and freshwater environments. The OPR site did not list any endangered or threatened marine species in the region.

Priority habitat and species information was requested from the Washington Department of Fish and Wildlife Priority Habitats and Species Program to assist in determining if any threatened or endangered species sightings have been recorded in the project vicinity.

The project is not in any Designated Critical Habitat. (Attachment B—Designated Critical Habitat Map)

See Table 1 for a list of species and a determination of effects.

Table 1: Species Listing and Effect Determination

Species	Federal Status	Species Habitat Requirements	Effect Determination	Rationale
Birds				
Streaked horned lark (*Eremophila alpestris strigata*)	Threatened	Open spaces of 300 acres or more. Generally flat areas dominated by forbs and with little to no shrub or tree cover.	No Effect	The project site does not provide the appropriate habitat for this species. The project is occurring on a five-acre parcel that is surrounded by sub-divisions and a major thoroughfare.
Yellow-Billed Cuckoo (*Coccyzus americanus*)	Threatened	Breeding occurs in open woodland habitat, especially where undergrowth is thick and in deciduous riparian woodlands.	No Effect	The project site does not provide the appropriate habitat for this species. The project is occurring on a five-acre parcel that is surrounded by sub-divisions and a major thoroughfare.
Fishes				
Lower Columbia ESU Chinook Salmon (*Oncorhynchus tshawytscha*)	Threatened	Small cold streams with gravel substrate for laying eggs.	No Effect	The project site does not provide the appropriate habitat for this species and there is no apparent hydrologic connection to any stream or water body.
Columbia River ESU Chum (*Oncorhynchus keta*)	Threatened	Fast moving, cold water streams and rivers.	No effect	The project site does not provide the appropriate habitat for this species and there is no apparent hydrologic connection to any stream or water body.
Lower Columbia ESU Coho (*Oncorhynchus kisutch)*	Threatened	Fast moving, cold water streams and rivers.	No effect	The project site does not provide the appropriate habitat for this species and there is no apparent hydrologic connection to any stream or water body.

Lower Columbia ESU Steelhead (*Oncorhynchus mykiss)*	Threatened	Fast moving, cold water streams and rivers.	No effect	The project site does not provide the appropriate habitat for this species and there is no apparent hydrologic connection to any stream or water body.
Bull Trout (*Salvelinus confluentus*)	Threatened	Gravel substrate for spawning and cold, highly oxygenated streams, with low velocity pools for juvenile rearing.	No Effect	The project site does not provide the appropriate habitat for this species and there is no apparent hydrologic connection to any stream or water body.
Flowering Plants				
Bradshaw's Desert Parsley (*Lomatium bradshawii*)	Endangered	Low lying areas near small streams that are seasonally flooded or saturated in soils of the Bashaw, Mcalpin and Wapato series.	No Effect	The project site does not provide the appropriate habitat for this species.
Golden Paintbrush (*Castilleja levisecta*)	Threatened	Upland prairies, on generally flat grasslands. Low deciduous shrubs are commonly present as small to large thickets. In all cases, Golden Paintbrush occurs on glacial soils.	No Effect	The project site does not provide the appropriate habitat for this species. The project area is regularly mowed all year.
Water Howellia (*Howellia aquatilis*)	Threatened	Aquatic plant that occupies small vernal pools/wetlands and oxbow sloughs.	No Effect	The project site does not provide the appropriate habitat for this species. There are no vernal pools/wetlands or oxbow sloughs at the project location.
Mammals				
Gray Wolf (*Canis lupus*)	Endangered	Habitat generalists but thrive in low populated forested wilderness areas, with an abundance of prey available.	No Effect	The project site does not provide the appropriate habitat for this species. It is unlikely that any wolves would inhabit the project area.

5.0 MIGRATORY BIRDS

The USFWS *Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers* was consulted to access potential impacts to migratory birds. The proposed tower is occurring in a location which is not classified as an Important Bird Area by the National Audubon Society. The proposed project consists of constructing a 175-foot tall monopole tower, which will not have guy wires—a known hazard to migratory birds. Furthermore, the proposed tower has space to accommodate future antenna collocations, therefore minimizing the need for more towers in the future. The proposed project is not expected to have any effects to migratory birds. See Table 2.

Table 2: Tower Siting Guidelines to Minimize Effects to Migratory Birds

Site Question	Answer	Explanation
1) Is antenna collocation on an existing nearby tower feasible?	No	The nearest tower is not available for collocation.

2) Is the proposed tower >199' in height? If so, the minimum FAA requirements for lighting should be used. White strobe lights are preferred over red lights.	No	The proposed tower will be 175' tall.
3) Will the proposed tower require guy wires for support? If guy wires are used, daytime visual markers should be utilized on the wires.	No	The proposed tower will not have guy wires.
4) Are there cumulative impacts from the construction of multiple towers in a concentrated area?	No	There will only be one tower on the parcel.
5) Is the tower in or near a wetland or wildlife refuge?	Yes	There are wetlands on the parcel but they are disturbed wetlands that are less than one acre in size. The tower project is occurring outside of the wetlands. The nearest wildlife refuge is 20 miles northwest.
6) Has the project footprint been minimized to avoid habitat fragmentation?	Yes	The project has a small 40' x 40' footprint.
7) Does the proposed tower have room to accommodate future antenna collocations?	Yes	The tower will have room for at least three future collocations.
8) Will security lights be downshielded?	Unknown	Always recommended

Final details on potential lighting requirements for this project are not available at this time. Therefore the findings and conclusions presented in this Biological Assessment are contingent upon the following conditions:

- Light intensity will be set at the minimum allowed by the FAA.
- Where flashing lights are required, they will have the shortest duration allowed by the FAA and will strobe rather than fade in/out.
- Red lighting should be avoided where possible; white is strongly preferable, particularly at night.

6.0 CONCLUSIONS

In conclusion, it is Adapt's opinion that this project will have **no effect** upon any wetlands, threatened/endangered species, or migratory birds that may be located within, or in the vicinity of, the project site. In general, we do not believe that the host parcel contains any habitat for any of the threatened/endangered species considered, nor is the host parcel in any designated critical habitat.

7.0 REFERENCES

The following documents and websites were consulted in the preparation of the Biological Assessment:

- National Oceanic and Atmospheric Administration. Endangered and Threatened Marine and Anadramous Fish. 08 July 2015. < www.nmfs.noaa.gov/pr/species/esa/fish.htm>

- United States Fish and Wildlife Service. Critical Habitat Portal. 01 April 2015. <http://ecos.fws.gov/crithab/>.

- United States. Department of the Interior Fish and Wildlife Service. IPaC Information, Planning and Conservation System. 06 August 2015. <www.ecos.fws.gov/ipac/>

8.0 LIMITATIONS

Adapt appreciates the opportunity to be of service to you on this project. Should you have any questions concerning this report, or if we can assist you in any way, please contact us at (503) 892-2346.

Respectfully Submitted,

Adapt Engineering

Beth Belanger, BA/BS
Staff Biologist

Attachments:

Attachment A Endangered and Threatened Species List
Attachment B Critical Habitat Map

ATTACHMENT A
BIOLOGICAL ASSESSMENT

ENDANGERED AND THREATENED SPECIES LIST

Prune Hill

IPaC Trust Resource Report

Generated August 06, 2015 04:46 PM MDT

US Fish & Wildlife Service

IPaC Trust Resource Report

Project Description

NAME

Prune Hill

PROJECT CODE

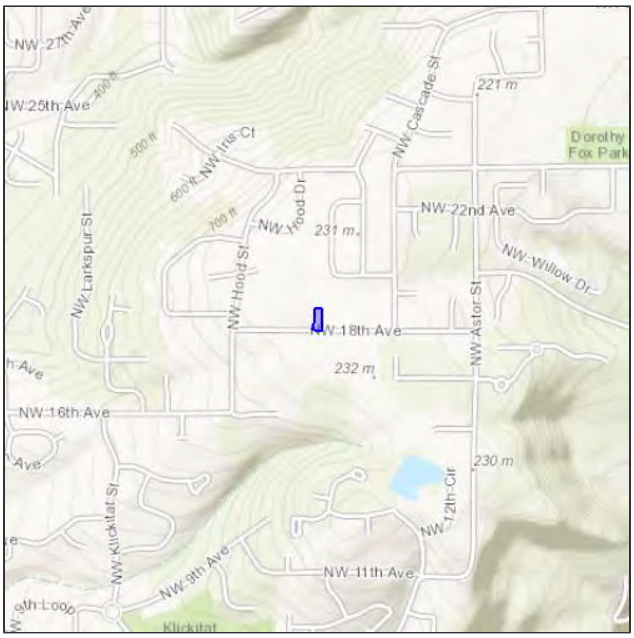
C5FOV-JLND5-EJDIB-XAJGB-INELZE

LOCATION

Clark County, Washington

DESCRIPTION

Installation of a 175' monopole tower within a 40' x 40' lease area.



U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
(360) 753-9440

Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the Endangered Species Program and should be considered as part of an effect analysis for this project.

This unofficial species list is for informational purposes only and does not fulfill the requirements under Section 7 of the Endangered Species Act, which states that Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." This requirement applies to projects which are conducted, permitted or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can be obtained by returning to this project on the IPaC website and requesting an Official Species List from the regulatory documents section.

Birds

Streaked Horned Lark Eremophila alpestris strigata — **Threatened**

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0B3

Yellow-billed Cuckoo Coccyzus americanus — **Threatened**

CRITICAL HABITAT

There is **proposed** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06R

Fishes

Bull Trout Salvelinus confluentus — **Threatened**

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E065

Flowering Plants

Bradshaw's Desert-parsley Lomatium bradshawii **Endangered**

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q1YN

Golden Paintbrush Castilleja levisecta **Threatened**

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q26U

Water Howellia Howellia aquatilis **Threatened**

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q2RM

Mammals

Gray Wolf Canis lupus **Proposed Endangered**

CRITICAL HABITAT
No critical habitat has been designated for this species.

Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

There is no critical habitat within this project area

Migratory Birds

Birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

Bald Eagle Haliaeetus leucocephalus — **Bird of conservation concern**
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008

Brewer's Sparrow Spizella breweri — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HA

Cassin's Finch Carpodacus cassinii — **Bird of conservation concern**
Year-round

Flammulated Owl Otus flammeolus — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0DK

Fox Sparrow Passerella iliaca — **Bird of conservation concern**
Season: Breeding

Olive-sided Flycatcher Contopus cooperi — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0AN

Peregrine Falcon Falco peregrinus — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FU

Purple Finch Carpodacus purpureus — **Bird of conservation concern**
Year-round

Rufous Hummingbird selasphorus rufus — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0E1

Short-eared Owl Asio flammeus — **Bird of conservation concern**
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HD

Tricolored Blackbird Agelaius tricolor — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06P

Vesper Sparrow Pooecetes gramineus ssp. affinis **Bird of conservation concern**

Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F9

Willow Flycatcher Empidonax traillii **Bird of conservation concern**

Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F6

Refuges

Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

There are no refuges within this project area

Wetlands

Impacts to NWI wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

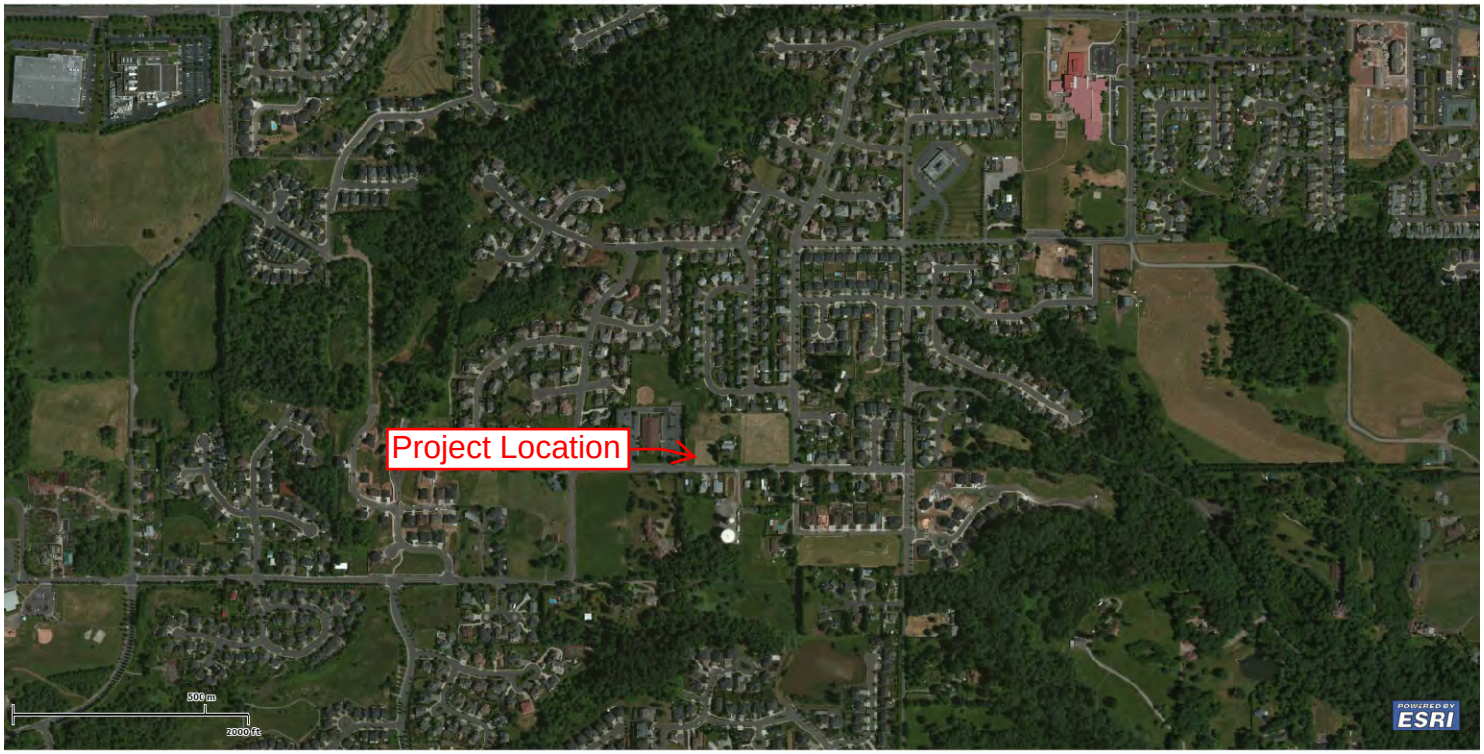
There are no wetlands identified in this project area

ATTACHMENT B
BIOLOGICAL ASSESSMENT

CRITICAL HABITAT MAP

Prune Hill

Designated Critical Habitat Map



APPENDIX D

DAHP CONCURRENCE

Beth Belanger

From: towernotifyinfo@fcc.gov
Sent: Tuesday, August 04, 2015 2:15 PM
To: Beth Belanger
Subject: Section 106 Notification of SHPO/THPO Concurrence- Email ID #1331550

This is to notify you that the Lead SHPO/THPO has concurred with the following filing:
Date of Action: 08/04/2015
Direct Effect: No Historic Properties in Area of Potential Effects (APE)
Visual Effect: No Historic Properties in Area of Potential Effects (APE)
Comment Text: None

File Number: 0006898118
TCNS Number: 128201
Purpose: Update
Original Purpose: New Tower Submission Packet
Notification Date: 7AM EST 08/05/2015
Applicant: Parallel Infrastructure
Consultant: Adapt Engineering
Positive Train Control Filing Subject to Expedited Treatment Under Program Comment: No
Site Name: Prune Hill
Site Address: 2829 Northwest 18th Avenue
Detailed Description of Project:
Site Coordinates: 45-35-34.1 N, 122-26-22.9 W
City: Camas
County: CLARK
State:WA
Lead SHPO/THPO: Washington State Department of Archaeology and Historic Preservation

NOTICE OF FRAUDULENT USE OF SYSTEM, ABUSE OF PASSWORD AND RELATED MISUSE
Use of the Section 106 system is intended to facilitate consultation under Section 106 of the National Historic Preservation Act and may contain information that is confidential, privileged or otherwise protected from disclosure under applicable laws. Any person having access to Section 106 information shall use it only for its intended purpose. Appropriate action will be taken with respect to any misuse of the system.

APPENDIX E

HISTORICAL SURVEY REPORT

Adapt Engineering
10725 SW Barbur Blvd. Ste. 200
Portland, OR 97219

Tel (503) 892-2346
Fax (503) 892-2348
www.adaptengr.com

Agency: FCC
Form: Form 621
Project: Prune Hill
Adapt Number: WA15-19957
Surveyor: Chanel Buehner

Project Location:
2829 Northwest 18th Avenue
Camas, WA 98607
Clark County
45.592806, -122.439694

Project Description:
Parallel Infrastructures proposes to construct a new 175' telecommunication tower in Camas, WA. The mobile tower will be within a 40' x 40' lease area with chain link fencing. The power and Telco equipment route is located approximately 175' from the project location adjacent to a gravel access road. The site allows for three future carriers.

Methodology:
On July 15th, 2015, Adapt Engineering's Historic Preservation Specialist, Chanel Buehner checked the Washington Department of Archaeology and Historic Preservation's (DAHP) historic sites database, WISAARD, for previously surveyed historic properties, and found no previously surveyed resources within the original half-mile Area of Potential Effect (APE) that were determined eligible for listing in the National Register of Historic Places. Because no properties within the APE have potentially eligible determinations approved by the Washington DAHP staff, no further research is required by Buehner. The survey is limited, as it only requires the surveying of properties currently in the state inventory.

APE Description:
Parallel Infrastructure proposes to construct a telecommunications tower in Camas, WA. The proposed project area is located on a private residential property on NW 18th Street between NW Astor Street and NW Hood Street. The Columbia River is approximately 1.15 miles south of the proposed site. The area that surrounds the proposed project location is suburban with single-family residential resources. The proposed project area consists of pasture grasses in an undeveloped field.

Conclusion:
There are no resources included in this report. There were no previously surveyed historic sites within the prescribed half-mile APE for which the Washington DAHP staff has approved of a potentially eligible historic status. The proposed project would have no visual or direct effect on any historic properties, as the determination has been made that there are no eligible historic properties within the APE.

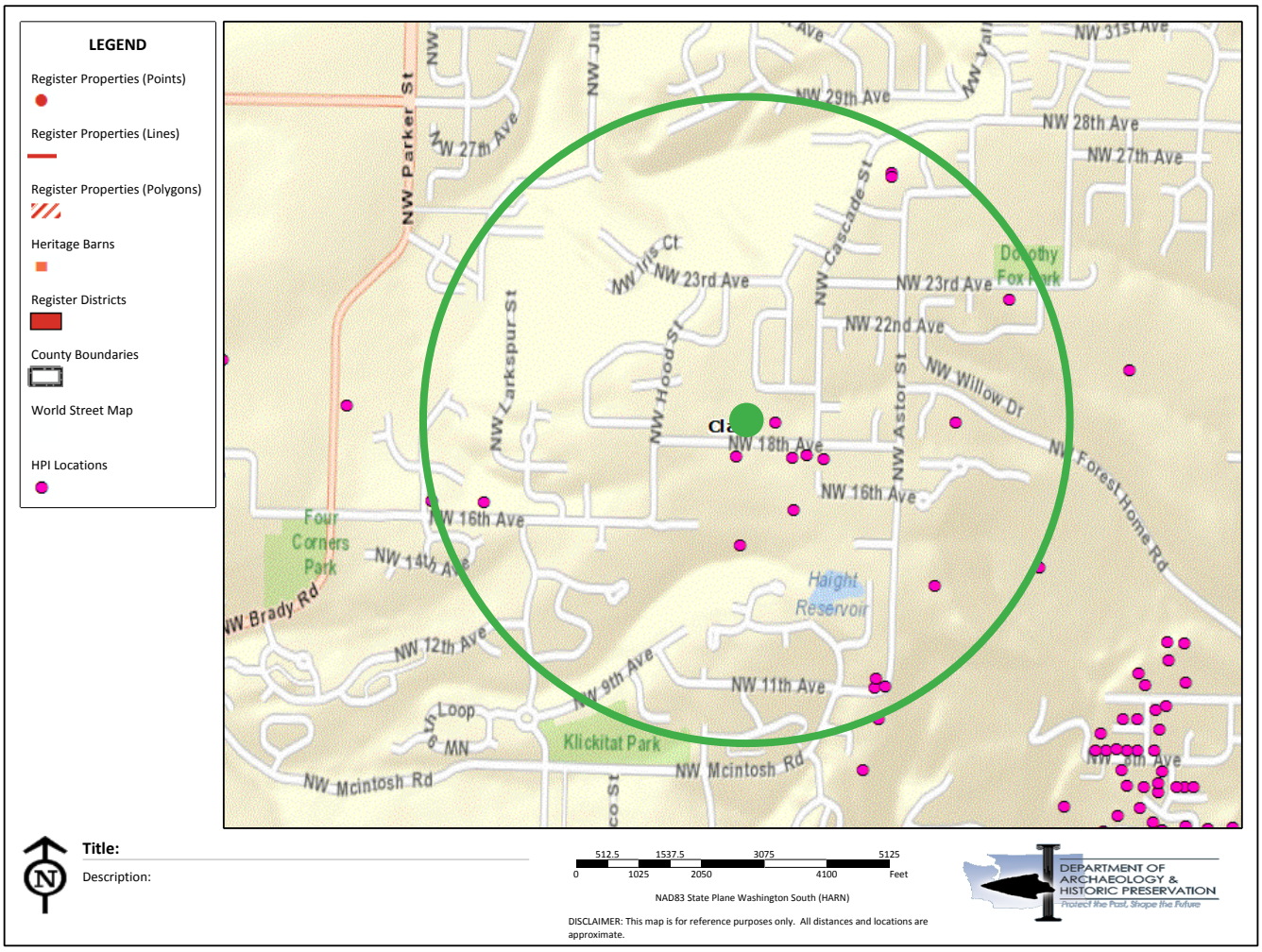


Figure 1: Location of the project location and the standard half-mile APE (taken from DAHP database).

Figure 2: Aerial Photo showing location of the project location (taken from Google Earth).

Figure 3: Aerial Detail Photo showing location of the project location (taken from Google Earth).

APPENDIX G

FORM 620

FCC Form 620

Notification Date: **7AM EST 08/03/2015**
File Number: **0006898118**

FCC Wireless Telecommunications Bureau
New Tower ("NT") Submission Packet

Approved by OMB
3060 – 1039
See instructions for
public burden estimates

General Information

1) (Select only one) **(NE)** **NE** – New **UA** – Update of Application **WD** – Withdrawal of Application	
2) If this application is for an Update or Withdrawal, enter the file number of the pending application currently on file.	File Number:

Applicant Information

3) FCC Registration Number (FRN): **0023395601**
4) Name: **Parallel Infrastructure**

Contact Name

5) First Name: **Brandon**	6) MI:	7) Last Name: **Olsen**	8) Suffix:
9) Title:			

Contact Information

10) P.O. Box:	**And /Or**	11) Street Address: **4601 Touchton Road Building 300; Suite 3200**		
12) City: **Jacksonville**			13) State: **FL**	14) Zip Code: **32246**
15) Telephone Number: **(503)951-7515**		16) Fax Number:		
17) E-mail Address: **Brandon.Olsen@parallelinfrastructure.com**				

Consultant Information

18) FCC Registration Number (FRN): **0016991648**
19) Name: **Adapt Engineering**

Principal Investigator

20) First Name: **Barbara**	21) MI:	22) Last Name: **Fisher**	23) Suffix:
24) Title:			

Principal Investigator Contact Information

25) P.O. Box:	**And /Or**	26) Street Address: **10725 SW Barbur Blvd., Ste. 200**		
27) City: **Portland**			28) State: **OR**	29) Zip Code: **97219**
30) Telephone Number: **(503)892-2346**		31) Fax Number:		
32) E-mail Address: **beth.belanger@adaptengr.com**				

Professional Qualification

33) Does the Principal Investigator satisfy the Secretary of the Interior's Professional Qualification Standards?	(**X**) **Y**es ( ) **N**o

34) Areas of Professional Qualification:

( ) Archaeologist

(**X**) Architectural Historian

( ) Historian

( ) Architect

( ) Other (Specify) _____

Additional Staff

35) Are there other staff involved who meet the Professional Qualification Standards of the Secretary of the Interior?	( ) **Y**es (**X**) **N**o

If "YES," complete the following:

36) First Name:	37) MI:	38) Last Name:	39) Suffix:
40) Title:			

41) Areas of Professional Qualification:

( ) Archaeologist

( ) Architectural Historian

( ) Historian

( ) Architect

( ) Other (Specify) _____

Site Information

Tower Construction Notification System

1) TCNS Notification Number: **128201**

Site Information

2) Positive Train Control Filing Subject to Expedited Treatment Under Program Comment: ( ) Yes (X) No

3) Site Name: **Prune Hill**

4) Site Address: **2829 Northwest 18th Avenue**

5) Detailed Description of Project:

Installation of a 175' monopole tower within a 40' x 40' lease area.

6) City: **Camas**	7) State: **WA**	8) Zip Code: **98607**

9) County/Borough/Parish: **CLARK**

10) Nearest Crossroads: **NW 18th Ave & NW Hood Street**

11) **NAD 83** Latitude (DD-MM-SS.S): **45-35-34.1** (X) N or ( ) S

12) **NAD 83** Longitude (DD-MM-SS.S): **122-26-22.9** ( ) E or (X) W

Tower Information

13) Tower height above ground level (include top-mounted attachments such as lightning rods): **53.3** ( ) Feet (X) Meters

14) Tower Type (Select One):

( ) Guyed lattice tower

( ) Self-supporting lattice

(X) Monopole

( ) Other (Describe):

Project Status

15) Current Project Status (Select One):

(X) Construction has not yet commenced

( ) Construction has commenced, but is not completed Construction commenced on: _____

( ) Construction has been completed Construction commenced on: _____

Construction completed on: _____

Determination of Effect

14) Direct Effects (Select One):

(**X**) No Historic Properties in Area of Potential Effects (APE)

( ) No Effect on Historic Properties in APE

( ) No Adverse Effect on Historic Properties in APE

( ) Adverse Effect on one or more Historic Properties in APE

15) Visual Effects (Select One):

(**X**) No Historic Properties in Area of Potential Effects (APE)

( ) No Effect on Historic Properties in APE

( ) No Adverse Effect on Historic Properties in APE

( ) Adverse Effect on one or more Historic Properties in APE

Tribal/NHO Involvement

1) Have Indian Tribes or Native Hawaiian Organizations (NHOs) been identified that may attach religious and cultural significance to historic properties which may be affected by the undertaking within the APEs for direct and visual effects?	(**X**) Yes ( ) No

2a) Tribes/NHOs contacted through TCNS Notification Number: **128201** Number of Tribes/NHOs: **6**

2b) Tribes/NHOs contacted through an alternate system: Number of Tribes/NHOs: **0**

Tribe/NHO Contacted Through TCNS

3) Tribe/NHO FRN:

4) Tribe/NHO Name: **Confederated Tribes of the Grand Ronde Community of Oregon**

Contact Name

5) First Name: **Jordan**	6) MI:	7) Last Name: **Mercier**	8) Suffix:

9) Title: **Cultural Protection Coordinator**

Dates & Response

10) Date Contacted **06/25/2015** 11) Date Replied **07/13/2015**

( ) No Reply

( ) Replied/No Interest

( ) Replied/Have Interest

(**X**) Replied/Other

Tribe/NHO Contacted Through TCNS

3) Tribe/NHO FRN:

4) Tribe/NHO Name: **Confederated Tribes of the Warm Springs Reservation**

Contact Name

5) First Name: **Roberta**	6) MI:	7) Last Name: **Kirk**	8) Suffix:

9) Title: **THPO Assistant**

Dates & Response

10) Date Contacted **06/25/2015** 11) Date Replied **07/16/2015**

( ) No Reply

( ) Replied/No Interest

( ) Replied/Have Interest

(**X**) Replied/Other

Tribal/NHO Involvement

1) Have Indian Tribes or Native Hawaiian Organizations (NHOs) been identified that may attach religious and cultural significance to historic properties which may be affected by the undertaking within the APEs for direct and visual effects?	(**X**) Yes ( ) No

2a) Tribes/NHOs contacted through TCNS Notification Number: **128201** Number of Tribes/NHOs: **6**

2b) Tribes/NHOs contacted through an alternate system: Number of Tribes/NHOs: **0**

Tribe/NHO Contacted Through TCNS

3) Tribe/NHO FRN:

4) Tribe/NHO Name: **Cowlitz Indian Tribe**

Contact Name

5) First Name: **James**	6) MI:	7) Last Name: **Gordon**	8) Suffix:

9) Title: **Cultural Resources Tech**

Dates & Response

10) Date Contacted **06/25/2015** 11) Date Replied **07/24/2015**

( ) No Reply

( ) Replied/No Interest

( ) Replied/Have Interest

(**X**) Replied/Other

Tribe/NHO Contacted Through TCNS

3) Tribe/NHO FRN:

4) Tribe/NHO Name: **Eastern Shoshone Tribe**

Contact Name

5) First Name: **Wilfred**	6) MI:	7) Last Name: **Ferris**	8) Suffix: **III**

9) Title: **THPO**

Dates & Response

10) Date Contacted **06/25/2015** 11) Date Replied **06/24/2015**

( ) No Reply

( ) Replied/No Interest

( ) Replied/Have Interest

(**X**) Replied/Other

Tribal/NHO Involvement

1) Have Indian Tribes or Native Hawaiian Organizations (NHOs) been identified that may attach religious and cultural significance to historic properties which may be affected by the undertaking within the APEs for direct and visual effects?	(**X**) Yes ( ) No

2a) Tribes/NHOs contacted through TCNS Notification Number: **128201** Number of Tribes/NHOs: **6**

2b) Tribes/NHOs contacted through an alternate system: Number of Tribes/NHOs: **0**

Tribe/NHO Contacted Through TCNS

3) Tribe/NHO FRN:

4) Tribe/NHO Name: **Nez Perce Tribe**

Contact Name

5) First Name: **Patrick**	6) MI:	7) Last Name: **Baird**	8) Suffix:
9) Title: **THPO/ Archaeologist**			

Dates & Response

10) Date Contacted **06/25/2015** 11) Date Replied _____

(**X**) No Reply

( ) Replied/No Interest

( ) Replied/Have Interest

( ) Replied/Other

Tribe/NHO Contacted Through TCNS

3) Tribe/NHO FRN:

4) Tribe/NHO Name: **Yakama Nation**

Contact Name

5) First Name: **JoDe**	6) MI: **L**	7) Last Name: **Goudy**	8) Suffix:
9) Title: **Chairman**			

Dates & Response

10) Date Contacted **06/25/2015** 11) Date Replied _____

(**X**) No Reply

( ) Replied/No Interest

( ) Replied/Have Interest

( ) Replied/Other

Other Tribes/NHOs Contacted

Tribe/NHO Information

1) FCC Registration Number (FRN):
2) Name:

Contact Name

3) First Name:	4) MI:	5) Last Name:	6) Suffix:
7) Title:			

Contact Information

8) P.O. Box:	**And /Or**	9) Street Address:		
10) City:			11) State:	12) Zip Code:
13) Telephone Number:		14) Fax Number:		
15) E-mail Address:				
16) Preferred means of communication: ( ) E-mail ( ) Letter ( ) Both				

Dates & Response

17) Date Contacted _____ 18) Date Replied _____

( ) No Reply

( ) Replied/No Interest

( ) Replied/Have Interest

( ) Replied/Other

Historic Properties

Properties Identified

1) Have any historic properties been identified within the APEs for direct and visual effect?	( ) Yes (X) No
2) Has the identification process located archaeological materials that would be directly affected, or sites that are of cultural or religious significance to Tribes/NHOs?	( ) Yes (X) No
3) Are there more than 10 historic properties within the APEs for direct and visual effect? If "Yes", you are required to attach a Cultural Resources Report in lieu of adding the Historic Property below.	( ) Yes (X) No

Historic Property

4) Property Name:
5) SHPO Site Number:

Property Address

6) Street Address:		
7) City:	8) State:	9) Zip Code:
10) County/Borough/Parish:		

Status & Eligibility

11) Is this property listed on the National Register? Source: _____	( ) Yes ( ) No
12) Is this property eligible for listing on the National Register? Source: _____	( ) Yes ( ) No
13) Is this property a National Historic Landmark?	( ) Yes ( ) No

14) Direct Effects (Select One):

( ) No Effect on this Historic Property in APE

( ) No Adverse Effect on this Historic Property in APE

( ) Adverse Effect on this Historic Property in APE

15) Visual Effects (Select One):

( ) No Effect on this Historic Property in APE

( ) No Adverse Effect on this Historic Property in APE

( ) Adverse Effect on this Historic Property in APE

Local Government Involvement

Local Government Agency

1) FCC Registration Number (FRN):
2) Name: **City of Camas Planning Department**

Contact Name

3) First Name: **Lauren**	4) MI:	5) Last Name: **Hollenbeck**	6) Suffix:
7) Title:			

Contact Information

8) P.O. Box:	**And /Or**	9) Street Address: **616 NE 4th Ave**		
10) City: **Camas**			11) State: **WA**	12) Zip Code: **98607**
13) Telephone Number: **(360)817-1568**		14) Fax Number:		
15) E-mail Address: **lhollenbeck@cityofcamas.us**				
16) Preferred means of communication: ( ) E-mail ( ) Letter (**X**) Both				

Dates & Response

17) Date Contacted **06/17/2015** 18) Date Replied _____

(**X**) No Reply

( ) Replied/No Interest

( ) Replied/Have Interest

( ) Replied/Other

Additional Information

19) Information on local government's role or interest (optional):

Other Consulting Parties

Other Consulting Parties Contacted

1) Has any other agency been contacted and invited to become a consulting party?	( ) **Y**es (**X**) **N**o

Consulting Party

2) FCC Registration Number (FRN):
3) Name:

Contact Name

4) First Name:	5) MI:	6) Last Name:	7) Suffix:
8) Title:			

Contact Information

9) P.O. Box:	**And /Or**	10) Street Address:		
11) City:			12) State:	13) Zip Code:
14) Telephone Number:		15) Fax Number:		
16) E-mail Address:				
17) Preferred means of communication: ( ) E-mail ( ) Letter ( ) Both				

Dates & Response

18) Date Contacted _____ 19) Date Replied _____

( ) No Reply

( ) Replied/No Interest

( ) Replied/Have Interest

( ) Replied/Other

Additional Information

20) Information on other consulting parties' role or interest (optional):

Designation of SHPO/THPO

1) Designate the Lead State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) based on the location of the tower.

SHPO/THPO

Name: **Washington State Department of Archaeology and Historic Preservation**

2) You may also designate up to three additional SHPOs/THPOs if the APEs include multiple states. If the APEs include other countries, enter the name of the National Historic Preservation Agency and any state and provincial Historic Preservation Agency.

SHPO/THPO Name: _____

SHPO/THPO Name: _____

SHPO/THPO Name: _____

Certification

I certify that all representations on this FCC Form 620 Submission Packet and the accompanying attachments are true, correct, and complete.

Party Authorized to Sign

First Name: **Beth**	MI:	Last Name: **Belanger**	Suffix:

Signature: **Beth Belanger** Date: **07/31/2015**

FAILURE TO SIGN THIS APPLICATION MAY RESULT IN DISMISSAL OF THE APPLICATION AND FORFEITURE OF ANY FEES PAID.

WILLFUL FALSE STATEMENTS MADE ON THIS FORM OR ANY ATTACHMENTS ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. Code, Title 18, Section 1001) AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).

Attachments :

Type	Description	Date Entered
Resumes/Vitae	Barbara Fisher	07/31/2015
Map Documents	See Historical Resource Report	07/31/2015
GIS Map Files	See Historical Resource Report	07/31/2015
Area of Potential Effects	See Historical Resource Report	07/31/2015
Tribal/NHO Involvement	See TCNS Notification	07/31/2015
Local Government Involvement	CLG Letter	07/31/2015
Public Involvement	Legal Notice Affidavit	07/31/2015

APPENDIX H

LOCAL GOVERNMENT CORRESPONDENCE

ADAPT Engineering
10725 SW Barbur Boulevard, Suite 200
Portland, Oregon 97219

Tel (503) 892-2346
Fax (503) 892-2348
www.adaptengr.com

June 17, 2015

City of Camas Planning Department
Attn: Lauren Hollenbeck
616 NE 4th Ave
Camas, Washington 98607
(360)817-1568
lhollenbeck@cityofcamas.us

Subject: Proposed Telecommunications Tower/Section 106 Review
Prune Hill
616 NE 4th Ave
Camas, Washington 98607

Dear Ms. Hollenbeck,

The Federal Communications Commission (FCC) has requested that we contact the Certified Local Government *or* the jurisdictional Planning Department for any project that requires a Section 106 Review.

We are contacting you on behalf of our client, Parallel Infrastructures, which has proposed to install a 175' monopole tower at the address listed above. The project coordinates are 45° 35' 34.1" W, -122° 26' 22.9" N.

A Section 106 Review is in the process of being completed. A copy of the report will be provided upon request. A set of proposed construction drawings are included with this letter for your reference.

With this letter, Adapt Engineering (Adapt) respectfully invites the City of Camas Planning Department to comment further on any possible effects the proposed project may have to historical or cultural resources. Please note that another company will be responsible for acquiring the required building permits.

Please do not hesitate to contact me by telephone at (503)892-2346 or by email at Beth.belanger@adaptengr.com if you have any further questions.

Sincerely,

Beth Belanger
Senior NEPA Compliance Manager

APPENDIX I

PUBLIC NOTICE AFFIDAVIT

Affidavit of Publication
STATE OF WASHINGTON)
) ss:
County of Clark)

Columbian

BETH BELANGER
ADAPT ENGINEERING INC PDX-L
10725 SW BARBUR BLVD #200
PORTLAND OR 97219

REFERENCE: 70746 2829 NW 18 AV CAMAS
3339372 LEGAL NOTICE Parall

I, the undersigned say,

That I am over the age of eighteen and not interested in the above entitled matter; that I am now, and at all time embraced in the publication herein mentioned, was, the principal clerk of the printer of The Columbian, a daily newspaper printed, published and circulated in the said county and adjudged a newspaper of general circulation by the Superior Court of the County of Clark, State of Washington, under Proceeding No. 802006715; that the advertisement, of which the annexed is a true printed copy, was published in the above-named newspaper on the following dates, to wit:

LEGAL NOTICE

Parallel Infrastructure is proposing to install a telecommunications tower at 2829 NW 18th Ave, Camas, WA 98607 (45.592806 N, -122.439694 W). The height of the tower will be 53.3 meters above ground level (281.7 meters above mean sea level). The tower is anticipated to have FAA Style F (L-856/L-864/L-810) lighting. Specific information regarding the project is available by calling Adapt Engineering at (503)892-2346, during normal business hours. Any interested party may submit comments by 8/07/2015 to Adapt Engineering at 10725 SW Barbur Blvd., Ste. 200, Portland, OR 97219 to comment on the impact of the proposed action on any districts, sites, buildings, structures or objects significant in American history, archaeology, engineering or culture that are listed or determined eligible for listing in the National Register of Historic Places under National Historic Preservation Act Section 106. Interested persons may review the application for this project at www.fcc.gov/asr/applications by entering Antenna Structure Registration (Form 854) file no. A0974440. Interested persons may raise environmental concerns about the project under the National Environmental Policy Act rules of the Federal Communications Commission, 47 CFR §1.1307, by notifying the FCC of the specific reasons that the action may have a significant impact on the quality of the human environment. Requests for Environmental Review must be filed within 30 days of the date that notice of the project is published on the FCC's website and may only raise environmental concerns. The FCC strongly encourages interested parties to file Requests for Environmental Review online at www.fcc.gov/asr/environmentalrequest, but they may be filed with a paper copy by mailing the Request to FCC Requests for Environmental Review, Attn: Ramon Williams, 445 12th Street SW, Washington, DC 20554. A copy of the Request should be provided to Adapt Engineering at 10725 SW Barbur Blvd., Ste. 200, Portland, OR 97219 (Project # WA15-19957).
July 6 538983

PUBLISHED ON: 07/06

TOTAL COST: 114.35
FILED ON: 07/06/15

I Certify (or declare) under penalty of perjury that the foregoing is true and correct.

Signature Sandra Burkett

APPENDIX J

TRIBAL CONSULTATION

Beth Belanger

From: towernotifyinfo@fcc.gov
Sent: Friday, June 26, 2015 12:04 AM
To: Beth Belanger
Cc: Jonathan.Jonas@fcc.gov; diane.dupert@fcc.gov
Subject: NOTICE OF ORGANIZATION(S) WHICH WERE SENT PROPOSED TOWER CONSTRUCTION NOTIFICATION INFORMATION - Email ID #4252948

Dear Sir or Madam:

Thank you for using the Federal Communications Commission's (FCC) Tower Construction Notification System (TCNS). The purpose of this electronic mail message is to inform you that the following authorized persons were sent the information you provided through TCNS, which relates to your proposed antenna structure. The information was forwarded by the FCC to authorized TCNS users by electronic mail and/or regular mail (letter).

Persons who have received the information that you provided include leaders or their designees of federally-recognized American Indian Tribes, including Alaska Native Villages (collectively "Tribal Nations"), Native Hawaiian Organizations (NHOs), and State Historic Preservation Officers (SHPOs). For your convenience in identifying the referenced Tribal Nations and NHOs and in making further contacts, the City and State of the Seat of Government for each Tribal Nation and NHO, as well as the designated contact person, is included in the listing below. We note that Tribal Nations may have Section 106 cultural interests in ancestral homelands or other locations that are far removed from their current Seat of Government. Pursuant to the Commission's rules as set forth in the Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communications Commission (NPA), all Tribal Nations and NHOs listed below must be afforded a reasonable opportunity to respond to this notification, consistent with the procedures set forth below, unless the proposed construction falls within an exclusion designated by the Tribal Nation or NHO. (NPA, Section IV.F.4).

The information you provided was forwarded to the following Tribal Nations and NHOs. If a Tribal Nation or NHO does not respond within a reasonable time, you should make a reasonable effort at follow-up contact, unless the Tribal Nation or NHO has agreed to different procedures (NPA, Section IV.F.5). In the event a Tribal Nation or NHO does not respond to a follow-up inquiry, or if a substantive or procedural disagreement arises between you and a Tribal Nation or NHO, you must seek guidance from the Commission (NPA, Section IV.G). These procedures are further set forth in the FCC's Declaratory Ruling released on October 6, 2005 (FCC 05-176).

1. THPO Wilfred Ferris III - Eastern Shoshone Tribe - Fort Washakie, WY - electronic mail and regular mail
Details: The Eastern Shoshone Tribe has established a new online procedure for FCC TCNS review/consultation. Online submissions can now be completed at http://app.tribal106.com

Based on the location of the proposed project and the pole(s) that you will be constructing as part of the Section 106 process in our particular aboriginal homelands, we are REQUESTING TO BE CONSULTED on this

proposed project.

Please utilize the Tribal 106 NHPA consultation processing system website. Online submissions can be completed at http://app.tribal106.com

The Eastern Shoshone Tribe through the Historic Preservation Department has established a fee of $400.00 per consultation. We are only accepting checks at this time. If you have questions, please feel free to contact Mr. Wilfred Ferris, III THPO at wferris.eshoshone@gmail.com

Sincerely,
Wilfred J. Ferris, III, THPO
Eastern Shoshone Tribe

2. Cultural Protection Coordinator Jordan Mercier - Confederated Tribes of the Grand Ronde Community of Oregon - Grand Ronde, OR - electronic mail and regular mail
Details: NOTICE As of January 1, 2014 the Confederated Tribes of the Grand Ronde Community of Oregon will initiate a processing fee for all projects being proposed for licensing through the FCC Tower Construction Notification System TCNS. The processing fee willbe 250 dollars for each proposed project.

Please send a check or money order made out to The Confederated Tribes of Grand Ronde Community of Oregon, in the amount of 250 dollars. Please ensure it is mailed to the following address:

ConfederatedTribes of Grand Ronde
Land and Culture Department: Attn Jordan Mercier
9615 Grand Ronde Road
Grand Ronde, Oregon 97347-9712

The Project TCNS number must be included on the check or money order Ex. TCNS 89301.

Failure to include the TCNS number will prevent processing. Payments sent without a referenced TCNS number will be deposited and will not be attributable to a project. This will result in the need to resubmit payment with the appropriate TCNS number in the amount of 250 dollars ex. 2 x250 dollars.

Once payment is received, your project will be reviewed as soon as possible. If your project is being proposed for the purpose of Public Safety, email the contact below to inquire about steps to have the processing fee waived.

The Confederated Tribes of Grand Ronde Community of Oregon requires that latitude and longitude coordinates are provided for each and every project. When available, the tribe requests that shp. files delineating a projects Area of Potential Effect are providedin addition to latitude and longitude coordinates. This

information can be sent electronically to Jordan Mercier at Jordan.Mercier@Grandronde.org

Please include the appropriate TCNS number in your correspondence.

Sincerely,

Jordan Mercier
Compliance Technician
Land and Culture Department
Confederated Tribes of Grand Ronde
Jordan.Mercier@Grandronde.org
503.879.2185

3. Cultural Resource Mgr Sally Bird - Confederated Tribes of the Warm Springs Reservation - Warm Springs, OR - electronic mail and regular mail
Details: Warm Springs Geo Visions, on behalf of the Confederated Tribes of the Warm Springs Reservation of Oregon will review your TCNS request within 30 days upon receipt of payment. Payment for each request reviewed with be at a base cost of $250.00 per request. If additional reviews are needed from this office, such as review of an archaeological report an additional fee may be forthcoming.

Payment should be sent to:
Warm Springs Geo Visions
Attn: Project #512009
P.O. Box 460
Warm Springs, Oregon 97761

4. Chairman JoDe L Goudy - Yakama Nation - Toppenish, WA - electronic mail and regular mail
Details: If the Applicant/tower builder receives no response from the Yakama Nation within 30 days after notification through TCNS, the Yakama Nation has no interest in participating in pre-construction review for the proposed site. The Applicant/tower builder, however, must IMMEDIATELY notify the Yakama Nation in the event archaeological properties or human remains are discovered during construction, consistent with Section IX of the Nationwide Programmatic Agreement and applicable law.

5. THPO/ Archaeologist Patrick Baird - Nez Perce Tribe - Lapwai, ID - electronic mail and regular mail

If the applicant/tower builder receives no response from the Nez Perce Tribe within 30 days after notification through TCNS, the Nez Perce Tribe has no interest in participating in pre-construction review for the proposed site. The Applicant/tower builder, howeve

r, must immediately notify the Nez Perce Tribe in the event archaeological properties or human remains are discovered during construction, consistent with Section IX of the Nationwide Programmatic Agreement and applicable law.

6. Cultural Resources Tech James Gordon - Cowlitz Indian Tribe - Longview, WA - electronic mail and regular mail
Details: If the Applicant receives no response from the Cowlitz Indian Tribe within 30 days after notification through TCNS, the Cowlitz Indian Tribe has no interest in participating in pre-construction review for the site. The Applicant, however, must notify the Cowlitz Indian Tribe in the event archaeological properties or human remains are discovered during construction.

The information you provided was also forwarded to the following SHPOs in the State in which you propose to construct and neighboring States. The information was provided to these SHPOs as a courtesy for their information and planning. You need make no effort at this time to follow up with any SHPO that does not respond to this notification. Prior to construction, you must provide the SHPO of the State in which you propose to construct (or the Tribal Historic Preservation Officer, if the project will be located on certain Tribal lands), with a Submission Packet pursuant to Section VII.A of the NPA.

7. SHPO Allyson Brooks - Office of Archeology & Historic Preservation - Olympia, WA - electronic mail

8. Deputy SHPO Greg Griffith - Office of Archeology & Historic Preservation - Olympia, WA - electronic mail

9. Greg A Griffith - Washington State Department of Archaeology and Historic Preservation - Olympia, WA - electronic mail

"Exclusions" above set forth language provided by the Tribal Nation or SHPO. These exclusions may indicate types of PTC wayside pole notifications that the Tribal Nation or SHPO does not wish to review. TCNS automatically forwards all notifications to all Tribal Nations and SHPOs that have an expressed interest in the geographic area of a proposal. However, if a proposal falls within a designated exclusion, you need not expect any response and need not pursue any additional process with that Tribal Nation or SHPO. Exclusions may also set forth policies or procedures of a particular Tribal Nation or SHPO (for example, types of information that a Tribal Nation routinely requests, or a policy that no response within 30 days indicates no interest in participating in pre-construction review).

Please be advised that the FCC cannot guarantee that the contact(s) listed above opened and reviewed an

electronic or regular mail notification. The following information relating to the proposed tower was forwarded to the person(s) listed above:

Notification Received: 06/17/2015
Notification ID: 128201
Tower Owner Individual or Entity Name: Parallel Infrastructures
Consultant Name: Beth Belanger Ms
Street Address: 10725 SW Barbur Blvd
Ste. 200
City: Portland
State: OREGON
Zip Code: 97219
Phone: 503-892-2346
Email: beth.belanger@adaptengr.com

Structure Type: MTOWER - Monopole
Latitude: 45 deg 35 min 34.1 sec N
Longitude: 122 deg 26 min 22.9 sec W
Location Description: 2829 Northwest 18th Avenue
City: Camas
State: WASHINGTON
County: CLARK
Detailed Description of Project: Installation of a 175' monopole tower within a 40' x 40' lease area.
Ground Elevation: 228.4 meters
Support Structure: 53.3 meters above ground level
Overall Structure: 53.3 meters above ground level
Overall Height AMSL: 281.7 meters above mean sea level

If you have any questions or comments regarding this notice, please contact the FCC using the electronic mail form located on the FCC's website at:

http://wireless.fcc.gov/outreach/notification/contact-fcc.html.

You may also call the FCC Support Center at (877) 480-3201 (TTY 717-338-2824). Hours are from 8 a.m. to 7:00 p.m. Eastern Time, Monday through Friday (except Federal holidays). To provide quality service and ensure security, all telephone calls are recorded.

Thank you,
Federal Communications Commission

Shoshone Finance
P.O. Box 538
Fort Washakie, WY 82514
(307) 332-6804/3043
Fax: (307) 332-0429

To: Adapt Engineering
Date: 07/15/15
Project: Prune Hill
TCNS Number: 128201

X	FINDING OF NO CULTURAL PROPERTIES – The potential for cultural resources to be present within or near your proposed project is low and should not result in an adverse effect. However, if cultural materials are discovered during construction please notify the Chippewa Cree Cultural Resource Preservation Department or Tribal Historic Preservation Office.

After reviewing the materials you provided on the above referenced project, the Eastern Shoshone Tribal Historic Preservation Department finds that there may be a low potential for historic/cultural materials to be present during the proposed undertaking.

The Eastern Shoshone Tribe has a long and storied history throughout a very large swath of the present day United States that we consider our aboriginal homelands. No further cultural resource work is necessary for this project as long as the areas outlined are adhered to. If additional work is necessary outside the areas designated, please notify our department and we can make the necessary arrangements.

If potential cultural resources are located during construction, please notify our office immediately. Thank you for consulting with the Eastern Shoshone Tribal Historic Preservation Office. If you have any questions or concerns, please feel free to contact me at (307) 335-2081 or (307)-349-6406 or email me at wferris.eshoshone@gmail.com Thank you.

Wilfred Ferris, III
Tribal Historic Preservation Officer

Beth Belanger

From: towernotifyinfo@fcc.gov
Sent: Monday, July 13, 2015 1:47 PM
To: Beth Belanger
Cc: tcns.fccarchive@fcc.gov; Jordan.Mercier@grandronde.org
Subject: Reply to Proposed Tower Structure (Notification ID: 128201) - Email ID #4273289

Dear Beth Belanger Ms,

Thank you for using the Federal Communications Commission's (FCC) Tower Construction Notification System (TCNS). The purpose of this email is to inform you that an authorized user of the TCNS has replied to a proposed tower construction notification that you had submitted through the TCNS.

The following message has been sent to you from Cultural Protection Coordinator Jordan Mercier of the Confederated Tribes of the Grand Ronde Community of Oregon in reference to Notification ID #128201:

The Confederated Tribes of Grand Ronde Community of Oregon Cultural Protection staff have no concerns or additional information to provide at this time for this project. We request that if archeological and/or cultural resources are discovered during the project that we are contacted immediately by phone.
Misty Thorsgard
503.879.2320

For your convenience, the information you submitted for this notification is detailed below.

Notification Received: 06/17/2015
Notification ID: 128201
Tower Owner Individual or Entity Name: Parallel Infrastructures
Consultant Name: Beth Belanger Ms
Street Address: 10725 SW Barbur Blvd
Ste. 200
City: Portland
State: OREGON
Zip Code: 97219
Phone: 503-892-2346
Email: beth.belanger@adaptengr.com

Structure Type: MTOWER - Monopole
Latitude: 45 deg 35 min 34.1 sec N
Longitude: 122 deg 26 min 22.9 sec W
Location Description: 2829 Northwest 18th Avenue
City: Camas

State: WASHINGTON
County: CLARK
Detailed Description of Project: Installation of a 175' monopole tower within a 40' x 40' lease area.
Ground Elevation: 228.4 meters
Support Structure: 53.3 meters above ground level
Overall Structure: 53.3 meters above ground level
Overall Height AMSL: 281.7 meters above mean sea level

Beth Belanger

From: towernotifyinfo@fcc.gov
Sent: Thursday, July 16, 2015 9:01 AM
To: Beth Belanger
Cc: tcns.fccarchive@fcc.gov; roberta.kirk@ctwsbnr.org
Subject: Reply to Proposed Tower Structure (Notification ID: 128201) - Email ID #4280317

Dear Beth Belanger Ms,

Thank you for using the Federal Communications Commission's (FCC) Tower Construction Notification System (TCNS). The purpose of this email is to inform you that an authorized user of the TCNS has replied to a proposed tower construction notification that you had submitted through the TCNS.

The following message has been sent to you from THPO Assistant Roberta Kirk of the Confederated Tribes of the Warm Springs Reservation in reference to Notification ID #128201:

We have received the information and tribal review fee for TCNS project 128201. We agree with the recommendations in the archeology report that an inadvertant discovery plan be in place for this project. Upon implementation of the proposed project if any cultural resources are observed please contact our office immediately.

Respectfully,

Roberta Kirk
roberta.kirk@ctwsbnr.org

For your convenience, the information you submitted for this notification is detailed below.

Notification Received: 06/17/2015
Notification ID: 128201
Tower Owner Individual or Entity Name: Parallel Infrastructures
Consultant Name: Beth Belanger Ms
Street Address: 10725 SW Barbur Blvd
Ste. 200
City: Portland
State: OREGON
Zip Code: 97219
Phone: 503-892-2346
Email: beth.belanger@adaptengr.com

Structure Type: MTOWER - Monopole

Latitude: 45 deg 35 min 34.1 sec N
Longitude: 122 deg 26 min 22.9 sec W
Location Description: 2829 Northwest 18th Avenue
City: Camas
State: WASHINGTON
County: CLARK
Detailed Description of Project: Installation of a 175' monopole tower within a 40' x 40' lease area.
Ground Elevation: 228.4 meters
Support Structure: 53.3 meters above ground level
Overall Structure: 53.3 meters above ground level
Overall Height AMSL: 281.7 meters above mean sea level

Beth Belanger

From: towernotifyinfo@fcc.gov
Sent: Friday, July 24, 2015 4:26 PM
To: Beth Belanger
Cc: tcns.fccarchive@fcc.gov
Subject: Reply to Proposed Tower Structure (Notification ID: 128201) - Email ID #4291667

Dear Beth Belanger Ms,

Thank you for using the Federal Communications Commission's (FCC) Tower Construction Notification System (TCNS). The purpose of this email is to inform you that an authorized user of the TCNS has replied to a proposed tower construction notification that you had submitted through the TCNS.

The following message has been sent to you from Cultural Resources Tech James Gordon of the Cowlitz Indian Tribe in reference to Notification ID #128201:

To Whom It May Concern:

Given that the above-referenced project is within the Cowlitz Indian Tribe's area of concern, the Cultural Resources Department of the Cowlitz Indian Tribe would like to state its interest.

In the event of ground-disturbing activity, the CRD recommends an Inadvertent Discovery Plan be attached to the permit; we have included language for your consideration.

This determination is based on all currently available knowledge, and is subject to revision should new information arise. No further contact regarding this project is necessary unless any part of the scope of work-including project boundaries and staging areas-is modified, or the Inadvertent Discovery Plan needs to be implemented.

Please contact us with any questions or concerns you may have. We look forward to working with you on this undertaking.

Thank you for your time and attention.

All My Relations,

dAVe burlingame
Director, Cultural Resources
360.577.6962
508.1677 [c]

COWLITZ INDIAN TRIBE
INADVERTENT DISCOVERY LANGUAGE

[revised 130222]

In the event any archaeological or historic materials are encountered during project activity, work in the immediate area (initially allowing for a 100' buffer; this number may vary by circumstance) must stop and the following actions taken:

1. Implement reasonable measures to protect the discovery site, including any appropriate stabilization or covering; and 2. Take reasonable steps to ensure the confidentiality of the discovery site; and, 3. Take reasonable steps to restrict access to the site of discovery.

The project proponent will notify the concerned Tribes and all appropriate county, state, and federal agencies, including the Department of Archaeology and Historic Preservation. The agencies and
Tribe(s) will discuss possible measures to remove or avoid cultural material, and will reach an agreement with the project proponent regarding actions to be taken and disposition of material.

If human remains are uncovered, appropriate law enforcement agencies shall be notified first, and the above steps followed. If the remains are determined to be Native, consultation with the affected Tribes will take place in order to mitigate the final disposition of said remains.

See the Revised Code of Washington, Chapter 27.53, "Archaeological Sites and Resources," for applicable state laws and statutes. See also Washington State Executive Order 05-05, "Archaeological and Cultural Resources." Additional state and federal law(s) may also apply.

It is strongly encouraged copies of inadvertent discovery language/plan are retained on-site while project activity is underway.

Contact information:

dAVe burlingame
Director, Cultural Resources
360.577.6962
508.1677 cell
577.6207 fax
culture@cowlitz.org

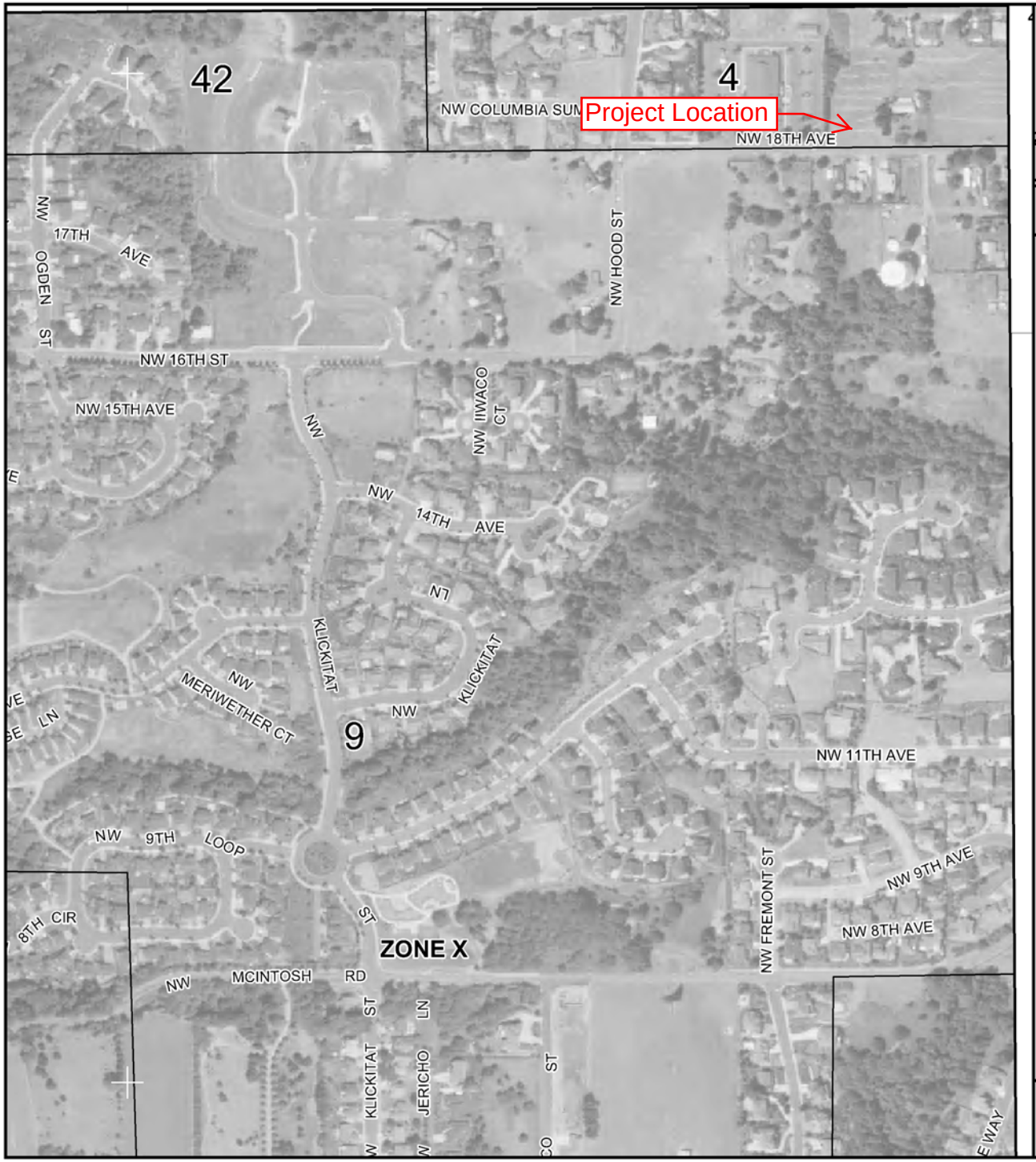
For your convenience, the information you submitted for this notification is detailed below.

Notification Received: 06/17/2015
Notification ID: 128201
Tower Owner Individual or Entity Name: Parallel Infrastructures
Consultant Name: Beth Belanger Ms
Street Address: 10725 SW Barbur Blvd
Ste. 200
City: Portland
State: OREGON
Zip Code: 97219
Phone: 503-892-2346
Email: beth.belanger@adaptengr.com

Structure Type: MTOWER - Monopole
Latitude: 45 deg 35 min 34.1 sec N
Longitude: 122 deg 26 min 22.9 sec W
Location Description: 2829 Northwest 18th Avenue
City: Camas
State: WASHINGTON
County: CLARK
Detailed Description of Project: Installation of a 175' monopole tower within a 40' x 40' lease area.
Ground Elevation: 228.4 meters
Support Structure: 53.3 meters above ground level
Overall Structure: 53.3 meters above ground level
Overall Height AMSL: 281.7 meters above mean sea level

APPENDIX K

FLOOD DETERMINATION



MAP SCALE 1" = 500'

250 0 500 1000

FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0529D

FIRM

FLOOD INSURANCE RATE MAP

CLARK COUNTY, WASHINGTON AND INCORPORATED AREAS

PANEL 529 OF 600

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CAMAS, CITY OF	530026	0529	D
CLARK COUNTY	530024	0529	D
VANCOUVER, CITY OF	530027	0529	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
53011C0529D

EFFECTIVE DATE
SEPTEMBER 5, 2012

Federal Emergency Management Agency

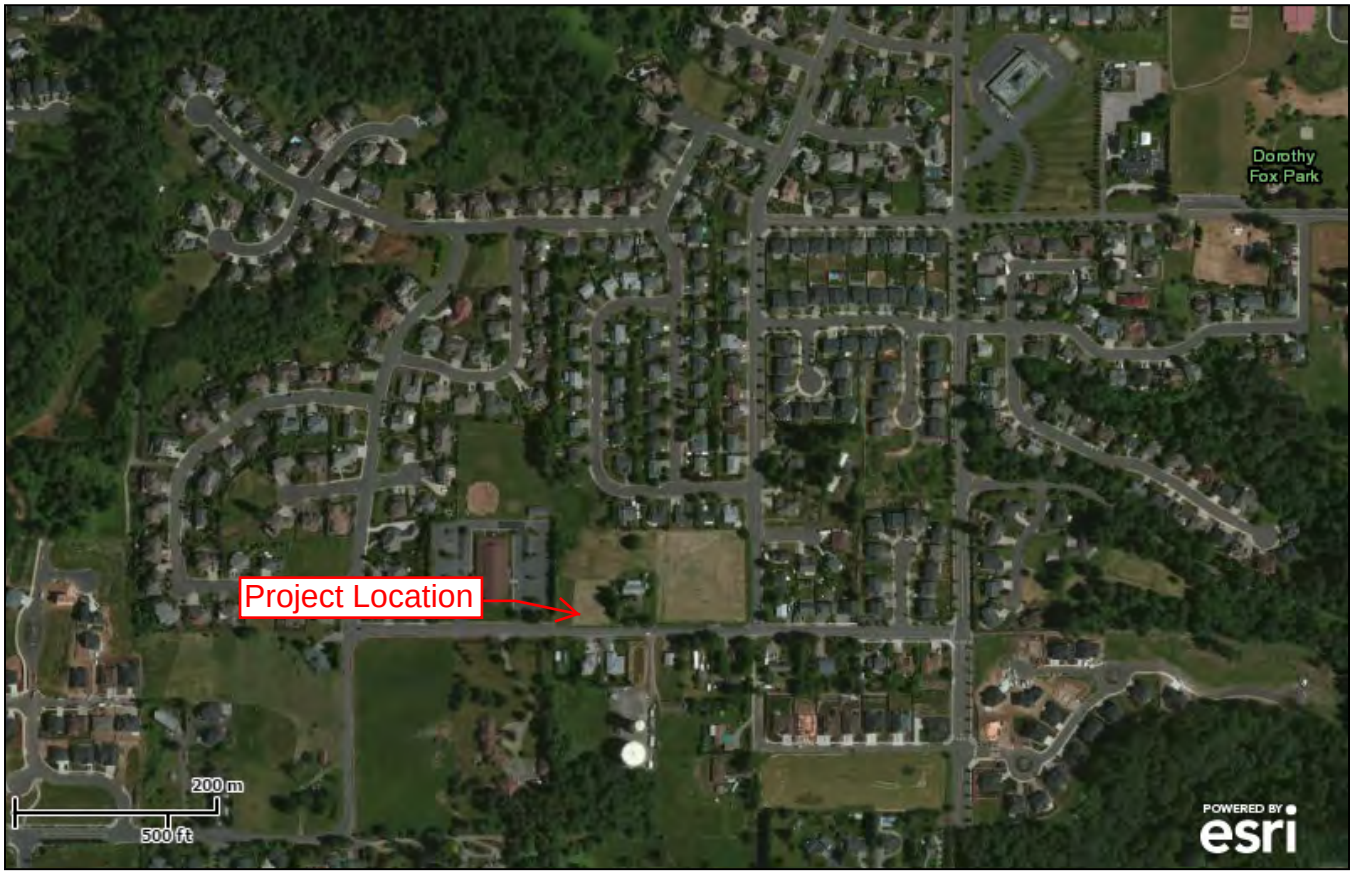
APPENDIX L

NATIONAL WETLAND INVENTORY

U.S. Fish and Wildlife Service
National Wetlands Inventory

Prune Hill

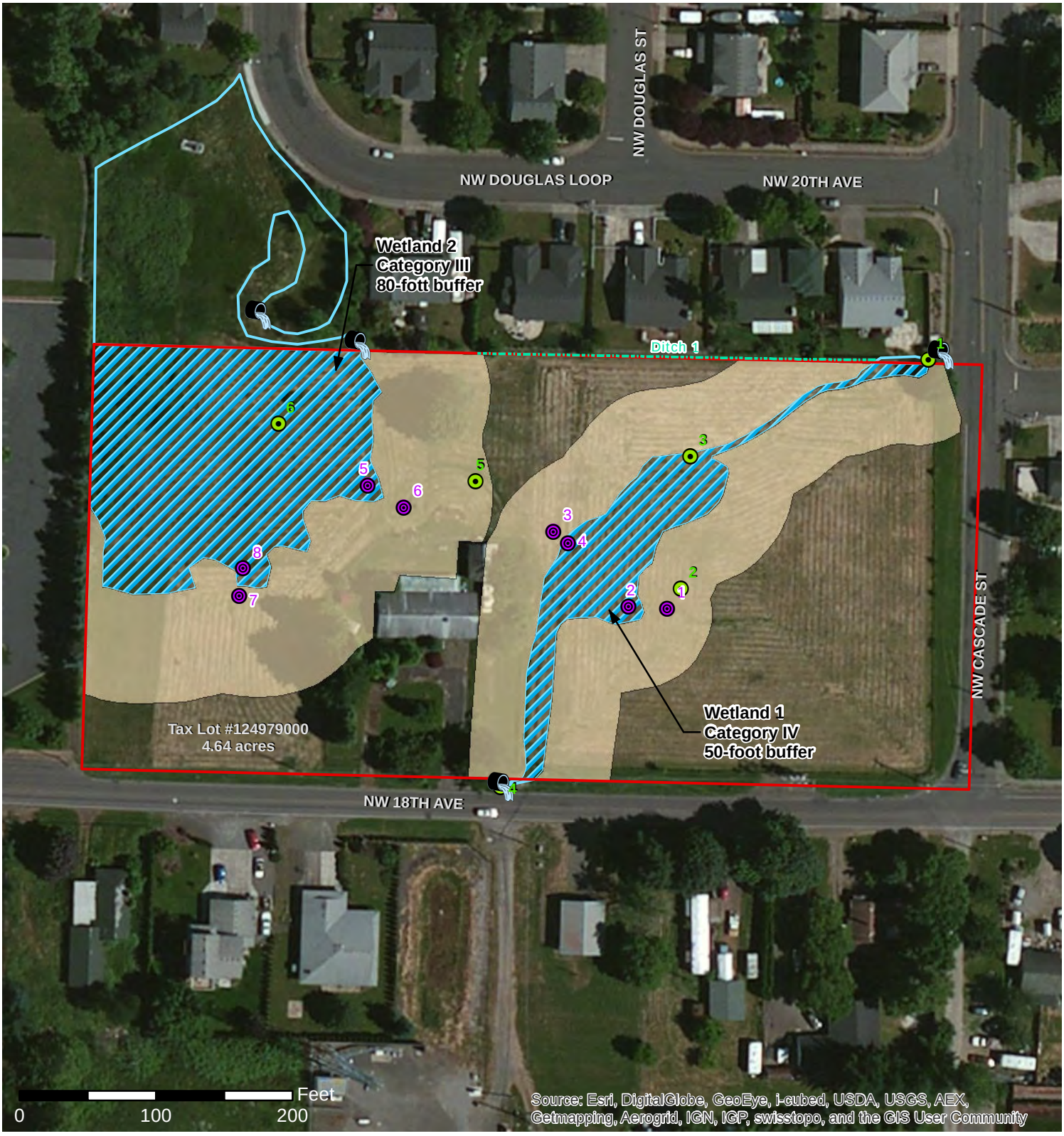
Apr 1, 2015



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

User Remarks:



Legend

- Study Site Tax Lot Boundary
- Wetlands (0.98 acres)
- Offsite Wetlands
- Wetland Buffers
- Ditch
- Data Plots
- Photo Points
- Culverts/Drains

Scale: 1 inch = 100 feet

Figure 5. Wetland Buffer Map

CASCADE ENVIRONMENTAL GROUP

NW 18th Avenue Camas
Project Site
Wetland Delineation Report

Date: 4/8/2015

City of Camas, Washington

Data Source: Clark County, WA GIS, 2013

Z:\GIS\Adapt_Wetland_Delineations\NW18th_Camas\NW18th_Camas_Fig5_WetlandBuffers.mxd

APPENDIX M

PREPARER'S QUALIFICATIONS

Adapt Engineering
10725 SW Barbur Blvd., Suite 200
Portland, Oregon 97219
V (503) 892-2346
F (503) 892-2348
www.adaptengr.com

PROFESSIONAL EXPERIENCE SUMMARY

Beth Belanger
Environmental Scientist / NEPA Specialist / Biologist / Project Manager

TECHNICAL SPECIALTIES

National Environmental Policy Act (NEPA) Reviews
Biological Assessments
Threatened and Endangered Species Habitat Evaluation
Wetland Monitoring
Project Management
Plant Identification
Forest and Stream Ecology
Mycology

EDUCATION

Graduated in 2004 with a Bachelors of Arts and Bachelors of Science in Environmental Science from The Evergreen State College, Olympia, Washington

CERTIFICATIONS

Oregon Public Notary
Oregon Department of Transportation—Certified Biologist
Portland State University Professional Certificate in Environmental Regulations and Compliance

PROFESSIONAL SUMMARY

Ms. Belanger has worked extensively conducting National Environmental Policy Act (NEPA) reports since early 2005, including conducting site visits, field investigations, plant and species identification, data gathering and report writing.

Ms. Belanger worked as a field biologist from June 2004 to April 2005 for the Washington Department of Natural Resources. During the summer of 2003, Ms. Belanger was a Wetland Monitoring Intern for the Washington State Department of Transportation.

REPRESENTATIVE PROJECT EXPERIENCE

National Environmental Policy Act (NEPA) Reports, Oregon and Washington
Ms. Belanger has conducted over 400 NEPA review projects since 2005 for several telecommunications companies including AT&T Mobility, Sprint-Nextel Communications and T-Mobile. Each NEPA review included a biological review of wetland conditions and potential threatened and endangered species habitat. In conjunction to the NEPA reports, Ms. Belanger has conducted an equal number of biological assessments for the same telecommunications carriers since May 2005.

Exhibit E
CUP15-01

Adapt Engineering
10725 SW Barbur Boulevard, Suite 200
Portland, Oregon 97219

Tel (503) 892-2346
Fax (503) 892-2348
www.adaptengr.com

June 29, 2015

Adapt Project No. WA15-19957-GEO

Parallel Infrastructure c/o
Cascadia PM
5501 NE 109th Ct., Suite A2
Vancouver, WA 98662

Attention: Mr. Joe Riddle

Subject: Geotechnical Engineering Evaluation
Prune Hill
2829 NW 18th Avenue
Camas, Washington 98607

Dear Mr. Riddle:

Adapt Engineering (Adapt) is pleased to submit this report describing our recent geotechnical engineering evaluation for the Prune Hill tower site. The purpose of our work was to interpret general surface and subsurface site conditions in order to provide recommendations for design and construction. Our scope of services consisted of a surface reconnaissance, a subsurface exploration, geotechnical analyses, and report preparation. This project was authorized by Cascadia PM on behalf of Parallel Infrastructure (PI).

We prepared this report in accordance with generally accepted geotechnical engineering practices and the time we prepared it, for the exclusive use of Cascadia PM, PI, and their agents, for specific application to this project. Use or reliance upon this report by a third party is at their own risk. Adapt does not make any representation or warranty, express or implied, to such other parties as to the accuracy or completeness of this report or the suitability of its use by such other parties for any purpose whatever, known or unknown, to Adapt.

We appreciate the opportunity to be of service to you. If you have any questions, or if we can be of further assistance to you, please contact us at (503) 892-2346.

Respectfully Submitted,

Adapt Engineering

Robert Nystrom, R.G.
Staff Geologist

Jeanne M. Niemer, P.E.
Senior Geotechnical Engineer
Senior Reviewer

Attachment A Figures
Figure 1 Location/Topographic Map
Figure 2 Site & Exploration Plan

Attachment B Subsurface Exploration Log

Adapt Engineering
10725 SW Barbur Boulevard, Suite 200
Portland, Oregon 97219

Tel (503) 892-2346
Fax (503) 892-2348
www.adaptengr.com

Parallel Infrastructure
c/o Cascadia PM
Geotechnical Engineering Evaluation

Prune Hill Tower Site
Camas, Washington

WA15-19957-GEO
June 2015

PROJECT DESCRIPTION

The property is located at 2829 NW 18th Avenue in Camas, Clark County, Washington, as shown on the attached *Location/Topographic Map,* Figure 1. The proposed project will consist of constructing a new 175-foot communications tower, equipment cabinets, and generator pad within a new fenced compound. Additionally, a new gravel driveway will be constructed from NW 18th Avenue to the lease area.

SITE CONDITIONS

Surface Conditions

The proposed lease area is located near the southwest corner of the host property and is vacant. It is level and covered with grasses. There was no standing water present at the time of our site visit.

Subsurface Conditions

We explored the subsurface conditions at the project site on June 15, 2015. We drilled one boring near the proposed tower location (not staked), as shown on the attached Figure 2. We performed Standard Penetration Tests (ASTM D 1586) at regular two and a half to five foot intervals in the exploration. We logged and classified the subsurface materials in general accordance with the Manual Visual Classification Method (ASTM D 2488).

We encountered approximately 25 feet of medium stiff to very stiff silt with varying amounts of clay and fine sand. We encountered dense to very dense silty sand and gravel from approximately 25 feet bgs to approximately 46.5 feet bgs, the maximum extent of our exploration.

We did not encounter any groundwater, seeps, or seams in the boring at the time of our exploration. Groundwater levels may fluctuate in response to changing precipitation patterns, off-site construction activities, and changes in site utilization.

Seismic Conditions

Based on our analysis of subsurface exploration logs and a review of published geologic maps, we interpret the on-site soil conditions to correspond to Site Class D, as defined by Table 1613.5.2 of the 2012 *International Building Code*.

CONCLUSIONS

Based on our exploration and analyses, the site can be developed as proposed. The tower should be supported on a drilled pier foundation that derives its support from the dense to very dense sand and gravel that we encountered at about 25 feet bgs. The equipment shelter can be supported on medium stiff silt or structural fill.

Based on our analysis and understanding of the site, we interpret the on-site subsurface conditions to correspond to Site Class D, as defined by Table 1613.5.2 of the 2009 International Building Code. Based on the consistency of the site soils and the lack of groundwater, we conclude that

the potential for liquefaction during a design level earthquake is negligible. Our specific geotechnical design and construction recommendations are presented in the following sections.

GEOTECHNICAL DESIGN RECOMMENDATIONS

Seismic Design Parameters

Our recommended seismic design parameters are summarized in the table below.

Seismic Design Parameters		
	Short Period	**1 Second**
Mapped Spectral Acceleration Values	S_S=0.915	S_1=0.381
Site Class	D	
Site Coefficient	F_a=1.134	F_v=1.638
Design Spectral Response Acceleration Parameters	S_{DS}=0.692	S_{D1}=0.416

For purposes of seismic site characterization, we extrapolated the soil conditions that we observed below the exploration termination depth, based on our knowledge of the regional geology.

Drilled Pier Design Recommendations

Axial Capacity – Skin Friction:

For frictional resistance along the shaft of the drilled piers, acting both downward and in uplift, we recommend using the ultimate skin friction value listed below. We recommend that frictional resistance be neglected in the uppermost two feet below the ground surface. The ultimate skin friction values presented do not include a safety factor, in accordance with the provisions of the EIA/TIA 222-G code. They have been reduced below the groundwater table to account for downdrag from liquefaction during a design level earthquake.

Ultimate Skin Friction	
Depth (feet)	**Skin Friction (psf)**
0-2	0
2-17	1500
17-25	500
25-46.5	1000

Axial Capacity – End Bearing:

We recommend that the drilled pier penetrate a minimum of five feet into the dense to very dense sand and gravel that underlies the site at a depth of approximately 25 feet bgs. For vertical

compressive soil bearing capacity, we recommend using the unit end bearing capacities presented below, where B is the diameter of the pier in feet and D is the depth into the bearing layer in feet, in accordance with the EIA/TIA G-code. This ultimate end bearing capacity does not include a safety factor.

End Bearing Capacity		
Depth (feet)	**Bearing Capacity (tsf)**	**Limiting Point Resistance (tsf)**
25-45	9.0 D/B	27

Notes: D = the embedment depth (in feet) into the bearing layer. B = pier diameter (feet).

Drilled Pier Lateral Capacity

Drilled pier foundations for communication towers are typically rigid and act as a pole that rotates around a fixed point at depth. Although more complex and detailed analysis is available, either the simplified passive earth pressure method or the subgrade reaction method is typically used to determine the pier diameter and depth required to resist groundline reaction forces and moments. These methods are described below.

Passive Earth Pressure Method: The passive earth pressure method is a simplified approach that is generally used to estimate an allowable lateral load capacity based on soil wedge failure theory. Although the lateral deflection associated with the soil wedge failure may be estimated, design lateral deflections using the passive earth pressure method should be considered approximate, due to the simplified nature of the method. A lateral deflection on the order of one-half inch would be required to mobilize the passive pressure presented below. Our recommended passive earth pressures for the soil layers encountered at this site are presented in the table below and do not include a safety factor. They may be assumed to act over an area measuring two pier diameters wide by eight pier diameters deep.

Lateral Passive Earth Pressures	
Depth (feet)	**Passive Pressure (pcf)**
0-2	0
2-17	700
17-25	500
25-46.5	800

Subgrade Reaction Method: The subgrade reaction method is typically used to compute lateral design loads based on allowable lateral deflections. Using this method, the soil reaction pressure (p) on the face of the pier is related to the lateral displacement (y) of the pier by the horizontal subgrade modulus (k_h); this relationship is expressed as $p=k_h y$. Because soil modulus values are

based on small scale, beam load test data, and are usually reported as a vertical subgrade modulus (k_v), they must be converted to horizontal subgrade modulus values representative for larger scale applications (such as large pier diameters) by means of various scaling factors, as discussed below.

In addition to the scaling and loading orientation, the soil-pier interaction governing k_h is also affected by the soil type. For cohesionless soils (sand, non-plastic silt) and soft cohesive soils (clay, cohesive silt), the horizontal subgrade modulus (k_h) increases linearly with depth (z). This relationship is expressed as $k_h = n_{hz}(1/B)$, where n_h is the coefficient of horizontal subgrade reaction and (1/B) is the scaling factor.

For stiff or hard cohesive soils (clay, cohesive silts), the horizontal subgrade modulus (k_h) is essentially the same as the vertical subgrade modulus (k_v) and is considered constant with depth. This relationship is expressed as $k_h=k_v[1(ft)/1.5B]$, where [1(ft)/1.5B] is the scaling factor (B is expressed in feet).

Our recommended values for the coefficient of horizontal subgrade reaction (n_h) and the vertical subgrade modulus (k_v) for the soil layers encountered at this site are presented in the table below. These values do not include a factor of safety since they model the relationship between contact pressure and displacement. Therefore, the structural engineer or monopole manufacturer should select an appropriate allowable displacement for design, based on the specific requirements of the communication equipment mounted on the tower.

Recommended Horizontal Subgrade Reaction Values		
Depth Interval,(feet)	**n_h (pci)**	**k_v (pci)**
0-2	0	0
2-25	N/A	100
25-46.5	125	N/A
Coefficient of Horizontal Subgrade Reaction (pci)	**$k_h= n_h(z/B)$ (Sand & Soft Clay)**	**$k_h=k_v/(1.5B)$ (Stiff Clay)**

Drilled Pier Construction Considerations: We did not encounter groundwater while drilling. If groundwater is encountered during drilling, it may be necessary to pump accumulated groundwater prior to pier concrete placement. Alternatively, the use of bentonite slurry could be utilized to stabilize the drilled pier excavation. The foundation-drilling contractor should be prepared to case the excavation to prevent unanticipated caving and raveling of the pier shaft sidewall.

The drilling contractor should be prepared to clean out the bottom of the pier excavation if loose soil is observed or suspected, with or without the presence of slurry or groundwater. As a

minimum, we recommend that the drilling contractor have a cleanout bucket on site to remove loose soils and/or mud from the bottom of the pier. If groundwater is present and abundant within the pier hole, we recommend that the foundation concrete be tremied from the bottom of the hole to displace the water and minimize the risk of contaminating the concrete mix. We recommend that concrete be placed by tremie methods if more than 3 inches of water has accumulated in the excavation.

Spread Footings

Lightly loaded structures such as the equipment shelter can be supported on spread footings. Continuous-wall and isolated-spread footings should be at least 18 and 24 inches wide, respectively. For frost protection, the footings should be founded at least 24 inches below the lowest adjacent grades or deeper if required by local building code.

Footings should bear directly on medium stiff silt or structural fill placed in accordance with our recommendations. Footings bearing on medium stiff silt or structural fill should be sized for an allowable bearing capacity of 2,500 psf. We estimate post construction settlements will be less than one inch for the above recommended bearing capacity. We estimate that the differential settlement will be approximately half of the total settlement. Our recommended bearing capacity is based on limiting settlements and includes a factor of safety of 3 against bearing capacity failure.

Lateral loads acting on the foundations can be resisted by passive earth pressures on the sides of the foundation and by friction along the soil-concrete interface at the base of the foundation. We recommend using an allowable passive earth pressure of 350 pounds per cubic foot (pcf) for foundations confined by medium stiff silt or structural fill placed in accordance with our recommendations. The passive pressure within the upper two feet of embedment should be neglected. We recommend an allowable coefficient of friction of 0.32. In order to develop these capacities, concrete must be poured neat in excavations, the adjacent grade must be level, and the static ground water level must remain below the base of the footing throughout the year. These allowable lateral resistance values include a factor of safety of 1.5.

Floor Slabs

We recommend a 6-inch-thick layer of imported granular structural fill should be placed and compacted over the prepared subgrade. The granular fill should be placed in 6-inch-thick lifts and compacted to at least 95 percent of the maximum dry density, as determined by the American Society for Testing and Materials (ASTM) D 1557. A modulus of subgrade reaction value of 75 pounds per cubic inch (pci) may be used to design the floor slab.

Foundation Construction Considerations

A geotechnical engineer from Adapt (or their representative) should confirm suitable bearing conditions and evaluate the foundation subgrades. Observations should also confirm that loose or soft material, organics, unsuitable fill, or old topsoil zones were removed. Localized deepening of footing excavations may be required to penetrate any deleterious materials.

Because foundation stresses are transferred outward as well as downward into the bearing soils, all footing over-excavations should extend horizontally outward from the footing edge a distance equal to the one half the over-excavation depth for the structural backfill.

Access Driveway

We recommend that the subgrade for any access roadway be prepared in accordance with the Site Preparation section of this report. For planning purposes, we anticipate that 6 to 12-inches of clean sand and gravel subbase material and a minimum 3-inches of crushed rock surfacing will be required to create a stable gravel roadway surface at this site. We can provide additional subgrade stabilization or gravel road section recommendations based on observed field conditions at the time of construction.

CONSTRUCTION RECOMMENDATIONS

Site Preparation

Clearing and Stripping: After surface and near-surface water sources have been controlled, the construction areas should be cleared and stripped of organic matter and other deleterious materials. Silt fences, hay bales, buffer zones of natural growth, sedimentation ponds, and granular haul roads should be used as required to reduce sediment transport during construction to acceptable levels.

Where present, fill and existing topsoil should be stripped and removed from proposed development locations and for a five-foot-margin around such areas. Based on our explorations, we anticipate the depth of stripping to be less than a few inches, although greater stripping depths may be required if deleterious materials are encountered. Deleterious materials encountered during site preparation should be removed from the subgrade soils and hauled off site for disposal. Stripped material should be transported off site for disposal or stockpiled for use in landscaped areas. If stripping operations occur during wet weather, a generally greater stripping depth might be required in order to remove disturbed moisture-sensitive soils; therefore, stripping is best performed during a period of dry weather.

Excavations: We anticipate that site grading will be minimal. Where required, temporary soil cuts associated with site excavations or regrading activities should be adequately sloped back to prevent sloughing and collapse, unless a shoring box or other suitable excavation side wall bracing is provided. It is the responsibility of the contractor to ensure that excavations are properly sloped or braced for worker safety protection, in accordance with OSHA safety guidelines.

Final Grades: Final site grades should slope downward away from the structure at a minimum of two percent and runoff should be conveyed to a suitable drainage outlet. Additionally, the area surrounding the structure could be capped with concrete, asphalt or compacted, low-permeability soils to reduce surface water infiltration into the subsurface soils near the foundation.

Structural Fill

The following recommendations for structural fill are provided for design and construction purposes, if required.

Materials: Structural fill includes any fill materials placed under footings, pavements, or driveways and backfill over the embedded mat foundation. Typical materials used for structural fill include: clean, well-graded sand and gravel; clean sand; crushed rock; controlled-density fill (CDF); lean-mix concrete; and various soil mixtures of silt, sand, and gravel. Recycled concrete, asphalt, and glass derived from pulverized parent materials may also be used as structural fill. Use of the on-site soils as structural fill is also feasible.

Placement and Compaction: When used as structural fill, the on-site soils should be placed in lifts with a maximum thickness of 8 inches and compacted to not less than 92 percent of the material's maximum dry density, as determined by ASTM D-1557. The on-site soils should moisture-conditioned to a moisture content within 3 percent of the optimum moisture content (ASTM D-1557). If the on-site soils cannot be properly moisture-conditioned, we recommend using imported granular material for structural fill.

Imported granular structural fill should consist of angular pit or quarry run rock, crushed rock, or crushed gravel and sand that is fairly well graded between coarse and fine particle sizes. The fill should contain no organic matter or other deleterious materials, have a maximum particle size of one inch, and have less than 5 percent passing the U.S. No. 200 Sieve. In deep excavations, or where subgrade soils require stabilization, the particle size may be increased to four inches. The percentage of fines can be increased to 12 percent of the material passing the U.S. No. 200 Sieve if placed during dry weather and provided the fill material is moisture-conditioned, as necessary, for proper compaction. The material should be placed in lifts with a maximum uncompacted thickness of 12 inches and be compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D-1557. During the wet season or when wet subgrade conditions exist, the initial lift thickness should be increased to 24 inches and should be compacted by rolling with a smooth-drum, nonvibratory roller.

CDF and lean-mix concrete do not require special placement or compaction procedures. Regardless of location or material, all structural fill should be placed over firm, unyielding subgrade soils. If earthwork takes place during freezing conditions, we recommend that all exposed subgrades be allowed to thaw and be recompacted prior to placing subsequent lifts of structural fill.

CONSTRUCTION OBSERVATIONS

Satisfactory earthwork performance depends on the quality of construction. Sufficient monitoring of the contractor's activities is a key part ensuring that work is completed in accordance with the construction drawings and specifications. We recommend that a representative from Adapt observe that the subsurface conditions observed during our site investigation are consistent with

those encountered during construction, and that foundation subgrades are suitable for placement of structural fill, rebar, or concrete for the new structures.

Some jurisdictions require a final letter of geotechnical compliance before they will finalize a permit. If such a letter is required, a representative from Adapt MUST observe pier installation and/or foundation subgrades PRIOR to concrete being poured for the foundation. If Adapt does not perform this observation, we cannot provide a final letter of geotechnical compliance, and a permit will not be eligible for final sign-off. ***It is the owner's responsibility to ensure that Adapt be notified in a timely manner (i.e., at least 48 hours prior to the required site observation) of the need for our services on site during construction.***

CLOSURE

We have prepared this report for use by the owner/developer and other members of the design and construction team for the proposed Prune Hill tower site. The opinions and recommendations contained within this report are not intended to be, nor should they be, construed as a warranty of subsurface conditions, but are forwarded to assist in the planning and design process.

We have made observations based on our explorations that indicate the soil conditions at only those specific locations and only to the depths penetrated. These observations do not necessarily reflect soil types, strata thickness, or water level variations that may exist in other locations. If subsurface conditions vary from those encountered in our site exploration, Adapt should be alerted to the change in conditions so that we may provide additional geotechnical recommendations, if necessary. The future performance and integrity of the improvements will depend largely on proper initial site preparation, drainage, and construction procedures. Observation by experienced geotechnical personnel should be considered an integral part of the construction process.

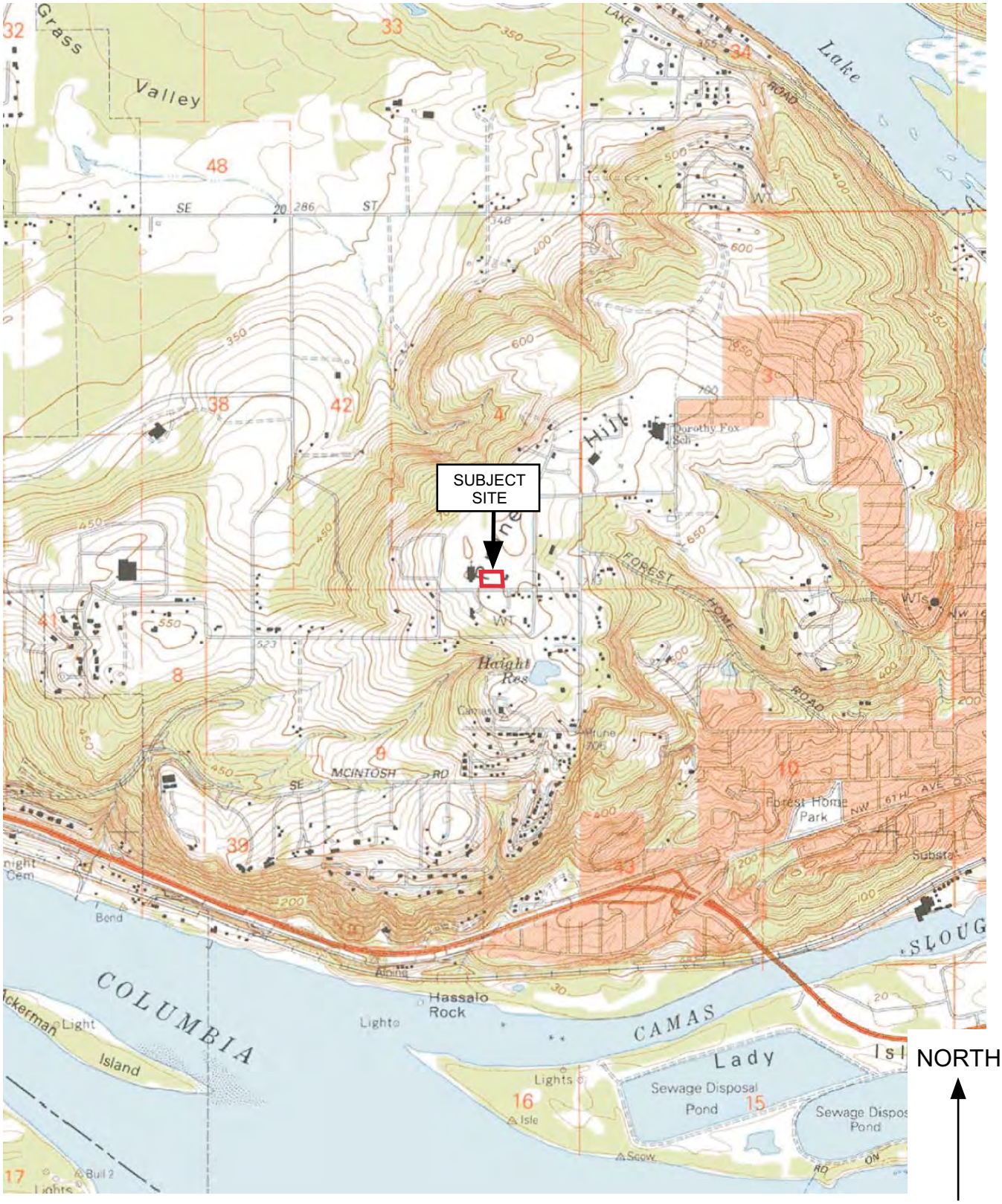
The conclusions and recommendations contained in this report are based on our understanding of the currently proposed project, as derived from written and verbal information supplied to us by Cascadia PM and Pi. When the design has been finalized, we recommend that the design and specifications our firm review it to see that our recommendations have been interpreted and implemented as intended. If design changes are made, we request that we be retained to review our conclusions and recommendations and to provide a written modification or verification.

The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in our report for consideration in design.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

ATTACHMENT A

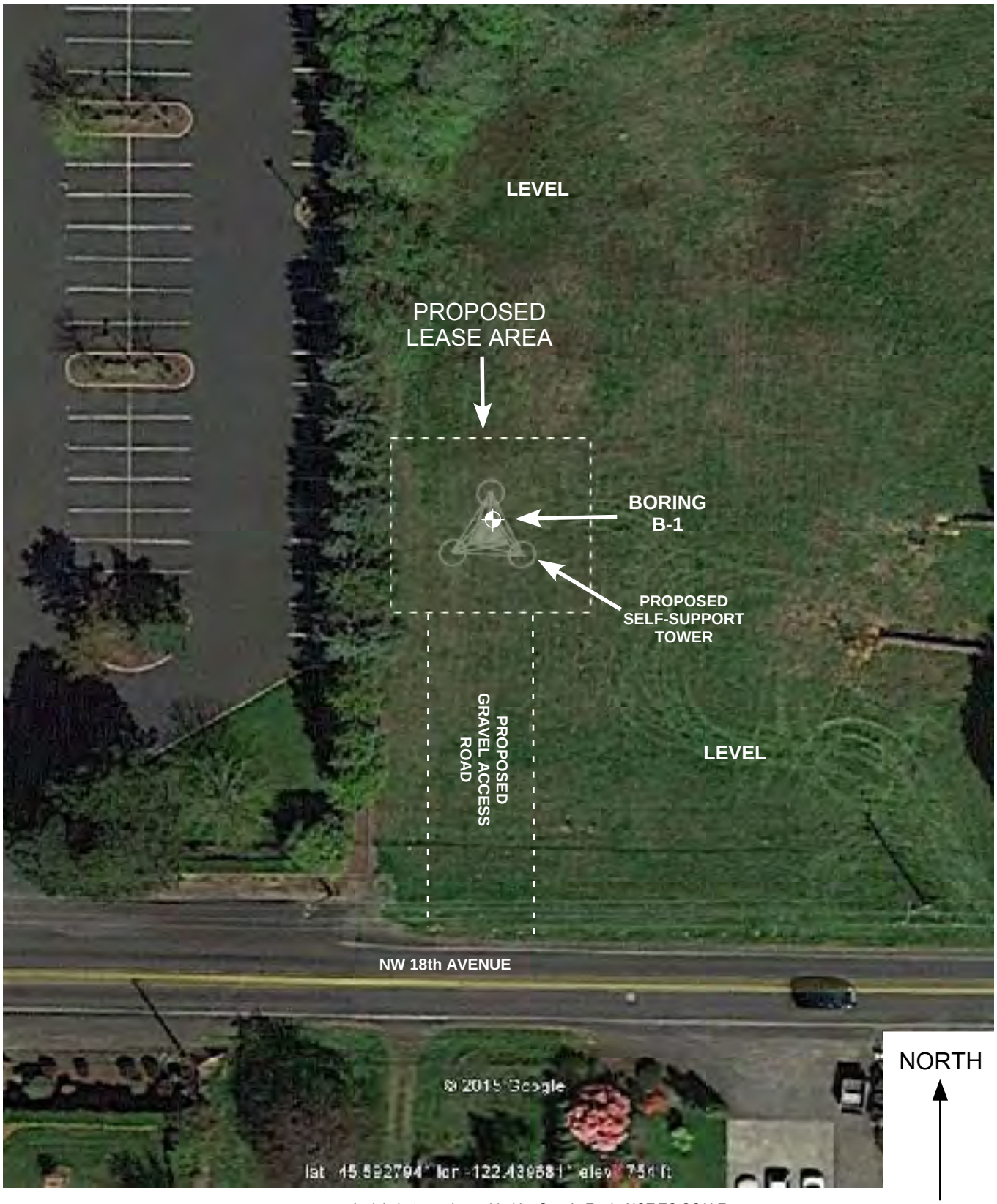
FIGURES



Base Map Courtesy of U.S.G.S. Topographic Map "Camas, WA-OR" (1993) Scale 1:24,000

Adapt Engineering
10725 SW Barbur Blvd., Suite 200
Portland, Oregon 97219
Tel: (503) 892-2346 Fax: (503) 892-2348

FIGURE - 1 Location Map
Location : Prune Hill
2829 NW 18th Avenue
Camas, Washington 98607
Client : Parallel Infrastructure c/o Cascadia PM
Date : 6-29-15 **Job # :** WA15-19957-GEO



Aerial photograph provided by Google Earth, NOT TO SCALE

Adapt Engineering
10725 SW Barbur Blvd., Suite 200
Portland, Oregon 97219
Tel: (503) 892-2346 Fax: (503) 892-2348

FIGURE - 2 Site & Exploration Plan

Location : Prune Hill
2829 NW 18th Avenue
Camas, Washington 98607

Client : Parallel Infrastructure c/o Cascadia PM

Date : 6-29-15 **Job # :** WA15-19957-GEO

ATTACHMENT B

SUBSURFACE EXPLORATION LOG

BORING LOG

Adapt Engineering
10725 SW Barbur Blvd., Suite 200
Portland, Oregon 97219
TEL:503.892.2346 FAX: 503.892.2348

PROJECT : Prune Hill
2829 NW 18th Avenue
Camas, Washington 98607

Job Number: WA15-19957-GEO

Boring No.: **B-1**

Elevation Reference :
Ground Surface Elevation :
Well Completed : N.A.
Casing Elevation : N.A.

DEPTH (feet)		SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNT	POCKET PEN	TORVANE	GROUND WATER	OBSERVATIONS	TESTING
0	Medium stiff, brown, moist, SILT (ML), fine roots		1	2 3 4	1.0			Slightly plastic from surface to 7.5'	
	Becomes stiff, brown and gray, below 2.5'		2	2 7 8	3.0				
5	SILT grades to light gray clay (CL)		3	2 4 5	1.5	2.6			
	Very stiff, brown-oxidized, moist, CLAY (CL), SILT in tip		4	4 7 11	4.5	4.2		Highly plastic	
10	Very stiff, red-oxidized, moist, silty CLAY (CL) and clayey SILT (ML), some sand, black inclusions		5	5 8 11	3.5	3.6		Slightly plastic	
15	Very stiff, brown-red-oxidized, moist, SILT (ML), mottled		6	4 10 8	1.5			Highly plastic	
20	Becomes stiff, sandy SILT with trace gravel below 20'		7	6 4 8	0.5			Decrease in drilling speed at 18', gravel, temporary	
25			8	4 11 50/4	0.75				

LEGEND

- 2-inch O.D. Split-Spoon Sample
- 1" Geoprobe
- Sample not Recovered
- DATE ▼ Static Water Level at Drilling
- DATE ▽ Static Water Level
- Perched Groundwater
- Grab Sample
- WTPH-D Ext. 8010 — Type of Analytical Testing Used
- NR — No Recovery
- ATD — At Time of Drilling

Drilling Start Date: 6/15/15
Drilling Completion Date: 6/15/15
Logged By: RN

BORING LOG

Adapt Engineering
10725 SW Barbur Blvd., Suite 200
Portland, Oregon 97219
TEL:503.892.2346 FAX: 503.892.2348

PROJECT : Prune Hill
2829 NW 18th Avenue
Camas, Washington 98607

Job Number: WA15-19957-GEO

Boring No.: **B-1**

Elevation Reference : N.A.
Ground Surface Elevation : N.A.
Well Completed :
Casing Elevation :

DEPTH (feet)		SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNT	POCKET PEN	TORVANE	GROUND WATER	OBSERVATIONS	TESTING
30	Very dense, brown, moist, silty sandy GRAVEL (GP)		9	16 26 50/1					
35	Dense, brown-yellow-gray, moist, silty fine SAND and GRAVEL (GW)		10	21 35 15					
40	Very little sample recovery, similar drilling conditions observed		11	50/2				Also used 3" spoon with 50/1 blow count	
45	Very dense, brown, moist, silty GRAVEL (GM), some fine sand		12	13 21 31					
	Boring terminated at 46.5' bgs. No groundwater, seeps or seams encountered								
50									
55									

LEGEND

- 2-inch O.D. Split-Spoon Sample
- 1" Geoprobe
- Sample not Recovered
- Static Water Level at Drilling (DATE)
- Static Water Level (DATE)
- Perched Groundwater
- Grab Sample
- WTPH-D Ext. 8010 — Type of Analytical Testing Used
- NR — No Recovery
- ATD — At Time of Drilling

Drilling Start Date: 6/15/15
Drilling Completion Date: 6/15/15
Logged By: RN

Exhibit F
CUP15-01

Adapt Engineering
101725 SW Barbur Blvd., Ste. 200
Portland, Oregon 97219

Tel (503) 892-2346
Fax (503) 892-2348
www.adaptengr.com

Critical Areas Report

Prune Hill
2829 Northwest 18th Avenue
Camas, WA 98607

Applicant:
Parallel Infrastructures
c/o Cascadia PM
5501 NE 109th Court, Suite A-2
Vancouver, WA 98662

Prepared by:

Adapt Engineering
10725 SW Barbur Blvd., Ste. 200
Portland, Oregon 97219

October 5, 2015

Adapt Project No. WA15-19957-NEPA

TABLE OF CONTENTS

A. Introduction

A.1 Site Description

The proposed project area is located at 2829 Northwest 18th Avenue, Camas, Clark County, Washington on parcel number 124979000 (Section 4, Township 1N, Range 3E). The property is privately owned by Jean Nagel. The rectangular shaped host parcel is 5 acres (217,800 ft²) in size and is developed with one 2,000 ft² residential home, which was constructed in 1965. The house is situated near the center of the western half of the property. The remainder of the property is undeveloped and consists mostly of pasture grasses that are mowed regularly during the growing season. Various trees and shrubs are concentrated near the house and along the western property boundary. The property is bordered by NW 18th Ave to the south, NW Cascade Street to the east, a residential development to the north, and the Church of Jesus Christ Latter Day Saints to the west. A utility line runs east-west along the southern boundary of the parcel. (Appendix A—Site Maps)

A.2 Project Description

Parallel Infrastructure (PI) proposes to construct a 175' monopole tower on the southwest quadrant of the host parcel. The proposed tower and associated equipment will be located within a 40-foot x 40-foot lease area. An approximately 50-foot long by 12-foot wide gravel access road will be installed to connect the lease area to NW 18th Ave. The gravel access road and utility corridor will be within the same 20' easement. The utilities (power and telco) will be routed along the access road and then turn west at a 90° angle to connect to the nearest utility pole on NW 18th Ave. A fiber optic line will also follow the access easement, and then cross over to the southern side of NW 18th Ave.; from there it will continue easterly to the nearest fiber optic hookup. The total length of the fiber optic trench route will be approximately 600' long.

A 1,384-ft² portion of the 1,600-ft² proposed lease area is proposed to be located within a delineated wetland buffer. To avoid further impacts to the buffer, the proposed lease area was decreased in size from 2,500-ft² (50'x50') to 1,600-ft² (40'x40') and also moved further to the southeast. The host property owner has agreed to waive the tower-height setback (and reduce the setback from 175-ft to 103-ft) in order to allow Parallel Infrastructure to locate the compound in a place that minimizes its impact to the wetland buffer. Also, Parallel Infrastructure redesigned the interior layout of its leased compound by locating the monopole in the far northwest corner of the compound and thus further minimizing the impact of the compound area while still maintaining a tower height setback to the south. The proposed height of the tower is necessary due to radiofrequency requirements for transmitting radio waves. There will be no direct impacts to the delineated wetland itself.

Parallel Infrastructure considered other options for the proposed project, including moving the entire project to the eastern portion of the parcel, at a location that was not in a wetland or buffer. This option was not approved by the property owner, whom intends to subdivide that portion of the property at a later date. PI also considered locating the project on another parcel, but was unable to find willing landowners and properties that were large enough to comply with tower setback requirements.

Parallel Infrastructure proposes to mitigate project impacts to the buffer zone by performing buffer averaging.

(Appendix B—Construction Drawings, Appendix C—Site Photos)

A.3 Permits Requested

Parallel Infrastructure, is applying for a Conditional Use Permit from the City of Camas. The parcel is zoned Residential-12,000 (R-12), therefore, a Conditional Use permit is required for the siting of a telecommunications tower. During the Pre-Application meeting that occurred on April 16, 2015, it was noted that a Critical Areas report would be required. This Critical Areas report is to address the location of a portion of the tower lease area within a wetland buffer, as required by Title 16 of the City of Camas Municipal Code.

Additionally, Parallel Infrastructure is applying for a wetland permit to construct the proposed tower and lease area partly within a wetland buffer zone. The proposed project is not expected to degrade the ecological functions of the nearby wetland, which is rated a Category 3 wetland. Per the Washington State Department of Ecology "Wetland Rating System for Western Washington", Category 3 wetlands have a "moderate level of functions" and are typically disturbed, have lower diversity and are "isolated from other natural resources". The subject wetland is a gradual depression on an otherwise mostly flat parcel. The off-site portion of the subject wetland has been previously modified to serve as a storm-water treatment area, and is impounded by the housing development to the north of the subject property. The buffer zone adjacent to this wetland is degraded and regularly mowed during the growing season, precluding shrubs and trees from inhabiting that area. The vegetation in the buffer zone consists of mostly pasture grasses. The proposed telecommunications tower and lease area will be located on the outer edge of the wetland buffer, approximately 50' from a major roadway (NW 18th Ave).

The proposed telecommunications project will comply with all federal, state and local regulations regarding storm-water management, sedimentation control, pollution control, floodplain restrictions and wastewater disposal.

B. Critical Areas

B.1 Wetland Delineation Results

Cascade Environmental Group (Cascade) was contracted to complete a wetland delineation of the host parcel. Professional Wetland Scientists from Cascade performed the field survey on March 23, 2015 and provided a completed delineation report on April 08, 2015. Cascade followed the methodology prescribed in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (Corps 2010) and the *1997 Corps of Engineers Wetland Delineation*

Manual (Environmental Laboratory 1987). It was determined that there are two jurisdictional wetlands on the parcel.

B.2 Critical Area Characterization

Wetland 1 begins at the outfall of a culvert near the host parcel's driveway at the center of the southern boundary. The wetland follows a drainage ditch across the center of the site, into an off-site storm water drain just outside the northeast corner of the parcel. This wetland is approximately 0.26 acres in size and is classified as a temporarily flooded palustrine emergent (PEMA) wetland using the Cowardin classification system. Surface water and a high water table were observed during the field investigation. The soils at this wetland met two hydric soil indicator criteria: redox dark surface (F6) and depleted below dark surface (A11). The vegetation for this wetland consisted primarily of tall fescue (*Festuca arundinacea*), creeping bentgrass (*Agrostis stolonifera*), and reed canary grass (*Phalaris arundinacea*), all of which are facultative and facultative wet species. Wetland 1 is rated as a Category IV wetland, using the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Hruby 2014). Category IV wetlands are afforded a 50-ft buffer.

Wetland 2 is located on the northwest corner of the parcel and extends off-site into what appears to be a storm water treatment pond. The on-site portion of the wetland is approximately 0.72 acres in size and is classified as a temporarily flooded palustrine emergent (PEMA) wetland. Surface water and a high water table were observed during the field investigation. The soil at this site was classified as a histosol (A1) hydric soil. The vegetation at the site was dominated by tall fescue (*Festuca arundinacea*) and reed canary grass (*Phalaris arundinacea*), interspersed with creeping bentgrass (*Agrostis stolonifera*), bird's foot trefoil (*Lotus corniculatus*), spreading rush (*Juncus patens*), weedy forbs, and some scrub-shrub species (*Salix* spp. and *Alnus rubra*) along the western wetland boundary, all of which are facultative and facultative wet species. This wetland is rated a Category III wetland using the Washington State Rating System. Category III wetlands are allotted an 80-ft buffer. See Wetland Delineation Report for detailed information and data sheets. (Appendix D—Wetland Delineation)

B.3 Project Impacts to Critical Areas

The proposed project will have no direct impact to either wetland on the property. Federal or state wetland fill permits are not required. Approximately 1384 ft² of the 1600 ft² lease area will be within the 80-ft wide buffer zone of wetland 2. The total impacts to the wetland buffer will be 1384 ft². The impacts will consist of a concrete foundation for the tower itself, a concrete pad for associated equipment and gravel added within the fenced lease area.

B.4 Alternatives Considered but Eliminated from Further Analysis

To ensure reliable analog or digital cellular communications in a given region, certain parameters including topographic or building obstructions, terrain elevations, distance of

signal relay antennas, and zoning requirements must be met to define an appropriate site selection search ring. Final candidate sites are then selected in the search area based upon accessibility, construction feasibility, available leasing opportunities, and signal coverage (i.e. Radio Frequency requirements [RF]), zoning, and minimizing environmental issues).

Parallel Infrastructure, consistent with the FCC's requirements for environmental review, has considered and evaluated a number of alternative sites for locating the proposed tower and has concluded that all of the sites considered are either unavailable for Parallel Infrastructure's use, are unacceptable to the community, or are unsatisfactory from a technical radio frequency perspective for the coverage needs of the communications system supported by the antennas.

Parallel Infrastructure inquired with the City of Camas about constructing a new tower on the city-owned property located at 2822 NW 18th Ave in Camas, Washington. The City of Camas did not agree to a lease with Parallel Infrastructure. There is an existing lattice tower at that location but according to the owner of the tower, it is not structurally capable of supporting additional antennas and equipment.

Locating the tower on the southeastern quadrant of the host parcel at 2829 NW 18th Ave was also considered. However, the property owner intends to sub-divide that portion of the parcel into smaller lots for residential development, and will not allow the Parallel Infrastructure lease area to be located there. The current proposed location is based on the property owner's location requirements and the setback requirements.

All other locations within the search area are small residential lots that would not meet the setback requirements for a conditional use permit. (Appendix E—Letter from Property Owner)

B.5 Avoidance Measures

The proposed lease area was moved further southeast to avoid direct impacts to the wetlands and reduce the impacts to the buffer zone onsite. All alternative actions and locations were considered. The tower and lease area location were relocated further southeast of the original location to lessen the impacts to the wetland buffer zone. The property owner has agreed to provide a setback waiver from the residential building on the property.

C. Proposed Mitigation: Buffer Averaging

Parallel Infrastructure is proposing onsite buffer averaging and a conservation covenant of the buffer associated with Wetland 2, which would provide long-term protection to that buffer zone.

Specifically, to compensate for the buffer width reduction, the proposed project's lease area would decrease the buffer by 1,384 ft² but increase the buffer width by 1,384 ft² in an adjacent area of the same buffer. The area that is subject to the buffer averaging

would be permanently demarcated by fencing or logs, with appropriate signage declaring the protected status of the buffer zone. Further protection, would be guaranteed by a conservation covenant of the wetland buffer zone.

The criteria listed in the City of Camas' Wetland Ordinance regarding buffer averaging [CMC 16.53.050(C)(2)] would be met as follows:

a.)After buffer averaging, the total square footage of the wetland buffer would remain equal to the square footage of buffer prior to averaging.

b.) The proposed new buffer area would be located on the southwestern portion of the parcel, near NW 18th Ave, which can be considered an area more sensitive to adjacent land use, given the close proximity to the road and potential for increased contaminants and storm water runoff.

c.) The buffer area shall not be reduced less than seventy-five percent (60-ft) in width.

d.) The proposed mitigation is unlikely to result in a significant change to Wetland 2's rating as a Category III wetland because the wetland scored the lowest points available for this category (16 points on a total score of 16-19 points). Wetland 2 scored low on water quality functions and hydrological functions. It is unlikely that buffer averaging alone would result in a significant change to water quality or hydrological functions on the site.

D. Conclusions and Recommendations

Parallel Infrastructure has considered all appropriate candidate sites for the location of the proposed telecommunications tower. It was concluded that the parcel located at 2829 NW 18th Avenue, Camas, Washington, is the most viable location for the proposed tower. Upon further investigation, it was determined that wetlands are present on the property; therefore a delineation was completed by a professional wetland scientist to determine the extent of the wetland and associated buffer boundaries. The proposed tower location is partially located within a buffer and will require mitigation of associated impacts. Parallel Infrastructure proposes buffer averaging as permitted according to the Camas Municipal Code.

While the installation of this telecommunications facility poses no major risk to the local wildlife or critical habitat areas, it is important that the construction companies and vendors follow standard best management practices during all construction activities. This will allow for the continued growth of the infrastructure in the City of Camas, while also avoiding unintended negative consequences to local biodiversity.

Parallel Infrastructure has made efforts to minimize the proposed project's impacts to the on-site wetlands and wetland buffers and proposes developing a small portion of the buffer zone, as specifically authorized by the City's wetland ordinance. Parallel Infrastructure respectfully requests the City's approval of a wetland permit for this project.

E. Limitations

This report documents the evaluation, best professional judgment, and conclusions of Adapt Engineering. It should not be solely relied upon to satisfy federal, state, or local permitting requirements.

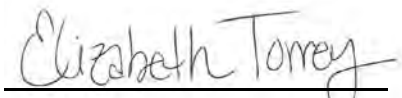
This report has been prepared for the exclusive use of Parallel Infrastructure and their agents for specific application to the project site. Use or reliance upon this report by a third party is at their own risk. Adapt does not make any representation or warranty, express or implied, to other such parties as to the accuracy or completeness of this report or the suitability of its use by other parties for any purpose whatsoever, known or unknown, to Adapt.

Adapt appreciates the opportunity to be of service to you on this project. Should you have any questions concerning this report, or if we can assist you in any way, please contact us at (503) 892-2346.

Respectfully Submitted,

Adapt Engineering

Beth Belanger, BS/BA
Biologist



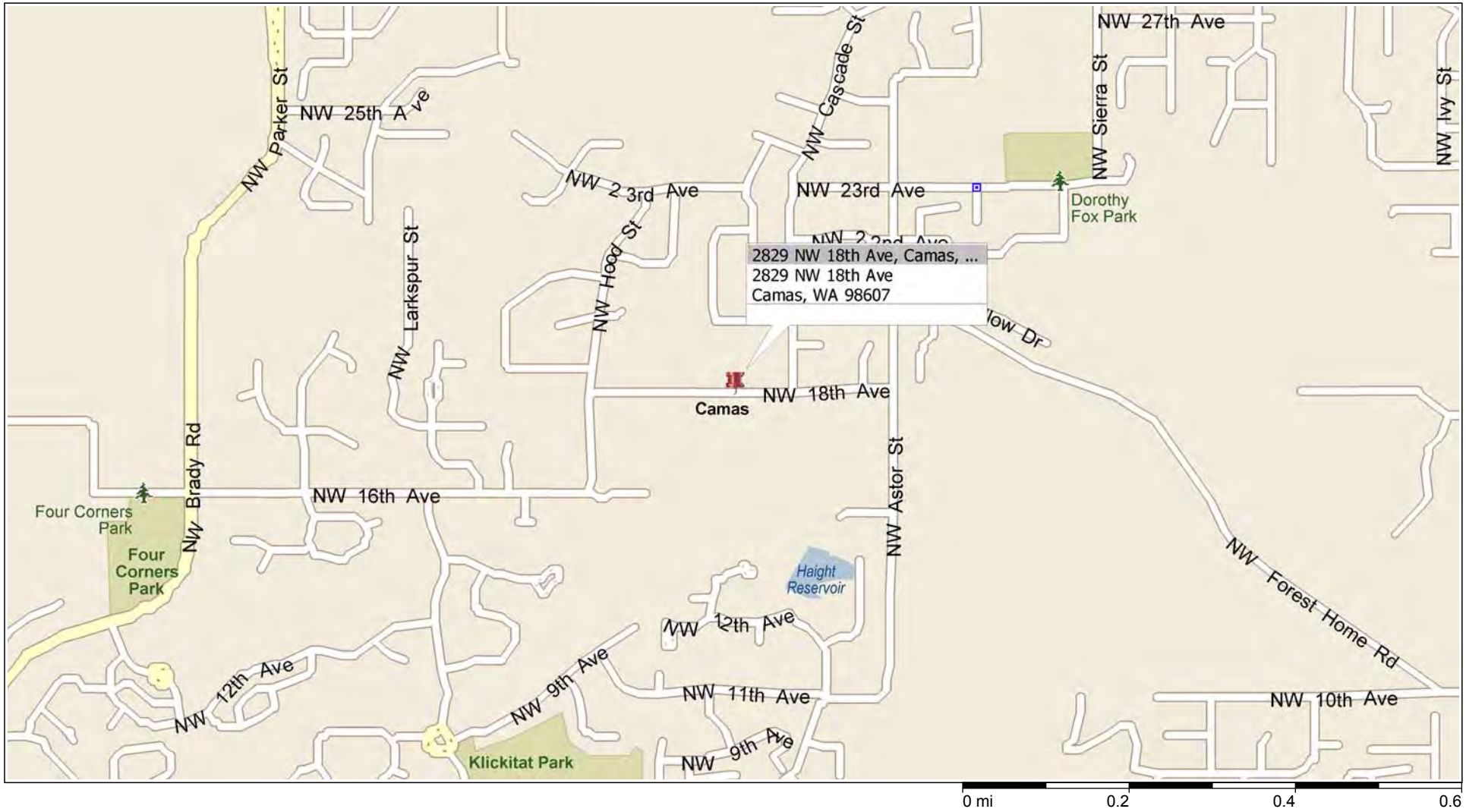
Elizabeth Torrey, M.W.S.
Wildlife and Fisheries Biologist

APPENDIX A

MAPS

Vancouver, Washington, United States

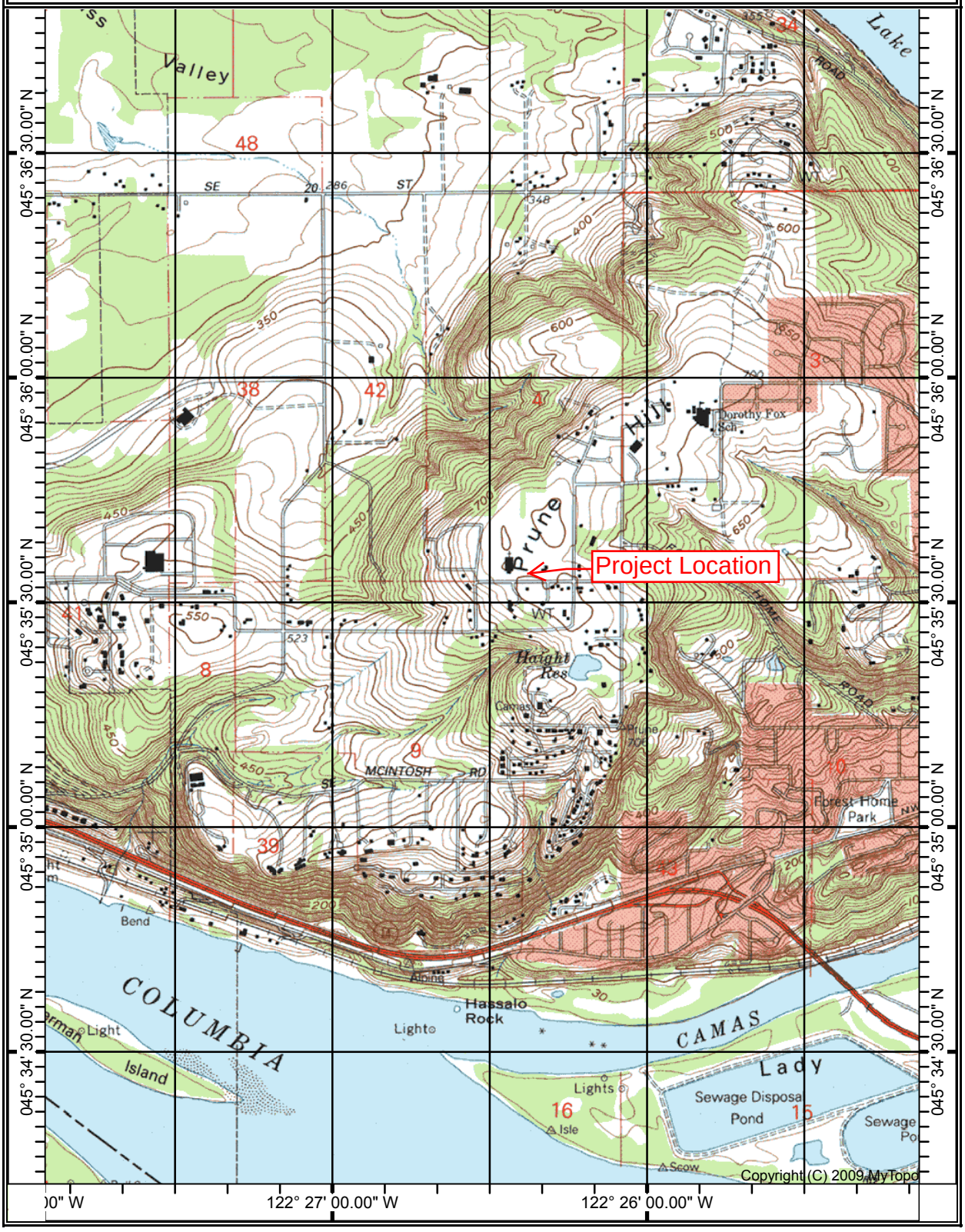
Washington, United States, North America



Map Name: CAMAS
Print Date: 06/17/15

Scale: 1 inch = 2,000 ft.
Map Center: 045° 35' 33.49" N 1

Horizontal Datum: NAD27



SCALE 1:24000

0 1000 2000 3000 4000 5000 6000 7000

FEET

APPENDIX B

CONSTRUCTION DRAWINGS

PRUNE HILL
ZONING DRAWINGS

2829 NW 18TH AVE
CAMAS, WA 98607

PROJECT SUMMARY

THIS PROJECT INCLUDES THE FOLLOWING SCOPE OF WORK:

1. PROPOSED INSTALLATION OF WIRELESS TELECOMMUNICATIONS FACILITY ON A PARCEL OF LAND.

2. PROPOSED FREEWIRE OUTDOOR RF EQUIPMENT TO BE INSTALLED ON 7'-0" X 7'-0" CONCRETE PAD WITHIN A 40'-0" X 40'-0" PARALLEL INFRASTRUCTURE FENCED LEASE AREA.

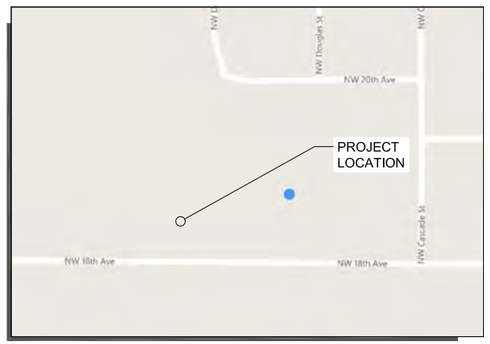
3. PROPOSED INSTALLATION OF (3) PANEL ANTENNAS AND (7) MICROWAVE ANTENNAS ON A NEW 175'-0" MONOPOLE.

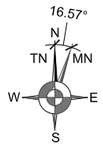
4. PROPOSED INSTALLATION OF 800A ELECTRICAL AND FIBER SERVICE FOR FREEWIRE WIRELESS EQUIPMENT.

SITE INFORMATION

SITE ADDRESS:	2829 NW 18TH AVE CAMAS, WA 98607
LATITUDE:	45° 35' 33.4" N (45.592611)
LONGITUDE:	122° 26' 22.9" W (122.439694)
SOURCE:	1A
DATUM:	NAD 83
JURISDICTION:	CLARK COUNTY
TAX ID NUMBER:	124979-000
ZONING CLASSIFICATION:	R-12
GROUND ELEVATION:	749.2' AMSL
TOP OF (N) MONOPOLE:	175' AGL
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B

PROJECT VICINITY & AREA MAPS





DRIVING DIRECTIONS

FROM SEATAC INTERNATIONAL AIRPORT:

1. TAKE RAMP RIGHT FOR I-5 S (143.5 MI)
2. AT EXIT 7, TAKE RAMP RIGHT FOR I-205 SOUTH TOWARD SALEM (10.1 MI)
3. AT EXIT 27, TAKE RAMP RIGHT FOR WA-14 EAST TOWARD CAMAS (4.3 MI)
4. AT EXIT 10, TAKE RAMP RIGHT AND FOLLOW SIGNS FOR SE 192ND AVE (0.2 MI)
5. TURN LEFT ONTO SE 192ND AVE (0.2 MI)
6. TURN RIGHT ONTO SE BRADY RD (0.8 MI)
7. ROAD NAME CHANGES TO NW BRADY RD (0.5 MI)
8. TURN RIGHT ONTO NW 16TH AVE (0.5 MI)
9. TURN LEFT ONTO NW HOOD ST (0.1 MI)
10. TURN RIGHT ONTO NW 18TH AVE (0.2 MI)
11. ARRIVE AT 2829 NW 18TH AVE, CAMAS, WA 98607

ESTIMATED TIME: 2 HOUR AND 40 MINUTES
ESTIMATED DISTANCE: 162.6 MILES

LEGAL DESCRIPTION

SEE SV-1 SHEET.

UTILITY COMPANIES

POWER: CLARK PUBLIC UTILITIES
MIKE BROWN
PH: 360.992.8836

TELCO/FIBER: TBD

GOVERNING CODES

GOVERNING CODES

IBC-2012, INTERNATIONAL BUILDING CODE W/ LOCAL AMENDMENTS

NEC-2008, NATIONAL ELECTRICAL CODE

A.D.A. COMPLIANCE
INSTALLATION IS UNMANNED AND NOT FOR HUMAN HABITATION.
HANDICAP ACCESS IS NOT REQUIRED PER A.D.A.

PROJECT CONTACTS

APPLICANT
PARALLEL INFRASTRUCTURE
4601 TOUCHTON ROAD EAST, BLDG. 300
SUITE 3200, JACKSONVILLE, FL 32246
PH: 904.450.4830

CO-APPLICANT
FREEWIRE
5465 SW WESTERN AVE, SUITE E
BEAVERTON, OR 97005

CO-APPLICANT
T-MOBILE
19807 NORTH CREEK PKWY N
BOTHELL, WA 98011

PROPERTY OWNER
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1020 SE COFFEY RD
WASHOUGAL, WA 98671

PRINCIPAL ENGINEER,
NETWORK CONSTRUCTION
RYAN SAUVAGEAU
PH: 971.678.0228
blackstorm.ryan@gmail.com

ZONING AND PERMITTING CONSULTANT
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5501 NE 109TH CT, STE A-2
VANCOUVER, WA. 98662
NOAH GRODZIN
PH:360.567.3794

SITE ACQUISITION CONSULTANT
CASCADIA PM
5501 NE 109TH COURT, SUITE A-2
VANCOUVER, WA 98662
JEFF COLANTINO
PH: 360.450.8697

SURVEYOR
AMBIT CONSULTING
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STRUCTURAL ENGINEER
VECTOR STRUCTURAL ENGINEERS
9138 S STATE ST., SUITE 101
SANDY, UT 84070
ROGER T. ALWORTH, S.E.
PH: 801.990.1775

DRAWING INDEX

APPROVAL LIST

TITLE	SIGNATURE	DATE
PROPERTY OWNER		
VERIZON REPRESENTATIVE		
PROJECT MANAGER		
SITE ACQUISITION		
ZONING		
CONST. MANAGER		
RF ENGINEER		
AAV MANAGER		

Parallel INFRASTRUCTURE

CASCADIA PM
Precision Program Management

VECTOR engineers

CPM PROJECT NO.: 8842

PRELIMINARY

NO.	DATE	D/C	DESCRIPTION
1	07-01-15	JG/JG	CLIENT COMMENT
2	07-07-15	JG/JG	CPM COMMENT
3	08-06-15	GS/GS	CLIENT COMMENT

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION
1	08-25-15	JC/GS	LU COMMENTS
2	09-16-15	JC/GS	LU COMMENTS
3	10-09-15	JC/GS	LU COMMENTS

SITE NAME
PRUNE HILL

TAX ID NO.:
124979000

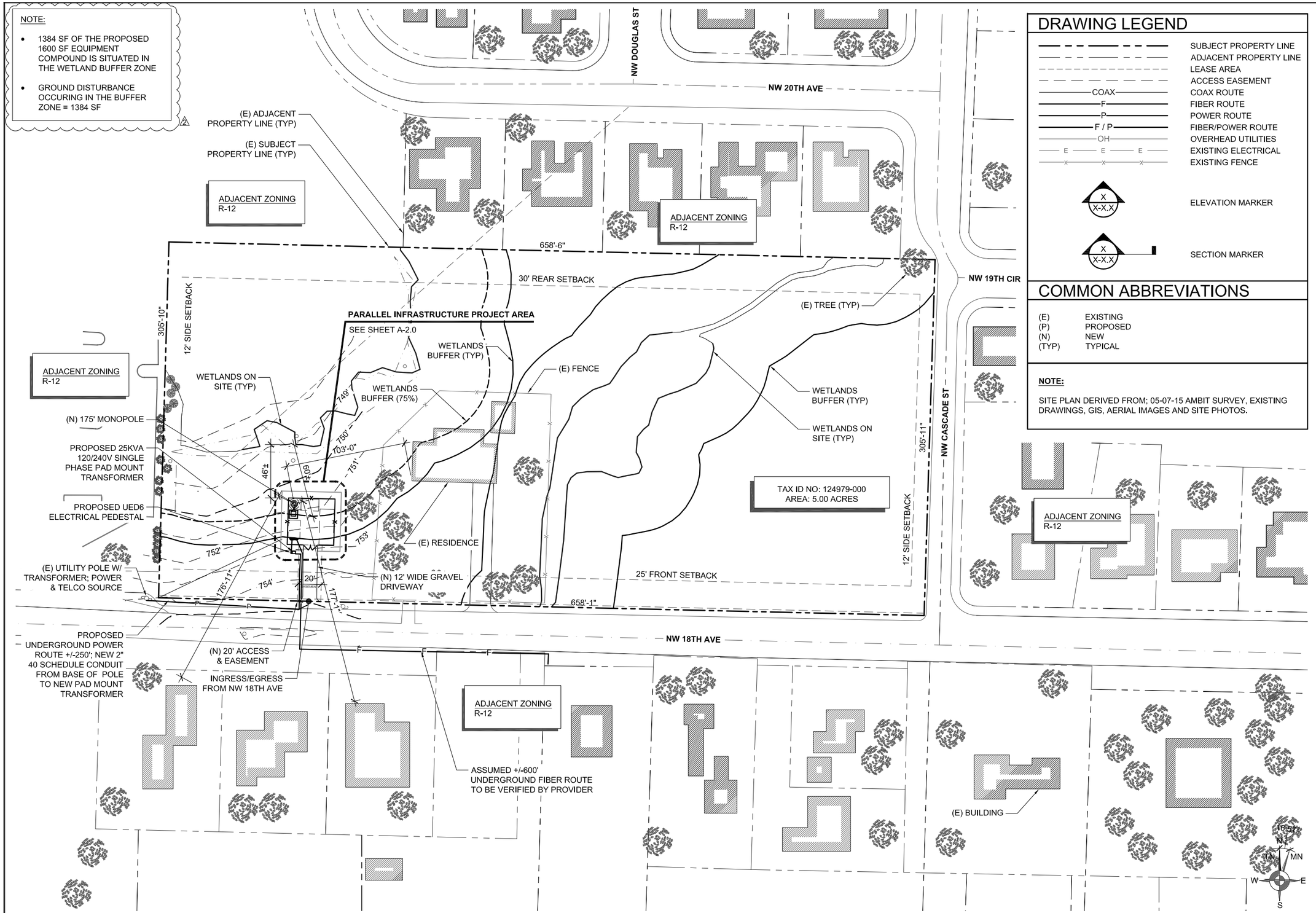
SITE ADDRESS
2829 NW 18TH AVE
CAMAS, WA 98607

SHEET TITLE
TITLE SHEET

SHEET NO.
T-1.0

NOTE:

- 1384 SF OF THE PROPOSED 1600 SF EQUIPMENT COMPOUND IS SITUATED IN THE WETLAND BUFFER ZONE
- GROUND DISTURBANCE OCCURING IN THE BUFFER ZONE = 1384 SF



DRAWING LEGEND

- SUBJECT PROPERTY LINE
- ADJACENT PROPERTY LINE
- LEASE AREA
- ACCESS EASEMENT
- COAX — COAX ROUTE
- F — FIBER ROUTE
- P — POWER ROUTE
- F / P — FIBER/POWER ROUTE
- OH — OVERHEAD UTILITIES
- E — E — E — EXISTING ELECTRICAL
- X — X — X — EXISTING FENCE
- X / X-X.X — ELEVATION MARKER
- X / X-X.X — SECTION MARKER

COMMON ABBREVIATIONS

(E)	EXISTING
(P)	PROPOSED
(N)	NEW
(TYP)	TYPICAL

NOTE:

SITE PLAN DERIVED FROM; 05-07-15 AMBIT SURVEY, EXISTING DRAWINGS, GIS, AERIAL IMAGES AND SITE PHOTOS.

Parallel INFRASTRUCTURE

CASCADIA PM
Precision Program Management

VECTOR ENGINEERS

CPM PROJECT NO.: 8842

PRELIMINARY

NO.	DATE	D/C	DESCRIPTION
1	07-01-15	JG/JG	CLIENT COMMENT
2	07-07-15	JG/JG	CPM COMMENT
3	08-06-15	GS/GS	CLIENT COMMENT

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION
1	08-25-15	JC/GS	LU COMMENTS
2	09-16-15	JC/GS	LU COMMENTS
3	10-09-15	JC/GS	LU COMMENTS

SITE NAME
PRUNE HILL

TAX ID NO.:
124979000

SITE ADDRESS
2829 NW 18TH AVE
CAMAS, WA 98607

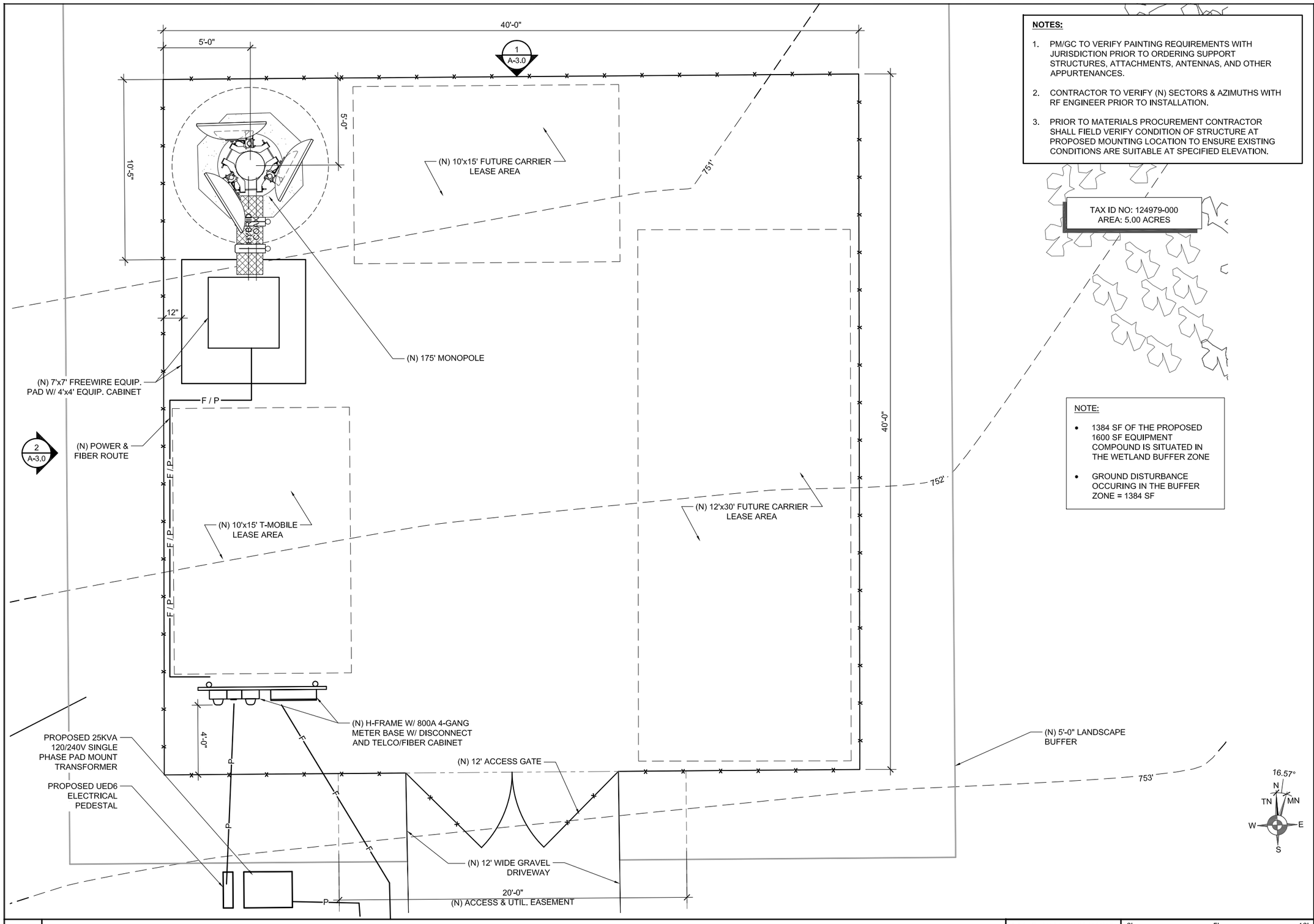
SHEET TITLE
OVERALL SITE PLAN

SHEET NO.
A-1.0

1 OVERALL SITE PLAN

SCALE: 1" = 80'-0" (11X17)
SCALE: 1" = 40'-0" (22X34)

0' 40' 80' 160'



NOTES:

1. PM/GC TO VERIFY PAINTING REQUIREMENTS WITH JURISDICTION PRIOR TO ORDERING SUPPORT STRUCTURES, ATTACHMENTS, ANTENNAS, AND OTHER APPURTENANCES.
2. CONTRACTOR TO VERIFY (N) SECTORS & AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.
3. PRIOR TO MATERIALS PROCUREMENT CONTRACTOR SHALL FIELD VERIFY CONDITION OF STRUCTURE AT PROPOSED MOUNTING LOCATION TO ENSURE EXISTING CONDITIONS ARE SUITABLE AT SPECIFIED ELEVATION.

TAX ID NO: 124979-000
AREA: 5.00 ACRES

NOTE:

- 1384 SF OF THE PROPOSED 1600 SF EQUIPMENT COMPOUND IS SITUATED IN THE WETLAND BUFFER ZONE
- GROUND DISTURBANCE OCCURING IN THE BUFFER ZONE = 1384 SF

Parallel INFRASTRUCTURE

CASCADIA PM
Precision Program Management

VECTOR ENGINEERS

CPM PROJECT NO.: 8842

PRELIMINARY

NO.	DATE	D/C	DESCRIPTION
1	07-01-15	JG/JG	CLIENT COMMENT
2	07-07-15	JG/JG	CPM COMMENT
3	08-06-15	GS/GS	CLIENT COMMENT

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION
1	08-25-15	JC/GS	LU COMMENTS
2	09-16-15	JC/GS	LU COMMENTS
3	10-09-15	JC/GS	LU COMMENTS

SITE NAME
PRUNE HILL

TAX ID NO.:
124979000

SITE ADDRESS
2829 NW 18TH AVE
CAMAS, WA 98607

SHEET TITLE
ENLARGED SITE PLAN

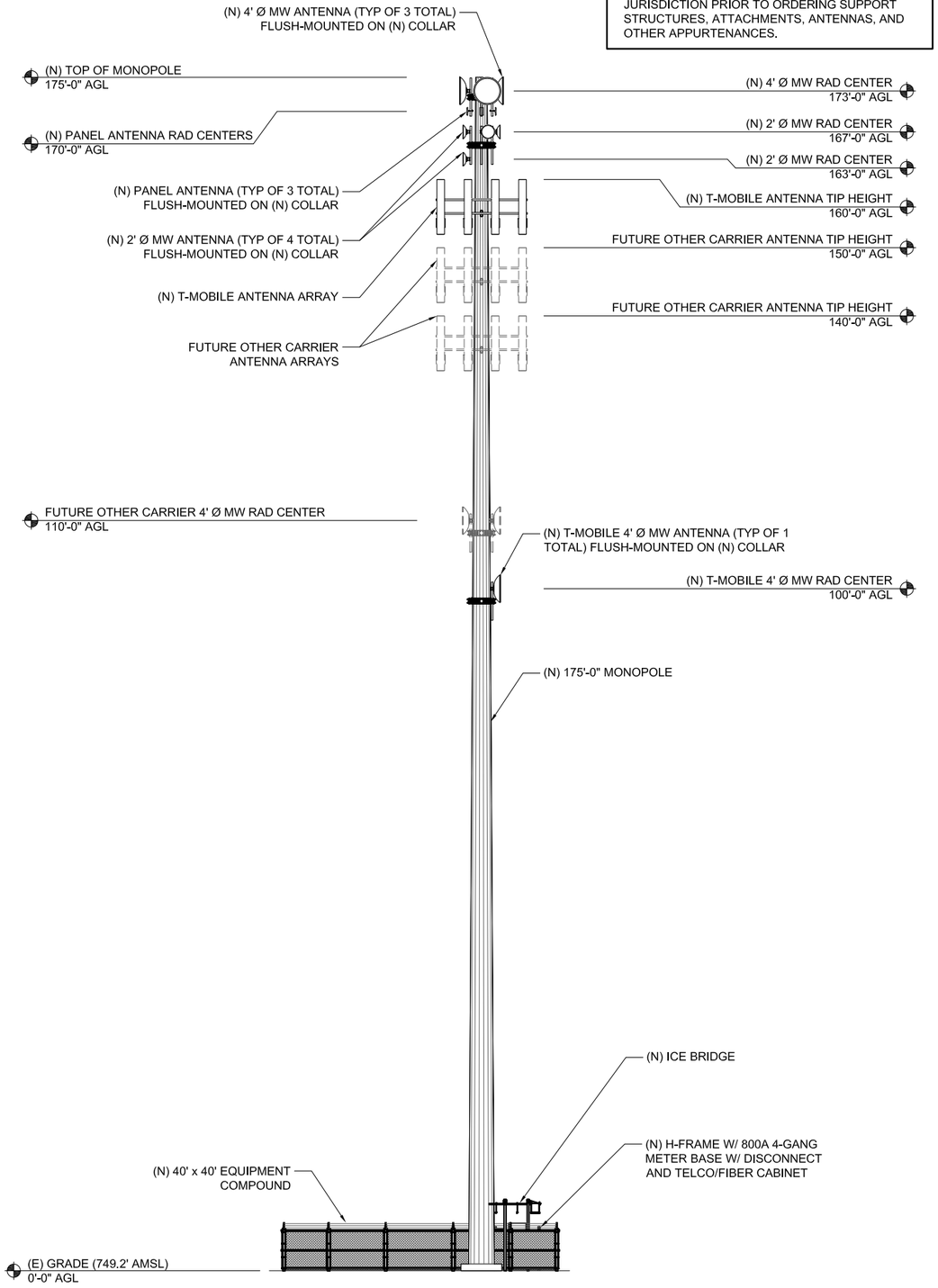
SHEET NO.
A-2.0

1 ENLARGED SITE PLAN

SCALE: 3/16" = 1'-0" (11X17)
SCALE: 3/8" = 1'-0" (22X34)

0' 5' 10'

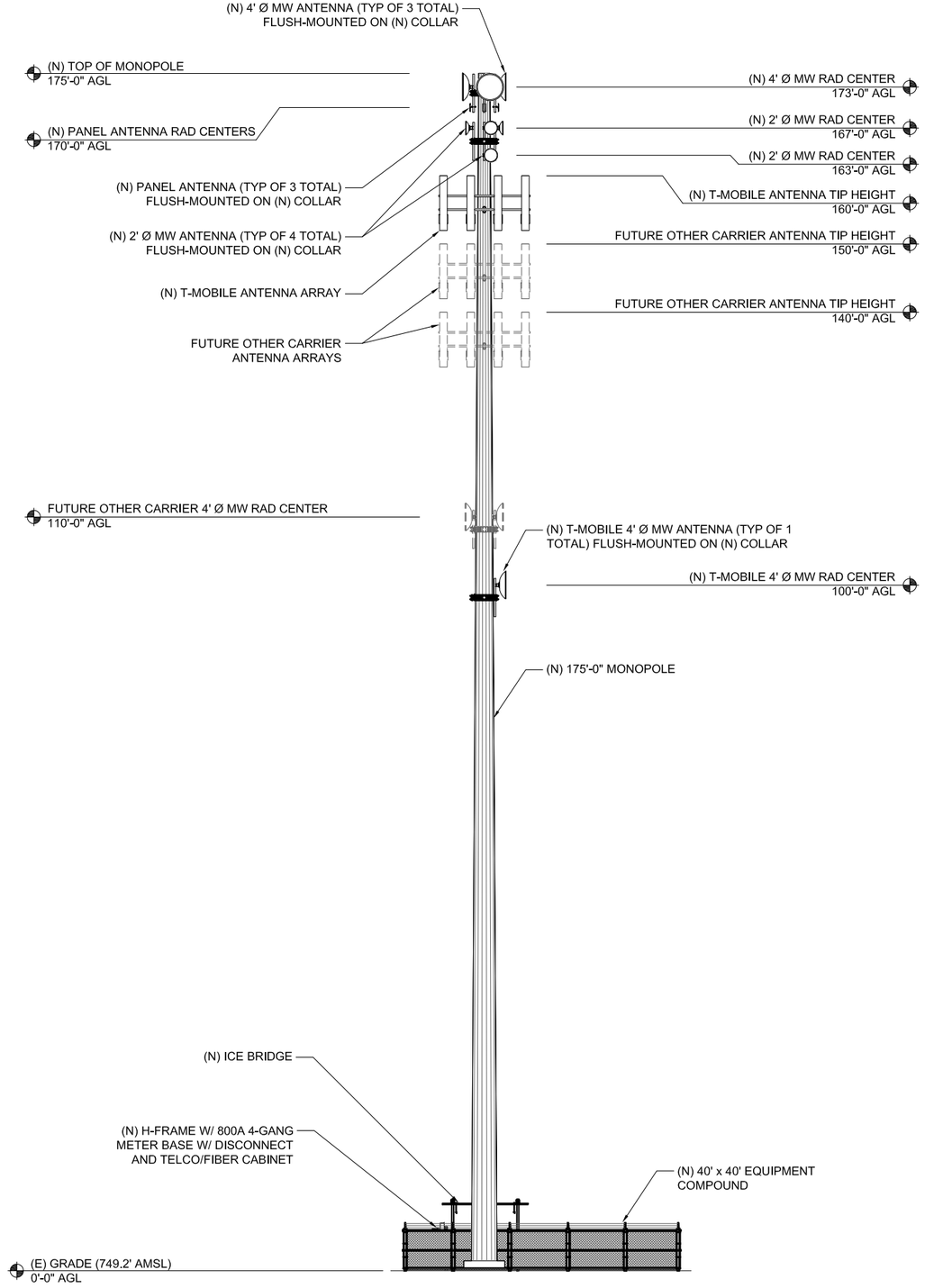
NOTE:
PM/GC TO VERIFY PAINTING REQUIREMENTS WITH JURISDICTION PRIOR TO ORDERING SUPPORT STRUCTURES, ATTACHMENTS, ANTENNAS, AND OTHER APPURTENANCES.



1 NORTH ELEVATION

SCALE: 1/16" = 1'-0" (11X17)
SCALE: 1/8" = 1'-0" (22X34)

0' 8' 16' 32'



2 WEST ELEVATION

SCALE: 1" = 20'-0" (11X17)
SCALE: 1" = 10'-0" (22X34)

0' 10' 20' 40'

Parallel INFRASTRUCTURE

CASCADIA PM
Precision Program Management

VECTOR engineers

CPM PROJECT NO.: 8842

PRELIMINARY

NO.	DATE	D/C	DESCRIPTION
1	07-01-15	JG/JG	CLIENT COMMENT
2	07-07-15	JG/JG	CPM COMMENT
3	08-06-15	GS/GS	CLIENT COMMENT

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION
1	08-25-15	JC/GS	LU COMMENTS
2	09-16-15	JC/GS	LU COMMENTS
3	10-09-15	JC/GS	LU COMMENTS

SITE NAME
PRUNE HILL

TAX ID NO.:
124979000

SITE ADDRESS
2829 NW 18TH AVE
CAMAS, WA 98607

SHEET TITLE
NORTH AND EAST ELEVATIONS

SHEET NO.
A-3.0

APPENDIX C

SITE PHOTOS

1. Looking north from proposed lease area.

2. Looking east from proposed lease area at residence on parcel.

3. Looking south from the proposed lease area.

4. Looking west.

5. View of Site from South

6. Utility route that parallels NW 18th Ave.

7. Tower on adjacent parcel (2822 NW 18th Ave, Camas, WA)

APPENDIX D

WETLAND DELINEATION REPORT

NW 18th Avenue Camas Project Site
Wetlands and Other Waters Delineation Report

Prepared for:

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Portland, OR 97219
503-892-2346
Contact: Beth Belanger

Prepared by:

Cascade Environmental Group
222 NW Davis St., Suite 317
Portland, OR 97209
503-894-8585
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April 2015

Cascade Environmental Group, LLC. NW 18th Avenue Camas Project Site Wetlands and Other Waters Delineation Report. April 2015. Portland, OR. Prepared for Adapt Engineering. Portland, Oregon

Table of Contents

Figures

Appendices

Tables **Page**

Acronyms and Abbreviations

City	City of Camas
Corps	United States Army Corps of Engineers
CWA	Clean Water Act
DNR	Department of Natural Resources
Ecology	Washington Department of Ecology
EPA	Environmental Protection Agency
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
GIS	Geographic Information System
GPS	Global Positioning System
HGM	hydrogeomorphic
LWI	local wetland inventory
NAVD88	North American Vertical Datum, 1988
NOAA	National Oceanic and Atmospheric Administration
NOWData	NOAA Online Weather Data
NRCS	National Resource Conservation Service
NWI	National Wetland Inventory
OBL	obligate
OHWM	ordinary high water mark
PEMA	palustrine emergent, temporarily flooded
PEMCx	palustrine emergent, seasonally flooded, excavated
PSS1C	palustrine scrub-shrub, broad-leaved deciduous, seasonally flooded
PHS	Priority Habitats and Species
SMA	Shoreline Management Act
SWPCA	State Water Pollution Control Act
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WDFW	Washington Department of Fish and Wildlife
WRIA	Water Resource Inventory Area

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1 Introduction and Background

This report has been prepared to document the extent and condition of existing wetlands and other waters within the parcel boundaries (study site) for the proposed NW 18th Avenue Camas project site that are regulated under the Clean Water Act (CWA) by the U.S. Army Corps of Engineers (Corps) and the Washington Department of Ecology (Ecology). It also provides wetland ratings and associated wetland buffer widths to satisfy wetland ordinance requirements of the City of Camas (Chapter 16.53 of the Municipal Code). This report complies with City, Ecology, and Corps standards and will be used to fulfill regulatory requirements for project permitting.

1.1 Project Background

The proposed project consists of the installation of a cellular transmission tower a private property located in Camas, Washington, (Figure 1) sponsored by AT&T Mobility Services. Project elements include the construction of a monopole tower with antennas and an equipment shelter within a new 40-foot by 40-foot fenced compound (lease area). A 12-foot wide gravel access road and easement is proposed to be constructed leading to the lease area from NW 18th Avenue located along the southern property boundary; and power and telecommunications services are proposed to be routed along the new access road from existing services located on NW 18th Avenue. Project design and construction siting is in progress and will be based in part on the results presented in this report.

1.2 Site Description

The study site consists of the entire 4.64-acre tax parcel (tax lot # 124979000) located at 2829 NW 18th Avenue in Section 4, Township 1 North, Range 3 East, Camas, Washington. The site is bounded by moderate density urban residential development; NW Cascade Street runs along the eastern boundary and NW 18th Avenue runs along the southern boundary. Site topography is fairly flat, sloping toward the north at a 1-2% grade; elevation ranges from 738 to 752 feet in the North American Vertical Datum of 1988 (NAVD88). The site features an unoccupied single family residence located in the central section of the site with associated driveway and fenced yard. It is zoned as residential with an average lot size of 10,000 ft^2 (City of Camas Zoning Designation R-10). Vegetation onsite consists primarily of mown pasture grass interspersed with weedy forbs; conifers and shrubs grow around the house and along the western site boundary.

1.3 Landscape Context

The study site is located on a high terrace above the Columbia River at the interface of dense urban and rural development within Water Resources Inventory Area (WRIA) 28: Salmon – Washougal River Basin and the U.S. Environmental Protection Agency (EPA) Level IV Portland/Vancouver Basin ecoregion (Pater et al 2010). The Portland/Vancouver Basin is a largely developed region of high terraces, floodplains, and low hills with numerous wetlands, oxbow lakes, and ponds. The marine-influenced climate is temperate and mesic, with an average of 37–50 inches of annual precipitation, falling mainly in the winter, and mild temperatures throughout the year. Historically, prairie and oak woodland grew in well-drained areas, while wetlands, Oregon ash, and Douglas fir forests occurred in moister areas. Presently, urban, suburban, and industrial development, agriculture, and forestry are primary land uses in this ecoregion

1.4 Jurisdictional Authorities

Wetlands are regulated by the Corps, Ecology, and the City of Camas under separate jurisdictions. The Corps regulates discharge of materials to wetlands and other Waters of the United States under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act (Corps 2008). The Corps authorizes actions that discharge, dredge, or fill into Waters of the United States, including wetlands, through issuance of permits.

Ecology regulates wetlands in Washington state under two separate authorities: the State Water Pollution Control Act (SWPCA) and the Shoreline Management Act (SMA). Through the SWPCA, state Water Quality Certifications are issued pursuant to Section 401 of the CWA. The SMA applies to wetlands within 200 feet of shoreline water bodies and wetlands associated with the water bodies. Ecology may also regulate wetlands through administrative orders or through water quality permits such as for short-term water quality modifications. Ecology has the authority to require permit conditions in addition to those being required by the Corps (McMillan 1998).

City of Camas wetland ordinance is included in Chapter 16.53 of the Municipal Code. The City reviews activities with the potential to impact wetlands or their buffers and issues permits when impacts cannot be avoided. Wetland permit applications require a wetland delineation and mitigation plan that demonstrates how wetland impacts will be effectively avoided, minimized, and mitigated. The City categorizes wetlands per the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Hruby 2014) to determine the values and functions of wetlands. Wetland ratings, along with the intensity of the proposed development, are used to

establish wetland buffer widths to protect the water quality, hydrologic, and habitat functions of the wetland.

Other critical areas administered by the City are addressed under Title 16 of the Municipal Code and include critical aquifer recharge areas, flood and geologic hazard areas, and fish and wildlife habitat conservation areas. Along with wetlands, these critical areas are identified as areas which serve important ecological functions and are preserved and protected from the impacts of certain development activities, or present a risk to public safety in the case of potential flood or geologic hazards. Development or alteration in or adjacent to any critical area is subject to review and regulation by the City

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2 Methods

This section describes the methods used to identify the location of wetland boundaries and determine wetland acreage for the NW 18th Avenue Camas project site. As part of the methodology, both onsite and offsite methods were used.

2.1 Preliminary Data Collection

Prior to conducting fieldwork, ecologists reviewed the following available data and information:

- National Oceanic and Atmospheric Association (NOAA) Online Weather Data (NOWData) for the Portland International Airport, Oregon
- National Resource Conservation Service (NRCS) WETS table for the Portland International Airport, Oregon
- U.S. Department of Agriculture (USDA) NRCS Soil Survey of Clark County, Washington
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI)
- Washington Department of Natural Resources (DNR) hydrography data
- Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) data
- Critical Area Ordinance for City of Camas (Title 16)
- Clark County Geographic Information System (GIS) environmental data
    - Clark County Local Wetland Inventory (LWI)
    - 2-foot elevation contours
    - Critical Areas mapping datasets
- City of Camas City Maps Collection (http://www.ci.camas.wa.us/services/maps/)
    - Zoning designation and comprehensive land use
    - Wetlands

2.1.1 Precipitation Data and Analysis

Precipitation data for, and prior to, the dates of fieldwork were reviewed to evaluate observed wetland hydrology conditions relative to statistically normal precipitation. Precipitation that deviates from normal ranges can affect site conditions and impact observed wetland hydrology indicators.

Precipitation data were acquired from NOAA from the Portland International Airport weather station in Oregon to provide context for observed hydrological conditions of the study area at the time of the site visits (NOAA 2015). Table 1 provides precipitation data for the date of the

site visit, precipitation for the two weeks prior to the site visit, and a comparison to the normal water year average.

Table 1. Precipitation Summary for Recent Period Preceding Site Visit

Observed Precipitation (inches) [a]					
Date of Site Visit	**Date of Visit**	**Two Weeks to Date**	**Water Year to Date**	**Normal Water Year to Date**	**Percent of Normal Water Year to Date**
03/23/2015	1.00	4.02	26.04	25.48	104%

[a] Data provided by NOWData, Portland International Airport, Oregon, 2015.

Table 2 provides monthly precipitation totals for three months preceding the site visit and compares these values to normal monthly precipitation. Also included in the table are the normal monthly ranges of precipitation representing 70% probability as reported in the NRCS WETS table for the area. WETS tables were developed specifically for application to wetland science using climate data from the National Weather Service Cooperative Network for the purpose of defining a normal range for monthly precipitation and growing seasons required to assess the climatic characteristics for a geographic area over a representative time period (NRCS 1995).

Table 2. Precipitation Summary for Three Months Preceding Site Visit

Month	Total Precipitation (inches) [a]	Normal Value for Month (inches) [b]	Percentage of Normal Precipitation	WETS Normal Range of Precipitation [c]
February	3.71	3.66	101%	2.77-5.00
January	3.33	4.88	68%	2.87-6.17
December	6.05	5.49	110%	3.80-6.85

[a] Data provided by NOAA NOWData, Portland International Airport, Oregon, 2015.; [b]normal date range:1981-2010; [c] NRCS WETS for table for Station ID OR229 Portland International Airport, Oregon 1971 – 2000.

In the months preceding the site visit, below-normal to above-normal precipitation levels were observed: precipitation occurred at 110% of normal in December, at 68% of normal in January, and at 101% of normal in February. Precipitation recorded for all three months was within the WETS normal range published for the region. In the two weeks preceding the site visit on March 23, 2015, precipitation was recorded at 4.02 inches, resulting in a total for the water year to date (beginning October 1) at 24.48 inches (104% of normal).

Variable weather conditions in the months prior to delineation fieldwork culminated in normal levels of precipitation for the water year. Wet conditions immediately preceding and during the day of fieldwork (4.02 inches in the two weeks before with an accumulation of 1 inch on the day of) is expected to result in exaggerated ground and surface water levels. Thus, it is assumed that conditions observed during delineation fieldwork represented somewhat wetter-than-normal hydrological conditions for the early growing season.

2.1.2 Wetland Inventory Maps

No NWI or LWI wetlands are mapped within the study site boundaries or within 300 feet (Figure 2). Visible inspection of aerials with contours, however, show a low-lying wet area just outside the northwestern study site boundary.

2.1.3 Non-Wetland Critical Areas

Clark County environmental data depict hydric soils and Category I Critical Areas in the western section of the study site that extend northwest beyond the study site boundaries (Figure 2). The Critical Areas dataset identifies constrained lands and, in this case, appears to correspond with 100-foot buffers applied to mapped hydric soils. The presence of Category I Critical Areas within the study site may trigger additional development reviews under Critical Areas ordinance.

County GIS data also designates the study site and surrounding area as a Category II Aquifer Recharge Area, an area considered critical to the quality and quantity of groundwater (Chapter 16.55 of the Municipal Code). This designation requires permit conditions for certain activities that may degrade the quality of groundwater.

2.1.4 USDA/NRCS Soil Survey Maps

Soil survey data obtained from the Web Soil Survey (Soil Survey Staff, NRCS) show two soil series mapped within the study site (Figure 3).

Powell silt loam at slopes of 0-8% occurs over most of the study site with the exception of the northwestern section. This series consists of deep, somewhat poorly drained soils formed in silty materials over old alluvium and occurring on high terraces with slopes of 0-30% and elevations of 300-600 feet. Powell silt loam is rated completely nonhydric (no map units rated as hydric) and is not prone to flooding or ponding.

Odne silt loam covers the northwestern portion of the site at slopes of 0-5%. It consists of deep, poorly drained soils formed in alluvium and occurring in basins and drainages located on terraces at elevations of 100-500 feet. Odne silt loam is rated hydric (100% of map units rated as hydric) and is not prone to flooding or ponding.

2.2 Field Methods

Wetlands were delineated according to methodology described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Corps 2010) and the 1987 *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987). Streams, if present, were delineated following guidance presented in *Determining the Ordinary High Water Mark on Streams in Washington State* (Olson and Stockdale 2010) and the memorandum following the U.S. Supreme Court's decision in the Rapanos case (Corps, EPA 2007).

Fieldwork was performed on March 23, 2015 when boundaries of all wetlands and other waters within the study site were identified and recorded. Qualified wetland ecologists walked the entire site, identifying vegetation and examining soils to identify potential wetland areas and associated boundaries. The boundaries were determined based on topography and the presence or absence of wetland indicators. Two wetlands were identified within the study site and a total of eight formal data plots were established where data on vegetation, soils, and hydrology were recorded using standard wetland delineation data forms (Figure 4 and Appendix A). All identified wetlands were classified according to the USFWS *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979) and assessed using *Washington State Wetland Rating System for Western Washington: 2014 Update* (Hruby 2014; Appendix B). For other regulated waters, such as streams, presence of ordinary high water mark (OHWM), surface flow, and flow period are estimated based on field observations and supporting data including DNR stream classification, historical photos, existing reports, and landowner accounts.

Ecologists also reviewed areas outside the study site (offsite survey area) for the presence of wetlands or streams that could have regulated buffers that extend onto the study site. The boundaries of wetlands and other waters within 300 feet of the study site were estimated per critical area report requirements set forth in the Camas Municipal Code (Section 16.53.030[B][2].

Ground level color photographs were also taken throughout the site to convey study site conditions (Appendix C).

2.2.1 Vegetation

Under normal conditions, hydrophytic vegetation is considered prevalent if greater than 50 percent of the dominant species from each vegetative stratum—tree, shrub, vine, and herbaceous—are classified as obligate (OBL), facultative wet (FACW), and/or facultative (FAC) according to the USFWS publication *National Wetland Plant List* (Lichvar 2012).

Dominant species were determined by using the "50/20 rule," wherein dominants are the most abundant species that individually or collectively account for more than 50 percent of the total coverage of vegetation in the stratum, plus any other species that by itself accounts for at least 20 percent of the total. Vegetation was sampled within 5-foot diameter circular plots for herbaceous and shrub species and 30-foot diameter circular plots for tree species. All plant species encountered are listed on the data forms to provide a full picture of the vegetation community; trees and shrubs are excluded from the sample plot if they aren't representative of plot conditions due to changes in slope or topographic breaks.

2.2.2 Soils

Ecologists excavated soil sample pits to a depth of at least 16 inches (when possible) to determine whether soils at the sample location met hydric soil criteria as described in *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Corps 2010). Soil colors were determined using a Munsell Soil Color Chart (Gretag Macbeth 2000). Hydric soils are soils that formed under conditions of saturation, flooding, or ponding for sufficient duration to develop anaerobic conditions in the upper layers (Environmental Laboratory 1987; Corps 2010).

2.2.3 Hydrology

Wetland hydrology indicators are used along with indicators of hydric soils and hydrophytic vegetation to determine whether an area is a wetland. Primary indicators of wetland hydrology include inundation (i.e., standing water), saturation in the upper 12 inches of the soil column, high water table, water marks or lines on adjacent stationary objects (e.g., trees), sediment deposits or drift lines on vegetation, oxidized rhizospheres along living roots, and water-stained leaves. Two or more secondary indicators from the following list can also be used to identify wetland hydrology: surface drainage patterns, dry-season water table, and shallow aquitard, saturation visible on aerial photography, FAC-neutral test, geomorphic position, or frost-heave hummocks (Environmental Laboratory 1987; CORPS 2010).

General guidance in determining whether wetland criteria are present states that soils should be continuously inundated or saturated to the surface for at least 5-12.5% of the growing season in years of normal precipitation (Environmental Laboratory 1987). According to the WETS table, the growing season for the region, with temperatures at or above 28^0F, spans from February 15 to November 30 (288 days) in 5 out of 10 years (NRCS 2002).

2.3 Wetland Ratings and Buffers

Wetlands were assessed for functions using the *Washington State Wetland Rating System for Western Washington : 2014 Update* (Hruby 2014). Wetland rating units include contiguous offsite portions which are estimated per methods described in the rating system. Appendix B contains the standard wetland rating forms. Wetlands are rated to determine appropriate mitigation ratios and buffer widths. Each wetland is rated based on its significance, sensitivity to disturbance, the difficulty involved in restoring it, or by the assessed level of functions it provides, and assigned a category from I to IV. Estuaries, bogs, natural heritage sites, mature forested wetlands, coastal lagoons, and interdunal wetlands receive specific categories; all other wetlands are rated based on their assessed level of function.

The categorical assignment of each wetland is based on three major groups of functions that wetlands perform: water quality, hydrologic, and wildlife habitat. Each group is divided into "site potential," "landscape potential," and "value" sections that are scored as "high," "medium," or "low." The scores for each group of functions are summed to produce the overall rating for the wetland.

Wetland buffers width requirements are included in Section 16.53.040 of the City Municipal Code. Buffer widths are determined using a combination of wetland rating results and the land use intensity of the proposed project.

2.4 Mapping

Wetland data points and boundary locations were located using TerraSync software on a Trimble GeoXT Global Positioning System (GPS) unit with sub-meter positional accuracy capability. GPS data were post-processed resulting in an estimated average positional accuracy of 1 to 3 feet. GPS survey data were exported to a GIS format (ESRI shapefile) and overlaid with tax lot data obtained from Clark County for the study area. Wetland boundary lines were manually digitized from GPS point files and buffered by the appropriate distance based on the wetland rating result using ArcGIS Desktop 10.1 buffer functions.

3 Results

3.1 Wetlands

Two wetlands were identified within the study site, both of which extend north beyond the study site boundaries. The mapped wetland areas along with data plot and photo point locations are shown on Figure 4, wetland sample plot data sheets are included in Appendix A, wetland rating forms are provided in Appendix B, and site photographs of wetland areas are included in Appendix C.

3.1.1 Wetland 1

Wetland 1 is located in the central section of the study site, extending from the southern boundary northeast across the site and continuing just offsite onto the neighboring property; 0.26 acres (11,456 ft^2) occur within the study site boundaries. It originates at the outfall of a culvert installed under the onsite driveway and slopes gradually (1-2% grade) to the northeast where it drains into a storm sewer just beyond the site boundary. It has been ditched in the upper and lower portions to facilitate drainage of the property and convey flows to the sewer system. The ditching results in a characteristic localization of the wetland area to the ditch bottom as water drains from the surrounding area and concentrates in the ditch. The wetland is bounded by upland grassy field and residential development. Wetland 1 is a slope hydrogeomorphic (HGM) class with a Cowardin classification of temporarily flooded palustrine emergent (PEMA).

Wetland hydrology was determined based on observed surface water (A1) and high water table (A2). Soil data collected in wetland data plots meet Corps wetland hydric soil indicator criteria for redox dark surface (F6) and depleted below dark surface (A11) indicating that iron in the soil has been removed or transformed by processes of reduction and translocation in dark-colored soils. Dark soil layers are very dark gray (10YR 3/1) and depleted soil layers are dark gray (10 YR 4/1) loam or silt loam with common to many prominent yellow-red redoximorphic concentrations and depletions occurring as soft masses within the soil matrix.

Vegetation in the wetland is primarily graminoid and includes tall fescue (*Festuca arundinacea*; FAC) and creeping bentgrass (*Agrostis stolonifera*; FAC) with reed canarygrass (*Phalaris arundinacea*; FACW) dominating the ditched areas and wetter portions of the wetland. Weedy forbs such as hairy cat's ear (*Hypochaeris radicata*; FACU), dandelion (*Taraxacum officinale*; FACU), and white clover (*Trifolium repens*; FAC) are common along the margins of the wetland.

3.1.2 Wetland 2

Wetland 2 is located in the northwestern section of the study site, extending offsite to the north; 0.72 acres (5,429 ft^2) occur within the study site boundaries. The wetland is situated in a shallow topographic depression, sloping very gradually (less than 1% grade) to the north where it forms an impoundment offsite. The offsite portion of the wetland has been ditched and apparently modified for use as a stormwater treatment feature; surface water discharging from the wetland drains into a storm drain located just beyond the northern site boundary on the east end of the wetland. Surface water was observed in small depressions in the onsite portion of the wetland; several inches of surface water was noted in the ditch and impoundment in the offsite portion. Wetland 2 features both slope and depressional HGM classes. It also features multiple Cowardin classifications including temporarily flooded palustrine emergent (PEMA; occurring onsite), seasonally flooded, broad-leaved deciduous, palustrine scrub-shrub (PSS1C; occurring offsite), and seasonally flooded, excavated, palustrine emergent (PEMCx; occurring offsite) in the ditch.

Wetland hydrology was determined based on observed surface water (A1) and high water table (A2). Soil data collected in wetland data plots meet Corps wetland hydric soil indicator criteria for histosol (A1), indicating accumulation of organic material under anaerobic soil conditions. Soils were soil layers were black (10 YR 2/1) muck for greater than 16 inches in depth.

Vegetation within the wetland consists of both herbaceous emergent and scrub-shrub vegetation classes, with emergent areas occurring both onsite and offsite and comprising over 30% of the total wetland area. The vegetation community onsite is dominated by tall fescue and reed canarygrass interspersed with creeping bentgrass, bird's foot trefoil (*Lotus corniculatus*; FAC) and spreading rush (*Juncus patens*; FACW). Weedy forbs such as hairy cat's ear, dandelion, and white clover are common along wetland margins. A few willows (*Salix* spp; FAC or FACW) and young red alder (*Alnus rubra*; FAC) occur along the western wetland boundary.

3.1.3 Offsite Wetlands

Wetland 1 extends just offsite to the north of the wetland boundary. The offsite wetland area is part of a maintained lawn and separated from the rest of the wetland by a wooden fence. The storm sewer that drains the entire wetland is located offsite.

Wetland 2 extends offsite to the north and where it is impounded by development. It has apparently been modified to function as a stormwater treatment area and features a stormwater outfall with associated swale. A ditch segment drains the entire wetland east into a storm sewer. Several inches of water were observed within both the ditch and impounded area in the western

section. Offsite wetland vegetation includes both emergent and scrub-shrub classes. The scrub-shrub community occurs in the impounded area and consists of spiraea (*Spiraea douglasii*; FACW) mixed with a few willows (*Salix* spp. FAC or FACW) with an understory dominated by reed canarygrass interspersed with slough sedge (*Carex obnupta*; OBL), common rush (*Juncus effusus*: FACW), and spreading rush. The swale is vegetated by mown grasses such as creeping bentgrass and tall fescue interspersed with birds-foot trefoil and weedy forbs. Cattail (*Typha latifolia*; OBL), spreading rush, and American brooklime (*Veronica americana*; OBL) occur in the ditch.

3.1.4 Wetland Rating Category, Functions, and Buffers

Wetlands 1 rated as a Category IV wetland; Wetland 2 rated as a Category III wetland (Figure 5). Ratings reflect the hydrologic, water quality, and habitat function scores assigned to wetlands based on a systematic assessment. Rating results for are shown in Table 3. Wetland buffer widths are determined by considering the wetland rating results and the land use intensity of the proposed actions. The project sponsor proposes to construct a cellular transmissions tower facility, which includes a tower and security fencing, and is considered a "high intensity land use" by City ordinance. The buffer width prescribed for a Category III wetland in the presence of high intensity land use is 80 feet and the buffer width prescribed for a Category IV wetland is 50 feet.

Table 3. Wetland Rating Table.

Wetland	Water Quality	Hydrology	Habitat	Total Function Score	Ecology Rating	City of Camas CBuffer Width – High Intensity Land Use
1	5	4	3	12	IV	50'
2	6	6	4	16	III	80'

Wetlands 1 was determined to be a slope HGM class and it scored medium to medium-low on water quality and hydrologic functions and low on habitat function. Both water quality and hydrologic functions are limited by the wetland's lack of dense, uncut, herbaceous plants (the wetland is regularly mown), though the wetland is adjacent to runoff and pollutant generating development which confers landscape potential. Also, because the wetland drains directly into a storm sewer, it also has little value with regard to protecting downstream resources from floodwaters. Habitat function is limited by a lack of diversity in vegetation structure,

hydroperiods, habitat interspersion, and special habitat features; and lack of intact buffer areas and connectivity to relatively undisturbed areas offer little opportunity for wildlife use.

Wetland 2 was determined to include both slope and depressional HGM classes and was rated as a depressional according to wetland rating guidance (Hruby 2014). Wetland 2 scored medium on water quality and hydrologic functions and medium-low on habitat function. Water quality function is limited by a lack of persistent, ungrazed plants and seasonally inundated area, though the wetland is in a favorable position adjacent to pollutant generating land uses to provide landscape potential. With regard to hydrologic function, the wetland features medium site potential due to a contributing area less than 10 times the area of the wetland and its position as a "headwater" wetland, and high landscape potential due to its position adjacent to runoff generating development; site value is limited, however, as the wetland drains directly into a sewer system, thereby rendering it ineffective for protecting downstream resources from floodwaters. Habitat function is represented by the presence of some diversity in vegetation structure and habitat interspersion, hydroperiods, and presence of special habitat features; however, a lack of intact buffer area or connectivity to relatively undistributed areas limits the landscape potential and value of the site.

3.2 Other Waters

No other waters were delineated with the project site or within 300 feet. Ditched areas of wetlands are vegetated and will be regulated as part of the wetland. Ditch 1, mapped along the northern site boundary (Figure 4) is a small, shallow, and entirely vegetated ditch apparently excavated from uplands to facilitate drainage of the adjacent properties. It does not appear to be relatively permanent water (it does not contain flows for at least 3 months out of the year) and does not drain, directly or otherwise, into a traditionally navigable water. Thus it is unlikely to come under local, State or federal jurisdiction.

3.3 Uplands

Uplands within the study site include grass fields and residential development with an associated driveway and lawn area. The pasture and lawn areas are vegetated by tall fescue, creeping bentgrass and other turfgrasses interspersed commonly with weedy forbs such as hairy cat's ear, dandelion, sheep sorrel (*Rumex acetosella*; FACU), common vetch (*Vicia americana*; FAC) and common chickweed (*Stellaria media*; FACU). These areas are regularly mown. Western redcedar (*Thuja plicata*; FAC) and Sitka spruce (*Picea sitchensis*; FAC) trees have been planted around the residence and Douglas fir (*Pseudotsuga menziesii*; FACU) trees have be planted along the western site boundary. Soils in upland areas are black (10 YR 2/1) to very

dark gray (10 YR 3/1) to dark grayish brown (10 YR 3/2) loam with few to common indistinct yellow-red redoximorphic features. Groundwater was observed in several upland sample plots, though this is attributed to the heavy rainfall which occurred immediately preceding the date of fieldwork.

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4 Conclusions

Cascade Environmental Group, LLC, delineated 2 wetlands totaling 0.98 acres (42,870 ft^2) within the study site. Wetland 1 rated as a Category IV wetland and Wetland 2 rated as a Category III wetlands using the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Hruby 2014). A 50-foot buffer was applied to Wetland 1 and an 80-foot buffer was applied to Wetland 2 as defined in City wetland protection ordinance (Section 16.53.040).

One ditch (Ditch 1) was mapped along the northern boundary of the study site. The ditch is apparently excavated from uplands for drainage purposes, does not feature relatively permanent flows and does not drain to a traditionally navigable water, thus is not considered jurisdictional.

It is expected that the City, as well as the Corps and Ecology, will regulate both wetlands. The buffers will be regulated by the City.

This report documents the best professional judgment and conclusions of the investigators. It is correct and complete to the best of our knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at one's own risk until it has been reviewed and approved in writing by the U.S. Army Corps of Engineers, the Washington State Department of Ecology, and the City of Camas.

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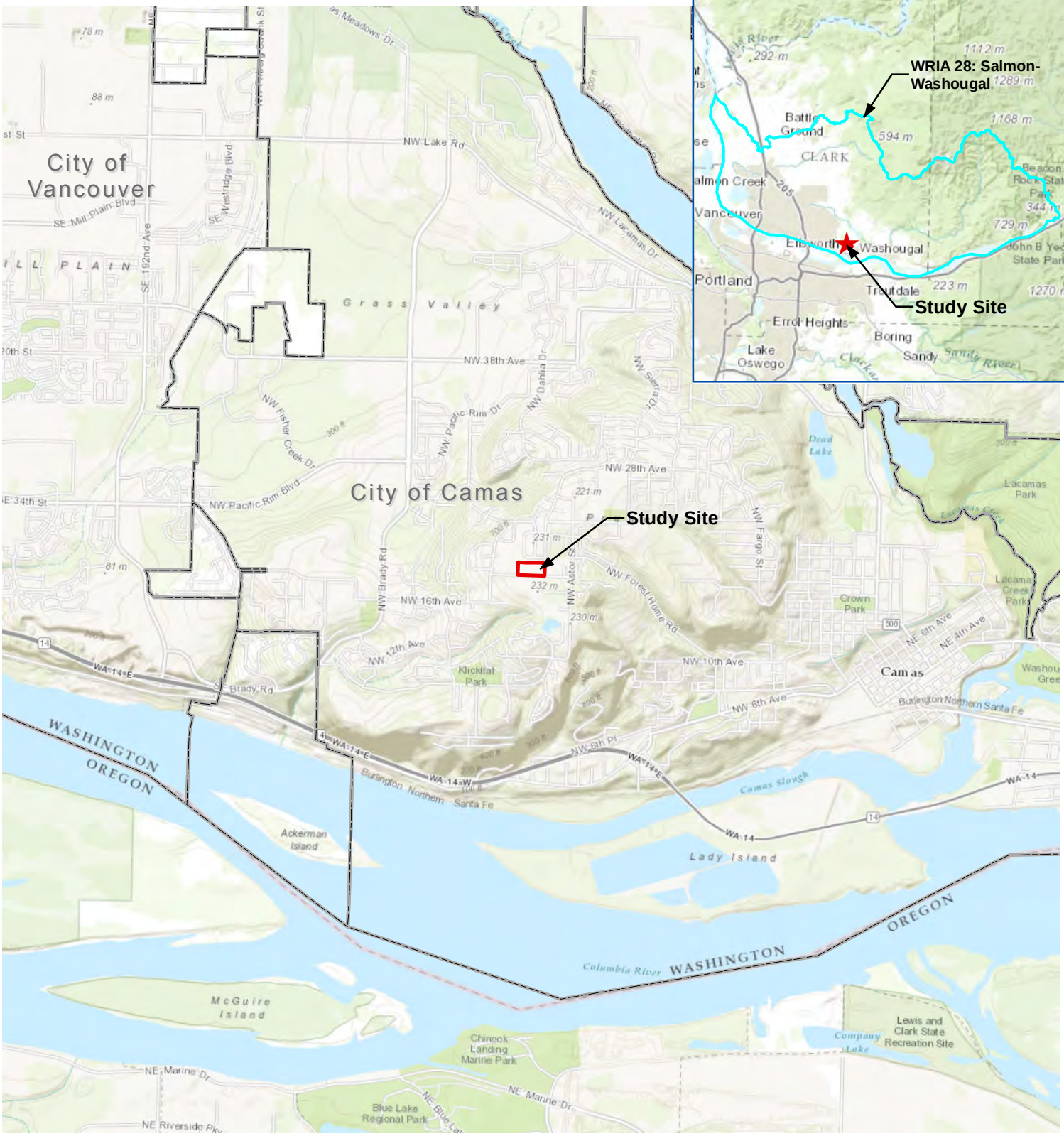
Figures



Scale: 1 inch = 1 mile

Figure 1. Location Map

CASCADE ENVIRONMENTAL GROUP

NW 18th Avenue Camas
Project Site
Wetland Delineation Report

Date: 4/8/2015

City of Camas, Washington

Data Source:ESRI, 2015; Clark County, WA GIS, 2013.

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Legend

- Study Site Tax Lot Boundary
- Offsite Survey Area (300 ft.)
- Hydric Soils
- Critical Lands (Hydric Soils)

Scale: 1 inch = 200 feet

Note: Entire extent shown mapped as Category 2 Critical Recharge Area and as Wildland Urban Interface: 500 ft. + elevation by Clark County.

Data Source: Clark County, WA GIS, 2013;

Z:\GIS\Adapt_Wetland_Delineations\NW18th_Camas\NW18th_Camas_Fig2_CriticalAreas.mxd

Figure 2. Critical Areas and Wetland Inventory Map

CASCADE ENVIRONMENTAL GROUP

NW 18th Avenue Camas
Project Site
Wetland Delineation Report

Date: 3/30/2015

City of Camas, Washington

Map Symbol	Series Name	Slopes (%)	Hydric Rating
OdB	Odne silt loam	0-5	Hydric
PoB	Powell silt loam	0-8	Nonhydric

Legend

- Study Site Tax Lot Boundary
- Offsite Survey Area (300 ft.)

Scale: 1 inch = 200 feet

Data Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed 03/30/2015

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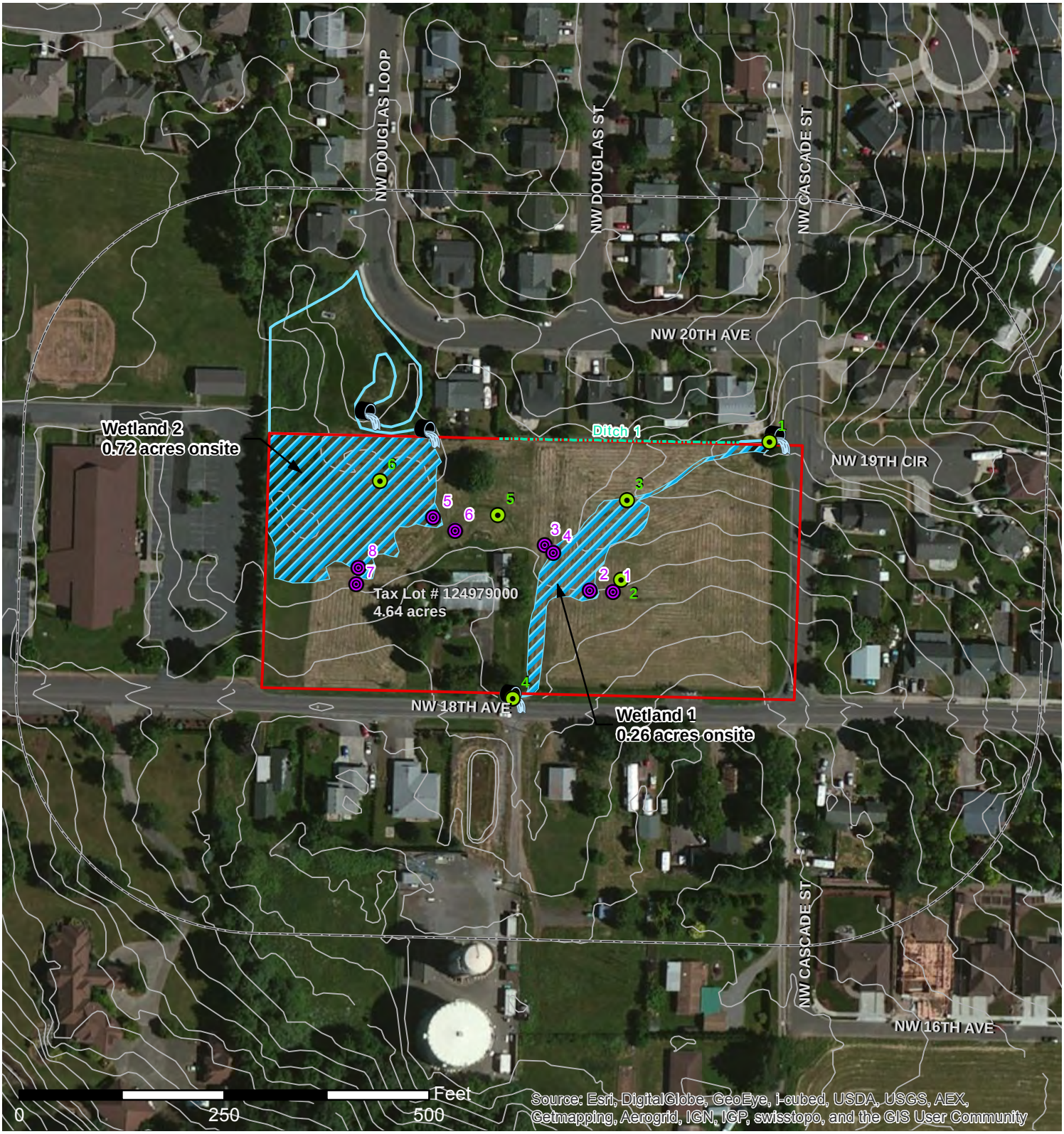
Figure 3. USDA/ NRCS Soil Survey Map

CASCADE ENVIRONMENTAL GROUP

NW 18th Avenue Camas
Project Site
Wetland Delineation Report

Date: 3/30/2015

City of Camas, Washington



Legend

- Study Site Tax Lot Boundary
- Offsite Survey Area (300 ft.)
- Wetlands (0.98 acres)
- Offsite Wetlands
- Ditch
- Data Plots
- Photo Points
- Culverts/Drains

Scale: 1 inch = 150 feet
Contour Interval: 2 feet

Data Source: Clark County, WA GIS, 2013

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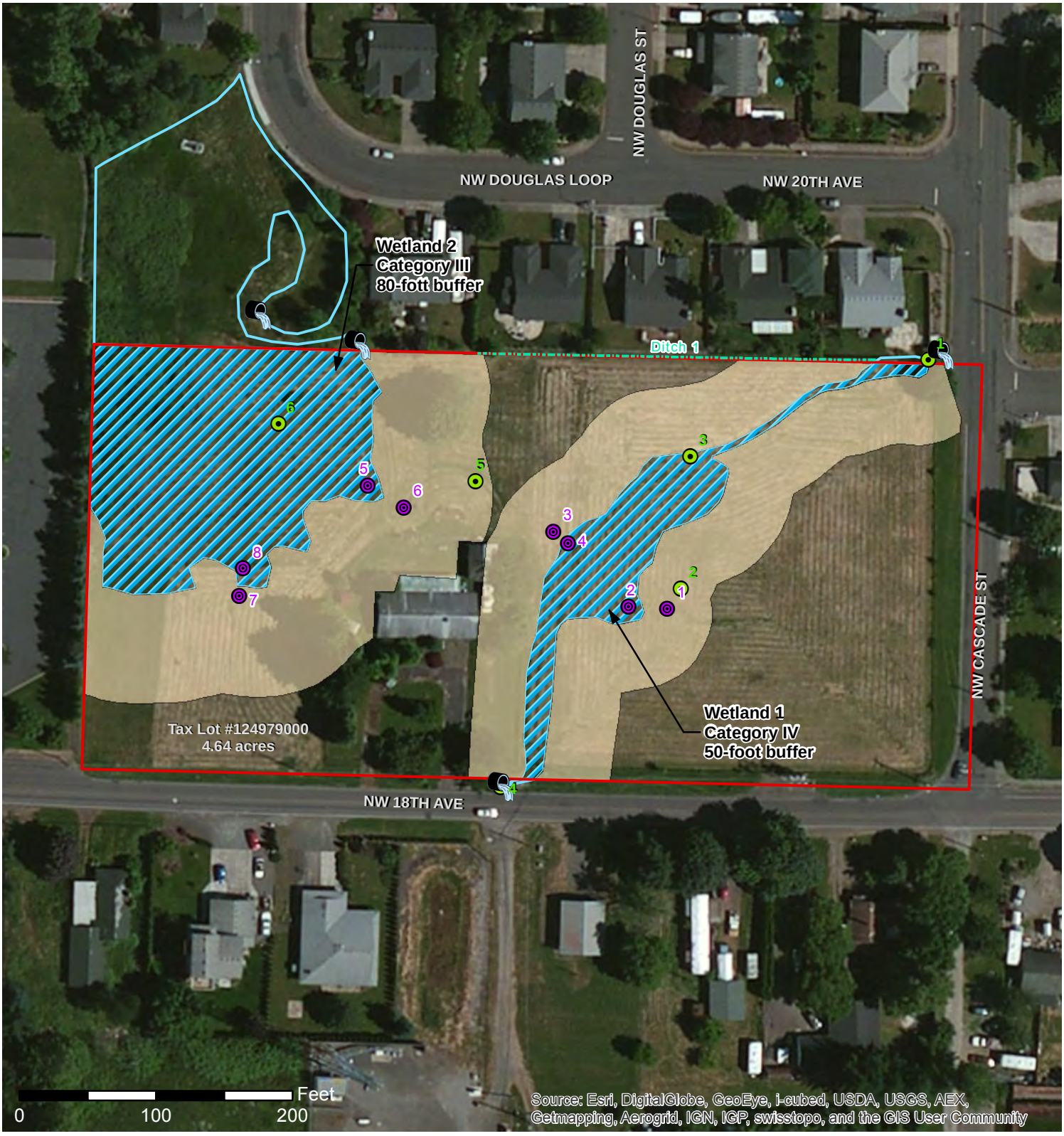
Figure 4. Wetland Boundary Map

CASCADE ENVIRONMENTAL GROUP

NW 18th Avenue Camas
Project Site
Wetland Delineation Report

Date: 3/31/2015

City of Camas, Washington



Legend

- Study Site Tax Lot Boundary
- Wetlands (0.98 acres)
- Offsite Wetlands
- Wetland Buffers
- Ditch
- Data Plots
- Photo Points
- Culverts/Drains

Scale: 1 inch = 100 feet

Figure 5. Wetland Buffer Map

CASCADE ENVIRONMENTAL GROUP

NW 18th Avenue Camas
Project Site
Wetland Delineation Report

Date: 4/8/2015

City of Camas, Washington

Data Source: Clark County, WA GIS, 2013

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Appendices

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: NW 18th Ave Camas City/County: Camas/Clark County Sampling Date: 3/23/2015
Applicant/Owner: Adapt Engineering State: WA Sampling Point: 1
Investigator(s): B. Haddaway, K. Biafora Section, Township, Range: S4, T1N, R3E
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 1-2%
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 45.592861° Long: 122.438684° Datum: WGS 84
Soil Map Unit Name: Powell silt loam NWI Classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?**	**Yes** _____ **No X**
Hydric Soil Present?	Yes _____ No X		
Wetland Hydrology Present?	Yes _____ No X		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status?
1.			
2.			
3.			
4.			
Total Cover:	0		
Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Agrostis stolonifera*	20	Y	FAC
2. *Festuca arundinacea*	70	Y	FAC
3. *Rumex acetosella*	10		FACU
4. *Hypochaeris radicata*	5		FACU
5. *Taraxacum officinale*	5		FACU
6. *Trifolium repens*	0.01		FAC
7.			
8.			
9.			
10.			
11.			
Total Cover:	110.01		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1 =	**0**
FACW species		x2 =	**0**
FAC species	**90.01**	x3 =	**270.03**
FACU species	**20**	x4 =	**80**
UPL species		x5 =	**0**
Column Totals:	**110.01** (A)		**350.03** (B)

Prevalence Index = B/A = **3.2**

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
_____ 3 - Prevalence Index is ≤3.0[1]
_____ 4 - Morphological Adaptation1 (Provide supporting
_____ data in Remarks or on a separate sheet)
_____ 5 - Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks: Vegetation does not meet Prevalence Index

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10 YR 3/2	100					LOAM	
9-16	10 YR 3/3	85	10 YR 3/2	10	D	M	LOAM	
			10 YR 2/2	5	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___		
Water table Present?	Yes X	No ___	Depth (inches): 6		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 6	**Wetland Hydrology Present?**	**Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Delineation fieldwork conducted following period of heavy rainfall, consequently, groundwater was observed in upland areas that do not support hydric soils or hydrophytic plants

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: NW 18th Ave Camas City/County: Camas/Clark County Sampling Date: 3/23/2015
Applicant/Owner: Adapt Engineering State: WA Sampling Point: 2
Investigator(s): B. Haddaway, K. Biafora Section, Township, Range: S4, T1N, R3E
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 1-2%
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 45.592861° Long: 122.438684° Datum: WGS 84
Soil Map Unit Name: Powell silt loam NWI Classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?**	**Yes X No**
Hydric Soil Present?	Yes X No		
Wetland Hydrology Present?	Yes X No		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status?
1.			
2.			
3.			
4.			
Total Cover:	0		
Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Agrostis stolonifera*	20	Y	FAC
2. *Festuca arundinacea*	80	Y	FAC
3. *Taraxacum officinale*	0.01		FACU
4. *Trifolium repens*	0.01		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
Total Cover:	100.02		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)
Total Number of Dominant Species Across All Strata: **2** (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	x1 =	**0**
FACW species	x2 =	**0**
FAC species	x3 =	**0**
FACU species	x4 =	**0**
UPL species	x5 =	**0**
Column Totals: **0** (A)		**0** (B)

Prevalence Index = B/A = **#DIV/0!**

Hydrophytic Vegetation Indicators:
- 1 - Rapid Test for Hydrophytic Vegetation
- **X** 2 - Dominance Test is >50%
- ##### 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptation1 (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10 YR 3/1	100					LOAM	
6-9	10 YR 3/1	95	5 YR 3/2	5	C	M	LOAM	
9-16	10 YR 4/1	90	10 YR 5/1	5	D	M	LOAM	
			5 YR 3/2	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water table Present?	Yes	X	No	___	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes	X	No	___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: NW 18th Ave Camas City/County: Camas/Clark County Sampling Date: 3/23/2015
Applicant/Owner: Adapt Engineering State: WA Sampling Point: 3
Investigator(s): B. Haddaway, K. Biafora Section, Township, Range: S4, T1N, R3E
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 1-2%
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 45.592861° Long: 122.438684° Datum: WGS 84
Soil Map Unit Name: Powell silt loam NWI Classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?**	**Yes** _____ **No X**
Hydric Soil Present?	Yes _____ No X		
Wetland Hydrology Present?	Yes _____ No X		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status?
1.			
2.			
3.			
4.			
Total Cover:	0		
Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Agrostis stolonifera*	5		FAC
2. *Festuca arundinacea*	90	Y	FAC
3. *Rumex acetosella*	15		FACU
4. *Cirsium arvense*	1		FAC
5. *Taraxacum officinale*	5		FACU
6.			
7.			
8.			
9.			
10.			
11.			
Total Cover:	116		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: **1** (A)
Total Number of Dominant Species Across All Strata: **1** (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species		x1 = **0**
FACW species		x2 = **0**
FAC species	**96**	x3 = **288**
FACU species	**20**	x4 = **80**
UPL species		x5 = **0**
Column Totals:	**116** (A)	**368** (B)

Prevalence Index = B/A = **3.2**

Hydrophytic Vegetation Indicators:
_____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
_____ 3 - Prevalence Index is ≤3.0[1]
_____ 4 - Morphological Adaptation1 (Provide supporting
_____ data in Remarks or on a separate sheet)
_____ 5 - Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks: Vegetation does not meet Prevalence Index

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10 YR 2/1	100					LOAM	
10-13	10 YR 3/1	100					LOAM	
13-16	10 YR 3/1	94	10 YR 4/2	5	D	M	LOAM	
			5 YR 3/3	1	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water table Present? Yes X No ___ Depth (inches): 13

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 13

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Delineation fieldwork conducted following period of heavy rainfall, consequently, groundwater was observed in upland areas that do not support hydric soils or hydrophytic plants

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: NW 18th Ave Camas City/County: Camas/Clark County Sampling Date: 3/23/2015
Applicant/Owner: Adapt Engineering State: WA Sampling Point: 4
Investigator(s): B. Haddaway, K. Biafora Section, Township, Range: S4, T1N, R3E
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 1-2%
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 45.592861° Long: 122.438684° Datum: WGS 84
Soil Map Unit Name: Powell silt loam NWI Classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** **Yes X No**
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status?
1.			
2.			
3.			
4.			
Total Cover:	0		
Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Phalaris arundinacea*	80	Y	FACW
2. *Festuca arundinacea*	20	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)
Total Number of Dominant Species Across All Strata: **2** (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	x1 =	**0**
FACW species	x2 =	**0**
FAC species	x3 =	**0**
FACU species	x4 =	**0**
UPL species	x5 =	**0**
Column Totals: **0** (A)		**0** (B)

Prevalence Index = B/A = **#DIV/0!**

Hydrophytic Vegetation Indicators:
1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
3 - Prevalence Index is ≤3.0[1]
4 - Morphological Adaptation1 (Provide supporting data in Remarks or on a separate sheet)
5 - Wetland Non-Vascular Plants[1]
Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10 YR 3/1	100					LOAM	
6-16	10 YR 3/1	85	10 YR 4/3	10	C	M	LOAM	
			10 YR 4/4	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 0.5

Water table Present? Yes X No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): ___

Wetland Hydrology Present? **Yes X** **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: NW 18th Ave Camas City/County: Camas/Clark County Sampling Date: 3/23/2015
Applicant/Owner: Adapt Engineering State: WA Sampling Point: 5
Investigator(s): B. Haddaway, K. Biafora Section, Township, Range: S4, T1N, R3E
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0-1%
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 45.592861° Long: 122.438684° Datum: WGS 84
Soil Map Unit Name: Odne silt loam NWI Classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?** **Yes** **No X**
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status?
1.			
2.			
3.			
4.			
Total Cover:	0		
Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Agrostis stolonifera*	50	Y	FAC
2. *Festuca arundinacea*	30	Y	FAC
3. *Taraxacum officinale*	5		FACU
4. *Hypochaeris radicata*	20	Y	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
Total Cover:	105		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)
Total Number of Dominant Species Across All Strata: **3** (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: **67%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1 =	**0**
FACW species		x2 =	**0**
FAC species	**80**	x3 =	**240**
FACU species	**25**	x4 =	**100**
UPL species		x5 =	**0**
Column Totals:	**105** (A)		**340** (B)

Prevalence Index = B/A = **3.2**

Hydrophytic Vegetation Indicators:
1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
3 - Prevalence Index is ≤3.0[1]
4 - Morphological Adaptation1 (Provide supporting data in Remarks or on a separate sheet)
5 - Wetland Non-Vascular Plants[1]
Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **No X**

Remarks: Vegetation does not meet Prevalence Index

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10 YR 3/1	100					LOAM	
12-14	10 YR 3/2	70	10 YR 3/1	30	D	M	LOAM	
14-16	10 YR 3/1	75	10 YR 3/2	20	C	M	LOAM	
			10 YR 3/3	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water table Present? Yes X No ___ Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 3

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Delineation fieldwork conducted following period of heavy rainfall, consequently, groundwater was observed in upland areas that do not support hydric soils or hydrophytic plants

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: NW 18th Ave Camas City/County: Camas/Clark County Sampling Date: 3/23/2015
Applicant/Owner: Adapt Engineering State: WA Sampling Point: 6
Investigator(s): B. Haddaway, K. Biafora Section, Township, Range: S4, T1N, R3E
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0-1%
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 45.592861° Long: 122.438684° Datum: WGS 84
Soil Map Unit Name: Odne silt loam NWI Classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** **Yes X No**
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status?
1.			
2.			
3.			
4.			
Total Cover:	0		
Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Agrostis stolonifera*	60	Y	FAC
2. *Festuca arundinacea*	25	Y	FAC
3. *Taraxacum officinale*	2		FACU
4. *Trifolium repens*	5		FAC
5. *Hypochaeris radicata*	10		FACU
6.			
7.			
8.			
9.			
10.			
11.			
Total Cover:	102		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)
Total Number of Dominant Species Across All Strata: **2** (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:
OBL species	x1 = **0**
FACW species	x2 = **0**
FAC species	x3 = **0**
FACU species	x4 = **0**
UPL species	x5 = **0**
Column Totals: **0** (A)	**0** (B)

Prevalence Index = B/A = **#DIV/0!**

Hydrophytic Vegetation Indicators:
- 1 - Rapid Test for Hydrophytic Vegetation
- **X** 2 - Dominance Test is >50%
- ##### 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptation1 (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks:

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/1	100					MUCK	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water table Present?	Yes	X	No	___	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes	X	No	___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: NW 18th Ave Camas City/County: Camas/Clark County Sampling Date: 3/23/2015
Applicant/Owner: Adapt Engineering State: WA Sampling Point: 7
Investigator(s): B. Haddaway, K. Biafora Section, Township, Range: S4, T1N, R3E
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0-1%
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 45.592861° Long: 122.438684° Datum: WGS 84
Soil Map Unit Name: Odne silt loam NWI Classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?** **Yes** **No X**
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status?
1.			
2.			
3.			
4.			
Total Cover:	0		
Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Taraxacum officinale*	0.01		FACU
2. *Festuca arundinacea*	100	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
Total Cover:	100.01		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: **1** (A)
Total Number of Dominant Species Across All Strata: **1** (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1 =	**0**
FACW species		x2 =	**0**
FAC species	**100**	x3 =	**300**
FACU species	**0.01**	x4 =	**0.04**
UPL species		x5 =	**0**
Column Totals:	**100.01** (A)		**300.04** (B)
Prevalence Index = B/A =			**3.0**

Hydrophytic Vegetation Indicators:
1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
3 - Prevalence Index is ≤3.0[1]
4 - Morphological Adaptation1 (Provide supporting data in Remarks or on a separate sheet)
5 - Wetland Non-Vascular Plants[1]
Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **No X**

Remarks: Vegetation does not meet Prevalence Index

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10 YR 3/1	100					LOAM	
13-16	10 YR 3/1	97	10 YR 3/3	2	C	M	LOAM	
			10 YR 4/1	1	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water table Present? Yes X No ___ Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 3

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Delineation fieldwork conducted following period of heavy rainfall, consequently, groundwater was observed in upland areas that do not support hydric soils or hydrophytic plants

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: NW 18th Ave Camas City/County: Camas/Clark County Sampling Date: 3/23/2015
Applicant/Owner: Adapt Engineering State: WA Sampling Point: 8
Investigator(s): B. Haddaway, K. Biafora Section, Township, Range: S4, T1N, R3E
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0-1%
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 45.592861° Long: 122.438684° Datum: WGS 84
Soil Map Unit Name: Odne silt loam NWI Classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** **Yes X No**
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status?
1.			
2.			
3.			
4.			
Total Cover:	0		
Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Agrostis stolonifera*	20	Y	FAC
2. *Festuca arundinacea*	80	Y	FAC
3. *Trifolium repens*	1		FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
Total Cover:	101		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)
Total Number of Dominant Species Across All Strata: **2** (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	x1 =	**0**
FACW species	x2 =	**0**
FAC species	x3 =	**0**
FACU species	x4 =	**0**
UPL species	x5 =	**0**
Column Totals: **0** (A)		**0** (B)

Prevalence Index = B/A = **#DIV/0!**

Hydrophytic Vegetation Indicators:
1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
3 - Prevalence Index is ≤3.0[1]
4 - Morphological Adaptation1 (Provide supporting data in Remarks or on a separate sheet)
5 - Wetland Non-Vascular Plants[1]
Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks:

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 2/1	100					MUCK	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Muck Mineral (S1)
- ___ Sandy gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___		
Water table Present?	Yes X	No ___	Depth (inches): 1		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 1	**Wetland Hydrology Present?**	**Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland name or number WL-1

RATING SUMMARY – Western Washington

Name of wetland (or ID #): WL-1 Date of site visit: 3/23/2014

Rated by K. Biafora Trained by Ecology? X Yes ___No Date of training 9/2014

HGM Class used for rating Slope Wetland has multiple HGM classes? __Y X N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.
Source of base aerial photo/map ESRI, 2015

OVERALL WETLAND CATEGORY IV (based on functions X or special characteristics__)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

X **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
			Circle the appropriate ratings	
Site Potential	H M **L**	H M **L**	H M **L**	
Landscape Potential	H **M** L	H **M** L	H M **L**	
Value	H **M** L	H M **L**	H M **L**	**TOTAL**
Score Based on Ratings	5	4	3	12

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	**I** **II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I** **II**
Interdunal	**I** **II** **III** **IV**
None of the above	X

Wetland name or number WL-1

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	4

Wetland name or number _____

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

   NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

   1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

   NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

   NO – go to 3 **YES** – The wetland class is **Flats**
   *If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

   NO – go to 4 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   __X__The wetland is on a slope (*slope can be very gradual*),
   _X__The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   __X__The water leaves the wetland **without being impounded**.

   NO – go to 5 **YES –** The wetland class is **Slope**

   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number _____

NO – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number _____

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	
Total for D 1 Add the points in the boxes above	

Rating of Site Potential If score is: ___**12-16 = H** ___**6-11 = M** ___**0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____ Yes = 1 No = 0	
Total for D 2 Add the points in the boxes above	

Rating of Landscape Potential If score is: ___**3 or 4 = H** ___**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	
Total for D 3 Add the points in the boxes above	

Rating of Value If score is: ___**2-4 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number _____

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland:

Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0

D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.*

Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3
The wetland is a "headwater" wetland	points = 3
Wetland is flat but has small depressions on the surface that trap water	points = 1
Marks of ponding less than 0.5 ft (6 in)	points = 0

D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.*

The area of the basin is less than 10 times the area of the unit	points = 5
The area of the basin is 10 to 100 times the area of the unit	points = 3
The area of the basin is more than 100 times the area of the unit	points = 0
Entire wetland is in the Flats class	points = 5

Total for D 4 — Add the points in the boxes above

Rating of Site Potential If score is: ___**12-16 = H** ___**6-11 = M** ___**0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?

D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 No = 0
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff?	Yes = 1 No = 0
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)?	Yes = 1 No = 0

Total for D 5 — Add the points in the boxes above

Rating of Landscape Potential If score is: ___**3 = H** ___**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.*

The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):

- Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2
- Surface flooding problems are in a sub-basin farther down-gradient. points = 1

Flooding from groundwater is an issue in the sub-basin. points = 1

The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0

There are no problems with flooding downstream of the wetland. points = 0

D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0

Total for D 6 — Add the points in the boxes above

Rating of Value If score is: ___**2-4 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number _____

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

R 1.0. Does the site have the potential to improve water quality?	
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event:	
Depressions cover > $^{3}/_{4}$ area of wetland — points = 8	
Depressions cover > ½ area of wetland — points = 4	
Depressions present but cover < ½ area of wetland — points = 2	
No depressions present — points = 0	
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height, **not** Cowardin classes)	
Trees or shrubs > $^{2}/_{3}$ area of the wetland — points = 8	
Trees or shrubs > $^{1}/_{3}$ area of the wetland — points = 6	
Herbaceous plants (> 6 in high) > $^{2}/_{3}$ area of the wetland — points = 6	
Herbaceous plants (> 6 in high) > $^{1}/_{3}$ area of the wetland — points = 3	
Trees, shrubs, and ungrazed herbaceous < $^{1}/_{3}$ area of the wetland — points = 0	
Total for R 1 — Add the points in the boxes above	

Rating of Site Potential If score is: **___12-16 = H ___6-11 = M ___0-5 = L** *Record the rating on the first page*

R 2.0. Does the landscape have the potential to support the water quality function of the site?	
R 2.1. Is the wetland within an incorporated city or within its UGA? Yes = 2 No = 0	
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area? Yes = 1 No = 0	
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years? Yes = 1 No = 0	
R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4 Other sources _____ Yes = 1 No = 0	
Total for R 2 — Add the points in the boxes above	

Rating of Landscape Potential If score is: **___3-6 = H ___1 or 2 = M ___0 = L** *Record the rating on the first page*

R 3.0. Is the water quality improvement provided by the site valuable to society?	
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi? Yes = 1 No = 0	
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens? Yes = 1 No = 0	
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (*answer YES if there is a TMDL for the drainage in which the unit is found*) Yes = 2 No = 0	
Total for R 3 — Add the points in the boxes above	

Rating of Value If score is: **___2-4 = H ___1 = M ___0 = L** *Record the rating on the first page*

Wetland name or number _____

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion

R 4.0. Does the site have the potential to reduce flooding and erosion?

R 4.1. Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).* If the ratio is more than 20 points = 9 If the ratio is 10-20 points = 6 If the ratio is 5-<10 points = 4 If the ratio is 1-<5 points = 2 If the ratio is < 1 points = 1	
R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have >90% cover at person height. These are NOT Cowardin classes).* Forest or shrub for > $^1/_3$ area OR emergent plants > $^2/_3$ area points = 7 Forest or shrub for > $^1/_{10}$ area OR emergent plants > $^1/_3$ area points = 4 Plants do not meet above criteria points = 0	
Total for R 4 Add the points in the boxes above	

Rating of Site Potential If score is:___**12-16 = H** ___**6-11 = M** ___**0-5 = L** *Record the rating on the first page*

R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

R 5.1. Is the stream or river adjacent to the wetland downcut? Yes = 0 No = 1	
R 5.2. Does the up-gradient watershed include a UGA or incorporated area? Yes = 1 No = 0	
R 5.3. Is the up-gradient stream or river controlled by dams? Yes = 0 No = 1	
Total for R 5 Add the points in the boxes above	

Rating of Landscape Potential If score is:___**3 = H** ___**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

R 6.0. Are the hydrologic functions provided by the site valuable to society?

R 6.1. Distance to the nearest areas downstream that have flooding problems? *Choose the description that best fits the site*. The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	
Total for R 6 Add the points in the boxes above	

Rating of Value If score is:___**2-4 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number _____

LAKE FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

L 1.0. Does the site have the potential to improve water quality?		
L 1.1. Average width of plants along the lakeshore *(use polygons of Cowardin classes)*:		
Plants are more than 33 ft (10 m) wide	points = 6	
Plants are more than 16 ft (5 m) wide and <33 ft	points = 3	
Plants are more than 6 ft (2 m) wide and <16 ft	points = 1	
Plants are less than 6 ft wide	points = 0	
L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. *These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.*		
Cover of herbaceous plants is >90% of the vegetated area	points = 6	
Cover of herbaceous plants is $>^{2}/_{3}$ of the vegetated area	points = 4	
Cover of herbaceous plants is $>^{1}/_{3}$ of the vegetated area	points = 3	
Other plants that are not aquatic bed $>^{2}/_{3}$ unit	points = 3	
Other plants that are not aquatic bed in $>^{1}/_{3}$ vegetated area	points = 1	
Aquatic bed plants and open water cover $>^{2}/_{3}$ of the unit	points = 0	
Total for L 1	Add the points in the boxes above	

Rating of Site Potential If score is: **___8-12 = H ___4-7 = M ___0-3 = L** *Record the rating on the first page*

L 2.0. Does the landscape have the potential to support the water quality function of the site?		
L 2.1. Is the lake used by power boats?	Yes = 1 No = 0	
L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants?	Yes = 1 No = 0	
L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil?	Yes = 1 No = 0	
Total for L 2	Add the points in the boxes above	

Rating of Landscape Potential: If score is: **___2 or 3 = H ___1 = M ___0 = L** *Record the rating on the first page*

L 3.0. Is the water quality improvement provided by the site valuable to society?		
L 3.1. Is the lake on the 303(d) list of degraded aquatic resources?	Yes = 1 No = 0	
L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)?	Yes = 1 No = 0	
L 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the lake or basin in which the unit is found.*	Yes = 2 No = 0	
Total for L 3	Add the points in the boxes above	

Rating of Value If score is: **___2-4 = H ___1 = M ___0 = L** *Record the rating on the first page*

Wetland name or number _____

LAKE FRINGE WETLANDS

Hydrologic Functions - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?	
L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore (**do not** include Aquatic bed): *Choose the highest scoring description that matches conditions in the wetland.*	
> ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide — points = 6	
> ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide — points = 4	
> ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide — points = 4	
Plants are at least 6 ft (2 m) wide (any type except Aquatic bed) — points = 2	
Plants are less than 6 ft (2 m) wide (any type except Aquatic bed) — points = 0	

Rating of Site Potential: If score is:___**6 = M** ___**0-5 = L** *Record the rating on the first page*

L 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
L 5.1. Is the lake used by power boats with more than 10 hp?	Yes = 1 No = 0	
L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance?	Yes = 1 No = 0	
Total for L 5	Add the points in the boxes above	

Rating of Landscape Potential If score is:___**2 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

L 6.0. Are the hydrologic functions provided by the site valuable to society?	
L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score.	
There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit — points = 2	
There are nature trails or other paths and recreational activities within 25 ft of OHWM — points = 1	
Other resources that could be impacted by erosion — points = 1	
There are no resources that can be impacted by erosion along the shores of the unit — points = 0	

Rating of Value: If score is**:**___**2 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number _____

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: *(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance*) Slope is 1% or less points = 3 Slope is > 1%-2% points = 2 Slope is > 2%-5% points = 1 Slope is greater than 5% points = 0	2
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 No = 0	0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area points = 6 Dense, uncut, herbaceous plants > ½ of area points = 3 Dense, woody, plants > ½ of area points = 2 Dense, uncut, herbaceous plants > ¼ of area points = 1 Does not meet any of the criteria above for plants points = 0	0
Total for S 1 Add the points in the boxes above	2

Rating of Site Potential If score is: ___**12 = H** ___**6-11 = M** **X** **0-5 = L** *Record the rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____ Yes = 1 No = 0	0
Total for S 2 Add the points in the boxes above	1

Rating of Landscape Potential If score is: **X** **1-2 = M** ___**0 = L** *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list*. Yes = 1 No = 0	1
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the basin in which unit is found.* Yes = 2 No = 0	0
Total for S 3 Add the points in the boxes above	1

Rating of Value If score is: ___**2-4 = H** **X** **1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number _____

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.* Dense, uncut, **rigid** plants cover > 90% of the area of the wetland points = 1 All other conditions points = 0	0

Rating of Site Potential If score is: ___**1 = M** **X** **0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	1

Rating of Landscape Potential If score is: **X** **1 = M** _____**0 = L** *Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	0
S 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for S 6 Add the points in the boxes above	0

Rating of Value If score is: ___**2-4 = H** ___**1 = M** **X** **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland drains into sewer system

Wetland name or number _____

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

____Aquatic bed	4 structures or more: points = 4	
_X_Emergent	3 structures: points = 2	
____Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1	
____Forested (areas where trees have > 30% cover)	1 structure: points = 0	
If the unit has a Forested class, check if:		
____The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon		0

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

____Permanently flooded or inundated	4 or more types present: points = 3	
____Seasonally flooded or inundated	3 types present: points = 2	
_X_Occasionally flooded or inundated	2 types present: points = 1	
_X_Saturated only	1 type present: points = 0	
____Permanently flowing stream or river in, or adjacent to, the wetland		
____Seasonally flowing stream in, or adjacent to, the wetland		
____**Lake Fringe wetland**	**2 points**	
____**Freshwater tidal wetland**	**2 points**	1

H 1.3. Richness of plant species

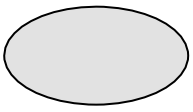
Count the number of plant species in the wetland that cover at least 10 ft^2.

Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

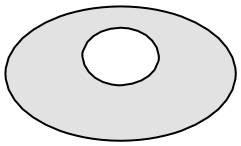
If you counted: > 19 species	points = 2	
5 - 19 species	points = 1	1
< 5 species	points = 0	

H 1.4. Interspersion of habitats

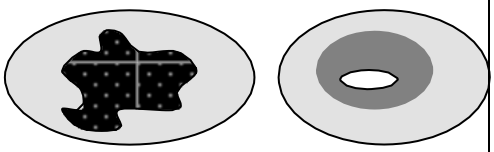
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points

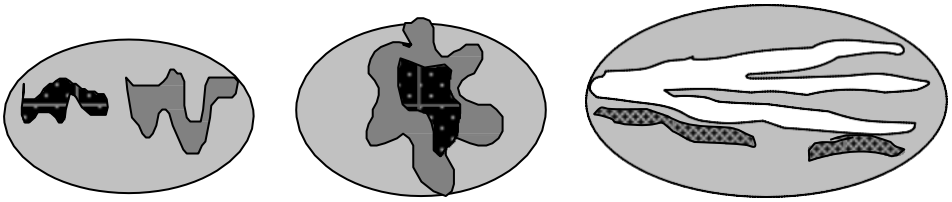


Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points



0

Wetland name or number _____

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ____Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	0
Total for H 1 Add the points in the boxes above	2

Rating of Site Potential If score is:___**15-18 = H** ___**7-14 = M** **X** **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 **+** [(% moderate and low intensity land uses)/2].003 **= 0.003** % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 10 **+** [(% moderate and low intensity land uses)/2] 11 **= 21** % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	-1

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** **X** **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more priority habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	

Rating of Value If score is:___**2 = H** ___**1 = M** **X** **0 = L** *Record the rating on the first page*

Wetland name or number _____

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes **–** Go to **SC 2.2** No **–** Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes **= Category I** No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes **– Contact WNHP/WDNR and go to SC 2.4** No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes **= Category I** No **= Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No **= Is not a bog**	**Cat. I**

Wetland name or number _____

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	

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Wetland name or number WL-2

RATING SUMMARY – Western Washington

Name of wetland (or ID #): WL-2 Date of site visit: 3/23/2015

Rated by K. Biafora Trained by Ecology? X Yes ___No Date of training 9/2014

HGM Class used for rating Depressional Wetland has multiple HGM classes? X Y ___N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.
Source of base aerial photo/map ESRI, 2010

OVERALL WETLAND CATEGORY III (based on functions X or special characteristics__)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

III **Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			
	Circle the appropriate ratings									
Site Potential	H	M	L	H	M	L	H	M	L	
Landscape Potential	H	M	L	H	M	L	H	M	L	
Value	H	M	L	H	M	L	H	M	L	TOTAL
Score Based on Ratings	6			6			4			16

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	X

Wetland name or number WL-2

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	2
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	4

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number _____

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

   NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

   1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

   NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

   NO – go to 3 **YES** – The wetland class is **Flats**
   *If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

   NO – go to 4 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded**.

   NO – go to 5 **YES –** The wetland class is **Slope**

   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number _____

NO – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number _____

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	1
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	2
Total for D 1 Add the points in the boxes above	5

Rating of Site Potential If score is: ___**12-16 = H** ___**6-11 = M** **X** **0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	1
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____ Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	3

Rating of Landscape Potential If score is: **X** **3 or 4 = H** ___**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	0
Total for D 3 Add the points in the boxes above	1

Rating of Value If score is: ___**2-4 = H** **X** **1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number _____

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	2
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	3
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	5
Total for D 4 Add the points in the boxes above	10

Rating of Site Potential If score is: ___**12-16 = H** **X** **6-11 = M** ___**0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?

D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 Add the points in the boxes above	3

Rating of Landscape Potential If score is: **X** **3 = H** ___**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* *Wetland drains to sewer system* points = 0 There are no problems with flooding downstream of the wetland. points = 0	0
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	0

Rating of Value If score is: ___**2-4 = H** ___**1 = M** **X** **0 = L** *Record the rating on the first page*

Wetland name or number _____

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

R 1.0. Does the site have the potential to improve water quality?	
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event:	
Depressions cover > $^{3}/_{4}$ area of wetland — points = 8	
Depressions cover > ½ area of wetland — points = 4	
Depressions present but cover < ½ area of wetland — points = 2	
No depressions present — points = 0	
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height, **not** Cowardin classes)	
Trees or shrubs > $^{2}/_{3}$ area of the wetland — points = 8	
Trees or shrubs > $^{1}/_{3}$ area of the wetland — points = 6	
Herbaceous plants (> 6 in high) > $^{2}/_{3}$ area of the wetland — points = 6	
Herbaceous plants (> 6 in high) > $^{1}/_{3}$ area of the wetland — points = 3	
Trees, shrubs, and ungrazed herbaceous < $^{1}/_{3}$ area of the wetland — points = 0	
Total for R 1 — Add the points in the boxes above	

Rating of Site Potential If score is: **___12-16 = H ___6-11 = M ___0-5 = L** *Record the rating on the first page*

R 2.0. Does the landscape have the potential to support the water quality function of the site?	
R 2.1. Is the wetland within an incorporated city or within its UGA? Yes = 2 No = 0	
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area? Yes = 1 No = 0	
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years? Yes = 1 No = 0	
R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4 Other sources _____ Yes = 1 No = 0	
Total for R 2 — Add the points in the boxes above	

Rating of Landscape Potential If score is: **___3-6 = H ___1 or 2 = M ___0 = L** *Record the rating on the first page*

R 3.0. Is the water quality improvement provided by the site valuable to society?	
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi? Yes = 1 No = 0	
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens? Yes = 1 No = 0	
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (*answer YES if there is a TMDL for the drainage in which the unit is found*) Yes = 2 No = 0	
Total for R 3 — Add the points in the boxes above	

Rating of Value If score is: **___2-4 = H ___1 = M ___0 = L** *Record the rating on the first page*

Wetland name or number _____

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion

R 4.0. Does the site have the potential to reduce flooding and erosion?

R 4.1. Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).* If the ratio is more than 20 points = 9 If the ratio is 10-20 points = 6 If the ratio is 5-<10 points = 4 If the ratio is 1-<5 points = 2 If the ratio is < 1 points = 1	
R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have >90% cover at person height. These are NOT Cowardin classes).* Forest or shrub for > $^1/_3$ area OR emergent plants > $^2/_3$ area points = 7 Forest or shrub for > $^1/_{10}$ area OR emergent plants > $^1/_3$ area points = 4 Plants do not meet above criteria points = 0	
Total for R 4 Add the points in the boxes above	

Rating of Site Potential If score is:___**12-16 = H** ___**6-11 = M** ___**0-5 = L** *Record the rating on the first page*

R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

R 5.1. Is the stream or river adjacent to the wetland downcut? Yes = 0 No = 1	
R 5.2. Does the up-gradient watershed include a UGA or incorporated area? Yes = 1 No = 0	
R 5.3. Is the up-gradient stream or river controlled by dams? Yes = 0 No = 1	
Total for R 5 Add the points in the boxes above	

Rating of Landscape Potential If score is:___**3 = H** ___**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

R 6.0. Are the hydrologic functions provided by the site valuable to society?

R 6.1. Distance to the nearest areas downstream that have flooding problems? *Choose the description that best fits the site*. The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	
Total for R 6 Add the points in the boxes above	

Rating of Value If score is:___**2-4 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number _____

LAKE FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

L 1.0. Does the site have the potential to improve water quality?		
L 1.1. Average width of plants along the lakeshore *(use polygons of Cowardin classes)*:		
Plants are more than 33 ft (10 m) wide	points = 6	
Plants are more than 16 ft (5 m) wide and <33 ft	points = 3	
Plants are more than 6 ft (2 m) wide and <16 ft	points = 1	
Plants are less than 6 ft wide	points = 0	
L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. *These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.*		
Cover of herbaceous plants is >90% of the vegetated area	points = 6	
Cover of herbaceous plants is $>^{2}/_{3}$ of the vegetated area	points = 4	
Cover of herbaceous plants is $>^{1}/_{3}$ of the vegetated area	points = 3	
Other plants that are not aquatic bed $>^{2}/_{3}$ unit	points = 3	
Other plants that are not aquatic bed in $>^{1}/_{3}$ vegetated area	points = 1	
Aquatic bed plants and open water cover $>^{2}/_{3}$ of the unit	points = 0	
Total for L 1	Add the points in the boxes above	

Rating of Site Potential If score is: **___8-12 = H ___4-7 = M ___0-3 = L** *Record the rating on the first page*

L 2.0. Does the landscape have the potential to support the water quality function of the site?		
L 2.1. Is the lake used by power boats?	Yes = 1 No = 0	
L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants?	Yes = 1 No = 0	
L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil?	Yes = 1 No = 0	
Total for L 2	Add the points in the boxes above	

Rating of Landscape Potential: If score is: **___2 or 3 = H ___1 = M ___0 = L** *Record the rating on the first page*

L 3.0. Is the water quality improvement provided by the site valuable to society?		
L 3.1. Is the lake on the 303(d) list of degraded aquatic resources?	Yes = 1 No = 0	
L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)?	Yes = 1 No = 0	
L 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the lake or basin in which the unit is found.*	Yes = 2 No = 0	
Total for L 3	Add the points in the boxes above	

Rating of Value If score is: **___2-4 = H ___1 = M ___0 = L** *Record the rating on the first page*

Wetland name or number _____

LAKE FRINGE WETLANDS

Hydrologic Functions - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?	
L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore (**do not** include Aquatic bed): *Choose the highest scoring description that matches conditions in the wetland.*	
> ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide — points = 6	
> ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide — points = 4	
> ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide — points = 4	
Plants are at least 6 ft (2 m) wide (any type except Aquatic bed) — points = 2	
Plants are less than 6 ft (2 m) wide (any type except Aquatic bed) — points = 0	

Rating of Site Potential: If score is:___**6 = M** ___**0-5 = L** *Record the rating on the first page*

L 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
L 5.1. Is the lake used by power boats with more than 10 hp?	Yes = 1 No = 0	
L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance?	Yes = 1 No = 0	
Total for L 5	Add the points in the boxes above	

Rating of Landscape Potential If score is:___**2 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

L 6.0. Are the hydrologic functions provided by the site valuable to society?	
L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score.	
There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit — points = 2	
There are nature trails or other paths and recreational activities within 25 ft of OHWM — points = 1	
Other resources that could be impacted by erosion — points = 1	
There are no resources that can be impacted by erosion along the shores of the unit — points = 0	

Rating of Value: If score is**:**___**2 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number _____

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: *(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance*) Slope is 1% or less — points = 3 Slope is > 1%-2% — points = 2 Slope is > 2%-5% — points = 1 Slope is greater than 5% — points = 0	
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 No = 0	
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area — points = 6 Dense, uncut, herbaceous plants > ½ of area — points = 3 Dense, woody, plants > ½ of area — points = 2 Dense, uncut, herbaceous plants > ¼ of area — points = 1 Does not meet any of the criteria above for plants — points = 0	
Total for S 1 — Add the points in the boxes above	

Rating of Site Potential If score is: ___**12 = H** ___**6-11 = M** ___**0-5 = L** *Record the rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____ Yes = 1 No = 0	
Total for S 2 — Add the points in the boxes above	

Rating of Landscape Potential If score is: ___**1-2 = M** ___**0 = L** *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list*. Yes = 1 No = 0	
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the basin in which unit is found.* Yes = 2 No = 0	
Total for S 3 — Add the points in the boxes above	

Rating of Value If score is: ___**2-4 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number _____

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.* Dense, uncut, **rigid** plants cover > 90% of the area of the wetland — points = 1 All other conditions — points = 0	

Rating of Site Potential If score is: ___**1 = M** ___**0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	

Rating of Landscape Potential If score is: ___**1 = M** ___**0 = L** *Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) — points = 2 Surface flooding problems are in a sub-basin farther down-gradient — points = 1 No flooding problems anywhere downstream — points = 0	
S 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	
Total for S 6 — Add the points in the boxes above	

Rating of Value If score is: ___**2-4 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number _____

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

____	Aquatic bed	4 structures or more: points = 4
_X_	Emergent	3 structures: points = 2
_X_	Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
____	Forested (areas where trees have > 30% cover)	1 structure: points = 0

If the unit has a Forested class, check if:

____The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

1

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

____	Permanently flooded or inundated	4 or more types present: points = 3
_X_	Seasonally flooded or inundated	3 types present: points = 2
_X_	Occasionally flooded or inundated	2 types present: points = 1
_X_	Saturated only	1 type present: points = 0
____	Permanently flowing stream or river in, or adjacent to, the wetland	
____	Seasonally flowing stream in, or adjacent to, the wetland	
____	**Lake Fringe wetland**	**2 points**
____	**Freshwater tidal wetland**	**2 points**

2

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

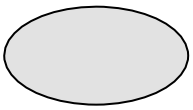
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

If you counted:	> 19 species	points = 2
	5 - 19 species	points = 1
	< 5 species	points = 0

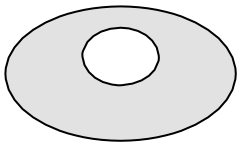
1

H 1.4. Interspersion of habitats

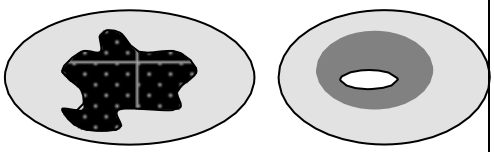
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points

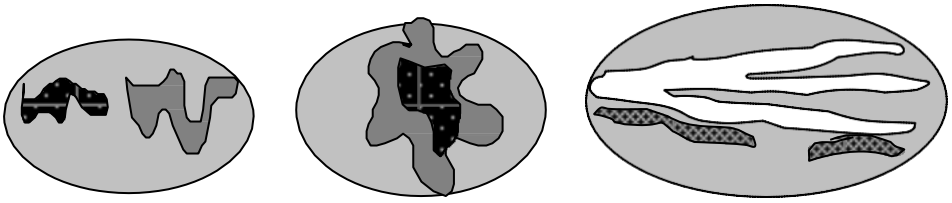


Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points



2

Wetland name or number _____

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ____Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* _X_At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	1
Total for H 1 Add the points in the boxes above	7

Rating of Site Potential If score is:___**15-18 = H** _**X**_**7-14 = M** ___**0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 **+** [(% moderate and low intensity land uses)/2] 0.04 **= 0.04** % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat___ **+** [(% moderate and low intensity land uses)/2]___ **=** _____% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	-1

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** _**X**_**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more priority habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	

Rating of Value If score is:___**2 = H** ___**1 = M** _**X**_**0 = L** *Record the rating on the first page*

Wetland name or number _____

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes **–** Go to **SC 2.2** No **–** Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes **= Category I** No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes **– Contact WNHP/WDNR and go to SC 2.4** No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes **= Category I** No **= Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No **= Is not a bog**	**Cat. I**

Wetland name or number _____

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	

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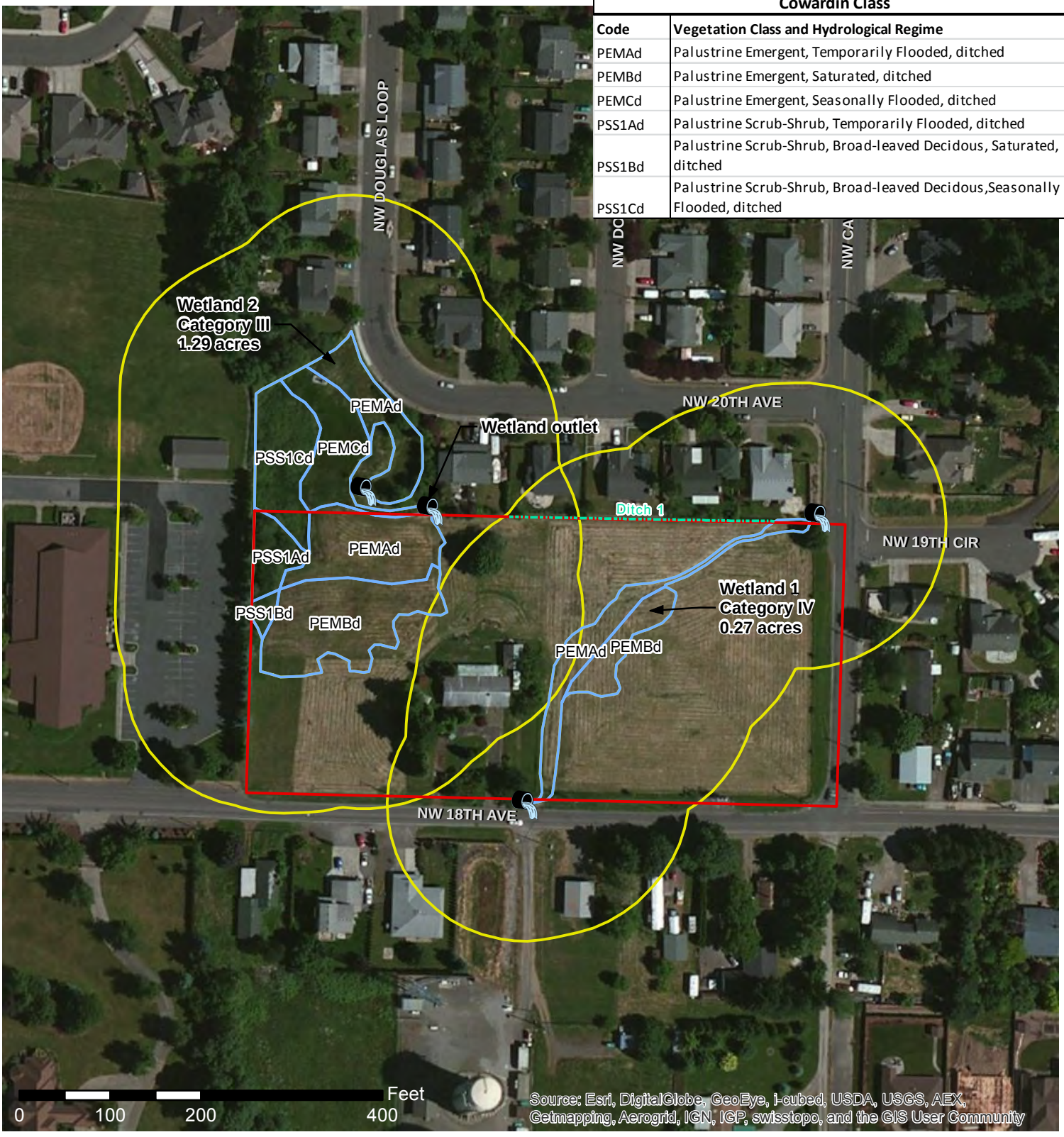


Cowardin Class	
Code	**Vegetation Class and Hydrological Regime**
PEMAd	Palustrine Emergent, Temporarily Flooded, ditched
PEMBd	Palustrine Emergent, Saturated, ditched
PEMCd	Palustrine Emergent, Seasonally Flooded, ditched
PSS1Ad	Palustrine Scrub-Shrub, Temporarily Flooded, ditched
PSS1Bd	Palustrine Scrub-Shrub, Broad-leaved Decidous, Saturated, ditched
PSS1Cd	Palustrine Scrub-Shrub, Broad-leaved Decidous,Seasonally Flooded, ditched

Legend

- Study Site Tax Lot Boundary
- Landscape Buffer (150 ft.)
- Ditch
- Culverts/Drains

Scale: 1 inch = 100 feet

Appendix B. Wetland Rating Map 1

CASCADE ENVIRONMENTAL GROUP

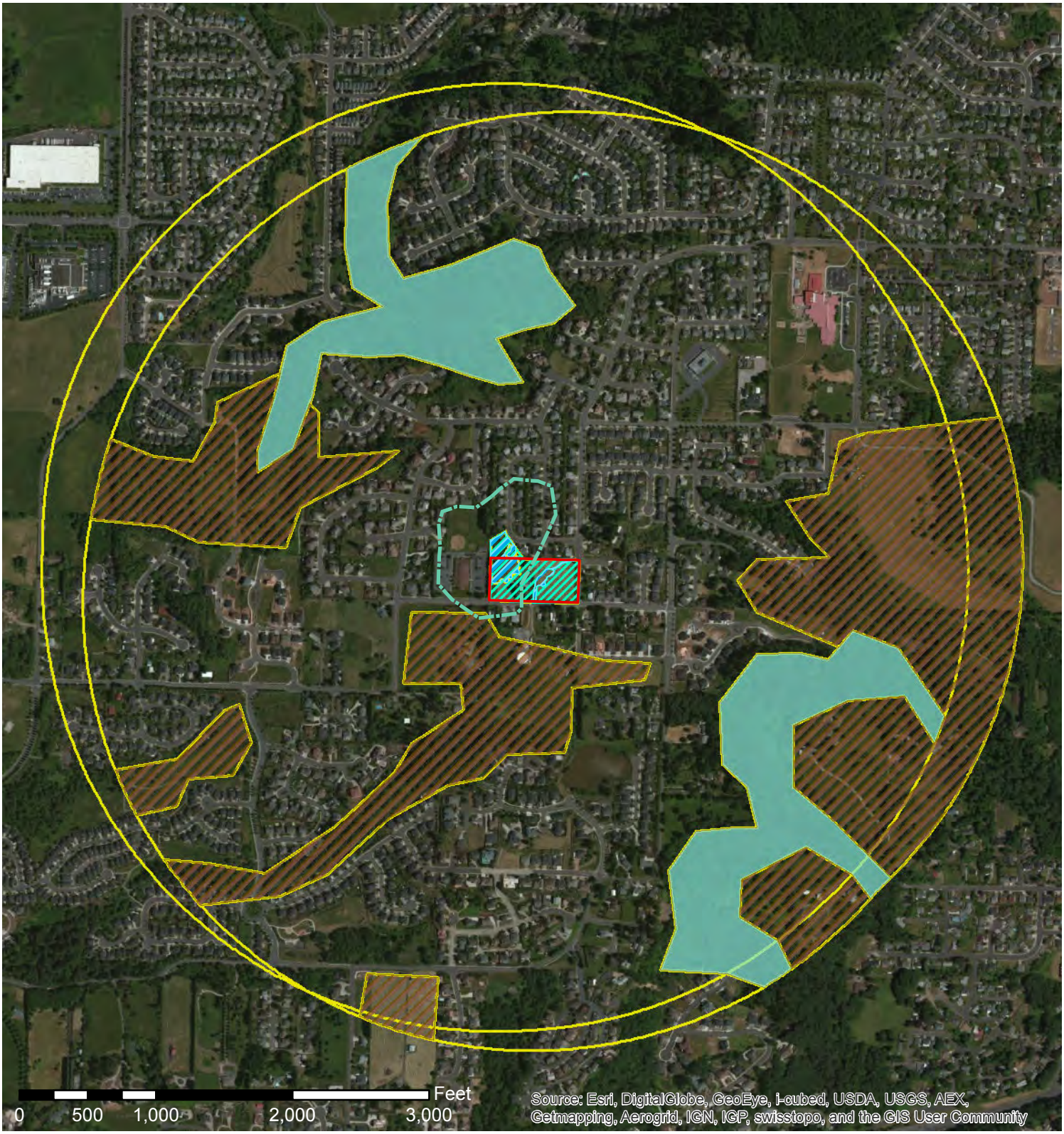
NW 18th Avenue Camas
Project Site
Wetland Delineation Report

Date: 4/7/2015

City of Camas, Washington

Data Source: Clark County, WA GIS, 2013

Z:\GIS\Adapt_Wetland_Delineations\NW18th_Camas\NW18th_Camas_WetlandRatingMap1.mxd



Legend

- Study Site Tax Lot Boundary
- Wetlands
- Contributing Basin (Wetland 2)
- 1 Km Circle
- Accessible Habitat
- Relatively Undisturbed Habitat
- Moderate and Low Intensity Uses

Scale: 1 inch = 1,000 feet

Data Source: Clark County, WA GIS, 2013

Z:\GIS\Adapt_Wetland_Delineations\NW18th_Camas\NW18th_Camas_WetlandRatingMap2.mxd

Appendix B. Wetland Rating Map 2

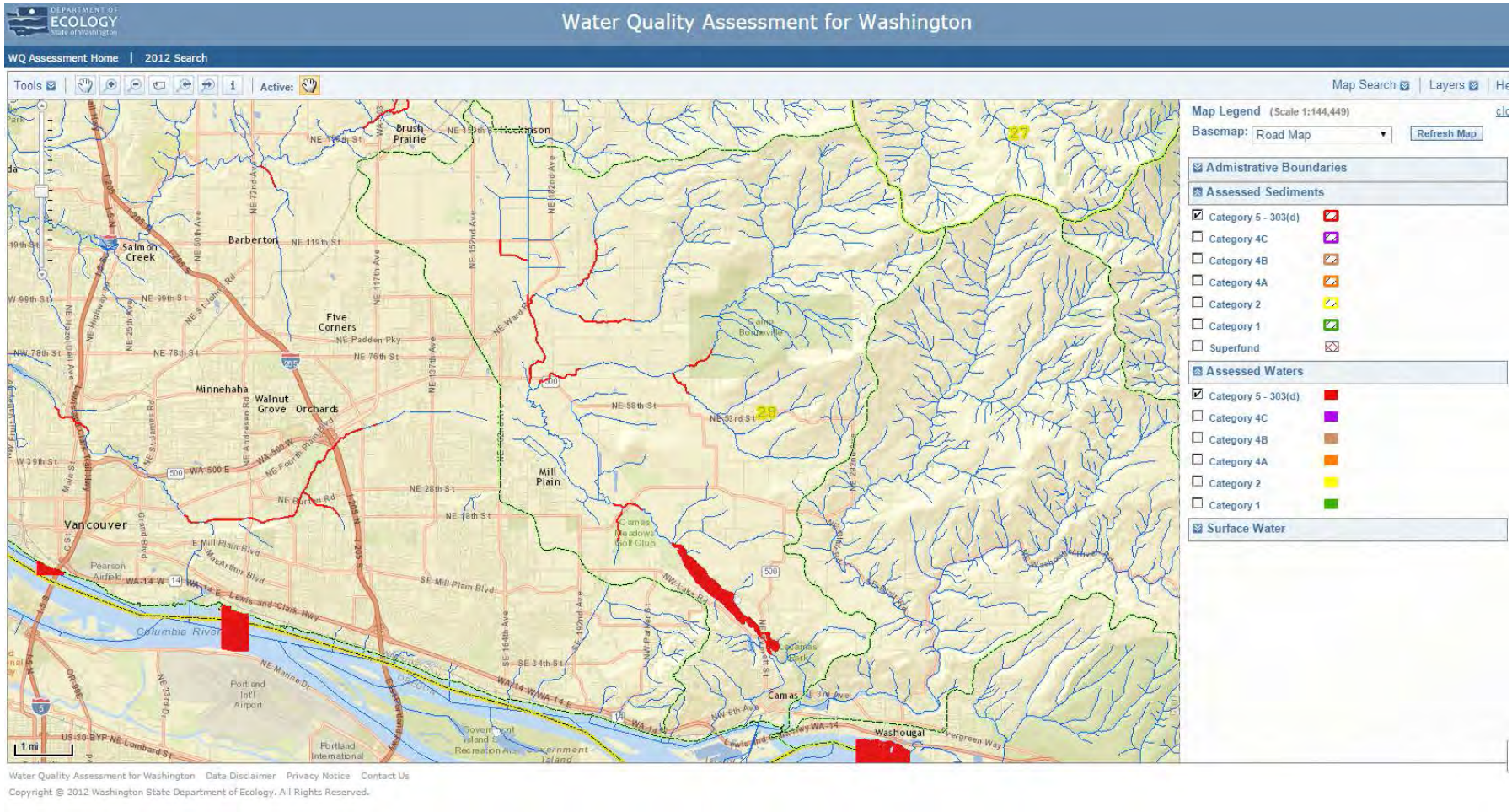
CASCADE ENVIRONMENTAL GROUP

NW 18th Avenue Camas
Project Site
Wetland Delineation Report

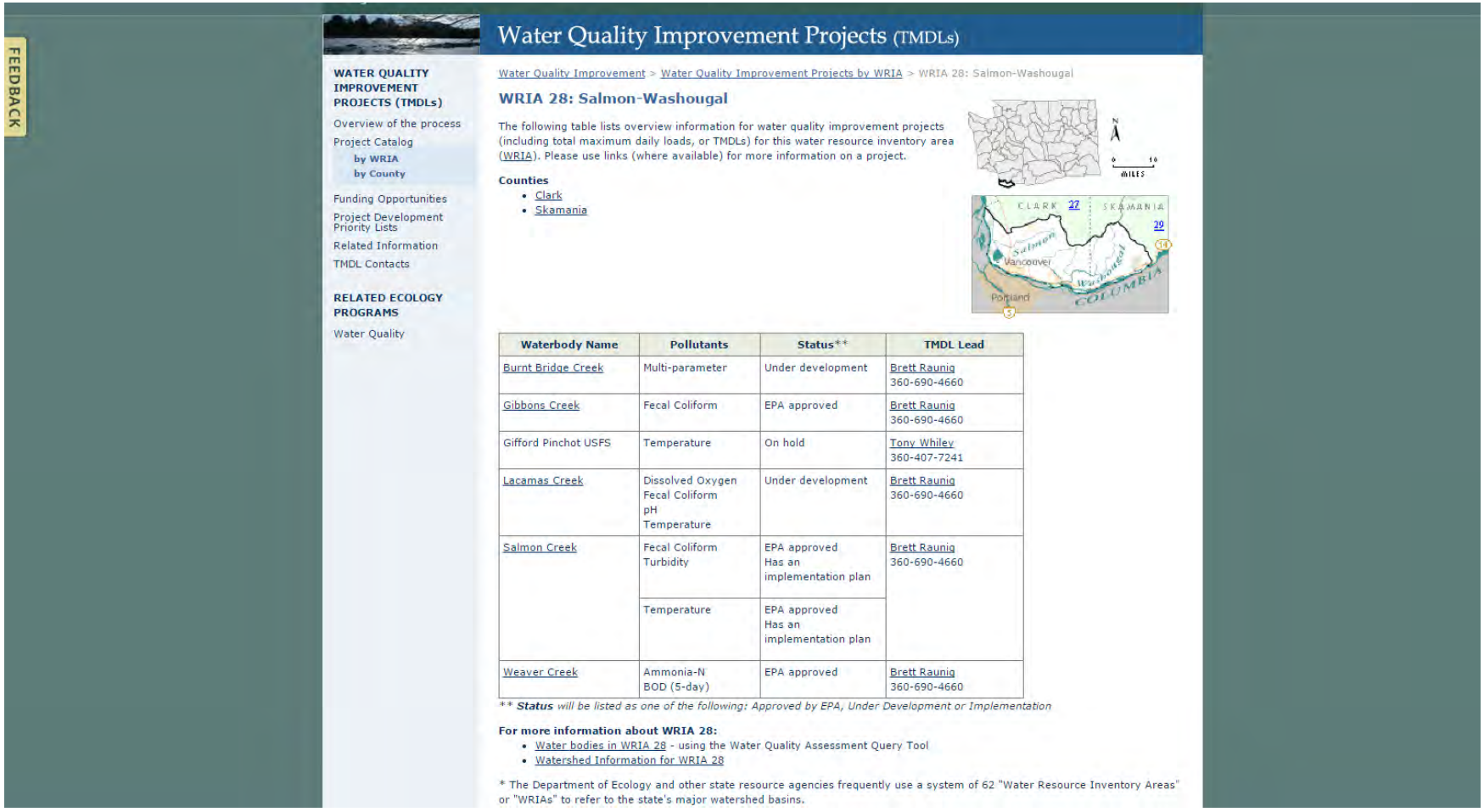
Date: 4/7/2015

City of Camas, Washington

Appendix B: Figure 3. Screen Capture of 303(d) Listed Waters



Appendix B: Figure 4. Screen Capture of TDML List for WRIA 28



FEEDBACK

Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

- Overview of the process
- Project Catalog
  - by WRIA
  - by County
- Funding Opportunities
- Project Development Priority Lists
- Related Information
- TMDL Contacts

RELATED ECOLOGY PROGRAMS

- Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 28: Salmon-Washougal

WRIA 28: Salmon-Washougal

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- Clark
- Skamania

Waterbody Name	Pollutants	Status**	TMDL Lead
Burnt Bridge Creek	Multi-parameter	Under development	Brett Raunig 360-690-4660
Gibbons Creek	Fecal Coliform	EPA approved	Brett Raunig 360-690-4660
Gifford Pinchot USFS	Temperature	On hold	Tony Whiley 360-407-7241
Lacamas Creek	Dissolved Oxygen Fecal Coliform pH Temperature	Under development	Brett Raunig 360-690-4660
Salmon Creek	Fecal Coliform Turbidity	EPA approved Has an implementation plan	Brett Raunig 360-690-4660
	Temperature	EPA approved Has an implementation plan	
Weaver Creek	Ammonia-N BOD (5-day)	EPA approved	Brett Raunig 360-690-4660

** ***Status*** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 28:

- Water bodies in WRIA 28 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 28

* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAs" to refer to the state's major watershed basins.

Photo point 1. Photo 1. From the northeast corner of the study site looking 60° offsite toward storm sewer that drains Wetland 1.

Photo point 1. Photo 2. From the northeast corner of the study site looking 240° toward the northeastern ditched portion of Wetland 1.

Photo point 2. Photo 1. From the upland pasture area south of Wetland 1 looking 10 ° across the wetland.

Photo point 2. Photo 2. From the upland pasture area south of Wetland 1 looking 55 ° along the wetland/upland boundary.

Photo point 2. Photo 3. From the upland pasture area south of Wetland 1 looking 140° toward NW 18th Avenue and uplands.

Photo point 2. Photo 4. From the upland pasture area south of Wetland 1 looking 250° toward Wetland 1 and residence.

Photo point 3. Photo 1. From Wetland 1 looking 80° at northeastern ditched portion. Note surface water present in ditch.

Photo point 4. Photo 1. From the culvert at the origin of Wetland 1 looking 75° at culvert outfall and southern ditched portion.

Photo point 5. Photo 1. From the upland area between Wetland 1 and 2 looking 0° at uplands and the northern property boundary. Ditch 1 begins at fence line.

Photo point 5. Photo 2. From the upland area between Wetland 1 and 2 looking 90° at uplands grading down into Wetland 1.

Photo point 5. Photo 3. From the upland area between Wetland 1 and 2 looking 180° at back of residence.

Photo point 5. Photo 4. From the upland area between Wetland 1 and 2 looking 270° at uplands grading down into Wetland 2.

Photo point 6. Photo 1. From Wetland 2 looking 190° toward the wetland/upland boundary (visible as topographic break) and the lease area marked by orange flagging. Note surface water.

Photo point 6. Photo 2. From Wetland 2 looking 300° toward scrub-shrub vegetation in the offsite portion of wetland.

Photo point 6. Photo 3. From Wetland 2 looking 20° toward ditch vegetation in the offsite portion of the wetland.

Photo point 6. Photo 4. From Wetland 2 looking 80° across wetland toward uplands (boundary visible as topographic break).

Photo point 6. Photo 5. From Wetland 2 looking 80° across wetland toward residence (boundary visible as topographic break).

APPENDIX E

LETTER FROM PROPERTY OWNER

CASCADIA PM

Precision Program Management

Ms. Sarah Fox, AICP
Senior Planner
City of Camas Community
Development Department
616 NE 4th Street
Camas, WA 98606

October 5, 2015

RE: CUP Application PLI-15-001-4 – Location of Proposed Wireless Facility on Our Property at 2829 NW 18th Avenue, Camas, WA 98607.

Dear Ms. Fox:

As the owner of above mentioned property, we are satisfied with the location chosen by the proponents for the new wireless facility on our property. We understand that the City of Camas requested that the site be moved to the east side of the property; however, this area is also impacted by wetlands and associated buffers. There is a portion of usable land that could be subdivided per current zoning standards and we want this area left without any further restrictions.

Thank you for your time and consideration on this matter, and please feel free to contact my daughter Mary Williams at 360-904-8050.

Sincerely,

Jean Nagel

Jean M. Nagel

Cascadia PM, LLC
Corporate Headquarters
3322 South Bay Road NE
Olympia, WA 98506
360 438 8002
www.cascadiapm.com

130 N. Nimitz Hwy Suite A-200
Honolulu, HI 96817
808 536 7400

5501 NE 109th Ct Suite A-2
Vancouver, WA 98662
360 885 9200

733 Seventh Ave Suite 209
Kirkland, WA 98033
425 828 1008

APPENDIX F

PREPARER'S RESUME

Adapt Engineering
10725 SW Barbur Blvd., Suite 200
Portland, Oregon 97219
V (503) 892-2346
F (503) 892-2348
www.adaptengr.com

PROFESSIONAL EXPERIENCE SUMMARY

Beth Belanger
Environmental Scientist / NEPA Specialist / Biologist / Project Manager

TECHNICAL SPECIALTIES

National Environmental Policy Act (NEPA) Reviews
Project Management
Biological Assessments
Threatened and Endangered Species Habitat Evaluation
Wetland Determinations & Monitoring
Plant Identification
Forest and Stream Ecology
Mycology

EDUCATION

Graduated in 2004 with a Bachelors of Arts and Bachelors of Science in Environmental Science from The Evergreen State College, Olympia, Washington

CERTIFICATIONS

Oregon Public Notary
Oregon Department of Transportation—Certified Biologist
PSU Professional Certificate in Environmental Regulations and Compliance
PSU Professional Certification of Completion in Basic Wetland Delineation

PROFESSIONAL SUMMARY

Ms. Belanger has worked extensively conducting National Environmental Policy Act (NEPA) reports since early 2005, including conducting site visits, field investigations, plant and species identification, data gathering and report writing.

Ms. Belanger worked as a field biologist from June 2004 to April 2005 for the Washington Department of Natural Resources. During the summer of 2003, Ms. Belanger was a Wetland Monitoring Intern for the Washington State Department of Transportation.

REPRESENTATIVE PROJECT EXPERIENCE

National Environmental Policy Act (NEPA) Reports, Oregon and Washington
Ms. Belanger has conducted over 500 NEPA review projects since 2005 for several telecommunications companies including AT&T Mobility, Sprint-Nextel Communications and T-Mobile. Each NEPA review included a biological review of wetland conditions and potential threatened and endangered species habitat. In conjunction to the NEPA reports, Ms. Belanger has conducted an equal number of biological assessments for the same telecommunications carriers since May 2005.

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2015-ANM-1999-OE

Exhibit G
CUP15-01

Issued Date: 09/03/2015

Kim Calcasola
PI Telecom Infrastructure
4601 Touchton Road
Bldg 300, Suite 3200
Jacksonville, FL 32246

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Monopole Prune Hill
Location:	Camas, WA
Latitude:	45-35-34.10N NAD 83
Longitude:	122-26-22.90W
Heights:	749 feet site elevation (SE)
	180 feet above ground level (AGL)
	929 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part 1)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed and maintained in accordance with FAA Advisory circular 70/7460-1 K Change 2.

This determination expires on 03/03/2017 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates , heights, frequency(ies) and power . Any changes in coordinates , heights, and frequencies or use of greater power will void this determination. Any future construction or alteration , including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

A copy of this determination will be forwarded to the Federal Communications Commission (FCC) because the structure is subject to their licensing authority.

If we can be of further assistance, please contact our office at (425) 227-2791. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2015-ANM-1999-OE.

Signature Control No: 256583371-264016220 (DNE)
Daniel Shoemaker
Specialist

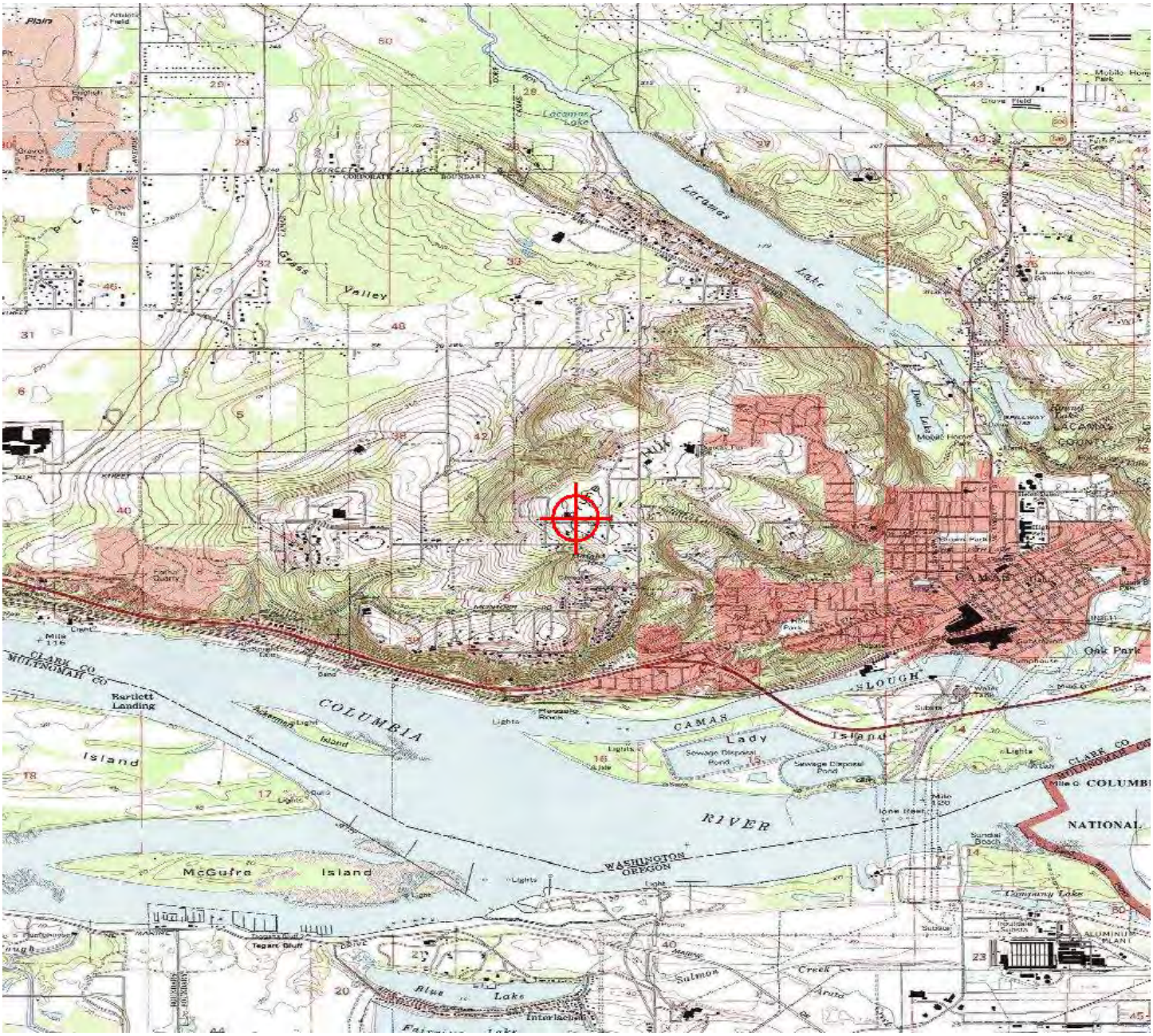
Attachment(s)
Frequency Data
Map(s)

cc: FCC

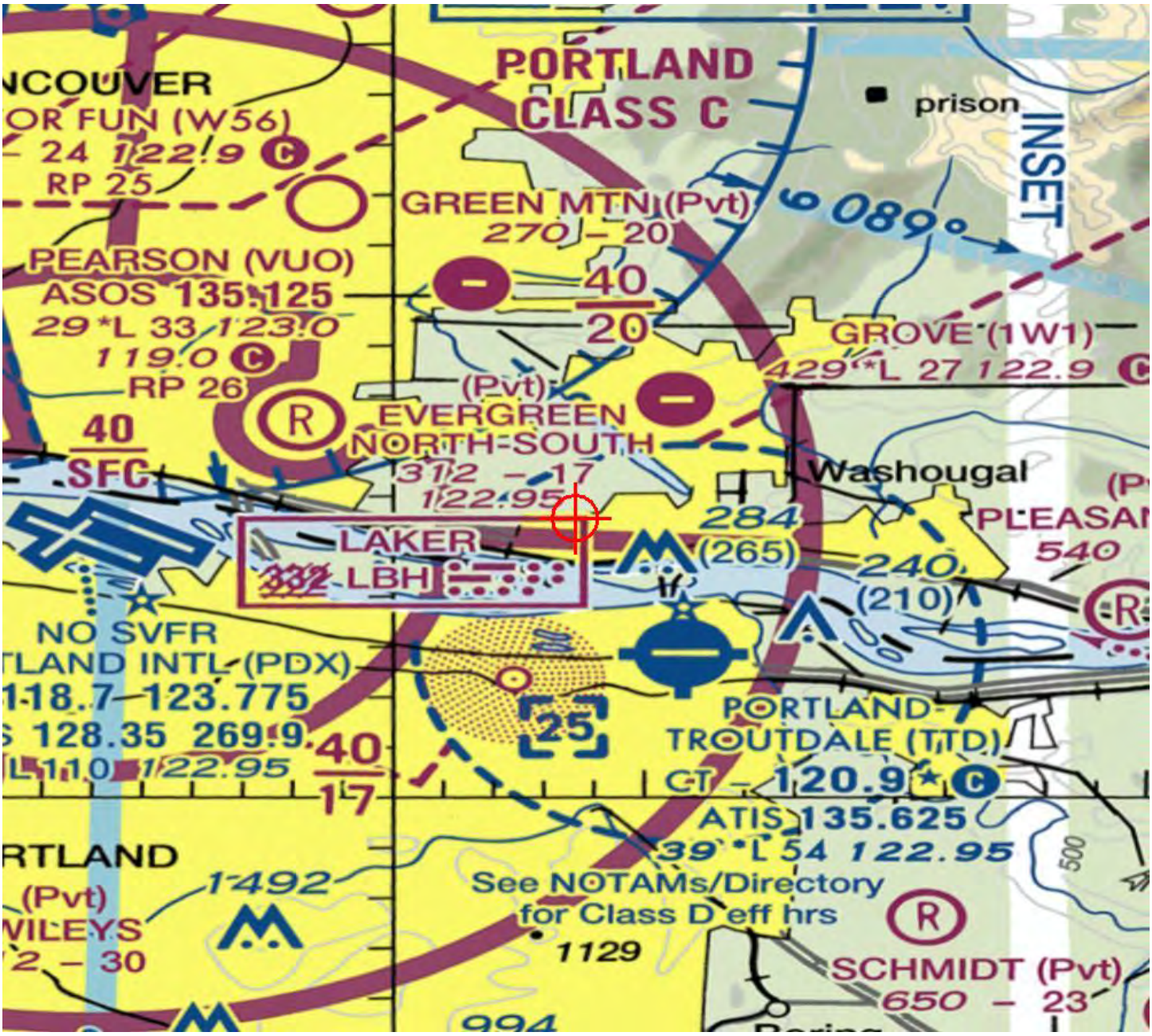
Frequency Data for ASN 2015-ANM-1999-OE

LOW FREQUENCY	HIGH FREQUENCY	FREQUENCY UNIT	ERP	ERP UNIT
698	806	MHz	1000	W
806	824	MHz	500	W
824	849	MHz	500	W
851	866	MHz	500	W
869	894	MHz	500	W
896	901	MHz	500	W
901	902	MHz	7	W
930	931	MHz	3500	W
931	932	MHz	3500	W
932	932.5	MHz	17	dBW
935	940	MHz	1000	W
940	941	MHz	3500	W
1850	1910	MHz	1640	W
1930	1990	MHz	1640	W
2305	2310	MHz	2000	W
2345	2360	MHz	2000	W

TOPO Map for ASN 2015-ANM-1999-OE



Sectional Map for ASN 2015-ANM-1999-OE



Coverage predictions for Prune Hill Water Tower

Summary

Freewire is proposing to add wireless network infrastructure in the Prune Hill area that will be used to serve regional businesses with high quality Internet access. The technology uses a combination of unlicensed and licensed radio frequencies that are dependent on line of sight (LOS) to provide high availability Internet access for business.

After reviewing the available space on the water tower for antenna collocation, we had concerns that the trees to the south and southwest of the water tower would interfere with our ability to provide LOS to the businesses in the river valley.

As shown in Exhibit A, there are a row of trees that are equal to or exceed the 80' height of the available space on the water tower. This will cause significant degradation to the LOS in the areas shown in Exhibit B.

At the 160' to 175' space on the tower at the new proposed site, this issue does not exist and we are able to provide 360 degree coverage to the surrounding businesses.

Exhibit A – Aerial Map

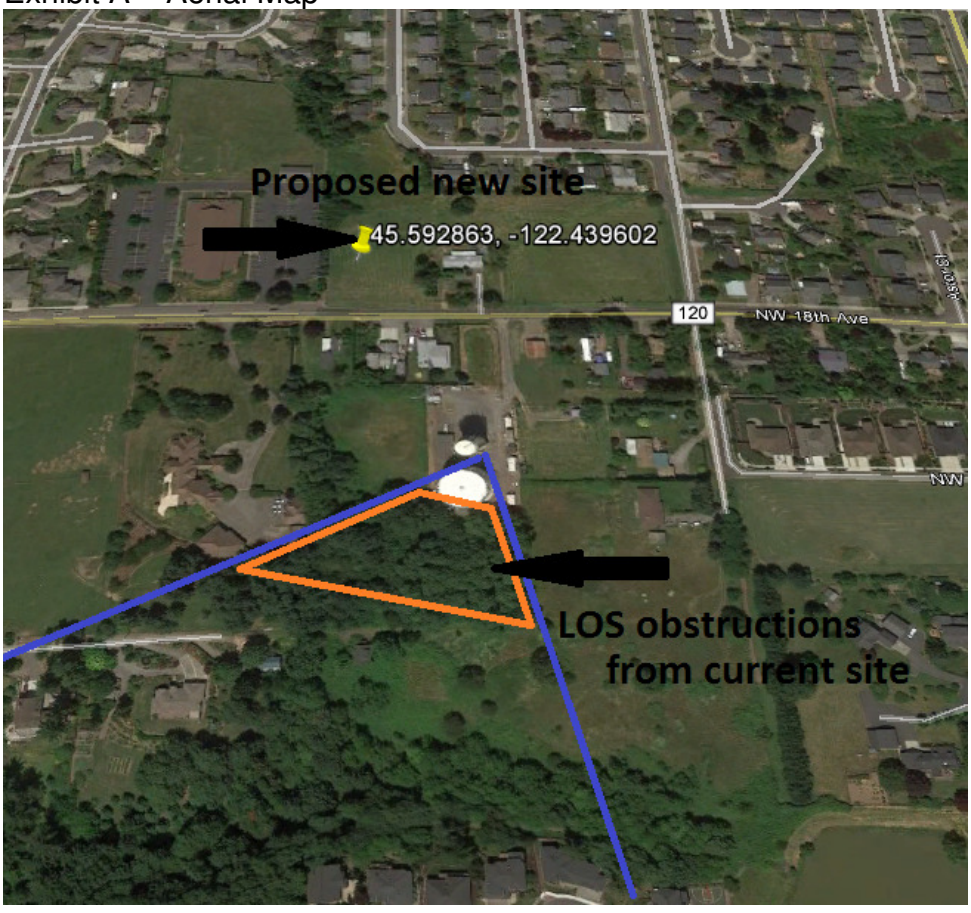
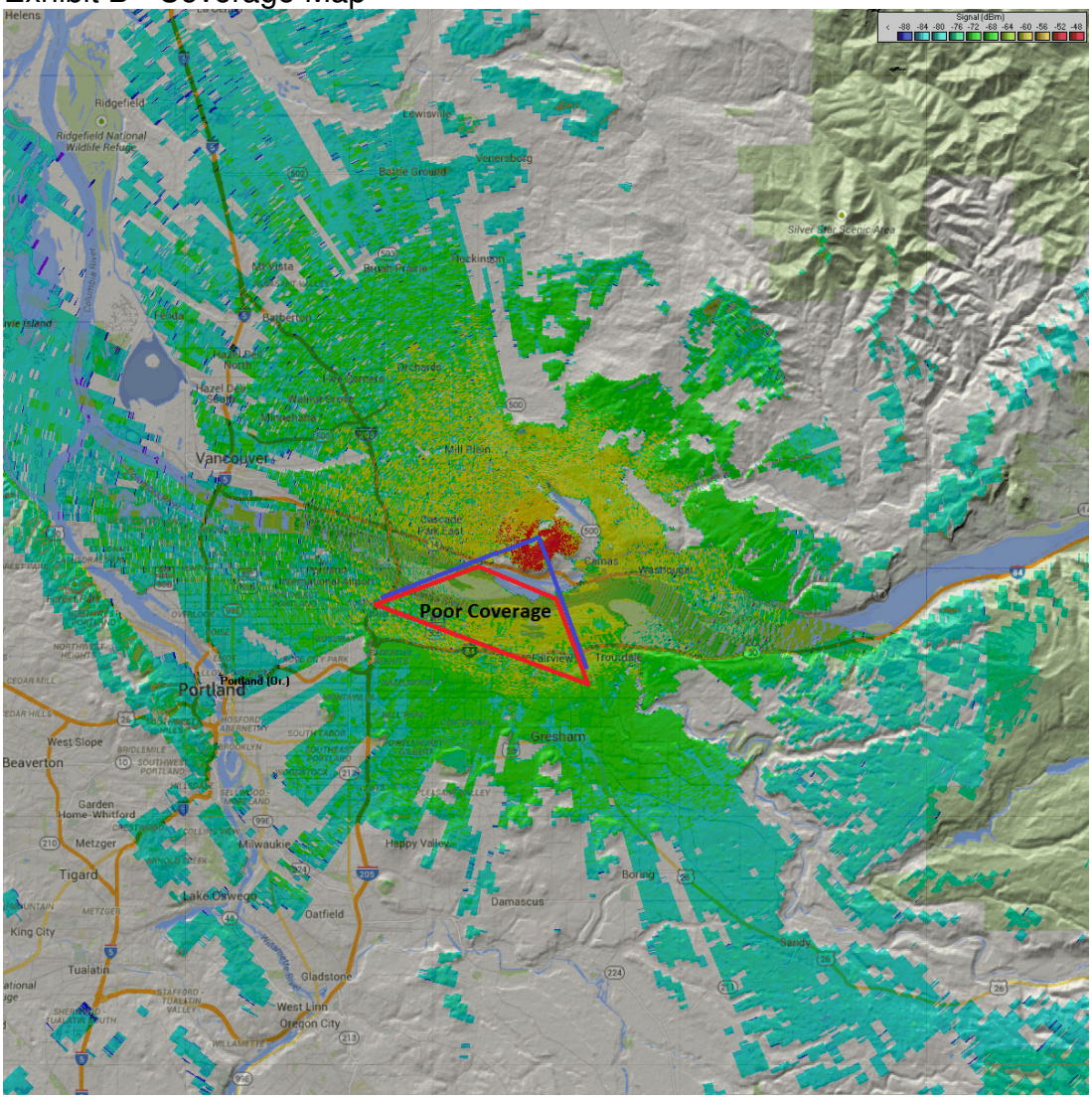


Exhibit B - Coverage Map



PRUNE HILL
ZONING DRAWINGS

2829 NW 18TH AVE
CAMAS, WA 98607

Exhibit I
CUP15-01

PROJECT SUMMARY

THIS PROJECT INCLUDES THE FOLLOWING SCOPE OF WORK:

1. PROPOSED INSTALLATION OF WIRELESS TELECOMMUNICATIONS FACILITY ON A PARCEL OF LAND.

2. PROPOSED FREEWIRE OUTDOOR RF EQUIPMENT TO BE INSTALLED ON 7'-0" X 7'-0" CONCRETE PAD WITHIN A 40'-0" X 40'-0" PARALLEL INFRASTRUCTURE FENCED LEASE AREA.

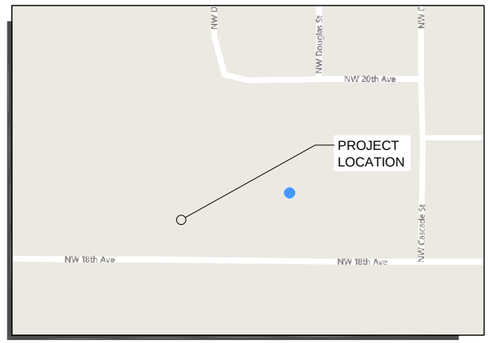
3. PROPOSED INSTALLATION OF (3) PANEL ANTENNAS AND (7) MICROWAVE ANTENNAS ON A NEW 175'-0" MONOPOLE.

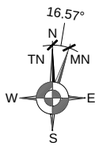
4. PROPOSED INSTALLATION OF 800A ELECTRICAL AND FIBER SERVICE FOR FREEWIRE WIRELESS EQUIPMENT.

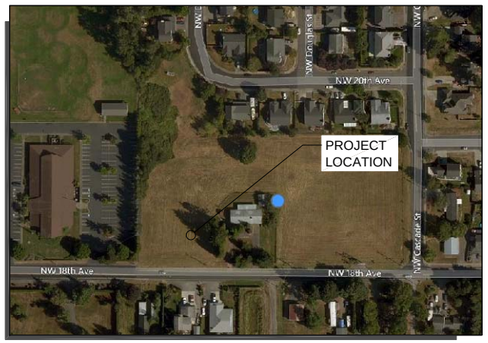
SITE INFORMATION

SITE ADDRESS:	2829 NW 18TH AVE CAMAS, WA 98607
LATITUDE:	45° 35' 33.4" N (45.592611)
LONGITUDE:	122° 26' 22.9" W (122.439694)
SOURCE:	1A
DATUM:	NAD 83
JURISDICTION:	CLARK COUNTY
TAX ID NUMBER:	124979-000
ZONING CLASSIFICATION:	R-12
GROUND ELEVATION:	749.2' AMSL
TOP OF (N) MONOPOLE:	175' AGL
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B

PROJECT VICINITY & AREA MAPS







DRIVING DIRECTIONS

FROM SEATAC INTERNATIONAL AIRPORT:

1. TAKE RAMP RIGHT FOR I-5 S (143.5 MI)
2. AT EXIT 7, TAKE RAMP RIGHT FOR I-205 SOUTH TOWARD SALEM (10.1 MI)
3. AT EXIT 27, TAKE RAMP RIGHT FOR WA-14 EAST TOWARD CAMAS (4.3 MI)
4. AT EXIT 10, TAKE RAMP RIGHT AND FOLLOW SIGNS FOR SE 192ND AVE (0.2 MI)
5. TURN LEFT ONTO SE 192ND AVE (0.2 MI)
6. TURN RIGHT ONTO SE BRADY RD (0.8 MI)
7. ROAD NAME CHANGES TO NW BRADY RD (0.5 MI)
8. TURN RIGHT ONTO NW 16TH AVE (0.5 MI)
9. TURN LEFT ONTO NW HOOD ST (0.1 MI)
10. TURN RIGHT ONTO NW 18TH AVE (0.2 MI)
11. ARRIVE AT 2829 NW 18TH AVE, CAMAS, WA 98607

ESTIMATED TIME: 2 HOUR AND 40 MINUTES
ESTIMATED DISTANCE: 162.6 MILES

LEGAL DESCRIPTION

SEE SV-1 SHEET.

UTILITY COMPANIES

POWER: CLARK PUBLIC UTILITIES
MIKE BROWN
PH: 360.992.8836

TELCO/FIBER: TBD

GOVERNING CODES

GOVERNING CODES

IBC-2012, INTERNATIONAL BUILDING CODE W/ LOCAL AMENDMENTS

NEC-2008, NATIONAL ELECTRICAL CODE

A.D.A. COMPLIANCE
INSTALLATION IS UNMANNED AND NOT FOR HUMAN HABITATION.
HANDICAP ACCESS IS NOT REQUIRED PER A.D.A.

PROJECT CONTACTS

APPLICANT
PI TELECOM INFRASTRUCTURE, LLC
4601 TOUCHTON ROAD EAST, BLDG. 300
SUITE 3200, JACKSONVILLE, FL 32246
PH: 904.450.4830

CO-APPLICANT
FREEWIRE
5465 SW WESTERN AVE, SUITE E
BEAVERTON, OR 97005

CO-APPLICANT
T-MOBILE
19807 NORTH CREEK PKWY N
BOTHELL, WA 98011

PROPERTY OWNER
JEAN M NAGEL
1020 SE COFFEY RD
WASHOUGAL, WA 98671

PRINCIPAL ENGINEER, NETWORK CONSTRUCTION
RYAN SAUVAGEAU
PH: 971.678.0228
blackstorm.ryan@gmail.com

ZONING AND PERMITTING CONSULTANT
CASCADIA PM
5501 NE 109TH CT, STE A-2
VANCOUVER, WA. 98662
NOAH GRODZIN
PH:360.567.3794

SITE ACQUISITION CONSULTANT
CASCADIA PM
5501 NE 109TH COURT, SUITE A-2
VANCOUVER, WA 98662
JEFF COLANTINO
PH: 360.450.8697

SURVEYOR
AMBIT CONSULTING
245 SAINT HELENS AVE, SUITE 3A
TACOMA, WA 98406
PH: 602.463.0472

STRUCTURAL ENGINEER
VECTOR STRUCTURAL ENGINEERS
9138 S STATE ST., SUITE 101
SANDY, UT 84070
ROGER T. ALWORTH, S.E.
PH: 801.990.1775

DRAWING INDEX

APPROVAL LIST

TITLE	SIGNATURE	DATE
PROPERTY OWNER		
VERIZON REPRESENTATIVE		
PROJECT MANAGER		
SITE ACQUISITION		
ZONING		
CONST. MANAGER		
RF ENGINEER		
AAV MANAGER		

Parallel INFRASTRUCTURE

CASCADIA PM
Precision Program Management

VECTOR ENGINEERS

CPM PROJECT NO.: 8842

PRELIMINARY

NO.	DATE	D/C	DESCRIPTION
1	07-01-15	JG/JG	CLIENT COMMENT
2	07-07-15	JG/JG	CPM COMMENT
3	08-06-15	GS/GS	CLIENT COMMENT

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION
2	09-16-15	JC/GS	LU COMMENTS
3	10-09-15	JC/GS	LU COMMENTS
4	11-13-15	MS/MS	CLIENT COMMENT

SITE NAME
PRUNE HILL

TAX ID NO.:
124979000

SITE ADDRESS
2829 NW 18TH AVE
CAMAS, WA 98607

SHEET TITLE
TITLE SHEET

SHEET NO.
T-1.0

SURVEYOR'S NOTES

1. SURVEYOR DOES NOT GUARANTEE THAT ALL UTILITIES ARE SHOWN OR THEIR LOCATIONS ARE DEFINITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND DEVELOPER TO CONTACT ANY INVOLVED AGENCIES TO LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION. REMOVAL, RELOCATION AND/ OR REPLACEMENT IS THE RESPONSIBILITY OF THE CONTRACTOR.

2. BUILDING SETBACK LINES, ZONING, FLOOD AREA ZONES, AND ADDRESSES THAT MAY BE SHOWN ARE SUPPLIED BY THE GOVERNING AGENCY OR TAKEN FROM THE BEST AVAILABLE RECORDS. THE SURVEYOR WILL NOT ACCEPT RESPONSIBILITY FOR THE ACCURACY OF ANY INFORMATION SUPPLIED BY OTHERS.

3. THE DESCRIPTION OF PROPERTY BOUNDARIES AND EASEMENTS SHOWN HEREON, REPRESENT THAT INFORMATION PROVIDED IN SUBDIVISION GUARANTEE #622-65163, ISSUED BY CHICAGO TITLE COMPANY OF WASHINGTON, DATED FEBRUARY 24, 2015. ANY INFORMATION SHOWN WHICH MAY VARY FROM THE CONTENTS OF THE REPORT(S) NOTED ABOVE, REPRESENTS INFORMATION AND MEASUREMENTS FOUND DURING THE COURSE OF THE SURVEY.

4. BEARINGS SHOWN HEREON ARE BASED UPON U.S. STATE PLANE NAD83 COORDINATE SYSTEM WASHINGTON STATE PLANE COORDINATE SOUTH ZONE, DETERMINED BY GPS OBSERVATIONS USING THE CORRECTION VALUES FROM THE WASHINGTON STATE REFERENCE NETWORK (WSRN).

5. THIS PROJECT APPEARS TO BE LOCATED WITHIN FLOOD ZONE "X" AREAS OF MINIMAL FLOODING ACCORDING TO FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 529 OF 600, MAP NO. 53011C0529D, DATED SEPTEMBER 5, 2012.

6. PROJECT ELEVATIONS ESTABLISHED FROM GPS DERIVED ORTHOMETRIC HEIGHTS BY APPLICATION OF NGS 'GEOID 12A' MODELED SEPARATIONS TO ELLIPSOID HEIGHTS DETERMINED BY REAL TIME KINEMATIC (RTK) GPS DATA PROCESSED ON THE WASHINGTON STATE REFERENCE NETWORK (WSRN). ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NAVD88 DATUM.

7. THE DATE OF SURVEY AND FIELD OBSERVATION USED FOR THIS SURVEY WERE TAKEN ON MAY 4, 2015.

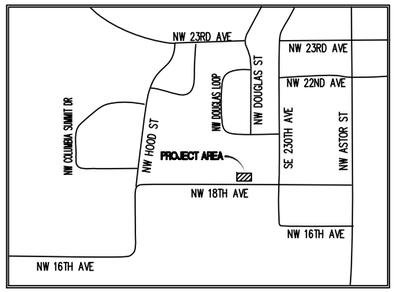
LEGEND

P.O.C.	POINT OF COMMENCEMENT
P.O.B.	POINT OF BEGINNING
P.O.T.	POINTT OF TERMINUS
	POWER & UTILITY POLE
	FND MONUMENT
	POSITION OF GEODETIC COORDINATE
XXXX.X NG	SPOT ELEVATION
	LIMITS OF LESSOR'S PROPERTY
	LIMITS OF LEASE AREA
	STREET CENTERLINE
	EASEMENT
	CHAIN LINK FENCE
	WOOD FENCE
O/H	OVERHEAD POWER & UTILITY WIRES
	DECIDUOUS TREE
	CONIFEROUS TREE

8. THE PURPOSE OF THIS SURVEY IS TO ESTABLISH OR DETERMINE LEASE AREAS & ASSOCIATED EASEMENTS. THE BOUNDARY SHOWN HEREON IS PLOTTED FROM RECORD INFORMATION PROVIDED BY TITLE AND DOES NOT CONSTITUTE A BOUNDARY SURVEY OF THE PROPERTY.

9. THERE ARE WETLANDS ON THE SITE PREFORMED BY OTHERS. NO DATA HAS BEEN PROVIDE TO SHOWN ON THIS SURVEY.

POSITION OF GEODETIC COORDINATES
LATITUDE 45° 35' 34.1" NORTH (NAD83) 45.592806°N
LONGITUDE 122° 26' 21.8" WEST (NAD83) 122.439389°W
GROUND ELEVATION @ 750.5' (NAVD88)



VICINITY MAP
N.T.S.

DIRECTIONS TO SITE

[FROM PORTLAND INTERNATIONAL AIRPORT]
START OUT GOING SOUTH ON NE AIRPORT WAY TOWARD PORTLAND AIRPORT PARKING. TURN LEFT TO TAKE THE I-205 N RAMP TOWARD SEATTLE. MERGE ONTO I-205 N/VETERANS MEMORIAL FWY N (CROSSING INTO WASHINGTON). MERGE ONTO WA-14 E/LEWIS AND CLARK HWY E VIA EXIT 27 TOWARD CAMAS. TAKE THE SE 192ND AVE EXIT, EXIT 10. TURN LEFT ONTO SE 192ND AVE. TURN RIGHT ONTO SE BRADY RD. TURN RIGHT ONTO NW HOOD ST. TAKE THE 1ST RIGHT ONTO NW 18TH AVE. 2829 NW 18TH AVE IS ON THE LEFT.

PARENT PARCEL LEGAL DESCRIPTION

(REFER TO LEGAL DESCRIPTIONS SHEET SV-4)

SCEAN A. RIPLEY
STATE OF WASHINGTON
41296
REGISTERED
PROFESSIONAL LAND SURVEYOR

TO: PI TELECOM INFRASTRUCTURE, LLC, A DELAWARE LIMITED LIABILITY COMPANY AND CHICAGO TITLE COMPANY OF WASHINGTON;

I, SCEAN A. RIPLEY, A WASHINGTON STATE PROFESSIONAL LAND SURVEYOR, CERTIFY THAT THE INFORMATION SHOWN HEREON WAS COMPILED USING DATA FROM AN ACTUAL FIELD SURVEY MADE UNDER MY DIRECT SUPERVISION.

Scean A Ripley 10/29/2015

SCEAN A. RIPLEY, PLS#41296 DATE

Parallel INFRASTRUCTURE

CENTERLINE SOLUTIONS

Ambit
245 SAINT HELENS AVE. SUITE 3A
TACOMA, WA 98402 (253)572-9181

CPM PROJECT NO.:

FINAL

NO.	DATE	D/C	DESCRIPTION
0	05-07-15	CK	SURVEY PRELIM
1	06-05-15	SAR	REV GEO COORD
2	06-16-15	SAR	REV LEASE LOC
3	10-29-15	SAR	REV LEASE LOC

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION

SITE NAME

PRUNE HILL

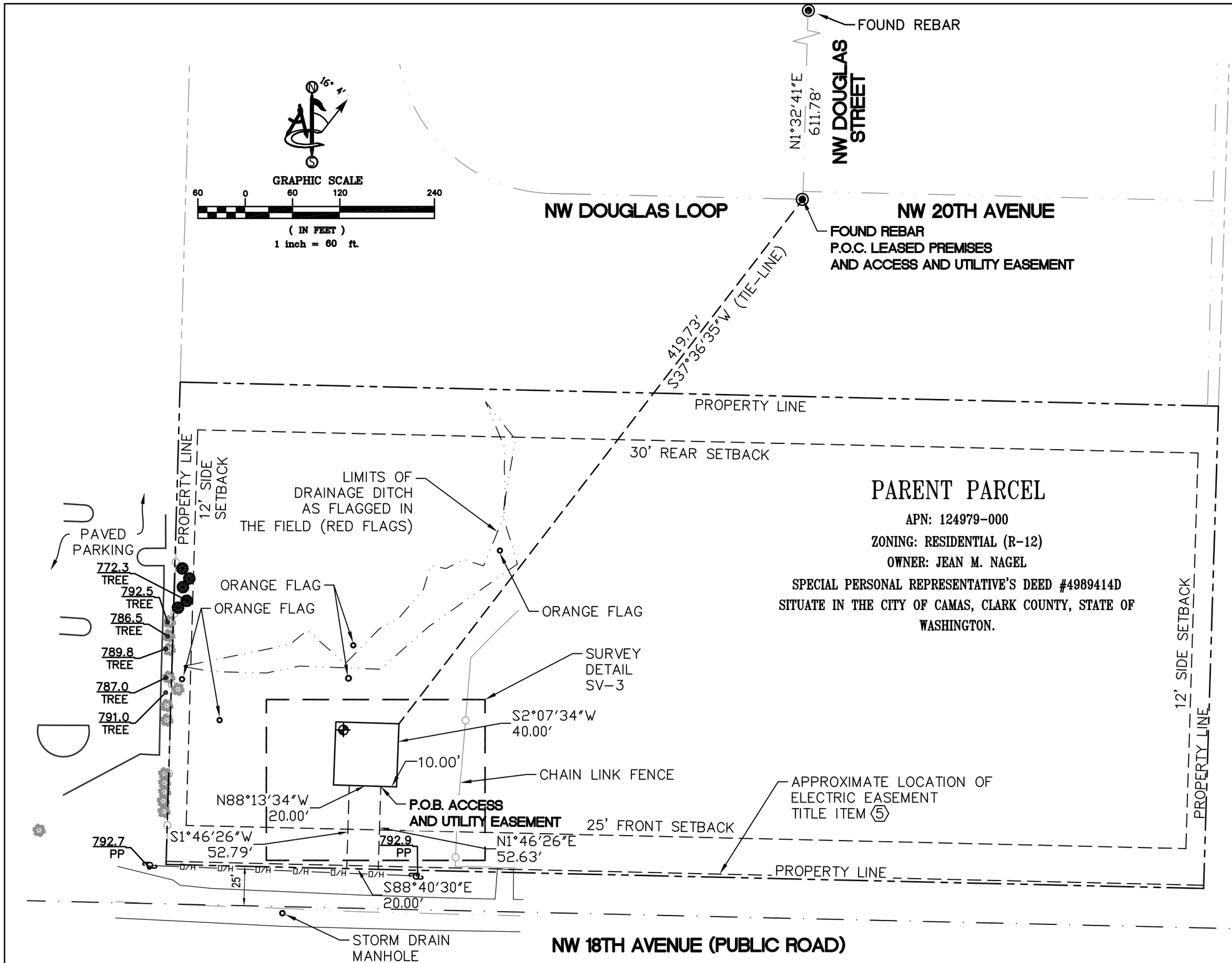
SITE ADDRESS
2829 NW 18TH AVENUE
CAMAS, WA 98607
CLARK COUNTY

SHEET TITLE

SITE SURVEY

SHEET NO.

SV-1



PARENT PARCEL

APN: 124979-000

ZONING: RESIDENTIAL (R-12)

OWNER: JEAN M. NAGEL

SPECIAL PERSONAL REPRESENTATIVE'S DEED #4989414D

SITUATE IN THE CITY OF CAMAS, CLARK COUNTY, STATE OF WASHINGTON.

Parallel INFRASTRUCTURE

CENTERLINE SOLUTIONS

Ambit
245 SAINT HELENS AVE. SUITE 3A
TACOMA, WA 98402 (253)572-9181

CPM PROJECT NO.:

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SUBMITTAL

NO.	DATE	D/C	DESCRIPTION

SITE NAME

PRUNE HILL

SITE ADDRESS

2829 NW 18TH AVENUE
CAMAS, WA 98607
CLARK COUNTY

SHEET TITLE

OVERALL DETAIL

SHEET NO.

SV-2

LEASED PREISES
P.O.B.

(TIE–LINE)
S37°36'35"W
419.73'

S88°13'34"E
40.00'

40'X40'
LEASED PREMISES

POSITION OF
GEODETIC
COORDINATES

750

751

N2°07'34"E
40.00'

40.00'
S2°07'34"W

752

N88°13'34"W
40.00'

20.00'

10.00'

ACCESS AND
UTILITY EASEMENT
P.O.B.

PROPOSED 20'
ACCESS AND
UTILITY EASEMENT

753

S1°46'26"W
52.79'

52.63'
N1°46'26"E

25' FRONT SETBACK

754

PARENT PARCEL

APN: 124979-000

ZONING: RESIDENTIAL (R-12)

OWNER: JEAN M. NAGEL

SPECIAL PERSONAL REPRESENTATIVE'S DEED #4989414D
SITUATE IN THE CITY OF CAMAS, CLARK COUNTY, STATE OF WASHINGTON.

GRAPHIC SCALE
10 0 10 20 40
(IN FEET)
1 inch = 10 ft.

15° 52'

Parallel INFRASTRUCTURE

CENTERLINE SOLUTIONS

Ambit
245 SAINT HELENS AVE. SUITE 3A
TACOMA, WA 98402 (253)572-9181

CPM PROJECT NO.:

FINAL

NO.	DATE	D/C	DESCRIPTION
0	05-07-15	CK	SURVEY PRELIM
1	06-05-15	SAR	REV GEO COORD
2	06-16-15	SAR	REV LEASE LOC
3	10-29-15	SAR	REV LEASE LOC

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION

SITE NAME

PRUNE HILL

SITE ADDRESS
2829 NW 18TH AVENUE
CAMAS, WA 98607
CLARK COUNTY

SHEET TITLE

SURVEY DETAIL

SHEET NO.

SV-3

PARENT PARCEL LEGAL DESCRIPTION

THE SOUTH FIVE (5) ACRES OF THE FOLLOWING DESCRIBED TRACT, EXCLUSIVE OF COUNTY ROADS:

THE WEST ONE-HALF OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN.

EXCEPT COUNTY ROADS.

BEING THE PROPERTY VESTED TO JEAN M. NAGEL, AS HER SEPARATE ESTATE, PURSUANT TO A PERSONAL REPRESENTATIVE DEED RECORDING NUMBER 4989414, DATED JULY 3, 2013; TAX PARCEL NUMBER 124979-000.

SITUATE IN THE CITY OF CAMAS, CLARK COUNTY, STATE OF WASHINGTON.

LEASED PREMISES LEGAL DESCRIPTION

THAT PORTION OF SOUTH FIVE ACRES OF THE WEST ONE-HALF OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN; BEING THE PROPERTY VESTED TO JEAN M. NAGEL, AS HER SEPARATE ESTATE, PURSUANT TO A PERSONAL REPRESENTATIVE DEED RECORDING NUMBER 4989414, DATED JULY 3, 2013; TAX PARCEL NUMBER 124979-000; MORE PARTICULARLY DESCRIBED AS FOLLOWS.

COMMENCING AT THE APPARENT MONUMENT ALIGNMENT OF NW DOUGLAS STREET AND NW DOUGLAS LOOP SOUTH, FROM WHICH THE APPARENT MONUMENT ALIGNMENT OF NW DOUGLAS STREET AND NW DOUGLAS LOOP NORTH BEARS NORTH 01°32'41" EAST, A DISTANCE OF 611.78 FEET;
THENCE SOUTH 37°36'35" WEST, A DISTANCE OF 419.73 FEET TO THE POINT OF BEGINNING;
THENCE SOUTH 02°07'34" WEST, A DISTANCE OF 40.00 FEET;
THENCE NORTH 88°13'34" WEST, A DISTANCE OF 40.00 FEET;
THENCE NORTH 02°07'34" EAST, A DISTANCE OF 40.00 FEET;
THENCE SOUTH 88°13'34" EAST, A DISTANCE OF 40.00 FEET TO THE POINT OF BEGINNING.

CONTAINING 1600 SQUARE FEET.

SITUATE IN THE CITY OF CAMAS, CLARK COUNTY, STATE OF WASHINGTON.

ACCESS AND UTILITY EASEMENT LEGAL DESCRIPTION

THAT PORTION OF SOUTH FIVE ACRES OF THE WEST ONE-HALF OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN; BEING THE PROPERTY VESTED TO JEAN M. NAGEL, AS HER SEPARATE ESTATE, PURSUANT TO A PERSONAL REPRESENTATIVE DEED RECORDING NUMBER 4989414, DATED JULY 3, 2013; TAX PARCEL NUMBER 124979-000; PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE APPARENT MONUMENT ALIGNMENT OF NW DOUGLAS STREET AND NW DOUGLAS LOOP SOUTH, FROM WHICH THE APPARENT MONUMENT ALIGNMENT OF NW DOUGLAS STREET AND NW DOUGLAS LOOP NORTH BEARS NORTH 01°32'41" EAST, A DISTANCE OF 611.78 FEET;
THENCE SOUTH 37°36'35" WEST, A DISTANCE OF 419.73 FEET;
THENCE SOUTH 02°07'34" WEST, A DISTANCE OF 40.00 FEET;
THENCE NORTH 88°13'34" WEST, A DISTANCE OF 10.00 FEET TO THE POINT OF BEGINNING;
THENCE NORTH 88°13'34" WEST, A DISTANCE OF 20.00 FEET;
THENCE SOUTH 01°46'26" WEST, A DISTANCE OF 52.79 FEET MORE OR LESS TO THE NORTH RIGHT-OF-WAY MARGIN OF NW 18TH AVENUE;
THENCE ALONG SAID MARGIN, SOUTH 88°40'30" EAST, A DISTANCE OF 20.00 FEET;
THENCE LEAVING SAID MARGIN, NORTH 01°46'26" EAST, A DISTANCE OF 52.63 FEET TO THE POINT OF BEGINNING.

CONTAINING 1054 SQUARE FEET.

SITUATE IN THE CITY OF CAMAS, CLARK COUNTY, STATE OF WASHINGTON.

Parallel INFRASTRUCTURE
CENTERLINE SOLUTIONS
Ambit
245 SAINT HELENS AVE. SUITE 3A
TACOMA, WA 98402 (253)572-9181

CPM PROJECT NO.:

FINAL

NO.	DATE	D/C	DESCRIPTION
0	05-07-15	CK	SURVEY PRELIM
1	06-05-15	SAR	REV GEO COORD
2	06-16-15	SAR	REV LEASE LOC
3	10-29-15	SAR	REV LEASE LOC

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION

SITE NAME

PRUNE HILL

SITE ADDRESS

2829 NW 18TH AVENUE
CAMAS, WA 98607
CLARK COUNTY

SHEET TITLE

LEGAL DESCRIPTIONS

SHEET NO.

SV-4

SCHEDULE "B" NOTE

AMBIT CONSULTING HAS RECEIVED AND REVIEWED THE TITLE COMMITMENT PREPARED BY CHICAGO TITLE COMPANY WASHINGTON, DATED EFFECTIVE FEBRUARY 24, 2015, BEING COMMITMENT No. 622-65163 FOR THE SUBJECT PROPERTY, TO DETERMINE THE IMPACTS OF EXISTING TITLE EXCEPTIONS.

NOTE: ITEM(S) #1-4 AND 6-7 ARE NOT SURVEY MATTERS AND HAVE NOT BEEN PLOTTED

⟨5⟩ EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT:
IN FAVOR OF: PUBLIC UTILITY DISTRICT NO. 1 OF CLARK COUNTY, WASHINGTON
PURPOSE: TRANSMISSION OF ELECTRIC ENERGY, INCLUDING COMMUNICATION FACILITIES
RECORDING DATE: OCTOBER 28, 1963
RECORDING NO.: G369733 (PLOTTED, MAY AFFECT ACCESS EASEMENT)

Parallel INFRASTRUCTURE
CENTERLINE SOLUTIONS
Ambit
245 SAINT HELENS AVE. SUITE 3A
TACOMA, WA 98402 (253)572-9181

CPM PROJECT NO.:

FINAL

NO.	DATE	D/C	DESCRIPTION
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1	06-05-15	SAR	REV GEO COORD
2	06-16-15	SAR	REV LEASE LOC
3	10-29-15	SAR	REV LEASE LOC

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION

SITE NAME

PRUNE HILL

SITE ADDRESS

2829 NW 18TH AVENUE
CAMAS, WA 98607
CLARK COUNTY

SHEET TITLE

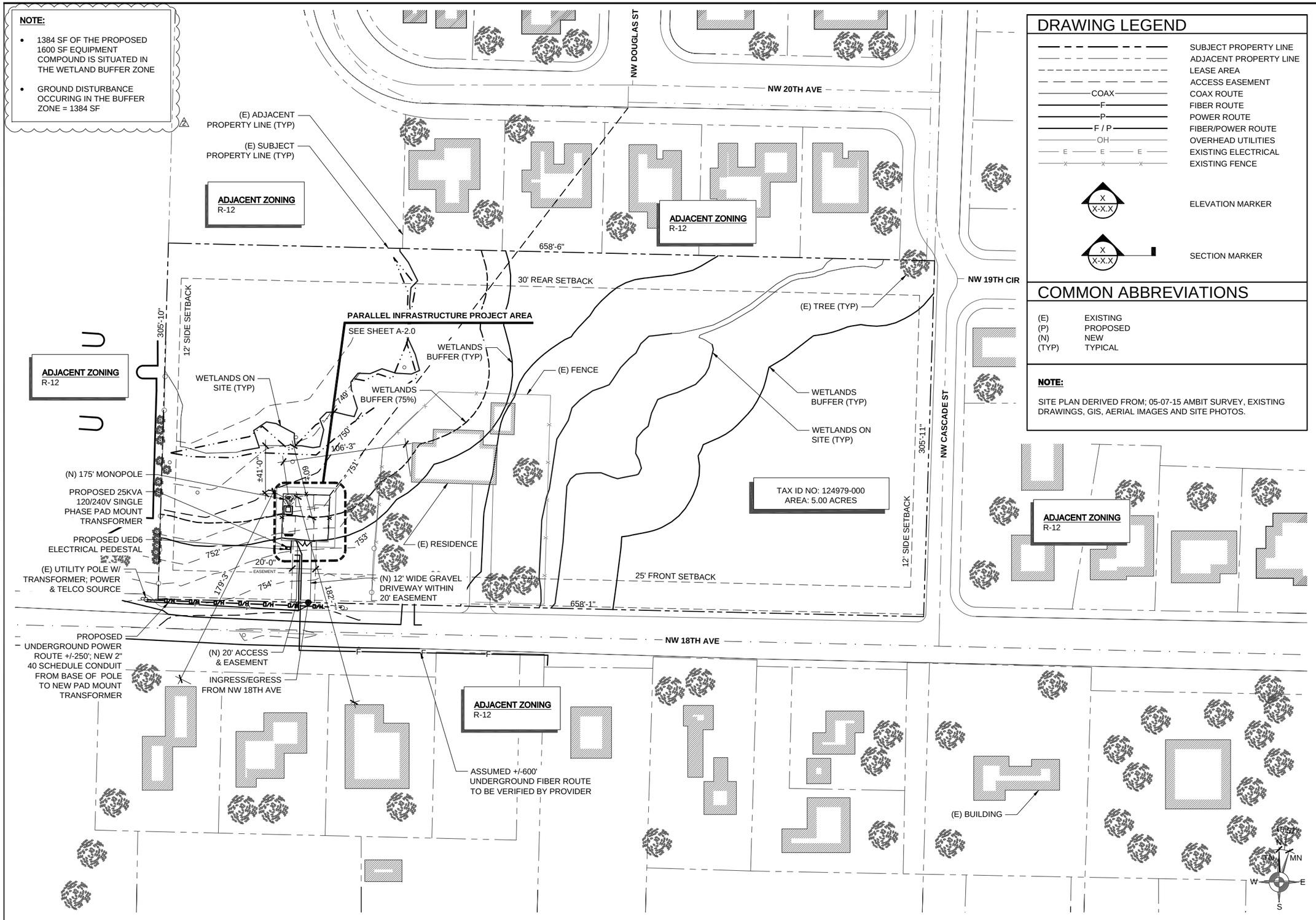
LEGAL DESCRIPTIONS

SHEET NO.

SV-5

NOTE:

- 1384 SF OF THE PROPOSED 1600 SF EQUIPMENT COMPOUND IS SITUATED IN THE WETLAND BUFFER ZONE
- GROUND DISTURBANCE OCCURING IN THE BUFFER ZONE = 1384 SF



DRAWING LEGEND

- SUBJECT PROPERTY LINE
- ADJACENT PROPERTY LINE
- LEASE AREA
- ACCESS EASEMENT
- COAX — COAX ROUTE
- F — FIBER ROUTE
- P — POWER ROUTE
- F / P — FIBER/POWER ROUTE
- OH — OVERHEAD UTILITIES
- E — E — E — EXISTING ELECTRICAL
- X — X — X — EXISTING FENCE
- X / X-X.X — ELEVATION MARKER
- X / X-X.X — SECTION MARKER

COMMON ABBREVIATIONS

(E)	EXISTING
(P)	PROPOSED
(N)	NEW
(TYP)	TYPICAL

NOTE:

SITE PLAN DERIVED FROM; 05-07-15 AMBIT SURVEY, EXISTING DRAWINGS, GIS, AERIAL IMAGES AND SITE PHOTOS.

1 OVERALL SITE PLAN

SCALE: 1" = 80'-0" (11X17)
SCALE: 1" = 40'-0" (22X34)

0' 40' 80' 160'

Parallel INFRASTRUCTURE

CASCADIA PM
Precision Program Management

VECTOR engineers

CPM PROJECT NO.: 8842

PRELIMINARY

NO.	DATE	D/C	DESCRIPTION
1	07-01-15	JG/JG	CLIENT COMMENT
2	07-07-15	JG/JG	CPM COMMENT
3	08-06-15	GS/GS	CLIENT COMMENT

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION
2	09-16-15	JC/GS	LU COMMENTS
3	10-09-15	JC/GS	LU COMMENTS
4	11-13-15	MS/MS	CLIENT COMMENT

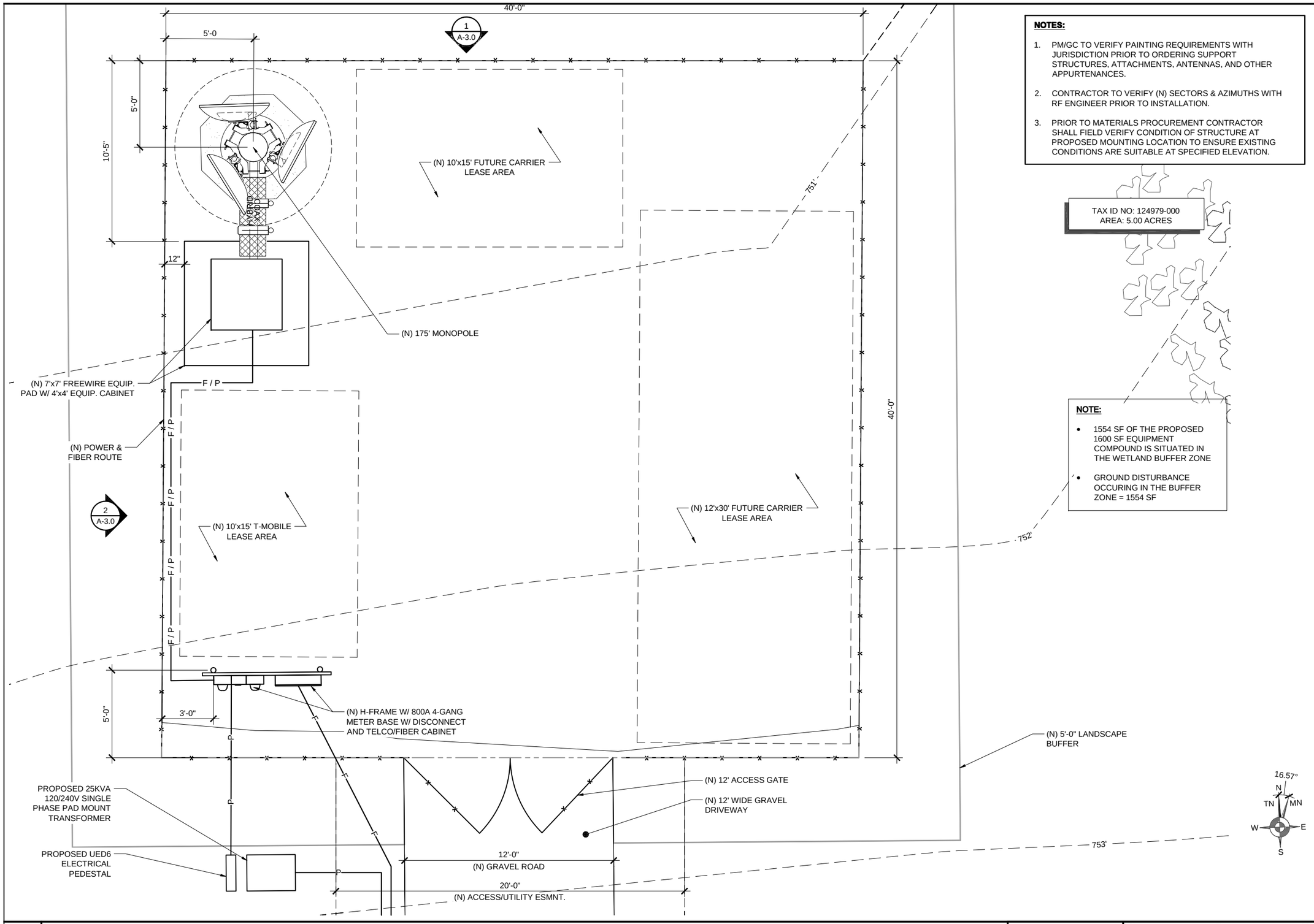
SITE NAME
PRUNE HILL

TAX ID NO.:
124979000

SITE ADDRESS
2829 NW 18TH AVE
CAMAS, WA 98607

SHEET TITLE
OVERALL SITE PLAN

SHEET NO.
A-1.0



NOTES:

1. PM/GC TO VERIFY PAINTING REQUIREMENTS WITH JURISDICTION PRIOR TO ORDERING SUPPORT STRUCTURES, ATTACHMENTS, ANTENNAS, AND OTHER APPURTENANCES.
2. CONTRACTOR TO VERIFY (N) SECTORS & AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.
3. PRIOR TO MATERIALS PROCUREMENT CONTRACTOR SHALL FIELD VERIFY CONDITION OF STRUCTURE AT PROPOSED MOUNTING LOCATION TO ENSURE EXISTING CONDITIONS ARE SUITABLE AT SPECIFIED ELEVATION.

TAX ID NO: 124979-000
AREA: 5.00 ACRES

NOTE:

- 1554 SF OF THE PROPOSED 1600 SF EQUIPMENT COMPOUND IS SITUATED IN THE WETLAND BUFFER ZONE
- GROUND DISTURBANCE OCCURING IN THE BUFFER ZONE = 1554 SF

Parallel INFRASTRUCTURE

CASCADIA PM
Precision Program Management

VECTOR engineers

CPM PROJECT NO.: 8842

PRELIMINARY

NO.	DATE	D/C	DESCRIPTION
1	07-01-15	JG/JG	CLIENT COMMENT
2	07-07-15	JG/JG	CPM COMMENT
3	08-06-15	GS/GS	CLIENT COMMENT

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION
2	09-16-15	JC/GS	LU COMMENTS
3	10-09-15	JC/GS	LU COMMENTS
4	11-13-15	MS/MS	CLIENT COMMENT

SITE NAME
PRUNE HILL

TAX ID NO.:
124979000

SITE ADDRESS
2829 NW 18TH AVE
CAMAS, WA 98607

SHEET TITLE
ENLARGED SITE PLAN

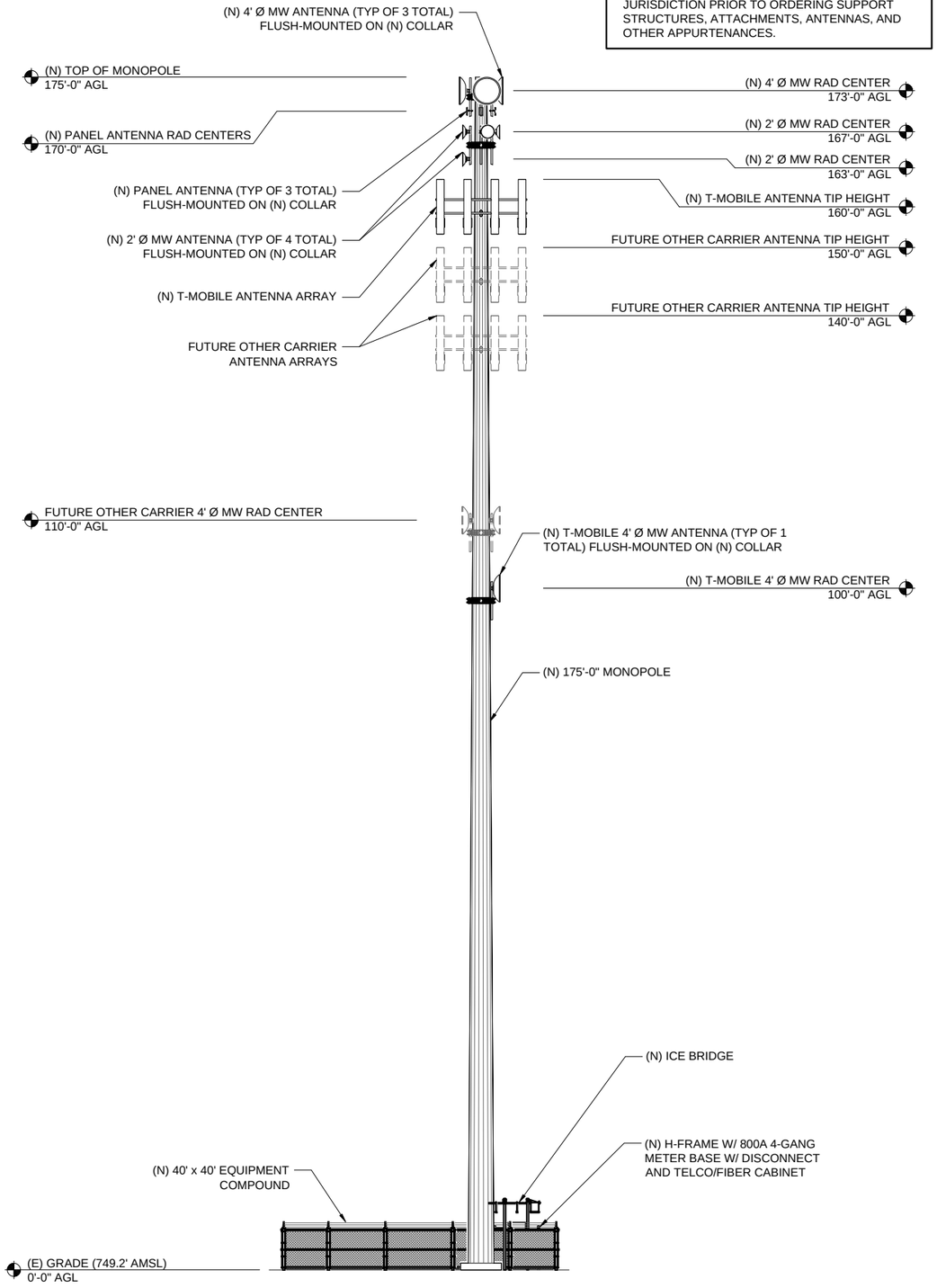
SHEET NO.
A-2.0

1 ENLARGED SITE PLAN

SCALE: 3/16" = 1'-0" (11X17)
SCALE: 3/8" = 1'-0" (22X34)

0' 5' 10'

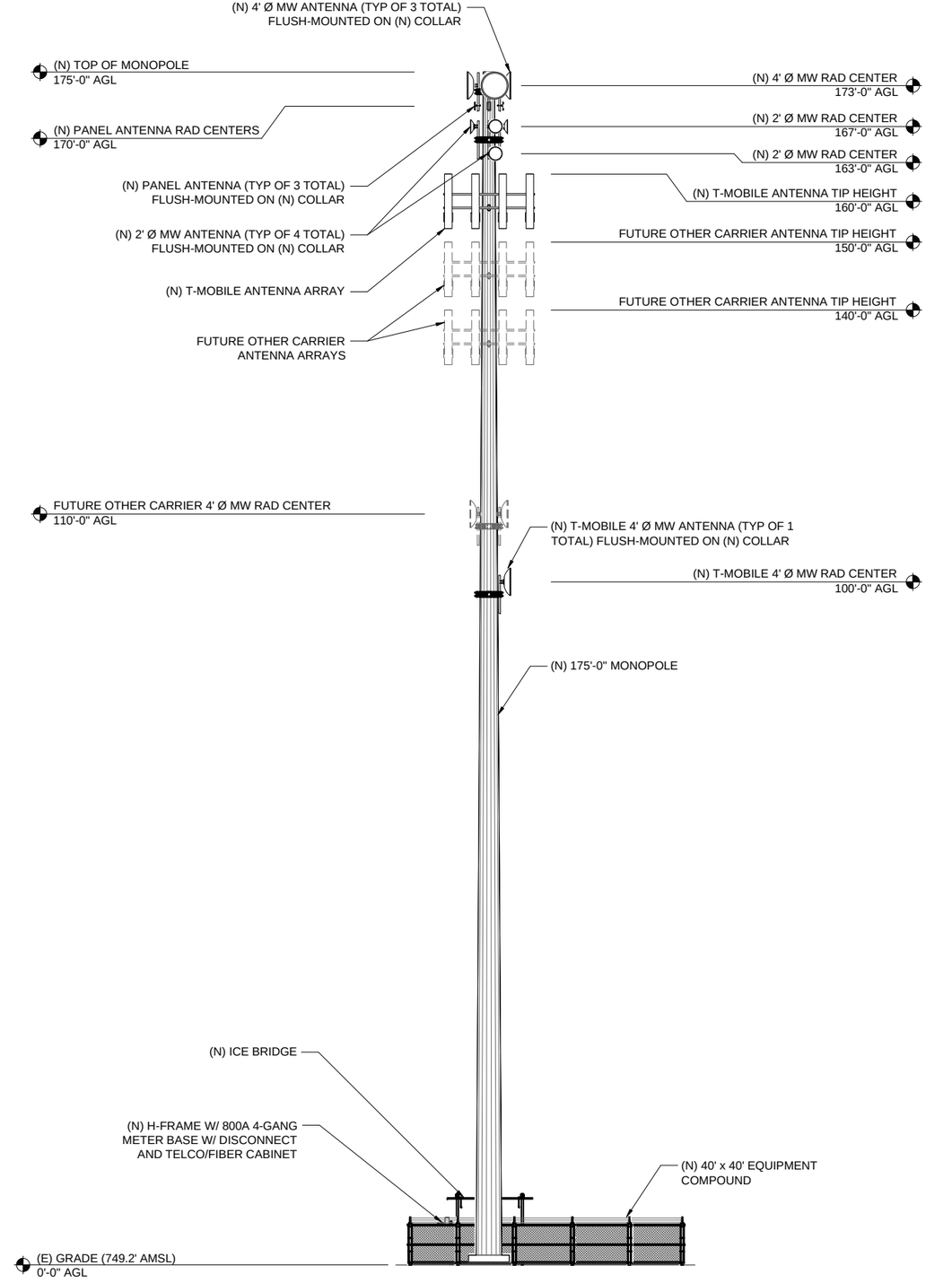
NOTE:
PM/GC TO VERIFY PAINTING REQUIREMENTS WITH JURISDICTION PRIOR TO ORDERING SUPPORT STRUCTURES, ATTACHMENTS, ANTENNAS, AND OTHER APPURTENANCES.



1 NORTH ELEVATION

SCALE: 1/16" = 1'-0" (11X17)
SCALE: 1/8" = 1'-0" (22X34)

0' 8' 16' 32'



2 WEST ELEVATION

SCALE: 1" = 20'-0" (11X17)
SCALE: 1" = 10'-0" (22X34)

0' 10' 20' 40'

Parallel INFRASTRUCTURE

CASCADIA PM
Precision Program Management

VECTOR ENGINEERS

CPM PROJECT NO.: 8842

PRELIMINARY

NO.	DATE	D/C	DESCRIPTION
1	07-01-15	JG/JG	CLIENT COMMENT
2	07-07-15	JG/JG	CPM COMMENT
3	08-06-15	GS/GS	CLIENT COMMENT

SUBMITTAL

NO.	DATE	D/C	DESCRIPTION
2	09-16-15	JC/GS	LU COMMENTS
3	10-09-15	JC/GS	LU COMMENTS
4	11-13-15	MS/MS	CLIENT COMMENT

SITE NAME
PRUNE HILL

TAX ID NO.:
124979000

SITE ADDRESS
2829 NW 18TH AVE
CAMAS, WA 98607

SHEET TITLE
NORTH AND EAST ELEVATIONS

SHEET NO.
A-3.0

Exhibit J
CUP15-01

CASCADIA PM

Precision Program Management

Ms. Sarah Fox, AICP
Senior Planner
City of Camas Community
Development Department
616 NE 4th Street
Camas, WA 98606

October 5, 2015

RE: CUP Application PLI-15-001-4 – Location of Proposed Wireless Facility on Our Property at 2829 NW 18th Avenue, Camas, WA 98607.

Dear Ms. Fox:

As the owner of above mentioned property, we are satisfied with the location chosen by the proponents for the new wireless facility on our property. We understand that the City of Camas requested that the site be moved to the east side of the property; however, this area is also impacted by wetlands and associated buffers. There is a portion of usable land that could be subdivided per current zoning standards and we want this area left without any further restrictions.

Thank you for your time and consideration on this matter, and please feel free to contact my daughter.

Sincerely,

Jean Nagel

Jean M. Nagel

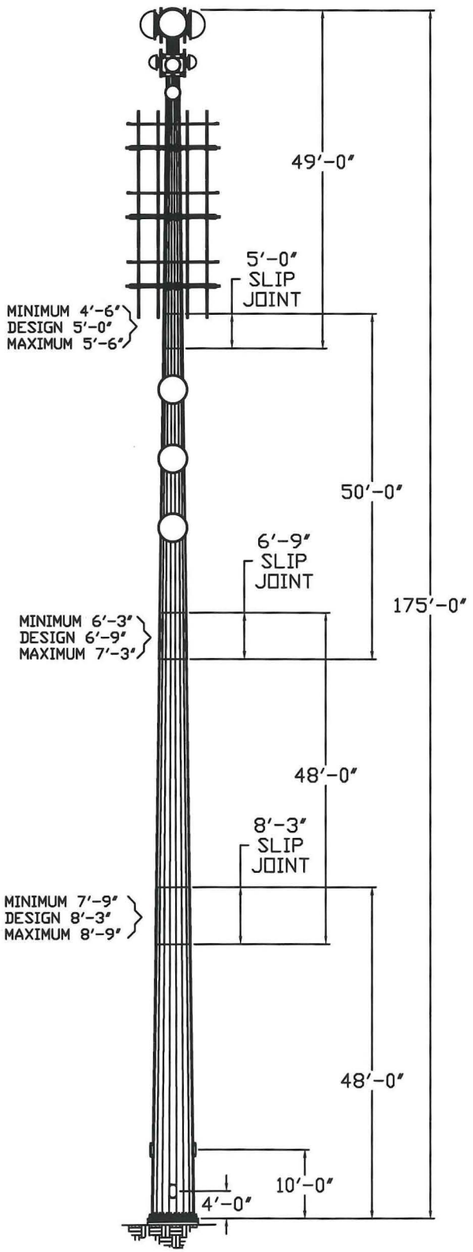
Cascadia PM, LLC
Corporate Headquarters
3322 South Bay Road NE
Olympia, WA 98506
360 438 8002
www.cascadiapm.com

130 N. Nimitz Hwy Suite A-200
Honolulu, HI 96817
808 536 7400

5501 NE 109th Ct Suite A-2
Vancouver, WA 98662
360 885 9200

733 Seventh Ave Suite 209
Kirkland, WA 98033
425 828 1008

EXHIBIT K



MONOPOLE DESIGN LOADS: 105 MPH WIND & NO ICE (3 SEC GUST) ← 140 MPH wind
30 MPH WIND & 1/4" ICE (3 SEC GUST)
60 MPH WIND & NO ICE (SERVICE)
STRUCTURE CLASS II
EXPOSURE CATEGORY C ← should be "B"
TOPOGRAPHIC CATEGORY 2
CREST HEIGHT = 683 FT.

SITE INFORMATION:

COORDINATES: LATITUDE: 45° 35' 34.36" N
LONGITUDE: 122° 26' 22.73" W

ADDRESS: 2829 NW 18th AVE
CAMAS, WA 98607

MAXIMUM BASE MOMENT & FORCES		
MOMENT (FT-KIPS)	SHEAR (KIPS)	AXIAL (KIPS)
13,573	112	92

ELEV.	ITEM	RAD.	AZ.	
175'	FLASH BEACON LIGHTING	——	——	
175'	8' LIGHTNING ROD	——	——	
173'	FLUSH MOUNT	——	——	(3) EW63 (INSIDE POLE)
173'	(3) AD18G-4-T2	YES	——	
170'	(3) MT-484033/NVA	——	——	(3) 7/8" (INSIDE POLE)
167'	FLUSH MOUNT	——	——	(3) EW63 (INSIDE POLE)
167'	(3) AD18G-2-T2	YES	——	
163'	(1) AD18G-2-T2	YES	——	(1) EW63 (INSIDE POLE)
155'	(24) RRH2X40-AWS	——	——	(28) 1 5/8" (INSIDE POLE)
155'	(4) DC6-48-60-18-8CF	——	——	
155'	(12) 8' X 1' X 9" PANELS	——	——	
155'	14' LOW PROFILE PLATFORM W/RAIL	——	——	
145'	(24) RRH2X40-AWS	——	——	(28) 1 5/8" (INSIDE POLE)
145'	(4) DC6-48-60-18-8CF	——	——	
145'	(12) 8' X 1' X 9" PANELS	——	——	
145'	14' LOW PROFILE PLATFORM W/RAIL	——	——	
135'	(18) RRH2X40-AWS	——	——	(21) 1 5/8" (INSIDE POLE)
135'	(3) DC6-48-60-18-8CF	——	——	
135'	(9) 8' X 1' X 9" PANELS	——	——	
135'	14' LOW PROFILE PLATFORM W/RAIL	——	——	
120'	PL4-71W-DXA/E	YES	——	(1) EW63 (INSIDE POLE)
110'	PL4-71W-DXA/E	YES	——	(1) EW63 (INSIDE POLE)
100'	PL4-71W-DXA/E	YES	——	(1) EW63 (INSIDE POLE)

POLE DATA					
POLE 65 KSI 18 SIDED					
ELEV.	WALL THICKNESS	TAPER	TUBE LENGTH	TOP DIA.	BASE DIA.
126'-175'	5/16"	.331"/FT.	49'-0"	18"	34 1/4"
81'-131'	1/2"	.331"/FT.	50'-0"	31 7/8"	48 1/2"
39'-9"-87'-9"	5/8"	.331"/FT.	48'-0"	45 3/16"	61 1/8"
0'-48'	5/8"	.331"/FT.	48'-0"	57 1/8"	73"

ANCHOR BOLT DATA:
(34x) 2 1/4"ø ASTM A615 GRADE 75 KSI
X 8'-0" LG ON A 81"ø BOLT CIRCLE
TEMPLATE O.D. = ø86" A36

BASE PLATE DATA:
88"ø, 2 1/4" THICK, ROUND
ASTM A572 50 KSI
(34x) 3/4" THICK X 10 1/2" TALL GUSSETS
ASTM A572 50 KSI

NOTES:

1. POLE DESIGN ACCORDING TO TIA-222-G.
2. ANTENNA LOADS FROM MANUFACTURING SPECIFICATIONS.
3. WELD CONNECTIONS SHALL CONFORM TO THE LATEST REVISION OF THE AMERICAN WELDING SOCIETY, A.W.S. D 1.1.
4. ALL POLE MEMBERS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO ASTM A123.
5. ALL BOLTS SHALL BE GALVANIZED ACCORDING TO THE STANDARD SPECIFICATION FOR ZINC COATING OR IRON AND STEEL HARDWARE, ASTM A153.
6. BOLTS
   A. BOLTS IN TENSION ASTM A325
   B. STEP BOLTS ASTM A394
7. ORIENT V-NOTCH ON TOP OF TEMPLATE AND REFERENCE TAB ON BASE PLATE @ 0°.
8. STAMP "EEI 94430" ON TOP OF BASE PLATE NEAR FLAT #14 WITH 1/2" STEEL STAMPS.
9. ALL ITEMS MUST BE INVENTORIED AT THE TIME OF DELIVERY TO THE JOB SITE/STORAGE FACILITY. ANY SHORTAGES REPORTED AFTER THIS DELIVERY WILL BE THE RESPONSIBILITY OF THE CONTRACTOR/OWNER.
10. ALL STRUCTURAL COMPONENTS SHALL BE VERIFIED FOR PROPER ASSEMBLY BY THE FIELD CREW PRIOR TO INSTALLATION. REPAIRS AND/OR MISSING MATERIALS BECOME THE FINANCIAL RESPONSIBILITY OF THE CONTRACTOR IF EEI IS NOT NOTIFIED PRIOR TO INSTALLATION.
11. ANY PROBLEMS THAT OCCUR WITH SCHEDULING, FOUNDATION INSTALLATION, ERECTION OR ANY ITEMS FURNISHED BY EEI MUST BE REPORTED IMMEDIATELY TO ALLOW EEI TIME TO TAKE CORRECTIVE MEASURES. EEI WILL MAKE EVERY EFFORT TO REPAIR/REPLACE NECESSARY ITEMS IN AN EXPEDITED MANNER, AND/OR WILL PURSUE CORRECTIVE MEASURES IN THE MOST ECONOMICAL WAY POSSIBLE AT OUR DISCRETION. HOWEVER, UNDER NO CIRCUMSTANCES WILL EEI PAY FOR, OR BE RESPONSIBLE FOR ANY DOWN TIME OR EXPENSES INCURRED DUE TO DOWN TIME.

SITE: PRUNE HILL, WA

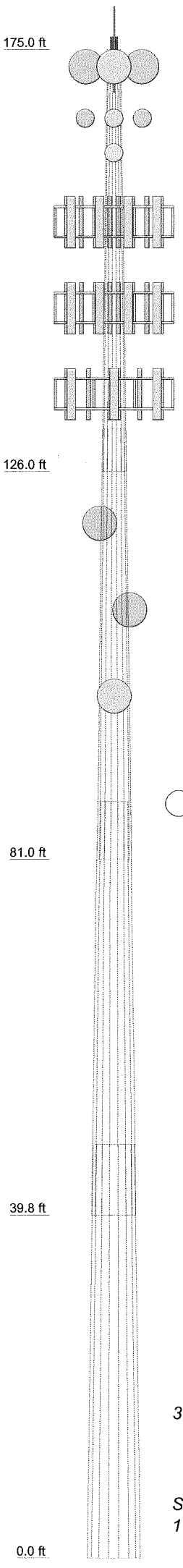
175' EHRESMANN
MONOPOLE

EHRESMANN ENGINEERING, INC.
CONSULTING ENGINEERS
4400 WEST 31st. STREET
YANKTON, SD 57078
(605) 665-7532
(605) 665-9780

DATE: 06/09/15
BY: GE
CHECKED:

J.O. 94430 | DWG # 94430E01 | SHT E01 OF

Section	1	2	3	4
Length (ft)	49.000	50.000	48.000	48.000
Number of Sides	18	18	18	18
Thickness (in)	0.313	0.500	0.625	0.625
Socket Length (ft)	5.000	6.750	8.250	
Top Dia (in)	18.000	31.926	45.230	57.126
Bot Dia (in)	34.205	48.462	61.104	73.000
Grade	A572-65			
Weight (K)	4.3	10.8	17.2	21.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	175	(4) 8' x 1' x 9" Panel Antenna	145
8' Lightning Rod	175	(8) RRH2X40-AWS	145
FLUSH MOUNT	173	(8) RRH2X40-AWS	145
AD18G-4-T2	173	(8) RRH2X40-AWS	145
AD18G-4-T2	173	DC6-48-60-18-8CF	145
AD18G-4-T2	173	DC6-48-60-18-8CF	145
MT-484033/NVA	170	(2) DC6-48-60-18-8CF	145
MT-484033/NVA	170	14' Low Profile Platform w/ Rail	145
MT-484033/NVA	170	(4) 8' x 1' x 9" Panel Antenna	145
FLUSH MOUNT	167	(4) 8' x 1' x 9" Panel Antenna	145
AD18G-2-T2	167	(6) RRH2X40-AWS	135
AD18G-2-T2	167	(6) RRH2X40-AWS	135
AD18G-2-T2	167	DC6-48-60-18-8CF	135
AD18G-2-T2	163	DC6-48-60-18-8CF	135
(8) RRH2X40-AWS	155	DC6-48-60-18-8CF	135
(8) RRH2X40-AWS	155	14' Low Profile Platform w/ Rail	135
DC6-48-60-18-8CF	155	(3) 8' x 1' x 9" Panel Antenna	135
(4) 8' x 1' x 9" Panel Antenna	155	(3) 8' x 1' x 9" Panel Antenna	135
DC6-48-60-18-8CF	155	(3) 8' x 1' x 9" Panel Antenna	135
(4) 8' x 1' x 9" Panel Antenna	155	(6) RRH2X40-AWS	135
(4) 8' x 1' x 9" Panel Antenna	155	PL4-71W-DXA/E	120
(8) RRH2X40-AWS	155	PL4-71W-DXA/E	110
(2) DC6-48-60-18-8CF	155	PL4-71W-DXA/E	100
14' Low Profile Platform w/ Rail	155		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Clark County, Washington.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 105 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 30 mph basic wind with 0.25 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 2 with Crest Height of 683.000 ft
8. Weld together tower sections have flange connections.
9. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
10. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
11. Welds are fabricated with ER-70S-6 electrodes.
12. TOWER RATING: 97.7%

ALL REACTIONS ARE FACTORED

AXIAL 110 K

SHEAR 8 K — *MOMENT 948 kip-ft*

TORQUE 0 kip-ft
30 mph WIND - 0.250 in ICE

AXIAL 92 K

SHEAR 112 K — *MOMENT 13573 kip-ft*

TORQUE 1 kip-ft
REACTIONS - 105 mph WIND

Ehresmannn Engineering Inc.
4400 West 31st. Street
Yankton, SD 57078
Phone: (605) 665-7532
FAX: (605) 665-9780

Job: **PRUNE HILL, WA**			**94430-1**
Project: ***175' EEI Monopole***			
Client: Parallel Infrastucture	Drawn by: CD		App'd:
Code: TIA-222-G	Date: 06/15/15		Scale: NTS
Path: Z:\POCKETS\QUOTES JOBS\BLACK STORM INC\Ryan Sauvageau\PRUNE HILL, WA\94430-15 - PRUNE HILL, WA.eri			Dwg No. E-1

tnxTower	Job	Page
	PRUNE HILL, WA 94430-15	1 of 16
Ehresmannn Engineering Inc. *4400 West 31st. Street* *Yankton, SD 57078* *Phone: (605) 665-7532* *FAX: (605) 665-9780*	**Project** 175' EEI Monopole	**Date** 15:41:57 06/15/15
	Client Parallel Infrastucture	**Designed by** CD

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Clark County, Washington.
Basic wind speed of 105 mph.
Structure Class II.
Exposure Category C.
Topographic Category 2.
Crest Height 683.000 ft.
Nominal ice thickness of 0.250 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 30 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Treat Feedline Bundles As Cylinder
	Consider Moments - Horizontals		Assume Legs Pinned		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Calculate Redundant Bracing Forces
	Use Moment Magnification		Use Clear Spans For Wind Area		Ignore Redundant Members in FEA
√	Use Code Stress Ratios		Use Clear Spans For KL/r		SR Leg Bolts Resist Compression
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension	√	All Leg Panels Have Same Allowable
	Escalate Ice		Bypass Mast Stability Checks		Offset Girt At Foundation
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Consider Feedline Torque
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Include Angle Block Shear Check
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		**Poles**
	Leg Bolts Are At Top Of Section		SR Members Have Cut Ends		Include Shear-Torsion Interaction
	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	Add IBC .6D+W Combination		Use TIA-222-G Tension Splice Capacity Exemption		

Tapered Pole Section Geometry

tnxTower	Job	Page
	PRUNE HILL, WA 94430-15	2 of 16
Ehresmannn Engineering Inc. *4400 West 31st. Street* *Yankton, SD 57078* *Phone: (605) 665-7532* *FAX: (605) 665-9780*	**Project** 175' EEI Monopole	**Date** 15:41:57 06/15/15
	Client Parallel Infrastucture	**Designed by** CD

Section	*Elevation*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	175.000-126.000	49.000	5.000	18	18.000	34.205	0.313	1.250	A572-65 (65 ksi)
L2	126.000-81.000	50.000	6.750	18	31.926	48.462	0.500	2.000	A572-65 (65 ksi)
L3	81.000-39.750	48.000	8.250	18	45.230	61.104	0.625	2.500	A572-65 (65 ksi)
L4	39.750-0.000	48.000		18	57.126	73.000	0.625	2.500	A572-65 (65 ksi)

Tapered Pole Properties

Section	*Tip Dia.*	*Area*	*I*	*r*	*C*	*I/C*	*J*	*It/Q*	*w*	*w/t*
	in	in^2	in^4	*in*	*in*	in^3	in^4	in^2	*in*	
L1	18.278	17.544	693.416	6.279	9.144	75.833	1387.744	8.774	2.618	8.378
	34.733	33.617	4878.712	12.032	17.376	280.771	9763.844	16.812	5.470	17.504
L2	34.098	49.874	6222.995	11.156	16.219	383.694	12454.179	24.942	4.739	9.478
	49.210	76.116	22121.273	17.027	24.619	898.553	44271.654	38.065	7.649	15.299
L3	48.194	88.485	22241.793	15.835	22.977	968.013	44512.852	44.251	6.860	10.977
	62.047	119.975	55442.206	21.470	31.041	1786.103	110957.364	59.999	9.654	15.447
L4	60.777	112.083	45204.971	20.058	29.020	1557.725	90469.425	56.052	8.954	14.327
	74.126	143.574	95014.551	25.693	37.084	2562.144	190154.124	71.801	11.748	18.797

Tower Elevation	*Gusset Area (per face)*	*Gusset Thickness*	*Gusset Grade*	*Adjust. Factor* A_f	*Adjust. Factor* A_r	*Weight Mult.*	*Double Angle Stitch Bolt Spacing Diagonals*	*Double Angle Stitch Bolt Spacing Horizontals*
ft	ft^2	*in*					*in*	*in*
L1 175.000-126.000				1	1.01	1.01		
L2 126.000-81.000				1	1.01	1.01		
L3 81.000-39.750				1	1.01	1.01		
L4 39.750-0.000				1	1.01	1.01		

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	A615-75
Anchor bolt size	2.250 in
Number of bolts	34
Embedment length	84.000 in
f'_c	4.000 ksi
Grout space	0.000 in
Base plate grade	A572-50
Base plate thickness	2.250 in
Bolt circle diameter	81.000 in

Base Plate Data	
Outer diameter	88.000 in
Inner diameter	66.000 in
Base plate type	Stiffened Plate
Bolts per stiffener	1
Stiffener thickness	0.750 in
Stiffener height	10.500 in

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	155.000 - 0.000	28	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	145.000 - 0.000	28	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	135.000 - 0.000	21	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
EW63	C	No	Inside Pole	120.000 - 0.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
EW63	C	No	Inside Pole	173.000 - 0.000	3	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
LDF5-50A (7/8 FOAM)	C	No	Inside Pole	170.000 - 0.000	3	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
EW63	C	No	Inside Pole	167.000 - 0.000	3	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
EW63	C	No	Inside Pole	163.000 - 0.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
EW63	C	No	Inside Pole	110.000 - 0.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
EW63	C	No	Inside Pole	100.000 - 0.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	175.000-126.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	1.454
L2	126.000-81.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	3.091
L3	81.000-39.750	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	2.856
L4	39.750-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	2.752

Feed Line/Linear Appurtenances Section Areas - With Ice

tnxTower	Job: PRUNE HILL, WA 94430-15	Page: 4 of 16
Ehresmannn Engineering Inc. 4400 West 31st. Street Yankton, SD 57078 Phone: (605) 665-7532 FAX: (605) 665-9780	Project: 175' EEI Monopole	Date: 15:41:57 06/15/15
	Client: Parallel Infrastucture	Designed by: CD

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	175.000-126.000	A	0.709	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	1.454
L2	126.000-81.000	A	0.693	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	3.091
L3	81.000-39.750	A	0.667	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	2.856
L4	39.750-0.000	A	0.606	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	2.752

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Flash Beacon Lighting	C	None		0.0000	175.000	No Ice	2.700	2.700	0.050
						1/2" Ice	3.100	3.100	0.070
8' Lightning Rod	C	None		0.0000	175.000	No Ice	1.000	1.000	0.040
						1/2" Ice	2.017	2.017	0.049
(4) 8' x 1' x 9" Panel Antenna	A	From Centroid-Face	3.500 0.000 0.000	0.0000	155.000	No Ice	11.467	9.133	0.075
						1/2" Ice	12.083	9.734	0.148
(4) 8' x 1' x 9" Panel Antenna	B	From Centroid-Face	3.500 0.000 0.000	0.0000	155.000	No Ice	11.467	9.133	0.075
						1/2" Ice	12.083	9.734	0.148
(4) 8' x 1' x 9" Panel Antenna	C	From Centroid-Face	3.500 0.000 0.000	0.0000	155.000	No Ice	11.467	9.133	0.075
						1/2" Ice	12.083	9.734	0.148
(8) RRH2X40-AWS	A	From Centroid-Face	3.500 0.000 0.000	0.0000	155.000	No Ice	2.522	1.589	0.044
						1/2" Ice	2.753	1.795	0.061
(8) RRH2X40-AWS	B	From Centroid-Face	3.500 0.000 0.000	0.0000	155.000	No Ice	2.522	1.589	0.044
						1/2" Ice	2.753	1.795	0.061
(8) RRH2X40-AWS	C	From Centroid-Face	3.500 0.000 0.000	0.0000	155.000	No Ice	2.522	1.589	0.044
						1/2" Ice	2.753	1.795	0.061
DC6-48-60-18-8CF	A	None		0.0000	155.000	No Ice	1.375	1.375	0.033
						1/2" Ice	1.567	1.567	0.050
DC6-48-60-18-8CF	B	None		0.0000	155.000	No Ice	1.375	1.375	0.033
						1/2" Ice	1.567	1.567	0.050
(2) DC6-48-60-18-8CF	C	None		0.0000	155.000	No Ice	1.375	1.375	0.033

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	Client: Parallel Infrastucture	Designed by: CD

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral ft Vert ft ft*	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
14' Low Profile Platform w/ Rail	C	None		0.0000	155.000	1/2" Ice No Ice 1/2" Ice	1.567 30.000 40.000	1.567 30.000 40.000	0.050 1.870 2.620
(4) 8' x 1' x 9" Panel Antenna	A	From Centroid-Face	3.500 0.000 0.000	0.0000	145.000	No Ice 1/2" Ice	11.467 12.083	9.133 9.734	0.075 0.148
(4) 8' x 1' x 9" Panel Antenna	B	From Centroid-Face	3.500 0.000 0.000	0.0000	145.000	No Ice 1/2" Ice	11.467 12.083	9.133 9.734	0.075 0.148
(4) 8' x 1' x 9" Panel Antenna	C	From Centroid-Face	3.500 0.000 0.000	0.0000	145.000	No Ice 1/2" Ice	11.467 12.083	9.133 9.734	0.075 0.148
(8) RRH2X40-AWS	A	From Centroid-Face	3.500 0.000 0.000	0.0000	145.000	No Ice 1/2" Ice	2.522 2.753	1.589 1.795	0.044 0.061
(8) RRH2X40-AWS	B	From Centroid-Face	3.500 0.000 0.000	0.0000	145.000	No Ice 1/2" Ice	2.522 2.753	1.589 1.795	0.044 0.061
(8) RRH2X40-AWS	C	From Centroid-Face	3.500 0.000 0.000	0.0000	145.000	No Ice 1/2" Ice	2.522 2.753	1.589 1.795	0.044 0.061
DC6-48-60-18-8CF	A	None		0.0000	145.000	No Ice 1/2" Ice	1.375 1.567	1.375 1.567	0.033 0.050
DC6-48-60-18-8CF	B	None		0.0000	145.000	No Ice 1/2" Ice	1.375 1.567	1.375 1.567	0.033 0.050
(2) DC6-48-60-18-8CF	C	None		0.0000	145.000	No Ice 1/2" Ice	1.375 1.567	1.375 1.567	0.033 0.050
14' Low Profile Platform w/ Rail	C	None		0.0000	145.000	No Ice 1/2" Ice	30.000 40.000	30.000 40.000	1.870 2.620
(3) 8' x 1' x 9" Panel Antenna	A	From Centroid-Face	3.500 0.000 0.000	0.0000	135.000	No Ice 1/2" Ice	11.467 12.083	9.133 9.734	0.075 0.148
(3) 8' x 1' x 9" Panel Antenna	B	From Centroid-Face	3.500 0.000 0.000	0.0000	135.000	No Ice 1/2" Ice	11.467 12.083	9.133 9.734	0.075 0.148
(3) 8' x 1' x 9" Panel Antenna	C	From Centroid-Face	3.500 0.000 0.000	0.0000	135.000	No Ice 1/2" Ice	11.467 12.083	9.133 9.734	0.075 0.148
(6) RRH2X40-AWS	A	From Centroid-Face	3.500 0.000 0.000	0.0000	135.000	No Ice 1/2" Ice	2.522 2.753	1.589 1.795	0.044 0.061
(6) RRH2X40-AWS	B	From Centroid-Face	3.500 0.000 0.000	0.0000	135.000	No Ice 1/2" Ice	2.522 2.753	1.589 1.795	0.044 0.061
(6) RRH2X40-AWS	C	From Centroid-Face	3.500 0.000 0.000	0.0000	135.000	No Ice 1/2" Ice	2.522 2.753	1.589 1.795	0.044 0.061
DC6-48-60-18-8CF	A	None		0.0000	135.000	No Ice 1/2" Ice	1.375 1.567	1.375 1.567	0.033 0.050
DC6-48-60-18-8CF	B	None		0.0000	135.000	No Ice 1/2" Ice	1.375 1.567	1.375 1.567	0.033 0.050
DC6-48-60-18-8CF	C	None		0.0000	135.000	No Ice 1/2" Ice	1.375 1.567	1.375 1.567	0.033 0.050
14' Low Profile Platform w/ Rail	C	None		0.0000	135.000	No Ice 1/2" Ice	30.000 40.000	30.000 40.000	1.870 2.620
MT-484033/NVA	A	From Face	3.000 0.000	0.0000	170.000	No Ice 1/2" Ice	0.817 0.951	0.042 0.089	0.020 0.024

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	Client: Parallel Infrastucture	Designed by: CD

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
MT-484033/NVA	B	From Face	0.000 3.000 0.000	0.0000	170.000	No Ice 1/2" Ice	0.817 0.951	0.042 0.089	0.020 0.024
MT-484033/NVA	C	From Face	0.000 3.000 0.000	0.0000	170.000	No Ice 1/2" Ice	0.817 0.951	0.042 0.089	0.020 0.024
FLUSH MOUNT	C	None		0.0000	173.000	No Ice 1/2" Ice	5.000 6.000	5.000 6.000	0.500 0.750
FLUSH MOUNT	C	None		0.0000	167.000	No Ice 1/2" Ice	5.000 6.000	5.000 6.000	0.500 0.750

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
PL4-71W-DXA/E	A	Paraboloid w/o Radome	From Face	0.500 0.000 0.000	0.0000		120.000	4.000	No Ice 1/2" Ice	12.560 13.089	0.170 0.237
PL4-71W-DXA/E	B	Paraboloid w/o Radome	From Face	0.500 0.000 0.000	0.0000		110.000	4.000	No Ice 1/2" Ice	12.560 13.089	0.170 0.237
PL4-71W-DXA/E	C	Paraboloid w/o Radome	From Face	0.500 0.000 0.000	0.0000		100.000	4.000	No Ice 1/2" Ice	12.560 13.089	0.170 0.237
AD18G-4-T2	A	Paraboloid w/o Radome	From Face	3.000 0.000 0.000	0.0000		173.000	4.030	No Ice 1/2" Ice	12.756 13.289	0.098 0.166
AD18G-4-T2	B	Paraboloid w/o Radome	From Face	3.000 0.000 0.000	0.0000		173.000	4.030	No Ice 1/2" Ice	12.756 13.289	0.098 0.166
AD18G-4-T2	C	Paraboloid w/o Radome	From Face	3.000 0.000 0.000	0.0000		173.000	4.030	No Ice 1/2" Ice	12.756 13.289	0.098 0.166
AD18G-2-T2	A	Paraboloid w/o Radome	From Face	3.000 0.000 0.000	0.0000		167.000	2.170	No Ice 1/2" Ice	3.698 3.988	0.021 0.042
AD18G-2-T2	B	Paraboloid w/o Radome	From Face	3.000 0.000 0.000	0.0000		167.000	2.170	No Ice 1/2" Ice	3.698 3.988	0.021 0.042
AD18G-2-T2	C	Paraboloid w/o Radome	From Face	3.000 0.000 0.000	0.0000		167.000	2.170	No Ice 1/2" Ice	3.698 3.988	0.021 0.042
AD18G-2-T2	C	Paraboloid w/o Radome	From Face	3.000 0.000 0.000	0.0000		163.000	2.170	No Ice 1/2" Ice	3.698 3.988	0.021 0.042

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	Client: Parallel Infrastucture	Designed by: CD

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	53.415					
Bracing Weight	0.000					
Total Member Self-Weight	53.415			0.117	-0.020	
Total Weight	76.958			0.117	-0.020	
Wind 0 deg - No Ice		-0.001	-69.699	-8209.669	1.598	0.044
Wind 30 deg - No Ice		33.002	-60.741	-7162.299	-3837.738	-0.432
Wind 60 deg - No Ice		60.663	-35.400	-4173.769	-7166.505	0.258
Wind 90 deg - No Ice		68.858	1.592	238.684	-8097.955	0.867
Wind 120 deg - No Ice		60.139	34.771	4098.748	-7087.768	0.599
Wind 150 deg - No Ice		35.862	58.960	6910.102	-4262.631	0.101
Wind 180 deg - No Ice		0.010	70.241	8294.118	-12.656	-0.028
Wind 210 deg - No Ice		-35.853	58.957	6905.668	4251.178	-0.131
Wind 240 deg - No Ice		-60.134	34.766	4092.867	7080.776	-0.643
Wind 270 deg - No Ice		-68.854	1.586	230.435	8093.411	-0.907
Wind 300 deg - No Ice		-60.658	-35.409	-4184.812	7160.320	-0.229
Wind 330 deg - No Ice		-33.004	-60.744	-7166.375	3840.722	0.502
Member Ice	6.612					
Total Weight Ice	93.704			0.250	-0.030	
Wind 0 deg - Ice		-0.000	-8.312	-909.439	0.111	0.004
Wind 30 deg - Ice		3.994	-7.231	-792.176	-431.463	-0.038
Wind 60 deg - Ice		7.223	-4.205	-460.749	-792.596	0.023
Wind 90 deg - Ice		8.237	0.139	21.038	-899.776	0.077
Wind 120 deg - Ice		7.178	4.149	454.496	-785.770	0.054
Wind 150 deg - Ice		4.244	7.076	770.552	-468.553	0.011
Wind 180 deg - Ice		0.001	8.358	917.196	-1.128	-0.002
Wind 210 deg - Ice		-4.243	7.075	770.167	467.502	-0.013
Wind 240 deg - Ice		-7.178	4.148	453.985	785.106	-0.058
Wind 270 deg - Ice		-8.237	0.138	20.322	899.324	-0.080
Wind 300 deg - Ice		-7.223	-4.205	-461.709	792.002	-0.021
Wind 330 deg - Ice		-3.994	-7.232	-792.530	431.666	0.044
Total Weight	76.958			0.117	-0.020	
Wind 0 deg - Service		-0.000	-20.363	-2398.445	0.452	0.013
Wind 30 deg - Service		9.642	-17.746	-2092.447	-1121.244	-0.126
Wind 60 deg - Service		17.723	-10.342	-1219.321	-2093.773	0.075
Wind 90 deg - Service		20.118	0.465	69.817	-2365.904	0.253
Wind 120 deg - Service		17.570	10.159	1197.569	-2070.769	0.175
Wind 150 deg - Service		10.477	17.226	2018.931	-1245.380	0.030
Wind 180 deg - Service		0.003	20.521	2423.284	-3.712	-0.008
Wind 210 deg - Service		-10.475	17.225	2017.636	1242.005	-0.038
Wind 240 deg - Service		-17.569	10.157	1195.851	2068.698	-0.188
Wind 270 deg - Service		-20.116	0.463	67.407	2364.548	-0.265
Wind 300 deg - Service		-17.722	-10.345	-1222.547	2091.937	-0.067
Wind 330 deg - Service		-9.643	-17.747	-2093.638	1122.087	0.147

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice

Comb. No.	Description
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	175 - 126	Pole	Max Tension	14	0.000	0.000	0.000
			Max. Compression	26	-32.401	0.000	-0.215
			Max. Mx	8	-13.099	-1266.063	-61.021
			Max. My	14	-12.696	-0.110	-1321.264
			Max. Vy	8	70.946	-1266.063	-61.021
			Max. Vx	14	72.389	-0.110	-1321.264

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	20			1.044
L2	126 - 81	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.882	-0.034	-0.273
			Max. Mx	8	-31.160	-4653.356	-163.119
			Max. My	14	-30.855	-19.222	-4775.284
			Max. Vy	8	85.248	-4653.356	-163.119
			Max. Vx	14	87.509	-19.222	-4775.284
			Max. Torque	4			2.129
L3	81 - 39.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-73.931	-0.034	-0.273
			Max. Mx	8	-55.697	-8272.087	-267.371
			Max. My	14	-55.536	-20.079	-8483.954
			Max. Vy	8	96.831	-8272.087	-267.371
			Max. Vx	14	99.089	-20.079	-8483.954
			Max. Torque	20			1.469
L4	39.75 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-109.993	-0.034	-0.273
			Max. Mx	8	-92.269	-13253.566	-391.505
			Max. My	14	-92.265	-20.968	-13572.941
			Max. Vy	8	110.240	-13253.566	-391.505
			Max. Vx	14	112.451	-20.968	-13572.941
			Max. Torque	20			1.465

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	109.993	0.000	-0.000
	Max. H_x	21	69.262	110.167	-2.537
	Max. H_z	3	69.262	0.002	111.516
	Max. M_x	2	13435.335	0.002	111.515
	Max. M_z	8	13253.566	-110.172	-2.548
	Max. Torsion	20	1.464	110.166	-2.537
	Min. Vert	15	69.262	-0.016	-112.383
	Min. H_x	9	69.262	-110.172	-2.548
	Min. H_z	15	69.262	-0.016	-112.383
	Min. M_x	14	-13572.941	-0.016	-112.382
	Min. M_z	20	-13246.122	110.166	-2.537
	Min. Torsion	8	-1.421	-110.172	-2.548

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	76.958	0.000	0.000	0.117	-0.020	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	92.349	-0.002	-111.515	-13435.335	2.658	0.047
0.9 Dead+1.6 Wind 0 deg - No Ice	69.262	-0.002	-111.516	-13350.737	2.637	0.052
1.2 Dead+1.6 Wind 30 deg - No Ice	92.349	52.803	-97.186	-11722.515	-6280.240	-0.695

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	Client: Parallel Infrastucture	Designed by: CD

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
0.9 Dead+1.6 Wind 30 deg - No Ice	69.262	52.803	-97.186	-11648.522	-6240.878	-0.690
1.2 Dead+1.6 Wind 60 deg - No Ice	92.349	97.060	-56.640	-6830.355	-11728.140	0.485
0.9 Dead+1.6 Wind 60 deg - No Ice	69.262	97.060	-56.640	-6787.275	-11654.042	0.486
1.2 Dead+1.6 Wind 90 deg - No Ice	92.349	110.172	2.548	391.504	-13253.566	1.421
0.9 Dead+1.6 Wind 90 deg - No Ice	69.262	110.172	2.548	388.716	-13170.021	1.419
1.2 Dead+1.6 Wind 120 deg - No Ice	92.349	96.223	55.634	6708.005	-11599.880	0.950
0.9 Dead+1.6 Wind 120 deg - No Ice	69.262	96.223	55.634	6665.624	-11526.659	0.946
1.2 Dead+1.6 Wind 150 deg - No Ice	92.349	57.379	94.337	11308.948	-6977.232	0.125
0.9 Dead+1.6 Wind 150 deg - No Ice	69.262	57.379	94.337	11237.730	-6932.976	0.120
1.2 Dead+1.6 Wind 180 deg - No Ice	92.349	0.016	112.382	13572.941	-20.968	-0.059
0.9 Dead+1.6 Wind 180 deg - No Ice	69.262	0.016	112.383	13487.319	-20.752	-0.065
1.2 Dead+1.6 Wind 210 deg - No Ice	92.349	-57.364	94.331	11301.720	6958.339	-0.159
0.9 Dead+1.6 Wind 210 deg - No Ice	69.262	-57.364	94.331	11230.572	6914.283	-0.164
1.2 Dead+1.6 Wind 240 deg - No Ice	92.349	-96.214	55.626	6698.323	11588.426	-0.997
0.9 Dead+1.6 Wind 240 deg - No Ice	69.262	-96.214	55.626	6656.037	11515.329	-0.999
1.2 Dead+1.6 Wind 270 deg - No Ice	92.349	-110.166	2.537	377.832	13246.122	-1.464
0.9 Dead+1.6 Wind 270 deg - No Ice	69.262	-110.167	2.537	375.181	13162.662	-1.462
1.2 Dead+1.6 Wind 300 deg - No Ice	92.349	-97.052	-56.654	-6848.659	11717.904	-0.426
0.9 Dead+1.6 Wind 300 deg - No Ice	69.262	-97.052	-56.654	-6805.394	11643.921	-0.421
1.2 Dead+1.6 Wind 330 deg - No Ice	92.349	-52.807	-97.191	-11729.208	6285.173	0.772
0.9 Dead+1.6 Wind 330 deg - No Ice	69.262	-52.807	-97.191	-11655.149	6245.773	0.777
1.2 Dead+1.0 Ice+1.0 Temp	109.993	-0.000	0.000	0.273	-0.034	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	109.993	-0.000	-8.311	-940.184	0.116	0.001
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	109.993	3.994	-7.231	-818.972	-445.947	-0.039
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	109.993	7.223	-4.204	-476.328	-819.455	0.023
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	109.993	8.237	0.139	21.894	-930.186	0.078
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	109.993	7.178	4.149	469.909	-812.362	0.056
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	109.993	4.244	7.076	796.573	-484.493	0.013
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	109.993	0.001	8.358	948.304	-1.194	-0.000
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	109.993	-4.243	7.075	796.166	483.379	-0.012
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	109.993	-7.177	4.148	469.369	811.658	-0.057

Load Combination	Vertical K	Shear$_x$ K	Shear$_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	109.993	-8.237	0.138	21.137	929.706	-0.081
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	109.993	-7.223	-4.205	-477.343	818.825	-0.023
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	109.993	-3.994	-7.232	-819.347	446.159	0.041
Dead+Wind 0 deg - Service	76.958	-0.000	-20.361	-2448.676	0.469	0.009
Dead+Wind 30 deg - Service	76.958	9.641	-17.744	-2136.299	-1144.559	-0.128
Dead+Wind 60 deg - Service	76.958	17.721	-10.341	-1244.870	-2137.682	0.077
Dead+Wind 90 deg - Service	76.958	20.116	0.465	71.450	-2415.410	0.256
Dead+Wind 120 deg - Service	76.958	17.569	10.158	1222.662	-2114.148	0.177
Dead+Wind 150 deg - Service	76.958	10.476	17.224	2061.103	-1271.593	0.032
Dead+Wind 180 deg - Service	76.958	0.003	20.520	2474.094	-3.837	-0.006
Dead+Wind 210 deg - Service	76.958	-10.474	17.223	2059.764	1268.106	-0.035
Dead+Wind 240 deg - Service	76.958	-17.567	10.156	1220.886	2112.009	-0.186
Dead+Wind 270 deg - Service	76.958	-20.115	0.463	68.959	2414.011	-0.266
Dead+Wind 300 deg - Service	76.958	-17.720	-10.344	-1248.206	2135.786	-0.072
Dead+Wind 330 deg - Service	76.958	-9.642	-17.745	-2137.530	1145.432	0.143

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-76.958	0.000	0.000	76.958	0.000	0.000%
2	-0.002	-92.349	-111.518	0.002	92.349	111.515	0.002%
3	-0.002	-69.262	-111.518	0.002	69.262	111.516	0.002%
4	52.803	-92.349	-97.186	-52.803	92.349	97.186	0.000%
5	52.803	-69.262	-97.186	-52.803	69.262	97.186	0.000%
6	97.060	-92.349	-56.640	-97.060	92.349	56.640	0.000%
7	97.060	-69.262	-56.640	-97.060	69.262	56.640	0.000%
8	110.173	-92.349	2.548	-110.172	92.349	-2.548	0.000%
9	110.173	-69.262	2.548	-110.172	69.262	-2.548	0.000%
10	96.223	-92.349	55.634	-96.223	92.349	-55.634	0.000%
11	96.223	-69.262	55.634	-96.223	69.262	-55.634	0.000%
12	57.379	-92.349	94.337	-57.379	92.349	-94.337	0.000%
13	57.379	-69.262	94.337	-57.379	69.262	-94.337	0.000%
14	0.016	-92.349	112.385	-0.016	92.349	-112.382	0.002%
15	0.016	-69.262	112.385	-0.016	69.262	-112.383	0.002%
16	-57.364	-92.349	94.331	57.364	92.349	-94.331	0.000%
17	-57.364	-69.262	94.331	57.364	69.262	-94.331	0.000%
18	-96.214	-92.349	55.626	96.214	92.349	-55.626	0.000%
19	-96.214	-69.262	55.626	96.214	69.262	-55.626	0.000%
20	-110.167	-92.349	2.537	110.166	92.349	-2.537	0.000%
21	-110.167	-69.262	2.537	110.167	69.262	-2.537	0.000%
22	-97.053	-92.349	-56.654	97.052	92.349	56.654	0.000%
23	-97.053	-69.262	-56.654	97.052	69.262	56.654	0.000%
24	-52.807	-92.349	-97.191	52.807	92.349	97.191	0.000%
25	-52.807	-69.262	-97.191	52.807	69.262	97.191	0.000%
26	0.000	-109.993	0.000	0.000	109.993	-0.000	0.000%
27	-0.000	-109.993	-8.312	0.000	109.993	8.311	0.000%
28	3.994	-109.993	-7.231	-3.994	109.993	7.231	0.000%
29	7.223	-109.993	-4.205	-7.223	109.993	4.204	0.000%
30	8.237	-109.993	0.139	-8.237	109.993	-0.139	0.000%
31	7.178	-109.993	4.149	-7.178	109.993	-4.149	0.000%
32	4.244	-109.993	7.076	-4.244	109.993	-7.076	0.000%
33	0.001	-109.993	8.358	-0.001	109.993	-8.358	0.000%
34	-4.243	-109.993	7.075	4.243	109.993	-7.075	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
35	-7.178	-109.993	4.148	7.177	109.993	-4.148	0.000%
36	-8.237	-109.993	0.138	8.237	109.993	-0.138	0.000%
37	-7.223	-109.993	-4.205	7.223	109.993	4.205	0.000%
38	-3.994	-109.993	-7.232	3.994	109.993	7.232	0.000%
39	-0.000	-76.958	-20.363	0.000	76.958	20.361	0.002%
40	9.642	-76.958	-17.746	-9.641	76.958	17.744	0.002%
41	17.723	-76.958	-10.342	-17.721	76.958	10.341	0.002%
42	20.118	-76.958	0.465	-20.116	76.958	-0.465	0.002%
43	17.570	-76.958	10.159	-17.569	76.958	-10.158	0.002%
44	10.477	-76.958	17.226	-10.476	76.958	-17.224	0.002%
45	0.003	-76.958	20.521	-0.003	76.958	-20.520	0.002%
46	-10.475	-76.958	17.225	10.474	76.958	-17.223	0.002%
47	-17.569	-76.958	10.157	17.567	76.958	-10.156	0.002%
48	-20.116	-76.958	0.463	20.115	76.958	-0.463	0.002%
49	-17.722	-76.958	-10.345	17.720	76.958	10.344	0.002%
50	-9.643	-76.958	-17.747	9.642	76.958	17.745	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	11	0.00002617	0.00005690
3	Yes	11	0.00001756	0.00004619
4	Yes	14	0.00000001	0.00006444
5	Yes	14	0.00000001	0.00004365
6	Yes	14	0.00000001	0.00006974
7	Yes	14	0.00000001	0.00004697
8	Yes	12	0.00000001	0.00008583
9	Yes	12	0.00000001	0.00006214
10	Yes	14	0.00000001	0.00006824
11	Yes	14	0.00000001	0.00004609
12	Yes	14	0.00000001	0.00006867
13	Yes	14	0.00000001	0.00004639
14	Yes	11	0.00002605	0.00006025
15	Yes	11	0.00001747	0.00004840
16	Yes	14	0.00000001	0.00006832
17	Yes	14	0.00000001	0.00004617
18	Yes	14	0.00000001	0.00006793
19	Yes	14	0.00000001	0.00004590
20	Yes	12	0.00000001	0.00008131
21	Yes	12	0.00000001	0.00005890
22	Yes	14	0.00000001	0.00006989
23	Yes	14	0.00000001	0.00004707
24	Yes	14	0.00000001	0.00006465
25	Yes	14	0.00000001	0.00004378
26	Yes	6	0.00000001	0.00000001
27	Yes	11	0.00000001	0.00009327
28	Yes	11	0.00000001	0.00009396
29	Yes	11	0.00000001	0.00009600
30	Yes	11	0.00000001	0.00009217
31	Yes	11	0.00000001	0.00009489
32	Yes	11	0.00000001	0.00009423
33	Yes	11	0.00000001	0.00009427
34	Yes	11	0.00000001	0.00009407
35	Yes	11	0.00000001	0.00009475

36	Yes	11	0.00000001	0.00009211
37	Yes	11	0.00000001	0.00009603
38	Yes	11	0.00000001	0.00009405
39	Yes	10	0.00008996	0.00007311
40	Yes	10	0.00000001	0.00008353
41	Yes	10	0.00008973	0.00009148
42	Yes	10	0.00000001	0.00007282
43	Yes	10	0.00008974	0.00009048
44	Yes	10	0.00000001	0.00008673
45	Yes	10	0.00008995	0.00007390
46	Yes	10	0.00000001	0.00008631
47	Yes	10	0.00000001	0.00008970
48	Yes	10	0.00000001	0.00007267
49	Yes	10	0.00008972	0.00009159
50	Yes	10	0.00000001	0.00008427

Maximum Tower Deflections - Service Wind

Section No.	*Elevation* *ft*	*Horz. Deflection in*	*Gov. Load Comb.*	*Tilt* °	*Twist* °
L1	175 - 126	29.556	45	1.5833	0.0011
L2	131 - 81	15.823	45	1.2726	0.0003
L3	87.75 - 39.75	6.583	45	0.7366	0.0002
L4	48 - 0	1.924	45	0.3676	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation *ft*	*Appurtenance*	*Gov. Load Comb.*	*Deflection in*	*Tilt* °	*Twist* °	*Radius of Curvature ft*
175.000	Flash Beacon Lighting	45	29.556	1.5833	0.0011	37323
173.000	AD18G-4-T2	45	28.890	1.5724	0.0011	37323
170.000	MT-484033/NVA	45	27.893	1.5561	0.0010	37323
167.000	AD18G-2-T2	45	26.898	1.5395	0.0010	23326
163.000	AD18G-2-T2	45	25.580	1.5168	0.0009	15551
155.000	(4) 8' x 1' x 9" Panel Antenna	45	22.984	1.4682	0.0007	9330
145.000	(4) 8' x 1' x 9" Panel Antenna	45	19.859	1.3979	0.0005	6219
135.000	(3) 8' x 1' x 9" Panel Antenna	45	16.927	1.3123	0.0004	4665
120.000	PL4-71W-DXA/E	45	13.014	1.1471	0.0002	4479
110.000	PL4-71W-DXA/E	45	10.744	1.0196	0.0002	4721
100.000	PL4-71W-DXA/E	45	8.727	0.8885	0.0002	4990

Maximum Tower Deflections - Design Wind

Section No.	*Elevation* *ft*	*Horz. Deflection in*	*Gov. Load Comb.*	*Tilt* °	*Twist* °
L1	175 - 126	161.627	14	8.6689	0.0136
L2	131 - 81	86.661	14	6.9734	0.0014
L3	87.75 - 39.75	36.098	14	4.0395	0.0007

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	Client: Parallel Infrastucture	Designed by: CD

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L4	48 - 0	10.556	14	2.0166	0.0003

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.000	Flash Beacon Lighting	14	161.627	8.6689	0.0136	7114
173.000	AD18G-4-T2	14	157.994	8.6099	0.0129	7114
170.000	MT-484033/NVA	14	152.552	8.5209	0.0118	7114
167.000	AD18G-2-T2	14	147.126	8.4306	0.0108	4445
163.000	AD18G-2-T2	14	139.931	8.3069	0.0094	2962
155.000	(4) 8' x 1' x 9" Panel Antenna	14	125.765	8.0417	0.0068	1774
145.000	(4) 8' x 1' x 9" Panel Antenna	14	108.706	7.6580	0.0040	1179
135.000	(3) 8' x 1' x 9" Panel Antenna	14	92.694	7.1903	0.0018	881
120.000	PL4-71W-DXA/E	14	71.309	6.2869	0.0010	839
110.000	PL4-71W-DXA/E	14	58.884	5.5889	0.0007	880
100.000	PL4-71W-DXA/E	14	47.843	4.8717	0.0006	925

Base Plate Design Data

Plate Thickness in	Number of Anchor Bolts	Anchor Bolt Size in	Actual Allowable Ratio Bolt Tension K	Actual Allowable Ratio Concrete Stress ksi	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Critical Ratio
2.250	34	2.250	191.086 223.654 0.85	3.819 4.080 0.94	25.986 45.000 0.58	24.946 45.000 0.55	Conc fc	0.94 ✓

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	175 - 126 (1)	TP34.205x18x0.313	49.000	175.000	183.5	31.977	-12.696	214.564	0.059
L2	126 - 81 (2)	TP48.462x31.926x0.5	50.000	175.000	129.4	72.573	-30.855	979.791	0.031
L3	81 - 39.75 (3)	TP61.104x45.23x0.625	48.000	175.000	103.5	113.360	-54.544	2389.820	0.023
L4	39.75 - 0 (4)	TP73x57.126x0.625	48.000	175.000	81.7	143.574	-92.265	4722.130	0.020

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Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	175 - 126 (1)	TP34.205x18x0.313	1321.267	1559.875	0.847	0.000	1559.875	0.000
L2	126 - 81 (2)	TP48.462x31.926x0.5	4775.325	5054.817	0.945	0.000	5054.817	0.000
L3	81 - 39.75 (3)	TP61.104x45.23x0.625	8302.891	9866.500	0.842	0.000	9866.500	0.000
L4	39.75 - 0 (4)	TP73x57.126x0.625	13572.916	15236.833	0.891	0.000	15236.833	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	175 - 126 (1)	TP34.205x18x0.313	72.389	1178.620	0.061	0.001	3123.558	0.000
L2	126 - 81 (2)	TP48.462x31.926x0.5	87.509	2695.910	0.032	0.058	10122.000	0.000
L3	81 - 39.75 (3)	TP61.104x45.23x0.625	99.089	4255.730	0.023	0.059	19757.083	0.000
L4	39.75 - 0 (4)	TP73x57.126x0.625	112.451	5122.930	0.022	0.059	30511.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	175 - 126 (1)	0.059	0.847	0.000	0.061	0.000	0.910 ✓	1.000	4.8.2 ✓
L2	126 - 81 (2)	0.031	0.945	0.000	0.032	0.000	0.977 ✓	1.000	4.8.2 ✓
L3	81 - 39.75 (3)	0.023	0.842	0.000	0.023	0.000	0.865 ✓	1.000	4.8.2 ✓
L4	39.75 - 0 (4)	0.020	0.891	0.000	0.022	0.000	0.911 ✓	1.000	4.8.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	175 - 126	Pole	TP34.205x18x0.313	1	-12.696	214.564	91.0	Pass
L2	126 - 81	Pole	TP48.462x31.926x0.5	2	-30.855	979.791	97.7	Pass
L3	81 - 39.75	Pole	TP61.104x45.23x0.625	3	-54.544	2389.820	86.5	Pass
L4	39.75 - 0	Pole	TP73x57.126x0.625	4	-92.265	4722.130	91.1	Pass
							Summary	

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						Pole (L2)	97.7	Pass
						Base Plate	93.6	Pass
						RATING =	**97.7**	**Pass**

Program Version 6.1.3.1 - 3/21/2014 File:Z:/POCKETS/QUOTES JOBS/BLACK STORM INC/Ryan Sauvageau/PRUNE HILL, WA/94430-15 - PRUNE HILL, WA.eri

TO: Hearings Examiner

BY: Glenn Watson, Camas Resident (and on behalf of other residents)

DATE: May 30, 2016

RE: Wireless Facility on Prune Hill (File No. CUP15-01)

An extremely high number of Camas residents were disappointed to learn of the proposal submitted to construct a 175 foot monopole; three panel antennas; seven microwave antennas; and ground equipment on a concrete pad, all within a 40' x 40' fenced area at 2829 NW 18th Avenue (tax parcel #124979-000). This proposed location is situated almost directly across the street from an existing tower and water tower which presently house similar appliances.

The proposed tower will have an adverse effect upon the use, enjoyment and valuation of the adjacent neighboring properties and the public welfare.

Additionally, the applicant has provided no evidence that failure to place the cellular tower on the proposed site would create a gap in coverage that could not be remedied by placing appliances at a different site or with a different configuration.

Camas City officials have the power to regulate the placement and appearance of cell towers, as long as such discrimination is not unreasonable, and especially since residents already have significant coverage in the area.

A petition has been signed by over 100 residents of Camas, requesting a legitimate alternative site analysis and environmental impact statement (EIS) be completed to find the safest and most appropriate site for this tower (**Exhibit #1**).

The City of Camas needs to consider a variety of issues before rendering a decision on this application.

The issues include the following:

1. Effect on the Existing Wetland and Migrating Bird Population (and Potential Legal Exposure For Camas)
2. Injurious To The Property & Improvements In The Vicinity
3. Aesthetics and Safety
4. Current Collocation Options
5. Significant Existing Coverage In The Area
6. Reasonable Discrimination Is Allowed
7. Alternative Locations

1. Effect on the Existing Wetland and Migrating Bird Population & Potential Culpability for the City of Camas

Under the Washington State Environmental Policy Act (SEPA), and the National Environmental Policy Act (NEPA), it is the obligation of the applicants to prove that their project will not cause serious damage to the environment. The SEPA checklist as submitted fails to acknowledge the risks outlined below. As such, a full EIS is needed to adequately evaluate the effect of this proposal on the local environment.

According to the U.S. Fish and Wildlife Service (USFWS), "*The construction of new towers creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. Communications towers are estimated to kill 4-5 million birds per year, which violates the spirit and the intent of the Migratory Bird Treaty Act (MBTA) and the Code of Federal Regulations (CFR) at Part 50 designed to implement the MBTA. Some of the species affected are also protected under the Endangered Species Act and Bald and Golden Eagle Act.*"

USFWS guidelines also state "If at all possible, new towers should be sited within existing "antenna farms" (clusters of towers). Towers should not be sited in or near wetlands, other known bird concentration areas…in known migratory or daily movement flyaways, or in habitat of threatened or endangered species. Towers should not be sited in areas with a high incidence of fog, mist, and low ceilings."

(https://wireless2.fcc.gov/UlsEntry/attachments/attachmentViewRD.jsp;ATTACHMENTS=vRpTXL9M1KJ1yKPdnR7lyPXWXgBtk5yTmCcJhJ2n1p0jkSZQj4vk!-2068534051!-1396969785?applType=search&fileKey=2146535194&attachmentKey=18095363&attachmentInd=applAttach)

As confirmed in the application documents submitted by PI Telecom Infrastructure, LCC and T-Mobile, "The Applicant's site design will impact a wetland buffer area around a Category III wetland." Although not noted in the documents submitted by the applicants, this area is also a known bird concentration area, and is in a daily movement flyaway. The City of Camas has also confirmed all of Camas is considered a migratory bird path. As mentioned above, we are requesting a full EIS, and are confident the EIS results will support the above, as well as the daily observations of migrating birds by local residents.

This application (and the City of Camas' recommendation to approve same) ignores voluntary communication tower guidelines released by the USFWS and recently updated for the Federal Communication's Commission (FCC), tower companies, and the public. Because of the importance of wetlands to migratory birds and other wildlife, USFWS strongly recommends against building in **or near** wetlands, with collocation on an existing structure or placement in a less impacting site as recommended by the USFWS.

The tower impacts, both from collisions and from radiation, to resident, breeding and migrating birds and other wildlife has not been assessed by the applicants. The tower and its infrastructure will likely

harm wildlife and wildlife habitat, resulting in possible "takings" which would be criminal violations of several Federal statutes and their regulations.

Albert M. Manville, II, Ph.D., C.W.B., and Principal, Wildlife and Habitat Conservation Solutions, LLC, has provided expert testimony in recent similar cases (for other cities in both Washington and Oregon) associated with applications for towers both smaller and similar in size to the proposed tower (attached as **Exhibit #2** and **Exhibit #3**). Notably, Manville highlights most city codes are not capable of assessing the impacts from collisions and radiation to wildlife, specifically migratory birds – which represent environmental damage not addressed by Camas City Code.

In a recent case associated with a proposal by AT&T (and other entities) to construct a 75ft tall tower, Manville noted the following:

"The Federal Communications Commission (FCC) does not mandate 100% cell phone coverage and there is no provision under the 1996 Telecommunications Act (TCA) for such a requirement (Manville 2001, as discussed at the conference in the Levitt 2001 Proceedings). There are alternatives to building this structure, including in more developed areas that contain degraded habitats, collocated on another existing antenna structure, and away from habitat critically important to birds and other wildlife. All are preferable alternatives — discussed beyond.

I will assert that the City Ordinance No. 9.5750, "Telecommunication Devices — Siting Requirements and Procedures," is an inadequate document to be solely used by the City of Eugene's Planning Department to assess, approve or deny this AT&T/Crossfire cell tower permit application. While there is a growing database on effects of cell tower radiation to human health and safety which are prevented from introduction into testimony by Section 704 of the TCA, my focus in this testimony is on impacts from collisions and radiation to wildlife, specifically migratory birds — which represent environmental damage not addressed by Section 704.

Regarding impacts to wildlife, not only must the City of Eugene consider current FCC rules and regulations for licensing this cell tower, they must also consider the court ordered findings from the 2008 American Bird Conservancy et al. v. FCC lawsuit, which FCC lost on appeal in the Federal Court of Appeals for the District of Columbia Circuit. These include considerations under the Migratory Bird Treaty Act (MBTA) for impacts to protected migratory birds (above and beyond issues pertaining to the Endangered Species Act [ESA]), as well as compliance under the National Environmental Policy Act (NEPA) and its regulations. NEPA review includes opportunities for public review, comment, request for preparation of an Environmental Assessment (EA), and even litigation.

Additionally, and the focus of this testimony, are the rules and regulations implemented by the U.S. Fish and Wildlife Service (herein USFWS or Service) under the MBTA, and the Bald and Golden Eagle Protection Act (BGEPA), both which are strict liability, criminal statutes.

Lastly, the growing documented effects of low level, non-ionizing electromagnetic radiation

which will be transmitted from and received by this tower are of growing concern to wildlife, including "take." FCC's current radiation standards are based solely on thermal heating, a standard 30 years out of date and inapplicable based on laboratory and field research on birds (and other animals) published in refereed scientific journals (summarized below), not to mention numerous other credible scientific findings (e.g., Panagopoulos and Margaritis 2008).

While FCC continues to fail to address low level impacts from non-ionizing radiation, the U.S. Department of Commerce's National Telecommunications and Information Administration (NTIA) and its First Responder Network Authority (FirstNet) reacted positively to a letter sent from the Department of Interior to NTIA on February 7, 2014 (USDOI 2014) — Enclosure A in that letter which I authored. FirstNet is building, operating and maintaining the first high-speed, nationwide wireless broadband network dedicated to public safety. FirstNet plans to systematically review the impacts of their nationwide broadcast network from injury, crippling loss and death to migratory birds from collisions with communication towers, and will begin addressing impacts from non-ionizing electromagnetic radiation emitted from them. Unlike the FCC which continues to deny effects from non-ionizing radiation, NTIA is acknowledging and addressing them through a systematic NEPA review process.

This complex situation and conflicting rules and regulations clearly suggest that members of the City Planning Department review each issue individually, but overall assess them collectively…

It is also important to note that if the City of Eugene's Planning Department were to approve the AT&T/Crossfire permit application, and "take" from this tower were to occur, there could be potential culpability for both the City and AT&T. First, the "take" would be un-permitted. USFWS does not currently issue incidental take permits for accidental/incidental injuries or deaths. Instead, the agency recommends that towers be collocated on other existing structures; be built in already heavily developed areas with already degraded wildlife habitats; and that natural habitats important to birds and other wildlife be avoided. Implementing these efforts will minimize potential "take" as a consequence.

To understand how agents with the Service's Office of Law Enforcement and prosecuting environmental attorneys with the Department of Justice make and prosecute cases respectively, I quote from a power line manual (APLIC 2006) an explanation of how prosecution generally works. As the Service has previously stated (e.g., APLIC 2006:21), "although the MBTA ha[s] no provision for allowing take, the USFWS realizes that some birds will be killed even if all reasonable measures to avoid it are used. The USFWS Office of Law Enforcement [OLE] carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and industries that have programs to minimize their impacts on migratory birds. Since a take cannot be authorized, it is not possible to absolve individuals, companies, or agencies from liability even if they implement avian mortality avoidance or similar conservation measures. However, the OLE does have enforcement discretion and focuses on those individuals, companies, or agencies that take

migratory birds without regard for their actions and the law, especially when conservation measures had been developed but had not been implemented."

Clearly, the Service's 2000 voluntary communication tower guidance and the same guidance I updated and provided to FCC in 2013 (Manville 2013b) have "conservation measures" which USFWS has recommended be implemented. While I am no longer a federal employee, I do as a private citizen continue to recommend that AT&T and the City of Eugene implement these guidelines. Recapping, these include collocating on another antenna structure, selecting a more environmentally benign site, building in a more degraded habitat, and avoiding wetlands."

2. Injurious To The Property & Improvements In The Vicinity Of The Proposed Use (Decreased Property Values)

Approval of this application will violate CMC 18.43.050 – Conditional Use Permit Criteria. Specifically, construction of this new tower will directly and detrimentally affect the property value of surrounding homes.

The applicant notes *"…this area is already characterized by utility facilities (water and emergency response towers) to meet the needs of surrounding residents and area businesses."* The applicant's statement is false, and is clearly demonstrated by the photos submitted in their application (above). There is presently a single water tower and a communications tower which provides and supports emergency services communications. Our residential area is **not** "characterized by utility facilities."

The applicant goes on to state *"The proposal promotes the public welfare by providing substantially better coverage to the residents in the event of emergency and making new wireless services available, particularly fixed wireless broadband service for existing and future **businesses** in Camas and the surrounding area. Furthermore, the project has been designed to minimize the intrusion into the wetland buffer and is located to insure that the tower is at least 175' (height of tower) away from off-site residences.*" As discussed further below, T-Mobile's own coverage map indicates the area already has full "4G" coverage. Additionally, Freewire's services are business-based (not for the general public), and in no way "promotes the public welfare."

Residents are justifiably concerned about the proposed cell tower reducing the value of their homes and properties. Who would want to live right next to one, or under one? And imagine what it's like for people who purchased or built their dream home, only to now have an unwanted cell tower installed just outside their window?

The negative effect of the proposed tower can also contribute to urban blight, and a deterioration of neighborhoods and school districts when residents want to move out or pull their children out because they don't want to live or have their children attend schools near to a cell tower.

People don't want to live next to one not just because of health concerns, but also due to aesthetics and public safety reasons, i.e., cell towers become eyesores, obstructing or tarnishing cherished views, and also can attract crime, are potential noise nuisances, and fire and fall hazards.

For local businesses (realtors and brokers) representing and listing these properties, it will create decreased income. And for our city government, it will results in decreased revenue (via property taxes).

These points underscore why the proposed wireless communication facility is a commercial facility that doesn't belong in our residential area, should be placed in an alternative, less obtrusive location.

Please read the New York Times news story, "A Pushback Against Cell Towers," published in the paper's Real Estate section, on August 27, 2010:http://www.nytimes.com/2010/08/29/realestate/29Lizo.html?_r=1&ref=realestate.

A number of organizations and studies have documented the detrimental effects of cell towers on property values:

1. The Appraisal Institute, the largest global professional membership organization for appraisers with 91 chapters throughout the world, spotlighted the issue of cell towers and the fair market value of a home and educated its members that a cell tower should, in fact, cause a decrease in home value.

The definitive work on this subject was done by Dr. Sandy Bond, who concluded that "media attention to the potential health hazards of [cellular phone towers and antennas] has spread concerns among the public, resulting in increased resistance" to sites near those towers. Percentage decreases mentioned in the study range from 2 to 20% with the percentage moving toward the higher range the closer the property. These are a few of her studies:

a. "The effect of distance to cell phone towers on house prices" by Sandy Bond, Appraisal Journal, Fall 2007, see attached. Source, Appraisal Journal, found on the Entrepreneur website,http://www.entrepreneur.com/tradejournals/article/171851340.html or http://www.prres.net/papers/Bond_Squires_Using_GIS_to_Measure.pdf

b. Sandy Bond, Ph.D., Ko-Kang Wang, "The Impact of Cell Phone Towers on House Prices in Residential Neighborhoods," The Appraisal Journal, Summer 2005; see attached. Source: Goliath business content website, http://goliath.ecnext.com/coms2/gi_0199-5011857/The-impact-of-cell-phone.html

c. Sandy Bond also co-authored, "Cellular Phone Towers: Perceived impact on residents and property values" University of Auckland, paper presented at the Ninth Pacific-Rim Real Estate Society Conference, Brisbane, Australia, January 19-22, 2003; see attached. Source: Pacific Rim Real Estate Society website,http://www.prres.net/Papers/Bond_The_Impact_Of_Cellular_Phone_Base_Station_Towers_On_Property_Values.pdf

2. Industry Canada (Canadian government department promoting Canadian economy), "Report On the National Antenna Tower Policy Review, Section D — The Six Policy Questions, Question 6. What evidence exists that property values are impacted by the placement of antenna towers?"; see attached. Source: Industry Canada http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08353.html website,

3. New Zealand Ministry for the Environment, "Appendix 5: The Impact of Cellphone Towers on Property Values"; see attached. Source: New Zealand Ministry for the Environment website,http://www.mfe.govt.nz/publications/rma/nes-telecommunications-section32-aug08/html/page12.html

On a more local level, residents and real estate professionals have also informed city officials in California about the detrimental effects of cell towers on home property values:

1. Glendale, CA: During the January 7, 2009 Glendale City Council public hearing about a proposed T-mobile cell tower in a residential neighborhood, local real estate professional Addora Beall described how a Spanish home in the Verdugo Woodlands, listed for 1 million dollars, sold $25,000 less because of a power pole across the street. "Perception is everything," said Ms. Beall stated. "It the public perceives it to be a problem, then it is a problem. It really does affect property values." See Glendale City Council meeting, January 7, 2009, video of Addora Beall comments @ 2:35:24:http://glendale.granicus.com/MediaPlayer.php?view_id=12&clip_id=1227

2. Windsor Hills/View Park, CA: residents who were fighting off a T-Mobile antenna in their neighborhood received letters from real estate companies, homeowner associations and resident organizations in their community confirming that real estate values would decrease with a cell phone antenna in their neighborhood. To see copies of their letters to city officials, look at the report from Los Angeles County Regional Planning Commission regarding CUP Case No. 200700020-(2), from L.A. County Board of Supervisors September 16, 2009, Meeting documents, Los Angeles County website, here at: http://file.lacounty.gov/bos/supdocs/48444.pdf

a. See page 295, August 31, 2008 Letter from Donna Bohanna, President/Realtor of Solstice International Realty and resident of Baldwin Hills to Los Angeles Board of Supervisors explaining negative effect of cell tower on property values of surrounding properties. "As a realtor, I must disclose to potential buyers where there are any cell towers nearby. I have found in my own experience that there is a very real stigma and cellular facilities near homes are perceived as undesirable."

b. See page 296, March 26, 2008 Letter from real estate professional Beverly Clark, "Those who would otherwise purchase a home, now considered desirable, can be deterred by a facility like the one proposed and this significantly reduces sales prices and does so immediately…I believe a facility such as the one proposed will diminish the buyer pool, significantly reduce homes sales prices, alter the character of the surrounding area and impair the use of the residential properties for their primary uses."

c. See Page 298, The Appraiser Squad Comment Addendum, about the reduced value of a home of resident directly behind the proposed installation after the city had approved the CUP for a wireless facility there: "The property owner has listed the property…and has had a potential buyer back out of the deal once this particular information of the satellite communication center was announced….there has been a canceled potential sale therefore it

is relevant and determined that this new planning decision can have some negative effect on the subject property."

d. See Page 301, PowerPower presentation by residents about real estate values: "The California Association of Realtors maintains that 'sellers and licensees must disclose material facts that affect the value or desirability of the property,' including 'known conditions outside of and surrounding' it. This includes 'nuisances' and zoning changes that allow for commercial uses."

e. See Pages 302-305 from the Baldwin Hills Estates Homeowners Association, the United Homeowners Association, and the Windsor Hills Block Club, opposing the proposed cell tower and addressing the effects on homes there: "Many residents are prepared to sell in an already depressed market or, in the case of one new resident with little to no equity, simply walk away if these antennas are installed.

f. See Pages 362-363, September 17, 2008, Letter from resident Sally Hampton, of the Windsor Hills Homeowner's Assoc., Item K, addressing effects of the proposed facility on real estate values.

3. Santa Cruz, CA: Also attached is a story about how a preschool closed up because of a cell tower installed on its grounds; "Santa Cruz Preschool Closes Citing Cell Tower Radiation," Santa Cruz Sentinel, May 17, 2006; Source, EMFacts website: http://www.emfacts.com/weblog/?p=466.

4. Merrick, NY: For a graphic illustration of what we don't want happening here in Camas, just look at Merrick, NY, where NextG wireless facilities are being installed, resulting in declining home real estate values. Look at this Best Buyers Brokers Realty website ad from this area, "Residents of Merrick, Seaford and Wantaugh Complain Over Perceived Declining Property Values:http://www.bestbuyerbroker.com/blog/?p=86.

5. Burbank, CA: As for Burbank, at a City Council public hearing on December 8, 2009, hillside resident and a California licensed real estate professional Alex Safarian informed city officials that local real estate professionals he spoke with agree about the adverse effects the proposed cell tower would have on property values:

"I've done research on the subject and as well as spoken to many real estate professionals in the area, and they all agree that there's no doubt that cell towers negatively affect real estate values. Steve Hovakimian, a resident near Brace park, and a California real estate broker, and the publisher of "Home by Design" monthly real estate magazine, stated that he has seen properties near cell towers lose up to 10% of their value due to proximity of the cell tower...So even if they try to disguise them as tacky fake metal pine trees, as a real estate professional you're required by the California Association of Realtors: that sellers and licensees must disclose material facts that affect the value or desirability of a property including conditions that are known outside and surrounding areas."

(See City of Burbank Website, Video, Alex Safarian comments @ 6:24:28, http://burbank.granicus.com/MediaPlayer.php?view_id=6&clip_id=848)

Indeed, 27 Burbank real estate professionals in December 2009, signed a petition/statement offering their professional opinion that the proposed T-Mobile cell tower at Brace Canyon Park would negatively impact the surrounding homes, stating:

> "It is our professional opinion that cell towers decrease the value of homes in the area tremendously. Peer reviewed research also concurs that cell sites do indeed cause a decrease in home value. We encourage you to respect the wishes of the residents and deny the proposed T-Mobile lease at this location. We also request that you strengthen your zoning ordinance regarding wireless facilities like the neighboring city of Glendale has done, to create preferred and non preferred zones that will protect the welfare of our residents and their properties as well as Burbank's real estate business professionals and the City of Burbank. Higher property values mean more tax revenue for the city, which helps improve our city." (Submitted to City Council, Planning Board, City Manager, City Clerk and other city officials via e-mail on June 18, 2010. To see a copy of this, scroll down to bottom of page and click "Subpages" or go here:http://sites.google.com/site/nocelltowerinourneighborhood/home/decreased-real-estate-value/burbank-real-estate-professionals-statement)

Here is a list of additional articles on how cell towers negatively affect the property values of homes near them:

- The Observer (U.K.), "Phone masts blight house sales: Health fears are alarming buyers as masts spread across Britain to meet rising demand for mobiles," Sunday May 25, 2003 or go here:http://www.guardian.co.uk/money/2003/may/25/houseprices.uknews

- "Cell Towers Are Sprouting in Unlikely Places," The New York Times, January 9, 2000 (fears that property values could drop between 5 and 40 percent because of neighboring cell towers)

- "Quarrel over Phone Tower Now Court's Call," Chicago Tribune, January 18, 2000 (fear of lowered property values due to cell tower)

- "The Future is Here, and It's Ugly: a Spreading of Techno-blight of Wires, Cables and Towers Sparks a Revolt," New York Times, September 7, 2000

- "Tower Opponents Ring Up a Victory," by Phil Brozynski, in the *Barrington* [Illinois] *Courier-Review*, February 15, 1999, 5, reporting how the Cuba Township assessor reduced the value of twelve homes following the construction of a cell tower in Lake County, IL. See attached story: http://spot.colorado.edu/~maziara/appeal&attachments/Newton-43-LoweredPropertyValuation/

- In another case, a Houston jury awarded 1.2 million to a couple because a 100-foot-tall cell tower was determined to have lessened the value of their property and caused them mental anguish: Nissimov, R., "GTE Wireless Loses Lawsuit over Cell-Phone Tower," Houston Chronicle, February 23, 1999, Section A, page 11. (Property values depreciate by about 10 percent because of the tower.)

3. **Aesthetics and Safety**

The proposed cell tower facility would be out of character with the general nature, beauty, landscape, scenery, and charm of the present neighborhood. Additionally, as shown in the previous photo, is out of scale in both height and massing with the single-family residential character of the neighborhood and the existing vegetation in the neighborhood. The tower, no matter how it may be camouflaged, will be visually unappealing and aesthetically out of character with the existing structures, and conspicuous in the skyline for the area.

The cell tower (even if disguised as a fake pine tree) is a visual blight, and sets an unwelcomed precedent for our Camas hillside neighborhood. If we allow one fake pine tree cell tower here, how many other fake pine tree cell towers are next? Then what happens to our parks, our views, and our natural scenery?

Additionally, the proposed tower exceeds height limitations in the City's single-family residential (R-1) zone.

Residents also have serious concerns about public safety hazards the cell tower facility could pose to school children, homes, fire hazard areas and wildlife.

As there are already existing cellular appliances collocated on both the water and CRESA towers, the potential effects of adding a third tower (with potentially many appliances) needs to be studied to ensure the total level of radio frequency emissions produced by the appliances remains in compliance with Federal, state and location requirements.

The higher courts have addressed the Federal requirements and limitations of the Telecommunications Act of 1996, addressing the need for local governments to present "substantial evidence" why a cell tower is denied.

> (iii) Any decision by a State or local government or instrumentality thereof to deny a request to place, construct, or modify personal wireless service facilities shall be in writing and supported by substantial evidence contained in a written record.*

The U.S. Ninth Circuit Court of Appeals in October 2009 sided with the City of Palos Verdes Estates and its residents' right to oppose a wireless tower based on aesthetics:http://la.curbed.com/archives/2009/10/fake_trees_will_not_grow_in_pve.php and http://www.latimes.com/news/local/la-me-ugly-telecoms26-2009oct26,0,5439620.story

In addition, the higher courts have pointed out that federal regulations allow for reasonable discrimination ("the conferees do not intend that if a State or local government grants a permit in a commercial district, it must also grant a permit for a competitor's 50-foot tower in a residential district").

4. Collocation May Still Be An Option And Should Be Aggressively Pursued

A review of available documentation (as of May 30, 2016) indicates collocation should be explored further. The document submitted by the applicants titled *"Parallel Infrastructure Wireless Tower, Narrative in Support of Conditional Use Permit (CUP15-01) and Wetland Permit, City of Camas Community Development Department, Submitted February 2016"* states the following:

"*Both Freewire and T-Mobile have exhausted potential opportunities for collocation/upgrades in the vicinity. Freewire has been looking for a suitable location on Prune Hill since 2010. It evaluated a potential location on the City's water tower at 2822 NW 18th Avenue, and it found the 80-foot available height to be insufficient to reach Freewire customers to the south and west, particularly due to existing trees in that direction. T-Mobile has been providing service from the 180-foot CRESA (Clark Emergency Services Agency) tower, also at 2822 NW 18th Avenue, but the CRESA tower is not structurally capable of supporting T-Mobile's new antennas and technology. TMobile has been unable to upgrade its technology at this location with replacement antennas (replacing the two existing antennas with two new ones) or to improve its coverage by adding a sector. In addition, Parallel Infrastructure inquired with the City of Camas Public Works Director about siting a new tower on the same parcel as the existing utilities, and City staff indicated that the City wasn't interested in leasing space for, among other reasons, a lack of ground space on the parcel; Parallel Infrastructure wanted its typical 50'x50' space for an equipment compound, but that would consume the City's access and maintenance area around the water tanks and existing CRESA tower. Overall, the City's water tower is* ***nearly fully occupied*** *with antennas at the higher elevations; the CRESA tower is not structurally capable of supporting additional weight; and adequate ground space is not available for a supporting equipment compound at this location."*

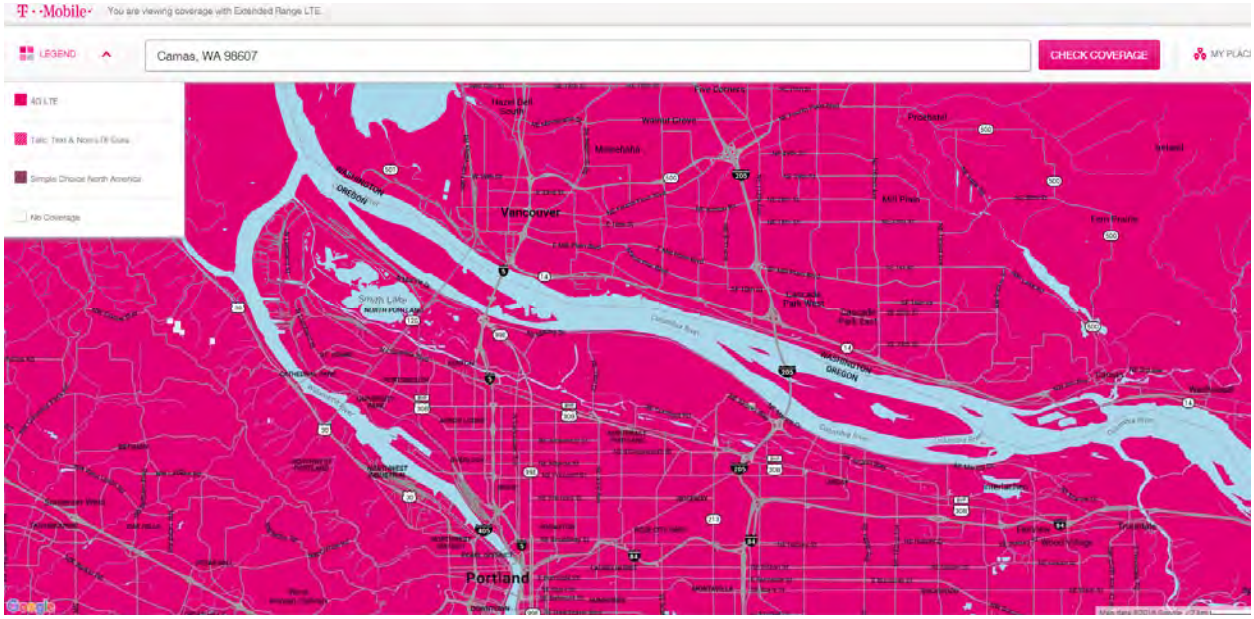
As stated above by the applicants, the City's water tower is **not** fully occupied. Additionally, the residents of Camas have made an inquiry with the Public Works Department regarding the extent of the applicants' efforts and the level of response by the City of Camas. As of May 30, 2016, we are awaiting a response to our inquiry. Collocation efforts should be comprehensive, exhaustive, and well-documented before approving a new site, especially within a wetland area. Further, areas to the south and west of the proposed location already receive appropriate coverage from both Freewire and T-Mobile via existing tower appliances in both Washington and Oregon.

5. We Already Have Coverage

There is a burden of proof to be met by the applicant that a truly "significant" gap in coverage actually exists in the location where the applicant proposes to install a wireless facility.

Many cities are now requiring this burden of proof be met before accepting proposed wireless facility installation permit applications. If we are not doing it already, Camas should begin doing this as well.

According to T-Mobile's own coverage map, there is presently **full** "4G LTE" coverage in the area (http://www.t-mobile.com/coverage-map.html):



Freewire appears to be a company which serves only businesses, as such, this may be a moot point. Little information is publicly-available regarding current service and coverage areas. As such, additional tests should be conducted by an independent third party to determine if a "significant" gap in Freewire coverage presently exists, and a determination should be made regarding the applicant's claim that Freewire's business-only services would provide any benefits for the general public.

6. Reasonable Discrimination Is Allowed

Officials in other cities have erroneously claimed that their hands are tied and that Federal law leaves them powerless in regulating the location, number, and appearance of wireless facilities. They have been tragically misinformed.

Local Governments Have Authority to Regulate the Place and Manner of Wireless Communication Facilities

Recent Ninth Circuit Court and U.S. District Court decisions – citing the Telecommunications Act of 1996 (TCA)1 and other state laws – have acknowledged and affirmed the rights and authority of local governments to regulate the placement and appearance of wireless facilities.[1]

The Telecommunications Act of 1996 preserves and acknowledges the authority of local governments to regulate the location, construction and modification of cell towers in their communities:

> SECTION. 704. FACILITIES SITING; RADIO FREQUENCY EMISSION STANDARDS.
> (a) NATIONAL WIRELESS TELECOMMUNICATIONS SITING POLICY- Section 332(c) (47 U.S.C. 332(c)) is amended by adding at the end the following new paragraph:
> (7) PRESERVATION OF LOCAL ZONING AUTHORITY-
> (A) GENERAL AUTHORITY - Except as provided in this paragraph, nothing in this Act shall limit or affect the authority of a State or local government or instrumentality thereof over decisions regarding the placement, construction, and modification of personal wireless service facilities.[1]

In addition, there have been two very recent U.S. District Court, *NewPath Networks v City of Irvine* and *NewPath Networks v City of Davis*, explaining how local authorities have rights that do not conflict with Federal and State and regulations concerning wireless facility installations, including authority to protect the public interests of its residents. The decision for *NewPath v the City of Davis* was also posted on Attorney Jonathan Kramer's website, so he should be able to answer your questions about this decision and its implications for local governments.[2]

In case there is further doubt, look to the explanation and assurances that Thomas Bliley, chairman of the Commerce Committee at the time of the TCA's enactment. In addressing the concerns of his fellow representatives that the proposed TCA would strip local governments of their regulatory powers, he stated for the record that:

> Nothing is in this bill that prevents a locality, and I will do everything in conference to make sure this is absolutely clear, prevents a local subdivision from determining where a cellular pole should be located, but we do want to make sure that this technology is available across the country, that we do not allow a community to say we are not going to have any cellular pole in our locality. That is wrong. Nor are we going to say they can delay these people forever. But the location will be determined by the local governing body.
>
> The second point you raise, about the charges for right-of-way, the councils, the supervisors and the mayor can make any charge they want provided they do not charge the cable company one fee and they charge a telephone company a lower fee for the same right-of-way. They should

> not discriminate, and that is all we say. Charge what you will, but make it equitable between the parties. Do not discriminate in favor of one or the other. [3]

Reasonable Discrimination is Permitted

Local governments are authorized to regulate wireless facilities with aesthetic and public safety standards, requirements and ordinances, as long as these requirements are not unreasonable, and do not violate the specific limitations of the TCA.

For example, in *MetroPCS v the City and County of San Francisco*, the Ninth Circuit Court of Appeals cited *AT&T Wireless v City Council of Virginia Beach* and other court cases that have affirmed that "**some discrimination among providers of functionally equivalent services is allowed**: **Any discrimination need only be "reasonable**."

In *AT&T Wireless PCS v City Council of Virginia Beach*, at issue was a denial for a wireless facility proposed on church property in an area that was residential and had no commercial towers. In this case, the U.S. Fourth Circuit Court of Appeals affirmed that **a city can favor one competitor over another**, as long as it does not unreasonably favor one over another, and then addressed what is "unreasonable" and "reasonable" (bold-faced emphasis below is this Report's):

> even assuming that the City Council discriminated, it did not do so "unreasonably," under any possible interpretation of that word as used in subsection (B)(i)(I). We begin by emphasizing the obvious point that **the Act explicitly contemplates that some discrimination "among providers of functionally equivalent services" is allowed. Any discrimination need only be reasonable**.
>
> There is no evidence that the City Council had any intent to favor one company or form of service over another. In addition, the evidence shows that opposition to the application rested on traditional bases of zoning regulation: preserving the character of the neighborhood and avoiding aesthetic blight. **If such behavior is unreasonable, then nearly every denial of an application such as this will violate the Act, an obviously absurd result.**

Both the Fourth and Ninth Circuit Courts referred to the original Congressional Conference Report, or legislative history behind this particular limitation of the TCA, that supports this view:

> It condemns decisions that "unreasonably favor one competitor over another" but emphasizes the conferees' intent that the discrimination clause "**will provide localities with the flexibility to treat facilities that create different visual, aesthetic, or safety concerns differently to the extent permitted under generally applicable zoning requirements even if those facilities provide functionally equivalent services**."[4]

Most importantly, the Fourth Circuit Court also noted about the intent of the authors of the TCA of 1996:

> For example, **the conferees do not intend that if a State or local government grants a permit in a commercial district, it must also grant a permit for a competitor's 50-foot tower in a residential district**.[5]

The Ninth Circuit Court of Appeals affirmed similarly, citing previous court cases:

> *see also Omnipoint*, 331 F.3d at 395 **("Permitting the erection of a communications tower in a business district does not compel the [zoning board] to permit a similar tower at a later date in a residential district."**); *Unity Township*, 282 F.3d at 267 (discrimination claim " 'require[s] a showing that the other provider is similarly situated' ") (quoting *PennTownship,* 196 F.3d at 480 n.8). In fact, the sole district court case from the Ninth Circuit on this issue holds that a mere increase in the number of wireless antennas in a given area over time can justify differential treatment of providers. *Airtouch Cellular v. City of El Cajon*, 83 F. Supp. 2d 1158, 1166 (S.D. Cal. 2000).

Other recent court decisions also affirm that requirements for installations in one part of town can differ for another part of town, and take into account aesthetics, design, and public safety; please see*Sprint PCS v Palos Verdes*, *MetroPCS v San Francisco*, and *T-Mobile v City of Anacortes*.[6]

In fact, there are many examples of recent local municipal decisions, resolutions and motions denying a cell tower due to aesthetics:

- County of Los Angeles: Board of Supervisors denies T-Mobile cell tower proposed for Hacienda Heights upon appeal; see County of Los Angeles website for Motion of Intent to Deny by Supervisor Don Knabe, October 27, 2009, on-line at: http://file.lacounty.gov/bos/supdocs/51925.pdf. Also see County of Los Angeles Counsel, Findings and order adopted March 9, 2010, 6 pages, on-line at:http://file.lacounty.gov/bos/supdocs/53564.pdf.

- City of Los Angeles Associate Zoning Administrator Maya E. Zaitzevsky denies T-Mobile cell tower in Toluca Lake, CA (North Hollywood-Valley Village area): see CUP denial, Case No. ZA 2009-1873 (CUW), February 17, 2010; Los Angeles Planning Department website, on-line Summary at: http://plncts.lacity.org/cts_internet/index.cfm?urlCaseId=174190&caseNumber=ZA-2009-1873-CUW&fuseaction=case.summary; final Decision on-line directly here: http://pdis.lacity.org/pdf/viewPDF.aspx?Query=Type=PDIS;Doc=1A86F.

- City Council for Temple City, CA, denies monopine cell tower proposed for church location in residential neighborhood: see attached Resolution 10-4664 (Attachment below), passed, approved and adopted March 16, 2010. Source: City Clerk, Temple City, CA.

- City Council for City of Irvine, CA, denies NewPath DAS installations for Turtle Rock community, resolution approved August 11, 2009. See on-line at City of Irvine website at:http://www.irvinequickrecords.com/sirepub/cache/2/smoxvoyx05vvzg45kpeyvpuo/95784940517201001305652.PDF.

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1. Telecommunications Act of 1996; Source: FCC, p 117, http://www.fcc.gov/Reports/tcom1996.pdf
2. In NewPath v the City of Irvine, NewPath's motion for a summary judgment was denied. You can read the decision, dated Dec 23, 2009, here: http://cityofdavis.org/cmo/pdfs/newpath/Preliminary-Injunction/02-23-10/Exhibit-A-to-Citys-Request-for-

Judicial-Notice-%28Doc-24-2%29.pdf . You can read the City of Davis' Feb. 24, 2010, response to NewPath's complaint here: http://cityofdavis.org/cmo/pdfs/newpath/NewPath-v.-City-of-Davis/Answer-to-Complaint.pdf, and the March 19, 2010 U.S. District Court final Decision favoring the City of Davis here: http://www.telecomlawfirm.com/articles/pdf/newpath_v_davis_deny_prelim_inj_20100319.pdf

3. 141 Cong. Rec. H8274 (daily ed. Aug. 2, 1995), http://frwebgate.access.gpo.gov/cgi-bin/getpage.cgi?position=all&page=H8274&dbname=1995_record

4, 5. AT&T Wireless PCS v City Council of Virginia Beach, Footnote No. 3, citing the House of Representatives Conference Report No. 104-458, 104th Cong., 2d. Session, ordered printed January 31, 1996, page 208. In addition, see MetroPCS v the City and County of San Francisco, which also cited this Conference Report explaining the Act's nondiscrimination Clause. Read the original Conference Report on-line at: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=104_cong_reports&docid=f:hr458.104.pdf

6. See Sprint v Palos Verdes Estates (October 13, 2009), U.S. Court of Appeals for the Ninth Circuit, on-line at: http://www.ca9.uscourts.gov/datastore/opinions/2009/10/13/05-56106.pdf; MetroPCS v City and County of San Francisco (March 7, 2005) at Metropolitan News-Enterprise Online's website: http://www.metnews.com/sos/0305/0316759.PDF and here: http://openjurist.org/400/f3d/715/metropcs-inc-v-city-and-county-of-san-francisco; T-Mobile v City of Anacortes (July 20, 2009), U.S. Court of Appeals for the Ninth Circuit, on-line at: http://www.ca9.uscourts.gov/datastore/opinions/2009/07/20/08-35493.pdf. For the other decision oft cited in this Section, AT&T Wireless PCS v City Council of the City of Virginia Beach (September 1, 1998), U.S. Fourth Circuit Court of Appeals, on-line at: http://pacer.ca4.uscourts.gov/opinion.pdf/972389.P.pdf In addition, another important and recent landmark decision is found in Sprint v County of San Diego; in that case, the U.S. Ninth Circuit Court of Appeals reversed its earlier decision on the matter of effective prohibition and decided that "actual" prohibition must be proven if a plaintiff claims effective prohibition; see Sprint v County of San Diego (September 10, 2008), Court of Appeals for Ninth Circuit, on-line at:http://www.ca9.uscourts.gov/datastore/opinions/2008/09/10/0556076.pdf

7. Alternative Locations

The residents recommend the City of Camas suggest available alternative, and less intrusive sites than the location proposed. This includes the potential options previously discussed in this document.

Just last year, the U.S. Ninth Circuit Court of Appeals, in *Sprint PCS Assets v. the City of Palos Verdes* (October 2009) and *T-Mobile v the City of Anacortes* (July 20, 2009), explained that the "effective prohibition" inquiry involves a "two-pronged" analysis requiring: (1) the showing of a "significant gap" in service coverage and (2) some inquiry into the feasibility of alternative facilities or site locations.

In *T-Mobile v the City of Anacortes*, the City conceded a significant gap existed, so the Court stated that the provider then had the burden of showing the lack of available and technologically feasible alternatives t*o* close the gap, for instance, exploring and researching reasonable and viable alternative locations (called the "least intrusive means" standard). The Ninth Circuit noted that this standard:

> allows for a meaningful comparison of alternative sites before the siting application process is needlessly repeated. It also gives providers an incentive to choose the least intrusive site in their first siting applications, and it promises to ultimately identify the best solution for the community, not merely the last one remaining after a series of application denials.

However, the Ninth Circuit Court of Appeals further explained:

> A provider makes a prima facie showing of effective prohibition by submitting a comprehensive application, which includes consideration of alternatives, showing that the proposed WCF is the least intrusive means of filing a significant gap. **A locality is not compelled to accept the provider's representations. However, when a locality rejects a prima facie showing, it must show that there are some potentially available and technologically feasible alternatives.**

On a more local level, residents and/or local government officials from the neighboring communities took it upon themselves to find and propose alternative feasible and available locations that were the least intrusive on their communities and would still serve the coverage needs of the provider:

Glendale: resident Maggie McMahon suggested to City Council an alternative location with map overlay instead of the one proposed in front of her home.

Please read the Los Angeles County Board of Supervisors/L.A. County Counsel Final Finding and Order to Deny, in particular those Items relating to alternative siting:

View Park/Windsor Hills: please read Items 13, 19 and 22, 23, 33 and 43-45, addressing alternative siting:

> 44. The Board finds that the evidence showed that T-Mobile did not examine suggested alternative sites that could have provided additional coverage while being less intrusive in terms of visual and aesthetic impacts on the community.

La Crescenta/Montrose: please read Items 12, 14, 15, 19 and 20; for instance:

19. The Board finds that Sprint/Nextel failed to conduct a meaningful comparison of alternative sites, instead zeroing in on what worked for Sprint/Nextel, rather than considering the community's interest in selecting a less intrusive site.

Hacienda Heights: please read Items 12, 16, 17, 27; for instance:

17. Project opponents testified that specific proposed alternative sites were not investigated by T-Mobile. There are other SCE towers in the vicinity. One member of the Board stated that his staff had checked with SCE and was advised that T-Mobile had only inquired about two of the towers as possible alternatives.

In conclusion, being highly vigilant and attentive to this issue of alternative siting is smart on two levels, protecting both the residents and City within the full extent of the law. **We need more rigorous alternative site analysis requirements of our wireless applicants.**

Examples of Local Government
Alternative Siting Analysis Requirements
(and ordinances)

Here are three examples of required detailed alternative site information. The first two originate from the Cities of Richmond and Glendale (CA) and have already been approved and adopted; the third is pulled from Attorney Jonathan Kramer's Generic Application Form:

1. **Richmond, CA**: The City's Application Submittal Checklist includes among its minimum requirements (**bold-faced** emphasis ours), on page 2:

ALTERNATIVE SITE ANALYSIS

- **Identify and indicate on a map, at a minimum, two (2) viable technically and economically feasible or superior alternative locations outside the disfavored areas which could eliminate or substantially reduce the need to locate in a restricted area.** If there are fewer than two such alternative locations, the applicant must provide evidence establishing that fact. **The map shall also identify all locations where an unimpaired signal can be received to eliminate or substantially reduce the need for such a location.** Radio frequency plots of all alternative facilities considered for use in conjunction with these facility sites shall be provided as part of the alternatives analysis. For each alternative location so identified, the applicant shall describe the type of facility and design measures that could be used at that location so as to minimize negative visual, noise and aesthetic impacts (e.g., the use of camouflaging techniques).
- **Evaluate the potential for co-location with existing wireless communications facilities as an alternative to the proposed facility.**
- Compare, across the same set of evaluation criteria and to similar levels of description and detail, the relative merits of the proposed wireless communications facility site with those of each of the identified technically feasible alternative locations and facility designs, and all technically feasible inter-carrier roaming agreements. Such comparison analysis shall rank each of the alternatives (i.e., the proposed location/facility and each of the technically

feasible location/design alternatives) in terms of impacts (i.e., from least to most impacts on visual, noise and aesthetic concerns), and shall support such ranking with analysis.

- Include photo-simulations of each of the alternatives (i.e., the proposed location/facility and each of the technically feasible location/design alternatives).

2. **Glendale, CA:** The city's new wireless facility ordinance[10] requires alternative sites information that includes the potential for co-location and the availability and feasibility of potential alternative sites:

For wireless facility installations proposed in public rights of way, look at "Section 5. 12.08.037 Wireless Telecommunications Facility Encroachment Permits. G. Application." It includes the potential for co-location:

4. An alternative site analysis, assessing the feasibility of alternative sites, including the potential for co-location, in the vicinity of the proposed site, as deemed necessary by the director of public works. In the case of proposed sites that are inside or within 1000 feet of any residential zone, the alternative site analysis shall specifically include an evaluation of the availability and feasibility of potential alternative sites located at preferred locations and within preferred zones.

For all proposed locations, see "Section 25, 30.40.020 – Application Filing. H. [supplemental application requirements]. 1. All Proposed Locations." It reads:

n. An alternative site analysis, assessing the feasibility of alternative sites, including the potential for co-location, in the vicinity of the proposed site, as deemed necessary by the Planning Director. Said alternative site analysis shall specifically include an evaluation of the availability and feasibility of potential alternative sites located outside a ROS, RIR, RI , R-3050, R-2250, R-1650 and R-1250 zone.

3. **Attorney Jonathan Kramer's Generic Application Form:[11] requests more detailed alternative site information under its Section 4.15 than Burbank's proposed Supplemental Application Form**, even though ours does incorporate many parts of Mr. Kramer's model form. In particular, read Sections 4.15.b and 4.15c (**bold-faced** ours, below, for emphasis):

4.15 Attach a written statement fully and expansively describing at a minimum:

a. Why this project is the least intrusive means to close the significant gap claimed and described in 4.12.

b. Identify and discuss all alternative sites and means considered to close the significant gap claimed and described in 4.12.

c. Whether two or more sites in place of the site proposed in Section 1 could close the significant gap claimed and described in 4.12, or to reduce the significant gap to be less than significant.

d. Whether the Government of Generic requiring two or more sites in place of the site proposed in Section 1 would prohibit or have the effect of prohibiting the applicant from providing any interstate or intrastate telecommunications service. If

the response asserts that a prohibition or effective prohibition would occur, explain in detail all of the reasons why it would

e. Include all information whatsoever you relied on in reaching this determination.

f. Include any other information you believe would assist the Government of Generic make findings regarding whether the proposed project is the least intrusive means of closing the significant gap claimed and described in 4.12, or to reduce the significant gap to be less than significant.

Designate this Exhibit, "Exhibit 4.15."

Initial here _____ to indicate that Exhibit 4.15 is attached hereto.
Proceed to 4.20

_____

1. See *Sprint v Palos Verdes Estates*, U.S. Court of Appeals for the Ninth Circuit, October 13, 2009, p. 14551, TUhttp://www.ca9.uscourts.gov/datastore/opinions/2009/10/13/05-56106.pdfUT, and *T-Mobile v City of Anacortes*, U.S. Court of Appeals for the Ninth Circuit, July 20, 2009, p. 9221, on-line at: TUhttp://www.ca9.uscourts.gov/datastore/opinions/2009/07/20/08-35493.pdfUT . According to the Telecommunications Act of 1996, Section 332(c)(7)(B)(i)(II): "The regulation of the placement, construction, and modification of personal wireless service facilities by any State or local government or instrumentality thereof…shall not prohibit or have the effect of prohibiting the provision of personal wireless services"; also see *Telecommunications Act of 1996*, FCC, p. 117, on-line at:TUhttp://www.fcc.gov/Reports/tcom1996.pdfUT

2. See *T-Mobile v City of Anacortes*, U.S. Court of Appeals for the Ninth Circuit, July 20, 2009,p. 9221, on-line at: TUhttp://www.ca9.uscourts.gov/datastore/opinions/2009/07/20/08-35493.pdfUT

3. See *T-Mobile v City of Anacortes,* p. 9222.

4. See *T-Mobile v City of Anacortes*, p. 9226.

5. Regarding the result of the 2-pronged analysis? In *Sprint PCS Assets v. the City of Palos Verdes*, the Court found substantial evidence proving Sprint's existing network was functional. As a result, the Court affirmed: "Because we conclude that Sprint has not shown the existence of a significant gap as a matter of law, we do not reach the second element of the analysis." In the case of *T-Mobile v the City of Anacortes*, the City conceded it had a significant gap, and failed to show the existence of some potentially available and technologically feasible alternative to the proposed location, and so the City's denial was found in violation of this particular part of the TCA.

6. View Park/Windsor Hills: L.A. Co. BOS/Co. Counsel Final Findings and Order to Deny, September 15, 2009, on-line at TUhttp://file.lacounty.gov/bos/supdocs/51099.pdfUT.

7. La Crescenta/Montrose: LA Co. BOS/Co. Counsel Final Findings and Order to Deny, October 6, 2009, on-line at: TUhttp://file.lacounty.gov/bos/supdocs/51430.pdfUT

8. Hacienda Heights: L.A. Co. BOS/Co. Counsel Final Findings and Order to Deny, March 9, 2010, on-line at: TUhttp://file.lacounty.gov/bos/supdocs/53564.pdfUT

9. Richmond's "Planning Division Wireless Communications Facility Conditional Use Permit Application Submittal Checklist" can be found on the City's website at TUhttp://www.ci.richmond.ca.us/DocumentView.aspx?DID=5577UT. Richmond, CA's new wireless Ordinance No. 09-10 N.S. was unanimously approved by its Mayor and City Council on February 16, 2010. It can be found on-line on the City's website at: TUhttp://www.ci.richmond.ca.us/archives/66/Ord.%2009-10%20Wireless%20Communications%20Facilities-CONFORMED.pdf.UT

10. The excerpts from Glendale's wireless telecommunications ordinance cited here can be found on-line in Glendale's new wireless facility ordinance, which was unanimously approved by its Mayor and City Council on April 13, 2010, at:TUhttp://www.ci.glendale.ca.us/gmc/Ordinance5692.pdfUT. See Page 8 (item G.4) and Page 67 (item n).

11. Attorney Jonathan Kramer's Generic Supplemental Application Form can be found on-line at: TUhttp://telecomlawfirm.com/articles/pdf/generic.sitingpreapp.20100622.pdfUT. See Page 7, Section 4.15.

EXHIBIT #1

Proposed Prune Hill Wireless Communications Facility (City File #CUP15-01)

We, the undersigned residents of Camas, ask that the proposed 175 foot cell tower to be erected by PI Telecom Infrastructure, LLC on the portion of the property located at 2829 NW 18th Avenue, Camas, WA 98607 (tax parcel #124979-000) be moved to an alternative site in the area that would be more appropriate and safer for the residents of the adjacent neighborhoods.

We are concerned that the proposed site is immediately adjacent to a residential neighborhood and church where young families live and congregate.

We are concerned about the visual pollution and negative effects of the proposed tower location on neighborhood property values which, according to studies, may decline up to 20%.

We are very concerned about the unknown risks to residents' health, especially for pregnant women and small children posed by high exposure to radiofrequency energy.

We are concerned about the effect the proposed tower will have on the wetland areas (located on the property), the protected migratory birds, and other wildlife in the area.

We are concerned that, in the event of a mechanical or structural failure, all or some parts of the tower structure could actually fall on neighboring homes or church.

We believe there are alternative sites in the area that would be safer and more appropriate for a proposed cell tower and therefore request that an alternative site analysis be done to find the safest and most appropriate site for this tower.

We believe the concerns of the residents should be considered before any approvals are granted by the City of Camas.

Name	Address	Phone	Signature
MARK SNYDER	[redacted]		
Dorothy E Campbell			Dorothy E Campbell
Susan Allin			Susan Allin
James Kasinsky			
Kenneth Campbell			
Ben Taylor			
Mei-Ling Taylor			
Anitra Quist			
Greg Peck			Greg S. Peck
Nanette Robinson			Nanette Robinson
Karla Connelly			Karlaconnelly@gmail.com
Brian Connelly			Brian Connelly
Sierra Eckman			

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Name	Address	Phone	Signature
Kathleen Atkeson	[redacted]		Kathleen Atkeson
Jimmy L Smith			Jimmy L Smith
Barbara J. Smith			Barbara J. Smith
Karen Anderson			Karen Anderson
Jeremy Gibbs			Jeremy Gibbs
WILLIAM ANDERSON			William Anderson
Adam Carolus			
Roxy Cretsinger			ROXANNE
Robert P Dahl			Robert P Dahl
Jason Campbell			Jason Campbell
Heather Wynn			Heather Wynn
Michael Viselli			Michael A. Viselli
JOSH LYONS			

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Name	Address	Phone	Signature
Aundrea Greenhill	[redacted]	[redacted]	[signature]
Kenn Greenhill	[redacted]	[redacted]	[signature]
Tricia Webb	[redacted]	[redacted]	Tricia Webb
Cindy Reuter	[redacted]	[redacted]	[signature]
Francine O'Shaughnessy	[redacted]	[redacted]	F. O'Shaughnessy
Rance Staley	[redacted]	[redacted]	Rance Staley
Angela Staley	[redacted]	[redacted]	[signature]
Elizabeth Wesman Elizabeth C Wesman	[redacted]	[redacted]	Elizabeth C Wesman
Robert Linn	[redacted]	[redacted]	Robert C. Linn
Greg Kaphammer	[redacted]	[redacted]	[signature]
Kim Kaphammer	[redacted]	[redacted]	Kim Kaphammer
Dave C[illegible]	[redacted]	[redacted]	[signature]
Joe Wilc[illegible]	[redacted]	[redacted]	[signature]

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Name	Address	Phone	Signature
Dan Warner	[redacted]		
Sylvia Amor			
Rhett Rogers			
Sheri Watson			
Glen Watson			
Rachel Kennedy			
Michael Colvin			
Marilyn Beverly			
Karen Brasch			
Mike Brasch			
Marilyn Christensen			
J. L. CHRISTENSEN			
Phil E. Lord			

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Name	Address	Phone	Signature
Cecilia Wu	[redacted]		
Don CHAPMAN			
Allyson CHAPMAN			Allyson Chapman
Jeff Jasinsky			
Robert States			
Helen Rady			HRady
Robert Offe			
Selma Offe			Selma L. Offe
Loc Hoang			
Steve Hoang			
Franklin			
J.L. CHARTERS			
Brent Charters			

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Name	Address	Phone	Signature
Marc Taylor	[redacted]	[redacted]	
Susan Holm			
Jason Holm			
Donna L. Aerts			
Manuel Aerts			
Josephine Armstrong			Joseph Hinge Armstrong
Todd Schoewlein			
Piper Buersmeyer			
Matt Buersmeyer			
Mark Gibson			
Brad Newson			
Paul Stednitz			
Vartanian			

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Name	Address	Phone	Signature
Chuck Keating	[redacted]	[redacted]	
Von Waller	[redacted]	[redacted]	
Nila Quevedo	[redacted]	[redacted]	
Jesus Eroing	[redacted]	[redacted]	
Andy Hein	[redacted]	[redacted]	
Stephen Swofford	[redacted]	[redacted]	
Kari Spikkeland	[redacted]	[redacted]	
Jon Spikkeland	[redacted]	[redacted]	
Galina Voronin	[redacted]	[redacted]	
[illegible]	[redacted]	[redacted]	
Yelena [illegible]	[redacted]	[redacted]	
Jennifer Conell	[redacted]	[redacted]	
Canh Truong	[redacted]	[redacted]	

EXHIBIT #1

Proposed Prune Hill Wireless Communications Facility (City File #CUP15-01)

We, the undersigned residents of Camas, ask that the proposed 175 foot cell tower to be erected by PI Telecom Infrastructure, LLC on the portion of the property located at 2829 NW 18th Avenue, Camas, WA 98607 (tax parcel #124979-000) be moved to an alternative site in the area that would be more appropriate and safer for the residents of the adjacent neighborhoods.

We are concerned that the proposed site is immediately adjacent to a residential neighborhood and church where young families live and congregate.

We are concerned about the visual pollution and negative effects of the proposed tower location on neighborhood property values which, according to studies, may decline up to 20%.

We are very concerned about the unknown risks to residents' health, especially for pregnant women and small children posed by high exposure to radiofrequency energy.

We are concerned about the effect the proposed tower will have on the wetland areas (located on the property), the protected migratory birds, and other wildlife in the area.

We are concerned that, in the event of a mechanical or structural failure, all or some parts of the tower structure could actually fall on neighboring homes or church.

We believe there are alternative sites in the area that would be safer and more appropriate for a proposed cell tower and therefore request that an alternative site analysis be done to find the safest and most appropriate site for this tower.

We believe the concerns of the residents should be considered before any approvals are granted by the City of Camas.

Name	Address	Phone	Signature
[redacted]			

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Name	Address	Phone	Signature
Ken Vastano	[redacted]		
[illegible]			
[illegible]			
William Mann			
Drew Mann			
Jim Lovelace			
Lisa Lovelace			
Scott Richards			
Marjolaine Richa			

EXHIBIT #2
1

Testimony of Albert M. Manville, II, Ph.D., C.W. B., and Principal, Wildlife and Habitat Conservation Solutions, LLC, on Behalf of Friends of Amazon Creek, Before the City of Eugene City Planning Department in Opposition to AT&T/Crossfire's Application for a "Stealth" Cellular Communications Tower in the Upper Amazon Creek Corridor

Re: CUP 14-003, please enter into the record.

Date: May 6, 2015

Introduction

I will make a strong case that the approval, placement and operation of a 75-ft "stealth" artificial evergreen tree, cellular (cell) communication tower in the center of the upper Amazon Creek corridor, Eugene, Oregon is inappropriate and incompatible with the City of Eugene's designation of the area as a protected nature area. The specific proposed tower location is at 4060 West Amazon Drive, situated on residentially zoned property owned by Crossfire Ministries. Approving this tower is not in the public and taxpayers' best interest, and will likely harm wildlife and wildlife habitat. In particular, of the more than 300 bird species observed in the Eugene area, potential harm to 7 already designated Birds of Conservation Concern (BCC; USFWS 2008) has troubling implications. The Federal Communications Commission (FCC) does not mandate 100% cell phone coverage and there is no provision under the 1996 Telecommunications Act (TCA) for such a requirement (Manville 2001, as discussed at the conference in the Levitt 2001 Proceedings). There are alternatives to building this structure, including in more developed areas that contain degraded habitats, collocated on another existing antenna structure, and away from habitat critically important to birds and other wildlife. All are preferable alternatives — discussed beyond.

I will assert that the City Ordinance No. 9.5750, "Telecommunication Devices — Siting Requirements and Procedures," is an inadequate document to be solely used by the City of Eugene's Planning Department to assess, approve or deny this AT&T/Crossfire cell tower permit application. While there is a growing database on effects of cell tower radiation to human health and safety which are prevented from introduction into testimony by Section 704 of the TCA, my focus in this testimony is on impacts from collisions and radiation to wildlife, specifically migratory birds — which represent environmental damage not addressed by Section 704.

Regarding impacts to wildlife, not only must the City of Eugene consider current FCC rules and regulations for licensing this cell tower, they must also consider the court ordered findings from the 2008 American Bird Conservancy et al. *v.* FCC lawsuit, which FCC lost on appeal in the Federal Court of Appeals for the District of Columbia Circuit. These include considerations under the Migratory Bird Treaty Act (MBTA) for impacts to protected migratory birds (above and beyond issues pertaining to the Endangered Species Act [ESA]), as well as compliance under the National Environmental Policy Act (NEPA) and its regulations. NEPA review includes opportunities for public review, comment, request for preparation of an Environmental Assessment (EA), and even litigation.

Additionally, and the focus of this testimony, are the rules and regulations implemented by the U.S. Fish and Wildlife Service (herein USFWS or Service) under the MBTA, and the Bald and Golden Eagle Protection Act (BGEPA), both which are strict liability, criminal statutes.

Lastly, the growing documented effects of low level, non-ionizing electromagnetic radiation which will be transmitted from and received by this tower are of growing concern to wildlife, including "take." FCC's current radiation standards are based solely on thermal heating, a standard 30 years out of date and inapplicable based on laboratory and field research on birds (and other animals) published in refereed scientific journals (summarized below), not to mention numerous other credible scientific findings (e.g., Panagopoulos and Margaritis 2008).

While FCC continues to fail to address low level impacts from non-ionizing radiation, the U.S. Department of Commerce's National Telecommunications and Information Administration (NTIA) and its First Responder Network Authority (FirstNet) reacted positively to a letter sent from the Department of Interior to NTIA on February 7, 2014 (USDOI 2014) — Enclosure A in that letter which I authored. FirstNet is building, operating and maintaining the first high-speed, nationwide wireless broadband network dedicated to public safety. FirstNet plans to systematically review the impacts of their nationwide broadcast network from injury, crippling loss and death to migratory birds from collisions with communication towers, and will begin addressing impacts from non-ionizing electromagnetic radiation emitted from them. Unlike the FCC which continues to deny effects from non-ionizing radiation, NTIA is acknowledging and addressing them through a systematic NEPA review process.

This complex situation and conflicting rules and regulations clearly suggest that members of the City Planning Department review each issue individually, but overall assess them collectively.

Summary of My Training and Experience

I worked as a federal wildlife biologist for 17 years, retiring in June 2014 from my position as a Senior Wildlife Biologist with the Division of Migratory Bird Management, USFWS, Headquarters Office, Arlington, VA. I was the Service's national lead on issues related to anthropogenic causes of bird mortality, including from communication towers. In that capacity, I chaired the Communication Tower Working Group (looking at both avian-tower collisions and avian-radiation impacts), working closely with the FCC, Federal Aviation Administration, other federal agencies, all the large tower and cell phone trade associations, several cell phone companies, scientists, academicians, and consultants. I was the USFWS project officer for the cutting edge tower lighting study at Michigan State Police communication towers (Gehring et al. 2009, Gehring et al. 2011), served as the project officer for a U.S. Coast Guard tall communication tower study, developed a cell tower research monitoring protocol for the U.S. Forest Service (Manville 2002), developed a peer-reviewed cell tower radiation monitoring protocol, and represented USFWS as lead reviewer on many communication tower projects from cell towers to tall, digital television towers.

I earned a B.S. in zoology from Allegheny College, Meadville, PA. Following a 4-year stint in the U.S. Navy where I was trained by the Department of State as a Mandarin Chinese linguist and interpreter working at the National Security Agency (including training on the use of

communication devices and equipment), I completed an M.S. in natural resources and wildlife management from the University of Wisconsin, Stevens Point, and earned a Ph.D. at Michigan State University in wildlife ecology and management. More recently, I was designated as a "Certified Wildlife Biologist" (C.W.B.) by The Wildlife Society.

I have served on the Board of Managers of the Washington Biologists' Field Club, and was nominated for membership in the Cosmos Club. I also am a member of numerous professional societies. Additionally, I served on the Steering Committee of the Endangered Species Coalition before being offered a branch chief's position in 1997 with the Division of Migratory Bird Management. In 1999, I received the Conservation Service Award from the Secretary of Interior for bird conservation efforts with the electric utility industry.

I have testified over 40 times before Congress and other governmental bodies in regard to environmental issues and conducted numerous research efforts globally. I have published more than 175 professional and popular papers, chapters, and book reviews, and given more than 160 invited public presentations. I served on the Editorial Advisory Board of the *Nature Conservancy* Magazine, was the wildlife consultant for the Walt Disney/Touchstone Pictures production of the movie *White Fang* (based on Jack London's book), and I have conducted hundreds of radio and television interviews, and been extensively quoted in the print media. I have held teaching positions at Michigan State University, George Mason University, and the USDA Graduate School Evening Programs, and I currently (since 2000) am an Adjunct Professor for Johns Hopkins University's Krieger School of Arts and Sciences, DC campus, teaching graduate classes in wildlife ecology, and conservation biology and wildlife management. In October 2014, I created a limited liability company certified by the Commonwealth of Virginia State Corporation Commission. The LLC is named, *Wildlife and Habitat Conservation Solutions LLC*.

Why Are Migratory Birds Important?

Migratory Birds:

Migratory birds — i.e., those that migrate across U.S., Canadian and/or Mexican borders, of which 1,027 species are currently protected in the United States (50 C.F.R. 10.13 list), are a public trust resource, meaning they belong to everyone. Almost all North American continental birds are protected by the MBTA. The Act implements and regulates bilateral protocols with Canada, Mexico, Japan and Russia. It is a strict liability statute; proof of criminal intent in the injury or killing of birds is not required by authorities for cases to be made.

The statute and its regulations protect migratory birds, their parts, eggs, feathers and nests from un-permitted possession and "take" (i.e., un-permitted injury, crippling loss, or killing). Migratory bird nests are protected during the breeding season while eagle nests are protected year-round. Efforts are currently underway by USFWS to develop a permit where un-permitted "take" could be allowed under MBTA; that process began in 2001. A Federal permit is required to possess a migratory bird and its parts, but the MBTA currently provides *no* provision for the accidental or incidental "take" (causing injury, crippling loss, or death) of a protected migratory bird, even when otherwise normal, legal business practices or personal activities are involved, such as the operation of an AT&T/Crossfire cell tower that results in bird injuries and/or deaths.

The U.S. Congress noted the "take" of even one protected migratory bird to be a violation of the Statute, with fines and criminal penalties that can be extensive.

Eagles:

Bald and Golden Eagles are also protected by the BGEPA, another strict liability statute. "Take" under BGEPA is more expansive than under MBTA, and includes pursuit, shooting, poisoning, capturing, killing, trapping, collecting, molesting and disturbing both species (50 C.F.R. 22.3). It is important to note that eagles do not simply need to be killed or injured to be in violation of the Eagle Act. Un-permitted disturbance such as noise from AT&T's tower construction or tower maintenance could disturb Bald Eagles. Example: An adult breeding pair of Bald Eagles is documented as nesting at Skinner Butte (*Eugene Register Guard*, 4/22/15) and may forage in the upper Amazon Creek corridor. "Disturbance take" could result in reduced survivorship of adults, juveniles and chicks, affecting their population viability. These are potential criminal offenses. While USFWS does not generally require that companies such as AT&T possess eagle "take" permits, without them, "disturbance take" and "take resulting in mortality" (50 C.F.R. 22.26), and for "take of nests" (50 C.F.R. 22.27) are potential criminal offenses.

Status of Migratory Birds:

Migratory birds are in trouble, including impacts from individual structures such as ATT's proposed cell tower which cumulatively can have huge impacts to bird populations. There are growing numbers of Birds of Conservation Concern (BCCs; USFWS 2008) — species in decline but not yet ready for federal listing as threatened or endangered under ESA. Currently there are 273 species (out of 1,027 protected birds) and subspecies on the national BCC, Service Regional BCC and Bird Conservation Region BCC lists, providing an early warning of likely peril unless the population trends are reversed. At least 7 BCCs may be present in the Amazon Creek corridor (discussed below).

Additionally, there are 92 endangered and threatened bird species on the ESA List of Threatened and Endangered Species. Collectively, BCC and ESA-listed birds represent at least 366 bird species (36%) in decline — some seriously — with numbers of both listed and BCC species growing (Manville 2013a). Additionally, the USFWS is also tasked to maintain stable or increasing breeding populations of Bald and Golden Eagles under implementing regulations of BGEPA and compliance with NEPA — including for cell towers. As noted above, at least 1 breeding pair of Bald Eagles is nesting at nearby Skinner Butte, and could be impacted by the proposed tower either through collision with its metal branches while foraging in the upper Amazon Creek area, or by its radiation should they establish a nest in the tower itself or nest nearby.

Birds are critically important to us all, providing key ecosystem services that fuel a multi-billion dollar industry through pollination, insect and weed-seed control efforts in the agribusiness and forest products industries. Without migratory birds, there would be untold additional problems requiring more pesticide, herbicide, and other chemical use. Feeding, photographing, and watching migratory birds — popular activities that draw residents from all around Eugene to the Amazon Creek nature area — also fuels a $32 billion/yr recreation industry in the U.S., representing an estimated 20% of the U.S. adult population involved in these endeavors. It is asserted that more adults in the U.S. feed, photograph and watch birds than play golf (Carter

2013, MountainNature.com 2015). Bird watching in the Amazon Creek corridor represents one of many opportunities for the public to become involved with nature (FriendsofAmazonCreek.org). For example, the Edison Elementary School's River Spies Program (riverspies.blogspot.com) recently had young children directly engaged in a bird survey in the corridor. This proposed cell tower is out of character with the public's interest and these recreational endeavors.

Impacts of Collisions and Radiation to Migratory Birds from Communication Towers

Collisions:

Migratory birds have been documented killed in single night, mass mortality collision events with communication towers, guy-support wires, and tower lights in the U. S. since 1948 — (Aronoff 1949, summarized in Manville 2007) — including at unguyed, unlit, < 200-ft above-ground-level (AGL) cell towers like AT&T's proposed tower. For example, in October 2005, W. Evans reported hundreds of migratory birds documented killed by collisions with short, unguyed and unlit cell towers in the Northeast, sometimes in significant numbers of hundreds of birds/cell tower/night (e.g., W. Evans cited in Manville 2007). While the probability of high levels of collisions with AT&T's proposed tower is small given its valley location and modest height, collision mortality or injury — especially with the rigid metal branches of the stealth tower while navigating through the neighborhood in inclement weather — is certainly likely.

During nighttime navigation, birds can be overwhelmed by inclement weather events, forcing bird fall-out, significant reductions in flight heights, and resultant confusion in identifying safe structures (Manville 2014a). Currently an estimated 6.8 million birds/yr are killed in the U.S. and Canada (Longcore et al. 2012). The vast majority of these bird deaths are in the U.S. In another review, at least 13 species of BCCs were estimated to suffer annual mortality of 1-9% of their estimated total population based solely on tower and tower structure collisions in the U.S. or Canada (Longcore et al. 2013). These include estimated annual mortality of > 2% for the Yellow Rail (a BCC species possibly present but scarce in Eugene in the summer and on the National BCC list), Swainson's Warbler, Pied-bill Grebe (a BCC possibly present in Eugene but scarce and on the BCC Regional list), Bay-breasted Warbler, Golden-winged Warbler, Worm-eating Warbler, Prairie Warbler, and Ovenbird. Up to 350 species of birds have been documented killed at communication towers (Manville 2014a). Each time more birds are injured or killed at individual communication towers such as that proposed by AT&T, these "takings" add to the overall impacts to bird populations not unlike the phenomenon of the "death by a thousand cuts."

More than 300 species of migratory birds have been recorded in the Eugene area (Welcome to Birding Eugene 2015). Of these — in addition to the Yellow Rail and Pied-billed Grebe mentioned above — at least 5 additional BCC species are designated on the USFWS's (2008:23) Bird Conservation Region (BCR) 4, Northwestern Interior Forest U.S. BCC list. These include the Horned Grebe, Peregrine Falcon (previously ESA delisted), Lesser Yellowlegs, Short-billed Dowitcher, and Olive-sided Flycatcher. Since these species are already in decline and in trouble, potential impacts from AT&T's proposed tower *could* further negatively affect them. By not building that tower in a sensitive natural area that attracts such birds, potential risk is reduced.

Radiation:

Not until recently have the effects of low-level, non-thermal electromagnetic radiation on domestic and wild birds been made public. For example, laboratory studies by T. Litovitz (2000 pers. comm.) and DiCarlo et al. (2002) from the standard 915 MHz cell phone frequency on domestic chicken embryos showed that radiation from extremely low levels (0.0001 the level emitted by the average digital cell phone) caused heart attacks and deaths in some embryos; controls were unaffected (DiCarlo et al. 2002). However, the effects of microwave (and other) radiation from communication towers on nesting and roosting wild birds are yet unstudied in the U.S. In Europe, impacts have been well documented. Balmori (2005) found strong negative correlations between levels of tower-emitted microwave radiation and bird breeding, nesting, and roosting in the vicinity of electromagnetic fields in Spain. He documented nest and site abandonment, plumage deterioration, locomotion problems, and death in House Sparrows, White Storks, Rock Doves, Magpies, Collared Doves, and other species. While these species had historically been documented to roost and nest in these areas, Balmori (2005) did not observe these symptoms prior to construction of the cellular phone towers. Balmori and Hallberg (2007) and Everaert and Bauwens (2007) found similar strong negative correlations among male House Sparrows.

The electromagnetic radiation standards used by the FCC continue to be based on thermal heating, a criterion now 30 years out of date and inapplicable today. This is primarily due to the lower levels of radiation output from microwave-powered communication devices such as cellular telephones and their cell towers, Wi-Fi, so called “smart meters,” and other sources of point-to-point communications; levels typically lower than from microwave ovens. FCC, to date, has been unwilling to update their regulatory standards.

In February 2014, the Director of the Department of Interior’s Office of Environmental Policy and Compliance sent a letter to the U.S. Commerce Department’s NTIA suggesting regulatory compliance by its FirstNet, a newly created entity, implementing development of emergency broadcast systems nationwide (USDOI 2014). Included in those recommendations are inadequacies which NTIA has acknowledged and is now proceeding to address. These included inadequacies for conserving migratory birds in Enclosure A which I authored while working for the Division of Migratory Bird Management, USFWS. In it, I provided recommendations for addressing bird injury, crippling loss, and death from communication tower and metal branch collisions; and research needs for beginning to address impacts from non-ionizing electromagnetic radiation emitted from such towers.

Given the findings of the studies mentioned above, and an extensive meta-review of the published studies by Panagopoulos and Margaritis (2008), field studies should be conducted in the U.S. by third-party, independent research entities with no vested interest in the outcomes to validate potential impacts of communication tower radiation — both direct and indirect — to birds and other animals. However, to date, these have yet to be performed. Rather than building the Crossfire tower, AT&T should fund an independent radiation study in the U.S. I have already developed a preliminary study protocol.

<u>Amazon Creek Corridor and AT&T/Crossfire’s Proposed Stealth Cell Tower</u>

Until recently, companies such as AT&T applying for broadcast licenses through the FCC would normally have requested a “categorical exclusion” for review of a license application such as for

this proposed Crossfire tower (i.e., FCC Environmental Compliance regulation, Section 106 National Historic Preservation Act process). Only where a federally-listed migratory bird (Section 4, ESA) and/or its "critical habitat" (Section 3, ESA) were present at or near the tower site would environmental review have been required under FCC regulations. Otherwise, environmental review and public input would likely have been excluded. That situation is now changing.

It is true that City and state governments have been constrained in some ways by Section 704 of the Telecommunications Act of 1996. Although Section 704 states that new tower construction requires approval of the state or local governing authority (e.g., City of Eugene), it clarifies that local zoning authority may be preempted by FCC. However, new develops may arguably have changed this situation. Case law in 2 municipal cases have resulted in towns being able to supersede Section 704 provisions and deny cell tower permit approval. In Sprint Spectrum *v.* Willoth, Docket 98-7442, U.S. Court of Appeals 2nd Circuit, 1999, Sprint challenged the Planning Board of the Town of Ontario, New York, over their rejection of permits for several cell towers. Ontario, NY, prevailed. In Verizon Wireless *v*. Clarkstown, NY, Southern District of New York, 00 Cir. 3029 (CM), 2000, the court denied plaintiff's claim that the town of Clarkstown had violated TCA by denying cell tower permit approval, and dismissed all claims against Clarkstown.

Due to the lawsuit by The American Bird Conservancy et al. *v.* FCC which the Commission lost on appeal (516 F.3d; D.C. Cir. 2008; *American Bird Conservancy*), effects of communication towers to migratory birds must now be included as part of the court ordered review process, and the public must be provided a meaningful opportunity to request an EA under NEPA for proposed towers that FCC considers "categorically excluded." While the FCC's interim rulemaking focused initially on tall (i.e., those $\geq$ 450 ft AGL) towers, that height limit has been discarded and the December 2011 statement by FCC Commissioner Michael J. Copps in regard to the order of remand (FCC 11-181) is telling. In the Matter of Effects of Communication Towers on Migratory Birds, WT Docket No. 03-187, Order of Remand, Commissioner Copps stated, *"Today, at long last, the Commission has responded to the DC Circuit's rebuke to our previous rules that fell short of meeting our responsibilities under the National Environmental Policy Act, the Endangered Species Act, and the Migratory Bird Treaty Act. While I am disappointed it has taken nearly four years to respond to the court, I am encouraged these interim rules will give more parties greater opportunity to register their concerns about migratory birds when a tower goes up…"*

Summarizing FCC's current position, the Commission must now address impacts to migratory birds in addition to any avian-ESA issues. As such, AT&T — whose frequencies are licensed by FCC — cannot ignore migratory bird issues including adjacent bird concentrations in the Amazon Creek area and adjacent Park areas; possible "take" from collisions with the metal, stealth tower arms; impacts of non-ionizing tower radiation on breeding, roosting, and feeding birds; Bald Eagles which could be disturbed or otherwise impacted by tower construction; and USFWS updated 2013 voluntary communication tower siting, placement, operation and decommissioning guidance (Manville 2013b). Before I retired from USFWS, I updated the Service's voluntary 2000 communication tower guidance which I had previously co-authored, sharing the updates with the FCC (Manville 2013b).

It is also important to note that if the City of Eugene's Planning Department were to approve the AT&T/Crossfire permit application, and "take" from this tower were to occur, there could be potential culpability for both the City and AT&T. First, the "take" would be un-permitted. USFWS does not currently issue incidental take permits for accidental/incidental injuries or deaths. Instead, the agency recommends that towers be collocated on other existing structures; be built in already heavily developed areas with already degraded wildlife habitats; and that natural habitats important to birds and other wildlife be avoided. Implementing these efforts will minimize potential "take" as a consequence.

To understand how agents with the Service's Office of Law Enforcement and prosecuting environmental attorneys with the Department of Justice make and prosecute cases respectively, I quote from a power line manual (APLIC 2006) an explanation of how prosecution generally works. As the Service has previously stated (e.g., APLIC 2006:21), "*although the MBTA ha[s] no provision for allowing take, the USFWS realizes that some birds will be killed even if all reasonable measures to avoid it are used. The USFWS Office of Law Enforcement [OLE] carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and industries that have programs to minimize their impacts on migratory birds. Since a take cannot be authorized, it is not possible to absolve individuals, companies, or agencies from liability even if they implement avian mortality avoidance or similar conservation measures. However, the OLE does have enforcement discretion and focuses on those individuals, companies, or agencies that take migratory birds without regard for their actions and the law, especially when conservation measures had been developed but had not been implemented.*"

Clearly, the Service's 2000 voluntary communication tower guidance and the same guidance I updated and provided to FCC in 2013 (Manville 2013b) have "conservation measures" which USFWS has recommended be implemented. While I am no longer a federal employee, I do as a private citizen continue to recommend that AT&T and the City of Eugene implement these guidelines. Recapping, these include collocating on another antenna structure, selecting a more environmentally benign site, building in a more degraded habitat, and avoiding wetlands.

Due to the proximity of the proposed tower to the Amazon Creek nature area, killing or injuring migratory birds would be incompatible with the purpose and intent of this City in designating the special status of this area. This is an important migration corridor for many species of songbirds, is likely used by the 2 BCC waterbirds mentioned above, and provides habitat protection and natural resource conservation as important tenets of this part of the Eugene parks system. In addition, millions of taxpayer dollars have been spent to create and maintain this green space and wildlife corridor (T. Taylor, Supervisor, Eugene Parks & Open Space Division public presentation). Construction of the tower is out of character and incompatible with the purpose and intent of this protected nature area. It will almost certainly create environmental damage not addressed through Section 704 of the Telecommunications Act, and because federal funds were in part used to develop and upgrade the Amazon Creek corridor, a federal "nexus" may have resulted. This nexus allows the public through the NEPA process to review, comment, testify, request an EA, and even litigate due to this funding situation since the area would be affected by the tower.

Conclusions and Recommendations

While the proposed AT&T/Crossfire cell tower is of modest height (75 ft AGL) and will be constructed in a cryptic, stealth-like design mimicking a pine tree, ostensibly to draw little human notice and conceal its identity from the public, I am unaware of any evidence to show that such design is any less attractive to migratory birds seeking nesting or roosting structures. Furthermore, although un-guyed and unlit, migratory birds still have been documented killed by collisions with monopole and lattice towers, sometimes in significant numbers of hundreds of birds/cell tower/night (e.g., W. Evans cited in Manville 2007). Adjacent lighting from streetlights could, for example, result in significant bird attraction and collisions with rigid metal branches during inclement weather events.

The effects of low level radiation are also growing concerns. While FCC has yet to recognize them, NTIA has. The effects of radiation from studies conducted in Europe are troubling. The situation provides an opportunity for AT&T to fund an independent, third-party study to better understand the impacts of telecommunication structures on migratory birds and other species.

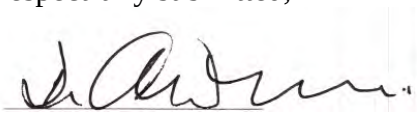
Summarizing, based on my previous review and analysis, here are the issues I recommend the City of Eugene Planning Department consider in addressing AT&T's Crossfire tower application:

- Is this cell tower necessary?
- The collision and RF safety of this proposed tower to migratory birds must be evaluated. Cell towers, including short stealth designs such as this one, are not benign structures.
- The potential environmental effects of this proposed tower to birds, and impacts on the Amazon Creek habitat area, must be assessed. This review not only includes City Ordinance No. 9.5750, but FCC rules and regulations (Section 106 NHPA), FCC court-ordered determinations and other recent case law, environmental damage that will be created other than what is addressed by Section 704 of the TCA (which deals only with human health, not environmental damage), existing regulations under the MBTA (which contains no incidental "take" provisions), and impacts due to potential violations of regulations under BGEPA, ESA and NEPA review processes.
- Is there potential culpability to the City of Eugene if the tower application is approved and "take" subsequently occurs?
- An assessment should be made of the 7 BCCs including validation that the Yellow Rail, Pied-bill Grebe, Horned Grebe, Peregrine Falcon, Lesser Yellowlegs, Short-billed Dowitcher, and Olive-sided Flycatcher may be present in the corridor and could be negatively affected if they are present.
- A recognition of potential "disturbance take" of Bald Eagles.
- There is a conundrum between FCC's outdated radiation standards based on thermal heating and NTIA's recognition that low level, non-ionizing radiation can affect migratory birds, and is being addressed through NEPA review. However, until independent research can be conducted and results analyzed, no recommendations can yet be provided on this issue — other than to proceed using the precautionary approach and to keep emissions as low as reasonably achievable.

- Use updated, 2013 USFWS voluntary communication tower guidelines, most especially including "conservation measures" which will minimize migratory bird "take" — i.e., collocation, selecting other existing degraded and developed sites, and avoiding designated natural habitat areas.
- Assess the overall compatibility of this proposed tower with the purposes, intents, public concerns and taxpayer-funded efforts involved with maintaining the Amazon Creek corridor natural area.

In conclusion, on behalf of Friends of Amazon Creek, I recommend that the City of Eugene Planning Department reject this particular cell tower application.

Respectfully submitted,



Albert M. Manville, II, Ph.D., C.W.B.
Wildlife and Habitat Conservation Solutions, LLC

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EXHIBIT #3

1

BEFORE THE HEARING EXAMINER
FOR THURSTON COUNTY

In the Matter of the Appeal of Chris Nubbe and Alison Baker
On behalf of Deschutes Neighborhood Group, c/o Alex D. Foster

No. 2015103966, Application 15-117887 VE

Declaration of: Albert M. Manville, II, Ph.D., C.W.B. (to be Submitted by Appellant)

I, Albert M. Manville, II, Ph.D., C.W.B., declare as follows:

1. I make this declaration based on my personal knowledge, academic and field training, and professional experience as the former U.S. Fish and Wildlife Service (USFWS or Service) national lead on effects to protected migratory birds from human built structures and equipment. I am over the age of 18 and competent to testify to the matters herein.
2. I am the principal of Wildlife and Habitat Conservation Solutions, LLC, located in Falls Church, Virginia. I have been contracted by the Deschutes Neighborhood Group to analyze and assess this application and proposed siting for a Verizon Wireless (VW) cellular (cell) Wireless Communications Facility (WCF).
3. I am employed part-time as an Adjunct Professor for the Krieger School of Arts and Sciences, Advanced Academic Programs, Johns Hopkins University, Washington, DC campus. I retired from the Division of Migratory Bird Management, USFWS, in late June 2014, after working for USFWS for 17 years on avian-structural issues.
4. I submit the following testimony for the record.

I declare under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

DATED: 10th of February, 2016, Falls Church, VA

Albert M. Manville, II, Ph.D., C.W.B.

Testimony of Albert M. Manville, II, Ph.D., C.W.B., and Principal, Wildlife and Habitat Conservation Solutions, LLC, in regard to the Administrative Appeal of Determination of Nonsignificance (DNS) for Thurston County Project 2015103966, SEPA Application No. 15-111588 XA, Special Use Permit (SUP) Application by Verizon Wireless for a Cellular (cell) Tower Wireless Communications Facility (WCF) at 16244 Vail Road SE, Yelm, WA 98597. Comments Submitted on Behalf of the Deschutes Neighborhood Group for the record.

Date: February 10, 2016

INTRODUCTION

I will make a strong case for the following:

- The approval, placement and operation of a 156-ft-tall, monopole cell tower by Verizon Wireless (VW) in a forested riparian area habitat at 16244 Vail Rd. SE, Yelm, WA — which will extend approximately 54 ft above tree line — is immediately adjacent to an emergent wetlands marsh (EWM), recently and officially designated as the 163rd Lane Priority II Waterfowl Concentration Area by the Washington Department of Fish and Wildlife (WDFW) at 16244 Vail Rd. SE, Yelm, WA. Nearby there are 2 other designated wetland waterfowl concentration areas (i.e., Lake Lawrence and Smith Prairie [exhibits previously provided by Alex D. Foster]). VW's WCF application ignores voluntary communication tower guidelines released by the Service (USFWS 2000, co-authored by me) and recently updated (Manville 2013b) for the Federal Communications Commission (FCC), tower companies, and the public. Because of the importance of wetlands to migratory birds and other wildlife, USFWS strongly recommends against building in/near wetlands, with collocation on an existing structure or placement in a less impacting site as recommended by the Service.
- The FCC does not require 100% cell phone coverage.
- The tower impacts, both from collisions and from radiation, to resident, breeding and migrating birds and other wildlife have not been assessed by Verizon. WDFW and the Black Hills Chapter of the Audubon Society have raised additional concerns about wetland impacts and the importance of protecting this emergent wetlands marsh. I will focus on these concerns since the tower and its infrastructure will likely harm wildlife and wildlife habitat, resulting in possible "takings" which would be criminal violations of several Federal statutes and their regulations.
- Allowing approval and construction to proceed will likely be in violation of Thurston County Code (TCC; 20.33.080). Other legal issues dealing with extraordinary circumstances will be raised.
- I will recommend — based on my best scientific judgement and professional experience — that the Hearing Examiner reverse VW's current application for a SUP, reverse the DNS, and approve this appeal, suggesting either collocation (e.g., on an existing distribution power pole but well beyond the 1,000 ft buffer for any of the 3 wetland sites) or placement of this cell tower in a far less impacting site to wildlife and their habitats (e.g., surrounding Weyerhaeuser tree growth property).

Summary of My Training and Experience — Please see the APPENDIX for these details.

DISCUSSION

Background: Why Are Migratory Birds Important?

Migratory birds — i.e., those that migrate across U.S., Canadian and/or Mexican borders, of which 1,027 species are currently protected in the United States (50 C.F.R. 10.13 list), are a public trust resource, meaning they belong to everyone. Most birds in the State of Washington are migratory. Almost all North American continental birds are protected by the Migratory Bird Treaty Act (MBTA). The Act implements and regulates bilateral protocols with Canada, Mexico, Japan and Russia. It is a strict liability statute; proof of criminal intent in the injury or killing of birds is not required by enforcement authorities for cases to be made.

The statute and its regulations protect migratory birds, their parts, eggs, feathers and nests from un-permitted possession and "take" (i.e., un-permitted injury, crippling loss, or killing). Migratory bird nests are protected during the breeding season while eagle nests are protected year-round — both which could be impacted by VW tower construction and operation. Efforts are currently underway by USFWS to develop a permit where un-permitted and "unintentional take" could be allowed under MBTA; that process began in 2001. A Federal permit is required to possess a migratory bird and its parts, but the MBTA currently provides ***no*** provision for the accidental or incidental "take" (causing injury, crippling loss, or death) of a protected migratory bird, even when otherwise normal, legal business practices or personal activities are involved, such as the construction and operation of a VW cell tower that results in bird injuries and/or deaths. The U.S. Congress noted the "take" of even one protected migratory bird to be a violation of the Statute, with fines and criminal penalties that can be extensive. Under the purview of the MBTA, VW needs to make every effort to "avoid and minimize take" of migratory birds. Simply put, this means selecting an alternative, far more environmentally friendly site or simply not building a new WCF.

Eagles:

Bald and Golden Eagles are also protected by the Bald and Golden Eagle Protection Act (BGEPA), another strict liability statute. "Take" under BGEPA is more expansive than under MBTA, and includes pursuit, shooting, poisoning, capturing, killing, trapping, collecting, molesting and disturbing both species (50 C.F.R. 22.3). It is important to note that eagles do not simply need to be killed or injured to be in violation of the Eagle Act. Un-permitted disturbance such as noise from VW tower construction or tower maintenance could disturb Bald Eagles. Bald Eagles are present in and around the 3 wetlands (see photo exhibit from Alex Foster's previous testimony). "Disturbance take" could result in reduced survivorship of adults, juveniles and chicks, affecting their population viability. These are potential criminal offenses. While USFWS does not generally require that companies such as VW possess eagle "take" permits, without them, "disturbance take" and "take resulting in mortality" (50 C.F.R. 22.26), and for "take of nests" (50 C.F.R. 22.27) are potential criminal offenses.

Status of Migratory Birds:

Migratory birds are in trouble, including impacts from individual structures such as VW's proposed cell tower which cumulatively can have huge impacts to bird populations. There are growing numbers of Birds of Conservation Concern (BCCs; USFWS 2008) — species in decline but not yet ready for federal listing as threatened or endangered under the Endangered Species Act (ESA), although some are under listing review. Currently there are 273 species (out of 1,027 protected birds) and subspecies on the national BCC, Service Regional BCC and Bird Conservation Region BCC lists, providing an early warning of likely peril unless the population trends are reversed.

At the EWM, the 2 other wetlands, and the surrounding woodland habitats, Bald Eagles (a species of State concern), Vaux's Swift (species of State concern, especially its nesting forested habitat), and a host of other migratory birds are present in and around Yelm, WA.

Additionally, there are 93 endangered and threatened bird species on the ESA List of Threatened and Endangered Species. Collectively, BCC and ESA-listed birds represent at least 366 bird species (36%) in decline — some seriously — with numbers of both listed and BCC species growing (Manville 2013a). The USFWS is also tasked to maintain stable or increasing breeding populations of Bald and Golden Eagles under implementing regulations of BGEPA and compliance with the National Environmental Policy Act (NEPA) — including for cell towers. Presumably at least 1 breeding pair of Bald Eagles is nesting around the lake and wetlands area. Additionally, the checkerspot butterfly (Federally Endangered), the Oregon spotted frog (Federally Threatened), and the Puget Oregonian snail (Federally proposed) may be present in the wetlands areas, further elevating construction and operation risks.

Birds are critically important to us all, providing key ecosystem services that fuel a multi-billion dollar industry through pollination, insect and weed-seed control efforts in the agribusiness and forest products industries. Without migratory birds, there would be untold additional problems requiring more pesticide, herbicide, and other chemical use. Feeding, photographing, and watching migratory birds also fuels a $32 billion/yr recreation industry in the U.S., representing an estimated 20% of the U.S. adult population involved in these endeavors. It is asserted that more adults in the U.S. feed, photograph and watch birds than play golf (Carter 2013, MountainNature.com 2015). Birdwatching at the wetlands and woodland areas represents one of many opportunities for the public to become involved with nature, including watching and hunting waterfowl in the surrounding wetlands. This proposed cell tower is out of character with the public's interest and these recreational endeavors in the wetlands and woodlots.

Impacts of Collisions and Radiation to Migratory Birds from Communication Towers

Collisions:

Migratory birds have been documented killed in single night, mass mortality collision events (up to 10,000 in single night, single tower collision events) with communication towers, guy-support wires, and tower lights in the U. S. since 1948 — (Aronoff 1949, summarized in Manville 2007) — including at unguyed, unlit, < 200-ft above-ground-level (AGL) cell towers like VW's proposed WCF. In October 2005, W. Evans reported hundreds of migratory birds documented killed by collisions with short, unguyed and unlit cell towers in the Northeast, sometimes in significant numbers of hundreds of birds/cell tower/night (e.g., W. Evans cited in Manville 2007). While the probability of high levels of collisions with VW's proposed tower is small, collision mortality is certainly likely, especially for birds whose daily movements between wetlands puts them at collision risk day or night as they fly just above tree line.

During nighttime migrations, birds can be overwhelmed by inclement weather events, forcing bird fallout, significant reductions in flight heights, and resultant attraction to lighted structures and confusion (Manville 2014, 2016) — such as any security lighting that may be placed at VW's power shed, attracting birds, causing them to collide with the cell tower. Currently an estimated 6.8 million birds/yr are killed in the U.S. and Canada (Longcore et al. 2012). The vast majority of these bird deaths are in the U.S. In another review, at least 13 species of BCCs were estimated to suffer annual mortality of 1-9% of their estimated total population based solely on communication tower collisions in the U.S. or Canada (Longcore et al. 2013). These include estimated annual mortality of > 2% for the Yellow Rail (a BCC species possibly present in the wetlands), Swainson's Warbler, Pied-bill Grebe (a BCC possibly present), Bay-breasted Warbler, Golden-winged Warbler, Worm-eating Warbler, Prairie Warbler, and Ovenbird.

Up to 350 species of birds have been documented killed at communication towers (Manville 2014, 2016). There are a number of species of birds present in or around the Emergent Wetlands Marsh which will likely be negatively impacted by the WCF. These include but certainly are not limited to Vaux's Swift, Bald Eagle, Swanson's Thrush, Western Tanager, Snowy Egret, Great Blue Heron, Canada Goose, Trumpeter Swan, Common Goldeneye (among several species of waterfowl), Osprey, Belted Kingfisher, and Pileated Woodpecker. Each time one of these birds is killed at an individual communication tower such

as that proposed by VW, these "takings" add to the overall impacts to bird populations not unlike the phenomenon of the "death by a thousand cuts."

Radiation:

Not until recently have the effects of low-level, non-thermal electromagnetic radiation on domestic and wild birds been made public. Laboratory studies by T. Litovitz (2000 pers. comm.) and DiCarlo et al. (2002) from the standard 915 MHz cell phone frequency on domestic chicken embryos showed that radiation from extremely low levels (0.0001 the level emitted by the average digital cell phone) caused heart attacks and deaths in some embryos; controls were unaffected (DiCarlo et al. 2002). However, the effects of microwave (and other) radiation from communication towers on nesting and roosting wild birds are yet unstudied in the U.S. In Europe, impacts have been well documented. Balmori (2005) found strong negative correlations between levels of tower-emitted microwave radiation and bird breeding, nesting, and roosting in the vicinity of electromagnetic fields in Spain. He documented nest and site abandonment, plumage deterioration, locomotion problems, and death in House Sparrows, White Storks, Rock Doves, Magpies, Collared Doves, and other species. While these species had historically been documented to roost and nest in these areas, Balmori (2005) did not observe these symptoms prior to construction of the cellular phone towers. Balmori and Hallberg (2007) and Everaert and Bauwens (2007) found similar strong negative correlations among male House Sparrows. The same concerns apply to the proposed WCF tower, especially for nesting birds (i.e., the species listed above some of which may nest in and around the WCF and wetlands).

The electromagnetic radiation standards used by the FCC continue to be based on thermal heating, a criterion now more than 30 years out of date and inapplicable today. This is primarily due to the lower levels of radiation output from microwave-powered communication devices such as cellular telephones and their cell towers, Wi-Fi, so called "smart meters," and other sources of point-to-point communications; levels typically lower than from microwave ovens. FCC, to date, has been unwilling to update their regulatory standards. Significantly lower radiation output does not equate to reduced risk (e.g., Panagopoulos and Margaritis (2008).

In February 2014, the Director of the Department of Interior's Office of Environmental Policy and Compliance sent a letter — which I helped draft — to the U.S. Commerce Department's National Telecommunications and Information Administration (NTIA) suggesting regulatory compliance by its FirstNet, a newly created entity, implementing development of emergency broadcast systems nationwide (USDOI 2014; copy included in previous testimony of Alex Foster). Included in those recommendations are inadequacies which NTIA has acknowledged and is now proceeding to address. These included inadequacies for conserving migratory birds in Enclosure A which I authored while working for the Division of Migratory Bird Management, USFWS. In it, I provided recommendations for addressing bird injury, crippling loss, and death from communication tower collisions; and research needs for beginning to address impacts from non-ionizing electromagnetic radiation emitted from them.

Given the findings of the studies mentioned above, and an extensive meta-review of the published studies by Panagopoulos and Margaritis (2008), field studies should be conducted in the U.S. by third-party, independent research entities with no vested interest in the outcomes to validate potential impacts of communication tower radiation — both direct and indirect — to birds and other animals. However, to date, these have yet to be performed. Rather than building the WCF, VW might seriously consider funding an independent radiation study in the U.S. I have already developed a preliminary study protocol.

FCC Cell Coverage

The FCC does not mandate 100% cell phone coverage and there is no provision under the 1996 Telecommunications Act (TCA) for such a requirement (Manville 2001, as discussed at the conference in the Levitt 2001 Proceedings). There are alternatives to building this proposed cell tower immediately adjacent to the Emergent Wetlands Marsh, which otherwise will likely result in "takings" and other problems. Provided any alternative site selected is not problematic for birds and other wildlife, collocation on an existing distribution line power pole — provided it is not in the view shed of any of 3 existing wetlands — or tower construction within the Weyerhaeuser tree growth facility might be considered.

Issues Specific to the Emergent Wetlands Marsh (EWM) at 16244 Vail Road SE, Yelm, WA — New Developments Which Thurston County Officials Need to Consider

In addition to the above-listed specific bird species which use/may use the EWM and surrounding woodland habitats, bird injuries and deaths due to collisions and effects from radiation will result in "takings" which cannot be mitigated (MBTA and its implementing regulations contain ***no*** provision for mitigation of "take"). While arguably, the height of this tower will extend *only* ~54 ft above tree line, the record is clear (e.g., Manville 2007) that unlit communication towers < 200 ft AGL can still kill hundreds of birds in single night collision events. This proposed WCF is to be located between Lake Lawrence and the EMW, within approximately 300 ft of the EWM, and within the Deschutes River migratory corridor — an important passageway for many species of migratory and resident birds.

The collision problem posed by this tower can be effectively illustrated by APLIC (2012: 68, Fig. 5.9A — available electronically), a document I co-authored with the electric utility industry. Here, waterfowl moving from a feeding area (e.g., EWM) to a resting area (e.g., Lake Lawrence) are put at collision risk as they must fly across a power line — which could just as easily be a communication tower. Flying just above tree line will put bird movements and flight at potentially significant risk. Risk is elevated from inclement weather events — daytime and night — high winds, noise and other disturbances, and dawn and dusk bird movements especially with fog, mist and reduced visibility present. Wetlands provide important roosting, resting and feeding areas for many migratory birds, not just waterfowl. A tower some 54-ft above tree line, very close to the EWM, will also create a collision obstacle for approaching/departing avifauna on a day-to-day basis.

A significant, $1.6 million wetland restoration mitigation effort by the cities of Olympia, Lacey and Yelm was recently required by the State in exchange for the water rights in and surrounding these wetlands. After completion, the floodplain area will essentially become a new, publicly owned wildlife refuge. Wetland restoration here will create more bird and waterfowl habitats. Thus, constructing and operating a 156-ft WCF in or next to this floodplain is incompatible with the environmental benefits of this substantial restoration investment, and what the State is creating does not appear to be in the public's best interest, especially when this is related to protecting wildlife and their habitats both of which are in the public trust.

Until recently, companies such as VW applying for broadcast licenses through the FCC would normally have requested a "categorical exclusion" for review of a license application such as for this proposed VW WCF (i.e., FCC Environmental Compliance regulation, Section 106 National Historic Preservation Act process) — this in a process separate from the Thurston County SUP. Only where a federally-listed migratory bird or other listed species (Section 4, ESA) and/or its "critical habitat" (Section 3, ESA) were present at or near the tower site would environmental review have been required under FCC regulations. Otherwise, environmental review and public input would likely have been excluded through NEPA. That situation is now changing.

It is true that county, city and state governments have been constrained in some ways by Section 704 of the Telecommunications Act of 1996. Although Section 704 states that new tower construction requires approval of the state or local governing authority (i.e., Thurston County), it clarifies that local zoning authority may be preempted by FCC. However, new developments may arguably have changed this situation. Case law in two municipal cases have resulted in towns being able to supersede Section 704 provisions and deny cell tower permit approval. In Sprint Spectrum *v.* Willoth, Docket 98-7442, U.S. Court of Appeals 2nd Circuit, 1999, Sprint challenged the Planning Board of the Town of Ontario, New York, over their rejection of permits for several cell towers. Ontario, NY, prevailed. In Verizon Wireless *v.* Clarkstown, NY, Southern District of New York, 00 Cir. 3029 (CM), 2000, the court denied plaintiff's claim that the town of Clarkstown had violated TCA by denying cell tower permit approval, and dismissed all claims against Clarkstown.

Due to the lawsuit by The American Bird Conservancy et al. *v.* FCC which the Commission lost on appeal (516 F.3d; D.C. Cir. 2008; *American Bird Conservancy*), effects of communication towers to migratory birds must now be included as part of the court ordered review process, and the public must be provided a meaningful opportunity to request an Environmental Assessment (EA) under NEPA for proposed towers that FCC considers "categorically excluded." While the FCC's interim rulemaking focused initially on tall (i.e., those ≥ 450 ft AGL) towers, that height limit has been discarded and the December 2011 statement by FCC Commissioner Michael J. Copps in regard to the order of remand (FCC 11-181) is worth repeating. In the Matter of Effects of Communication Towers on Migratory Birds, WT Docket No. 03-187, Order of Remand, Commissioner Copps stated, *"Today, at long last, the Commission has responded to the DC Circuit's rebuke to our previous rules that fell short of meeting our responsibilities under the National Environmental Policy Act, the Endangered Species Act, and the Migratory Bird Treaty Act. While I am disappointed it has taken nearly four years to respond to the court, I am encouraged these interim rules will give more parties greater opportunity to register their concerns about migratory birds when a tower goes up..."*

Summarizing FCC's current position, the Commission must now address impacts to migratory birds in addition to any avian-ESA and other wildlife-ESA issues. As such, VW — whose frequencies are licensed by FCC — cannot ignore migratory bird issues. These include bird use of adjacent wetland bird habitats; possible "take" from collisions with the proposed VW 156-ft cell tower; impacts of non-ionizing tower radiation on breeding, roosting, and feeding birds; Bald Eagles which could be disturbed or otherwise impacted by tower construction and maintenance; and USFWS updated 2013 voluntary communication tower siting, placement, operation and decommissioning guidance (Manville 2013b). Before I retired from USFWS, I updated the Service's voluntary 2000 communication tower guidance which I had previously co-authored, sharing the updates with the FCC, tower companies and the public (Manville 2013b).

Additionally in regard to Federal categorical exclusions (43 C.F.R. 46.215: categorical exclusion, extraordinary circumstances), Thurston County Code (TCC; 20.33.080) specifically addresses the location and design standards for freestanding WCF's and remote, freestanding WCF's/antenna support structures. Specifically, the TCC states, *"...[the WCF] shall not be located within one thousand feet of wetlands, staging areas, or rookeries supporting listed priority species by the Washington Department of Fish and Wildlife."* For the EWM, these include the Bald Eagle, Ferruginous Hawk, Northern Goshawk, Vaux's Swift, Western Grebe, and possibly others (Washington State Species of Concern List, WDFW 2016 online) — all which have been documented present or are possible incidental residents/migrants in and around the EWM. Thurston County's current approval of VW's SUP is clearly in violation of its own regulations since this WCF is within approximately 300 ft of the EWM wetlands.

Furthermore, extraordinary circumstances under NEPA review (43 C.F.R. 46.215) would appear to preempt a categorical exclusion determination. Specifically, the Federal extraordinary circumstances speak to, *"Hav[ing] significant impacts on such natural resources and unique geographic characteristics*

as historic or cultural resources; park, recreation or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (EO 11990); national monuments; migratory birds; and other ecologically significant or critical areas" (emphasis added). In addition, current County actions do not comply with Section *I of* 43 C.F.R 46.215 which states that, *"...[such actions] violate a Federal, or a State, local,* (emphasis added) *or tribal labor requirement imposed for the protection of the environment..."* and *(h) have significant impacts on species listed, or proposed to be listed, on the List of Endangered or Threatened Species or have significant impacts on designated Critical Habitat for these species"* (noting that some of the aforementioned species on the Washington State Species of Concern List are being assessed for possible Federal ESA listing). Thus, based on these extraordinary circumstances, categorical exclusion does not appear to apply to either the Federal or this County permit review.

It is also important to note that if the Thurston County officials were to fail to deny this appeal and summarily approve the permit application at 16244 Vail Road SE, Yelm, WA 98597, and "take" from this tower were to occur, there could be potential culpability for both the County and VW. First, the "take" would be un-permitted. USFWS does not currently issue incidental take permits for accidental/incidental injuries or deaths. Instead, to "avoid or minimize take," the USFWS recommends that towers be collocated on other existing structures; be built in already heavily developed areas with already degraded wildlife habitats; and that natural habitats important to birds and other wildlife such as these wetlands be avoided. As a consequence, implementing these so-called conservation measures will minimize potential "take" and legal culpability.

To understand how agents with the USFWS's Office of Law Enforcement and prosecuting environmental attorneys with the Department of Justice make and prosecute wildlife cases respectively, I quote from a power line manual (APLIC 2006) an explanation of how prosecution generally works. As the USFWS has previously stated (e.g., APLIC 2006: 21), *"although the MBTA ha[s] no provision for allowing take, the USFWS realizes that some birds will be killed even if all reasonable measures to avoid it are used. The USFWS Office of Law Enforcement [OLE] carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and industries that have programs to minimize their impacts on migratory birds. Since a take cannot be authorized, it is not possible to absolve individuals, companies, or agencies from liability even if they implement avian mortality avoidance or similar conservation measures. However, the OLE does have enforcement discretion and focuses on those individuals, companies, or agencies that take migratory birds without regard for their actions and the law, especially when conservation measures had been developed but had not been implemented."*

Clearly, the USFWS's 2000 voluntary communication tower guidance and the same guidance I updated and provided to FCC in 2013 (Manville 2013b) have "conservation measures" which USFWS has recommended be implemented. While I am no longer a federal employee, I do as a private citizen continue to recommend that VW and Thurston County implement these guidelines. Recapping, these include collocating on another antenna or other structure, selecting a more environmentally benign site, building in a more degraded habitat, and avoiding wetlands.

There are additional concerns about impacts from cell tower radiation to avifauna and other wildlife. However, until peer-reviewed, scientific studies are conducted and their results are published in a refereed scientific journals, we simply won't know with any degree of certainty or statistical rigor how tower radiation is actually affecting wildlife in the United States — the situation which also clearly pertains to the Emergent Wetland Marsh. In Europe, results from studies of wild birds are troubling. Until more evidence is gathered, I recommend a precautionary approach for avoiding these impacts.

Conclusions and Recommendations

- While the proposed VW WCF is relatively short (156 ft AGL), unguided and unlit (at least on the tower), it will extend approximately 54 ft above the tree canopy, significantly elevating collision risk, especially during nighttime inclement weather events when birds are moving/migrating. Migratory birds have been documented killed by collisions with unlit monopole and lattice towers < 200 ft AGL, sometimes in significant numbers of hundreds of birds/cell tower/night (e.g., W. Evans cited in Manville 2007).
- Any security lighting could result in significant bird attraction and collisions, especially during inclement weather events.
- There is a potential for "disturbance take" of Bald Eagles which if un-permitted could make VW and the County potentially criminally culpable, and "take" under MBTA is currently un-permitted. Avoidance and minimization are the current options which through use of "conservation measures" would include collocation, selecting a less impacting site, and avoiding wetlands.
- County approval of VW's SUP is in violation of the County's own legal code.
- USFWS voluntary communication tower guidelines have been ignored.
- Extraordinary circumstances under NEPA appear to apply.
- The effects of low level radiation are also of growing concern and have not been addressed by the applicant nor the County. While FCC has yet to recognize these concerns, NTIA has (USDOI 2014). The effects of radiation from studies conducted in Europe are troubling. The situation provides an opportunity for VW to fund an independent, third-party study to better understand the impacts of our communication devices on migratory birds and other species.
- FCC does not require nor call for 100% cell phone coverage.

In conclusion, for all the reasons I have previously stated, I recommend that the Thurston County Hearing Examiner repeal VW's SUP and approve the current appeal before the County.

Respectfully submitted,

Albert M. Manville, II, Ph.D., C.W.B.
Wildlife and Habitat Conservation Solutions, LLC

APPENDIX

Summary of My Training and Experience

I worked as a Federal wildlife biologist for 17 years, retiring in June 2014 from my position as a Senior Wildlife Biologist with the Division of Migratory Bird Management, USFWS, Headquarters Office, Arlington, VA. I was the Service's national lead on issues related to anthropogenic causes of bird mortality, including from communication towers. In that capacity, I chaired the Communication Tower Working Group (looking at both avian-tower collisions and avian-radiation impacts), working closely with the FCC, Federal Aviation Administration, other Federal agencies, all the large tower and cell phone trade associations, several cell phone companies, scientists, academicians, and consultants. I was the USFWS project officer for the cutting edge tower lighting study at Michigan State Police communication towers (Gehring et al. 2009, Gehring et al. 2011), served as the project officer for a U.S. Coast Guard tall communication tower study, developed a cell tower research monitoring protocol for the U.S. Forest Service (Manville 2002), developed a peer-reviewed cell tower radiation monitoring protocol, and represented

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2/10/2016

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I earned a B.S. in zoology from Allegheny College, Meadville, PA. Following a 4-year stint in the U.S. Navy where I was trained by the Department of State as a Mandarin Chinese linguist and interpreter working at the National Security Agency (including training on the use of communication devices, electronics and equipment), I completed an M.S. in natural resources and wildlife management from the University of Wisconsin, Stevens Point, and earned a Ph.D. at Michigan State University in wildlife ecology and management. More recently, I was designated as a "Certified Wildlife Biologist" (C.W.B.) by The Wildlife Society.

I have served on the Board of Managers of the Washington Biologists' Field Club, and was nominated for membership in the Cosmos Club. I also am a member of numerous professional societies. Additionally, I served on the Steering Committee of the Endangered Species Coalition before being offered a branch chief's position in 1997 with the Division of Migratory Bird Management. In 1999, I received the Conservation Service Award from the Secretary of Interior for bird conservation efforts with the electric utility industry.

I have testified over 40 times before Congress and other governmental bodies in regard to environmental issues and conducted numerous research efforts globally. I have published more than 175 professional and popular papers, chapters (including my current chapter in *Problematic Wildlife: a Cross-Disciplinary Approach*; 2016), and book reviews, and given more than 160 invited public presentations. I served on the Editorial Advisory Board of the *Nature Conservancy* Magazine, was the wildlife consultant for the Walt Disney/Touchstone Pictures production of the movie *White Fang* (based on Jack London's book), and I have conducted hundreds of radio and television interviews, and been extensively quoted in the print and electronic media. I have held teaching positions at Michigan State University, George Mason

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EXHIBIT #3

Thurston County Development Services
Attention: Mr. Tony Kantas, Associate Planner
2000 Lakeridge Dr.
Olympia, WA 98502

February 21, 2016

Re: Verizon Wireless - OLY Lake Lawrence - Project No. 2015103966; Rebuttal to Comments Submitted by Mr. Jeffrey S. Jones, of J.S. Jones and Associates, on Behalf of Verizon Wireless, Pertaining to Thurston County Code Section 20.33.080(2)(e)(i) Compliance

To be Submitted for the Record

Dear Mr. Kantas:

On behalf of the Deschutes Neighborhood Group, I am rebutting the majority of comments provided by Mr. Jeffrey S. Jones, Professional Wetland Scientist and Wildlife Biologist, submitted on behalf of Verizon Wireless (VW) and its proposed Wireless Communication Facility (WCF). Mr. Jones' comments are dated February 15, 2016. I will address each of Mr. Jones' concerns and include issues which he has failed to address and/or has allegedly misrepresented.

Thurston County Code (TCC) Section 20.33.080(2)(e)(i) states the following:

"(i). To minimize the potential for birds to collide with towers, WCFs/antenna support structures shall not be located within one thousand feet of wetlands, staging areas, or rookeries supporting birds listed as priority species by the Washington Department of Fish and Wildlife, listed as endangered or threatened species under the federal Endangered Species Act (64 FR 14307), listed in Title 24 TCC or Chapter 17.15 TCC as species of local importance, and as amended, or within one thousand feet of publicly owned wildlife refuges, unless the applicant demonstrates that the proposed location will not have a significant impact on such birds. Where possible, WCFs/antenna support structures shall not be located where they would interfere with migratory flyways documented by state or federal agencies."

Mr. Jones has raised the following issues and made the following claims.

1) Wetlands, staging areas or rookeries. Mr. Jones asserts that the VW WCF is not located within 1,000 feet of any staging area or rookery (e.g., a Great Blue Heron rookery). While a rookery may not be present, staging by a variety of avian species including waterfowl is probably occurring in the fall. Mr. Jones needs to provide substantive evidence (e.g., point counts, aerial surveys, and recordings) that staging and rookery breeding/rearing are <u>not</u> occurring. The proposed WCF is within 300 ft of the officially designated 163rd Lane Priority II Waterfowl Concentration Area, 16244 Vail Rd., SE, Yelm, WA. The Washington Department of Fish and Wildlife (WDFW) recently designated this 163rd Lane a Priority II Waterfowl Concentration wetland area next to the other two designated wetland conservation areas, Lake Lawrence and Smith Prairie. Mr. Jones has failed to mention the officially designated status of this 163rd Lane Priority II area by officials from WDFW. The Thurston County Code (above) is clear. A WCF *"shall not be located within one thousand feed of wetlands, staging areas, **<u>or</u>*** [emphasis added] *rookeries…"* The determination is based on any of the above 3 options.

The dense cattail habitats and surrounding forested area to which Mr. Jones refers within 1,000 feet of the WCF provide important breeding, roosting, feeding and resting habitats for numerous bird species. Water depths were measured by Mr. Alex Foster at a maximum of 10 feet while he kayaked the site; the average depth is about 4 feet. The wetland has open water habitat year round; this is not a seasonal wetland. The cattails form a floating mat, and with summer winds, the mats are moving, continually changing open water conditions. The avifauna commonly present include the Red-winged Blackbird, Great Blue Heron, Hooded Merganser, Gadwall, Bufflehead, Ring-neck Duck, Common Goldeneye, Canada Goose, Yellow Rail (a Bird of Conservation Concern [BCC; USFWS 2008]) which is scarce in its summer range but could be present in this area, Pied-billed Grebe (a BCC species found in the Deschutes River corridor), Vaux's Swift (a species of WA State Concern, especially its nesting forested habitat in the immediate area), Ovenbird (a BCC species documented in the Black Hills, Thurston County), and Bald Eagle (WA State Species of Concern photographed at the 163rd Lane wetlands, likely using the area for foraging on dead and dying migrating salmon in the nearby Deschutes River). Other WDFW Priority Bird Species may also be present, certainly including the Pileated Woodpecker, possibly the Purple Martin, and the Northern Goshawk.

Migratory birds are in trouble, including impacts from individual structures such as VW's proposed cell tower which cumulatively can have huge impacts to bird populations. There are growing numbers of BCCs (USFWS 2008) — species in decline but not yet ready for federal listing as threatened or endangered under the Endangered Species Act (ESA), although some are under listing review. Currently there are 273 species (out of 1,027 protected birds) and subspecies on the national BCC, U.S. Fish and Wildlife Service (USFWS or Service) Regional BCC and Bird Conservation Region BCC lists, providing an early warning of likely peril unless the population trends are reversed.

Yellow Rail, Pied-billed Grebe, and Ovenbird — all BCCs — are currently estimated to be suffering annual mortality of 1-9% of their estimated total population based solely on collisions with communication towers in the U.S. and Canada (Longcore et al. 2013 — a paper which I coauthored). All the aforementioned migratory birds, plus virtually all other birds in the State of Washington, are protected by the Migratory Bird Treaty Act (MBTA), a strict liability statute. Proof of criminal intent in the injury or killing of birds (called "takings") is not required by enforcement authorities for cases to be made. The injury or killing of just 1 migratory bird was determined by Congress to be a potential criminal violation of the Statute. "Take" violations could include cases against VW, officials from Thurston County, and the current property owner of the land where the WCF is proposed to be built and operated. Whether publicly or privately owned, MBTA applies to everyone. The tenets of MBTA are to "avoid or minimize take." Selecting an alternative site, collocation on an existing structure, and building in less impacting habitats are the preferred alternatives.

MBTA and its implementing regulations provide ***no*** provision for mitigation of "take." Additionally, as summer resident migratory birds frequently make daily forays from one wetland to another, and then morning and evening movements to night roosts — often flying just above tree line from one wetland to another or wetland to forest — collision risk with the tower is elevated. Mr. Jones states that the proposed tower will not have a significant impact on birds. Based upon what evidence? According to his signed testimony, he has only visited the site twice: June 6, 2013, and July 28, 2014. This minimal visitation at the site, excluding early spring and fall migrations, and raptor migration and breeding periods — something is generally migrating throughout the West year round — does not provide a great deal of confidence in his blanket declaration.

The Bald and Golden Eagle Protection Act (BGEPA) is another strict liability statute. "Take" under BGEPA is more expansive than under MBTA, which includes "disturbance." Un-permitted disturbance such as noise from VW road and tower construction, cutting and loss of roosting Douglas fir and other trees used for Bald Eagle feeding (VW's own site plan calls for tree removal for the road and site), and

tower maintenance could disturb feeding and breeding eagles, reducing survivorship of adults, juveniles and chicks, affecting their population viability. If VW fails to possess a permit for "disturbance take" and "take resulting in mortality" (50 CFR 22.26) or for "take of nests" (50 CFR 22.27), and "take" occurs, they could be held criminally culpable.

2) Publicly owned wildlife refuges within 1,000 ft of the WCF. Mr. Jones is correct, there is not a USFWS-managed national wildlife refuge within the immediate area. However, a significant, $1.6 million wetland restoration mitigation effort, required and approved by the Washington State Department of Ecology 3 years prior to VW's SEPA review and permit application, is being implemented by the cities of Olympia, Lacey and Yelm in exchange for the water rights in and surrounding these wetlands. After completion, the 185-acre Smith Ranch floodplain area — directly adjacent to the 163rd Lane Priority II Waterfowl Concentration Area and the Deschutes River, as well as within 1,000 feet of the VW WCF — will essentially become a new, publicly owned wildlife refuge. Wetland restoration here will create more bird and waterfowl habitats. Thus, constructing and operating a 156-ft VW WCF in or next to this floodplain is incompatible with the environmental benefits of this substantial restoration investment, as well as what the State is creating. The proposed tower is not in the public's best interest, especially when this is related to protecting wildlife and their habitats both of which are in the public trust.

3) Effect on priority and listed bird species, and/or species of local concern. As previously mentioned in #1 above, the Yellow Rail (a BCC; USFWS 2008) which is scarce in its summer range but could be present in this area, Pied-billed Grebe (a BCC species found in the Deschutes River corridor, including here), Vaux's Swift (a species of WA State Concern, especially its nesting forested habitat in the immediate area — including the proposed Douglas fir tower site), Ovenbird (a BCC species documented in the Black Hills, Thurston County), and Bald Eagle (WA State Species of Concern previously photographed at the 163rd Lane wetlands) have been documented or are likely present at and surrounding this proposed tower site. Additionally, point counts, raptor surveys, acoustic monitoring, and other species assessments need to be made to determine if other WDFW Priority Bird Species are present and use the wetlands and woodlands seasonally for breeding, as overwintering habitat, and/or during migration. These Priority Species include the Northern Goshawk, Pileated Woodpecker, and Purple Martin. The burden is on Mr. Jones to document that these species, and others of concern, are <u>not</u> present, rather than asserting that the tower, its infrastructure and the access road will not impact them based on little evidence supporting that assertion.

4) Effect on migratory flyways documented by State and Federal agencies. Mr. Jones makes reference to the Pacific Flyway denoted, e.g., on maps in Western Washington. Waterfowl migratory flyways are primarily for political and administrative designation, used generally in developing waterfowl hunting regulations by State and Federal Flyway representatives, in concert with the USFWS Migratory Bird Division (for which I worked for 17 years, just retiring in mid-2014). Waterfowl do not subscribe to these boundaries. There are also numerous other noted and important migratory pathways and bird concentration areas, denoted for example by groups such as Partners in Flight, Audubon's Important Bird Areas, and the North American Bird Conservation Initiative's (NABCI) Bird Conservation Regions (BCRs), among others. The Deschutes River Corridor, which the 163rd Lane wetland is situated, is just such an important bird concentration area.

Contrary to Mr. Jones' assertions, un-guyed and unlit cellular (cell) telecommunications towers like this one can have significant mortality impacts on populations of migratory birds, whether resident, breeding, or migrating — including from collisions and radiation impacts (the latter discussed in #5 below). In official USFWS agency comments I provided to the Federal Communications Commission (FCC) regarding rulemaking on the "Effects of Communication Towers on Migratory Birds" in 2007 (Manville 2007), I noted some examples of single night mortality events at unlit lattice and monopole cell towers where hundreds of birds were killed in single night collisions. Other more recent examples have been documented. Here is what I stated in testimony provided to Thurston County officials. "*Migratory birds have been documented killed in single night, mass mortality collision events (up to 10,000 in single night, single tower collision events) with communication towers, guy-support wires, and tower lights in the U. S. since 1948 — (Aronoff 1949, summarized in Manville 2007) — including at unguyed, unlit, < 200-ft above-ground-level (AGL) cell towers like VW's proposed WCF. In October 2005, W. Evans reported hundreds of migratory birds documented killed by collisions with short, unguyed and unlit cell towers in the Northeast, sometimes in significant numbers of hundreds of birds/cell tower/night (e.g., W. Evans cited in Manville 2007). While the probability of high levels of collisions with VW's proposed tower is small, collision mortality is certainly likely, especially for birds whose daily movements between wetlands puts them at collision risk day or night as they fly just above tree line.*"

Again, contrary to Mr. Jones' conclusion, the evidence clearly raises problematic concerns. Part of my previous job as USFWS national Migratory Bird structural lead (1997-2014) was to track structural and fishing gear impacts to migratory birds continent-wide. In addition to official Service agency comments provided to the FCC (Manville 2007), I published or coauthored numerous other refereed, peer-reviewed documents in numerous scientific publications regarding collision risk from cell towers, including those much like VW's proposed WCF (e.g., Manville 2009, 2013a, 2014, Gehring et al. 2009, Gehring et al. 2011, Longcore et al. 2012, and Longcore et al. 2013, among others). Risk from colliding with "short" cell towers such as VW's WCF can be especially elevated during dawn and dusk bird movements in foggy conditions, nighttime songbird migrations during inclement weather, and when bird "fallout" occurs during inclement weather events where birds drop from migrating altitudes to land during the night due to cloud ceilings. Please refer to my current chapter in *Problematic Wildlife: a Cross-Disciplinary Approach* (Manville 2016 — available electronically from springer.com) for additional details. The risk from VW's WCF can be avoided by either not building the proposed tower or siting it elsewhere in a less impacting site.

Mr. Jones stated in his comments (p. 3) that the "*… proposed WCF complies with U.S. Fish and Wildlife Service Interim Guidelines…*" (USFWS 2000) which I co-authored and the memo from our Director which I co-drafted for her signature in September 2000. While these guidelines were updated to FCC, the industry and the public in 2013 (Manville 2013b), what Mr. Jones asserts is incorrect. As stated in the 2000 and 2013 guidance, "*Towers should not be sited in or near wetlands, other known bird concentration areas (e.g., State or Federal refuges, staging areas rookeries), in known migratory or daily movement flyways, or in habitat of threatened or endangered species.*" All the conditions in USFWS guidance apply to the VW WCF situation making this location highly unsuitable. Bottom line: entities such as VW need to take all practicable and reasonable steps possible to "avoid or minimize take." Placing this tower in a high risk area does not accomplish that goal and could make them legally culpable.

5) Other issues which Mr. Jones did not address: security lighting. While VW's site plan and sketches make it difficult to determine if ground-based security lighting will be installed, almost all drive-up cell tower facilities have some sort of security lighting present. Lighting, even heat- or motion-sensi-

tive lighting, can cause bird attraction (Manville and other sources cited above). While the cell tower itself is not required by the Federal Aviation Administration and the FCC to be lighted, other lighting will almost certainly be used at the power shed and/or parking area. Mr. Jones did not address this concern.

Tower radiation. Cell tower radiation is a growing concern which Mr. Jones has failed to address. Not until recently have the effects of low-level, non-thermal electromagnetic radiation on domestic and wild birds been made public. Laboratory studies by T. Litovitz (2000 pers. comm.) and DiCarlo et al. (2002) from the standard 915 MHz cell phone frequency on domestic chicken embryos showed that radiation from extremely low levels (0.0001 the level emitted by the average digital cell phone) caused heart attacks and deaths in some embryos; controls were unaffected (DiCarlo et al. 2002). However, the effects of microwave (and other) radiation from communication towers on nesting and roosting wild birds are yet unstudied in the U.S. In Europe, impacts have been well documented. Balmori (2005) found strong negative correlations between levels of tower-emitted microwave radiation and bird breeding, nesting, and roosting in the vicinity of electromagnetic fields in Spain. He documented nest and site abandonment, plumage deterioration, locomotion problems, and death in House Sparrows, White Storks, Rock Doves, Magpies, Collared Doves, and other species. While these species had historically been documented to roost and nest in these areas, Balmori (2005) did not observe these symptoms prior to construction of the cellular phone towers. Balmori and Hallberg (2007) and Everaert and Bauwens (2007) found similar strong negative correlations among male House Sparrows. The same concerns apply to the proposed VW WCF tower, especially for nesting birds (i.e., the species listed above some of which may nest in and around the WCF and wetlands).

The electromagnetic radiation standards used by the FCC continue to be based on thermal heating, a criterion now more than 30 years out of date and inapplicable today. This is primarily due to the lower levels of radiation output from microwave-powered communication devices such as cellular telephones and their cell towers, Wi-Fi, so called “smart meters,” and other sources of point-to-point communications; levels typically lower than from microwave ovens. FCC, to date, has been unwilling to update their regulatory standards. Significantly lower radiation output does not equate to reduced risk (e.g., Panagopoulos and Margaritis 2008).

In February 2014, the Director of the Department of Interior’s Office of Environmental Policy and Compliance sent a letter — which I helped draft — to the U.S. Commerce Department’s National Telecommunications and Information Administration (NTIA) suggesting regulatory compliance by its FirstNet, a newly created entity, implementing development of emergency broadcast systems nationwide (USDOI 2014; copy included in previous testimony of Alex Foster). Included in those recommendations are inadequacies which NTIA has acknowledged and is now proceeding to address. These included inadequacies for conserving migratory birds in Enclosure A which I authored while working for the Division of Migratory Bird Management, USFWS. In it, I provided recommendations for addressing bird injury, crippling loss, and death from communication tower collisions — including avoiding building in or near wetlands; and research needs for beginning to address impacts from non-ionizing electromagnetic radiation emitted from them — such as this proposed VW WCF. Unfortunately, Mr. Jones failed to include any mention of these issues and concerns raised by NTIA.

Conclusion

In summary, it appears to be clear that if Thurston County officials had collectively evaluated all provisions of the TCC, they would have concluded that VW should not have been issued a Special Use Permit (SUP) for the proposed site. Based on my analysis of the existing facts and on my best professional judgment, their approval of an SUP appears to be in violation of the existing Code. I would also conclude that Mr. Jones has not made an effective case for siting this proposed tower.

Thank you for the opportunity to review Mr. Jones' letter and to provide comments rebutting his conclusions. Respectfully submitted.

Albert M. Manville, II, Ph.D., and Certified Wildlife Biologist (CWB), The Wildlife Society;
Principal, Wildlife and Habitat Conservation Solutions, LLC;
Adjunct Professor, Krieger School of Arts and Sciences, Johns Hopkins University; and
former Senior Wildlife Biologist, Division of Migratory Bird Management, USFWS, Retired.

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Mini Curriculum Vitae: Albert M. Manville, II, Ph.D., C.W.B.

Dr. Albert (Al) Manville retired June 2014 from his position as a Senior Wildlife Biologist with the Division of Migratory Bird Management, U.S. Fish & Wildlife Service, Headquarters Office, Arlington, VA. He was the Service's national lead on issues related to anthropocentric causes of bird mortality both from structures and from fishery impacts. In those capacities, he chaired the Communication Tower Working Group, the Avian Power Line Interaction Committee Service Steering Committee, and the Waterbird Bycatch Working Group; he co-chaired the Interagency Seabird Working Group, the Wind Turbine Siting Working Group Subcommittee, and represented the Service on the Wildlife Workgroup of the National Wind Coordinating Collaborative, on the Avian Power Line Interaction Committee, on the Technical Advisory Committee for Audubon National Wildlife Refuge, was a technical scientific advisor to the Wind Energy Federal Advisory Committee, and was a technical advisor to the Bird-Safe Glass Initiative. He also served on the White House's Office of Science and Technology Policy Wind-Wildlife Federal Taskforce.

Al received a B.S. degree in zoology from Allegheny College (Meadville, PA) with a research focus on black bears. He received an M.S. in natural resources and wildlife management from the University of Wisconsin, Stevens Point, studying the parasites and diseases of black bears, while also conducting waterfowl and upland gamebird assessments. He earned a Ph.D. at Michigan State University in wildlife ecology and management, studying black bears in the wild using radio tracking devices to assess their movements, dispersion, den site selection, and survival, as well as the impact of humans on bear populations. He also conducted several independent avian studies at MSU. More recently, he studied the interaction between wolves, brown bears and humans in Alaska for 12 years; spent 6 summers conducting research in the Aleutian Islands on the impacts of marine debris on seabirds, sea lions, and seals; and studied impacts to seabirds, wolves, bears and other wildlife from the *Exxon Valdez* oil spill for 5 years post-spill. Dr. Manville was also trained by the U.S. Department of State as a Mandarin Chinese linguist and interpreter working for the National Security Agency while serving in the U.S. Navy. He is designated a "Certified Wildlife Biologist" (CWB) by The Wildlife Society.

Among many varied career positions, Dr. Manville was Big Game Records Coordinator for the Boone and Crockett Club, has served as Vice President/Director of Science Policy for Defenders of Wildlife, and was a member of the U.S. Scientific Delegation on High Seas Driftnetting which led to significant victories at the United Nations in stopping large-scale driftnet fishing worldwide. He helped write and pass 7 Federal environmental laws dealing with marine plastic debris, oil spills, and military plastic dumping. He chaired a coalition of more than 50 environmental groups that helped win $16.2 million in federal research appropriations to investigate marine entanglement issues. He founded the Nongame Coalition (also helping to garner ~ $2 M in federal nongame bird appropriations), and co-founded the Ad Hoc Advisory Committee on Plastics/Keystone Dialogue on Plastics which helped convince the U.S. Navy to stop all dumping of plastics worldwide, efforts codified into law in 1993. He served on the Board of Managers of the Washington Biologists' Field Club and has been nominated for membership in the Cosmos Club. He is a member of numerous professional societies.

Al previously served as the Executive Director of the Adirondack Mountain Club in Upstate New York. He has served on the Steering Committee of the Endangered Species Coalition, Washington, DC. In 1997, he became a branch chief with the Division of Migratory Bird Management with USFWS where, as a senior wildlife biologist, he was in charge of bird strike, related policy, and international migratory bird issues for his Division. In 1999, Dr. Manville received the Conservation Service Award from the Secretary of the Interior for bird conservation efforts with the electric utility industry.

Manville has testified over 40 times before Congress and other governmental bodies and conducted

numerous research efforts globally. He has published more than 175 professional and popular papers, chapters and book reviews (including the current chapter in *Problematic Wildlife: a Cross-Disciplinary Approach*, 2016, springer.com), and given more than 160 invited public presentations. He has served on the Editorial Advisory Board of the *Nature Conservancy* Magazine, was the wildlife consultant for the Walt Disney/Touchstone Pictures production of the movie *White Fang* — based on Jack London's book, and has conducted hundreds of radio (e.g., TalkinBirds.com #561, 2/7/2016 interview on FAA lighting) and television interviews, and been extensively quoted in the print and electronic media.

He has held teaching positions at Michigan State University, was on the faculty of George Mason University and the USDA Graduate School Evening Programs, and since 2000 has been an Adjunct Professor for Johns Hopkins University (DC Campus) teaching evening, weekend and weeklong intensive graduate ecology and conservation biology/wildlife management courses for JHU. He also enjoys flying as a private pilot, is a wildlife photographer, kayaker, and dog aficionado, and he serves as Principal for his consulting business, *Wildlife and Habitat Conservation Solutions, LLC*, registered in the Commonwealth of Virginia.

Rock Doves, Magpies, Collared Doves, and other species. While these species had historically been documented to roost and nest in these areas, Balmori (2005) did not observe these symptoms prior to construction of the cellular phone towers. Balmori and Hallberg (2007) and Everaert and Bauwens (2007) found similar strong negative correlations among male House Sparrows. The same concerns apply to the proposed VW WCF tower, especially for nesting birds (i.e., the species listed above some of which may nest in and around the WCF and wetlands).

The electromagnetic radiation standards used by the FCC continue to be based on thermal heating, a criterion now more than 30 years out of date and inapplicable today. This is primarily due to the lower levels of radiation output from microwave-powered communication devices such as cellular telephones and their cell towers, Wi-Fi, so called "smart meters," and other sources of point-to-point communications; levels typically lower than from microwave ovens. FCC, to date, has been unwilling to update their regulatory standards. Significantly lower radiation output does not equate to reduced risk (e.g., Panagopoulos and Margaritis (2008).

In February 2014, the Director of the Department of Interior's Office of Environmental Policy and Compliance sent a letter — which I helped draft — to the U.S. Commerce Department's National Telecommunications and Information Administration (NTIA) suggesting regulatory compliance by its FirstNet, a newly created entity, implementing development of emergency broadcast systems nationwide (USDOI 2014; copy included in previous testimony of Alex Foster). Included in those recommendations are inadequacies which NTIA has acknowledged and is now proceeding to address. These included inadequacies for conserving migratory birds in Enclosure A which I authored while working for the Division of Migratory Bird Management, USFWS. In it, I provided recommendations for addressing bird injury, crippling loss, and death from communication tower collisions — including avoiding building in or near wetlands; and research needs for beginning to address impacts from non-ionizing electromagnetic radiation emitted from them — such as this proposed VW WCF. Unfortunately, Mr. Jones failed to include any mention of these issues and concerns raised by NTIA.

Conclusion

In summary, it appears to be clear that if Thurston County officials had collectively evaluated all provisions of the TCC, they would have concluded that VW should not have been issued a Special Use Permit (SUP) for the proposed site. Based on my analysis of the existing facts and on my best professional judgment, their approval of an SUP appears to be in violation of the existing Code. I would also conclude that Mr. Jones has not made an effective case for siting this proposed tower.

Thank you for the opportunity to review Mr. Jones' letter and to provide comments rebutting his conclusions. Respectfully submitted.

2/20/2016

Albert M. Manville, II, Ph.D., Certified Wildlife Biologist (CWB), The Wildlife Society;
Principal, Wildlife and Habitat Conservation Solutions, LLC;
Adjunct Professor, Krieger School of Arts and Sciences, Johns Hopkins University; and
former Senior Wildlife Biologist, Division of Migratory Bird Management, USFWS, Retired.

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EXHIBIT #3

2013 U.S. Fish and Wildlife Service (USFWS) Revised Voluntary Guidelines for Communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning –

Suggestions Based on Previous USFWS Recommendations to FCC Regarding WT Docket No. 03-187, FCC 06-164, Notice of Proposed Rulemaking, "Effects of Communication Towers on Migratory Birds" (2007), Docket No. 08-61, FCC's Antenna Structure Registration Program (2011), Service 2012 Wind Energy Guidelines, and Service 2013 Eagle Conservation Plan Guidance

Submitted by:

Albert M. Manville, II, Ph.D., C.W.B.
Senior Wildlife Biologist & Avian-Structural Lead
Division of Migratory Bird Management, U.S. Fish & Wildlife Service
4401 N. Fairfax Dr. -- MBSP-4107
Arlington, VA 22203
703/358-1963, albert_manville@fws.gov

Last updated: September 27, 2013

[Comm Tower 2013 Revised Guidance-to FCC-AMM.docx]

1. Collocation of the communications equipment on an existing communication tower or other structure (e.g., billboard, water and transmission tower, distribution pole, or building mount) is strongly recommended. Depending on tower load factors and communication needs, from 6 to 10 providers should collocate on an existing tower or structure provided that frequencies do not overlap/"bleed" or where frequency length or broadcast distance requires higher towers. New towers should be designed structurally and electronically to accommodate the applicant's antenna, and antennas of at least 2 additional users – ideally 6 to 10 additional users, if possible – unless the design would require the addition of lights and/or guy wires to an otherwise unlit and/or unguyed tower. This recommendation is intended to reduce the number of towers needed in the future.

2. If collocation is not feasible and a new tower or towers are to be constructed, it is strongly recommended that the new tower(s) should be not more than 199 feet above ground level (AGL), and that construction techniques should not require guy wires. Such towers should be unlighted if Federal Aviation Administration (FAA) regulations and lighting standards (FAA 2007, Patterson 2012, FAA 2013 lighting circular anticipated update) permit. Additionally, the Federal Communications Commission (FCC) through recent rulemaking now requires that new towers $\geq$ 450 ft AGL contain no red-steady lights. FCC also recommends that new towers 350-450 ft AGL also contain no red-steady lights, and they will eventually recommend that new towers < 350 ft AGL convert non-flashing lights to flash with existing flashing lights. LED lights are being suggested as replacements for all new construction and for retrofits, with the intent of future synchronizing the flashes. Given these dynamics, the Service recommends using lattice tower or monopole structures for all towers < 200 ft AGL and for taller towers where feasible. The Service considers the less than 200 ft AGL option the "gold standard" and suggests that this

is the environmentally preferred industry standard for tower placement, construction and operation – i.e., towers that are unlit, unguyed, monopole or lattice, and less than 200 ft AGL.

3. If constructing multiple towers, the cumulative impacts of all the towers to migratory birds – especially to Birds of Conservation Concern (FWS 2008) and threatened and endangered species, as well as the impacts of each individual tower, should be considered during the development of a project.

4. The topography of the proposed tower site and surrounding habitat should be clearly noted, especially in regard to surrounding hills, mountains, mountain passes, ridge lines, rivers, lakes, wetlands, and other habitat types used by raptors, Birds of Conservation Concern, and state and federally listed species, and other birds of concern. Active raptor nests, especially those of Bald and Golden Eagles, should be noted, including known or suspected distances from proposed tower sites to nest locations. Nest site locations for Golden Eagles may vary between years, and unoccupied, inactive nests and nest sites may be re-occupied over multiple years. The Service's 2013 Eagle Conservation Plan Guidance, Module 1, Land-based Wind Energy, Version 2, available on our website, is a useful document (USFWS 2013).

5. If at all possible, new towers should be sited within existing "antenna farms" (i.e., clusters of towers), in degraded areas (e.g., strip mines or other heavily industrialized areas), in commercial agricultural lands, in Superfund sites, or other areas where bird habitat is poor or marginal. Towers should not be sited in or near wetlands, other known bird concentration areas (e.g., state of federal refuges, staging areas, rookeries, and Important Bird Areas), in known migratory, daily movement flyways, areas of breeding concentration, in habitat of threatened or endangered species, or key habitats for Birds of Conservation Concern (FWS 2008). Disturbance can result in effects to bird populations which may cumulatively affect their survival. The Service has recommended some disturbance-free buffers, e.g., 0.5 mi around raptor nests during the nesting season, and 1-mi disturbance free buffers for Ferruginous Hawks and Bald Eagles during nesting season in Wyoming (FWS WY Ecological Services Field Office, referenced in Manville 2007:23). The effects of towers on "prairie grouse," "sage grouse," and grassland and shrub-steppe bird species should also be considered since tall structures have been shown to result in abandonment of nest site areas and leks, especially for "prairie grouse" (Manville 2004). The issue of buffers is currently under review, especially for Bald and Golden Eagles. Additionally, towers should not be sited in areas with a high incidence of fog, mist, and low cloud ceilings.

6. If taller (> 199 ft AGL) towers requiring lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used. Unless otherwise required by the FAA, only white strobe or red strobe lights (red preferable since it is generally less displeasing to the human eye at night), or red flashing incandescent lights should be used at night, and these should be the minimum number, minimum intensity (< 2,000 candela), and minimum number of flashes per minute (i.e., longest duration between flashes/"dark phase") allowable by the FAA. The use of solid (non-flashing) warning lights at night should be avoided (Patterson 2012, Gehring et al. 2009) – see recommendation #2 above. Current research indicates that solid red lights attract night-migrating birds at a much higher rate than flashing lights (Gehring et al. 2009, Manville 2007, 2009). Recent research

indicates that use of white strobe, red strobe, or red flashing lights alone provides significant reductions in bird fatalities (Patterson 2012, Gehring et al. 2009).

7. Tower designs using guy wires for support, which are proposed to be located in known raptor or waterbird concentrations areas, daily movement routes, major diurnal migratory bird movement routes, staging areas, or stopover sites, should have daytime visual markers or bird deterrent devices installed on the wires to prevent collisions by these diurnally moving species. The efficacy of bird deterrents on guy wires to alert night migrating species has yet to be scientifically validated. For guidance on markers, see Avian Power Line Interaction Committee (APLIC). 2006. *Suggested Practices for Avian Protection on Power Lines -- State of the Art in 2006.* Edison Electric Institute, APLIC, and the California Energy Commission. Washington, DC, and Sacramento, CA. 207 pp, and APLIC. 2012. *Reducing Avian Collisions with Power Lines -- the State of the Art in 2012.* Edison Electric Institute and APLIC. Washington, DC. 159 pp. Also see www.aplic.org, www.energy.ca.gov, or call 202-508-5000.

8. Towers and appendant facilities should be designed, sited, and constructed so as to avoid or minimize habitat loss within and adjacent to the tower "footprint." However, a larger tower footprint is preferable to the use of guy wires in construction. Several shorter, un-guyed towers are preferable to one, tall guyed, lighted tower. Road access and fencing should be minimized to reduce or prevent habitat fragmentation, disturbance, and the creation of barriers, and to reduce above ground obstacles to birds in flight.

9. If, prior to tower design, siting and construction, if it has been determined that a significant number of breeding, feeding and roosting birds, especially of Birds of Conservation Concern (FWS 2008), state or federally-listed bird species, and eagles are known to habitually use the proposed tower construction area, relocation to an alternate site is highly recommended. If this is not an option, seasonal restrictions on construction are advised in order to avoid disturbance, site and nest abandonment, especially during breeding, rearing and other periods of high bird activity.

10. Security lighting for on-ground facilities, equipment and infrastructure should be motion- or heat-sensitive, down-shielded, and of a minimum intensity to reduce nighttime bird attraction and eliminate constant nighttime illumination, but still allow safe nighttime access to the site (USFWS 2012, Manville 2011).

11. Representatives from the USFWS or researchers from the Research Subcommittee of the Communication Tower Working Group should be allowed access to the site to evaluate bird use; conduct dead-bird searches; place above ground net catchments below the towers (Manville 2002); and to perform studies using radar, Global Position System, infrared, thermal imagery, and acoustical monitoring, as necessary. This will allow for assessment and verification of bird movements, site use, avoidance, and mortality. The goal is to acquire information on the impacts of various tower types, sizes, configurations and lighting protocols.

12. Towers no longer in use, not re-licensed by the FCC for use, or determined to be obsolete should be removed from the site within 12 months of cessation of use, preferably sooner.

13. In order to obtain information on the usefulness of these guidelines in preventing bird strikes and better understanding impacts from habitat fragmentation, please advise USFWS personnel of the final location and specifications of the proposed tower, and which measures recommended in these guidelines were implemented. If any of these recommended measures cannot be implemented, please explain why they are not feasible. This will further advise USFWS in identifying any recurring problems with the implementation of the guidelines, which may necessitate future modifications.

Reference Sources:

Federal Aviation Administration. 2007. Obstruction marking and lighting. Advisory Circular AC 70/7460-1K. U.S. Department of Transportation.

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U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, VA. 85 pp. http://www.fws.gov/migratorybirds/>

U.S. Fish and Wildlife Service. 2012. U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines. March, 82 pp.

U.S. Fish and Wildlife Service. 2013. Eagle Conservation Plan Guidance, Module 1, Land-based Wind Energy, Version 2. Division of Migratory Bird Management. April, 103 pp.

Sarah Fox

From: Glenn W <nocamascelltower@gmail.com>
Sent: Monday, May 30, 2016 8:44 PM
To: Community Development Email; Sarah Fox; Robert Maul
Subject: Public Comment Document (CUP15-01 & SEPA 15-07)
Attachments: CUP15-01 and SEPA 15-07 Camas Community Comments.pdf

Sarah / Robert,

Hope you enjoyed the weekend...

The attached documentation serves as public comment both under SEPA15-07 and CUP15-01. Please respond to this email and confirm receipt.

I am requesting your office also review the documents, as there is relevant information associated with the city's wrongful DNS determination under SEPA, specifically as it relates to wildlife, wetlands, and migratory birds.

Regarding impacts to wildlife, not only must the City of Camas consider current FCC rules and regulations for licensing this cell tower, they must also consider the court ordered findings from the 2008 American Bird Conservancy et al. v. FCC lawsuit, which FCC lost on appeal in the Federal Court of Appeals for the District of Columbia Circuit. These include considerations under the Migratory Bird Treaty Act (MBTA) for impacts to protected migratory birds (above and beyond issues pertaining to the Endangered Species Act [ESA]), as well as compliance under the National Environmental Policy Act (NEPA) and its regulations.

It is also important to note that if the City of Camas' Planning Department were to approve the permit application, and "take" from this new tower were to occur, there could be potential culpability for both the City and the applicants (due to violations of Federal law).

The documents submitted by the applicants associated with the above issues (and the DNS determination) should be set aside, as the applicants have a vested interest. Further, an EIS should be completed, as the Camas Municipal Code is unable to address the potential impacts of this proposed communication facility.

Thanks,

Glenn Watson

Exhibit N

Sarah Fox

From: Noah Grodzin <noah.grodzin@cascadiapm.com>
Sent: Wednesday, July 15, 2015 11:06 AM
To: Sarah Fox
Subject: FW: PI at City of Camas water tank (Prune Hill) - City Correspondence

Hi Sarah;
Please see below for documentation of correspondence with the city and the inability to locate on the city property.
Thank you,

Noah Grodzin
Zoning Manager
CascadiaPM
971.285.6645

From: Eric Levison [mailto:ELevison@cityofcamas.us]
Sent: Thursday, January 29, 2015 3:54 PM
To: Jeff Colantino
Cc: Steve Wall
Subject: RE: PI at City of Camas water tank (Prune Hill)

Jeff,

At this point I do not see a need to meet. After some reflection by our group, we have determined that a for profit tower on City property in this vicinity does not make sense for our long term interests. I am retiring at the end of February. If you have other locations or a firm proposal you would like to present, please contact Steve Wall.

Thanks, Eric

CASCADIA PM

Exhibit O
CUP15-01

Precision Program Management

Verizon
C/o KGI
Building Three, Suite 370
805 Las Cimas Parkway,
Austin, TX 78746

September 30, 2015

RE: Camas Municipal Code CMC18.35.140(A): Notification to other Wireless Carriers of a New Wireless Facility (175-Foot Monopole) at 2829 NW 18th Avenue, Camas, WA 98607.

Application Number CUP 15-01

Greetings:

Pursuant to the requirements of City of Camas CMC Chapter 18.35 Telecommunications Ordinance, Parallel Infrastructure, along with Freewire and T-Mobile, is hereby providing you with notice of their intent to apply to the City of Camas to construct a wireless communications support structure that would be located at 2829 NW 18th Avenue in Camas, WA. In general, they plan to construct a support structure of 175 feet in height for the purpose of providing wireless service.

Please inform us whether you have wireless facilities located within 500 feet of the proposed facility, which may be available for possible collocation opportunities. Please provide us with this information within 10 days after the date you received this letter. If no response is received within that time, we shall assume you do not wish to pursue collocation at such site. You may contact me by phone (206.227.7445) or email (pkenterprises_mv@comcast.net) to discuss.

Sincerely,

CASCADIA PM

Phillip Kitzes
Land Use Coordinator

Cascadia PM, LLC
Corporate Headquarters
3322 South Bay Road NE
Olympia, WA 98506
360 438 8002
www.cascadiapm.com

130 N. Nimitz Hwy Suite A-200
Honolulu, HI 96817
808 536 7400

5501 NE 109th Ct Suite A-2
Vancouver, WA 98662
360 885 9200

733 Seventh Ave Suite 209
Kirkland, WA 98033
425 828 1008

CASCADIA PM

Precision Program Management

Sprint Corporation
10545 Willows Road NE, Suite 200
Redmond, WA 98052

September 30, 2015

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Sincerely,

CASCADIA PM

Phillip Kitzes
Land Use Coordinator

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733 Seventh Ave Suite 209
Kirkland, WA 98033
425 828 1008

CASCADIA PM

Precision Program Management

AT&T Mobility
19801 SW 72nd Avenue, #200
Tualitin, OR 97062

September 30, 2015

RE: Camas Municipal Code CMC18.35.140(A): Notification to other Wireless Carriers of a New Wireless Facility (175-Foot Monopole) at 2829 NW 18th Avenue, Camas, WA 98607.

Application Number CUP 15-01

Greetings:

Pursuant to the requirements of City of Camas CMC Chapter 18.35 Telecommunications Ordinance, Parallel Infrastructure, along with Freewire and T-Mobile, is hereby providing you with notice of their intent to apply to the City of Camas to construct a wireless communications support structure that would be located at 2829 NW 18th Avenue in Camas, WA. In general, they plan to construct a support structure of 175 feet in height for the purpose of providing wireless service.

Please inform us whether you have wireless facilities located within 500 feet of the proposed facility, which may be available for possible collocation opportunities. Please provide us with this information within 10 days after the date you received this letter. If no response is received within that time, we shall assume you do not wish to pursue collocation at such site. You may contact me by phone (206.227.7445) or email (pkenterprises_mv@comcast.net) to discuss.

Sincerely,

CASCADIA PM

Phillip Kitzes
Land Use Coordinator

Cascadia PM, LLC
Corporate Headquarters
3322 South Bay Road NE
Olympia, WA 98506
360 438 8002
www.cascadiapm.com

130 N. Nimitz Hwy Suite A-200
Honolulu, HI 96817
808 536 7400

5501 NE 109th Ct Suite A-2
Vancouver, WA 98662
360 885 9200

733 Seventh Ave Suite 209
Kirkland, WA 98033
425 828 1008

Exhibit P - CUP15-01

⚠ CAUTION

CELL / MICROWAVE TOWERS AFFECT

RADIO FREQUENCY HAZARD

CITIZEN'S REAL/PERCEIVED HEALTH AND HOW THAT, IN TURN, AFFECTS

CITIZEN'S PROPERTY VALUES


NOTICE
GUIDELINES FOR WORKING IN RADIOFREQUENCY ENVIRONMENTS
All personnel should have electromagnetic energy (EME) awareness training.
All personnel entering this site must be aut
Obey all posted signs.
Assume all antennas are active.
Before working on antennas, notify o
opriate transmitters.
Maintain minimum 3 feet clearan
Do not stop in front of antenn
Use personal RF monitors
Never operate transmitt
Do not operate base s
WARNING
RADIO-FREQUENCY RADIATION HAZARD
BEYOND THIS POINT
WARNING
Beyond this point:
Radio frequency fields at
is site exceed the FCC rules
human exposure.
ure to obey all posted signs and site guidelines
or working in radio frequency environments could result in serious injury.
In accordance with Federal Communications commission rules on radio frequency emissions 47 CFR 1.1307(b)
SmartSign.com • 800-952-1457 • S-6088
WARNING
RADIOFREQUE
- Area of Restricted Oc
- Serious Injury Possible
PRUDENCE
Rayonnement Radiofréquence
- zone de séjour limité
- lésions graves possibles par suite d'usage abusif
CAUTION
Beyond This nt you are entering an area where RF Emissions *may exceed* the FCC General Population Exposure Limits
Follow all posted signs and site guidelines for working in an RF environment
Beyond This Point you are entering a controlled area where RF Emissions *may exceed* the FCC Occupational Exposure Limits
Obey all posted signs and site guidelines for working in an RF environment
WARNING
Beyond This Point you are entering a controlled area where RF Emissions *exceed* the FCC Controlled Exposure Limits
Failure to obey all posted signs and site guidelines could result in serious injury

OSHA Requires That These Signs Be Attached to Each Cell / Microwave Antenna Tower:

Beware of the RF emissions of These antennas!

They are dangerous to workers!

Therefore they are potentially dangerous to whoever Is living, long term, nearby, as well!

When Searching... “Cell Phone Towers, Health Hazards”, on the Internet:

There are 1,410,000 results (0.58 seconds)

So… whether or not the concerns are based on actual fact, it remains that most people are wary, they feel that there may be a potential health problem.

There are enough negative publications to give pause…

09 September 2013

Why Cell Phone Towers Are So Bad For Your Health

April 20, 2010

REVIEWING HEALTH HAZARDS OF CELL PHONE TOWERS: A SCIENTIFIC CASE STUDY

William Rae, MD

"Sensitivity to electromagnetic radiation is the emerging health problem of the 21st century. It is imperative health practitioners, governments, schools and parents learn more about it. The human health stakes are significant".

Martin Blank, PhD

"Cells in the body react to EMFs as potentially harmful . The DNA in living cells recognizes electromagnetic fields at very low levels of exposure;…

Olle Johansson, PhD

"It is evident that various biological alterations, including immune system modulation, are present in electrohypersensitive persons….

Magda Havas, PhD

"Radio frequency radiation and other forms of electromagnetic pollution are harmful at orders of magnitude well below existing guidelines…

People Just Do Not Want To Live Near These, In Their Minds, Potentially Dangerous Structures.

Whenever a Cell/Microwave Tower goes into a Neighborhood,

Property Values Decrease!

94% of respondents said a nearby cell tower or group of antennas would negatively impact value or interest in a property

79% said under no circumstances would they ever purchase or rent a property within a few blocks of a cell tower or antennas.

Study: 21% reduction in property value if cell phone tower built

"It is our professional opinion that cell towers decrease the value of homes in the area tremendously. Peer reviewed research also concurs that cell sites do indeed cause a decrease in home value.

Burbank Real Estate Professionals petition.

The study indicated that **homebuyers would pay from 10% less to over 20% less for a property if it were in close proximity to a cell phone base station.**

The ‘opinion’ survey results were then confirmed by a market sales analysis.

The results of the sales analysis showed prices of properties were reduced by around 21% after a cell phone base station was built in the neighborhood.”

Because of This Perception

We Do Not Want Our
~ $309K Valued Home
Decreasing to
$278K - $244K!

We Just Cannot Afford a
$30,900 to $64,890 Loss!
Therefore:

Keep the Towers:

Away From Our Backyards!

Away From Zoned Residential Property!

CUP15-01
Exhibit Q

City of Camas Planning Department
616 NE Fourth Avenue
Camas, Washington 98607
Attn: Sarah Fox

I have reviewed the application (City File No. CUP15-01) 'Prune Hill Wireless Communications Facility'. As is stated this a request for permit to construct a wireless communications facility, which will include: a 175 foot monopole; three panel antennas; seven microwave antennas; and ground equipment on a concrete pad, all within a fenced area located at located at 2829 NW 18th Avenue, Camas.

I would offer the following comments about this project:

The proposed location is across the street from a City water tank and a previously approved commercial antenna. That tower, adjacent to the water tank, is less conspicuous because the height of the tank. My concern is that this project will extend the unsightly sprawl of antenna arrays closer to existing residences. I am concerned for, what I consider an unsightly 175 foot tower with antenna array in a clear open space will further degrade the aesthetic nature of the area. It would likely deter or impact future development nearby as well as lowering current adjacent property values and salability.

From a safety and environmental context I have concerns. I live about one half mile east, in a straight line, from the proposed tower. On Prune Hill winds, in the Fall and Winter, are typically strong. It is not uncommon to have steady winds of 30 plus mph and gusts in excess of 50 plus mph. I know the wind noise blowing across and though the monopole tower will generate some noise. In addition the Columbia Gorge is commonly prone to ice buildup, particularly on prune hill during the winter months. The excessive winds and an ice buildup on the 175 foot tower create a potentially significant safety risk for the nearby properties and residents. I have some concerns about the potential of personal injury and property damage if permitted. It leads me to wonder what liability would the City of Camas bear knowing these concerns have been expressed in the permitting process.

I respectfully request that the application for this facility be denied. If the decision is to permit the facility, I encourage a minimum of two findings. I ask that the applicant be required to apply 'stealth' construction strategies to minimize the aesthetic impacts. This might also include lowering the tower height. Second that, if permitted, the applicant and owner/operator of the facility formally agree to hold the city harmless and be responsible for any and all liability that may be caused by this construction.

Thank you,

Don Chaney

Don Chaney
2535 NW Ivy Street
Camas, WA 98607