EXHIBIT NO. **5**

APPLICATION NO. HUM-MAJ-1-08

HUMBOLDT COUNTY LCP AMENDMENT
(SAMOA TOWN PLAN)

DEPARTMENT OF COMMERCE , NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION, NATIONAL WEATHER SERVICE (NWS) INSTRUCTION 10-1802, DATED 10/6/04, "OPERATIONS & SERVICES, STORMREADY & TSUNAMIREADY RECOGNITIION PROGRAM" (1 of 25)

Department of Commerce • National Oceanic & Atmospheric Administration • National Weather Service

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October 6, 2004

Operations and Services

STORMREADY AND TSUNAMIREADY RECOGNITION PROGRAMS

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SUMMARY OF REVISIONS: Supercedes StormReady and TsunamiReady Recognition Programs, NWSI 10-1802, dated November 11, 2003. Revisions include:

1. Modified Section 6.0 - Renewal of Storm/TsunamiReady Status. Added instructions regarding subsequent community/county renewals (i.e., after 1st time renewal) and instructions for communities that fail to apply for re-recognition.
2. Added new Section 7.1 - StormReady Commendation Award
3. Added new Section 8.0 - StormReady Supporter Overview

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signed 9/22/04

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StormReady and TsunamiReady Organization and Operations Manual

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1. Introduction. Some 90 percent of all Presidentially declared disasters are weather related, leading to around 500 deaths per year and nearly $14 billion in damage. A destructive tsunami can create a tremendous risk to life and property for coastal communities along the Pacific, Atlantic, and Caribbean. To help Americans guard against the ravages of severe weather and potential tsunami damage, the National Weather Service (NWS) has designed the StormReady and TsunamiReady programs aimed at arming America's communities with the communication and safety skills necessary to save lives and property.

1.1 StormReady Overview. Many laws and regulations exist to help local emergency managers deal with hazardous material spills, search and rescue operations, medical crises, etc., but there are relatively few uniformly-recognized guidelines dealing with the specifics of hazardous weather response operations.

The NWS recognized this need and designed StormReady - - a program to help cities, counties, towns, and other designated communities, implement procedures to reduce the potential for disastrous, weather-related consequences.

By participating in StormReady, local agencies can earn recognition for their jurisdiction by meeting guidelines established by the NWS in partnership with federal, state, and local emergency management professionals. The StormReady program is intended to:

- Improve the timeliness and effectiveness of hazardous weather warnings for the public.
- Provide detailed and clear recommendations by which local emergency managers may establish/improve effective hazardous weather operations.
- Help local emergency managers justify costs and purchases related to supporting their hazardous weather-related program.
- Reward local hazardous-weather mitigation programs that have achieved a desired performance level.
- Provide a means of acquiring additional Community Rating System points assigned by the National Flood Insurance Program (NFIP).
- Provide an "image incentive" to counties, cities, towns, and other designate communities, that can identify themselves as being StormReady .
- Encourage the enhancement of hazardous weather preparedness programs in jurisdictions surrounding StormReady Communities and Counties.

StormReady is a **voluntary** program offered to provide guidance and incentive to officials interested in improving their respective hazardous weather operations. **Implied or explicit references to "requirements" are made with regard to the voluntary participants in the StormReady program and should not be construed as being state or federal mandates.**

1.2 TsunamiReady Overview. Tsunamis are quite rare compared to hazardous weather events in the United States. As a result, tsunami hazard awareness and preparedness in some locations along the U.S. West Coast, Caribbean, Alaska, and within the Pacific Region (Hawaii, American Samoa, Guam, Republic of Palau, Federated States of Micronesia, and Republic of the Marshall Islands) is inconsistent and, in many cases, insufficient. Even in locations with a history of deadly tsunamis, an adequate level of awareness and preparedness is difficult to achieve and sustain over time. The TsunamiReady program was created to help meet the needs of communities at risk from tsunamis.

Due to the similarities in the awareness and preparedness practices (communications, warning reception and dissemination, public education, etc.) in the severe weather and tsunami programs, the guidelines for becoming a TsunamiReady community mirror those of StormReady with a few important exceptions and additions. For example, a TsunamiReady community must have defined evacuation routes that lead to a designated shelter outside of the hazard zone (see Appendix D, TsunamiReady Guidelines).

Note: Communities that apply for TsunamiReady recognition may also satisfy many of the requirements for becoming StormReady, and are therefore strongly encouraged to jointly apply for StormReady recognition as well.

The TsunamiReady program is designed to educate local emergency management officials and their constituents and to promote a well-designed tsunami emergency response plan for each community. TsunamiReady promotes tsunami hazard preparedness as an active collaboration among federal, state, and local emergency management agencies. This collaboration supports greater and more consistent tsunami awareness and mitigation efforts among communities at risk. The TsunamiReady program is intended to:

- Improve the timeliness and effectiveness of tsunami warnings for the public.
- Provide detailed and clear recommendations by which local emergency managers may establish/improve effective tsunami emergency operations.
- Help local emergency managers justify costs and purchases related to supporting their tsunami preparedness program.
- Increase public awareness and understanding of the tsunami hazard.
- Encourage consistency in educational materials and response among communities and states.
- Reward local tsunami hazard mitigation programs that have achieved a desired performance level.
- Provide an "image incentive" to coastal counties, cities, towns, and other designated communities, that can identify themselves as being TsunamiReady.

- Encourage the enhancement of tsunami preparedness programs in jurisdictions surrounding the TsunamiReady Communities and Counties.

TsunamiReady is a voluntary program offered to provide guidance and incentive to officials interested in improving their respective tsunami hazard operations. **Implied or explicit references to "requirements" are made with regard to the voluntary participants in the TsunamiReady program and should not be construed as being state or federal mandates.**

2. StormReady Advisory Board Organization. StormReady Advisory Boards implement and oversee the StormReady and TsunamiReady programs. Advisory Boards are set up on a national, regional, and local level.

2.1 National StormReady Advisory Board. The National StormReady Advisory Board is responsible for general oversight of the StormReady and TsunamiReady programs. The National Board maintains a minimum set of guidelines that are consistent across the country. The National StormReady Advisory Board reviews existing and proposed guidelines at its annual meetings and publishes updated guidelines. The National StormReady Advisory Board includes:

NWS Warning Coordination Meteorologist (WCM) Program Leader (NWSH)
NWS Eastern Region WCM Program Leader
NWS Southern Region WCM Program Leader
NWS Central Region WCM Program Leader
NWS Western Region WCM Program Leader
NWS Alaska Region WCM Program Leader
NWS Pacific Region WCM Program Leader
President (or designee) of the National Emergency Management Association
President (or designee) of the International Association of Emergency Managers

2.2 Regional StormReady Advisory Board. Each of the NWS six regional offices have Regional StormReady Advisory Boards plus a Regional TsunamiReady Board where appropriate. The regional director determines team membership. Regional StormReady Advisory Boards monitor the activities of local boards and ensure the national guidelines are maintained. Regional boards also collect and review proposed guideline changes received from Local StormReady Advisory Boards. Recommendations for change to the national guidelines are forwarded to the National StormReady Advisory Board for consideration.

2.3 Local StormReady Advisory Board. The Local StormReady Advisory Board can enhance StormReady guidelines to fit local and state situations. Local StormReady Advisory Boards may be set up either on a WFO or statewide basis. Each local board consists of at a minimum:

1 - NWS office Meteorologist in Charge (MIC).
1 - NWS office WCM.
1 - State emergency management agency director or designee.*
1 - Local emergency management association president or designee.*

* One per state if local board is WFO based with multi-state responsibility.

The Local StormReady Advisory Board oversees all steps leading to the recognition of a StormReady community, county, or parish. This includes developing by-laws for the Board's activities, enhancing the national guidelines for the local area, establishing procedures for site verification visits, and implementing procedures for application review.

The appropriate Local StormReady Board with at least one additional member - - the Tsunami Warning Center's Geophysicist In Charge - - provides oversight of the TsunamiReady program at the local level. The Local StormReady Board has authority to enhance TsunamiReady to fit local and state situations.

The Local StormReady Board is responsible for all steps leading to the recognition of the TsunamiReady community. This includes implementing procedures for site verification visits and application review.

3. The Application Process. Application for StormReady and/or TsunamiReady recognition is a formal process requiring a written application, site verification visit(s), local board action, and recognition. The StormReady and combined Storm/TsunamiReady application forms are available on the NWS StormReady web site at: http://www.stormready.noaa.gov/apply.htm

3.1 Application Submission. A county or incorporated community seeking StormReady recognition should prepare a written application following the guidelines outlined in Appendix B and submit it to the appropriate NWS office. A county or incorporated community seeking TsunamiReady recognition should prepare a written application following the guidelines outlined in Appendix E and submit it to the appropriate NWS office.

Some applicants will have jurisdiction over both a community and the unincorporated areas of the surrounding county. In these cases, a single application is sufficient, with the combined populations used to determine the appropriate guideline categories. If a community earns Storm/TsunamiReady recognition, the unincorporated communities will be included in the recognition, but do not get individually recognized.

While much of the application is a basic accounting of technology, a brief narrative describing aspects of preparedness and planning activities is necessary and will help assess such things as the hazardous weather plan, exercises, and public safety programs.

The local StormReady Advisory Board Chairperson will provide copies of the application to each board member and assign a team to visit the applicant to formally discuss the application.

3.2 Local Application Review. A StormReady Advisory Board member will review the application to ensure the appropriate guidelines are met. (See Appendix A, StormReady Guidelines, and Appendix D, TsunamiReady Guidelines). If the application indicates the guidelines are not met, the applying agency will be notified about any changes needed to meet the

guidelines. After these changes are made, the agency should submit an updated application for additional Board review.

Once the Population-Based Guidelines are met, the local StormReady Advisory Board will provide each board member with a copy of the application. The Board Chairperson will assign a team to visit the applicant to verify the accuracy on the application and to formally discuss any application issues.

3.3 Site Verification Visit. The Local StormReady Advisory Board Chairperson will assign a verification team of no less than two members to visit an applicant. The verification team should be composed of, at a minimum, one NWS person and one emergency manager. StormReady/ TsunamiReady verification team members should be StormReady Advisory Board members, or other individuals deemed qualified to make an assessment by the Local StormReady Advisory Board.

During the site verification visit, the verification team member(s) will check off the "Verif" boxes listed in each Guideline on the StormReady or combined Storm/TsunamiReady application, for each item that the applicant has in their EOC and/or 24 hour warning point. During the site visit, the verification team should visit both the warning point and EOC to:

a. Verify equipment listed on application;
b. Confirm suitable location of equipment; and,
c. Confirm readiness of equipment.

During a site visit, the team will also review the applicant's hazardous weather plan. This review may require the applicant to explain procedures to ensure that the content meets StormReady Guidelines. A full copy of the applicant's Hazardous Weather Plan does not need to be submitted to the StormReady Advisory Board; however, the verification team may request a copy for further offsite review.

During a TsunamiReady site visit, the team will review the applicant's Tsunami Hazard Response Plan. This review may require the applicant to explain procedures to ensure that the content meets TsunamiReady Guidelines. A full copy of the applicant's Tsunami Hazard Response Plan does not need to be submitted to the StormReady Advisory Board; however, the verification team may request a copy for further offsite review.

After the site visit, the verification team will send their site visit summary, and any additional comments or documentation deemed pertinent, to the Local StormReady Advisory Board.

3.4 StormReady Board Review. The Local StormReady Advisory Board will review a jurisdiction's application and associated site visit summaries at the Board's next meeting. The local StormReady Advisory Board may approve an application for recognition after this first review.

If the recognition is not approved, the local Board will provide written guidance on what improvements are needed to for the community to achieve recognition. Upon written response from the applying jurisdiction, the local Advisory Board will schedule another site verification visit and review. If a community disputes a decision made by the local Advisory Board, the dispute will be forwarded to the Regional StormReady Advisory Board for resolution.

3.5 The Recognition Process. When the Local StormReady Advisory Board determines an applicant has met the program guidelines, it can grant StormReady and/or TsunamiReady recognition to the applicant. The local Board will notify the National and Regional StormReady Advisory Boards of each recognition they grant.

The successful applicant will receive a formal notification letter from the local NWS Meteorologist In Charge (MIC), two StormReady and/or TsunamiReady signs, authorization to use the StormReady logo, instructions for acquiring additional signs, and information concerning the notification of the National Flood Insurance Program for possible adjustment to insurance rates (section 4).

Recognition will be for a period of 3 years from the date the official letter of recognition is signed by the MIC of the local WFO.

StormReady recognition information and examples are located at the NWS National StormReady Web site at: http://www.stormready.noaa.gov

3.6 Recognition Ceremony. Details of the recognition announcement and ceremony will be coordinated between the applicant and the local NWS office which has responsibility for the community or county.

A typical ceremony includes a formal media announcement and should be a combination of the unveiling of the StormReady and/or TsunamiReady signs and a subsequent press conference. See Appendix C for information and examples of recognition materials.

4. National Flood Insurance Program. Recognized jurisdictions participating in the Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA), National Flood Insurance Program (NFIP) may receive 25 Community Rating Points towards lowering flood insurance rates. StormReady communities should forward a copy of their recognition letter to their NFIP representative for details. More information on the NFIP and the Community Rating System is available at: http://www.fema.gov/nfip/crs.shtm

5. Recognition Monitoring. A formal plan to monitor a recognized jurisdiction is not necessary. However, if a formal concern is brought to the Local StormReady Advisory Board, the Board will review the issue and may suspend the recognition for 60 days while the review is conducted. If the local Board review indicates the community or county no longer meets Storm/TsunamiReady guidelines, and the discrepancy cannot be resolved within a reasonable amount of time, the Local StormReady Advisory Board will request the StormReady signs be

removed. A written notification from the local WFO MIC will be sent to the NFIP informing them of this action.

6. Renewal of Storm/TsunamiReady Status. Storm/TsunamiReady recognition is valid for 3 years from the date the local WFO MIC signs a communities official StormReady Recognition Letter. Six months prior to the expiration of the recognition, the Local StormReady Advisory Board will notify recognized jurisdictions in writing of their need to re-apply. Communities should follow the applicable guidelines published at the time of the notification.

Subsequent renewals (i.e., after 1st time renewal) will repeat the interval and procedures outlined in sections 6.1 and 6.2 of the StormReady Organization and Operations Manual at: http://www.stormready.noaa.gov/resources/OpsManual2005.pdf

The Local StormReady Advisory Board should seek to maintain an atmosphere of constant improvement by keeping the evaluation guidelines representative of advancing technology and techniques. Site verification visits for re-recognition will be at the discretion of the Local StormReady Advisory Board.

If the anniversary date for renewal passes, a community will not lose its Storm/TsunamiReady status if it has turned in a renewal application, and/or has provided a letter of intent to renew its recognition (one time submission only) to the Local StormReady Advisory Board. A county or community will only lose its Storm/TsunamiReady status, if it fails to renew its application, or does not provide a letter of intent to renew, within 6 months after the official renewal date. Local StormReady Advisory Boards have the authority to formally terminate a communities recognition.

If a community chooses not to apply for re-recognition, the Local StormReady Advisory Board will request the Storm/TsunamiReady signs be removed. A written notification from the local WFO MIC will be sent to the NFIP informing them of this action. Notify Donna Franklin (donna.franklin@noaa.gov) so she can remove the community from the National StormReady database and National StormReady Web site.

7. StormReady Community Hero Award. The Storm/TsunamiReady Community Hero Award is a special *national level* recognition award that may be presented by senior NWS or NOAA officials to an individual(s) within a community or county that has been recognized as Storm/TsunamiReady. The award is designed to formally recognize those individuals within a community or county in which a life/lives and/or property have been saved as a direct result of their proactive actions which personify the NWS Storm/TsunamiReady program. Award guidelines and protocol can be found in the StormReady Organization and Operations Manual (section 7.1) at: http://www.stormready.noaa.gov/resources/OpsManual2005.pdf

7.1 StormReady Commendation Award. The Storm/TsunamiReady Commendation Award is a *local level* award within the framework of the nationally recognized StormReady program that may be presented by a local WFO to a community that has been designated Storm/ TsunamiReady. The award is designed to formally recognize a community or county in which a

life/lives and/or property has been saved as a result of the successful implementation of the Storm/TsunamiReady program. Award guidelines and protocol can be found in the StormReady Organization and Operations Manual (section 7.2) at: http://www.stormready.noaa.gov/resources/OpsManual2005.pdf

8.0 StormReady Supporter Overview. StormReady Supporters are local entities that do not qualify for Storm/TsunamiReady Recognition, yet promote the principles and guidelines of the Storm/TsunamiReady program into their severe weather/tsunami safety and awareness plans. Entities may be eligible as a StormReady Supporter, based on the bylaws of the local NWS StormReady Advisory Board and the endorsement from local emergency management. Examples of potential StormReady Supporters might include, but are not limited to businesses, hospitals, shopping centers and malls, schools, and nuclear power plants. StormReady Supporter guidelines can be found in the StormReady Organization and Operations Manual (sections 1.4 through 1.7) at: http://www.stormready.noaa.gov/resources/OpsManual2005.pdf

APPENDIX A - StormReady Guidelines

Since the tax base typically dictates the resources applied to public programs, the guidelines for successful participation in the StormReady Program are based on population. Four population categories are used for developing appropriate recognition guidelines related to weather disaster preparedness. The population-based categories are:

Guidelines	Population			
	< 2,500	2,500 - 14,999	15,000 - 40,000	> 40,000
Guideline 1: Communications				
Established 24 hr Warning Point (WP)	X*	X*	X	X
Established Emergency Operations Center (EOC)	X*	X*	X	X
Ability to relay real-time storm reports to forecast office	X	X	X	X
Guideline 2: NWS Information Reception				
Number of ways for EOC and WP to receive NWS warning, etc (If in range, one *must* be NWR)	3	4	4	4
Guideline 3: Hydrometeorological Monitoring				
Number of systems to monitor Hydrometeorological data.	1	2	3	4
Guideline 4: Local Warning Dissemination				
Number of ways EOC/WP can disseminate warnings to public	1	2	3	4
NWR - SAME receivers in public facilities	X	X	X	X
Guideline 5: Community Preparedness				
Number of annual weather safety talks	1	2	3	4
Spotters and dispatchers trained biennially	X	X	X	X
Host / co-host annual NWS spotter training				X
Guideline 6: Administrative				
Formal hazardous weather operations plan	X	X	X	X
Biennial visits by emergency manager to NWS office	X	X	X	X
Annual visits by NWS official to community	X	X	X	X

* For cities or towns with less than 15,000 people, a 24-hour warning point and EOC are required; however, another jurisdiction within the county may provide that resource.

Guideline 1: Communications & Coordination Center

Effective communication is the key to disaster management. This is especially true in natural hazard emergencies (e.g., flood, wildfire) where rapid changes may permit only short lead-time warnings that require an immediate, educated response.

1. 24-Hour Warning Point. To receive recognition under the StormReady Program, an applying agency will need a 24-hour warning point (WP) to receive NWS information and provide local reports and advice. Typically, this is a law enforcement or fire department dispatching point. For cities or towns without a local dispatching point, another jurisdiction within the county may act in that capacity for them.

* For cities or towns with less than 15,000 people, a 24-hour warning point is required; however, another jurisdiction within the county may provide that resource.

The warning point will need to have:

- 24-hour operations.
- Warning reception capability.
- Warning dissemination capability.
- Ability and authority to activate local warning system(s).

2. Emergency Operations Center (EOC). All agencies must have an EOC. For towns and cities with less than 15,000 people, the EOC may be provided by another jurisdiction within the county. The EOC will need to be staffed during hazardous weather events and, when staffed, assume the warning point's hazardous weather functions.

* For cities or towns with less than 15,000 people, an EOC is required; however, another jurisdiction within the county may provide that resource.

The following summarizes the weather-related roles of an EOC:

- May assume weather-related duties of warning point, when staffed.
- Activated based on predetermined guidelines related to NWS information and/or weather events.
- Staffed with emergency management director or designee.
- Warning reception capability (see guideline 2).
- Ability and authority to activate local warning system(s). Must have capabilities equal to or better than the warning point.
- Ability to communicate with adjacent EOCs/Warning Points.
- Established communications link with NWS to relay real-time weather information to support the warning decision making process.

3. Real-Time Storm Reports. An integral part of the warning decision making process is timely reports of real-time weather information. StormReady communities should relay these reports to the local NWS forecast office. At a minimum, these reports should include the type, location, and time of significant weather events. The extent and tracking of these reports are left to the discretion of the local StormReady Advisory Board.

Guideline 2: National Weather Service Warning Reception

Warning Points and EOCs each need multiple ways to receive NWS warnings. The StormReady Program guidelines for receiving NWS warnings in an EOC/WP require a combination of the following, based on population:

- NOAA Weather Radio receiver with tone alert. Specific Area Message Encoding is preferred. *Required for recognition only if within range of transmitter.*
- Emergency Management Weather Information Network (EMWIN) receiver: Satellite feed and/or VHF radio transmission of NWS products.
- Statewide law enforcement telecommunications: Automatic relay of NWS products on law enforcement systems.
- Amateur Radio transceiver: Potential communications directly to NWS office.
- Wireless Devises: From a provider not directly tied to a local system such as EMWIN.
- Television: Local network or cable TV.
- Local Radio (Emergency Alert System - LP1/LP2).
- National Warning System (NAWAS) drop: FEMA-controlled civil defense hotline.
- NOAA Weather Wire drop: Satellite downlink data feed from NWS.
- Other: For example, active participation in a state-run warning network.

Guideline 3: Hydrometeorological Monitoring

While receipt of warnings is crucial to the success of any EOC or Warning Point, there should also be a means of monitoring weather information, especially radar data. To obtain StormReady recognition, each EOC/WP (based on population) should have some combination of the following recommended means of gathering weather information:

- Internet
- Television/radio
- Two-way radio
- Emergency Management Weather Information Network (EMWIN)
- Local systems for monitoring weather

Guideline 4: Warning Dissemination

Once NWS warnings are received, or local information suggests an imminent weather threat, local emergency officials should communicate with as much of their population as possible. To be recognized as StormReady, a community must have NOAA Weather Radio in the following facilities:

Required Locations:
- 24 hour Warning Point
- Emergency Operations Center
- City Hall
- School Superintendent Office

Recommended Locations:
- Courthouses
- Public libraries
- Hospitals
- All schools
- Fairgrounds
- Parks and recreation areas
- Public utilities
- Sports arenas
- Transportation departments
- Nursing Homes/Assisted Living

In addition, recognition will be contingent on having one or more of the following means (based on population) of ensuring timely warning dissemination to citizens:

- Cable television audio/video overrides.
- Local flood warning systems with no single point of failure.
- Other locally-controlled methods like a local broadcast system or sirens on emergency vehicles.
- Outdoor warning sirens.
- *Counties Only:* A County-wide communications network that ensures the flow of information between all cities and towns within its borders. This would include acting as a warning point for the smaller towns.

Guideline 5: Community Preparedness

Public education is vital in preparing citizens to respond properly to weather threats. An educated public most likely will take steps to receive weather warnings, recognize potentially threatening weather situations, and act appropriately to those situations. Those seeking recognition in the StormReady Program will need to:

- Conduct or facilitate safety talks for schools, hospitals, nursing homes, and industries (number of talks per year will be based on population). These may be a part of multi-hazard presentations affecting local communities/regions (e.g., flood, wildfire, tsunami).
- Accomplish weather-related safety campaigns which include publicity for NOAA Weather Radios where coverage exists. These may be a part of multi-hazard presentations affecting local communities/regions (e.g. flood, wildfire, tsunami).

- EOC/Warning Point staff and Storm Spotters will need to attend NWS Storm Spotter training sessions at least every other year. All jurisdictions larger than 40,000 people will need to host/co-host a Spotter training session every year.

Guideline 6: Administrative

A program cannot be successful without formal planning and pro-active administration. To be recognized in the StormReady Program a community needs:

- Approved hazardous weather action plans must be in place. These plans will need to address, at a minimum, the following:
  - Hazards/risk assessment
  - Warning Point procedures relating to natural hazards
  - EOC activation criteria and procedures if applicable
  - Storm Spotter activation criteria and reporting procedures if applicable.
  - Storm Spotter roster and training record if applicable.
  - Criteria and procedures for activation of sirens, cable television override, and/or local systems activation in accordance with state Emergency Alert System (EAS) plans.
  - Annual exercises relating to natural hazard.

To facilitate close working relationships, the community/county emergency management program leader will need to visit the supporting NWS office at least every other year. NWS officials will commit to visit recognized counties, cities, and towns annually to tour EOCs/Warning points and meet with key officials.

APPENDIX B - StormReady Application Form

The StormReady application form is located at the NWS National StormReady Web site at: http://www.stormready.noaa.gov/apply.htm

APPENDIX C - StormReady Recognition Information/Examples

StormReady recognition information and examples are located at the NWS National StormReady Web site at: http://www.stormready.noaa.gov

APPENDIX D - TsunamiReady Guidelines

Guidelines for participation in the TsunamiReady program are given in the following table. Each guideline is fully discussed following the table. Four community categories (based upon population) are used for developing appropriate recognition guidelines.

Guidelines	Population			
	< 2,500	2,500 - 14,999	15,000 - 40,000	> 40,000
Guideline 1: Communications and Coordination				
Established 24-hour Warning Point (WP)	X*	X*	X	X
Established Emergency Operations Center (EOC)	X*	X*	X	X
Guideline 2: Tsunami Warning Reception				
Number of ways for EOC/WP to receive NWS tsunami messages. (If in range, one *must* be NWR receiver with tone alert; NWR-SAME is preferred)	3	4	4	4
Guideline 3: Local Warning Dissemination				
Number of ways EOC/WP can disseminate warnings to public	1	2	3	4
NWR - SAME receivers in public facilities	X	X	X	X
For county/borough warning points, county/borough communication network that ensures information flow among communities	X	X	X	X
Guideline 4: Community Preparedness				
Number of annual tsunami awareness programs	1	2	3	4
Designate/establish tsunami shelter/area in safe zone	X	X	X	X
Designate tsunami evacuation areas and evacuation routes, and install evacuation route signs	X	X	X	X
Provide written, locally specific, tsunami hazard response material to public	X	X	X	X
Schools: Encourage tsunami hazard curriculum, practice evacuations (if in hazard zone), and provide safety material to staff and students.	X	X	X	X
Guideline 5: Administrative				
Formal tsunami hazard operations plan	X	X	X	X

Biennial meeting/discussion between emergency manager and NWS	X	X	X	X
Visit by NWS official to community at least every other year	X	X	X	X

* For cities or towns with less than 15,000 people, a 24-hour warning point and EOC are required; however, another jurisdiction within the county may provide that resource.

Guideline 1: Communications and Coordination Center

A key to effective hazards management is effective communication. This is especially true in tsunami emergencies, since wave arrival times may be measured in just minutes. Such a "short fused" event requires an immediate but careful, systematic and appropriate response. To ensure such a proper response, communities must have established the following:

1. 24-Hour Warning Point. To receive recognition under the TsunamiReady program, an agency needs to have a 24-hour Warning Point (WP) able to receive NWS Tsunami information and provide local reports and advice. Typically, this might be a law enforcement or fire department dispatching point. For cities or towns without a local dispatching point, a county/borough agency could act for them in that capacity. The warning point needs to have:

- 24 hour operations
- Warning reception capability
- Warning communication/dissemination capability
- Ability and authority to activate local warning system(s)

2. Emergency Operations Center. Agencies serving jurisdictions of more than 2,500 people will need an emergency operations center (EOC). It must be staffed during tsunami events to execute the warning point's tsunami warning functions. Summarized below are tsunami-related roles of an EOC:

- Activate based on predetermined guidelines related to NWS tsunami information and/or tsunami events
- Staffed by emergency management director or designee
- Possess warning reception/dissemination capabilities equal to or better than the warning point
- Ability to communicate with adjacent EOCs/Warning Points
- Ability to communicate with local NWS office.

Guideline 2: Tsunami Warning Reception

Warning points and EOCs each need multiple ways to receive NWS Tsunami Warnings. TsunamiReady guidelines to receive NWS warnings in an EOC/WP require a combination of the following, based on population:

- NOAA Weather Radio (NWR) receiver with tone alert. Specific Area Message Encoding (SAME) is preferred. Required for recognition only if within range of transmitter
- NOAA Weather Wire drop: Satellite downlink from NWS.
- Emergency Management Weather Information Network (EMWIN) receiver: Satellite feed and/or VHF radio transmission of NWS products
- Statewide Telecommunications System: Automatic relay of NWS products on statewide emergency management or law enforcement system
- Statewide Warning Fan-out System: State authorized system of passing message throughout warning area
- NOAA Weather Wire via Internet NOAAPort Lite: Provides alarmed warning messages through a dedicated Internet connection
- Direct link to NWS office: For example, amateur or VHF radio
- E-mail from Tsunami Warning Center: Direct e-mail from Warning Center to emergency manager
- Pager Message from Tsunami Warning Center: Page issued from Warning Center directly to EOC/WP
- Radio/TV via Emergency Alert System: Local radio/TV or cable TV
- US Coast Guard Broadcasts: WP/EOC monitoring of USCG marine channels
- National Warning System (NAWAS) drop: FEMA-controlled civil defense hot-line

Guideline 3: Warning Dissemination

1. Upon receipt of NWS tsunami warnings or other reliable information suggesting a Tsunami is imminent, local emergency officials should communicate the threat to as much of the population as possible. Receiving TsunamiReady recognition requires having one or more of the following means of ensuring timely warning dissemination to citizens (based on population):

    - A community program subsidizing the purchase of NWR.
    - Outdoor warning sirens
    - Television audio/video overrides
    - Phone messaging (dial-down) systems
    - Other locally-controlled methods, e.g., local broadcast system or emergency vehicle sirens.

2. Once NWS Tsunami Warnings are received, or local information suggests an imminent tsunami threat, the local emergency officials should communicate with as much of the

population as possible. To be recognized as TsunamiReady, a community must have NOAA Weather Radio in the following facilities:

Required Locations:
- 24 hour Warning Point
- Emergency Operations Center
- City Hall
- School superintendent office or equivalent

Recommended Locations:
- Courthouses
- Public libraries
- Hospitals
- All schools
- Fairgrounds
- Parks and recreation areas
- Public utilities
- Sports arenas
- Transportation departments
- Nursing Homes/Assisted Living
- Harbors

Receivers with SAME capability are preferred (this is required for recognition only if locations are within range of NWR transmitter).

In addition, recognition will be contingent on having one or more of the following means (based on population) of ensuring timely warning dissemination to citizens:

- Cable television audio/video overrides.
- Local Flood warning systems with no single point of failure.
- Other locally-controlled methods like a local broadcast system or sirens on emergency vehicles.
- Outdoor warning sirens.

3. Counties/Boroughs Only: A county/borough-wide communications network ensuring the flow of information among all cities and towns within its borders. This would include provision of a warning point for the smaller towns, and fanning out of the message as required by state policy. Critical public access buildings should be defined by each community's tsunami warning plan.

Guideline 4: Awareness

Public education is vital in preparing citizens to respond properly to Tsunami threats. An educated public is more likely to take steps to receive tsunami warnings, recognize potentially threatening Tsunami events, and respond appropriately to those events. Communities seeking recognition in the TsunamiReady program must:

1. Conduct or sponsor Tsunami awareness programs. Possible locations may include schools, hospitals, fairs, workshops, and community meetings (number of presentations per year is based on population).

2. Define Tsunami evacuation areas and evacuation routes, and install evacuation route signs.

3. Designate a Tsunami shelter/area outside the hazard zone.

4. Provide written Tsunami hazard information to the populace, including:
   - Hazard zone maps
   - Evacuation routes
   - Basic tsunami information

   These instructions can be distributed through mailings, i.e, utility bills, within phone books, and posted at common meeting points such as libraries and public buildings throughout the community.

5. Local schools must meet the following criteria:
   - Encourage the inclusion of Tsunami information in primary and secondary school curriculums. NWS will help identify curriculum support material.
   - Provide an opportunity biennially for a Tsunami awareness presentation by the local NWS office and/or the local Emergency Manager.
   - Schools within the defined hazard zone must have Tsunami evacuation drills at least biennially.
   - Written safety material should be provided to all staff and students.
   - Have an earthquake plan.

Guideline 5: Administrative

No program can be successful without formal planning and a pro-active administration. To be recognized in the TsunamiReady Program:

1. A Tsunami warning plan must be in place and approved by the local governing body. This plan must address the following:
   - Warning point procedures
   - EOC activation criteria and procedures
   - Warning point and EOC personnel specification
   - Hazard zone map with evacuation routes
   - Procedures for canceling an emergency for those less-than-destructive Tsunamis
   - Criteria and procedures for activation of sirens, cable television override, and/or local systems activation in accordance with state Emergency Alert System (EAS) plans, and warning fan-out procedures, if necessary
   - Annual exercises.

2. Yearly visit/discussion with local NWS Office or Tsunami Warning Center personnel. Due to distance and other logistical constraint in the Alaska and Pacific Regions, this guideline can be met by a visit to the NWS office, phone discussion, or e-mail contacts.

3. NWS officials will commit to visit recognized communities, at least every other year, to tour EOCs/Warning points and meet with key officials.

APPENDIX E - Combined Storm/TsunamiReady Application Form

The combined Storm/TsunamiReady application form is located on the NWS StormReady web site at: http://www.stormready.noaa.gov/apply.htm

EXHIBIT NO. **6**

APPLICATION NO.

HUM-MAJ-1-08 – HUMBOLDT COUNTY LCP AMENDMENT (SAMOA TOWN PLAN)

TSUNAMI HAZARD MAP, DATED 7/28/04, HUMBOLDT STATE UNIVERSITY, ILLUSTRATING TSUNAMI INUNDATION RELATIVE HAZARD AREAS (INCLUDING AREAS RELEVANT TO THE REVIEW OF SUCH HAZARDS PURSUANT TO THE REQUIREMENTS OF THE HUMBOLDT BAY AREA PLAN). COLORED VERSION AVAILABLE THROUGH THE HSU HUMBOLDT EARTHQUAKE EDUCATION CENTER WEBSITE:
http://www.humboldt.edu/~geology/earthquakes/eqk_info.html

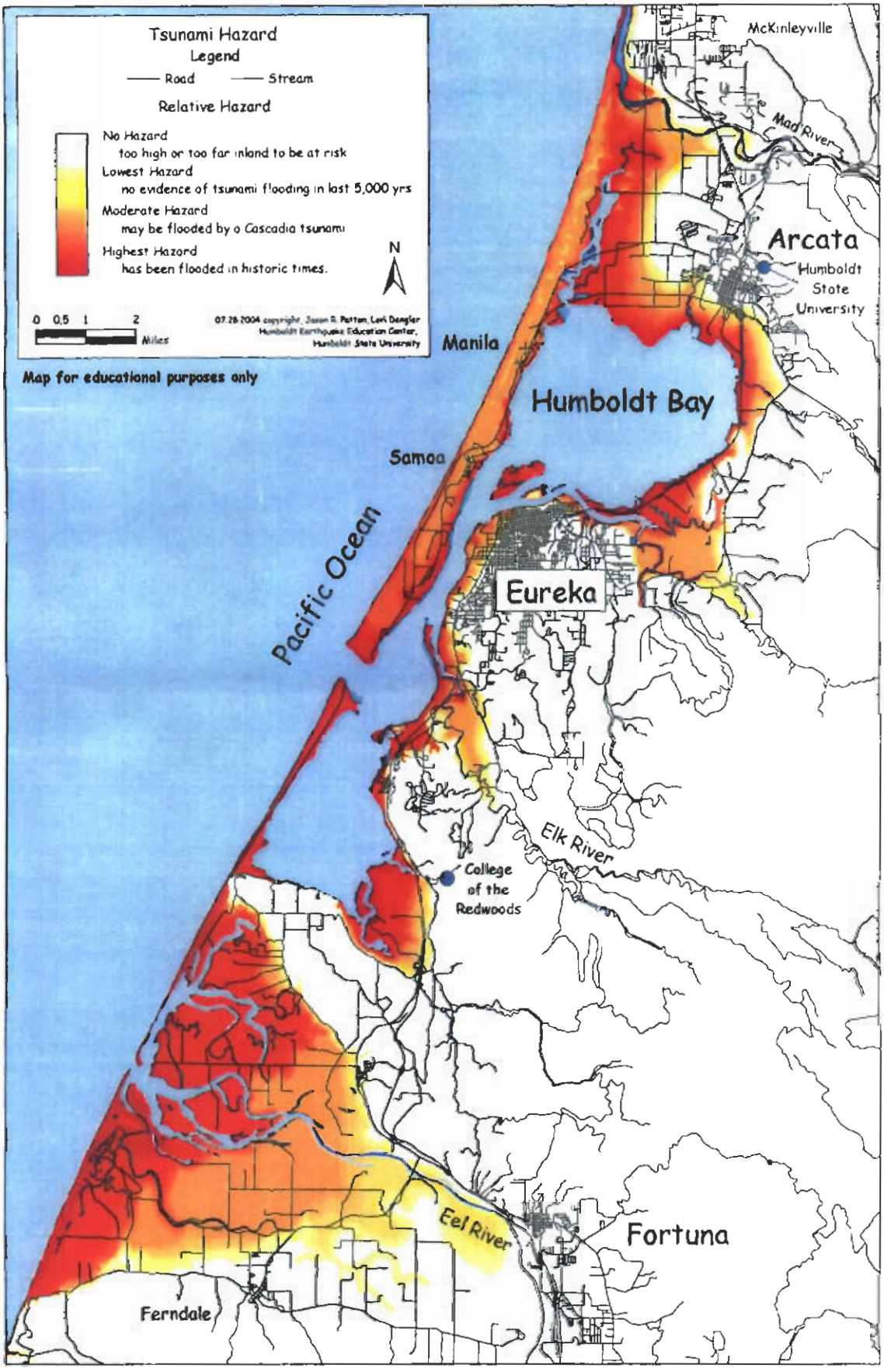
Tsunami Hazard
Legend
Road
Stream
Relative Hazard
No Hazard
too high or too far inland to be at risk
Lowest Hazard
no evidence of tsunami flooding in last 5,000 yrs
Moderate Hazard
may be flooded by a Cascadia tsunami
Highest Hazard
has been flooded in historic times.
N
0 0.5 1 2
Miles
07.28.2004 copyright, Jason R. Patton, Lori Dengler
Humboldt Earthquake Education Center,
Humboldt State University
Map for educational purposes only
McKinleyville
Mad River
Arcata
Humboldt
State
University
Manila
Humboldt Bay
Samoa
Pacific Ocean
Eureka
Elk River
College
of the
Redwoods
Eel River
Fortuna
Ferndale

EXHIBIT NO. **7**

APPLICATION NO.

HUM-MAJ-1-08 – HUMBOLDT COUNTY LCP AMENDMENT (SAMOA TOWN PLAN)

"SAMOA TOWN MASTER PLAN BIOLOGICAL RESOURCES STUDY PREPARED BY MAD RIVER BIOLOGISTS, DATED 12/04. PREPARED FOR COUNTY OF HUMBOLDT COMMUNITY DEVELOPMENT SERVICES DEPARTMENT & SAMOA PACIFIC GROUP, SUBMITTED TO PLANWEST PARTNERS (COLOR VERSION SCANNED ON COMMISSION'S WEBSITE) (1 of 137)

Samoa Town Master Plan

Biological Resource Study

December 2004

Prepared For:

County of Humboldt
Community Development Services Department
And
Samoa Pacific Group

Prepared By:

Mad River Biologists
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Submitted To:

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JUL 21 2009
CALIFORNIA
COASTAL COMMISSION

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INTRODUCTION

The County of Humboldt, Community Development Services Department (County) and Samoa Pacific Group (SPG) are evaluating the feasibility of a general plan amendment and zone reclassification for the purpose of obtaining a coastal development permit for the Samoa Town Master Plan (TMP). During 2003 and 2004, Mad River Biologists (MRB) conducted a biological resource study on behalf of the project applicants to identify biological constraints for the proposed plan. The following report serves as the basis for biological resource information presented in Chapters 2.04 and 4.04 of the Environmental Impact Report prepared by Planwest Partners for the Samoa Town Master Plan.

ENVIRONMENTAL SETTING

The plan area is located on the Samoa Peninsula, or "North Spit," a 17-mile long barrier sand spit enclosing the northern section of Humboldt Bay in Humboldt County, California. The 171.7-acre plan area falls within the coastal zone on a largely developed section of the peninsula, and includes both developed and undeveloped dunes. The 171.7-acre property includes a 17-acre parcel of dune habitat that is currently zoned for Natural Resources located west of New Navy Base Road where development currently is not planned.

Existing development includes commercial and industrial zoned lands associated with historic lumber mill operations and the community of Samoa. Vegetation associated with developed areas consists primarily of introduced species that have become naturalized, or that were planted for landscaping purposes. Developed areas also support various "man-induced" wetlands such as the town's existing wastewater treatment facility, drainage ditches and vegetated detention basins. Undeveloped portions of the property include habitats such as coniferous forests, coastal scrub, foredunes, beach strand, and dune hollow wetlands, most of which occur on undeveloped dunes immediately adjacent to New Navy Base Road.

STUDY METHODS

Habitat Mapping and Wetlands Delineation

Habitat mapping and wetland delineation work was performed by MRB biologists Stephanie Morrissette and Jessica Stauffer. Field mapping was done between June of 2003 and February of 2004. Wetland delineations were conducted in June and July of 2003, with follow-up visits in January and February of 2004 to collect winter hydrology data.

Habitats were mapped in the field using ortho-rectified aerial photographs of the plan site overlain with 1-foot topographic contour lines. Field maps were digitized using a "heads up" digitizing procedure in ArcView for presentation purposes. Delineated wetlands were compared with survey data provided by Kelly-O'hern Associates to obtain reference points and accurate area calculations for the water treatment facility and dune hollow wetlands occurring within the plan area.

The discussion of natural communities is based on classifications described by the Department of Fish and Game, California Natural Diversity Database (CDFG 2002). Vegetation types associated with these communities follow a system created by Sawyer and Keeler-Wolf (1995) that relies on units called series, which are based on floristic dominance and assessed by cover.

Wetland systems are classified according to the USFWS classification system as outlined in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). Associated vegetation series are included within the description of each wetland type when applicable.

Wetlands were delineated using procedures outlined in the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (Environmental Laboratory 1987). The USACE utilizes a three-parameter approach for making wetland determinations. It is based on the presence of indicators for 1) wetland hydrology (permanent inundation or periodic saturation of the soil to the surface at some time during the growing season of the prevalent vegetation), 2) a predominance of hydrophytic vegetation (plants adapted to anaerobic conditions resulting from a prolonged inundation with water) and 3) hydric soils (soils that become saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions that favor the growth of hydrophytic vegetation).

Soil pits were dug to assess site conditions for the presence of wetlands. In areas where initial pit data suggested a wetland determination, transects running perpendicular to the major drainage pattern were created. Soil pits were typically dug along these transects within wetland, upland and transition zones. Observation points were established where soil pits could not be dug due to the presence of an artificial substrate. At each soil pit and observation point, hydrology, vegetation, and substrate were examined, and data was recorded on site report forms. A detailed wetland delineation map showing the location of all soil pits is provided as Figure 1. A sample wetland delineation data form is included as Attachment A. The original data is available upon request from the County of Humboldt. The wetland status indicator for species listed on the data forms was taken from the *National list of plant species that occur in wetlands*: 1988 National Summary (Reed), as defined below:

OBL Obligate Wetland. Occur in wetlands under natural conditions at an estimated probability > 99%.

FACW Facultative Wetland. Usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.

FAC Facultative. Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

FACU Facultative Upland. Usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability1%-33%).

UPL Obligate Upland. Occur in wetlands in another region, but occur almost always (estimated probability >99%) under natural conditions in non-wetlands in the region specified.

NL Not Listed, generally considered upland.

NI Not Indicated. Recorded for those species for which insufficient information was available to determine an indicator status.

* Tentative assignment due to limited information.

In the State of California, CDFG serves in an advisory capacity with regard to the fill and/or alteration of wetlands, and is a commenting agency for projects subject to local, county and/or state environmental review processes. Under the Coastal Act, the California Coastal Commission retains permitting jurisdiction for wetlands (and other sensitive natural communities) occurring within the plan area. All wetlands occurring within the plan area were identified by their presumed state and/or federal jurisdiction, as depicted in Figure 2. Corresponding acreage(s) for each wetland type is provided in Table 1.

Designation of Environmentally Sensitive Habitat Areas

Several habitats within the plan area are recognized as sensitive by various resource agencies. Under Section 30107.5 of the Coastal Act, the California Coastal Commission defines "Environmentally Sensitive Habitat Area", or EHSA as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments". Section 30240 of the Coastal Act in part states that ESHAs shall be protected against significant disruption, and limits development design adjacent to such areas to prevent impacts that would significantly degrade ESHA sites. In addition, CDFG recognizes "sensitive natural community" types within the plan area that are rare and worthy of consideration due to highly limited distribution, regardless of presence or absence of rare, threatened, or endangered status species.

Sensitive habitat status can therefore be the result of rarity of a community type, value of a community's role in the ecosystem, threats to limited habitats caused by disturbance or degradation from human activities or developments, or protection by state or federal agencies for resources such as wetlands or rare plants. Additionally, community types composed of invasive, exotic species (such as the yellow bush lupine and European beachgrass series) may be considered sensitive habitats in part due to their inclusion within larger, sensitive community types such as coastal scrub and foredunes (Sawyer and Keeler-Wolf 1995).

ESHA status determinations were based on several factors, including: type of substrate (native substrate vs. fill material), species composition (ratio of native to exotic species), relative quality of habitat for native species and functional value, proximity to other sensitive habitats and/or existing development and historical land use practices. Under the discussion of each community type presented, the rationale for why a given habitat may or may not be considered an ESHA by regulating agencies is provided. All habitats mapped for the plan area are depicted in Figure 3; those considered environmentally sensitive are depicted in Figure 4.

Determining Occurrence or Potential Occurrence of Special Status Taxa

The plan area was assessed by MRB biologists Stephanie Morrissette and Ron LeValley for habitats capable of supporting special status plant and animal taxa with known occurrence or distribution in the project region. A list of definitions that pertain to special status species may be found in Attachment B.

The project region was defined as the Eureka 7.5 minute USGS quadrangle and eight adjacent coastal quadrangles (Arcata North, Tyee City, Arcata South, Trinidad, Crannell, Fields Landing, Fortuna, Cannibal Island, and Ferndale).The California Natural Diversity Data Base (CNDDB) and the California Native Plant Society's (CNPS) *Inventory of rare and endangered vascular plants of California* were queried for the project region in May of 2003, and again in March of 2004. A list of regionally occurring special status plants and animals was compiled for the plan area based on the results of the data base queries, review of pertinent literature, and informal consultation with public agencies and other knowledgeable individuals. This list, including information on each species' range, habitat requirements, and its known or potential occurrence in the plan area is included as Attachment C.

Floristic surveys were conducted for all special-status vascular plants listed in Attachment C for which suitable habitat was determined to be present at the plan area and where development is

proposed. Botanical surveys were conducted between May 13th and August 1st of 2003 for all plant species expected to be in bloom during that period. Additional botanical surveys were conducted on March 12th, 19th and April 9 of 2004 for early blooming species that may have been missed during the 2003 survey effort. A Native Species Field Survey Form was filled out for each rare plant occurrence found at the plan site; a sample form is provided in Attachment D and the original data is available upon request from the County of Humboldt.

While formal wildlife surveys were not conducted, there is a wealth of knowledge regarding wildlife use of the North Spit that may be applied to the plan area. Wildlife use of the site was assessed based on the observed and described habitats at the site. The locations of sensitive flora and fauna found within the plan area are depicted in Figure 5. A compiled species list for the plan site is included as Attachment E. The identification of plant species is based on the current taxonomic treatment presented in The Jepson Manual (Hickman, 1993). Scientific names for all species referenced in this document can be found in Attachment E.

The absence of a particular special-status plant or animal from the report does not necessarily mean that it is absent from the study area, only that no occurrence records exist in the CNDDB or CNPS inventories for the project region, and it was not detected in the plan area during the 2003/2004 field surveys. Habitat suitability was evaluated for all special-status species addressed in the biological study by using the following criteria:

Present. The species is known to occur within the plan area, based on historical occurrence records and/or recent survey data.

High Potential. Habitat components meeting the species requirements are present and most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found in the plan area.

Moderate Potential. Habitat components meeting the species requirements are present; however, some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found in the plan area.

Low Potential. Some habitat components meeting the species requirements are present; however, the majority of habitat on and adjacent to the site is unsuitable. The species has a low probability of being found in the plan area.

Not Present. Habitat on and adjacent to the site is clearly unsuitable for the species or recent survey data indicates that it currently does not occur within the plan area.

RESULTS

Upland Habitats

Sensitive coastal dune habitat occurs in the plan area, represented by coastal coniferous forest, northern coastal scrub, northern foredune, and beach strand. Although much of these habitats at the plan area have become degraded by the introduction and encroachment of exotic species and by other anthropogenic means, they represent important natural communities on the North Spit. For example, the foredune community provides important habitat for two federal/state-listed endangered plant species, Humboldt Bay wallflower (*Erysimum menziesii* ssp. *eurekense*) and beach layia (*Layia carnosa*), and other special-status species. These communities are considered Environmentally Sensitive Habitat Areas (ESHA) by the California Coastal Commission and are protected from most types of development under Section 3.30 (B) of the Humboldt Bay Area

Plan (HBAP) of the Humboldt County Local Coastal Program (LCP). Other upland habitats within the plan area include those associated with urban landscapes, developed dunes and degraded dunes, all of which have been significantly altered by historical and/or current land use practices. Descriptions of the upland habitats found in the plan area follow.

Coastal Coniferous Forest – Beach pine/Sitka spruce forest is found at the north end of the plan area east of New Navy Base Road on upland stabilized dunes. Forested dunes such as these are believed to predate active moving dune systems (Cooper 1967, Duebendorfer 1992). Typically, forested dunes occur inland from moving dunes that slowly encroach upon them. Forested dunes at the plan area are more or less contiguous with forested areas that occur west of New Navy Base Road although are interrupted by this roadway.

(a) Vegetation. Coniferous forests at the plan area correspond to the Beach Pine Series described by Sawyer and Keeler-Wolf (1995). Canopy cover within this community type is moderately dense, typically between 10 and 20 meters tall and structurally diverse (Pickart 1990). Dominant overstory species include beach pine (*Pinus contorta* ssp. *contorta*) and Sitka spruce (*Picea sitchensis*). Shrub cover can be moderately dense, composed of California huckleberry (*Vaccinium ovatum*), silk tassel (*Garrya elliptica*), salal (*Gaultheria shallon*), twinberry (*Lonicera involucrata*), red-flowering currant (*Ribes sanguineum*) and/or wax myrtle (*Myrica californica*), to somewhat open with only a low ground cover of bearberry (*Arctostaphylos uva-ursi*), false lily-of-the-valley (*Maianthemum dilatatum*), pearly everlasting (*Anaphalis margaritacea*), hawkweed (*Hieracium albiflorum*), beach goldenrod (*Solidago spathulata*), rattlesnake orchid (*Goodyera oblongifolia*), yerba buena (*Satureja douglasii*) and vanilla grass (*Hierochloe occidentalis*). A dune hollow wetland dominated by Hooker willow (*Salix hookeriana*) occurs within the coniferous forest at the north end of the plan area adjacent to New Navy Base Road.

Surveys for non-vascular plants, and fungi were not conducted as a part of this study; however, coastal coniferous forest habitats on the North Spit are known to support a diverse and abundant flora of mosses, lichens and fungi (Duebendorfer 1992, Pickart 1990, Glavich 1999). This habitat type may support two rare maritime lichens of the genus *Bryoria* (*B. spiralifera* and *B. pseudocapillaris*) that reportedly occur in similar habitats on the North Spit.

(b) Wildlife. A variety of wildlife species utilize coastal coniferous forests such as the beach pine/Sitka spruce habitat in the plan area. Mammalian species typically associated with this habitat include Virginia opossum (*Didelphis virginiana*), porcupine (*Erethizon dorsatum*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), long-tailed weasel (*Mustela frenata*), mink (*Mustela vison*), spotted skunk (*Spilogale gracilis*), striped skunk (*Mephitis mephitis*), bobcat (*Lynx rufus*) and a variety of species of the orders Rodentia [deer mouse (*Peromyscus maniculatus*), western harvest mouse (*Reithrodontomys megalotis*), and California vole (*Microtus californicus*)] and Insectivora [vagrant shrew (*Sorex vagrans*) and shrew mole (*Neurotrichus gibbsii*)]. Big brown bats (*Eptesicus fuscus*) and Yuma myotis (*Myotis yumanensis*) are also likely to occur while hoary bat (*Lasiurus cinereus*) and Mexican free-tailed bat (*Tadarida brasiliensis*) are possible but not likely.

Amphibian species likely to be resident in this habitat type are California slender salamander (*Batrachoseps attenuatus*), Ensatina salamander (*Ensatina eschscholtzii picta*), and clouded salamander (*Aneides ferreus*). Northwestern salamander (*Ambystoma gracile*) and rough-skinned newt (*Taricha granulosa*) may also use it for cover and forage habitat. All of these amphibians are terrestrial species that require the type of moisture-rich ground cover present within this portion of the plan area. Northern red-legged frog (*Rana aurora aurora*), Pacific tree frog (*Hyla*

regilla) and California red-sided garter snake (*Thamnophis sirtalis*) are likely to be found in the dune hollows and utilize the adjacent upland forest habitat for cover and forage.

Avian species expected to utilize this forest type are many of those associated with both forest interior and edge habitats, birds with relatively small home ranges, and those species inhabiting other nearby habitats that can act as source populations for the habitat at the plan area. A number of both resident and migrant bird species are expected to occur or have the potential to occur in coastal coniferous forests. Of those, several are sensitive species, including Cooper's hawk (*Accipiter cooperi*) and Black-capped Chickadee (*Parus atricapillus*), both of which were observed at the site, and Vaux's Swift (*Chaetura vauxi*), Purple Martin (*Progne subis*) and Sharp-shinned Hawk (*Accipiter striatus*), which have high potential for occurrence.

Given the relatively small and isolated nature of this habitat type in the plan area most species that occur here are those exhibiting comparatively small home ranges. Gray fox is the largest wildlife species likely to frequent the coastal coniferous forest at the plan area. Similarly, this habitat probably functions as a biological island for many of the species it supports due, once again, to its size (exhibiting high ratio of edge to interior habitat) and isolation. Therefore immigration by individuals from outside of the habitat patch must occur to maintain inhabitance by some of the representative species, especially those with larger home ranges.

(c) Habitat Status. While no special status vascular plants or wildlife species are known to occur within the coniferous forests at the plan area, the habitat itself is considered rare and constitutes an important resource on the North Spit. The California Department of Fish and Game's Natural Heritage Program has assigned beach pine/Sitka spruce forests a global rank of G4 (greater than 100 viable occurrences world-wide and/or greater than 50,000 acres), a state rank of S2 (6-20 viable occurrences statewide and/or 2,000-10,000 acres), and a threat rank of 0.1 (very threatened). Forested dunes are considered Environmentally Sensitive Habitat Areas by the California Coastal Commission, and specifically identified as such under Section 3.30.B.1.a.2 of the HBAP of the Humboldt County LCP.

Northern Coastal Scrub – Northern coastal scrub was first described by Holland (1986) as a community of low shrubs, 0.5 to 2 meters tall, usually dense but with scattered grassy openings, and generally occurring on windy, exposed upland coastal sites. Native coastal scrub representative of the salal-black huckleberry series and the coyote brush series occurs adjacent to the coastal coniferous forest (beach pine forest) at the north end of the property on stabilized dunes, and adjacent to dune hollow wetlands found on and near the old log deck south of the town of Samoa. Non-native coastal scrub, represented by the invasive yellow bush lupine, is found on coastal dunes west of New Navy Base Road and within degraded and developed dunes associated with the log deck.

(a) Vegetation. Sawyer & Keeler-Wolf (1995) consider coastal scrub habitat as a collection of vegetation series that are determined at each site by dominant cover. The salal-black huckleberry series represents the predominant native coastal scrub community within the plan area. It is characterized by salal and black huckleberry as important shrubs in the canopy, and is variably mixed with other coastal scrub species such as coast silktassel, bearberry, wax myrtle, twinberry, coyote brush (*Baccharis pilularis*), and yellow bush lupine (*Lupinus arboreus*).

Yellow bush lupine is believed to be native to Sonoma and Ventura Counties but has become naturalized locally. It is considered an exotic species in Humboldt County where, like European beachgrass (*Ammophila arenaria*), it has a history of being planted to stabilize sand dunes (Sawyer and Keeler-Wolf 1995, Miller 1988). Yellow bush lupine has been shown to act as a

catalyst for the invasion of other non-native species, resulting in elevated levels of organic matter, nitrogen and phosphorus in the dune community. Yellow bush lupine is the sole or dominant species within the yellow bush lupine series, although coyote brush and wax myrtle may also occur in lower cover values (Sawyer and Keeler-Wolf 1995). At the plan area, the yellow bush lupine shrub canopy is typically discontinuous, and often associated with a dense herb layer of exotic annual grasses.

Although coyote brush is a native species, it is typically found on degraded dunes that have become stabilized by European beachgrass and/or yellow bush lupine that previously supported native dune mat vegetation. At the plan area, the coyote brush series is associated with many of the same species found within the yellow bush lupine series, including yellow bush lupine, but is characterized as coyote brush as the sole or dominant species within the canopy (Sawyer and Keeler-Wolf 1995).

(b) Wildlife. The northern coastal scrub habitat of the Humboldt Bay area provides breeding and foraging habitat as well as cover for a variety of resident reptilian and mammalian species as well as resident and migrant avifauna. The only sensitive wildlife species with the likelihood for occurrence within this habitat type is the Northern Harrier (*Circus cyaneus*), which may use it as foraging habitat. Wildlife species occurring within this habitat type in the plan area include those species adapted to habitat edges.

(c) Habitat Status. The State of California's Natural Heritage Program recognizes northern coastal scrub as a sensitive natural community and has assigned it a global rank of G3 (21-100 viable occurrences worldwide and/or 10,000-50,000 acres), state rank of S3 (21-100 viable occurrences statewide and/or 10,000-50,000 acres) and threat rank of 0.2 (threatened). The California Coastal Commission generally considers coastal scrub communities to be Environmentally Sensitive Habitat Areas, depending on the size, location and/or quality of habitat. Coastal scrub ESHA are protected from certain types of development and land use activities by Section 3.30.B of the HBAP of the Humboldt County LCP.

All coastal scrub habitat mapped west of New Navy Base Road was classified as ESHA by the EIR consulting biologist, regardless of the degree of degradation these dunes exhibit due to the presence of non-native species (see ESHA Map in appendices). These lands are currently zoned for Natural Resources and are contiguous with adjacent ESHA foredune communities that provide habitat for the listed dune-mat associated special-status plant species.

Where yellow bush lupine occurs on developed and degraded dunes east of New Navy Base Road it was not designated as ESHA because these areas exhibit little to no native species component (<5% cover of natives), are typically discontinuous from native dune habitats that are capable of supporting sensitive species, and occur on substrates that have been significantly altered by various developments or industrial activities (e.g. graded or filled). Similarly, small isolated occurrences (typically less than 100 ft^2 but no greater than 500 ft^2) of native scrub species such as wax myrtle, California blackberry, and coyote brush found growing in fill or significantly degraded upland dunes east of New Navy Base Road where non-native, ruderal vegetation is predominant overall, were mapped within the degraded or developed dune categories and are not considered ESHA.

Where coyote brush occurs in high cover and/or in conjunction or contiguous with other native scrub species (i.e. the salal-black huckleberry series) it was mapped under the Northern Coastal Scrub category (see Habitat Map-Figure 3) and is thus considered ESHA.

Northern Foredunes – Pickart and Sawyer (1998) describe foredunes as the semi-stabilized system of dune ridges and/or hummocks that typically occur between the beach (above the limit of ordinary wave action) and the deflation plain. These ridges are a result of the accumulation of sand in and around plants that can tolerate burial by sand. They may be parallel to the beach, forming a relatively continuous crest, or they may form a series of longitudinal ridges oriented parallel with prevailing northwest winds (Pickart and Sawyer 1998).

Industrial development, roads and the introduction of invasive exotic species have significantly altered foredunes that occur at the plan area. West of New Navy Base Road, European beachgrass dominates the continuous, steep primary foredunes, and has stabilized this once active dune system. New Navy Base Road bisects the foredune system at the plan area, and impedes interior foredune development in all but the northwest end of the property by the Samoa Booster Station (i.e. power pole site).

Remnant foredune habitats (i.e. open sandy areas with a native dune mat species component) occur immediately east of New Navy Base Road in the vicinity of the buried Samoa/Mad River water pipeline, interspersed with dune hollow wetlands and degraded dunes.

(a) Vegetation. Foredune plant communities at the plan area are represented by three main vegetation series described by Sawyer and Keeler-Wolf (1995): European beachgrass series, iceplant series, and sand-verbena – beach bursage series.

The European beachgrass series is the most widespread plant community found on foredunes west of New Navy Base Road. The series is represented by the introduced species, European beachgrass, as the sole or dominant species in the ground layer (Sawyer and Keeler-Wolf 1995). European beachgrass is a prolific rhizomatous grass that was planted widely in coastal areas to stabilize dunes. It is known to substantially alter the physical and biological conditions of the natural dune environment, consequently leading to a loss of native vegetation (Pickart & Sawyer 1998). Few species are found in association with this vegetation type, but native species can occur in openings within, and on the periphery of this series. Efforts to restore native dune vegetation often involve the eradication of European beachgrass and other invasive exotics species such as yellow bush lupine and iceplant.

The iceplant series is also prevalent in the foredunes at the plan area, characterized by the presence of Hottentot fig (*Carpobrotus edulis*) and/or intermediate Hottentot fig/sea fig hybrids (*Carpobrotus edulis* x *C. chilensis*). These species typically form dense clonal mats to the near exclusion of other species (Duebendorfer 1992, Sawyer and Keeler-Wolf 1995, Pickart and Sawyer 1998). Iceplant is not restricted to undeveloped dunes, and is found commonly on disturbed lands (developed dunes) in the plan area. Iceplant is the dominant series found at the southern half of the foredune habitats west of New Navy Base Road.

The sand-verbena – beach bursage series comprises the native dune mat community found on undeveloped dunes in the plan area. Dune mat is characterized by a somewhat mobile sandy substrate supporting perennial forbs, grasses and low growing shrubs. Overall, plant species diversity is typically high in this community type, and on the North Spit, is characterized by the presence of beach bursage (*Ambrosia chamissonis*), beach morning glory (*Calystegia soldanella*), beach pea (*Lathyrus littoralis*), dune buckwheat (*Eriogonum latifolium*), dune sagebrush (*Artemisia pycnocephala*), yellow sand-verbena (*Abronia latifolia*), seashore bluegrass (*Poa douglasii*), beach evening primrose (*Camissonia cheiranthifolia*), dune goldenrod (*Solidago spathulata* ssp. *spathulata*), beach strawberry (*Fragaria chiloensis*) and seaside daisy (*Erigeron glaucus*).

At the plan area, dune mat is not well represented, occurring only in remnant areas of the foredune system not colonized by European beachgrass or other invasive species. Nevertheless, the foredunes at the plan area provide habitat for the state and federally listed endangered species, Humboldt Bay wallflower and beach layia, as well as other special-status species recognized by the State of California: pink sand verbena (*Abronia umbellata* ssp. *breviflora*), dark-eyed gilia (*Gilia millefoliata*), and American glehnia (*Glenia littoralis*).

(b) Wildlife. Northern foredune habitats on the North Spit support a variety of wildlife, providing cover as well as serving as breeding and foraging habitat for several small mammals such as black-tailed jackrabbit (*Lepus californicus*), rodents, and insectivores. Some larger mammals also commonly utilize this habitat type for forage, including long-tailed weasel, bobcat, gray fox, both striped and spotted skunk, and occasionally black-tailed deer (*Odocoileus hemionus*). Porcupines may also use the foredunes although their potential for occurrence is lower.

Reptiles are not likely to be found in the foredunes, although northern alligator lizard (*Elgaria coeruleus*) and California red-sided garter snake could potentially occur here.

Several avian species utilize the foredunes at the plan area, particularly those raptor species that prey on small mammals. The foredune community has the potential to support several sensitive avifauna species, including Northern Harrier (*Circus cyaneus*) and White-tailed Kite (*Elanus leucurus*) with known presence on site, and Short-eared Owl (*Asio flammeus*), which has a low potential for occurrence. Rarely, stray Burrowing Owls *(Athene cunicularia)* have been observed in foredune habitats similar to those of the plan area on the South Spit of Humboldt Bay and at Centerville Beach near the mouth of the Eel River (S. McAllister, pers. obs. 2001-2003).

(c) Habitat Status. The State of California's Natural Heritage Program recognizes northern foredunes as sensitive natural communities, regardless of the degree of degradation by invasive exotic species, and has assigned them a global rank of G2 (6-20 viable occurrences worldwide and/or 2000-10,000 acres), and state rank of S2 (6-20 viable occurrences statewide and/or 2,000-10,000 acres), and a threat rank of 0.1 (very threatened). Northern foredunes are considered Environmentally Sensitive Habitat Areas by the California Coastal Commission, and specifically identified as such under Section 3.30.B.1.a.2 of the HBAP of the Humboldt County LCP.

All foredunes mapped west of New Navy Base Road are considered Environmentally Sensitive Habitat Areas since they currently support and/or provide suitable habitat for listed special-status plant species, are zoned for Natural Resources, and are contiguous with adjacent ESHA foredune communities. These areas have not been filled or significantly altered by mechanical means. Degraded dune areas east of New Navy Base Road that exhibit an open sandy substrate with greater than 5% cover of native dune mat species and minimal cover of invasive exotic species were also classified as ESHA sites, since these areas provide suitable habitat for, and in some areas support, listed special-status plant species.

Beach Strand – Also referred to as the littoral strip, beach strand represents the area of loosely compacted sand that occurs between the tidal wash zone and the semi-stabilized dunes west of New Navy Base Road. Abiotic factors, rather than stabilizing vegetation, influence the landscape here. High winds, waves, cyclic tidal inundation and sand transport by littoral action severely restrict vegetative growth. Drift accumulates here and new dunes form if the beach is accreting (i.e. expanding).

(a) Vegetation. Pioneer plant species such as sea rocket (*Cakile maritima*) and native dunegrass (*Leymus mollis*) are often found in the beach strand. This vegetation establishes in the summer and fall, and then is frequently removed by winter storm activity. This cycle repeats itself annually. Sawyer and Keeler-Wolf (1995) recognize two vegetation series that may occur on beach stand where sand is accreting, the Sand-verbena – beach bursage series and the Native dunegrass series, neither of which are currently represented in the beach strand at the plan area.

(b) Wildlife. Beach strand is a unique and important habitat for a number of wildlife species. Terrestrial mammal species that use beach strand commonly include gray fox, raccoon, and striped skunk. Marine mammal use of this habitat at the plan area is minimal although California sea lions (*Zalophus californianus*) and harbor seals (*Phoca vitulina*) may be seen on rare occasions.

No reptiles or amphibians are known to make use of beach strand habitat at the plan area, but tracks made by western toads (*Bufo boreas*) foraging at night are occasionally observed on beach strand at nearby sites (S. McAllister, pers. obs.200-2004).

Several species of seabirds, shorebirds, raptors, and passerine birds frequent the beach strand habitat within the plan area. This habitat type is unique because it is the area of interface between the ocean and upland dune habitats, allowing for a dynamic combination of bird species and interactions. For example, a number of raptor species use this area as foraging habitat where they prey on shorebirds. Many of the bird species that occur or have the potential for occurrence in the beach strand habitat are sensitive species. Of these, Northern Harrier, Osprey (*Pandion haliaetus*), Merlin (*Falco columbarius*), and Peregrine Falcon (*Falco peregrinus*) are know to occur; Brown Pelican (*Pelecanus occidentalis californicus*), Double-crested Cormorant (*Phalacrocorax auritus*), and Elegant Tern (*Sterna eleganus*), have a high potential for occurrence; Long-billed Curlew (*Numenius americanus*) has a moderate potential for occurrence; and Western Snowy Plover (*Charadrius alexandrinus*) has a low potential for occurrence.

Although Western Snowy Plover, a federally Threatened species, has a low potential for occurrence within the plan area today, historic data show that they once utilized beach strand habitat all along the north spit of Humboldt Bay, including that within the plan area. Their absence is likely due to encroachment by the non-native European beachgrass, which led to habitat alterations that rendered this area unsuitable for Western Snowy Plovers in the 1970s. Because there is some potential for occurrence, regular (monthly) surveys for Western Snowy Plovers are conducted on the North Spit by government agencies during the breeding season.

(c) Habitat Status. The State of California's Natural Heritage Program recognizes beach strand as part of the active coastal dune system, and has assigned it a global rank of G3 (21-100 viable occurrences worldwide and/or 10,000-50,000 acres), a state rank of S2 (6-20 viable occurrences statewide and/or 2,000-10,000 acres), and a threat rank of 0.2 (threatened). Beach strand communities are considered Environmentally Sensitive Habitat Areas by the California Coastal Commission, and specifically identified as such under Section 3.30.B.1.a.2 of the HBAP of the Humboldt County LCP.

Degraded Dunes and Developed Dunes – Degraded dunes and developed dunes are categories used to describe lands that have been significantly altered by past industrial use, and on-going vehicular activity and maintenance (e.g. removal of structural debris and non-native vegetation with the use of heavy equipment). They are differentiated from one another by the type of substrate they possess. Degraded dunes have a native, sandy substrate whereas developed dunes have been filled to some degree. Degraded and developed dunes occur almost exclusively east of

New Navy Base Road on lands that were once used for historic lumber mill operations and storage (i.e. the log deck and adjacent slopes). West of New Navy Base Road, degraded dunes were identified only in one small area adjacent to the parking lot near the Samoa Booster Station where recent development had significantly altered the landscape.

(a) Vegetation. Degraded dunes are either sparsely vegetated due to recent ground disturbance or dominated by invasive exotic species such as European beachgrass, sea fig (*Carpobrotus* sp.), yellow bush lupine or a dense cover of exotic annual grasses and herbs. Vegetative cover by one or more species that may describe a vegetation series is generally not extensive or consistent enough to warrant classification as a distinct community. The substrate is typically sand with little to no fill material present; and native species represent less than 5% of the total vegetative cover.

Developed dunes differ from degraded dunes in that the substrate is predominately fill material with little to no open sand. Fill may be gravel, wood fiber (chips and pulp), asphalt/concrete or a combination of these. Most of the developed dunes remain unvegetated, and where vegetation is present it is represented by Himalayan blackberry, jubata grass (*Cortaderia jubata*), yellow parentucellia (*Parentucellia viscosa*), exotic annual grasses (*Vulpia, Holcus, Anthoxanthum, Aira*, etc.) and many of the same species found on degraded dunes.

(b) Wildlife. Degraded and developed dunes within the plan area are of negligible value to wildlife and are used primarily by habitat generalists. The only sensitive wildlife species with the potential for occurrence within this habitat type is the Northern Harrier, which may use it as foraging habitat.

(c) Habitat Status. While it is conceivable that one or more of the listed special-status dune mat species may occur within or on the periphery of the degraded dunes, these areas do not provide important habitat for these species due to ongoing ground disturbance associated with industrial activities, competition with non-native plants, and (in most instances) their discontinuity from the foredunes west of New Navy Base Road. Survey data collected in 2003/2004 indicates that no special-status species currently grow within or otherwise utilize the degraded dunes at the plan area, and they are not considered Environmentally Sensitive Habitat Areas. Developed dunes at the plan area do not provide suitable habitat for any special-status plants or important habitat for any wildlife species, and likewise are not considered Environmentally Sensitive Habitat Areas.

Urban Landscape – Urban landscape is the primary habitat found within the town of Samoa, and is represented by introduced species that are typically adapted to high levels of disturbance. It includes plantings of ornamental trees, shrubs and groundcovers associated with managed yards, recreation areas and travel corridors.

(a) Vegetation. Much of the open space surrounding residences, businesses, public buildings, parks and playing fields has been landscaped with introduced trees and shrubs to provide ornamental value. Monterey pine (*Pinus radiata*) was planted extensively along Vance Avenue, and Monterey cypress (*Cupressus macrocarpa*) and eucalyptus (*Eucalyptus globulus*) occur intermittently throughout the town. While Sawyer and Keeler-Wolf (1995) recognize vegetative series associated with these species, these trees are not native to the plan area. Natural stands of Monterey pine and Monterey cypress are only known to occur in southern California, and eucalyptus is native to Australia.

(b) Wildlife. Although urban landscape habitats are generally of relatively low value to wildlife, many opportunistic habitat generalists adapted to high levels of human disturbance make use of these habitats within the plan area. Mammalian species that typically use these types of landscapes include Virginia opossum, raccoon, striped skunk, and gray fox. In addition to these habitat generalists, certain parts of the urban landscape such as abandoned buildings or other such structures may also provide roosting areas for bats. Two sensitive bat species, pallid bat (*Antrozous pallidus*) and Townsend's western big-eared bat (*Corynorhinus townsendii townsendii*) have the potential for occurrence in the plan area, although neither species is likely to occur. Both species are highly sensitive to human disturbance.

Urban landscapes also attract many species of birds, ranging from those feeding at birdfeeders to those that are attracted to habitat provided by gardening, ornamental vegetation and other urban activities. No special-status wildlife species were observed in this habitat during visits to the site by the consulting biologists nor are any expected to occur there. There is a small chance that Cooper's or Sharp-shinned Hawks could establish a nest in the large conifers or eucalyptus trees in the urban areas, but if that occurred the individuals would need to accommodate a fair amount of background disturbance.

(c) Habitat Status. Urban landscapes within the plan area are not considered Environmentally Sensitive Habitat Areas. No sensitive plants were observed in areas labeled urban landscape, nor would any be expected to occur in these habitats. It is recommended that removal of large trees in the urban areas be done in the fall or winter to avoid destroying the nest or eggs of potential breeding birds, including raptors.

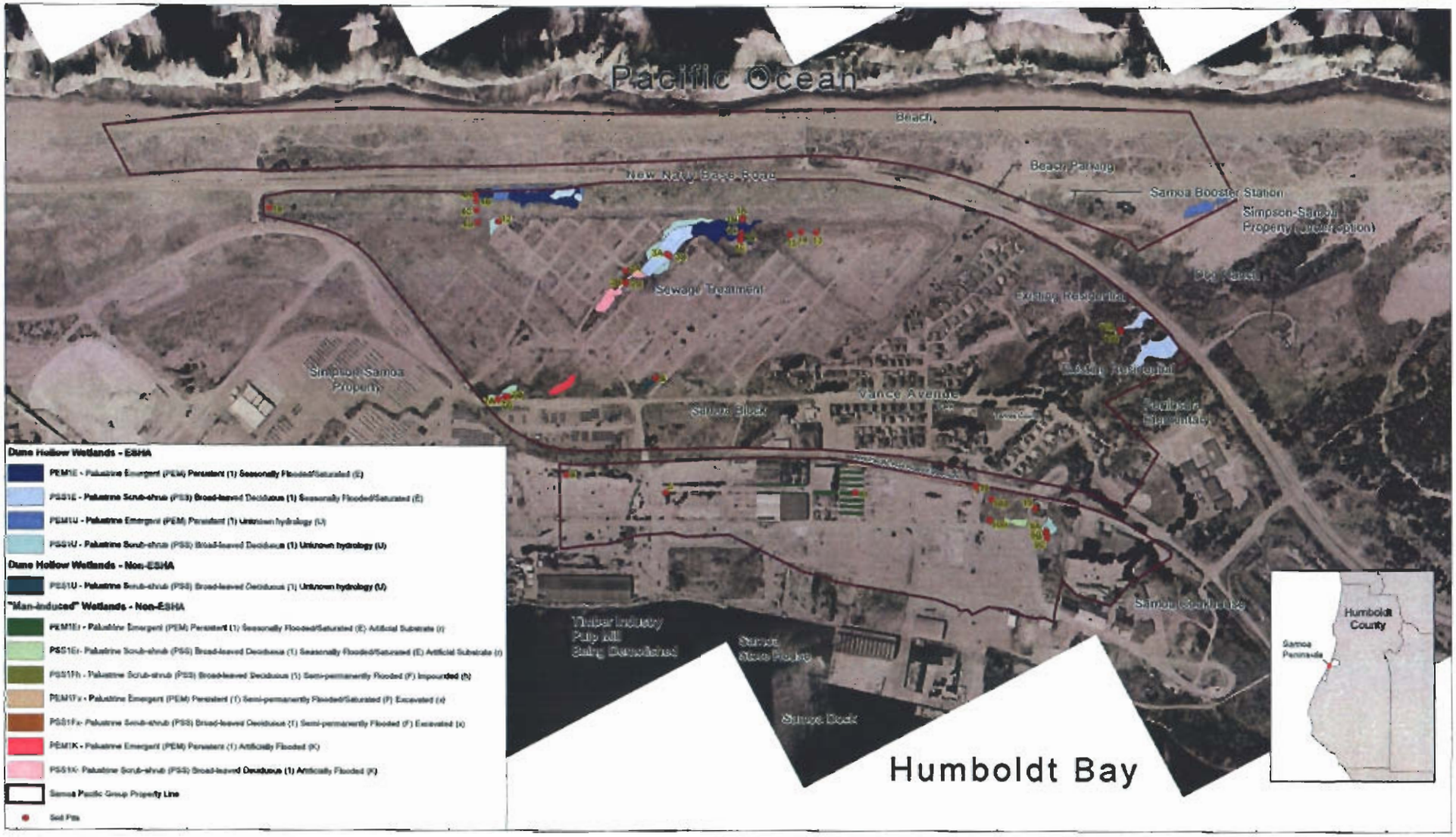
Wetland Habitats

A routine wetland delineation was conducted for the plan area between June and July of 2003, with additional site visits conducted in February of 2004, to identify potential state and federal jurisdictional wetlands. Palustrine (freshwater) emergent and scrub-shrub wetlands, in the form of herbaceous and woody dune hollows, and various "man-induced" wetlands such as the wastewater treatment facility, drainage ditches and other detention basins occur within the plan area. All wetland types found within the plan area are described in the following section. Copies of the wetland delineation data forms are available upon request.

Samoa Town Master Plan

Humboldt County, California

Environmental Impact Report
Detailed Wetland Map



Map Compiled by Planwest Partners
June 9, 2005
Projection: California State Plane Zone 1, Units Feet, NAD 1983
Orthophotography: Kelly-O'Hern Associates, 4-23-2001
Habitat Delineations: Derived from Mad River Biologist Field Surveys

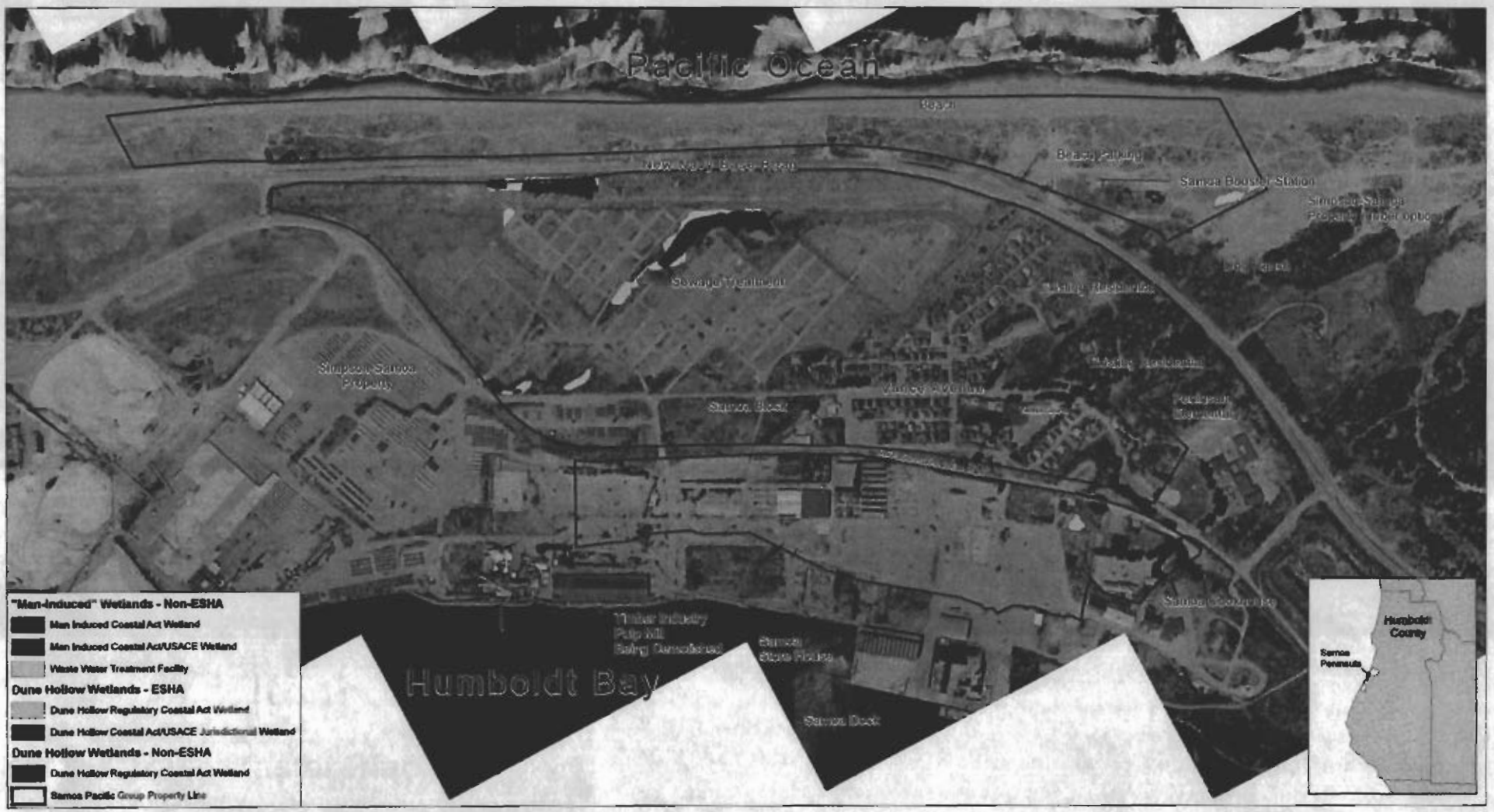
0 1,000 2,000 Feet

PLANWEST PARTNERS

Samoa Town Master Plan

Humboldt County, California

Environmental Impact Report
Wetland Jurisdiction Map



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Habitat Delineations: Derived from Mad River Biologist Field Surveys

0 1,000 2,000 Feet

PLANWEST PARTNERS

Table 1 Wetland Acreages

Wetland Type	NWI Code	Acreage
Dune Hollow Wetlands – ESHA		**4.3661**
Herbaceous Dune Hollow Wetlands		*2.0946*
	PEM1E	1.4910
	PEM1U	0.6036
Woody Dune Hollow Wetlands		*2.2715*
	PSS1E	1.5355
	PSS1U	0.7360
Dune Hollow Wetland – Non-ESHA		**0.0513**
Woody Dune Hollow Wetland	PSS1U	*0.0513*
"Man-Induced" Wetlands – Non-ESHA		**1.5840**
Palustrine Emergent Wetlands		*1.1049*
	PEM1Er	0.6870
	PEM1Fx	0.2629
(wastewater treatment facility)	PEM1K	0.1550
Palustrine Scrub-shrub Wetlands		*0.4792*
	PSS1Er	0.1095
	PSS1Fh	0.0281
	PSS1Fx	0.0321
(wastewater treatment facility)	PSS1K	0.3095
Total Wetland Acreage		**6.0014**

Dune Hollow Wetlands – Dune hollows are seasonal, freshwater wetlands that form in deflation planes at or near the elevation of the seasonal (winter) fresh water table, typically behind large moving dunes (Pickart 1990). The Natural Heritage Program of the California Department of Fish and Game does not distinguish dune hollows from other freshwater marshes and swamps, however for management purposes they are mapped and addressed separately from other wetlands located on the property because of their distinctive flora and geomorphology. Two main types of dune hollows occur within the plan area, woody hollows and herbaceous hollows.

(a) Vegetation. Hooker willow is the dominant shrub (or small tree) in the canopy within woody dune hollow wetlands at the plan area; however wax myrtle is also often present. Tree height is generally less than 20 feet (6 m). This vegetation type corresponds to the Hooker willow series described by Sawyer and Keeler-Wolf (1995).

Herbaceous hollows in the plan area are either dominated by salt rush (*Juncus breweri*) or slough sedge (*Carex obnupta*). Slough sedge is typically associated with hollows that exhibit greater wetland hydrology than those dominated by salt rush. Associate species in both types include Pacific silverweed (*Potentilla anserina* ssp. *pacifica*), springbank clover (*Trifolium wormskioldii*), and California blackberry (*Rubus ursinus*). Slough sedge dominated hollows correspond to the sedge series. Sawyer and Keeler-Wolf (1995) currently do not recognize a salt rush series.

No special status plant species were found within the dune hollow wetlands at the plan area. There is an historic occurrence of coastal marsh milk-vetch (*Astragalus pycnostachyus* var. *pycnostachyus*), a CNPS List 1B species, known from the vicinity of the plan area. This species was not located during the 2003/2004 botanical survey, however dune hollow wetlands within the plan area may provide suitable habitat for this species.

(b) Wildlife. Dune hollows provide important habitat for a variety of wildlife species. Sensitive avian species known to be present in this habitat type within the plan area are the resident and breeding Black-capped Chickadee and the migrant California Yellow Warbler (*Dendroica petechia brewsteri*). Raptor's such as Cooper's and Sharp-shinned Hawks commonly hunt in this habitat during migration and winter.

Mammalian species that utilize these habitats include several resident rodents and insectivores that use the habitat for breeding, foraging, and cover. Larger species that utilize it for foraging habitat and cover include Virginia opossum, brush rabbit, black-tailed jackrabbit, porcupine, gray fox, raccoon, long-tailed weasel, mink, spotted skunk, striped skunk, bobcat, and black-tailed deer. Several species of bats could also use these areas seasonally for foraging, and California red-sided garter snakes may also be found in these habitats.

Hollows that exhibit surface water or saturated soil conditions in the upper soil layer during the growing season (i.e. wetland hydrology) may provide breeding habitat for amphibians, including northwestern salamander, rough-skinned newt, and northern red-legged frog. Northern red-legged frog is a California Species of Concern. Hollows that lack a surface water component year round are less likely to be used by wildlife that depend on aquatic resources.

(c) Habitat Status. The State of California's Natural Heritage Program recognizes the Hooker willow series (in part) associated with the North Coast Riparian Scrub community, which has a global rank of G3 (21-100 viable occurrences worldwide and/or 10,000-50,000 acres), a state rank of S3 (21-100 viable occurrences statewide and/or 10,000-50,000 acres) and a threat rank of 0.2 (threatened). The California Coastal Commission generally considers wetlands and riparian

areas as Environmentally Sensitive Habitat Areas, and they are identified as such under Section 3.30.B.1.a.2 of the HBAP of the Humboldt County LCP.

Woody and herbaceous dune hollows that exhibit wetland hydrology, hydric soils and a predominance of hydrophytic vegetation within the plan area (refer to discussion of PEM1E and PSS1E wetland types below) are considered Waters of the U.S. and are regulated by the USACE under section 404 of the Federal Clean Water Act. They also fall within the jurisdiction of the California Coastal Commission as Coastal Act wetlands.

Clear evidence of wetland hydrology was not observed in some dune hollows mapped within the plan area, and are thus not presumed to be Federal Waters of the U.S (refer to discussion of PEM1U and PSS1U wetland types below). Although wetland hydrology could not be verified and is presumed absent[1], these areas may still be considered regulatory wetlands under the Coastal Act since they exhibit a predominance of wetland vegetation. Some of these features represent riparian vegetation growing in an upland position but with connectivity to a wetland that does experience seasonal flooding and/or saturated soil conditions. Others represent small, isolated patches of willow growing on relict dunes within the old log deck that have become buried by natural sand movement and/or contouring of the land in conjunction with various developments.

Hollows that lack one or more wetland parameters may be considered regulatory wetlands under the Coastal Act; however these areas are not functioning as true wetlands due to the absence of wetland hydrology. Most would be considered environmentally sensitive habitats owing to their connection to other ESHA sites. Additional information on soils, vegetation and hydrology for the dune hollow wetland categories is provided below:

Federal and State Jurisdictional Dune Hollow Wetlands:

Palustrine Emergent, Persistent, Seasonally Flooded/Saturated Wetland (PEM1E)

PEM1E refers to three-parameter dune hollow wetlands dominated by herbaceous hydrophytes. Representative species include *Carex obnupta* (OBL), *Potentilla anserina* ssp. *pacifica* (OBL), *Juncus breweri* (FACW*), and *Rubus ursinus* (FACW*). The soil is a hydric, low chroma (typically 2.5Y3/1) sandy loam, with oxidized root channels and/or reddish streaking in the root zone. These hollows occur at or close to the seasonal fresh water table and remain flooded and/or saturated for long periods during the growing season.

Palustrine Scrub-shrub, Broad-leaved Deciduous Seasonally Flooded/Saturated Wetland (PSS1E)

PSS1E refers to three-parameter dune hollow wetlands dominated by woody hydrophytes, primarily *Salix hookeriana* (FACW). Similar to the PEM1E category above, the soil is a hydric, low chroma (typically 2.5Y3/1) sandy loam, with oxidized root channels and/or reddish streaking. They occur at or close to the seasonal fresh water table and remain flooded and/or saturated for long periods during the growing season.

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[1] Wetland hydrology was not observed in some dune hollows during significant wet weather conditions in February of 2004.

Regulatory Dune Hollow 'Wetlands' under the Coastal Act:

Palustrine Emergent, Persistent Wetland, hydrology unknown (PEM1U)

PEM1U refers to herbaceous dune hollows that are dominated by *Juncus breweri*-FACW*. The substrate is typically low chroma (2.5Y3/2- 3/1) sand or sandy loam that lacks oxidation reduction features or evidence of wetland hydrology within the upper 20 inches of the substrate. These areas are typically transitional between upland dunes and lower-elevation, seasonally saturated/flooded herbaceous dune hollows that support slough sedge.

Palustrine Scrub-shrub, Broad-leaved Deciduous Wetland, hydrology unknown (PSS1U)

PSS1U refers to woody dune hollows dominated by Hooker willow (*Salix hookeriana*-FACW) or a combination of Hooker willow and wax myrtle (*Myrica Californica*-FAC+). There is no evidence of wetland hydrology within the upper 20 inches of substrate; however the predominant woody vegetation (willow) is thought to act as a phreatophyte (plant with long roots capable of reaching the seasonally high fresh water table). The substrate is typically a low chroma (2.5Y 3/2- 3/1) sand and/or sandy loam substrate (in all cases except for one polygon mapped within the coastal-dependent industrial area (CDI) east of the NW Pacific Rail Road Easement where there is 20% gravel 'fill' mixed with sand).

Features mapped as PSS1U typically represent the extension of riparian vegetation growing in upland positions out of seasonally flooded or saturated dune hollows. In two instances, they represent small, isolated willow stands growing on the old log deck that may represent relict hollows. The relict hollows are thought to have become buried by sand movement, either by natural dune processes or by artificial means such as grading and contouring of the land through site development. The later offer limited habitat value for wildlife due to their small size and relative isolation, and do not appear to be functioning as wetlands owing to the absence of wetland hydrology, and in this respect, do not represent environmentally sensitive habitats.

"Man-induced" Wetlands

"Man-induced" wetlands are described by the U.S. Army Corps of Engineers (USACE) (Environmental Laboratory 1987) as areas that have developed at least some characteristics of naturally occurring wetlands due to either intentional or incidental human activities. There are seven "man-induced" wetland types that occur at the plan area. Two of these are associated with a wastewater treatment facility, and the remaining five are associated with channelized ditches and other human caused disturbances. Each type is described in the following section by the vegetation, hydrology, and substrate they possess, as well as their corresponding USFWS/Cowardin classification.

Water Treatment Facility

Treated wastewater from the town of Samoa is pumped into a settling pond located adjacent to Vance Avenue in the vicinity of the proposed "light-industrial business park" (i.e. old log deck). Water from this pond is directed westward through a culvert and surfaces within a detention basin that is currently dominated by a mature stand of Hooker willow. The willow-dominated channel fans out before connecting to an herbaceous dune hollow near New Navy Base Road.

It is unknown to what extent treated wastewater influences the hydrology of the dune hollows connected to this system. The herbaceous dune hollow and part of the willow dominated channel lies within a deflation plane that is distinctly lower in elevation than the artificially-flooded

scrub-shrub wetland that precedes it, and is less altered and/or managed by human activity. The division between the artificially flooded "man-induced" wetland and the dune hollow wetland (which is hydrologically connected to the seasonal freshwater table) was established based primarily on elevation patterns.

(a) Vegetation. The treatment pond supports a dense stand of cattails (*Typha latifolia*-OBL). Himalayan blackberry dominates the relatively steep banks of the pond. The cattail series described by Sawyer and Keeler-Wolf (1995) represents the plant community in this wetland type. The willow-dominated channel that the treatment pond drains into is represented by the Hooker willow series. Opportunistic species such as coyote brush, wax myrtle, yellow bush lupine, iceplant, Himalayan blackberry, and a variety of exotic annual and perennial grasses occupy its banks.

No special-status plant species are expected or known to occur within the wetlands associated with the water treatment facility.

(b) Wildlife. Although the willow-dominated channel at the wastewater treatment facility represents an artificial wetland, the Hooker willow provides habitat for a number of wildlife species. Mammal species expected to utilize this area are similar to those found in the woody dune hollow wetlands, including several resident rodents and insectivores that use the habitat for breeding, foraging, and cover as well as several larger species that utilize the habitat for foraging habitat and cover; these include Virginia opossum, black-tailed jackrabbit, bobcat, brush rabbit, gray fox, porcupine, raccoon, striped skunk, spotted skunk, mink, and black-tailed deer. Several species of bats could also use this habitat type seasonally for forage.

As in the dune hollow wetlands, the reptile and amphibian species with high potential for occurrence in this habitat type within the plan area include California red-sided garter snake, Northwestern salamander, rough-skinned newt, and northern red-legged frog.

Sensitive avian species known to be present in this habitat type within the plan area are the resident and breeding Black-capped Chickadee and the migrant California Yellow Warbler. Raptor's such as Cooper's and Sharp-shinned Hawks commonly hunt in this habitat during migration and winter.

(c) Habitat Status. Although habitats associated with the water treatment facility represent three-parameter wetlands, the USACE does not regulate such facilities (33 CFR Part 328.2 (a) 7). The Coastal Commission may identify the pond and the detention basin as wetlands under the Coastal Act; however, they are unlikely to be considered Environmentally Sensitive Habitat Areas due to the artificial means by which hydrology is provided.

A more detailed description and corresponding USFWS/Cowardin classification for wetlands associated with the water treatment facility is provided below:

Palustrine Emergent, Persistent, Artificially Flooded Wetland (PEM1K)

This category is used exclusively for the treatment pond that supports a dense stand of cattails (*Typha latifolia*-OBL) and remains permanently flooded by wastewater. Although soils were not looked at here (due to the presence of wastewater), the substrate is thought to consist of sand or sandy loam overlain by sediment. There is no record of an artificial substrate being used in the creation of the pond. In 2003, the banks of the pond supported a dense thicket of Himalayan blackberry, which was reportedly retained as a means of blocking public access to the facility.

During the winter of 2003/2004, the blackberry was cleared and a chain link fence was erected around the pond for public safety reasons.

Palustrine Scrub-shrub, Broad-leaved Deciduous, Artificially Flooded Wetland (PSS1K)

This category refers to a drainage channel dominated by Hooker willow that is largely influenced by the input of treated wastewater from the treatment pond. The south bank of this channel is formed from debris such as asphalt, concrete, wood, and wood fiber. An old dune dominated primarily by exotic, ruderal species forms the north bank of the channel, which is significantly degraded from industrial impacts. The water regime of the channel is influenced by fluctuations in wastewater loads from the treatment pond. It appears that water typically flows into the detention basin year-round; however during the summer months it is expected to infiltrate readily into the sandy loam/silty clay loam soils as it flows down slope. The channel is expected to remain saturated, if not inundated, for prolonged periods as evidenced by the presence of oxidation-reduction features (oxidized root channels) in the soil profile and a predominance of hydrophytic vegetation, primarily *Salix hookeriana* (FACW).

Other Detention Basins and Drainage Ditches

Various types of disturbance-related wetlands not associated with the wastewater treatment facility are found within the zoned coastal-dependent industrial (CDI) area east of the existing railroad alignment, and in two small isolated areas located on developed dunes adjacent to the log deck. Most of the wetlands in the CDI area occur in narrow channels filled with a mixture of sand, gravel and sediment deposits that represent the footings of buildings that were recently removed from the plan area. Most of these represent two-parameter wetlands due to the presence of wetland hydrology and a predominance of hydrophytic vegetation. Two of the "man-induced" wetland types represent an excavated drainage ditch that runs parallel to the chain link fence at the north end and western edge of the CDI area. This drainage ditch exhibits three wetland parameters (hydric soils, a predominance of hydrophytic vegetation and wetland hydrology).

The source of water in the CDI area is not definitive, but may be the result of a normally high water table, alteration of historic drainage patterns associated with industrial activities, storm water runoff, or a combination of these and/or other possibilities not described here.

(a) Vegetation. Species composition within these "man-induced" wetlands varies depending on the water regime they are subject to and the type of substrate they possess. Permanently to semi-permanently flooded channels with a substrate composed of fill material and/or sediment deposits mixed with sand support a low to moderate cover of primarily obligate hydrophytes such as small-flowering bulrush (*Scirpus microcarpus*), cattails (*Typha latifolia*), slough sedge (*Carex obnupta*), scouring rush and horsetails (*Equisetum* ssp.), and facultative-wetland saplings of red alder (*Alnus rubra*) and willow (*Salix* spp.). Seasonally flooded areas composed of compacted fill overlain with sediment deposits typically support weedy, shallow-rooted plants such as bird's foot trefoil (*Lotus corniculatus*-FAC), pennyroyal (*Mentha pulegium*-OBL), yellow parentucellia (*Parentucellia viscosa*-NL), lythrum (*Lythrum hysoppifolium*-FACW), and beard grass (*Polypogon monspeliensis*-OBL).

No special-status plant species are known to occur within the man-induced wetlands at the plan area.

(b) Wildlife. Man-made drainage ditches/channels are of relatively low habitat value to wildlife, although one sensitive species, the northern red-legged frog, could potentially occur here and Wilson's Snipe (*Gallinago delicata*) and Killdeer (*Charadrius vociferous*) are regular in winter.

(c) Habitat Status. "Man-induced" wetlands mapped for the plan area are not considered Environmentally Sensitive Habitat Areas due to their low functional value and relative isolation, although some may fall within the jurisdiction of the California Coastal Commission as Coastal Act wetlands (pers. comm. John Dixon, California Coastal Commission 11/21/03) and within USACE jurisdiction under section 404 of Clean Water Act. Presumed permitting jurisdiction is provided below under the discussion of each wetland type.

Palustrine Emergent, Persistent, Seasonally Flooded/Saturated, Artificial Substrate (PEM1Er)

PEM1Er refers to polygons within the CDI area that occur on a composite of gravel fill, sand and sediment deposits. These areas become seasonally flooded or saturated and support a low to moderate cover of persistent emergent wetland vegetation. Many of these areas represent the foundations of buildings that have been removed from the site sometime within the last decade. PEM1Er wetlands are not paved with asphalt or concrete, and may be hydrologically connected to the seasonal high water table in the CDI area[2]. Representative species include *Equisetum telmateia* ssp. *braunii* (OBL), *Equisetum hyemale* ssp. *affine* (FACW), *Polypogon maritimus* (OBL), *Cyperus eragrostis* (FACW), *Juncus effusus* (FACW+), *Typha latifolia* (OBL), *Epilobium ciliatum* (FACW), *Rubus discolor* (FACW*), *Cortaderia jubata* (NL), and *Salix lasiolepis* (FACW) and *Salix hookeriana* (FACW) saplings.

Areas mapped as PEM1Er are considered non-ESHA, Coastal Act wetlands since they provide only nominal functional value as wetlands. These areas act as impoundments by retaining storm water but filtration is limited owing to low vegetation cover from periodic clearing and maintenance of these channels. They presumably do not fall within USACE jurisdiction due to the absence of hydric soils and artificial nature.

Palustrine Scrub-shrub, Broad-leaved Deciduous, Seasonally Flooded/Saturated, Artificial Substrate (PSS1Er)

This category is used for willow (*Salix hookeriana*-FACW and *Salix lasiolepis*-FACW) dominated scrub-shrub wetlands occurring within the CDI area that are growing within gravel fill/sand substrate, and which become seasonally flooded or saturated. Similar to PEM1Er above, these areas are also thought to be hydrologically connected to the naturally high water table that is present within the CDI area.

Areas mapped as PSS1Er are considered non-EHSA Coastal Act wetlands due to their low functional value as wetlands, poor quality of habitat and relative isolation. They presumably do not fall within USACE jurisdiction due to the absence of hydric soils and their artificial nature.

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[2] Water table depth information obtained from geotechnical boring logs provided by LACO Associates, Eureka, CA. show water table depths between 3 and 6.5 feet during the month of July 2003 for the CDI area.

Palustrine Emergent, Persistent, Semi-permanently Flooded, Excavated (PEM1Fx)

This category refers to sections of a drainage ditch located within the CDI area that support a predominance of herbaceous hydrophytes[3], and possess wetland hydrology and hydric soils. A buildup of organic matter, sediment deposits, and an aquic moisture regime (semi-permanently flooded) has produced a low chroma, sandy silt loam substrate within the ditch.

Although the drainage ditch represents a man-made channel, it is a three-parameter Coastal Act/USACE jurisdictional wetland.

Palustrine Scrub-shrub, Broad-leaved Deciduous, Semi-permanently Flooded, Excavated (PSS1Fx)

This category refers to sections of a drainage ditch (refer to PEM1Fx above) located within the CDI area that are dominated by hydrophytic willow species, support hydric soils and exhibit wetland hydrology. Although the drainage ditch represents a man-made channel, it is a three-parameter Coastal Act/USACE jurisdictional wetland.

Palustrine Scrub-shrub, Broad-leaved Deciduous, Semi-permanently Flooded, Impounded (PSS1Fh)

This category is used to describe a small, willow-dominated (*Salix lasiolepis*-FACW) channel that is impounded by a concrete slab at the north end of the CDI area. The channel appears to act as a catch basin for runoff. The substrate is composed primarily of sand mixed with sediment and gravel that is transported via runoff. The water regime is semi-permanently flooded (surface water is present throughout much of the growing season, and when absent, is expected to be at or near the surface). The basin may be hydrologically connected to the water table in the CDI area. Vegetation is limited to two mature willow trees. Himalayan blackberry (FACW) and jubata grass (NL) are found growing on the edge of this channel.

The channel represents a two-parameter, non-ESHA Coastal Act wetland due its low functional value as a wetland and relative isolation from other ESHA wetlands. It is presumably not within USACE jurisdiction.

Non-wetland Impoundments

Non-wetland impoundments refer to low lying areas within the CDI area that occur on intact asphalt or concrete, become seasonally flooded (often remaining so for long periods during the rainy season), and support a predominance of weedy, shallow-rooted or free floating wetland plants. In most places, a layer of sediment between 0.25-4.00 inches deep covers the impervious substrate. This sediment is typically composed of sand and/or wood pulp/dust mixed with other fines and gravel fill, and is thought to be transported from adjacent, unpaved industrial areas via storm water runoff.

(a) Vegetation. Common species include *Cyperus eragrostis* (FACW), *Epilobium ciliatum* (FACW), *Lotus corniculatus* (FAC), *Polypogon maritimus* (OBL), *Mentha pulegium* (OBL), *Lythrum hyssopifolium* (FACW), and *Parentucellia viscosa* (NL). Some impounded areas lack rooted vegetation but support algal growth and/or free-floating hydrophytes such as mosquito

[3] During the winter of 2003/2004 vegetation was cleared from some sections of the drainage ditch and the channel was re-contoured. It is unknown if this is a regular or ongoing maintenance activity.

fern (*Azolla filiculoides* -OBL) and duckweed (*Lemna* sp. - OBL) that form encrusted mats on the substrate during the dry season.

No special-status plant species are known to occur within the non-wetland impoundments at the plan area.

(b) Wildlife. Impoundments of the type found in the plan area are of relatively low habitat value to wildlife, although one sensitive species, the northern red-legged frog, could potentially occur there.

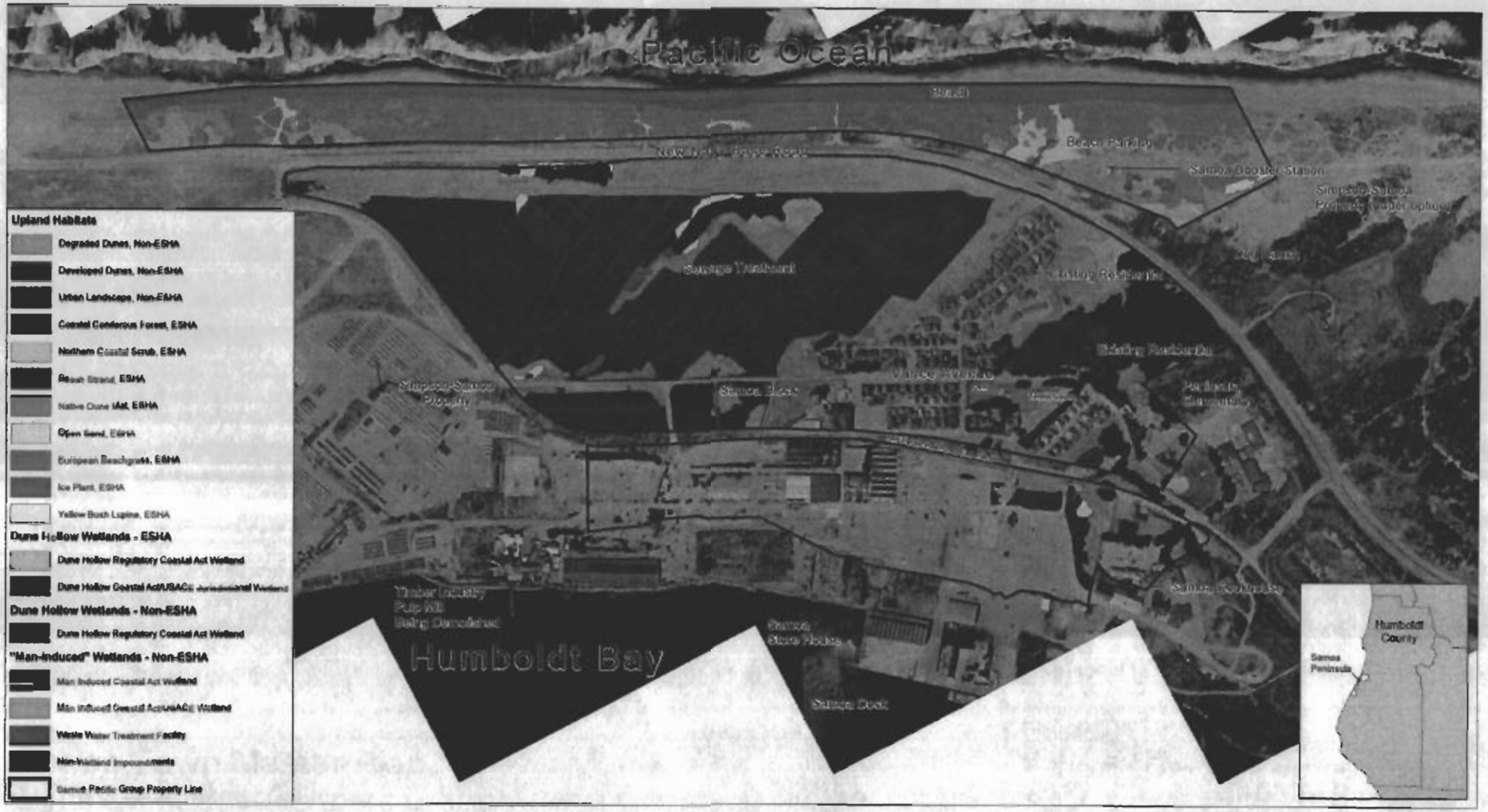
(c) Habitat Status. Impoundments mapped for the plan area are not considered wetland habitats or Environmentally Sensitive Habitat Areas due to the presence of an impervious, artificial substrate of asphalt or concrete. Although these areas exhibit two wetland parameters (wetland hydrology and predominance hydrophytic vegetation), they provide little, if any, habitat value for native flora and fauna, and are subject to on-going disturbance from site use activities (vehicular traffic and vegetation clearing[4]). They presumably do not fall within Coastal Act or USACE jurisdiction.

[4] As observed in January 2004, much of the vegetation within these areas had been cleared, reportedly in conjunction with maintenance activities associated with the removal of exotic species such as jubata grass from the plan area.

Samoa Town Master Plan

Humboldt County, California

Environmental Impact Report
Habitat Map



Map Compiled by Planwest Partners
June 9, 2005
Projection: California State Plane Zone 1, Units Feet, NAD 1983
Orthophotography: Kelly-O'Hern Associates, 4-23-2001
Habitat Delineations. Derived from Mad River Biologist Field Surveys

0 1,000 2,000 Feet

PLANWEST PARTNERS

Samoa Town Master Plan

Humboldt County, California

Environmental Impact Report
ESHA Map

0 1,000 2,000 Feet

Coastal Dunes - ESHA
- Beach Strand
- Coastal Coniferous Forest
- Northern Coastal Scrub
- Native Dune Mat
- Open Sands
- European Beachgrass
- Ice Plant
- Yellow Bush Lupine

Dune Hollow Wetlands - ESHA
- Dune Hollow Regulatory Coastal Act Wetland
- Dune Hollow Coastal Act/USACE Jurisdictional Wetland
- Samoa Pacific Group Property Line

Map Compiled by Planwest Partners
June 9, 2005
Projection: California State Plane Zone 1, Units Feet, NAD 1983
Orthophotography: Kelly-O'Hern Associates, 4-23-2001
Habitat Delineations: Derived from Mad River Biologist Field Surveys

PLANWEST PARTNERS

Table 2 Summary of Habitats and Plant Communities in the Plan Area

Formation	Plant Community and/or Wetland Type	CNDDB Status Rank[1]	ESHA Status[2]	State Wetland[3]	Federal Wetland[3]
Coastal Coniferous Forest	Beach Pine Series	G4 S2.1	X		
Northern Coastal Scrub	Salal – Black Huckleberry Series	G3 S3.2	X		
	Coyote Brush Series (in part)	G2 S1.2	X		
	Yellow Bush Lupine Series (in part)	G2 S1.2	X		
Northern Foredunes	European Beachgrass (in part)	G2 S2.1	X		
	Iceplant Series (in part)	G2 S2.1	X		
	Sand-verbena - Beach Bursage Series	G2 S2.1	X		
Beach Strand	Native Dunegrass Series	G1 S1.1	X		
	Sand-verbena - Beach Bursage Series	G3 S2.2	X		
Degraded Dunes	Ruderal Vegetation				
Developed Dunes	Ornamental and Ruderal Vegetation				
Dune Hollow Wetlands	PSS1E - Hooker Willow Series (North coast riparian forest, in part)	G3 S3	X	X	X
	PEM1E - Sedge Series (freshwater wetland)	G4 S4	X	X	X
	PSS1U- Hooker Willow Series (North coast riparian forest, in part)	G3 S3	X	X	
"Man-Induced" Wetlands					
Wastewater Facility	PEM1K – Cattail Series			X	
	PSS1K – Hooker Willow Series			X	
Drainage Ditch	PEM1Fx – Ruderal Vegetation			X	X
	PSS1Fx – Hooker Willow Series			X	X
Other Detention Basins	PEM1Er – Ruderal Vegetation			X	
	PSS1Er – Mixed Willow/Ruderal			X	
	PSS1Fh – Mixed Willow/Ruderal			X	

1 Status Rank refers to a system created by the Nature Conservancy Heritage Program, which is utilized by the CNDDB to rank natural communities by their rarity and threat significance and rarity of various vegetation types.

2 Denotes Environmentally Sensitive Habitat Area as defined under the California Coastal Act and HBAP LCP.

3 Denotes Presumed Federal and/or State Jurisdictional Wetlands

Special-Status Plant Species Potentially Occurring in the Plan Area

Based on CNDDB and CNPS database records, known geographical ranges and habitat requirements for these species, and recent (2003/2004) field surveys, it was determined that five special-status plant species presently occur or have high potential for occurrence in the plan area. These include Humboldt Bay wallflower (*Eryisimum menziesii* spp. *eurekense*), beach layia (*Layia carnosa*), pink sand verbena (*Abronia umbellata* ssp. *breviflora*), dark-eyed gilia (*Gilia millefoliata*), and American glehnia (*Glehnia littoralis* ssp. *leiocarpa*). Surveys for nonvascular plants were not conducted as a part of this study; however, suitable habitat for two species of moss has been identified as the beach pine-Sitka spruce forest at the north end of the plan area. These species are discussed in greater detail below:

Humboldt Bay Wallflower (*Erysimum menziesii* ssp. *eurekense*) is known only from the Humboldt Bay area where it is endemic to coastal dune habitats on the North and South Spits. It is on List 1B of the CNPS inventory as endemic to California, endangered throughout its range, and with occurrences limited to a few highly restricted populations. Humboldt Bay Wallflower is listed as endangered by both the State of California and the federal government. Loss of habitat and disturbance due to development, vehicles and the introduction of invasive, non-native plants such as European beachgrass and yellow bush lupine are the major threats to this species.

Humboldt Bay Wallflower is a member of the mustard family (Brassicaceae). It is a monocarpic perennial, forming a basal rosette of leaves that may persist for several years before flowering. Blooming periods are typically February through May (CNPS 2001). Once the plant blooms and fruits it dies. This type of delayed reproduction may allow the plant to exploit favorable growing periods (Pickart and Sawyer 1998). Wallflowers are found primarily in dune mat and occasionally in lupine scrub, herbaceous dune hollows, and open sand areas (Duebendorfer 1985). Within the dune mat habitat, which is characterized by low-growing native herbaceous and shrubby perennials, the plants are generally clustered in patches of a few to hundreds of individuals (Sawyer and Andre 1990). Dominant associate species include coast buckwheat (*Eriogonum latifolium*), dune goldenrod (*Solidago spathulata*), seashore bluegrass (*Poa douglasii*), beach pea (*Lathyrus littoralis*), beach sagewort (*Artemisia pycnocephala*) and yellow sand verbena (*Abronia latifolia*) (Duebendorfer 1992).

Humboldt Bay wallflower is known to occur in the foredunes west of New Navy Base Road, but not within any areas currently under consideration for proposed development. In 2000, several individuals were observed east of New Navy Base Road in two small areas of remnant dune mat in the vicinity of the water pipeline right-of-way (Morrissette and LeValley 2000); however, these individuals were not relocated during the 2003/2004 survey effort, and are thought to be extirpated. There is high potential for it to occur in the dunes west of New Navy Base Road in the plan area.

Beach Layia (*Layia carnosa*) is on List 1B of the CNPS inventory as endemic to California, endangered throughout its range, and with occurrences limited to a few highly restricted populations. It is both State and federally listed as endangered. Its habitat is restricted to coastal dune systems in Humboldt, Marin, Monterey, and Santa Barbara Counties (Pickart and Sawyer 1998). The largest known remaining population of beach layia occurs on the North Spit of Humboldt Bay (Morey 1989) where surveys indicate that its distribution is widespread but patchy. Loss of habitat due to coastal development, encroachment of non-native plant species

and trampling by vehicles and pedestrians are all factors that contribute to the decline in numbers of this species.

Beach layia is an annual herb of the sunflower family (Asteraceae). It germinates in mid-winter and typically blooms May through June, withering by mid-summer. The flower heads are inconspicuous with white ray flowers and yellow disk flowers. The leaves are somewhat fleshy and the plants may be unbranched to diffusely branched. Individuals range from 2-18 cm in height. Beach layia inhabits the dune mat and foredune areas on the North Spit of Humboldt Bay, but also occurs in lower densities along margins of lupine scrub, herbaceous hollows, and open areas with moving sand. It has also been reported occurring on disturbed and gravelly soils along roadsides, vehicle trails and footpaths (Duebendorfer 1992). Beach layia requires areas with open sand to colonize and cannot establish itself in the thick vegetative cover of nonnative plants that similarly inhabit the North Spit dune system. Associated dune mat species include coast buckwheat (*Eriogonum latifolium*), coast goldenrod (*Lathyrus littoralis*), coastal sagewort (*Artemesia pycnocephala*), and yellow sand verbena (*Abronia latifolia*) (Duebendorfer 1992).

Beach layia is locally common in coastal dunes on the North Spit. In May of 2003 and April of 2004, Mad River Biologists documented beach layia growing in foredunes near the Samoa Booster Station and in two locations in remnant dune mat west of New Navy Base Road in the vicinity of the water pipeline right-of-way.

Pink Sand Verbena (*Abronia umbellata* ssp. *breviflora*) is on List 1B of the California Native Plant Society (CNPS) inventory as endangered in a portion of its range, endemic to California, and distributed in a limited number of occurrences. Currently, pink sand verbena is not listed as endangered by the State of California or the federal government. Threats to this species include stabilization of the sand dunes by European beachgrass and other non-native species, loss of habitat to development, and vehicle disturbance.

Pink sand verbena is a member of the four-o'clock family (Nyctaginaceae). There is some confusion as to whether pink sand verbena is an annual or a short-lived perennial that forms a small taproot. Roberts (1994) suggests that it could "exhibit different growth strategies under different environmental conditions." Pink sand verbena blooms July through September (CNPS 2001). It is morphologically similar to a closely related species, yellow sand verbena (*Abronia latifolia*), which is abundant on the North Spit. Unlike pink sand verbena, yellow sand verbena is a long-lived perennial that forms an extensive root system with a large taproot and many lateral roots. The preferred habitat for pink sand verbena is dune mat and beach strand, but it also occurs on beaches; low, sandy hummocks; open, sandy bay edges; and river mouths. It is restricted to coastal sandy habitats and is limited to fine sandy or silty sand beaches with little organic soil (Roberts 1994). Associated species include yellow sand verbena (*Abrona latifolia*), beach pea (*Lathyrus littoralis*), dunegrass (*Leymus mollis*), European beachgrass (*Ammophila arenaria*), sea rocket (*Cakile maritima*) and beach bursage (*Ambrosia chamissonis*) (Vrilakas 1988).

Pink sand verbena is known to occur in the foredunes west of New Navy Base Road. This species was documented in 2000 and 2003-2004 in the vicinity of the Samoa Booster Station (i.e. "power pole site) by the consulting biologists.

Dark-eyed Gilia (***Gilia millefoliata***) is on List 1B of the CNPS inventory as endangered in a portion of its range, rare outside California, and distributed in a limited number of occurrences. Currently, dark-eyed gilia is not listed as endangered by the State of California or the federal government. It occurs from southern Oregon to Marin County in California. Threats to this species include stabilization of the sand dunes by European beachgrass and other non-native species, loss of habitat to development, grazing, and vehicle and foot traffic.

Dark-eyed gilia is a member of the phlox family (Polemoniaceae). It is an annual herb that typically blooms between April and July (CNPS 2001). It is a small (less than 30 cm tall), densely glandular plant with a "skunk-like odor" (Hickman 1993) that forms a basal rosette of 1-2-pinnately lobed leaves. It produces clusters of two to six small flowers in the axils of bracts. It is described in the CNDDB (2004) as occurring in coastal habitats between 0 and 32 feet in elevation. Native associates include dune mat species such as yellow sand verbena, beach pea, beach layia, dune knotweed (*Polygonum paronychia*) and seashore bluegrass.

Dark-eyed gilia occurs in the foredune community as well as in remnant or degraded dunes dominated by exotic forbs and annual grasses. It was documented in 2003 and 2004 in the vicinity of the Samoa Booster Station (i.e. "power pole site") and in remnant dune mat east of New Navy Base Road in the water pipeline right-of-way.

American Glehnia (***Glehnia littoralis* ssp. *leiocarpa***) is a recently added CNPS list 4 species. Plants on this list are of limited distribution or infrequent throughout a broader area in California. They are not currently considered endangered or "rare" but they are uncommon enough that monitoring is warranted (CNPS 2001). This species is known to occur from Mendocino County in California, north into Washington on coastal dunes. Like many of the other sensitive dune plants, threats to this species include stabilization of the sand dunes by European beachgrass and other non-native species, loss of habitat to development, grazing, and vehicle and foot traffic.

American glehnia is a perennial herb of the Carrot Family (Apiaceae). It is a low growing, prostrate plant with fleshy, divided (1-2- ternate or ternate-pinnate) leaves. It blooms between May and August, producing a stout, compound umbel of small white flowers.

American glehnia is known to occur in the foredunes west of New Navy Base Road. It was documented in 2003 in the vicinity of the Samoa Booster Station (i.e. power pole site) by the consulting biologists in a relatively open sandy area with few associates, primarily yellow sand verbena, European beachgrass, and sea rocket.

Slender silver moss (*Anomobryum filiforme*) is a CNPS list 2 moss species that is more or less widespread outside of California but is considered endangered in a portion of its range due to limited distribution (distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported). Slender silver moss is not considered threatened or endangered by the State of California or the federal government. This species is known to occur in broad-leaved upland forest, lower montane coniferous forest, North Coast coniferous forests and damp rock and soil on outcrops, usually on road cuts (CNDDB 2004).

No surveys were performed in 2003 or 2004 for this species, and its presence at the plan area is unknown; however, potentially suitable habitat includes the beach pine/Sitka spruce forest community type.

Minute pocket-moss (*Fissidens pauperculus*) is a CNPS list 1B moss species that is endemic to California, considered endangered in a portion of its range, and distributed in a limited number of occurrences. Minute pocket-moss is not considered threatened or endangered by the State of California or the federal government. This species is known to occur in damp coastal soils within coastal coniferous forests (CNDDB 2004).

No surveys were performed in 2003 or 2004 for this species, and its presence at the plan area is unknown; however, potentially suitable habitat includes the beach pine/Sitka spruce forest community type.

Special-Status Animal Species Potentially Occurring in the Plan Area

Based on CNDDB records, known geographical ranges and habitat requirements for the wildlife species listed in Table 2.4-2, and recent (2003/2004) site visits, the project applicant's biologists have treated a total of thirty-nine special-status animal species and determined that of those, twenty-eight have the potential for occurrence in the plan area. These twenty-eight species and their relevant habitat characteristics are described in more detail below:

Northern red-legged frog (*Rana aurora aurora*) is State-listed by the California Department of Fish and Game (CDFG) as a Species of Special Concern and federally listed as a Species of Concern. The northern red-legged frog ranges from northern Humboldt County, California to Sullivan Bay, British Columbia (Jennings and Hayes 1994). In California, the northern red-legged frog and populations intermediate between Northern and California red-legged frogs extend from Marin County north to the Oregon state line with an elevational range from near sea level to 300 m. Threats to this species include urban encroachment, construction of reservoirs and water diversions, land conversions, industrial and non-industrial forest practices, introduction of exotic predators and competitors, livestock grazing, and habitat fragmentation.

Northern red-legged frogs are likely to occur in all of the seasonal and permanent fresh emergent and scrub-shrub wetlands and dune hollow wetlands throughout the plan area.

Northwestern Pond Turtle (*Clemmys marmorata marmorata*) is considered a Species of Special Concern in California and is a Category 2 Candidate for Federal Listing. Northwestern pond turtle is the only native aquatic turtle in California. It is widely distributed west of the Cascades and Sierra Nevada. This species is found near and in water, especially slow moving or quiet waters, primarily ponds, small lakes, reservoirs, and quiet streams and rivers. They can be found basking on rocks, logs or on the bank along aquatic vegetation. Basking perches seem to be an important component of their habitat needs. Females lay a clutch of 5-11 eggs between April and August in a small hole in a dirt bank, sometimes at a distance from their home water. The diet of pond turtles consists of aquatic plants, fish, invertebrates and carrion.

Along the north coast of California, the Northwestern pond turtle is sparsely distributed, mainly at ponds in the interior. As recently as 2000, Northwestern pond turtles were observed in semi-permanently inundated woody dune hollows in Manila. None were found during field surveys, and the dune hollows in the plan area are not considered suitable for this species.

Brown Pelican (*Pelecanus occidentalis californicus*) is both State and Federally listed as Endangered and, at nesting colonies, is a CDFG Fully Protected species. Brown Pelicans breed along the Atlantic Coast from Chesapeake Bay (recently) south through the Gulf of Mexico and

into coastal South America, and on the Pacific Coast from southern California southward along the western Mexican coast into South America (Galapagos Is.). Along temperate North American coasts, birds annually move northward following the breeding season. Along the West coast, large numbers occur from mid-summer through fall northward to southwestern Washington and sparingly to Puget Sound and southwestern British Columbia. A southward passage in late fall leaves very few Brown Pelicans north of central California.

The original decline of the Brown Pelican was due primarily to reproductive interference such as egg shell thinning caused by the accumulation of persistent pesticides such as DDT in the environment. While these threats have decreased since the banning of domestic use of DDT and similar pesticides in 1972, the species is still at risk. Current threats include the potential for depletion of anchovy fish stocks, which pelicans feed on almost exclusively and are necessary for successful nesting, by a sustained high commercial catch. This species is also at a distinct risk for oil pollution given that the great bulk of pelican activity is concentrated within several miles of the coast throughout the year and that they plunge-dive entirely, or nearly entirely, beneath the surface; spend considerable time swimming; routinely occur in large flocks, and are not averse to foraging in 'industrialized' waterways, increasing the chances for impact by localized oil spills. Finally, it should be noted that nesting Brown Pelicans are highly susceptible to the consequences of disturbance. Reproductive success is lower in colonies that have been disturbed by man than in those that are undisturbed (Anderson and Keith 1980).

In the plan area this species uses the near-shore Pacific Ocean west of the plan area and may occasionally use the beach and coastal promontories for day-roost sites. Brown Pelicans also commonly frequent the Humboldt Bay east of the Samoa Peninsula for foraging, loafing, and roosting.

Double-crested Cormorant (*Phalacrocrax auritus*) are protected by the CDFG as a California Species of Special Concern within their nesting colonies. Worldwide, Double-crested Cormorants are confined to North America. In California this species breeds inland on lakes and coastally in colonies on nearshore rocks and islands. Historically, cormorants have been affected by human disturbance in the form of disruption at colonies and persecution, and were among the piscivorous (fish-eating) bird species most affected by eggshell thinning caused by persistent pesticides such as DDT up until their ban in the 1970's. Their numbers have dramatically increased in recent years. However, current threats exist and include direct persecution, harassment, and disturbance at colonies and roosting sites. They also remain vulnerable to gull predation (Kury and Gochfeld 1975).

Double-crested Cormorants are highly likely to occur in the plan area. They are present locally year round, breeding on pilings in Humboldt Bay approximately 5 miles west of the plan area near the old Arcata Wharf. They commonly forage in Humboldt Bay and in nearshore waters in the Pacific Ocean adjacent to the plan area.

Great Blue Heron (*Ardea herodias*) nesting rookeries are protected by the CDFG in California. Worldwide, Great Blue Heron ranges throughout Alaska, Canada, British Columbia, North America, Central America, northwest South America, the West Indies, the Galapagos Islands, and rarely to the Hawaiian Islands. In California, this species is a common resident and breeder, occurring widely in a variety of coastal and upland wetland edge habitats such as rivers, lake shores, ponds, lowland marshes, bottomland pastures (including grazed pastureland), coastal

bays, lagoons, intertidal rocks, and beaches (Fix and Bezener 2000, Harris 1996). Threats to this species are loss of wetlands as well as land development and human disturbance.

Great Blue Heron occurs at the plan area, frequenting Humboldt Bay and breeding within the bay on Indian Island just east of the plan area. It is a common local resident and breeder. No rookeries are known from the plan area.

Great Egret (*Ardea alba*) nesting rookeries are protected by the CDFG in California. Worldwide, one Great Egret race breeds in North America and winters in South America. Another breeds in Europe and Russia and winters in Africa, and a third occurs in Singapore and is found from the Indian subcontinent to Southeast Asia to Australia and New Zealand. A common resident and breeder in California, Great Egret occurs in open or semi-open fish-bearing habitats and favors expansive shallows, marshes, rushy lakeshores, bays, sloughs, and marshlands, roosting in undisturbed trees and nesting in dense stands of trees or snags (Fix and Bezener 2000, Harris 1996). Great Egret will also forage in grazed pastureland (Harris 1996). Current threats to this species include loss of wetland habitats, extermination as pests on fish farms, and raiding of nests for eggs.

Great Egret occurs at the plan area, frequenting Humboldt Bay and breeding within the bay on Indian Island just east of the plan area. No rookeries are known from the plan area.

Snowy Egret (*Egretta thula*) nesting rookeries are protected by the CDFG in California. Worldwide, Snowy Egret is distributed widely throughout North and South America, nesting along the Atlantic coast of North America, west in the coastal plain, and in scattered inland colonies between New Mexico, Colorado, and California. In California, Snowy Egret is a year round resident, migrant, and summer breeder occurring in areas of shallow, standing, or slow moving water such as marshes, lakes, floodplains, stream sides, and tidal wetlands and during migration at reservoirs or along river corridors (Fix and Bezener 2000). Unlike other related species, Snowy Egret does not forage in grazed pastureland, preferring water-associated foraging habitat (Harris 1996). Current threats to Snowy Egret include destruction of wetland habitats and human disturbance during breeding.

Snowy Egret is locally common near the plan area, frequently foraging in Humboldt Bay. This species is also known to have bred on Indian Island within the bay in some years (Harris 1996). No rookeries are known from the plan area.

Black-crowned Night Heron (*Nycitcorax nycticorax*) nesting rookeries are protected by the CDFG in California. Globally, Black-crowned Night Heron is widely distributed throughout North and South America, Eurasia, and Africa. In California, this species is a common year-round resident and less common breeder, occurring in fresh and salt water marshes, pond margins, mudflats, sloughs, cropland, and slow-moving stream shorelines. Nesting occurs in dense stands of trees and brush, primarily in secluded areas (Fix and Bezener 2000, Harris 1996). Current threats to Black-crowned Night Heron include loss of wetland habitat and human disturbance at nesting sites.

Black-crowned Night Heron is a common local resident and breeder in Humboldt County and is known to occur within and around the plan area. During a site visit to the Dog Ranch property just north of the plan area on 6 June, 2003, Black-crowned Night Herons were observed roosting in willow habitat. No roosts are known from the plan area.

Osprey (*Pandion haliaetus*) is State listed as a California Species of Special Concern by the CDFG at nesting sites. This species has a worldwide distribution, occurring on every continent with the exception of Antarctica. In California, Osprey is a common summer resident and breeder and is less common in winter. This species forages over bodies of water bearing fish. Breeding primarily in scattered locations throughout northern California from the Cascade Ranges south to Lake Tahoe, and along the coast south to Marin County, they nest and roost on exposed treetops, towers, pilings, or similar structures near lakes, reservoirs, rivers, estuaries, and the open sea coast (Fix and Bezener 2000, Harris 1996). Historically, Osprey was impacted by eggshell thinning caused by persistent pesticides such as DDT up until their ban in the 1970's. Current threats to the species primarily include degradation of aquatic environments such as rivers and lakes and loss of nesting structures such as trees to timber harvest and other activities.

Osprey is a common resident and breeder in the project region and within close vicinity to the plan area. An active Osprey nest was observed in 2004 on a power pole adjacent to Humboldt Bay approximately 200 meters east of CDI area. An Osprey nest is also known approximately 3 miles north of Samoa in the town of Manila. Ospreys are known to feed in the ocean adjacent to the Plan Area and in Humboldt Bay.

White-tailed Kite (*Elanus leucurus*) is a CDFG Fully Protected species at nesting sites. California supports the largest number of White-tailed Kites in North America. Found in virtually all California lowlands west of the Sierra Nevada range and the southeast deserts, this species is also common in the Central Valley and along the entire California coast (Dunk 1995). White-tailed Kite commonly inhabits agricultural and riparian areas, preferring habitats that do not support grazing pressure. Nest structures are shrubs or trees that generally provide concealment from the ground (Pickwell 1930, Hawbecker 1940).

White-tailed Kites have a low potential for occurrence in the plan area due to a lack suitable nesting or foraging habitat for the species. However, birds may occasionally fly over from nearby lowland agricultural areas north of the plan area where they are common.

Bald Eagle (*Haliaeetus leucocephalus*) is currently listed as Threatened by the USFWS but has been proposed for delisting and is a CDFG Fully Protected species (at nesting sites).Worldwide, Bald Eagle is distributed throughout Canada, Alaska, and the contiguous United States. In California, Bald Eagle is found throughout most of the state near water bodies, breeding in the tops of trees or other similar structures near lakeshores, river banks, estuaries, and the sea coast; during winter and migration they inhabit both coastal and inland waterways (Fix and Bezener 2000, Harris 1996). Current threats include degradation of riparian and other water-associated habitats as well as disturbance at nest sites.

Bald Eagle has a low potential for occurrence at the plan area due to the absence of suitable nesting habitat. However during winter, individuals of this species are known to occasionally forage along the margins of Humboldt Bay near the plan area.

Northern Harrier (*Circus cyaneus*) is a CDFG Species of Special Concern at nesting sites. Worldwide, Northern Harrier has a circumpolar distribution. In North America, this species is found from North Alaska east across Canada to the Atlantic Coast and south into Mexico, breeding from the northernmost portion of its range through the central United States and wintering in the Southern United States. Year-round residents also occur throughout portions of North America. In California, Northern Harrier is distributed throughout the state primarily in

open habitats, nesting in coastal fresh and saltwater marshes and foraging in grasslands, meadows, and marshes (Fix and Bezener 2000, Harris 1996). Current threats to this species are habitat destruction resulting from the agricultural and urban development.

Locally, Northern Harrier is a common migrant and winter resident, found in coastal marshes and grasslands near Humboldt Bay in the vicinity of the plan area. It is uncommon during the summer and breeding season.

Sharp-shinned Hawk (*Accipiter striatus*) is a CDFG Species of Special Concern at nesting sites. Worldwide, Sharp-shinned Hawk breeds in portions of Alaska, Canada, and the contiguous United States and winters in potions of Canada, the contiguous United States, Latin America, and the Bahamas. In California, Sharp-shinned Hawk breeds primarily in Northern California in dense to semi-open coniferous, deciduous, or mixed forests, and occasionally along riparian edges. It winters in far more areas than those in which it breeds (Fix et al 2000). Current threats to Sharp-shinned Hawk include the potential impacts to California's small breeding population as a result of falconry and destruction of suitable habitat, primarily as a result of timber harvest.

Sharp-shinned Hawk has a low potential for occurrence at the plan area and is not likely to occur there as it is uncommon in the Humboldt Bay region. However, the small stand of coniferous forest within the plan area could potentially provide habitat for wintering or migrant birds.

Cooper's Hawk (*Accipiter cooperi*) is a CDFG Species of Special Concern at nesting sites. Worldwide, Cooper's Hawk breeds in portions of Canada, and south into Mexico and the southeastern United States and winters in portions of the mid and western United States and portions of Canada south into Middle America. In California, Cooper's Hawk occurs in open woodlands and brushlands, nesting primarily in riparian habitat in foothills and valleys (Fix and Bezener 2000). Threats to Cooper's Hawk include habitat destruction, predominately occurring in lowland riparian areas, and disturbance at nest sites.

Cooper's Hawk is present within the vicinity of the plan area, using woodland habitats in and around the Samoa town site as wintering habitat and during migration. They have bred on Woodley Island in Humboldt Bay, just 1 mile west of the plan area.

Merlin (*Falco columbarius*). Populations of Merlin that winter in California are CDFG Species of Special Concern. Worldwide, Merlin has a circumpolar breeding range occurring in northern temperate and sub and low Arctic regions and is migratory throughout most of its range, wintering in a variety of open habitat types in northern and southern temperate zones of Eurasia and the Americas. Merlin does not breed in California but is transient throughout much of the state, wintering along the coast and in the central valley in open country with scattered lookout posts such as estuaries, seacoasts, open woodlands, savannah, windbreaks and hedgerows, pastures and the edges of grasslands and agricultural fields (Fix and Bezener 2000, Harris 1996). Current threats to Merlin primarily include persistent pesticide use on wintering areas in Central and South America and take for falconry.

Merlin is present each fall in open lowlands along the coast such as those present in the plan area.

American Peregrine Falcon (*Falco peregrinus anatum*) was removed from the Federal Endangered Species List on 25 August, 1999 and is currently listed as a USFWS Species of Concern and a CDFG Species of Special Concern and is a California Fully Protected species at

nest sites. Worldwide, Peregrine Falcon breeds from northern Alaska through portions of Canada and the contiguous Untied States and occasionally in northern Mexico, and migrates from Greenland south through Canada and Alaska into the contiguous United States, through Mexico and into South America. In California, Peregrine Falcon ranges throughout most of the state with the exception of the deserts during migration and winter and breeds along the central and southern California coast and in the Channel Islands, inland north coastal mountains, Klamath and Cascade ranges, and the Sierra Nevada. It nests on ledges of large cliff faces or other similar structures in a variety of habitats including wetlands, woodlands, urban and agricultural areas and coastal habitats. While Peregrine Falcon has recovered throughout California, the potential threat of habitat destruction remains.

Peregrine Falcon is present in the plan area where suitable coastal lowland habitats supporting Peregrine prey species such as shorebirds and other waterbirds occur. Peregrines also forage in Humboldt Bay near the plan area.

Western Snowy Plover (*Charadrius alexandrinus nivosus*) is Federally listed as Threatened in its coastal breeding population and is a CDFG Species of Special Concern. The Pacific coast breeding population of the Western Snowy Plover ranges along coastal beaches from southern Washington through Oregon and into southern Baja, California, Mexico and is comprised of those individuals that nest beside or near tidal waters, including all nesting colonies on the mainland coast, peninsulas, offshore islands, adjacent bays and estuaries within 50 miles of the coast (USFWS 2001). In California, Western Snowy Plover occurs in the far northern California Counties of Del Norte, Humboldt and Mendocino south to the San Francisco Bay area in portions of Napa, Alameda, Santa Clara, and San Mateo Counties, the Monterey Bay area in Monterey, Santa Cruz, San Mateo, San Francisco, Marin, and Sonoma Counties, to San Luis Obispo, Santa Barbara, and Ventura Counties and south to Los Angeles, Orange, and San Diego Counties (USFWS 2001). In northern California, Western Snowy Plover breeds and winters along ocean beaches as well as gravel bars of the Eel River, Humboldt County, California (Colwell et al. 2002). On beaches, nesting occurs above the high tide line in sandy substrate and occasionally on driftwood (LeValley 1999). Current threats to Western Snowy Plover include increasing human disturbance on beach habitat primarily in the form of recreational uses of such areas, alteration of nesting habitat from encroachment by European beachgrass (*Ammophila arenaria*), predation of eggs and young by corvids, and habitat loss to beach development.

This species is not likely to occur at the plan area given that beach habitat along the north spit of Humboldt Bay, within and adjacent to the plan area, does not currently appear suitable to support Western Snowy Plover. This is due primarily to encroachment of European beachgrass on the north spit which has resulted in a narrow waveslope leaving little to no habitat for the species. In addition, five years (2000-2004) of breeding season surveys of the north spit, conducted at least once monthly, have yielded negative results for Snowy Plover presence.

Long-billed Curlew (*Numenius americanus*) is listed as a Federal Species of Concern, and by the CDFG as a California Species of Special Concern at nesting sites. Worldwide, Long-billed Curlew breeds in southwestern Canada and in the western United States, and winters in the southern United States to South and Central America. In California, Long-billed Curlew breeds in wet meadow habitat in northeastern California in Siskiyou, Modoc, and Lassen Counties and winters in large flocks along most of the California coast as well as the Central and Imperial valleys (in tidal mudflats, estuaries, saltwater marshes, tidal channels, grasslands, and

agricultural fields with short grasses (Fix and Bezener 2000). Current threats to Long-billed Curlew include loss and degradation of prairie and meadow breeding habitat due to grazing and agricultural pressures.

Long-billed Curlew has a moderate potential for occurrence at the plan area. This species is present in the Humboldt Bay during winter and migration periods and could conceivably use the coastal habitats adjacent to the plan area while foraging.

Elegant Tern (*Sterna elegans*) is listed as a Federal Species of Concern, and by the CDFG as a California Species of Special Concern at nesting colonies. Worldwide, Elegant Tern breeding distribution is extremely restricted, occurring almost exclusively on islands in the Gulf of California/Mexico, and portions of the southern California coast. Its winter range is primarily along the coast of western South America from Peru to Chile. In California, Elegant Tern breeds predominantly on islands in the Sea of Cortez and along the coast of Southern California and migrates along the California coast in late spring, summer, and early fall only occurring in coastal habitats such as inshore ocean, estuaries, coastal freshwater and salt lagoons, river mouths and creek outfalls and is rarely seen in inland habitats (Fix and Bezener 2000). Current threats to Elegant Tern primarily include human disturbance at nesting colonies.

Elegant Tern is highly likely to occur in coastal habitats adjacent to the plan area as well as the bayshore along the north spit of Humboldt Bay where this species is a fall migrant. Nesting by this species has also been documented on a small unnamed island in North Humboldt Bay near the plan area in 1962 (Harris 1996).

Short-eared Owl (*Asio flammeus*) is a CDFG Species of Special Concern at nest sites. Worldwide, Short-eared Owl breeds from Alaska across Canada and south to California, Kansas, and New Jersey and winters in the southern part of its breeding range and south throughout the United States to Central America and in South America as well as most of the Old World. In California, Short-eared Owl nests in only a few of its former breeding locations and in northwestern California breeds only in coastal areas where conditions are prime. This species is a ground nester and occurs in open country, including grasslands, wet meadows and cleared forests. In migration it may appear in alpine meadows (Fix and Bezener 2000). Current threats to Short-eared Owl are primarily decline and degradation of marsh and tall grassland habitat primarily as a result of grazing pressure.

Short-eared Owl has a low potential for occurrence at the plan area given that they are rare to uncommon migrants and winter visitors in northwestern California and only accidental breeders. Little, if any, suitable habitat for these owls exists within the plan area. However, the species is known to occur in the Mad River Wildlife Area approximately 10 miles north of the plan area, at Centerville, approximately 18 miles south of the plan area (Harris 1996), and at the South Spit (S. McAllister, pers. com).

Vaux's Swift (*Chaetura vauxi*) is a Federal Species of Concern and a CDFG Species of Special Concern at nesting sites. Worldwide, Vaux's Swift breeds from southeastern Alaska and Montana to central California and winters in the tropics. In California, Vaux's Swift breeds in coastal coniferous forests, with a significant minority now using chimneys in towns and cities. They forage in forest openings, burned-over forest, meadows, rivers, lakes, and suburbia. Nearly all roost sites in migration are detected in chimneys (Fix and Bezener 2000). Current threats to Vaux's Swift include loss of suitable nest sites such as large, hollow snags and old Pileated

Woodpecker cavities as well as human disturbance especially from fires in fireplaces where swifts may nest or roost.

Vaux's Swift has a high potential for occurrence in the plan area within the coastal coniferous forest habitat.

Willow Flycatcher (*Empidonax traillii brewsteri*) is a Federal Species of Concern at nesting sites. Worldwide, Willow Flycatcher (*Empidonax traillii*), a Neotropical migrant, breeds in riparian and mesic upland thickets in the United States and Canada and winters from Mexico south to Panama (AOU 1983). In California, Willow Flycatcher typically breeds in moist meadows with perennial streams, lowland riparian woodlands dominated by willows, cottonwoods, or in smaller spring-fed boggy areas with willows or alders (Serena 1982, Harris et al. 1987, Whitfield 1990). Threats to Willow Flycatcher primarily include loss of riparian habitat due to invasion of non-native species, channelization and damming of free flowing rivers, and nest parasitism by Brown-headed Cowbird (*Molothrus ater*).

Willow Flycatcher has a low potential for occurrence in the plan area. Although migrants of this species may be found in the dune hollows and limited willow habitats within the plan area, the woody hollows and riparian woodlands at the plan area are not substantial enough to be suitable habitat for breeding Willow Flycatchers.

Purple Martin (*Progne subis*) is a CDFG Species of Special Concern at nesting sites. Worldwide, Purple Martin breeds throughout much of southern Canada and less commonly in western Canada as well as portions of the contiguous United States, Mexico, and Cuba, wintering in South America from southeastern Brazil northward and westward to the eastern portions of Bolivia and Columbia northward to the southern Caribbean Islands. In California, Purple Martin breeds in riparian woodlands, oak woodlands, partially logged, broken, or burned coniferous forests, and montane mixed forests, nesting in cavities (usually old woodpecker cavities) of tall trees, often near water (Fix and Bezener 2000). This species also breeds where human settlement occurs, often nesting in nest-boxes (Baicich and Harrison 1997). Foraging occurs over bottomlands, bays, coastal lagoons, ponds, and wetlands. During migration Purple Martin occurs over rivers, reservoirs, and agricultural fields (Fix and Bezener 2000). Current threats to Purple Martin include nest cavity competition with introduced European Starling (*Sternus vulgaris*) and loss of nesting structures due to removal of snags.

Purple Martin has a high potential for occurrence at the plan area given that suitable habitat for the species exists in and around the plan area.

Bank Swallow (*Riparia riparia*) is a Federal Species of Concern, and is listed by the CDFG as Threatened at nesting sites. Worldwide, Bank Swallow is the most widely distributed of the swallows, with breeding colonies scattered across the northern hemisphere, from western North America to eastern Eurasia. This species winters in Central and South America or in Africa and Central Asia. In California, Bank Swallow breeds in areas with vertical embankments high enough for them to avoid predation and with friable substrates that allow for excavation of a nest cavity. These embankments are typically found along rivers, streams, lakes, gravel pits, and road cuts. Foraging habitat generally consists of open areas where this species can take prey, primarily insects, on the wing such as agricultural fields. The primary current threat to Bank Swallow is destruction of natural stream banks from practices such as rip-rapping.

Bank Swallow has a low potential for occurrence at the plan area given that no breeding habitat exists on site, although rare migrants might potentially use the area.

Black-capped Chickadee (*Parus atricapillus*) is a CDFG Species of Special Concern. Worldwide, Black-capped Chickadee is largely resident from Alaska east across Canada to Newfoundland and south to northern California, northern New Mexico, Missouri, and northern New Jersey and winters south to Maryland and Texas. In California, Black-capped Chickadee occurs in mixed hard and softwood forests, natural and suburban woodlands, scattered trees, shrubs, thickets, old fields, clear cuts, forest edges, and dense undergrowth, as well as suburban areas such as parks and gardens. The primary current threat to Black-capped Chickadee is degradation and destruction of riparian habitat.

Black-capped Chickadee occurs within the plan area in the coniferous forest habitat, thickets and suburban areas throughout the site.

California Yellow Warbler (*Dendroica petechia brewsteri*) is a CDFG Species of Special Concern at nesting sites. Worldwide, the northern form of the Yellow Warbler (*Dendroica* petechia), which includes the California subspecies, breeds from Alaska to Newfoundland and southern Labrador south to western South Carolina and northern Georgia, and west through the southwest to the Pacific coast and winters in Central America and the West Indies south to northern Peru. In California, California Yellow Warbler nests primarily in alder-cottonwood-willow stands with riparian cover and occupies habitats along the coastal strip during migration (Harris 1996). Current threats to California Yellow Warbler include degradation and loss of alder-cottonwood-willow and riparian habitats as well as nest parasitism by Brown-headed Cowbird (*Molothrus ater*).

California Yellow Warbler occurs within the plan area in the willow dominated dune hollows and related habitats during migration but is not known to breed there.

Pallid bat (*Antrozous pallidus*) is a CDFG Species of Special Concern. Worldwide, pallid bat occurs in south-central British Columbia and portions of the western contiguous United States. In California, pallid bat occupies a variety of low elevation habitats including grasslands, shrublands, woodlands, and coniferous forests (Philpott 1997). They are most common in open, dry habitats that contain rocky areas for roosting. Day roosts are commonly found in rock crevices and tree hollows and have been documented in large conifer snags, inside basal hollows of redwoods (*Sequoia sempervirens*), and giant Sequoias (*Sequoiadendron giganteum*), and bole cavities in oaks (*Quercus* spp) (Sherwin pers. comm. 1998). Cavities in broken branches of black oak (*Quercus kelloggii*) are very important and there is a strong association with black oak for roosting (Pierson, Pers. Comm. 1996). These bats also occur in man-made habitats such as abandoned buildings and other such structures. Current threats to pallid bat are habitat loss, pesticide use, and roost-site disturbance.

Pallid bat is not known to occur within the plan area. However, potential habitat for this species does exist on site in the form of abandoned buildings and other structures.

Townsend's Western big-eared bat (*Corynorhinus townsendii townsendii*) is a Federal Species of Concern and a CDFG Species of Special Concern. Worldwide, Townsend's western big-eared bat occurs in the western United States. In California, Townsend's western big-eared bat primarily occupies rural areas in a variety of habitat types. Day roosts for this species are found

within caves, abandoned mines, and buildings. Rock crevices and large snags may also provide habitat for roosting (Howell et al. 1996, Sherwin 1998). Night roosts may occur in more open settings, including under bridges (Philpott 1997). Current threats to Townsend's Western big-eared bat include habitat loss, pesticide use, and human disturbance of maternity and night roosts to which this species is highly susceptible.

There are several known roosting sites for Townsend's big-eared bat in Humboldt County, but none in or around the plan area. All known occurrences have been in man-made structures. The distribution of this species in Humboldt County is poorly known due to lack of survey effort. This species could potential occupy abandoned buildings within the plan area.

Red tree vole (*Arborimus pomo*) is a Federal Species of Concern and a CDFG Species of Special Concern. Worldwide, red tree vole occurs in coastal Oregon and northwestern California. In California, this species primarily inhabits Douglas fir forests but may occupy redwood or Sitka spruce forests and areas with salal (*Gaultheria shallon*) (Whitaker 1998). Current threats to this species include habitat degradation or destruction in the form of clear cuts, forest fires, and other factors that create openings in the forest and isolate blocks of trees.

Red tree vole has a low potential for occurrence within the plan area because no suitable habitat exists. Clear-cuts, forest fires, and other factors that create openings in the forest and isolate blocks of trees are detrimental to Red Tree Voles.

Samoa Town Master Plan

Humboldt County, California

Environmental Impact Report
Sensitive Species Map

Map Compiled by Planwest Partners
August 27, 2004
Projection: California State Plane Zone 1, Units Feet, NAD 1983
Orthophotography: Kelly-O'Hern Associates, 4-23-2001
Sensitive Species Derived from Mad River Biologist Field Surveys

0 1,000 2,000 Feet

PLANWEST PARTNERS

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Attachment A Routine Wetland Delineation Data Forms

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Samoa TMP	Date: 7/2/03
Applicant / Owner: SPG (Samoa Pacific Group)	County: Hum
Investigator: S. Morrissette	State: CA
Do Normal Circumstances exist on the site? (YES) NO	Community ID: upland - Degraded Dunes
Is the site significantly disturbed (Atypical Situation)? (YES) NO	Transect ID: 1
Is the area a potential Problem Area? (If needed, explain on reverse) YES (NO)	Plot ID: A

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
.20	1 Briza maxima	Herb	(NL)	9		
.40	2 Carpobrotus edulis	Herb	(NL)	10		
.10	3 Salix hookeriana	shrub	FACW	11		
.10	4 Cortaderia jubata	Herb	NL	12		
.05	5 Vulpia bromoides	Herb	FACU*	13		
.05	6 Bromus diandrus	Herb	NL	14		
	7			15		
	8			16		

Percent of ~~Dominant~~ Species that are OBL, FACW, or FAC (excluding FAC-) ≤ 10 %

Remarks

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	/	(in)
Depth to Free Water in Pit	/	(in)
Depth to Saturated Soil	/	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-20"	C	2.5Y 3/2	—	—	Sand w/ gravel

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors no O.R.
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Gravel from adjacent road mixed w/ sand

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES (NO)	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	YES (NO)	

Remarks

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/2/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	Boundary of PEM1E
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	1
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	12

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
30	1 Salix hookeriana	Shrub	(FACW)	9		
20	2 Juncus brewerii	Herb	(FACW*)	10		
10	3 Rubus ursinus	↓	FAC+	11		
10	4 Briza maxima		NL	12		
05	5 Vulpia bromoides		FACU*	13		
10	6 Lotus micranthus	↓	NL	14		
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 100 %

Remarks 50:20 rule utilized. Dominant species circled.

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☑ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 → 20"	C	2.5 Y 3/1	—	—	sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Low chroma present but color is not a good indicator for sandy substrates.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	(YES) NO	
Hydric Soils Present?	YES (NO)	

Remarks

Represents boundary of herbaceous dune hollow wetland

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/2/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	PEM1E
Is the site significantly disturbed (Atypical Situation)?	YES (NO)	Transect ID	1
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	C

VEGETATION

Herbaceous Dune Hollow wetland that is 'connected' to wastewater Treatment channel.

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
10	1 Juncus breweri	Herb	FACW*	9		
70	2 Carex obnupta	"	OBL	10		
10	3 Rubus ursinus	"	FAC+	11		
	4			12		
	5			13		
	6			14		
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 100%

Remarks

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: 1
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☑ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

↳ Observations taken during dry time of year.

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
07 20"	C	2.5Y 3/1	7.5YR 3/3 & 3/4	common/Distinct	sand or Sandy loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☑ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Reddish streaking in substrate. Close to seasonal fresh water table. Also some organic streaking present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	(YES) NO	
Hydric Soils Present?	(YES) NO	

Remarks

Herbaceous dune hollow wetland

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/2/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrisselle	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	Boundary of PEM1E
Is the site significantly disturbed (Atypical Situation)?	YES (NO)	Transect ID	1
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	D

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
05	1 Madia sativa	Herb	NL	9		
30	2 Juncus breweri		(FACW)*	10		
0	3 Carex obnupta		(OBL)	11		
05	4 Rubus ursinus		FAC+	12		
05	5 Achillea millefoliata		FACU	13		
10	6 Ammophila arenaria		(FACU)	14		
10	7 Cardamine oligosperma	↓	(FACW)	15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 75%

Remarks 50:20 rule, Dominant species circled

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: ONE
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☑ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0720"	C	2.5y 3/2	none	none	Sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Color not a good indicator to use in sandy substrates
No O.R. or organic streaking here.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? Boundary (YES) NO
Wetland Hydrology Present?	(YES) NO	
Hydric Soils Present?	YES (NO)	

Remarks
This point represents wetland/upland transition, Predominance of hydrophytic vegetation is marginal. Possible sediment deposits, no evidence of O.R.

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/2/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	upland
Is the site significantly disturbed (Atypical Situation)?	YES (NO)	Transect ID	1
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	E

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
70	1 Ammophila arenaria	Herb	(FACU)	9		
10	2 Aira praecox	↓	NL	10		
05	3 Cerastium glomeratum		FACU	11		
05	4 Juncus brewerii		FACW*	12		
05	5 Scrophularia californica		FAC	13		
05	6 Aira caryophyllea		NI	14		
	7			15		
	8			16		

Percent of ~~Dominant~~ All Species that are OBL, FACW, or FAC (excluding FAC-) ~ 10 %

Remarks

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	/	(in)
Depth to Free Water in Pit	/	(in)
Depth to Saturated Soil	/	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):				Drainage Class:	
Taxonomy (Subgroup)			Field Observations Confirm Mapped Type? YES NO		

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
07 20"	C	2.5Y 3/2	none	none	Sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Low chroma color not a good indicator for sand

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES (NO)	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	YES (NO)	

Remarks

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/7/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	upland
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	2
Is the area a potential Problem Area? (If needed, explain on reverse)	(YES) NO	Plot ID	A

VEGETATION

	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
.30	1 Myrica californica	Shrub	(FAC+)	9 other species present <5% cover!		
.20	2 Cortaderia jubuata	Herb	(NI)	10 Achillea millefoliata	Herb	FACU
.10	3 Rubus ursinus	Herb	FAC+	11 Melilotus officinalis	↓	FACU
.10	4 Scrophularia californica	Herb	FAC	12 Polystichum munitum	↓	FACU
.20	5 Baccharis pilularis	Shrub	(NL)	13 Vicia sp	↓	
	6			14		
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) <50%

Remarks
Dominants are circled / 50:20 rule utilized

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test no
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
see note	below				

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Substrate is composed of fill material that forms a berm one to three feet high.

Fill = wood debris, sand, rock, & broken asphalt.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES (NO)	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	YES (NO)	

Remarks

Represents south bank of water treatment channel.

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/7/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	PEM1E
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	2
Is the area a potential Problem Area? (If needed, explain on reverse)	(YES) NO	Plot ID	B

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Rubus ursinus	Herb	(FAC+)	9		
2 Raphanus raphanistrum	/	(UPL)	10		
3 Chenopodium album		(FACW)	11		
4 Madia sativus		NL	12		
5 Sonchus asper		FAC	13		
6 Rumex crispus	↓	(FACW-)	14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 75%

Remarks Dominant species are circled / used 50:20 rule
This point is located at a slightly higher elevation within channel where treated waste water is discharged.
Burned organic matter appears to have been dumped here.

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS

Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- Few ☑ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3"	A	2.5 Y 3/1	7.5 YR 4/6	Few/Prominant	Silty clay Loam
3"-20"	Fill	2.5 Y 2.5/1	none	none	Burned Organic matter mixed with sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Top 20" of substrate may represent buildup of sediment deposits over organic fill.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	(YES) NO	
Hydric Soils Present?	YES ? NO	

Remarks

Small filled area within a larger PSS1E wetland that represents wastewater treatment Area.

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/7/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	upland
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	2
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	C

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Ammophila arenaria	Herb	FACU	9		
2 Vulpia bromoides	↓	FACU*	10		
3 Achillea millefolium	↓	FACU	11		
4 Madia sativa	↓	NL	12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 0%

Remarks: Located on north bank of water treatment channel

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	/	(in)
Depth to Free Water in Pit	/	(in)
Depth to Saturated Soil	/	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
7/8"	C	2.5YR 3/1	none	none	Sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Color alone not indicative of hydric soils in sand.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES (NO)	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	YES (NO)	

Remarks: Slope of bank is relatively steep. Soil Pit 2C is ± 4 feet higher than 2B.

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP		Date 7/7/03
Applicant / Owner	SPG		County Hum
Investigator	S, Morrissette		State CA
Do Normal Circumstances exist on the site?	unknown	YES NO	Community ID PSS1U
Is the site significantly disturbed (Atypical Situation)?		(YES) NO	Transect ID 3
Is the area a potential Problem Area? (If needed, explain on reverse)		(YES) NO	Plot ID A

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
40	1 Epilobium ciliatum	H	(FACW)	9		
20	2 Salix hookeriana	S	(FACW)	10		
15	3 Rubus ursinus	H	FAC+	11		
2.05	4 Galium aparine	H	FACU	12		
.05	5 Polypogon monspeliensis	H	FACW+	13		
.15	6 Anaphalis margaritacea	H	NL	14		
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 100%

Remarks Dominants are circled / 50:20 rule utilized

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): only 1
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 → 13"	Fill ?	2.5y 3/1	—	—	sandy Loam
13" → 18"	C	2.5y 3/1	—	—	Sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☒ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present? see note	YES (NO)	
Hydric Soils Present? see note	(YES) NO	

Remarks

Atypical situation – evidence of hydrology may be absent due to presence of fill. Wood fiber/pulp fill has been dumped here. Fill is high in organic matter and appears to sufficiently hold enough water to support hydrophytes. Organic streaking in sandy, C-horizon. Problem area: investigation conducted during dry season.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Sarroa TMP		Date 7/7/03
Applicant / Owner	SPG		County Hum
Investigator	S. Morrissette		State CA
Do Normal Circumstances exist on the site?	unknown	YES NO	Community ID upland
Is the site significantly disturbed (Atypical Situation)?		(YES) NO	Transect ID 3
Is the area a potential Problem Area? (If needed, explain on reverse)		YES (NO)	Plot ID B

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
.30	1 Achillea millefoliata	H	(FACU)	9		
.20	2 Anaphalis margaritacea	)	(NL)	10		
.05	3 Rubus ursinus	(	FAC+	11		
.10	4 Plantago lanceolata	)	FAC-	12		
	5	V		13		
	6			14		
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 0%

Remarks Dominants circled / 50:20 rule utilized

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-.5"	Oi	2.5Y 3/1	—	—	
.5-16"	A	2.5Y -3/2	—	—	Sandy loam
16" →	C	2.5Y 3/2	—	—	Sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES (NO)	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	YES (NO)	

Remarks

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/17/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	PEM1E
Is the site significantly disturbed (Atypical Situation)?	YES (NO)	Transect ID	4
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	A

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
.80	1 Carex obnupta	Herb	(OBL)	9		
.20	2 Potentilla anserina		(OBL)	10		
<.05	3 Rubus discolor		FAC+	11		
<.05	4 Juncus brewerii		FACW	12		
	5			13		
	6			14		
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 100%

Remarks 50:20 rule, dominants circled.

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☑ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☑ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
16"	C	2.5 Y 3/1 & 3/2	10YR 4/3 + 4/4	common/distinct	sandy loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☑ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Soil is moist at > 6" but no free H_2O (July 17th)

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	(YES) NO	
Hydric Soils Present?	(YES) NO	

Remarks

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site Samoa TMP.	Date 7/17/03
Applicant / Owner SPG	County Hum
Investigator S. Morrissette	State CA
Do Normal Circumstances exist on the site? (YES) NO	Community ID PEM1U
Is the site significantly disturbed (Atypical Situation)? YES (NO)	Transect ID 4
Is the area a potential Problem Area? (If needed, explain on reverse) YES (NO)	Plot ID B

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
.60	1 Carex obnupta	H	(OBL)	9		
.20	2 Juncus breweri	↓	(FACW)	10		
.05	3 Rubus discolor	↓	FAC+	11		
.05	4 Epilobium ciliatum	↓	FACW	12		
	5			13		
	6			14		
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 100 %

Remarks

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS	
Depth of Surface Water	(in)
Depth to Free Water in Pit	(in)
Depth to Saturated Soil	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☐ Inundated none
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
16"	C	2.5Y 3/1	—	—	Sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	YES (NO)	Wetland boundary
Hydric Soils Present?	YES (NO)	

Remarks

Point = Transition between PEM1E and upland dune
~ 1 foot higher in elevation than 4A

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/17/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	upland
Is the site significantly disturbed (Atypical Situation)?	YES (NO)	Transect ID	4
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	C

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
30	1 Juncus howeri	H	(FACW)	9 other species present <5% cover		
10	2 Aira praecox		(NL)	10 Sonchus oleraceus	Herb	NI*
15	3 Cardionema		(NL)	11 Daucus pusillus		NL
08	4 Leontodon taraxacoides		FACU	12 Vulpia bromoides		FACU*
10	5 Bromus diandrus		(NL)	13 Parentucellia viscosa		FA
08	6 Plantago lanceolata		FAC-	14 Briza maxima		NL
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 25%

Remarks 50:20 rule utilized / Dominant species circled

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

FIELD OBSERVATIONS

Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
7/18"	A	2.5Y 3/1	—	—	SAND

HYDRIC SOIL INDICATORS: none

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES (NO)	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	YES (NO)	

Remarks

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/17/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	upland/ Developed DUNE
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	4
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	D

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ~~Rubus discolor~~	~~Herb~~	~~FAC+~~	9		
2 Carex obnupta	Herb	OBL	10		
3			11		
4 other sp. <10% cover			12		
5 Agrostis stolonifera	Herb	FACW	13		
6 Sonchus oleraceous	Herb	FACU	14		
7 Galium aparine	Herb	FACU	15		
8 Lotus purshianus	Herb	NL	16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 50%

Remarks

Discarded RUDI due to its invasive nature and questionable NWI status. In California, RUDI is FAC+, but in "Northwest", which includes coastal Oregon habitats similar to plan site, it is FACU. It is also growing (at this point) in a wood pulp/sand mixture on upland berm (i.e. developed dune).

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	/	(in)
Depth to Free Water in Pit	/	(in)
Depth to Saturated Soil	/	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-20"	see note below	2.5YR 2.5/1	—	—	Loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Substrate is reddish due to presence of wood pulp. High organic matter content due to accumulation of wood fiber (product of lumber storage), which has a high water holding capacity. Substrate is predominantly wood fiber/pulp.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	YES (NO)	

Remarks

Atypical Situation. The substrate appears well-drained, but the high water holding capacity of the wood fiber is capable of supporting hydrophytic vegetation.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/17/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	upland
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	none
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	5

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Cyperus eragrostis	Herb	FACW	9		
2 Epilobium ciliatum		FACW	10		
3 Lotus corniculatus		FAC	11		
4 Polypogon maritimus		OBL	12		
5 Parentucellia viscosa	↓	NL	13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 80%

Remarks

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS updated 12/03

Depth of Surface Water	.5 – 1"	(in)
Depth to Free Water in Pit		(in)
Depth to Saturated Soil		(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☑ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☑ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
See below — Filled					

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Substrate = Asphalt w/ sediment build-up.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	(YES) NO	NON-wetland Impoundment
Hydric Soils Present?	YES (NO)	

Remarks

Shallow-rooted hydrophytes growing in sediment (< 1") over impervious asphalt.

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/17/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	? YES NO	Community ID	upland
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	NONE
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	6

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Cyperus eragrostis	Herb	(FAC+)	9		
2 Lotus corniculatus	↓	(FAC)	10		
3 Polygonum maritimus		(OBL)	11		
4 Trifolium repens		(FAC)	12		
5 Parentucellia viscosa		(NL)	13		
6 Lythrum hyssopifolium		(FACW)	14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 83%

Remarks

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☑ Inundated noted previous spring (2003)
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☑ Sediment Deposits current
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
—	Filled	(see notes below)			

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Substrate= Asphalt w/ sediment buildup (1-2" deep)
Artificial substrate.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	
Wetland Hydrology Present?	(YES) NO	Is this Sampling Point Within a Wetland? YES (NO)
Hydric Soils Present?	YES (NO)	Non-wetland Impoundment

Remarks

Shallow-rooted hydrophytes growing in less than 2" of sediment on an impervious asphalt.

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/31/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	PSS1A
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	7
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	A

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
95	1 Hooker Willow	Shrub	(FACW)	9		
.10	2 Rubus discolor	Herb	(FAC+)	10		
.10	3 Ammophila arenaria	↓	NI	11		
.05	4 Hedera helix	↓	NI	12		
	5			13		
	6			14		
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 100%

Remarks

Scrub-shrub (Woody hollow) wetland adjacent to high use industrial area. Point represents outer edge of hollow (boundry).

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4"	A	2.5Y 2.5/1	7.5YR 3/3	Few/Distinct	Sandy loam
4"	C	2.5Y 3/2	—	—	Sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☑ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain In Remarks)

Remarks: Color not a good indicator for hydric soils in sandy substrates. Organic matter content in surface layer not exceptionally "high", but it is present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	YES (NO)	wetland boundary
Hydric Soils Present?	(YES) NO	

Remarks

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site Samoa TMP	Date 2/4/04
Applicant / Owner SPG	County Hum
Investigator S. Morrissette	State CA
Do Normal Circumstances exist on the site? (YES) NO	Community ID PSS1 E
Is the site significantly disturbed (Atypical Situation)? YES (NO)	Transect ID 7
Is the area a potential Problem Area? (If needed, explain on reverse) YES (NO)	Plot ID B

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Salix hookeriana	Tree	FACW	9		
2 Rubus discolor	Shrub	FAC+	10		
3 Carex obnupta	Herb	OBL	11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 100%

Remarks

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS	
Depth of Surface Water	(in)
Depth to Free Water in Pit	(in)
Depth to Saturated Soil	6 (in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☐ Inundated
- ☑ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6"	A	10YR 2/1	-	-	Sandy loam
6-20"	C	2.5Y 3/2	-	-	Sand / sandy loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☑ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☑ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	(YES) NO	
Hydric Soils Present?	(YES) NO	

Remarks

Point is near or at the seasonal fresh water table.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	2/4/04
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	PSS1A
Is the site significantly disturbed (Atypical Situation)?	YES (NO)	Transect ID	7
Is the area a potential Problem Area? (If needed, explain on reverse)	(YES) NO	Plot ID	C

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Salix hookeriana	Tree	FACW	9		
2 Rubus discolor	Shrub	FAC+	10		
3 Carex obnupta	Herb	OBL	11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 100 %

Remarks

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	/	(in)
Depth to Free Water in Pit	/	(in)
Depth to Saturated Soil	/	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: 0
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 → 3"	A	10YR 2/1	—	—	Sandy loam
3" → 24"	C	2.5Y 3/2	—	—	Sand or Sandy loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☑ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	(YES) NO	

Remarks

Evidence of hydrology may be lacking due to time of year of investigation = problem area.
Soil & vegetation suggests presence of wetland hydrology.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/31/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	PSS1U
Is the site significantly disturbed (Atypical Situation)?	YES (NO)	Transect ID	none
Is the area a potential Problem Area? (If needed, explain on reverse)	(YES) NO	Plot ID	8

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
* 1 Salix hookeriana	S	(FACW)	9		
* 2 Rubus discolor	H	FAC+	10		
* 3 Polystichum munitum	H	FACU	11		
<5% 4 Scrophularia californica	H	FAC	12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 100%

Remarks

Bordered by Baccharis pilularis, Cortaderia jubata
Rubus discolor, Brassica sp., Briza maxima.
Willow is acting as a phreatiphyte. Area highly degraded.

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other none

☐ No Recorded Data Available

FIELD OBSERVATIONS

Depth of Surface Water	/	(in)
Depth to Free Water in Pit	/	(in)
Depth to Saturated Soil	/	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
18"	A	10YR 3/1	—	—	sandy loam
4-10"	C	2.5Y 3/2	—	—	Sandy loam
10" → 26"	A	10YR 3/1	—	—	Sandy loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: There is a buried A horizon of decayed O.M. (wood pulp)

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	(YES) NO	

Remarks

Woody dune hollow wetland adjacent to high use/impact industrial area. Significantly degraded. Wetland hydrology not verified; possibly due to seasonal variation (Problem Area).

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/17/03 updated 12/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	PSS1U
Is the site significantly disturbed (Atypical Situation)?	YES (NO)	Transect ID	9
Is the area a potential Problem Area? (If needed, explain on reverse)	(YES) NO	Plot ID	A

VEGETATION

	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
%						
80	1 Salix hookeriana	T	FACW	9		
50	2 Rubus discolor	H	FAC+	10		
20	3 Hedera helix	WV	NL	11		
	4			12		
	5			13		
	6			14		
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 67%

Remarks 100% ground cover of leaf litter
Willow suspected of acting as a phreatiphyte

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1"	Oi	2.5Y 3/1	—	—	
1"-10"	C	2.5Y 3/2	—	—	sandy loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☑ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:
matrix a sandy Loam with ~20% gravel fill
dense roots, difficult to dig beyond 6"
No Mottles or oxidation-reduction features

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present? unknown	YES NO	Coastal Act Wetland
Hydric Soils Present?	YES (NO)	

Remarks
Coastal Act Jurisdictional Wetland
Hydrology not verified; elevation is close to seasonal high water table.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/17/03 – hydrology re-checked 12/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	PSS1u Boundary
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	9
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	B

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Salix hookeriana	T	(FACW)	9		
2 Cortaderia jubata	H	(NL)	10		
3 Centarium (davyi)	/	(FAC+)	11		
4 Polypogon maritimus	↓	OBL	12		
5 Fragaria chiloensis	↓	NL	13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) >67%

Remarks
* may be C. muehlenbergii = FAC

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	/	(in)
Depth to Free Water in Pit	/	(in)
Depth to Saturated Soil	/	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
Gravel Fill - compacted, difficult to dig.					
No evidence of ponding					
Sandy Loam matrix in > 80% gravel					

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	YES (NO)	

Remarks: Wetland boundary of presumed Woody Hollow (PSS1) that is considered a problem area. (Hydrology not verified due to seasonal variation).

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/17/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	upland
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	9
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	C

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
.20	1 Cortaderia jubata	Herb	NL	9		
.30	2 Parentucellia viscosa	↓	NL	10		
.25	3 Hypochaeris radicata	↓	FACU*	11		
.20	4 Lotus purshianus	↓	NL	12		
	5			13		
	6 Other species present			14		
.15	7 Briza maxima	Herb		15		
.05	8 Melilotus alba	↓		16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 0 %

Remarks

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
Same	as 9B	– Gravel	fill		

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Point is located on "Developed Dune"

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES (NO)	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	YES (NO)	

Remarks

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/17/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	upland
Is the site significantly disturbed (Atypical Situation)?	YES (NO)	Transect ID	10
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	B

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
.30	1 Centaurium (davyi)	Herb	FAC+	9		
.10	2 Fragaria chiloensis	↓	NL	10		
.10	3 Anthoxanthum odoratum		FACU	11		
.10	4 Hypochaeris radicata		FACU*	12		
.05	5 Parentucellia viscosa		NL	13		
.05	6 Lotus purshianus	↓	NL	14		
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 25%

Remarks

The area between 10A & 10B is used by vehicles & is highly disturbed.

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
See note	below				

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Substrate is compacted gravel fill in a sandy loam matrix. Gravel > 80%

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES (NO)	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	YES (NO)	

Remarks

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site Samoa TMP			Date 7/17/03
Applicant / Owner SPG			County Hum
Investigator S. Morrissette			State CA
Do Normal Circumstances exist on the site? unknown	YES	NO	Community ID upland
Is the site significantly disturbed (Atypical Situation)?	(YES)	NO	Transect ID 10
Is the area a potential Problem Area? (If needed, explain on reverse)	YES	(NO)	Plot ID A

VEGETATION

	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
%						
.20	1 Cyperus eragrostis	H	(FAC+)	9		
.20	2 Mentha pulegium		(OBL)	10		
.10	3 Holcus lanatus		FAC	11		
.20	4 Hypochaeris radicata		(FACU*)	12		
.05	5 Lotus purshianus	↓	NL	13		
	6			14		
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 67%

Remarks 50:20 rule utilized

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	2"	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: updated 12/03
- ☑ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
Filled	Substrate				

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Artificial substrate = Asphalt + gravel
Becomes seasonally flooded / saturated

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	(YES) NO	NON-wetland Impoundment
Hydric Soils Present?	YES (NO)	

Remarks
Shallow-rooted hydrophytes growing in sediment deposits / organic debris atop an impervious substrate of asphalt.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	7/17/03
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	PEM1Er
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	none
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	11

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
.40	1 Equisetum hyemale ssp. affine	Herb	FACW	9		
.20	2 Trifolium wormskioldii	↓	FACW	10		
.10	3 Cyperus eragrostis	↓	FAC+	11		
.10	4 Salix lasiolepis	Shrub	FACW	12		
.05	5 Scirpus cernuus	Herb	OBL	13		
.05	6 Holcus lanatus	Herb	FAC	14		
.05	7 Equisetum telmateia ssp. braunii	Herb	OBL	15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 100%

Remarks

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	up to .4"	(in)
Depth to Free Water in Pit		(in)
Depth to Saturated Soil		(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☑ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
See note	below				

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Substrate is gravel fill in sandy loam matrix.
Some sediment buildup in channel
H_2O ponds here.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	(YES) NO	
Hydric Soils Present?	YES (NO)	

Remarks

man-induced wetland, Atypical Situation.
Presumed (Coastal Act) Jurisdictional Wetland.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site Samoa TMP		Date 7/7/03 updated 1/21/04
Applicant / Owner SPG		County Humboldt
Investigator S. Morrissette		State CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID PSS1U
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID NONE
Is the area a potential Problem Area? (If needed, explain on reverse)	(YES) NO	Plot ID 12

Isolated willow patch w/in RUDI south of wastewater Treatment channel.

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Salix hookeriana	T	FACW	9 Adjacent Vegetation:		
2 Rubus discolor	S	FAC+	10 Myrica californica		
3			11 Briza maxima		
4			12 Cortaderia jubata		
5			13 Baccharis pilularis		
6			14 Carpobrotus edulis		
7			15 Achillea millefoliata		
8			16 Plantago lanceolata		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-)

Remarks

Small isolated depression – Part of log deck
Substrate = sand over fill – previously filled area
Dump site for debris (gravel, asphalt, concrete)

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	Ø	(in)
Depth to Free Water in Pit	Ø	(in)
Depth to Saturated Soil	Ø	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3"	Oi	10YR 2/1	~~0~~	~~0~~	
3-20"	C	10YR 2/1-2/2	~~0~~	~~0~~	Sandy loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☑ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain In Remarks)

Remarks:

High organic matter content in the substrate due to wood fiber/pulp accummulation from lumber storage operation; however, Soils did not react w/ alpha, alpha-Dipyridyl.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present? unk.	YES NO	
Hydric Soils Present? unk.	YES NO	

Remarks

Presumed (Coastal Act) Jurisdictional wetland.
Salix tapped into seasonal fresh H_2O table (Acting as a phreatiphyte?
Doesn't appear to get saturated within upper 20" for long periods. Problem area: hydrology not verified, High organic matter content in soil, presumably holds sufficient water to support hydrophytic vegetation.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	1/22/04
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	? YES NO	Community ID	upland
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	NONE
Is the area a potential Problem Area? (If needed, explain on reverse)	(YES) NO	Plot ID	13

VEGETATION

	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
*	1 Salix hookeriana	Tree	(FACW)	9		
*	2 Rubus discolor	Herb	FAC+	10 → Not a good indicator here		
	3 Other adjacent species =			11 Growing on upland berm		
*	4 Cortaderia jubata	Herb	(NL)	12		
*	5 Carpobrotus sp.	|	NL	13		
*	6 Myrica californica	|	FAC+	14		
*	7 Briza maxima	|	NL	15		
	8	↓		16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) <50%

Remarks Located immediately adjacent to upland 'berm'/dune that borders logdeck—presumably created—not natural. Isolated Hooker willow occurs within depression that is 3-4 feet lower than adjacent land.

*=Dominants

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-18"	C	2.5 y 3/2-3/3	—	—	Sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☒ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:
1-2" of leaf litter duff on surface.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES (NO)	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	YES (NO)	

Remarks
Data was collected at this point due to the presence of Salix hookeriana.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site Samoa TMP	Date 2/4/04
Applicant / Owner SPG	County Hum
Investigator S. Morrissette	State CA
Do Normal Circumstances exist on the site? unknown YES NO	Community ID PSS1Er
Is the site significantly disturbed (Atypical Situation)? (YES) NO	Transect ID NONE
Is the area a potential Problem Area? (If needed, explain on reverse) YES (NO)	Plot ID 14

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
.60	1 Salix hookeriana	Tree	FACW	9		
.10	2 Lupinus eragrostis	Herb	FAC+	10		
.20	3 Agrostis stolonifera	Herb	FACW	11		
.10	4 Briza maxima	↓	NL	12		
.05	5 Juncus effusus		OBL	13		
.05	6 Rubus discolor	↓	FAC+	14		
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) >50%

Remarks
Small willow patch North of Myrica stand adj. to WNBroad.

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water		(in)
Depth to Free Water in Pit		(in)
Depth to Saturated Soil	11	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☐ Inundated
- ☑ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10"	Fill	2.5Y 3/1 & 3/2	—	—	Sandy Silt loam
10"→	Fill				Compact gravel fill

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☑ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:
10" of hydric fill over compacted gravel fill
Positive for alpha, alpha'-Dipyridyl test

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	(YES) NO	
Hydric Soils Present? hydric fill	(YES) NO	

Remarks
"man-induced" Coastal Act Wetland.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	2/4/04
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrisseite	State	CA
Do Normal Circumstances exist on the site? unknown	YES NO	Community ID	PEM1Er
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	none
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	15

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
.50	1 Carex obnupta	herb	OBL	9		
.15	2 Juncus effusus	herb	OBL	10		
.20	3 Baccharis pilularis	Shrub		11		
.30	4 Lonicera involucrata	"		12		
<.10	5 Murica californica	"		13		
<.10	6 Rubus discolor	herb		14		
<.05	7 Cirsium vulgare	herb		15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-)

Remarks

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water		(in)
Depth to Free Water in Pit		(in)
Depth to Saturated Soil	0 – 10"	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☐ Inundated
- ☑ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10"	Hydric Fill	2.5Y 3/1-3/2	10YR 4/6	Few / Distinct	sandy silt Loam
10" →					compacted gravel

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:
Top 10" of hydric fill material over compacted gravel.
Reacts w/ alpha, alpha dipyridel

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	(YES) NO	
Hydric Soils Present? Fill ←	YES (NO)	

Remarks
Man-induced wetland, Atypical situation.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	1/22/04
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	upland
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	none
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	16

VEGETATION

%	Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
.30	1 Juncus breweri	Herb	(FACW*)	9		
.15	2 Aira praecox	Herb	(NL)	10		
<.10	3 Hypochaeris radicata	Herb	FACU*	11		
<.05	4 Rumex acetosella	Herb	FAC-	12		
<.05	5 Lotus micranthus	Herb	NL	13		
.15	6 Lupinus arboreus	Shrub	(NL)	14		
	7			15		
	8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 33 %

Remarks

50:20 rule, dominant species circled

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	—	(in)
Depth to Free Water in Pit	—	(in)
Depth to Saturated Soil	—	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none

- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4"	Oi	Wood fiber (pulp & small chips)			-
4"-20"	C	2.5 Y 3/2	none	none	SAND

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES (NO)	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	YES (NO)	

Remarks

represents an area of developed dune that has been filled w/ wood chips. It is within a slight depression (deflation plane) & supports Dune Rush, but hydrology is not adequate & hydrophytic species are not predominant.

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	3/23/04
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	PSS1E
Is the site significantly disturbed (Atypical Situation)?	YES (NO)	Transect ID	17
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	A

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Pinus contorta var. contorta	T	NI	9 These trees are associated		
2 Picea sitchensis	T	FAC	10 with the bank (edge species)		
3 Salix hookeriana	S	FACW	11		
4 Myrica californica	S	FAC+	12		
5 Carex obrupta	H	OBL	13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) >80%

Remarks Woody hollow within beach-pine forest

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	5"	(in)
Depth to Free Water in Pit		(in)
Depth to Saturated Soil		(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☑ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-20"	C	2.5Y2.5/1	—	—	Sandy loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☑ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☑ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	(YES) NO	
Hydric Soils Present?	(YES) NO	

Remarks

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	3/23/04
Applicant / Owner	SPG	County	Hum
Investigator	S. Morrissette	State	CA
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	upland
Is the site significantly disturbed (Atypical Situation)?	YES (NO)	Transect ID	17
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	B

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Pinus contorta var. contorta	Tree	NI	9 Hierochloe occidentalis	Herb	NL
2 Picea sitchensis	Tree	FAC	10		
3 Vaccinium ovatum	Shrub	NL	11		
4 Garrya elliptia	shrub	NL	12		
5 Myrica californica	Shrub	FAC+	13		
6 Solidago spathulata	Herb	FACU	14		
7 Hieracium albiflorum	Herb	NL	15		
8 Fragaria chiloensis	Herb	NL	16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 22%

Remarks

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	/	(in)
Depth to Free Water in Pit	/	(in)
Depth to Saturated Soil	/	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators: none
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required): none
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):				Drainage Class:	
Taxonomy (Subgroup)			Field Observations Confirm Mapped Type? YES NO		

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1.5"	Oi				
1.5"-4"	A	2.5Y 2.5/1	Ø	Ø	Sandy loam
4"-15"	C	2.5Y 5/3	Ø	Ø	Sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES (NO)	Is this Sampling Point Within a Wetland? YES (NO)
Wetland Hydrology Present?	YES (NO)	
Hydric Soils Present?	YES (NO)	

Remarks Relatively steep transition from lower elevation hollow + upland bank (17B) of beach pine / sitka spruce habitat.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site Samoa TMP	Date 1/22/04
Applicant / Owner SPG	County Humboldt
Investigator S. Morrissette	State CA
Do Normal Circumstances exist on the site? (YES) NO	Community ID PSS1Fx
Is the site significantly disturbed (Atypical Situation)? (YES) NO	Transect ID None
Is the area a potential Problem Area? (If needed, explain on reverse) YES (NO)	Plot ID 18

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Salix hookeriana	Shrub	FACW	9 other less dom.		
2 Rubus discolor	Herb	FAC+	10 Polygonum		
3 Myrica californica	Shrub	FAC+	11 On banks:		
4 Juncus effusus	Herb	OBL	12 Equisetum		
5 Scirpus microcarpus	Herb	OBL	13 Rubus		
6 Azolla filiculoides	Herb	OBL	14 Polystichum		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 100%

Remarks

Edge of PSS1E + PEM1E of drainage ditch

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS	
Depth of Surface Water	8" (in)
Depth to Free Water in Pit	(in)
Depth to Saturated Soil	(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☑ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
12"	A	10YR 3/2	—	—	silt loam or Sandy silt loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☑ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Ditch is bounded by Asphalt on downslope.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	(YES) NO	
Hydric Soils Present?	(YES) NO	

Remarks

Excarated drainage ditch represents a 3-parameter USACE Jurisdict. Wetland (Atypical Situation = man-induced).

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	1/22/04
Applicant / Owner	SPG	County	Hum.
Investigator	S. Morrissette	State	CA.
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	PSS1Fh
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	None
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	19

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
(1) Salix lasiolepis	Tree	FACW	9		
2 Myrica californica	shrub	FAC+	10 – on bank		
3 Cortaderia jubata	Herb	NL	11 – on bank		
(4) Typha latifolia	Herb	OBL	12		
5			13		
6 Cyperus eragrostis – bank / edge			14		
7 Rubus discolor – bank / edge			15		
8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 100%

Remarks Dominants in channel circled

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	> 3 feet	(in)
Depth to Free Water in Pit		(in)
Depth to Saturated Soil		(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☑ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
?	?	10YR 3/2	—	—	Sandy Silt loam
		(bank)			

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☑ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

H_2O ± 3 feet deep w/ detritus on bottom. Could not reach substrate. H_2O appears polluted.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Wetland Hydrology Present?	(YES) NO	
Hydric Soils Present? unk.	YES NO	

Remarks

man-induced (Atypical Situation) impoundment.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site	Samoa TMP	Date	1/22/04
Applicant / Owner	SPG	County	Hum.
Investigator	S. Morrissette	State	CA.
Do Normal Circumstances exist on the site?	(YES) NO	Community ID	PEM1K *
Is the site significantly disturbed (Atypical Situation)?	(YES) NO	Transect ID	none
Is the area a potential Problem Area? (If needed, explain on reverse)	YES (NO)	Plot ID	20

* Waste Water Treatment Pond

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Typha latifolia	Herb	OBL	9		
2 Rubus discolor	↓	FAC+	10		
3 Epilobium ciliatum	↓	FACW	11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-)

Remarks

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ No Recorded Data Available

FIELD OBSERVATIONS		
Depth of Surface Water	>> 20	(in)
Depth to Free Water in Pit		(in)
Depth to Saturated Soil		(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☑ Inundated Artificially Flooded/ Permanent
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type? YES NO

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
Wastewater Present					
no Digging Done— presumed to be hydric					
bank soils are low chroma (1)					

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☑ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content In Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(YES) NO	
Wetland Hydrology Present?	(YES) NO	Is this Sampling Point Within a Wetland? (YES) NO
Hydric Soils Present?	(YES) NO	man-induced wetland

Remarks

Attachment B Definitions that Pertain to Special Status Species and Sensitive Natural Communities

For the purposes of this analysis and following common practice, "special-status species" are defined as those plants and animals that are legally protected under the State and Federal Endangered Species Acts (ESA) and other regulations, and species that are considered rare by the scientific community. Rare, endangered, or threatened species are protected by the Federal Endangered Species Act of 1973 (as updated in 50 CFR § 17.11 and 17.12, January 1992), the California Native Plant Protection Act of 1997, and the California Endangered Species Act of 1970 (California Administrative Code Title 14, section 670.2 and 670.51). The California Environmental Quality Act (CEQA) (January 1984) provides additional protection for listed species that meet the Rare or Endangered criteria defined in section 15380.

(a) Federal Endangered Species (FE). A species listed as Endangered under the Federal ESA is on the brink of extinction as determined through a strict legal and scientific listing process. This gives the species protection under Section 9 of the Federal ESA which prohibits the "take" of any Endangered species. "Take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

(b) Federal Threatened Species (FT). A species listed as Threatened under the Federal ESA is experiencing serious threats that may eventually lead to its extinction, but the situation is not yet critical. Those species listed as Federally Threatened are not automatically protected under the Act although most of the same protection that applies to Federally listed Endangered species applies to Threatened species as authorized through Section 4(d) of the Act. Therefore unauthorized "take" (i.e. harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect) is not permitted. Exceptions to the "take" rule, often referred to as 4(d) rules, can be authorized by the United States Fish and Wildlife Service (USFWS). The Service can also authorize the issuance of "take" permits to allow the "take" of a Federally Threatened species as part of an otherwise lawful activity.

(c) Federal Candidate Species (FC). Federal Candidate species are those species for which enough data has been collected to support a proposal to list the species as either Threatened or Endangered under the Federal ESA. Federal Candidate species are not protected under the ESA and are not considered herein.

(d) Federal Species of Concern (FSC). Federal Species of Concern are species for which the data are insufficient at this time to support a federal listing proposal. Additional field research and data collection are necessary in order to classify these species as either candidates for listing or remove them from consideration. Federal species of concern are not protected under the Federal Endangered Species Act.

(e) State Endangered Species (SE). A species listed as Endangered under the California Endangered Species Act (CESA), administered by the California Department of Fish and Game (CDFG), is "in serious danger of becoming extinct throughout all, or a significant portion of its range" and is limited to species or subspecies native to California (§2062). "Take" ("to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") is prohibited under CESA except as otherwise provided in State law.

(f) State Threatened Species (ST). A species listed as Threatened under the CESA (§ 2067) is "a native species or subspecies that although not presently threatened with extinction , is likely to become an Endangered species in the foreseeable future" in the absence of the special protection and management efforts required in the CESA chapter of the Fish and Game Code Section 2050-2068. Any animal determined to be "rare" by the Fish and Game Commission on or before January 1, 1985 is a Threatened species.

(g) State Fully Protected Animals (CFP). Fully Protected Animals are protected under California Fish and Game Codes 3511 (birds). Those Fully Protected species known to occur, or with the potential for occurrence at the plan area include Brown Pelican (*Pelecanus occidentalis californicus*), White-tailed Kite (*Elanus leucurus*), Bald Eagle (*Haliaeetus leucocephalus*), and American Peregrine Falcon (*Falco peregrinus*).

(h) State Species of Special Concern (CSC). California Species of Special Concern are species listed by the CDFG as those California breeding populations that are seriously declining with the possibility of extirpation from all or a portion of their range. This designation affords no legally mandated protection. However, pursuant to the CEQA Guidelines, some species of special concern would be considered Rare. Any unmitigated impacts to rare species would be considered under the CEQA Guidelines to be a "significant effect on the environment". Thus, Species of Special Concern must be considered in any project that will or is currently undergoing CEQA review and/or must obtain an environmental permit(s) from a public agency.

(i) California Native Plant Society List Species. The California Native Plant Society (CNPS) maintains an inventory that includes five lists for categorizing plant species of concern. List 1 species have the highest priority: List 1A species are thought to be extinct and List 1B species are known to still exist. List 2 species are rare in California, but more common elsewhere. Lists 3 and 4 contain species about which there is some concern; these are "review" and "watch" lists, respectively. The plants on the CNPS list 1B and 2 are considered rare, endangered, and threatened plants pursuant to Section 15380 of the California Environmental Quality Act (CEQA). The plants on these lists meet the definitions under the Native Plant Protection Act and/or the California Endangered Species Act of the California Department of Fish and Game Code and are eligible for state listing. CDFG requests the inclusion of List 1 and List 2 species in environmental documents. In addition, other state and local agencies may request the inclusion of species on other lists as well.

Species listed by the CNPS are further characterized by a rarity, endangerment, and distribution code (R-E-D code), which was developed to refine listing designations. The rarity component addresses the extent of the plant, in terms of both numbers of individuals and the nature and extent of distribution; endangerment refers to the plant's vulnerability to extinction; and distribution focuses on the overall range of the plants. The R-E-D system is summarized below.

R (Rarity)

1. Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time.
2. Distributed in a limited number of occurrences, occasionally more if each occurrence is small.
3. Distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported.

E (Endangerment)

1. Not endangered.
2. Endangered in a portion of its range.
3. Endangered throughout its range.

D (Distribution)

1. More or less widespread outside of California
2. Rare outside of California
3. Endemic to California

(j) California Natural Diversity Data Base. CDFG maintains records for the distribution and known occurrences of special status species and natural communities in the California Natural Diversity Database (CNDDB). It is organized into map areas based on 7.5 minute topographic quadrangles produced by the U.S. Geological Survey. The database gives detailed information on each occurrence, including specific location of the individual, population, or habitat (if possible) and the presumed current state of the population or habitat. Sensitive species and natural communities are also ranked in the database by their rarity and threat status, as defined below:

Global ranks

G1: Fewer than 6 viable occurrences worldwide and/or 2000 acres

G2: 6-20 viable occurrences worldwide and/or 2000-10,000 acres

G3: 21-100 viable occurrences worldwide and/or 10,000-50,000 acres

G4: Greater than 100 viable occurrences worldwide and/or greater than 50,000 acres

G5: Community demonstrably secure due to worldwide abundance

State ranks

S1: Fewer than viable occurrences statewide and/or less than 2000 acres

S2: 6-20 viable occurrences statewide and/or 2000-10,000 acres

S3: 21-100 viable occurrences statewide and/or 10,000-50,000 acres

S4: Greater than 100 viable occurrences statewide and/or greater than 50,000 acres

S5: Community demonstrably secure statewide

Threat ranks

0.1: Very threatened

0.2: Threatened

0.3: No current threats known

Attachment C Special Status Species Addressed for the Samoa Town Master Plan Biological Study

Plant Species	Status *	Habitat Characteristics (CNDDB 2004)[5]	Potential for Occurrence at Plan Area
Abronia umbellata ssp. *breviflora* pink sand verbena	FSC List 1B RED 2-3-2 G5T2/S2.1	Coastal dunes and coastal strand from north coast of California into Oregon. Foredunes and interior dunes with sparse cover; 0-12m.	**Present.** Pink sand verbena occurs in foredune habitats in the plan area and adjacent properties west of New Navy Base Road.
Anomobryum filiforme slender silver-moss	List 2 RED 3-2-1 G4/S1.3	Broad-leaved upland forest, lower montane coniferous forest, North Coast coniferous forest / damp rock and soil on outcrops, usually on road cuts; 100-1000 m.	**Moderate Potential.** No surveys were performed in 2003/2004 for this moss; however, potentially suitable habitat includes the beach pine/Sitka spruce forest habitat at the north end of the plan area.
Astragalus pycnostachyus var. *pycnostachyus* coastal marsh milk-vetch	FSC List 1B RED 3-2-3 G3?T2/S2.2	Mesic sites in dunes or along streams or coastal salt marsh; 0-3m.	**Not Present.** An historical CNDDB record indicates that coastal marsh milk-vetch once occurred in the vicinity of the CDI area. Dune hollow wetlands in the plan area may provide suitable habitat, however this species was not found during the 2003/2004 botanical surveys.
Carex arcta northern clustered sedge	List 2 RED 2-2-1 G5/S1S2	Bogs and fens, North Coast coniferous forest (mesic); 60-1,400m.	**Not Present.** Northern clustered sedge was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit.
Carex leptalea flaccid sedge	List 2 RED 3-2-1 G5/S2?	Bogs and fens, meadows (mesic), marshes and swamps; 0-790m.	**Not Present.** Flaccid sedge was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit.
Carex lyngbyei Lyngbye's sedge	List 2 RED 2-2-1 G5/S2.2	Marshes and swamps (brackish or freshwater); 0-10m	**Not Present.** Historical records from the North Spit exist in the CNDDB for this species, in estuarine habitats bordering the CDI area. Lyngbye's sedge was not found in the plan area during the 2003/2004 botanical surveys, nor would it be expected to occur there due to lack of suitable habitat.
Carex praticola meadow sedge	List 2 RED 2-2-1 G5/S2S3	Moist to wet meadows; 0-3200m.	**Not Present.** Meadow sedge was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit.

[5] California Department of Fish and Game Natural Diversity Data Base. 2004.

Plant Species	Status *	Habitat Characteristics (CNDDB 2004)[5]	Potential for Occurrence at Plan Area
Carex viridula var. *viridula* green sedge	List 2 RED 3-1-1 G5T?/S1.3	Marshes and swamps (freshwater) and North Coast coniferous forests (mesic).	**Not Present.** Green sedge was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit.
Castilleja affinis ssp. *litoralis* Oregon coast Indian paintbrush	List 2 RED 2-2-1 G4G5T4/S2.2	Coastal bluff scrub, coastal dunes, coastal scrub/ sandy; 15-100m.	**Not Present.** Suitable habitat within the plan area includes undeveloped dunes; however, this species is not known to occur on the North Spit, and it was not detected in the plan area during the 2003/2004 botanical surveys.
Castilleja ambigua ssp. *humboldtiensis* Humboldt Bay owl's-clover	FSC List 1B RED 2-2-3 G4T2/S2.2	Found in coastal salt marsh habitat, in association with *Spartina, Distichlis, Salicornia, Jaumea*. 0-3m. Known only from Humboldt and Marin Counties.	**Not Present.** This species is restricted to tidal salt marshes in Humboldt Bay. CNDDB occurrences for the North Spit are located in tidally-influenced estuarine habitats that are not present in the plan area.
Castilleja mendocinensis Mendocino coast paintbrush	FSC List 1B RED 2-2-2 G2/S2.2	Coastal bluff scrub, closed-cone coniferous forests, coastal dunes, coastal prairie, coastal scrub. Often on sea bluffs or cliffs in coastal bluff scrub or prairie; 0-160m.	**Not Present.** Mendocino coast paintbrush was not detected in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit, and known habitat characteristics are not present in the plan area.
Cordylanthus maritimus ssp. *palustris* Point Reyes bird's-beak	FSC List 1B RED 2-2-2 G4?T2/S2.2	Found in coastal salt marsh habitat, in association with *Spartina, Distichlis, Salicornia, Jaumea*, etc.; 0-15m.	**Not Present.** This species is restricted to tidal salt marshes in Humboldt Bay. CNDDB occurrences for the North Spit are located in tidally-influenced estuarine habitats that are not present in the plan area.
Empetrum nigrum ssp. *hermaphroditum* black crowberry	List 2 RED 2-2-2 G5T5/S2?	Coastal bluff scrub, coastal prairie; 10-200m.	**Not Present.** Black crowberry was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit.
Erysimum menziesii ssp. *eurekense* Humboldt Bay wallflower	FE, SE List 1B RED 3-3-3 G2T1/S1.1	Endemic to coastal dunes (foredunes) around Humboldt Bay; 0-10m.	**High Potential.** Humboldt Bay wallflower is known to occur in coastal dunes west of New Navy Base Road. Several individuals were documented in remnant dune mat habitat in the plan area east of New Navy Base Road in 2000, in the vicinity of the buried water pipelines. This occurrence was not relocated in March 2004, and these individuals are thought to be extirpated.
Fissidins pauperculus minute pocket-moss	List 1B RED 2-2-3 G3?/S1.2	North coast coniferous forests (damp coastal soil); 10-100m.	**Moderate Potential.** No surveys were performed in 2003/2004 for this moss; however, potentially suitable habitat includes the beach pine/Sitka spruce forest habitat at the north end of the plan area.

Plant Species	Status *	Habitat Characteristics (CNDDB 2004)[5]	Potential for Occurrence at Plan Area
Erythronium revolutum coast fawn lily	List 2 RED 2-2-1 G4/S2.2	Bogs and fens, Broadleafed upland forest, North Coast coniferous forest / mesic, streambanks; 0-1065m.	**Not Present.** Suitable habitat is not present at the plan area for this species, and it was not found during the 2003/2004 botanical survey.
Gilia capitata ssp. *pacifica* Pacific gilia	List 1B RED 2-2-2 G5T?	Coastal bluff scrub, coastal prairie, valley and foothill grasslands; 5-300m.	**Not Present.** Pacific gilia was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit.
Gilia millefoliata dark-eyed gilia	List 1B RED 2-2-2 G2/S2.2	Coastal dunes; 2-20m.	**Present.** Dark-eyed gilia occurs in plan area in dune habitats adjacent to New Navy Base.
Glehnia littoralis ssp. *leiocarpa* American glehnia	List 4 RED 1-2-1 G5T5/S3.2	Coastal dunes; 0-20m.	**Present.** American glehnia is known to occur in coastal dunes on the North Spit. It was found growing in the plan area near the Samoa Booster Station in June 2003.
Hesperevax sparsiflora var. *brevifolia* Short-leaved evax	List 2 RED 2-2-1 G4T3/S3.2	Coastal bluff scrub, coastal dunes, sandy bluffs and flats; 0-200m.	**Not Present.** Short-leaved evax is not known to occur on the North Spit, although suitable habitat is present. This species was not found in the plan area during the 2003/2004 botanical surveys.
Lathyrus japonicus sand pea	List 2 RED 3-3-1 G5/S1.1	Coastal dunes, 1-30m.	**Not Present**. Historical occurrences of sand pea are known from the North Spit, and suitable habitat includes undeveloped dunes; however, this species was not detected in the plan area during the 2003/2004 botanical surveys.
Lathyrus palustris marsh pea	List 2 RED 2-2-1 G5/S2S3	Bogs and fens, mesic sites in lower montane coniferous forest, marshes and swamps, North Coast coniferous forest, coastal prairie, and coastal scrub; 1-100m.	**Not Present.** There is a record of marsh pea near the town of Samoa in the CNDDB; however, this species was not detected in the plan area during the 2003/2004 botanical surveys.
Layia carnosa beach layia	FE, SE List 1B RED 3-3-3 G1/S1.1	On sparsely vegetated, semi-stabilized dunes, usually behind foredunes; 0-75m.	**Present**. Beach layia is locally common in coastal dunes on the North Spit. In May of 2003 and April of 2004, it was documented growing in the plan area in foredunes near the Samoa Booster Station, and in two locations in remnant dune mat west of New Navy Base Road in the vicinity of the pipeline right-of-way.
Lilium occidentale western lily	FE, SE List 1B RED 3-3-2 G1/S1.2	Coastal scrub, freshwater marsh, bogs and fens, coastal bluff scrub, coastal prairie, North Coast coniferous forest. On well-drained, old beach washes overlain with wind-blown alluvium and original topsoil; usually near margins of Sitka spruce; 2-185m.	**Not Present.** Western lily was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit, although potentially suitable habitat includes forested dunes at the north end of the plan area.

Plant Species	Status *	Habitat Characteristics (CNDDB 2004)[5]	Potential for Occurrence at Plan Area
Lycopodiella inundata bog club-moss	List 2 RED 3-2-1 G4?/S1?	In California, known only from Humboldt County. Bogs and fens (coastal), lower montane coniferous forest (mesic), marshes and swamps (lake margins); 0-1000m.	**Not Present.** Bog club moss was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit, although suitable habitat may be present.
Lycopodium clavatum Running-pine	List 2 RED 2-1-1 G5?/S2S3	In California, known only from Humboldt County. North Coast coniferous forest, marshes and swamps; forest floors in shady and semi-exposed mesic areas, 45-1640m.	**Not Present.** Running pine was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit, although potentially suitable habitat may be present.
Mitella caulescens leafy-stemmed mitrewort	List 2 RED 2-1-1 G5/S2.3	Broadleaved upland forests, lower montane coniferous forests, meadows and seeps, North Coast coniferous forests/mesic; 6-1710m.	**Not Present.** Leafy-stemmed mitrewort was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit, although suitable habitat may be present.
Monotropa uniflora Indian pipe	List 2 RED 2-2-1 G5/S2S3	Broadleaved upland forest, North Coast coniferous forest; often under redwoods or western hemlock; 10-200m.	**Not Present.** Suitable habitat for Indian pipe is not considered present in the plan area, and it was not detected on the property during the 2003/2004 botanical surveys.
Montia howellii Howell's montia	List 2 RED 3-2-1 G3/S1.2	Meadows, North Coast coniferous forests, vernal pools. Vernally mesic sites; often on compacted soil. 0-400m. Rediscovered in California in 1999.	**Not Present.** Howell's montia was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit, and known habitat characteristics are not present.
Oenotheria wolfii Wolf's evening primrose	List 1B RED 3-3-2 G1/S1.1	Coastal bluff scrub, coastal dunes, coastal prairie, lower montane coniferous forests, sandy/usually mesic; 3-800m.	**Not Present.** Although suitable habitat for Wolf's evening primrose is present, surveys conducted in 2003/2004 indicate that this species does not presently occur in the plan area.
Puccinellia pumila dwarf alkali grass	List 2 RED 3-2-1 G4?/S1.1?	In California, known only from Humboldt and Mendocino counties. Mineral spring meadows and coastal salt marshes; 1-10m.	**Not Present.** Coastal salt marsh habitats do not occur in the plan area, and there are no known CNDDB occurrence records for dwarf alkali grass in adjacent salt marsh habitats
Romanzoffia tracyi Tracy's romanzoffia	List 2 RED 3-1-1 G4/S1.3	Coastal bluff scrub, coastal scrub /rocky sites; 15-30m.	**Not Present.** No occurrence records exist for Tracy's romanzoffia on the North Spit, but potentially suitable habitat includes undeveloped dunes (coastal scrub habitats). This species was not found in the plan area during the 2003/2004 botanical surveys.
Sidalcea malachroides maple-leaved checkerbloom	FSC List 1B RED 2-2-2 G3/S3.2	Broadleaved upland forest, coastal prairie, coastal scrub, and North Coast coniferous forest. Woodlands and clearings near coast; often in disturbed areas; 2-760m.	**Not Present.** Maple-leaved checkerbloom was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit, and potentially suitable habitat is limited.
Sidalcea malviflora ssp. *patula* Siskiyou checkerbloom	List 1B RED 3-2-2 G5T1/S1.1	Coastal prairie, broad-leaved upland forest. Open coastal forest; 15-65m.	**Not Present.** Siskiyou checkerbloom was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit, and potentially suitable habitat is limited.

Plant Species	Status *	Habitat Characteristics (CNDDB 2004)[5]	Potential for Occurrence at Plan Area
Sidalcea oregana ssp. *eximia* coast checkerbloom	List 1B RED 3-2-3 G5T1/S1.2	Endemic to Humboldt County. Meadows and seeps, North Coast coniferous forest, and lower montane coniferous forest; 0-1800m.	**Not Present.** Coast checkerbloom was not found in the plan area during the 2003/2004 botanical surveys. No occurrence records exist for the North Spit, and potentially suitable habitat is limited.
Spergularia canadensis var. *occidentalis* western sand spurry	List 2 RED 3-3-1 G5T4?/S1.1	Coastal salt marsh; 0-3 m.	**Not Present.** Suitable habitat for western sand spurrey is not present in the plan area.
Trichodon cylindricus cylindrical trichodon (moss)	List 2 RED 2-2-1 G4G5/S2.2	Broad-leafed upland forest, Upper montane coniferous forest / sandy, exposed soil, roadbanks; 50-1500m.	**Not Present.** There are no occurrence records for this species on the North Spit, and known habitat characteristics area not present in the plan area.
Usnea longissima long-beard lichen	CLS Red List w/List 1B recommended G3/S2.1	North coast coniferous forest and broadleaved upland forest. Grows in the "redwood zone" on a variety of trees, including big leaf maple, oaks, ash, Douglas-fir, and bay; 0-2000 ft. in California.	**Not Present.** Long-beard lichen is not presently known to occur on the North Spit. Known habitat characteristics are lacking, and this species was not detected in the plan area during the 2003/2004 botanical surveys.
Viola palustris marsh violet	List 2 RED 3-2-1 G5/S1S2	Swampy, shrubby places in coastal scrub or coastal bogs; 0-15m.	**Not Present.** Although suitable habitat for marsh violet is present and historical occurrences exist for the North Spit, surveys conducted in 2003/2004 indicate that this species does not presently occur in the plan area.

Fish Species	Status*	Habitat Characteristics	Potential for Occurrence at Plan Area
Oncorhynchus clarki clarki coast cutthroat trout	CSC G4T4/S3	Small, low gradient coastal streams and estuaries from the Eel River in California to the Oregon border.	**Not Present.** Suitable habitat does not occur at the Plan Area.
Oncorhynchus kisutch coho salmon southern Oregon / northern California esu	FT, ST	In California, major populations are located in the Klamath, Trinity, Mad, and Noyo Rivers and are widely distributed in coastal streams.	**Not Present.** Suitable habitat does not occur at the Plan Area.
Eucuclogobius newberryi tidewater goby	FE, CSC G3/S2S3	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County, to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches.	**Not Present.** Suitable habitat does not occur at the Plan Area.

Amphibian Species	Status*	Habitat Characteristics	Potential for Occurrence at Plan Area
Rhyacotriton variegates Southern torrent salamander	FSC, CSC G3/S2S3	Old, well-shaded, permanent streams and seepages, or within splash zone or on moss-covered rock within trickling water. Coastal redwood, Douglas-fir, mixed conifer, montane hardwood-conifer habitats.	**Not Present.** Suitable habitat does not occur at the Plan Area.
Ascaphus truei Western tailed frog	FSC, CSC G4/S2S3	Restricted to perennial montane streams. Montane hardwood-conifer, redwood, Douglas-fir, ponderosa pine habitats. Tadpoles require water below 15°C.	**Not Present.** Suitable habitat does not occur at the Plan Area.
Rana aurora aurora Northern red-legged frog	CSC G4T4/S2	Found in humid forests, woodland, grasslands, and streamsides in nw California, generally near permanent water. They can be found far from water, in damp woods and meadows during non-breeding season.	**High Potential.** Seasonal & permanent fresh emergent and scrub-shrub wetlands as well as dune hollow wetlands throughout the plan area offer excellent habitat for Northern red-legged frog.

Reptile Species	Status*	Habitat Characteristics	Potential for Occurrence at Plan Area
Clemmys marmorata Northwestern pond turtle	CSC G3G4T3/S3	Ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. They need basking sites and suitable upland habitat (sandy banks or grassy open fields) for egg-laying.	**Not Present.** Pond turtles are rare on the coast and suitable habitat is not present at the plan area.

Bird Species	Status*	Habitat Characteristics	Potential for Occurrence at Plan Area
Oceanodroma furcata Fork-tailed Storm-petrel (rookery site)[6]	CSC G5/S1	Colonial nester on small, offshore islets. Forage over the open ocean, usually well off-shore.	**Not Present.** Petrels are seabirds, occurring too far offshore to be of concern for the Samoa Town Master Plan. Habitat does not occur at the plan area.

[6] Note: Parenthetical references below species names indicate an annual phase or associated habitat of each species that applies to the associated protective status; other phases or habitats do not apply.

Bird Species	Status*	Habitat Characteristics	Potential for Occurrence at Plan Area
Pelecanus occidentalis californicus Brown Pelican (nesting colonies and communal roosts)	FE, SE, CFP G4T3/S1S2	Colonial nester on coastal islands just outside the surf line. Nest on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators.	**High Potential.** Brown pelicans use the near-shore Pacific Ocean west of the plan area and may occasionally use the beach and coastal promontories for day-roost sites. The birds also use the Humboldt Bay east of the Samoa Peninsula extensively for foraging, loafing, and roosting habitat. No nesting sites are known north of Monterey Bay.
Phalacrocorax auritus Double-crested Cormorant (rookery sites)	CSC G5/S3	Double-crested Cormorant is a colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state.	**High Potential.** Present locally year-round, Double-crested Cormorants breed on pilings in Humboldt Bay near the Old Arcata Wharf, approx. 5 miles northeast of the plan area, forage in Humboldt Bay and also in the ocean adjacent to the plan area, and roost on pilings along the bay shore.
Ardea herodias Great Blue Heron (rookery site)	None G5/S4	Great Blue Herons occur widely in lakes, ponds, rivers and marshes (Fix and Bezner 2000).	**Present.** A common local resident and breeder, They occur in Humboldt Bay where a major breeding site is located on Indian Island within the bay east of the Plan Area (Harris 1996).
Ardea alba Great Egret (rookery)	None G5/S4	Occur in coastal lowland pastures, sloughs and marshlands as well as along coastal rivers inland (Harris 1996).	**Present.** A common local resident and breeder. They occur in Humboldt Bay where a major breeding site is located on Indian Island within the bay east of the Plan Area (Harris 1996).
Egretta thula Snowy Egret (rookery)	None G5/S4	Open mudflats and tidal sloughs, exposed rocky or sandy ocean coast (locally), salt- and freshwater marshes, wet meadows, lakeshores, and (to a limited extent) upland pasture provide foraging areas.	**Present.** A common resident and uncommon breeder locally, Snowy Egrets forage in Humboldt Bay near the Plan Area and have been known to breed on Indian Island, within the bay (Harris 1996).
Nycitcorax nycticorax Black-crowned Night-Heron (rookery)	None G5/S3	Black-crowned Night Herons forage nocturnally in freshwater and salt marshes, pond edges, mudflats, crop lands and along slow-moving streams. This species roosts and nests in dense stands of trees and brush.	**Present.** Black-crowned Night Herons are a common local resident and breeder in coastal lowlands (Harris 1996). They were observed roosting in willow habitat in the Dog Ranch area during a site visit conducted by the consulting biologists on 20 June, 2003.
Pandion haliaetus Osprey (nesting)	CSC	Ospreys forage over bodies of water and roost and nest on exposed treetops, towers, pilings, or similar structures near lakes, reservoirs, rivers, estuaries, and the open sea coast (Fix and Bezener 2000). A common summer resident and breeder, some individuals will also over-winter near major feeding areas (Harris 1996).	**Present.** An active Osprey nest was observed in 2004 on a power pole adjacent to Humboldt Bay approximately 200 meters east of the CDI area. An Osprey nest is also known approximately 3 miles north of Samoa in the town of Manila. In addition, Ospreys are known to feed in the ocean adjacent to the Plan Area and in Humboldt Bay.

Bird Species	Status*	Habitat Characteristics	Potential for Occurrence at Plan Area
Elanus leucurus White-tailed kite (nesting)	CFP G5/S3	White-tailed Kites are locally common residents and breeders in northern California, especially in agricultural and riparian areas of the coastal plain (Harris 1996)	**Low Potential.** Although no foraging or nesting habitat is present in the Samoa Town site, birds may occasionally fly over from nearby lowland agricultural areas north of the town site where they are common.
Haliaeetus leucocephalus Bald Eagle (nesting & wintering)	FT, SE CFP G4/S2	Bald Eagle nesting habitat is generally located in uneven-aged, multi-storied stands with old-growth components (Anthony et al., 1982). They typically occur within two miles of water bodies that support adequate food supply (Lehman 1979, USDI 1986). Habitat for migratory birds is generally along the coast following the salmon runs (Buehler 2000).	**Low Potential.** Bald Eagle nesting habitat does not occur within the plan area although during winter occasional Bald Eagles forage along the margins of Humboldt Bay near the plan area.
Circus cyaneus Northern Harrier (nesting)	CSC G5/S3	Harriers are found primarily in open grassland habitats, primarily lowland pastures and marshlands of the coastal plain (Harris 1996).	**Present.** Northern Harriers commonly winter and migrate through and uncommonly breed and summer in coastal marshes and grasslands near Humboldt Bay east of the Samoa Peninsula (Harris 1996).
Accipiter striatus Sharp-shinned Hawk (nesting)	CSC G5/S3	Sharp-shinned Hawks occupy dense to semi-open coniferous, deciduous or mixed forests; occasionally along riparian edges (Fix and Bezener 2000). Birds in migration and in winter will use woody hollows and coniferous forest.	**Low Potential.** While nesting Sharp-shinned Hawks are uncommon in the Humboldt Bay region, a small strand of coniferous forest within the Samoa Town site could potentially provide habitat for wintering or migrant birds.
Accipiter cooperi Cooper's Hawk (nesting)	CSC G5/S3	Locally, nesting may occur in suitable localities such as; Lanphere dunes, Mad River County Park (Harris 1996), and isolated woodlands near Manila. The coniferous forests from Lanphere dunes to Samoa.	**Present.** Migrating and wintering birds use woodland habitats in and around the Samoa town site and breeding has been reported just a mile west on Woodley Island in the Humboldt Bay (Harris 1996).
Falco columbarius Merlin (wintering)	CSC G5/S3	Merlins are found in a wide variety of habitats where they prey primarily on shorebirds and songbirds (Fix and Bezener 2000).	**Present.** In northwestern California Merlins are uncommon migrants and winter visitors. They appear each fall in the open lowlands along the coast such as those present in the plan area (Harris 1996).
Falco peregrinus Peregrine Falcon (nesting)	FSC CSC, SFP G4T3/S2	Although not strictly tied to aquatic habitats, Peregrine Falcons rely upon populations of flocking birds such as shorebirds and ducks during colder months and thus favor shorelines and shallows for foraging habitat (Fix and Bezener 2000 and Harris 1996). Preferred nesting sites include inaccessible cliffs on rocky outcrops and in river gorges.	**Present.** Suitable coastal lowland habitats supporting shorebirds and other waterbirds upon which Peregrine Falcons feed are present within the plan area. Peregrines also forage in Humboldt Bay east of the plan area. Nesting has been suspected, but not confirmed at the Samoa Bridge.

Bird Species	Status*	Habitat Characteristics	Potential for Occurrence at Plan Area
Rallus longirostris levipes California Clapper Rail	FE, SE, SFP G5T1/S1	This species is a perennial inhabitant of tidal salt marshes of the greater San Francisco Bay system.	**Not Present.** Although this species formerly occurred at Humboldt Bay (known from 1 old specimen), and other California sites, it is not expected to occur in northwestern California at present (Harris 1996).
Charadrius alexandrinus nivosus Western Snowy Plover (nesting/coastal population)	FT, CSC G4T3/S2	In Northern California, snowy plovers breed and winter along ocean beaches and gravel bars of the Eel River (Colwell et al. 2002). Nesting occurs above the high tide line in sandy substrate, and occasionally on driftwood (LeValley 1999).	**Low Potential.** Beach habitat along the North spit of Humboldt Bay within and adjacent to the plan area does not appear to support snowy plovers. European beach grass (Ammophila arenaria) encroachment on the north spit has resulted in a narrow waveslope leaving little to no suitable habitat for the subspecies. Four years (2000-2003) of breeding season surveys of the north spit, conducted at least once monthly, have yielded negative results for snowy plover presence near the Plan Area.
Numenius americanus Long-billed Curlew (nesting)	FSC, CSC G5/S2	Although Long-billed Curlews are most common on tidal mud flats or flooded pastures, they also forage in the wet sand of the wave slope in coastal beach habitats.	**Moderate Potential.** Long-billed Curlew are present in Humboldt Bay near the plan area during winter and migration periods and could potentially use the coastal habitat adjacent to the Plan Area while foraging.
Sterna elegans Elegant Tern (nesting colony)	FSC, CSC	Elegant terns are a strictly coastal species inhabiting beaches and estuaries and nest colonially on southern California and Baja California islands.	**High Potential.** Elegant Terns are fall visitors to northwestern California and frequent the bayshore along the north spit of Humboldt Bay near the plan area. Nesting is highly unlikely.
Cerorhinca monocerata Rhinoceros Auklet (nesting colony)	CSC G5/S3	Rhinoceros Auklets nest on offshore rocks and islands and, locally, on mainland cliffs.	**Not Present.** Habitat does not occur at the Plan Area.
Fratercula cirrhata Tufted Puffin (nesting colony)	CSC G5/S2	Tufted Puffins usually nest in burrows at the edges of cliffs or on the grassy slopes of islands.	**Not Present** Habitat does not occur at the Plan Area.
Asio flammeus Short-eared Owl (nesting)	CSC G5/S3	Short-eared Owls occupy open habitats such as overgrown grasslands and scrub, prairies, meadows, dunes, irrigated lands, ungrazed pastures, and both fresh and saltwater marshes.	**Low Potential.** Short-eared Owls are migrant and winter visitors and accidental breeders in northwestern California. Little, if any, suitable habitat for these owls is present within the plan area. However, they are known to occur in the Mad River Wildlife Area approximately 10 miles north of the plan area and at Centerville approximately 18 miles south of the plan area (Harris 1996), and were observed recently at South Spit (S. McAllister, pers. obs.).

Bird Species	Status*	Habitat Characteristics	Potential for Occurrence at Plan Area
Chaetura vauxi Vaux's Swift (nesting)	FSC, CSC G5/S3	Vaux's Swifts breed in coastal coniferous forests, with a significant minority now using chimneys in towns and cities. They forage in forest openings, burned-over forest, meadows, rivers, lakes, and suburbia.	**High Potential.** Coniferous forest within the plan area serves as potential habitat for Vaux's Swifts.
Empidonax traillii brewsteri Little Willow Flycatcher (nesting)	FSC G5T1T2/ S1S2	Little Willow Flycatchers inhabit riparian areas and typically breed in large wet meadows supporting substantial willow stands. During migration, this subspecies utilizes riparian areas and edge habitats near clear cuts.	**Low Potential.** Migrant Little Willow Flycatchers may be found in dune hollow and limited willow habitats in the plan area. However there are not substantial enough willow hollows or riparian woodlands in the plan area to be considered suitable breeding habitat for Little Willow Flycatchers.
Progne subis Purple Martin (nesting)	CSC G5/S3	The Purple Martin breeds in riparian woodlands, oak woodland, partially logged, broken or burned coniferous forests and montane mixed forests, nesting in cavities (usually old woodpecker holes) of tall trees, often near water (Fix and Bezener 2000). Foraging occurs over bottomlands, bays, coastal lagoons, ponds, and wetlands.	**High Potential.** Suitable habitat for Purple Martins is present in and around the plan area.
Riparia riparia Bank Swallow (nesting)	FSC ST G5/S2S3	Bank Swallows breed in areas with vertical embankments high enough for them to avoid nest predation and substrates friable enough to permit excavation of nest cavities. Foraging habitat generally consists of open areas where Bank Swallows can take prey (insects, etc.) on the wing.	**Low Potential.** No breeding habitat for Bank Swallows is present in or near the plan area although rare migrants could potentially use the area for foraging.
Parus atricapillus Black-capped Chickadee	CSC G5/S3	Mixed hard and softwood forests, natural and suburban woodlands, scattered trees, shrubs, and thickets, old fields, clearcuts, forest edges, and dense undergrowth replacement, as well as suburban areas such as parks and gardens provide habitat for Black-capped Chickadee.	**Present.** Occurs in coniferous forest, thickets, and suburban areas throughout the plan area.
Dendroica petechia brewsteri California Yellow Warbler (nesting)	CSC G5T3?/S2	Breeding habitat for Yellow Warblers consists primarily of alder-cottonwood-willow stands that offer riparian cover. During migration they occupy habitats along the coastal strip (Harris 1996).	**Present.** Occurs within the plan area in the willow dominated dune hollows and related habitats during migration but is not known to breed there.

Mammal Species	Status*	Habitat Characteristics	Potential for Occurrence at Plan Area
Corynorhinus townsendii townsendii Townsend's Western Big-eared Bat	FSC, CSC G4T3T4/ S2S3	Townsend's western big-eared bats primarily occupy rural areas in a variety of habitat types. Day roosts for the species are found within caves, abandoned mines, and buildings. Night roosts may occur in more open settings, including under bridges (Philpott 1997). This species is highly susceptible to human disturbance.	**Low Potential.** Although there are several roosting sites for Townsend's big-eared bats known in Humboldt County, all of which have been in man-made structures, none are known in or near the Samoa town site. However, the distribution of the species in Humboldt County is poorly known due to lack of survey effort. Potential habitat is present on site in the form of abandoned buildings and other structures.
Antrozous pallidus Pallid Bat	CSC G5/S3	Pallid bats occupy a variety of low elevation habitats including grasslands, shrub lands, woodlands, and coniferous forests (Philpott 1997). They are most common in open, dry habitats that contain rocky areas for roosting. These bats also occur in man-made habitats such as abandoned structures, mines, and other shelters.	**Low Potential.** Although not know to occur in the plan area, Pallid bat habitat exists on site in the form of abandoned and other such structures suitable for roosting habitat.
Arborimus albipes White-footed Vole	CSC G3G4/S2S3	This species is found along small steams, especially in areas with alder (Whitaker 1998).	**Not Present.** Habitat does not occur at the Plan Area.
Arborimus pomo Red Tree Vole	FSC, CSC G3/S3	Red tree voles primarily inhabit Douglas fir forests but may occupy redwood or Sitka spruce forests and areas with salal shrubs (Whitaker 1998).	**Low-Moderate Potential.** Although red tree voles are known from coastal sites, the extent of forested habitat at the plan area is probably not suitable habitat for this species.

Note: This list was compiled from a search of the Eureka, Arcata North, Tyee City, Arcata South, Trinidad, Crannell, Fields Landing, Fortuna, Cannibal Island, and Ferndale 7.5 minute USGS quadrangles of the California Department of Fish and Game Natural Diversity Data Base (CNDDB 2004) and California Native Plant Society on-line inventory (CNPS 2004), and field surveys and habitat assessments conducted by EIR consulting biologists Ron LeValley and Stephanie Morrissette.

Key to status codes:

CFP: CDFG Fully Protected Animal
CLS: California Lichen Society "Red List"
CSC: CDFG Species of Special Concern
FSC: Federal Species of Concern
SE: State Endangered
ST: State Threatened
FE: Federal Endangered
FT: Federal Threatened

List 1B: CNPS 1B List, Endangered, Threatened or Rare in California
List 2: CNPS 2 List, Rare in California, But More Common Elsewhere
List 4: CNPS 4 List, Plants of Limited Distribution, A Watch List
RED: CNPS Rarity, Endangerment and Distribution Code
G/S: CNDD Global/State Rank for Rarity and Threat Significance
None: No status is given, but rookery sites are monitored by CDFG

Attachment D California Native Species Field Survey Forms

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work *mm/dd/yyyy:* 06/10/2003

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Layia carnosa*

Common Name: beach layia

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals _____ Subsequent Visit? ☑ yes ☐ no
Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Stephanie Morrissette
Address: Mad River Biologists
920 Samoa Blvd. Suite 210, Arcata, CA 95521
E-mail Address: stephanie@madriverbio.com
Phone: (707) 826-0300

Plant Information

Phenology: _____ % vegetative 10 % flowering 90 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Humboldt Landowner / Mgr.: Samoa Pacific Group
Quad Name: _____ Elevation: <10 feet
T 5N R 1E Sec 16 , SE ¼ of NW ¼, Meridian: H☑ M☐ S☐ Source of Coordinates (GPS, topo. map & type): Topo, USGS
T 5N R 1E Sec 16 , NW ¼ of SW ¼, Meridian: H☑ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☐ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Coastal Dunes. Dune mat and open sandy areas associated with trails. Common associates include Poa douglasii, Camissonia cheiranthifolia, Abronia latifolia, Bromus diandrus, Lotus strigosus, Ambrosia camissonis, Calystegia soldanella, Lathyrus littoralis, Aira praecox, Armeria maritima, Briza maxima, Solidago spathulata, Rumex acetosella.

Other rare taxa seen at THIS site on THIS date: Gilia millefoliata and Glehnia littoralis ssp. leiocarpa.

Site Information Overall site quality: ☐ Excellent ☐ Good ☑ Fair ☐ Poor

Current / surrounding land use: Recreation and water district maintenance activities. Site is mostly fair to poor with some "good" dune mat areas interspersed.

Visible disturbances: Foot traffic/trampling. Occurrences east of New Navy Base Road occur in the vicinity of buried water pipeline.

Threats: Encroachment of non-native species such as Carpobrotus edulis, Lupinus arboreus, Ammophila arenaria and exotic annual grasses.

Comments: No census conducted. The distribution of this species was mapped on properties affected by the Samoa Town Master Plan.

Determination: *(check one or more, and fill in blanks)*
- ☑ Keyed (cite reference): The Jepson Manual (Hickman 1993)
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☐ By another person (name): _____
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☑
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☑ yes ☐ no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work *mm/dd/yyyy:* 06/10/2003

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California Native Species Field Survey Form

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Scientific Name: *Gilia millefoliata*

Common Name: dark-eyed gilia

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals _____ Subsequent Visit? ☑ yes ☐ no
Is this an existing NDDB occurrence? _____ ☐ no ☑ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Stephanie Morrissette
Address: Mad River Biologists
920 Samoa Blvd. Suite 210, Arcata, CA 95521
E-mail Address: stephanie@madriverbio.com
Phone: (707) 826-0300

Plant Information

Phenology: _____ % vegetative 10 % flowering 90 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Humboldt Landowner / Mgr.: Samoa Pacific Group
Quad Name: _____ Elevation: <10 feet
T 5N R 1E Sec 16 , SE ¼ of NW ¼, Meridian: H☑ M☐ S☐ Source of Coordinates (GPS, topo. map & type): Topo, USGS
T 5N R 1E Sec 16 , NW ¼ of SW ¼, Meridian: H☑ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☐ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Coastal Dunes. Dune mat and disturbed areas dominated by annual grasses with a sandy substrate. Associated species include Layia carnosa, Lotus strigosus, Lathyrus littoralis, Abronia latifolia, Aira praecox, Bromus diandrus, Rumex acetosella, Briza maxima, Polygonun paronychia, and Poa douglasii.

Other rare taxa seen at THIS site on THIS date: Layia carnosa primarily, but Glehnia littoralis ssp. leiocarpa also nearby.

Site Information Overall site quality: ☐ Excellent ☐ Good ☑ Fair ☐ Poor

Current / surrounding land use: Recreation and water district maintenance activities.

Visible disturbances: Foot traffic/trampling. Occurrences east of New Navy Base Road occur in the vicinity of buried water pipeline.

Threats: Encroachment of non-native species such as Carpobrotus edulis, Lupinus arboreus, Ammophila arenaria and exotic annual grasses.

Comments: No census conducted. The distribution of this species was mapped on properties affected by the Samoa Town Master Plan.

Determination: *(check one or more, and fill in blanks)*
☑ Keyed (cite reference): The Jepson Manual (Hickman 1993)
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☑
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☑ yes ☐ no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work *mm/dd/yyyy:* 06/10/2003

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California Native Species Field Survey Form

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Scientific Name: *Glehnia littoralis ssp. leiocarpa*

Common Name: American glehnia

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 9 Subsequent Visit? ☑ yes ☐ no ☐ unk.
Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Stephanie Morrissette
Address: Mad River Biologists
920 Samoa Blvd. Suite 210, Arcata, CA 95521
E-mail Address: stephanie@madriverbio.com
Phone: (707) 826-0300

Plant Information

Phenology: _____ % vegetative _____ % flowering 100 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Humboldt Landowner / Mgr.: Samoa Pacific Group
Quad Name: _____ Elevation: <10 feet
T 5N R 1E Sec 16 , SE ¼ of NW ¼, Meridian: H☑ M☐ S☐ Source of Coordinates (GPS, topo. map & type): Topo, USGS
T____ R __ Sec ____ , ____ ¼ of _____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☐ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Coastal Dunes. Sandy substrate in dune mat. Associated species include Abronia latifolia (primarily), Cakile maritima and Ammophila arenaria.

Other rare taxa seen at THIS site on THIS date: Gilia millefoliata and Layia carnosa in general vicinity.

Site Information Overall site quality: ☐ Excellent ☐ Good ☑ Fair ☐ Poor

Current / surrounding land use: Recreation and water district maintenance activities.

Visible disturbances: Foot traffic/trampling.

Threats: Encroachment of Ammophila arenaria.

Comments: Survey performed in conjunction with Samoa Town Master Plan biological study.

Determination: *(check one or more, and fill in blanks)*
- ☑ Keyed (cite reference): The Jepson Manual (Hickman 1993)
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☐ By another person (name): _____
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☑
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☑ yes ☐ no

EXHIBIT NO. 8

APPLICATION NO.

HUM-MAJ-1-08 – HUMBOLDT COUNTY LCP AMENDMENT (SAMOA TOWN PLAN)

"BOTANICAL SURVEY FOR SAMOA TOWN MASTER PLAN COASTAL ACCESS AND VISITOR USE AREA" PREPARED BY MAD RIVER BIOLOGISTS, DATED 8/26/09. PREPARED FOR SAMOA PACIFIC GROUP AND PLANWEST PARNERS (COLOR VERSION SCANNED ON COMMISSION'S WEBSITE) (1 of 14)

RECEIVED
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CALIFORNIA
COASTAL COMMISSION

Botanical Survey
For
Samoa Town Master Plan
Coastal Access and Visitor Use Area

August 26, 2009

Prepared For:
Samoa Pacific Group
And
Planwest Partners
P.O. Box 4581
Arcata, CA 95518
(707) 825-8260

Prepared By:
Mad River Biologists
417 Second Street, Suite 201
Eureka, California 95501
Stephanie Morrissette
(707) 442-4302

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Figure 6 2009 Locations of Sensitive Plants and Habitats in the Proposed STMP Coastal Access and Visitor Use Area

Table 1 Survey Schedule

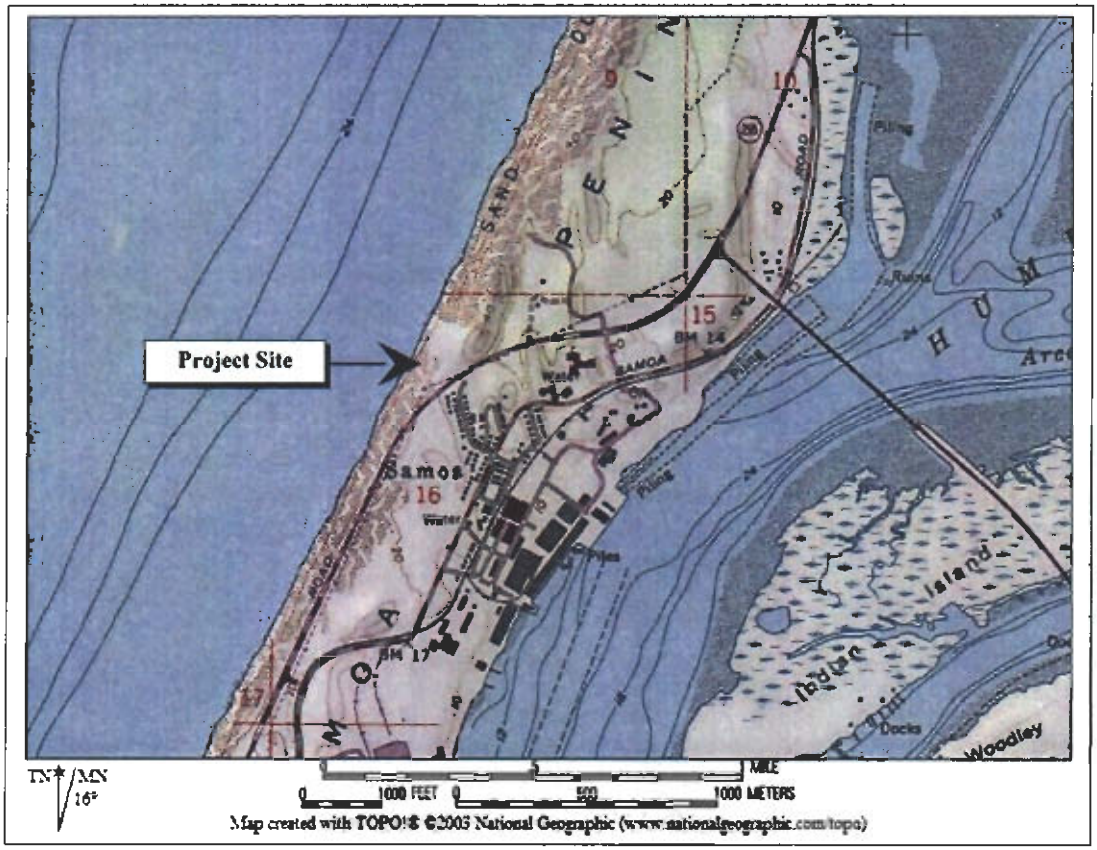
Appendix A Native Species Field Survey Forms

I. Introduction and Background

Mad River Biologists (MRB) conducted a botanical survey in 2009 at the location of a proposed 1.5-acre Visitor Serving Use Area for the Samoa Town Master Plan (STMP). The project site is located on the North Spit of Humboldt Bay, on the west side of Highway 255 and the town of Samoa, within the fenced confines of a disused water treatment facility (Figure 1).

The botanical survey was completed to fulfill the requirements of Mitigation Measure 4.4.2h, found in section 4.4 of the Final MEIR, for the purpose of assessing potential impacts to known rare plant populations and environmentally sensitive habitats from the proposed project.

Figure 1 STMP Visitor Serving Use Area – Project Location



Four sensitive plant species are known to occur within the dune environs of the North Spit: Humboldt Bay wallflower (*Erysimum menziesii* ssp. *eurekense*), beach layia (*Layia carnosa*), dark-eyed gilia (*Gilia millefoliata*), and pink sand verbena (*Abronia umbellata* ssp. *breviflora*), as shown on historic distribution maps from the Beach and Dunes Management Plan (Figures 2 and 3) and the California Natural Diversity Data Base (CNDDB) (Figure 4). The proposed visitor use area supports suitable habitat for all four species, and beach layia and dark-eyed gilia were identified on the site in 2003/2004 (MRB 2004). The 2009 survey updates existing biological resource information provided by MRB in 2003/2004 for the STMP.

Figure 2 Beach Layia Reconnaissance Mapping (Humboldt Beach & Dunes Management Plan)

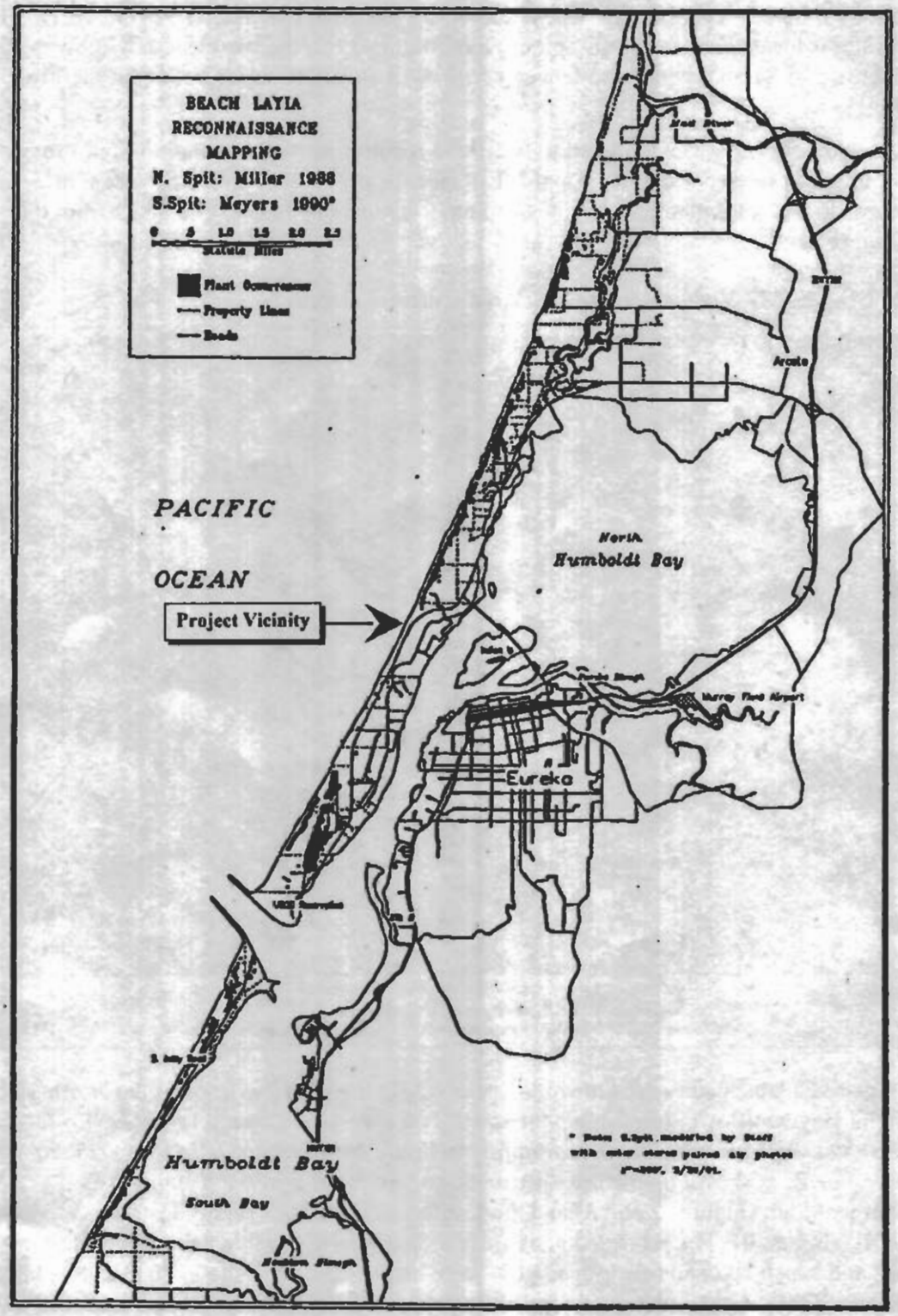


Figure 3 Distribution of Humboldt Bay Wallflower (Humboldt Beach & Dunes Management Plan)

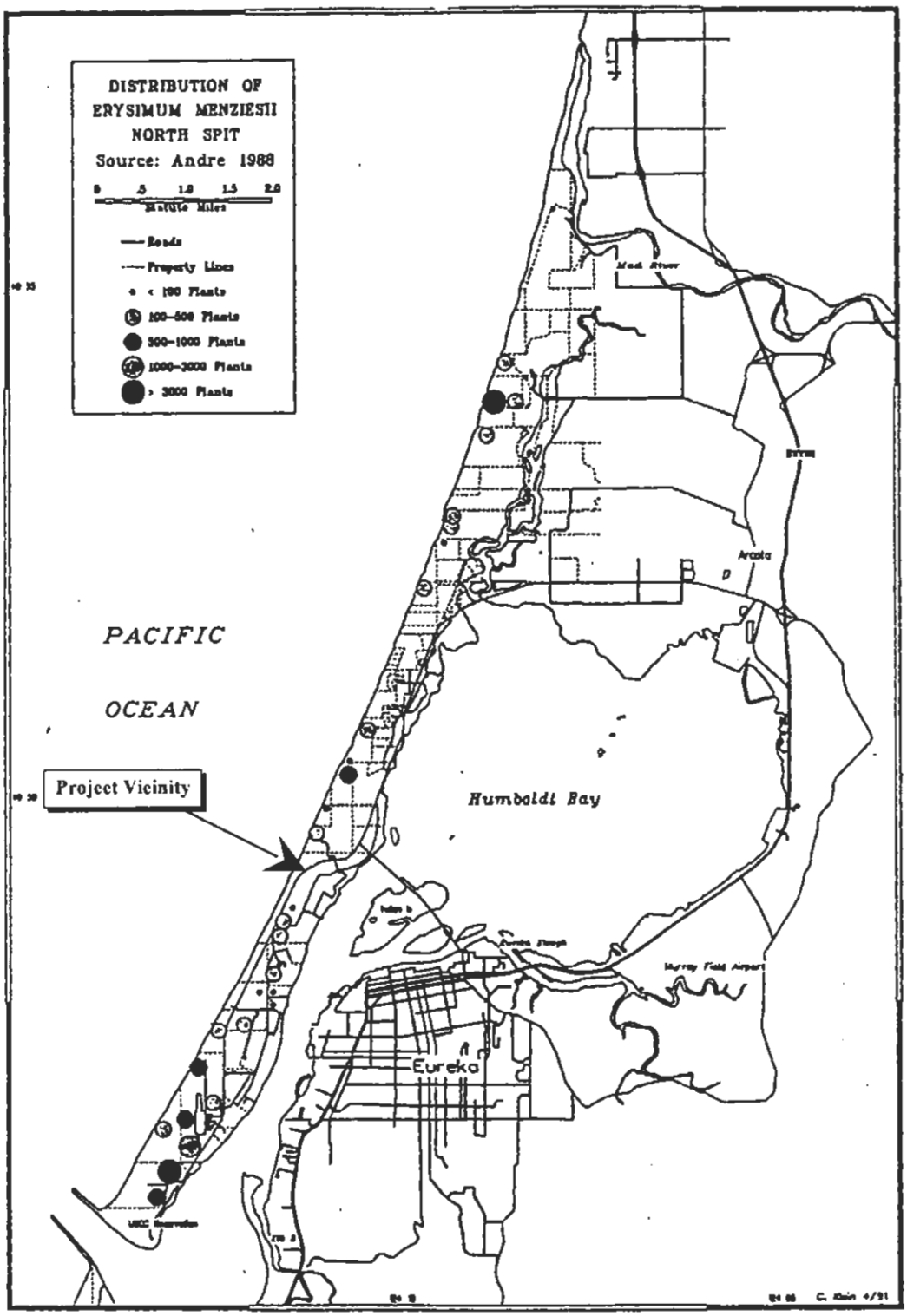
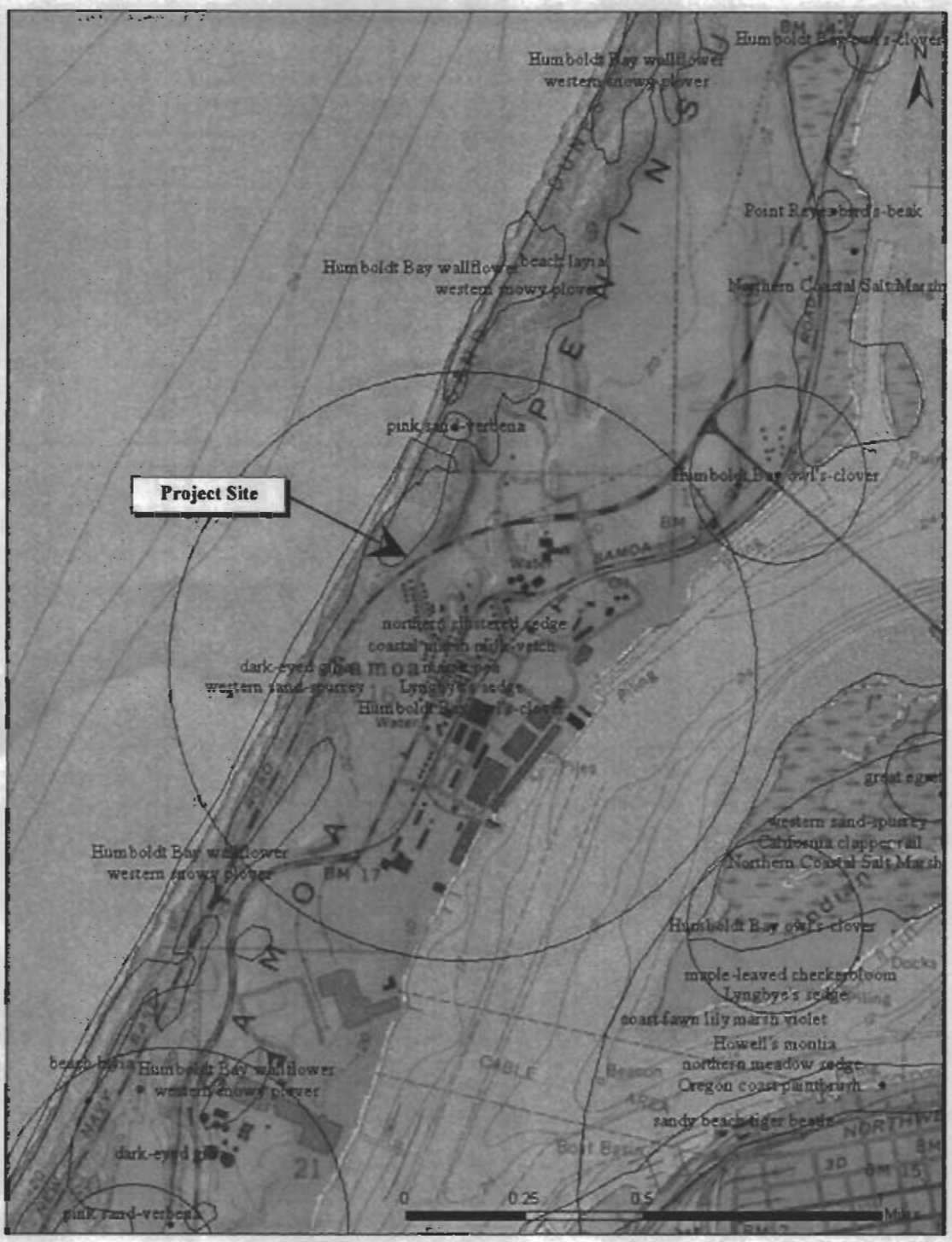


Figure 4 CNDDB Special-status Species Occurrence Records for the North Spit of Humboldt Bay (CNDDB August 2009)



II Survey Methods

An eleven-acre survey area was established to include the proposed 1.5-acre Visitor Use Area and surrounding dune habitats immediately adjacent to the site and an existing pedestrian route to the beach. The area was surveyed four times during 2009 to capture peak blooming periods for the target rare plant species, according to the schedule in Table 1 below.

Table 1 Survey Schedule

Species Surveyed	Blooming Period	Survey Dates (2009)
Humboldt Bay Wallflower (*Erysimum menziesii* ssp. *eurekense*)	March - April	March 29 April 19
Beach Layia (*Layia carnosa*)	March- July	March 29 April 19 June 11
Dark-eyed Gilia *Gilia millefoliata*	April - July	April 19 June 11 July 7
Pink Sand Verbena *Abronia umbellata* ssp. *breviflora*	June - October	June 11 July 7

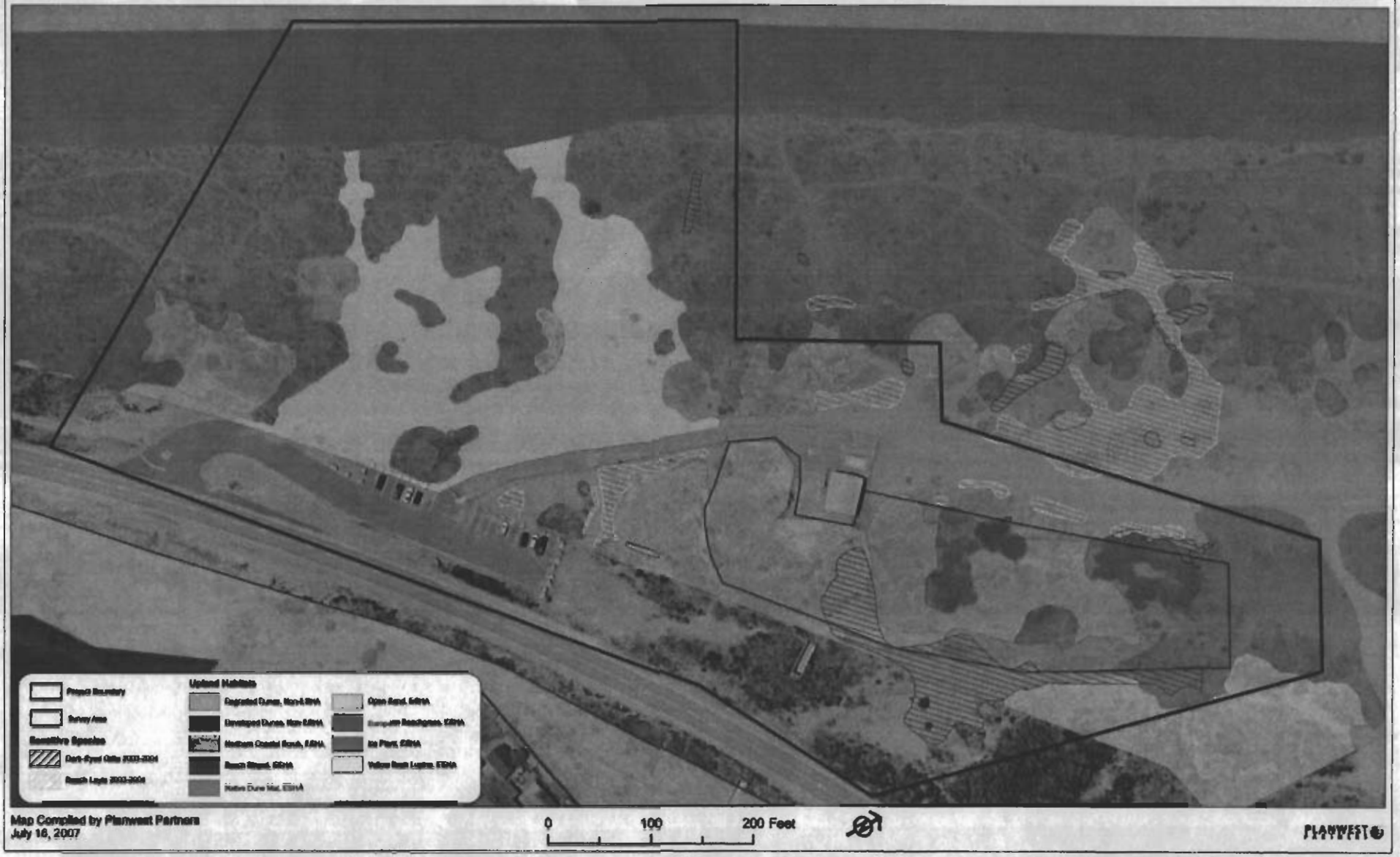
Each survey took approximately two hours and involved a slow walk through the study area to search for rare plants and map habitats. Habitats were mapped in the field using ortho-rectified aerial photographs of the plan site, provided by Planwest Partners. Field maps were digitized using a "heads up" digitizing procedure in ArcView for presentation purposes. Habitat designations are consistent with those described in the MEIR. Habitats were mapped at a scale finer than they were in 2003/2004 to document discrete patches of native dune mat within the proposed visitor use area that may provide optimal habitat for the rare dune plants.

All plants encountered were identified to the highest taxonomic level necessary for making a rare plant determination. No new species were identified; therefore the compiled species list provided in the MEIR represents the most up to date list for the project site.

Native Species Field Survey Forms were completed for each rare plant occurrence found within the project area, which are included in Appendix A.

Figure 5 shows the mapped habitats and rare plant locations from the 2003/2004 STMP botanical survey conducted by MRB. Figure 6 shows the updated rare plant locations and habitats from the 2009 survey conducted by MRB.

Figure 5: 2003/2004 Locations of Sensitive Plant Species and Habitats in the vicinity of the Proposed STMP Coastal Access and Visitor Use Area



III Results

Beach layia and dark-eyed gilia both occur within the study area as shown in Figure 6. They were found in many of the same locations as they were in 2003/2004 but occupying smaller representative areas within the native dune mat community, on degraded dunes, and in areas of open sand. American Glehnia (*Glehnia littoralis*) was not relocated and none of the other target rare plant species were found.

Dark eyed-gilia is the only rare plant that was found within the proposed 1.5-acre visitor use area. Two hundred ten (210) individuals were counted within two small patches of degraded dunes along the fence on the east side of the facility. Common associates include *Aira praecox, Bromus diandrus, Rumex acetosella, Briza maxima, Poa douglassii*, and *Camissonia cheiranthifolia*.

Beach layia was found growing within native dune mat, areas of open sand and degraded dunes around the perimeter of the site. Common associates include those for dark-eyed gilia, and also *Abronia latifolia, Ambrosia chamissonis* and *Calystegia soldanella* in areas of dune mat.

IV Potential Impacts and Recommended Avoidance/Minimization Measures

Beach layia and dark eyed-gilia are annual species. Their numbers and distribution can fluctuate from year to year depending on a number of factors, including climatic changes, dune movement, encroachment of and displacement by non-native species, and other anthropogenic disturbances that may reduce or increase habitat availability.

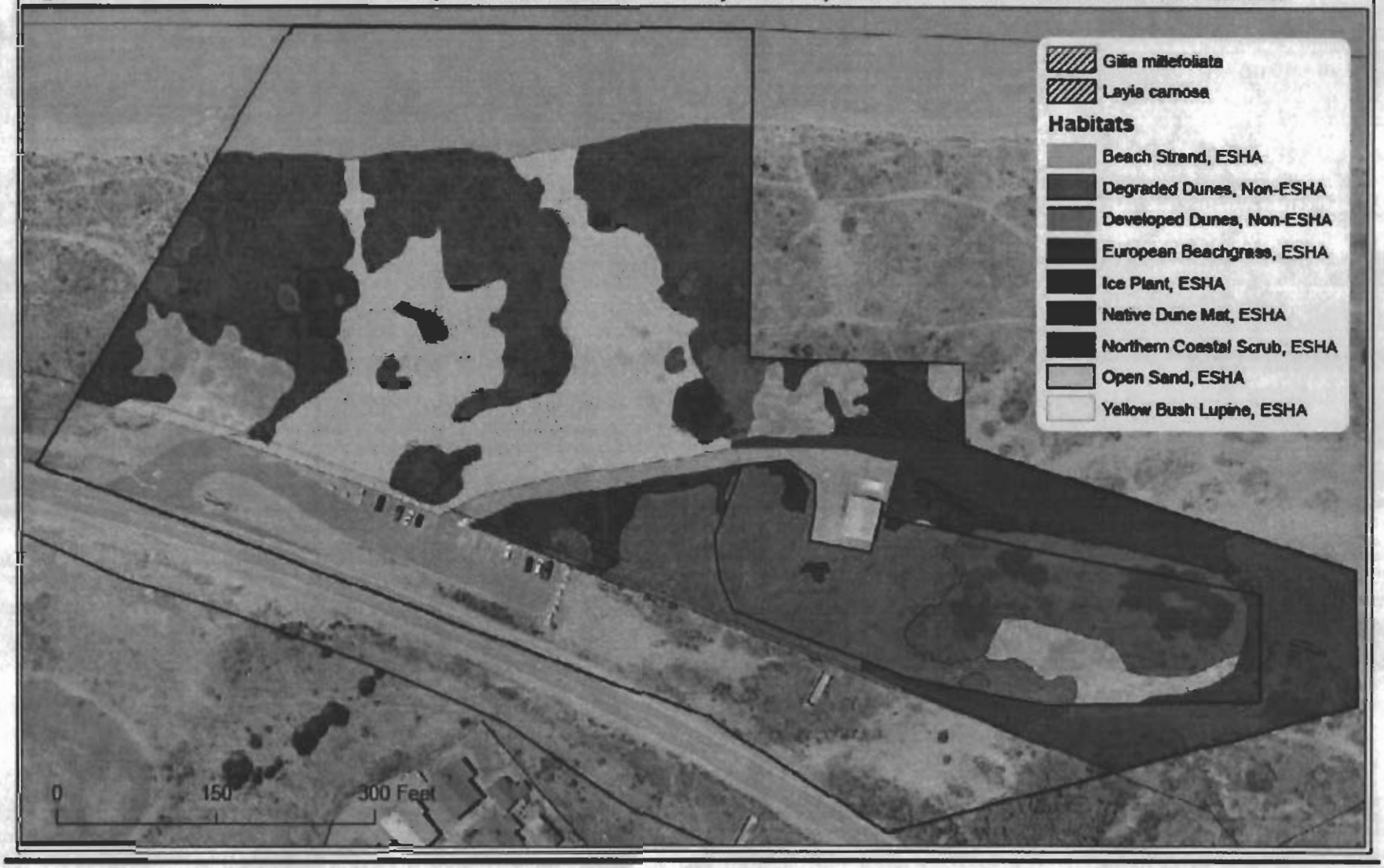
Based on the current study, 220 dark-eyed gilia would be permanently displaced from development of the proposed visitor use area. Seed in the substrate produced by these individuals may also be impacted and/or displaced.

To minimize impacts to dark-eyed gilia, construction should be conducted outside of the plant's reproductive period, i.e. after the plants set seed and wither (August) and before germination in mid-winter (January). Seed could be collected from individual plants prior to construction and broadcasted within suitable habitat nearby. Seed may also be conserved by scraping the top six inches of sand where these plants are known to occur within the proposed visitor use area and relocating it to a suitable location nearby (such as adjacent degraded dunes) where the species does not currently exist.

No beach layia occurs within the proposed visitor use area, however, occurrences around the perimeter of the site may be impacted by vehicle traffic accessing the site during construction or by an increase in recreational use of the area as a result of development. Similar to the dark-eyed gilia, impacts may be avoided or minimized by delaying construction until after the beach layia has completed its reproductive cycle and before germination (August to January). Signage and fencing may also be incorporated into the project design to limit foot traffic in the dunes and concentrate it within existing pathways.

Prior to construction, rare plant occurrences should be flagged in the field as areas to avoid. A qualified biologist should also be on site to monitor any seed collection and relocation efforts, and during construction to insure that adjacent rare plant occurrences are avoided.

Figure 6: 2009 Locations of Sensitive Plant Species and habitats in the vicinity of the Proposed STMP Coastal Access and Visitor Use Area



V References

California Native Plant Society (CNPS). 2009. *Electronic Inventory of Rare and Endangered Vascular Plants of California.* Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. CNPS. Sacramento, CA.

California Natural Diversity Data Base (CNDDB). 2009. California Department of Fish and Game, State of California Resources Agency. Sacramento, CA.

Hickman, J.C. (ed). 1993. *The Jepson Manual: Higher Plants of California.* University of California Press, Berkeley and Los Angeles California.

Hitchcock, A.S. and Agnes Chase. 1971. *Manual of the Grasses of the United States.* Dover Publications, Inc., New York.

Planwest Partners, Inc. 2007. Samoa Town Master Plan Final Master Environmental Impact Report. State Clearinghouse #2003052054. Prepared for Humboldt County Community Development Services.

Appendix A Native Species Field Survey Forms

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov

Date of Field Work (mm/dd/yyyy): 3/29/09 4/19/09

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Layia carnosa

Common Name: Beach Layia

Species Found? ☑ Yes ☐ No — If not, why? No census - mapped only

Total No. Individuals N/A Subsequent Visit? ☑ yes ☐ no

Is this an existing NDDB occurrence? Yes ☐ no ☐ unk. (Yes, Occ. #)

Collection? If yes: _____ (Number) _____ (Museum / Herbarium)

Reporter: Stephanie Morrissette
Address: Mad River Biologists
417 2nd St. Ste 201 Eureka, CA. 95501
E-mail Address: Stephanie@madriverbio.com
Phone: 707-442-4302

Plant Information

Phenology: 40 % vegetative 50 % flowering 10 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Humboldt Landowner / Mgr.: Samoa Pacific Group

Quad Name: _____ Elevation: _____

T____ R____ Sec ____, ____ ¼ of _____¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): _____

T____ R____ Sec ____, ____ ¼ of _____¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐

Coordinates:

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):* Coastal dunes. Within dune mat community, open sand, and degraded dunes dominated by annual grasses.

Associates include: Poa douglassii, Camissonia dreiranthifolia, Abronia latifolia, Bromus diandrus, Lotus strigosus, Aira praecox, Rumex acetosella, Briza maxima, Ambrosia chamissonis, Calystegia soldanella

Other rare taxa seen at THIS site on THIS date: (separate form preferred) Gilia millefoliata in vicinity

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☐ Good ☑ Fair ☐ Poor

Immediate AND surrounding land use: Recreation & water district activities (pipeline & "booster station")

Visible disturbances: Invasive species, foot traffic / trampling

Threats:

Comments: Census not conducted. Occurrences adjacent to STMP visitor use area mapped to show proximity to project site.

Determination: *(check one or more, and fill in blanks)*

☒ Keyed (cite reference): Jepson Manual (Hickman 1993)
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)* Slide Print Digital

Plant / animal ☐ ☐ ☐
Habitat ☐ ☐ ☐
Diagnostic feature ☐ ☐ ☐

May we obtain duplicates at our expense? yes ☐ no ☐

DFG/BDB/1747 Rev. 11/17/88

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov

Date of Field Work (mmddlyyyy): 3/29 & 4/19/09

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Gilia millefoliata

Common Name: Dark-eyed gilia

Species Found? ☒ Yes ☐ No _____ If not, why?

Total No. Individuals 210 Subsequent Visit? ☒ yes ☐ no

Is this an existing NDDB occurrence? yes Yes, Occ. # ☐ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Stephanie Morrissette
Address: Mad River Biologists
417 2nd St. Ste 201, Eureka, CA 95501
E-mail Address: Stephanie@madriverbio.com
Phone: 707-442-4302

Plant Information

Phenology: 20 % vegetative 60 % flowering 20 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Humboldt Landowner / Mgr.: Samoa Pacific Group

Quad Name: _____ Elevation: _____

T____ R____ Sec ____, ____ ¼ of _____¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): _____

T____ R____ Sec ____, ____ ¼ of _____¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐

Coordinates:

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):* Coastal dunes, within degraded dunes dominated by annual grasses.
Associates include Aira praecox, Bromus diandrus, Rumex acetosella, Briza maxima, Poa douglassii, Camissonia cheiranthifolia.

Other rare taxa seen at THIS site on THIS date: (separate form preferred) Layia carnosa in vicinity

*210 individuals within proposed visitor use area.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☐ Good ☒ Fair ☐ Poor

Immediate AND surrounding land use: Recreation & utility (Water Pipeline & "booster station")

Visible disturbances: Invasive species encroachment (Carpobrotus edulis, Lupinus arboreous, Ammophila arenaria & annual grasses)

Threats:

Comments: Updated botanical survey to map distribution in vicinity of proposed visitor use area. Last survey completed in 2003/2004

Determination: *(check one or more, and fill in blanks)*
- ☒ Keyed (cite reference): Jepson Manual (Hickman 1993)
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☐ By another person (name): _____
- ☐ Other: _____

Photographs: *(check one or more)* Slide Print Digital
- Plant / animal ☐ ☐ ☐
- Habitat ☐ ☐ ☐
- Diagnostic feature ☐ ☐ ☐

May we obtain duplicates at our expense? yes ☐ no ☐

DFG/BDB/1747 Rev. 11/17/08

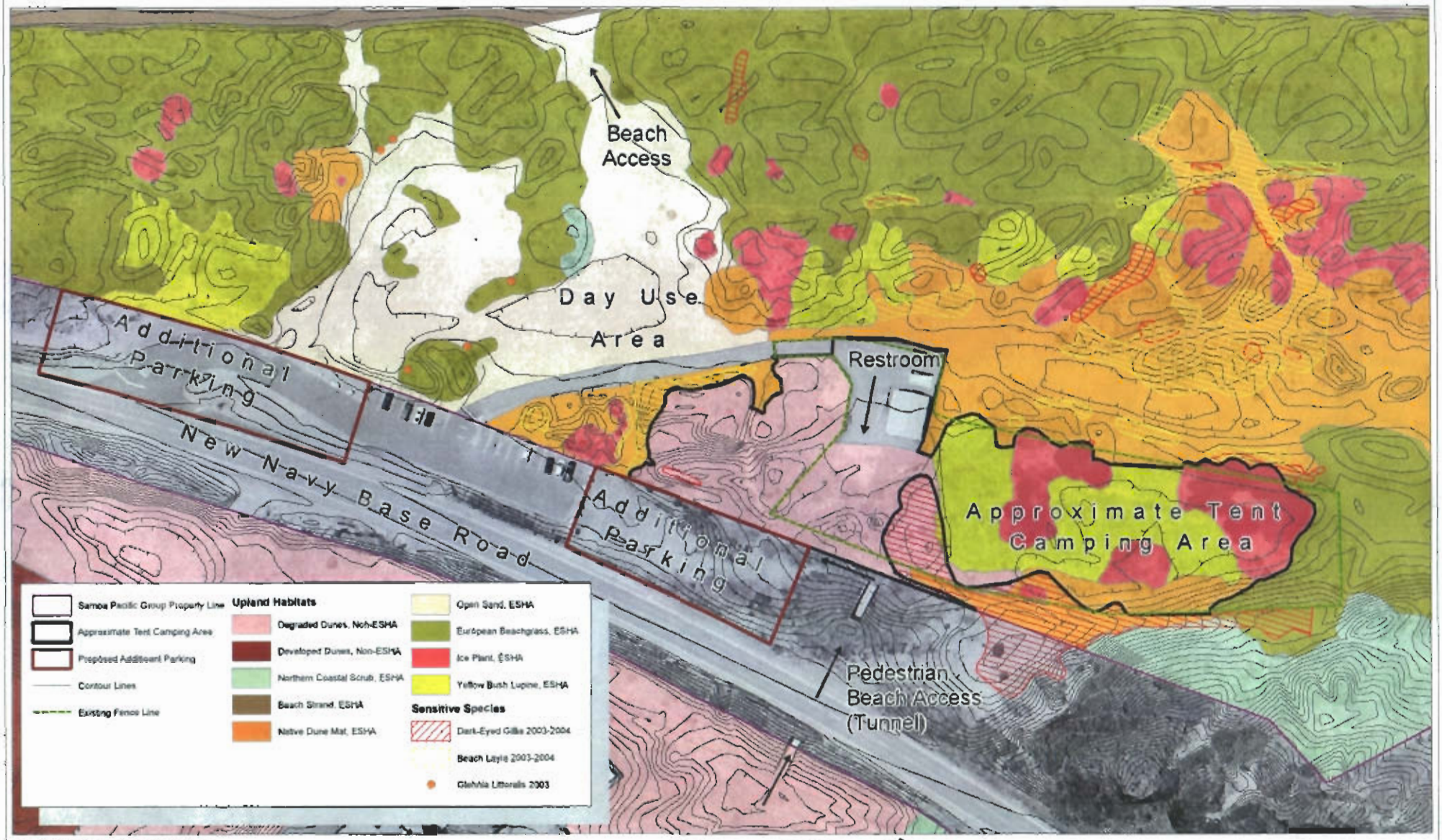
EXHIBIT NO. 9

APPLICATION NO.

HUM-MAJ-1-08 – HUMBOLDT COUNTY LCP AMENDMENT (SAMOA TOWN PLAN)

"SAMOA TOWN MASTER PLAN COASTAL ACCESS AND VISITOR USE AREA MAP" SHOWING APPROXIMATE LOCATION OF THE TENT CAMPING SITE PROPOSED IN LCP AMENDMENT HUM-MAJ-01-08 AND SENSITIVE HABITAT AREAS, 7/16/07 (COLOR VERSION SCANNED ON COMMISSION'S WEBSITE)

Samoa Town Master Plan Coastal Access and Visitor Use Area



Map Compiled by Planwest Partners
July 16, 2007

0 100 200 Feet

PLANWEST PARTNERS

EXHIBIT NO. **10**

APPLICATION NO. HUM-MAJ-1-08

HUMBOLDT COUNTY LCP AMENDMENT (SAMOA TOWN PLAN)

REGIONAL WATER QUALITY CONTROL BOARD CONCURRENCE WITH REVISED REMOVAL ACTION WORKPLAN FOR LEAD IN SOIL – SAMOA PENINSULA BROWNFIELD" DATED 8/28/09 & RECEIVED 9/1/09 BY COASTAL COMMISSION, SIGNED BY KASEY ASHLEY, P.G., SR. ENGINEERING GEOLOGIST, COPY ONLY TO COMMISSION, PERTAINING TO THE 7/24/09 "REVISED REMOVAL ACTION WORKPLAN-SAMOA PENINSULA BROWNFIELD" PREPARED BY WINZLER & KELLY FOR MR. SEAN ARMSTRONG, DANCO CONSTRUCTION (1 of 3)

JD

California Regional Water Quality Control Board
North Coast Region
Bob Anderson, Chairman

Linda S. Adams
Secretary for Environmental Protection

www.waterboards.ca.gov/northcoast
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
Phone: (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135

Arnold Schwarzenegger
Governor

August 28, 2009

RECEIVED
SEP 01 2009
CALIFORNIA
COASTAL COMMISSION

RECEIVED
AUG 31 2009
WK-EUREKA

Mr. Dan Johnson
Samoa Pacific Group LLC
5251 Ericson Way
Arcata, CA 95521

Dear Mr. Johnson:

Subject: Concurrence with Revised Removal Action Workplan for Lead in Soil - Samoa Peninsula Brownfield

File: Samoa Peninsula, Samoa, California, Case No. 1NHU890

Regional Water Board staff reviewed the July 24, 2009, *Revised Removal Action Workplan - Samoa Peninsula Brownfield* (Plan) developed by Winzler & Kelly for the cleanup and abatement of discharges connected to the application of lead based paint to structure(s) found at the Samoa Peninsula site. The Plan was reviewed for compliance with the California Water Code, State Water Board Resolution No. 92-49, Policies and Procedures for Investigation and Cleanup and Abatement under Section 13304 of the Water Code, and other appropriate laws and regulations.

Regional Water Board staff concurs in principle with the selected remedy for the removal and disposal of lead contaminated soils surrounding each structure that has previously been coasted with lead based paint. Staff concurs with the excavation limit level of 150 parts per million as protective of human health and waters of the State. Prior to our concurrence with the actual Plan, a 30 day public comment period is required.

Enclosed is a copy of the public notice for the selected remedy that will be posted on the Regional Water Board's Internet home page at:

http://www.waterboards.ca.gov/northcoast/

In addition, you are required to post this notice at the site and provide a copy to all adjacent property owners, and interested parties. Documentation confirming posting the notice at the site and delivery of this notice to the adjacent property owners and interested parties (including their names and addresses) will need to be submitted to my attention at the Regional Water Board's office in Santa Rosa, California. The 30-day public comment period will begin the date this notice is posted on our Internet home

page. Regional Water Board staff will address any significant comments received at the end of the 30-day period.

You need to submit the proof of posting to our agency no later than September 27, 2009. Section 13267 of the California Water Code contains the authority for this request. Please contact me at (707) 576-2673 if you have any questions.

Sincerely,

Kasey Ashley

Kasey Ashley P.G.
Senior Engineering Geologist

Enclosure: Public Notice for Removal Action Plan

082809_KSA_kasamoa11

cc: Andrew Whitney, Economic Development Division, County of Humboldt, 520 E St., Eureka, CA 95501
Orrin Plocher, Freshwater Environmental Services, 78 Sunny Brae, Arcata, CA 95521
Melanie Faust, California Coastal Commission, 710 E Street, Suite 200, Eureka, CA 95501
Jed Douglas, Winzler & Kelly, 633 Third Street, Eureka, CA 95501-0417

August 28, 2009

NOTICE OF PROPOSED REMOVAL ACTION

For

Samoa Peninsula – Lead Discharges Associated with Various Structures
Samoa

Case No. 1NHU890

Internet Posting Date: **August 28, 2009**
Comment Period Ends: **September 27, 2009**

Problem Description
Numerous structures in the Town of Samoa have historically been coated with lead based paints. Elevated levels of lead have been identified in soil surrounding a number of structures. Additional sampling at all structures previously coated with lead based paints will be conducted in the future. The extent of elevated lead in surface soils around structures that have been sampled extends out horizontally from the structure drip line to approximately 15 feet. The constituent of concern is lead.

Site Characterization and Remedial Activities
Site characterization activities have included several episodes of soil and groundwater sampling. The extent of soil contamination is defined for the structures sampled, additional structures will be sampled and soils removed in the future.

Proposed Remedial Action
The responsible party for the site proposes to conduct limited soil excavation using an excavation limit of 150 mg/kg for lead at areas where lead has been identified in soils. The excavated soils will be disposed at a permitted facility. Prior to sampling soils surrounding all structures, lead based paints will be removed from the structures. The removal activities will be conducted on sets of six structures at a time

Period for Public Review and Comment
The North Coast Regional Water Quality Control Board file for the Samoa Peninsula can be reviewed at the Regional Water Board office at 5550 Skylane Blvd, Santa Rosa. Appointments are recommended and can be arranged by calling (707) 576-2220. You may also contact Kasey Ashley with the Regional Water Board at (707) 576-2673 or by e-mail to kashley@waterboards.ca.gov.