Memorandum: Establishing Wetland Buffers for the Shoreline Market Redevelopment Project

Date: March 4th, 2025

To: Yurok Economic Development Corporation

From: Mason London, Principal Biologist, Naiad Biological Consulting (NBC)

Prepared in Collaboration With: LACO Associates

Subject: Wetland Buffer Recommendations for APN: 520-151-014, 520-151-015, & 520-151-016

Executive Summary

This memorandum evaluates the feasibility of reduced wetland buffer zones for the Shoreline Market Redevelopment Project, located at 120025 US HWY 101, Orick, CA, within three parcels owned by the Yurok Tribe (Figure 1). The analysis focuses on balancing development needs with environmental protection, adhering to Humboldt County's *Criteria for Establishing Buffer Areas*. Key findings and recommendations include:

- **Wetland Delineation:** The site contains three-parameter wetlands (Waters of the United States) and one-parameter wetlands (Waters of the State of California), which have been delineated based on regulatory definitions (LACO, 2021).
- **Buffer Recommendations:**
    - A **50-foot buffer for three-parameter wetlands** (Wetlands 1, 2, and 3) to protect ecological functions and mitigate construction impacts (Photo 1 – 4; Figure 2).
    - A **10-foot buffer for one-parameter wetlands**, reflecting their limited ecological functionality (Photo 5; Figure 2).
- **Site Conditions:** The site is heavily disturbed, with grazing and compacted soils contributing to reduced ecological value. Existing cultural features, such as a gravel lot and levee, serve as practical boundaries for buffer zones.
- **Mitigation Measures:** Temporary fencing, compliance with the County's standards for stormwater management, pre-construction surveys, and erosion control measures will ensure compliance with environmental standards during and after construction.
- **Development Impact:** The majority of development near wetlands will consist of a leach field with underground infrastructure, minimizing long-term impacts.

By adhering to the proposed buffer zones and mitigation measures, the project is expected to proceed with minimal environmental disruption while meeting regulatory requirements.

1. Introduction

The Shoreline Market Redevelopment Project at 120025 US HWY 101, Orick, CA, involves proposed development on parcels adjacent to several identified wetlands. These wetlands,

previously delineated in LACO's 2021 Wetland and Waters Delineation Report, include three-parameter wetlands (Waters of the United States), as defined by the U.S. Army Corps of Engineers (USACE), and one-parameter wetlands (Waters of the State of California), as defined by the California Coastal Commission (CCC).

The purpose of this memorandum is to evaluate the feasibility of reduced buffer zones for these wetlands while adhering to Humboldt County's *Criteria for Establishing Buffer Areas*. These criteria ensure that wetland resources are adequately protected from potential adverse impacts associated with adjacent development. Specific recommendations are based on site conditions, regulatory requirements, detailed hydrological and biological assessments, and best management practices to minimize ecological impacts.

2. Site Overview

General Site Conditions

- **Location:** The project site encompasses three contiguous parcels identified by Assessor's Parcel Numbers (APNs) 520-151-014, 520-151-015, and 520-151-016. These parcels, owned by the Yurok Tribe, are located at 120025 US Highway 101, Orick, California. The Subject Properties are situated within the Orick 7.5-minute United States Geological Survey (USGS) quadrangle, specifically in Section 4, Township 10 North, Range 1 East, Humboldt County, California.
- **Proximity:** The Subject Properties lie approximately 33 miles north of Eureka, California, in an unincorporated area of Humboldt County. The site is bound to the south by US Highway 101 and to the north by Redwood Creek and its associated levee, which forms a prominent feature of the site and serves as a hydrological boundary.
- **Coastal Zone:** The Subject Properties are within California's Coastal Zone, subject to regulations that protect sensitive coastal resources.
- **Area Investigated:** The investigation of buffer establishment included approximately 7.5 acres of the Subject Properties. Areas with impermeable surfaces, such as asphalt and structures, were excluded from the analysis to focus on ecologically relevant portions of the site.
- **Prominent Features:** The northern boundary is defined by Redwood Creek and the adjacent levee, which provides a natural separation from the creek's riparian zone. The site also exhibits significant anthropogenic disturbance, particularly in areas historically used for grazing and development (Photo 5 – 10).
- **Current Land Use:** The site is highly disturbed. The eastern portion is dominated by a gravel-covered lot housing a gas station and associated infrastructure (Photo 2). The western portion is heavily degraded, utilized for cattle and horse grazing, and shows extensive evidence of compaction and disturbance (Photo 5 – 10).

3. Evaluation of Buffer Areas Against the Seven Criteria

The Humboldt County Criteria for Establishing Buffer Areas provide a structured framework for determining appropriate buffer widths to protect environmentally sensitive habitat areas (ESHAs), including wetlands. These criteria ensure that development adjacent to wetlands does not significantly degrade their ecological functions or values. The North Coast Area Plan (NCAP) establishes specific policies for wetland buffers and ESHA protections within the coastal zone, which guide buffer determinations in this project area. The California Coastal Commission (CCC) mandates a minimum 100-foot setback from all wetlands (CCC, 1981), which serves as the standard baseline for buffer requirements.

Because the property is located within the Urban Limit Line, the project may utilize the more flexible resource protection policies of NCAP, which include provisions for setback averaging. Section 313-125.7.1 of the Humboldt County Coastal Zoning Code states that within an urban limit line, the required setback is either 100 feet or the average setback of existing adjacent development, determined using the "stringline method." Based on the Stringline Distances exhibits prepared by LACO in September 2021, LACO determined that an average setback of approximately 55 feet is consistent with setbacks on adjacent parcels. Given this established pattern of development and the provisions within the NCAP allowing for setback averaging, the project proposes to utilize an adapted version of this approach in determining appropriate wetland buffer distances.

Additionally, Section 313-125.7.3 allows for a reduction of the required setback if it can be demonstrated that the reduced buffer will not result in significant adverse impacts on wetland habitat and remains compatible with the continuance of such habitats (§313-125.7.3.1). Such reductions may also require mitigation measures to ensure the protection of wetland habitat values (§313-125.7.3.2). Based on these provisions, this document proposes a 50-foot buffer for three-parameter wetlands and a 10-foot buffer for one-parameter wetlands, supported by an analysis of ecological function, site disturbance, and habitat quality to demonstrate compliance with NCAP policies.

This document acknowledges these buffer requirements and presents a site-specific justification for reduced buffer widths based on the County's established criteria, NCAP policies, and site-specific analysis. The proposed buffer reductions are supported by an evaluation of ecological function, site disturbance, and habitat quality, demonstrating that they will not result in significant adverse impacts and remain consistent with the applicable wetland buffer and ESHA policies of the North Coast Area Plan.

Criterion 1: Biological Significance of Adjacent Lands

- **Analysis:** Adjacent lands exhibit varying degrees of biological significance. The eastern portion of the site, dominated by gravel and existing development, contributes negligible ecological function. Conversely, Wetlands 2 and 3, surrounded by dense willow thickets, retain some biological significance as they support wetland-associated wildlife and vegetation (Photo 3 & 4). These wetlands serve as microhabitats that provide foraging and nesting opportunities, as well as seasonal breeding grounds for wetland-dependent species.

Wetland 1, however, is ecologically isolated by surrounding gravel and disturbed ground, limiting its functional role within the ecosystem (Photo 1 & 2).

The recommended buffer widths are sufficient because they align with regulatory standards and account for the degraded conditions of the adjacent lands. A 50-foot buffer for three-parameter wetlands ensures adequate space to preserve the remaining ecological processes and provides a transition zone that minimizes edge effects. This buffer width is further supported by the presence of dense vegetation in Wetlands 2 and 3, which helps mitigate potential disturbances. For one-parameter wetlands, a 10-foot buffer is appropriate as these features lack significant ecological interactions and serve primarily as isolated, low-functioning depressions.

- **Recommendation:**
    - For three-parameter wetlands, a 50-foot buffer is sufficient to mitigate edge effects, reduce potential anthropogenic impacts, and maintain ecological processes within the willow thickets.
    - For one-parameter wetlands, a 10-foot buffer is appropriate, as these features do not support significant biological interactions or high-value species.
    - Implement pre-construction surveys for amphibians and nesting birds for the temporal impacts which will occur during development phase.

Criterion 2: Sensitivity of Species to Disturbance

- **Analysis:** Historical disturbances, including livestock grazing, compaction, and fill deposition, have significantly altered habitat conditions on the project site. Wetland 1 is directly adjacent to an active gravel parking lot, which generates ongoing noise, dust, and light disturbances that reduce its suitability for sensitive species. Similarly, Wetlands 2 and 3 are surrounded by areas heavily grazed by livestock, with compacted soils and trampled vegetation that limit the ability of these wetlands to provide high-quality habitat for sensitive species. While the willow thickets associated with Wetlands 2 and 3 offer some habitat value, the ongoing disturbance from grazing activities reduces their overall ecological functionality. One-parameter wetlands are small, isolated features, and given the disturbed nature of the surrounding non-wetland habitat, it is unlikely that they would harbor species that do not also occur in the adjacent upland areas.

  The proposed 50-foot buffer for three-parameter wetlands will help to mitigate these disturbances by providing a zone of protection where additional impacts can be minimized, allowing the remaining habitat to function effectively. For one-parameter wetlands, the 10-foot buffer is sufficient as these features do not provide unique habitat value or support species that are absent from surrounding areas.

- **Recommendation:**
    - Maintain a 50-foot buffer for three-parameter wetlands to minimize acoustic and visual disturbance and reduce the impact of surrounding activities on wetland-associated wildlife.

- Conduct targeted surveys for nesting birds and amphibians during pre-construction to identify and mitigate potential disturbances.

Criterion 3: Susceptibility of Parcel to Erosion

- **Analysis:** Site soils, generally characterized by graded, compacted, and historic fill, appear to be prone to erosion during heavy rainfall events in the portions not covered in gravel. Without adequate vegetation cover, runoff may exacerbate sediment transport into adjacent wetlands, particularly during construction activities. Currently, these wetlands are not protected, and grazing horses and cows are free to enter and trample these features, further exacerbating erosion. The proposed buffers will provide sufficient protection against these effects. A 50-foot buffer for the three-parameter wetlands will intercept additional materials and stabilize the surrounding environment by providing space for vegetation regrowth and erosion control measures. For one-parameter wetlands, a 10-foot buffer is sufficient as these features do not significantly differ functionally from the surrounding degraded upland habitat. Furthermore, the area to be developed within the subject parcels is generally flat and open, reducing the likelihood of increased erosion beyond existing levels. To further mitigate potential impacts, the project will be designed in accordance with County standards for stormwater management to address runoff and ensure that water quality is preserved.

- **Recommendation:**
  - Employ erosion control measures, including biodegradable silt fences and strategically placed straw wattles, to intercept sediment-laden runoff. Revegetation with native wetland and riparian species should be implemented post-construction to stabilize soils.
  - Maintain a 50-foot buffer for three-parameter wetlands and a 10-foot buffer for one-parameter wetlands to provide adequate protection against erosion and promote long-term stabilization.

Criterion 4: Use of Natural Topographic Features to Locate Development

- **Analysis:** The natural topographic features of the site play a significant role in mitigating potential impacts to adjacent wetlands. A prominent feature is the levee along the site's western boundary, which provides a natural barrier separating Redwood Creek from the project area. This levee acts as both a hydrological and physical buffer, reducing the potential for sediment or runoff from entering the creek. Additionally, the flat terrain across the majority of the project area minimizes the likelihood of significant erosion or concentrated runoff pathways that could adversely affect the wetlands. However, areas immediately adjacent to wetlands, particularly near the willow thickets of Wetlands 2 and 3, are more vulnerable to disturbances and require careful management to avoid unintended impacts. Utilizing the levee and naturally flat areas as protective boundaries ensures that development remains strategically placed away from high-risk zones.

  The proposed buffer widths are aligned with these natural topographic features to enhance their protective effectiveness. For instance, the 50-foot buffer for three-parameter wetlands

incorporates flat, undeveloped areas that can intercept sediment or pollutants before they reach wetland boundaries. The 10-foot buffer for one-parameter wetlands reflects their limited ecological function and the absence of significant topographic features that would necessitate wider buffers. To further mitigate potential impacts, the project will be designed in accordance with County standards for stormwater management to address runoff and ensure that water quality is preserved. This plan will likely include features such as bioswales, retention basins, and other stormwater treatment systems that enhance infiltration and reduce sedimentation.

- **Recommendation:**
    - Maintain the levee as a natural protective barrier for Redwood Creek, ensuring that no development or construction activities compromise its integrity.
    - Utilize the site's flat terrain to design stormwater management systems, such as bioswales and retention basins, that direct runoff away from wetlands and towards treatment areas.
    - Ensure that buffer zones are enhanced with native vegetation to provide additional stability and minimize the risk of erosion or runoff infiltration into wetland areas.
    - Implement County standards for stormwater management as a critical component of the development to safeguard wetland features from runoff-related impacts.

Criterion 5: Use of Existing Cultural Features to Locate Buffer Zones

- **Analysis:** Existing infrastructure, including the gravel lot and gas station, provides logical demarcation for buffer zones. These cultural features reduce the need for expanded buffers in areas of minimal ecological function. Additionally, the willows surrounding Wetlands 2 and 3 will be retained to further protect these features. Although not classified as cultural features, the willow thickets provide an effective natural buffer by stabilizing soils and reducing the potential for runoff impacts. Similarly, a mound to the west of Wetland 1 will be preserved, providing additional protection from adjacent activities, and the gravel parking lot to the east of Wetland 1 will also be retained, serving as a practical boundary for the buffer zone.

- **Recommendation:**
    - Align buffer zones with these features, maintaining recommended widths while ensuring construction activities avoid additional encroachment.
    - Retain the willow thickets around Wetlands 2 and 3 as part of the protective buffer to enhance the ecological functionality of these areas.
    - Preserve the mound west of Wetland 1 and the gravel lot to the east as practical and effective boundaries for buffer zones.

Criterion 6: Lot Configuration and Location of Existing Development

- **Analysis:** The development within the subject parcels is generally located well outside of any suitable buffer, making this criterion relatively obsolete. The placement of structures and infrastructure avoids direct encroachment on sensitive areas, reducing the need for significant adjustments to buffer zones. However, the heavily disturbed lands within the rest of the subject parcels make it reasonable to apply reduced buffer widths of 50 feet for three-parameter wetlands and 10 feet for one-parameter wetlands. These buffers are sufficient to address the degraded condition of the site while still providing necessary protection to wetland features.

- **Recommendation:**
    - In developed areas, enhance buffer efficacy through native plantings and hardscaping that limits runoff. For undeveloped areas, maintain the recommended reduced buffer zones to balance development objectives with ecological considerations.

Criterion 7: Type and Scale of Development Proposed

- **Analysis:** The project involves light commercial redevelopment with limited encroachment into buffer zones. Construction impacts are expected to be temporary, with no long-term degradation of wetland resources anticipated. The majority of the development within the portion of the subject parcels where there is a high concentration of one-parameter wetlands and three-parameter wetlands will consist of a leach field, with all associated development occurring underground. This design minimizes surface-level disturbance and ensures that the area will not be heavily accessed by the public post-construction, reducing potential impacts to wetland features. If these buffers are followed during construction activities, there is likely to be no significant impact to these features based on the type and scale of development proposed.

- **Recommendation:**
    - Ensure that construction activities adhere to all recommended mitigation measures, including the installation of temporary fencing, and restrict equipment and material storage to non-buffer areas.
    - Implement robust monitoring protocols during construction to confirm that buffer zones remain intact and undisturbed.

4. Recommended Buffer Zones

Based on the analysis of the seven criteria:

1. **Three-Parameter Wetlands (Wetlands 1, 2, and 3):**
    - **Buffer:** 50 feet (Figure 2)

- **Additional Measures:** Temporary fencing during construction, erosion control measures, pre-construction biological surveys, and post-construction vegetation monitoring.

2. **One-Parameter Wetlands:**
    - **Buffer:** 10 feet (Figure 2)
    - **Additional Measures:** Temporary fencing during construction, and erosion control measures and protection during construction.

5. Avoidance and Minimization/Mitigation Measures

- **Fencing:** Install temporary high-visibility fencing around all wetlands during construction to delineate and protect buffer zones.
- **Erosion Control:** Implement erosion control measures such as biodegradable silt fences, straw wattles, and immediate revegetation post-construction to stabilize disturbed soils.
- **Biological Surveys:** Conduct pre-construction and construction-phase biological **surveys** during seasonally appropriate windows to identify and protect sensitive species. Survey frequency and timing are specified below to ensure compliance with regulatory requirements and minimize impacts to sensitive species during construction activities:
    - **Amphibians:** A qualified biologist should conduct pre-construction visual encounter surveys for amphibians within 24 hours prior to ground disturbance within 200 feet of all wetlands and watercourses. Surveys should focus on identifying and relocating any amphibians present to avoid incidental harm. During construction, periodic inspections (e.g., daily during initial ground disturbance and after significant weather events) should be conducted to monitor for amphibian presence and relocate individuals as necessary.
    - **Nesting Birds:** Pre-construction nesting bird surveys, performed by a qualified biologist, should occur within 14 days prior to project activities if work is scheduled during the nesting season (February 1 – August 31, depending on species). Surveys should cover all suitable nesting habitat within 50 feet of the action area and wetlands. If active nests are identified, construction monitoring surveys should occur at regular intervals (e.g., weekly or as needed) to assess nest status and ensure compliance with required no-disturbance buffers.
    - **General Wildlife:** Pre-construction surveys should be conducted to assess potential presence of terrestrial and wetland-associated species to avoid incidental take. During construction, ongoing biological monitoring should occur at frequencies appropriate to species presence and project activities (e.g., daily during major earth-moving activities near sensitive habitat). If special-status species are observed at any time, the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS) must be notified immediately, and appropriate protection measures will be implemented.

- **Stormwater Management:** Utilize bioswales, retention basins, and permeable surfaces to manage runoff and reduce sedimentation into wetland areas.
- **Post-Construction Monitoring:** Monitor buffer zones for three years post-construction to ensure vegetation establishment and functionality of mitigation measures.

6. Conclusion

The recommended buffer zones and associated avoidance and minimization/mitigation measures are designed to address Humboldt County's criteria comprehensively while aligning with site-specific conditions. These measures will ensure that wetland features are safeguarded from construction-related impacts, supporting compliance with regulatory requirements and promoting ecological sustainability. Ongoing monitoring and adherence to these guidelines will help balance development objectives with the preservation of sensitive wetland resources.

Please contact me for further information or clarification.

Best regards,

Mason London
Principal Biologist, Naiad Biological Consulting
naiadbiological@gmail.com | (805) 709-5353

7. References

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Appendix A: Figures

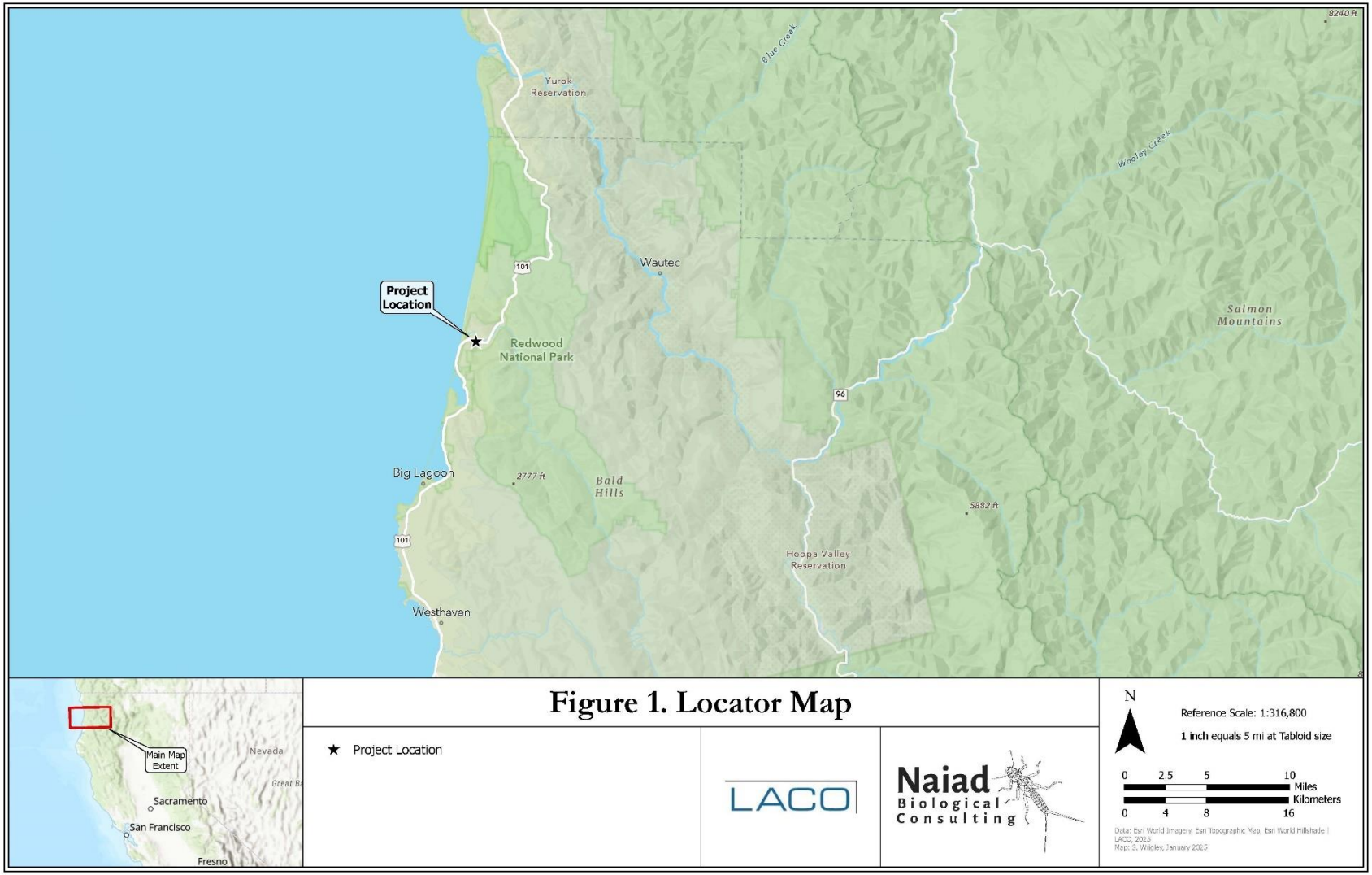

Figure 1. Locator Map

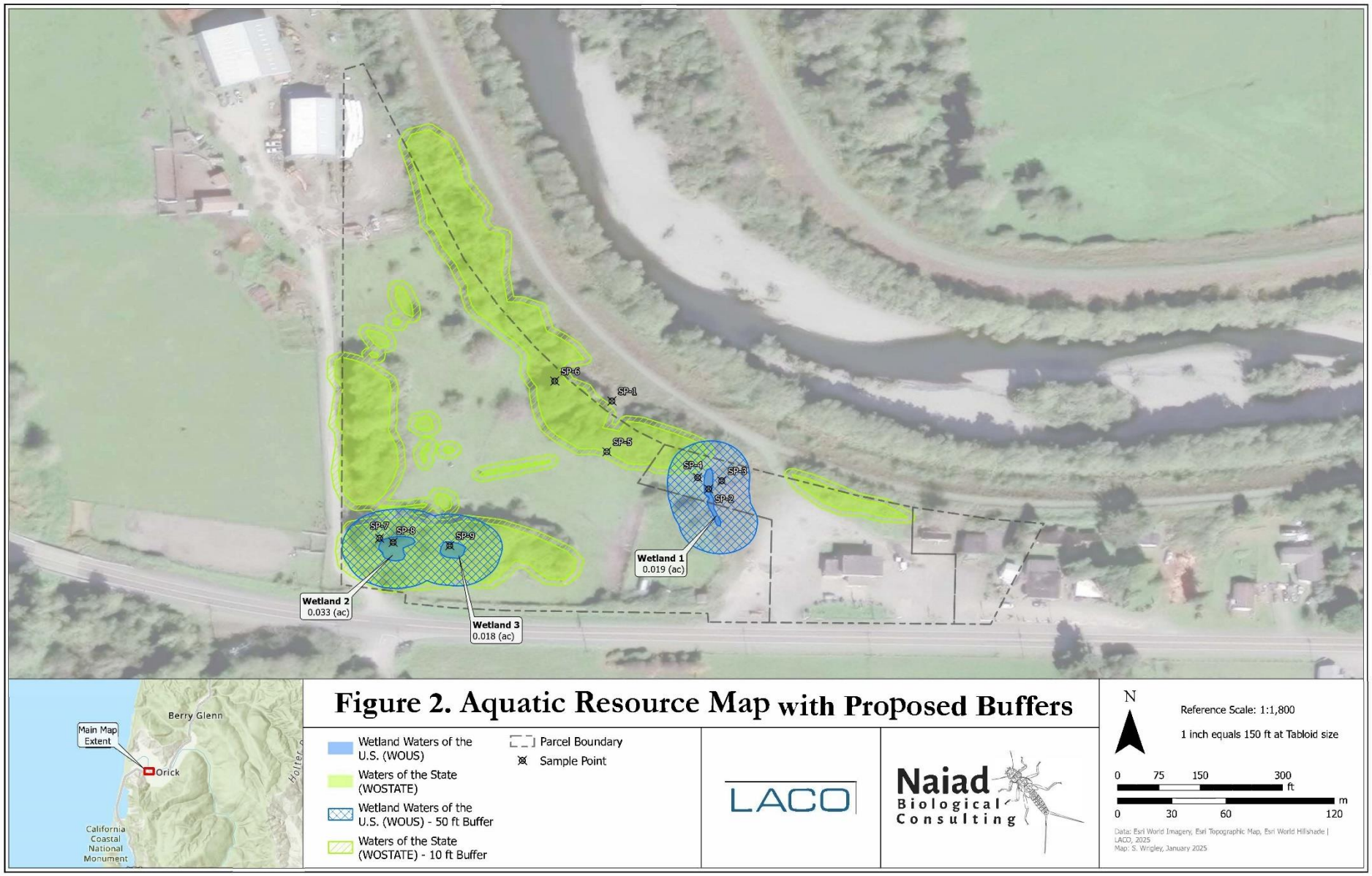

Figure 2. Aquatic Resource Map with Proposed Buffers

Appendix B: Site Photos

Photo 1: Wetland 1: View showing adjacent disturbed areas and vegetation.

Photo 2: Wetland 1: Proximity of structures and site conditions.

Photo 3: Wetland 2: Dense vegetation and observed site conditions.

Photo 4: Wetland 3: Vegetation and site characteristics.

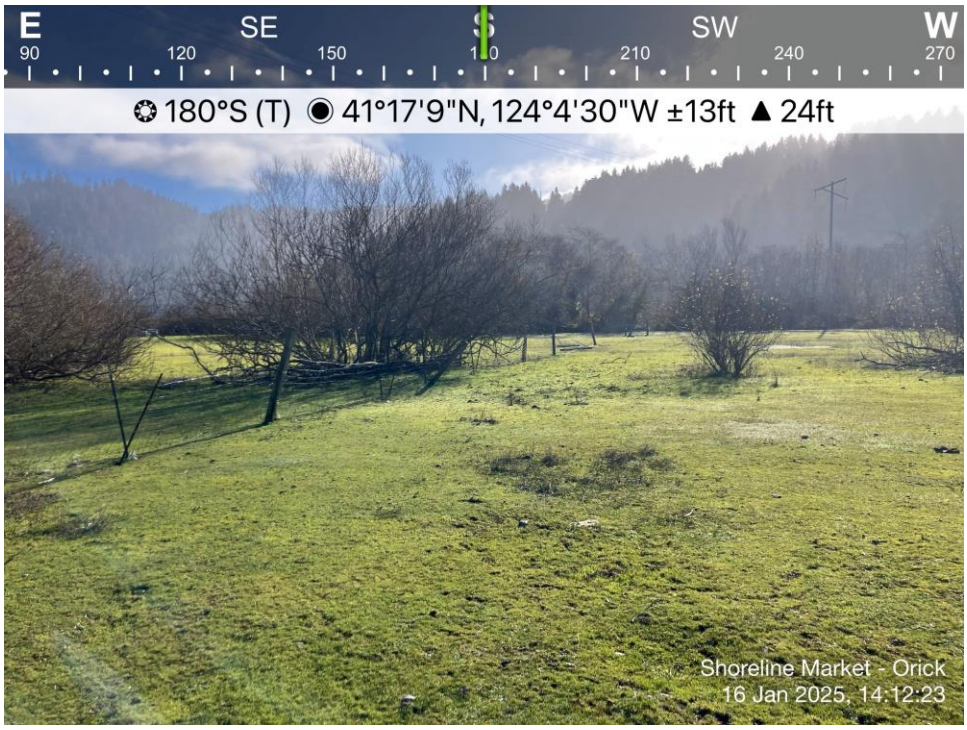

Photo 5: One parameter wetlands and adjacent areas and boundary conditions.

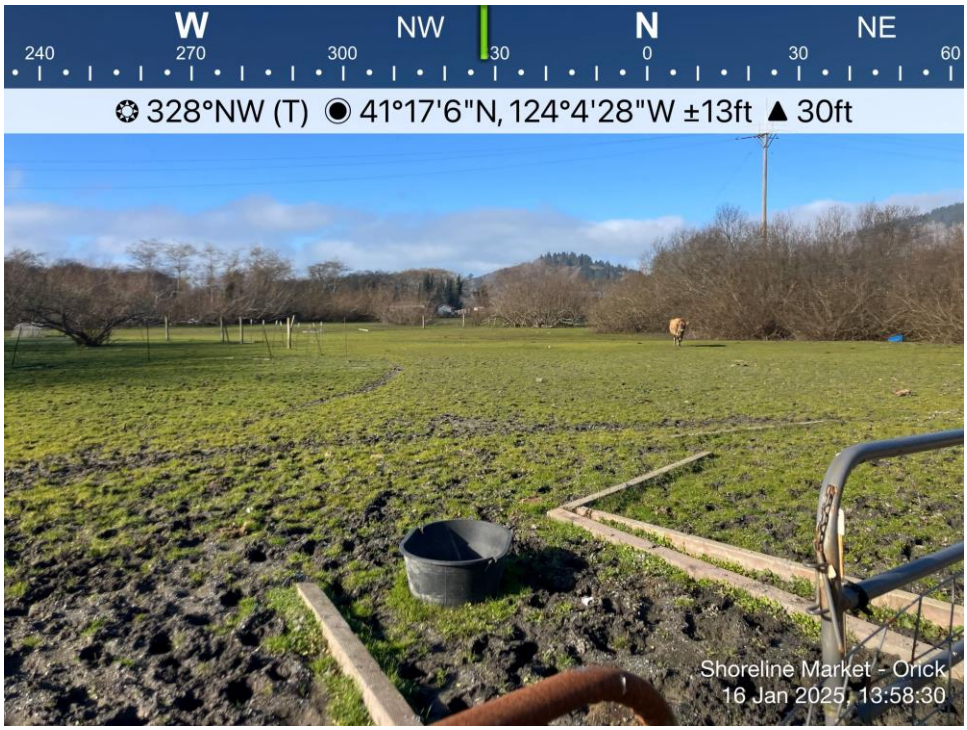

Photo 6: Grazing field habitat within the proposed project site.

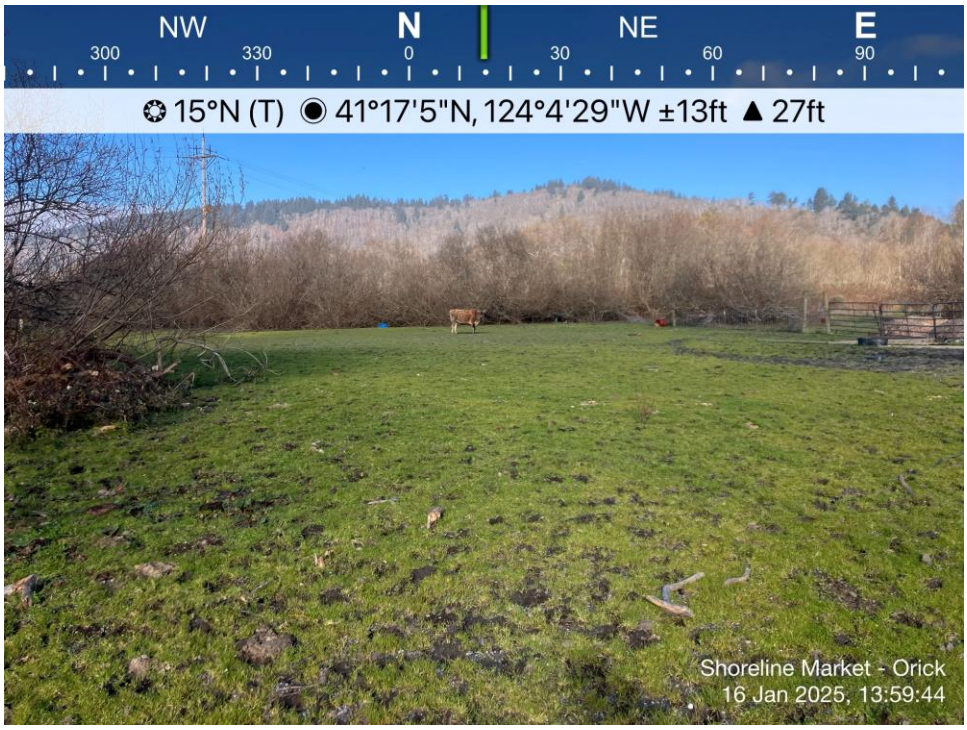

Photo 7: Open field within the proposed development site (Wetland 2 & 3 to the left of this photo).

Photo 8: Existing infrastructure adjacent to the project boundary.

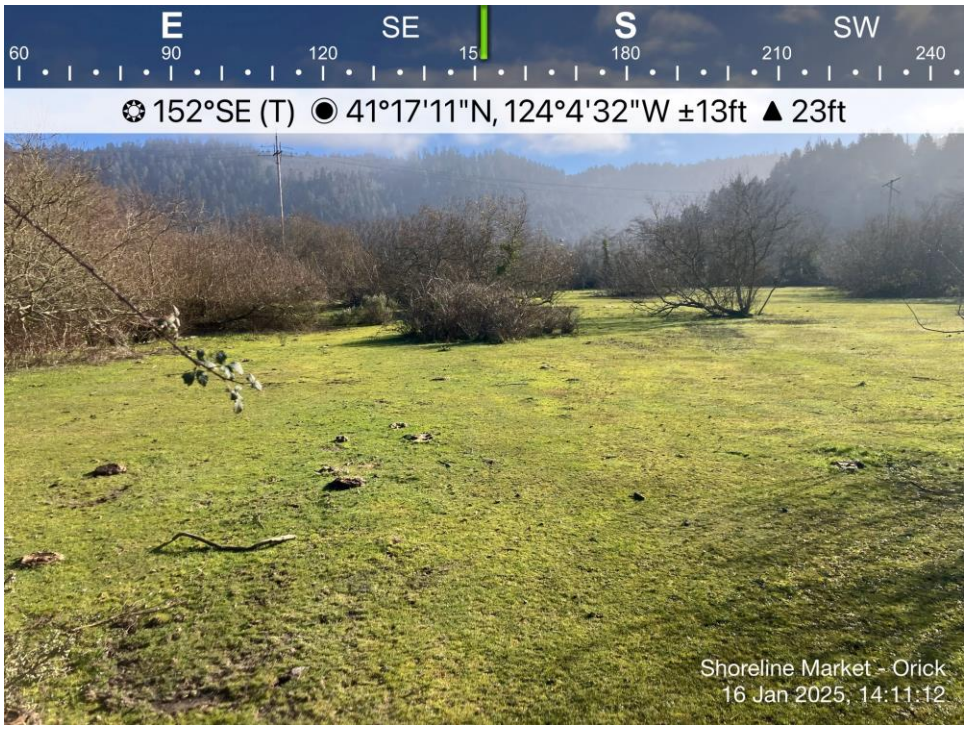

Photo 9: Buffer zone near Wetland 3 within the project area.

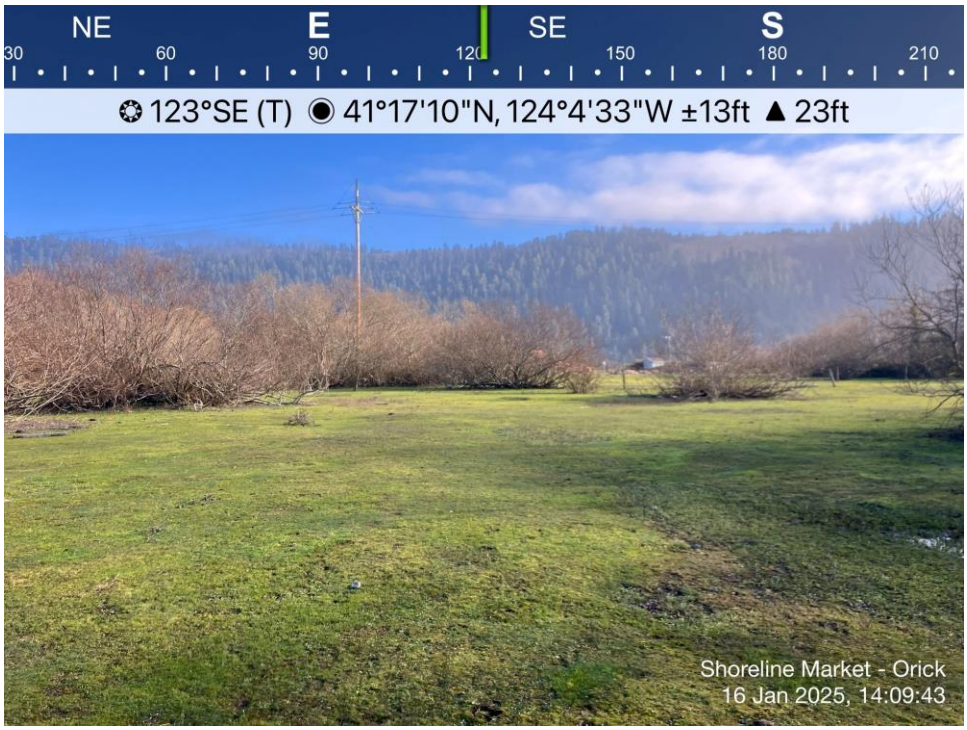

Photo 10: General view of grazing areas near the project site and adjacent one perimeter wetlands (Wetland 2 & 3 to the right of this photo).