STATE OF CALIFORNIA -- THE RESOURCES AGENCY GRAY DAVIS, *GOVERNOR*

CALIFORNIA COASTAL COMMISSION

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

MAILING ADDRESS:
P. O. BOX 4908
EUREKA, CA 95502-4908

RECORD PACKET COPY

W 19b

Staff: Tiffany S. Tauber
Staff Report: June 29, 2001
Hearing Date: July 11, 2001
Commission Action:

STAFF REPORT: REGULAR CALENDAR

APPLICATION NO.: **1-00-025**

APPLICANT: **California Department of Fish and Game**

PROJECT LOCATION: At the Fay Slough Wildlife Area located between Eureka and Arcata adjacent to northbound Highway 101 at the northern limits of the City of Eureka, Humboldt County (APNs 402-161-07, -08; 402-171-08; 501-241-09).

PROJECT DESCRIPTION: Enhance existing wetlands by: (1) repairing 5,142 linear feet of existing dike, (2) removing 1,400 linear feet of dike, (3) constructing 630 linear feet of new dike, (4) excavating 7 shallow ponds, (5) installing 4 water control structures, (6) raising 2,182 linear feet of access road by two feet, and (7) creating approximately 0.52 acres of wetland at the Eel River Wildlife Area to mitigate for wetland fill from dike improvements.

GENERAL PLAN DESIGNATION: Agriculture Exclusive

ZONING DESIGNATION: Agriculture Exclusive 60-acre-minimum

LOCAL APPROVALS RECEIVED: None Required

OTHER APPROVALS REQUIRED: Army Corps of Engineers

SUBSTANTIVE FILE DOCUMENTS: (1) Humboldt County LCP, (2) Coastal Development Permit No. 1-89-31

SUMMARY OF STAFF RECOMMENDATION:

Staff recommends approval with special conditions of the proposed wetland enhancement project. The project would increase the availability of seasonal water and create a diversity of wetland habitats at the Fay Slough Wildlife Area, located at the northern end of the City of Eureka adjacent to northbound Highway 101 in Humboldt County. The proposed project involves dredging and filling within wetlands including: (1) repairing 5,142 linear feet of existing dike, (2) removing 1,400 linear feet of dike, (3) constructing 630 linear feet of new dike, (4) excavating 7 shallow ponds, (5) installing 4 water control structures, (6) raising 2,182 linear feet of access road by two feet, and (7) creating approximately 0.5 acres of wetland at the Eel River Wildlife Area to mitigate for wetland fill from dike construction. The project is an allowable use for dredging and filling of wetlands because it is solely for a restoration purpose intended to enhance wetland habitat values at the site consistent with Coastal Act Section 30233(a)(7).

The proposed project is intended to benefit the environment by enhancing wetland habitat values. However, to ensure that the proposed project does not result in unintended significant adverse impacts to coastal resources and actually enhances wetland habitat values consistent with the resource protection provisions of Section 30233 and 30240, the Commission attaches Special Condition Nos. 1-6. These recommended conditions require that: (1) a final revised restoration monitoring plan be submitted for review and approval by the Executive Director to ensure that the goals and objectives of the restoration project are met, (2) a monitoring plan for the mitigation site be submitted for the review and approval by the Executive Director to ensure the goals and objectives of the mitigation site are met, (3) the mitigation at the Eel River Wildlife Area be constructed as proposed, (4) no excavated material or other construction related debris be placed in coastal waters or wetlands and that all excess material and temporary fill be removed and disposed of in an approved location, (5) construction activities occur between July 15th and November 15th to prevent conflicts with the primary wildlife breeding season at the site, and (6) the applicant obtain appropriate project approval from the U.S. Army Corps of Engineers.

As conditioned, staff has determined that the proposed development would be consistent with the Chapter 3 policies of the Coastal Act.

STAFF NOTES:

1. Standard of Review

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

2. Commission's Concurrent Review of Application No. 1-99-075

At the July 11, 2001 meeting, the Commission will also be reviewing a similar and related wetland enhancement project proposed by the Department of Fish and Game at the Eel River Wildlife Area (Item No. W 19a, 1-99-075). The two projects are under separate coastal development permit applications, but are related by the fact that mitigation for wetland fill proposed at the Fay Slough Wildlife Area would occur at the Eel River Wildlife Area.

I. MOTION, STAFF RECOMMENDATION AND RESOLUTION:

The staff recommends that the Commission adopt the following resolution:

Motion:

I move that the Commission approve Coastal Development Permit No. 1-00-025 pursuant to the staff recommendation.

STAFF RECOMMENDATION OF APPROVAL:

Staff recommends a **YES** vote. 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 TO APPROVE THE PERMIT:

The Commission hereby approves a coastal development permit for the proposed development 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. 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:** See Attachment A.

III. **SPECIAL CONDITIONS:**

1. Restoration Monitoring Program

A. PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit, for review and written approval of the Executive Director, a final revised monitoring program that substantially conforms with the monitoring program submitted to the Commission entitled "Fay Slough Wildlife Area Monitoring Plan" prepared by Terri Weist of the Department of Fish and Game and attached as Exhibit No. 8, except that it shall be revised to include the following:

1. Performance standards that will assure achievement of levels of bird usage and wetland vegetation cover at the project site to levels that are greater than pre-project levels of bird usage and wetland vegetation cover at the project site. The monitoring goals and objectives shall include but not be limited to the following standards: (a) increases in waterfowl use, (b) increases in shorebird use, (c) increases in wading bird use, and (d) increases in emergent wetland vegetation cover.

2. Provisions for monitoring at least the following attributes: (a) waterfowl use of the wildlife area, (b) shorebird feeding and resting use, (c) wading bird use, and (d) emergent wetland vegetation around the perimeter of the freshwater pond for five years using methods such as: transects, photo plots, and bird counts.

3. Ecological performance criteria shall relate logically to the restoration goals enumerated in (a) above. Where there is sufficient information to provide a strong scientific rationale, the performance criteria may be absolute (e.g., specified number of bird-hours of use per unit time or specified vegetative cover). Where absolute performance criteria cannot reasonably be formulated, clear relative performance criteria shall be specified. Relative criteria are those that require a comparison of the restoration site with reference sites. In the case of relative performance criteria, the rationale for the selection of reference sites, the comparison procedure, and the basis for judging differences to be significant shall be specified. If a comparison (e.g., restoration variate's value to an absolute standard or to a reference value) requires a statistical test, the test shall be described, including the desired magnitude of difference to be detected, the desired statistical power of the test, and the alpha level at which the test will be conducted. The design of the sampling program shall relate logically to the performance criteria and chosen methods of comparison. The sampling program shall be described in sufficient detail to enable an independent scientist to duplicate it. Frequency of monitoring and sampling shall be specified for each variable to be monitored. Sample sizes shall be specified and their rationale explained. Based on the magnitude of difference to be detected, the desired statistical power, the chosen alpha

level, and an estimate of the appropriate sampling variability, the necessary sample size will be estimated.

4. Provisions for submittal within 30 days of completion of the initial enhancement work of (1) "as built" plans demonstrating that the initial enhancement work has been completed in accordance with the approved enhancement program, and (2) an assessment of the initial biological and ecological status of the "as built" enhancements. The assessment shall include an analysis of the attributes that will be monitored pursuant to the program, with a description of the methods for making that evaluation.

5. Provisions for monitoring and remediation of the restoration site in accordance with the approved final restoration program and the approved final monitoring program for a period of five years.

6. Provisions for submission of annual reports of monitoring results to the Executive Director by a particular date each year for the duration of the required monitoring period, beginning the first year after submission of the "as-built" assessment. Each report shall include copies of all previous reports as appendices. Each report shall also include a "Performance Evaluation" section where information and results from the monitoring program are used to evaluate the status of the wetland enhancement project in relation to the performance standards.

7. Provisions for submission of a final monitoring report to the Executive Director at the end of the five-year reporting period. The final report must be prepared in conjunction with a qualified wetlands biologist. The report must evaluate whether the enhancement site conforms with the goals, objectives, and performance standards set forth in the approved final enhancement program. The report must address all of the monitoring data collected over the five-year period.

B. If the final report indicates that the enhancement project has been unsuccessful, in part, or in whole, based on the approved performance standards, the applicant shall submit a revised or supplemental enhancement program to compensate for those portions of the original program which did not meet the approved performance standards. The revised enhancement program shall be processed as an amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

C. The permittee shall monitor and remediate the wetland enhancement site in accordance with the approved monitoring program. Any proposed changes from the approved monitoring program shall be reported to the Executive Director. No changes to the approved monitoring program shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines no amendment is legally required.

2. Mitigation Monitoring Program

A. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicant shall submit for review and written approval of the Executive Director, a final detailed monitoring program designed by a qualified wetland biologist for monitoring of the wetland mitigation site. The monitoring program shall at a minimum include the following:

1. Performance standards that will assure achievement of levels of bird usage and wetland vegetation cover at the mitigation site that are greater than pre-project levels of bird usage and wetland vegetation cover at the project site. The mitigation monitoring goals and objectives shall include but not be limited to the following standards: (a) increases in waterfowl use, (b) increases in shorebird use, (c) increases in wading bird use, and (d) increases in emergent wetland vegetation cover.

2. Provisions for monitoring at least the following attributes: (a) waterfowl use of the wildlife area, (b) shorebird feeding and resting use, (c) wading bird use, and (d) increases in emergent wetland vegetation around the perimeter of the mitigation site for five years using methods such as: transects, photo plots, and bird counts.

3. Ecological performance criteria shall relate logically to the mitigation goals enumerated in (a) above. Where there is sufficient information to provide a strong scientific rationale, the performance criteria may be absolute (e.g., specified number of bird-hours of use per unit time or specified vegetative cover). Where absolute performance criteria cannot reasonably be formulated, clear relative performance criteria shall be specified. Relative criteria are those that require a comparison of the restoration site with reference sites. In the case of relative performance criteria, the rationale for the selection of reference sites, the comparison procedure, and the basis for judging differences to be significant shall be specified. If a comparison (e.g., mitigation variate's value to an absolute standard or to a reference value) requires a statistical test, the test shall be described, including the desired magnitude of difference to be detected, the desired statistical power of the test, and the alpha level at which the test will be conducted. The design of the sampling program shall relate logically to the performance criteria and chosen methods of comparison. The sampling program shall be described in sufficient detail to enable an independent scientist to duplicate it. Frequency of monitoring and sampling shall be specified for each variable to be monitored. Sample sizes shall be specified and their rationale explained. Based on the magnitude of difference to be detected, the desired statistical power, the chosen alpha level, and an estimate of the appropriate sampling variability, the necessary sample size will be estimated.

4. Provisions for submittal within 30 days of completion of the initial mitigation work of (1) "as built" plans demonstrating that the initial enhancement work has been completed in accordance with the approved enhancement program, and (2) an

assessment of the initial biological and ecological status of the "as built" enhancements. The assessment shall include an analysis of the attributes that will be monitored pursuant to the program, with a description of the methods for making that evaluation.

5. Provisions for monitoring and remediation of the mitigation site in accordance with the approved final mitigation program and the approved final monitoring program for a period of five years.

6. Provisions for submission of annual reports of monitoring results to the Executive Director by a particular date each year for the duration of the required monitoring period, beginning the first year after submission of the "as-built" assessment. Each report shall include copies of all previous reports as appendices. Each report shall also include a "Performance Evaluation" section where information and results from the monitoring program are used to evaluate the status of the wetland mitigation site in relation to the performance standards.

7. Provisions for submission of a final monitoring report to the Executive Director at the end of the five-year reporting period. The final report must be prepared in conjunction with a qualified wetlands biologist. The report must evaluate whether the enhancement site conforms with the goals, objectives, and performance standards set forth in the approved final mitigation program. The report must address all of the monitoring data collected over the five-year period.

B. If the final report indicates that the mitigation project has been unsuccessful, in part, or in whole, based on the approved performance standards, the applicant shall submit a revised or supplemental enhancement program to compensate for those portions of the original program which did not meet the approved performance standards. The revised enhancement program shall be processed as an amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

C. The permittee shall monitor and remediate the wetland mitigation site in accordance with the approved monitoring program. Any proposed changes from the approved monitoring program shall be reported to the Executive Director. No changes to the approved monitoring program shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines no amendment is legally required.

3. Off-Site Wetland Mitigation

The permittee shall create 0.52 acres of freshwater wetland at the Eel River Wildlife Area to mitigate for the filling of 0.52 acres of freshwater wetland at the Fay Slough Wildlife Area as proposed and approved by Coastal Development Permit No. 1-00-025.

4. Construction Responsibilities and Debris Removal

The permittee shall comply with the following construction-related requirements:

(a) No construction materials, debris, or waste shall be placed or stored where it may be subject to entering waters of Fay Slough or slough channels;

(b) Any and all excess excavated material resulting from construction activities that is not utilized for the approved levee repair or other development approved pursuant to this authorization shall be removed and disposed of at a disposal site outside the coastal zone or placed within the coastal zone pursuant to a valid coastal development permit.

(c) Any and all temporary fill associated with the ditch crossing used to access the Fay Slough levee shall be removed within 30 days of project completion and the ditch shall be recontoured and revegetated to its condition that existed prior to the placement of the fill.

5. Timing of Construction

To avoid adverse impacts to wildlife during prime breeding season, all project construction shall occur between July 15th and November 15th.

6. Army Corps of Engineers Approval

PRIOR TO COMMENCEMENT OF CONSTRUCTION, the permittee shall provide to the Executive Director a copy of a permit issued by the Army Corps of Engineers, or letter of permission, or evidence that no permit or permission is required. The applicant shall inform the Executive Director of any changes to the project required by the Army Corps of Engineers. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

IV. FINDINGS AND DECLARATIONS

The Commission hereby finds and declares:

1. Site Description, Background & Project Description

The Department of Fish and Game proposes to enhance existing wetlands to provide increased habitat value and diversity for water-associated wildlife at the Fay Slough Wildlife Area (FSWA). The proposed site is located at the northern end of the City of Eureka, between Eureka and Arcata and adjacent to northbound Highway 101 in Humboldt County. The FSWA comprises approximately 500 acres of former ranch lands that was purchased by the state in 1987. The site

is bordered by Fay Slough on the southern edge and is bisected by multiple slough channels, an existing unimproved access road, and several interior levees. With the exception of the road and levees, the entire site is considered seasonal wetland. Murray Field, a county airport, is located adjacent to the site on the south and access to the FSWA from Highway 101 is shared with an automobile dealership north of Murray Road. Highway 101 forms the northwestern boundary of the FSWA and separates it from the intertidal salt marshes and mudflats of Humboldt Bay. Lands adjacent to the north, south and east of Fay Slough are in agricultural use. (Exhibit Nos. 1 &2)

Most of the site is relatively flat, rather monotypic pasture lands composed of a variety of grasses, sedges, rushes and forbs, many of which are exotic species introduced through historic agricultural uses. Currently, the area contains seasonal wetlands, short and tall grass pasture, and seasonal sloughs, with only the borrow ditch from the perimeter dike holding water year-round. Salt marshes remain only as a fringe along the tidal side of the Fay Slough levee.

The FSWA provides habitat for a diversity of water associated wildlife including waterfowl, wading birds, rails, shorebirds, coot, gulls, otter, mink, amphibians, and reptiles. Raptors including red-tailed hawk, red-shouldered hawk, northern harrier, barn owl, and screech owl inhabit the area. Other species that inhabit the FSWA include black bear, black-tailed deer, fox, raccoon, skunk, and weasel. The Pacific tree frog and yellow-legged frog are also known to inhabit the FSWA. Other amphibians in the area include the clouded salamander, black salamander, ensatina, northwest salamander, and rough-legged newt.

Background

The FSWA site was historically part of the extensive tidal marshes of Humboldt Bay, but was converted to agricultural use following the construction of a levee around this portion of Humboldt Bay around the turn of the 20th century. The site was farmed and grazed until 1987 when the area was acquired by the California Department of Fish and Game (DFG) with Proposition 19 Bond funds intended specifically for the acquisition, restoration, and management of coastal wetlands.

Diking and filling in the early part of the last century to promote agricultural, industrial, and urban land uses has resulted in substantial degradation of northern California coastal wetlands, including those around Humboldt Bay. This degradation has resulted in a significant reduction in wetland function and wildlife values. Historically, Humboldt Bay extended from the sand spits that separate it from the Pacific Ocean to the base of the inland foothills. The bay was first diked in the late 19th century by the railroad crossing the marshes between Eureka and Arcata. Subsequent dike construction further isolated former tidelands from the bay and the area was converted to agricultural uses. Like many of the historic tidelands around Humboldt Bay, the project area was never fully drained following the construction of the Bay levee and therefore, the vast majority of the project site remains seasonal wetland. Although the land is now a state wildlife area, only a portion of the site has been enhanced to improve wetland habitat values.

The Commission has previously approved wetland enhancement activities at the Fay Slough Wildlife Area. In 1989, the Commission approved Coastal Development Permit No. 1-89-31 that involved creating over 11 acres of wetland by removing fill and improving freshwater wetlands on about 120 acres. The fill removed included buildings, concrete pads and earthen fills present at the site when it was acquired. The project also included placing fill on interior roads to form low dikes and constructing 550 feet of additional dike. The dike involved filling .13 acres of wetland and was constructed to hold runoff water in two shallow freshwater ponds totaling about 120 acres.

Project Description

The DFG proposes to enhance existing seasonal freshwater wetlands and improve habitat values for water associated wildlife at the Fay Slough Wildlife Area. The project involves repairing the Fay Slough dike that separates freshwater wetlands from saltwater, modifying internal dikes, and excavating shallow freshwater ponds. Most of this development would occur within existing grazed seasonal wetlands. The project is designed to increase the diversity of wetland types within the wildlife area by creating additional seasonal and semi-permanent freshwater ponds. The seasonal wetlands would provide enhanced feeding and resting habitat for migrating and wintering waterfowl and shorebirds and provide brood water for local nesting ducks and geese. Wildlife species that would benefit from the enhancement include shorebirds, waterfowl, wading birds, rails, gulls, songbirds, river otters, mink, reptiles, and amphibians. The DFG has determined that the proposed project would not impact any threatened or endangered plant or animal species.

The draft FSWA Management Plan identifies one of the management goals for FSWA is to enhance habitat for waterfowl. To meet this management goal, the Department of Fish and Game (DFG) proposes to perform activities that would enhance wetland habitat values and increase the biological diversity of the FSWA. Proposed enhancement activities include: (1) repairing 5,142 linear feet of existing dike, (2) removing 1,400 linear feet of dike, (3) constructing 630 linear feet of new dike, (4) excavating 7 shallow ponds, (5) installing 4 water control structures, (6) raising 2,182 linear feet of access road by two feet, and (7) creating approximately 0.52 acres of wetland at the Eel River Wildlife Area to mitigate for wetland fill from dike construction (Exhibit Nos. 3-7). As a result of the proposed enhancement project, water would remain on the surface of the project area longer each year as a result of constructing shallow ponds and water control facilities. The proposed wetland enhancement project is expected to attract increased numbers of shorebirds, wading birds, and waterfowl to the area. As waterfowl and shorebird numbers increase, the prey base for raptors and other predators would also increase.

All excavated material would be used on-site or removed to an authorized disposal site. Exposed dikes would be seeded with a compatible grass seed to prevent erosion. The project is proposed to be constructed between July 15 and November 15. Details of each of the project elements are described below.

Detailed Description of Project Components

a. Repair of Fay Slough Dike

The Fay Slough dike would be repaired using approximately 7,159 cubic yards of native soil excavated on-site. The soil would be placed along 5,142 linear feet of the inboard side of the dike and would result in an increased width of six feet at the base and three feet at the top, which would repair the dike to its approximate original dimensions (Exhibit No. 3 & 4). The proposed dike repair is needed to prevent saltwater intrusion into existing freshwater wetlands through the eroding dike.

This portion of the project would result in filling approximately 0.72 acres of seasonal wetland. As discussed below other project elements involve filling an additional 0.2 acres of seasonal wetland and removing 0.4 acres of fill in seasonal wetlands for a net fill of 0.52 acres. The wetland impacts associated with the dike repair cannot be mitigated by wetland creation on site because the entire FSWA is already seasonal wetland. Therefore, the applicant proposes to mitigate wetland impacts by creating similar habitat off-site. Approximately 0.52 acres of similar seasonal freshwater wetland would be created (in coordination with a separate enhancement project at the Eel River Wildlife Area, 1-99-075) on the Department of Fish and Game's Eel River Wildlife Area located about 13 miles to the southwest. Currently, there is an existing freshwater pond on the Eel River Wildlife Area which would be expanded by excavating the adjacent uplands. The uplands would be excavated on a shallow gradient to a level that would allow water to flow from the pond into the newly excavated site and would also act as a catchment basin to collect winter runoff from the adjacent hillside.

b. Modification of Interior Levees

Three segments of interior levees would be modified by the proposed project. Approximately 1,400 feet of dike would be removed resulting in the removal of 0.4 acres of wetland fill (Exhibit Nos. 3 & 4). Portions of this material would be used to repair the Fay Slough dike discussed in section (a) above. Other portions would be used to construct approximately 630 feet of new dike that would increase the size of an existing freshwater pond by nearly 6 acres. This new dike would result in filling approximately 0.2 acres of seasonal wetlands. The proposed mitigation for this fill is included in the off-site wetland creation discussed in (a) above.

c. Excavation of Shallow Ponds

The project also proposes to excavate 7 shallow depressions in the landscape, thereby increasing the duration and availability of seasonal freshwater wetlands for wildlife and improving habitat diversity at the site (Exhibit Nos. 3-5). These excavations would remove approximately 12-24 inches of soil from 16.5 acres of ungrazed pasture and establish a 10 to 1 slope around the perimeter of the ponds. The excavated material would be used to repair the Fay Slough dike, decrease the size of the borrow ditch, and raise the existing access road.

d. Fay Slough Borrow Ditch

The applicant indicates that the Fay Slough borrow ditch, which runs along the inboard side of the Fay Slough levee and was the source of the material used to construct the dike, is wider and deeper than is optimal for wetland management purposes. The borrow ditch would be reduced from the current average width of 20 feet to five feet and from a current depth of four feet to 2.5 feet (Exhibit Nos. 3 & 4). The applicant indicates that the modified ditch would still provide the capacity necessary to adequately manage the FSWA. The wide, deep ditch does not drain entirely during the summer and as a result becomes stagnant and covered with algae and offers only minimal habitat value. This portion of the project would provide more shallow water habitat since the managed water level would be higher than the crest of the borrow ditch and would allow the ditch to drain more effectively, thereby creating more valuable habitat for wetland vegetation.

e. Water Control Structures and Road Improvement

Water control structures would be installed at four locations to manipulate water for wildlife management purposes. The water control structures consist of a flashboard/riser system and would be maintained regularly (Exhibit No. 3 & 4). These structures would be used to regulate water levels by removing or adding boards to maintain desirable wetland characteristics throughout the project area. The ability to manage the water levels at the site is important to ensure that water levels are adequate to provide optimal wetland habitat during varying times of the year. The water control structures allow water to be impounded in shallow ponds for a longer duration, thereby providing more valuable foraging areas for nesting waterfowl. The water control structures also allow the area to be drained if necessary such as for disease control (i.e. fowl cholera) and for soil management. The water control structures also allow the DFG to manage the property to prevent flooding of private lands adjacent to the FSWA. Approximately 2,182 linear feet of existing access road would be raised approximately two feet above grade with side slopes of approximately 2.5 to 1. The fill proposed to be placed on the existing roadway would not extend beyond the existing road prism and would not result in wetland fill.

f. Temporary Ditch Crossings

The applicant proposes up to four temporary crossings constructed in the Fay Slough borrow ditch for heavy equipment to access the outer dike. The crossings would consist of a culvert of sufficient width with earthen material placed around it to allow heavy equipment to cross safely. The temporary fill would result in the placement of approximately 18 cubic yards of fill and would be removed upon completion of the project.

g. Monitoring

The DFG has submitted a monitoring plan that sets forth performance standards and remedial measures to monitor the success of the proposed wetland enhancement project (Exhibit No. 8). The applicant proposes to monitor bird use, vegetation establishment, and pond development.

Avian monitoring began in October 2000 and monthly pre-project monitoring is being conducted to establish baseline data to compare with post-project surveys. Post-project bird surveys would take place at least biannually for five years and would be compared to the baseline data to detect changes in species occurrences. Wildlife species that area expected to increase in number and occurrence are waterfowl, coots, grebes, shorebirds, herons, and egrets. Four avian monitoring transects were established and the transects would be surveyed in the spring (April-May) and fall (October-November) to capture seasonal bird use of the area.

Once the project is completed, the applicant proposes to map the ponds and dikes using GPS system. Acreage would be determined for each pond developed and digital photographs would be taken biannually at fixed photoplot locations to monitor pond development and vegetation characteristics over five years.

Although the project does not propose active planting of vegetation, pre-project vegetation would be sampled to document change in vegetation type following project completion. The applicant anticipates that while some freshwater wetland vegetation currently exists on the project site, pond development would probably increase emergent wetland species. Since water would inundate portions of the project area, transects would be established along the perimeter of the ponds and throughout non-inundated slough channels to document wetland vegetation establishment. Each 30-meter transect would be comprised of 10, 1-square-meter quadrat plots. Two transects would be established between the two ponds if they are not inundated by water. Vegetation transects would be measured annually in August to document the establishment of wetland vegetation. The applicant proposes that the project goal of wetland enhancement would be considered successful when plot data show greater than 60% of wetland obligate/facultative or emergent wetland species are established. The applicant further indicates that water levels may have to be manipulated to ensure wetland emergent and obligate species are established following implementation of the project should performance standards not be met.

The applicant expects an increase in water-associated bird abundance on FSWA as a result of the wetland enhancement project. However, the applicant notes that wildlife populations are dynamic and are regulated by a variety of uncontrollable and extraneous factors (i.e. disease, weather, prey abundance). Therefore, the applicant has not proposed target levels at which to measure increases in avifauna abundance because a failure to detect statistically significant increases in bird use may not be a result of project failure.

The applicant proposes to submit annual monitoring reports to the Executive Director for five years beginning the December following project completion. The final monitoring report would be submitted to the Executive Director on the fifth year anniversary date after commencement of the monitoring effort and would contain all the data collected over the five-year monitoring period accompanied by appropriate statistical analyses. The format would include an introduction, site plans, and study area, methods used and analyses performed and an evaluation of project goals.

2. Protection of the Wetland Environment

Section 30233 of the Coastal Act states that the diking, filling, or dredging of wetlands shall be permitted only when there is no feasible less environmentally damaging alternative, and only when feasible mitigation measures have been provided to minimize adverse environmental effects. Section 30233 also specifies that diking, filling, or dredging are allowed in wetlands only for limited uses.

The project involves filling approximately 0.72 acres of seasonal wetland on the inboard side of the Fay Slough levee to repair the levee and filling approximately 0.2 acres of seasonal wetlands to construct a new 630-foot-long interior levee. The project also involves removing 0.4 acres of wetland fill by removing an existing 1,400-foot-long interior levee. Thus, the project would result in a total of 0.52 acres of wetland fill which would be offset by creating 0.52 acres of seasonal freshwater wetland at the Eel River Wildlife Area. The project also involves excavating 7 shallow ponds, 12-24 inches deep within 16.5 acres of seasonal wetlands.

Section 30233(a) provides as follows, in applicable part:

> (a) *The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*
>
> *(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*
>
> *(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.*
>
> *(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland.*
>
> *(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.*

(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource dependent activities.

(C) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary...

The above policies set forth a number of different limitations on what types of projects may be allowed in coastal wetlands. For analysis purposes, the limitations applicable to the subject project can be grouped into four general categories or tests. These tests are:

1. The purpose of the filling, diking, or dredging is for one of the eight uses allowed under Section 30233;

2. that feasible mitigation measures have been provided to minimize adverse environmental effects;

3. that the project has no feasible less environmentally damaging alternative; and

4. that the biological productivity and functional capacity of the habitat shall be maintained and enhanced where feasible.

Allowable Use for Dredging and Filling of Coastal Waters

The first test set forth above is that any proposed filling, diking or dredging must be for an allowable purpose as specified under Section 30233 of the Coastal Act. One of the allowable purposes for diking, filling, or dredging, under Section 30233(a)(7) is "restoration purposes." As discussed in detail above, the proposed wetland enhancement project requires dredging of wetlands to create ponds, placement of fill for dikes and water control structures, and placement of temporary fill to access the top of the levee. The project is designed to increase the diversity of wetland types within the wildlife area and enhance habitat values for water associated wildlife. Repairing the Fay Slough levee would provide separation between freshwater and saltwater habitats and prevent saltwater intrusion into freshwater wetlands adjacent to the levee. Excavating shallow depressions throughout the area would create seasonal and semi-permanent freshwater ponds that would hold water for a longer period of the year, thereby creating an

additional wetland habitat type at the site. The Commission finds wetland enhancement projects, where the sole purpose of the project is to improve wetland habitat values, to constitute "restoration purposes" pursuant to Section 30233(a)(7). For example, the Commission concurred with a consistency determination for a wetland enhancement project proposed by the U.S. Fish and Wildlife Service at the Humboldt Bay National Wildlife Refuge (CD-33-92). This project similarly involved dredging, diking, and filling of wetlands to create and enlarge shallow ponds and sloughs and replace water control structures and was approved as a "restoration purpose" under Section 30233(a)(7). Another similar wetland enhancement project approved by the Commission as a "restoration purpose" under Section 30233(a)(7) involved the excavation of six acres of Doran Park Marsh to create a new tidal pond wildfowl foraging area at the southeast end of Bodega Harbor, Sonoma County (CDP #1-93-04). More recently, the Commission approved a similar wetland enhancement project proposed by the Department of Fish and Game involving excavation of slough channels to create freshwater ponds at the Mad River Slough Wildlife Area adjacent to Humboldt Bay to the north of the subject site (CDP #1-99-063). Consistent with these Commission actions, the proposed project, solely intended to enhance wetland habitat values on the Fay Slough Wildlife Area, is considered a "restoration purpose" and is allowable under Section 30233.

This finding that the proposed diking, filling, and dredging constitutes "restoration purposes" is based, in part, on the assumption that the proposed project will be successful in increasing wetland habitat values. Should the project be unsuccessful at increasing wetland habitat values, or worse, if the proposed diking, filling, and dredging impacts of the project actually result in long term degradation of the habitat, the proposed diking, filling, and dredging would not actually be for "restoration purposes." To ensure that the project achieves the wetland enhancement objectives for which the project is intended, the Commission attaches Special Condition No. 1. Special Condition No. 1 requires the applicant to submit a final revised monitoring plan for review and approval by the Executive Director prior to the issuance of the coastal development permit. The monitoring plan is required to outline a method for measuring and documenting the improvements in habitat value and diversity at the site, including wildlife and plant species and abundance, over the course of five years following project completion. Furthermore, Special Condition No. 1 requires the monitoring plan to include provisions for remediation to ensure that the goals and objectives of the wetland enhancement project are met.

The Commission finds that as conditioned, the proposed dredging and filling in coastal wetlands for the proposed wetland enhancement project is fill for "restoration purposes," and therefore is an allowable use pursuant to Section 30233(a)(7) of the Coastal Act.

Adequate Mitigation Measures

The second test set forth by Section 30233 is that adequate mitigation must be provided for the adverse environmental impacts of an allowable filling and dredging project. Potential significant adverse impacts often associated with dredging or filling projects of this kind in coastal wetlands include: (1) the coverage of bottom habitat and the loss of wetland surface area and volume, (2) impacts to sensitive vegetation, (3) conversion of one type of wetland to another, (4) impacts to

fish and wildlife habitat, and (5) water pollution in the form of sedimentation or debris entering coastal waters. Overall, the project would enhance wetland habitat values and would produce generally only beneficial environmental effects. However, the proposed project must be conditioned to ensure that potential significant adverse impacts are minimized.

i) No Net Loss of Wetland Area

A potential significant adverse impact which can result from the proposed dredging and filling in wetlands is the net loss of wetland surface area and volume. As discussed in the Project Description Finding, the proposed wetland enhancement project would involve the placement of 0.52 acres of fill in seasonal freshwater wetlands to repair the Fay Slough dike and construct a new interior dike.

The wetland impacts associated with the dike repair and dike construction cannot be mitigated by wetland creation on site because the entire FSWA is already wetland or essential dike area needed for flood protection or for separating different wetland types. Therefore, the applicant proposes to mitigate wetland impacts by creating similar freshwater wetlands off-site. Approximately 0.52 acres of similar seasonal freshwater wetland would be created (in coordination with a separate enhancement project at the Eel River Wildlife Area, 1-99-075) on the Department of Fish and Game's Eel River Wildlife Area located about 13 miles to the southwest. Currently, there is an existing freshwater pond on the Eel River Wildlife Area which would be expanded by excavating a portion of the adjacent uplands. The uplands would be excavated on a shallow gradient to a level that would allow water to flow from the existing pond into the newly excavated site and would also act as a catchment basin to collect winter runoff from the adjacent hillside.

The project would result in an increase of approximately 16.5 acres of surface water to provide increased habitat for water-associated wildlife including shorebirds and wading birds. The excavated material would be deposited in upland locations and would not result in a loss of wetland surface area or volume. In addition, the temporary fill associated with constructing temporary crossings to access the outer levee would have only a minor short-term effect on wildlife values and would be removed following project completion.

The applicant is proposing to mitigate for fill of wetlands by creating the same type of wetlands at a 1:1 ratio. The project involves filling approximately 0.72 acres of seasonal wetland on the inboard side of the Fay Slough levee to repair the levee and filling approximately 0.2 acres of seasonal wetlands to construct a new 630-foot-long interior levee. The project also involves removing 0.4 acres of wetland fill by removing an existing 1,400-foot-long interior levee. Thus, the project would result in a total of 0.52 acres of wetland fill which would be offset by creating 0.52 acres of seasonal freshwater wetland at the Eel River Wildlife Area. This fill would be offset by expanding the pond on the northern edge by excavating upland pasture to an elevation contiguous with an existing managed freshwater pond.

The Commission has required a variety of mitigation ratios for developments that include wetland fill. Sometimes the ratios have been 4:1 or higher. The determination of what is an appropriate

ratio is dependent on many factors, including such factors as the habitat values of the area filled, the relative difficulty in establishing the new habitat area, and the time lag between when the impacts to the existing habitat are sustained and when habitat values have been fully realized at the mitigation site.

The DFG indicates that while converting some upland pasture to wetlands to create the mitigation site is desirable, converting all of the upland to wetland is not regardless of the feasibility of doing so. The upland area itself provides valuable transition habitat from the wetlands below and contributes to the overall management goal of achieving habitat diversity at the wildlife area. Thus, excavating more than the proposed 1:1 ratio of upland pasture would convert additional upland habitat to wetland habitat, which would result in an adverse impact to a habitat of another type and further loss of habitat diversity that is important to the wildlife at the site. Another option to increase the mitigation area would be to expand the edges of the existing freshwater pond to create more wetland area. However, the DFG indicates that the riparian habitat around the edges of the pond are well established and to excavate along the edges would result in the removal of this riparian area which itself also provides valuable habitat.

Another limitation to expanding the mitigation area is the existing barn located on the upland pasture at the northern end of the ERWA between the entrance road and the freshwater pond. The barn has existed at the site since the DFG acquired the property and converted it from a ranch to a wildlife area. The DFG indicates that there are no plans to remove the barn in the near future to make more area for wetland creation. Thus, the physical structure present in the upland area presents a limitation to the amount of area that can be excavated to create new wetlands.

As noted above, the determination of what is an appropriate ratio is dependent on many factors, including the relative difficulty in establishing the new habitat area, and the time lag between when the impacts to the existing habitat are sustained and when habitat values have been fully realized at the mitigation site. In the northern coastal counties where the climate is significantly wetter than southern coastal counties, wetland vegetation grows relatively quickly and successfully when placed in the right environment. The relative abundance of seasonal freshwater wetlands along the north coast is evidence of the viability of this kind of habitat. The establishment of seasonal freshwater wetlands is less complex than mitigation projects attempting to establish salt marsh, eelgrass beds, or other more complex and limited habitat types. The proposed mitigation site would be contiguous with an existing freshwater pond which would increase the likelihood that the created wetland area would become rapidly inundated and vegetated with similar wetland species. This type of mitigation, that expands an area of existing wetland habitat, results in more successful establishment of habitat area and values relative to mitigation that involves creating a habitat where similar habitat does not currently exist. In addition, the wetter climate and the existing adjacent wetland habitat decreases the threat of exotic vegetation invading the site and resulting in a failure to achieve intended habitat values at the created wetland. Therefore, a higher mitigation ratio, (i.e. 2:1 or 4:1) that would otherwise be required to accommodate for the potential failure of creating wetland habitat is not necessary in this case. Moreover, higher mitigation ratios are typically required to offset adverse wetland impacts that result from a time lag between the impact and the implementation of the mitigation.

The time between when an impact occurs (i.e. wetland fill) and when mitigation is established results in a temporary loss of habitat that generally requires a greater mitigation ratio. However, in this case, because the mitigation site is the borrow area for the material used for the wetland restoration project (i.e. repairing the levee) there will not be a time lag between when the impact occurs and when the mitigation is implemented. Thus, a greater mitigation ratio for this type of temporary habitat loss is not warranted.

The Commission further finds that the proposed project would not result in a net loss of wetland habitat. Unlike development projects which involve the fill of wetlands for non-wetland uses, the objective of this proposed project is to restore freshwater wetland habitat and habitat diversity at the site, thereby enhancing the habitat values for wildlife utilizing the wildlife area. Accordingly, given the (1) increased rainfall in northern coastal counties; (2) existing habitat adjacent to the proposed mitigation site; (3) the lack of temporal losses associated with the proposed project; and (4) the fact that the wetland fill is occurring for wetland restoration rather than for non-wetland uses, the Commission finds the proposed project involving mitigation at a 1:1 ratio would not result in a net loss of wetlands and in addition, would enhance existing wetlands consistent with the wetland provisions of the Coastal Act.

To ensure that the proposed project does not result in a net loss of wetland area, Special Condition No. 3 requires the applicant to create 0.52 acres of seasonal freshwater wetland at the Eel River Wildlife Area to offset filling 0.52 acres of seasonal freshwater wetland at the Fay Slough Wildlife Area as proposed. Special Condition No. 2 requires the applicant to submit a mitigation monitoring plan to ensure that the objectives of the proposed mitigation are met and that the off-site creation of freshwater wetlands is adequate to mitigate for the loss of freshwater wetlands at the site. To further ensure that the project does not result in the loss of wetland surface area or volume, the Commission attaches Special Condition No. 4 which requires all excavated material not utilized for project elements approved pursuant to CDP No. 1-00-025 to be disposed of to be placed on-site in upland locations including the existing road as proposed by the applicant, or at an approved upland location rather than in wetland locations. Special Condition No. 4 also requires the removal of the temporary fill associated with ditch crossings to access the levee following project completion.

ii) Vegetation

The project would remove some wetland vegetation in the areas to be excavated and converted to shallow water ponds. The DFG Natural Diversity Data Base identifies sensitive species including Humboldt Bay owl's clover and Point Reyes bird's beak as being located within the project vicinity. However, a recent plant survey conducted at the site did not find either of these sensitive species. Therefore, the excavation of the ponds would not adversely affect rare plants and an increase in the quantity and diversity of wetland-associated plant species within the affected areas would naturally occur as the area becomes wet for longer periods each year. Therefore, the proposed excavation work would enhance wetland vegetation.

iii) Fish and Wildlife

The project would increase the quantity, depth, and duration of water on the FSWA and would promote an increase in diversity of wildlife habitat and abundance of water-associated wildlife. Increased annual duration of shallow water and low gradient pond edges would attract shorebirds and foraging Canada geese. The increase in open water and marsh habitat is also expected to draw herons, egrets, and American coot. Emergent vegetation within ponds would provide cover for rails and nest structure for red-winged blackbirds and marsh wrens. Although increases in bird species would be the most notable in the area, post-project conditions would also favor increases in mammals, reptiles, amphibians, and invertebrates. Predators such as river otter, mink, peregrine falcon, and merlin would benefit indirectly by an increase in food sources.

While the intended purpose of the proposed project is to enhance habitat values of the existing wetlands, the project would result in short-term impacts to existing wetland vegetation and seasonal wetland habitat. The project involves excavating approximately 26,600 cubic yards of material within seasonal wetlands to create 16.5 acres of shallow ponds. The excavation would temporarily eliminate some wetland vegetation and seasonal wetland habitat from the areas to be excavated. However, if the project achieves its enhancement goals, wetland habitat values would be greatly expanded and the short-term impacts of the excavation would be fully mitigated.

To ensure that the project achieves the wetland enhancement objectives for which the project is intended and thereby mitigates for the short term loss of wetland habitat resulting from the proposed excavation work, the Commission attaches Special Condition No. 1. Special Condition No. 1 requires the applicant to submit a final monitoring plan for review and approval by the Executive Director prior to the issuance of the coastal development permit. The monitoring plan is required to outline a method for measuring and documenting the improvements in habitat value and diversity at the site, including wildlife and plant species and abundance, over the course of five years following project completion. Furthermore, Special Condition No. 1 requires the monitoring plan to include provisions for remediation to ensure that the goals and objectives of the wetland enhancement project are met.

In addition, to ensure that project construction activities do not interfere with the breeding season for some species present at the site, the Commission attaches Special Condition No. 5 to limit construction activities to occur only between July 15th and November 15th as proposed by the Department of Fish and Game.

iv) Conversion of Wetland Types

As discussed previously, the entire project site, with the exception of the road and levees, is grazed seasonal wetland. Most of the approximately 500 acre site is relatively flat, rather monotypic pasture lands composed of a variety of grasses, sedges, rushes and forbs, many of which are exotic species introduced through historic agricultural uses. Currently, the area contains seasonal wetlands, short and tall grass pasture, and seasonal sloughs, with only the borrow ditch from the perimeter dike holding water year-round. Salt marsh remains only as a

fringe along the tidal side of the Fay Slough levee. The proposed project involves excavating approximately 16.5 acres of shallow ponds throughout the project site, which would result in the conversion of seasonal wetland habitat to semi-permanent wetland habitat. The shallow ponds would hold water on the site for a longer period of time during wet months, thereby providing an additional wetland habitat type for water associated wildlife. Although a portion of the proposed project would result in a conversion of approximately 16.5 acres of seasonal wetland to ponded wetland, the conversion would enhance the habitat value of the site by increasing habitat diversity. The DFG anticipates that the semi-permanent wetland habitat created by the project would provide enhanced feeding and resting habitat for migrating and wintering waterfowl and shorebirds and provide brood water for local nesting ducks and geese. Therefore, the 16.5-acre conversion of seasonal wetlands to semi-permanent wetlands would result in an enhancement of habitat values by increasing the diversity of wetland types at the site and in this case, would not result in a significant adverse impact.

v) Water Quality

Potential adverse impacts to coastal waters could occur in the form of sedimentation or debris from project excavation and fill being allowed to enter coastal waters. To ensure that adverse impacts to water quality do not occur, the Commission attaches Special Condition No. 4. Special Condition No. 4 requires that no construction materials, debris, or waste be placed or stored where it could be subject to entering the waters of Fay Slough or slough channels. In addition, Special Condition No. 4 requires all spoil material to be deposited in approved upland locations including the existing road, but not outside of the road prism.

The Commission finds that the proposed wetland enhancement project is a permitted use under Section 30233 of the Coastal Act, and that as conditioned, all potential adverse impacts have been minimized to the maximum extent feasible.

Alternatives Analysis

The third test set forth by Section 30233 is that the proposed dredge or fill project must have no feasible less environmentally damaging alternative. In this case, the Commission has considered four possible alternatives to the proposed project including: (1) restoring tidal action, (2) sealing existing tidegates, (3) creating ponds above grade, and (4) the no project alternative.

Breaching the Humboldt Bay Dike

As discussed previously, the subject site, and much of the bottomlands surrounding Humboldt Bay, were cut off from tidal action over 100 years ago by the construction of levees to drain the land for agricultural uses. Breaching the levees would restore tidal action to the area and would allow for the reestablishment of salt marsh habitat. While this alternative would more effectively restore historic environmental conditions at the site, breaching the levee would also flood adjacent private lands and public roads. The project site is separated from Humboldt Bay and direct tidal action by Highway 101 and is located adjacent to private agricultural land to the north and commercial development directly to the south. Restoring the entire FSWA to tidal action would

require the construction of a substantial perimeter levee around the entire 500-acre site to contain the tidal action to the subject site and prevent flooding of adjacent private lands, including the automobile dealership to the south, residential areas to the east, Highway 101 to the west, and agricultural lands to the north. Moreover, as Highway 101 and the adjacent railroad prevents the site from being open to the bay, returning tidal action on the entire site would require the installation of numerous culverts and a system of water passageways below these facilities which are not under the ownership of the applicant. In its current condition, only muted tidal action is feasible on a limited portion of the site adjacent to Fay Slough. As mentioned previously, the applicant anticipates returning approximately 50 acres of seasonal freshwater wetland to muted tidal action in the future as Phase 2 of enhancement activities at the FSWA. Restoring the entire site to tidal action however, would require the construction of a new perimeter levee which would require extensive wetland fill and would be extremely costly. Therefore, breaching existing levees to restore tidal action is not a feasible less environmentally damaging alternative.

Sealing the Tide Gates to Expand Freshwater Ponding

A primary method of restoring and enhancing wetlands is to increase the water surface and holding capacity of the land. Sealing the existing tidegates at the subject site would prevent water from draining to Humboldt Bay. Retaining the rainwater and fresh water runoff that drains to the site would increase the size and duration of freshwater ponding on the site without the need for filling or dredging within wetlands. However, without the ability to manage water levels at the relatively flat site, rising water would eventually flood adjacent property owners and public roads. Similar to the option discussed above, new levees would need to be constructed to contain water on the FSWA and prevent flooding of adjacent lands and would require costly wetland fill. In addition, this alternative would not allow the depth of the freshwater ponds to be manipulated to optimal levels for maximizing wildlife habitat values. Therefore, sealing the tidegates to hold water on the site is not a feasible less environmentally damaging feasible alternative.

Construction of New Dikes to Create Ponds Above Grade to Expand Freshwater Ponding

As noted above, a primary objective of the FSWA wetland enhancement project is to increase the water surface and holding capacity of the land. One method of accomplishing this objective would be to construct additional new levees on the site that would act as berms to hold water for longer periods of time. However, this alternative would require extensive placement of wetland fill to create the additional berms. Therefore, constructing new levees to create ponds above grade is not a less environmentally damaging feasible alternative.

No Project

The "no project" alternative would leave the FSWA in its current monotypic condition with limited areas of standing water throughout the year. The "no project" alternative would eliminate the opportunity for increased habitat diversity and increased species abundance at the Wildlife Area. Therefore, the no project alternative is not a less environmentally damaging feasible

alternative as it would not accomplish the project objectives of enhancing wetland habitat values at the FSWA.

(d) Maintenance and Enhancement of Marine Habitat Values

The fourth general limitation set forth by Section 30233 is that any proposed dredging or filling in coastal wetlands must maintain and enhance the biological productivity and functional capacity of the habitat, where feasible.

The project would not result in a net decrease in wetland area, as the proposed fill at the FSWA site would be mitigated by creating an equal area of similar wetland habitat out of uplands at the Eel River Wildlife Area (ERWA). Special Condition No. 3 requires the applicant to create the wetland at the ERWA mitigation site as proposed. To ensure that the habitat enhancement objectives are realized, Special Condition No. 1 requires the applicant to submit a revised monitoring program to monitor how habitat values change as a result of the project. The condition further requires the applicant to submit plans for remediation of the site within one year if monitoring determines that the project has not been successful in achieving the goals, objectives, and performance standards identified in the approved monitoring program. To ensure that the mitigation site at the ERWA is successful in providing habitat value greater than the wetlands proposed to be filled at the FSWA, the Commission attaches Special Condition No. 2. This condition requires the applicant to prepare and submit a monitoring plan for review and approval prior to issuance of the permit.

As discussed above in the section of this finding on mitigation, the conditions of the permit would ensure that the project would not have significant adverse impacts on the existing freshwater wetlands or on the water quality of Fay Slough and slough channels. The proposed project would enhance the habitat value of the existing seasonal wetlands by increasing the duration and availability of water at the site. Additionally, the proposed project would create a greater diversity of wetland habitats, thereby enhancing the biological productivity and functional capacity of the wetlands consistent with the requirements of Section 30233 of the Coastal Act.

Conclusion

The Commission thus finds that the project is an allowable use, that there is no feasible less environmentally damaging alternative, that feasible mitigation is required for potential impacts associated with the dredging and filling of coastal wetlands, and that marine habitat values will be maintained or enhanced. Therefore, the Commission finds that the proposed development, as conditioned, is consistent with Section 30233 of the Coastal Act.

3. Restoration of Marine Resources and Coastal Wetlands Where Feasible

Coastal Act Section 30230 states as follows:

> *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

Coastal Act Section 30231 states as follows:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

Coastal Act sections 30230 and 30231 require in part, that marine resources and coastal wetlands be maintained, enhanced, and restored where feasible. These policies call for restoration of coastal wetlands and marine resources. Restoration in the strictest sense generally refers to the reestablishment of wetland functions and characteristics that existed prior to human disturbance. At the subject site, restoration would involve returning the site to tidal action and salt marsh as opposed to enhancing the current seasonal freshwater wetlands as proposed. As discussed in the background section, the subject site was historically part of Humboldt Bay until it was diked off in the late 19th century and reclaimed for agricultural use. The subject site now functions as seasonal freshwater wetlands with limited areas of salt marsh around the tidal fringe of Fay Slough.

According to information from the U.S. Fish and Wildlife Service (USFWS), in the Humboldt Bay region it is estimated that between 7,000 and 8,700 acres of salt marsh were present prior to human development. Since the mid-1800's, most of what was likely to have been historic salt marsh has been diked or filled and has been reduced to a total area of around 900 acres, a reduction of at least 87%. In general, restoring areas that have historically supported tidal salt marsh is preferable when the physical conditions of a site present such an opportunity. The USFWS for example, has indicated that restoration of salt marsh habitats around the Bay is a high priority, as salt marsh restoration is important for the protection, enhancement, and restoration of native fish, wildlife, and plant communities, some of which are dependent on salt marsh for their existence.

Coastal Act sections 30230 and 30231 call for the restoration of coastal wetlands and marine resources "where feasible." As discussed above in the Alternatives Analysis section under the Section 30233 analysis, while restoring the FSWA entirely to tidal salt marsh may be preferable in terms of restoring pre-disturbance ecological conditions, it is not feasible due to logistical constraints of the site and surrounding land uses. The DFG has indicated however, that plans for a

second phase of wetland enhancement at the FSWA would include the installation of water control structures near Fay Slough to allow for muted tidal flow to approximately 50 acres. The feasibility of salt marsh restoration at the entire FSWA is limited by its minimal tidal connection due to Highway 101 which separates the FSWA from Humboldt Bay. In addition, restoring the entire FSWA to tidal marsh would require breaching or removing existing dikes which would result in potential flooding of adjacent private development and Highway 101. Therefore, the Commission finds that the proposed wetland enhancement project that does not involve restoring the site to salt marsh is consistent with Coastal Act Sections 30231 and 30230 because complete salt marsh restoration is not feasible. Nonetheless, the proposed project would enhance coastal wetlands and maintain and increase the biological productivity of the coastal wetlands consistent with Section 30230.

There has been recent local debate among agency and public interests involved in wetland management and regulation in the Humboldt Bay area regarding the value of salt marsh versus freshwater wetland restoration and the best approach to managing and restoring wetlands around Humboldt Bay. The lands around the bay are frequently looked to for mitigation and restoration opportunities and several restoration projects have been proposed or are anticipated on these lands. These diked former tidelands are largely unimproved, low areas, with the ability to support a variety of wetland habitats including, in some areas, salt marsh. Many questions are raised when considering restoration opportunities of these lands including feasibility, compatibility with agriculture and other surrounding land uses, potential for invasion of exotic species, proper management of restored areas, and the value of different wetland habitats for fish and wildlife species in and around the bay.

Freshwater wetlands are often proposed on these grazed seasonal wetlands instead of tidal wetlands, even though other opportunities for freshwater habitat restoration or enhancement may exist in nearby areas and opportunities for salt marsh restoration are much more limited. Salt marsh creation is very difficult to accomplish in higher areas away from the bay that could not be subjected to tidal influence simply by opening a tide gate or removing a levee. Because of these questions, the Commission recognizes the increasing need for a coordinated approach to restoration opportunities around the bay. The Commission finds that the most effective approach to this question over the value and need for salt marsh and freshwater restoration around the bay would be to create a forum in which agency and public interests could work together to prepare a long-term, regional planning document that addresses the opportunities, choices, constraints, management challenges, and funding sources available for future restoration and enhancement of these coastal resources.

One example of the implementation of such a regional planning approach to wetland restoration is the San Francisco Bay Area Wetlands Ecosystem Goals Project (Project). The Project was created for agency and public interests involved in wetland management and regulation in the San Francisco Bay area to develop regional wetland goals that would represent a shared vision of what is needed to ensure the health of Bay area wetlands. The product of the Project is a document entitled "*Baylands Ecosystem Habitat Goals*" (Goals) that were developed by more than 100 scientists from local, state, and federal agencies, private consulting firms, and universities.

Development of the Goals was co-sponsored by nine state and federal agencies, including the National Marine Fisheries Service, San Francisco Bay Conservation and Development Commission, San Francisco Bay Regional Water Quality Control board, State Coastal Conservancy, State Department of Fish and Game, State Department of Water Resources, State Resources Agency, U.S. Environmental Protection Agency, and the U.S. Fish and Wildlife Service. Additional participants included the San Francisco Bay Joint Venture, the San Francisco Estuary Project, and the San Francisco Estuary Institute. The Goals prepared by Project efforts are used to identify needs for sustaining diverse and healthy communities of fish and wildlife resources in the San Francisco Bay area. The Project was started to provide a basis to guide a regional wetland planning process for public and private interests seeking to preserve, enhance, and restore the ecological integrity of wetland communities resulting in a regional wetland management plan based on wetland goals, and recommendations on how to coordinate such projects.

Project participants selected key species and habitats and then assembled qualitative and quantitative data to prepare habitat recommendations that were then incorporated into the Goals document. The Goals are presented at three levels of specificity including region, subregion, and segment. The Goals pertain primarily to the region's baylands, which include mudflats, existing tidal marsh, tidal marsh channels, and seasonal and other wetlands within diked historical tidal marshlands, similar to lands surrounding Humboldt Bay. Although there are many regional differences between San Francisco Bay and the Humboldt Bay area such as surrounding land uses and development pressures, the efforts for regional planning for wetland restoration around San Francisco Bay can be used as a model for planning efforts around the Humboldt Bay. The Commission supports the initiation of a similar regional planning process in coordination with other interested agencies involved in regulation and management of wetlands to address long-term restoration opportunities around Humboldt Bay.

4. Public Access

Coastal Act Section 30210 requires in applicable part that maximum public access and recreational opportunities be provided when consistent with public safety, private property rights, and natural resource protection. 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 adequate access exists nearby. Section 30211 requires that development not interfere with the public's right to access gained by use or legislative authorization. In applying these sections of the Coastal Act, 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 Fay Slough Wildlife Area is open to the public year-round for wildlife-related activities such as bird watching, kayaking, hunting (pursuant to applicable seasons and regulations), research, and education. Activities that are not compatible with wildlife, such as off-road vehicle riding,

are not allowed at the site. The proposed project does not involve any changes or additional restrictions to existing public access including during project construction. In fact, public use of the site is expected to increase after the project as a result of increased wildlife abundance and diversity and as a result of improved levees that act as designated public trails. Sufficient parking exists to accommodate the current level of public use as well as the anticipated increase in use following project completion.

Therefore, the Commission finds that the proposed project would not have an adverse effect on public access, and that the project as proposed without new public access is consistent with the requirements of Coastal Act Sections 30210, 30211, and 30212.

5. Agricultural Resources

The Coastal Act sets forth policies that relate to the protection of agricultural land and limit the conversion of agricultural lands to non-agricultural uses. Sections 30241 and 30242 address methods to be undertaken to maintain the maximum amount of prime agricultural land in production and to minimize conflicts between agricultural and urban land uses.

Prior to the DFG's acquisition of the site in 1987, the site was historically used for livestock grazing and dairy farming. The site is composed of Bayside soils which are heavy bay formed clays with extremely poor drainage and are identified as having some of the poorest drainage in the county. These soils are not identified as prime agricultural soils.

According to the Humboldt County certified LCP, the subject site is planned and zoned Agriculture Exclusive. However, the site is within the Commission's retained jurisdiction and therefore, the standard of review is the Coastal Act rather than the LCP. Because the site is already managed for fish and wildlife habitat rather than for agriculture, the proposed project does not constitute a conversion of agricultural land. In addition, the DFG currently leases a minimum of 200 acres for grazing which would not be affected by the proposed project. Furthermore, the restoration of wetland habitat values over portions of the site would be compatible with agricultural use of adjacent lands. The proposed levees and water control structures would allow the wildlife area to be managed in a manner that would not result in flooding of adjacent agricultural lands.

Therefore, the Commission finds that the proposed project does not constitute a conversion of agricultural lands and is consistent with Sections 30241 and 30242 of the Coastal Act.

6. U.S. Army Corps of Engineers Approval

The project requires review and approval by the U.S. Army Corps of Engineers. Pursuant to the Federal Coastal Zone Management Act, any permit issued by a federal agency for activities that affect the coastal zone must be consistent with the coastal zone management program for that state. Under agreements between the Coastal Commission and the U.S. Army Corps of Engineers, the Corps will not issue a permit until the Coastal Commission approves a federal consistency certification for the project or approves a permit. To ensure that the project

ultimately approved by the Corps is the same as the project authorized herein, the Commission attaches Special Condition No. 6 which requires the permittee to submit to the Executive Director evidence of U.S. Army Corps of Engineers approval of the project prior to the commencement of work.

7. California Environmental Quality Act

Section 13096 of the Commission's administrative regulations requires Commission approval of a coastal development permit application to be supported by findings showing that the application, as modified by any conditions of approval, is consistent with any applicable requirement 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 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 found consistent with the policies of the Coastal Act. Mitigation measures which will minimize or avoid all significant adverse environmental impact have been required. As conditioned, there are no feasible alternatives or feasible mitigation measures available, beyond those required, which would substantially lessen any significant adverse impact that the activity would 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 and to conform to CEQA.

Exhibits:

1. Regional Location
2. Site Location
3. Site Plan
4. Project Typical
5. Pond Typical
6. Mitigation Site
7. Mitigation Plan
8. Proposed Monitoring Plan

ATTACHMENT A

Standard Conditions:

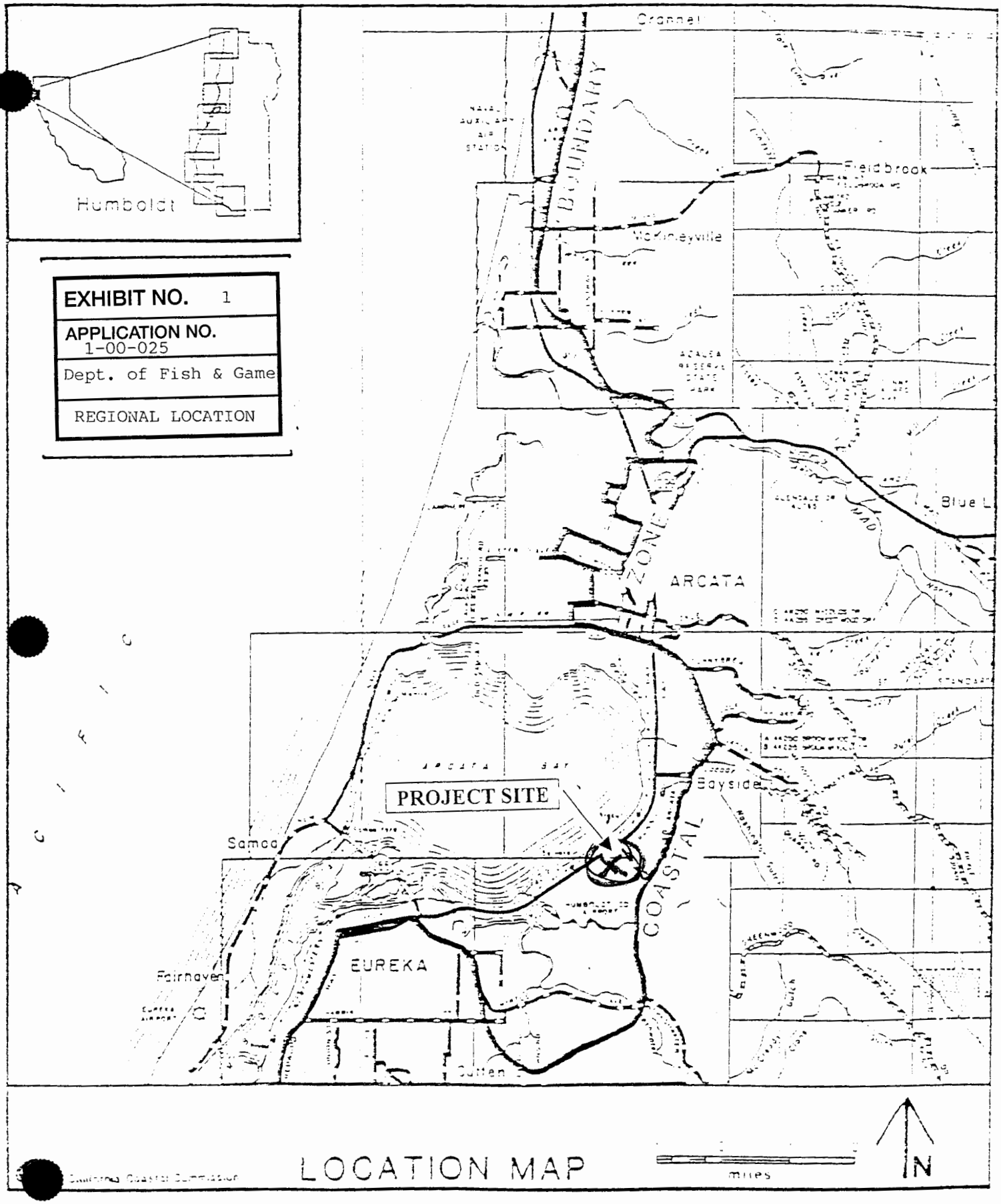
1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

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.

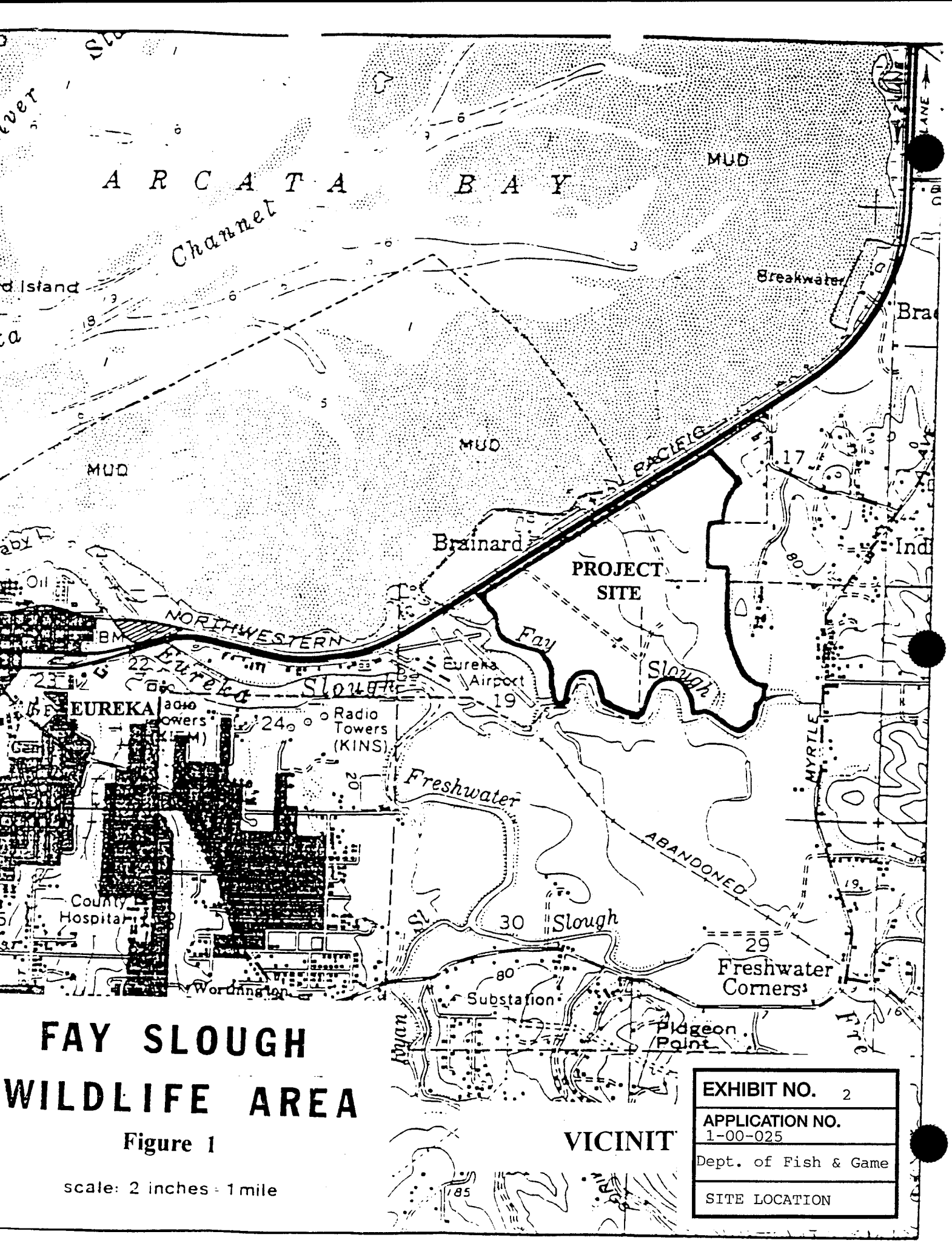
4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

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.



California Coastal Commission

County of Humboldt



FAY SLOUGH WILDLIFE AREA

Figure 1

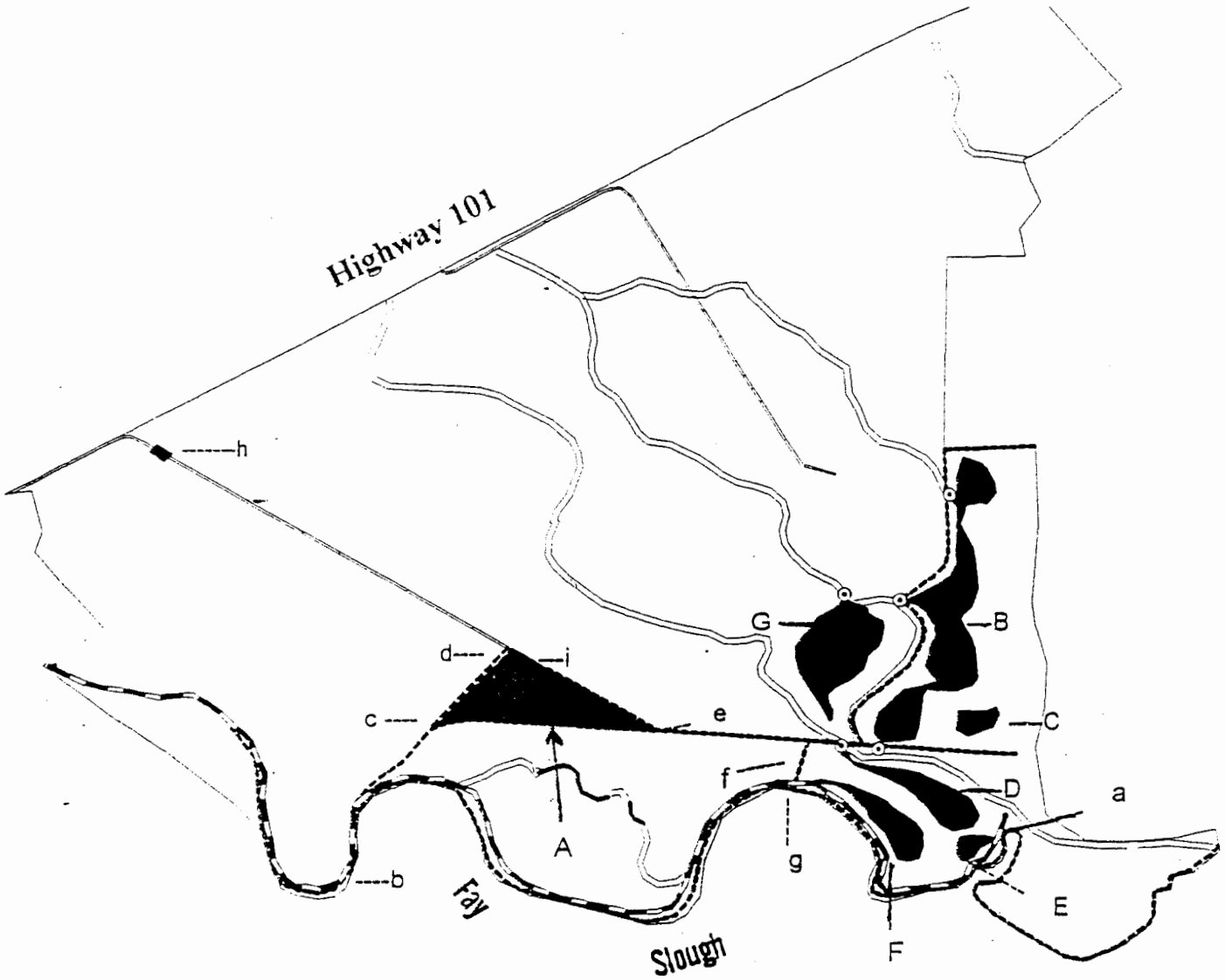
scale: 2 inches = 1 mile

VICINITY

EXHIBIT NO. 2
APPLICATION NO. 1-00-025
Dept. of Fish & Game
SITE LOCATION

Figure 1

Fay Slough Wildlife Area Wetland Enhancement Project



- Parking lot
- FSWA Boundary
- New water structure /culvert
- Channel
- Access road
- Borrow ditch
- Dike
- Slough
- Pond enhancement

a-b	raise and widen existing levee decrease width and depth of borrow ditch
c-d	construct new levee
c-e	remove existing levee
f-g	remove existing levee
h-i	increase height of existing access road
A	existing pond
B-G	excavate shallow ponds

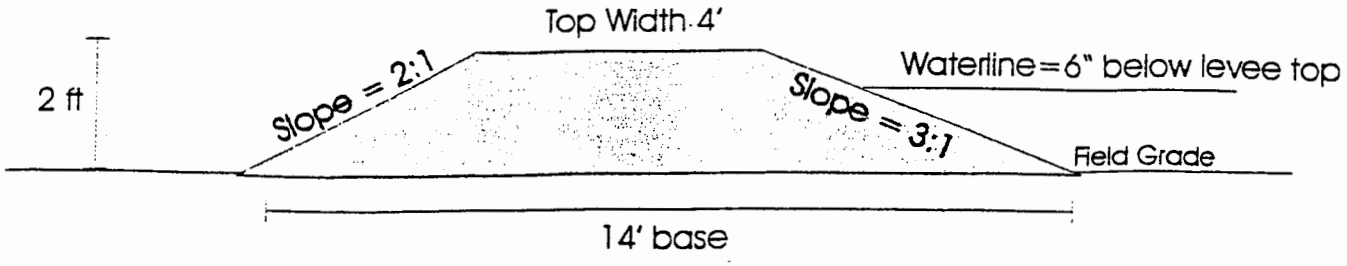
N

SCALE: 1" = 860'

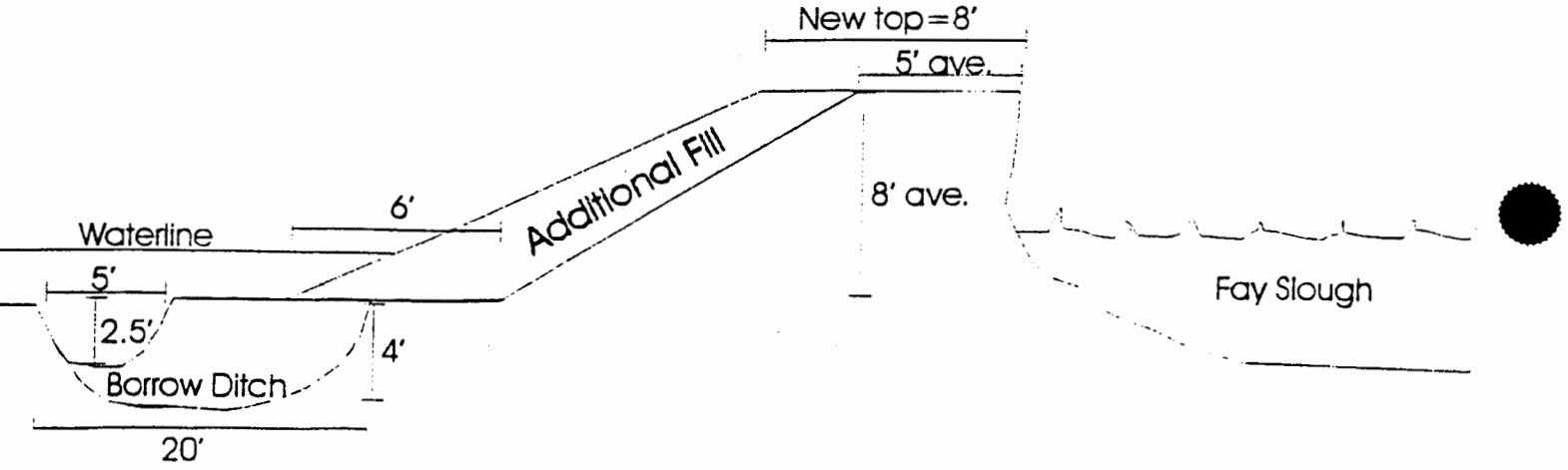
EXHIBIT NO. 3
APPLICATION NO. 1-00-025
Dept. of Fish & Game
SITE PLAN

FAY SLOUGH WILDLIFE AREA WETLAND ENHANCEMENT

Typical Interior Dike Cross Section



Fay Slough Dike Typical Cross Section



Access Road Typical Cross Section

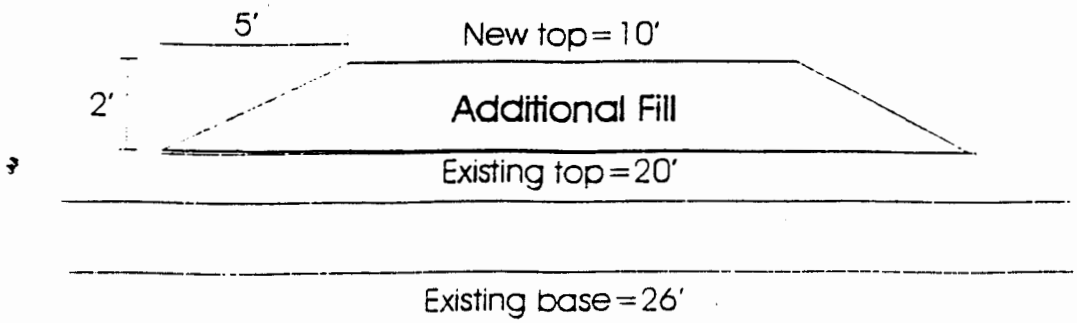


EXHIBIT NO. 4
APPLICATION NO. 1-00-025
Dept. of Fish & Game
PROJECT TYPICALS

FAY SLOUGH WILDLIFE AREA POND DETAIL

TYPICAL CROSS-SECTION

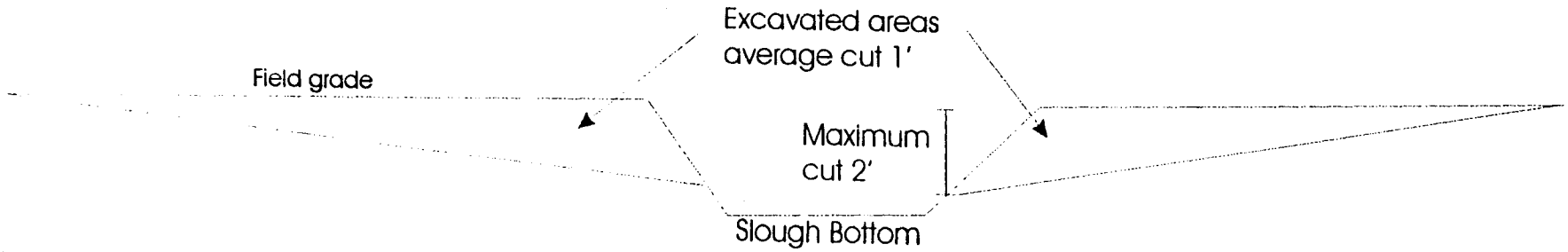
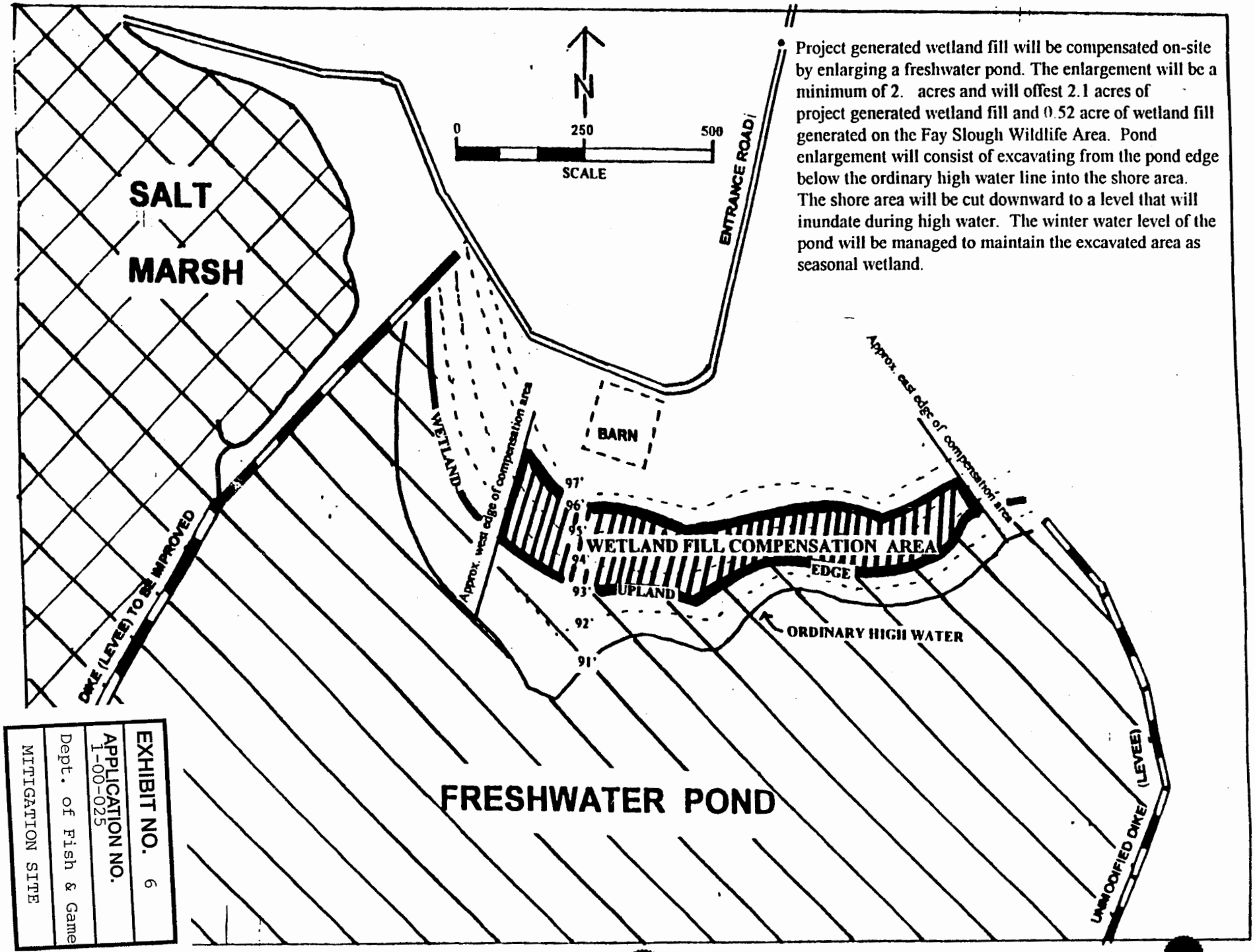


EXHIBIT NO.	5
APPLICATION NO. 1-00-025	
Dept. of Fish & Game	
POND TYPICAL	

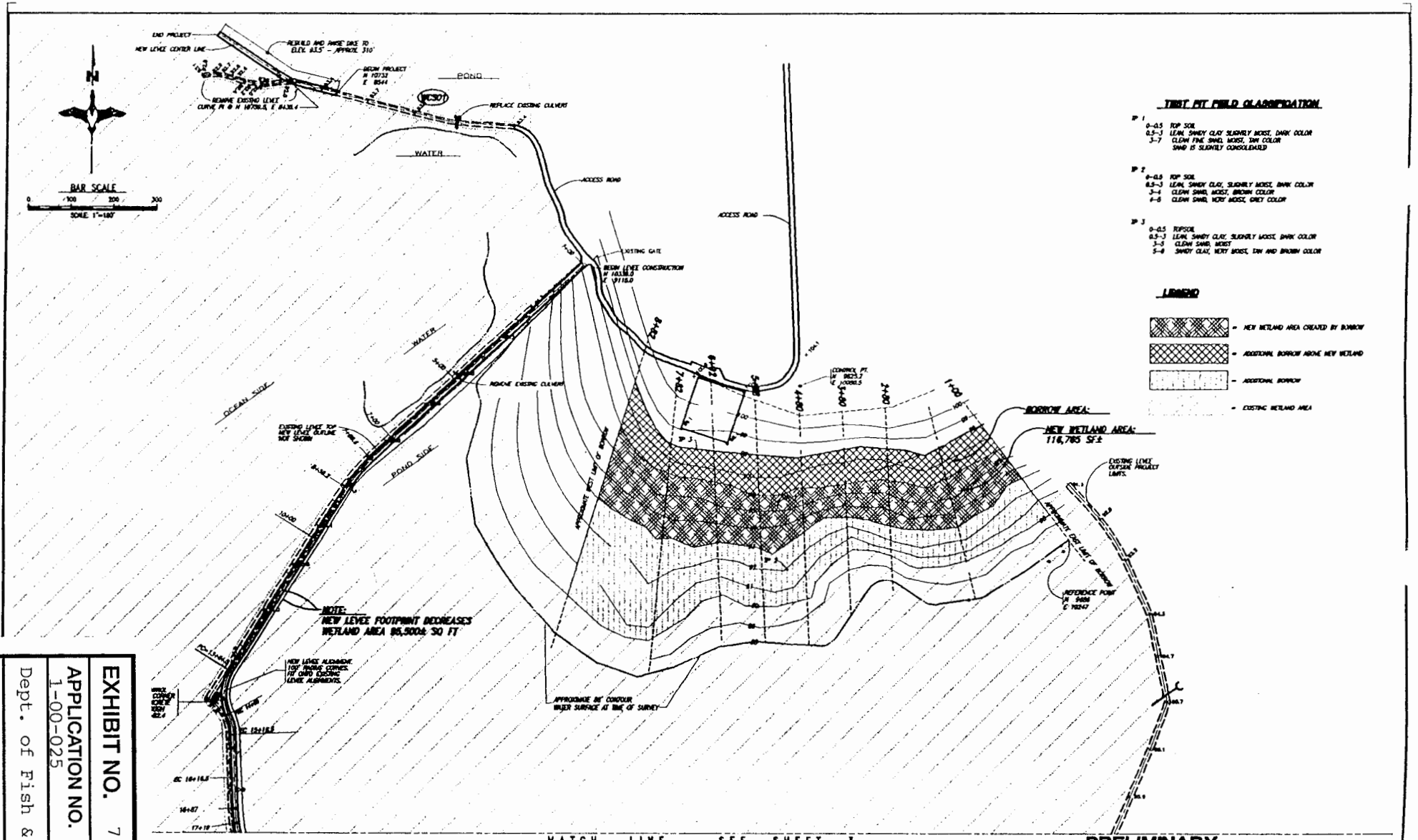
WETLAND FILL COMPENSATION PLAN



Project generated wetland fill will be compensated on-site by enlarging a freshwater pond. The enlargement will be a minimum of 2. acres and will offest 2.1 acres of project generated wetland fill and 0.52 acre of wetland fill generated on the Fay Slough Wildlife Area. Pond enlargement will consist of excavating from the pond edge below the ordinary high water line into the shore area. The shore area will be cut downward to a level that will inundate during high water. The winter water level of the pond will be managed to maintain the excavated area as seasonal wetland.

EXHIBIT NO. 6
APPLICATION NO. 1-00-025
Dept. of Fish & Game
MITIGATION SITE

PORTION OF THE EEL [redacted] VER WILDLIFE AREA



PRELIMINARY

DUCKS UNLIMITED INC.
WESTERN REGIONAL OFFICE

PROJECT NO. CA-0138-001

EEL RIVER W.A.
PLAN OF NORTH HALF

DESIGNED BY: DTH
DRAWN BY: LSF/DVB
REVIEWED BY: RJ
CHECKED BY: JBF

DATE: 08-27-00
SHEET NO. 2 OF 7
APPROVED BY:
APPROVED BY:

EXHIBIT NO. 7
APPLICATION NO. 1-00-025
Dept. of Fish & Game
MITIGATION PLAN

Fig. 1

FAY SLOUGH WILDLIFE AREA MONITORING PLAN

Project Proponent: California Department of Fish and Game
Project Manager: Terri Weist

Project Description:

The California Department of Fish and Game is proposing to restore portions of the Fay Slough Wildlife Area (Fig 1) to increase the quality and quantity of freshwater wetland habitat to benefit waterfowl and wetland-associated species. This monitoring plan will cover proposed activities for Phase I. The project will include dike construction, dike removal, shallow wetland excavation, modification of an existing borrow ditch and access road. Pond excavation and expansion will increase water depths and duration of available water on approximately 22 acres. Table 1 describes pond and slough dimensions.

Table 1. Pond and slough dimensions for Fay Slough Wildlife Area Wetland Enhancement Project.

Pond ID	Size (ac)	Depth (in)
A	5.81	18
B	5.78	12
C	0.89	12
D	2.15	12
E	0.79	12
F	2.16	12
G	4.72	12

Current Environmental Condition

Appendix A contains the results of a botanical survey conducted in 1985 that is from the Fay Slough Draft Management Plan. Habitat types within the project area are primarily freshwater/brackish marsh and salt marsh (only found as a fringe along the tidal side of the Fay Slough levee). Previously constructed dikes that converted this area for agricultural purposes created only marginally functional wetland habitat in terms of wildlife value. The proposed project will increase habitat capability of FSWA through pond development and water manipulation.

Birds that depend upon wetland and open water habitat that could increase in abundance following project implementation include ducks (mallards, northern pintail, American wigeon, northern shoveler, Canada geese, green-winged teal, cinnamon teal, wood ducks and bufflehead). Shorebirds such as sandpipers, dunlin, short-billed dowitcher, killdeer etc. and other water-associated birds such as egrets, herons, rails,

grebes and bitterns will likely appear on the wildlife area as a result of this project as well.

See Appendix B lists for a list of mammals of the FSWA.

At least four species of snakes populate the area including the western terrestrial garter snake, common garter snake, western aquatic garter snake and gopher snake (Appendix C). The Pacific tree frog and yellow-legged frog have been found on FSWA. Other amphibians that could be resident at FSWA are clouded salamander, black salamander, ensatina, northwest salamander and rough-legged newt.

Goals and Objectives

Fay Slough Wildlife Area (FSWA) was acquired in 1987 (supplemental lands were acquired in 1989) to provide habitat for water associated species. The 1993 Draft FSWA Management Plan states that one of the management goals for FSWA is to enhance habitat for waterfowl. Initially, the area was under tidal influence. The area was diked to create pasture land for agricultural purposes. Only with active land management through construction of dikes, pond excavation and water manipulation will an increase in a higher quality wetland habitat occur. The primary goal of this project is to increase habitat capability for waterfowl, wading birds and shorebirds.

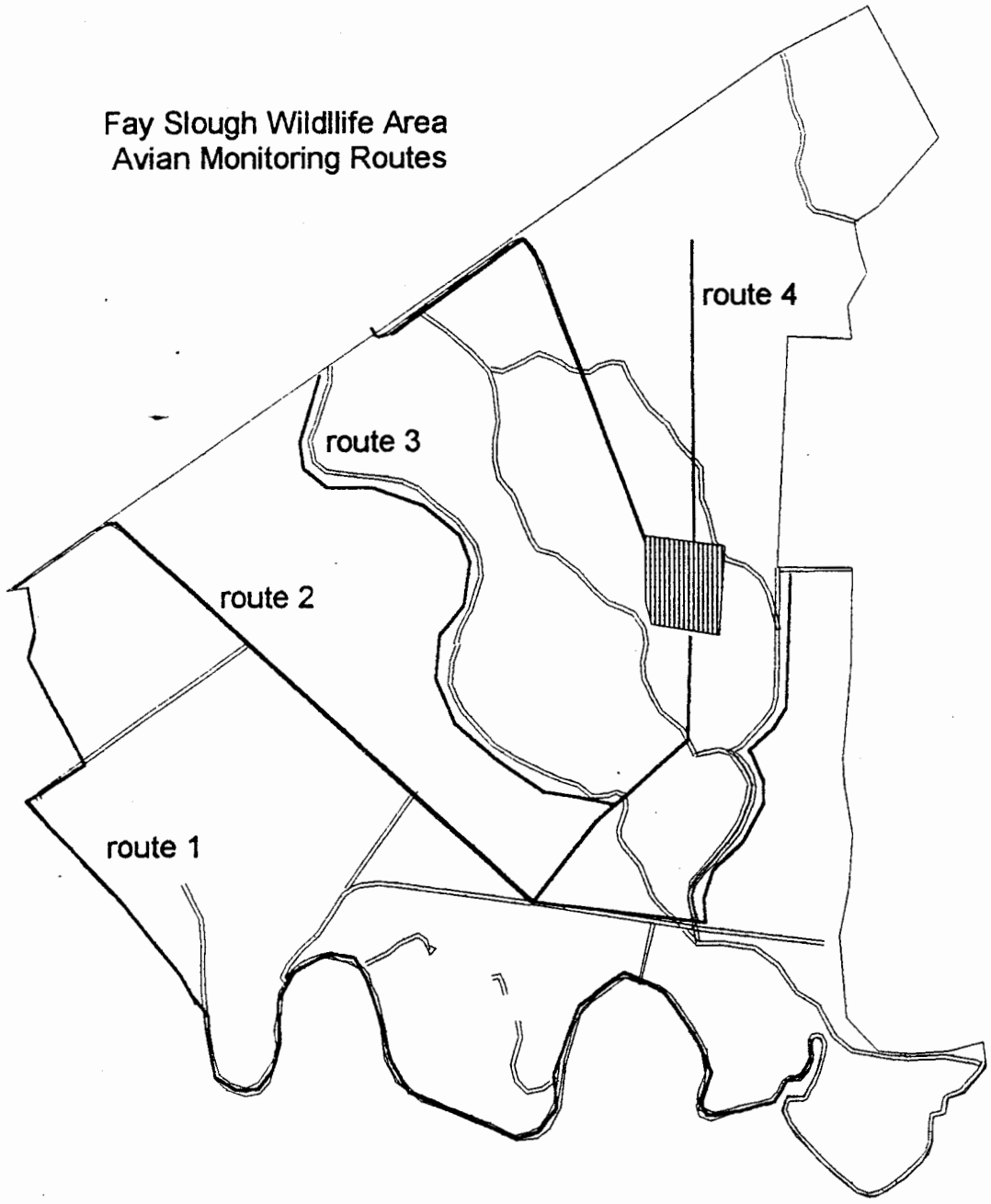
Excavation of shallow wetland habitat will create ponds that will hold water throughout the spring and summer. This wetland habitat will create conditions for a larger avian wildlife component and greater habitat diversity throughout FSWA.

Monitoring

In order to evaluate whether these goals have been achieved through implementation of this proposed project, we will monitor pond development and bird use for five years. Once project activities are complete, ponds and dikes will be mapped using GPS. Acreage will be determined for each pond developed. Digital photographs will be taken bi-annually at fixed photoplot locations to monitor pond development and adjacent vegetative characteristics over five years.

In addition, bird monitoring has been initiated to acquire baseline data in which to compare post project data. Four avian monitoring transects were established and surveys began in October 2000 (Fig. 2). Bird species are identified and total numbers are estimated. Transects will be surveyed in the spring (April-May) and fall (October-November) in order to capture seasonal bird use of the wildlife area.

Fig. 2. Avian monitoring routes for Fay Slough Wildlife Area Enhancement Project, Humboldt County, California.



If assumptions for parametric analysis are met, a two sample t-test will be used to test for significant differences between pre-project and post-project bird counts using a significance level of α=0.10. If parametric assumptions are not met, the non-parametric equivalent will be used.

A five year monitoring period may yield insufficient data to detect significant results in trend analysis (Hatfield et. al. 1996). However, we will employ Lehmann's trend analysis (Lehmann 1975) since it was considered the most powerful nonparametric trend analysis test (Hatfield et. a. 1996) to see if we detect any increase in bird numbers. In addition, frequency histograms will be used to graphically depict bird group counts over the five year monitoring program.

Vegetation Monitoring

Although there will be no active planting of vegetation for this project, pre-project vegetation will be sampled to document change in vegetation type following project implementation. While some freshwater wetland vegetation currently exists on the project site, pond development will probably increase emergent wetland vegetative species.

Since water will inundate portions of the project area, transects will be established along the perimeter of the ponds and throughout non-inundated slough channels to document wetland vegetation establishment. Each 30-m transect will be comprised of 10, 1m^2 quadrat plots. One transect will be placed along dikes c-e (Fig. 1), c-d and i-e for a total of 30 plots for pond A. Similarly, one transect will be established along the western borders of both pond B and pond G. "Ponds" F, D and E are primarily excavated channels that will create meandering sloughs. Two transects (20 plots) will be established between the two ponds F and D if they are not inundated by water. Transects will be surveyed annually in August (A. Eicher, pers. comm. and Pac. Estuarine Res. Lab. 1990).

Six cover classes will be used to estimate cover of wetland plant species (Pac. Estuarine Res. Lab. 1990) within each quadrat. Frequency histograms of cover classes are readily compared with the Kolmogorov-Smirnov two-sample test (Pac. Estuarine Res. Lab. 1990). The project goal of wetland enhancement will be considered successful when plot data show $\geq$ 60% of wetland obligate/facultative or emergent wetland species are established.

Remedial Measures

We expect to detect an increase in water-associated bird abundance on FSWA as a result of this enhancement project. However, wildlife population are dynamic and regulated by a variety of uncontrollable and extraneous factors (disease, weather, prey

abundance etc). Therefore, we did not provide specific target levels at which to measure increases in avifauna abundance because a failure to detect statistically significant increases in bird use may not be a result of project failure. Should we not detect increases in post-project bird use at FSWA after the five year monitoring program, we will contrast bird counts obtained from other areas of Humboldt Bay to see if bird abundance is generally increasing, decreasing or stable.

If waterfowl and water-associated bird abundance within FSWA do not reflect bird use seen in surrounding areas, further investigation may be warranted. Water levels, water depth, seasonality and other factors influence food and prey base for waterfowl. If pond development and food base for waterfowl are not present at desirable levels, further habitat manipulation may be necessary. These biological parameters will be investigated fully and contingency measures will be provided should they become necessary.

Should wetland vegetative species not reach the performance standard of $\geq$60% cover, remedial measures that may include manipulating water levels, weed eradication and additional planting of desired species will be initiated.

Reporting Schedule

Annual reports will be submitted to the Executive Director beginning 1December of 2002. The final monitoring report will be submitted to the Executive Director on the fifth year of the monitoring effort. The final report will contain all the data collected over the five year monitoring period accompanied by appropriate statistical analyses. The format will include an introduction, site plans and study area, methods used and analyses performed. A project evaluation of the project goals will be discussed.