AGENDA
SPECIAL MEETING OF THE BOARD OF COMMISSIONERS
HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT
REGULAR MEETING OF FEBRUARY 23, 2017 HAS BEEN CANCELLED

DATE: **February 16, 2016**

TIME: **Regular Session** **– 7:00 PM**

PLACE: **Woodley Island Marina Meeting Room**

The Meeting Room is wheelchair accessible. Accommodations and access to Harbor District meetings for people with other handicaps must be requested of the Director of Administrative Services at 443-0801 at least 24 hours in advance of the meeting.

1. **Call to Order Regular Session at 7:00 P.M. and Roll Call**

2. **Pledge of Allegiance**

3. **Public Comment**

Note: This portion of the Agenda allows the public to speak to the Board on the various issues not itemized on this Agenda. A member of the public may also request that a matter appearing on the Consent Calendar be pulled and discussed separately. Pursuant to the Brown Act, the Board may not take action on any item that does not appear on the Agenda. Each speaker is limited to speak for a period of three (3) minutes regarding each item on the Agenda. Each speaker is limited to speak for a period of three (3) minutes during the PUBLIC COMMENT portion of the Agenda regarding items of special interest to the public not appearing on the Agenda that are within the subject matter jurisdiction of the Board of Commissioners. The three (3) minute time limit may not be transferred to other speakers. The three (3) minute time limit for each speaker may be extended by the President of the Board of Commissioners or the Presiding Member of the Board of Commissioners at the regular meeting of the District. The three (3) minute time limit for each speaker may be enforced by the President of the Board of Commissioners or the Presiding Member of the Board of Commissioners at the regular meeting of the District.

4. **Consent Calendar**

5. **Communications and Reports**

   a. Executive Director Report
   b. Staff Reports
   c. District Counsel, District Planner, District Engineer and District Treasurer Reports
   d. Commissioner and Committee Reports
   e. Other

6. **Non Agenda**

7. **Unfinished Business**

8. **New Business**

   a. District 3 Commissioner Oath of Office- Stephen Kullmann
   b. Election of Officers
   c. Consideration of Resolution No. 2017-01, a resolution designating business matters, appointment and authorization for the Humboldt Bay Harbor, Recreation and Conservation District for calendar year 2017.
   d. Discussion Eelgrass Management Plan- District Planner George Williamson
   e. Discussion Dredge Sediment disposal plan- Beach disposal option- Erik Nelson, SHN

9. **Administrative and Emergency Permits**

10. **Adjournment- REGULAR MONTHLY MEETING OF FEBRUARY 23, 2017 HAS BEEN CANCELLED**
NEXT SPECIAL MEETING IS FEBRUARY 28, 2017
NEXT REGULAR MEETING IS MARCH 23, 2017

8a.

OATH OF OFFICE

I, Stephen Kullmann, do solemnly swear that I will support and defend the Constitution of the United States and the Constitution of the State of California against all enemies, foreign and domestic; that I will bear true faith and allegiance to the Constitution of the United States and the Constitution of the State of California; that I take this obligation freely, without any mental reservation or purpose of evasion; and that I will well and faithfully discharge the duties upon which I am about to enter.

Signed: _____

Dated: February 16, 2017

Address: 601 Startare Drive,
Eureka, CA 95501

_____
Signature of person administering oath

8c.

HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT

RESOLUTION NO. 2017-01

A RESOLUTION DESIGNATING BUSINESS MATTERS, APPOINTMENT AND AUTHORIZATION FOR THE HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT FOR CALENDAR YEAR 2017.

BE IT RESOLVED THAT the Board of Commissioners for the Humboldt Bay Harbor, Recreation and Conservation District hereby appoints and/or authorizes the following Business Matters for the Fiscal Year beginning January 1, 2017 and ending December 31, 2017 for all divisions of the Humboldt Bay Harbor, Recreation and Conservation District:

OFFICERS FOR THE BOARD OF COMMISSIONERS:

President -
Vice President -
Secretary -
Commissioner -
Commissioner -

ENABLING LEGISLATION:

Appendix II of the State of California Harbors and Navigation Code: Humboldt Bay Harbor, Recreation and Conservation District.

FINANCIAL:

1. Auditors – Hunter, Hunter & Hunt, LLP; 1315 Fourth Street; Eureka, CA 95501
2. District Treasurer – Mark Wetzel, CPA; David L. Moonie & Co., LLP; 325 Second Street, Suite 301; Eureka, CA 95501
3. Budget Officer – District Treasurer and Executive Director
4. Custodians of Funds – District Treasurer and Executive Director
5. Authorized to Open Accounts – District Treasurer and Executive Director
6. Investment of Surplus Funds – Custodians of Funds
7. Custodians of State, Federal and other funds, whether loans or grants, to make application for, receive and expend – Custodians of Funds and Executive Director
8. Expenditures:
    a. Checks require any two signatures of the following: Current Commissioner, District Treasurer or Executive Director.
    b. Expenditures over $5,000 shall follow § 36 of Appendix II of the State of California Harbors and Navigation Code: Humboldt Bay Harbor, Recreation and Conservation District

c. Purchase Order for non-recurring, single expenditures over $300.00
d. Board approval of any expenditure over $5,000.00

9. Authorized Revenue Facilities:
    a. Local Bank Checking, Money Market & Savings Accounts – TriCounties Bank, Eureka Branch
    b. Remote Bank Checking, Money Market/Savings Accounts – BBVA Compass Bank
    c. Humboldt County Treasurer to receive Humboldt County imposed tax revenues and other collected revenues for disbursement to the Humboldt Bay Harbor, Recreation and Conservation District

LEGAL NOTICE DESIGNATIONS:

1. Official Notice posting sites:
    a. District Conference Room – aside main door on outside wall
    b. District website: www.humboldtbay.org
2. The Times-Standard (newspaper of general circulation) as the newspaper for legal publications
3. Email notification to News Media: The Times-Standard, North Coast Journal, The Arcata Eye, Ferndale Enterprise, McKinleyville Press, KEET-TV, KIEM-TV, KMUD Radio, KINS Radio, and KHUM Radio
4. Email notification to:
    a. Cities: Eureka, Fortuna, Arcata
    b. Counties: Humboldt
    c. Chambers of Commerce: Eureka, Arcata
    d. Interested parties list

REGULAR MONTHLY BOARD MEETINGS:

1. Location: Humboldt Bay Harbor, Recreation and Conservation District; 601 Startare Drive; Eureka, CA
2. Time: Closed Session: 6:00 p.m. PST; Regular Session: 7:00 p.m. PST
3. When: 4th Thursdays of each month. Exceptions only if regular meeting dates conflict with November and December holidays.
4. Notices posted a minimum of 72 hours prior to the meeting.

SPECIAL BOARD MEETINGS:

1. Location: Humboldt Bay Harbor, Recreation and Conservation District; 601 Startare Drive; Eureka, CA
2. When: As needed.
3. Notices posted a minimum of 24 hours prior to the meeting.

OTHER BUSINESS:

1. Election Officer – Executive Director
2. Filing of Bonds - Executive Director
3. Authorized to contract as necessary- Executive Director
4. Legal Counsel – Paul Brisso of Mitchell, Brisso, Delaney & Vrieze, LLC, 814 7th St. Eureka, CA 95501
5. District Planner – George Williamson; Planwest Partners Inc.; 1125 16th Street; Arcata, CA 95521
6. District Engineer- Mike Foget; SHN Engineers, 812 W. Wabash Ave, Eureka, CA 95501
7. District Treasure- Mark Wetzel; DLM & Co. LLP, 2662 Harris St, Eureka, CA 95503
8. Insurance Agent of Record – Special Districts Risk Management Authority (Property, Liability, Workers Compensation, Marina Operators Liability)
9. Recognize the Humboldt Bay Harbor, Recreation and Conservation District as an equal opportunity employer.
10. Designation of registered office and agent:
    Office: 601 Startare Drive; Eureka, CA 95501
    Agent: Executive Director
11. Custodian of Public Records: Executive Director

PASSED AND ADOPTED by the Board of Commissioners of the Humboldt Bay Harbor, Recreation and Conservation District at a duly called meeting held on the 16th day of February 2017, by the following polled vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

_____, President
Board of Commissioners

ATTEST:

_____, Secretary
Board of Commissioners

CERTIFICATE OF SECRETARY

The undersigned, duly qualified and acting Secretary of the HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT, does hereby certify that the attached Resolution is a true and correct copy of RESOLUTION NO. 2017-01 entitled,

A RESOLUTION DESIGNATING BUSINESS MATTERS, APPOINTMENT AND AUTHORIZATION FOR THE HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT FOR CALENDAR YEAR 2017

as regularly adopted at a legally convened meeting of the Board of Commissioners of the HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT, duly held on the 16TH day of February 2017; and further, that such Resolution has been fully recorded in the Journal of Proceedings in my office, and is in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this 16th day of February 2017.

_____

, Secretary
Board of Commissioners

Humboldt Bay Eelgrass Management Plan

8d.

Collaborative Partners Meeting #3
February 6, 2017 - Meeting and Boat Tour

Meeting Purpose:

Third of minimum five collaborative partners meetings, to review and provide input on:

- Eelgrass Management Plan outline
- Pre-project eelgrass checklist & guidance
- Potential mitigation/remediation/restoration locations

Agenda

Agenda Overview and Introductions

Eelgrass Management Plan Outline

Plan outline and key components:

- Pre-project guidance and eelgrass checklist
- Eelgrass webpage-Hub for project applicant info, project tracking component, additional resources
- Preliminary eelgrass mitigation/restoration site inventory
- Regulatory tools for retaining/capitalizing eelgrass mitigation credit

Pre-project eelgrass checklist. Up-front project checklist to determine whether a project may impact eelgrass and what to do about it:

- Project Characteristics
- Surveying/preliminary surveying guidance
- Planning and design considerations and timing

Inventory of Potential mitigation/ remediation/ restoration opportunities; Review maps and discuss:

- Spatial & temporal factors of mitigation & conservation
- Historic changes in Humboldt Bay and effects on eelgrass
- Eelgrass habitat/use differences within Humboldt Bay
- Mitigation/restoration site prioritization, opportunities, scale

Regulatory Tools & Programs; Capturing value within the regulatory frameworks available and desirable management planning structure:

- Mitigation/In lieu fee program
- Mitigation Bank
- Regional General Permits (RGPs)
- Other
- Comprehensive Management Plans (CMPs) and ledger accounting

Harbor District Boat Tour: Observe and discuss eelgrass restoration/mitigation needs and opportunities:

- Working waterfront,
- Entrance Bay,
- King Salmon,
- Field's Landing

8e.

CONSULTING ENGINEERS & GEOLOGISTS, INC.
812 W. Wabash • Eureka, CA 95501-2138 • 707/441-8855 • FAX: 707/441-8877 •shninfo@shn-engr.com

Reference: 016240.020

February 3, 2017

Jack Crider, Executive Director
Humboldt Bay Harbor, Recreation and Conservation District
1000 King Salmon Drive
Eureka, CA 95503

Subject: Summary of Dredge Material Disposal on the Samoa Beach Surf Zone and Alternative Disposal Analysis

Dear Mr. Crider:

SHN Engineers & Geologists (SHN) has prepared a review summary of dredge material disposal on the Samoa beach surf zone and an alternative disposal analysis from historical documents generated as part of project permitting for maintenance dredging in Humboldt Bay. Numerous plans and reports have been produced for disposal of dredge material at the Samoa beach surf zone over the past 20 years and this summary report is intended to consolidate the actions and findings into 1 document. Specifically to incorporate the dredging operations completed during winter months of 2006/2007 with previous events and the 2016 disposal site feasibility study.

Introduction

In August 2005, a Section 401 Water Quality Certification permit was issued to the HBHRCD and City of Eureka by the North Coast Regional Water Quality Control Board (RWQCB). This permit approved beach disposal of an estimated 217,000 cubic yards (cy) of dredge material generated from cooperative maintenance dredging projects in Humboldt Bay. In the 401 permit, the California Department of Fish and Game (CDFG) and the United States Environmental Protection Agency (EPA) commented that the project may proceed. However, the sediment may not be suitable for beach disposal in the future due to the small grain size and the lack of studies to evaluate the effects of disposal on the near shore sea floor habitat.

The RWQCB noted that the planned dredging to start in November 2006 might be the last opportunity for the applicants to thoroughly study the effects of this type of disposal, and if future shoreline disposal is proposed then a plan will need to be developed to monitor and study the discharge and near shore subtidal habitat during implementation of the project. Subsequent discussion on shoreline disposal led to development of the beach zone disposal monitoring plan in August 2006 (Pacific Affiliates, 2006). The purpose of the 2006 Samoa beach surf zone monitoring and reporting program was to provide data to the regulatory and resource agencies that would allow them to re-evaluate the near shore ocean disposal methodology for future events. The actions and findings of the 2006 beach surf zone monitoring program as well as results from previous monitoring programs implemented for beach surf zone disposal of dredge material are provided in this summary report.

Previous Dredging and Beach Surf Zone Disposal Events

The HBHRCD and City of Eureka waterfront mooring facilities require maintenance dredging to restore adequate depth on average every 10 years. Cooperative maintenance dredging projects using a cutter head suction dredge and transport pipeline to the Samoa beach surf zone for disposal of dredge slurry were conducted in 1988, 1998, and 2007. The period of occurrence and volume of material dredged and disposed for each event on the Samoa beach surf zone is summarized as follows:

- January to March 1988–approximately 131,000 cy
- January to May 1998–approximately 226,238 cy
- November 2006 to March 2007–approximately 230,065 cy

Due to concern for dredge material composition and potential adverse effects on benthic habitats, permitting agencies have requested nearshore subtidal and intertidal habitat monitoring for changes in conditions during beach surf zone disposal. Each dredging episode conducted has been accompanied by a beach surf zone disposal monitoring program for specific criteria, which has incorporated an increased level of monitoring with each successive Samoa beach surf zone disposal event.

Samoa Beach Surf Zone Disposal Monitoring

The 1988 monitoring program established three transects along the beach zone that included the disposal site, a transect 100 meters north of the discharge location, and a control site approximately 1,000 meters south of the discharge location. Samples were collected from intertidal locations at each transect for determination of material composition and faunal abundance before and after dredging operations. Results of the study indicated that portions of dredge material had been deposited at the discharge site and were buried under a layer of sand. The remainder of the material was carried away by the tides and wave action (Newton, 1988).

Based on the 1988 monitoring study, negative effects of temporary discharge of dredge spoils on the intertidal fauna of Samoa Beach were localized and transitory, primarily affecting the abundance of characteristic beach species in the immediate vicinity of the disposal outfall. Within one month following the end of disposal operations, most species characteristic of this beach were present at the disposal site, although at reduced densities. Approximately four months following termination of beach disposal, intertidal fauna populations at the disposal site had recovered to levels comparable to those at the control site (Newton, 1988).

The 1998 monitoring program used the same three monitoring transects on the beach zone as in 1988 to determine species compositions and abundance at locations within the study area (discharge point, 100 meters north of discharge point, and control site 1,000 meters south). Monitoring events were increased during the 1998 program to include pre-, during, and four months of post-discharge operations. In addition, annual monitoring events with reports were required for five years following termination of dredging operations.

The objectives of the beach zone disposal monitoring were to provide information that included:

- establishing pre-project baseline conditions,
- material grain size composition, and
- species composition and abundance of intertidal invertebrates.

Monitoring was conducted at all three transects prior to operations to evaluate baseline conditions and during operations to assess effects from beach surf zone disposal. Overall project monitoring showed the effects of discharged material were highly localized, with a typical assemblage of sand beach composition and animals being observed in samples collected 100 meters to the north of the discharge location. Four monthly monitoring events (May through August) were conducted after the dredging had stopped, and showed a gradual increase in species abundance and occurrence at the disposal transect location. By August 1998, the sampling event showed patterns of species occurrence and abundance were quite similar to the control site, and were approaching a level of faunal similarity approximating that found in the January pre-discharge sampling event (SHN, 1998).

The presence of the mole crab (*Emerita analoga*) was monitored closely in 1998 as an indicator species of return to pre-discharge conditions. This species is known to require highly oxygenated water and is highly sensitive to contaminants in beach sands (Morris et al, 1980). The reappearance of this species in August 1998 indicated that little residual biological effect could be detected at the discharge point.

The Coastal Development Permits (CDPs) issued for the cooperative maintenance dredging project in 2006 (1-05-039 and 1-05-040) additionally required a beach surf zone disposal monitoring program as a special condition. The monitoring program was designed to assess conditions at the discharge point, areas in close proximity, and a control point away from the project site. A fourth transect was added to the previously used set of monitoring transects located 100 meters to the south of the discharge point. Each location was monitored prior to operations, during the beach disposal application process, and after application of material had stopped. In addition, annual monitoring with reports was required for five years following termination of dredging operations. The primary objectives of the 2006/2007 beach surf zone disposal monitoring were to provide information that included:

- establishing pre-project baseline conditions,
- pattern of dispersal of material deposited at the site,
- species composition and abundance of intertidal invertebrates,
- turbidity monitoring offshore, and
- hydrographic and land surveys.

Aspects implemented as part of the monitoring program consisted of aerial photographs of the shoreline, hydrostratigraphic surveys, land surveys, turbidity measurements, sediment core samples for grain size analysis, and near shore sediment testing for infauna and epibenthic marine habitat. The dredging event occurred during the period of November 10, 2006 to March 31, 2007, and deposited an estimated 230,065 cy of material on the beach surf zone. Monitoring for the beach zone was conducted prior to application in October 2006, monthly during operations (five events), post- operations monthly (four events), and then annually for an additional four years.

Changes in topography were observed at the discharge point location with the application and accumulation of material, and a channel would form from the slurry discharge. Each time dredging was stopped for more than one tide cycle, the channel created would fill with sand as result of the high rates of sediment transport that occur on the beach in the winter (Pacific Affiliates, 2007). Disposal operations appear to have only contributed a minor fraction of sediment that accumulated along each transect. Overall, observations show that material was predominantly transported away from the beach zone in winter months (December through March).

Aerial photographs were taken as part of the monitoring program on three occasions (before, during, and after operations) to provide a view of the ocean conditions along the shoreline. The photographs were taken along the coastal stretch from the mouth of the Eel River to the mouth of the Mad River, a distance extending 27.25 miles. Disposal operations at Samoa beach were not evident on the aerial photographs taken during the dredging program. Although, the discharge channel created by the dredge slurry during operations was evident, the sediment deposited from beach surf zone disposal cannot be distinguished from the sediment present in the water and no sediment plume from discharge operations was evident. Aerial photographs of both the Mad River and Eel River show a distinct plume of sediment from winter storm activities.

Monitoring data showed a short term impact to biological communities located only at the discharge pipeline location. Biological communities monitored at the north and south transects were not affected by the dredge disposal operations. Pre- and post-project monitoring at the pipeline disposal transect indicate that the abundance and richness of macroinvertebrates returned to pre-project conditions three months following termination of the beach surf zone disposal operations (Pacific Affiliates, 2009).

The 2009 annual Samoa beach surf zone monitoring report provided data to the regulatory agencies that should allow them to re-evaluate near shore ocean disposal methodology. Data in that report indicated:

- The affects of dredge disposal operations on sediment composition are temporary and localized to the pipeline transect.
- Sediment composition returned to pre-project conditions three months following termination of disposal operations.
- Hydrographic survey data provided show variation in the quantities of sediment in the intertidal and subtidal zones along the monitored transects. Sediments were predominantly affected by winter conditions, including large swells, high tides, and fast moving currents.
- Sediment was transported away from the beach during the winter time, and was either transported to the beach or there was no change observed during the summer.
- The same seasonal pattern of onshore and offshore material transport was observed in past dredging episodes.
- Aerial photographs of the disposal site showed that no plume was developing from the sediment deposited at the beach, but plumes were observed at the Eel and Mad River mouths.

- Suspended sediment concentrations increased during the winter months and decreased in the offseason.
- There was no change in turbidity levels between May and July 2007 following the dredging operations.
- Infaunal community survey reports indicate that the biological communities along the disposal monitoring transect returned to pre-project conditions three months following termination of the project.
- The biological communities were only affected temporarily at the disposal site location during disposal operations.
- The data suggested the biological communities north and south of the discharge location were not affected by the dredge disposal operations.

Beach Surf Zone Disposal Operations

The Samoa beach disposal site is located between two major rivers, the Eel and Mad Rivers. Planning dredging events during the winter months (November to March) will allow the material to disperse more rapidly due to large swells, high tides, and strong currents. Both rivers would be discharging turbid water into the ocean at a natural seasonal maximum, which would minimize the sedimentation impact from dredging and beach surf zone disposal on the ocean. Most of the material discharged to the surf zone disposal site will be dispersed offshore as part of the cyclical process of erosion on the beach in the winter.

The Eureka Littoral Cell is a complex coastal system with a high-energy wave environments, moderate tides and winds, significant sediment yield from rivers, and offshore features that influence the morphology of the coastline (Moffatt & Nichol, 2013). The Eel River represents one of the largest suspended sediment sources in the world, with an annual volume estimated to be 24,698,370 cy of material discharged. A majority of this material is transported offshore and settles on the continental margin. Material that is deposited on the beaches is subject additional transport and redistribution from erosion of the beaches and dunes by winter waves.

The dredging window selected and approved for the 2006 dredging project (November to March) is the only time during the year that nearshore ocean disposal can be implemented in a manner that will cause the least disturbance to the Samoa beach (Pacific Affiliates, 2009). Because massive quantities of coarse grained sand are shifted both parallel and normal to the shore by natural forces, dispersal of the additional sediment load has not posed a problem at the proposed average use for previous cooperative maintenance dredging projects.

Water quality impacts from dredging and disposal operations may affect water quality parameters, such as, dissolved oxygen (DO), pH, suspended solids (SS), and turbidity. Turbidity near the dredging and disposal sites would increase because of additional SS in the water column. DO levels in the water column could decrease during disposal operations due to dispersed sediment absorbing DO. Since ambient water quality conditions recur shortly after each dredging event, any associated adverse effects of dredging and disposal operations on these water quality variables would be short-term and minor in magnitude.

The disposal application area would be posted at several locations along the beach as to the activities and duration of the project. Barricades and lighting were previously provided and maintained throughout the project. The discharge area is to be monitored daily to ensure proper public notification of the project activities and safe access to the North Spit recreational areas. The daily monitoring of the beach surf zone during disposal operations will also allow for collection of debris that is transported through the pipeline and eventually ends up on the beach.

No mitigation measures were required for implementation of the 1998 cooperative maintenance dredging program. The CDP evaluated feasible mitigation measures to minimize adverse environmental effects and determined the project will have no significant adverse environmental effects as proposed. The use of cutter head suction dredging and transfer of dredged material through pipeline minimized turbidity impacts at the dredging site to a level of insignificance. The use of the surf zone disposal site during winter months resulted in only temporary impacts to the invertebrate fauna existing at the site, which was not significant. The California Coastal Commission (CCC) stated that additional mitigation measures were neither available nor required in order to minimize environmental effects of the project. By avoiding significant impacts to coastal resources, the 1998 maintenance dredging project as stated in the CDP maintained the biological productivity and functional capacity of the habitat.

However, mitigation measures were identified in the 2006 biological opinion as well as the CCC's recommendations to minimize and fully mitigate the impacts of the authorized take on SONCC[1] coho salmon in Humboldt Bay during operation from the cutter head suction dredge. In addition, the 2006 CDP included performance standards as part of the dredge operation in the bay that included:

- Intake of the cutter head shall be no more than 3 feet from the substrate during pipeline pumping.
- No pumping of water by the suction dredge during descent prior to beginning dredging shall be permitted.
- Suspended sediment within bay waters shall not exceed 200 milligrams per liter (mg/L) beyond 1,000 feet beyond the dredge platform.
- The monitoring report shall be submitted 60 days following completion of the project.
- A spill prevention plan shall be prepared, and regulatory agencies shall be notification immediately upon a spill or leak occurring.

The applicant implemented these conditions in 2006, as well as partial funding of a salmonid access and habitat restoration project as part of the Coho Salmon Incidental Take Mitigation in 2006. The incidental take permit for impacted species was issued by U.S. Fish and Wildlife (FWS) and a consistency determination from the CDFG in 2006.

One other aspect that will minimize impact from dredging and disposal operations in the future is to reduce the amount of material dredged and shortening the window of operations. Reducing the annual dredge material volume to approximately 100,000 cy or less per year would further lessen

1 SONCC: Southern Oregon/Northern California coast

any potential impacts to the beach surf zone disposal site. Conducting operations during the winter months additionally avoids the peak periods of public beach use. It is anticipated that future maintenance dredging in Humboldt Bay after an initial two-year period would be further reduced to maintenance dredge material volumes in the 30,000 to 40,000 cy range annually. Handling this volume of dredged material on an annual basis will be easier to manage for the HBHRCD and City of Eureka, and will allow for discontinuation of beach surf zone disposal due to establishment of and alternate upland disposal site.

Dredge Material Characteristics

Sediment samples were recently collected from City of Eureka waterfront facilities for the Small Boat Basin and Commercial Street dock (August 2016). Samples were collected and tested in accordance with the approved sampling and analysis plan (SAP) prepared for the HBHRCD in December 2015 (NHE, 2015). Testing results of these samples were compared to results of historical samples collected in these areas in August 1996 and February 2005. Specifically, for constituents of concern that included dioxin/furans, pentachlorophenol, polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbon (PAHs). A summary of results for the primary constituents of concern over the three testing programs is provided in Table 1.

Table 1
Historical Sample Testing Results

City of Eureka	Aug-96		Feb-05		Aug-16	
Small Boat Basin	**Sample #1 (A,B,C,D)**	**Sample #1 (E,F,G,H)**	**Sample #A**	**Sample #B**	**SBB-H**	**SBB-J**
Semivolatile Organics						
Benzo(a)pyrene, (ug/kg)[1]	27/17	45/21	17.8	22.8	<9.2[2]	<9.0
PCBs[3]						
Arcolor 1016, 1221, 1232, 1242, 1248, 1254, 1260 (mg/kg)[4]	ND[5]/ND	ND/ND	ND	ND	ND	ND
Herbicides						
Pentachlorophenal (ug/kg)	NA[6]	NA	ND	ND	<4.3	<4.2
Dioxin/Furans						
Total TEQ[7] (pg/g)[8]	NA	NA	**3.74**	**2.57**	**0.427**	**0.330**
Commercial Street Dock	**Sample #3-(A,B,C,D)**		**Sample #A (1,2)**		**COM-G**	
Semivolatile Organics						
Benzo(a)pyrene, (ug/kg)	97/65		73.1		<9.9	
PCBs						
Arcolor 1016, 1221, 1232, 1242, 1248, 1254, 1260 (mg/kg)	ND/ND		ND		ND	
Herbicides						
Pentachlorophenal (ug/kg)	NA		ND		<1.5	
Dioxin/Furans						
Total TEQ (pg/g)	NA		**3.13**		**1.66**	

Table 1
Historical Sample Testing Results

1. ug/kg: micrograms per kilogram
2. <: "less than" the laboratory reporting limit
3. PCBs: polychlorinated biphenyls
4. mg/kg: milligrams per Kilogram
5. ND: not detected
6. NA: not analyzed
7. TEQ: toxic equivalents
8. pg/g: pictograms per gram

Constituent levels over the three testing programs for these areas have shown that concentrations have either decreased or stayed the same since 1996 project sampling. Pentachlorophenal and PCBs were below laboratory method detection limits during all three events. The PAH constituent Benzo(a)pyrene is showing a significant decrease over this period with results showing no detectable concentrations during the August 2016 sampling event. Although dioxins and furans were not tested in the 1996 Small Boat Basin sampling program, the sediment samples collected in August 2016 showed decreased concentrations from previous results obtained in February 2005. Dioxin/furan TEQ levels for the Small Boat Basin were an order of magnitude lower than the previous samples collected 10 years prior. The results of metals testing showed all levels to be consistent over time and within the range of naturally occurring concentrations.

Disposal of this predominantly silty material in the high-energy surf zone at the high-tide contour would result in short-term, minor adverse effects to a zone of low biological activity. The finer material placed on the beach would disperse from the coastal zone, and would eventually settle in deeper water. Impacts to water quality at the dredging and disposal sites due to chemical contaminants associated with the dredge material are generally short-term and localized.

In January 2006, the EPA provided comment on the proposed cooperative dredging and stated that it does not believe that a significant health or ecological risk is associated with discharge of material at the Samoa spit from dioxins and furans at the concentrations found in the Eureka area project dredge material. Current levels of dioxins and furans identified in the material planned for dredging are lower than those observed and approved by oversight agencies in 2006.

Alternatives Analysis

The previous CDPs issued for maintenance dredging have included requirements for the applicants to evaluate alternatives for use of different dredging methodology and disposal options. A detailed analysis for dredging methods and disposal options was completed by the HBHRCD in December 2005 and is included in the 2006 CDP staff report. The dredging alternative review additionally contained an economic analysis of each dredging and disposal method considered for evaluation. The 2005 alternative analysis is summarized in the following sections.

The cutter head suction dredge and pipeline transport of material was determined to be the environmentally less damaging alternative than use of a clam shell dredging method and hopper barge. The alternative method would increase turbidity levels in the dredge area, require disassembling of docks, and the material would have to be transported in barges to an offshore disposal site by scows or tugs. The cutter head suction dredge will enable removal of sediment

from beneath floating docks, pile supports and from within the relatively narrow berths and fairways. Turbidity is minimized by the draw-off at the cutter head and spoils are transported in a closed pipeline extending to the disposal site.

The analysis additionally evaluated use of a cutter head suction dredge and hopper barge for containment and transport of material for offshore disposal. This process would generate a significant volume of suspended sediment as the hopper barge fills the accompanying water with finer material would overflow into the water body from which it is dredged. Additionally, the amount of non-productive time spent mooring the barges, disconnecting the spoils pipeline, and transporting to Humboldt Offshore Disposal Site (HOODS) would add considerable time and costs to the project. Transport capabilities can also be constrained by weather and/or tide conditions during the winter months.

Disposal locations evaluated as part of previous permitting efforts included use of HOODS, Former Louisiana Pacific (LP) disposal site, a new upland disposal site (Superbowl), and the existing upland disposal site (Samoa lagoons). The issues associated with material placement at each of these sites remain during the feasibility analysis completed for material disposal in 2016. Primary reasons identified include:

- HOODS transport of material will not allow for cutter head dredging method due to discharge slurry being predominantly liquids (80%). The distance to transport barge material (18 mile round trip) and winter conditions will also be problematic for the project.
- The Superbowl site is a bermed area by the airstrip that could be modified to receive dredge material. The site would not be able to discharge decant water from the disposal process and would have to be large enough to facilitate infiltration as part of the dewatering process. Nearby areas of the Superbowl site have transformed into freshwater marsh habitat with sensitive plant species that have colonized.
- The former LP disposal site, used previously no longer has waste discharge requirements (WDRs)–they were rescinded in 2001 due to inactivity A technical report was submitted to the RWQCB in July 2005 to obtain permits to reactivate the former LP disposal site. However, the HBHRCD was notified that no discharge from the facility would be permitted to Humboldt Bay. The site has limited capacity which would impact the ability to use infiltration as a means to dewater the material in a timely manner. The inability to discharge dredge slurry decant water to a nearby water body will prevent use of this site.
- The Samoa dredge pond lagoons currently have limited capacity for additional material and will need to address additional permit requirements to reactivate; however, this location does appear to be the most probable site to receive dredge material in the future.

The CDP requirement to evaluate alternatives determined in 1996 and 2006 that none of the alternatives provides a feasible less environmentally damaging alternative. Other options have more impact to sensitive species than surf zone disposal. The CCC additionally stated in 1998 that the overall impacts using beach disposal would be less than using the offshore HOODS site. The 2005 alternatives review evaluated six combinations of dredging and disposal options for economical analysis. The findings showed that use of cutter head suction dredging and beach disposal was the most economically viable alternative, with costs to use HOODs being almost twice as much.

Actions were initiated by the HBHRCD in 2007 to reauthorize WDR permits for the Samoa dredge pond lagoons with the RWQCB. In May 2010, the RWQCB responded to the mitigated negative declaration (MND) prepared for the upland disposal site, citing an Environmental Impact Report (EIR) would be a more appropriate form of environmental review for the proposed project. The RWQCB also summarized project permits required would include; Construction General Storm Water, Water Quality Certification (401), and WDRs or a conditional waiver. Based on these considerations and uncertainty for site reactivation, the HBHRCD began to seek alternative disposal locations.

In 2016, a feasibility study was completed for the HBHRCD to reassess disposal site locations as well as new options that have developed in recent years (SHN, 2016). The feasibility study evaluated nine potential material disposal options and outlined the necessary permitting, engineering and associated costs. The feasibility study evaluated disposal options not previously considered by the HBHRCD that included:

- Use of Redwood Marine Terminal (RMT) clarifiers and ocean outfall.
- Pumping maintenance dredge material into the federal channel flow lane for the ACOE to remove
- Beneficial reuse projects around Humboldt Bay that require material and are suitable to receive dredge material.
- Construction of a new upland disposal site.

The feasibility study spreadsheet with cost analysis completed for HBHRD in 2016 along with a figure showing disposal option locations is provided in Attachment 1.

Although the ability to permit beach surf zone disposal appears to be one of the more difficult options, the annual dredging and permitting costs would be the more manageable by the HBHRCD and City of Eureka. Additional efforts completed in 2016 have included a habitat assessment for sensitive botanical and biological species conducted at the Samoa Lagoons upland disposal site. This location would be the most viable option to receive dredge material in the future upon acquiring applicable permits, and removal of existing material to increase storage capacity.

The USEPA and CDFG stated in the 2006 permitting process that the applicant must investigate other disposal options for any future maintenance dredging to be conducted under subsequent USACE authorization. The primary concern for beach disposal of dredge material was mainly due to small grain size and the lack of studies to evaluate the effects of disposal on the near shore sea floor habitat. The monitoring programs implemented during previous beach surf zone disposal have shown that the small grain size of the material is not a significant issue as the material is dispersed offshore. The HBHRCD continues to seek alternative options and anticipates that, in two years, the activation of the Samoa Lagoons upland disposal site will be available to receive dredge material.

California Coastal Commission Observations

Previous CCC findings in the 1996 and 2006 CDP staff reports stated that the proposed dredging, its associated pipeline installation, and beach surf zone disposal are consistent with the use limitations of Section 30233, because the dredging is for maintenance of existing vessel berthing and mooring areas, no new development is planned, and will not result in a significant loss of biological productivity.

Public comments were solicited following each permit application submitted to the regulatory agencies. Comments were received following the submittal of the negative declaration, after the public notice to proceed, and following the RWQCB 401 permit application. To obtain all permits in 1996 and 2006, the applicants had to demonstrate that all environmental impacts were fully mitigated.

Review of the sediment chemical analysis was conducted by the CCC Water Quality Unit, US EPA, RWQCB and the CDFG. Based on the review, CCC staff concluded that the project would not significantly impact coastal resources and approved nearshore disposal of the material provided adequate monitoring is performed. The CDP approved for the HBHRCD and City of Eureka in 2006 identified seven (7) potential effects on coastal resources from the proposed dredging and beach disposal that included:

1. Increased turbidity during pipeline installation and removal
2. Covering of estuarine intertidal habitat along the pipeline route
3. Accidental releases of dredge slurry or hazardous materials
4. Disturbing marine intertidal habitat at the material disposal site
5. Degrading water quality at the nearshore dredge material disposal site
6. Impacts to terrestrial environmentally sensitive habitat areas
7. Release of hydrogen sulfide

Each potentially adverse impact identified was addressed in the 2006 CDP staff report and none of these impacts were determined to be significant. Specific items of note cited in the 2006 CDP for potential adverse impacts consisted of:

1. **Turbidity** - minimize impacts to a level of insignificance by avoiding mudflats to extent practicable and conducting work during high tide when sensitive areas are inundated.
2. **Habitat Covering** - pipeline placement would be temporary and would not result in a significant loss of biological productivity. Flora and fauna temporarily displaced by pipeline routes are expected to be re-colonized by the abundance of organisms in adjacent areas.
3. **Accidental Release** - development of a Dredge Spoils Slurry/Hazardous Materials Spill Contingency Plan that included monitoring, prevention measures and a response plan.
4. **Nearshore Habitat Disturbance** - post project monitoring from previous events have shown little residual biological effect of dredge spoils could be detected at the discharge

point with four months. Samoa Beach is exposed to extreme wave conditions and the temporary burial by dredge spoils would only remain until wave and tidal action disperse the material to the offshore shelf.

5. **Water Quality Impacts –**

    a. **Physical** – the dredge material consists of 80 to 90% fine grain material that is being placed in an environment comprised of 95% sand. The USACE and USEPA do not have a prohibition on nearshore disposal of material that is predominately fine grain provided it meets guidelines that the dredge material is demonstrated to be compatible with the receiving beach. This includes: being the least environmentally damaging alternative, will not result in significant degradation of ecosystems based on factual determination, and all practicable means employed to minimize adverse environmental impacts. All these guideline mandates were addressed and documented during the 2006/2007 dredging and disposal program.

    b. **Chemical** – results of sediment testing have shown that the material does not have contaminants in concentrations that would result in significant human health risks or ecological degradation. Testing for constituents of concern that include pesticides, PCBs and dioxins have decreased over time and are below any regulatory screening levels. Any contaminants that may be present would be further diluted in the dredging process and rapidly dispersed in the high-energy environment of the surf zone.

6. **Terrestrial Habitat Impacts** – the pipeline route across the Samoa Peninsula will minimize impacts to potentially sensitive habitat species by using an established trail route. In addition, field surveys and monitoring during the project by a qualified biologist would reduce the impacts to a level of insignificance.

7. **Hydrogen Sulfide** – generated as a byproduct of anaerobic breakdown of organic material within bay sediment, hydrogen sulfide can be a toxic and irritating gas. The hydrogen sulfide levels expected during surf zone disposal of dredge material in the open air do not pose a threat to human health. Suction dredging would dilute the hydrogen sulfide with seawater and the material would be further diluted during the initial mixing with ocean waters upon discharge.

The CCC additionally stated in the 2006 CDP staff report that the project as conditioned will be in conformity with policies of Chapter 3 of the Coastal Act. Approval of the permit complies with California Environmental Quality Act (CEQA) because either: 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment; or 2) there are not further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

Summary of Findings

Near shore beach surf zone disposal has proven to be a successful dredging disposal methodology in previous dredging episodes. Although there will be temporary impacts at the Samoa Beach zone disposal site, the effects on ocean water quality are considered less significant than other disposal alternatives. Negative effects of temporary discharge of dredge spoils on the intertidal fauna of Samoa Beach were localized and temporary. Further, approximately four months following project termination, populations had recovered to pre-project conditions at the disposal site.

The biggest obstacle for approval of future dredging projects using beach disposal will be from public perception. The aesthetics and odor generated from discharge of the material in the surf zone will cause concern from the general public; therefore education outreach of the perceived impacts will need to be addressed. Information efforts on the process, material composition, previous findings, monitoring program, and duration with temporary localized impacts will need to be initiated prior to and during operations.

The HBHRCD and City of Eureka continue to seek out alternative disposal options for cooperative maintenance dredging. Currently the HBHRCD is evaluating conditions and requirements to remove material and reactivate with new permits, the Samoa lagoons upland disposal site. Additional efforts being made by the HBHRCD to reduce maintenance dredging costs include: purchase of a cutter head suction dredge and pipeline, purchase of vibracore sampling equipment, and completing an SAP for all HBHRCD and City of Eureka waterfront facilities. The HBHRCD additionally completed a feasibility analysis in 2015 for beneficial aspects of dredge material reuse.

The purpose of the dredging is to provide mooring areas for fishing boats, recreational, and other boats. It is the goal of the HBHRCD, the City of Eureka, and the CCC to provide as many recreational opportunities as possible for the public in Humboldt Bay. Conducting maintenance dredging is not a new project and is vital to achieving this goal. The disposal of dredge material on Samoa Beach surf zone is similar to the previous maintenance dredging projects approved by the CCC in 1988, 1998, and 2006. A "No Action" project would result in loss of existing mooring facilities that would eventually silt in. This is contrary to policies of the Coastal Act.

If you have any comments or concerns, please call me at 707-441-8855.

Sincerely,

SHN Engineers & Geologists

Mike K. Foget, PE
Project Manager

Erik J. Nielsen, PG, CHG
Project Hydrogeologist

MKF:EJN:dla

Attachment : 1. Alternatives Analysis of Dredge Material Analysis
c. w/attach.: Miles Slattery, City of Eureka

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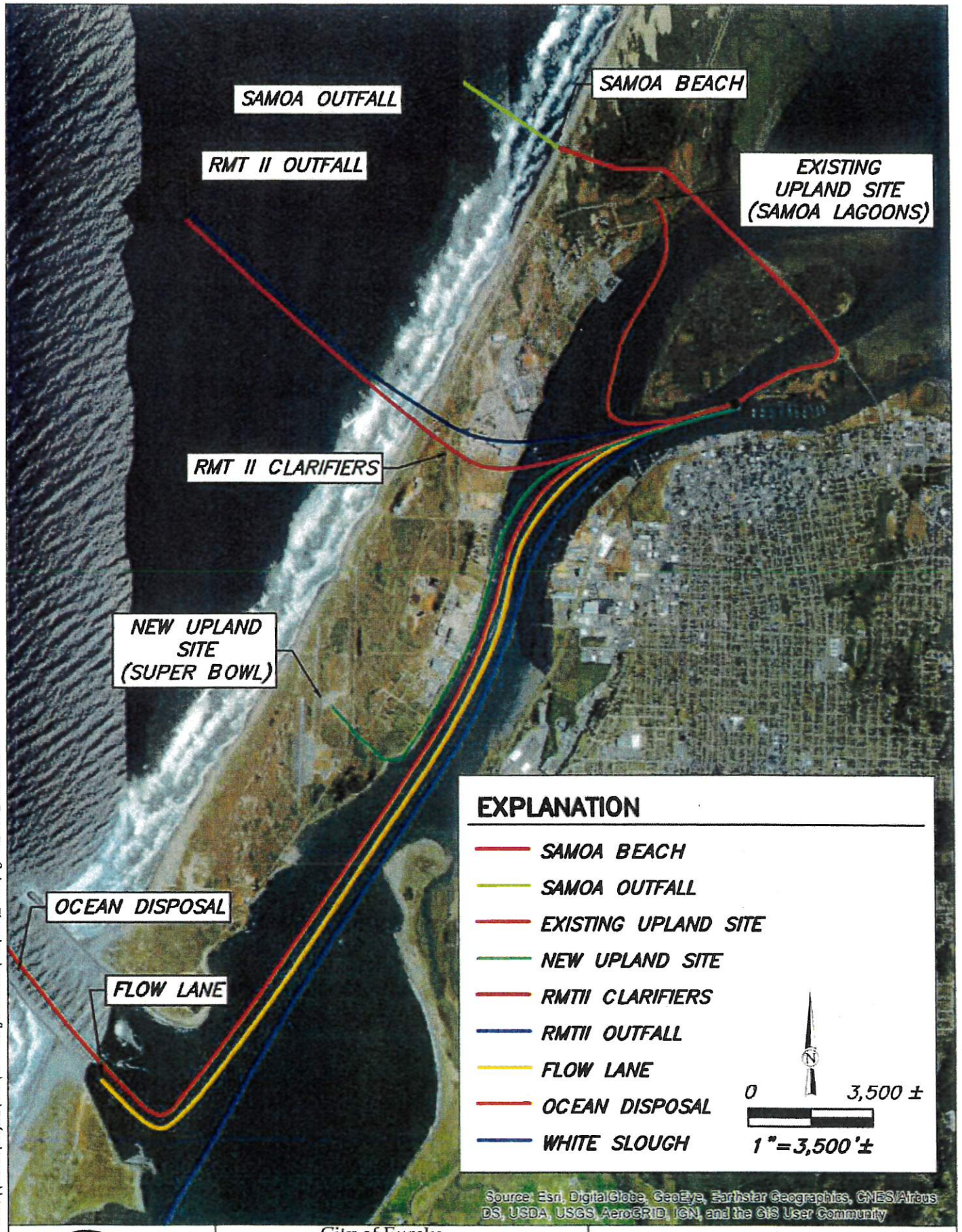
Alternatives Analysis for Dredge Material Disposal



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Consulting Engineers & Geologists, Inc.	City of Eureka Dredging Eureka, California	Dredging Storage Site Alternatives SHN 016240
	February 2017	Figure2_REV1_20170203.mxd	Figure 1

Table 1: Comparison of Dredge Material Placement Sites

Dredge Disposal Location	Description	Challenges	Permit Requirements	Degree of Difficulty	Annual Dredging Cost	Costs to Permit	Total Cost[1] (Over 10 Year Period)	Equivilent Slip Fee Unit[2,3] ($ per lineal foot per month)
Samoa Beach	Beach application of dredge material	• Discouraged by the California Coastal Commission • Aesthetic, public perception concerns	• ACOE 404 • NMFS Biological • RWQCB 401 • CCC CDP	◔	$240,000	$460,000-$2,250,000	$2,860,000-$4,650,000	$2.35-$3.82
Samoa Beach Temporary Ocean Outfall	Ocean application of dredge material through 1/2 mile temporary outfall	• Difficult to meet discharge limitations • Outfall pipe installation and removal	• ACOE 404 • NMFS Biological • RWQCB 401 • CCC CDP	◔	$270,000	$400,000-$1,800,000	$3,100,000-$4,500,000	$2.55-$3.70
Existing Upland Storage Site	Settling basins and outflow structure at west end of Samoa bridge	• Permit to current agency standards • Requires removal of existing material • Final dispostion of dredge material	• ACOE 404 • RWQCB 401 • CCC CDP	◔	$480,000	$185,000-$450,000	$4,985,000-$5,250,000	$4.10-$4.31
New Upland Storage Site	Settling basin and outflow structure	• Premitting and construction of new settling basin with outlow structure • Final dispostion of dredge material	• ACOE 404 • RWQCB 401 • RWQCB WDRs • SWRCB CUP • CCC CDP	◐	$250,000	$220,000-$540,000	$2,720,000-$3,040,000	$2.24-$2.50
RMT II Clarifiers/Outfall	Process dredge slurry through settling clarifiers then discharge decant water to the ocean outfall	• Infrastructure improvements • Removal of sediment from clarifier • Final dispostion of dredge material	• ACOE 404 • NMFS Biological • RWQCB 401 • RWQCB NPDES • CDFW 1600 • CCC CDP	◐	$450,000	$230,000-$450,000	$4,730,000-$4,950,000	$3.89-$4.07
RMT II Ocean Outfall	Direct discharge of dredge material through ocean outfall	• Difficult to meet discharge limitations for suspended sediment	• ACOE 404 • NMFS Biological • RWQCB 401 • RWQCB NPDES • CDFW 1600 • CCC CDP	●	$280,000	$345,000-$1,350,000	$3,145,000-$4,150,000	$2.58-$3.41
Flow Lane	Transfer to main federal channel where Army Corps of Engineers (ACOE) dredges	• Not previously completed in Humboldt Bay • ACOE approval and work commitment • Suspension of fine sediments	• ACOE 404 • NMFS Biological • RWQCB 401 • RWQCB NPDES • CCC CDP	◔	$510,000	$345,000-$1,800,000	$5,445,000-$6,900,000	$4.47-$5.67
Ocean Disposal via ACOE Dredge	Transfer to ACOE dredge vessel. ACOE subsequently ships offshoes to ocean disposal site	• Not previously completed in Humboldt Bay • Dredge slurry is 90% liquids • ACOE approval denied (Oct 2016)	N/A	N/A	N/A	N/A	N/A	N/A
White Slough	Slurry placement within bermed area. Material settling and infiltration of water	• Not previously completed in Humboldt Bay • Distance from dredge location to placement site	• ACOE 404 • RWQCB 401 • RWQCB WDRs • CCC CDP	◐	$1,000,000	$230,000-$538,000	$10,230,000-$10,538,000	$8.41-$8.66

◔ : Fewer permitting and implementation challenges
◐ : Medium permitting and implementation challenges
◕ : Medium to major permitting and implementation challenges
● : Relatively major permitting and implementation challenges

1. Total Cost = Cost to Permit + (10 yrs x Annual Dredge Cost), in $/10 yrs
2. Equivalent Slip Fee Unit = [(Total Cost/10 yrs) / (12 mo/yr)(10,140 lineal feet, total slip space)], in $/lineal foot-mo
3. Equivalent slip fee assumes all costs

Project Description

The Humboldt Bay Harbor, Recreation and Conservation District (HBHRCD) and City of Eureka are planning to conduct cooperative maintenance dredging at waterfront facilities in Humboldt Bay to restore adequate depth to boat moorage facilities. The work will consist of using a cutter-head suction dredge to remove material and pump the dredge spoils through pipeline to designated disposal sites over a five-year period. The initial site designated to receive dredge material over a two-year period will be the Samoa beach surf zone and the second site planned to receive material for the following three years will be an upland storage site located on the Samoa Peninsula.

Work to be completed over the first two years will consist of approximately 100,000 cubic yards (cy) of material being dredged annually. The first dredging and disposal sequence will occur at the Eureka Small Boat Basin and Commercial Street Dock (approximately 82,000 cy) and a portion of the HBHRCD Woodley Island Marina (approximately 21,000 cy). The section of the Woodley Island Marina planned for the first phase of maintenance dredging is Dock F, where the U.S. Coast Guard cutter is moored. The second phase of dredging will include Woodley Island Marina Docks A through F (approximately 105,000 cy). The following three years will be comprised of maintenance dredging at various waterfront docks and marinas, and is estimated to be in the range of 30,000 to 40,000 cy annually. The planned locations for the five year cooperative maintenance dredging project and estimated volume for each area are summarized in Table 1.

Table 1
Dredging Project Location and Quantities

Year	Location	Dredging Surface Area (acres)	Estimated Total Volume (cy)[1]	Total Annual Volume (cy)
1	Eureka Small Boat Basin	7.8	82,157	103,348
	Commercial Street Dock	0.25		
	Woodley Island Marina – Dock F (Coast Guard)	2.2	21,191	
2	Woodley Island Marina – Docks A through E	11.7	105,728	105,728
3	Samoa Bridge Launch Ramp	0.086	1,250	39,149
	Bonnie Gool Guest Dock	0.38	2,230	
	Adorni Center Dock	0.044	3,930	
	BISC Dock	0.045		
	J Street Dock	0.41		
	F Street Floating Dock	0.092	740	
	Fisherman's Terminal	0.87	6,740	
	C Street Dock			
	Dock B	0.25	1,910	
	Redwood Terminal Berth 1	0.90	8,230	
	Redwood Terminal Berth 2	2.5	18,090	

Table 1 Dredging Project Location and Quantities				
Year	**Location**	**Dredging Surface Area (acres)**	**Estimated Total Volume (cy)[1]**	**Total Annual Volume (cy)**
4	Woodley Island Marina – Docks G through I	5.1	33,809	38,059
	Fields Landing Boat Yard	0.24	4,250	
5	Private Docks and Marina Maintenance Dredging	TBD[2]	TBD	30,000 to 40,000 cy

1. cy: cubic yards
2. TBD: volume to be determined

Dredging and disposal activities intended for beach surf zone disposal will be conducted during the winter months (December through March) to utilize naturally occurring conditions of high waves and strong currents to disperse the material from the beach surf zone to the outer shelf. Beach surf zone disposal was previously employed during maintenance dredging in Humboldt Bay in 1988, 1998 and 2007. The amount of material planned for annual disposal to the beach surf zone is less than half of the amount compared to each of the two previous dredging and disposal events (226,000 cy and 230,000 cy) and will occur over a shorter time frame (estimated duration 3 months). Previous monitoring programs for beach surf zone disposal has shown this method results in only minor impacts to the environment, that are short term and localized. The dredge material pipeline route and location of planned beach surf zone disposal is shown on Figure 1.

Dredging and disposal activities intended for the remaining three years of the project will be conducted during the late summer and fall months (August through October) with material intended to be placed at the Samoa Lagoons upland disposal site (Figure 2). This location has been used previously to receive dredge material and was considered to be the most probable upland disposal site for reactivation following completion of an alternatives analysis study. Existing material previously placed in the Samoa lagoons site will require removal to increase capacity, and new permits with oversight agencies will need to be acquired. The two year time frame before planned use of the Samoa Lagoons upland site will allow the HBHRCD and City of Eureka time to address these issues and to have a program in place to receive and remove dredge material from this location.

Keeping maintenance dredge material volumes in the 30,000 to 40,000 cy range annually would allow for continued use of the Samoa Lagoons upland site in the future. Handling of this reduced volume of dredged material on an annual basis will be easier to manage for the HBHRCD and City of Eureka, and will allow for discontinuation of beach surf zone disposal due to establishment of this alternate upland disposal site.

Sediment testing for each planned dredge area will be conducted according to the 2015 Sampling and Analysis Plan (SAP) completed for Eureka Waterfront maintenance dredging. The SAP has been approved by the US. Army Corps of Engineers and the Regional Water Quality Control Board. Sediment testing for constituents of concern previously identified in

Humboldt Bay will occur prior to maintenance dredging for each area to ensure suitability in material handling and intended location of placement.

Maintenance dredging for the Eureka waterfront facilities is not a new project, and is conducted on average every 10 years to maintain access for all. The Eureka waterfront maintenance dredging work was previously approved by regulatory agencies in 1987, 1997, and 2006. The proposed dredge methodology and material transport is the least intrusive option, and beach surf zone disposal in the winter months has shown to have only localized and short term impacts. Beach surf zone disposal operations will be accompanied by a monitoring program similar to those implemented during previous events. Beach surf zone disposal method is planned to be replaced by upland disposal within two years of the cooperative maintenance dredging program. Amended conditions for cutter head suction dredge operations provided in the two previous CDPs issued for maintenance dredging will be incorporated into the project along with any additional BMPs as required.

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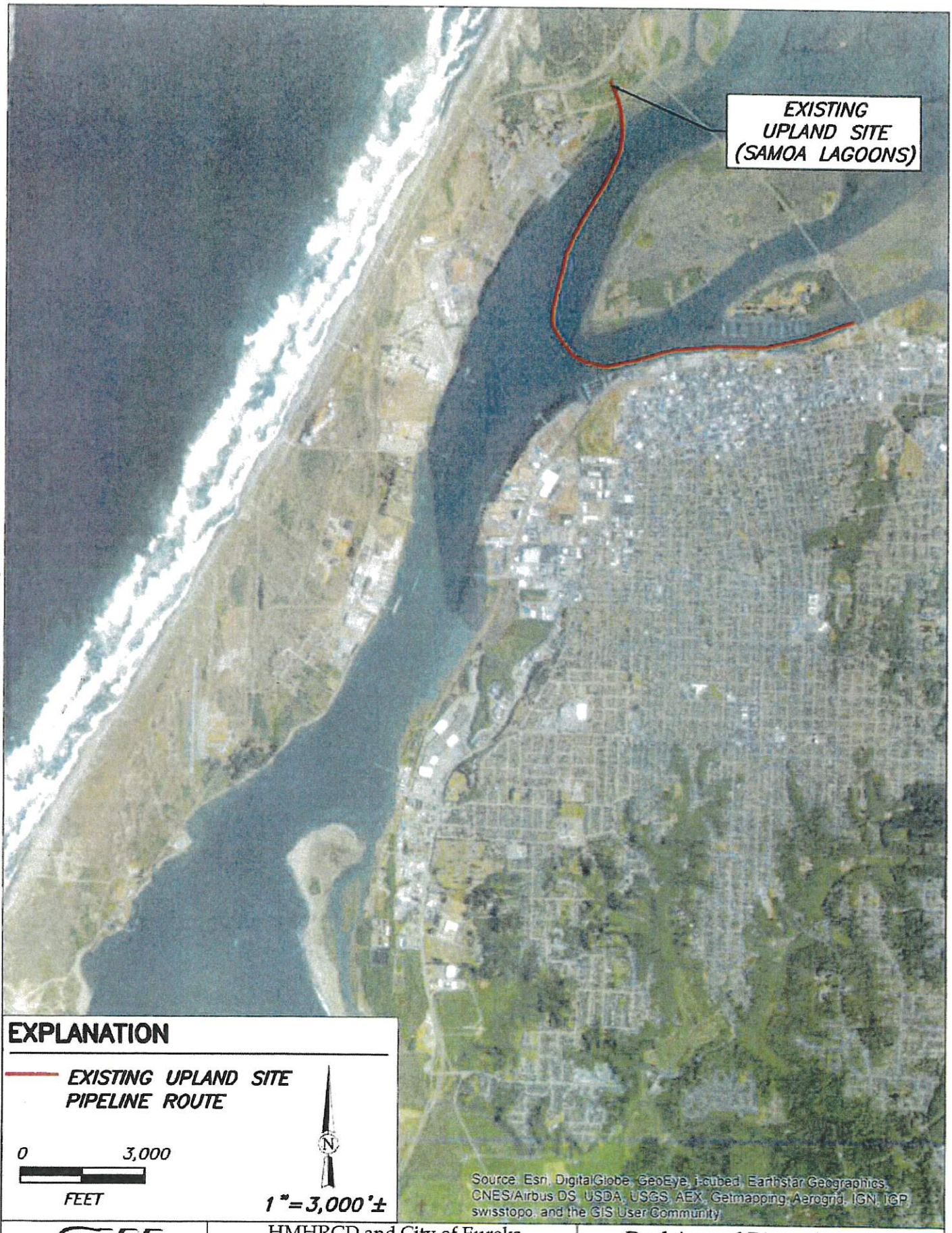
Consulting Engineers & Geologists, Inc.	HMHRCD and City of Eureka Maintenance Dredging Eureka, California	Dredging and Disposal Locations Years 1 and 2 SHN 016240.020
February 2017	Figure1_DredgingDisposal_Years1_2.mxd	Figure 1



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SHN Consulting Engineers & Geologists, Inc.	HMHRCD and City of Eureka Maintenance Dredging Eureka, California	Dredging and Disposal Locations Years 3 Through 5 SHN 016240.020
February 2017	Figure2_DredgingDisposal_Years3_5.mxd	Figure 2