CALIFORNIA COASTAL COMMISSION
NORTH COAST DISTRICT OFFICE
710 E STREET • SUITE 200
EUREKA, CA 95501-1865
VOICE (707) 445-7833
FAX (707) 445-7877

F12b

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STAFF REPORT: REGULAR CALENDAR

Application No.:	**1-12-007**
Applicant:	**Calif. Department of Fish and Game**
Agents:	Karen Kovacs, Wildlife Program Manager, CDFG Northern Region, Redding CA; Steve Burton, CDFG Region 1, Montague CA
Location:	At the mouth of Lake Tolowa lagoon, within the Lake Earl Wildlife Area, approximately five miles north of Crescent City, Del Norte County (APN 106-010-05).
Project Description:	Restore approximately 34 acres of dune habitat by removing invasive European beachgrass on either side of the Lake Tolowa lagoon mouth, using a combination of manual and mechanical removal techniques.
Staff Recommendation:	Approval with conditions.

SUMMARY OF STAFF RECOMMENDATION

The applicant, California Department of Fish and Game, proposes to remove invasive European beachgrass (*Ammophila arenaria*) from approximately 34 acres of dune habitat near the mouth of Lake Tolowa lagoon. The project area is part of the 6,144-acre Lake Earl Wildlife Area managed by CDFG north of Crescent City in Del Norte County (**Exhibits 1-5**). The goal of the "Lake Earl Wildlife Area Coastal Dune Restoration Plan" (**Exhibit 9**) is to restore the natural ecological processes of the dune system for the benefit of native dune plant and animal species.

CDFG states that the removal of invasive *Ammophila* is critical to the restoration of natural dune processes within the Wildlife Area. The proposed Restoration Plan indicates that the removal of *Ammophila* would produce three important changes: (1) the restored physical processes would allow a renewed sand supply to reach and sustain the inner dune areas, supporting the survival and expansion of remnant dune mat vegetation; (2) coastal dune mat vegetation would re-establish in open dune areas where dense mats of *Ammophila* presently exclude native plants, and (3) the dormant seed bank of rare native plants would germinate, restoring populations that have almost been extinguished by the direct and indirect effects of *Ammophila* (see **Exhibits 7** and **9**).

Wildlife species are also expected to benefit from the proposed project. The western snowy plover has not been documented to nest in this federally-designated critical habitat during the past twenty years. Other factors affect plover nesting in the area as well, but dense stands of *Ammophila* have directly displaced nesting sites and increased cover for predators of the plover. The proposed restoration would return the area to conditions more favorable for plover nesting. The project has received the support of the U. S. Fish & Wildlife Service (**Exhibit 10**). As the proposed dune restoration project is inherently dependent upon the presence of the dune ESHA, staff believes the project constitutes a use dependent on the resources of the ESHA consistent with the use requirements of Section 30240(a) of the Coastal Act.

CDFG proposes to remove *Ammophila* by mechanical methods (bulldozers, excavators) within approximately 14 of the 34 acres proposed for restoration. Where sensitive resources have been identified in the remaining approximately 20 acres, the dunes would be treated with manual methods. Crews working in these areas would loosen the roots of *Ammophila* with shovels then pull the plants out. *Ammophila* detritus would be buried or burned.

The Restoration Plan incorporates the mitigation measures identified in the Mitigated Negative Declaration prepared for the project (see **Exhibit 9**, including Appendix G) as well as measures recommended by the U. S. Fish & Wildlife Service for the protection of the western snowy plover. **Special Condition 1** is recommended to protect any cultural deposits that may be discovered during restoration activities. **Special Condition 2** addresses State Lands Commission authorization. **Special Condition 3** requires implementation of the project in accordance with the approved Restoration Plan (**Exhibit 9**). **Special Condition 4** requires a final monitoring report providing evidence of restoration success, or additional measures to secure this result.

Commission staff recommends **approval** of coastal development application 1-12-007, as conditioned.

TABLE OF CONTENTS

APPENDICES

EXHIBITS

I. MOTION AND RESOLUTION

The staff recommends that the Commission adopt the following resolution:

Motion:

> *I move that the Commission approve coastal development permit 1-12-007 pursuant to the staff recommendation.*

Staff recommends a **YES** vote on the foregoing motion. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

Resolution:

> *The Commission hereby approves coastal development permit 1-12-007 and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.*

II. STANDARD CONDITIONS

This permit is granted subject to the following standard conditions:

1. **Notice of Receipt and Acknowledgment**: The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration**: If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation**: Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment**: The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land**: These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

III. SPECIAL CONDITIONS

This permit is granted subject to the following special conditions:

1. **Protection of Archaeological Resources.** If an area of cultural deposits is discovered during the course of the project, all construction shall cease and shall not re-commence until a qualified cultural resource specialist analyzes the significance of the find and prepares a supplementary archaeological plan for the review and approval of the Executive Director, and either: (a) The Executive Director approves the Supplementary Archaeological Plan and determines that the Supplementary Archaeological Plan's recommended changes to the proposed development or mitigation measures are *de minimis* in nature and scope, or (b) the Executive Director reviews the Supplementary Archaeological Plan, determines that the changes proposed therein are not *de minimis*, and the permittee has thereafter obtained an amendment to coastal development permit 1-12-007 approved by the Commission.

2. **State Lands Commission Authorization.** Prior to commencement of development approved by this permit, the permittee shall provide to the Executive Director a written determination from the State Lands Commission that: (a) no State or public trust lands are involved in the development, or (b) State or public trust lands are involved in the development and all permits required by the State Lands Commission have been obtained, or (c) State or public trust lands may be involved in the development, but an agreement has been made with the State Lands Commission for the approved project as conditioned by the Commission to proceed without prejudice to that determination.

3. **Development in Accordance with Approved Restoration Plan.** The permittee shall undertake all development authorized by coastal development permit 1-12-007 in accordance with the approved "Lake Earl Wildlife Area Coastal Dune Restoration Plan" dated May 2011 and updated/revised July 12, 2012, including the additional representations set forth in the cover letter dated July 12, 2012, collectively referred to as the "Restoration Plan" and attached hereto as **Exhibit 9**, and as modified by the special conditions. The Executive Director may approve for cause minor changes to the approved Restoration Plan that are *de minimis* in nature and scope and would not result in significant adverse impacts to coastal resources. No other changes to the approved Restoration Plan shall occur without a Commission approved amendment to this coastal development permit unless the Executive Director determines no amendment is legally required.

4. **Final Monitoring Plan; Determination of Restoration Success.** The permittee shall submit a final monitoring report for the review and written approval of the Executive Director within five (5) years after the commencement of the mechanical dune restoration methods authorized by coastal development permit 1-12-007. The final report shall

demonstrate to the Executive Director's satisfaction that the "as built" project activities undertaken in accordance with the approved Restoration Plan, in light of all of the monitoring data collected since commencement of mechanical *Ammophila* removal, have adequately achieved the following ecosystem benefits predicted by the applicant in proposing the Restoration Plan: (1) in the dune areas treated by manual *Ammophila* removal methods only, the relative cover of native dune mat vegetation has increased and the relative cover of *Ammophila* has decreased; and (2) in the dune areas treated by mechanical *Ammophila* removal methods only, coastal dune mat vegetation has re-established in open dune areas previously dominated by *Ammophila* and *Ammophila* has not significantly re-colonized the area. For purposes of this special condition, pre-project baseline conditions shall be those established by the documents submitted by the permittee in support of the application for coastal development permit 1-12-007. If the Executive Director determines that the final monitoring report does not establish that the standard of restoration project success set forth in this special condition has been met, the permittee shall, within ninety (90) days after receipt of written notice of the Executive Director's determination, submit a complete application for an amendment to CDP 1-12-007 to undertake additional adaptive management and/or restoration measures that would achieve this standard.

IV. FINDINGS AND DECLARATIONS

The Commission hereby finds and declares as follows:

A. PROPOSED PROJECT DESCRIPTION

The California Department of Fish and Game (applicant, hereinafter "CDFG") proposes to implement the "Lake Earl Wildlife Area Coastal Dune Restoration Plan" (hereinafter "Restoration Plan," **Exhibit 9**) within an approximately 111-acre portion of the 6,144 acre Lake Earl Wildlife Area located approximately five miles north of Crescent City in Del Norte County (**Exhibit 1**, Regional Map; **Exhibit 2**, Project Boundary Map).[1, 2] The proposed project would be undertaken within that portion of the Lake Earl Wildlife Area (APN 106-010-05) that is located within the project boundaries identified in green in **Exhibits 2, 3 and 4**. **Exhibit 4** more specifically shows the areas within the proposed project boundaries where the mechanical removal of European beachgrass (*Ammophila arenaria*) (hereinafter "*Ammophila"*) is proposed. The complete scope of the Restoration Plan discusses potential restoration in additional areas

[1] The "Lake Earl Wildlife Area Coastal Dune Restoration Plan" or "Restoration Plan" where referred to in the staff report refers to the document prepared May 2011 and updated/revised July 12, 2012, including revised Figures 2 and 5, new Appendix G, editorial annotations, and a cover letter provided by CDFG dated July 12, 2012 revising the scope of the Restoration Plan project boundaries proposed pursuant to coastal development permit 1-12-007. The Restoration Plan also includes the other previously submitted Appendices to the Restoration Plan, which have not been revised, and are not attached in Exhibit 9; these Appendices are retained in the permit file and available at the Commission's North Coast District Office. Appendix C (Cultural Resource) is a confidential document retained only by CDFG. All other components of the Restoration Plan are included in **Exhibit 9** of this staff report.

[2] The scope of the physical area considered by the Restoration Plan covers areas broader than the sites proposed for restoration in this permit application. For example, it addresses also potential restoration of "Area 3" – a portion of the nearby Tolowa Dunes State Park - located south of the Wildlife Area and an additional portion of the dunes within the Wildlife Area located immediately south of, and contiguous with, the proposed project site.

outside of the proposed project boundaries; however, this proposal is limited to the areas shown in **Exhibits 2** and **3.**

Removal and disposal of *Ammophila*

The Restoration Plan proposes the removal of *Ammophila* from approximately 34 acres of dune habitat on either side of the mouth of Lake Tolowa lagoon, within the boundaries of the overall project site shown in **Exhibit 2**. CDFG estimates that the project would be completed in phases over approximately five years. CDFG does not propose the use of heat treatment, animal grazing, or the application of herbicides anywhere within the subject project site. CDFG proposes to use mechanical restoration techniques within approximately 14 acres of the site (**Exhibit 4**). Where mechanical removal is proposed, heavy equipment such as bulldozers and excavators would be used to scrape or excavate thick stands of *Ammophila*. Over 700,000 cubic yards of sand would be moved to implement the project. The excavated sand would be re-contoured in approximately the same location; no import, export, or stockpiling of sand is proposed.

Ammophila removal on the remaining approximately 20 acres of the total 34 acres of subject dune habitat would be completed using hand removal methods. The fibrous grass roots would be loosened by crews digging down to a depth of about a foot below the surface with shovels before pulling the grass free. This method would be used in areas close to sensitive native dune mat vegetation, rare plant populations, wetlands, western snowy plover populations sighted by monitors, or archaeological resources. Protective buffers would be established in accordance with provisions outlined in the Restoration Plan, and high-visibility temporary fencing would be installed as needed.

Ammophila detritus would be directly buried in trenches in some locations (where the use of heavy equipment is authorized) or piled, dried and burned in others. CDFG states that the burning of *Ammophila* would only be conducted with the necessary permits and a smoke management plan authorized by the North Coast Unified Air Quality Management District. As required by the U. S. Fish & Wildlife Service and stated in Appendix G of the Restoration Plan revised July 12, 2012, the smoke management plan would be designed to avoid adverse impacts on the western snowy plover (Technical Assistance letter, **Exhibit 10**). In addition, a CDFG biologist or a qualified site monitor selected by CDFG would be present on site during all mechanical equipment operations and *Ammophila* burning activities and would have the authority to stop work.

Monitoring for Protection of Wetlands

The Restoration Plan directly incorporates detailed monitoring measures listed in the Mitigated Negative Declaration prepared for the project in accordance with the requirements of the California Environmental Quality Act (CEQA) (**Exhibit 9**). Among these measures are the requirement that sand movement be monitored, and adaptive management measures deployed (installation of temporary sand fencing, for example) if excessive sand migrates into nearby wetlands before the natural dune ecosystem re-stabilizes.

Archaeological resources

A Cultural Resources Investigation was conducted by the Humboldt State University Cultural Resources Facility (HSU-CRF) for the proposed project (see Appendix A). No previously

known archaeological sites are present on the project site, but one newly recorded archaeological site (location confidential, on file with CDFG) was discovered during the course of these studies. Cultural resource protective measures were prescribed by HSU-CRF to protect this site and any others that may be discovered inadvertently during project implementation. These measures are specifically outlined in the Restoration Plan (**Exhibit 9**). **Special Condition 3** requires that the proposed project activities be undertaken in accordance with the approved Restoration Plan, which therefore is subject to the identified mitigation measures. In addition, as discussed below, **Special Condition 1** is attached to address the protection of any other cultural deposits that may be discovered during the proposed restoration activities.

No interference with continued public coastal access
No significant interference with existing public coastal access and recreation in the project area would result from the proposed project. Occasional temporary closures of subareas of the project may be necessary at times to protect public safety during the operation of heavy equipment or during the burning of grass piles. Primary public access routes through the area, including access to the wave slope at the western boundary, would continue mostly uninterrupted throughout the term of the project.

Implementation in accordance with approved, revised Restoration Plan
As noted above, CDFG has made clarifications and revisions to the proposed project description since the pending application was originally submitted and has re-defined the location and limits of the proposed project boundaries (**Exhibit 9**). Through these revisions, CDFG has also incorporated into the Restoration Plan the mitigation measures identified in the Mitigated Negative Declaration prepared by CDFG pursuant to the requirements of the California Environmental Quality Act. These measures are broadly protective of Environmentally Sensitive Habitat Areas (ESHA) and sensitive species. Thus the Restoration Plan as revised now directly incorporates the subject measures, which have been designed by CDFG to ensure that the project is carried out in a manner that protects sensitive resources while undertaking substantial disturbance within the proposed project boundaries. **Special Condition 3** requires therefore that the project be undertaken in accordance with the approved revised Restoration Plan, which now includes these measures as part of the proposed project description and within the revised project boundaries clarified by CDFG in a letter dated July 12, 2012 transmitting the Restoration Plan revisions (**Exhibit 9**).

B. ENVIRONMENTAL SETTING
The Lake Earl Wildlife Area managed by the Department of Fish and Game is a 6,144-acre reserve located in the northwest corner of the Klamath/North Coast Bioregion and is centered on the largest coastal lagoon system on the Pacific Coast of the United States, south of Alaska. The reserve includes the Lake Earl/Lake Tolowa coastal lagoon commonly referred to as "Lake Earl." The Wildlife Area consists of pastures managed for the Aleutian cackling goose (*Branta hutchinsii leucopareia*), freshwater and estuarine wetlands, coastal forests, and dunes. A peninsula that was historically an important Native American village site separates the bodies of water known as Lakes Earl and Tolowa, which have a hydrologic connection via a relatively narrow channel at the peninsula tip. Water levels in the lagoon fluctuate, due to a combination of freshwater rainfall and surface runoff, lagoon breaching, and tidal flux when the estuary is open to the sea. The sand berm separating the lagoon from the ocean is typically mechanically breached at least once each year to prevent flooding of roads outside the Wildlife Area

boundaries (Coastal Development Permit 1-09-047, CDFG, Appendix A). **Exhibit 5** contains a series of aerial photographs of the area between 2005 and 2011, submitted by CDFG.

The Wildlife Area contains no facilities and is bounded by largely undeveloped lands. The dune habitat proposed for restoration is contiguous with coastal dune habitat extending south to Tolowa Dunes State Park. To the north, the project is bordered by the undeveloped Pacific Shores subdivision. This subdivision, laid out in 1963, consists of platted parcels of coastal dune and wetland habitats, which have never received permits allowing development. More than half of these parcels have been acquired by CDFG.

The project is bounded on the western axis by sandy beach and the Pacific Ocean. The eastern boundary of the project is the basin and wetlands of Lake Tolowa. An arm of Lake Tolowa drains southward through the project area, creating a gradient of ambulatory seasonal and permanently inundated wetlands. This slough channel, locally known as "Shorebird Slough," extends south into the Tolowa Dunes State Park during high water.

The portion of the Wildlife Area proposed for restoration includes approximately 111 acres, including more than 70 acres of delineated wetlands, and approximately 34 acres of dune habitat. The nearshore dunes are bordered by estuarine and freshwater wetland habitats. The dunes are largely dominated by *Ammophila*, though remnant patches of native dune mat vegetation persist, particularly in the interior areas of the deflation plain. *Ammophila* was introduced to the region in the 1800's to stabilize blowing sand and facilitate development. CDFG states that *Ammophila* infestation has since altered dune morphology, sand movement patterns, and native plant community composition along the length of the Pacific Coast. *Ammophila* has also decreased invertebrate abundance and diversity, negatively affected native pollinators, and continues to threaten sensitive plant and wildlife species.

CDFG has prepared and submitted studies that have identified five sensitive habitat types within the Wildlife Area near the proposed project site: Beach Strand, Coastal Dunes, Estuarine, Saline Emergent Wetland, and Fresh Water Emergent Wetland. Major vegetation types within the project area, including areas colonized extensively by *Ammophila* are shown in **Exhibit 7.** **Exhibit 4** shows the dune areas subject to the proposed mechanical removal of *Ammophila*. Federally-designated critical habitat for the western snowy plover (shown in **Exhibit 8**) overlaps the project boundaries. A Technical Assistance letter prepared by the U. S. Fish & Wildlife Service dated May 3, 2010 confirms the agency's support for the proposed project (**Exhibit 10**).

A rare plant assessment of the project area conducted in 2009 and submitted by CDFG in support of the pending application located and mapped sand dune phacelia (*Phacelia argentea*) within the proposed project boundaries (**Exhibit 4**). Sometimes called silvery phacelia, the perennial plant is considered locally rare and in California occurs only in Del Norte County. Sand dune phacelia is considered a Sensitive Species in Oregon. The survey also noted that suitable habitat was present for dark-eyed gilia (*Gilia millefoliata*), a rare annual plant (California Native Plant Society List 1B.2 species), and that state records show that suitable habitat for as many as 19 rare native plants may exist within the general project area.

C. OTHER AGENCY APPROVALS

Department of Fish and Game

The applicant, CDFG, served as the lead agency for the project for California Environmental Quality Act (CEQA) purposes. A draft Mitigated Negative Declaration (MND) was prepared in July 2011 and submitted to the State Clearinghouse. CDFG received a Notice of Completion from the State Clearinghouse on August 12, 2011. No comments were received by CDFG in response to the MND. The mitigation measures identified in the MND have been fully incorporated into the revised Restoration Plan dated July 12, 2012 (**Exhibit 9**), and thus have been made part of the proposed project description.

North Coast Unified Air Quality Management District (NCUAQMD)

CDFG acknowledges that at various stages of the project, dried *Ammophila* detritus collected by crews may be burned on site. Before burning activities are undertaken, CDFG states that the necessary approvals would be obtained from NCUAQMD, including approval of burn permits and a smoke management plan. The Restoration Plan includes the requirement that the smoke management plan be prepared in a manner protective of any western snowy plover populations that may be present at the time of the proposed burn operations.

State Lands Commission

The California State Lands Commission (SLC) has direct jurisdiction and authority over ungranted sovereign tidelands and submerged lands underlying the State's navigable waterways (ocean, bays, sloughs, lakes, and rivers) as well as over other lands subject to the public trust. CDFG has an existing lease from the SLC over the project site and certain surrounding lands for preservation of wildlife habitat and for the periodic breaching of Lake Earl. To ensure that the applicant has the necessary authority to undertake all aspects of the project on trust lands, **Special Condition 2** requires CDFG to demonstrate that the SLC has reviewed and if necessary, approved all aspects of the project before commencing the activities authorized by this permit.

U. S. Fish & Wildlife Service

CDFG has obtained a Technical Assistance letter of consultation from the U. S. Fish & Wildlife Service dated May 3, 2010 (**Exhibit 10**). The letter conveys the finding that the activities proposed in the "Lake Earl Wildlife Area Coastal Dunes Restoration Plan" would not result in the take of federally listed species. The letter provides numerous recommendations for the protection of the western snowy plover during proposed project activities, which CDFG has incorporated into the revised Restoration Plan (**Exhibit 9**); the Restoration Plan also incorporates the Technical Assistance letter as Appendix F.

D. STANDARD OF REVIEW

The proposed project is located in Del Norte County, in an area that is within the Commission's retained permit jurisdiction. Del Norte County has a certified local coastal program (LCP), but the subject site is located within an area over which the state retains a public trust interest, as shown on State Lands Commission maps. Therefore, the standard of review that the Commission must apply to the project is the Chapter 3 policies of the Coastal Act.

E. ENVIRONMENTALLY SENSITIVE HABITAT AREAS

Section 30240 of the Coastal Act states:

> *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
>
> *(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Section 30107.5 of the Coastal Act defines "environmentally sensitive habitat area" as:

> *…any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.*

Coastal Dune ESHA

The proposed Restoration Plan (**Exhibit 9**) seeks to restore natural dune ecosystem conditions to approximately 34 acres of coastal dune habitat within the Lake Earl Wildlife Area shown in **Exhibits 2, 3,** and **4**. The portion of the Wildlife Area located within the proposed project limits is considered Environmentally Sensitive Habitat (ESHA) pursuant to the definition set forth in the Coastal Act, as discussed below.

The subject dunes are part of the much larger Lake Earl Dune System that extends several miles north and south of Lake Earl and as much as two miles inland. The area is composed of dense stands of the invasive European beachgrass (*Ammophila arenaria*), open sand, native dune mat vegetation, herbaceous deflation plain wetlands and some coastal scrub habitat. The purpose of the proposed project is to improve the coastal dune habitat for the benefit of native plants and wildlife. To achieve this, the primary activity proposed is the removal of *Ammophila* by mechanical and manual methods. Mechanical removal would be limited to approximately 14 of the 34 acres as generally shown in **Exhibit 4**.

Detrimental impacts of *Ammophila*

Resource management agencies consider *Ammophila* the most pervasive exotic plant species currently threatening coastal dunes on the west coast of the United States. *Ammophila* is a better sand accumulator than the native dunegrass and dune mat vegetation, and creates a higher, steeper foredune profile. Dune formations anchored by *Ammophila* tend to form in parallel to the shoreline, further decreasing sand flow to the inner dunes and thus limiting the supply of sand substrate needed to support the native dune vegetation. In contrast, natural dune processes typically result in more perpendicular dune patterns, allowing sand drift to maintain the inner dunes. Although cyclic stabilization of dunes is a naturally occurring phenomenon in the Pacific Northwest regulated by tectonic events, the presence of *Ammophila* shortens the time for stabilization, eliminates or occupies habitat niches for native species, and drastically alters natural succession.

At Tolowa Dunes, the foredune average height is 33 feet with peaks as high as 39 feet. By comparison, LIDAR[3] surveys in 2002 indicated that the existing sand berm at the mouth of Lake Tolowa was approximately 13 feet above Mean Sea Level (msl). According to CDFG, the steep foredunes in the proposed project area are thought to have vertically accreted about 10 feet more than would otherwise have been likely if *Ammophila* colonies were not present.

Dune mat vegetation; rare plants

Despite the evident impacts of *Ammophila*, remnants of globally rare dune mat vegetation continue to persist within the proposed project area (see **Exhibit 7**), as stated in the Restoration Plan and confirmed by a botanical survey of the project area conducted in 2009 (Appendix A). The botanical survey was submitted by CDFG in support of the pending permit application. The survey also located and mapped populations of sand dune phacelia (*Phacelia argentea*), a rare perennial plant sometimes called silvery phacelia, within the proposed project boundaries (**Exhibits 4, 6**). Within California, sand dune phacelia grows only on the coastal dunes of Del Norte County. The survey stated that suitable habitat for dark-eyed gilia (*Gilia millefoliata*), a rare annual plant identified by the California Native Plant Society as a List 1B.2 species occurs within the general project area, though no individual plants were specifically identified. The survey also noted that a query of the California Natural Diversity Database and the California Native Plant Society (CNPS) Inventory of Rare, Threatened and Endangered Plants for the project area and the surrounding 7.5-minute USGS quadrangles showed that suitable habitat for as many as 19 Special Status regionally occurring sensitive plant species exists within the proposed project area.

Western snowy plover

The proposed project area contains federally-designated critical habitat for the threatened western snowy plover (*Charadrius alexandrinus nivosus*), a small shorebird. Plover nesting sites have historically been identified within the boundaries of the proposed project site. No nests have been observed during surveys over the past twenty years, however. Other factors affect plover nesting in the area as well, but dense stands of *Ammophila* have directly displaced nesting sites and increased cover for predators. Annual bird counts have noted plovers overwintering near the proposed project site.

Allowable Use Test; Final Demonstration of Restoration Project Success

Section 30240(a) of the Coastal Act limits activities that may be undertaken within Environmentally Sensitive Habitat Areas (ESHAs) to only those uses that are dependent on the resources of the subject ESHA. The proposed project would be located within an approximately 111-acre portion of the 6,144-acre Lake Earl Wildlife Area managed by the applicant, CDFG. The project area includes the dune complex where CDFG proposes to undertake habitat restoration primarily by removing invasive European beachgrass (*Ammophila arenaria*) as described in the subject "Lake Earl Wildlife Area Coastal Dune Restoration Plan" (as revised July 12, 2012, **Exhibit 9**). Within the proposed project boundaries, CDFG proposes to remove *Ammophila* from approximately 34 acres of environmentally sensitive coastal dune habitat. Approximately 14 acres of the subject dunes would be treated by digging up the *Ammophila* with heavy equipment (bulldozers, excavators); the remainder would be treated by hand removal of

[3] LIDAR ("Light Detection and Ranging") is an optical remote sensing technology that can measure the distance to, or other properties of a target by illuminating the target with light, often using pulses from a laser.

the beachgrass. Beachgrass detritus would either be disposed of by deeply burying the grass or by drying it in piles and burning it.

Exhibit 4 shows the general areas within the proposed project boundaries where the mechanical removal method would be used. Elsewhere within the dune habitat where sensitive resources exist, manual removal methods would be used as noted above. In these locations, crews would use shovels to dig about one foot down into the dune sands to loosen the fibrous grass roots, and then pull the plants out by hand.

The fragile dune habitat within the subject site is highly disturbed and has been significantly colonized by *Ammophila* as shown in **Exhibit 7**. The infestation has changed the physical shape of the dunes and affects ongoing dune processes in ways that favor further growth of *Ammophila* and successional species at the expense of the native dune vegetation and the dune ecosystem as a whole. If the proposed restoration project is implemented, CDFG predicts that substantial dune ecosystem improvement will be realized within the project area and that the recovery and maintenance of native dune mat vegetation will follow thereafter. Rare native plant populations are expected to recover as well. CDFG notes that the subject dunes are considered a particularly valuable ecosystem and a very rare type of ESHA on the Pacific Coast. The entire project area therefore meets the definition of ESHA set forth in the Coastal Act.

As stated above, the purpose of the proposed project is to restore and protect native vegetation and to return natural ecosystem function to the coastal dune habitat within the Wildlife Area. CDFG proposes to accomplish this purpose through a combination of mechanical and manual removal of exotic invasive plants. Thus, as the project is inherently designed to achieve the restoration of the environmentally sensitive habitat area, the Commission finds that the proposed development activities within the environmentally sensitive dune habitats, including exotic plant removal, are designed exclusively for the benefit of the ESHA. The Commission has further determined because the proposed dune restoration project is inherently dependent upon the presence of ESHA, the project constitutes a use dependent on the resources of the ESHA consistent with the use requirements of Section 30240(a) of the Coastal Act.

This finding that the proposed project constitutes "a use dependent on the resources of the ESHA" is based, in part, on the assumption that the proposed exotic plant removal will be successful in restoring native dune habitat values as proposed. Should the project be unsuccessful, or worse, if the proposed impacts of the project actually result in long term degradation of the habitat, the proposed development would not be for "restoration purposes."

The Restoration Plan proposes post-restoration monitoring, but does not include a success standard and provisions for additional restoration measures or adaptive management intervention if a final monitoring report should fail to establish that the success standard has been met. As noted above, should the proposed project result in either no benefit to the subject coastal dune habitat or worse, if the project should result in the deterioration of the coastal dune habitat as compared with the pre-project baseline, the development would by definition not be for restoration purposes as required by Coastal Act Section 30240(a) set forth above. Therefore, to ensure that the proposed project ultimately achieves the objectives for which it is intended (i.e., for the restoration of dune habitat by removing invasive *Ammophila* to promote the growth of native dune mat vegetation), and thus would be consistent with the requirements of Coastal Act

Section 30240(a), that development in ESHA be limited to uses dependent on the resources of the ESHA, the Commission attaches **Special Condition 4** which requires that CDFG submit a final monitoring report within five (5) years after the commencement of mechanical *Ammophila* removal comparing pre- and post-restoration conditions and evaluating whether, in light of all monitoring reports prepared in accordance with the Restoration Plan, native dune mat vegetation has increased relative to the coverage by *Ammophila* or other exotic invasive species in the treated areas. If CDFG cannot demonstrate such improvement, Special Condition 4 further establishes the requirement that CDFG secure a permit amendment to implement additional restoration activities or additional adaptive management measures necessary to achieve the required favorable restoration result.

Measures to protect ESHA

The Commission has determined as set forth above that all areas within the subject project boundaries are ESHA. Nevertheless, project activities undertaken within these boundaries, even resource dependent uses, may nevertheless affect other specific, sensitive resources also located within the boundaries of the proposed project.

Coastal Act Section 30240(a) as stated above requires that ESHA be protected against any significant disruption of habitat values. The Restoration Plan originally dated May 2011 contains numerous provisions to protect the sensitive native plant and wildlife species during *Ammophila* removal and disposal operations. In addition to these measures, the Restoration Plan has been updated and annotated as of July 12, 2012 to directly incorporate all mitigation measures identified in the "Mitigated Negative Declaration" (MND) dated July 2011, prepared by CDFG as lead agency for purposes of compliance with the California Environmental Quality Act, and all measures protective of the western snowy plover recommended by the U. S. Fish & Wildlife Service (**Exhibit 10**). The revised restoration plan including all protective measures discussed herein is attached as **Exhibit 9** (though some informational Appendices to the Restoration Plan are only on file with the subject coastal development permit application but are included in the subject Restoration Plan). Therefore, all of the mitigation measures set forth in the MND (additionally referenced in Appendix A of this report) have been fully incorporated into the Restoration Plan approved by the Commission. **Special Condition 3** requires that all project activities be carried out in accordance with the approved Restoration Plan set forth in **Exhibit 9**. The referenced mitigation measures set forth in the revised Restoration Plan (**Exhibit 9**) include the following measures enforceable by the Commission through **Special Condition 3:**

> *Coastal Dune Mat Vegetation; Rare Plants; Wetlands*
>
> - *To avoid significant disturbance to native coastal dune mat habitat, beachgrass removal using heavy equipment will take place only within areas where European beachgrass comprises >80% of the plant cover (Fig. 3). In the remainder of the project area, trained work crews will use hand shovels to selectively remove only the targeted invasive species. Removal of native plants will be avoided throughout all phases of the project whenever possible.*
> - *Prior to project implementation within an area, all known sand dune phacelia sites will be located using stored coordinates on GPS units, and flagged (Fig. 3). Surveys for the rare dark-eyed gilia will take place in spring, prior to restoration activities. Any new rare plant occurrences will be documented and flagged.*

- *A 5 m (16.4 ft) buffer will be established between rare plant occurrences and any use, transport, or staging of heavy equipment. Plants will be enclosed by orange construction fencing prior to equipment activities to ensure avoidance of disturbance. Placement of stakes to support fencing will avoid disturbing root systems of sensitive plants.*
- *Hand pulling activities around rare plants will avoid disturbing their root systems.*
- *Burn piles will not occur within 5 m (16.4 ft) of sensitive plants to protect them from heat damage.*
- *All heavy equipment will be thoroughly washed to ensure removal of any nonnative plants and/or seeds outside the project area prior to entering the project area.*
- *CDFG will visit work sites prior to occupation by work crews, and will establish a buffer of at least 5 m (16.4 ft) of all ACOE delineated wetlands and any surface waters using exclusionary flagging (yellow and black striped) or temporary fencing within the treatment area. Only manual removal techniques will be allowed within the wetland buffer zone.*
- *When crossing wetland sloughs is necessary for manual removal crews to access project lands, temporary bridges and specific paths will be established and flagged to limit impacts to the smallest area possible.*
- *Wetlands will be further protected from hazardous waste by adhering to [construction site "housekeeping measures" and hazardous materials control measures further specified in the Restoration Plan].*

Snowy plover; grassland nesting birds

- *Habitat restoration activities will be scheduled outside of the snowy plover's breeding season (February 15th to September 15th) as much as possible.*
- *When the breeding season cannot be avoided <u>and</u> where based on snowy plover surveys that demonstrate nesting activity (or occupancy), habitat restoration work will occur in occupied habitat if an authorized plover monitor is on site during work. A minimum 100 m (323 ft) buffer zone will be maintained between the daily work area and snowy plovers. The monitor will have the authority to halt restoration work if a plover is observed within the daily work area, and have the ability to direct project-related activities away from plovers to maintain a 100 m (323 ft) buffer. Snowy plovers will not be flushed or hazed under any circumstances; whether accidental or intentional.*
- *If snowy plovers are detected during the non-breeding season or where it has been determined nesting activity is not occurring, a spatial buffer of 50 m (164 ft) will be maintained between plovers and restoration activities.*
- *The burn plan, including the smoke management plan, will be designed in accordance with the USFWS May 3, 2010 technical assistance letter recommendations (Appendix F), which state in part that smoke will be managed to avoid the main roosting sites for non-breeding snowy plovers (and brown pelicans Pelecanus occidentalis). Broadcast burning will not occur during the snowy plover breeding season, unless surveyors determine in*

advance that no breeding activity is occurring in the area likely to be affected by smoke.

- *During the breeding season (March-August 15), CDFG staff will survey potentially affected areas for European beachgrass ground nesting birds prior to commencement of work in a given area.*
- *Any nests that are found during CDFG surveys, or incidentally by other project personnel, will be protected by a 100 meter (323 ft) avoidance buffer for the remainder of the breeding season.*

Cultural Resources:

- *Establishment of a 30 m (98.4 ft) buffer area excluding heavy equipment from known archaeological site CRF-TDS-1.*
- *Presence of a professional archaeologist when project activities occur within 100 m (323 ft) of CRF-TDS-1.*
- *Following prescribed protocol if any new artifacts or human remains are discovered during project implementation.*

The project as conditioned by **Special Condition 3** will therefore not significantly degrade adjacent ESHA also located within the project boundaries and will be compatible with the continuance of all of the sensitive resources located within the subject habitat area. Therefore, the Commission attaches **Special Condition 3**. The Commission finds that the project as conditioned is therefore consistent with Section 30240(a) of the Coastal Act.

Therefore, for all of the reasons set forth above, the Commission finds that the proposed project, as conditioned, is consistent with Section 30240 of the Coastal Act, as: (1) development approved within the ESHA is for a use dependent on the resources of the environmentally sensitive dune habitats and will not result in a significant disruption of the ESHA; and (2) development approved within the ESHA is also sited and designed to prevent impacts to other adjacent ESHA also located within the project area which could otherwise be caused by the implementation of the proposed project, and would thus be compatible with the continuance of the ESHA.

F. PUBLIC COASTAL ACCESS

Section 30210 of the Coastal Act requires that maximum public access shall be provided consistent with public safety needs and the need to protect natural resource areas from overuse. Section 30212 of the Coastal Act requires that access from the nearest public roadway to the shoreline be provided in new development projects, except where it is inconsistent with public safety, military security, or protection of fragile coastal resources, or where adequate access exists nearby. Section 30211 of the Coastal Act requires that development not interfere with the public's right to access gained by use or legislative authorization. Section 30214 of the Coastal Act provides that the public access policies of the Coastal Act shall be implemented in a manner that takes into account the capacity of the site and the fragility of natural resources in the area. In applying Sections 30210, 30211, 30212, and 30214, the Commission is also limited by the need to show that any denial of a permit application based on these sections or any decision to grant a permit subject to special conditions requiring public access is necessary to avoid or offset a project's adverse impact on existing or potential access.

The proposed project will not adversely affect public access. The project site is located along the western margins of the Lake Earl Wildlife Area and thus is bordered by the Pacific Ocean on the western project boundary. The public uses the waveslope and project areas for beachcombing, horseback riding, nature study and other uses. The proposed project would not restrict existing authorized uses of the subject site. However, from time to time while heavy equipment is operating, the public may be excluded from specific areas of the proposed project site to protect public safety. These exclusions would be very limited, applicable only to relatively small subareas of the Wildlife Area for short durations of time as necessary during the anticipated five-year schedule of project activities. No significant impact on public coastal access would thus result. Therefore, the Commission finds that the proposed project does not have any significant adverse effect on public access to the shoreline, and the project as proposed without new public access is consistent with the public access policies of Coastal Act cited above.

G. ARCHAEOLOGICAL RESOURCES

Section 30244 of the Coastal Act states as follows:

> *Where development would adversely impact archeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.*

The project area is located within the ethnographic territory of the Tolowa people in northwest California. The Tolowa historically used the coastal margins of the Lake Earl dunes for subsistence year round. Contemporary Tolowa members continue some of these practices, such as surf fishing, shellfish collecting, and fish-drying in the present day. A Cultural Resources Investigation was conducted by the Humboldt State University Cultural Resources Facility (HSU-CRF) for the proposed project (see Appendix A). No previously known archaeological sites are present on the project site, but one newly recorded archaeological site (location confidential, on file with CDFG) was discovered during the course of these studies. Cultural resource protective measures were prescribed by HSU-CRF to protect this site and any others that may be discovered inadvertently during project implementation. These measures are specifically outlined in the Restoration Plan (**Exhibit 9**). **Special Condition 3** requires that the proposed project activities be undertaken in accordance with the approved Restoration Plan, which therefore is subject to the identified mitigation measures.

CDFG proposes to undertake more than 700,000 cubic yards of excavation and fill within the foredune areas proposed for mechanical removal of European beachgrass. Other areas will be managed by hand removal. The identified archaeological site would be fully protected from disturbance during these activities. However, CDFG in undertaking the disturbance of the dune area during restoration activities may encounter previously unknown archaeological resources or cultural remains. CDFG has included mitigation measures in the Restoration Plan that would follow a protocol outlined by the HSU-CRF investigation (**Exhibit 9**). **Special Condition 3** requires that the proposed project be undertaken in accordance with the approved Restoration Plan, thus including these measures as part of the conditions of this coastal development permit.

In addition, to ensure the detailed analysis of any archaeological or cultural resource discovered during project activities, and the appropriate course of action based on such analysis, the

Commission also attaches **Special Condition 1**. This condition requires that if an area of cultural deposits is discovered during the course of the project all construction shall cease and shall not recommence until a qualified cultural resource specialist analyzes the significance of the find. Thereafter, **Special Condition 1** requires the permittee to submit a supplementary archaeological plan based on the specialist's analysis for the review and approval of the Executive Director. After review of the supplementary plan, the Executive Director would either authorize recommencement of the project activities or require that the permittee obtain an amendment to coastal development permit 1-12-007, depending on the extent and significance of the discovery.

Therefore, the Commission finds that the proposed project, as conditioned, is consistent with Coastal Act Section 30244, as the development will include mitigation measures to ensure that the development will not adversely impact archaeological resources.

H. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

The applicant served as the lead agency for the project for CEQA purposes. The applicant prepared a Mitigated Negative Declaration for the project dated July 2011 (Appendix A). The applicant received a Notice of Completion from the State Clearinghouse in August 2011. No comments were received.

Section 13906 of the Commission's administrative regulation requires Coastal Commission approval of coastal development permit applications to be supported by a finding showing the application, as modified by any conditions of approval, is consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are any feasible alternatives or feasible mitigation measures available, which would substantially lessen any significant adverse effect the proposed development may have on the environment.

The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. As discussed above, the proposed project has been conditioned to be consistent with the policies of the Coastal Act. No public comments regarding potential significant adverse environmental effects of the project were received by the applicant as the lead agency during CEQA review of the project, nor were any public comments received by the Coastal Commission prior to preparation of the staff report. As specifically discussed in these above findings, which are hereby incorporated by reference, mitigation measures that will minimize or avoid all significant adverse environmental impacts have been required. All mitigation measures established in the Mitigated Negative Declaration and the protective measures recommended by the U. S. Fish & Wildlife Service in undertaking Technical Assistance review of the project May 3, 2010 have been incorporated into the proposed project and required by the pertinent special conditions applied herein. As conditioned, there are no other feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impacts which the activity may have on the environment. Therefore, the Commission finds that the proposed project, as conditioned to mitigate the identified impacts, can be found consistent with the requirements of the Coastal Act to conform to CEQA.

APPENDIX A: SUBSTANTIVE FILE DOCUMENTS

Coastal Development Permit Application Materials:

Application file for Coastal Development Permit No. 1-12-007.

Environmental Documents Submitted in Support of the CDP Application:

Initial Study and Mitigated Negative Declaration for the Lake Earl Wildlife Area Coastal Dunes Restoration Plan, Del Norte County, CA, dated July 2011, prepared by Deborah L. Jaques, Pacific Eco Logic, Astoria, Oregon; Sandra E. Jerabek, Tolowa Dunes Stewards/Smith River Alliance, Crescent City CA, and R. Robert Smith, California Dept. of Fish and Game, Redding, CA. (State Clearinghouse No. 201172072015: Review commenced August 9, 2011, no public comments were received, Notice of Completion dated August 12, 2011)

Lake Earl Wildlife Area Coastal Dune Restoration Plan, dated May 2011, prepared under the direction of the California Department of Fish and Game by Deborah Jaques M.S. and Sandra Jerabek M.Sc., Project Manager, for Tolowa Dunes Stewards, a Project of Smith River Alliance and California Department of Fish and Game, with funding support of the California Coastal Conservancy, pursuant to the proposal of CDP applicant/property owner/manager CDFG.

Reconnaissance Geologic Analysis of the Lake Earl Coastal Dunes Restoration Plan, Del Norte County, California, PWA Report No. 10091701, dated April 2010, prepared by William Weaver, Principal Geomorphologist, Thomas H. Leroy, Professional Geologist #7751 Pacific Watershed Associates, Inc., P.O. Box 4433, Arcata CA 95518-4433.

An Archaeological Survey Report for the Lake Earl Wildlife Area Coastal Dunes Restoration Project, dated April 2010, prepared by William Rich, M.A., RPA and James Roscoe, M.A., Cultural Resources Facility, Humboldt State University, 1 Harpst St., Arcata, CA 95518.

Report of Delineation of Wetlands and Other Waters of the U.S., Dunes Restoration Project, Lake Earl Wildlife Area, dated November 2009, prepared by Tamara L. Gedik, Principal Biologist, Gedik BioLOGICAL Associates, P.O. Box 104, Trinidad, CA 95570.

Biological Report for Sensitive Plan Surveys, Dunes Stewards Restoration Project, dated August 31, 2009, prepared by Tamara L. Gedik, Principal Biologist, Gedik BioLOGICAL Associates, P.O. Box 104, Trinidad, CA 95570.

Published Reports and Proceedings:

Proceedings of 1997 Symposium of the California Exotic Pest Plant Council. *Control of European Beachgrass (Ammophila arenaria) on the West Coast of the United States*, Andrea J. Pickart, The Nature Conservancy Lanphere-Christensen Dunes Preserve, Arcata CA 95521.

CDP 1-10-004. Staff Report for Coastal Development Permit 1-10-004 (California Dept. of Parks & Recreation). Little River State Beach, off of Clam Beach Road, near Highway 101 & Crannel Avenue, McKinleyville area, Humboldt County.

CDP 1-09-026. Staff Report for Coastal Development Permit 1-09-026 (California Dept. of Parks & Recreation). Little River State Beach, near Highway 101 & Crannel Avenue, McKinleyville area, Humboldt County. Restoration of approximately 81 acres of dune habitats through the removal of invasive exotic plant species and the restoration of natural dune topography using heavy equipment, flaming, and manual removal techniques.

CDP 1-09-047. Adopted Findings for Coastal Development Permit 1-09-047 (County of Del Norte, California Dept. of Fish & Game). On the beach at the Lake Earl/Lake Tolowa sandbar, two miles north of Crescent City, Del Norte County. Periodic breaching of the Lake Earl/Lake Tolowa sandbar for flood control purposes during the 2010-2011 through 2014-2015 rainy seasons (September 1 to February 15) whenever lagoon elevations reach 8 feet above mean sea level, and again on or about February 15 if lagoon elevations are 5 feet or more above mean sea level.

CDP 1-07-050. Staff report for Coastal Development Permit 1-07-050 (California Dept. of Fish & Game). At five sites within the Pacific Shores Subdivision near the unincorporated community of Fort Dick, Del Norte County. Implement *Oregon Silverspot Butterfly Experimental Habitat Improvement Pilot Project* entailing a variety of experimental vegetation removal and management techniques, involving mowing, livestock grazing, burning, and manual release techniques to be performed seasonally over a two-year period.

CDP 1-05-022. Staff report for Coastal Development Permit 1-05-022 (California Dept. of Parks and Recreation). Gold Bluffs Beach, Prairie Creek Redwoods State Park, north of Orick, Humboldt County. Remove approximately 15 acres of European beachgrass and other invasive, exotic vegetation from the dunes using an experimental heavy equipment method to determine optimal removal techniques.

CDP 1-04-071. Staff report for Coastal Development Permit 1-04-071 (California Dept. of Parks & Recreation). Little River State Beach, near Highway 101 & Crannel Avenue, McKinleyville area, Humboldt County. Experimentally treat European beachgrass infested dunes to determine optimal removal and disposal techniques to restore dune habitat using eight 1.48-acre treatment areas within the dunes.

CD-052-02. Consistency Determination CD-052-02 (Bureau of Land Management). Humboldt Bay South Spit, Humboldt County. Implementation of *South Spit Interim Management Plan*, a three-year Interim Management Plan (IMP) including habitat restoration activities. The IMP included measures to control invasive European beachgrass and to restore natural dune conditions within a twenty-seven acre area of the South Spit.

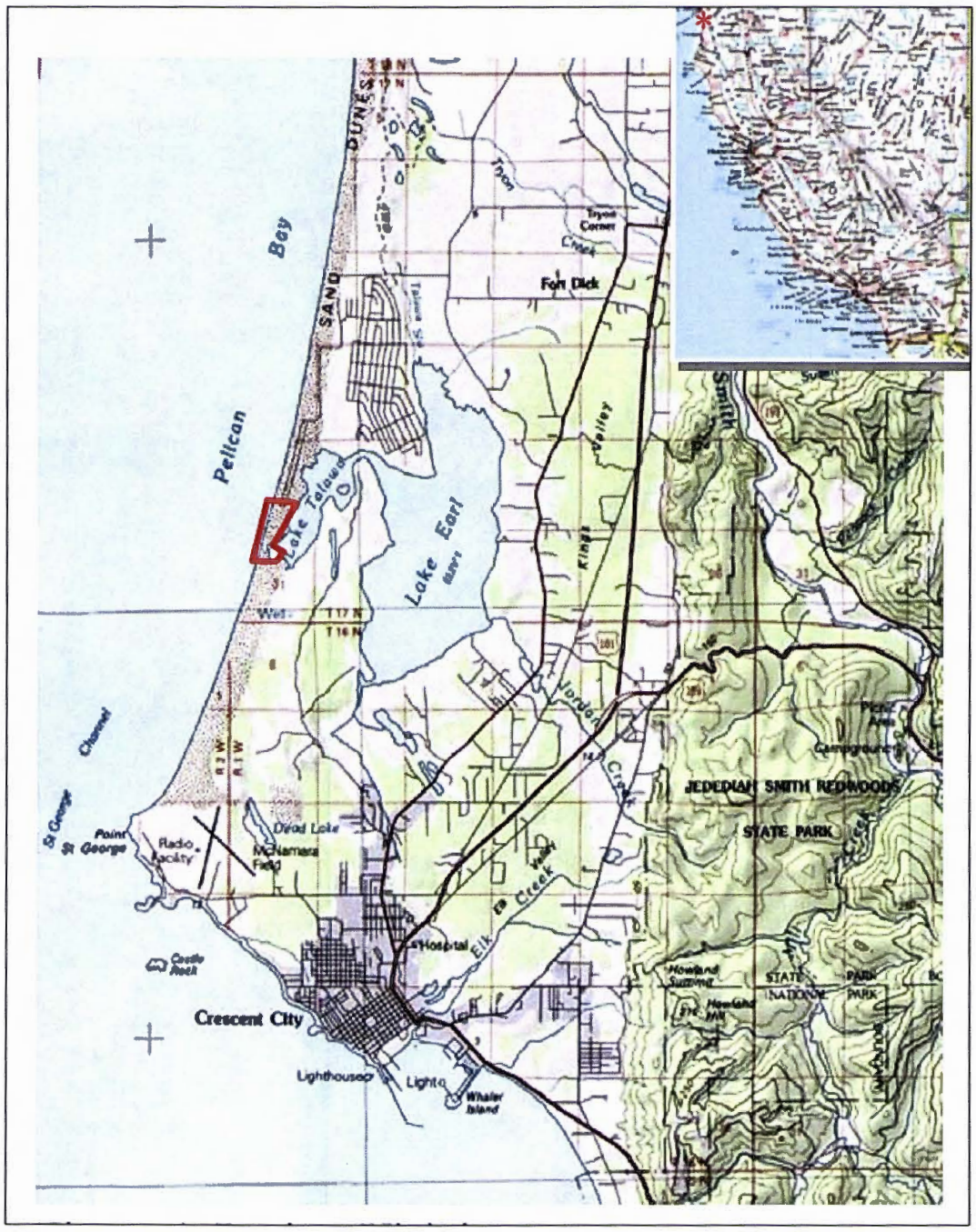
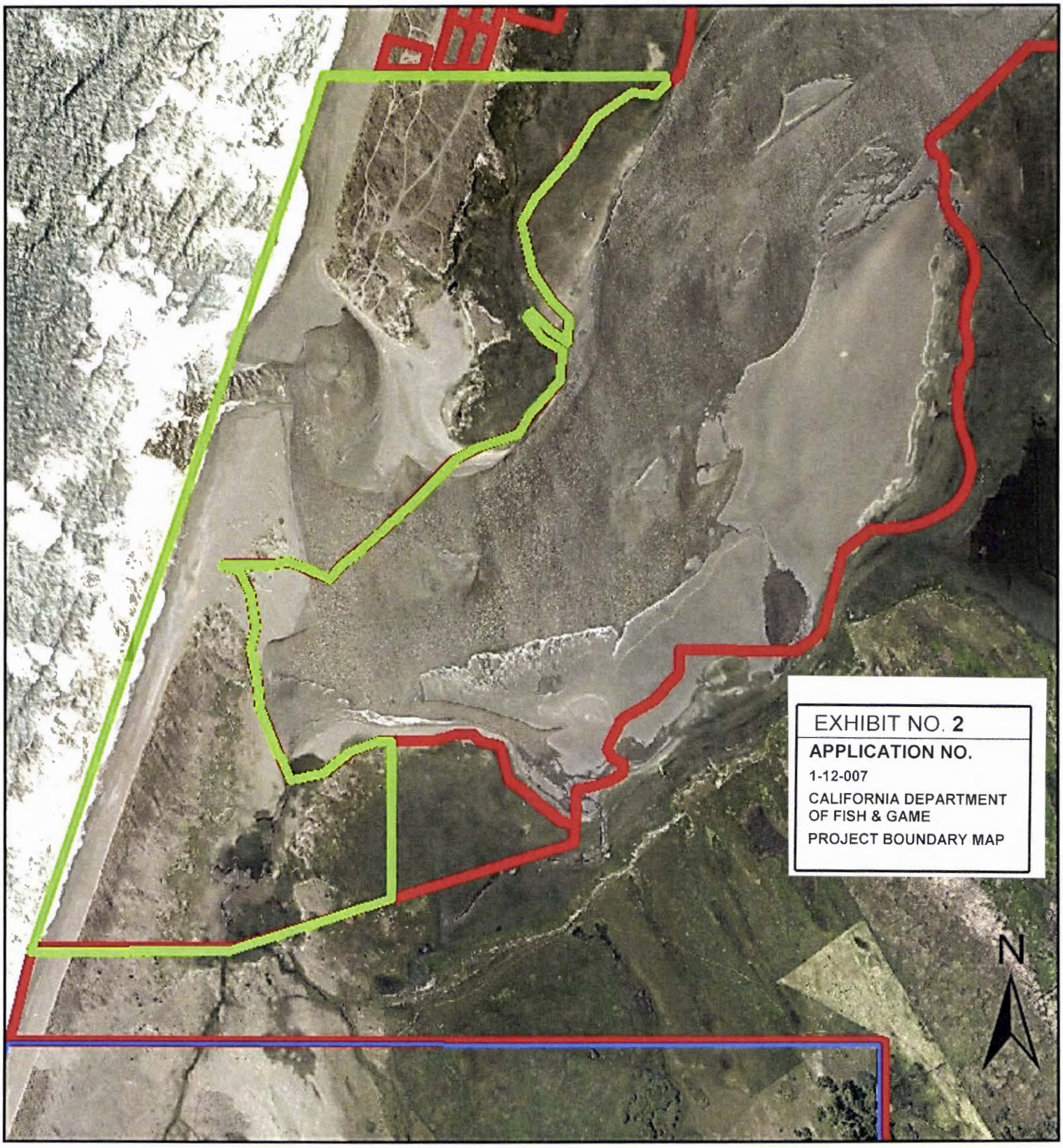


Figure 1. Location of the Lake Earl Wildlife Area Coastal Dunes Restoration Project (outlined in red) in Del Norte County, California.

EXHIBIT NO. 1
APPLICATION NO.
1-12-007
CALIFORNIA DEPARTMENT OF FISH & GAME
REGIONAL LOCATION MAP



Proposed Coastal Dune Restoration Boundary

Mouth of Lake Tolowa

Meters
0 37.5 75 150 225 300

Feet
0 140 280 560 840 1,120

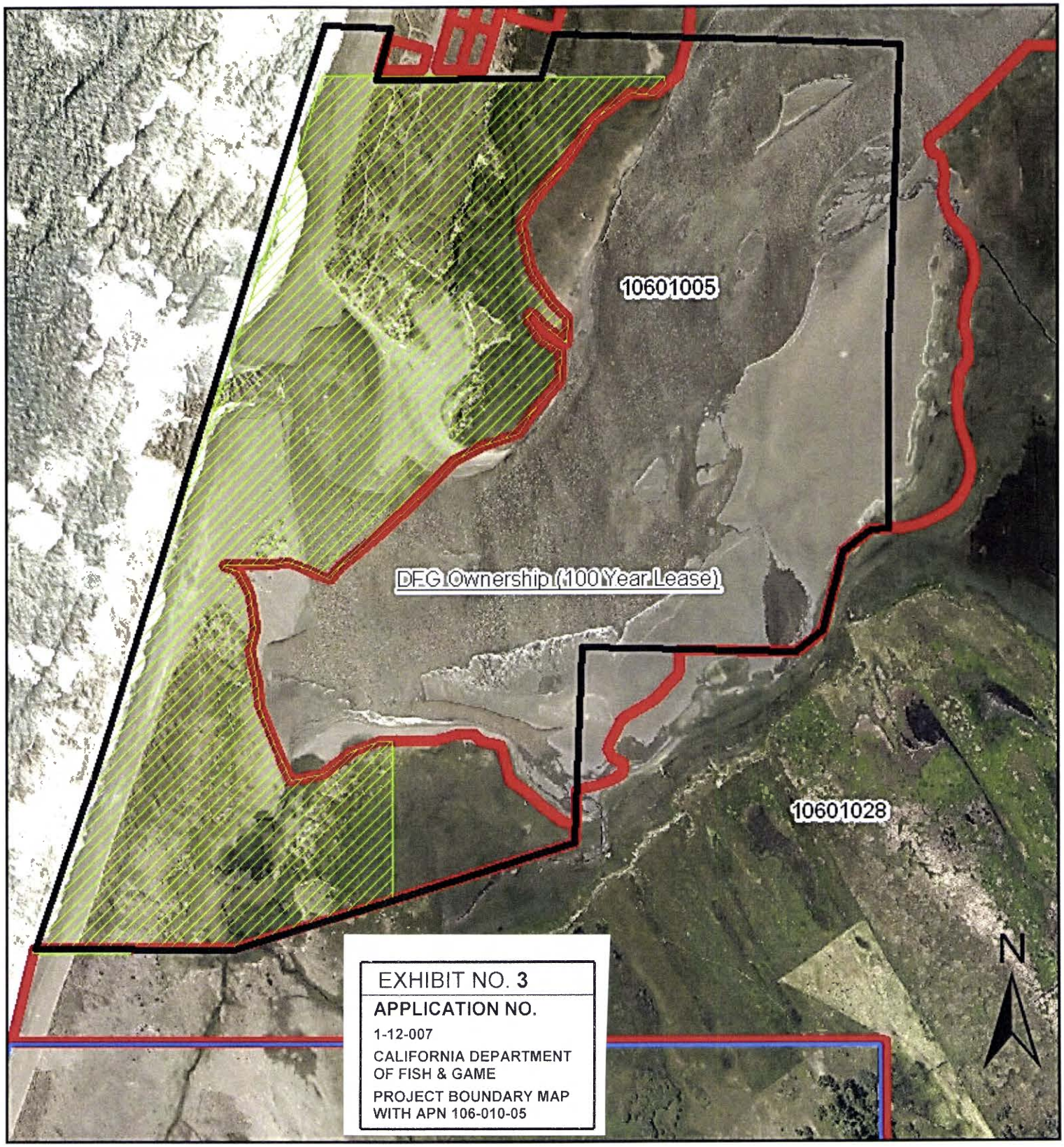
Lake Earl Wildlife Area

Coastal Dune Restoration Project Boundary
Tolowa Dunes State Park Boundary
DFG Lake Earl Wildlife Area Boundary

California Department of Fish & Game
Wildlife & Lands Program
North Coast Wildlife Area Complex

DEPARTMENT OF FISH AND GAME

Date: 11 July 2012
California Department of Fish & Game, Eureka
North Coast Wildlife Area Complex
Map is for planning purposes only.
Map developed by: Robert M. Sullivan (rsullivan@dfg.ca.gov).
Data provided in UTM Zone 10, NAD 83, meters.



Proposed Coastal Dune Restoration Boundary

Mouth of Lake Tolowa

Meters
0 37.5 75 150 225 300

Feet
0 145 290 580 870 1,160

Lake Earl Wildlife Area

APN#_10601005
Coastal Dune Restoration Project Boundary
Tolowa Dunes State Park Boundary
DFG Lake Earl Wildlife Area Boundary

California Department of Fish & Game
Wildlife & Lands Program
North Coast Wildlife Area Complex

DEPARTMENT OF FISH AND GAME

Date: 11 July 2012
California Department of Fish & Game, Eureka
North Coast Wildlife Area Complex
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Map developed by: Robert M Sullivan (rsullivan@dfg.ca.gov)
Data provided in UTM Zone 10, NAD 83, meters.

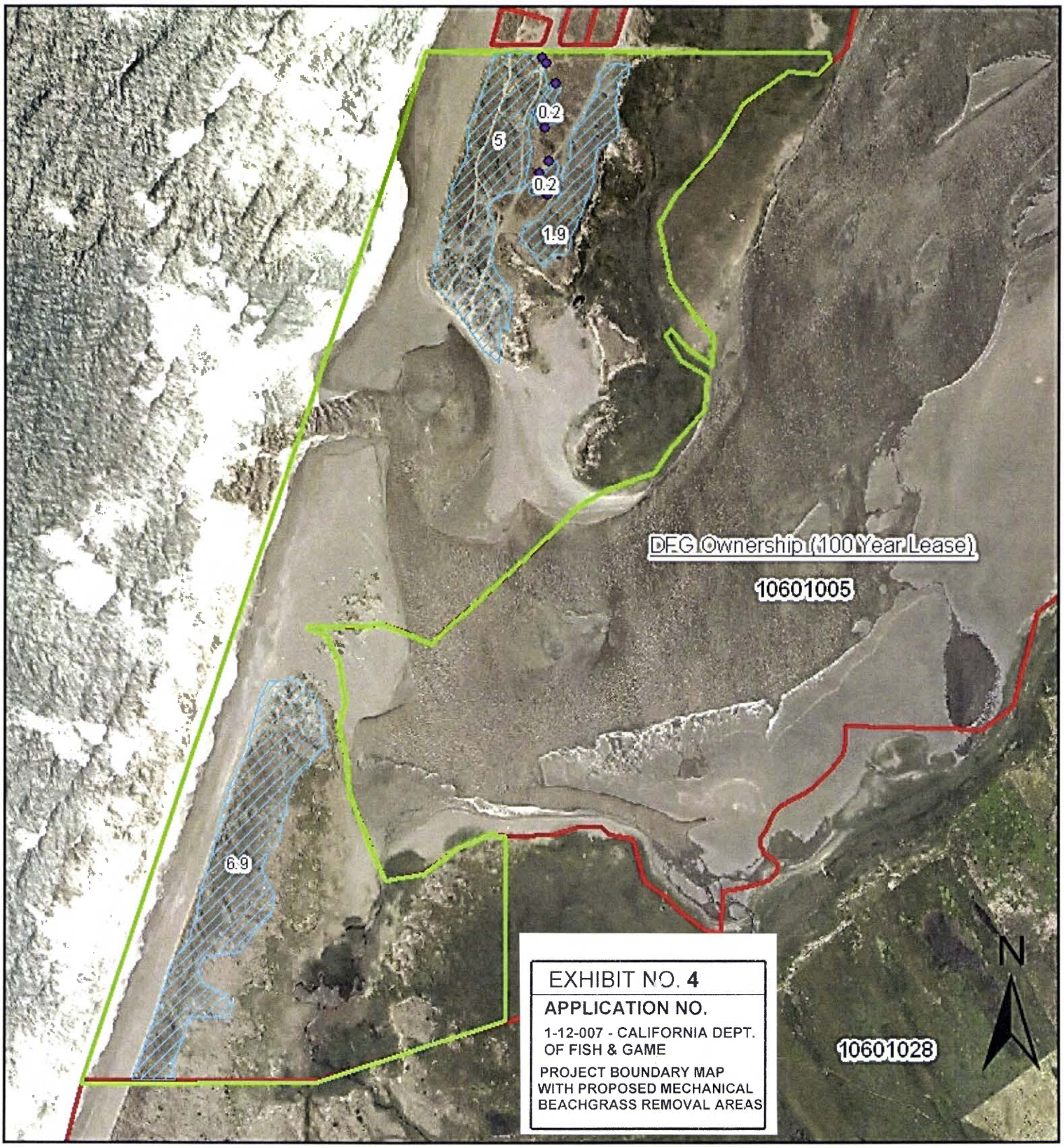


EXHIBIT NO. 4

APPLICATION NO.

1-12-007 - CALIFORNIA DEPT. OF FISH & GAME

PROJECT BOUNDARY MAP WITH PROPOSED MECHANICAL BEACHGRASS REMOVAL AREAS

Approximate Location of Mechanical Beachgrass Removal Zones (Acres)

Mouth of Lake Tolowa

Meters
0 30 60 120 180 240

Feet
0 115 230 460 690 920

Lake Earl Wildlife Area

- Phacelia Plants
- Mechanical Beachgrass Removal Areas
- **Coastal Dune Restoration Project Boundary**
- **DFG Lake Earl Wildlife Area Boundary**

California Department of Fish & Game
Wildlife & Lands Program
North Coast Wildlife Area Complex

DEPARTMENT OF FISH AND GAME

Date: 11 July 2012
California Department of Fish & Game, Eureka
North Coast Wildlife Area Complex
Maps is for planning purposes only.
Map developed by: Robert M Sullivan (rsullivan@dfg.ca.gov).
Data provided in UTM Zone 10, NAD 83, meters.

Photo~10-13-2005

Photo~11-28-07

EXHIBIT NO. **5**

APPLICATION NO.

1-12-007 - CALIFORNIA DEPT. OF FISH & GAME

AERIAL PHOTOGRAPHS OF LAKE EARL / LAKE TOLOWA COMPLEX, 2005-2001 (1 of 2)

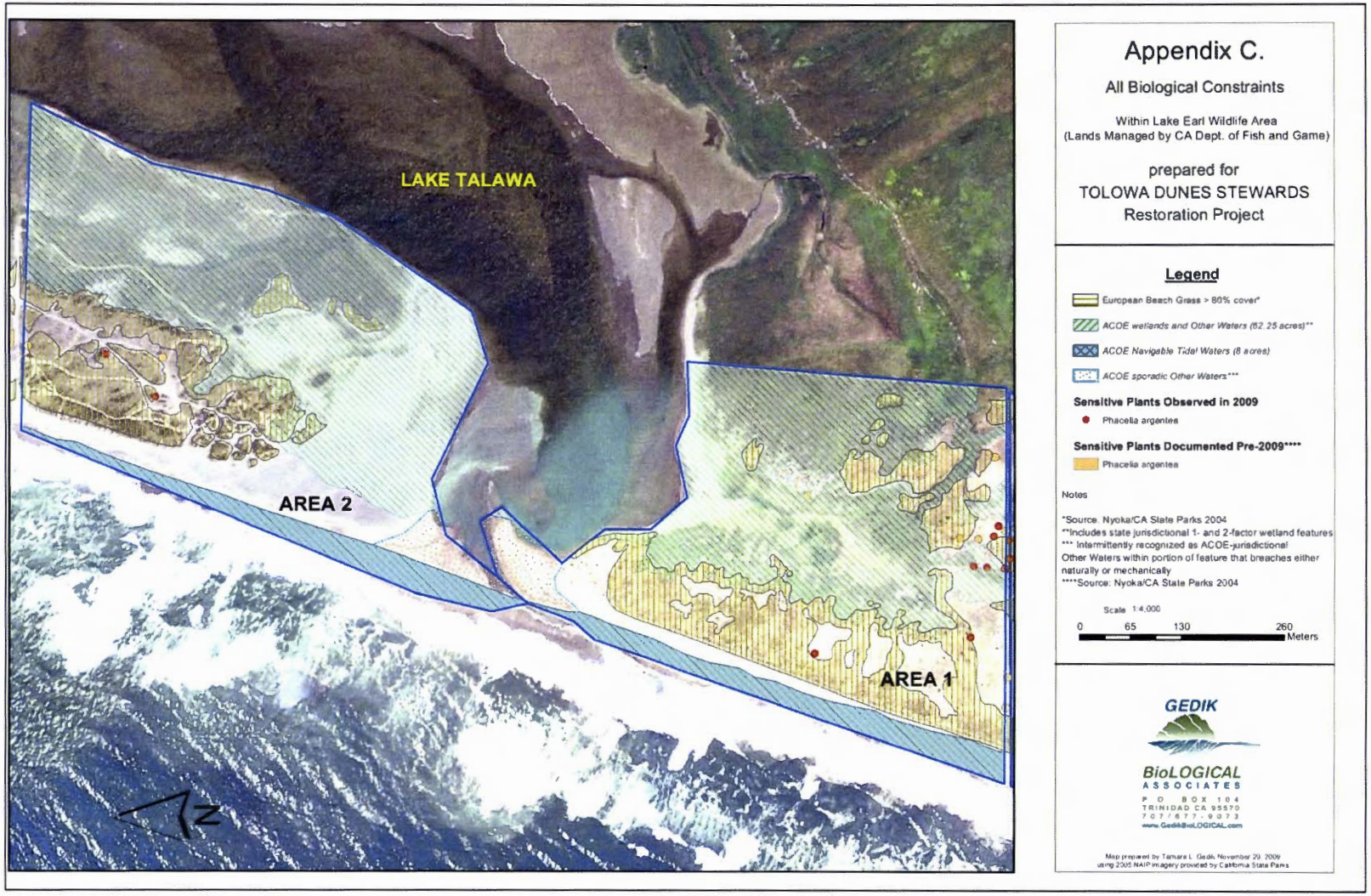
Photo 10-6-2011

Photo~10-6-11

EXHIBIT NO. 6

APPLICATION NO. 1-12-007
CALIF. DEPT. OF FISH & GAME

WETLANDS & RARE PLANT HABITAT WITHIN & NEAR PROJECT AREA (SOUTHERLY PORTIONS OF "AREA 1" ARE OUTSIDE PROJECT BOUNDARIES)



Appendix C.

All Biological Constraints

Within Lake Earl Wildlife Area
(Lands Managed by CA Dept. of Fish and Game)

prepared for
TOLOWA DUNES STEWARDS
Restoration Project

Legend

- European Beach Grass > 80% cover*
- *ACOE wetlands and Other Waters (52.25 acres)***
- *ACOE Navigable Tidal Waters (8 acres)*
- *ACOE sporadic Other Waters****

Sensitive Plants Observed in 2009

- Phacelia argentea

Sensitive Plants Documented Pre-2009***

- Phacelia argentea

Notes

*Source: Nyoka/CA State Parks 2004
**Includes state jurisdictional 1- and 2-factor wetland features
*** Intermittently recognized as ACOE-jurisdictional
Other Waters within portion of feature that breaches either naturally or mechanically
****Source: Nyoka/CA State Parks 2004

Scale 1:4,000

0 65 130 260 Meters

GEDIK
BioLOGICAL ASSOCIATES
P O BOX 104
TRINIDAD CA 95570
707/677-9073
www.GedikBioLOGICAL.com

Map prepared by Tamara L. Gedik, November 29, 2009
using 2005 NAIP imagery provided by California State Parks

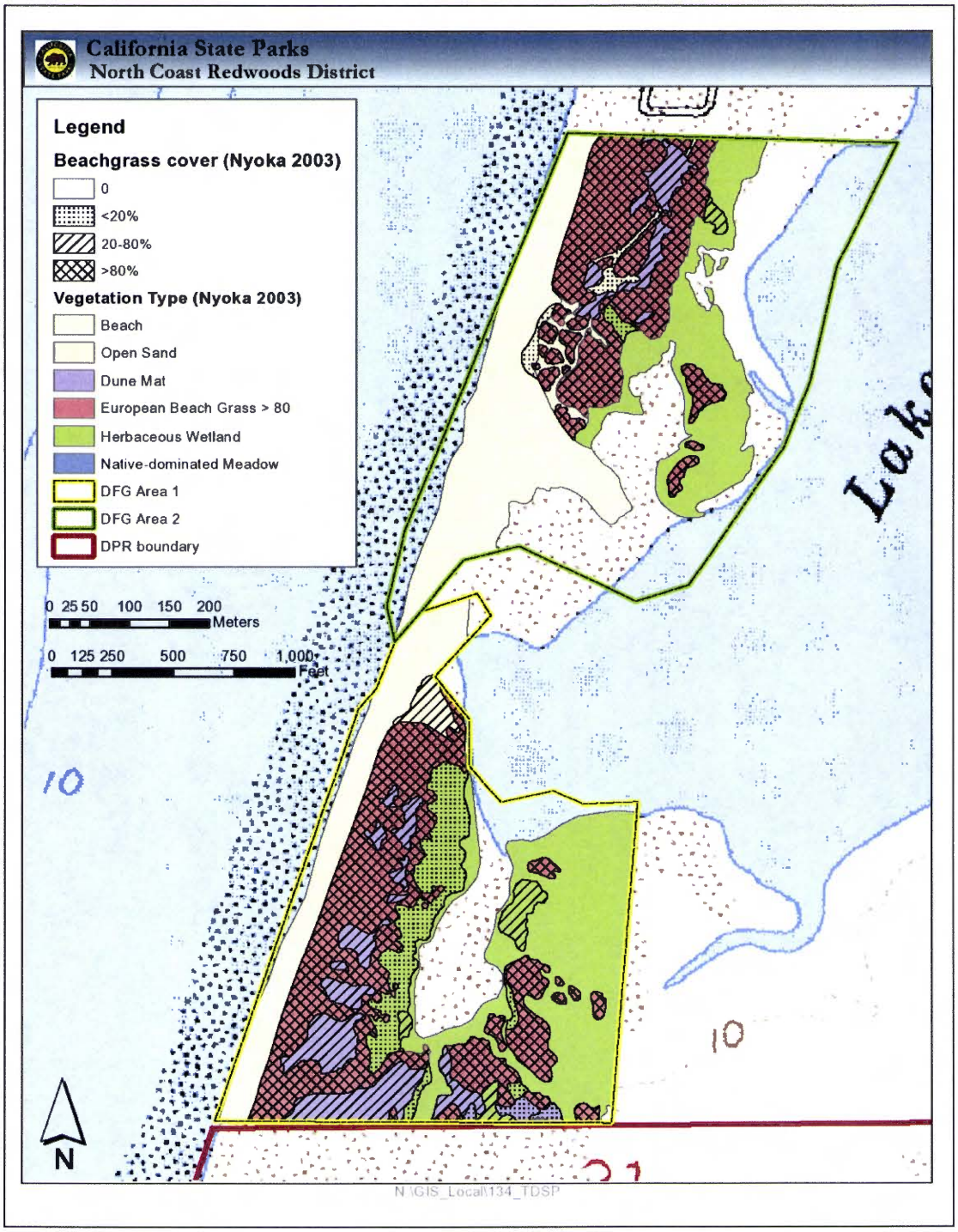


Figure 3. Major vegetation types within the Lake Earl Coastal Dunes Restoration Project Area as defined by Nyoka (2003). Map provided courtesy of California Department of Parks and Recreation.

EXHIBIT NO. 7
APPLICATION NO.
1-12-007 - CALIFORNIA DEPT. OF FISH & GAME
MAJOR VEGETATION TYPES WITHIN PROJECT BOUNDARIES

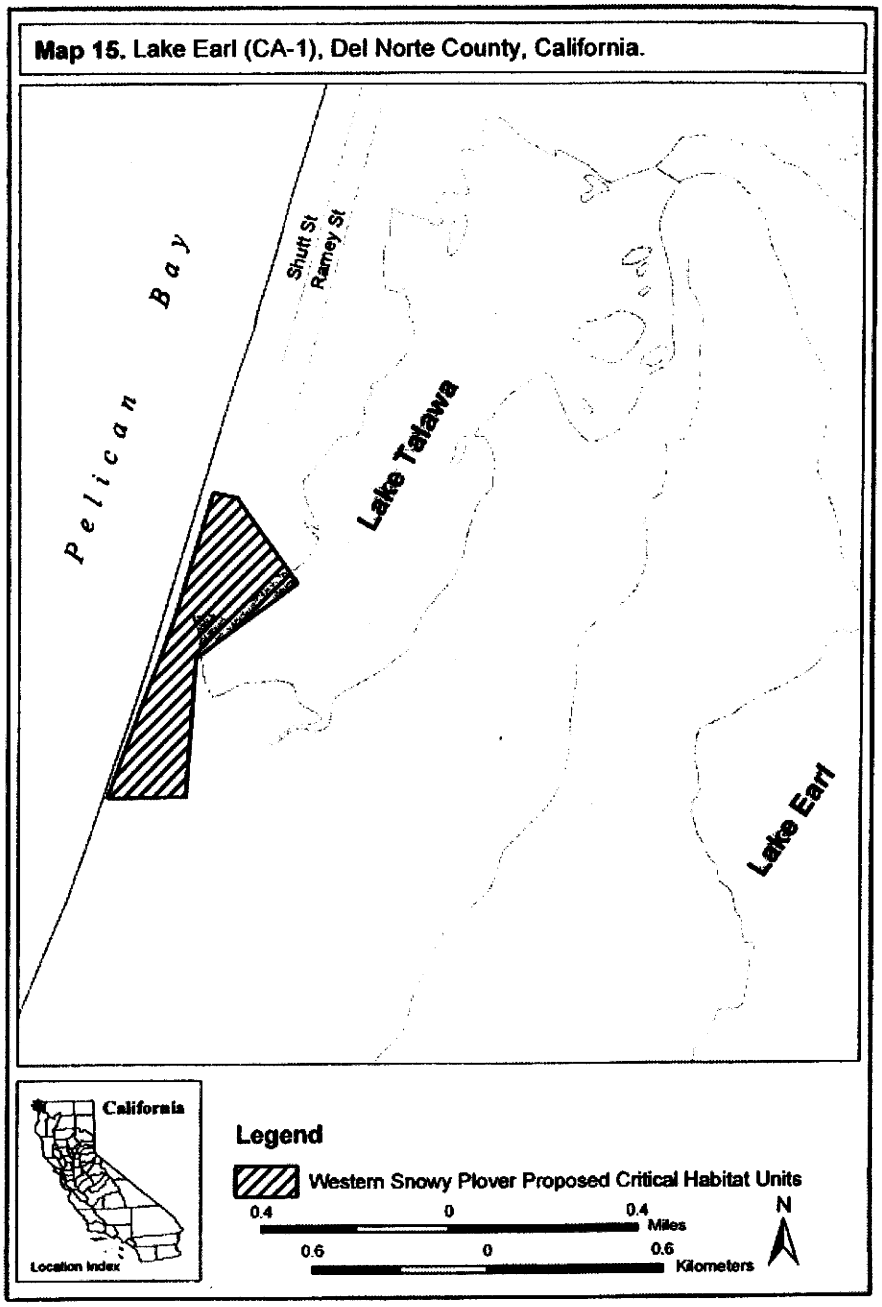


Figure 6. Critical habitat designation for the Western Snowy Plover at the mouth of Lake Tolowa, Del Norte County, CA. From USFWS 2005a.

EXHIBIT NO. 8
APPLICATION NO.
1-12-007 - CALIFORNIA DEPT. OF FISH & GAME
CRITICAL HABITAT DESIGNATION FOR THE WESTERN SNOWY PLOVER NEAR LAKE TALAWA