APPENDIX A: SECTION 106 CONSULTATION

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
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Lakewood, CO 80228-2583
Office: 720-963-3668
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Nathan.Allen@dot.gov

August 19, 2015

In Reply Refer To:
HFPM-16

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Subject: Response to SHPO request for additional information regarding the Area of Potential Effects, Determinations of Eligibility, and Finding of No Adverse Effect for the Sir Francis Drake Boulevard Improvement Project CA FLAP CR109[1].

Dear Ms. Polanco:

The Federal Highway Administration-Central Federal Lands Highway Division (FHWA-CFLHD) is providing additional information to the State Historic Preservation Officer (SHPO) regarding the undertaking referenced above. FHWA-CFLHD initiated consultation with the SHPO via letter and supporting documentation on July 3, 2015. The SHPO responded via email on August 7, 2015 with questions regarding both the built environment and archaeology. The SHPO questions and corresponding responses are provided below and augment FHWA-CFLHD's original submittal.

In addition, subsequent to our initial consultation with your office, Paul Engel, Archaeologist for the Point Reyes National Seashore (PRNS) provided FHWA-CFLHD with information on an archaeology site, PORE00037, which he recently investigated near our area of potential effect (APE). Through discussion with Jessica Tudor of your office, it was suggested that we provide this additional information as a supplement to this letter. Therefore, the PRNS memorandum and site record are provided in their entirety as attachments to this letter. Based on the PRNS field investigation and recommendations, FHWA-CFLHD reconsidered its original finding for the project and concluded that our original finding of No Adverse Effect is still appropriate. A summary discussion of PORE00037 and its relation to this undertaking is provided below, following responses to SHPO questions.

SHPO Questions on Built Environment - *It appears the project could potentially effect fences, a corral, a tree windbreak, and three contributing buildings to the historic ranches. It is clear that an ESA will be established around the buildings with fencing or concrete barriers used to establish this area. What is not as clear is the types of protective measures that are being used for fences, the corral and the wind break. It would be helpful to get a bulleted list of protective measures that will constitute the conditional no adverse effect. Will there be any ESA fencing? Are these protected features outlined on construction drawings? Will there be a pre-construction meeting to outline these measures?*

<u>FHWA-CFLHD Response to Questions on Built Environment</u> – In addition to standard construction Best Management Practices, FHWA-CFLHD has developed project specific commitments to avoid impacts to contributing historic features, such as fences, corrals, and windbreaks. These commitments are identified as Special Contract Requirements (SCRs) in the construction contract and are linked to the historic features through identification on construction design sheets with notes to avoid. These measures, as well as all other environmental commitments are discussed with the contractor and key personnel during pre-construction meetings. Furthermore, FHWA-CFLHD provides direct oversight of all construction activities through a designated Contracting Officer (CO) to ensure construction is completed as designed and in conformance with environmental commitments.

Specific measures to avoid impacts to the historic features contained in the project SCRs include:

SCR 107.02 Protection and Restoration of Property and Landscape.

- Paleontological remains and archaeological specimens found within the construction area are the property of the National Park Service (NPS) and will be removed only by the NPS or designated representatives. Should operations or employees uncover or find any paleontological remains or archaeological specimens, immediately suspend operations at the site of discovery and notify the CO immediately of any discovery. Prepare a notification that includes a brief statement of the location and details leading to the finding. Operations may continue in other areas that would not affect the site of discovery. Attend a preconstruction meeting with park archeologists to identify specific locations and develop archeological and historical site protection and avoidance measures, including installing temporary fencing or other approved physical barriers along the construction limits, to preclude construction equipment and personnel from disturbing these sites.

- Do not disturb Monterey Cypress trees or tree roots at the windbreak at the north end of B Ranch at approximate Station 99+00 Left to Station 102+00 Left.

SCR 107.11 Protection of Forests, Parks, and Public Lands.

- Historic Properties Protection: Do not disturb distinctive fencing materials, such as wood rail and white picket fencing, during construction as shown on the Plans. If fencing will be affected during construction, coordinate with CO. Do not disturb historic properties.

- Historic properties include the following:
  - Historic E Ranch corral;
  - Historic B Ranch windbreak;
  - Historic A Ranch main house;
  - Historic B Ranch main house; and
  - Historic B Ranch hay barn.

- Place temporary plastic fencing or concrete barriers to protect historic properties from inadvertent damage as directed by the CO.

SHPO Questions on Archaeology - *Please indicate how FHWA has established that MRN-229 no longer exists below the surface within the area where surface widening and paving will take place. Please also indicate if slope cut backs will occur and/or signs will be placed in proximity to the previously recorded location of MRN-229, as these activities necessitate more vertical disturbance than surface widening and paving. It is unclear in the provided documentation how FHWA has come to the conclusion that MRN-229 does not exist within 1 foot below the surface of the current ground surface, nor is it clear if they have considered the potential of other ground disturbing activities to disturb the site. Additionally, please indicate how FHWA intends to identify any post-review discoveries within the areas that have been identified as having high archaeological sensitivity for this undertaking. Will an archaeological monitor be employed?*

FHWA-CFLHD Response to Archaeology Questions – Project activities in the vicinity of the plotted location of site MRN-229 include only road widening, with vertical disturbance up to nine inches (0.25 meters) deep to replace asphalt. All construction activities will occur within the existing road prism where no archaeological deposit has been observed. Resurfacing will be within previously disturbed sediments, and widening will be within the existing road cut. Although installation of new signs would be deeper than the existing prism (i.e. a depth of four feet centered on a 4-inch-square area), evidence indicates that no site deposit exists in this area.

Based on the following observations, there are no indications that MRN-229 exists within or adjacent to the APE.

- The plotted location of site MRN-229 is apparently based on a verbal description. There has been no development or change to the area since the location was recorded in 1967, and repeated surface survey since has not found any evidence of a site, suggesting that the plot is incorrect.

- The sediments in the site vicinity are Older and Terminal Pleistocene, where archaeological deposits would occur on or close to the surface if not in a depositional environment. The landform is gently sloping, with only minor potential for colluvial deposition that might cover an archaeological deposit. This environment suggests that if any materials were present, some would be observable on the surface.

- Intensive survey at, and in the vicinity of, the plotted site location, with close attention to rodent backdirt, animal paths, and all exposed ground, found no archaeological materials.

- In the general vicinity of the site, the half mile southeast of Ranch G (project post miles 8.6 at the ranch driveway to 9.1 to the southeast), original road construction consists of cut-and-fill. The slope on the north side of the road, where the site is plotted, has been cut into, and the road sits on some depth of fill spread downslope from the cut. In this area, the cut left an elevation difference of between three and 10 feet between the original ground surface north of the road and the road surface. No archaeological materials were visible on top of the cut on original ground surface adjacent to the road, or in the cut, again suggesting that the plot is incorrect.

With no indications of an archaeological deposit, and project activities limited to the existing road cut, we are confident that the project has no potential to affect cultural deposits in the vicinity of the plotted location of MRN-229. In regards to SHPO questions on inadvertent discoveries, please see SCR 107.02 description above which addresses discovery situations. Due to the very limited nature of construction activities within areas identified as high archaeological sensitivity, and the negative results of field investigation in these areas, FHWA-CFLHD does not feel that archaeological monitoring of construction is warranted.

Newly Identified Archaeological Site: PORE00037

The following discussion is a summary of the PRNS investigation of PORE00037 as provided by Paul Engel, PRNS Archaeologist. PORE00037 consists of a low density lithic scatter extending across an extensive area. The site also includes two loci characterized by a low density surface scatter of marine shell. The documented site boundary of PORE00037 crosses Sir Francis Drake Boulevard (SFDB) at two locations (see Location Map and Site Sketch Map located in the attached Site Record prepared by Paul Engel). At the eastern intersection with SFDB, no cultural materials were observed within 40 meters of the SFDB roadway; rather, the site boundary joins surface deposits seen on both sides of the roadway outside of the project's APE. At the western intersection with SFDB, Locus 2 occurs within the project's APE. Locus 2 is a low density scatter of marine shell on either side of the road where a cattle underpass crosses under the road. The observed marine shell was fragmentary but both clam and oyster shell appeared to be represented. Based on the distribution of the marine shell, it seems that the relatively light deposit of marine shell was likely disturbed by the construction of the roadway and cattle underpass, and further disturbed by high winds and shifting sands. A series of six auger units were conducted to determine if more substantial deposits may occur below the surface at Locus 2 but no cultural materials were encountered.

Based on the PRNS investigation and documentation of PORE00037, it seems unlikely that Locus 2 would contribute to the site's eligibility for listing on the National Register of Historic Places because it lacks integrity of design and does not contain sufficient quantity and variety of materials to have research potential. Based on the recommendation of the PRNS, FHWA-CFLHD has committed to avoiding further impact to Locus 2 and the overall site through the use of protective fencing to delineate construction activities where the site boundaries intersect with the project.

Summary

As stated in our original consultation letter, and in light of new information provided for site PORE00037, FHWA-CFLHD requests your concurrence with the following:

- The appropriateness of the APE for the proposed undertaking;
- The adequacy of the historic property identification efforts;
- The determination that the culvert near M Ranch, the culvert south of Estero Road and the culvert at Schooner Creek do not meet the criteria for listing in the National Register of Historic Places;
- The determination that cultural deposits associated with PORE00037 Locus 2 within the APE for the proposed undertaking lack integrity and do not support eligibility of the

resource, and that the eligibility of the resource outside the project APE remains unevaluated;

- Determination that the proposed project will have no adverse effect on historic properties given the measures provided in the project's construction specifications to avoid and minimize harm.

If you have any questions regarding the field investigation or site record for PORE00037, please contact Paul Engel, at 415-464-5287, or paul_engel@nps.gov. If you have project questions, please feel free to contact me at Nathan.Allen@dot.gov or at 720-963-3668.

Thank you for your cooperation and assistance.

Sincerely,

for Nate Allen, PE
Project Manager

Attachments:
DOI/NPS Point Reyes National Seashore Memorandum re: PORE00037
California Department of Parks and Recreation 523 Forms for PORE00037

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

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March 24, 2015

In Reply Refer To:
HFPM-16

Nick Tipon
Sacred Sites Protection Committee
Federated Indians of Grafton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

Subject: Government-to-Government Consultation on Proposed Improvements to Sir Francis Drake Boulevard in Point Reyes National Seashore

Dear Mr. Tipon:

The Federal Highway Administration (FHWA), Central Federal Lands Highway Division (CFLHD), in cooperation with the National Park Service (NPS) and Marin County, California, is initiating an Environmental Assessment (EA)/Initial Study (IS) to study potential improvements to approximately 12 miles of Sir Francis Drake Boulevard in Point Reyes National Seashore within Marin County. A project study area map has been included for your reference. The improvements are proposed primarily to address the existing roadway's structural deficiencies, as well as operational and safety issues.

Sir Francis Drake Boulevard is an old wagon road dating to the 1800s that has been improved by the addition of chip seals and overlays. The road is within a 60-foot wide county easement through Point Reyes National Seashore from Pierce Point Road to Chimney Rock Road and Lighthouse Road. The road is the only means of visitor access to the Lighthouse and the Kenneth C. Patrick Visitor Centers, as well as several other popular recreational destinations, such as Chimney Rock and Lifeboat Station, Mount Vision, Drakes Beach, and Point Reyes Beaches North and South. The Chimney Rock and Lighthouse areas offer some of the park's best opportunities for watching whales and sea lions, and therefore experience high visitor use. The road is also the only way to access many of the historic beef and dairy ranches still in operation within the park with daily access for milk tanker trucks and school buses.

The existing pavement was not designed for the current traffic loads. Pavement along Sir Francis Drake Boulevard is deteriorating and is badly oxidized, heavily patched, lacks shoulder support, and demonstrates significant cracking and edge damage in some sections. Seasonal flooding of the creek near Schooner Bay can close the road to traffic for several days. Additionally, the road's current deteriorated state requires ongoing maintenance that would be substantially reduced if it were rehabilitated.

The proposed project includes resurfacing, restoration, and rehabilitation (3R) that will closely follow the existing roadway. The proposed project also includes new asphalt pavement, new striping and signs, replacement of two cattle under-crossings, replacement of cross culverts, and implementation of other safety features to meet current design standards. The road could be widened between 1 and 6 feet in some areas to create a consistent roadway width and improve safety; however, widening would be kept to a minimum to avoid and minimize impacts to adjacent sensitive resources. The proposed improvements would generally occur within the existing 60-foot Marin County roadway easement. In a few locations, proposed improvements may extend slightly beyond the existing easement to improve sight distance and safety, accommodate widening in areas of steep slopes, and reduce the risk of flooding near Schooner Bay.

In June 2014 a request for a Sacred Lands File record search was sent to the Native American Heritage Commission regarding this project. To date nothing has been received. FHWA-CFLHD is continuing to engage the organization for further information.

Your knowledge of the area is of great value and your feedback is important. We would appreciate any information or concerns you may wish to share, in particular, if there are any resources or places of traditional cultural or religious importance to members of your tribe that might be affected by the proposed project. If you have any comments or questions regarding the proposed project, please send them by April 30, 2015 to Mr. Nathan Allen (HFPM-16), Federal Highway Administration, 12300 West Dakota Avenue, Suite 380, Lakewood, CO 80228; by email at Nathan.allen@dot.gov; or by telephone at 720-963-3668.

Thank you for your cooperation and assistance.

Sincerely yours,

for Nate Allen, P.E.
Project Manager

Enclosure: Study Area Map

FEDERATED INDIANS OF
GRATON
RANCHERIA

Federated Indians of Graton Rancheria
Sacred Sites Protection Committee
6400 Redwood Drive Suite 300
Rohnert Park, CA 94928
1 (707) 566-2288

April 10, 2013

Nate Allen
US Dept. of Transportation
12300 West Dakota Ave. Suite 380A
Lakewood, CO 80228

RE: Proposed Improvements for Sir Francis Drake Blvd.
Point Reyes National Seashore

Dear Mr. Allen:

The Federated Indians of Graton Rancheria, a federally recognized Tribe and sovereign government, has received the information you provided regarding the proposed improvements for Sir Francis Drake Blvd. We provide comments under Section 106 of the National Historic Preservation Act of 1966 (NHPA) requiring federal projects to meet the requirements of 36 CFR 800 for consultation with federally recognized Tribes.

FIGR provides comments regarding sacred lands and other cultural sites to protect and/or avoid our cultural resources that might be adversely impacted by the scope of work of the project. The Sacred Sites Protection Committee (SSPC) is authorized by the Tribal Council to work with agencies to develop the specific plans and procedures to avoid any potential adverse impacts.

We request a copy of the archaeological survey conducted for this project and the planning documents for this project. Once we have reviewed the information in these materials we will provide comments during government to government consultation. Please send them to me at the address above.

Respectfully,

Nick Tipon
Sacred Sites Protection Committee
707 321-4792

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

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July 1, 2015

In Reply Refer To:
HFPM-16

Dr. Carol Roland-Nawi
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Subject: Request for Concurrence on the Area of Potential Effects, Determinations of Eligibility, and Finding of No Adverse Effect for the Sir Francis Drake Boulevard Improvement Project CA FLAP CR109[1].

Dear Dr. Roland-Nawi:

The Federal Highway Administration-Central Federal Lands Highway Division (FHWA-CFLHD) is initiating consultation with the State Historic Preservation Officer (SHPO) regarding the undertaking referenced above. We are consulting with you in accordance with 36 CFR Part 800, implementing Section 106 of the National Historic Preservation Act. We are requesting your concurrence on:

(1) The Area of Potential Effect (APE) established for the Sir Francis Drake Boulevard Improvement Project funded by the Federal Lands Access Program (CA FLAP CR109[1]) (Attachment 1);

(2) Determination of National Register eligibility of three culverts along Sir Francis Drake Boulevard, a contributor to the Point Reyes Ranches and Shafter/Howard Tenant Ranches Historic District; and

(3) Finding of no adverse effect for the undertaking.

The FHWA-CFLHD representative is Nate Allen, Project Manager. FHWA-CFLHD in coordination with the National Park Service, Point Reyes National Seashore has agreed to serve as the Federal lead agency for the purposes of Section 106 compliance on this undertaking. Attached is the cultural resources inventory conducted in support of the project (Leach-Palm et al. 2015), which has been reviewed by National Park Service, Point Reyes National Seashore Cultural Resources Specialist Paul Engel, and Marin County, who concur with the report findings and recommendations.

Description of the Undertaking

The FHWA-CFLHD, in cooperation with Marin County and the Point Reyes National Seashore, is proposing to rehabilitate, restore, and resurface 12.1 miles of Sir Francis Drake Boulevard in the Point Reyes National Seashore, Marin County, California. The project is along Sir Francis Drake Boulevard from Marin County milepost 42.93 to 30.79 (Project Miles 0 to

12.1). The project area extends between the intersection of Chimney Rock and Lighthouse Roads in the southwest and the intersection of Sir Francis Drake with Pierce Point Road in the northeast, about two miles west of Inverness. The project area is situated on only Point Reyes National Seashore lands, no private lands are included (see Attachment 2, Figures 1 and 2).

The majority of the proposed road resurfacing, restoring, and rehabilitating will closely follow the existing road with widening as appropriate to improve safety and minimize impacts (for details see Attachment 2, Project Description and Location, page 1). Generally, roadway improvements will be accomplished through the recycling of base course where possible, and new paved surfaces. Unpaved driveways and access roads will receive paved aprons. Guardrails and signs will be upgraded to meet design standards and existing parking areas will be used for staging and may be resurfaced. Other project elements include:

- Grading, striping, and safety-related features to meet current design practice where possible;
- Flattening some vertical alignments and cutting sides slopes to improve sight distance;
- Constructing roadway banking for driving safety;
- Replacement of two cattle undercrossings, two 84-inch culverts, and a 60-inch elliptical arch culvert;
- Replacement of 15- and 18-inch culverts with 24-inch culverts;
- One half mile of raising and realignment to reduce roadway flooding;
- Cut or rockery walls in select areas to support the wider roadway; and
- Replacement of fence posts as necessary.

Area of Potential Effects (APE)

The APE for archaeology and built environment is the same. It was defined to encompass the horizontal and vertical extent of all project construction activities and encompasses 112 acres along 12.1 miles of Sir Francis Drake Boulevard (Attachment 1, APE maps). The horizontal APE generally consists of a 60-foot- (18.3-meter-) wide corridor centered on the middle of the existing roadway. The corridor width varies to accommodate pull out, parking and staging areas, and minor realignment.

The vertical APE ranges among nine inches (0.25 meters) to replace asphalt, two feet for the 13 foot- (3.9 meters-) wide box culverts, and four feet (1.2 meters) to replace signs. Depth of the slope cut backs for improving sight distance is undetermined.

Widening and realignment to the existing road will introduce only minor new roadway features (small walls, signage, new paving) to the existing built environment, and such elements will not result in visual impacts. Thus, based upon the current project description, there is no need to extend the APE to include entire ranch clusters (complexes) situated along Sir Francis Drake Boulevard.

Identification of Historic Properties

As documented in the attached report (Attachment 2), consultation with Point Reyes National Seashore, archival research, assessment of the potential for buried archaeological resources, intensive pedestrian survey of the APE, and documentation of findings and recommendations have been completed. FHWA-CFLHD consulted with the Federated Indians of

Graton Rancheria who requested a copy of the cultural report and will comment on the project after review of the report.

Archaeological Resources

Consultation and identification efforts identified one previously recorded prehistoric site (CA-MRN-229) within the APE which no longer exists, apparently destroyed by road production. Regarding buried archaeological deposits, 0.6% of the project corridor has a high or very high potential for buried deposits. The project impacts in the small area of high potential (PM 8.9 to 9.0, Figure 5 in the attached report) are surface widening and paving entailing less than one foot (0.3 meters) of vertical disturbance, which will not affect potentially buried resources. Thus, no archaeological resources will be affected by the project and no further management is considered necessary.

Built Environment Properties

The project area passes through portions of three overlapping historic districts, the Point Reyes Dairy District, the Point Reyes Ranches Historic District, and the Shafter/Howard Tenant Ranches Historic District, that were determined eligible for listing in the National Register of Historic Places (National Register) between 1995 and 2008. None of the contributors to these districts are individually eligible. In its review of the cultural resources report prepared for this project, the National Park Service indicated it has implemented a phased approach to identifying historic properties associated with the history and development of dairy ranching on the Point Reyes peninsula. This approach has resulted in three separate district evaluations with variation in terms of applicable significance criterion, contributing resources, and period of significance among other things. With this in mind, FHWA-CFLHD has described and considered impacts to these resources as three separate historic districts in order to reflect the existing documentation and to be comprehensive in our analysis. See Table 4 in the attached report for delineation of each historic district, eligibility status, boundaries, and relationship to the current undertaking. See Figures 4 & 5 in the attached report for maps of the districts. Contributors of these historic districts within the APE are Sir Francis Drake Boulevard, which is a contributor to two of the historic districts; intersections with contributing roads: Muddy Hollow Road, Chimney Rock Road, the access to the former Coast Guard Life Saving Station, and access roads to E Ranch, M Ranch and Rogers Ranch; cattle undercrossings (small bridges); interior ranch roads that intersect Sir Francis Drake Boulevard; fences; corrals; windbreaks (lines of trees); and buildings at the historic ranches situated along Sir Francis Drake Boulevard.

For the current undertaking, three previously unevaluated structures within the districts were documented and evaluated for National Register eligibility. The attached report concludes that these three culverts (one at M Ranch, one south of Estero Road, and one at Schooner Creek) do not meet the criteria for listing in the National Register individually, as potential historic district contributors, or as character-defining features of Sir Francis Drake Boulevard, which is a contributor to the historic districts.

Project Effects

The project will have no adverse effect on historic properties. Overall, the project will not have an adverse effect on the three overlapping historic districts in the APE, the Point Reyes Dairy District, Point Reyes Ranches Historic District, and the Shafter/Howard Tenant Ranches

National Register Historic District. The National Register eligibility of the three overlapping historic districts in the APE will not change.

Proposed refurbishing and realignment of portions of Sir Francis Drake Boulevard will affect only small portions of the contributing roadway and two contributors of the overlapping Point Reyes Ranches and the Shafter/Howard Tenant Ranches historic districts that cover roughly 18,000 acres. The proposed changes include widening up to six feet for less than a half mile, with between four and six acres total of new paving added in the whole project, including paved ditches, curbs, pullouts, and aprons. The realignment will include some vertical changes to flatten the roadway, up to a total of one mile. The roadway will be shifted by 12 feet for a half mile section, and there will be other minor adjustments like roadway banking, cut slopes, and the addition of some rock walls at the road's edge that will be up to six feet tall. Other contributors intersect Sir Francis Drake Boulevard within the APE. These include contributing roads, ranch access roads, and interior access roads that will be altered through the repaving of aprons or slight truncation due to road shoulder improvements. The intersecting roads will be maintained as characteristic circulation features. The F Ranch cattle undercrossings, which are contributors to the Shafter/Howard Tenant Ranches historic district, will be removed and replaced with concrete culverts that will retain the vehicle and cattle circulation patterns in the district. The F Ranch cattle undercrossing are not individually eligible for listing in the National Register. The new structures will retain the general scale of the existing undercrossings and will not introduce new visual elements into the historic landscape that could impact the larger historic district. The proposed improvements will not alter the boulevard's ability to convey its significance linking the historic ranches on Point Reyes, its key characteristic that makes it a contributing element of the historic districts.

Other historic district contributors at the historic ranches in the APE may be affected. These resources are fences, corrals, windbreaks, and three contributing buildings at historic ranches. The project will avoid affecting these elements through project design and implementation of protective measures. Fences and corrals will be retained to maintain the alignment of human and ranch cattle circulation patterns and their characteristic that contributes to the historic districts. Effects will be avoided by limiting construction to the existing road bench, a 30-foot-wide corridor aligned on the current centerline. Corrals and buildings within the APE are more than 15 feet from the centerline, and therefore will not be affected by construction. Areas around corrals, windbreaks, and buildings will not be used for staging. Protective measures to be employed near historic buildings in the APE include use of orange construction fencing or concrete barriers to keep equipment away from resources. Inadvertent damage to contributors will be repaired to match existing. If it becomes necessary, distinctive fencing materials, such as wood rail fencing, shall be replaced in kind. Work at the windbreaks in or adjacent to the APE shall avoid disturbing the trees and their roots.

For a summary of the effects to the historic districts' contributors see Table 11 in the attached report.

We request your concurrence with the following:

- The appropriateness of the APE for the proposed undertaking;
- The adequacy of the historic property identification efforts;
- The determination that the culvert near M Ranch, the culvert south of Estero Road and the culvert at Schooner Creek do not meet the criteria for listing in the National Register of Historic Places;

- Determination that the proposed project will have no adverse effect on historic properties.

As part of the environmental process for this undertaking, FHWA-CFLHD must also comply with Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966. The intent of the Section 4(f) Statute, 49 U.S.C. Section 303, and the policy of the FHWA is to strive to avoid transportation use of historic sites and publicly owned recreational areas, parks, wildlife and waterfowl refuges. However, the legislation states that a transportation project may be approved if it results in a *de minimis* impact. As defined in FHWA's implementing regulations (23 CFR 774), "for historic sites, *de minimis* impact means that the FHWA has determined, in accordance with 36 CFR part 800, that no historic property is affected by the project or that the project will have "no adverse effect" on the historic property in question." This project has been determined to have no adverse effect on historic properties, i.e. the identified historic districts. Based on the findings outlined above, FHWA-CFLHD is notifying the SHPO that it intends on using the SHPO's concurrence in our no adverse effect finding to make a *de minimis* impact finding for the Point Reyes Dairy District, the Point Reyes Ranches Historic District, and the Shafter/Howard Tenant Ranches Historic District.

If you have any questions on the archaeological study, please contact Laura Leach-Palm, Far Western archaeologist, at 530-756-3941, or laura@farwestern.com. If you have any questions on the built environment, please contact Christopher McMorris, JRP Historical Consulting, at 530-757-2521, or cmcmorris@jrphistorical.com. If you have project questions, please feel free to contact me at Nathan.Allen@dot.gov or at 720-963-3668.

Thank you for your cooperation and assistance.

Sincerely,

Nate Allen, PE
Project Manager

Enclosure: APE maps; Cultural Resources Inventory Report

APPENDIX B: HAZARDOUS MATERIALS PHOTOGRAPHS

Sir Francis Drake Boulevard Project
Site Reconnaissance Photographs
June 2014

Photo 1: Aboveground Storage Tank on Nunez Family Farm Property

Photo 2: Small wood debris and tires on Nunez Family Farm Property

Photo 3: Household refuse, small wood debris, tires, and old vehicles on Nunez Family Farm Property

Photo 4: Household refuse, small wood debris, and tires on Nunez Family Farm Property

Photo 5: High Voltage Power Poles with Transformers along Sir Francis Drake Boulevard

APPENDIX C: DETAILED AIR QUALITY EMISSIONS CALCULATIONS

Road Construction Emissions Model, Version 7.1.5.1

Emission Estimates for -> SFDB CA FLAP CR109(1)				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (English Units)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**CO2 (lbs/day)**
Grubbing/Land Clearing	2.5	11.9	18.5	31.1	1.1	30.0	7.2	1.0	6.2	2,412.9
Grading/Excavation	5.2	24.1	45.5	32.6	2.6	30.0	8.6	2.4	6.2	4,987.9
Drainage/Utilities/Sub-Grade	4.0	18.6	31.9	32.1	2.1	30.0	8.1	1.9	6.2	3,769.1
Paving	2.8	16.7	20.5	1.4	1.4	-	1.2	1.2	-	3,059.3
Maximum (pounds/day)	5.2	24.1	45.5	32.6	2.6	30.0	8.6	2.4	6.2	4,987.9
Total (tons/construction project)	0.4	2.0	3.2	4.9	0.2	4.7	1.2	0.2	1.0	396.4

Notes: Project Start Year -> 2016
Project Length (months) -> 18
Total Project Area (acres) -> 90
Maximum Area Disturbed/Day (acres) -> 3
Total Soil Imported/Exported (yd^3/day)-> 110

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> SFDB CA FLAP CR109(1)				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (Metric Units)	**ROG (kgs/day)**	**CO (kgs/day)**	**NOx (kgs/day)**	**PM10 (kgs/day)**	**PM10 (kgs/day)**	**PM10 (kgs/day)**	**PM2.5 (kgs/day)**	**PM2.5 (kgs/day)**	**PM2.5 (kgs/day)**	**CO2 (kgs/day)**
Grubbing/Land Clearing	1.1	5.4	8.4	14.1	0.5	13.6	3.3	0.4	2.8	1,096.8
Grading/Excavation	2.4	11.0	20.7	14.8	1.2	13.6	3.9	1.1	2.8	2,267.2
Drainage/Utilities/Sub-Grade	1.8	8.4	14.5	14.6	0.9	13.6	3.7	0.9	2.8	1,713.2
Paving	1.3	7.6	9.3	0.6	0.6	-	0.6	0.6	-	1,390.6
Maximum (kilograms/day)	2.4	11.0	20.7	14.8	1.2	13.6	3.9	1.1	2.8	2,267.2
Total (megagrams/construction project)	0.4	1.8	2.9	4.5	0.2	4.3	1.1	0.2	0.9	359.6

Notes: Project Start Year -> 2016
Project Length (months) -> 18
Total Project Area (hectares) -> 36
Maximum Area Disturbed/Day (hectares) -> 1
Total Soil Imported/Exported ($meters^3$/day)-> 84

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model

Version 7.1.5.1

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells C10 through C25.

Input Type

Project Name	SFDB CA FLAP CR109(1)	
Construction Start Year	2016	Enter a Year between 2009 and 2025 (inclusive)
Project Type	2	1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction
Project Construction Time	18.00	months
Predominant Soil/Site Type: Enter 1, 2, or 3	1	1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock
Project Length	12.00	miles
Total Project Area	90.00	acres
Maximum Area Disturbed/Day	3.00	acres
Water Trucks Used?	1	1. Yes 2. No
Soil Imported	60.00	yd^3/day
Soil Exported	50.00	yd^3/day
Average Truck Capacity	20	yd^3 (assume 20 if unknown)

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells C34 through C37.

Construction Periods	User Override of Construction Months	Program Calculated Months	2005	%	2006	%	2007	%
Grubbing/Land Clearing	0.75	1.80	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	2.00	7.20	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	4.00	6.30	0.00	0.00	0.00	0.00	0.00	0.00
Paving	3.00	2.70	0.00	0.00	0.00	0.00	0.00	0.00
Totals	9.75	18.00						

Please note: You have entered a different number of months than the project length shown in cell C13.

NOTE: soil hauling emissions are included in the Grading/Excavation Construction Period Phase, therefore the Construction Period for Grading/Excavation cannot be zero if hauling is part of the project.

Hauling emission default values can be overridden in cells C45 through C46.

Soil Hauling Emissions

User Input	User Override of Soil Hauling Defaults	Default Values
Miles/round trip	10.00	30
Round trips/day	3.00	6
Vehicle miles traveled/day (calculated)		30

Hauling Emissions	ROG	NOx	CO	PM10	PM2.5	CO2
Emission rate (grams/mile)	0.16	8.25	0.70	0.17	0.10	1679.86
Emission rate (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day	0.01	0.55	0.05	0.01	0.01	111.00
Tons per contruction period	0.00	0.01	0.00	0.00	0.00	2.44

Worker commute default values can be overridden in cells C60 through C65.

Worker Commute Emissions

	User Override of Worker Commute Default Values	Default Values
Miles/ one-way trip	60.00	20
One-way trips/day	2.00	2
No. of employees: Grubbing/Land Clearing	6.00	34
No. of employees: Grading/Excavation	8.00	49
No. of employees: Drainage/Utilities/Sub-Grade	6.00	43
No. of employees: Paving	8.00	39

	ROG	NOx	CO	PM10	PM2.5	CO2
Emission rate - Grubbing/Land Clearing (grams/mile)	0.147	0.194	1.744	0.047	0.020	443.650
Emission rate - Grading/Excavation (grams/mile)	0.147	0.194	1.744	0.047	0.020	443.650
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)	0.147	0.194	1.744	0.047	0.020	443.650
Emission rate - Paving (grams/mile)	0.147	0.194	1.744	0.047	0.020	443.650
Emission rate - Grubbing/Land Clearing (grams/trip)	0.505	0.323	4.200	0.004	0.003	95.592
Emission rate - Grading/Excavation (grams/trip)	0.505	0.323	4.200	0.004	0.003	95.592
Emission rate - Draining/Utilities/Sub-Grade (gr/trip)	0.505	0.323	4.200	0.004	0.003	95.592
Emission rate - Paving (grams/trip)	0.505	0.323	4.200	0.004	0.003	95.592
Pounds per day - Grubbing/Land Clearing	0.247	0.316	2.877	0.075	0.031	706.113
Tons per const. Period - Grub/Land Clear	0.002	0.003	0.024	0.001	0.000	5.825
Pounds per day - Grading/Excavation	0.330	0.422	3.835	0.099	0.042	941.484
Tons per const. Period - Grading/Excavation	0.007	0.009	0.084	0.002	0.001	20.713
Pounds per day - Drainage/Utilities/Sub-Grade	0.247	0.316	2.877	0.075	0.031	706.113
Tons per const. Period - Drain/Util/Sub-Grade	0.011	0.014	0.127	0.003	0.001	31.069
Pounds per day - Paving	0.330	0.422	3.835	0.099	0.042	941.484
Tons per const. Period - Paving	0.011	0.014	0.127	0.003	0.001	31.069
tons per construction period	0.031	0.040	0.361	0.009	0.004	88.676

Water truck default values can be overriden in cells C91 through C93 and E91 through E93.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Miles Traveled/Day	Default Values Miles Traveled/Day
Grubbing/Land Clearing - Exhaust		1		40
Grading/Excavation - Exhaust		1		40
Drainage/Utilities/Subgrade		1		40

	ROG	NOx	CO	PM10	PM2.5	CO2
Emission rate - Grubbing/Land Clearing (grams/mile)	0.16	8.25	0.70	0.17	0.10	1679.86
Emission rate - Grading/Excavation (grams/mile)	0.16	8.25	0.70	0.17	0.10	1679.86
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)	0.16	8.25	0.70	0.17	0.10	1679.86
Pounds per day - Grubbing/Land Clearing	0.01	0.73	0.06	0.01	0.01	148.00
Tons per const. Period - Grub/Land Clear	0.00	0.01	0.00	0.00	0.00	1.22
Pound per day - Grading/Excavation	0.01	0.73	0.06	0.01	0.01	148.00
Tons per const. Period - Grading/Excavation	0.00	0.02	0.00	0.00	0.00	3.26
Pound per day - Drainage/Utilities/Subgrade	0.01	0.73	0.06	0.01	0.01	148.00
Tons per const. Period - Drainage/Utilities/Subgrade	0.00	0.03	0.00	0.00	0.00	6.51

Fugitive dust default values can be overridden in cells C110 through C112.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		3	30.0	0.2	6.2	0.1
Fugitive Dust - Grading/Excavation		3	30.0	2.4	6.2	0.5
Fugitive Dust - Drainage/Utilities/Subgrade		3	30.0	2.1	6.2	0.4

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles		ROG	CO	NOx	PM10	PM2.5	CO2
Override of Default Number of Vehicles	*Program-estimate*	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
		Cranes	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2	Excavators	0.41	2.79	4.47	0.22	0.20	572.86
		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
1.00		Graders	1.07	3.48	10.38	0.58	0.54	671.02
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Pavers	0.00	0.00	0.00	0.00	0.00	0.00
		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
		Pumps	0.00	0.00	0.00	0.00	0.00	0.00
		Rollers	0.00	0.00	0.00	0.00	0.00	0.00
		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
2.00	24	Signal Boards	0.73	2.73	2.64	0.19	0.18	314.87
		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
		Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00
		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
		Welders	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing	pounds per day	2.2	9.0	17.5	1.0	0.9	1558.8
	Grubbing/Land Clearing	tons per phase	0.0	0.1	0.1	0.0	0.0	12.9

Grading/Excavation	Default Number of Vehicles		ROG	CO	NOx	PM10	PM2.5	CO2
Override of Default Number of Vehicles	*Program-estimate*	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
	0	Cranes	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
1.00	3	Excavators	0.41	2.79	4.47	0.22	0.20	572.86
		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
	2	Graders	2.13	6.96	20.76	1.17	1.07	1342.05
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Pavers	0.00	0.00	0.00	0.00	0.00	0.00
		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
		Pumps	0.00	0.00	0.00	0.00	0.00	0.00
	2	Rollers	0.70	3.02	6.18	0.46	0.42	559.07
		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
	1	Rubber Tired Loaders	0.52	3.12	6.51	0.22	0.20	662.62
0.00	2	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
2.00	24	Signal Boards	0.73	2.73	2.64	0.19	0.18	314.87
		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
1.00	4	Tractors/Loaders/Backhoes	0.36	1.57	3.27	0.25	0.23	335.92
		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
		Welders	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation	pounds per day	4.9	20.2	43.8	2.5	2.3	3787.4
	Grading	tons per phase	0.1	0.4	1.0	0.1	0.1	83.3

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	CO2 pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
		Cranes	0.00	0.00	0.00	0.00	0.00	0.00
		Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
1.00		Excavators	0.41	2.79	4.47	0.22	0.20	572.86
		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
	1	Graders	1.07	3.48	10.38	0.58	0.54	671.02
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Pavers	0.00	0.00	0.00	0.00	0.00	0.00
		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
2.00	1	Plate Compactors	0.08	0.42	0.50	0.02	0.02	68.90
		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1	Pumps	0.00	0.00	0.00	0.00	0.00	0.00
1.00		Rollers	0.35	1.51	3.09	0.23	0.21	279.53
0.00	1	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
2.00	24	Signal Boards	0.73	2.73	2.64	0.19	0.18	314.87
		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
	3	Tractors/Loaders/Backhoes	1.07	4.72	9.81	0.76	0.69	1007.77
		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
		Welders	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage	pounds per day	3.7	15.6	30.9	2.0	1.8	2915.0
	Drainage	tons per phase	0.2	0.7	1.4	0.1	0.1	128.3

Paving	Default Number of Vehicles		ROG	CO	NOx	PM10	PM2.5	CO2
Override of Default Number of Vehicles	*Program-estimate*	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
		Cranes	0.00	0.00	0.00	0.00	0.00	0.00
		Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Excavators	0.00	0.00	0.00	0.00	0.00	0.00
		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
		Graders	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
	1	Pavers	0.42	2.84	4.49	0.22	0.21	481.68
	1	Paving Equipment	0.32	2.69	3.53	0.18	0.16	426.30
		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
		Pumps	0.00	0.00	0.00	0.00	0.00	0.00
	2	Rollers	0.70	3.02	6.18	0.46	0.42	559.07
		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
2.00	24	Signal Boards	0.73	2.73	2.64	0.19	0.18	314.87
		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
1.00	3	Tractors/Loaders/Backhoes	0.36	1.57	3.27	0.25	0.23	335.92
		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
		Welders	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	pounds per day	2.5	12.9	20.1	1.3	1.2	2117.8
	Paving	tons per phase	0.1	0.4	0.7	0.0	0.0	69.9
Total Emissions all Phases (tons per construction period) =>			0.4	1.6	3.1	0.2	0.2	294.3

Equipment default values for horsepower and hours/day can be overridden in cells C289 through C322 and E289 through E322.

Equipment		Default Values Horsepower		Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		106		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		10		8
Concrete/Industrial Saws		64		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		142		8
Excavators		163		8
Forklifts		89		8
Generator Sets		66		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		26		8
Pumps		53		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		20		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		45		8

0

END OF DATA ENTRY SHEET

APPENDIX D: WETLAND AND OTHER WATERS OF THE U.S. MAPS

Sir Francis Drake Boulevard Improvement Project

- Project Miles
- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- PFO-Riverine
- PFO-Slope
- Environmental Study Area

N

0 60 120 Feet

Source Layer Credits: 2014 Imagery ESRI

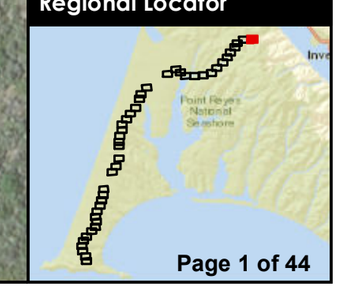
Projection: Lambert Conformal Conic State Plane California III FIPS 0502 Feet
North American Datum 1983

Map Prepared by: Jacobs Engineering, Peter Barney. Wetlands delineated by: Jacobs Engineering, Ben Eddy, Misha Seguin, Dan Soucy, Lori McDonald. Prepared on: 05/30/2014 Revised on: 1/15/2015

Wetland In/Out Points with numbers correspond to Wetland Determination Data Forms.

Aquatic features contiguous with Study Area boundaries continue beyond the project limits.

Regional Locator



Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- PFO-Riverine
- PFO-Slope
- RP1FO-Riverine
- Environmental Study Area

N

0 60 120 Feet

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Projection: Lambert Conformal Conic State Plane California III FIPS 0502 Feet
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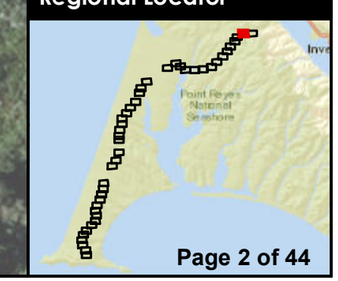

Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- PFO-Riverine
- PFO-Slope
- PSS-Slope
- RP1FO-Riverine
- Environmental Study Area

N

0 60 120 Feet

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Regional Locator

Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- PEM-Slope
- PFO-Riverine
- PFO-Slope
- PSS-Depressional
- PSS-Slope
- Environmental Study Area

N

0 60 120 Feet

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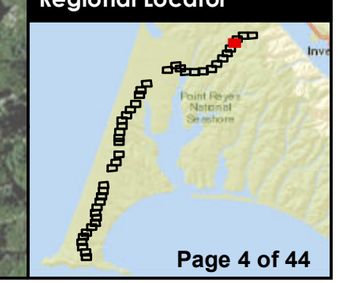

Sir Francis Drake Boulevard Improvement Project

- Project Miles
- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- PEM-Slope
- PFO-Riverine
- PSS-Depressional
- Environmental Study Area

N

0 60 120 Feet

Source Layer Credits: 2014 Imagery ESRI

Projection: Lambert Conformal Conic State Plane California III FIPS 0502 Feet North American Datum 1983

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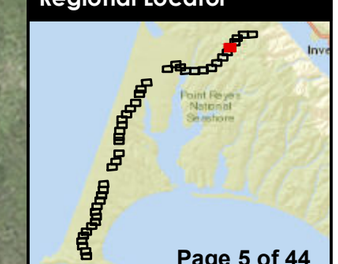

Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- PFO-Riverine
- PSS-Slope
- Environmental Study Area

N

0 60 120 Feet

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Regional Locator

Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- PEM2-Mineral Soil
- PFO-Riverine
- PFO-Slope
- RP1EM-Riverine
- RP1SS-Riverine
- Environmental Study Area

N

0 60 120 Feet

Source Layer Credits: 2014 Imagery ESRI

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North American Datum 1983

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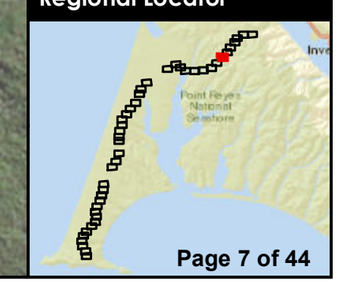

Sir Francis Drake Boulevard Improvement Project

- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- PSS-Riverine
- PSS-Slope
- RP1SS-Riverine
- Environmental Study Area

N

0 60 120 Feet

Source Layer Credits: 2014 Imagery ESRI

Projection: Lambert Conformal Conic State Plane California III FIPS 0502 Feet
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Regional Locator

Sir Francis Drake Boulevard Improvement Project

- Project Miles
- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- PEM-Riverine
- PFO-Riverine
- PSS-Riverine
- PSS-Slope
- Environmental Study Area

N

0 60 120 Feet

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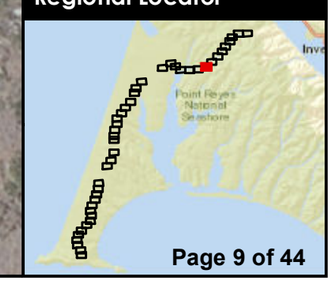

Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- PFO-Riverine
- PSS-Slope
- Environmental Study Area

N

0 60 120 Feet

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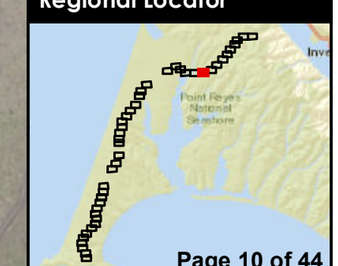

Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- E2EM-Estuarine
- PEM-Depressional
- PFO-Riverine
- PSS-Slope
- RP1EM-Riverine
- Environmental Study Area

N

0 60 120 Feet

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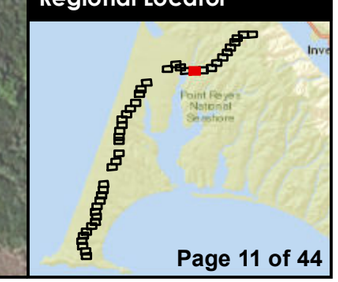

Sir Francis Drake Boulevard Improvement Project

- Project Miles
- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

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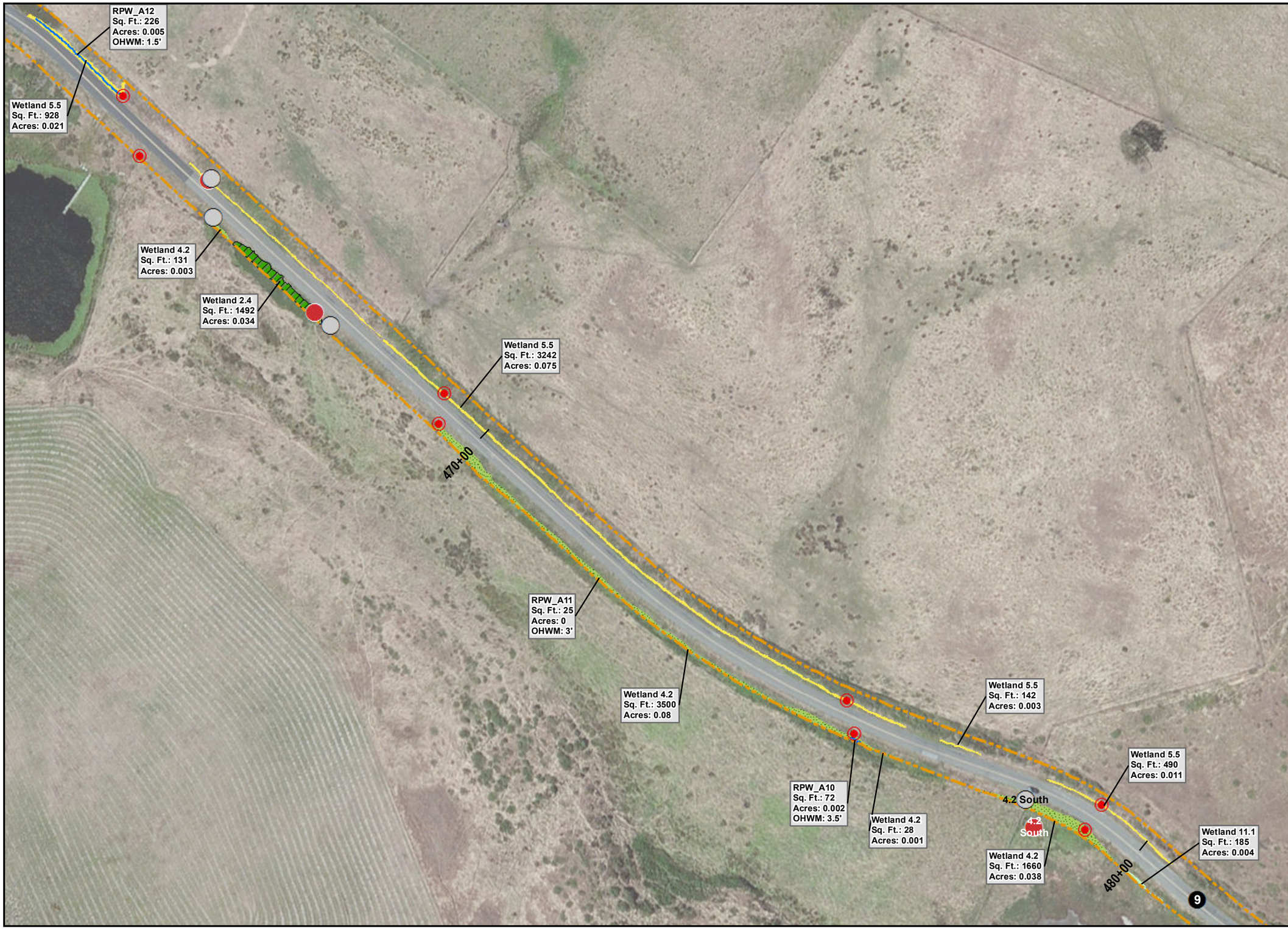

Sir Francis Drake Boulevard Improvement Project

Culvert
Wetland In
Wetland Out
Stationing Line

Waters of the U.S.

OWUS (RPW, NRPW, TNW)
E2EM-Estuarine
PEM-Depressional
PEM-Slope
PSS-Slope
Environmental Study Area

N

0 60 120 Feet

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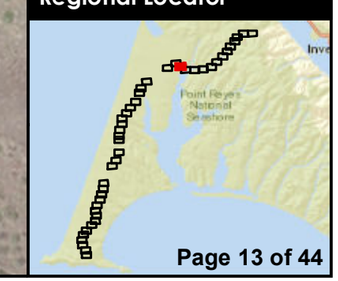

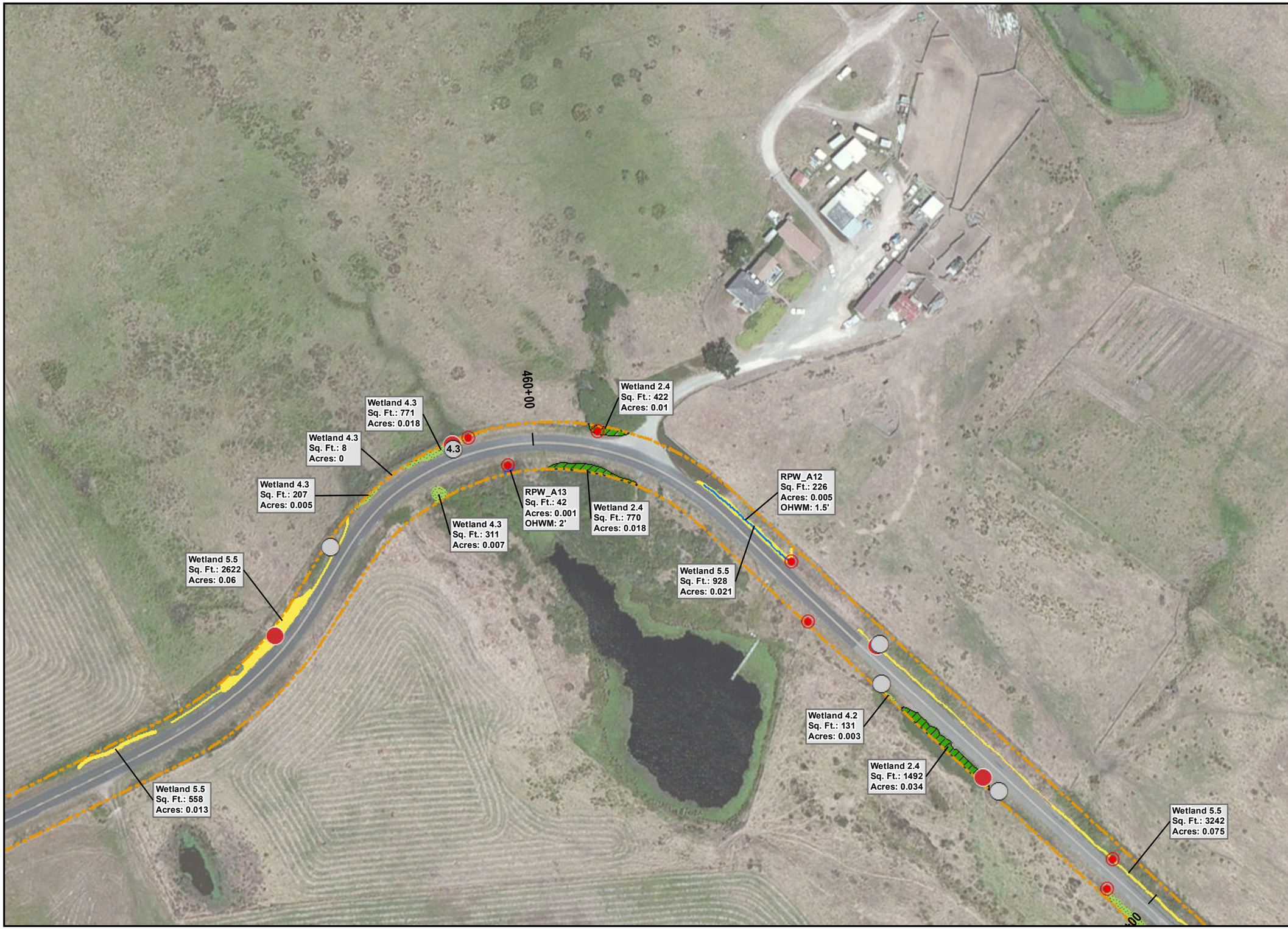

Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- PEM-Slope
- PSS-Slope
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N

0 60 120 Feet

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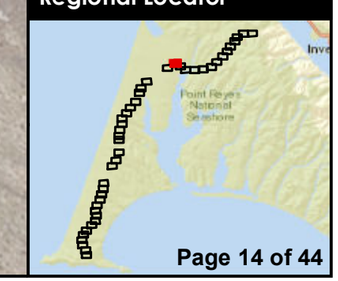

Sir Francis Drake Boulevard Improvement Project

- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- PEM-Depressional
- Environmental Study Area

N

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Aquatic features contiguous with Study Area boundaries continue beyond the project limits.

Regional Locator

Sir Francis Drake Boulevard Improvement Project

Culvert

Stationing Line

Waters of the U.S.

PEM-Depressional

Environmental Study Area

N

Feet
0 60 120

Source Layer Credits: 2014 Imagery ESRI

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Regional Locator

Sir Francis Drake Boulevard Improvement Project

- Project Miles
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- PEM-Slope
- Environmental Study Area

N

0 60 120 Feet

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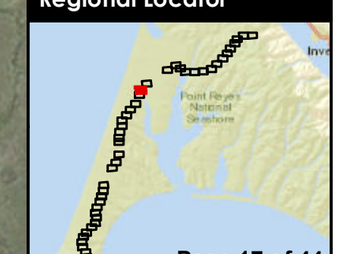

Sir Francis Drake Boulevard Improvement Project

Project Miles

Wetland In

Stationing Line

Waters of the U.S.

PEM-Slope

Environmental Study Area

N

Feet
0 60 120

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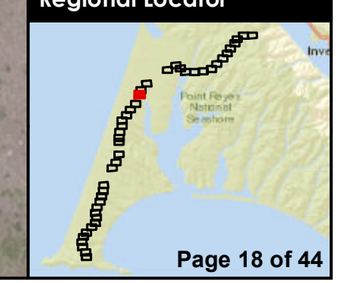

Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- PEM-Depressional
- Environmental Study Area

N

0 60 120 Feet

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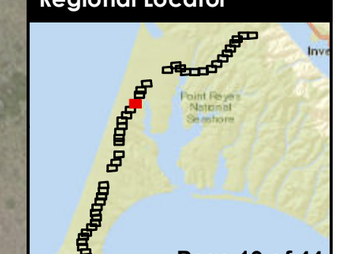

Sir Francis Drake Boulevard Improvement Project

Culvert

Wetland In

Wetland Out

Stationing Line

Waters of the U.S.

PEM-Depressional

Environmental Study Area

N

0 60 120 Feet

Source Layer Credits: 2014 Imagery ESRI

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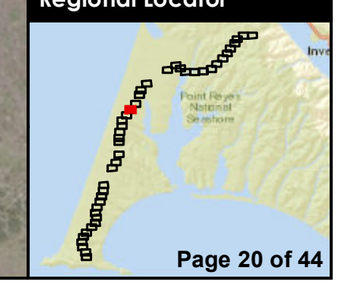

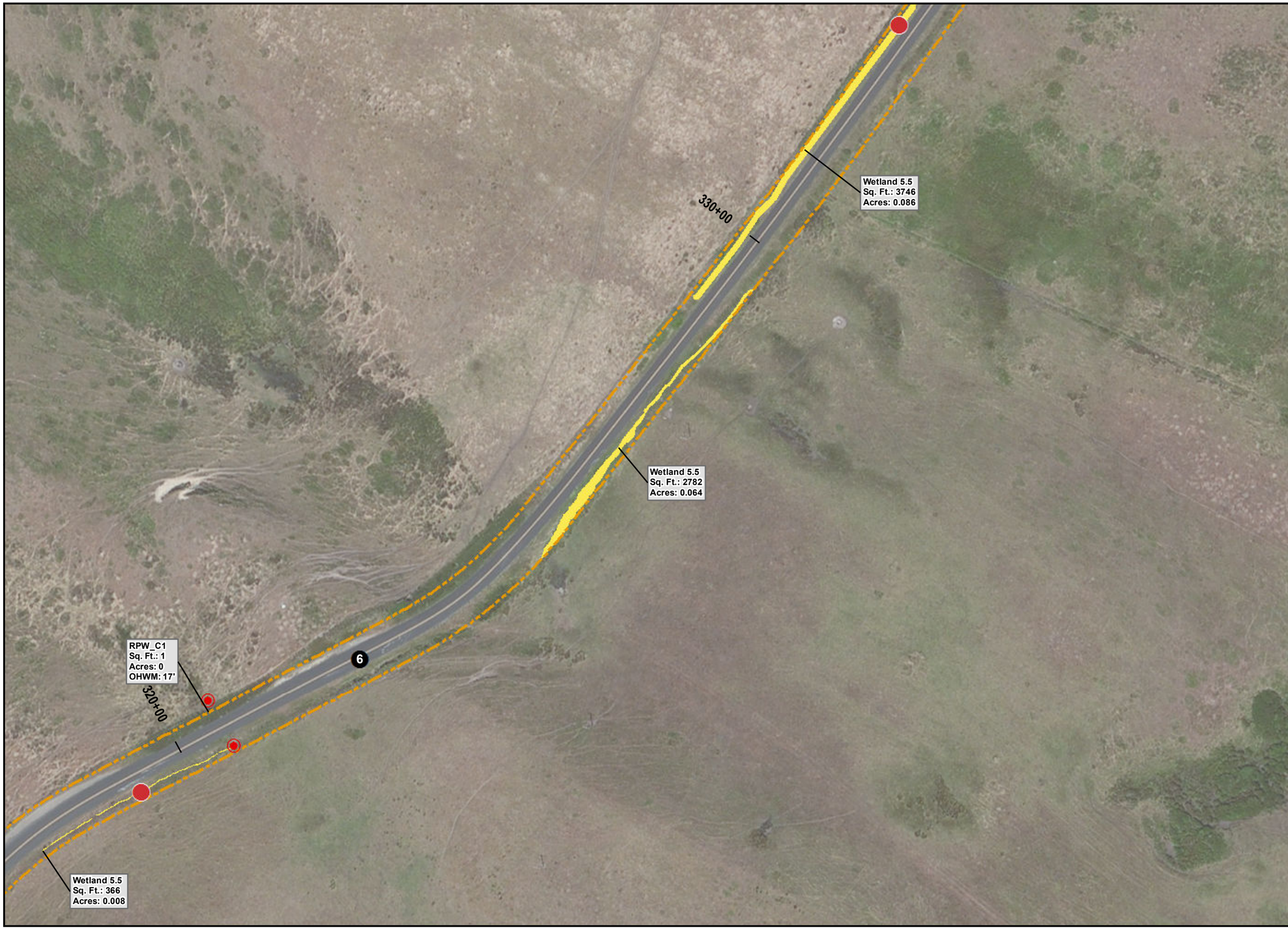

Sir Francis Drake Boulevard Improvement Project

- Project Miles
- Culvert
- Wetland In
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- Environmental Study Area

N

0 60 120 Feet

Source Layer Credits: 2014 Imagery ESRI

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Regional Locator

Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Stationing Line

Waters of the U.S.

- PEM-Depressional
- PEM-Slope
- Environmental Study Area

N

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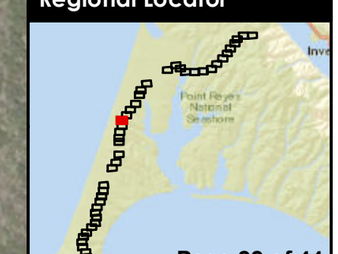

Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- PEM-Depressional
- PEM-Slope
- Environmental Study Area

N

0 60 120 Feet

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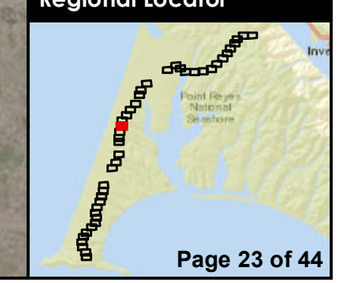
Regional Locator



Sir Francis Drake Boulevard Improvement Project

Culvert

Wetland In

Stationing Line

Waters of the U.S.

OWUS (RPW, NRPW, TNW)

PEM-Depressional

Environmental Study Area

N

0 60 120 Feet

Source Layer Credits: 2014 Imagery ESRI

Projection: Lambert Conformal Conic State Plane California III FIPS 0502 Feet North American Datum 1983

Map Prepared by: Jacobs Engineering, Peter Barney. Wetlands delineated by: Jacobs Engineering, Ben Eddy, Misha Seguin, Dan Soucy, Lori McDonald. Prepared on: 05/30/2014 Revised on: 1/15/2015

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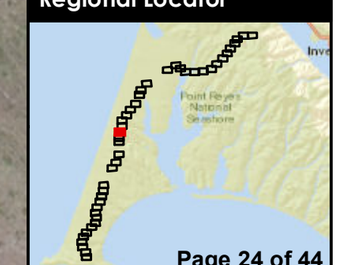

Sir Francis Drake Boulevard Improvement Project

- Project Miles
- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- PEM-Depressional
- Environmental Study Area

N

0 60 120 Feet

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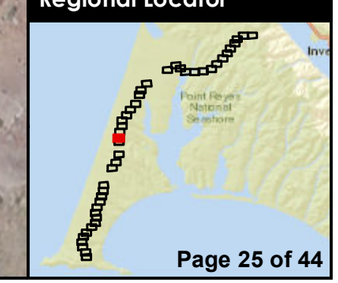

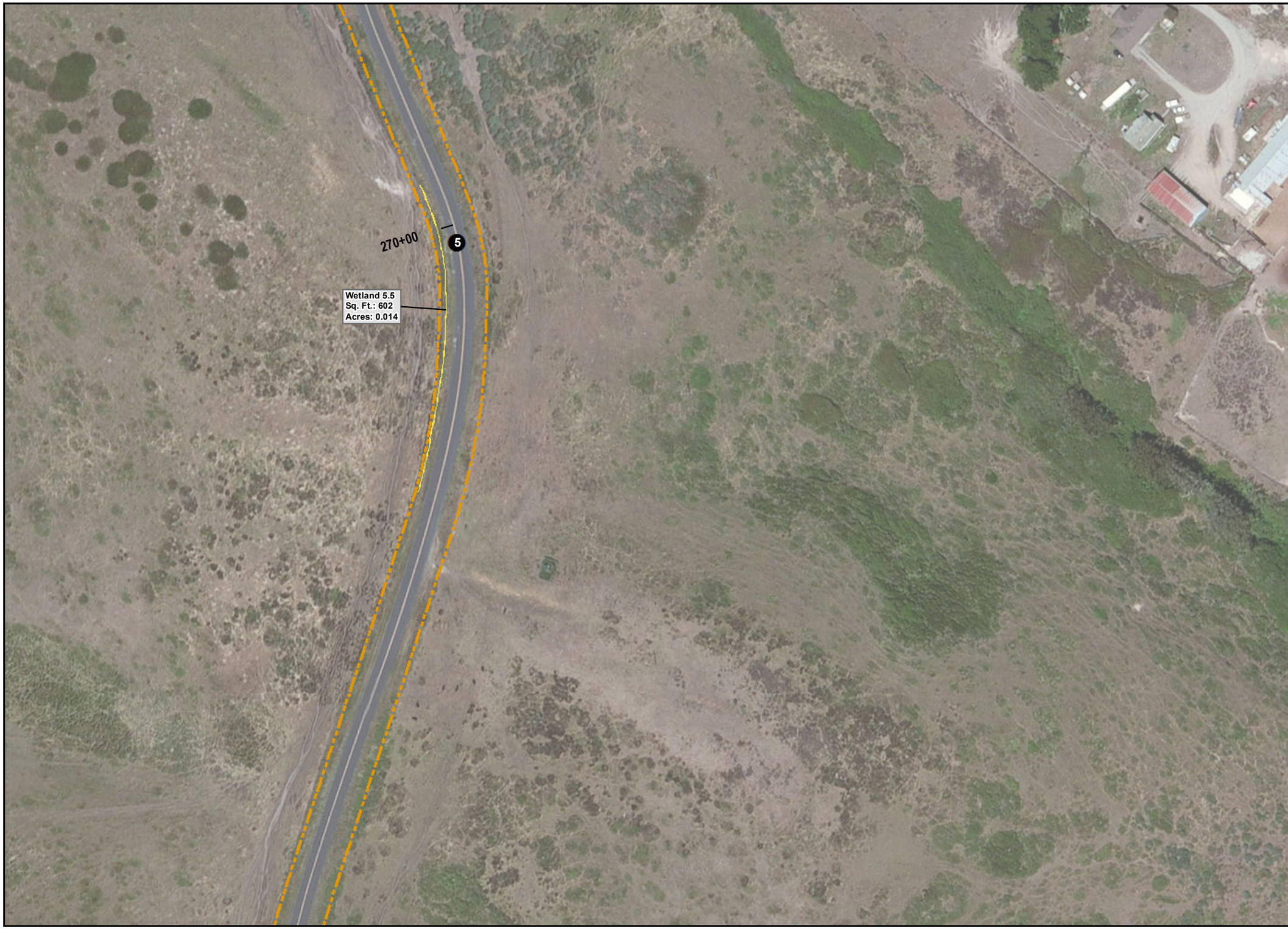

Sir Francis Drake Boulevard Improvement Project

Project Miles

Stationing Line

Waters of the U.S.

PEM-Depressional

Environmental Study Area

N

0 60 120 Feet

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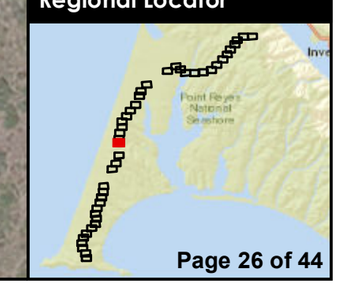

Sir Francis Drake Boulevard Improvement Project

- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- PEM-Depressional
- Environmental Study Area

N

0 60 120 Feet

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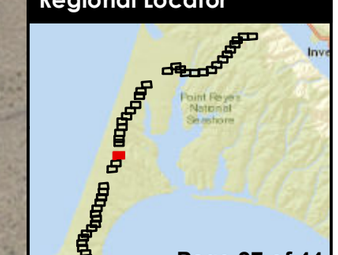

Sir Francis Drake Boulevard Improvement Project

- Project Miles
- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- PEM-Depressional
- PEM-Slope
- Environmental Study Area

N

0 60 120 Feet

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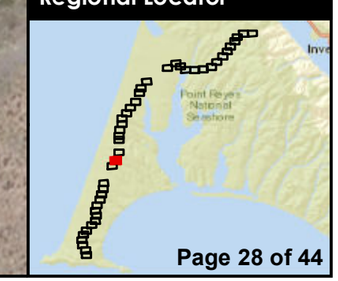

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- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- PEM-Depressional
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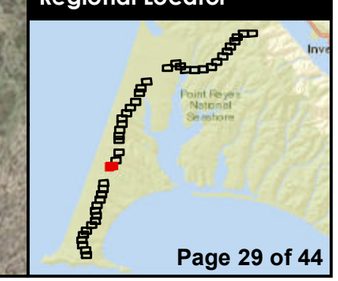

Sir Francis Drake Boulevard Improvement Project

Wetland In

Wetland Out

Stationing Line

Waters of the U.S.

PEM-Depressional

Environmental Study Area

N

0 60 120 Feet

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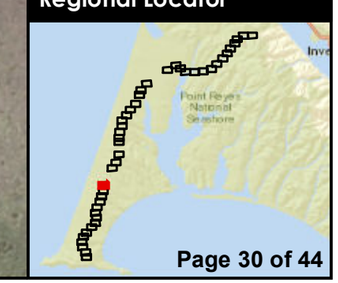

Sir Francis Drake Boulevard Improvement Project

Project Miles

Wetland In

Stationing Line

Waters of the U.S.

PEM-Depressional

PEM-Slope

Environmental Study Area

N

Feet

0 60 120

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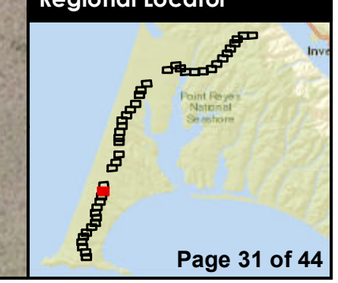

Sir Francis Drake Boulevard Improvement Project

Culvert

Stationing Line

Waters of the U.S.

PEM-Depressional

PEM-Slope

Environmental Study Area

N

0 60 120 Feet

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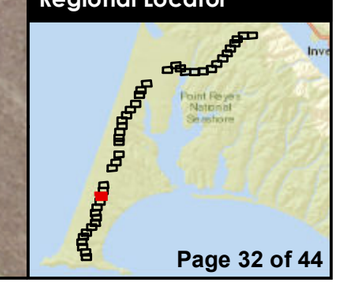

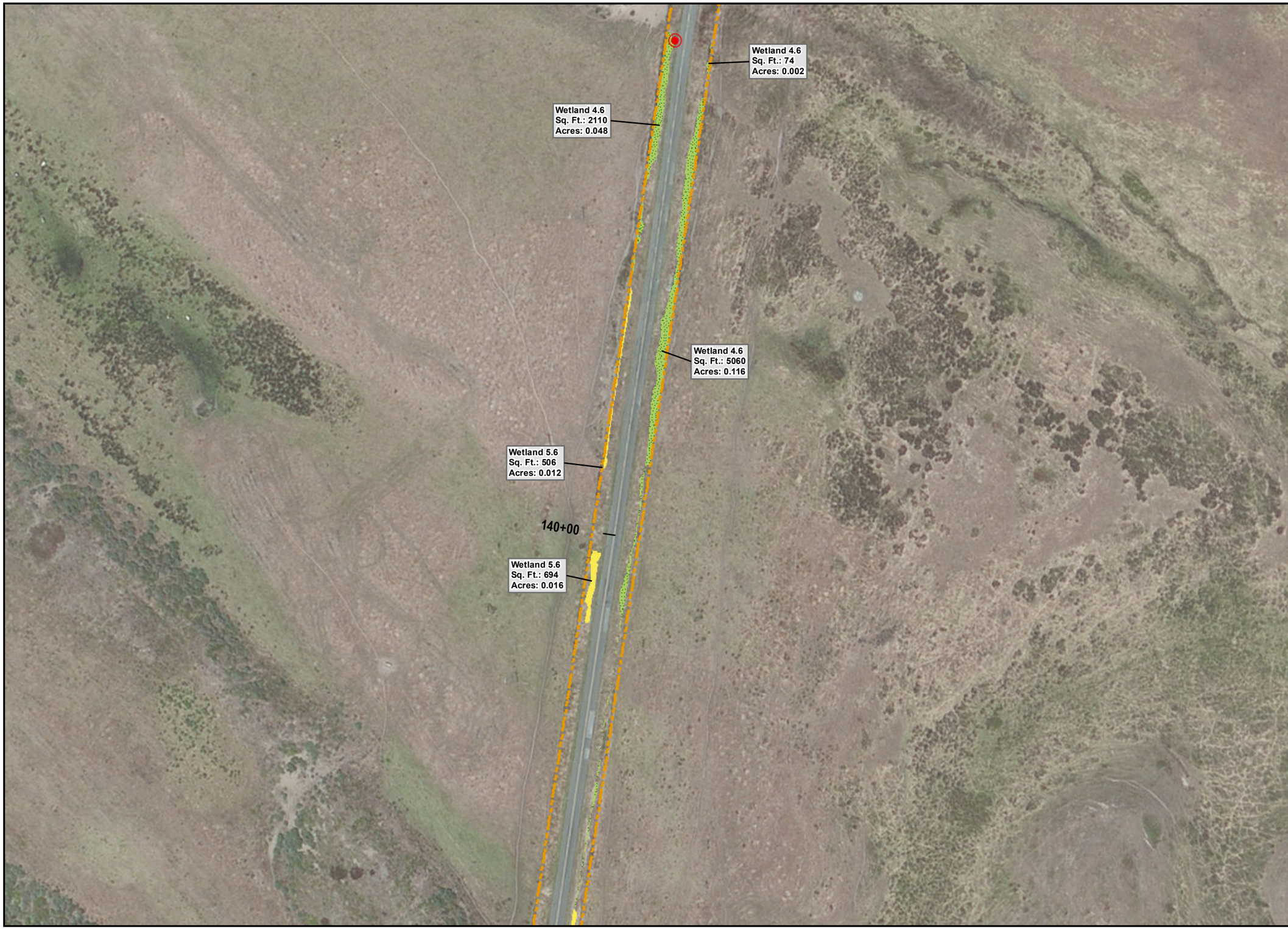

Sir Francis Drake Boulevard Improvement Project

Stationing Line

Waters of the U.S.

PEM-Depressional

PEM-Slope

Environmental Study Area

N

0 60 120 Feet

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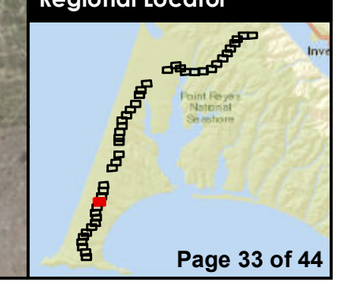

Sir Francis Drake Boulevard Improvement Project

Wetland In

Stationing Line

Waters of the U.S.

PEM-Depressional

PEM-Slope

Environmental Study Area

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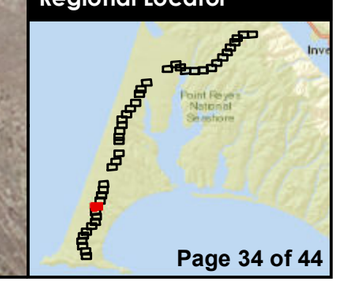

Sir Francis Drake Boulevard Improvement Project

- Project Miles
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- PEM-Slope
- Environmental Study Area

N

0 60 120 Feet

Source Layer Credits: 2014 Imagery ESRI

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Regional Locator

Sir Francis Drake Boulevard Improvement Project

- Project Miles
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- Environmental Study Area

N

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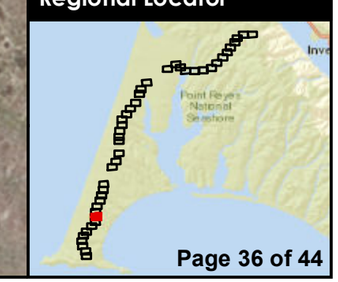

Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- Environmental Study Area

N

0 60 120 Feet

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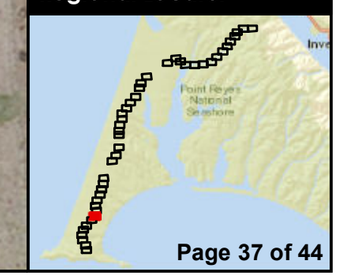

Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- Environmental Study Area

N

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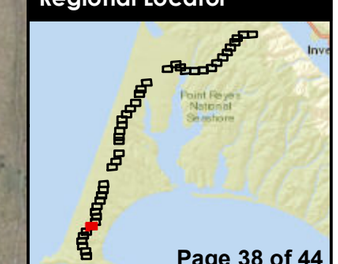

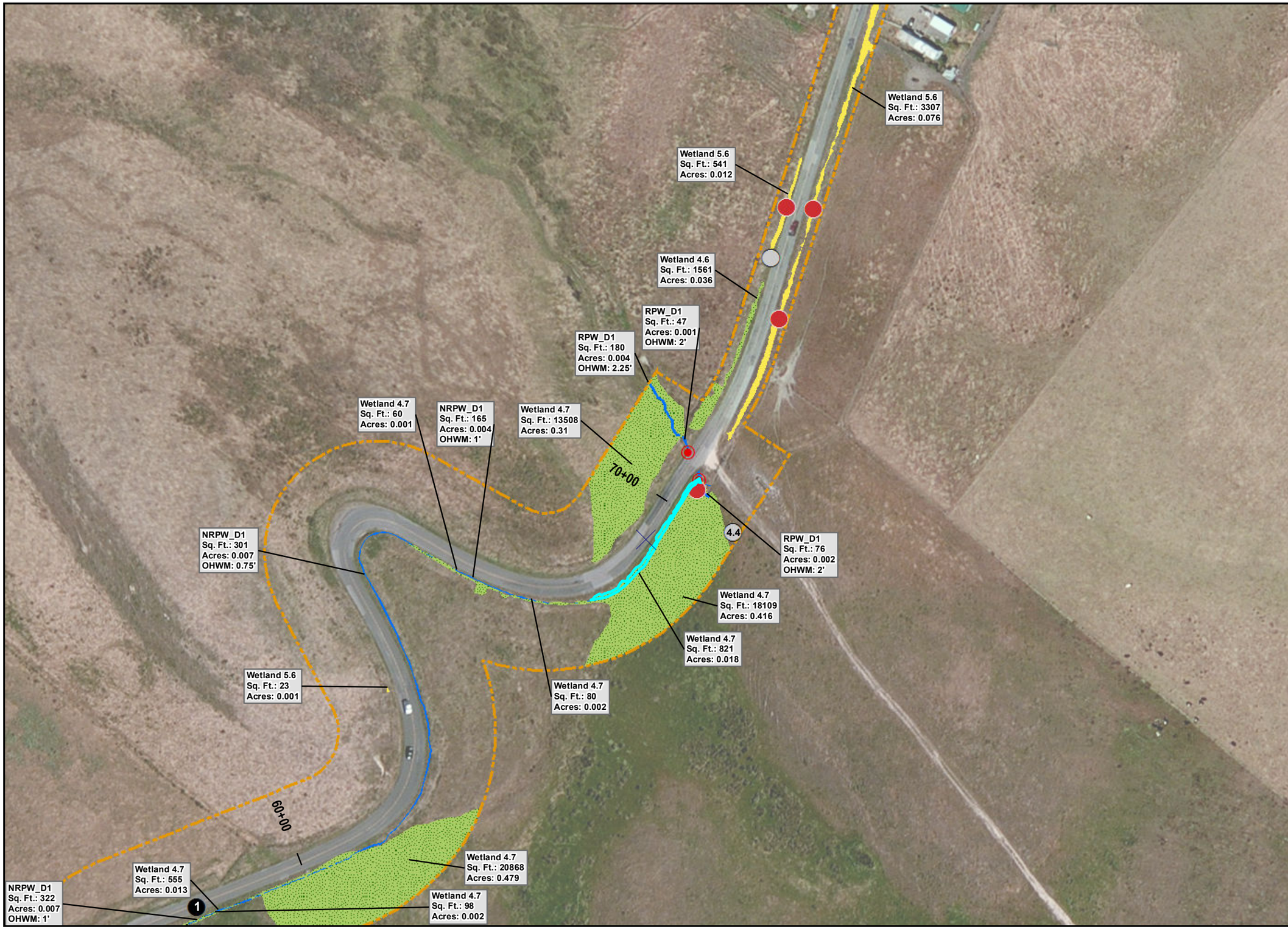

Sir Francis Drake Boulevard Improvement Project

- Culvert
- Wetland In
- Wetland Out
- Stationing Line

Waters of the U.S.

- OWUS (RPW, NRPW, TNW)
- PEM-Depressional
- PEM-Slope
- Environmental Study Area

N

0 60 120 Feet

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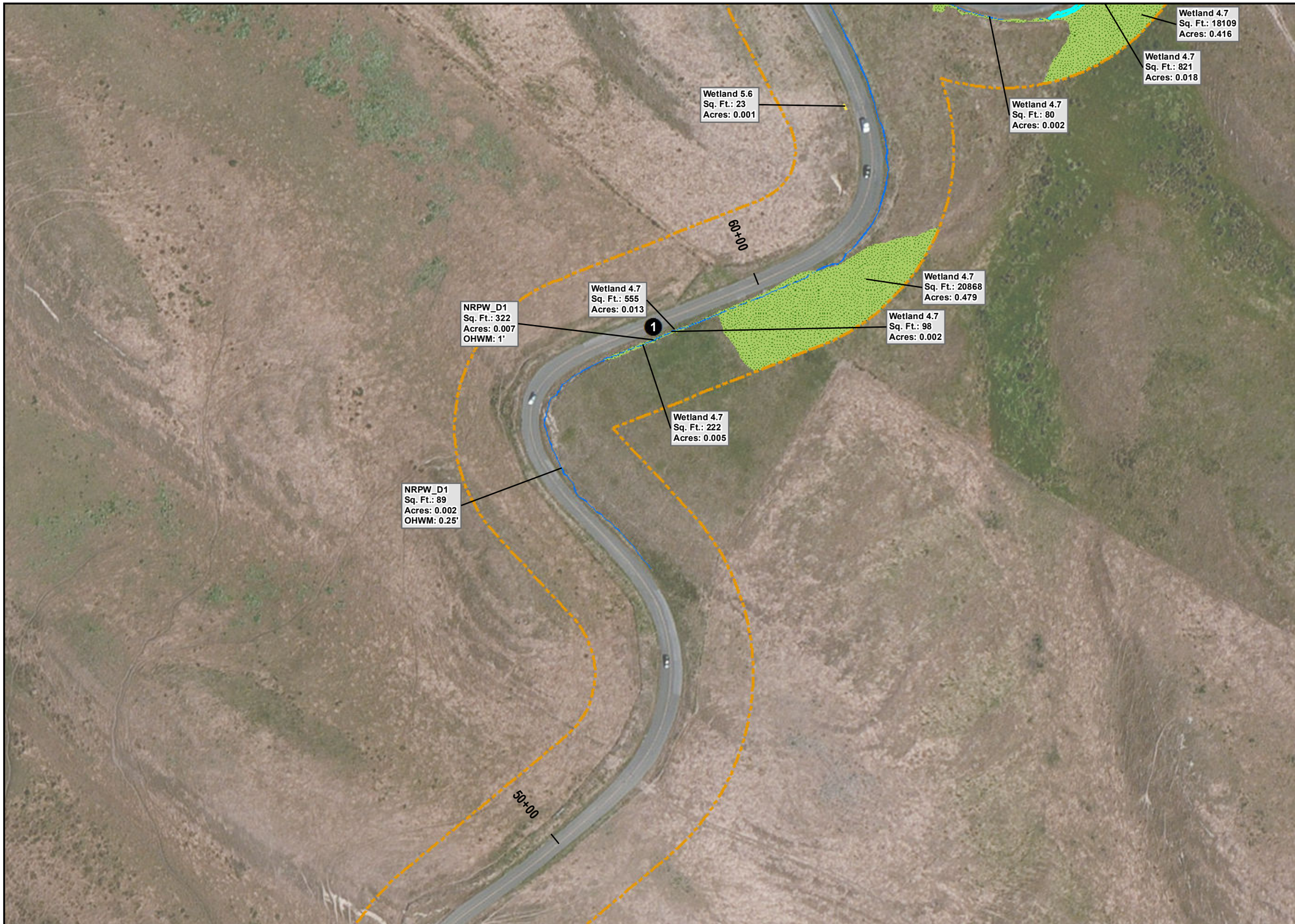

Sir Francis Drake Boulevard Improvement Project

Project Miles

Stationing Line

Waters of the U.S.

OWUS (RPW, NRPW, TNW)

PEM-Depressional

PEM-Slope

Environmental Study Area

N

0 60 120 Feet

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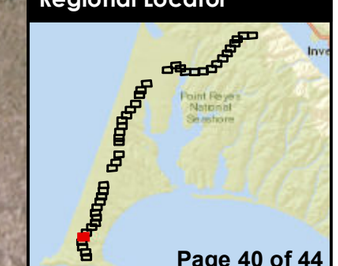

Sir Francis Drake Boulevard Improvement Project

Stationing Line

Waters of the U.S.

PEM-Depressional

Environmental Study Area

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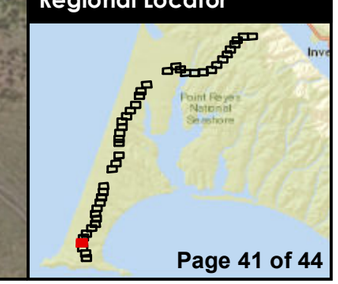

Sir Francis Drake Boulevard Improvement Project

Stationing Line

Waters of the U.S.

OWUS (RPW, NRPW, TNW)

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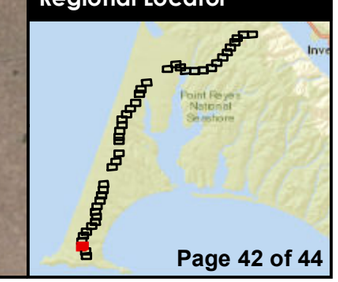

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Stationing Line

Waters of the U.S.

OWUS (RPW, NRPW, TNW)

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Sir Francis Drake Boulevard Improvement Project

Wetland In

Wetland Out

Stationing Line

Waters of the U.S.

OWUS (RPW, NRPW, TNW)

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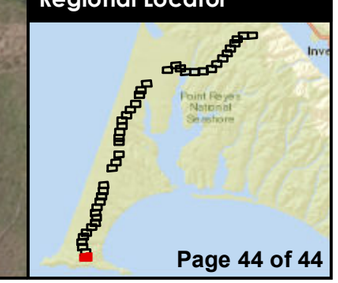

APPENDIX E: PROJECT SCOPING COMMENTS/RESPONSES

SFDB Responses to Public Scoping Comments

#	Commenter	Category	Comment	Response
1.	Lish	AL4000 Alternatives: New Alternatives Or Elements	All park roads should integrate transportation functionality and ecological sustainability, providing a net increase in environmental functions and values.	Comment noted. The responses below address how the project considers recommendations specific to this recommended goal.
2.	Lish	PN1000 Purpose And Need: Planning Process And Policy	Plan for effects of climate disruption, such as ensuring that the entire length of Sir Francis Drake Boulevard will still be in usable locations beyond the end of the century, despite rising sea levels and more frequent destructive floods. The section of Sir Francis Drake Boulevard between the Rogers Ranch and the Coast Guard road has long been a site a flooding and, even under drought conditions, there is standing water on the road throughout the year.	The portion of the project area prone to flooding is in a location where East Schooner Creek is carried under the roadway via an existing arch culvert and the roadway then parallels the creek. This area floods due to dense vegetation and sedimentation in the East Schooner Creek channel, which backs up water. As a result of sediment deposits, the elevation of the creek channel has also increased to where it is the same level as the roadway, resulting in standing water on the roadway. Flooding is not affected by the tidal flow into Schooner Creek. Rising sea levels have been incorporated into the project design considerations at Schooner Creek, where rising sea levels could affect the roadway. To reduce flooding on the roadway in the area of East Schooner Creek, the roadway would be raised 1 to 4 feet above the existing grade, the existing arch culvert would be replaced, and existing 18-inch culverts would be upsized.
3.	Lish	AL4000 Alternatives: New Alternatives Or Elements	Rather than just reconstructing this section to raise the roadway and "reduc[ing] flood risk," I encourage the NPS, the FHA, and the County to analyze the costs and benefits of realigning Sir Francis Drake Boulevard now to remove it from the floor of this valley vs. the costs of frequently repairing this section of road due to storm damage over the next century and beyond.	To realign the roadway between Pierce Point Road and Schooner Bay would require a new alignment in an area that is an eligible historic district and cultural landscape; contains numerous wetlands and other waters; and contains special-status species and associated habitat, including designated California red-legged frog critical habitat. Substantially realigning the roadway would result in unacceptable impacts to park resources.
4.	Lish	WQ4000 Water Resources: Impact Of	Protect the hydrology of wetlands and stream channels through restoration of natural drainage paths.	The project would not alter natural drainageways. However, enlarged culverts are proposed in the flood-prone area and culvert locations would be adjusted to follow natural

#	Commenter	Category	Comment	Response
		Proposal And Alternatives		drainages.
5.	Lish	TE4000 Threatened And Endangered Species: Impact Of Proposal And Alternatives; New: Wetlands: Impact of Proposal and Alternatives	What would the advantages and disadvantages on the wetlands, streams, coho salmon, steelhead trout, red-legged frog, and other species be of realigning Sir Francis Drake Boulevard so that it doesn't parallel the stream flowing from the junction with Pierce Point Road to Schooner Bay?	Substantial realignment of the roadway is beyond the scope of the project, which is primarily a resurfacing, restoration, and rehabilitation project. Because a substantial realignment in this location is beyond the scope of the project, an assessment of the advantages and disadvantages to resources has not been conducted. However, realigning the roadway between Pierce Point Road and Schooner Bay would require a new alignment in an area that is an eligible historic district and cultural landscape; contains numerous wetlands and other waters; and contains special-status species and associated habitat, including designated California red-legged frog critical habitat, resulting in substantial impacts to these resources.
6.	Lish	AL4000 Alternatives: New Alternatives Or Elements	Provide separate bicycle lanes along the entire length of Sir Francis Drake Boulevard, or at least widen the roads sufficiently to provide a broader shoulder upon which bicyclists may more safely ride.	Dedicated bike lanes are beyond the scope and purpose of this project, which is to improve the structural pavement condition of the roadway and reduce flooding. However, the proposed action would widen Sir Francis Drake Boulevard to a consistent 24-foot width, including a 1-foot-wide delineated shoulder. Providing a consistent roadway width and delineated shoulders, as well as localized sight distance improvements, would have incidental safety improvements for bicyclists. Because the study area contains numerous sensitive resources, a wider roadway to accommodate dedicated bike lanes could not be attained without substantial impacts to PRNS resources.
7.	Lish	AL4000 Alternatives: New Alternatives Or Elements	Use Solar Roadways (http://www.solarroadways.com/), or similar technology, which would replace the need for an asphalt surface. Surface the road using a material that houses PV panels to generate energy, which could potentially pay for the cost of the panel, thereby creating a road that would pay for itself over time. Doing so would help the park achieve its goal of being carbon neutral and vastly increasing the amount of clean energy produced	Solar roadways are still in conceptual stages, with grants from FHWA currently being used for research, development, and prototyping. In addition, installing a solar roadway would be very costly and ill-suited to the project location. Based on National Renewable Energy Laboratory data (2008), Point Reyes peninsula is not identified as a solar resource area.

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			here in Marin County.	
8.	Lish	AL4000 Alternatives: New Alternatives Or Elements	Rebuild park roads using innovative, natural methods to reduce imperviousness, thereby providing superior watershed-driven stormwater management, and to cleanse all runoff from the project area, thus preventing metals and toxins from leaching into streams and wetlands, thereby helping to improve water quality.	Pervious pavement is not proposed for the project due to cost and maintenance considerations, as well site considerations. For roadways, pervious pavement is typically used on low-volume roads (e.g., < 500 vehicles per day); SFDB had an average daily traffic volume of 1,369 vehicles in 2014 and pervious pavement is not considered suitable for this location.
9.	Lish	AL4000 Alternatives: New Alternatives Or Elements	Recycle as much pavement as possible and construct park roads with these recycled materials, thereby eliminating much waste, reducing landfill usage, and reducing the energy required to build the roads.	The existing pavement would be pulverized and used as a base for the roadway. In the 3R (resurfacing, restoration, and rehabilitation) sections of the roadway, which is approximately 90% of the project, the pavement would be pulverized in place and compacted to its existing width. New base course would only be added to achieve a 25-foot roadway base. In areas of reconstruction, asphalt would be pulverized, stockpiled, and then used for the base of the roadway.
10.	Lish	AL4000 Alternatives: New Alternatives Or Elements	Design the road using cutting-edge technologies to protect critical habitats and ecosystems from the encroachment of highway infrastructure.	The following design elements were implemented in order to avoid or minimize impacts to wetlands and other sensitive habitats adjacent to the road: • Maintain the existing roadway alignment to the greatest extent possible to minimize impacts to adjacent sensitive areas. • A 24-foot wide paved width, which is 4 to 8 feet less than published guidelines, is proposed (AASHTO 2011, NPS 1984). • 1-foot-wide shoulders, which are below the minimum 3-foot (NPS 1984) and 5-foot (AASHTO 2011) design standards, are proposed. This requires a design exception. • A clear zone width between 3 feet and 12 feet is proposed, which will be at or below minimum design standards. A design exception will be required for clear zone areas less than 12 feet wide. • Rockery walls and paved ditch sections were

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				incorporated into project design to minimize the width of roadway slopes and ground disturbance adjacent to the road. • A total of 32 curves provide less than minimum length of stopping sight distance. All of these curves will have design exceptions in order to minimize ground disturbance. Of the 32 curves, design exceptions at 15 curves would reduce impacts to adjacent wetlands and/or other waters of the U.S. • A total of 44 curves have curve radii below the minimum values for a 40 mph design speed. In many of these areas, wetlands and other waters of the U.S. are located adjacent to the roadway. Design exceptions are proposed for these curves to minimize potential impacts. • Near PM 1, a design exception for the steep grade is proposed. Wetlands are located adjacent to the roadway in this location, and the proposed design would match the existing terrain in order to minimize impacts..
11.	Lish	AL4000 Alternatives: New Alternatives Or Elements	Reduce disruptions to ecological processes by promoting wildlife corridors and passages, especially in areas such as wetlands where animals such as amphibians frequently cross.	Project design has, and will continue, to incorporate measures to minimize impacts to biological resources. Existing 15- and 18-inch culverts within the project area will generally be upsized to better accommodate drainageways and amphibian passage. In addition, the proposed box culvert at East Schooner Creek will be sunk one foot below existing grade to provide a natural bottom for fish passage, as well as amphibians.
12.	Lish	AL4000 Alternatives: New Alternatives Or Elements	Replace cattle guards and on-road cattle crossings at the A, B, and C ranches with under-crossings for the cattle to use.	Cattle guards in the project area generally do not function and are not maintained. Cattle guards will be replaced on a site-specific basis as needs are determined through coordination with ranchers. The two existing cattle under-crossings will be replaced with box culverts installed 2 feet below the existing round surface to maintain a natural dirt floor.

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13.	Lish	AL4000 Alternatives: New Alternatives Or Elements	I am particularly concerned about the impact that roads have on wildlife populations and strongly encourage the NPS and FHA to implement proven solutions to reduce the incidence of roadkills, such as: • providing animals with frequent opportunities to pass under roads by installing simple, inexpensive structures such as metal culverts; • increasing animals' use of these passages by providing plant cover near the entrances; • leading animals to passage entrances with earth berms, vegetation, or drift fences; and • reducing the plant cover along road curves, where it's harder to see oncoming traffic, and increasing the plant cover along straight sections, where it's easier to see traffic and thus is safer to cross.	The project team has coordinated with Marin County and NPS to review available crash data and discuss safety concerns along the project corridor. Wildlife collisions have not been identified as an issue along the corridor. However, project design has, and will continue, to incorporate measures to minimize impacts to biological resources. Existing 15- and 18-inch culverts within the project area will generally be upsized to better accommodate drainageways and amphibian passage. In addition, the proposed box culvert at East Schooner Creek will be sunk one foot below existing grade to provide a natural bottom promoting passage for amphibians. Additionally, sight distance improvements will be made at select locations along the roadway, such as cutting back side slopes, and removing vegetation within the clear zone (i.e., the area available for safe use by errant vehicles) may improve visibility of wildlife crossing the roadway.
14.	Lish	WH4000 Wildlife And Wildlife Habitat: Impact Of Proposal And Alternatives	Returning to the idea of realigning Sir Francis Drake Boulevard so that it doesn't parallel the stream from the junction of Pierce Point Road to Schooner Bay, given that the stream attracts wildlife, what would be the estimated number of roadkill animals if the road retains its current alignment as opposed to if the road is realigned so that it wasn't in a riparian zone?	As stated above, wildlife collisions have not been identified as an issue along the corridor. Additionally, substantial realignment of the roadway is beyond the scope of the project, which is primarily a resurfacing, restoration, and rehabilitation project. To realign the roadway between Pierce Point Road and Schooner Bay would require a new alignment in an area that is an eligible historic district and cultural landscape; contains numerous wetlands and other waters; and contains special-status species and associated habitat, including designated California red-legged frog critical habitat. Substantially realigning the roadway would result in unacceptable impacts to park resources. Because a substantial realignment in this location is beyond the scope of the project, an assessment of projected wildlife collisions between the existing alignment and a realignment has not been conducted.
15.	Lish	VR4000	The NPS, the FHA, and the County should also control	Stockpiling topsoil, use of certified weed-free seed, use of

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		Vegetation And Riparian Areas: Impact Of Proposal And Alternatives	populations of invasive species and promote the growth of native species by ensuring that any fill and soil, in addition to road construction equipment, be as free of non-native plant seed and material as possible. Native plants should be cultivated and planted immediately after construction is completed in order to give native plants a head start relative to non-native invasive species that may have been introduced to the soil.	native seed, and cleaning equipment prior to entering the construction area are part of FHWA's contract requirements and will be a part of project implementation.
16.	Lish	New Code #: Post-Project Monitoring	The NPS, the FHA, and the County should also provide sufficient financial resources to incorporate post-project monitoring of the impacts the road rehabilitation projects have on the hydrological, floral, and faunal resources to ensure the desired environmental results are achieved.	The contractor will be responsible for revegetation of temporarily disturbed areas following construction. If onsite mitigation is required for wetlands and/or California red-legged frog, post-construction monitoring will be required and monitoring plan will be developed.
17.	Dunning, USEPA	PN3000 Purpose And Need: Scope Of The Analysis	Purpose and Need and Scope of Analysis It is confusing that the environmental analysis for both projects is being completed concurrently, yet not being coordinated into one document, even with the overall project footprint being the same section of Point Reyes National Seashore. Further, it appears that the stated purpose and Need statements for the two separate EAs are similar.	Two documents were prepared because the roads are under the jurisdiction of different agencies. The 12-mile section of Sir Francis Drake Boulevard to be reconstructed is maintained by Marin County. Limantour Road, Lighthouse Road, and Chimney Rock Road are maintained by the National Park Service.
18.	Dunning, USEPA	PN3000 Purpose And Need: Scope Of The Analysis	Project #1: The National Park Service in cooperation with the Federal Highway Administration/Central Federal Lands Highway Division proposes to repair 22 miles of road and adjacent parking areas in Point Reyes National Seashore. This program includes four separate road projects: Rehabilitation of portions of Limantour Road, Lighthouse Road, and Chimney Rock Road, and Pavement Preservation on 15 spur roads and 21 paved parking areas. The purpose of the proposed action is to restore the structural integrity of park roads to ensure safe driving conditions for visitors traveling in Point Reyes National Seashore, provide efficient parking space to support demand for recreational access in the park, reduce road-related drainage problems, and reduce long-	Two documents were prepared because the roads are under the jurisdiction of different agencies. However, construction of both projects would occur concurrently, which would take advantage of efficiencies related to coordination and implementation.

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			term road and parking area maintenance needs and costs Project #2: The purpose of the proposed improvements is to restore the structural integrity of the road and enhance safety for all users while reducing ongoing maintenance requirements. Pavement along Sir Francis Drake Boulevard in the Seashore is deteriorating and badly oxidized, heavily patched, lacks shoulder support, and some sections have significant cracking and edge damage. Seasonal flooding of the creek near Schooner Bay can close the road to traffic for several days. Raising and realigning this short segment of the road has been proposed to help prevent annual flooding and minimize wetland impacts in the area where the adjacent tributary channel has aggraded and is now nearly at the same elevation as the road. The proposed improvements would address these issues through new asphalt pavement, new striping and signs, replacement of two cattle under-crossings, replacement of cross culverts, and implementation of other safety features to meet current design standards EPA recommends that NPS and FHWA further explain to the public and decisionmakers why the two projects are being pursued independently, especially in light of the efficiencies, and reductions in impacts to the environment, that could be gained be coordinating the planning, implementation, and future mitigation and monitoring of the two efforts. While we understand funding, timing, and a variety of other factors guide the implementation of various projects in Point Reyes National Seashore	
19.	Dunning, USEPA	New Code #: Cumulative Impacts	Cumulative Impacts Analyzing the two projects as one complete project would better allow for assessing the cumulative impacts associated with the combined rehabilitation of 34 miles of	The NEPA process for Limantour Road, Lighthouse Road, and Chimney Rock Road is complete and a FONSI has been signed. However, the EA/IS for Sir Francis Drake Boulevard will analyze the actions planned for these other

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			roads and 21 parking areas all within the same project footprint. Should the NPS continue to move forward on these as separate projects, the documents should both clearly identify the logistical efficiencies, and associated reduction in impacts to the environment, that can be achieved by constructing the rehabilitation projects at the same time. NPS should also confirm that, when considered together, the project impacts remain less than significant as is anticipated from the analysis of the two projects separately. The cumulative impact of constructing both project improvements at the same time need to be disclosed and used to schedule, and minimize, earthmoving equipment operation. For example, by planning the re-paving of the road surfaces of Sir Francis Drake at the same time as the spur roads leading into it, FHWA and NPS will minimize the need to haul dirt/materials in and out for both projects twice, instead of once. Visual impacts to park visitors will be minimized if project timelines can be synchronized. Noise impacts to wildlife will be minimized as well. Both EAs should describe these, and other, reduced impacts that will be achieved through project synchronization.	roads as a cumulative impact and will identify whether significant impacts would occur when considering the projects together. In addition, construction of both projects would occur concurrently, which would minimize environmental impacts related to transportation of construction materials, and visual and noise impacts related to construction operations.
20.	Dunning, USEPA	AL4000 Alternatives: New Alternatives Or Elements	Water Resources - Culvert Rehabilitation EPA recommends the use of open-bottom arch culverts instead of box culverts. For those culverts proposed to be lined, rather than replaced, consider replacing the old culverts with arch culverts if feasible and if additional cost and impacts associated with increased earth movement can be reduced as much as possible. EPA also recommends use of bioengineered bank stabilization where feasible instead of just traditional rip-rap.	The arch culvert at East Schooner Creek would be replaced with a concrete box culvert. A box culvert was chosen because it would have fewer environmental impacts. A pre-cast box would be used, which requires no foundation, reducing the amount of ground disturbance required. The box would also be quicker to install, minimizing the amount of construction time, and hence disturbance to wildlife species, required. The box culvert would be sunk one foot below the existing ground level to create a more natural bottom. Preliminary recommendations for the structure at Schooner Creek are for an open-bottom arch culvert. Site conditions may require no rip-rap at all, and minimal bank stabilization would be required.

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21.	Dunning, USEPA	AL4000 Alternatives: New Alternatives Or Elements	The Scoping notice states the need for "raising and realigning" Sir Francis Drake in order to "help prevent annual flooding and minimize wetland impacts in the area where the adjacent tributary channel has aggraded and is now nearly at the same elevation as the road." EPA recommends elevating the roadway with spanning or sufficient open-bottomed culverts to allow for sufficient tributary flow and seasonal flooding, rather than additional placement of box culverts.	The portion of the project area prone to flooding is in a location where East Schooner Creek is carried under the roadway via an existing arch culvert and the roadway then parallels the creek. This area floods due to dense vegetation and sedimentation in the East Schooner Creek channel, which backs up water. As a result of sediment deposits, the elevation of the creek channel has also increased to where it is the same level as the roadway, resulting in standing water on the roadway. The project includes raising the roadway elevation in this location 1 to 4 feet above existing grade, shifting the roadway approximately 12 feet south and away from the creek channel, replacing the existing arch culvert with a box culvert sunk one foot below the existing grade, and upsizing the existing 18-inch culverts in this section. This is expected to reduce potential for flooding the roadway and accommodate existing drainage patterns. Based on 15 percent design, no additional culverts are proposed in this section of roadway.
22.	Dunning, USEPA	WQ4000 Water Resources: Impact Of Proposal And Alternatives	Water Resources - Wetlands Impacts NPS should confirm that the full project impacts, when considering the entirety of the 34 miles of roads to be rehabilitated plus the parking area improvements, will not result in impacts to wetlands that will be substantive enough to require an Individual Permit. EPA also recommends that the NPS clarify whether the Corps has verified the wetland delineation and confirmed the permitting strategy. The NPS should confirm that that mitigation for Clean Water Act Section 404 and Section 401 impacts will be decided by the Corps and Regional Board, respectively and the environmental analysis of both road projects should address potential need for Clean Water Act 401 certification from the Regional Board.	Wetlands have been delineated for the project and a Wetlands Statement of Findings is being prepared in accordance with National Park Service regulations and Executive Order 11990 (Protection of Wetlands). Based on 15 percent design, it is anticipated that the project will require an Individual Section 404 Permit and a 401 Water Quality Certification. The wetland and other waters delineation report will be submitted to the Corps in early 2015 with a request for a preliminary jurisdictional determination. Mitigation for the project will be coordinated with appropriate agencies, such as the Corps.

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23.	Dunning, USEPA	AL4000 Alternatives: New Alternatives Or Elements	Design Standards One stated purpose of the project was to implement safety futures consistent with current design standards. EPA commends NPS and FHWA for identifying that "maintaining the character of the roads" and "avoiding and minimizing impacts to seashore resources" are objectives of the project. In light of these objectives, EPA recommends additional discussion about context sensitive design and a discussion of waivers or modifications to adhering to a suite of current design standards that would best allow for maintaining the current character of the park roads.	The purpose of the project is to restore the structural integrity of SFDB and enhance safety for all users while reducing ongoing maintenance requirements. The roadway traverses or is adjacent to special status species habitat, including designated California red-legged frog critical habitat, numerous wetlands and other waterbodies, and visual landscapes that are valued and intended for preservation within PRNS. Because of the context-sensitive nature of the project area, improving the roadway to meet current design standards would result in unacceptable impacts to PRNS resources, and was not carried forward for full evaluation in the EA/IS. The typical section proposed for the project is a consistent 24 feet wide, which is the narrowest width that can safely accommodate vehicle passage with consideration for the large vehicles that use SFDB.
24.	Van der Wal	VR4000 Vegetation And Riparian Areas: Impact Of Proposal And Alternatives	Widening and road construction of Sir Francis Drake out through the Pt. Reyes National Seashore will destroy native plants such as California Poppies and another yellow flower I don't have a confirmed name for that line the sides of the road to the lighthouse. It is spectacular to see each spring. May be other native plants along the roadside not seen by driving by.	A general habitat assessment and focused botanical surveys were conducted to identify vegetative types and rare plants along the roadway. The proposed improvements are below minimum design standards in order to minimize overall disturbance. The typical section proposed for the project is a consistent 24 feet wide, which is the narrowest width that can safely accommodate vehicle passage with consideration for the large vehicles that use SFDB. Additionally, rockery walls and paved ditches are proposed in specific areas to further minimize disturbance to adjacent habitat. Degraded areas impacted from construction-related activity will be replanted with local, native species.
25.	Van der Wal	PN3000 Purpose And Need: Scope Of The Analysis	Widening of the road seems to be very excessive.	See response to comments #23 and #24. Existing pavement widths on SFDB generally vary from 18 feet to 24 feet, with isolated areas as wide as 27 feet along switchbacks. The existing roadway has no shoulders in many areas.

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				These narrow conditions provide little or no room for errant vehicles to correct without running off the edge of the road. Switchbacks on hills and flood-prone areas show evidence of tires dropping off pavement edges. The road width does not provide sufficient clearance for vehicles and bicycles to safely pass each other without traveling into opposing lanes. Larger vehicles, such as recreational vehicles, school buses, park shuttles, and milk trucks, frequently encroach into the opposing travel lane due to the narrow width of the road. This scenario not only creates safety concerns, but puts stress on the pavement edges, requiring additional maintenance. Drivers typically expect uniform or consistent roadway design, which can inform their ability to respond to situations on the roadway. The inconsistent widths along the project route present safety concerns because they lack the predictability users expect, particularly users who are not familiar with the roadway, such as tourists.
26.	Van der Wal	VR4000 Vegetation And Riparian Areas: Impact Of Proposal And Alternatives; WH4000 Wildlife And Wildlife Habitat: Impact Of Proposal And Alternatives	At the junction of Chimney Rock Rd. and SFD Road I have seen Snipes and all the construction and truck equipment will disturb the habitat and other ground birds and native flowers/plants such as the Sticky Monkey Flower.	Visual, noise, and vibration disturbances from construction may make adjacent habitats less desirable and could therefore disrupt typical behaviors of individual birds that may occupy the area. However, it is anticipated that these disturbances would have little effect on these species because the proposed activities would be localized and would occur within a previously disturbed road corridor. In addition, bird species that currently use habitat within or adjacent to the study area are likely habituated to human disturbance. Impacts to sensitive natural communities will be avoided as practicable by designating Environmentally Sensitive Areas. Environmentally Sensitive Areas will include each population of special status plants known to occur within

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				the study area, as well as locations of sensitive natural communities. Annual and perennial plant populations will be delineated separately to ensure that the proper revegetation or transplanting methods are followed. Where Environmentally Sensitive Areas cannot be avoided, the following measures will be implemented. • Special status perennial plants with a Rare Plant Rank of 1 or 2 will be transplanted as appropriate. Species to be transplanted include Marin Manzanita, Mount. Vision ceanothus, Marin checker-lily, Point Reyes horkelia, Point Reyes checkerbloom, and purple-stemmed checkerbloom. Perennial plants and their associated soil profiles will be transplanted to adjacent areas outside of the impact zone, in close coordination with and guidance from NPS PRNS ecologists. • Special status annual plants will be reseeded as appropriate, including Point Reyes meadowfoam (blooms March–May), Point Reyes Bird's-beak (blooms June–October), and woolly-headed spineflower (blooms May–August). • Where permanent impacts and annual plant Environmentally Sensitive Areas overlap, seeds will be collected from each species. Therefore, construction will occur after the species has produced seeds (May through October depending on the species). Collected seeds will be dispersed in an area equivalent in size to the original, and in an area appropriate for each species. If feasible, the reseeded area will be adjacent to the current population. Reseeding efforts will occur amid close coordination with NPS PRNS ecology staff. • Where temporary impacts and annual plant Environmentally Sensitive Areas overlap, construction will occur after each species has had time to set seed (May through October, depending on the species).

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				Seeds will be collected and stored for reseeding. After seed collection, the top six inches of soil will be stockpiled and replaced in-kind post-construction. Collected seeds will be dispersed in the same area and equivalent in size to the original. Reseeding efforts will occur amid close coordination with NPS PRNS ecology staff.
27.	Flett	AL4000 Alternatives: New Alternatives Or Elements	I feel that, countrywide, the National Park Service tends to overdevelop and overbuild on lands under its jurisdiction. Some specific examples of (what I consider to be) overdevelopment include visitor amenities such as signage, rest rooms, parking lots, paved trails, and roads. In my opinion, these projects detract from the rural character and the natural landscape of the parks. I would much prefer that the Point Reyes National Seashore retain its off-the-beaten-track character, without paving and straightening Sir Francis Drake Boulevard and other roads within and through the park.	The project would be consistent with the visual and scenic preservation goals in the park's enabling legislation, NPS management plans and policies, as well as other area plans. The typical section proposed for the project is a consistent 24 feet wide, which is the narrowest width that can safely accommodate vehicle passage with consideration for the large vehicles that use SFDB. Traffic control signs within the study area would be reviewed and replaced, if needed, to meet current standards. Advanced warning signs would also be considered and may be included at approaches to areas where speed limits would be reduced, such as ranches. These changes are proposed to restore the structural integrity of the road and enhance safety for all users while reducing ongoing maintenance requirements. The visual character of the new facility will be very similar to the existing facility.
28.	Flett	PN2000 Purpose And Need: Park Purpose And Significance	Given that our country's major highways and bridges are in disrepair, I think that funds designated for road improvements could be better used elsewhere.	The current road has deteriorated pavement, is too narrow to accommodate safe passage of vehicles, and is seasonally inundated with standing water where East Schooner Creek parallels the north side of the road. The proposed roadway improvements would support the NPS Management Policies to provide for safe and efficient travel/accommodation of park visitors and the NPS road standards to provide a surface that will adequately support the weights of vehicles without failure, to keep non-routine maintenance to a minimum, and to provide safe travel ways for bicycling.

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				The proposed improvements are administered under the Federal Lands Access Program (FLAP), which provides funds for projects on "access transportation facilities." An access transportation facility is a public highway, road, bridge, trail, or transit system that is located on, is adjacent to, or provides access to federal lands for which title or maintenance responsibility is vested in a state, county, town, township, tribal, municipal, or local government. The FLAP supplements state and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators. The proposed project was placed in the FLAP in 2013 with matching funds from Marin County.
29.	Nunes	AL4000 Alternatives: New Alternatives Or Elements	Raise road to reduce flooding between Rogers/Evans Historic Ranch and Drakes Bay Oyster Company.	Between approximately the road crossing with Schooner Bay and the road to the Estero Trailhead, Sir Francis Drake Boulevard would be raised 1 to 4 feet and shifted approximately 12 feet to the south to reduce flooding of the roadway. Asphalt curb and gutter would be installed along the length of this section. Rockery walls, approximately six feet high, would be constructed along portions of this section to accommodate the wider roadway template and minimize impacts.
30.	Nunes	AL4000 Alternatives: New Alternatives Or Elements	Install speed/cattle-crossing signs at Historic A Ranch for safety purposes of all travelers driving/cycling/walking through the ranch.	Cattle guards were not included in the project design because of the noise they would create, which would impact wildlife. However, the project would include additional signage alerting drivers to slow down when approaching ranch property.
31.	Nunes	AL4000 Alternatives: New Alternatives Or Elements	Increase roadway width at north end of entrance to Historic B Ranch (current narrow lanes and no shoulder is creating a safety hazard for cars/buses/cyclist/tracker [sic] trailers).	In general, the project would widen the roadway 1 to 6 feet to maintain a consistent 24-foot width with two 11-foot travel lanes and delineated 1-foot shoulders.
32.	Nunes	AL4000 Alternatives: New	Consistently manage roadside vegetation and drainage on SFDB to reduce unnecessary flooding and poor visibility for safety of all travelers.	The project includes ditch reconditioning and dense vegetation removal as needed. The project would provide a "clear zone" on either side of the road, with an area

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		Alternatives Or Elements		between 3 and 12 feet that would be cleared of vegetation.
33.	Nunes	AL4000 Alternatives: New Alternatives Or Elements	Remove dangerous "S" curve between Historic A and B ranches.	At this location (approximately 1.0 mile from the intersection with Chimney Rock Road), the vertical alignment would be flattened and side slopes cut back to improve sight distance.
34.	Nunes	AL4000 Alternatives: New Alternatives Or Elements	Cattle guards at Historic A Ranch – recommend a total of five (5) • Eliminate first cattle guard and keep existing second cattle guard at Chimney Rock Road • Keep existing two (2) cattle guards at entrance and exit but construction needs to allow maintenance for cleaning purposes • Keep existing (1) cattle guard on way to Lighthouse and install one (1) cattle guard to complete the new fence on the way to the Lighthouse	Cattle guards were not included in the project design because of the noise they would create, which would impact wildlife.
35.	Olsen	AL4000 Alternatives: New Alternatives Or Elements	I would like to know if the park plans to widen the roads, especially those going to the lighthouse and provide bike lanes. The Park's roads are used by hundreds of bicyclists every week throughout the year. This is an area favored by bikers. The roads are very narrow and dangerous for cars and bikers. I'd simply like to know if this is part of the plan. The Park Service is making great efforts to get people out of their cars in order to reduce carbon emissions in our National Parks. I'm sure the Park Service is interested in promoting biking for this reason.	The following response was provided in a letter to the commenter from the superintendent: The preliminary project proposal for the 12 miles of Sir Francis Drake Boulevard (SFDB) within the Seashore calls for roadway widening. Within the Seashore, SFDB ranges in width from 18 to 24 feet. The proposal is to widen the roadway where appropriate to 24 feet, which would be comprised of two 11-foot wide travel lanes and 1-foot wide shoulders on each side. This would better accommodate bicyclists and improve overall safety. In some roadside sections, sensitive resources or existing land uses may not allow this full roadway widening. Minor realignments along SFDB are also proposed in a few areas to improve site distances and reduce the angle of existing curves.
36.	Cardwell	WH4000 Wildlife And Wildlife Habitat: Impact Of	Please include wildlife corridors, where possible, to help reduce roadkill. I see a lot of roadkill that makes me sad on the way to school and would like it if you could find a way to make the road safer for animals too.	The project would provide a "clear zone" on either side of the road, with an area between 3 and 12 feet that would be cleared of vegetation. Additionally, the vertical alignment of the roadway would be flattened and side slopes would be

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		Proposal And Alternatives		cut back, as needed, to improve sight distance. These measures would help drivers see wildlife alongside the road before they cross the road.
37.	Scoping Meeting	AL4000 Alternatives: New Alternatives Or Elements	Improve signage • Better signage should be installed for drivers stopping at Pierce Point/Sir Francis Drake Blvd. (SFDB) intersection • Bigger stop signs, painting on road surface, rumble strips • Better signage on SFDB for the turn to McClures Beach/lighthouse • Perhaps more advanced warning • Use consistent signage	Because the shoulders would be used by cyclists, rumble strips were not included in order to enhance safety. More advanced warning signs would be further investigated as project design progresses. Signage would meet current standards and would therefore be consistent.
38.	Scoping Meeting	AL4000 Alternatives: New Alternatives Or Elements	Ranchers will need room beyond shoulder to maintain fences	The wider 1-foot shoulders and clear zone (between 3 to 12 feet wide) on each side of the road would provide some room for ranchers to pull over to maintain fences. No additional space will be provided in order to minimize the need for additional right-of-way.
39.	Scoping Meeting	PN8000 Purpose And Need: Objectives In Taking Action	Current conditions result in hay and milk trucks driving down the center of the roadway	One of the needs identified for this project addresses substandard roadway width. In general, the project would widen the roadway 1 to 6 feet to maintain a consistent 24-foot width with two 11-foot travel lanes and delineated 1-foot shoulders.
40.	Scoping Meeting	CR6000 Cultural Resources: Impact Of Proposal And Alternatives	Archaeological resources identified within the right-of-way	A cultural resources study of the study area was conducted including a prefield records search, geoarchaeological sensitivity assessment, and archaeological survey of the proposed project area. The records search identified one previously recorded archaeological resource in the project area. The archaeological survey identified a single prehistoric isolate—an obsidian flake— which is not eligible for the National Register of Historic Places. The previously recorded archaeological site was not re-located despite concerted effort by the field crew. Based on the geoarchaeological sensitivity assessment, only two small areas were identified with a high likelihood for cultural

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				resources. No deep excavation is proposed in these areas. As a result no affect to archaeological resources are expected as a result of the project.
41.	Scoping Meeting	New Code #: Construction: Impact Of Proposal And Alternatives	Construction schedule for the flooded section should consider high tides and high storm water runoff with global climate change influence.	Work within wetlands or other waters of the U.S. will be completed during the low flow period or dry season of June 15 through October 15. Prior to construction, a 401 Water Quality Certification and a National Pollutant Discharge Elimination System Permit (NPDES) permit would be obtained. As part of the NPDES permit, a Stormwater Pollution Prevention Plan (SWPPP) would be developed, which would reduce potential water quality impacts during construction. Implementation of measures in the SWPPP, including those described under avoidance, minimization, and mitigation measures, below, would ensure that biological productivity and quality of coastal waters would be maintained for wildlife, aquatic species, and the protection of human health. Compliance with the conditions of the 401 Water Quality Certification, 404 permit, and NPDES permit will also ensure compliance with the water quality objectives outlined in the San Francisco Bay Basin (Region 2) Water Quality Control Plan.
42.	Scoping Meeting	New Code #: Climate Change: Impact Of Proposal And Alternatives	50 year timeframe is used for global climate change effects.	The effects of climate change will be analyzed as a cumulative impact. The California Ocean Protection Council adopted statewide sea level rise projections based on climate change that allow all state agencies to plan for sea level rise with the same assumptions. The council adopted statewide values for the predicted average sea level rise and potential range of for the years 2030 and 2050.
43.	Scoping Meeting	AL4000 Alternatives: New Alternatives Or Elements	Fish passage should be the minimum criteria the culvert is designed to accommodate. Use the biggest sized culverts feasible as long as the culverts are being replaced.	The two existing corrugated metal culverts at Schooner Creek would be replaced with a structure designed to provide improved fish passage by reducing tidal and stormwater flow velocities. The existing arch culvert at East Schooner Creek would be replaced with a concrete box culvert up to 6 feet high and 12 feet wide and would be

#	Commenter	Category	Comment	Response
				installed at least one foot below the existing channel bed to accommodate fish and other wildlife passage.

44.	Scoping Meeting	AL4000 Alternatives: New Alternatives Or Elements	• Project should include a Class I bike lane
			  • This is the opportunity to do this
			  • Safety issue with large trucks
			  • Help reduce Point Reyes National Seashore's carbon footprint
				Adding dedicated bike lanes along the roadway was considered to be outside the scope and purpose of this project. The project is intended to improve the structural pavement condition of the roadway and reduce flooding. In order to accommodate dedicated bike lanes, the roadway would need to be widened further and would result in additional impacts to park resources. Because of this, dedicated bike lanes were dismissed from consideration. However, widening the roadway to a consistent 24-foot width, providing a delineated shoulder and fog lines, and localized sight distance improvements would have incidental safety improvements for bicyclists.

45.	Scoping Meeting	AL4000 Alternatives: New Alternatives Or Elements	Cattle guards or rumble strips ahead of ranches can alert drivers to slow down	Cattle guards were not included in the project design because of the noise they would create, which would impact wildlife. However, the project would include additional signage alerting drivers to slow down when approaching ranch property.
46.	Scoping Meeting	AL4000 Alternatives: New Alternatives Or Elements	If there is enough space, add new pullouts	The existing gravel pullout by Schooner Bay would be paved with 4 inches of asphalt pavement to reduce erosion and maintenance. At existing pullouts along the project corridor, a 5-foot asphalt apron would be added over the existing aggregate surface, and some pullouts would be resurfaced with aggregate.
47.	Scoping Meeting	AL4000 Alternatives: New Alternatives Or Elements	Road should have fog lines	Fog lines (outer striping) would be added to the road.
48.	Scoping Meeting	AL4000 Alternatives: New Alternatives Or Elements	Request not to add paving to existing unpaved lots	The existing gravel pullout by Schooner Bay would be paved with 4 inches of asphalt pavement to reduce erosion and maintenance. At existing pullouts along the project corridor, a 5-foot asphalt apron would be added over the existing aggregate surface, and some pullouts would be

#	Commenter	Category	Comment	Response
				resurfaced with aggregate. The project includes no additional paving of pullouts or parking lots.
49.	Scoping Meeting	AL4000 Alternatives: New Alternatives Or Elements	Improve sight distance for cars pulling out of North District Operations Center	The trees that form the windbreak lining the road to the RCA Receiving Station are contributing elements to historic districts that encompass the Point Reyes peninsula. These trees are also outside of the county right-of-way. Therefore, these trees cannot be altered or removed as part of this project.
50.	Scoping Meeting	AL4000 Alternatives: New Alternatives Or Elements	Is it possible to consider realignments to avoid sensitive species or reduce construction complexity even if it is outside of the right-of-way?	Substantial realignment of the roadway is beyond the scope of the project, which is primarily a resurfacing, restoration, and rehabilitation project. The roadway is abutted by sensitive resources, including an eligible historic district and cultural landscape, numerous wetlands and other waters, and special-status species and associated habitat, for the entire length of the road. Keeping the road on existing alignment where possible will minimize impacts to adjacent resources to the extent practicable.
51.	Scoping Meeting	AL4000 Alternatives: New Alternatives Or Elements	Would fences, signs, posts in the right-of-way be moved outside the right-of-way as part of construction?	Fences would only be replaced when they need to be moved to accommodate construction. Any replaced fences would be located at the right-of-way line.
52.	Scoping Meeting	AL4000 Alternatives: New Alternatives Or Elements	How will the project deal with fencing for the ranches during construction? Which party will be responsible for taking down, securing, and reinstalling the fences?	The construction contractor will be responsible for taking down, securing, and reinstalling fences, with the exception of electrical fences, which will be the responsibility of the rancher.
53.	Scoping Meeting	AL4000 Alternatives: New Alternatives Or Elements	Is there a berm in the riparian corridor on the north side of the road in the flooded area?	Vegetation has grown over a fence that gives the impression of a berm, which will remain in place.
54.	Scoping Meeting	AL4000 Alternatives: New	Can the flooded section be improved by using a causeway or multiple culverts?	An option was considered to reconstruct the roadway in the flood prone area on a causeway (i.e., viaduct) in order to minimize impacts to sensitive habitat while reducing

#	Commenter	Category	Comment	Response
		Alternatives Or Elements		flooding potential. This would consist of removing the existing roadway and reconstructing the new roadway approximately 4 feet above the existing grade on 24-inch diameter piers placed every 20 to 40 feet. The horizontal alignment of the road would be shifted as much as 65 feet to the north of the existing road alignment in this segment. Additionally, temporary detours would be established at the locations where the causeway would tie into the existing road alignment. This would allow the road to remain open to the public during construction of the causeway. Assuming only the piers would account for permanent impacts, it is anticipated this option would reduce permanent impacts to wetlands and other waters of the U.S. by approximately 24 percent. This option would also reduce permanent impacts to California red-legged frog habitat by approximately 5 percent. However, temporary impacts to wetlands and red-legged frog habitat are likely to increase because (1) temporary detours may be required on new alignments to maintain one lane of traffic at tie-in locations and (2) temporary matting and/or gravel would need to be placed in wetlands and other waters to allow equipment and personnel access to pier locations for construction. In addition, the causeway option may indirectly affect frog habitat and wetlands and other waters through permanent shading of resources located directly below the causeway—totaling approximately one acre. Shading can adversely impact the growth and function of wetlands and other habitat. The causeway could also be a new visual element to the cultural landscape, which may be seen as a visual intrusion. This option would alter the existing road, which has a low profile and blends easily into the surrounding landscape. A new roadway alignment within fairly intact

#	Commenter	Category	Comment	Response
				vegetation, along with the addition of railing, may make the presence of the road more visually obvious. With this option, visual impacts are expected to be slightly higher and viewer response may be more negative. Additionally, the visual modification is expected to adversely affect SFDB, which is a contributing element to a number of historic districts. Although it would adversely affect a contributing element, it is not expected to result in an adverse effect to the historic districts or cultural landscape. However, additional measures would be required to mitigate adverse effects. Construction costs for incorporating this option would be approximately 75 percent higher than the Action Alternative and are substantially higher than the available funds for the project. Although permanent impacts to sensitive habitat would be reduced, temporary construction impacts to sensitive habitat, tourists, ranchers, and wildlife would be increased. Additionally, the permanent impacts to sensitive habitat adjacent to the road that would result from the Action Alternative will be mitigated through on-site and off-site restoration, enhancement, and creation of habitat. For these reasons, this option was eliminated from further consideration. Multiple culverts would require dredging the channel, which is not possible due to the presence of special status species, and would not fix the problem of water backing up into the road.
55.	Scoping Meeting	Purpose And Need: Scope Of The Analysis	Why does the project start at Pierce Point Road instead of park boundary?	Sir Francis Drake Boulevard is in better condition between the NPS boundary and the Pierce Point Road intersection.
56.	Scoping Meeting	MT1000 Miscellaneous Topics: General	What is the distance of the roadside that will be rocked or have retaining walls?	Approximately 300 linear feet of rockery walls are proposed. No retaining walls are proposed.

#	Commenter	Category	Comment	Response
		Comments		
57.	Scoping Meeting	New Code #: Post-Project Monitoring	How will construction oversight be monitored in regards to park resources?	During construction, a Contracting Officer will be onsite to provide construction oversight and coordinate efforts between the contractor and technical staff. In addition, the contractor must comply with Section 107 of FP-14, Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, which outlines legal relations and responsibility to the public. Specifically, this includes protection and restoration of property and landscape (107.02), environmental protection (107.10), and protection of forests, parks, and public lands (107.11).

APPENDIX F: NRCS CPA-106 FORM

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request: 2/2/15	4. Sheet 1 of 2
1. Name of Project: SIR FRANCES DRAKE BOULEVARD	5. Federal Agency Involved: DOT - Federal Highway Administration	
2. Type of Project: Road resurfacing, restoration, and rehabilitatio	6. County and State: Marin, California	

PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS: 2/2/15	2. Person Completing Form: Ken Oster
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☑ NO ☐		4. Acres Irrigated: 1,614 / Average Farm Size: 523
5. Major Crop(s): Fruit & Veg., Wine Grapes, Hay, Silage	6. Farmable Land in Government Jurisdiction: Acres: 11,973 % 3.6	7. Amount of Farmland As Defined in FPPA: Acres: 66,371 % 20.0
8. Name Of Land Evaluation System Used: CA Storie Index	9. Name of Local Site Assessment System: None	10. Date Land Evaluation Returned by NRCS: 2/3/15

PART III *(To be completed by Federal Agency)*		Alternative Corridor For Segment			
		Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly		1.05			
B. Total Acres To Be Converted Indirectly, Or To Receive Services		1.78			
C. Total Acres In Corridor		90.28			
PART IV *(To be completed by NRCS) Land Evaluation Information*					
A. Total Acres Prime And Unique Farmland		0.01			
B. Total Acres Statewide And Local Important Farmland		0.75			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		0.007			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		No Data			
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*		22			
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	Maximum Points				
1. Area in Nonurban Use	15	15			
2. Perimeter in Nonurban Use	10	10			
3. Percent Of Corridor Being Farmed	20	0			
4. Protection Provided By State And Local Government	20	0			
5. Size of Present Farm Unit Compared To Average	10	10			
6. Creation Of Nonfarmable Farmland	25	0			
7. Availablility Of Farm Support Services	5	0			
8. On-Farm Investments	20	9			
9. Effects Of Conversion On Farm Support Services	25	0			
10. Compatibility With Existing Agricultural Use	10	0			
TOTAL CORRIDOR ASSESSMENT POINTS	160	44	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	22	0	0	0
Total Corridor Assessment (From Part VI above or a local site assessment)	160	44	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	66	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?
Corridor A	0.76	2/4/15	YES ☐ NO ☑

5. Reason For Selection:

Minor impacts to farmlands.

Signature of Person Completing this Part: | DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

Farmland Conversion Impact Rating NRCS-CPA-106

For Corridor Type Projects

Project: SIR FRANCIS DRAKE BOULEVARD

Note: The existing portion of Sir Francis Drake Boulevard, within the project area is located within a 60-foot Marin County prescriptive easement on National Park Service land.

APPENDIX G: STATEMENT OF FINDINGS FOR EXECUTIVE ORDER 11990 PROTECTION OF WETLANDS

Statement of Findings for

Executive Order 11990

Protection of Wetlands

Improvements to Sir Francis Drake Boulevard

Point Reyes National Seashore, California

Recommended:_____ _____

Superintendent, Point Reyes National Seashore **Date**

Concurred:_____ _____

Chief, Water Resources Division **Date**

Approved:_____ _____

Director, Pacific West Region **Date**

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INTRODUCTION

This Wetlands Statement of Findings (WSOF) characterizes the wetland resources that occur within the study area for the Sir Francis Drake Boulevard (SFDB) improvement project at Point Reyes National Seashore (PRNS), a unit of the National Park Service (NPS) in Marin County, California. The SFDB project is being evaluated under a joint environmental assessment (EA)/Initial Study (IS) in compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). This WSOF describes the impacts the project would likely have on these aquatic resources, and documents the steps that will be taken to avoid, minimize, and offset these impacts.

Part 2.5 of the NPS Director's Order #77-1 for Wetland Protection (NPS 2012) states:

> Actions proposed by the NPS that have the potential to have adverse impacts on wetlands will be evaluated through the NEPA planning and compliance process. Regardless of the associated NEPA compliance pathway (EA, environmental impact statement, or categorical exclusion), a Wetland Statement of Findings documenting compliance with this Director's Order and Procedural Manual #77-1 will be completed for proposed actions that would result in adverse impacts on wetlands. Actions that may be excepted from this Statement of Findings requirement are identified in the Procedural Manual.

Director's Order #77-1, Section 5.3.4 (2) (NPS 2012), states:

> An EA that identifies a preferred alternative that will have adverse impacts on wetlands must be accompanied by a separately identifiable draft "Wetland Statement of Findings" (WSOF) that explains why an alternative with such impacts was chosen and that meets the other requirements identified in Section 5.3.5 of these procedures. EA/draft WSOF distribution must include all affected parties, other interested parties or organizations, and the agencies listed in Section 5.3.4.1 of these procedures.
>
> Following this review, the NPS must reevaluate the preferred alternative and its impacts, revise the WSOF as necessary, and issue either a Finding of No Significant Impact Statement (FONSI) or a Notice of Intent to prepare an Environmental Impact Statement (EIS) consistent with NPS NEPA procedures. If the final preferred alternative still results in adverse impacts on wetlands and a FONSI is to be issued, a final WSOF meeting the requirements identified in Section 5.3.5 must be attached to the FONSI as a separately identifiable document.

This Wetland Statement of Findings includes:

- A series of maps that show the locations and boundaries of Cowardin wetlands, and jurisdictional waters of the U.S. (WOUS) under the Clean Water Act within in the study area (Appendix A).
- Documentation of the qualifications of the staff and consultants who identified wetlands within the study area.
- Detailed descriptions of the affected wetlands.
- Functional descriptions of the affected wetlands.
- Full disclosure of the adverse impacts on the wetland habitats, processes, functions and values, and acreages at the sites where wetlands would be impacted.

- A discussion of the various factors and trade-offs considered in arriving at the decision to impact wetlands.
- A description of how the preferred alternative was designed to minimize wetland impacts to the greatest extent practicable.
- A description of the proposed wetlands compensation. Additionally, the WSOF will demonstrate how the NPS will:
  - Address the directives of Executive Order 11990 (Protection of Wetlands)
  - Ensure "no net loss" of wetland functions or values

OVERVIEW

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in cooperation with Marin County and the NPS, is proposing improvements to SFDB in Point Reyes National Seashore, which is a unit of the NPS within Marin County, California. The proposed project includes reconstruction of approximately 12 miles of SFDB within PRNS. The project begins at the intersection with Pierce Point Road and continues south and west to the intersection with Chimney Rock Road (see Figure 1). In general, roadway improvements are expected to occur within the existing 60-foot wide right-of-way (ROW).

Site Description

SFDB extends from Route 101 in Greenbrae, north of San Francisco, westward approximately 43 miles to the Y-intersection with Chimney Rock Road and Lighthouse Road. The junction with Pierce Point Road is the approximate boundary of PRNS and is approximately 2 miles west of Inverness. The portion of SFDB to be reconstructed is 12 miles between Pierce Point Road and the Y-intersection, and is maintained by Marin County.

Purpose and Need

Within the project area, SFDB is narrow and deteriorating at an accelerated pace. The declining condition may necessitate vehicle restrictions or closures if not rehabilitated in the near future. Some sections of the road have substandard curves, and one segment between PM 9 and PM 10 floods more than once per year on average. SFDB was originally an unimproved dirt road that was chip sealed and has never undergone major rehabilitation. The existing pavement was not designed to handle the current traffic loads. The park has carried out partial and temporary repair projects over the years to keep it operational and to meet the needs of the traveling public. However, SFDB is now at an age where a comprehensive repair project is needed to ensure continued service.

Figure 1: Study Area

Specifically, the project is needed because:

- **Roadway Width is Substandard:** Existing pavement widths generally vary from 18 feet to 24 feet, with isolated areas as wide as 27 feet along switchbacks. The road should be rehabilitated to a consistent 24-foot width where possible per American Association of State Highway and Transportation Officials (AASHTO) roadway design guidelines. On narrow roadways such as this, recreational vehicles, school buses, park shuttles, and milk trucks put stress on the pavement edges, requiring additional maintenance. The existing roadway has no shoulders in many areas and does not provide sufficient clearance for vehicles and bicycles to safely pass each other without traveling into opposing lanes. Switchbacks on hills show evidence of tires dropping off pavement edges. Existing bridges at cattle under-crossings do not meet current AASHTO standards.
- **Roadway is Prone to Flooding:** A 0.5-mile section of the roadway floods frequently, which restricts access to the park and affects staff, visitors, and ranchers. Vehicles have also run off the road and into ditches during flooding. A channel has formed along this stretch of roadway as a result of flooding. This channel has aggraded to where it is the same level of the roadway, resulting in standing water that has damaged pavement (described below). Dredging the channel is problematic due to the presence of wetlands and potential for California red-legged frog (*Rana draytonii)* habitat, which is a federally protected species.
- **Bicycle Safety is Lacking:** Marin County currently classifies SFDB as a Class III bike-shared route, meaning motor vehicles and bicycles share the road with no separation. The road's narrow width and lack of paved shoulders are not designed to safely accommodate bicycles.
- **Roadside Hazards Pose Safety Problems:** Several sharp curves, dense roadside vegetation, roadside hazards at under-crossings, and steep grades with minimal sight distance occur along the route. Centerline striping has worn off in many areas, and edge lines are missing.
- **Pavement is Deteriorating:** The existing pavement was not designed for the current traffic loads. Pavement along SFDB is badly oxidized, heavily patched, lacks shoulder support, and demonstrates significant cracking and edge damage in some sections. Potholes, edge raveling, and rutting in the wheel paths also exist. Standing water in shallow ditches has contributed to pavement failures in the vicinity of the Schooner Creek crossing. The current deteriorating state of the roadway requires ongoing maintenance.

ALTERNATIVES CONSIDERED

The following alternatives were considered for this project, including the preferred alternative.

No Action

Under the No Action Alternative, the proposed activity would not take place.

- Ongoing maintenance activities would continue to repair pavement edges due to substandard roadway widths and to repair general pavement damage, such as potholes, cracking, and rutting.
- No actions to address pavement conditions, other than minor patching and overlays, would be implemented.
- No actions would be taken to reduce flood damage to the roadway. Standing water in the channel that has formed along the roadside would continue to damage pavement, requiring ongoing maintenance. The road would continue to be closed to traffic during flood events and associated repair activities.

- No actions to address safety, other than pavement repair as needed, would be implemented. Delineated shoulders would not be provided to separate motor vehicles and bicycles. No changes would be made to diminish sharp curves, remove hazards from the clear zone, address limited sight distance, add striping, or implement other measures to enhance safety.

Action Alternative

The Action Alternative primarily consists of resurfacing, restoring, and rehabilitating SFDB in a manner that will closely follow the existing roadway in order to minimize impacts to the natural terrain. In general, the Action Alternative would widen the roadway 1 to 6 feet to maintain a consistent 24-foot width with two 11-foot travel lanes and two 1-foot shoulders. The total pavement width would be 4 to 8 feet less than published guidelines (AASHTO, 2011; NPS, 1984). The proposed width is intended to allow much of the construction to occur within the existing roadway bench and the existing Marin County easement while providing a rehabilitated pavement section.

Roadway widening would include pulverizing the existing asphalt pavement, overlaying with 4 inches of asphalt pavement, striping, and ditch reconditioning, with dense vegetation removal as needed. Paved ditches between 2 and 4 feet wide with asphalt curbs are proposed in specific areas to expedite tying to existing cut slopes, which would minimize overall ground disturbance. Existing 15- and 18-inch culverts within the project area would generally be replaced with 24-inch culverts where feasible. At existing pullouts along the project corridor, a 5-foot asphalt apron would be added over the existing aggregate surface, and some pullouts would be resurfaced with aggregate. The clear zone, which is the area available for safe use by errant vehicles, would be improved through removal of obstructions, as feasible. The clear zone would vary between 3 feet wide and the AASHTO minimum design standard width of 12 feet in order to minimize ground disturbance. Widths below 12 feet would require a design exception.

Based on the 15 percent design, a total of 4.3 acres of impervious surface would be added as a result of increased road surface and paved ditches adjacent to the road. However, paving additional ditch sections to expedite tying to existing cut slopes and reduce construction limits would increase the amount of impervious service by up to 6.0 acres.

The Action Alternative includes localized reconstruction and safety improvements in certain areas as follows:

- Between PM 0.8 and PM 1.2, the vertical alignment of the roadway would be flattened and side slopes would be cut back, as needed, to improve sight distance.
- Between PM 1.8 and PM 2.1, near Historic B Ranch, the existing slope on the west side of the roadway would be cut back and a cut wall less than 6 feet high would be constructed to accommodate the wider roadway.
- Between PM 4.0 and PM 4.1, the surface of the roadway would be tilted or banked through the curve to improve driver safety, and side slopes may be cut back to improve sight distance.
- The two existing wooden deck cattle under-crossings at PM 7.1 and PM 7.3 would each be replaced with concrete box culverts approximately 8 feet high and 13 feet wide. The box culverts would be installed 2 feet below the existing ground surface to maintain a natural dirt floor.
- The two existing corrugated metal culverts at Schooner Creek (PM 9.2) would be replaced. The structure type would be determined during final design and would be designed to provide improved fish passage by reducing tidal and stormwater flow velocities.

- The existing gravel pullout at PM 9.2 by Schooner Bay would be paved with 4 inches of asphalt pavement to reduce erosion and maintenance.
- Between approximately PM 9.3 and PM 9.8, the roadway would be raised 1 to 4 feet and shifted approximately 12 feet to the south to reduce flooding of the roadway. Asphalt curb and gutter would be installed along the length of this section. Rockery walls, approximately six feet high, would be constructed along portions of this section to accommodate the wider roadway template and minimize impacts.
- The existing arch culvert at PM 9.9 would be replaced with a concrete box culvert up to 6 feet high and 12 feet wide. The culvert would be installed at least one foot below the existing channel bed to accommodate fish and other wildlife passage within East Schooner Creek.

The project area is wider in certain locations to accommodate minor roadway realignment, bridge replacement, and potential resurfacing of or disturbance to adjacent parking areas.

Justification for Use of Wetlands

Sir Francis Drake Boulevard is an existing roadway with safety and flooding issues. Safety improvement measures include widening the roadway to a uniform 24-foot width where possible and improving the horizontal and vertical alignment in select areas. A wider roadway would allow for the safer passage of truck traffic and provide room for vehicles to maneuver around disabled vehicles, pedestrians, and bicyclists. Drainage improvements, including the installation of new culverts and replacement of existing culverts, would allow drainage to flow more efficiently through the corridor and minimize flooding. Realigning the roadway between PM 9 and PM 10 would also serve to minimize flooding.

Description of Affected Wetlands

Wetland Mapping Methodology

Wetland resource areas were delineated and mapped in the field on April 7 through April 11, 2014, by Jacobs Engineering Inc.'s environmental scientists. Members of the delineation and mapping team included:

Lori A. Macdonald, M.S., P.W.S., Senior Environmental Scientist. Lori Macdonald (P.W.S. #2086) has 20 years of experience in the environmental field and has been responsible for numerous wetland delineations in Massachusetts, including the Muddy Creek Wetland Restoration Project in Harwich/Chatham, funded by the U.S. Department of Agriculture (USDA) (Project No. 20110202.A10). As a part of this 1.5-mile project, Lori was also responsible for completing the vegetation composition analyses within wetland communities located along 20 transects. Lori is a member of the Society of Wetland Scientist, the Wildlife Society, and the California Native Plants Society.

Misha Seguin, Environmental Scientist – Biologist. Misha Seguin completed her Wetland Delineation certification from the Romberg Tiburon Center for Environmental Studies (San Francisco State University) in 2006. She assisted in the Delineation of Wetlands and Other Waters of the U.S. (OWUS) for the 2,000-plus acre Calaveras Dam Replacement Project for the San Francisco Public Utilities Commission, resulting in a delineation of over 1,000 acres of Waters of the U.S., including the reservoir. Subsequently, she has been lead scientist for many smaller-scale jurisdictional determinations throughout the diverse vegetation communities of California and Nevada. She was also certified in 2012 and 2013 in conducting the California Rapid Assessment Method (CRAM) for riverine and depressional wetlands systems, respectively.

Ben Eddy, Biologist, Wetland Professional in Training (WPIT). Ben Eddy is a former National Wetland Inventory (NWI) biologist and graduate of Indiana and Purdue Universities. Ben is

certified in wetland delineation and permitting by the U.S. Army Corps of Engineers (Corps). Ben has delineated wetlands for over 346 miles of transportation and utility right's-of-way. He is a member of the California and Colorado Native Plant Societies.

Dan Soucy, Biologist. Dan Soucy has 10 years of experience conducting wetland delineations and has worked on numerous wetland and riparian restoration projects in the mid-Atlantic area. He has conducted wetland work and delineated wetlands within the Atlantic and Gulf Coastal Plain; Great Plains; Western Mountains, Valleys, and Coast; and Arid West regions. Dan has completed the U.S. Army Corps of Engineers Wetland Delineation and Management Training Program (Certificate No: 4953) taught by Richard Chinn of Environmental Training Inc.

Wetlands were classified according to the U.S. Fish and Wildlife Service (USFWS) Cowardin Wetland Classification System (Cowardin, et al., 1979) and the Hydrogeomorphic Method (HGM). The specialists used Cowardin classifications to classify wetland units along the corridor, which defines wetlands as "lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes (Cowardin, et al., 1979):

1. at least periodically, the land supports predominantly **hydrophytes**;
2. the substrate is predominantly **undrained hydric soil**, and
3. the substrate is non-soil and is **saturated with water** or covered by shallow water at some time during the growing season of each year."

Field data characterizing the degree of dominance of hydrophytic vegetation, site hydrology and the presence of hydric soils were collected for the wetland determinations. Generally, the specialists only used the hydric soil criterion when there was uncertainty about hydrophytic vegetation or hydrology status.

Hydrophytic vegetation cover was estimated at each potential wetland site. The first criterion was met if at least 50 percent of the wetland was covered with hydrophytic vegetation. The wetland indicator status was listed for all plant species using the 2013 National Wetland Plant List (Lichvar, 2013). The indicator status was then used to assess the likelihood of an area being classified as a wetland as defined by the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987).

During the field delineation, wetland specialists assigned a number to each wetland mapping unit meeting a unique Cowardin classification and HGM definition. For example, wetlands meeting Cowardin's criteria for palustrine-emergent (PEM) and the HGM definition of depressional are labeled Wetland Type 5. Wetlands designated as Wetland Sub-type 5.4 are cattail-dominated wetlands. The tenth's place accounts for different vegetative profiles under the Cowardin system and geological subtypes according to HGM.

The extent of wetlands and OWUS were determined using the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) methodology incorporating updates in the *Arid West Regional Supplement*. Potentially jurisdictional wetlands and OWUS, as well as potential non-jurisdictional isolated features, were mapped at a scale of 1 inch = 200 feet on color digital orthoquad aerial imagery using a geographic information system (GIS) (ArcMap 10.1; Esri). Maps were generated in California State Plane. Map sets are found in Appendix A of the "Wetland, Other Waters of the U.S. and Riparian Area Delineation Report" prepared for this project and attached to this report as Appendix B. Completed data forms and a list of all plant species observed are also provided in Appendix B and C, respectively, of the attached delineation report (Jacobs, 2014).

Data was collected using Trimble GeoXH 6000 series global positioning system (GPS) collectors with Esri ArcPad and Trimble Positions software. Data points were also collected at a minimum of four FHWA survey monuments for reference purposes and for facilitating any transformation of the data to the FHWA coordinate system. Data dictionaries were used in ArcPad so that attribute choices could be predefined to allow for a more rapid and streamlined database population effort during field work. The data dictionaries also ensured data standardization across multiple GPS units and field staff. All data was post-processed using the Trimble Positions software to increase horizontal accuracy in WGS84 datum prior to it being moved to the project-specific coordinate system (California State Plane NAD 83). The processed field data was verified by the field staff to ensure no errors in feature attributes or spatial accuracy. All spatial analysis was conducted in an Esri ArcGIS Desktop environment using industry standard processes.

Wetland scientists captured GPS coordinates for each wetland determination data sheet completed in the field. Locations corresponding to the completion of wetland determination data sheets are marked in the delineation maps found in the "Wetland, Other Waters of the U.S. and Riparian Area Delineation Report" (Jacobs 2014) prepared for this project and attached as Appendix B. Informal wetland determination points are also indicated in delineation maps. Augers, instead of shovels, were used to analyze soil cores at these points. This method allowed wetland scientists to determine the extent of hydric soils and to map large wetland occurrences.

Vegetation

Plant species identified on the project site were assigned a wetland status according to the USFWS list of plant species that occur in wetlands (Lichvar, 2013). This wetland classification system is based on the expected frequency of occurrence in wetlands as follows:

OBL	Always found in wetlands	>99% frequency
FACW	Usually found in wetlands	67-99%
FAC	Equal in wetland or non-wetlands	34-66%
FACU	Usually found in non-wetlands	1-33%
NI	Not an indicator (not listed — upland)	<1%

Plants with obligate (OBL), facultative wetland (FACW), and facultative (FAC) classifications are considered hydrophytic vegetation in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987). The hydrophytic vegetation criterion is met when greater than 50 percent of the dominant plant species have an indicator status of OBL, FACW, and/or FAC. Dominant plant species were determined by listing each species in descending order of percent cover within the sample area until 50 percent cumulative cover was exceeded.

Hydrology

The Corps jurisdictional wetland hydrology criterion is satisfied if an area is inundated or saturated for a period sufficient to create anoxic soil conditions during the growing season (minimum of 18 consecutive days in the San Francisco Bay Area). Evidence of wetland hydrology can include direct evidence (primary indicators), such as visible inundation or saturation, drift lines, and surface sediment deposits (including algal mats), or indirect indicators (secondary indicators), such as oxidized root channels and the FAC-neutral test. If indirect or secondary indicators are used, at least two secondary indicators must be present to conclude that an area has wetland hydrology. Primary and secondary hydrology indicators were used to determine if areas surrounding each sample point in the study area satisfied the Corps hydrology criterion.

Soils

Soils formed over long periods of time under wetland conditions are often subject to a fluctuating water table that causes iron to shift from a reduced to an oxidized form. This commonly causes

the distinctive characteristics used as indicators of hydric soils. Hydric soils generally have a low matrix chroma, designated 0, 1, or 2, used to identify them as hydric. Chroma designations are determined by comparing a soil sample with a standard Munsell soil color chart. Soils with a chroma of 0 or 1 are considered hydric; soils with a chroma of 2 must also have mottles to be considered hydric. Soil profiles at each sample point in the study area were described to include horizon depths, color, redoximorphic features, and texture to determine if the soils satisfy the Corps criteria for hydric soils. The Natural Resources Conservation Service (NRCS) manual *Field Indicators of Hydric Soils in the United States* (USDA, 2010) was also used as a guide for determining hydric soils in the study area.

Wetland Classification within the Study Area

Wetland Type1 Cowardin-Palustrine-Forested (PFO); HGM-Slope

This wetland type occurs exclusively east of Schooner Bay. At the project's northern terminus, a seep originating immediately outside the project ROW forms a PFO-Slope wetland (Wetland Sub-type 1.1). This wetland emerges beneath a canopy of Bishop pine (*Pinus muricata*; NI), red alder (*Alnus rubra*; FACW), and toyon (*Heteromoles arbutus*; NI). Mature red alder dominates the Wetland Type 1 canopy, arroyo willow (*Salix lasiolepis*; FACW), blackberry (*Rubus* spp.), and currant (*Ribes* spp.), compose the shrub stratum, and giant horsetail (*Equisetum arvense*; FACW), poison hemlock (*Conium maculatum*; FACW), and coastal manroot (*Marah oreganus*; FACU) grow in the herb stratum.

One of the many hillside slopes east of Schooner Bay forms Wetland Sub-type 1.2. A mature red alder canopy covers the wetland; red-osier dogwood (*Cornus sericea*; NI), arroyo willow and shrubby blackberry compose the intermediate canopy. Ferns such as giant chain fern (*Woodwardia fimbriata*; FACW) form the majority of herbaceous cover.

Remaining occurrences of Wetland Type 1 (1.3) are intermixed with palustrine-scrub-shrub (PSS)-Slope wetlands on hillsides forming the study area's western boundary.

Occurrences of Wetland Type 1 correlate with seeps discharging water from hillsides. Points of discharge lie outside the study area, but form channels and/or wetlands mapped within it.

Soils collected in mapped areas of Wetland Type 1 show distinct indications of anaerobic conditions, as opposed to other mapped wetland types often displaying ambiguous indicators.

Wetland Type 2: Cowardin-Palustrine-Scrub-Shrub (PSS); HGM-Slope

This wetland type occurs east of Schooner Bay. Hillside seeps on the western edge of SFDB support willow thickets composed of arroyo willow intermixed with scrubby red alder. The understory is generally dense with blackberry and currants. Herbaceous species, including giant horsetail (*Equisetum telmateia*; FACW), water hemlock (*Cicuta douglasii*), and grasses, such as velvet grass (*Holcus lanatus*) and tall fescue (*Festuca arundinacea*), line the toe-of-slope at the edge of this wetland type.

Like Wetland Type 1, water discharged from hillside seeps provides wetland hydrology for Wetland Type 2. These seeps lie outside the study area, but influence areas mapped within it.

Wetland Type 3: Cowardin-Palustrine-Forested (PFO); HGM-Riverine

HGM classification interprets the extent of riverine wetlands more broadly than Cowardin. According to Cowardin, riverine wetlands occur in bottomlands and riparian areas regardless of their hydrological connectivity to the channel (USDA, 2008). For this reason, this report distinguishes between Cowardin's riparian systems and HGM riverine systems.

Wetland Type 3 occurs on the eastern edge of the study area. East Schooner Creek originates near the study area's northern terminus and flows adjacent to SFDB to its confluence with Schooner

Creek and ultimately, Schooner Bay. The bottomlands associated with this creek support this habitat type. Wetland Type 3 occurs largely outside the study area.

Mature red alder dominates the vegetative composition of Wetland Type 3. Red alder, often over 50 feet in height, provides a fairly dense canopy, but allows sufficient sunlight to support robust scrub-shrub and emergent strata. Shrub-height arroyo willow, red alder, and red elderberry (*Sambucus racemosa*; FACU) account for the majority of the intermediate canopy. Fertile riverine bottomlands support an herbaceous layer typically exceeding 100 percent (see Appendix B). Rough hedge nettle (*Stachys tenufolia*), stinging nettle (*Urtica dioca*; FAC), and species in the celery family (*Asclepiaceae*) compose the majority of the herbaceous stratum. A thick woody vined stratum of California blackberry (*Rubus ursinus*; FACU), with lesser numbers of Armenian blackberry (*Rubus armeniacus*; FACU), grow between shrub and herbaceous strata.

Occurrences of Wetland Type 3 continue upslope, beyond the study area, with small fragments mapped within the study area. Soil cores illustrated relatively thick O horizons, presumably a product of several dense vegetative strata contributing organic matter to the forest floor. Soil cores revealed particles finer (smaller diameter) than those mapped according to Cowardin's definition of riparian.

Wetland Type 4: Cowardin-Palustrine-Emergent (PEM); HGM-Slope

This wetland type occurs throughout the study area. East of Schooner Bay, Wetland Type 4 (4.1-4.2) is found on hillside seeps at the western edge of SFDB. Soft rush (*Juncus effuses*; FACW), small-bract sedge (*Carex subbracteata*; FACW), cow parsnip (*Heracleum maximum*; FACW), velvet grass (FACW), and tall fescue (FAC) dominate this wetland type. Arroyo willow and red alder saplings also occur.

As SFDB follows the crest of sand dunes west of Schooner Bay, Wetland Sub-type 4.6 occurs at the edge of the study area in dense sedge tussocks formed by slough sedge (*Carex obnupta*). Pacific silverweed (*Potentilla anserina*; FACW), rough hedge nettle (FACW), water hemlock, and rushes (*Juncus* spp.) are intermixed with slough sedge (OBL). Wetland subtype 4.6 correlates with the presence of Dune Land soil units (USDA, 1985). Strong coastal winds form Dune Land soils into tussocks and mounds. These soils do not develop profiles, constraining the ability to determine the presence of anaerobic conditions. Hydrologically, these wetlands appear influenced by coastal fog and precipitation. Plants close to the coast within PRNS depend on fog more than rain. Moreover, fog can represent the equivalent of 20 inches of rain annually in the seashore (Jacobs, 2014).

Wetland Type 5: Cowardin-Palustrine-Emergent (PEM); HGM-Depressional

SFDB acts as an artificial upland inclusion throughout much of the study area corridor. The road bank and pavement appear to trap water flow from seeps, sheetflow, and subsurface flow, causing water to pool either at the surface or to restrict subsurface migration, creating hydric soils at the toe-of-slope. The depression formed between the SFDB roadbank and adjacent naturally occurring slopes are the result of road construction. As a result, depressional wetlands can be found near the edge-of-pavement in much of the study area.

These depressional wetlands are known as swales. The San Francisco Environmental Protection Agency (SFEPA) office considers swales surface drainage features conveying concentrated surface flow, but lacking a defined bed and bank (Witham et al., 1998). For purposes of this study, this definition has significant jurisdictional context. Occurrences of Wetland Type 5 exist with and without a defined bed and bank. In many instances, these swales develop a defined channel in proximity to culverts at their lowest elevation, but lack these characteristics at higher elevations—elevation differential being no more than a few feet. Similarly, upland inclusions separate occurrences of Wetland Type 5 at relatively higher points.

Wetland scientists conjecture that flow velocity and water volume increase as swales approach their lowest topographical point. Wetland Type 5 swales appear to be fed, at least in part, by seeps upslope from SFDB.

Thin wetland swales, often no more than 1-2 feet in width, have formed east of Schooner Bay from the northern terminus to Drake's Estero between hillside seeps at the western edge of SFDB and the edge-of-pavement. Soft rush is the key wetland indicator for this wetland type, although velvet grass, water hemlock, giant horsetail, and willow (*Salix* spp.) saplings also grow in Wetland Type 5. NRCS soil maps place Rodeo Clay Loam beneath much of the wetlands east of Schooner Bay, helping explain water retention in Wetland A features. The permeability of Rodeo Clay Loam demonstrates slow permeability, creating saturation and pooled water from December through April. This soil unit also explains the inconsistency of channels within Wetland Type 5 swales. Rodeo Clay Loam has a low erosion potential (Jacobs, 2014).

Occurrences of Wetland Type 5 provide ambiguous wetland diagnostics south of SFDB's crossing of Drake's Estero, west of Schooner Bay. FACW species often occur in similar ratios as FACU plants; indications of iron reduction are not as visible, and wetland hydrology is unclear. A geological restrictive layer, presumably slowing water infiltration and creating anaerobic conditions is common to most occurrences of Wetland Type 5. NRCS-mapped soil units help explain the hydrological source of these wetland swales. Sandy soil types associated with upland dunes contain substantial inclusions of Humaquepts, Seeped. The high seepage potential and water retention of these inclusions may provide the necessary water discharges to form swales in depressional topography between the edge-of-pavement and low slopes typical in this part of PRNS.

South of Drake's Estero, Wetland Sub-type 5.5 vegetation generally includes higher graminoid percentages. Velvet grass, tall fescue, and perennial ryegrass (*Lolium perenne*; FAC) often contribute to more than half of vegetative cover. Rough hedge nettle, coast angelica (*Angelica hendersonii*; NI), Pacific silverweed, radish (*Raphanus* L.), and water hemlock typically grow in this wetland type. Invasive, hydrophytic weeds dominate the vegetative cover of Wetland Sub-type 5.6.

Wetland Type 6: Cowardin-Palustrine-Scrub-Shrub (PSS); HGM-Riverine

As with Wetland Type 3, wetland scientists identified Wetland Type 6 to distinguish between Cowardin's interpretation of riparian and the HGM definition of riverine. Unlike Cowardin, HGM classification considers a wetland's geological setting independent from hydrologic function.

Wetland Type 6 occurs only east of Schooner Bay. Bottomlands associated with East Schooner Creek support forested wetlands, though small breaks occur allowing for scrub-shrub (and emergent) habitats. Only small areas of this wetland type overlap with the study area. Occurrences of Wetland Type 6 begin where the toe-of-slop meets riverine bottomlands, leaving these wetlands largely outside the scope of this study.

Arroyo willow thickets, intermixed with red alder, red elderberry, and occasional occurrences of Pacific willow (FACW), dominate this wetland type. The dense canopy prevents significant herbaceous growth. Herbs, including giant horsetail, water hemlock, and invasive English ivy (*Hedera helix*; NI) occur where sunlight penetrates at the edges.

Vertical hydrology and sub-surface flow from hillside seeps appear to influence Wetland Type 6 more than East Schooner Creek. Whereas East Schooner Creek is deeply incised, a shallow water table in Wetland Type 6, no more than 3 inches deep, suggests a palustrine system rather than riparian.

Wetland Type 7: Cowardin-Riparian-Emergent (RP1EM); HGM-Riverine

This wetland type occurs only in the riverine bottomlands east of Schooner Bay. Small breaks in the otherwise dense canopy of the forested bottomlands allow for the growth of herbaceous species. Cattail (*Typha latifolia*; OBL), slough sedge, and California bulrush (*Schoenoplectus californicus*; OBL) contribute to more than 75 percent of vegetative cover in Wetland Type 7. Near the confluence of Schooner and East Schooner Creek, wetland scientists documented a large cattail monoculture in the riverine bottomland. The majority of the area comprising this wetland type consists of a large monoculture of cattails.

Hydrologically, Wetland Type 7 meets Cowardin's criteria for riparian classification. Stream water flows into these wetlands, pooling and allowing for a preponderance of FACW and OBL species.

Soil chemistry is also apparent in soil cores. Anaerobic soil diagnostics were clearly observed by wetland scientists. Additionally, mucky, organic O horizons are characteristic of Wetland Type 7.

Wetland Type 8: Cowardin-Riparian-Forested (RP1FO); HGM-Riverine

Like Wetland Type 7, Wetland Type 8 conforms to Cowardin's riparian criteria, as well as the HGM parameters for riverine. East Schooner Creek influences this wetland type both functionally and hydrogeomorphically.

This wetland type grows in a narrow band along the East Schooner Creek channel and occurs in forested wetlands, similar to Wetland Type 3. However, a larger percentage of tree-height arroyo willow grows in Wetland Type 8 than in Wetland Type 3, the latter dominated by mature red alder. Shrub and herbaceous strata are also sparser than in Wetland Type 3. Shrubby red alder, along with shrub-height arroyo willow, dominate the intermediate canopy. Likewise, herbaceous species are sparse in the rocky, sandy stream soils.

Wetland scientists identified a water table at roughly the same level as the stream channel in soil cores. Phreatophytic willow roots extend into the channel, indicating well-drained, sandy soils. Soil cores revealed sandy redox as the primary sign of anaerobic conditions.

Wetland Type 9: Cowardin-Riparian-Scrub-Shrub (RP1SS6); HGM-Riverine

As with Wetland Type 7 and 8, Wetland Type 9 complies with Cowardin's interpretation of riparian, as well as the HGM definition of riverine. This wetland type supports a nearby monoculture of arroyo willow. The dense willow canopy largely excludes sunlight from the thicket floor, preventing significant herbaceous growth.

Soils are sandy and thinner than in surrounding palustrine systems. Sandy redox indicated anaerobic soil conditions in areas of Wetland Type 9. Soil cores were taken near the ordinary high water mark (OHWM). Soil pits are filled with water at approximately the same elevation as the East Schooner Creek OHWM. As in Wetland Type 8, phreatophytic willows send roots into the stream channel, suggesting well-drained soils.

Wetland Type 10: Cowardin-Palustrine-Emergent (PEM); HGM-Riverine

This wetland type includes a single occurrence of the PEM and riverine wetland type. A small break in the bottomland forest adjacent to East Schooner Creek supports a flooded area dominated by California bulrush, with small percentages of cover comprised of rough hedge nettle and California blackberry.

During site visits in April, May, and June, six inches of water stood in the delineated area. The surface water elevation was several feet higher than the OHWM of the creek to the east, suggesting no hydrological connection to the stream. Geomorphically, Wetland Type 10 lies in a riverine bottomland.

Wetland Type 11: Cowardin-Estuarine-Emergent (E2EM); HGM-Estuarine

This wetland type occurs in the salt marsh flats at the northern edge of Drake's Estero. A causeway built for SFDB's crossing of the salt marsh acts as an artificial upland inclusion between estuarine wetlands on both sides of the road. For this reason, only small areas of Wetland Type 11 are within the scope of this study.

Beyond the ROW, the Drake's Estero salt marsh is a combination of halophytic pickleweed (*Salicornia* L.; OBL), saltgrass (*Distichlis spicata*; FAC), and alkali heath (*Frankenia salina*; FACW). Study areas mapped as estuarine were either vegetatively disturbed or influenced by freshwater flow from Schooner Creek. In addition to the halophytes mentioned above, wetland scientists identified Baltic sedge (*Carex balticus*; NI), marsh jaumea (*Jaumea carnosa*; OBL), gumplant (*Grindelia stricta*; FACW), and tall fescue.

The combination of halophytic and freshwater species indicates a freshwater influence at the estuary's periphery. Wetland scientists observed a drastic shift in vegetative cover at the convergence of Wetland Type 7, a freshwater emergent system, and Wetland Type 11. A monoculture of cattail borders a nearby monoculture of pickleweed, with no transitional area.

Soil cores revealed shallow redox; a reduced matrix could be seen within the first six inches.

Wetland Type12: Cowardin-Palustrine-Scrub-Shrub (PSS); HGM-Depressional

This wetland type contributes a small percentage of the total wetland area in the study area. An occurrence of Wetland Type 12 (12.1) falls within the SFDB ROW near Mount Vision Road. Vegetatively, this occurrence marginally classifies as a wetland as measured by the *Arid West Supplement* wetland vegetation index. Coyote brush (*Baccharis pilularis*; NI) represents the majority of scrubby cover. The herbaceous layer, composed of soft rush, giant horsetail, and velvet grass (all considered hydrophytic species in the Arid West) indicate the presence of a wetland.

The stressed appearance of wetland plants and succession of coyote brush suggest a hydrological disruption. Soil saturation was recorded deeper in soil cores than surrounding wetlands. Anaerobic soil diagnostics were also found deeper than surrounding wetlands.

Wetland Type13: Cowardin-Palustrine-Emergent (PEM); HGM-Mineral Soil Flats

A single occurrence of this wetland type exists east of Schooner Bay. It is a small, depressional wetland displaying characteristics of a vernal pool with an isolated, standing pool of water. The submerged soil lacks vegetation at its lowest point, which is contrasted by the surrounding bottomland's dense, herbaceous cover. Rough hedge nettle and California blackberry line the pool's fringe.

Soil cores revealed a thick O horizon and reduced matrix in the top four inches. A hardpan was present at twelve inches.

Wetland scientists found the water table two inches deeper than the pool's surface. The OHWM of the adjacent channel was also lower than the pool's surface water. For these reasons, wetland scientists believe that vertical hydrology influences Wetland Type 13, at least in part.

Total Wetlands Identified

A total of 17.95 acres of wetlands were identified during the survey efforts (Table 1), which was generally limited to the ROW surrounding SFDB, with a few exceptions where planned construction extended further.

Table 1: Total Amount of Wetland Systems throughout the Study Area

Wetland System	Square Feet	Acres
A	394,784	9.063
B	21,562	0.495
C	9,496	0.218
D	214,881	4.933
E	53,535	1.229
Total	694,259	15.94

Wetland Functions and Values

Wetland functions and values were assessed using the U.S. Army Corps of Engineers *The Highway Methodology Workbook Supplement: Wetland Functions and Values; A Descriptive Approach* (USACE 1999), which incorporates both wetland science and human judgment of values. The Corps notes that "intermixing science with value judgments in this way has proven to be both effective and acceptable" (USACE 1999). This assessment is based on the USACE methodology and provides a descriptive analysis of the following wetland functions and values within the study area (Table 2).

Table 2: Functions and Values Evaluated

Functions	Values
Groundwater recharge/discharge	Recreation
Floodflow alteration	Educational/scientific value
Fish and shellfish habitat	Uniqueness/heritage
Sediment/toxicant/pathogen retention	Visual quality
Nutrient removal/ retention/transformation	Endangered species habitat
Production export	
Sediment/shoreline stabilization	
Wildlife habitat	

As described above, 13 unique wetland types were identified in the wetland delineation report prepared for this project and attached as Appendix B. For the purposes of the *functional* assessment, wetlands were grouped on a larger scale based on a combination of dominant hydrologic influences, landscape setting, and location within the watershed, all which contribute to similar wetland functions. Five wetland systems were classified as a result and are discussed below. A detailed discussion of the functions and values of each wetland system can be found in Appendix C. Figures identifying the wetland systems and locations along the study area are attached as Appendix A.

Wetland System A: East Schooner Creek — Freshwater

Wetland System A is located at the easternmost end of the project area and runs south to the outlet at Schooner Bay (approximate PM 9.5 to PM 12). This freshwater system is anchored by East Schooner Creek and is predominantly influenced by groundwater seepage, precipitation, and ephemeral tributaries. Wetland System A is by far the most diverse and largest system in the study area. Wetland types found within System A, in order of prevalence, include palustrine scrub-shrub, palustrine forested, riparian emergent, riparian scrub-shrub, palustrine emergent, and riparian forested. HGM classifications included riverine, slope, depressional, and mineral soils. Wetland types mapped within this system include Type 1, 2, 3 6, 7, 8, 9, 10, 12, and 13.

The primary functions of this wetland system include floodflow alteration, fish and shellfish habitat, sediment/toxicant retention, nutrient removal, sediment/shoreline stabilization, and

wildlife habitat. This wetland system also provides endangered species habitat value. See attached wetland function and value evaluation in Appendix C for details.

Wetland System B: Schooner Bay — Estuarine

Wetland System B is located within the salt marsh estuarine system at Schooner Bay, approximately 3 to 4 miles from the intersection of Pierce Point Road and SFDB (approximately near PM 9). Wetland B is primarily influenced by the tides from Drakes Bay, as well as freshwater outflow from East Schooner Creek to the east and Schooner Creek from the north. This wetland system is subject to the ebb and flow of the tide, but also contains brackish water northeast of the study area at the freshwater creek's outflow. The study area crosses the main outlet/tidal slough to Schooner Bay, which supports marine wildlife species and estuarine plant species. Wetland types within System B, in order of dominance, are estuarine emergent, palustrine emergent, and palustrine scrub-shrub. HGM classifications are estuarine and slope.

The primary functions of this wetland system include floodflow alteration, fish and shellfish habitat, sediment/toxicant retention, nutrient removal, sediment/shoreline stabilization, wildlife habitat and recreation. The primary values of this wetland system include uniqueness/heritage, visual quality/aesthetics and endangered species habitat.

Wetland System C: Historic Ranch G — Freshwater

Wetland System C is a relatively small subwatershed located west and upslope of Schooner Bay near Historic Ranch G, where SFDB starts to climb in elevation above sea level. This system consists of palustrine emergent and palustrine scrub-shrub wetlands, with an HGM classification of "slope." A minor amount of estuarine emergent wetland is also located at the base of this system, as upslope freshwater drains down into Schooner Bay from the west, creating a brackish wetland system outside of the study area. The palustrine emergent slope wetlands along SFDB are a direct result of cuts into the hill slope from construction of the road, forming seep wetlands from groundwater and/or throughflow exfiltration. The palustrine scrub-shrub wetlands are dominated by willows, which continue south of SFDB into a well-vegetated and well-established manmade pond outside of the study area. The entire system drains into a freshwater wet meadow, and then into Schooner Bay.

This wetland system primarily provides wildlife habitat functions and visual quality/aesthetic value.

Wetland System D: Drainage Ditch Wetlands — Southern Section

Wetland System D is spread throughout the southern end of the study area and is predominantly comprised of roadside drainage ditches that would not be naturally present without construction of SFDB. These drainage features are either a result of cutting into the hillslope and allowing throughflow and/or groundwater to exfiltrate, or are drainage ditches predominantly constructed in uplands that have formed into wetlands based on hydrologic disruptions. Wetland types within Wetland System D are categorized as palustrine emergent wetlands-depressional or slope. Wetland System D comprises all drainage ditch wetlands found southwest of Historic G Ranch, approximately from PM 8.5 to PM 0.

The primary wetland functions associated with this wetland system include groundwater recharge/discharge, floodflow alteration and wildlife habitat. The wetland system's primary value is the presence of endangered species habitat.

Wetland System E: Drainage Ditch Wetlands — Eastern Section

Wetland system E is spread throughout the northeastern section of the study area and is comprised of roadside drainage ditches that would not be naturally present without construction of SFDB. These drainage features are either a result of cutting into the hillslope and allowing throughflow and/or groundwater exfiltratation, or are drainage ditches predominantly

constructed in uplands that have formed into wetlands based on disruptions of natural hydrologic processes. Wetland types within Wetland System E are categorized as palustrine emergent wetlands-depressional. Wetland System E comprises all drainage ditch wetlands east and northeast of Historic Ranch G, approximately from PM 8.5 to PM 12. This system is similar to Wetland System D. However, Wetland System E was classified separately based on a difference in subwatersheds, location in the landscape, and hydrological outputs. Although this system overlaps Wetland Systems A, B, and C, it was categorized separately due to the altered state of the drainage ditch features and functional differences. Specific functions and values for Wetland System E are described below.

The primary wetland functions associated with this wetland system include groundwater recharge/ discharge, floodflow alteration, and wildlife habitat. The wetland system's primary value is the presence of endangered species habitat.

Adverse Impacts Expected to Wetlands

The proposed project is anticipated to have temporary and direct impacts on protected wetlands. Impacts were calculated using the project's 15 percent design and are identified in Table 3. Design is still in the preliminary stages and the impact estimates below represent a worst case scenario. A total of 5.1 acres of temporary impacts and 4.4 acres of permanent impacts are estimated at the 15 percent design level. Refinements through the final design process are anticipated to lessen the quantity of impacts to wetlands.

Table 3: Anticipated Temporary and Permanent Impacts to Wetland Systems and by Wetland Types

	Wetland Type to be Filled in Acres (Temp acre/ Perm acre)							Total Acres
	PEM	PSS	PFO	RP1SS	RP1EM	RP1FO	E2EM	
System	Temp/Perm	Temp/Perm	Temp/Perm	Temp/Perm	Temp/Perm	Temp/Perm	Temp/Perm	
A	0.081 / 0.026	0.863 / 1.090	1.207 / 0.705	0.239 / 0.179	0.156 / 0.106	0.058 / 0.026		4.736
B	0.063 / 0.011	0.068 / 0.014					0.243 / 0.085	0.48
C	0.053 / 0.077	0.033 / 0.028					0.001	0.19
D	1.441 / 1.511							2.95
E	0.467 /							1.17
Total	2.11 / 2.33	0.96 / 1.13	1.21 / 0.71	0.24 / 0.18	0.16 / 0.11	0.06 / 0.03	0.24 / 0.09	9.54

Note: Totals are rounded to the nearest hundredth.

Wetland Impact Avoidance, Minimization, and Compensation

Efforts to Avoid and Minimize Impact

Numerous wetlands and other waters are located directly adjacent to SFDB. The following design elements were implemented in order to avoid or minimize impacts to wetlands and OWUS:

- A 24-foot wide paved width, which is 4 to 8 feet less than published guidelines, is proposed (AASHTO, 2011; NPS, 1984).
- 1-foot-wide shoulders, which are below the minimum 3-foot (NPS, 1984) and 5-foot (AASHTO 2011) design standards, are proposed. This requires a design exception.

- A clear zone width between 3 feet and 12 feet, which will be at or below minimum design standards, will require a design exception for areas less than 12 feet wide.
- To minimize overall disturbance, rockery walls and paved ditch sections were incorporated into project design to expedite ting into existing cut slopes.
- A total of 32 curves provide less than minimum length of stopping sight distance. All of these curves will have design exceptions in order to minimize ground disturbance. The curves with design exceptions that would reduce impacts to adjacent wetlands and/or other waters of the U.S. are located at the following approximate stations (STA): 61+77, 68+51, 93+36, 98+37, 223+41, 275+46, 294+60, 300+06, 460+55, 490+26, 504+60, 524+48, 528+35, 623+44, and 626+80.
- A total of 44 curves have curve radii below the minimum values for a 40 mph design speed. In many of these areas, wetlands and other waters of the U.S. are located adjacent to the roadway. Design exceptions are proposed for these curves to minimize potential impacts.
- A design exception is proposed between STA 60+51 and STA 63+00 for the steep grade. In this area, wetlands are located adjacent to the roadway. The proposed design will match the existing terrain in order to minimize impacts.

In addition to the design elements noted above, an option was eliminated in the flood-prone area that would raise the elevation of the roadway 3 to 4 feet on top of the existing alignment. This option would have likely required a temporary, parallel alignment to maintain traffic during construction. This option would result in impacts to wetlands on both the north and south sides of the roadway, with major impacts to WOUS on the north where East Schooner Creek parallels the road. In order to maintain traffic flow, this option would also likely require a detour parallel to the existing roadway, which would further impact WOUS. This option was eliminated in favor of shifting the roadway south, away from the creek channel, which minimizes impacts to WOUS. Efforts to minimize impacts will continue through final design.

Wetland impacts will be further minimized during construction by applying Best Management Practices (BMPs) in the field. BMPs will include limiting work in water to the low flow period of April 15 through October 15, which is also the non-breeding period associated with California red-legged frogs. River-washed gravel bags will be used in waterways below the OHWM in order to avoid adversely impacting fishery habitat. Sand bags will not be used below the OHWM. Other BMPs include use of temporary erosion controls along the corridor to protect adjacent wetland areas from siltation. A combination of fiber rolls, straw bales, and silt fencing will be used to control runoff from the construction site. In addition, temporary swales, gravel check dams, and temporary drainage basins will be used to control runoff during rain events. Exposed slopes will be sprayed with bonded fiber matrix and/or a temporary erosion control seed mix to help prevent erosion. Concrete and asphalt piles will be stockpiled outside and away from wetland resource areas, surrounded with fiber rolls, and covered with plastic. Final BMPs will be agreed upon in coordination with interested agencies such as the U.S. Army Corps of Engineers, USFWS, National Marine Fisheries Service, Regional Water Quality Control Board (RWQCB), and NPS. Final approved BMPs will likely include those outlined in the *NPS Procedural Manual #77-1: Wetland Protection – Appendix B Best Management Practices and Conditions for Proposed Actions with the Potential to Have Adverse Impacts on Wetlands* (see Appendix D).

Compensatory Mitigation Measures

A Clean Water Act Section 404 Individual Permit application and a Section 401 Water Quality Certification application will be submitted to the Corps and the RWQCB, respectively, requesting permission to impact jurisdictional features.

Temporarily impacted wetlands will be restored on-site to pre-construction conditions through planting vegetation and hydroseeding with a native seed mix. FHWA will compensate for the

permanent loss of jurisdictional features through purchase of mitigation credits at an approved wetland mitigation bank and/or creation of wetland and riparian compensatory mitigation at a 1.5:1 ratio or higher, as agreed upon through the permit terms and conditions. Potential on-site or off-site mitigation opportunities will be coordinated with the Corps and NPS as appropriate. If any portion of the mitigation requirements are fulfilled through on-site or off-site mitigation, a mitigation and monitoring plan will be developed and submitted with the permit applications to the Corps and RWQCB documenting measures to ensure successful mitigation. FHWA will be responsible for ensuring all permit terms and conditions are met.

SUMMARY

FHWA finds that there is no practical alternative to impacting up to 9.5 acres of wetlands in order to make the proposed improvements to Sir Francis Drake Boulevard. The project has been designed to avoid wetlands to the maximum practical extent, and the wetland impacts that cannot be avoided will be minimized. Through restoration of temporary impacts and mitigation for permanent loss of jurisdictional features, FHWA will ensure this project is consistent with the NPS no-net-loss of wetlands policy. Therefore, the FHWA finds that the Action Alternative is in compliance with Executive Order 11990, Protection of Wetlands.

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APPENDIX A: WETLAND IMPACT MAPS

Sir Francis Drake Boulevard Improvement Project

Wetland System A,B,C*

- Project Miles

Wetland System

- PFO-Palustrine Forested
- Stationing Line
- Impact Limits (15%)
- Wetland System A

0 110 220 Feet

Source Layer Credits: 2014 Imagery ESRI

Projection: Lambert Conformal Conic State Plane
California III FIPS 0502 Feet
North American Datum 1983

Prepared on: 12/12/2014 Revised on: 1/15/2015

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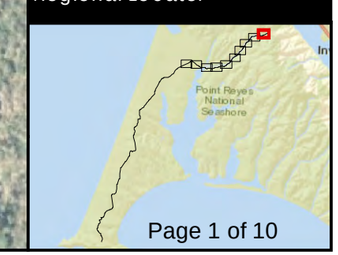
** NWI data are produced on a reconnaissance level and do not represent final wetland boundaries.

All wetlands within Impact Limits will be temporarily or permanently impacted.

Aquatic features contiguous with Study Area boundaries continue beyond the project limits.

Regional Locator



Sir Francis Drake Boulevard Improvement Project

Wetland System A,B,C*

- Project Miles

Wetland System

- PFO-Palustrine Forested
- PSS-Palustrine Scrub-Shrub
- RP1FO-Riparian Forested
- Stationing Line
- Impact Limits (15%)
- Wetland System A

N

0 110 220 Feet

Source Layer Credits: 2014 Imagery ESRI

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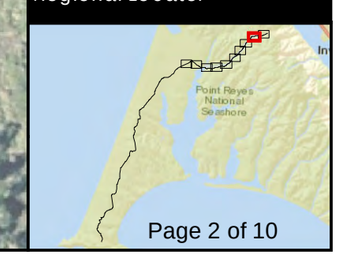

Sir Francis Drake Boulevard Improvement Project

Wetland System A,B,C*

- Project Miles

Wetland System

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- PFO-Palustrine Forested
- PSS-Palustrine Scrub-Shrub
- Stationing Line
- Impact Limits (15%)
- Wetland System A

National Wetland Inventory - Wetland

- Freshwater Forested/ Shrub Wetland**

N

0 110 220 Feet

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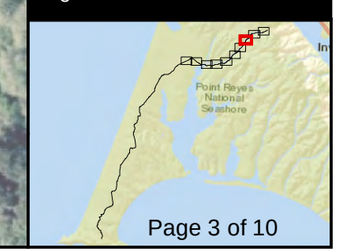

Sir Francis Drake Boulevard Improvement Project

Wetland System A,B,C*

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- Stationing Line
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- Wetland System A

National Wetland Inventory - Wetland

- Freshwater Forested/ Shrub Wetland**

N

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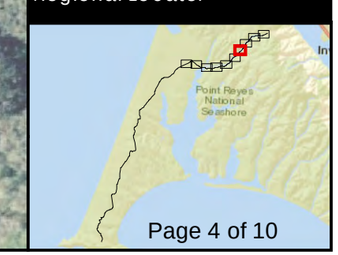

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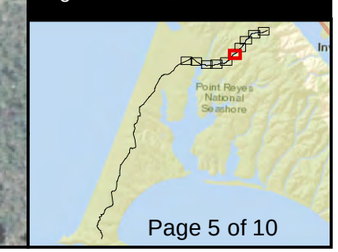

Sir Francis Drake Boulevard Improvement Project

Wetland System A,B,C*

- Project Miles

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- PEM-Palustrine Emergent
- PFO-Palustrine Forested
- PSS-Palustrine Scrub-Shrub
- RP1SS-Riparian Scrub-Shrub
- Stationing Line
- Impact Limits (15%)
- Wetland System A

National Wetland Inventory - Wetland

- Freshwater Emergent Wetland**
- Freshwater Pond**

N

0 110 220 Feet

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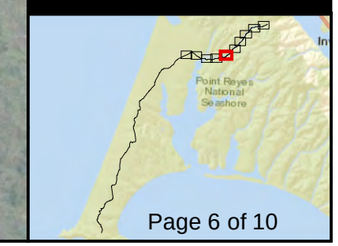

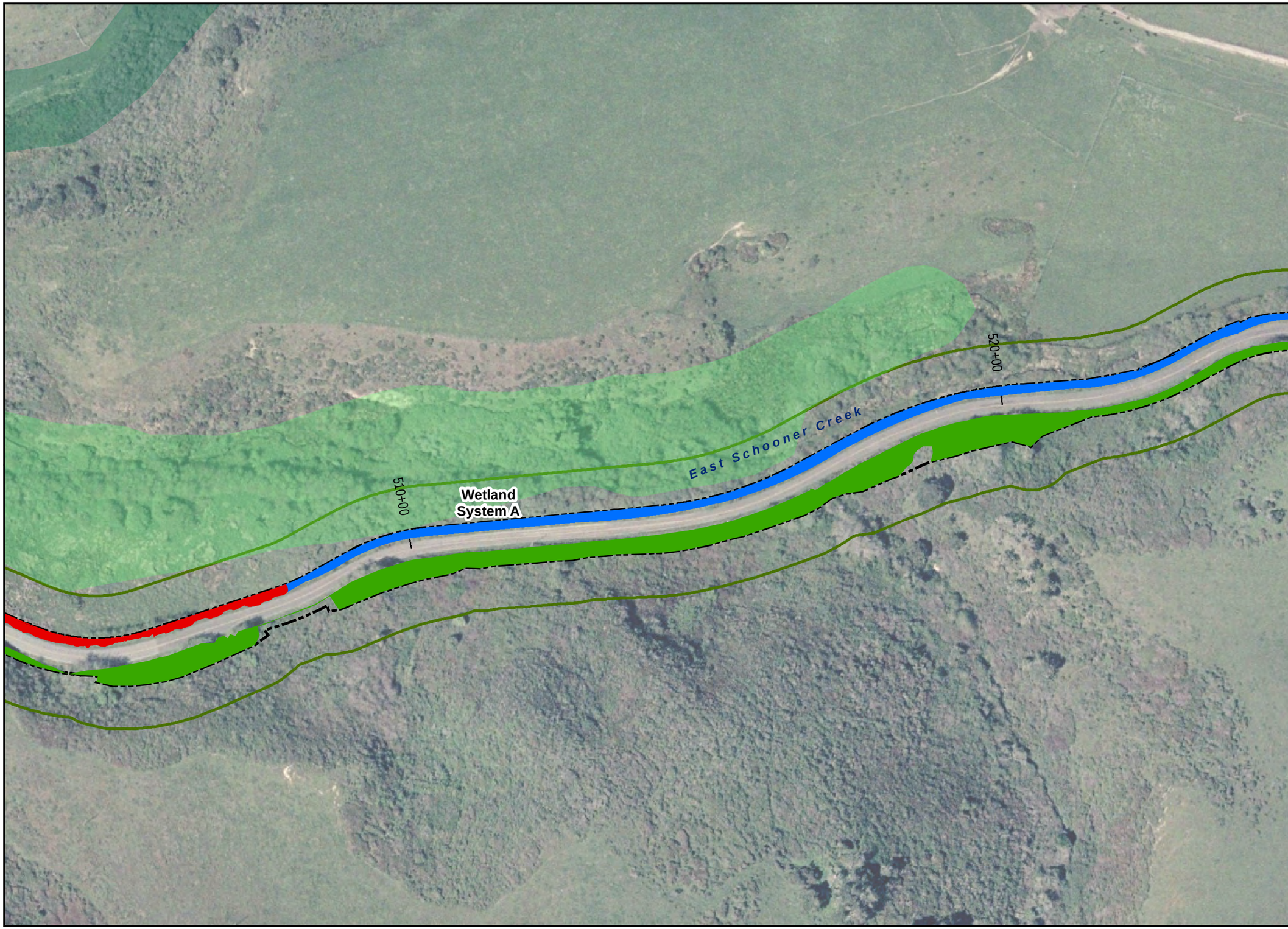

Sir Francis Drake Boulevard Improvement Project

Wetland System A,B,C*

- Project Miles

Wetland System

- PFO-Palustrine Forested
- PSS-Palustrine Scrub-Shrub
- RP1EM-Riparian Emergent
- Stationing Line
- Impact Limits (15%)
- Wetland System A

National Wetland Inventory - Wetland

- Freshwater Emergent Wetland**
- Freshwater Forested/ Shrub Wetland**

N

0 110 220 Feet

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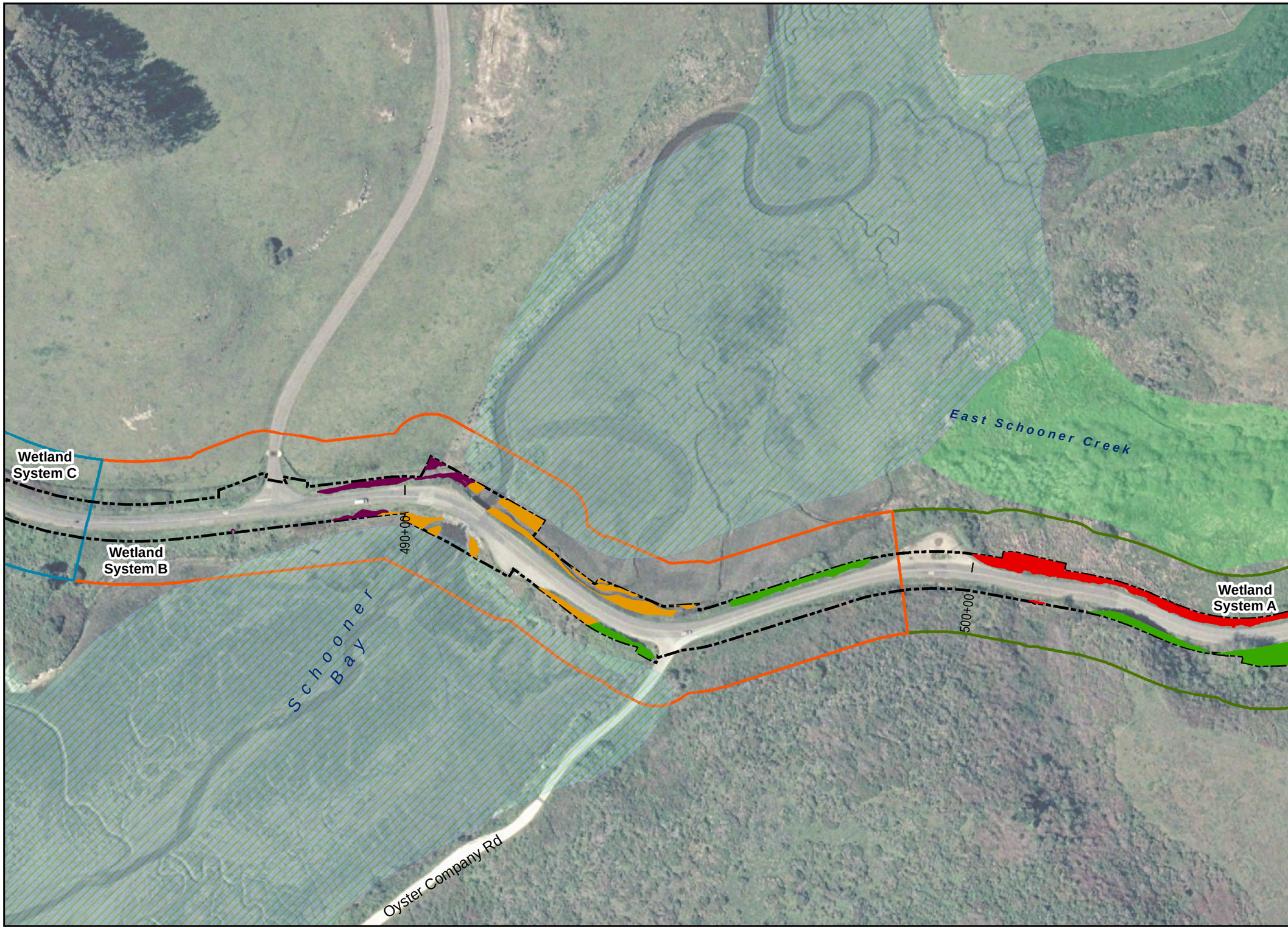

Sir Francis Drake Boulevard Improvement Project

Wetland System A,B,C*

- Project Miles

Wetland System

- E2EM-Estuarine Emergent
- PEM-Palustrine Emergent
- PSS-Palustrine Scrub-Shrub
- RP1EM-Riparian Emergent
- Stationing Line
- Impact Limits (15%)
- Wetland System A
- Wetland System B
- Wetland System C

National Wetland Inventory - Wetland

- Estuarine and Marine Wetland**
- Freshwater Emergent Wetland**
- Freshwater Forested/ Shrub Wetland**

N

0 110 220 Feet

Source Layer Credits: 2014 Imagery ESRI

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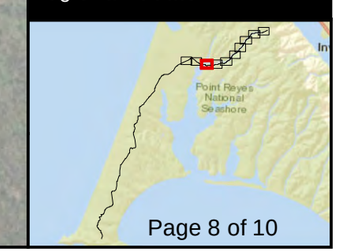

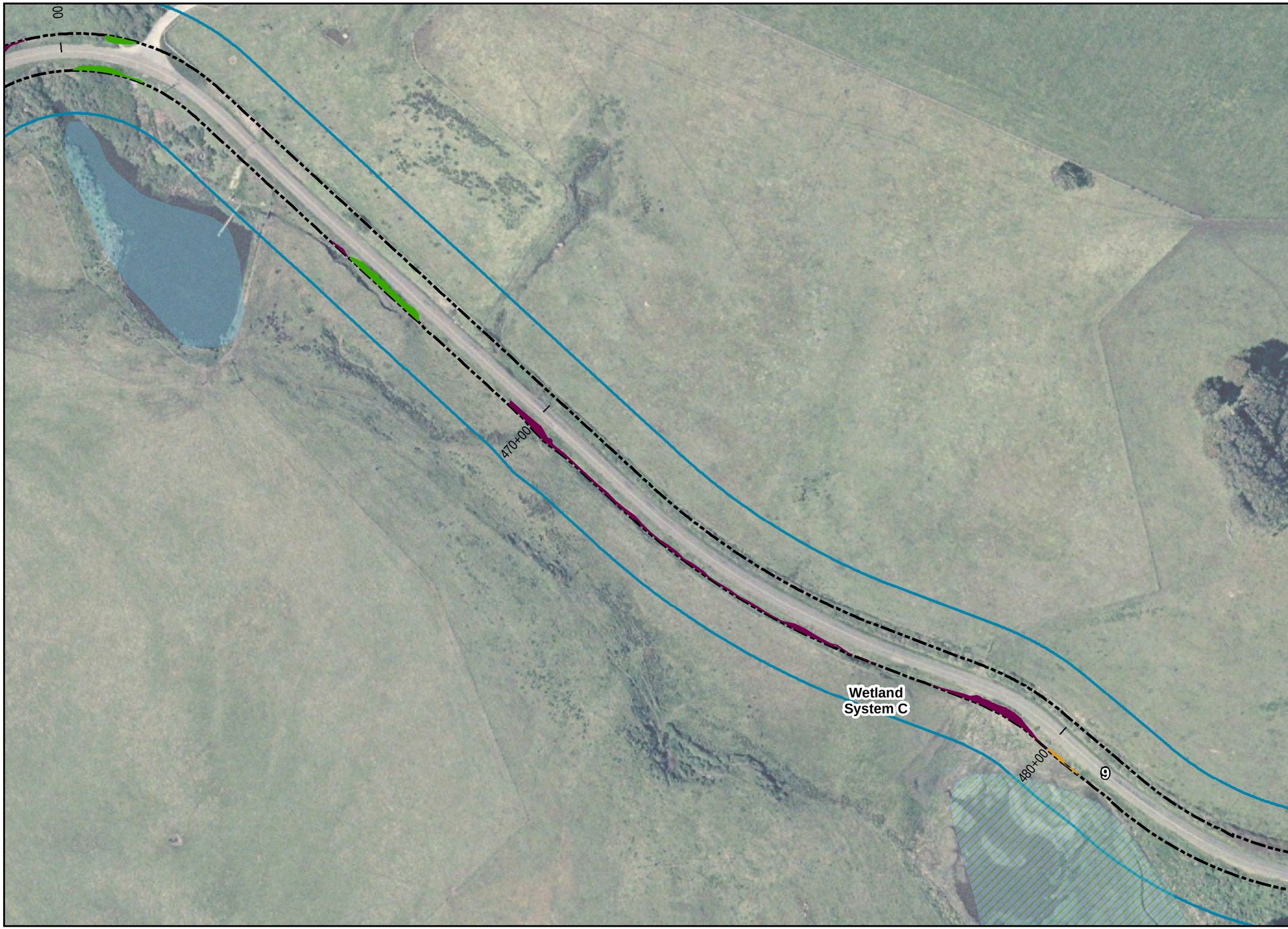

Sir Francis Drake Boulevard Improvement Project

Wetland System A,B,C*

- Project Miles

Wetland System

- E2EM-Estuarine Emergent
- PEM-Palustrine Emergent
- PSS-Palustrine Scrub-Shrub
- Stationing Line
- Impact Limits (15%)
- Wetland System C

National Wetland Inventory - Wetland

- Estuarine and Marine Wetland**
- Freshwater Pond**

N

0 110 220 Feet

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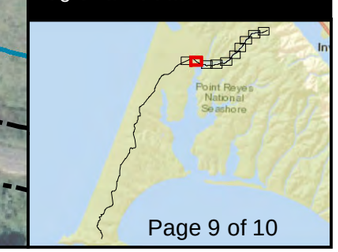

Sir Francis Drake Boulevard Improvement Project

Wetland System A,B,C*

- Project Miles

Wetland System

- PEM-Palustrine Emergent
- PSS-Palustrine Scrub-Shrub
- Stationing Line
- Impact Limits (15%)
- Wetland System C

National Wetland Inventory - Wetland

- Freshwater Pond**

N

0 110 220 Feet

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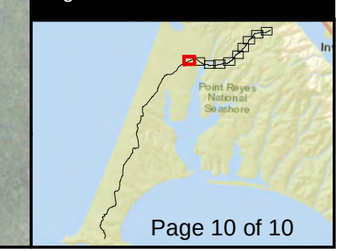

Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

- Project Miles

Wetland System

- PEM-Palustrine Emergent
- Stationing Line
- Impact Limits (15%)
- Wetland System E

N

0 110 220 Feet

Source Layer Credits: 2014 Imagery ESRI

Projection: Lambert Conformal Conic State Plane
California III FIPS 0502 Feet
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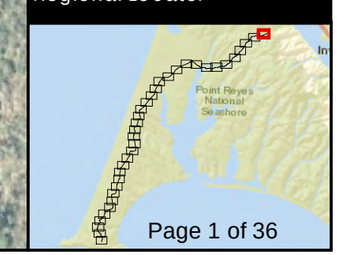
Regional Locator



Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

- Project Miles

Wetland System

- PEM-Palustrine Emergent
- Stationing Line
- Impact Limits (15%)
- Wetland System E

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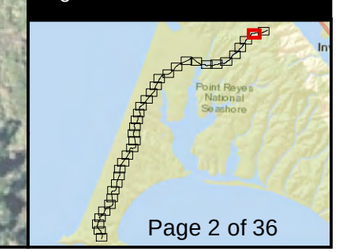

Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

- Project Miles

Wetland System

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- Stationing Line
- Impact Limits (15%)
- Wetland System E

National Wetland Inventory - Wetland

- Freshwater Forested/ Shrub Wetland**

N

0 110 220 Feet

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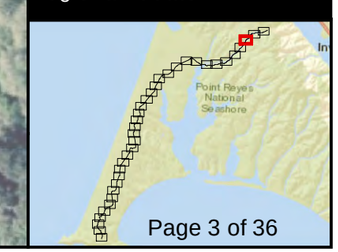

Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

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National Wetland Inventory - Wetland

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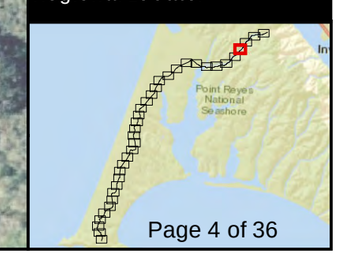

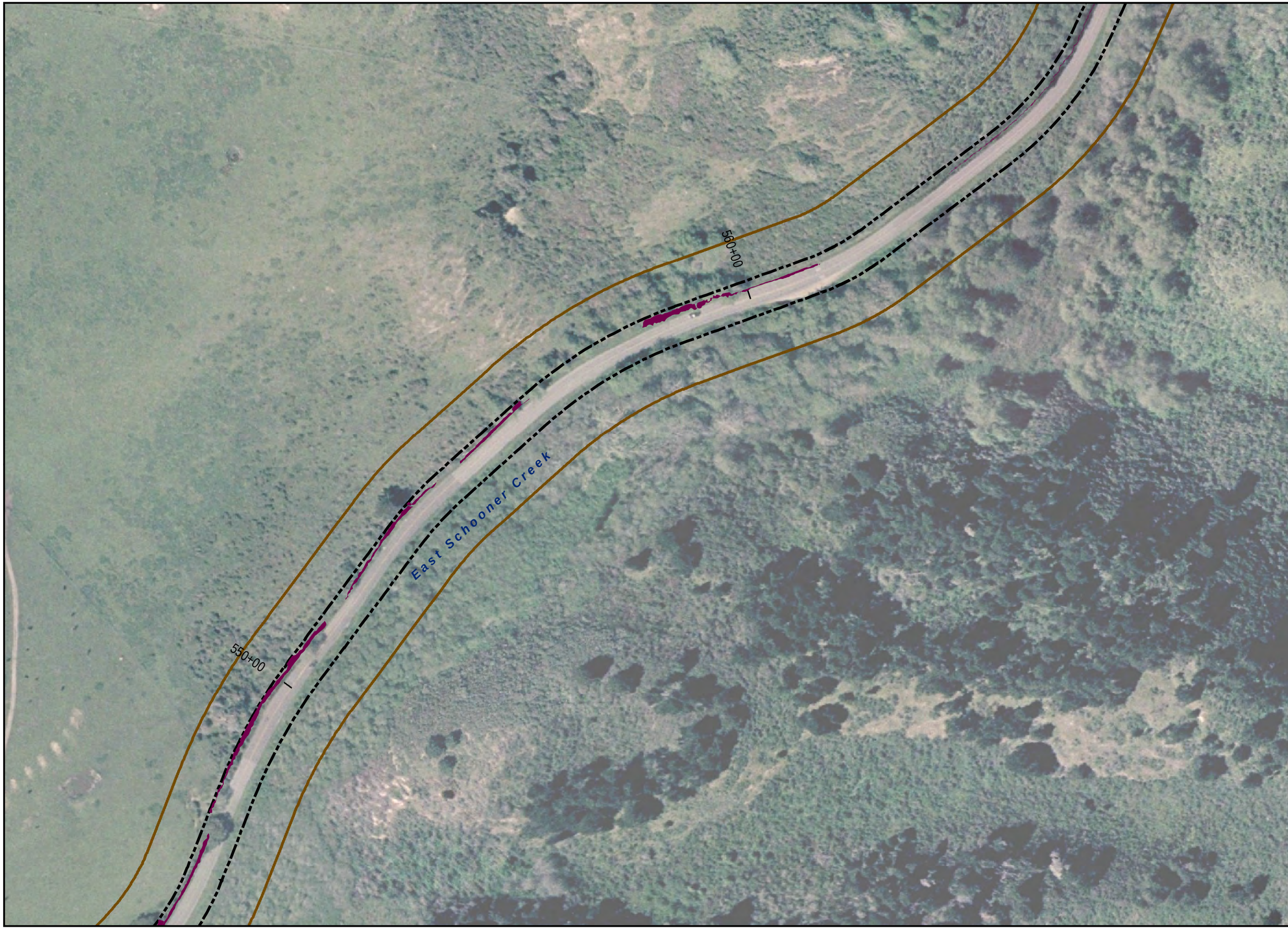

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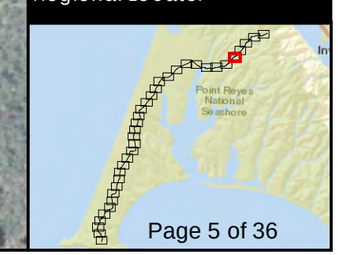

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National Wetland Inventory - Wetland

- Freshwater Emergent Wetland**
- Freshwater Pond**

N

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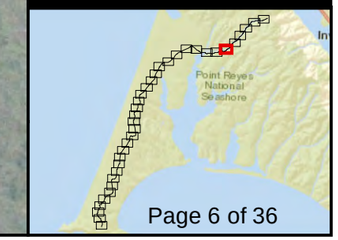

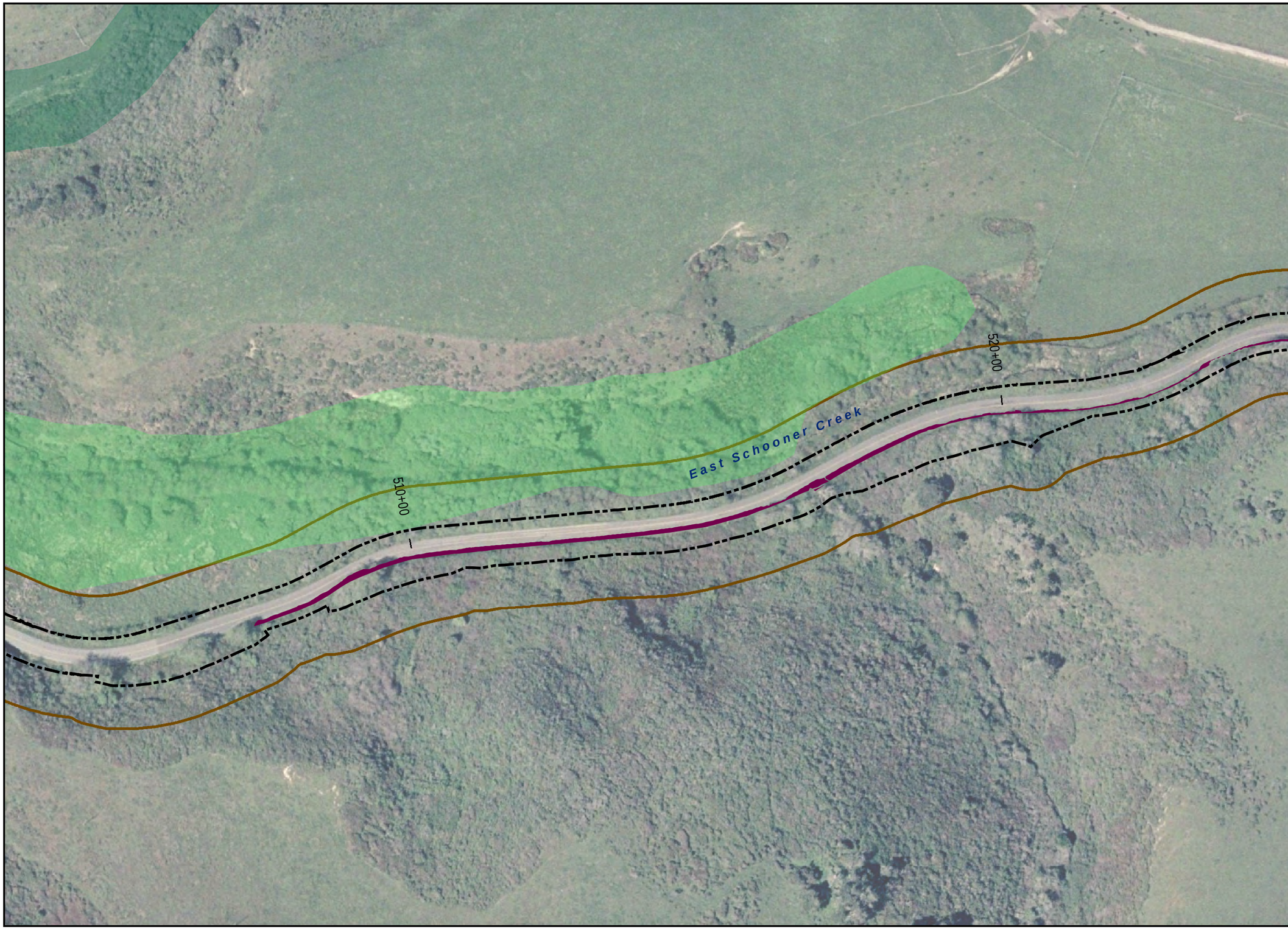

Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

- Project Miles

Wetland System

- PEM-Palustrine Emergent
- Stationing Line
- Impact Limits (15%)
- Wetland System E

National Wetland Inventory - Wetland

- Freshwater Emergent Wetland**
- Freshwater Forested/ Shrub Wetland**

N

0 110 220 Feet

Source Layer Credits: 2014 Imagery ESRI

Projection: Lambert Conformal Conic State Plane California III FIPS 0502 Feet North American Datum 1983

Prepared on: 12/12/2014 Revised on: 1/15/2015

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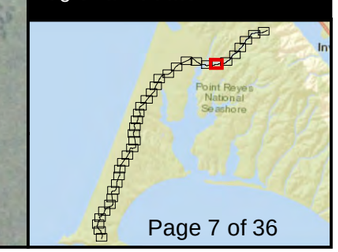

Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

Project Miles

Wetland System

PEM-Palustrine Emergent

Stationing Line

Impact Limits (15%)

Wetland System E

National Wetland Inventory - Wetland

Estuarine and Marine Wetland**

Freshwater Emergent Wetland**

Freshwater Forested/ Shrub Wetland**

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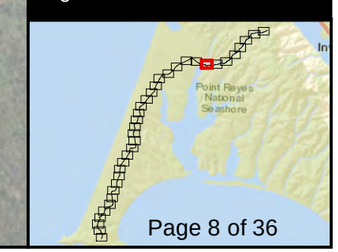

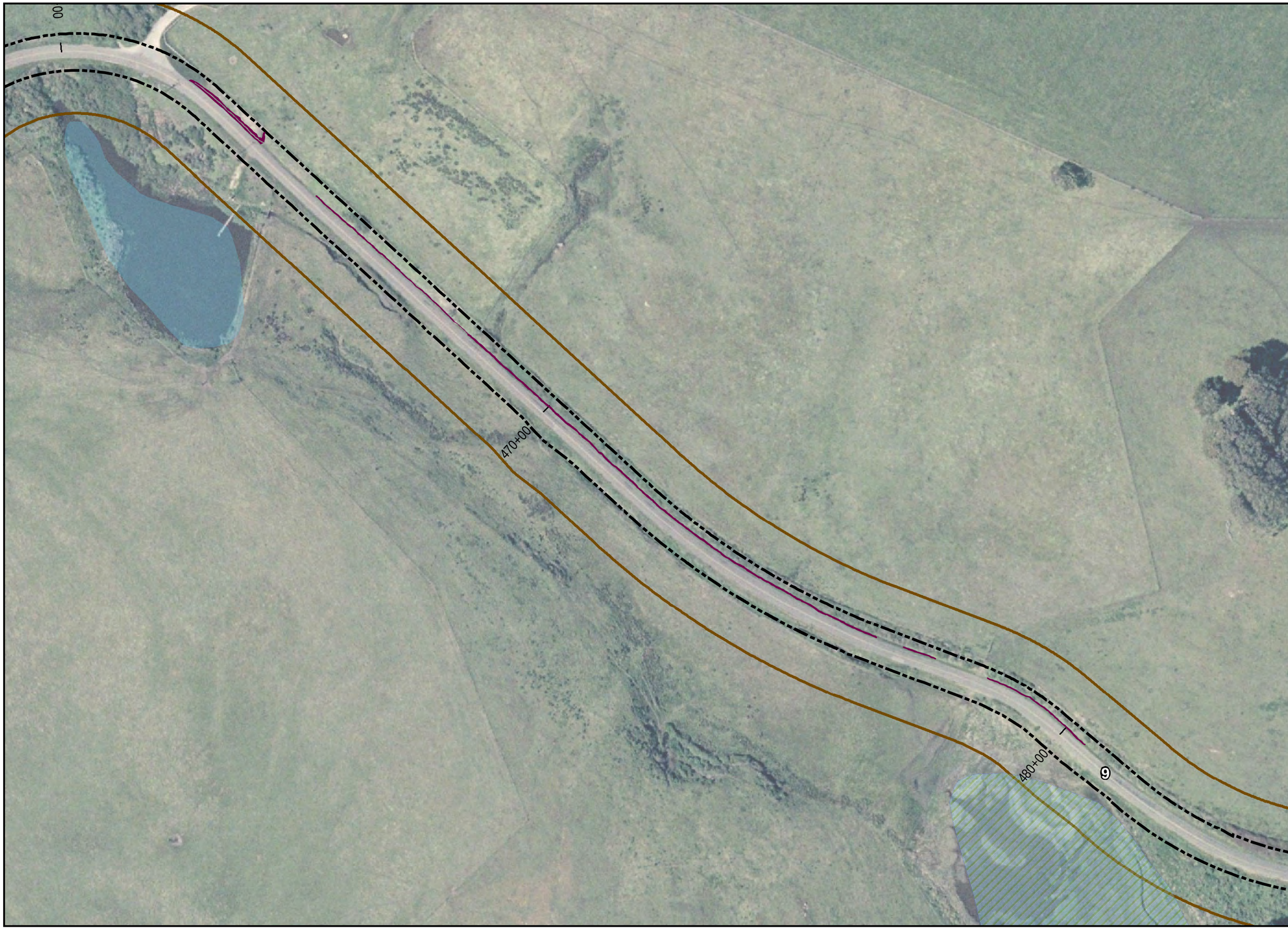

Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

- Project Miles

Wetland System

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- Stationing Line
- Impact Limits (15%)
- Wetland System E

National Wetland Inventory - Wetland

- Estuarine and Marine Wetland**
- Freshwater Pond**

Feet
0 110 220

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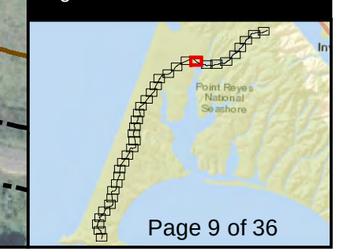

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Wetland System D,E*

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National Wetland Inventory - Wetland

- Freshwater Pond**

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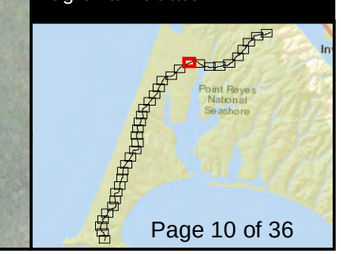

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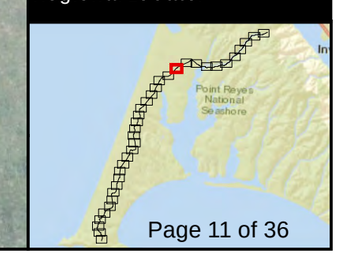

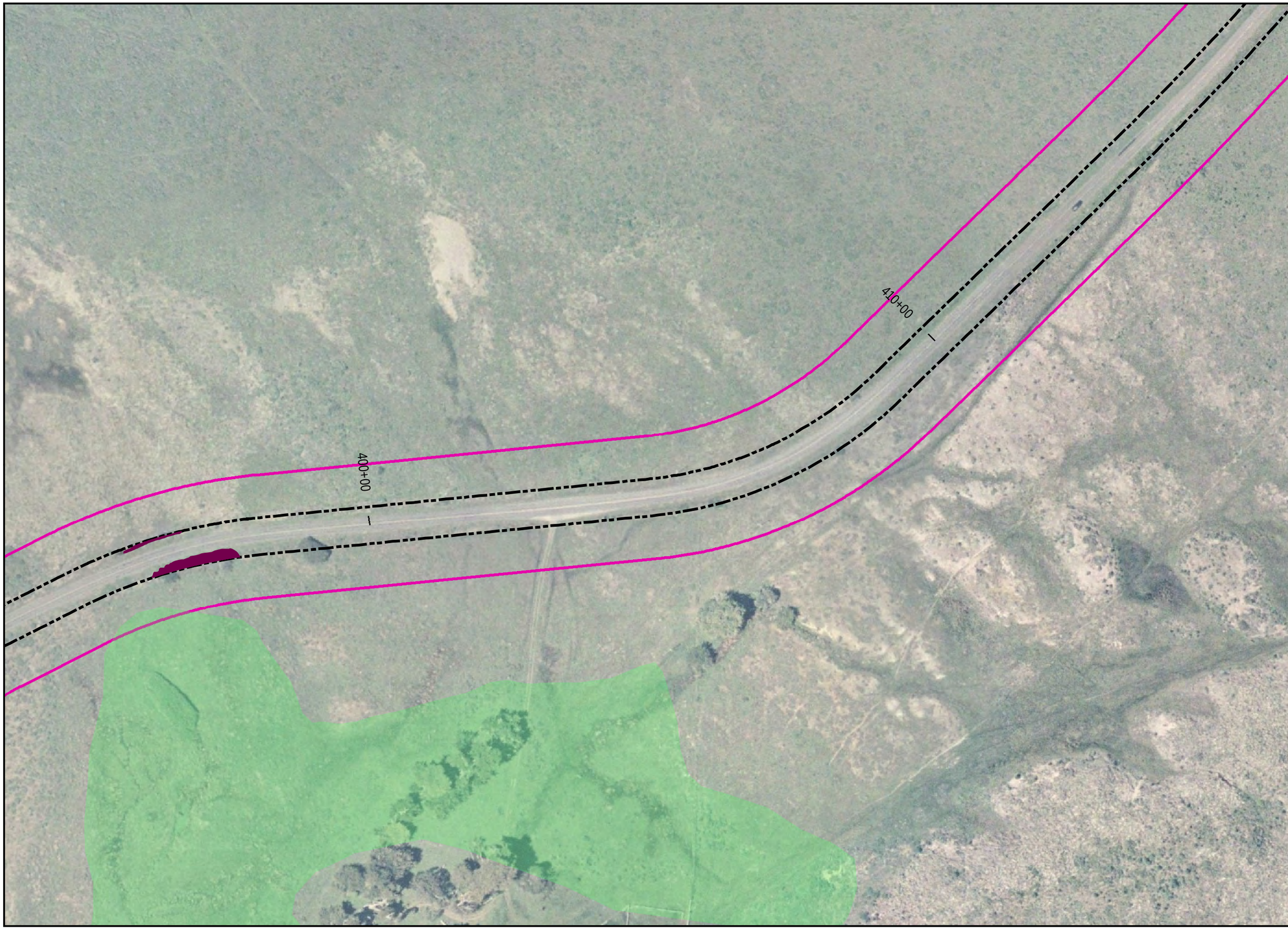

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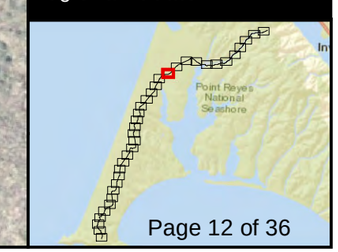

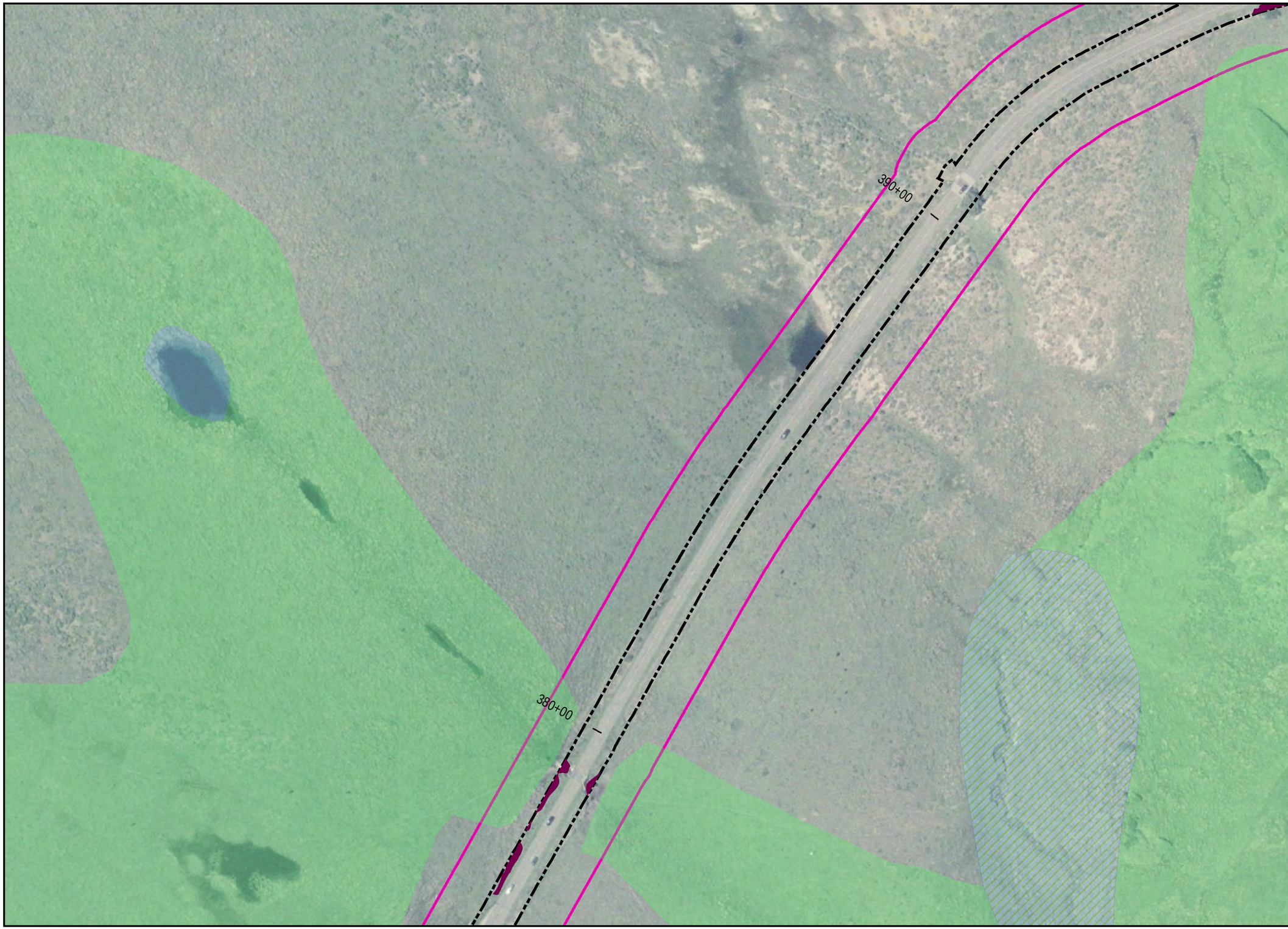

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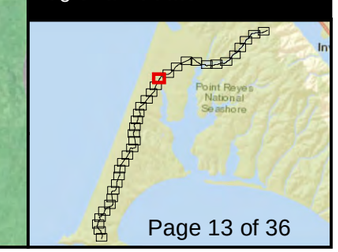

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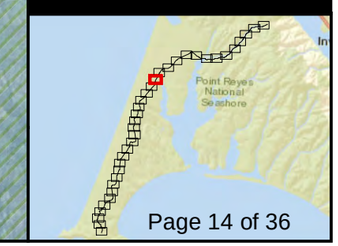

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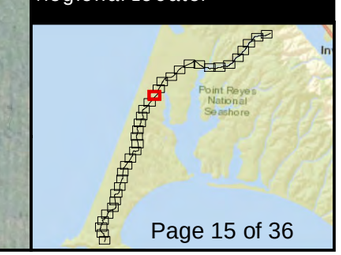

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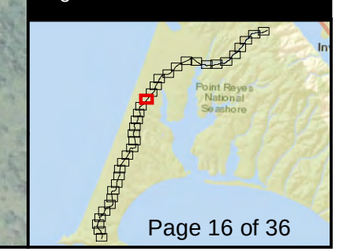

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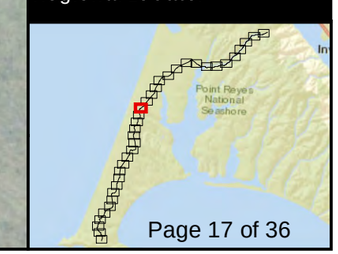

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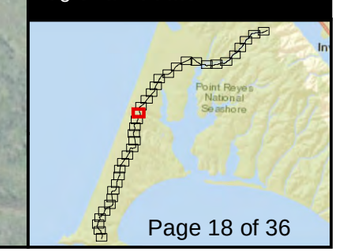

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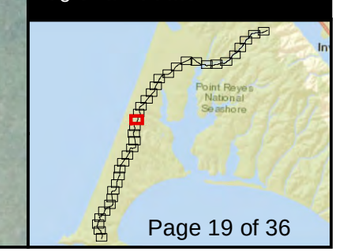

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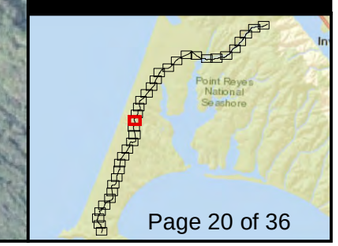

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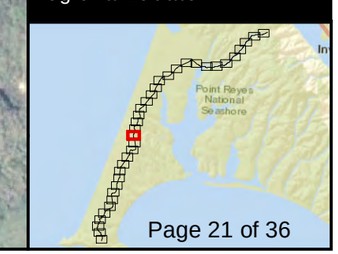

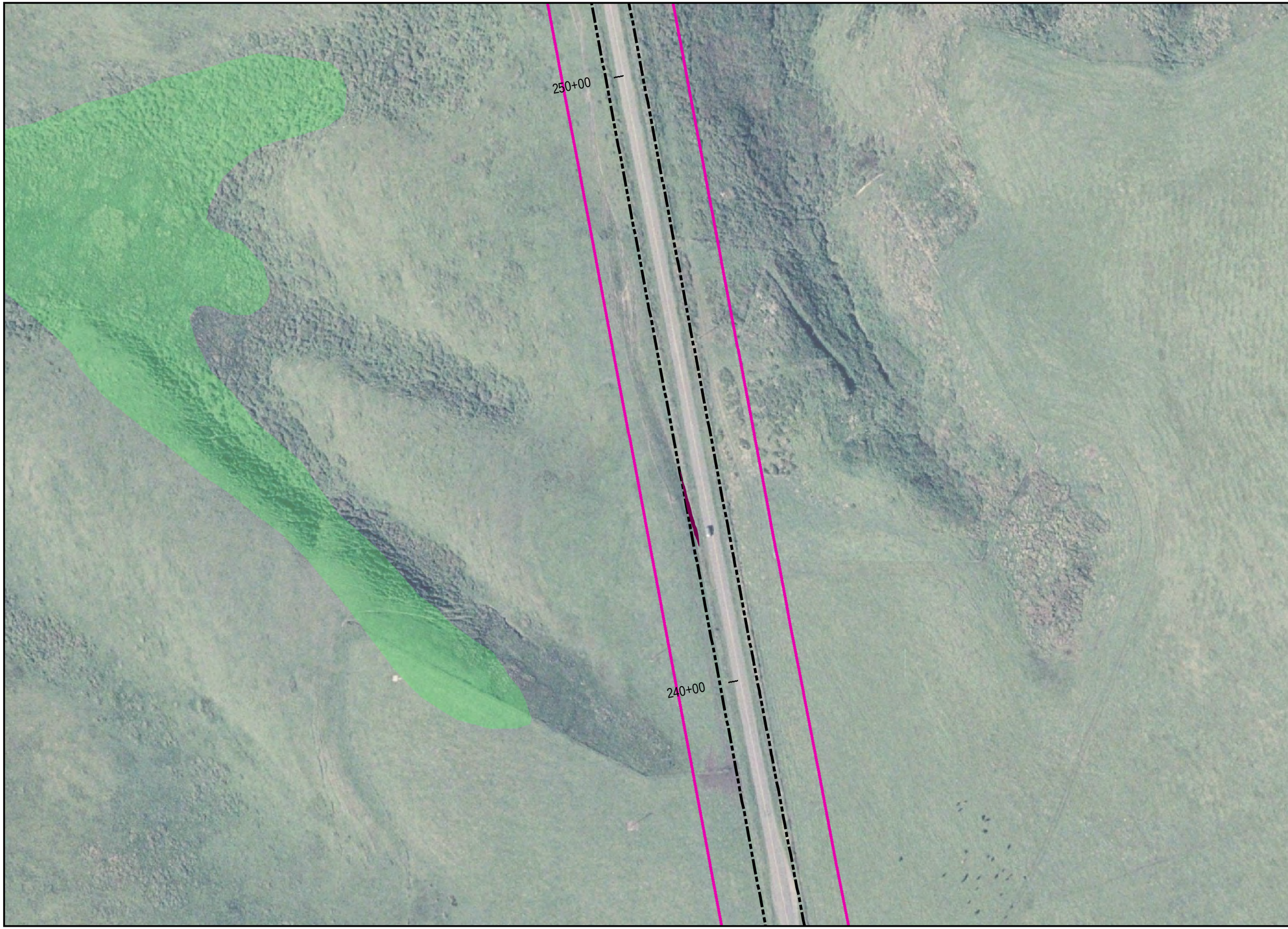

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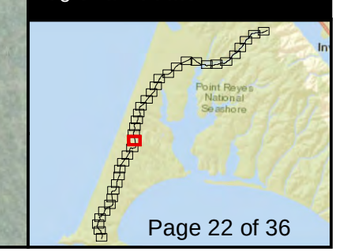

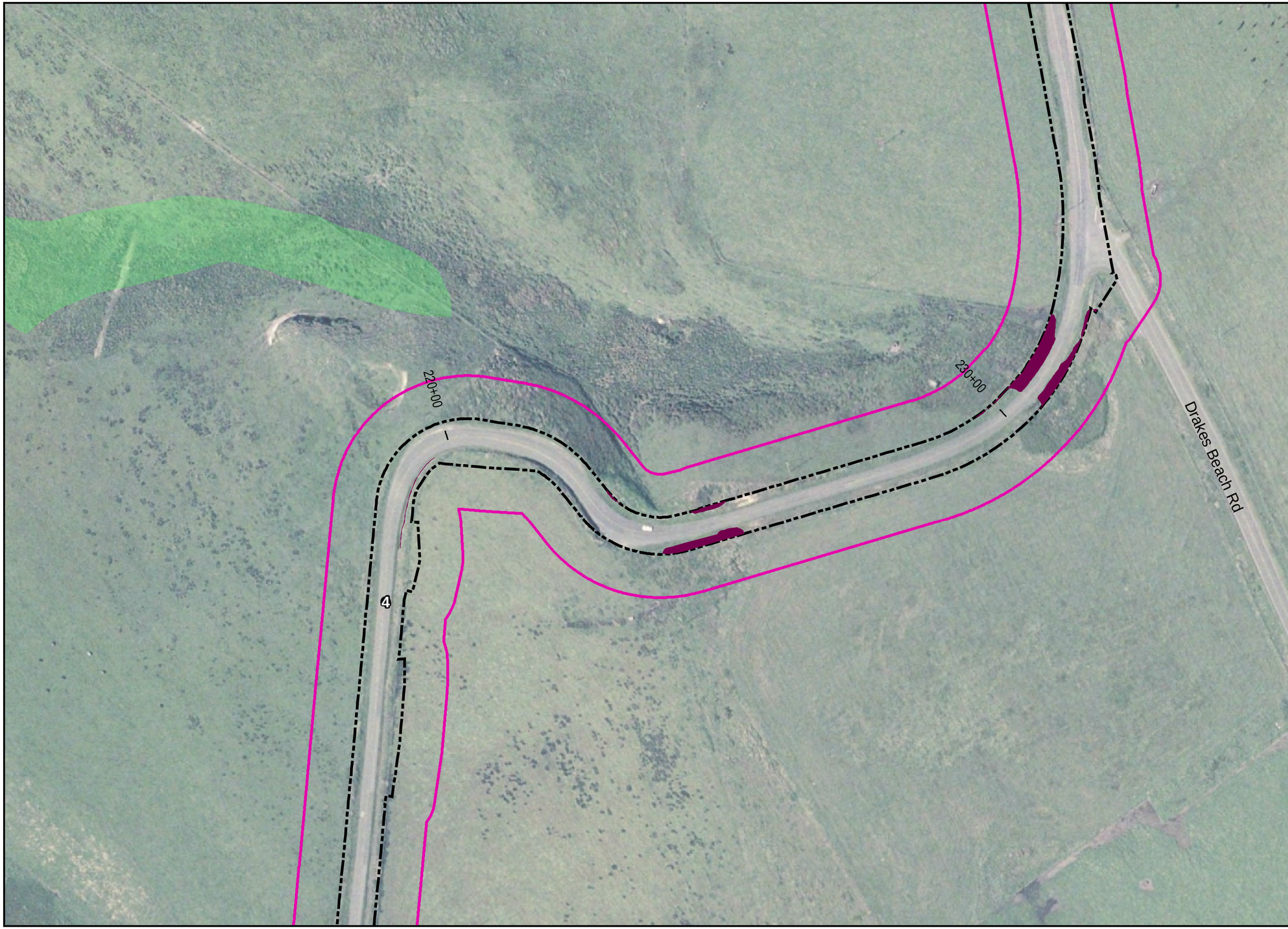

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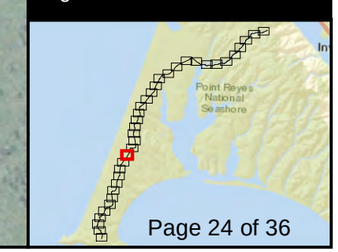

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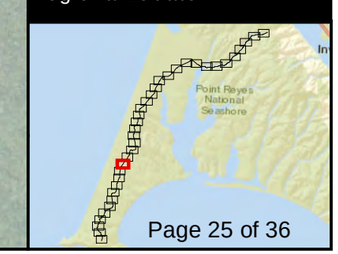

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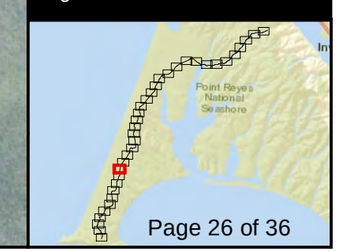

Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

- Project Miles

Wetland System

- PEM-Palustrine Emergent
- Stationing Line
- Impact Limits (15%)
- Wetland System D

National Wetland Inventory - Wetland

- Freshwater Emergent Wetland**

N

0 110 220 Feet

Source Layer Credits: 2014 Imagery ESRI

Projection: Lambert Conformal Conic State Plane
California III FIPS 0502 Feet
North American Datum 1983

Prepared on: 12/12/2014 Revised on: 1/15/2015

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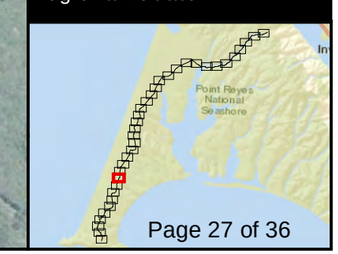

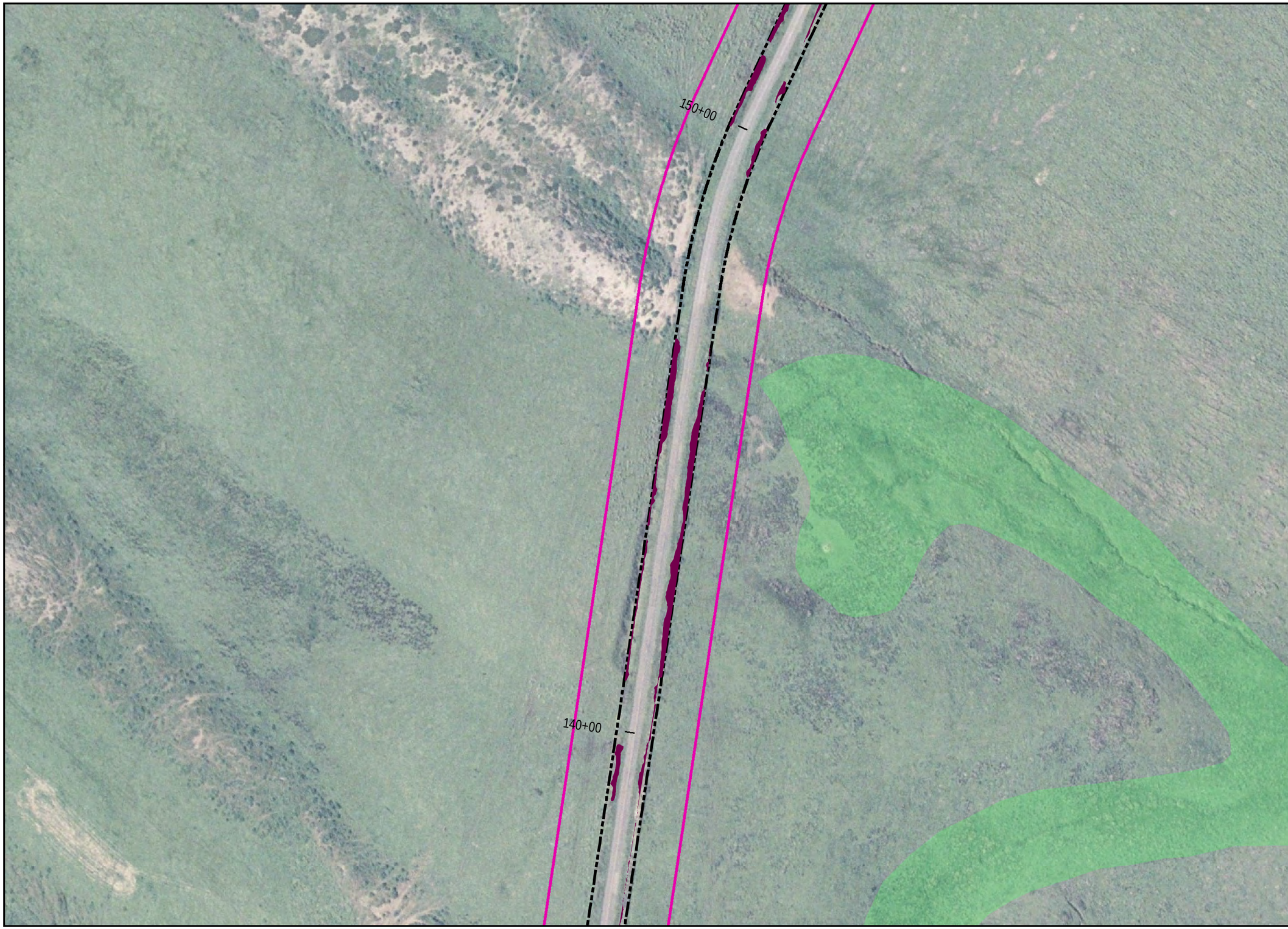

Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

- Project Miles

Wetland System

- PEM-Palustrine Emergent
- Stationing Line
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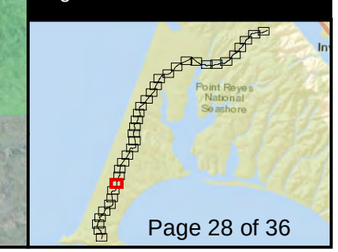

Sir Francis Drake Boulevard Improvement Project

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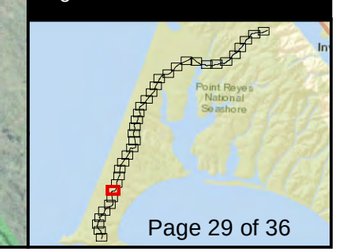

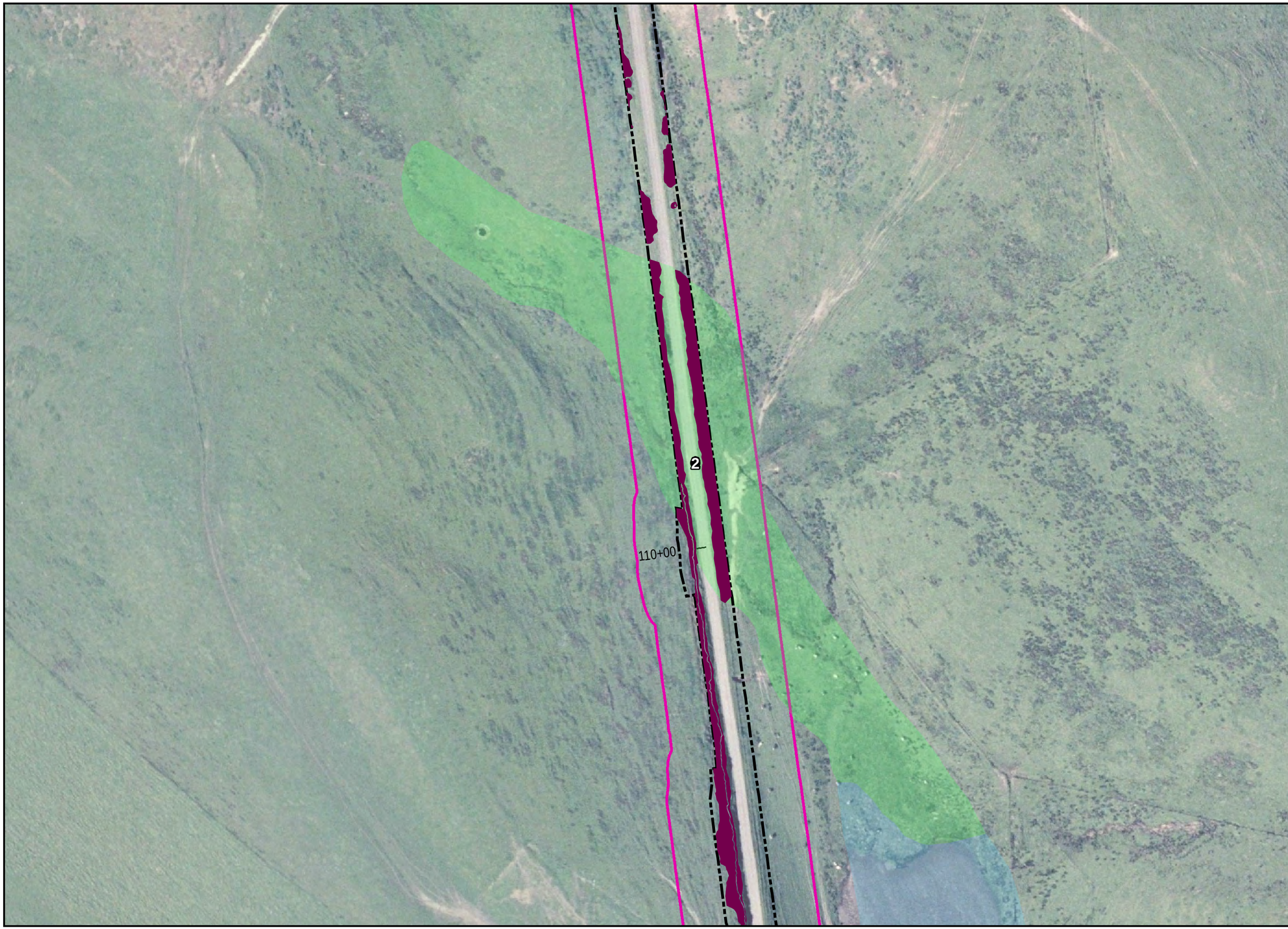

Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

- Project Miles

Wetland System

- PEM-Palustrine Emergent
- Stationing Line
- Impact Limits (15%)
- Wetland System D

National Wetland Inventory - Wetland

- Freshwater Emergent Wetland**
- Freshwater Pond**

N

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Source Layer Credits: 2014 Imagery ESRI

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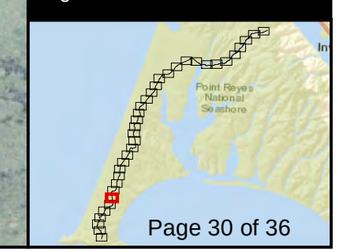

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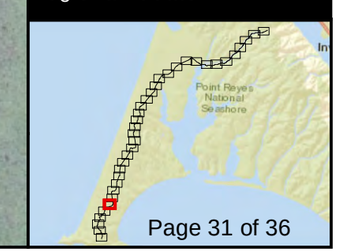

Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

Project Miles

Wetland System

PEM-Palustrine Emergent

Stationing Line

Impact Limits (15%)

Wetland System D

National Wetland Inventory - Wetland

Freshwater Emergent Wetland**

Freshwater Forested/ Shrub Wetland**

N

0 110 220 Feet

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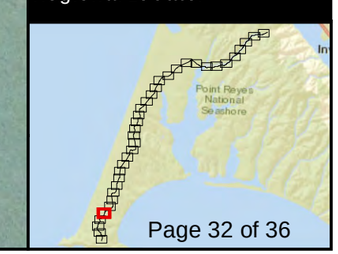

Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

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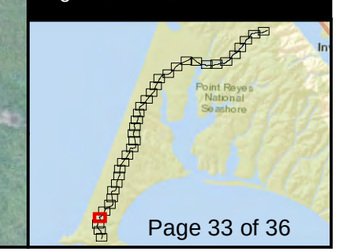

Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

- Project Miles

Wetland System

- PEM-Palustrine Emergent
- Stationing Line
- Impact Limits (15%)
- Wetland System D

National Wetland Inventory - Wetland

- Freshwater Pond**

N

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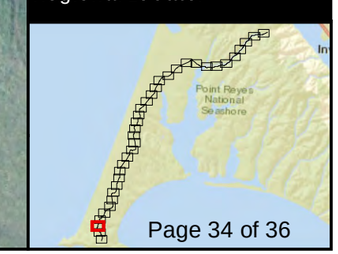

Sir Francis Drake Boulevard Improvement Project

Wetland System D,E*

- Project Miles

Wetland System

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- Stationing Line
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National Wetland Inventory - Wetland

- Freshwater Forested/ Shrub Wetland**
- Freshwater Pond**

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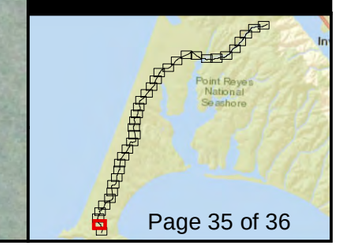

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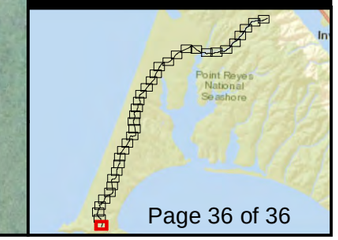

APPENDIX B: WETLAND DELINEATION REPORT

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Please refer to the Project File for the Wetland, Other Waters of the U.S., and Riparian Area Delineation Report and to Appendix D of the EA/IS for wetland and other waters of the U.S. delineation maps.

APPENDIX C: FUNCTIONAL ASSESSMENT OF WETLANDS

WETLAND FUNCTIONS AND VALUES ASSESSMENT

Wetlands are valuable assets to the natural environment. In order to capture the value wetlands provide to the ecosystem, their contributions are categorized by the many processes by which wetlands are associated. Wetlands provide essential functions, including water quality improvements, wildlife habitat, and flood attenuation. Additionally, wetlands are intrinsically valued by humans for qualities including visual aesthetics, recreation, and scientific opportunities. It is important to understand the general wetland functions and values that wetlands within a watershed provide, specifically to ensure the continued existence of their functions and values. This wetland functional assessment is designed to explain the role the wetlands play within the ecosystem and human environment of the Sir Francis Drake Boulevard (SFDB) project study area.

Methods

The "descriptive approach" to wetland functions and values outlined in the U.S. Army Corps of Engineers' (USACE) *The Highway Methodology Workbook Supplement: Wetland Functions and Values; A Descriptive Approach* (USACE 1999) incorporates both wetland science and human judgment of values. The USACE notes that "intermixing science with value judgments in this way has proven to be both effective and acceptable" (USACE 1999). This assessment is based on the USACE methodology and provides a descriptive analysis of the wetland functions and values within the study area, but does not quantify or rank their importance.

The functions and values evaluated in this analysis are listed in Table 1.

Table 1: Functions and Values Evaluated

Functions	Values
Groundwater recharge/discharge	Recreation
Floodflow alteration	Educational/scientific value
Fish and shellfish habitat	Uniqueness/heritage
Sediment/toxicant/pathogen retention	Visual quality
Nutrient removal/ retention/transformation	Endangered species habitat
Production export	
Sediment/shoreline stabilization	
Wildlife habitat	

Wetland Function-Value Evaluation Forms (Attachment A) were completed for each wetland system identified in the study area. Analysis incorporated field experience, references from the "Draft Wetland, Other Waters of the U.S., and Riparian Area Delineation Report" (Jacobs 2014a), and online resources.

Results

According to the "Wetland, Other Waters of the U.S. and Riparian Area Delineation Report" prepared for this project, 13 unique wetland types were identified in the study area. These wetland types were categorized using a combination of Cowardin and Hydrogeomorphic Approach (HGM) methods of classifying wetlands. For the purposes of a functional assessment, wetlands were grouped on a larger scale based on a combination of dominant hydrologic influences, landscape setting, and location within the watershed, all which contribute to similar wetland functions. Five wetland systems (Wetland System A through E) were classified and are discussed in this report. Table 2 below shows how the wetland types identified in the delineation report were grouped into wetland systems for this functional assessment.

Table 2: Wetland Types in the Study Area

Wetland System	Cowardin	HGM	Wetland Types[1]
A	Palustrine Forested (PFO)	Slope	Wetland 1
	Palustrine Scrub-Shrub (PSS)	Slope	Wetland 2
	Palustrine Forested (PFO)	Riverine	Wetland 3
	Palustrine Emergent (PEM)	Slope	Wetland 4
	Palustrine Scrub-Shrub (PSS)	Riverine	Wetland 6
	Riparian Emergent (RP1EM)	Riverine	Wetland 7
	Riparian Forested (RP1FO)	Riverine	Wetland 8
	Riparian Scrub-Shrub (RP1SS6)	Riverine	Wetland 9
	Palustrine Emergent (PEM)	Riverine	Wetland 10
	Palustrine Scrub-Shrub (PSS)	Depressional	Wetland 12
	Palustrine Emergent (PEM)	Mineral Soil Flats	Wetland 13
B	Palustrine Scrub-Shrub (PSS)	Slope	Wetland 2
	Palustrine Emergent (PEM)	Slope	Wetland 4
	Estuarine Emergent (E2EM)	Estuarine	Wetland 11
C	Palustrine Scrub-Shrub (PSS)	Slope	Wetland 2
	Palustrine Emergent (PEM)	Slope	Wetland 4
	Estuarine Emergent (E2EM)	Estuarine	Wetland 11
D	Palustrine Emergent (PEM)	Slope	Wetland 4
	Palustrine Emergent (PEM)	Depressional	Wetland 5
E	Palustrine Emergent (PEM)	Depressional	Wetland 5

[1] Jacobs 2014a

The wetlands within the study area are located across three Cowardin systems: estuarine, palustrine, and riparian. However, palustrine is the dominant Cowardin system, containing more than 90 percent of the total wetland acres within the study area. The dominant classes within the palustrine system are emergent, scrub-shrub, and forested wetlands.

As defined by Cowardin, palustrine wetlands "include all non-tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens and all such wetland that occur in tidal areas where salinity due to ocean derived slats is below 0.5 percent. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) areas less than 20 acres; (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of the basin less than 2 m at low water; and (4) salinity due to ocean derived salts less than 0.5 percent" (Cowardin 1979).

Palustrine wetlands are predominantly represented within the study area as seep and slope wetlands with dense shrubs (i.e., willows [*Salix* sp.] and alders [*Alnus* sp.]) and emergent vegetation (i.e., rushes [*Juncus* sp.]), as well as depressional wetlands with emergent vegetation.

Functional and value analysis revealed that most of the wetland systems within the study area provide some level of almost all of the wetland functions and values outlined in Table 1 (see forms in attachment A) for the following reasons:

- The location of the wetlands within Point Reyes National Seashore (PRNS) enhances their ability to sustain multiple functions and values. The National Park Service (NPS) limits or prevents development within its lands, which limits disturbances to the wetlands.
- As a unit of the NPS, PRNS is a destination recreation area, and therefore fundamentally holds value for human interests.

- A high density of emergent and shrubby vegetation, as well as a diverse amount of wetland types contributing to the overall functions of the surrounding wetlands are a predominant indicator that the wetlands provide many functions.
- The study area supports special status plants species and special status wildlife species, including California red-legged frog (CFLF [*Rana draytonii*]) and migratory habitat for Central California Coast coho salmon (CCC coho [*Oncorhynchus kisutch*]). Providing wildlife habitat and endangered species habitat is an important function of wetlands, and contributes to the value of the wetlands for society.

A table outlining the special status wildlife species that have potential to occur in each wetland system is provided in Attachment B.

Wetlands not only support special status species, but many other wildlife species as well. Several hundred non-status wildlife species may occur within the study area, in addition to special status wildlife species known to occur, or with potential to occur. Currently 80 species of mammals, 85 species of fish, 29 species of reptiles and amphibians, 490 bird species, and thousands of aquatic and terrestrial invertebrate species are documented throughout PRNS (NPS 2014a), some of which are assumed present within the study area. Additionally, over 900 plant species have been reported throughout PRNS (NPS 2014b), a few hundred of which were observed within the study area. (A table of the plant species that were observed during the wetland delineation surveys is provided in Attachment C). Due to the large numbers of plant and wildlife species that have been documented within PRNS, general species lists are not included in this report.[1]

A general discussion of each function and value of the wetland systems is provided below. Individual analysis of each wetland system can be found in the attached Wetland Function-Value Evaluation Forms (Attachment A). A description of the reference numbers used in the Rationale section of the forms can be found in the attachment D.

Wetland System A: East Schooner Creek — Freshwater

Wetland System A is located at the easternmost end of the project area and runs south to the outlet at Schooner Bay (approximate Project Mile (PM) 9.5 to PM 12). This freshwater system is anchored by East Schooner Creek and is predominantly influenced by groundwater seepage, precipitation, and ephemeral tributaries. Wetland System A is by far the most diverse and largest system in the study area. Wetland types found within System A, in order of prevalence, include palustrine scrub-shrub, palustrine forested, riparian emergent, riparian scrub-shrub, palustrine emergent, and riparian forested. HGM classifications included riverine, slope, depressional, and mineral soils. Specific functions and values for Wetland System A are described below.

Functions

Groundwater recharge/discharge. This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area, and refers to the fundamental interaction between wetlands and aquifers. Wetland System A is located in the lower regions of the watershed where groundwater naturally flows and discharges into East Schooner Creek. This function was represented predominantly by exfiltration from the slope wetlands, visibly demonstrating groundwater and/or throughflow discharge. Wetlands associated with East Schooner Creek, a perennial waterway, are also supported by groundwater discharge, as the water table was observed close to the surface during the delineation activities. Groundwater recharge was presumed by the presence of sandy and gravelly soils and wetlands with variable water levels.

[1] In addition to Attachments B and C, see the NPS PRNS website for potential species that could occur within the study area: http://www.nps.gov/pore/naturescience/index.htm.

Floodflow alteration. This function considers the effectiveness of the wetland in reducing flood damage by providing prolonged periods of water retention following precipitation events, and by gradually releasing the floodwaters. The dense vegetative cover in Wetland System A provides flood protection by slowing precipitation, and hydric soils absorb water. Several of the wetlands in this system are located in the bottomlands surrounding East Schooner Creek and provide additional water storage in high flow events, directly altering floodflows. Flood protection is considered a principal function of Wetland System A.

Fish and shellfish habitat. This function considers the effectiveness of seasonal or permanent watercourses associated with the wetland in supporting fish and shellfish habitat. East Schooner Creek is a perennial freshwater creek that provides a migratory corridor for CCC coho and also supports steelhead trout (*Oncorhynchus mykiss*), stickleback (*Gasterosteus* sp.), and other fish species. The dense vegetation that comprises the wetlands abutting the creek provide cover and food.[2] Providing fish and shellfish habitat is considered a principal function of Wetland System A.

Sediment/toxicant/pathogen retention. This function reduces or prevents degradation of water quality based on the effectiveness of the wetland to trap sediments, toxicants, or pathogens in runoff water from surrounding uplands or upstream eroding wetland areas. Surrounding uplands in the study area are used for poultry farming, which may introduce toxicants into the watershed. Slow moving water, organic soils, and dense vegetation observed in many wetland types in Wetland System A allow for retention of sediments and toxicants throughout the study area. Sediment/toxicant/pathogen retention is considered a principal function of Wetland System A.

Nutrient removal/retention/transformation. This function considers the effectiveness of the wetland to trap nutrients in runoff water from surrounding uplands or contiguous wetlands, and the ability of the wetland to transform them into other forms that can be used by higher trophic levels (i.e., birds, amphibians, or mammals). Indicators of this function in Wetland System A include the presence of excess nutrients (livestock waste), long-term saturated wetlands, dense vegetation, emergent vegetation, and a high diversity of vegetation. Additionally, several wetland types showed signs of slow moving diffuse water, which allows for nutrient removal and transformation. Nutrient removal/retention/transformation is one of the principal functions of Wetland System A.

Production export. This function evaluates the effectiveness of the wetland to produce food or useable products for humans or other living organisms. Wetland System A has a high density of vegetation, typically consisting of flowering plants that provide food for nectar-gathering insects. Many wetland types in this system support blackberry bushes [*Alnus* sp.] and emergent vegetation, providing food for higher trophic level species (i.e., birds, fish, and small mammals) as well.

Sediment/shoreline stabilization. This function considers the effectiveness of a wetland to stabilize streambanks and shorelines against erosion. Sediment/shoreline stabilization is a principal function of most of the individual wetland types bordering East Schooner Creek. The dense forested and shrubby vegetation (willows, alders, and blackberry) within Wetland System A, as well as the thick emergent vegetation (cattails [*Typha* sp.] and rushes), provides shoreline stabilization and helps attenuate erosion during high flow events.

Wildlife habitat. This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland

[2] For a full list of fish species known to occur within PRNS, refer to www.nps.gov/pore/naturescience/animalspecieslist.htm.

edge. Wetland System A provides habitat for all types of wildlife, which is a principal function of this system. The entire study area falls within critical habitat for the CRLF; therefore, almost all wetland types in the study area provide either aquatic or refugia habitat for CRLF. CRLF are known to occur throughout the study area and were observed onsite in 2014 in one palustrine emergent wetland (pers. com. Kull). Wetland System A also provides habitat for special status CCC coho and other fish species, including steelhead trout, sculpin (*Cottus* sp.), and stickleback. This wetland system also has potential to support several special status bird and mammal species (refer to Attachment B). Non-status wildlife species known to occur near East Schooner creek include California giant salamander (*Dicamptodon ensatus*), pacific tree frog (*Pseudacris regilla*), garter snake (*Thamnophis sirtalis*), and rough-skinned newt (*Taricha granulosa*) (NPS 2009).[3]

Values

Recreation. This value considers the suitability of the wetland and associated watercourses to provide passive recreational opportunities such as hiking, canoeing, etc. All wetland systems, including Wetland System A, are considered recreationally valuable due to their setting within a national park. Recreation is a primary reason for park visitation, and the wetland types within the study area contribute to the recreation experience by supporting wildlife habitat, visual aesthetics, diverse vegetation, wildflower displays, and improved water quality. However, opportunities for visitors to enjoy the wetlands in Wetland System A are limited because no hiking trails or separated bike paths are located within this system, and parking is restricted to a few pullouts along the road.

Educational/scientific value. This value considers the suitability of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research. Wetland System A provides some level of educational and scientific value to the human population, particularly because the wetlands support habitat for the special status CRLF. Additionally, the wetland types within Wetland System A are minimally disturbed relative to those in the surrounding San Francisco Bay area, and provide examples of numerous types of unique wetlands within a small geographical region. In addition, the wetlands are adjacent to SFDB and are readily accessible, which may provide educational experiences as well.

Uniqueness/heritage. As with all systems in the study area, Wetland System A provides a level of "uniqueness and heritage"[4] value to the human population, particularly due to the undeveloped nature of PRNS, as well as the unique geology, geography, and hydrology of the area.

- Hydrology of PRNS is significantly influenced by fog deposition, which provides a considerable source of water in the study area. Fog deposition helps sustain the productivity of the extremely diverse vegetation communities within the park during the typically dry California summers, and is a unique hydrologic influence compared to other wetlands in California.
- The geology of the peninsula supporting the study area is distinct from the entire California mainland due to the San Andreas Fault line, which divides the peninsula on the Pacific Plate and the rest of Marin County and California on the North American Plate (Stoffer 2005). The vegetation within Point Reyes demonstrates the different characteristic of the bedrock and

[3] For a list of vertebrate wildlife species within PRNS, many of which may occur within Wetland System A, refer to www.nps.gov/pore/naturescience/animalspecieslist.htm.

[4] Heritage values may include archaeological sites and critical habitat for endangered species, and the wetland's overall health and appearance, its role in the ecological system of the area, and its relative importance as a typical wetland class for this geographic location. These functions are valuable wetland attributes relative to aspects of public health, recreation, and habitat diversity.

soils on opposite sides of the fault line. The contrast also reflects the difference between the slope, aspect, precipitation, and other climatic factors influencing vegetation on opposite sides of the fault (USGS n.d.).

- The wetland types are unique in that they support critical habitat for the federally threatened CRLF.

Visual quality. This value considers the visual and aesthetic quality or usefulness of the wetland. Wetland System A provides valuable visual quality, particularly due to its setting within PRNS, which is relatively undeveloped and offers scenic vistas throughout the study area. Dense and diverse vegetation, wildlife sightings, aesthetically pleasing views of open water, and unobstructed sightlines all contribute to the visual quality of the wetland systems.

Endangered species habitat. This value considers the suitability of the wetland to support threatened or endangered species. Endangered species habitat is supported by Wetland System A and is considered a principal function of this system. This system hosts critical habitat for the federally threatened CRLF and, more specifically, provides aquatic breeding habitat. East Schooner Creek provides migratory habitat to the federally endangered CCC coho salmon, and old growth tree species provide habitat for federally threatened Northern spotted owl (*Strix occidentalis caurina*) along the eastern most section of the system.

Wetland System B: Schooner Bay — Estuarine

Wetland System B is located within the salt marsh estuarine system at Schooner Bay, approximately 3 to 4 miles from the intersection of Pierce Point Road and SFDB (approximately near PM 9). Wetland B is primarily influenced by the tides from Drakes Bay, as well as freshwater outflow from East Schooner Creek to the east and Schooner Creek from the north. This wetland system is subject to the ebb and flow of the tide, but also contains brackish water northeast of the study area at the freshwater creek's outflow. The study area crosses the main outlet/tidal slough to Schooner Bay, which supports marine wildlife species and estuarine plant species. Wetland types within System B, in order of dominance, are estuarine emergent, palustrine emergent, and palustrine scrub-shrub. HGM classifications are estuarine and slope. Specific functions and values for Wetland System B are described below.

Functions

Groundwater recharge/discharge. Wetland System B is located in the lowest regions of the watershed where groundwater naturally flows and discharges into Schooner Bay, and then into the Pacific Ocean. Due to this location, it is likely that this wetland system provides discharge functions that benefit these waters. In addition, the relatively high water quality within Drakes Estero (CWRQCB 2013) may be attributed in part to the presence of Wetland System B.

Floodflow alteration. Wetland System B covers a large, flat landscape and can collect excess water during high flow events. This system is accustomed to extreme variations in water levels due to tidal influences, and includes dense vegetation and hydric soils that also absorb excess water as needed. Floodflow alteration is considered a principal function of Wetland System B.

Fish and shellfish habitat. Schooner Bay is an estuarine system that provides marine fish habitat for migratory special status CCC coho salmon. Additionally, most of the 85 species of fish identified with PRNS occur in marine habitats, many of which are presumably found within Drake's Bay and/or Schooner Bay.[5] Providing fish habitat is considered a principal function of Wetland System B.

[5] For a full list of fish species observed in PRNS, refer to http://www.nps.gov/pore/naturescience/upload/animalspecieslist_fish.pdf.

Sediment/toxicant/pathogen retention. Wetland System B is a large catchment basin for waters flowing downslope westward, southward, and eastward into the ocean. Surrounding uplands are used for livestock grazing and poultry farming, which may introduce toxicants into the watershed. Slow moving water, organic soils, and dense vegetation allow for sediment and toxicant retention throughout the estuarine system. Sediment and toxicant retention is considered a principal function of Wetland System B.

Nutrient removal/retention/transformation. Wetland System B traps excess nutrients and transforms them into other forms to be used by higher trophic levels (i.e., birds, amphibians, or mammals). Indicators supporting this function include the presence of excess upstream nutrients (livestock waste), long-term saturated wetlands, dense vegetation, and emergent vegetation. Nutrient removal and transformation is considered a principal function of Wetland System B.

Production export. Wetland System B provides food for wildlife by supporting plant habitat and fish species for use by higher trophic level species, including rodents, marine mammals, and birds. Tidal sloughs within Wetland System B provide for easy movement for fish and marine species.

Sediment/shoreline stabilization. The dense emergent vegetation (pickleweed [*Salicornia virginica*] and willows) found throughout Wetland System B provides shoreline stabilization and helps attenuate erosion during high tide and high runoff events. Established tidal sloughs direct water towards the bay and help protect the shoreline upstream. Sediment/shoreline stabilization is considered a principal wetland function for Wetland System B.

Wildlife habitat. As previously stated, Wetland System B provides marine habitat for fish, mammals such as harbor seals, birds, and marine invertebrates. Wildlife habitat is considered a principal function for this system. According to the *San Francisco Bay Basin Plan*, the body of water within Drake's Estero is "nearly pristine" and of great value for wildlife habitat (CRWQCB 2013). Wetland System B also has potential to provide foraging habitat for several special status bird and mammal species (refer to Attachment B).[6]

Values

Recreation. All wetland systems, particularly the estuarine system, are considered recreationally valuable due to their setting within a national park. An upland area with picnic tables overlooking Schooner Bay and public parking for visitors is available within Wetland System B, allowing visitors direct recreation opportunities within this system. Recreation within PRNS is a primary reason for park visitation, and the wetland types within the study area help support the recreation experience by supporting wildlife habitat, visual aesthetics, diverse vegetation, wildflower displays, and improved water quality. However, there are few opportunities for visitors to enjoy the wetlands in Wetland System B because no hiking trails or separated bike paths are located within this System.

Educational/scientific value. This wetland system provides educational and scientific value through easy access to a tidal salt marsh, a diminishing resource within the San Francisco Bay. It also provides habitat for special status plant and wildlife species. Additionally, the wetland types within Wetland System B are minimally disturbed relative to those in the surrounding San Francisco Bay area, and provide examples of numerous types of unique wetlands within a small geographical region.

[6] For a list of vertebrate species within PRNS, many of which are marine species and may occur with Wetland System B, refer to www.nps.gov/pore/naturescience/animalspecieslist.htm.

Uniqueness/heritage. As with all systems in the study area, Wetland System B provides a level of "uniqueness and heritage" value to the human population, particularly due to the undeveloped nature of PRNS, as well as the unique geology, geography, and hydrology of the area.

- The tidal hydrology of this system is becoming rarer in the San Francisco Bay area.
- The geology of the peninsula supporting the study area is distinct from the entire California mainland due to the San Andreas Fault line, which divides the peninsula on the Pacific Plate and the rest of Marin County and California on the North American Plate (Stoffer 2005). The vegetation within Point Reyes demonstrates the different characteristic of the bedrock and soils on opposite sides of the fault line. The contrast also reflects the difference between the slope, aspect, precipitation, and other climatic factors influencing vegetation on opposite sides of the fault (USGS n.d.).

Visual quality. Wetland System B provides valuable visual quality, particularly due to its setting within PRNS, which is relatively undeveloped and provides scenic vistas across Schooner Bay and into Drake's Estero. Dense and diverse vegetation, wildlife sightings, aesthetically pleasing views of open water, and unobstructed sightlines all contribute to the visual quality value of this wetland system.

Endangered Species Habitat. Wetland System B provides migratory habitat to the federally endangered CCC coho salmon, as well as habitat for the special status Point Reyes bird's beak (*Cordylanthus maritimus* ssp. *palustris*), a locally rare plant. Additionally, Schooner Bay may provide foraging habitat for protected marine mammals. Endangered species habitat is a principal function of Wetland System B.

Wetland System C: Historic Ranch G — Freshwater

Wetland System C is a relatively small subwatershed located west and upslope of Schooner Bay near Historic Ranch G, where SFDB starts to climb in elevation above sea level. This system consists of palustrine emergent and palustrine scrub-shrub wetlands, with an HGM classification of "slope." A minor amount of estuarine emergent wetland is also located at the base of this system, as upslope freshwater drains down into Schooner Bay from the west, creating a brackish wetland system outside of the study area. The palustrine emergent slope wetlands along SFDB are a direct result of cuts into the hill slope from construction of the road, forming seep wetlands from groundwater and/or throughflow exfiltration. The palustrine scrub-shrub wetlands are dominated by willows, which continue south of SFDB into a well-vegetated and well-established manmade pond outside of the study area. The entire system drains into a freshwater wet meadow, and then into Schooner Bay. Specific functions and values for Wetland System C are described below.

Functions

Groundwater recharge/discharge. This function was represented by saturation in the Wetland System C slope wetlands, visibly demonstrating throughflow and/or groundwater discharge from the hillslope. The ponded area outside of the study area may be contributing to groundwater recharge as well.

Floodflow alteration. Wetland System C provides a minimum amount of flood protection, typically through dense vegetative cover that slows precipitation, and hydric soils that absorb water. The wetlands are predominantly located in the upper parts of the drainage basin and receive runoff from the road and surrounding uplands, therefore attenuating high volumes of precipitation.

Sediment/toxicant/pathogen retention. Wetland System C provides a minimal amount of sediment/toxicant/pathogen retention. Surrounding uplands are used for livestock grazing and

dairy farming, which may introduce toxicants into the watershed. Organic soils and dense vegetation allow for sediment and toxicant retention throughout this system.

Nutrient removal/retention/transformation. Wetland System C provides a minimal amount of nutrient removal/retention/transformation. Indicators supporting this function include the presence of excess nutrients higher up in the watershed (livestock waste), long-term saturated wetlands, and the presence of slowly drained organic soils.

Production export. Wetland System C provides a minimal amount of production export by supporting flowering plants that provide food for nectar-gathering insects, and by the presence of dense vegetation. The scrub-shrub vegetation provides nesting and foraging habitat for bird species.

Sediment/shoreline stabilization. Wetland System C provides sediment/shoreline stabilization, particularly through the palustrine scrub-shrub wetland just south of and across SFDB from Historic G Ranch. Severe erosion and headcutting is occurring outside of the study area adjacent to an ephemeral drainage. The dense willow thickets within the scrub-shrub wetland are holding the hillside in place and preventing further erosion.

Wildlife habitat. Wetland System C provides wildlife habitat, which is considered a principal function for this wetland. The study area falls within critical habitat for the CRLF; therefore, almost all wetland types in the study area provide either aquatic or refugia habitat for CRLF. CRLF are known to occur throughout the study area, and it is presumed they inhabit the man-made pond just west of Wetland System C. Therefore, Wetland System C likely provides refugia habitat for CRLF. This system also has the potential to provide habitat for other special status wildlife species (refer to Attachment B). As mentioned previously, almost 700 vertebrate species have been documented with PRNS.

Values

Recreation. All wetland systems, including Wetland System C, are considered recreationally valuable due to their setting within a national park. Recreation is a primary reason for park visitation, and the wetland types within the study area help support the recreation experience by supporting wildlife habitat, visual aesthetics, diverse vegetation, wildflower displays, and increased water quality. However, there are few opportunities for visitors to enjoy the wetlands within Wetland System C because no hiking trails or separated bike paths are located within this System.

Educational/scientific value. Wetland System C provides some level of educational and scientific value, particularly because the wetlands support habitat for special status species such as CRLF. The wetlands are easily accessible, which may provide educational experiences as well.

Uniqueness/heritage. As with all systems in the study area, Wetland System C provides a level of "uniqueness and heritage" value to the human population, particularly due to the undeveloped nature of PRNS, as well as the unique geology, geography, and hydrology of the area.

- Hydrology of PRNS is significantly influenced by fog deposition, which provides a considerable source of water in the study area. Fog deposition helps sustain the productivity of the extremely diverse vegetation communities within the park during the typically dry California summers, and is a unique hydrologic influence compared to other wetlands in California.
- The geology of the peninsula supporting the study area is distinct from the entire California mainland due to the San Andreas Fault line, which divides the peninsula on the Pacific Plate and the rest of Marin County and California on the North American Plate (Stoffer 2005). The vegetation within Point Reyes demonstrates the different characteristic of the bedrock and

soils on opposite sides of the fault line. The contrast also reflects the difference between the slope, aspect, precipitation, and other climatic factors influencing vegetation on opposite sides of the fault (USGS n.d.).

- The wetland types are unique in that they support critical habitat for the federally threatened CRLF.

Visual quality. Wetland System C provides valuable visual quality, particularly due to is setting within PRNS, which is relatively undeveloped and provides scenic vistas throughout the study area. Dense and diverse vegetation, wildlife sightings, aesthetically pleasing views of open water, and unobstructed sightlines all contribute to the visual quality value of the wetland systems. Visual quality is considered a principal wetland function of Wetland System C, particularly based on the view *from* the system, not necessarily *of* the wetland system. The view from Wetland System C provides an overlook of Schooner Bay and the surrounding freshwater wetlands that feed it from the west.

Endangered Species Habitat. Wetland System C supports endangered species habitat, which is considered a principal function of this system. This system hosts critical habitat for the federally threatened CRLF and, more specifically, the pond just outside the study area likely provides aquatic breeding habitat.

Wetland Systems D: Drainage Ditch Wetlands — Southern Section

Wetland System D is spread throughout the southern end of the study area and is predominantly comprised of roadside drainage ditches that would not be naturally present without construction of SFDB. These drainage features are either a result of cutting into the hillslope and allowing throughflow and/or groundwater to exfiltrate, or are drainage ditches predominantly constructed in uplands that have formed into wetlands based on hydrologic disruptions. Wetland types within Wetland System D are categorized as palustrine emergent wetlands-depressional or slope. Wetland System D comprises all drainage ditch wetlands found southwest of Historic G Ranch, approximately from PM 8.5 to PM 0. Specific functions and values for Wetland System D are described below.

Functions

Groundwater recharge/discharge. This function was represented in Wetland System D by saturation in the slope and the presence of depressional wetlands, visibly demonstrating throughflow and/or groundwater discharge from the hillslope. Minimal groundwater recharge is also presumed by the presence of sandy and gravelly soils.

Floodflow alteration. Wetland System D provides a minimum amount of flood protection, typically through dense vegetative cover that slows precipitation, and hydric soils that absorb water. The wetlands are predominantly located in the upper area of the drainage basin and receive runoff from the road and surrounding uplands, therefore attenuating high volumes of precipitation.

Sediment/toxicant/pathogen retention. Wetland System D provides sediment/ toxicant/ pathogen retention through collection of roadway run-off and potential toxicants from surrounding uplands that are used for livestock grazing and dairy farming. Dense vegetation and depressional geography allow for sediment and toxicant retention throughout this system.

Nutrient removal/retention/transformation. Wetland System D provides a minimal amount of nutrient removal/retention/transformation. Indicators supporting this function include the potential presence of excess nutrients higher in the watershed (livestock waste), long-term saturated wetlands, and the depressional geography of the wetlands.

Production export. Wetland System D provides a minimal amount of production export by supporting flowering plants that provide food for nectar-gathering insects, and by the presence

of dense vegetation. Several of the palustrine emergent wetlands support blackberry bushes and emergent vegetation, providing food for higher trophic level species (i.e., birds and small mammals).

Sediment/shoreline stabilization. Wetland System D provides a minimal amount of sediment/shoreline stabilization, as wetlands within this system do not directly abut a waterway. However, wetlands in this system do allow for sediment absorption and collection due to dense vegetation and topographical depressions.

Wildlife habitat. Wetland System D provides wildlife habitat, which is considered one of the two principal functions for this wetland. The study area falls within critical habitat for the CRLF; therefore, almost all wetland types in the study area are presumed to provide either aquatic or refugia habitat for CRLF. Wetland System D predominantly provides only refugia habitat due to a lack of ponded water (i.e., aquatic habitat) within the study area. Additionally, specific areas within Wetland system D provide habitat for the special status Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*). This system also has potential to provide habitat for other special status wildlife species (refer to Attachment B).

Values

Recreation. All wetland systems, including Wetland System D, are considered recreationally valuable due to their setting within a national park. Recreation is a primary reason for park visitation, and the wetland types within the study area help support the recreation experience by supporting wildlife habitat, visual aesthetics, diverse vegetation, wildflower displays, and increased water quality. Wetland System D crosses the trailhead for the Bull Point hiking trail, which includes a public parking area and allows visitors direct recreation in this system. However, there are no separated bike paths located within the study area to provide access to Wetland System D.

Educational/scientific value. Wetland System D provides some level of educational and scientific value to the human population, particularly because the wetlands support habitat for the special status CRLF. The wetlands are easily accessible, which may provide educational experiences as well.

Uniqueness/heritage. As with all systems in the study area, Wetland System D provides a level of "uniqueness and heritage" value to the human population, particularly due to the undeveloped nature of PRNS, as well as the unique geology, geography, and hydrology of the area.

- Hydrology of PRNS is significantly influenced by fog deposition, which provides a considerable source of water in the study area. Fog deposition helps sustain the productivity of the extremely diverse vegetation communities within the park during the typically dry California summers, and is a unique hydrologic influence compared to other wetlands in California.
- The geology of the peninsula supporting the study area is distinct from the entire California mainland due to the San Andreas Fault line, which divides the peninsula on the Pacific Plate and the rest of Marin County and California on the North American Plate (Stoffer 2005). The vegetation within Point Reyes demonstrates the different characteristic of the bedrock and soils on opposite sides of the fault line. The contrast also reflects the difference between the slope, aspect, precipitation, and other climatic factors influencing vegetation on opposite sides of the fault (USGS n.d.).
- The wetland types are unique in that they support critical habitat for the federally threatened CRLF.

Visual quality. Wetland System D provides valuable visual quality, particularly due to its setting within PRNS, which is relatively undeveloped and provides scenic vistas throughout the study area. Wildlife sightings, aesthetically pleasing views of open water and the Pacific Ocean, and unobstructed sightlines all contribute to the visual quality value of this wetland system.

Endangered Species Habitat. Wetland System D supports endangered species habitat, which is considered a principal function of this system. Wetland System D provides critical habitat for the federally threatened CRLF and supports Western dog violet (*Viola adunca*), the host plant for the federally endangered Myrtle's silverspot butterfly. This system also provides habitat for the state endangered Point Reyes meadowfoam (*Limnanthes douglasii sulphurea*), several populations of which have been documented on site.

Wetland E: Drainage Ditch Wetlands — Northeastern Section

Wetland system E is spread throughout the northeastern section of the study area and is comprised of roadside drainage ditches that would not be naturally present without construction of SFDB. These drainage features are either a result of cutting into the hillslope and allowing throughflow and/or groundwater exfiltratation, or are drainage ditches predominantly constructed in uplands that have formed into wetlands based on disruptions of natural hydrologic processes. Wetland types within Wetland System E are categorized as palustrine emergent wetlands-depressional. Wetland System E comprises all drainage ditch wetlands east and northeast of Historic Ranch G, approximately from PM 8.5 to PM 12. This system is similar to Wetland System D. However, Wetland System E was classified separately based on a difference in subwatersheds, location in the landscape, and hydrological outputs. Although this system overlaps Wetland Systems A, B, and C, it was categorized separately due to the altered state of the drainage ditch features and functional differences. Specific functions and values for Wetland System E are described below.

Functions

Groundwater recharge/discharge. This function was represented in Wetland System E by saturation in the depressional wetlands, visibly demonstrating throughflow and/or groundwater exfiltration from the hillslope. The wetlands are located in the lower regions of the watershed where groundwater naturally flows and discharges into waterways. Groundwater discharge is considered a principal function of Wetland System E.

Floodflow alteration. Wetland System E provides flood protection by receiving runoff from the road and surrounding uplands, therefore attenuating high volumes of precipitation. These wetlands typically have dense vegetative cover that slows precipitation, and hydric soils that absorb water. Although the wetlands are located in the bottomlands surrounding East Schooner Creek, they are located across SFDB from the creek and can provide additional water storage when floodwaters cross the road during high flow events. Floodflow alteration is considered a principal function of Wetland System E.

Sediment/toxicant/pathogen retention. Wetland System E provides sediment/ toxicant/ pathogen retention through collection of roadway runoff and potential toxicants from surrounding uplands that are used for livestock grazing and poultry farming. Dense vegetation and depressional geography allow for sediment and toxicant retention throughout this system.

Nutrient removal/retention/transformation. Wetland System E provides a minimal amount of nutrient removal/retention/transformation. Indicators supporting this function include the presence of excess upstream nutrients (livestock waste), long-term saturated wetlands, and the depressional geography of the wetlands.

Production export. Wetland System E provides a minimal amount of production export by supporting flowering plants that provide food for nectar-gathering insects and by the presence of dense vegetation. Several of the palustrine emergent wetlands support blackberry bushes and

emergent vegetation, providing food for higher trophic level species (i.e., birds and small mammals).

Sediment/shoreline stabilization. Wetland System E provides sediment stabilization through sediment absorption and collection due to dense vegetation, topographical depressions, and the presence of organic soils.

Wildlife habitat. Wetland System E provides wildlife habitat, which is considered one of the principal functions for this wetland system. The study area falls within critical habitat for the CRLF; therefore, almost all wetland types in the study area provide either aquatic or refugia habitat for CRLF. Wetland System E is adjacent to, and may contain, aquatic breeding habitat for CRLF. Additionally, this system has the potential to provide habitat for other special status wildlife species (refer to Attachment B). Non-status wildlife species known to occur near East Schooner creek include California giant salamander, pacific tree frog, garter snake, and rough-skinned newt (NPS 2009).

Values

Recreation. All wetland systems, including Wetland System E, are considered recreationally valuable due to their setting within a national park. Recreation is a primary reason for park visitation, and the wetland types within the study area help support the recreation experience by supporting wildlife habitat, visual aesthetics, diverse vegetation, wildflower displays, and increased water quality. However, there are few opportunities for visitors to enjoy wetlands within Wetland System E because no hiking trails or separated bike paths are located within this system, and parking is limited to a few pullouts along the road and the area at Schooner Bay.

Educational/scientific value. Wetland System E provides some level of educational and scientific value to the human population, particularly because the wetlands support habitat for the special status CRLF. The wetlands are easily accessible, which may provide educational experiences as well.

Uniqueness/heritage. As with all systems in the study area, Wetland System E provides a level of "uniqueness and heritage" value to the human population, particularly due to the undeveloped nature of PRNS, as well as the unique geology, geography, and hydrology of the area.

- Hydrology of PRNS is significantly influenced by fog deposition, which provides a considerable source of water in the study area. Fog deposition helps sustain the productivity of the extremely diverse vegetation communities within the park during the typically dry California summers, and is a unique hydrologic influence compared to other wetlands in California.
- The geology of the peninsula supporting the study area is distinct from the entire California mainland due to the San Andreas Fault line, which divides the peninsula on the Pacific Plate and the rest of Marin County and California on the North American Plate (Stoffer 2005). The vegetation within Point Reyes demonstrates the different characteristic of the bedrock and soils on opposite sides of the fault line. The contrast also reflects the difference between the slope, aspect, precipitation, and other climatic factors influencing vegetation on opposite sides of the fault (USGS n.d.).
- The wetland types are unique in that they support critical habitat for the federally threatened CRLF.

Visual quality. Wetland System E provides valuable visual quality to the human population, particularly due to its setting within PRNS, which is relatively undeveloped and provides scenic vistas throughout the study area. Wildlife sightings and aesthetically pleasing views of a variety of vegetation communities contribute to the visual quality value of the wetland system.

Endangered Species Habitat. Wetland System E supports endangered species habitat, which is considered a principal function of this system. Wetland System E provides critical habitat for the federally threatened CRLF and is likely to provide aquatic breeding habitat for this species as well.

Conclusion

Each of the five wetland systems within the study area provides some level of almost every function and value identified in *The Highway Methodology Workbook Supplement: Wetland Functions and Values; A Descriptive Approach* (USACE 1999). Wetland Systems A and B provide the most functions and highest values of all the systems, based on the number of principal functions each one provides. Wetland System A includes the highest diversity and density of wetland types, and subsequently includes the highest quantity of wetland acres within the study area. Although Wetland System B is much smaller, it provides unique functions and values to the ecosystem and the public because it is estuarine with tidal salt marsh. Wetland Systems C, D, and E provide substantially fewer principal functions to the surrounding ecosystem. However, these systems still provide a minimal amount of most wetland functions and values throughout the study area. In general, the most prevalent wetland functions and values in the study area across all wetland systems include providing wildlife habitat, endangered species habitat, sediment shoreline stabilization, and groundwater recharge/discharge.

Although the study area is located within a national park and is relatively undeveloped, the lands and ecosystems are not unaltered. Cattle grazing, dairy farming, road construction, and high visitor use contribute to lessening of the study area's wetland functions and values. SFDB, a paved road, has bisected the natural watershed and interrupted the wildlife corridor. Hydrology has been altered and existing culverts have become clogged as a result of dense vegetation and maintenance limitations, resulting in sections of the road being periodically flooded. During flooding, water covers the paved surface, which is unable to receive groundwater infiltration and absorb floodwaters. Additionally, several of the individual wetland types have been bisected by the road and are therefore small, which reduces the continuity of the wildlife corridors and provides for lesser flood attenuation than a larger wetland system. Wildlife habitat directly abuts the road, resulting in a slight reduction in habitat value and safety for special status and non-status wildlife species. The dominant land use in the southern half of the study area is livestock grazing, which contributes excess nutrients and toxicants into the wetland systems, potentially reducing overall water quality and wildlife habitat. Non-native plant species (i.e., velvet grass) dominate some of the wetland areas, which reduces vegetation diversity and quality of wildlife habitat as well. Despite these limitations, the wetland types within the study area support many important wetland functions and provide value to humans and surrounding wildlife.

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Personal Communications

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Attachment A: Wetland Function-Value Evaluation Forms

Wetland Function-Value Evaluation Form

Total area of wetland 9.06 acre Human made? No Is wetland part of a wildlife corridor? yes or a "habitat island"?_____

Adjacent land use National Park, Dairy Farming, Road Distance to nearest roadway or other development abuts SFDB

Dominant wetland systems present PFO, PSS, PEM Contiguous undeveloped buffer zone present yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? bottom

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. Wetland System A

Latitude 38°5'28.851"N Longitude 122°55'29.57"W

Prepared by: M.Seguin Date 12/11/14

Wetland Impact:
Type Temp & Perm - Direct Area Tem-2.6;Per-2.13 ac

Evaluation based on:
Office ✓ Field_____

Corps manual wetland delineation completed? Y ✓ N_____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓		4, 6,9,7,12,13,15		Seeps and large cattail wetland show signs of groundwaterexpression
Floodflow Alteration	✓		3,5,6,7,8,9,10,12,13,14,16,	✓	18. Wetlands attenuate some flow and retain water from rainstorm events. Vegetation is dense, however area has a history of flooding.
Fish and Shellfish Habitat	✓		1, 2,4,5,7,8,10,11,12,14,15	✓	16, 17. East Schooner Creek supports coho, steelhead trout, sculpin and stickleback.
Sediment/Toxicant Retention	✓		1,2,3,4,5,8,10,11,13,14,16	✓	Wetlands slow the flow and able to trap sediments. Dense vegetation allows for sediment retention. System is downslope of poultry and dairy farming, possible sources of toxicants.
Nutrient Removal	✓		3,4,5,6,7,8,9,10,11,12,13,	✓	14, water flows slowly allows for nutrient accumulation. potential sourceds of excess nutrients (livestock) exist upstream/upslope
Production Export	✓		1,2,4,5,6,7,8,9,12,14		High vegetation density. Wetland plants, including blackberries, feed wildlife.
Sediment/Shoreline Stabilization	✓		1,2,6,9, 12,13,15	✓	dense vegetation provides stabilization of creek shoreline.
Wildlife Habitat	✓		1,4,5,6,7,8,9,11,13,19,20,	✓	System provides habitat for many wildlife species, including amphibians, birds, and mammals. *
Recreation	✓		1,5, 6, 7		Located with national park boundaries and provides wildlife habitat.
Educational/Scientific Value	✓		1,2,3,4,5,11,		provides habitat for T&E species
Uniqueness/Heritage	✓		4,5,7,11,12,13,15,16,17,18		19,22,24. Provides views of unpolluted and undisturbed wetlands. Provides critical habitat for CRLF
Visual Quality/Aesthetics	✓		1,2,3,4,5,,7,8,9,10,11,12		attractive emergent marsh vegetation. Provides views of unpolluted and undisturbed wetlands.
ES Endangered Species Habitat	✓		1,2	✓	provides coho, steelhead, and CRLF habitat
Other					

Notes: *Within the entire PRNS there have been reported occurrences of 80 mammal, 85 fish, 29 reptile and/or amphibian, & 490 bird species, http://www.nps.gov/pore/naturescience/animals.htm. This system encompasses the last 3+ miles of the study area from post miles 9.5 to 12. The system represents wetlands associated with East Schooner Creek. This wetland system drains into Schooner Bay.

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.495 ac Human made? No Is wetland part of a wildlife corridor? yes or a "habitat island"? _____

Adjacent land use National Park, Dairy Farming, Road Distance to nearest roadway or other development abuts SFDB

Dominant wetland systems present E2EM, PEM, PSS Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? bottom

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. Wetland System B

Latitude 38.09100000 Longitude -122.92800000

Prepared by: M.Seguin Date 12/11/14

Wetland Impact:
Type temp & perm - direct Area Temp-0.37;Perm-0.11 ac

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N _____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓		7, 12, 13, 15		Wetland is tidally influenced
Floodflow Alteration	✓		1,5,6,8,9,10,13,14,16,18	✓	salt marsh provides water storage and slows flow during high flow events.
Fish and Shellfish Habitat	✓		1,3, 4,5,	✓	Marine environment, Supports migratory habitat for anadromous fish
Sediment/Toxicant Retention	✓		1,2,3,4,5,8,9,10,11,12,15,	✓	16. Traps potential sediments in dense vegetation and slow moving water.
Nutrient Removal	✓		1,2,3,4,5,7,8,9,10,14	✓	slow moving, ponded water is filtered through dense vegetation.
Production Export	✓		1,2,4,5,6,7,10,		
Sediment/Shoreline Stabilization	✓		1,2,3,4,6,7,9,12,15	✓	extensive wetland size and vegetation promote shoreline stabilization
Wildlife Habitat	✓		1,5,6,7,8,9,10,11,13,16,18,	✓	21, Salt marsh wetland provides migratory fish passage, bird and mammal habitat.
Recreation	✓		1,4,5,6,7,8,10,11,	✓	pull-out and picnic tables available at wetland. easily accessible
Educational/Scientific Value	✓		1,2,3,4,5,8,10		easily accessible well developed salt marsh habitat could be good educational site.
Uniqueness/Heritage	✓		4,5,6,9,12,13,14,16,1718,	✓	19,27,28. Salt marsh habitat is rare and diminishing in the bay area.
Visual Quality/Aesthetics	✓		1,2,3,5,6,7,8,9,10,11,12	✓	Very scenic view looking out over wetland to bay/ocean
ES Endangered Species Habitat	✓		1,2,	✓	Supports T & E plant and fish species.
Other					

Notes: Salt marsh habitat is rare and has diminished rapidly around the SF Bay. This area is a large contiguous salt marsh with defined channels that supports special-status plants and fish migration. Wetland System B is predominantly encompasses the salt marsh habitat where SFDB crosses Schooner Bay and is localized to mile post 9.

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.21 acre Human made? No Is wetland part of a wildlife corridor? yes or a "habitat island"? _____

Adjacent land use National Park, Dairy Farming, Road Distance to nearest roadway or other development abuts SFDB

Dominant wetland systems present PSS, PEM, E2EM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? Yes If not, where does the wetland lie in the drainage basin? Middle

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. Wetland System C

Latitude 38°3'52.933"N Longitude 122°58'16.1"W

Prepared by: M.Seguin Date 12/11/14

Wetland Impact:
Type temp & perm - direct Area Temp.-0.09/Perm-0.1ac

Evaluation based on:
Office ✓ Field _____

Corps manual wetland delineation completed? Y ✓ N _____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓		4, 6, 10, 13		Seeping from hillslope is an expression of groundwater discharge. PORE is dominated by impervious surfaces (bedrock).
Floodflow Alteration	✓		2,4,5,9		
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓		1, 2,4, 8		
Nutrient Removal	✓		4, 7		
Production Export	✓		1, 7		
Sediment/Shoreline Stabilization	✓		2, 13, 15		
Wildlife Habitat	✓		5, 7, 8	✓	CRLF upland refugia habitat
Recreation	✓		1, 4, 5,		Located with national park boundaries
Educational/Scientific Value	✓		1 , 5		Provides CRLF upland refugia habitat
Uniqueness/Heritage	✓		13,19, 24		
Visual Quality/Aesthetics	✓		1, 2, 4, 5, 7, 8, 10, 11, 12	✓	unobstructed views of multiple wetland types
ES Endangered Species Habitat	✓		1, 2		CRLF upland refugia habitat
Other					

Notes: System C is a small system west of Schooner Bay made up of wetland ditches and slope wetlands that are present due to road cutting of SFDB in the hillside. It drains downslope and east into a freshwater wetland (outside the study area) then into the tidal marsh at Schooner Bay.

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 4.93 acre Human made? Not directly Is wetland part of a wildlife corridor? yes or a "habitat island"?_____

Adjacent land use National Park, Dairy Farming, Road Distance to nearest roadway or other development abuts SFDB

Dominant wetland systems present PEM - Depressional, & Slope Contiguous undeveloped buffer zone present No.

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? bottom

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. Wetland System D

Latitude 38°4'10.098"N Longitude 122°58'16.232"W

Prepared by: M.Seguin Date 12/11/14

Wetland Impact:
Type temp & perm - direct Area Temp 1.44/Perm 1.51 ac

Evaluation based on:
Office ✓ Field_____

Corps manual wetland delineation completed? Y ✓ N_____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓		2, 4, 6, 10, 13	✓	Wetlands that occur at toe of slope indicate groundwater discharge areas.
Floodflow Alteration	✓		2,3,4,5,6,8,9,18	✓	The wetlands are depressional features along the road that can hold or slow water runoff during rain/flooding events.
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓		2, 3, 6,		Receives direct run-off from the road. Also livestock waste is adjacent to wetlands
Nutrient Removal	✓		3, 4, 8, 10, 11		livestock waste is adjacent to wetlands
Production Export	✓		1,2,4,7		Dense vegetation provides food for wildlife (blackberries)
Sediment/Shoreline Stabilization	✓		2, 15		
Wildlife Habitat	✓		4, 5, 7, 8	✓	Upland refugia habitat for CRLF, cover for small mammals.
Recreation	✓		1,5, 7		provides habitat for CRLF. Wetland system located with PRNS
Educational/Scientific Value	✓		1, 3, 5		considered as valuable wildlife habitat, potential education site for wetland hummock education
Uniqueness/Heritage	✓		13, 17, 22, 24		provides critical habitat for CRLF
Visual Quality/Aesthetics	✓		1,7, 8, 9, 10, 11		
ES Endangered Species Habitat	✓		1, 2	✓	Entire project area is within CRLF critical habitat and CRLF are known to occur.
Other					

Notes: This wetland system comprises of roadside ditches and slope wetlands that were formed as a result of the building of SFDB. SFDB cut into hillsides creating areas for groundwater to surface and support wetland vegetation, thus creating wetlands. This system includes all drainage ditches/slope wetlands west/south of Drake's Estero, within the study area.

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 1.22 ac Human made? Not directly Is wetland part of a wildlife corridor? yes or a "habitat island"? _____

Adjacent land use National Park, Dairy Farming, Road Distance to nearest roadway or other development abuts SFDB

Dominant wetland systems present PEM - Depressional, & Slope Contiguous undeveloped buffer zone present No.

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? bottom

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. Wetland System E

Latitude 38°4'10.098"N Longitude 122°58'16.232"W

Prepared by: M.Seguin Date 12/11/14

Wetland Impact:
Type temp & perm - Direct. Area Temp 0.47/Perm 0.7 ac

Evaluation based on:
Office ✓ Field _____

Corps manual wetland delineation completed? Y ✓ N _____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓		4, 6, 10, 13	✓	Wetlands that occur at toe of slope indicate groundwater discharge areas.
Floodflow Alteration	✓		3,4,5,6, 7, 8, 9, 10,12, 18	✓	The wetlands are depressional features along SFDB that can hold or slow water runoff during rain/flooding events.
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓		1,2, 3, 4,6, 10		roadway runoff & livestock waste upslope of wetlands
Nutrient Removal	✓		3, 4, 8, 10, 11		roadway runoff & livestock waste upslope of wetlands
Production Export	✓		4, 5, 7		
Sediment/Shoreline Stabilization	✓		2, 3, 9, 15		
Wildlife Habitat	✓		4, 5, 6, 7, 13	✓	CRLF upland refugia
Recreation	✓		1,5, 7		provides habitat for CRLF, particularly wetlands east of Drakes Estero. System located with PRNS.
Educational/Scientific Value	✓		1, 3, 5		considered as valuable wildlife habitat, potential education site for wetland hummock education
Uniqueness/Heritage	✓		13, 17, 22, 24		provides critical habitat for CRLF
Visual Quality/Aesthetics	✓		1,7, 8, 9, 10, 11		
ES Endangered Species Habitat	✓		1, 2	✓	Entire project area is within CRLF critical habitat and CRLF are known to occur.
Other					

Notes: This wetland system comprises of roadside ditches and slope wetlands that were formed as a result of the building of SFDB. SFDB cut into hillsides creating areas for groundwater to surface and support wetland vegetation, thus creating wetlands. This system includes all drainage ditches east of Drakes Estero.

* Refer to backup list of numbered considerations.

Attachment B: Special Status Wildlife Species that have Potential to Nest, Forage, or Migrate through Wetland Systems in the Study Area

Special Status Species		Wetland Systems				
Common Name	Scientific Name	A	B	C	D	E
American badger	*Taxidea taxus*			x	x	
Bald eagle	*Haliaeetus leucocephalus*	x	x			
Burrowing owl	*Athene cunicularia*			x	x	x
California black rail	*Laterallus jamaicensis coturniculus*		x			
California red-legged frog	*Rana draytonii*	x		x	x	x
Central California coast coho salmon	*Oncorhynchus kisutch*	x	x			
Cooper's hawk	*Accipiter cooperii*	x				
Golden eagle	*Aquila chrysaetos*	x	x	x	x	x
Myrtle's silverspot butterfly	*Speyeria zerene myrtleae*				x	
Northern harrier	*Circus cyaneus*		x	x	x	
Northern spotted owl	*Strix occidentalis caurina*	x				
Osprey	*Pandion haliaetus*	x	x			
Pallid bat	*Antrozous pallidus*	x		x	x	x
Point Reyes jumping mouse	*Zapus trinotatus orarius*	x		x	x	x
Point Reyes mountain beaver	*Aplodontia rufa phaea*	x				
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*		x			
Sharp-shined hawk	*Accipiter striatus*	x	x			
Swainson's hawk	*Buteo swainsoni*	x	x	x	x	x
Townsend's big-eared bat	*Corynorhinus townsendii*	x				
Tricolored blackbird	*Agelaius tricolor*	x		x		
Western pond turtle	*Actinemys marmorata*	x				
Western red bat	*Lasirurs blossevillii*	x				
White-tailed kite	*Elanus leucurus*		x	x	x	x
Yellow warbler	*Setophaga petechia*	x				

Source: Jacobs 2014b

Attachment C: Plant Species Identified During Wetland Delineation Surveys

Plants are not differentiated into Wetland Systems.

Scientific Name	Common Name
Acer negundo var californicum	California box elder
Achillea millefolium	yarrow
Agrostis stolonifera	red top
Alisma plantago-aquatica	water plantain
Alnus rhombifolia	white alder
Alnus rubra	red alder
Alopecurus pratensis	meadow foxtail
Amaranthus biltoides	amaranth
Amaranthus deflexus	amaranth
Ammophila arenaria	European beachgrass
Amsinckia menziesii var intermedia	fiddleneck
Amsinckia spectabilis var spectabilis	coast fiddleneck
Anaphalis margaritacae	pearly everlasting
Anemone oregana	western wood anemone
Angelica hendersonii	coastal angelica
Angelica tomentosa	woodland angelica
Arabis blepharophylla	coast rock cress
Arctostaphylos uva-ursi	manzanita
Arctostaphylos virgata	Marin manzanita
Artemesia californica	California sagebrush
Artemesia pycnocephala	coastal sagewort
Athyrium filix-femina var cyclosorum	coastal lady fern
Azolloa filiculoides	mosquito fern
Baccharis pilularis	coyote bush
Berberis pinnata ssp. *pinnata*	Oregon grape
Brassica nigra	black mustard
Bromus diandrus	ripgut brome
Bromus madritensis ssp. *rubens*	foxtail chess
Calamogrostis crassiglumis	Thurber's reedgrass
Calamogrostis nutkaensis	Pacific reedgrass
Capsella bursa-pastoris	Shepherd's purse
Cardamine californica	milk maids
Carex leptalea	sedge
Carex obnupta	slough sedge
Carex subbracteata	many-headed sedge
Carpobrotus chilensis	sea fig (iceplant)
Carpobrotus edulis	hottentot fig (iceplant)
Ceanothus gloriousus var exaltus	Mount Vision Ceanothus
Ceanothus gloriousus var gloriousus	Point Reyes ceanothus
Ceanothus thyrsiflorus	prostrate ceanothus
Cerastium arvense	field chickweed
Chenopodium album	lamb's quarters
Chlorogalum pomeridianum	soap plant

Scientific Name	Common Name
Chrysolepis chrysophylla var minor	chinquapin
Cirsium vulgare	spear thistle
Claytonia perfoliata	miner's lettuce
Claytonia sibirica	candy flower
Conium maculatum	poison hemlock
Cortaderia jubata	Pampas grass
Cupressus macrocarpa	Monterey cypress
Daucus carota	carrot
Distichilis spicata	saltgrass
Elymus californicus	California bottlebrush grass
Elymus triticoides	creeping wild rye
Equisetum arvense	common horsetail
Equisetum hyemale	common scouring rush
Equisetum telmateia ssp. *braunii*	giant horsetail
Erodium brachycarpum	giant storksbill
Erodium cicutarium	storksbill
Erysimum capitatum	western wallflower
Eschscholzia californica	California poppy
Euonymous occidentalis var occidentalis	euonymous
Festuca arundinaceae	tall fescue
Foeniculum vulgare	sweet fennel
Fragaria vesca	wild strawberry
Frageria chiloensis	beach strawberry
Frankenia salina	alkalai heath
Galium aparine	sticky willy
Galium californicum var californicum	California sticky willy
Geranium carolinum	Carolina geranium
Gnapthalium palustre	marsh cudweed
Hedera helix	English ivy
Heracleum lanatum	cow parsnip
Heracleum maximum	cow parsnip
Holcus lanata	velvet grass
Hyphochaeris radicata	catsear
Ilex aquifolium	English holly
Iris douglasiana	Douglas' iris
Juncus balticus	Baltic rush
Juncus effusus	soft juncus
Juncus xiphioides	iris-leaved juncus
Lemna minor	duckweed
Ligusticum lucidum	lovage
Limnathes doglasii sulphurea	Point Reyes meadowfoam
Linum bienne	narrow-lead flax
Linum usitatissimum	common flax

Scientific Name	Common Name
Lithocarpus densiflorus var densiflorus	tan oak
Lolium perenne	English ryegrass
Lomatium utriculatum	hog fennel
Lonicera hispidula var vacillans	California honeysuckle
Lonicera involucrata var ledbourii	coast honeysuckle
Lupinus albifrons var albifrons	silverleaf lupine
Lupinus arboreus	bush lupine
Madia sativa	coast tar weed
Marah fabaceus	California wild cucumber
Marah oreganus	coast man root
Medicago arabica	spotted burclover
Medicago sativa	alfalfa
Melilotus alba	white clover
Melilotus indica	yellow clover
Miimulus aurantiacus	bush monkey flower
Mimulus guttatus	common monkey flower
Perideria gairdneri ssp. *gairdneri*	Gairdnerçs yampah
Phacelia californica	California phacelia
Pinus muricata	Bishop pine
Pinus radiata	Monterey pine
Plantago lanceolata	narrowleaf plantain
Plantago major	common plaintain
Plantago maritima	Pacific plantain
Platystemon californicus	cream cups
Polygonum arenastrum	common knotweed
Polystichum munitum	sword fern
Potentilla anserina ssp. *pacifica*	Pacific cinquefoil
Potentilla glandulosa var glandulosa	sticky cinquefoil
Pseudotsugata menziesii var menziesii	Douglas fir
Pteridium aqulinum	bracken fern
Quercus agrifolia var agrifolia	coast live oak
Raphanus sativa	radish
Rhamnus californica ssp. *californica*	California coffeeberry
Rhynchospora californica	California rhynchospora
Ribes menziesii	canyon gooseberry
Ribes sanguineum	red-flowering currant
Ribes sanguineum var glutinosum	pink-flowering currant
Ribes sanguineum var sanguineum	red-flowering currant
Rorippa palustris	yellow water cress
Alnus discolor	Himalayan blackberry
Rubus parviflorus	thimbleberry
Rubus ursinus	California blackberry
Rumex acetosella	sheep sorrel

Scientific Name	Common Name
Rumex crispus	curly dock
Rumex occidentalis	western dock
Rumex pulcher	fiddle dock
Salicornia depressa	common glasswort
Salicornia virginica	pickleweed
Salix exigua	narrow-leaf willow
Salix laevigata	red willow
Salix lasiandra	Pacific willow
Salix lasiolepis	arroyo willow
Salsola soda	salty shrub
Sambucus racemosa	red elderberry
Schoenoplectus californicus	California bulrush
Scrophularia californica	California figwort
Sidalceae hickmanii var anomola	Checkerbloom
Sidalceae hickmanii var viridis	Marin checkerbloom
Sidalceae malviflora ssp. malviflora	checker mallow
Sidalceae malviflora ssp. *californica*	California checkerbloom
Sidalceae malviflora ssp. *malviflora*	Checkerbloom
Sisymbrium officinale	hedge mustard
Sonchus asper	Lettuce
Spergulia macrotheca	large-flowered sand spurrey
Stachys rigida	rough hedge nettle
Stellaria media	common chickweed
Symphoricarpos albus var leavigata	bush snowberry
Thalictrm fendleri	meadow rue
Torillis nodosa	hedge parsley
Toxicodendron diversilobum	poison oak
Trifolium dubium	shamrock
Trillium ovatum	white trillium
Typha domingensis	southern cattail
Typha latifolia	broad-leaved cattail
Ulex europaea	gorse
Umbellaria californica	bay laurel
Urtica dioica ssp. gracilis	California nettle
Urtica dioica ssp. holosericea	hoary nettle
Verbascum blattaria	mullein
Vicia americana var americana	American vetch
Vicia hirsuta	tare
Vicia sativa	vetch
Vinca major	periwinkle
Viola adunca	western dog violet
Vulpia bromoides	brome fescue
Woodwardia fimbriata	chain fern

Source: Jacobs 2014

Attachment D: Appendix A Wetland Evaluation Supporting Documentation (USACE 1999)

Appendix A

Wetland evaluation supporting documentation; Reproducible forms.

Below is an example list of considerations that was used for a New Hampshire highway project. Considerations are flexible, based on best professional judgment and interdisciplinary team consensus. This example provides a comprehensive base, however, and may only need slight modifications for use in other projects.

GROUNDWATER RECHARGE/DISCHARGE— This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. It refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.

CONSIDERATIONS/QUALIFIERS

1. Public or private wells occur downstream of the wetland.
2. Potential exists for public or private wells downstream of the wetland.
3. Wetland is underlain by stratified drift.
4. Gravel or sandy soils present in or adjacent to the wetland.
5. Fragipan does not occur in the wetland.
6. Fragipan, impervious soils, or bedrock does occur in the wetland.
7. Wetland is associated with a perennial or intermittent watercourse.
8. Signs of groundwater recharge are present or piezometer data demonstrates recharge.
9. Wetland is associated with a watercourse but lacks a defined outlet or contains a constricted outlet.
10. Wetland contains only an outlet, no inlet.
11. Groundwater quality of stratified drift aquifer within or downstream of wetland meets drinking water standards.
12. Quality of water associated with the wetland is high.
13. Signs of groundwater discharge are present (e.g., springs).
14. Water temperature suggests it is a discharge site.
15. Wetland shows signs of variable water levels.
16. Piezometer data demonstrates discharge.
17. Other

FLOODFLOW ALTERATION (Storage & Desynchronization) — This function considers the effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of floodwaters. It adds to the stability of the wetland ecological system or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.

CONSIDERATIONS/QUALIFIERS

1. Area of this wetland is large relative to its watershed.
2. Wetland occurs in the upper portions of its watershed.
3. Effective flood storage is small or non-existent upslope of or above the wetland.
4. Wetland watershed contains a high percent of impervious surfaces.
5. Wetland contains hydric soils which are able to absorb and detain water.
6. Wetland exists in a relatively flat area that has flood storage potential.
7. Wetland has an intermittent outlet, ponded water, or signs are present of variable water level.
8. During flood events, this wetland can retain higher volumes of water than under normal or average rainfall conditions.
9. Wetland receives and retains overland or sheet flow runoff from surrounding uplands.
10. In the event of a large storm, this wetland may receive and detain excessive flood water from a nearby watercourse.
11. Valuable properties, structures, or resources are located in or near the floodplain downstream from the wetland.
12. The watershed has a history of economic loss due to flooding.
13. This wetland is associated with one or more watercourses.
14. This wetland watercourse is sinuous or diffuse.
15. This wetland outlet is constricted.
16. Channel flow velocity is affected by this wetland.
17. Land uses downstream are protected by this wetland.
18. This wetland contains a high density of vegetation.
19. Other

FISH AND SHELLFISH HABITAT (FRESHWATER) — This function considers the effectiveness of seasonal or permanent watercourses associated with the wetland in question for fish and shellfish habitat.

CONSIDERATIONS/QUALIFIERS

1. Forest land dominant in the watershed above this wetland.
2. Abundance of cover objects present.

STOP HERE IF THIS WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE

3. Size of this wetland is able to support large fish/shellfish populations.
4. Wetland is part of a larger, contiguous watercourse.
5. Wetland has sufficient size and depth in open water areas so as not to freeze solid and retain some open water during winter.
6. Stream width (bank to bank) is more than 50 feet.
7. Quality of the watercourse associated with this wetland is able to support healthy fish/shellfish populations.
8. Streamside vegetation provides shade for the watercourse.
9. Spawning areas are present (submerged vegetation or gravel beds).
10. Food is available to fish/shellfish populations within this wetland.
11. Barrier(s) to anadromous fish (such as dams, including beaver dams, waterfalls, road crossing) are absent from the stream reach associated with this wetland.
12. Evidence of fish is present.
13. Wetland is stocked with fish.
14. The watercourse is persistent.
15. Man-made streams are absent.
16. Water velocities are not too excessive for fish usage.
17. Defined stream channel is present.
18. Other

Although the above example refers to freshwater wetlands, it can also be adapted for marine ecosystems. The following is an example provided by the National Marine Fisheries Service (NMFS) of an adaptation for the fish and shellfish function.

FISH AND SHELLFISH HABITAT (MARINE) — This function considers the effectiveness of wetlands, embayments, tidal flats, vegetated shallows, and other environments in supporting marine resources such as fish, shellfish, marine mammals, and sea turtles.

CONSIDERATIONS/QUALIFIERS

1. Special aquatic sites (tidal marsh, mud flats, eelgrass beds) are present.
2. Suitable spawning habitat is present at the site or in the area.
3. Commercially or recreationally important species are present or suitable habitat exists.
4. The wetland/waterway supports prey for higher trophic level marine organisms.
5. The waterway provides migratory habitat for anadromous fish.
6. Essential fish habitat, as defined by the 1996 amendments to the Magnuson-Stevens Fishery & Conservation Act, is present (consultation with NMFS may be necessary).
7. Other

SEDIMENT/TOXICANT/PATHOGEN RETENTION — This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens in runoff water from surrounding uplands or upstream eroding wetland areas.

CONSIDERATIONS/QUALIFIERS

1. Potential sources of excess sediment are in the watershed above the wetland.
2. Potential or known sources of toxicants are in the watershed above the wetland.
3. Opportunity for sediment trapping by slow moving water or deepwater habitat are present in this wetland.
4. Fine grained mineral or organic soils are present.
5. Long duration water retention time is present in this wetland.
6. Public or private water sources occur downstream.
7. The wetland edge is broad and intermittently aerobic.
8. The wetland is known to have existed for more than 50 years.
9. Drainage ditches have not been constructed in the wetland.

STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.

10. Wetland is associated with an intermittent or perennial stream or a lake.
11. Channelized flows have visible velocity decreases in the wetland.
12. Effective floodwater storage in wetland is occurring. Areas of impounded open water are present.
13. No indicators of erosive forces are present. No high water velocities are present.
14. Diffuse water flows are present in the wetland.
15. Wetland has a high degree of water and vegetation interspersion.
16. Dense vegetation provides opportunity for sediment trapping and/or signs of sediment accumulation by dense vegetation is present.
17. Other

NUTRIENT REMOVAL/RETENTION/TRANSFORMATION — This function considers the effectiveness of the wetland as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels. One aspect of this function is to prevent ill effects of nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.

CONSIDERATIONS/QUALIFIERS

1. Wetland is large relative to the size of its watershed.
2. Deep water or open water habitat exists.
3. Overall potential for sediment trapping exists in the wetland.

4. Potential sources of excess nutrients are present in the watershed above the wetland.
5. Wetland saturated for most of the season. Ponded water is present in the wetland.
6. Deep organic/sediment deposits are present.
7. Slowly drained fine grained mineral or organic soils are present.
8. Dense vegetation is present.
9. Emergent vegetation and/or dense woody stems are dominant.
10. Opportunity for nutrient attenuation exists.
11. Vegetation diversity/abundance sufficient to utilize nutrients.

STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.

12. Waterflow through this wetland is diffuse.
13. Water retention/detention time in this wetland is increased by constricted outlet or thick vegetation.
14. Water moves slowly through this wetland.
15. Other

PRODUCTION EXPORT (Nutrient) — This function evaluates the effectiveness of the wetland to produce food or usable products for humans or other living organisms.

CONSIDERATIONS/QUALIFIERS

1. Wildlife food sources grow within this wetland.
2. Detritus development is present within this wetland
3. Economically or commercially used products found in this wetland.
4. Evidence of wildlife use found within this wetland.
5. Higher trophic level consumers are utilizing this wetland.
6. Fish or shellfish develop or occur in this wetland.
7. High vegetation density is present.
8. Wetland exhibits high degree of plant community structure/species diversity.
9. High aquatic vegetative diversity/abundance is present.
10. Nutrients exported in wetland watercourses (permanent outlet present).
11. “Flushing” of relatively large amounts of organic plant material occurs from this wetland.
12. Wetland contains flowering plants that are used by nectar-gathering insects.
13. Indications of export are present.
14. High production levels occurring, however, no visible signs of export (assumes export is attenuated).
15. Other

SEDIMENT/SHORELINE STABILIZATION — This function considers the effectiveness of a wetland to stabilize streambanks and shorelines against erosion.

CONSIDERATIONS/QUALIFIERS

1. Indications of erosion or siltation are present.
2. Topographical gradient is present in wetland.
3. Potential sediment sources are present up-slope.
4. Potential sediment sources are present upstream.
5. No distinct shoreline or bank is evident between the waterbody and the wetland or upland.
6. A distinct step between the open waterbody or stream and the adjacent land exists (i.e., sharp bank) with dense roots throughout.
7. Wide wetland (>10’) borders watercourse, lake, or pond.
8. High flow velocities in the wetland.
9. The watershed is of sufficient size to produce channelized flow.
10. Open water fetch is present.
11. Boating activity is present.
12. Dense vegetation is bordering watercourse, lake, or pond.
13. High percentage of energy-absorbing emergents and/or shrubs border a watercourse, lake, or pond.
14. Vegetation is comprised of large trees and shrubs that withstand major flood events or erosive incidents and stabilize the shoreline on a large scale (feet).
15. Vegetation is comprised of a dense resilient herbaceous layer that stabilizes sediments and the shoreline on a small scale (inches) during minor flood events or potentially erosive events.
16. Other

WILDLIFE HABITAT — This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and/or migrating species must be considered. Species lists of observed and potential animals should be included in the wetland assessment report.[1]

CONSIDERATIONS/QUALIFIERS

1. Wetland is not degraded by human activity.
2. Water quality of the watercourse, pond, or lake associated with this wetland meets or exceeds Class A or B standards.
3. Wetland is not fragmented by development.
4. Upland surrounding this wetland is undeveloped.
5. More than 40% of this wetland edge is bordered by upland wildlife habitat (e.g., brushland, woodland, active farmland, or idle land) at least 500 feet in width.
6. Wetland is contiguous with other wetland systems connected by a watercourse or lake.
7. Wildlife overland access to other wetlands is present.
8. Wildlife food sources are within this wetland or are nearby.
9. Wetland exhibits a high degree of interspersion of vegetation classes and/or open water.
10. Two or more islands or inclusions of upland within the wetland are present.
11. Dominant wetland class includes deep or shallow marsh or wooded swamp.
12. More than three acres of shallow permanent open water (less than 6.6 feet deep), including streams in or adjacent to wetland, are present.
13. Density of the wetland vegetation is high.
14. Wetland exhibits a high degree of plant species diversity.
15. Wetland exhibits a high degree of diversity in plant community structure (e.g., tree/shrub/vine/grasses/mosses)
16. Plant/animal indicator species are present. (List species for project)
17. Animal signs observed (tracks, scats, nesting areas, etc.)
18. Seasonal uses vary for wildlife and wetland appears to support varied population diversity/abundance during different seasons.
19. Wetland contains or has potential to contain a high population of insects.
20. Wetland contains or has potential to contain large amphibian populations.
21. Wetland has a high avian utilization or its potential.
22. Indications of less disturbance-tolerant species are present.
23. Signs of wildlife habitat enhancement are present (birdhouses, nesting boxes, food sources, etc.).
24. Other

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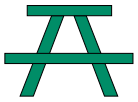
[1]In March 1995, a rapid wildlife habitat assessment method was completed by a University of Massachusetts research team with funding and oversight provided by the New England Transportation Consortium. The method is called WEThings (wetland habitat indicators for non-game species). It produces a list of potential wetland-dependent mammal, reptile, and amphibian species that may be present in the wetland. The output is based on observable habitat characteristics documented on the field data form. This method may be used to generate the wildlife species list recommended as backup information to the wetland evaluation form and to augment the considerations. Use of this method should first be coordinated with the Corps project manager. A computer program is also available to expedite this process.

RECREATION (Consumptive and Non-Consumptive) — This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland. Non-consumptive opportunities do not consume or diminish these resources of the wetland.



CONSIDERATIONS/QUALIFIERS

1. Wetland is part of a recreation area, park, forest, or refuge.
2. Fishing is available within or from the wetland.
3. Hunting is permitted in the wetland.
4. Hiking occurs or has potential to occur within the wetland.
5. Wetland is a valuable wildlife habitat.
6. The watercourse, pond, or lake associated with the wetland is unpolluted.
7. High visual/aesthetic quality of this potential recreation site.
8. Access to water is available at this potential recreation site for boating, canoeing, or fishing.
9. The watercourse associated with this wetland is wide and deep enough to accommodate canoeing and/or non-powered boating.
10. Off-road public parking available at the potential recreation site.
11. Accessibility and travel ease is present at this site.
12. The wetland is within a short drive or safe walk from highly populated public and private areas.
13. Other

EDUCATIONAL/SCIENTIFIC VALUE — This value considers the suitability of the wetland as a site for an “outdoor classroom” or as a location for scientific study or research.

CONSIDERATIONS/QUALIFIERS

1. Wetland contains or is known to contain threatened, rare, or endangered species.
2. Little or no disturbance is occurring in this wetland.
3. Potential educational site contains a diversity of wetland classes which are accessible or potentially accessible.
4. Potential educational site is undisturbed and natural.
5. Wetland is considered to be a valuable wildlife habitat.
6. Wetland is located within a nature preserve or wildlife management area.
7. Signs of wildlife habitat enhancement present (bird houses, nesting boxes, food sources, etc.).
8. Off-road parking at potential educational site suitable for school bus access in or near wetland.
9. Potential educational site is within safe walking distance or a short drive to schools.
10. Potential educational site is within safe walking distance to other plant communities.
11. Direct access to perennial stream at potential educational site is available.
12. Direct access to pond or lake at potential educational site is available.
13. No known safety hazards exist within the potential educational site.
14. Public access to the potential educational site is controlled.
15. Handicap accessibility is available.
16. Site is currently used for educational or scientific purposes.
17. Other

UNIQUENESS/HERITAGE — This value considers the effectiveness of the wetland or its associated waterbodies to provide certain special values. These may include archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, its relative importance as a typical wetland class for this geographic location. These functions are clearly valuable wetland attributes relative to aspects of public health, recreation, and habitat diversity.

CONSIDERATIONS/QUALIFIERS

1. Upland surrounding wetland is primarily urban.
2. Upland surrounding wetland is developing rapidly.
3. More than 3 acres of shallow permanent open water (less than 6.6 feet deep), including streams, occur in wetlands.
4. Three or more wetland classes are present.
5. Deep and/or shallow marsh or wooded swamp dominate.
6. High degree of interspersion of vegetation and/or open water occur in this wetland.
7. Well-vegetated stream corridor (15 feet on each side of the stream) occurs in this wetland.
8. Potential educational site is within a short drive or a safe walk from schools.
9. Off-road parking at potential educational site is suitable for school buses.
10. No known safety hazards exist within this potential educational site.
11. Direct access to perennial stream or lake exists at potential educational site.
12. Two or more wetland classes are visible from primary viewing locations.
13. Low-growing wetlands (marshes, scrub-shrub, bogs, open water) are visible from primary viewing locations.
14. Half an acre of open water or 200 feet of stream is visible from the primary viewing locations.
15. Large area of wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
16. General appearance of the wetland visible from primary viewing locations is unpolluted and/or undisturbed.
17. Overall view of the wetland is available from the surrounding upland.
18. Quality of the water associated with the wetland is high.
19. Opportunities for wildlife observations are available.
20. Historical buildings are found within the wetland.
21. Presence of pond or pond site and remains of a dam occur within the wetland.
22. Wetland is within 50 yards of the nearest perennial watercourse.
23. Visible stone or earthen foundations, berms, dams, standing structures, or associated features occur within the wetland.
24. Wetland contains critical habitat for a state- or federally-listed threatened or endangered species.
25. Wetland is known to be a study site for scientific research.
26. Wetland is a natural landmark or recognized by the state natural heritage inventory authority as an exemplary natural community.
27. Wetland has local significance because it serves several functional values.
28. Wetland has local significance because it has biological, geological, or other features that are locally rare or unique.
29. Wetland is known to contain an important archaeological site.
30. Wetland is hydrologically connected to a state or federally designated scenic river.
31. Wetland is located in an area experiencing a high wetland loss rate.
32. Other

APPENDIX D: NPS PROCEDURAL MANUAL #77-1: WETLAND PROTECTION - APPENDIX 2: BEST MANAGEMENT PRACTICES AND CONDITIONS FOR PROPOSED ACTIONS WITH THE POTENTIAL TO HAVE ADVERSE IMPACTS ON WETLANDS

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The following serve as Best Management Practices (BMPs) for NPS actions that may have adverse impacts on wetlands. Additional BMPs may be appropriate depending on local conditions or special circumstances. These also serve as "conditions" that must be met for the actions listed in Section 4.2.1 of these procedures to qualify as "excepted."

1. **Effects on hydrology and fluvial processes:** Action must have only negligible to minor, new adverse effects on site hydrology and fluvial processes, including flow, circulation, velocities, hydroperiods, water level fluctuations, sediment transport, channel morphology, and so on. Care must be taken to avoid any rutting caused by vehicles or equipment.

2. **Effects on fauna:** Action must have only negligible to minor, new adverse effects on normal movement, migration, reproduction, or health of aquatic or terrestrial fauna, including at low flow conditions.

3. **Water quality protection and certification:** Action is conducted so as to avoid degrading water quality to the maximum extent practicable. Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway or wetland. Action is consistent with state water quality standards and Clean Water Act Section 401 certification requirements (check with appropriate state agency).

4. **Erosion and siltation controls:** Appropriate erosion and siltation controls must be maintained during construction, and all exposed soil or fill material must be permanently stabilized at the earliest practicable date.

5. **Proper maintenance:** Structure or fill must be properly maintained so as to avoid adverse impacts on aquatic environments or public safety.

6. **Heavy equipment use:** Heavy equipment use in wetlands must be avoided if at all possible. Heavy equipment used in wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve preconstruction elevations.

7. **Stockpiling material:** Whenever possible, excavated material must be placed on an upland site. However, when this is not feasible, temporary stockpiling of excavated material in wetlands must be placed on filter cloth, mats, or some other semipermeable surface, or comparable measures must be taken to ensure that underlying wetland habitat is protected. The material must be stabilized with straw bales, filter cloth, or other appropriate means to prevent reentry into the waterway or wetland.

8. **Removal of stockpiles and other temporary disturbances during construction:** Temporary stockpiles in wetlands must be removed in their entirety as soon as practicable. Wetland areas temporarily disturbed by stockpiling or other activities during construction must be returned to their pre-existing elevations, and soil, hydrology, and native vegetation communities must be restored as soon as practicable.

9. **Topsoil storage and reuse:** Revegetation of disturbed soil areas should be facilitated by salvaging and storing existing topsoil and reusing it in restoration efforts in accordance with NPS policies and guidance. Topsoil storage must be for as short a time as possible to prevent loss of seed and root viability, loss of organic matter, and degradation of the soil microbial community.

10. **Native plants:** Where plantings or seeding are required, native plant material must be obtained and used in accordance with NPS policies and guidance. Management techniques must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species.

11. **Boardwalk elevations:** Minimizing shade impacts, to the extent practicable, should be a consideration in designing boardwalks and similar structures. (Placing a boardwalk at an

elevation above the vegetation surface at least equal to the width of the boardwalk is one way to minimize shading.)

12. **Wild and Scenic Rivers:** If the action qualifies as a water resources project pursuant to Section 7(a) of the Wild and Scenic Rivers Act, then appropriate project review and documentation requirements under Section 7(a) are required.

13. **Coastal zone management:** Action must be consistent, to the maximum extent practicable, with state coastal zone management programs.

14. **Endangered species:** Action must not jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, including degradation of critical habitat (see *NPS Management Policies 2006* and guidance on threatened and endangered species).

15. **Historic properties:** Action must not have adverse effects on historic properties listed or eligible for listing in the National Register of Historic Places.

APPENDIX H: PUBLIC AND AGENCY COMMENTS AND RESPONSES ON THE EA/IS

Sir Francis Drake Boulevard EA/IS Public/Agency Review Comments and Responses

No.	Name and Date Sent	Comment	Response
Please note: Color bolded comment text is directly answered in response column			
1	Unknown Sent: 7/23/15	This is great news! I drove to Pierce Point last month for the first time in a few years, and was surprised by the terrible condition of the road. Glad to learn it will be fixed. During construction, could the National Park Service please maintain an updated status of planned roadwork posted to the Point Reyes park website under the Park Alerts? So we can look in advance when choosing a date to visit the park and avoid a road closure. Thanks.	At least one lane of traffic will remain open during construction with a maximum 30-minute delay. If any delay longer than 30 minutes is anticipated to accomplish specific construction activities, notice will be provided to the public, relevant local agencies, school districts, and emergency service providers. In addition, Point Reyes National Seashore will post "park alerts" on its web site when notified by the lead agencies during construction.
2	Unknown Sent: 7/24/15	Improving this stretch of road would be great. The pavement is horrible and there is little to no shoulder. Better pavement and a shoulder would be a great improvement for people wishing to bike this stretch of road.	Thank you for your comment.
3	Jarrod Mendoza Sent: 7/31/15	Dear Superintendent Muldon, My Name is Jarrod Mendoza. I am a rancher in the Point Reyes National Seashore. The property that I lease is in a location where Sir Francis Drake Blvd runs in the middle. I would like to propose that the project look into putting two underpasses for livestock at the B ranch location. Cattle crossing the road can cause damage to the road which will require more repairs in the future. Safety for the animals from vehicles and safety to drivers is also a concern. An underpass located at the two main heavy traffic areas for cattle would solve both of theses problems. Thank You Jarrod Mendoza	Historically the cattle crossings at both Historic A Ranch and Historic B Ranch have been at-grade crossings and the at-grade crossings are being maintained as part of the historic operation of the ranches. Cattle underpasses are not feasible at these ranches due to drainage issues and impacts to adjacent sensitive resources beyond the 60-foot wide county road easement. The road surface will require periodic maintenance but it is a minor cost compared to an undercrossing. Historic A and B Ranches have operations and facilities on both sides of the road and adding cattle under-crossings would not alleviate the safety concerns within the ranch complex as the need for ranch equipment, personnel, animals, and large trucks to cross the road at grade would still be necessary for operation of the ranches.
4	Patricia Maurice California Department of Transportation District 4 Sent: 7/24/15	Dear Earnest Klock Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the project referenced above. The proposed project would resurface, restore, and rehabilitate a 12-mile segment of Sir Francis Drake Boulevard near Tomales Bay and Point Reyes. Although the project is more than six miles from the State Highway System, State Route (SR) 1 serves as the primary access point for regional traffic to the project, indicating that the project could lead dto increased traffic on SR 1 during construction. Caltrans' new mission, vision, and goals signal a modernization of our approach to California's transportation system. We review this local development for impacts to the State Highway System in keeping with our mission, vision, and goals for sustainability/livability/economy, and safety/health. We provide these comments consistent with the State's smart mobility goals that support a vibrant economy, and build communities, not sprawl. The following comments are based on the MND. Transportation Management Plan (TMP) If it is determined that traffic restrictions and detours are needed on or which may affect State highways, a TMP may be required for approval by Caltrans prior to construction. These must be prepared in accordance with Caltrans' TMP Guidelines. Further information is available for download at the following web address: http://www.dot.ca.gov/hq/traffops/trafmgmt/tmp_lcs/index.htm. Please ensure that such plans are also prepared in accordance with the TMP requirements of the corresponding jurisdictions. For further assistance, please contact the Caltrans District 4 Office of Traffic Management Operations at (510) 286-4579. Please feel free to call or email Greg Currey at (510) 286-5623 or Gregory.currey@dot.ca.gov with any questions regarding this letter.	During construction, at least one lane of traffic on Sir Francis Drake Boulevard shall remain open during construction, with a maximum 30-minute delay. No further restrictions or detours are anticipated. No impacts to SR 1 are anticipated during construction. If traffic restrictions or detours that would affect SR 1 become necessary, FHWA-CFLHD will contact Caltrans prior to construction to discuss the potential need for a TMP.

No.	Name and Date Sent	Comment	Response
		Sincerely, Patricia Maurice District Branch Chief Local Development – Intergovernmental Review	
5	Leonard Blumin Sent 8/9/15	I'm all in favor of making the roadway safer from the Pierce Pt. Rd.intersection out to the Chimney Rock intersection. I urge that the plan consider preserving public access to the critically important windbreak trees at Historic Ranches A& B, as well as providing safe off road parking spaces at these spots, beloved by lovers of nature that visit the Outer Point.	As a result of widening the roadway to a consistent 24-foot width, areas along the side of the roadway that are currently used for informal pullouts are likely to be reduced. However, improvements in the areas of Historic A Ranch and Historic B Ranch have been designed to avoid impacts to ranch buildings and the windbreaks. Access to informal pullouts would not be permanently precluded by the improvements, although access may be temporarily limited during construction at these locations. Paved ditches are not proposed adjacent to the core of Historic A Ranch or Historic B Ranch. Paved ditches may be installed north of Historic B Ranch to minimize earthwork on the west side of the roadway where steep hillsides occur; however, these would not be located adjacent to the informal pullout (i.e., cattle access) where it is believed birdwatchers park. The analysis of impacts to birdwatchers has been included in the errata for the EA/IS. Steep topography immediately adjacent to Historic B Ranch eliminates the potential for a designated pullout within the immediate vicinity of the windbreak. Furthermore, substandard vertical curves within the area of the ranches, particularly in the area of Historic B Ranch, limit potential sight distance for pullouts in these areas, and would create further unsafe conditions for pedestrians and motorists in this area.
6	Gordon Bennett Save Our Seashore Sent: 8/9/15	h h Save Our Seashore h h A 501(c)(3) Charitable Organization (EIN 94-3221625) Founded in 1993 to Protect Marin Countys Ocean, Coasts, Estuaries, Watersheds and Creeks PO Box 342, Pt. Reyes Station, CA 94956 gbatmuirb@aol.com 415-663-1881 August 10, 2015 To: John A. Dell'Osso, Point Reyes National Seashore (PRNS) http://parkplanning.nps.gov/document.cfm?parkID=333&projectID=53489&documentID=67326 Re: Sir Francis Drake Boulevard (SFDB) Improvement Project Environmental Assessment / Impact Statement (EA/IS) Save Our Seashore offers the following nine comments on SFDB EA/IS: 1) RECREATIONAL BIRDING IMPACTS AT HISTORIC WINDBREAKS - The 6a SFDB EA/IS fails to acknowledge or mitigate a major recreational impact: the potential elimination of informal off-road parking at the historic windbreaks on the A (Nunez) and B (Mendoza) Ranches. The PRNS website notes: Point Reyes National Seashore offers some of the finest birdwatching in the United States&With nearly 490 species recorded (over 50% ospecies of birds in North America)& A search on the NorthbayBirds Yahoo Group will reveal thousands of references to the A and B Ranch windbreaks, birding hotspots first discovered by Rich Stallcup in the 1960s. Yet the SFDB EA/IS treats these sites only as constrained construction sites, rather than recreational sites that deserve deeper consideration. Birders park under the trees at the northernmost B-Ranch windbreak (Google photo to left) in order to avoid parking nearer the ranch core and potential interfering with ranch operations.	Response 6a: Regarding analysis of safety impacts to birdwatching, there is currently no designated parking adjacent to Historic A Ranch or Historic B Ranch. Providing a uniform width roadway, 1-foot shoulders, and flattening roadside slopes will not exacerbate safety concerns for vehicles that have pulled off the road in these areas. Regarding analysis of recreational access for bird watching, please see the response to Comment #5. Regarding the visual impact analysis prepared for the EA/IS, visual simulations were conducted according to FHWA Visual Impact Analysis guidance. Key observation points were derived based on areas expected to experience the greatest visual change, areas that represent landscape units identified for the project, and areas that capture viewer group views. Therefore, the areas where simulations were developed are intended to be "representative of the range of views affected by the project." Response 6b: The requirements for setting speed limits are set forth in the California Vehicle Code. Speed limits require an engineering and traffic study in order to set speed limits that are uniform throughout the state and are not set arbitrarily. As stated in the California Manual for Setting Speed Limits, "setting the speed limit arbitrarily low often makes violators of a disproportionate number of drivers, does not facilitate orderly movement of traffic, and requires constant enforcement to maintain compliance" (CalTrans 2014). Existing posted speed limits in the project corridor vary between 35 mph and 40 mph. Based on coordination with Marin County and PRNS as well as review of available safety data, travel speeds were not identified as an issue to be addressed in this corridor. Therefore, changes to the design speed of the roadway or the existing posted speed limits are not proposed as part of this project and travel speeds in the corridor are expected to remain generally consistent with existing conditions. Response 6c: Existing cattle guards will be replaced at their current locations and to

No.	Name and Date Sent	Comment	Response
		Birders then walk along the west side of the road to view the windbreak and along the east side to view the pond. But the EA/IS lacks any figure or before-after photo simulation showing how this site will be handled. We can only surmise that Figure 4 (left) is a rough approximation of what is planned. If so, then the proposal appears to eliminate both off-road parking and pedestrian use under the trees as well as increase speed to 40 MPH through this area & all resulting in increased danger to birdwatchers. As can be seen in the EA/IS photos (right) taken along the B Ranch windbreak, the EA/IS ironically acknowledges the dangerous conditions at this site for vehicles. &but not for birdwatchers who frequent this windbreak area and who are often focused on birds, not vehicles. Similarly ironic is the EA/IS use of very informative before-after photo simulations (right), but only to illustrate potential impacts to views&not potential impacts to these very constrained windbreak sites. Thus the public is left to wonder what is proposed for both the A and B Ranch windbreak sites. The EA/ISs lack of even partially detailed plans (e.g. the typical 30% cpleted plan) for these constrained sites in makes informed comment from the public unnecessarily difficult. Assuming the previously referenced Figure 4 is a rough plan for the B Ranch site, we urge that a comparably-sized pullout that would be un-signed and informal could be located just north of the B-Ranch windbreak, which would mitigate for the elimination of the current parking under the trees. It is also possible to bird the B Ranch windbreak from the field above, but without a nearby pullout, birders would be required to walk some distance on a road that has no pedestrian facilities other than the proposed 3-foot clear area. Such clear areas (free from encroachment of agricultural fencing or other structures) are important not only for vehicle safety but also for pedestrians, yet Figure 4 does not show a clear area under these B Ranch trees. A retaining wall built adjacent to the paved ditch in figure 4 would leave no safe area under these trees for either vehicles or pedestrians. The A-ranch site is likely less constrained. Even with a wider road, it may be possible with appropriate grading to maintain the existing informal pullout at the base of the A Ranch windbreak. Alternate parking areas at A Ranch are problematic: the area south of the windbreak is in the ranch core and area north of the windbreak includes a well-used ranch access road that should not be blocked.	meet the wider roadway width. The existing cattle guards are currently broken and filled in with sediment. The new cattle guards, with the open rails, will function as well or even better as "rumble strips" than the existing ones do currently. Response 6d: The proposed project improvements adjacent to Historic A Ranch and Historic B Ranch would not directly or indirectly affect the Monterey Cypress trees adjacent to the west side of Sir Francis Drake Boulevard. Based on topography of the area, it is likely that the trees are receiving water from subsurface throughflow upslope (i.e., west) of the project area, and from fog drip, which is an important source of water for vegetation on the peninsula. Also, the trees are drought tolerant and typically do not require, nor thrive in, very moist environments. The minor increases in impervious surface adjacent to the trees would not reduce the amount of water that the trees may receive from the roadside ditch, which would continue to exist along most areas adjacent to the trees. Additionally, post construction best management practices, such as vegetated swales and vegetated buffers, will be used to reduce velocity of stormwater runoff, the net increase in runoff volume, and minimize impacts to water quality. However, should the trees be damaged during construction, FHWA-CFLHD and Marin County would be responsible for purchasing, planting, and monitoring replacement trees in consultation with the NPS and the leaseholding rancher. With respect to the potential effect of paved ditch. No paved ditch is proposed adjacent to the trees at Historic A ranch. Less than 100 linear feet of paved ditch is proposed adjacent to the trees at Historic B Ranch. Paved ditch is proposed north of the ranch core to reduce the construction footprint in this area of steep topography. The trees are at a higher elevation than the roadway, with most of their lateral roots being several feet above the ditch elevation. Redistribution of the amount of water that the trees may receive from the ditch is not anticipated to impact the trees due to the other sources of water available on site. With respect to potential effect of a retaining wall, the retaining wall initially proposed adjacent to Historic B Ranch is no longer part of the project. Maintenance of trees within windbreaks is under the jurisdiction of the National Park Service and mitigation for natural death of trees is a National Park Service management decision, which is beyond the scope of this project. Response 6e: According to federal, state, and local databases, there are no permitted aboveground storage tanks (ASTs) on the Historic B Ranch property. The proposed project would not impact the Historic B Ranch site or the unpermitted AST. Therefore, the suggested measures are not required for the project. Response 6f: The potential use of a mitigation bank has been eliminated. These revisions are reflected in the errata for the EA/IS. Mitigation within PRNS is proposed and coordination with Marin County, the National Park Service, and the US Army Corps of Engineers is ongoing to determine mitigation requirements for the Section 404 permit. With this regulatory compliance as mitigation, there will be no significant impacts to wetlands or other jurisdictional waters. Response 6g: The existing 84-inch diameter culverts will be replaced with an open-bottom precast concrete arch structure (approximately 32 feet wide, 8 feet high), which is sized to convey the 100-year storm event. Hydraulic analysis has shown that a 25 cm

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		6b Further, the EA/IS notes on page 9 (emphasis ours) Advanced warning signs would be considered and may be included at approaches to areas where speed limits would be reduced, such as ranches. Such advance signs (e.g. Reduced Speed Ahead) should be mandatory, not optional. The Projects design speed of 40 MPH is too fast for these crowded areas. Reduced Speed areas should be expanded beyond the ranch cores to include the adjacent windbreaks and associated pullouts frequented by birdwatchers. 6c Lastly, signs alone are inadequate to slow drivers distracted by the scenery. Cattle guards at the ranches now function as defacto rumble strips. However the placement of these guards is determined by ranching operations, not traffic control. And although the EA/IS fails to mention replacement, we presume that existing cattle guards will be replaced with new wider guards, which will reduce their effectiveness as defacto rumble strips. Thus we urge the EA/IS should consider as mandatory the appropriately-sited installation of rumble strips to provide an auditory warning for drivers to pay attention to changing road conditions and slow down through the ranch cores and associated windbreaks frequented by birders. 2) CULTURAL IMPACTS AT HISTORIC WINDBREAKS - The EA/IS notes (page 42) the contractor shall avoid disturbing trees and their roots within the Historic B Ranch windbreak. But the EA/IS also notes on page 40 These trees are reaching the end of their natural lives& Contrary to the EA/IS claim of No Impact, it appears far more likely that the expansion of impervious surfacing close to these trees, the installation of a paved ditch that will intercept runoff previously filtering into the ground below the trees and the possible retaining wall next to the trees will indeed impact trees already nearing the end of their natural lives. We therefore urge planting of replacement trees at the B-Ranch windbreak as a mandatory yet inexpensive mitigation for this windbreak at risk of losing not only its cultural value, but also its recreational value for birders. 6d 3) POTENTIAL ADDITIONAL ENVIRONMENTAL HAZARDS - The EA/IS has identified minor environmental hazards at A-Ranch, but fails to mention B Ranchs above-ground diesel tank, which is in the shed at the rear of the windbreak at the pull-off in the right photo. 6e If the tank is still in use, then the cost of crash barriers and permanent spill safeguards should be adopted as expenses of and mitigations for this project. 4) ON-SITE MITIGATION ONLY - The EA/IS page 86 notes (emphasis ours) : CFLHD shall compensate for the permanent loss of jurisdictional features through purchase of mitigation credits at an approved wetland mitigation bank and/or creation of wetland and riparian compensatory mitigation. Flora and fauna deprived of habitat due to road widening cannot be replaced by mitigation credits purchased at some distant site. 6f	sea level rise will have a negligible effect on the water surface elevation of Schooner Creek during a 100-year storm event. Due to site constraints and the goal to minimize environmental impacts, the roadway profile cannot be raised enough to provide 2 feet of freeboard. Approximately one foot of freeboard will be provided. The proposed arch culvert will convey the 100-year event without overtopping the road, which is a significant improvement over existing hydraulic conditions, where a 25-year event will overtop. Response 6h: Pervious pavement is not proposed for the project due to cost and maintenance considerations, as well site considerations. For roadways, pervious pavement is typically used on low-volume roads (e.g., < 500 vehicles per day); SFDB had an average daily traffic volume of 1,369 vehicles in 2014 and pervious pavement is not considered suitable for this location. Post construction best management practices, such as vegetated swales and vegetated buffers, will be used to reduce velocity of stormwater runoff, the net increase in runoff volume, and minimize impacts to water quality. Roadside drainage conditions are currently very poor in many locations along the road, which has led to flooding in some areas. The poor drainage also compromises the integrity of the pavement, causing rutting and raveling of the roadway surface, creating a rougher ride and potentially unsafe driving conditions. Improving the drainage conditions along the road is one of the goals of the project to improve safety for all users. A paved ditch has a narrower impact footprint than a typical earthen roadside ditch. Therefore, paved ditches were incorporated into the design in some locations to reduce impacts to adjacent environmental resources (such as wetlands), or in locations where an earthen ditch would not fit due to the existing topography. The paved ditches typically transition back to an earthen roadside ditch once there is adequate room. The roadside ditches will be revegetated with native material, which will provide a natural grass buffer for the runoff to reduce velocities and provide a pollutant filter before reaching the receiving stream channel. Response 6i: This figure has been removed. The study area used for wetlands and the California red-legged frog was the PRNS watershed, similar to the water quality analysis, which encompasses the peninsula. These corrections/revisions are reflected in the errata. Response 6j: This revision has been made and is reflected in the errata. Response 6k: It is not possible for the National Park Service to confirm if comment links function throughout the entire comment period. In the event that a comment link becomes non-functional at any point during a comment period, alternative access is available through the NPS PEPC site parkplanning.nps.gov. Additionally, written comments on this project were accepted via mail or hand delivery. Therefore, the comment period will not be extended.

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		Thus we urge that off-site mitigation credits should be eliminated as an alternative in the project and only on-site mitigations carried out. Left is a photo of the site at the end of the Drakes Estero access road, which is on filled wetlands and scheduled for restoration. This site is downstream from the East Schooner Creek road construction site and thus should be carefully considered as on-site mitigation. The other on-site mitigation area that should be considered is the lower portion of D Rodgers Ranch that was historically riparian on the other side of the creek from the road construction. As seen in the left photo, there are now inadequate buffers between the ranch and the creek. On-site mitigation here would serve both as project mitigation and on-going protection. We believe that after consultation with the rancher, operations could and should be moved further from the creek, fill removed, and a buffer of riparian vegetation restored. 6g 5) SEA LEVEL RISE IMPACTS - One of the key objectives of eh SFDB Project is to restore the now flood-prone access to PRNS (see EA/IS photo from page 22 below) But EA/IS Figure 16 (above) shows the access to PRNS underwater with a 25 cm Sea Level Rise and a 100-year storm. We believe that a project intended resolve a current flooding problem should also be designed to resolve a reasonably anticipated future flooding problem. Thus we urge that the two existing 84-inch diameter corrugated metal culverts at Schooner Creek (PM 9.2) should be replaced with an open-bottom arch structure with an approximately 32-foot-wide opening at an elevation that will provide 2 feet of freeboard above the water level caused by a 25 cm Sea Level Rise and a 100-year storm event. 6h 6) NO ADDITIONAL IMPERVIOUS SURFACING - We appreciate the multiple design exceptions that will minimize ground disturbance and reduce impacts to adjacent wetlands. However, the EA/IS still notes (page 79)...a total of 4.3 acres of impervious surface would be added&additional paved ditch sections&could increase the amount&to a total of 6.0 acres. The increase in impervious surface could permanently affect water quality within the study area by increasing the velocity and amount of stormwater runoff&. The additional impervious surface could also interfere with the rate of groundwater recharge; however, the study area is not within an identified groundwater basin. Park legislation has curtailed development within PRNS, and the watershed contains ample pervious surface... In addition, the coastal watershed assessment indicated impervious surface was a low stressor to subwatersheds that make up the PRNS watershed&For these reasons, the increase in impervious surface is expected to have minimal impacts&. We regard any increase in paved surfaces to be a permanent threat that is not diminished by impermanent considerations of groundwater,	

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		legislation or pervious surfaces elsewhere. We thus request that the project include pervious paving or aggregate substrate that equals the amount of additional impervious paving now proposed (4.3 - 6.0 acres) thus resulting in the project creating no net loss of pervious area&just the same as the project will result in no net loss of wetlands. 7) 6i MAPPING ERRORS - The EA/IS Figure 16 (left) shows the watersheds for Barries Bay Creamery Bay, and Schooner Bay running all the way to the Pacific Ocean. If that were actually true, PRNS would be an island. It is not and thus the watershed map is incorrect. 8) 6j REFERENCE ERRORS - The EA/IS notes Page 23: SFDB also provides access to roads that serve a wireless telegraphy receiving station (RCA station), a Coast Guard communications center and historic cemetery, and the Drakes Bay Oyster Company (now closed and planned to be managed as wilderness by the NPS). But the RCA station is a historic wireless telegraphy receiving station that is no longer in commercial service (it is maintained in operation for historical purposes only). Further, the former Drakes Bay Oyster Company (DBOC) site accessed by SFDB is not the site of a historic operation (DBOC was formed in 2004-5). None of the former DBOC structures removed from the site after full federal control were determined to have any historic relevance. This is similar to the removal after full federal control of the non-historic structures at Drakes Bay Estates, previously a private development on Limantour Beach Thus in the same sense that the road to Limantour Beach is not referred to as the road to the former Drakes Bay Estates, so similarly the road that provides access to Drakes Estero should not be referred to as the road to the former Drakes Bay Oyster Company. Lastly, the former DBOC facility site is not in the Wilderness Zone and thus is not planned to be managed as wilderness by the NPS (instead it is the site of the former state waters in Drakes Estero that is now managed as wilderness by the NPS. We thus request that the above page 23 sentence be corrected to read: SFDB also provides access to roads that serve a historic wireless telegraphy receiving station (RCA station), a Coast Guard communications center and historic cemetery, and the Drakes Bay Oyster Company (now closed and planned to be Drakes Estero, which is managed as wilderness by the NPS). 9) 6k WEBSITE ERRORS - The PRNS home page tab Comment on Road Maintenance Project has been broken for several days: Requested Page Not Found (404): Well, that stinks [we agree]&Please try using the search tool to find what you need. But when you enter the search term Sir Francis Drake, the engine	

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		returns with Sorry, no results found for 'Sir Francis Drake'. Like the EA/ISs lack of even partially detailed plans for constrained sites, this broken link makes informed comment from the public unnecessarily difficult. We therefore request an additional 10 days for public comment to midnight August 23, 2015. Thank You for the Opportunity to Comment. Sincerely, President, Save Our Seashore	
7	Ron Mallory Sent: 8/9/15	7a I agree with Gordon Bennett's comments sent to you August 10th. 7b One of my primary questions, in addition to the birding access and safety issues that Gordon raises, is why do we need 40 mph speeds in those parts of the PRNS; 30 mph would be much safer. Ron Mallory Larkspur, CA	Response 7a: Please refer to responses to Comments #5 and #6a-6k. Response 7b: Please refer to response to Comment #6b.
8	Donald Reinberg Sent: 8/9/15	8a Retain safe pedestrian access to windbreak sites 8b Retain safe informal pullouts near windbreak sites 8c Keep speeds reduced along windbreak sites 8d Start planting trees for future along the windbreaks as old ones are on their way out.	Response 8a: Please refer to responses to Comments #5 and Comment #6a. Response 8b: Please refer to responses to Comments #5 and Comment #6a. Response 8c: Please refer to responses to Comment #6b. Response 8d: Please refer to responses to Comment #6d.
9	Linda Brownrigg Sent: 08/10/15	Dear Sirs I have read and strongly agree with the comments you have received from Save Our Seashore (which I have not supported financially up to now). These points are well taken. 9a I disagree with the plan to raise the speed limit to 40 mph. That is unnecessary and dangerous for pedestrians, especially birders. 9b Please be sure the informal pullouts for birders are retained and made safe; road works damage to the trees is very likely and new trees should be planted 9c now. The points made about future sea level rises are valid and should not be ignored. 9d I strongly endorse the comments in the letter from Save our Seashore. I have long supported PRNS. Sincerely, Linda Brownrigg	Response 9a: Please refer to responses to Comment #6b. Response 9b: Please refer to responses to Comments #5, #6a, and #6d. Response 9c: Please refer to response to Comment #6h. Response 9d: Please refer to responses to Comments #5 and #6a-6k.
10	Gerald Meral Sent: 8/10/15	Superintendent Cicely Muldoon Point Reyes National Seashore Comment letter on improvements to Sir Frances Drake Boulevard Dear Superintendent Muldoon: As a resident of the Point Reyes Peninsula and a frequent user of the A and B Ranch areas, I offer these comments on the proposed road repair of Sir Frances Drake Boulevard.	Response 10a: Please refer to response to Comment #5. Response 10b: Please refer to responses to Comment #5 and Comment #6b. Response 10c: There are currently pullouts and parking areas at designated recreation sites along Sir Francis Drake Boulevard. The identified needs for this roadway rehabilitation project include addressing pavement deterioration, substandard roadway width, and flooding. Although improvements to existing designated pull outs were

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		At the western end of the road, there are several sites where birdwatchers from around the world observe birds in windbreak and other trees. There is presently informal parking off the road, used by many of these birdwatchers. 10a The road improvement project has the potential to cause danger to birdwatchers in two ways. First, the widening of the road may reduce informal parking space, forcing cars to park dangerously close to the road. This would make it hazardous to get in and out of cars, and will reduce the distance between parked cars and traffic, making the chance of collision higher. 10b Another problem could occur due to higher vehicle velocity resulting from the road improvements themselves. Presently the poor condition of the road results in slow speeds, making the area safer for birdwatching pedestrians. I recommend that informal parking in the vicinity of "A" and "B" ranches be maintained and improved, and that speed limits in those areas be reduced to 25 miles per hour. 10c When Highway 1 at Bolinas Lagoon was upgraded a few years ago, CalTrans thoughtfully improved the turnouts and parking areas to make the area much safer and accessible to birdwatchers who frequently use the area. Point Reyes National Seashore should model this road improvement on that project. 10d I have also reviewed the comment letter submitted by Save Our Seashore, and I endorse their recommendations regarding this project. Gerald H. Meral, Ph.D. PO 1103 Inverness, CA 94937 jerrymeral@gmail.com 415-717-8412	evaluated, creating new pullouts was not evaluated due to the presence of sensitive environmental resources adjacent to the both sides of Sir Francis Drake Boulevard for the entire length of the project. Response 10d: Please refer to responses to Comments #5 and #6a-6k.
11	Kate Carolan Watershed foundation Sent: 8/10/15	Please consider putting parking pullouts by the windbreak sites where birdwatchers congregate to view migrant and vagrant birds,which is part of the draw of recreational use in the park.I have been birding the park for over 20 years and can't tell you how many times we have had to wave cars to slow down to avoid accidents. Paving the road will make people go faster . We need places to park(pedestrian access as well to the trees) And please start planting new trees to continue this legacy. Rich Stallcup discovered theses places in the 60's and made them a famous destination for birders everywhere.Please refer to letter form Gordon Bennett to the park(John Dell'Osso) of Aug 10 2015 for com;lete details. thank you!	Please refer to responses to Comment #5 and #6a.
12	Tim Stanton Sent: 8/10/15	It appears that the Sir Francis Drake Boulevard Improvement Project EA/IS has several shortcomings. I know you have heard from others about these. I simply and respectfully wish to register my wishes as your examine these comments and reformulate - I hope - the plan: Please retain pedestrian access to the A (Nunez) and B (Mendoza) Ranch windbreak trees and safe pull-outs that are threatened by the proposed road widening and increased speed limit. Provide for reduced speed around these sites and the ranches in general. Please consider tree planting along the re-developed roadside as mitigation for windbreak trees that are old and close to	Please refer to responses to Comment #5 and #6a, #6b, #6g

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		death. Thanks very much for your attention. Tim Stanton	
13	Christine Engel Sent: 8/10/15	I rent weekly cottages to "bird" twice a year and do many daily trips as well. 13a Please, widening roads often just encourages speeding. 13b Access to windbreaks on the ranches is one of the primary reasons I visit so frequently. Please make access to windbreaks pedestrian friendly with informal pullouts. 13c Please reduce the speed limit and do not widen roads encouraging people (often barely yearly visitors) to speed. 13d New windbreak trees need to be planted as that what gives birds a place to feed and rest during Spring and Fall migration. Thanks.	Response 13a: Please refer to response to Comment #6b. Response 13b: Please refer to response to Comment #5. Response 13c: Please refer to response to Comment #6b. Response 13d: Please refer to response to Comment #6d.
14	Unknown Sent: 8/11/15	14a Please provide safe access to the PRNS birding hotspots at the A (Nunez) & B (Mendoza) Ranch windbreak trees pioneered by Rich Stallcup. As it is threatened by the currently proposed road widening for 40 MPH speeds on Sir Francis Drakes Boulevard throughout PRNS. Please 14b Retain safe pedestrian access to windbreak sites 14c Retain safe informal pullouts near windbreak sites 14d Keep speeds reduced along windbreak sites 14e Start planting trees for future along the windbreaks as old ones are on their way out. Thank you!!! Kim	Response 14a: Please refer to response to Comment #5 and Comment #6b. Response 14b: Please refer to response to Comment #5. Response 14c: Please refer to response to Comment #5. Response 14d: Please refer to response to Comment #6b. Response 14e: Please refer to response to Comment #6d.
15	Amy Trainer Environmental Action Cmte of West Marin Sent: 8/11/15	Cicely Muldoon, Superintendent Point Reyes National Seashore 1 Bear Valley Road Point Reyes, CA 94056 Dear Cicely: The Environmental Action Committee of West Marin (EAC) offers these comments on the proposed road repair of Sir Frances Drake Boulevard. Since 1971, EAC has been the leading voice protecting the wildlife and waters of West Marin and Point Reyes National Seashore. At the western end of the road, there are several sites where birdwatchers from around the world observe birds in windbreak and other trees. There is presently informal parking off the road, used by many of these birdwatchers. Our Point Reyes	Response 15a: Please refer to response to Comment #5. Response 15b: Please refer to responses to Comment #5 and Comment #6b. Response 15c: Please refer to response to Comment #10c.

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		Birding and Nature Festival draws many people to the region each April, and many of them also use this area. 15a The road improvement project has the potential to cause danger to birdwatchers in two ways. First, the widening of the road may reduce informal parking space, forcing cars to park dangerously close to the road. This would make it hazardous to get in and out of cars, and will reduce the distance between parked cars and traffic. 15b Another problem could occur due to higher vehicle velocity resulting from the road improvements themselves. Presently the poor condition of the road results in slow speeds, making the area safer for birdwatching pedestrians. We recommend that informal parking in the vicinity of "A" and "B" ranches be maintained and improved, and that speed limits in those areas be reduced to 25 miles per hour. 15c When Highway 1 at Bolinas Lagoon was upgraded a few years ago, CalTrans thoughtfully improved the turnouts and parking areas to make the area much safer and accessible to birdwatchers, who frequently use the area. Point Reyes National Seashore should inspect those areas, and try to model this road improvement on that project. Thank you for considering our comments. Sincerely yours, Amy Trainer EAC Executive Director	
16	David Tomb Jeepney Projects Worldwide Sent: 8/11/15	Dear John A. Dell'Osso, Point Reyes National Seashore (PRNS) I am a San Francisco resident and birder and grew up in Marin County in the early 1970's. I have great memories of birding the Outer Point (Nunez Ranch and Mendoza Ranch etc) with Rich Stallcup. Rich would find amazing and rare birds in the trees along sir Francis Drake Blvd at all of the Outer Point Ranch sites. Currently, as birding has become so popular (in part by Rich Stallcup) hundreds of birders every Fall and Spring scour the historic wind brakes at all of the Ranches which are safe havens for lost, rare and common birds. I often see up to twenty cars parked along the pull out around the Ranches. There are often clusters of 20 - 30- birders or more searching for birds or staked out spots where particular birds have been reported. Decreased parking and increased speeds are a bad idea. Cutting down trees to widen roads is a very bad idea. Please do not make the park less bird friendly. I am in full support of Gordon Bennett's detailed comments and observations. Please reconsider the current plan and save the current parking pull out areas and the critically important trees/shrubs/habitat for both birds and birders safety. Thank You, David Tomb	Please refer to response to Comments #5, #6b, #6d, and #15. None of the trees within the historic windbreaks, including Historic A Ranch and Historic B Ranch, would be removed. Fencing or concrete barriers would be placed around the windbreaks during construction to ensure avoidance.

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17	Eric Osterhaus Sent: 8/11/15	The trees at A (Nunez) & B (Mendoza) Ranch are world famous birding locations. 17a Please preserve the legendary natural history access to the trees with these actions: Retain safe pedestrian access to windbreak sites Retain safe informal pullouts near windbreak sites Keep speeds reduced along windbreak sites 17b Start planting trees for future along the windbreaks as old ones are on their way out.	Response 17a: Please refer to response to Comment #5 and #6b. Response 17b: Please refer to response to Comment #6d.
18	Carolyn Longstreth Sent: 8/11/15	Hello NPS: 18a I write as a birder, native plant enthusiast and local resident who often birdwatches along Sir Francis Drake Blvd in the vicinity of A and B Ranches. The EA does not acknowledge the significance to birders of the roadsides next to the groves of old cypress trees at these two ranches. Steps need to be taken to maintain safe access to these important sites for birders and other visitors to the Park. Specifically, at B Ranch, opposite the pond, a wide shoulder needs to be provided, both for pedestrian safety and to provide parking. At A Ranch, informal parking spaces are needed along the road adjacent to the cypress grove next to the residential compound. At present, there is a wide dirt shoulder that allows space to park. The old cypress trees on these two ranches harbor owls most of the year and, during spring and fall migration, attract vagrant or out-of-range birds, sightings of which are highly prized by birders. In fact, Bay Nature magazine recently covered the vagrant phenomenon at Point Reyes- - the article can be found at https://baynature.org/articles/the-lost-birds-of-point-reyes/. 18b One further comment concerns the population of Point Reyes Meadowfoam that grows in the roadside ditches next the Mendoza corrals near the bottom of the grade, just before the road curves sharply left and higher. Since this endangered plant favors wet habitats, perhaps the ditches along the road in this area can be left natural instead of paved. Thank you for your attention.	Response 18a: Please refer to response to Comment #5 and #6d. Response 18b: Efforts to further avoid and/or minimize impacts to Point Reyes meadowfoam is ongoing during the design process. Elimination of the paved ditch in this location is under consideration. This determination will be made during final design.
19	Scott Wilson California Department of Fish and Wildlife Sent: 08/12/2015	Dear Mr. Klock and Mr. Davies: The California Department of Fish and Wildlife (CDFW) has reviewed the joint National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) Environmental Assessment and Initial Study (EA/IS) for Sir Francis Drake Boulevard Improvement Project (Project). The joint NEPA and CEQA EA/IS document is being prepared by the Federal Highway Administration Central Federal Lands Highway Division (CFLHD), in cooperation with Marin County and the National Parks Service. The CFLHD is the federal lead agency responsible for NEPA compliance, and Marin County is the	Response 19a: Reasonably foreseeable direct and indirect changes (temporary and permanent) that may occur with implementation of the project are discussed throughout Chapters 3, 4, and 5 of the EA/IS. Response 19b: Analysis of impacts to fish and wildlife is provided in Section 3.15.3.2 and Section 3.16.3.2. Section 3.15.3.2 is a summary of the analysis provided in the wildlife biological assessment, marine and anadromous species biological assessment, and biological evaluation prepared for the project. These technical reports are available upon request and provide a more detailed analysis of impacts and effects. Response 19c: Roadside drainage conditions are currently very poor in many locations

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		state lead agency responsible for CEQA compliance. The proposed project includes road improvements to approximately 12 miles of Sir Francis Drake Boulevard in Point Reyes National Seashore. The road work will occur from the intersection with Pierce Point Road and continue south and west to the intersection with Chimney Rock Road. Project work will generally consist of resurfacing, realigning, widening, pullout improvements, paving roadside drainages, roadside vegetation clearing, and include the installation of approximately 70 culverts. CDFW is identified as a Trustee Agency pursuant to the California Environmental Quality Act (CEQA) § 15386. As a trustee for the State's fish and wildlife resources, CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants and the habitat necessary for biologically sustainable populations of those species pursuant to California Fish and Game Code § 1802. CDFW also acts as a Responsible Agency based on its discretionary authority regarding Project activities that impact streams and lakes (Fish and Game Code §§ 1600 – 1616), or result in the "take" of any species listed as candidate, threatened, or endangered pursuant to the California Endangered Species Act (CESA, Fish and Game Code, § 2050 et seq.). Pursuant to our jurisdiction, CDFW has the following concerns, comments, and recommendations regarding the proposed Project. *Impact Analysis* 19a The EA/IS should include the reasonably foreseeable direct and indirect changes (temporary and permanent) that may occur with implementation of the Project (pursuant to CEQA, § 15355). The EA/IS states that the project will result in an increase of 6.0 acres of paving along the 12-mile road segment. It further describes impacts to biological resources from the increased roadway width and the removal of roadside vegetation to create traffic safety "clear zones." Table 12 in the EA/IS states that permanent impacts to special-status plant species will be less than 0.19 acres. Impacts to the state-listed Point Reyes meadowfoam include 0.07 acres of permanent and 0.04 acres of temporary impacts. Section 3.13 addresses impacts to "Wetlands and Other Waters of the US" and Section 3.15 addresses impacts to "Special Status Species and Sensitive Natural Communities." Permanent impacts will result to 2.6 acres of riparian habitat, 4.4 acres of wetlands, and 0.4 acres of "other waters." The EA/IS describes one perennial, four ephemeral, and 18 intermittent streams. Of those, culvert improvements to Schooner Creek and East Schooner Creek would involve dewatering the streams to install upsized culverts to improve fish passage, sediment transport, and stormwater conveyance. 19b Impacts to fish and wildlife habitat would result from stream dewatering and construction of new culverts, and additional impervious surface area, which will reduce water infiltration thereby concentrate runoff and increase discharge. The additional road area may collect pesticides, herbicides, fertilizers, gasoline, and other petroleum products, which may discharge into adjacent drainages, wetlands, and riparian areas and affect aquatic habitat. In addition, removal of riparian vegetation could indirectly affect the species through an increase in water temperatures from lack of shading, an increase	along the road, which has led to flooding in some areas. The poor drainage also compromises the integrity of the pavement, causing rutting and raveling of the roadway surface, creating a rougher ride and potentially unsafe driving conditions. Improving the drainage conditions along the road is one of the goals of the project to improve safety for all users. A paved ditch has a narrower impact footprint than a typical earthen roadside ditch. Therefore, paved ditches were incorporated into the design in some locations to reduce impacts to adjacent environmental resources (such as wetlands), or in locations where an earthen ditch would not fit due to the existing topography. The paved ditches typically transition back to an earthen roadside ditch once there is adequate room. The roadside ditches will be revegetated with native material, which will provide a natural grass buffer for the runoff to reduce velocities and provide a pollutant filter before reaching the receiving stream channel. Response 19d: To meet the purpose and need of the project, and provide a safe and consistent 24-foot-wide paved surface, not all impacts to vegetation could be avoided due the abundant vegetation adjacent to the existing roadway. Environmental commitments include avoiding staging within 65 feet of wetland and riparian areas. Construction staging is anticipated to be sited within previously disturbed areas. The temporary impacts reflected in the EA/IS are a worst-case scenario based on conceptual design and account for trampling by equipment and personnel during construction activities, as noted in Section 3.17.3.2. A discussion of the timing and duration of temporary impacts has been added and is reflected in the errata. A restoration plan will be developed by CFLHD following issuance of NEPA and CEQA decision documents. Response 19e: All species meeting the definition of rare, threatened and endangered per CEQA Guidelines are disclosed and analyzed in the EA/IS (See discussion in the response to Comment #19g regarding the California black rail).Additional detail and analysis on impacts and effects to these species, as well as species that were eliminated from further consideration because they are unlikely to occur within the project area, are included in the wildlife biological assessment, marine and anadromous species biological assessment, and the biological evaluation prepared for the project. These technical reports are available upon request. In Section 2.3 of the EA/IS, Table 1 has been revised to reflect that a California Endangered Species Act permit will also be obtained. In addition, in Section 3.15.3.2, the following sentence has been added: If impacts to Point Reyes meadowfoam cannot be fully avoided during final design, a California Endangered Species Act permit for take of Point Reyes meadowfoam will be obtained from CDFW prior to construction. These changes are reflected in the errata sheet. Permanent impacts to Point Reyes meadowfoam will be mitigated at a 2:1 ratio as indicated in Section 3.15.4 of the EA/IS. The Mitigation and Monitoring Reporting Program is included in the Finding of No Significant Impact/Mitigated Negative Declaration. Response 19f: Direct, permanent impacts to the Point Reyes meadowfoam would result from widening of the roadway, while temporary impacts are a conservative estimate that accounts for inadvertent impacts from trampling by equipment or foot traffic during construction. In general, the project does not propose to change the slopes or crowns of

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		in erosion and turbidity due to bank destabilization, and a decrease in forage abundance. 19c Impacts to wetlands, water, and fish habitat should be minimized and avoided by reducing and or eliminating the proposed paved roadside drainages. Impacts from paved drainages due to accelerated stormwater and pollutants that would otherwise be attenuated by natural permeable surface should be addressed. At a minimum, the paved roadside channels should transition into natural swells before joining the 70 identified culverts. This transition area would create a buffer and filter area before increased flows, sediment, and pollutants enter the stream channels. Section 3.17 states Impacts to "Vegetation" from the road work will have permanent and temporary impacts on classified vegetation communities ranging from pasture, dunes, coastal grassland, and salt marsh. Table 13 in the EA/IS shows permanent impact to 33.7 acres of vegetation communities and 24.8 of temporary impacts to vegetation communities. 19d All permanent impacts to vegetation, including from roadside vegetation clearing for "clear zones" should be minimized to the greatest extent practicable. Impacts to wetlands, waters, salt marsh, riparian forest, and sensitive plant communities should be minimized, if not fully avoided all together. Areas of temporary impacts should be also minimized to the greatest extent possible, such as staging, access, and other construction activities. A discussion of the cause, timing and duration, and a restoration plan for areas temporarily impacted should be included. *California Endangered Species Act* 19e Rare, threatened and endangered species to be addressed should include all those which meet CEQA definition (see CEQA Guidelines, § 15380). This project may result in take of Point Reyes meadowfoam (state-listed endangered species). Please be advised that a California Endangered Species Act (CESA) permit must be obtained if the project has the potential to result in "take" of plants or animals listed under CESA, either during construction or over the life of the project. Issuance of a CESA Permit is subject to CEQA documentation. Therefore, the CEQA document must specify all potential impacts, mitigation measures for full mitigation, and a mitigation monitoring and reporting program. Early consultation with CDFW is encouraged, as significant modification to the Project and mitigation measures may be required in order to obtain a CESA Permit. 19f The EA/IS should address both 0.07 acres of permanent and 0.04 acres of temporary impacts to Point Reyes meadowfoam habitat. Every effort shall be first made to avoid impacting Point Reyes meadowfoam. The EA/IS does not address potential long-term affects to Point Reyes meadowfoam habitat that may result from changes in the hydroperiod from altering the road alignment and the associated micro-watersheds. Sloping or crowing of the road may cause increased or reduced water supply to areas of existing Point Reyes meadowfoam that would be left in place. This potential impact should be analyzed in the EA/IS so it can be adequately addressed in the CESA permit.	the roadway. However, minor superelevation changes in proximity to the meadowfoam populations at approximately PM 1.2 and PM 2.0 are proposed. The Action Alternative has been designed to perpetuate hydrologic conditions to the greatest extent practicable, particularly in areas of meadowfoam habitat to avoid or minimize potential impacts to the hydroperiod. This has included efforts such as eliminating segments of paved ditches and eliminating new proposed culverts or upsizing culverts. The impacts, as related to the meadowfoam, have been elaborated upon and are reflected in the errata. Response 19g: California black rail was evaluated in the biological evaluation prepared for the project. Impacts to wetlands, including the salt marsh, were considered in the assessment of impacts to the species. The EA/IS inadvertently excluded the rail from the special-status species table and effects discussion, although impacts to special-status bird species applies to the rail as well. This correction is reflected in the errata. Measures to minimize potential impacts to the California black rail include vegetation removal outside of the breeding season and, if this is not possible, pre-construction nest surveys. In addition, efforts to further avoid and minimize wetland impacts, including to the salt marsh, are ongoing during project design. Any unavoidable wetland impacts will be mitigated. Response 19h: While Marin County is providing a percentage of funding for the project, FHWA-CFLHD is ultimately responsible for bid letting, hiring a contractor, and construction of the project. Per California Fish and Game Code Section 1601, FHWA-CFLHD does not fall under the definition of "entity" and is therefore exempt from the Lake and Streambed Alteration Agreement requirements.

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		19g The area of impacts to the salt marsh vegetation community should be expanded to include potential presence of California black rail. The area around Drakes Bay is listed by CDFW's biogeographic information and observation system (BIOS) as within the California black rail habitat range. California black rail is a State Threatened species and listed as Fully Protected Species by the California Fish and Game Code 3511. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research. Therefore, the EA/IS should include measures to ensure complete take avoidance of these fully protected species. Unless protocol level absence surveys are done, project activities resulting in an increase in sound or visual disturbance should be timed to avoid the rail breeding season (February through July). *Lake and Streambed Alteration Agreement* 19h The EA/IS does not address section 1600 of the California Fish and Game Code. This should be addressed in the Regulatory Setting section in the Document. CDFW will require a Lake and Streambed Alteration Agreement (LSAA), pursuant to Fish and Game Code Section 1600 et seq. for the proposed Project-related activities within our jurisdictional waters within the proposed Project area. Notification is required for any activity that will divert or obstruct the natural flow, change the bed, channel, or bank including associated riparian or wetland resources, use material from the stream/channel bed, or substantially adversely affect fish and wildlife resources. Issuance of an LSAA is subject to CEQA. CDFW, as a responsible agency under CEQA, will consider the CEQA document for the Project. CDFW may not execute the final LSAA until it has complied with EQA (Public Resources Code section 21000 et seq.) as the responsible agency. To obtain information about the LSAA notification process, please access our website at https://www.wildlife.ca.gov/Conservation/LSA; or to request a notification package, contact CDFW's Bay Delta Regional Office at (707) 944-5500. In preparation for the Streambed Alteration Notification, please be prepared to address fish passage design criteria, sediment transport, design storm elevations, scour potential, and shear stress. Please review and utilize guidance and recommendations in the California Salmonid Stream Habitat Restoration Manual. A CDFW staff person should verify all culverts to determine our jurisdiction for coverage under an Agreement. Mitigation for impacts from culverts and impacts to fisheries habitat should be proposed. CDFW appreciates the opportunity to comment on the Sir Francis Drake Boulevard Improvement Project. CDFW staff is available to meet with you to further clarify our comments and provide technical assistance on any changes necessary to protect resources. If you have any questions, please contact Mr. Timothy S. Dodson, Environmental Scientist, at (707) 944-5513; or Ms. Karen Weiss, Senior Environmental Scientist (Supervisory), at (707) 944-5525.	

No.	Name and Date Sent	Comment	Response
20	William D. Wilson Sent: 8/13/15	I am a resident of Marin County and have birded the Point Reyes National Seashore for 40 years and I have deep concern about the proposed road-widening of Sir Francis Drake. The windbreak trees on the A-Ranch & B-Ranch of the PRNS are INTERNATIONALLY RENOWNED birding hotspots during bird-migrations. The proposed road-widening of Sir Francis Drake threatens access to these irreplaceable birding sites. They deserve to be regarded as a national treasure. Please: 20a (1) retain safe pedestrian access to windbreak sites, 20b (2) retain safe informal pullouts near windbreak sites, 20c (3) keep speeds reduced along windbreak sites, and 20d (4) start planting trees along the windbreaks as future replacements for the older trees. Thank you for your consideration. Will Wilson Corte Madera, California	Response 20a: Please refer to response to Comment #5. Response 20b: Please refer to response to Comment #5. Response 20c: Please refer to response to Comment #6b. Response 20d: Please refer to response to Comment #6d.
21	Heather A. Cameron Sent: 8/13/15	Dear John A. Dell'Osso, Point Reyes National Seashore (PRNS), The street widening project planned for outer Point Reyes, in proximity to key birding hotspots, namely A (Nunes) Ranch and B (Mendoza) Ranch, is something of great concern, for the safety for birders, as well as for the general public/tourists, and wildlife. 21a It's difficult to grasp the benefit of road work that encourages faster vehicular movement through Outer Point Reyes. Much of the allure of Pt. Reyes is about slowing down, enjoying the gorgeous landscape and wildlife, and being away from the frenetic energy of the "mainland". It doesn't seem worth the risk to proceed with this roadwork, simply to allow tourists or locals a quicker drive to the lighthouse.... People, as well as animals, along the road or crossing it, are far more likely to get hurt. 21b When seasonal bird migration is in high swing at these key birding spots, if the parking becomes limited, roadside shoulders for walking are gone, and traffic is moving by at 40mph, I will be out there birding regardless, as will many others, and we will have to hope for the best, and try to stay as safe as possible. It would be more than a shame to have the lovely, serene national park experience change to one of worry, and outright danger. Please reconsider moving forward with this road-widening project. Thank you. Respectfully, Heather Cameron	Response 21a: The purpose of the project is to restore the structural integrity of SFDB and enhance safety for all users while reducing ongoing maintenance requirements. Please refer to sections 1.5, 3.2.3.2, 3.3.3.2, and 3.4.3.2 of the EA/IS for an explanation of the benefits of this project. Also, please see response to Comment #6b. Response 21b: Please refer to responses to Comments #5 and #6b.

APPENDIX I: SECTION 4(F) DOCUMENTATION

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228-2583
Office: 720-963-3668
Fax: 720-963-3596
Nathan.Allen@dot.gov

August 19, 2015

In Reply Refer To:
HFPM-16

Cicely Muldoon
Superintendent
1 Bear Valley Road
Point Reyes National Seashore
Point Reyes, CA 94956

Subject: Section 4(f) *De Minimis* Impact Finding Concurrence for Sir Francis Drake Boulevard Improvement Project CA FLAP CR109[1].

Dear Superintendent Muldoon:

This letter is a request for review and concurrence on a finding of a Section 4(f) *de minimis* impact to the Point Reyes National Seashore (PRNS) as a result of the Sir Francis Drake Boulevard Improvement Project. The Federal Highway Administration, Central Federal Lands Highway Division (CFLHD), in cooperation with Marin County and the National Park Service (NPS), is proposing improvements to Sir Francis Drake Boulevard (SFDB) in the PRNS. The project includes improvements to approximately 12 miles of SFDB. The project begins at the intersection with Pierce Point Road and continues south and west to the intersection with Chimney Rock Road. These repairs will result in a Section 4(f) use of the PRNS.

Section 4(f)
Section 4(f) of the U.S. Department of Transportation Act of 1966 requires consideration of impacts to parks, recreational lands, wildlife and waterfowl refuges and historic sites in transportation project development. Under Section 4(f) of the U.S. Department of Transportation Act of 1966, PRNS is considered a Section 4(f) resource. Before approving a project that "uses" Section 4(f) property, CFLHD must either (1) determine that the impacts are *de minimis*, or (2) undertake a Section 4(f) Evaluation.

For publicly owned public parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact is one that will not adversely affect the activities, features, or attributes of the property. A *de minimis* impact determination does not require a full Section 4(f) evaluation, but avoidance, minimization, mitigation or enhancement measures are considered. The *de minimis* finding is subject to public review and written concurrence from the PRNS prior to CFLHD making a final *de minimis* impact determination.

Proposed Improvements to SFDB and De Minimis Impacts to PRNS
With regard to PRNS as a whole, the project would result in minor modifications to the existing county roadway easement and temporary construction easements at specific locations along SFDB. Because easement modifications could not be identified at the conceptual design level,

the more detailed preliminary design was used to assess the location of potential encroachment of the project onto PRNS.

Modifications to the existing easement, both permanent and temporary, would be required at approximately PM 0.8 to PM 1.2, PM 1.8 to PM 2.1, PM 3.2, PM 4.0 to PM 4.1, and PM 9.2 to 9.8 (see attached Figure). All of these locations are within functioning ranch leases and portions of the roadway that are fenced to restrict public access to ranches. With the exception of PM 9.2 to PM 9.8, these areas are generally within or near actively grazed lands, or are characterized by drier coastal grassland and open scrub vegetation. The area between PM 9.2 and PM 9.8, which is located east of Schooner Creek, is densely vegetated and consists of dense coyotebrush and related scrub vegetation. Although located within PRNS, none of these lands contain designated recreational sites or associated recreational structures, such as scenic overlooks or shuttle bus stops.

Permanent modification of the existing easement would total approximately 1.0 acres of land that would be newly incorporated into the county easement. Modifications are required in areas of localized improvements that include small alignment shifts to soften curves and/or improve sight distance, replace the Schooner Creek twin culverts, and shift the roadway away from the East Schooner Creek channel. While this would result in the permanent incorporation of minor portions of PRNS into a transportation facility, the total county easement width would remain 60 feet, and areas no longer within that 60-foot swath would be relinquished—these areas total approximately 1.0 acres. Therefore, there would be no net increase in PRNS property located within the county roadway easement. In addition, small, temporary construction easements totaling approximately 1.0 acre would be required at all of the aforementioned locations to facilitate grading of the roadway and allow for incidental impacts from foot traffic and equipment during construction. At final project acceptance, the temporary easements will be returned to the NPS.

The permanent easement modifications and temporary easements would be minor and would not adversely affect the activities, features, or attributes of PRNS. PRNS and its associated recreational activities, including its scenic landscape, would continue to function during construction and throughout the life of the roadway. Therefore, CFLHD anticipates a finding of *de minimis* impact.

Minimization Measures

The following measures have been incorporated into project design to reduce potential impacts to the PRNS:

- At least one lane of traffic shall remain open during construction with a maximum 30-minute delay. If any delay longer than 30 minutes is anticipated to accomplish specific construction activities, then notice shall be provided to the public, relevant local agencies, school districts, and emergency service providers.
- All construction shall occur on weekdays. If weekend work is proposed, the contractor shall provide notification to the Contract Oversight Engineer two weeks prior to the proposed work. No weekend work shall be conducted without Contract Oversight Engineer approval.
- All construction shall occur during daylight hours (1/2 hour after sunrise to 1/2 hour before sunset).

- Access to ranches and designated recreational sites shall be maintained throughout construction.
- Alignment of corrals to barns, pastures, and other features of the ranch complexes will be maintained.
- If fences within the existing SFDB easement need to be removed to accommodate construction, they shall be replaced in-kind at the edge of the road right-of-way. If distinctive fencing materials, such as wood rail fencing, are affected during construction, they shall be replaced in-kind and positioned to maintain the alignment of ranch cattle and human circulation patterns.
- The Historic E Ranch corral, Historic A Ranch main house, Historic B Ranch main house, and Historic B Ranch hay barn shall be protected from inadvertent damage by placement of fencing or concrete barriers.
- The contractor shall avoid disturbing trees and their roots within the Historic B Ranch windbreak.
- No construction staging shall occur at Historic E Ranch corral, Historic B Ranch windbreak, Historic A Ranch main house, Historic B Ranch main house, or Historic B Ranch hay barn.
- The area beyond the construction limits shall not be disturbed. Abandoned segments of roadway and temporary impact areas along SFDB within the project limits that would no longer be in use shall be reclaimed and revegetated. Degraded areas impacted from construction-related activity shall be replanted or reseeded with native plants from the watershed or nearby watershed under guidance from PRNS biologists. Shrubs, trees, and herbaceous perennials and annuals shall be seeded and planted along riparian corridors where impacts and vegetation removal occur. Riparian vegetation shall be replanted with shrubs or live-stakes along the banks of East Schooner Creek. FHWA-CFLHD shall prepare a restoration plan for the project in consultation with PRNS for appropriate seed mixes and plants. Revegetated areas shall be protected and cared for, including watering when needed, until restoration criteria have been met under US Army Corps of Engineers permits, the US Fish and Wildlife Biological Opinion, and/or National Pollutant Discharge Elimination System standards. Revegetated areas shall be monitored in accordance with the approved restoration plan to ensure success criteria are met.

Public Involvement

Public review and comment on the *de minimis* finding was solicited through a 30-day public review of the Environmental Assessment/Initial Study (EA/IS). Copies of the EA/IS and related technical studies were made available for review at the Point Reyes Public Library (11435 CA-1, Point Reyes Station, CA) and Civic Center Library (3501 Civic Center Drive, Room 427, San Rafael, CA), through the project web site: http://parkplanning.nps.gov/projectHome.cfm?projectID=53489, and through the National Park Service Planning, Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/projectHome.cfm?projectID=53489. No public comments related to the *de minimis* impact finding were received during the meeting or the public comment period.

***De Minimis* Impact Finding**

Written concurrence that this project will not adversely affect the activities, features, and attributes of the park property is needed to make the Section 4(f) *de minimis* finding and fulfill the requirements of 23 USC 138(b), 49 USC 303(d), and 23 CFR 774.7(f). To acknowledge that you have been notified of the Section 4(f) *de minimis* finding, and your agreement that the activities, features, and attributes of the PRNS will not be adversely affected, please sign below and return the signed copy to me at the address on the first page. Your prompt response is appreciated.

If you have questions please contact me at 720.963.3668 or at my email address: Nathan.Allen@dot.gov, or Laura Meyer, Jacobs Senior Project Manager at 303.223.5855 or at Laura.Meyer@Jacobs.com.

Sincerely,

for *Nathan Allen*
FHWA-CFLHD Project Manager

Enclosures
Figure 1 – Approximate Permanent and Temporary Easements

Cc: Timberley Belish, FHWA-CFLHD Environment Specialist

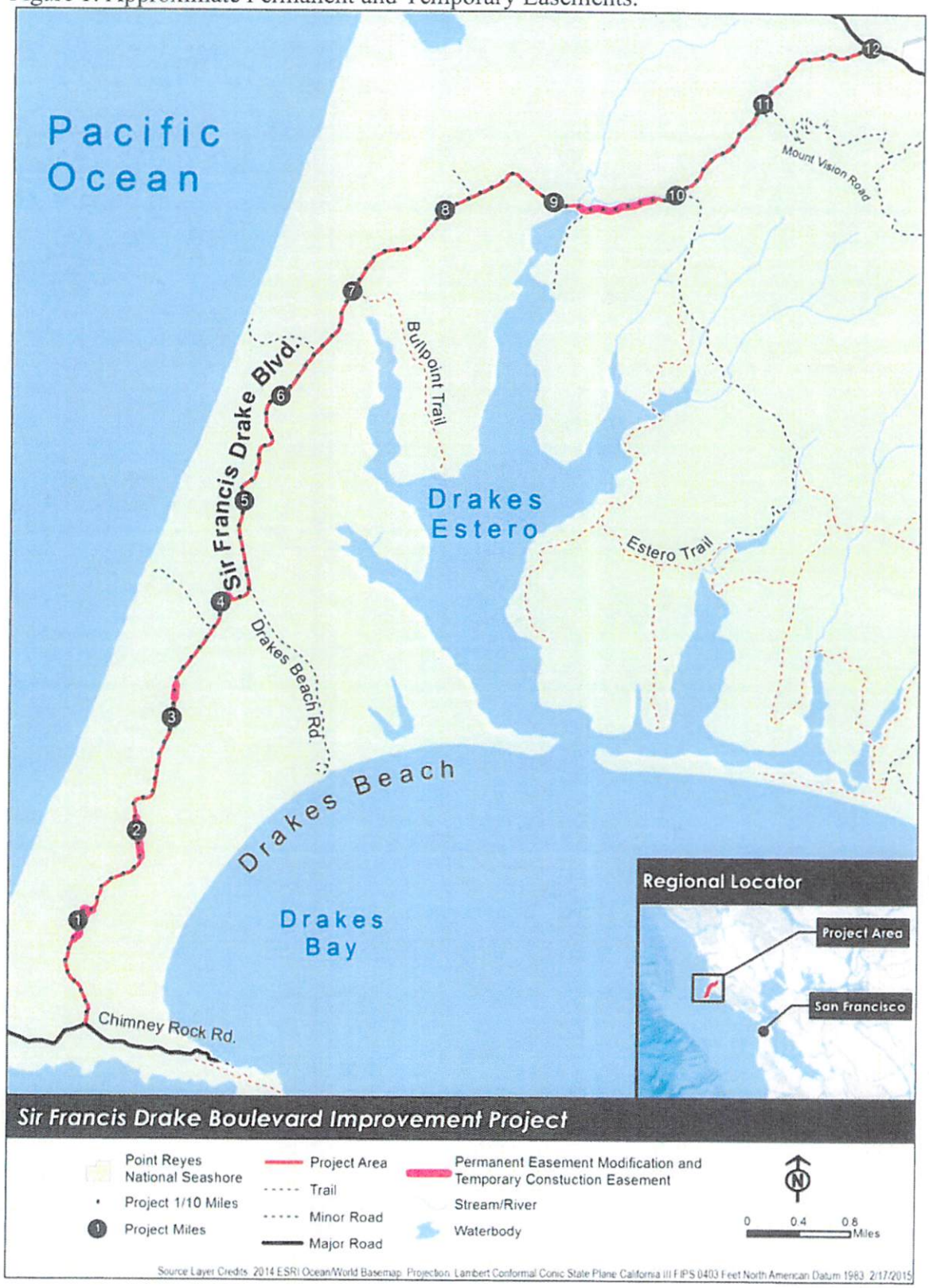
As the official with jurisdiction over the Point Reyes National Seashore, I concur with the recommendation of FHWA-CFLHD that the use and impacts associated with the Sir Francis Drake Boulevard Improvement Project along with the identified minimization measures, will not adversely affect the activities, features, and attributes that qualify the property for protection under section 4(f).

8/25/2015

Ms. Cicely Muldoon
Superintendent
Point Reyes National Seashore

Date

Figure 1: Approximate Permanent and Temporary Easements.



APPENDIX J: MITIGATION MONITORING AND REPORTING PROGRAM

MITIGATION MONITORING AND REPORTING PROGRAM

Introduction

The California Environmental Quality Act (CEQA) requires the adoption of feasible mitigation measures to reduce the severity and magnitude of significant environmental impacts associated with project development. The Initial Study/Mitigated Negative Declaration (IS/MND)/Environmental Assessment/Finding of No Significant Impact (EA/FONSI) for the Sir Francis Drake Boulevard Improvement Project (CA FLAP CR 109(1)) includes mitigation measures to reduce the potential environmental effects of the proposed project. CEQA also requires reporting on and monitoring of mitigation measures adopted as part of the environmental review process (Public Resources Code section 21081.6). This Mitigation Monitoring and Reporting Program (MMRP) is designed to aid Central Federal Lands Highway Division (CFLHD) and the County of Marin in their implementation and monitoring of measures adopted in the MND. The MMRP is presented in table format and describes the actions that must take place to implement each mitigation measure, the timing of those actions, the entities responsible for implementing and monitoring the actions, and verification of compliance.

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Table 1: Mitigation Measures for the Sir Francis Drake Boulevard Improvement Project (CA FLAP CR 109(1))

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
Aesthetics				
Potential impacts to scenic resources (Section I.b) and potential to degrade existing visual character or quality of site and its surroundings (Section I.c)	Mitigation Measure (MM) VA-1: The area beyond the construction limits shall not be disturbed. Abandoned segments of roadway and temporary impact areas along Sir Francis Drake Boulevard (SFDB) within the project limits that would no longer be in use shall be reclaimed and revegetated. Degraded areas impacted from construction-related activity shall be replanted or reseeded with native plants from the watershed or nearby watershed under guidance from Point Reyes National Seashore (PRNS) biologists. Shrubs, trees, and herbaceous perennials and annuals shall be seeded and planted along riparian corridors where impacts and vegetation removal occur. Riparian vegetation shall be replanted with shrubs or live-stakes along the banks of East Schooner Creek. Federal Highway Administration Central Federal Lands Highway Division (CFLHD) shall prepare a restoration plan for the project in consultation with PRNS for appropriate seed mixes and plants. Revegetated areas shall be protected and cared for, including watering when needed, until restoration criteria have been met under U.S. Army Corps of Engineers (USACE) permits, the U.S. Fish and Wildlife Service (USFWS) Biological Opinion, and/or National Pollutant Discharge Elimination System (NPDES) standards. Revegetated areas shall be monitored in accordance with the approved restoration plan to ensure success criteria are met.	During and After Construction	CFLHD/Construction Oversight Engineer (COE) and/or National Park Service (NPS)	CFLHD and NPS
	MM VA-2: If fences within the existing SFDB easement need to be removed to accommodate construction, they shall be replaced in-kind at the edge of the road right-of-way. If distinctive fencing materials, such as wood rail fencing, are affected during construction, they shall be replaced in-kind and positioned to maintain the alignment of ranch cattle and human circulation patterns.	After Construction	Contractor	CFLHD/COE
	MM VA-3: If historic wayfinding markers are temporarily removed during construction, the contractor shall reinstall the markers at the right-of-way line.	After Construction	Contractor	CFLHD/COE
	MM VA-4: If construction staging areas are located near ranch or farm residences, the contractor shall visually screen the staging area(s).	During Construction	Contractor	CFLHD/COE
Air Quality				
Temporary emissions during construction	MM AQ-1: Operators shall avoid leaving equipment and vehicles idling for more than five minutes when parked or not in use.	During Construction	Contractor	CFLHD/COE

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
(Section III.b)	MM AQ-2: The contractor shall control dust within the construction limits in accordance with FP-03 Section 158, FP-03 Section 312, and applicable state and federal regulations.	During Construction	Contractor	CFLHD/COE
Biological Resources				
Potential to adversely affect candidate, sensitive, and/or special status species per USFWS and California Department of Fish and Wildlife (CDFW) (Section IV.a)	MM BIO-1: Prior to construction, a qualified biologist shall lead Worker Environmental Awareness Training (WEAT) for all work supervisors. The trained supervisors shall provide WEAT to all workers prior to beginning work on the project. WEAT shall include, but is not limited to, identification of relevant biological resources (e.g., special status species that may be found in the project area) and an overview of conservation measures and avoidance and mitigation measures that are required during construction activities. Handouts summarizing information presented during WEAT and relevant contact information shall be provided to the workers. Upon completion of training, employees shall sign a form stating that they attended the training and understand all of the conservation and protection measures.	Before and During Construction	CFLHD/COE and NPS	CFLHD/COE
	MM BIO-2: All construction equipment shall be washed thoroughly to remove all dirt, plant, and other foreign material prior to entering the project area. Particular attention shall be shown to the under-carriage and any surface where soil containing exotic seeds may exist. These efforts are critical to prevent the introduction and establishment of non-native plant species into the project area. Arrangements shall be made for inspections of each piece of equipment before entering the project, and records of inspections shall be maintained by the contractor. Equipment found operating on the project that has not been inspected or has oil leaks shall be shut down and may be subject to citation.	During Construction	Contractor	CFLHD/COE
	MM BIO-3: To further minimize the introduction or spread of invasive species or non-native plant species, the contractor shall: (1) cover fill material in haul trucks entering the park; (2) limit vehicle parking to existing roadways, parking lots, access routes or previously disturbed sites approved by PRNS; (3) obtain all sand, rock, gravel, and erosion-control materials from PRNS-approved sources that are free of weeds and non-degradable contaminants.	During Construction	Contractor	CFLHD/COE
	MM BIO-4: Before clearing, grubbing, and grading, the contractor shall construct all erosion controls around the perimeter of the project area under construction, including filter barriers, diversion, and settling structures. The combined grubbing and grading operations shall be limited to 350,000 square feet of exposed soil at one time.	Before Construction	Contractor	CFLHD/COE

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
	MM BIO-5: The contractor shall ensure that food scraps and other trash from the project are deposited in covered or closed trash containers. The trash containers shall be stored and secured at the end of each working day to prevent wildlife access.	During Construction	Contractor	CFLHD/COE
	MM BIO-6: CFLHD shall comply with the *California Stormwater BMP Handbook* (2009) specifically addressing procedures for the proper use, storage, and disposal of materials and equipment on temporary construction pads that minimize or eliminate the discharge of potential pollutants to a watercourse (NS-14 in handbook) and procedures to protect waterbodies from debris and wastes associated with structure demolition or removal over or adjacent to watercourses (NS-15 in handbook).	During Construction	CFLHD/COE and Contractor	CFLHD/COE
	MM BIO-7: Any spill of petroleum products, hazardous materials, or other chemical or biological products released from construction, fleet, or other support vehicles, or stationary sources shall be properly cleaned, mitigated, and remedied, if necessary. Response shall occur in accordance with federal, state, and local regulations. Any spill of petroleum products or hazardous material shall be reported to the appropriate federal, state, and local authorities, if the spill is a reportable quantity.	During Construction	Contractor	CFLHD/COE
	MM BIO-8: The contractor shall repair leaks immediately on discovery. Equipment that leaks shall not be used. Oil pans and absorbent material shall be in place prior to beginning work. The contractor shall be required to provide the "on-scene" capability of catching and absorbing leaks or petroleum product spills, including antifreeze from breakdowns or repair actions, with approved absorbent materials. A supply of acceptable absorbent materials at the job site in the event of spills, as defined in the Stormwater Pollution Prevention Plan, shall be available. Sand and soil are not approved absorbent materials. Soils contaminated with fluids shall be removed, placed in appropriate safety containers, and disposed of according to state and/or federal regulations.	During Construction	Contractor	CFLHD/COE
	MM BIO-9: The construction contractor shall use best management practices to prevent the discharge of equipment fluids. All equipment shall be stored, repaired, maintained, and fueled at least 65 feet away from waterways, wetlands, and riparian habitat. A plan for prompt and effective response to any accidental spills shall be developed prior to construction.	During Construction	Contractor	CFLHD/COE

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
	MM BIO-10: Certified weed-free permanent and temporary erosion control measures shall be implemented to minimize erosion and sedimentation during and after construction.	Before, During, and After Construction	Contractor	CFLHD/COE
	MM BIO-11: CFLHD shall conform to the Federal Seed Act, the Federal Noxious Weed Act, and applicable state and local seed and noxious weed laws.	During and After Construction	CFLHD/COE and Contractor	CFLHD/COE
	MM BIO-12: Herbicides and pesticides shall not be used within the project construction limits.	Before, During, and After Construction	Contractor	CFLHD/COE
	MM BIO-13: Tree and vegetation removal shall not occur between February 1 and August 1 between project mile (PM) 10 and PM 12 to avoid the primary nesting season for NSO. In addition, tree and vegetation removal shall not occur between March 15 and August 1 for the entire project area for birds protected under Migratory Bird Treaty Act and special status bat species.	During Construction	CFLHD/COE	CFLHD/COE
	MM BIO-14: If any vegetation removal activities are scheduled to occur February 1–August 1 between PM 10 and PM 12 or March 15–August 1 for the remainder of the project corridor, a nest and roost survey shall be conducted no more than three days prior to construction to identify any active nests and roosts. Breeding and nesting behaviors shall be recorded and nest locations shall be documented using a Global Positioning System (GPS). Prior to conducting presence/absence surveys, biologists shall consult with PRNS for information on these species (i.e., known location, recent sightings, or presence of any tracked individuals near the project area).	Before Construction	CFLHD/COE	CFLHD/COE
	MM BIO-15: If active migratory birds or raptor nests are identified during the nesting season, a no-disturbance buffer shall be established around the nests. The extent of the no-disturbance buffers shall be determined by a wildlife biologist in consultation with CDFW or PRNS staff, and shall depend on the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographic or artificial barriers. The purpose of the buffer is to avoid disturbance or destruction of the nest until after the breeding season, or until a wildlife biologist determines that the young have fledged (usually late June to middle July). Within this buffer, construction activities shall be avoided during the identified species nesting season. However, construction activities can proceed if the biological monitor determines that the individual is not likely to abandon	Before Construction	CFLHD/COE	CFLHD/COE

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
	the nest during construction.			
	MM BIO-16: No man-made structures that could provide substrate for bat roosting shall be removed. Prior to any tree removal, a qualified biologist shall conduct a habitat assessment for any potentially suitable bat habitat within the trees to be removed. If no suitable habitat is identified, then avoidance for the species has been achieved. If the survey reveals suitable bat habitat, and tree removal is scheduled between April 16 through August 31 and/or October 16 through February 28, then bat presence/absence surveys shall be conducted prior to any tree removal. If presence/absence surveys are negative then avoidance has been achieved, and trees may be removed following the two-phased tree removal system. The two-phased removal system shall be conducted over two consecutive days. The first day, in the afternoon, limbs and branches are removed by a tree cutter using chainsaws only. Limbs with cavities, crevices or deep bark fissures would be avoided, and only branches or limbs without those features would be removed. On the second day, the entire tree is removed. If presence/absence surveys result in bat occupancy then the occupied trees shall only be removed from March 1 through April 15 and/or August 31 through October 15.	During Construction	CFLHD/COE and Contractor	CFLHD/COE
	MM BIO-17: A biological monitor shall be present on site to monitor for California red-legged frog during construction within suitable aquatic breeding habitat areas, including any drainage or identified wetland within the project area. The monitor shall be approved by the USFWS at least 15 days before construction begins. Credentials and experience must be supplied to the USFWS.	During Construction	CFLHD/COE	CFLHD/COE
	MM BIO-18: A USFWS-approved biologist shall search all suitable aquatic breeding habitat areas within the proposed construction limits, including any drainage or identified wetland within the project area, for California red-legged frogs. Specifically, surveys will occur during the following periods: one time prior to initial groundbreaking activities; daily during the initial ground disturbing phase of construction; daily during rainy period; and periodically during the remaining times.	During Construction	CFLHD/COE	CFLHD/COE

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
	MM BIO-19: Excavated steep-walled holes or trenches more than 1 foot deep shall be provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day to assist with avoiding entrapment of wildlife. Escape ramps or covered open trenches would help prevent injury or mortality of wildlife resulting from falling into trenches and becoming trapped. Trenches shall be inspected for the presence of federally-listed species at the beginning of each workday by a designated person trained by the USFWS-approved biologist. This person shall report daily during construction to the USFWS-approved biologist on the findings of these inspections and daily monitoring.	During Construction	CFLHD/COE and Contractor	CFLHD/COE
	MM BIO-20: For all activities occurring within the bed or bank of a drainage, daily construction monitoring by a qualified biologist shall be conducted.	During Construction	CFLHD/COE	CFLHD/COE
	MM BIO-21: Construction shall only occur during daylight hours (1/2 hour after sunrise to 1/2 hour before sunset).	During Construction	Contractor	CFLHD/COE
	MM BIO-22: No construction staging shall occur in wetlands or riparian habitat.	During Construction	Contractor	CFLHD/COE
	MM BIO-23: California red-legged frogs (CRLFs) found within the project area shall be captured by the approved biologist and held for the minimum amount of time necessary to release them in a suitable habitat outside of the construction work area following proper protocol as described below. Suitable release sites shall be identified by the USFWS-approved biologist prior to the start of construction. • All work that could result in direct injury, disturbance, or harassment of the individual animal must immediately cease. • CRLFs shall be captured using nets or by hand. The biologist shall avoid reaching for the frog by the tail, head, or limbs. The duration of handling individuals shall be limited to the maximum extent possible. Captured adults shall be kept moist, cool, and in an aerated environment, such as a bucket containing a damp sponge or cloth, and periods of direct sun exposure shall be minimized. Time in captivity shall be minimized to the extent practicable. • Individual animals shall not be placed in positions/containers	Before and During Construction	CFLHD/COE	CFLHD/COE

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
	where they may physically contact other individuals. • Multiple captured CRLFs shall not be released to the same location. • CRLFs shall be located upstream or downstream (not more than ¼ mile) of the work area to the closest suitable habitat for their life cycle. Suitable habitat shall be identified prior to the start of activities and shall be equivalent to the habitat (topography, exposure, vegetation) where the frog was found. The USFWS-approved biologist shall monitor any translocated animal until it is determined that the frog is not imperiled by predators or other dangers. • Only USFWS-approved biologists for the project shall capture CRLF. Soaps, oils, creams, lotions, repellents, or solvents of any sort shall not be used on hands within two hours before and during periods when they are capturing and relocating animals. To avoid transferring disease (e.g., chytrid fungus) or pathogens between sites during the course of handling the animals, the biologists shall take appropriate measures to disinfect all equipment and clothing, such as those describing in the Declining Amphibian Population Task Force's Code. • Pictures and GPS points shall be taken of the frog, the capture site, and the relocation site. Observations shall be recorded on California Natural Diversity Database field sheets and sent to CDFW. The USFWS shall be notified within one day of relocating individuals.			
	MM BIO-24: Any dewatering using pumps shall include screening not to exceed 0.2 inch mesh size. Pump intakes shall be placed in larger, perforated intake basins to allow water to be drawn into the pump while protecting aquatic organisms from entrainment. Both the outside of the intake basin and the pump intake shall be screened. The perforated intake basin shall be large enough to reduce the intake velocity so as not to impinge aquatic organisms on the screen.	During Construction	Contractor	CFLHD/COE

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
	MM BIO-25: Ground-disturbing activities shall be restricted to the dry season at approximately PM 1.6–1.8, PM 4.2–4.3, PM, 8.5–10.1, and PM 10.5–10.6 to avoid the period when California red-legged frogs could be actively breeding and dispersing to riparian habitats. Restrictions include no work between October 15 and June 15 for aquatic breeding areas.	During Construction	Contractor	CFLHD/COE
	MM BIO-26: Prior to any ground disturbance on the project site, wetland areas adjacent to the construction footprint shall be clearly delineated with orange-colored plastic construction fencing (environmentally sensitive area fencing), silt fencing, or solid barriers to prevent workers or equipment from inadvertently straying from the project area.	Before and During Construction	Contractor	CFLHD/COE
	MM BIO-27: Plastic mono-filament netting (erosion control matting) or similar material containing netting shall not be used at the project site as California red-legged frog or other animals may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydro-seeding compounds.	During Construction	Contractor	CFLHD/COE
	MM BIO-28: California red-legged frogs may take refuge in cavity-like structures (e.g., pipes, culverts). To prevent entrapment, any materials stored for one or more overnight periods shall be either securely capped prior to storage or thoroughly inspected by the on-site biologist and/or the construction foreman for individuals before the structure is used. If individuals are found, protocols for handling and relocating individuals as outlined in MM BIO-23 shall be followed.	During Construction	Contractor	CFLHD/COE
	MM BIO-29: Work in Schooner Creek, East Schooner Creek, and unnamed drainages between PM 9 and PM 12 shall be conducted during no- to low-flow periods of the year (July 1 and October 15 or the first significant fall rainfall; i.e., 0.2 inches over a 24-hour period). For the remainder of the project corridor, culvert repair or replacement and associated work shall be completed during the dry season—typically between April 15 and October 15 or the first significant fall rainfall. All construction-related work within waterways that cross the project area shall be done in accordance with permit conditions.	During Construction	Contractor	CFLHD/COE

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
	MM BIO-30: In accordance with the NPDES permit, a Rain Event Action Plan (REAP) shall be developed prior to Notice to Proceed. The REAP shall be reviewed and structured to address project-specific actions that are needed to prevent pollutants from reaching waterways or wetlands during a rain event. The REAP shall be executed within 48 hours prior to a forecasted rain event of 50% chance of precipitation or more.	Before and During Construction	Contractor	CFLHD/COE
	MM BIO-31: If a badger is observed within or near the project construction limits, construction shall stop and a PRNS biologist shall be notified. The biologist, in consultation with the Contracting Officer, shall determine an appropriate buffer distance and what construction activities can proceed.	Before and During Construction	Contractor and COE	CFLHD/COE
	MM BIO-32: A qualified biologist shall perform surveys prior to construction to determine the presence or absence of any life-stage of Myrtle's silverspot butterfly. If any life-stage of Myrtle's silverspot butterfly is observed during pre-construction surveys, the USFWS shall be contacted before work activities begin for technical assistance and determination if additional protection measures are needed.	Before and During Construction	CFLHD and/or NPS	CFLHD/COE
	MM BIO-33: A qualified botanist shall conduct a preconstruction survey of the construction limits for western dog violet plants within one year prior to project implementation. Preconstruction surveys shall be conducted within the blooming period between April and August. Identified plant populations shall be marked prior to project construction for avoidance during construction. If a plant population(s) cannot be feasibly avoided, individual plants shall be relocated by a qualified botanist to a location adjacent to the project disturbance limits.	During Construction	CFLHD and NPS	CFLHD
	MM BIO-34: If a seal or sea lion is identified within the project area, all work within 300 feet of the animal(s) shall be stopped and the contractor shall contact PRNS immediately. Work may resume once the seal or sea lion has left the project area or as approved by PRNS.	During Construction	Contractor	CFLHD/COE
	MM BIO-35: Impacts to sensitive natural communities shall be minimized by designating Environmentally Sensitive Areas. Environmentally Sensitive Areas shall include each population of special status plants known to occur within the study area, as well as locations of sensitive natural communities. Annual and perennial plant populations shall be delineated separately to ensure that the proper revegetation or	Before and During Construction	CFLHD/COE, Contractor, and NPS	CFLHD/COE

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
	transplanting methods, as described below, are followed. Environmentally Sensitive Areas shall be delineated with flags or fencing prior to construction and shall be maintained by the contractor and the biological monitor throughout construction. The contractor shall avoid fenced Environmentally Sensitive Areas.			
	MM BIO-36: Where Environmentally Sensitive Areas cannot be avoided, special status perennial plants with a Rare Plant Rank of 1, 2, or 4 shall be transplanted as appropriate. Perennial plants and their associated soil profiles shall be transplanted to adjacent areas outside of the impact zone, in close coordination with and guidance from PRNS ecologists. Prior to construction, seeds or cuttings shall be collected from perennial plants for propagation. Propagules shall be planted with the transplants to account for potential failure of transplants, as deemed necessary through coordination with PRNS ecology staff.	Before and During Construction	CFLHD/COE, Contractor, and NPS	CFLHD/COE
	MM BIO-37: Where Environmentally Sensitive Areas containing Point Reyes meadowfoam (blooms March to May), Point Reyes Bird's-beak (blooms June to October), and woolly-headed spineflower (blooms May to August) cannot be avoided, these special status annual plants shall be reseeded in a suitable location within the project corridor at a 2:1 rate.	Before and During Construction	CFLHD and NPS	CFLHD
	MM BIO-38: Where permanent impacts and annual plant Environmentally Sensitive Areas overlap, seeds shall be collected. Therefore, seed shall be collected prior to construction initiation/bid letting or construction shall occur after the species has produced seeds (May through October depending on the species). Collected seeds shall be dispersed in an area equivalent in size to the original, and in an area appropriate for each species. If feasible, the reseeded area shall be adjacent to the current population. Reseeding efforts shall occur in close coordination with PRNS ecology staff.	Before and After Construction	CFLHD/COE and NPS	CFLHD
	MM BIO-39: Where temporary impacts and annual plant Environmentally Sensitive Areas overlap, seed shall be collected prior to construction initiation/bid letting or construction shall occur after each species has had time to set seed (May through October, depending on the species). Collected seeds shall be stored for reseeding. After seed collection, the top six inches of soil shall be stockpiled and replaced in-kind post-construction. Collected seeds shall be dispersed in the same area and equivalent in size to the original. Reseeding efforts shall occur amid close coordination with PRNS ecology staff.	Before and After Construction	CFLHD/COE, Contractor, and NPS	CFLHD/COE
	MM BIO-40: Topsoil shall be conserved and separated from roadway	Before and After	Contractor	CFLHD/COE

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
	excavation and embankment foundation areas. No topsoil shall be imported from outside PRNS and only conserved topsoil shall be used. All areas disturbed by earthwork or other construction activity shall have topsoil replaced, as required, within two weeks of completing slope finishing.	Construction		
	MM BIO-41: Impacts to Point Reyes meadowfoam habitat shall be mitigated at a 2:1 ratio (created habitat to impacted habitat) to ensure the successful translocation of the species. The newly created habitat shall be monitored annually for five years during the height of the blooming season. To promote success of the mitigation, mowing within the newly created habitat as part of road maintenance or fire reduction shall occur after meadowfoam have set seed (typically occurs by June). A mitigation and monitoring plan shall be created and approved by CDFW, PRNS, and FHWA prior to initiation of construction.	After Construction	CFLHD and NPS	CFLHD and NPS
	MM BIO-42: Impacts to designated California red-legged frog critical habitat shall be mitigated in accordance with the terms and conditions of the USFWS Biological Opinion.	During and/or After Construction	CFLHD	CFLHD
	MM BIO-43: CFLHD shall comply with the conservation measures set forth by the National Marine Fisheries Service as a result of informal Section 7 consultation.	During and/or After Construction	CFLHD	CFLHD
	MM BIO-44: CFLHD shall comply with the terms and conditions of the California Endangered Species Act incidental take permit for Point Reyes meadowfoam.	During and/or After Construction	CFLHD	CFLHD
	See MM VA-1, AQ-1, and AQ-2.			
Potential adverse effects to riparian habitat and other sensitive natural communities (Section IV.b)	MM BIO-45: CFLHD shall compensate for the permanent loss of jurisdictional features through creation of wetland and riparian compensatory mitigation. The replacement ratio shall be 1.5:1 (acres replaced to acres impacted) or higher, in accordance with permit terms and conditions. A mitigation and monitoring plan shall be developed for on-site restoration of temporarily impacted wetlands and riparian habitat, restoration or mitigation of permanently impacted riparian habitat, and mitigation of permanently impacted wetlands.	During and/or After Construction	CFLHD/COE	CFLHD/COE
	See MM BIO-35.			
Adverse effect on	MM BIO-46: All material and debris generated as a result of project	After Construction	Contractor	CFLHD/COE

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
federally protected wetlands through placement of fill material (Section IV.c)	construction shall be removed from the site and disposed in an approved location outside of USACE jurisdiction.			
	MM BIO-47: Concrete and asphalt piles shall be stockpiled outside and away from wetland resource areas, surrounded with fiber rolls, and covered with plastic.	During Construction	Contractor	CFLHD/COE
	MM BIO-48: Temporarily impacted wetlands shall be restored on-site to pre-construction conditions through planting vegetation and hydroseeding with a native seed mix from the watershed or nearby watersheds under guidance from the PRNS biologists.	After Construction	Contractor and/or NPS	CFLHD/COE
	See MM VA-1, BIO-9, BIO-29.			
Potential to temporarily interfere with movement of native resident or migratory fish (Section IV.d)	See MM BIO-29.			
Cultural Resources				
Potential adverse change in significance of historic resource (Section V.a)	MM HR-1: The Historic E Ranch corral, Historic A Ranch main house, Historic B Ranch main house, and Historic B Ranch hay barn shall be protected from inadvertent damage by placement of fencing or concrete barriers.	Before Construction	CFLHD/COE or Contractor	CFLHD/COE
	MM HR-2: The contractor shall avoid disturbing trees within the B Ranch windbreak and their roots.	During Construction	Contractor	CFLHD/COE
	MM HR-3: No construction staging shall occur at E Ranch corral, B Ranch windbreak, A Ranch main house, or B Ranch hay barn.	During Construction	Contractor	CFLHD/COE
	See MM VA-2.			
Geology and Soils				
Soil erosion and loss of topsoil (Section VI.b)	See MM VA-1.			

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
Hazardous Materials				
Potential to encounter hazardous materials (Section VIII.a)	MM HM-1: Owners of subsurface utilities shall be contacted where excavation is to be conducted in order to assess whether any of the utilities are placed within Transite™ asbestos pipe. If subsurface utilities that need to be relocated are determined to be housed in Transite™ asbestos pipe, special handling, and possibly asbestos abatement, shall be required. Any disposal shall be conducted in accordance with applicable local, state, and federal regulations.	Before Construction	Contractor	CFLHD/COE
	MM HM-2: The contractor shall test the cattle under-crossings and culverts prior to demolition. Per the requirements of Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing), if asbestos-containing material is identified, the contractor shall provide a written plan or notification of intent to the Bay Area Air Quality Management District's Enforcement Division and Air Pollution Control Officer prior to commencing demolition of structures.	Before Construction	Contractor	CFLHD/COE
	MM HM-3: During Worker Environmental Awareness Training, construction supervisor personnel shall be trained to recognize signs of possible contamination in soil such as odors and staining. Supervisors shall be responsible for training construction staff. Handouts shall be provided to aid construction workers in issue identification.	Before/During Construction	CFLHD/COE	CFLHD/COE
Hydrology & Water Quality				
Temporary impacts to existing beneficial uses of Schooner Creek (Section IX.a)	MM WQ-1: All materials placed in watercourses shall be non-toxic. Any combination of wood, plastic, cured concrete, steel pilings, or other materials used for in-channel structures shall not contain coatings or treatments, or consist of substances deleterious to aquatic organism that may leach into the surrounding environment in amounts harmful to aquatic organisms.	During Construction	Contractor	CFLHD/COE
	MM WQ-2: Temporary erosion control measures shall be maintained in working condition until the project is complete or the measures are no longer needed.	During Construction	Contractor	CFLHD/COE
	See MM BIO-4, BIO-6, BIO-7, BIO-8, BIO-9, and BIO-12.			
Potential to degrade water quality (Section IX.f)	See MM BIO-4, BIO-6, BIO-7, BIO-8, BIO-9, BIO-12, WQ-1, and WQ-2.			
Noise				

Impact	Mitigation Measure	Timing	Responsible Party	Monitoring Party
Temporary noise impacts during construction activities (Section XII.d)	MM N-1: Construction equipment shall have mufflers conforming to original manufacturer specifications that are in good working order and are in constant operation to prevent excessive noise or unusual noise.	During Construction	Contractor	CFLHD/COE
	MM N-2: The contractor shall provide the construction schedule to residences within or adjacent to the construction limits and notify adjacent residences at least 48 hours in advance of construction work.	During Construction	Contractor	CFLHD/COE
	MM N-3: Construction shall occur on weekdays. If weekend work is proposed, the contractor shall provide notification to the Contract Oversight Engineer two weeks prior to the proposed work. No weekend work shall be conducted without Contract Oversight Engineer approval.	During Construction	Contractor/COE	CFLHD/COE
	See MM AQ-1 and BIO-21.			