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06-15-2012

Delta Stewardship Council
Public Comment

I would like to address the Council regarding Bethel Island as a Legacy Community, within Contra Costa Urban Limit Line, and HMP status regarding federal disaster funding.

First I would like to address the urban limit line as referenced in the 6-11-12, letter from Contra Costa Department of Conservation and Development. I have always been curious on why Bethel Island was included in the urban limit line, which then excluded us from the primary zone. The only reason I can come up with was the approval of the Delta Coves project, not by Contra Costa County, but by the Ninth Circuit Court in the late 80's. The general plan for the Bethel Island Area includes on island and off. Although off island is a land mass, in the sphere of influence by the town of Oakley, on island is physically separate by water and very different environment. Delta Coves conflicts with the Land Use Element statements 3-56, 3-57, 3-58. 3-56 states " New Residential development in the on-island area shall be limited at this time to approved development and one dwelling unit per parcel. 3-57 states limited development until a financing mechanism is fully and completely assured for improvements to the entire perimeter on-island levee system.

3-58 states levee breaches on-island are prohibited unless the entire perimeter levee is improved to Army Corp standards. But we have survived all this, included a intention breach despite the inconsistencies. I am concern with a conveyance system tunneling under the island. I state all this, so that the Council has an understanding that Contra Costa County has put in stop measures, as not to put more lives behind this levee system. I have included our Five Year Plan that includes the Land Use Elements.

Which brings me to the status of our levee system. On page 175, line 26,27,28, it states that the islands levees do not currently provide protection at the HMP level limiting assistance from the Federal Emergency Management Agency in the event of flooding. Attached is a letter from 4-20-2006 stating, approval from FEMA. If more verification is needed, please contact Bethel Island Municipal Improvement district or FEMA. Please correct this statement. We are currently trying to achieve PL84-99.

As to the boundaries outline in appendix K. I think it would be prudent of the board to include all the island. Marinas, homes and horse ranches, surround the island except for north-west section. This area includes agricultural lands, which if not able to develop hopefully will be put into conservation. East, is the improvement districts' 100 acre

mitigation site. I strongly urge the Council to include all of Bethel as a Legacy Community.

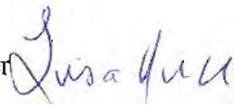
Contra Costa County ask for an explanation as why the Council believes we warrant a special note. We have been a recreation hub since WW II, that has is still rural despite all the development in East County. We are a step back. And as one Bethel Islander explained, "the Island has been everyone's great escape"

Lastly, I was sad to see the plans' statistic that 78 percent of Californians had not heard or know of the Delta. There is no marketing of the Delta as a designation, and that blame is within my own business community. If the water plan goes thru, and the science does not work, perhaps they will become aware of the Delta for a more profound reason.

Thank you for this opportunity of public comment.

Lisa Kirk

Delta property and business owner

A handwritten signature in blue ink that reads "Lisa Kirk". The signature is written in a cursive style and is positioned to the right of the typed name and title.



GOVERNOR'S OFFICE OF EMERGENCY SERVICES
 RESPONSE AND RECOVERY DIVISION
 RECOVERY BRANCH, PUBLIC ASSISTANCE SECTION
 3650 SCHRIEVER AVENUE
 MATHER, CALIFORNIA 95655
 PHONE: (916)845-8200 FAX: (916)845-8387

OES



April 14, 2006

BIMID

Mr. Paul Harper, District Manager
 Bethel Island Municipal Improvement District
 Post Office Box 244
 Bethel Island, California 94511

APR 20, 2006

Dear Mr. Harper:

SUBJECT: APPROVAL OF REQUEST FOR PUBLIC ASSISTANCE
 FEMA-1628-DR 2005-2006 WINTER STORMS
 OES ID: 013-91053 FEMAID: 013-UGVBC-OO
 SUBGRANTEE: BETHEL ISLAND MUNICIPAL IMPROVEMENT
 DISTRICT
 OES LOG: 118709.1 FEMA LOG: 1628-5

The California Governor's Office of Emergency Services (OES) is pleased to inform you that your Request for Public Assistance has been approved by the Federal Emergency Management Agency (FEMA). OES requests that you use the OES ID number noted above when corresponding with OES for this disaster. All correspondence should be addressed to:

Mr. Charles Rabamad
 Public Assistance Officer
 Governor's Office of Emergency Services
 Response and Recovery Division
 Recovery Branch, Public Assistance Section
 3650 Schriever Avenue
 Mather, California 95655
 ATTN: DR-1628

Incident Period

FEMA has declared the incident period for the 2005-2006 Winter Storms, designated as FEMA-1628-DR, closed as of January 3, 2006. Eligibility of Public Assistance costs, as a result of flooding, mudslides, and landslides, will be based on events that occurred within the incident period of December 17, 2005, through and including January 3, 2006. The incident closure date does not affect your ability to identify previously undiscovered damage that occurred during the incident period. However, pursuant to *Title 44 of the Code of Federal Regulations (44 CFR), Section 206.202*, any known damage that occurred within the incident must have been reported to OES within 60 days of the Kickoff Meeting to be eligible for federal assistance. The FEMA Regional Director may extend this time limitation based on extenuating circumstances beyond the control of the subgrantee. Additional damage must be reported in writing to OES as soon as practicable.

Project Completion Deadlines

Pursuant to *44 CFR, Section 206.204*, FEMA is requiring that all projects be completed within approved time frames or funding may be jeopardized. It is imperative that you submit a time extension request for any project that will not be completed by the current approved project

deadline. Further, time extensions will only be granted (by OES or FEMA) if your agency can demonstrate extenuating circumstances or unusual project requirements beyond its control that prevented the successful completion of the approved scope of work by the current approved project deadline. Please be advised that FEMA and OES will be scrutinizing these requests very closely and time extensions will only be approved for the most critical cases. To assist you in determining whether your agency requires a time extension, OES would like to remind you of the following time limitations for the completion of work associated with this disaster:

DR-1628 Emergency Work Deadlines (Categories A and B)		DR-1628 Permanent Work Deadlines (Categories C-G)	
Regulatory Deadline	OES' Time Extension Authority	Regulatory Deadline	OES' Time Extension Authority
08/03/06	02/03/07	08/03/07	02/03/10

As shown in the table above, OES is able to grant time extensions through February 3, 2007, for emergency work, and February 3, 2010, for permanent work. FEMA must approve time extensions for any project that will be completed after these dates. Time extension requests must include the reason for the delay, the Project Worksheet (PW) number, category of work, construction schedule, and any dates and provision of previously approved time extensions.

Alternate Projects

If your agency determines that it is not in the public's interest to complete a repair project, you may request an "Alternate Project" as defined in 44 CFR, Section 206.203(d)(2). The alternate project may be proposed for both small and large projects, but only for permanent restoration projects located within the declared disaster area. Federal funding for such alternate projects will be 75 percent of the federal share of the approved eligible costs. All requests for alternate projects must be made within 12 months of the Kickoff Meeting and must be approved by FEMA prior to construction. An environmental assessment will be performed for all alternate projects. If you require additional information regarding alternate project proposals, please contact this office.

Improved Projects

If your agency chooses to make improvements to, but still restore the predisaster function of a damaged facility, prior OES approval is required. Federal funding for improved projects is limited to the federal share of the approved estimate of eligible costs.

Change In Scope Of Work Or Additional Funding

Any change to the scope of work and/or significant increase in project funding must be requested in writing through OES. A version to the original PW will be prepared by OES based on the eligible work in the documentation provided with the request. The draft PW will be transmitted by OES to FEMA for approval. It is imperative that subgrantees wait for FEMA's

Mr. Paul Harper
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April 14, 2006

approval before initiating changes to the approved scope of work. Such work may be subject to review for compliance with various federal environmental and historic preservation regulations. Any additional work performed prior to approval by FEMA and completion of these reviews may jeopardize funding for the entire project.

Net Small Project Overrun (NSPO) Guidelines

Pursuant to 44 CFR, Section 206.204(e)(2), Public Assistance subgrantees may appeal for additional small project funding within sixty (60) days of the completion of work on their last small project. When submitting an appeal for a Net Small Project Overrun (NSPO), you must include a cost overrun summary listing all small project PWs, actual costs to complete the approved scope of work, and project completion dates.

Appeal Process

Please be informed that in accordance with 44 CFR, Section 206.206, you have the right to appeal any determination made by FEMA. Subgrantees must submit an appeal within sixty (60) days of the date of the OES letter that provides notification of the FEMA determination. OES then has an additional 60 days to review the appeal, make a recommendation, and transmit the appeal to FEMA. FEMA regulations require the subgrantee to provide the following: documented justification in support of their position, the monetary figure in dispute and the provision of federal law, and the regulation or policy with which the subgrantee believes the initial action was inconsistent. Subgrantees are encouraged to submit, at a minimum, the above documentation, as well as any additional documentation needed to best support the appeal argument. Failure to provide this information will affect OES' ability to support the appeal and still meet FEMA's regulatory deadlines.

Funding Process

Upon obligation of federal and state funds, you will be notified by OES via grant obligation notification letters. These obligation letters will describe the state and federal funding processes. Questions regarding payments of approved funding should be directed to OES' Grant Processing Section at (916) 845-8110.

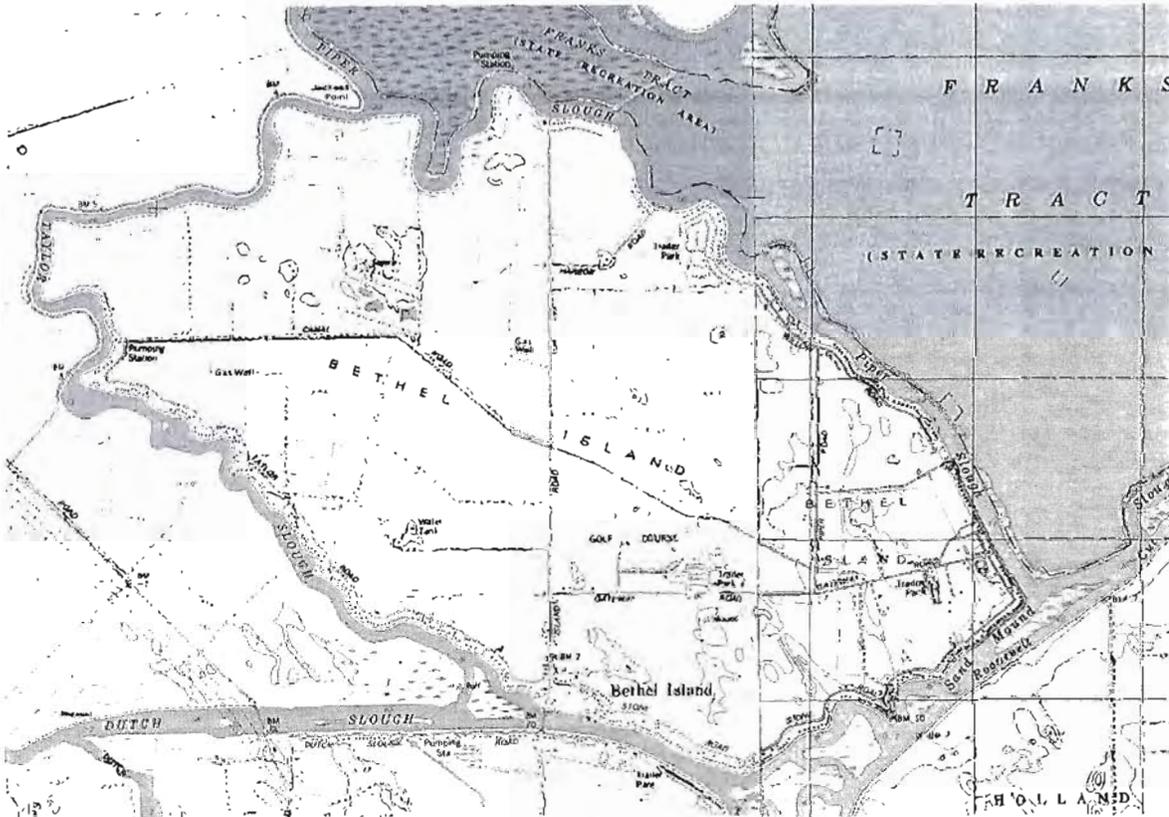
If you have any questions related to this correspondence, please contact Mr. Doug Lashmett, Deputy Public Assistance Officer, at (916) 845-8225 or Ms. Tamara Scott, Public Assistance Analyst, at (916) 845-8245. Questions regarding the Hazard Mitigation Grant Program should be directed to (916) 845-8150.

Sincerely,



CHARLES RABAMAD State
Public Assistance Officer

Bethel Island



Five Year Plan

2011 – 2016

August 2011

Prepared by:

Milani & Associates



Bethel Island

Five Year Plan: Special Flood Control Project Planning

Prepared For:

Bethel Island Municipal Improvement District

And

California Department of Water Resources (DWR)

Flood Safe Environmental Stewardship and Statewide Resources Office

Prepared by:

Milani & Associates

Project Manager/Principal EngineerMichael E. Milani, P.E., L.S.

Project Surveyor.....Ken Alcock

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Primary BIMID Contact Person:

Dan Phippen, Board President

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Bethel Island, CA 94511

BIMID Geotechnical Engineer:

Kevin Tillis

Hultgren-Tillis Geotechnical

2221 Commerce Avenue, Suite A-1

Concord, CA 94520

(925) 685-6300

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Executive Summary

Bethel Island Municipal Improvement District (BIMID) has prepared this Five Year Plan (Plan) to support and direct future planning efforts and works of improvements undertaken by the BIMID Board of Directors together with joint planning and work efforts with the California Department of Water Resources (DWR) and the Army Corps of Engineers. This document will serve as a guide to the BIMID Board for future on island improvements undertaken within the next five years.

In late 2005 BIMID engaged the services of Hultgren-Tillis Engineers to perform a geotechnical assessment and conceptual design for the existing perimeter levees serving Bethel Island. The results of that investigation were published and submitted to BIMID in early 2007. The Five Year Plan goals and objectives rely heavily on the analysis, findings and recommendation contained within the Hultgren-Tillis Geotechnical Investigation report (The Report).

BIMID was worked aggressively to improve and maintain its levee system to conform with or exceed a sustainable minimum levee standard. BIMID is working to raise levee crests to a minimum elevation of 9.2 feet (NGVD '29). All perimeter island levees crown elevations currently exceed current HMP requirements with a majority of the existing levee crown elevations conforming to PL 84-99 criterion.

This five year plan will establish priorities to accomplish the following goals:

- Develop a funding program to participate in the States Horseshoe Bend project
- Improve water side levee improvements to reduce seepage
- Raise existing levee improvements to an Elevation of 9.2 feet (NGVD '29) to meet BIMID Board directives.
- Widen existing levee improvements to provide for a continuous, all weather levee access road, sixteen (16') feet in width through the entire 11.5mile levee complex.
- Develop a pilot study to evaluate the effectiveness of a sheet pile cut off wall program to improve levee stability and reduce seepage.
- Raise existing District pump facilities above the 100 year flood elevation and
- Develop and implement on island horizontal and vertical control to conform to NAD '83 and NAVD '88 datum criterion.

All elevations referenced within this 5 year plan are based upon NGVD '29 datum.

History and Background Information

Bethel Island is one of eight western islands considered essential in preventing water quality degradation caused by the transportation of tidal salt water into the San Joaquin/Sacramento Delta. Bethel Island's location relative to the eight western islands places it adjacent to a major Delta Channel where fresh and salt water intermix. Refer to Figure 2 for a contextual map reflecting the location of the eight western islands consisting of Sherman, Twitchell, Webb Tract, Bradford, Jersey, Bethel, Hotchkiss Tract and Holland Tract islands.

Bethel Island contains approximately 3,500 acres of reclaimed lands, the majority of which lie below sea level. The island lands were reclaimed through the installation of approximately 11.5 miles of levee improvements. These improvements define the limits of the outer perimeter of the island. The recently completed Delta Cove project introduced an additional 3 miles of new internal levees. Ultimately BIMID will assume maintenance of the Delta Cove levees and associated storm drain and dewatering pump/drainage facilities. The transfer of these facilities is currently under negotiations and is subject to ongoing bankruptcy proceedings.

The Bethel Island levees are completely surrounded by tidal waterways. Bethel Island is bounded by Piper Slough to the north, northeast and east, Sand Mound and Dutch Slough to the south and Taylor Slough to the southwest, west, northwest and north. The location of Bethel Island is shown on Figure 1. The perimeter sloughs bordering Bethel Island are tidal in nature; consequently, the levees provide full-time flood protection from tidal waters. Bethel Island is unique in comparison with the other seven western islands in that the island supports both agricultural activities together with a large on island residential population and commercial/recreational businesses. In addition the on island improvements are below mean sea level which creates a levee system which functions more like a dam than an intermittent flood control facility.

The Bethel Island Municipal Improvement District was created in 1960 by a special act of the State Legislature (The Bethel Island Municipal District Act)(BIMID). The 1960 Legislative Act which created BIMID replaced and took on the levee maintenance responsibilities of Reclamation District 1619 which had been formed in 1915. Reclamation District No. 1619 was created to consolidate Swamp Land District No. 1, which was formed in 1868, together with certain sloughs/canals owned by Reclamation District 830.

On island parcels have been subject to periodic subdivision requests with the bulk of development located and concentrated along the perimeter of the island, principally the southwestern, southern southeastern, eastern and northeastern perimeters of the island. Principal development, with the exception of the Delta Cove project, consists of single family residences and commercial marina/recreational facilities.

Flooding History

Since its reclamation culminating around 1901 the island has experienced flooding events in 1907, 1908, 1909 and 1911. In recent years the Bethel Island has experienced a number of natural hazard events. The following table reflects events, event dates and estimated valuation of damage over the approximate fifty-five year record:

Type of Event	Natural Hazard Events	
	Date	Estimated Damage (\$)
Severe Weather/Wind/Rain	1/1/2006	\$542,000
Flooding	2/13/2000-2/14/2000	\$27,000
Severe Weather/Wind/Rain	12/21/1999 – 12/22/1999	\$10,000
Severe Weather/Wind/Rain	12/1998	\$90,000
Earthquake	10/17/1989	\$ 2,000
Severe Weather/Wind/Rain	2/17/1986-2/19/1986	\$ 2,000
Severe Weather/Wind/Rain	12/3/1983	\$ 2,000
Severe Weather/Wind/Rain	1/3/1982	\$ 7,000
Severe Weather/Wind/Rain	1/20/1967 – 1/31/1967	\$ 180,000

Bethel Island Municipal Improvement District

The Bethel Island Municipal Improvement District was created in 1960 by a special act of the State Legislature (The Bethel Island Municipal District Act). The 1960 Legislative Act which created BIMID replaced and assumed the levee maintenance responsibilities of Reclamation District 1619. Since BIMID assumed the responsibilities of RD 1619 it maintains the primary responsibility as any other California Reclamation District. Reclamation Districts are legal subdivisions within the State's Central Valley that are responsible for managing and maintaining non-project levees and other flood protection structures within a District's boundary.

BIMID is unique in that the 1960 Legislative Act authorizes the District to undertake and provide additional services supplemental to the normal operations and goals of a reclamation district. These services include:

- Collection, treatment and disposal of sewage, industrial wastes, storm water, garbage and refuse
- Production , storage, treatment and distribution of water
- Parks and playgrounds
- Airports
- Drainage of roads, streets and public places
- Reclamation of submerged or other lands including excavation, fill, levees, bulkheads, water pumping facilities and all related facilities
- Police services
- Abatement of nuisances that impair the District's ability to provide garbage, sewage, water storm water and reclamation services.

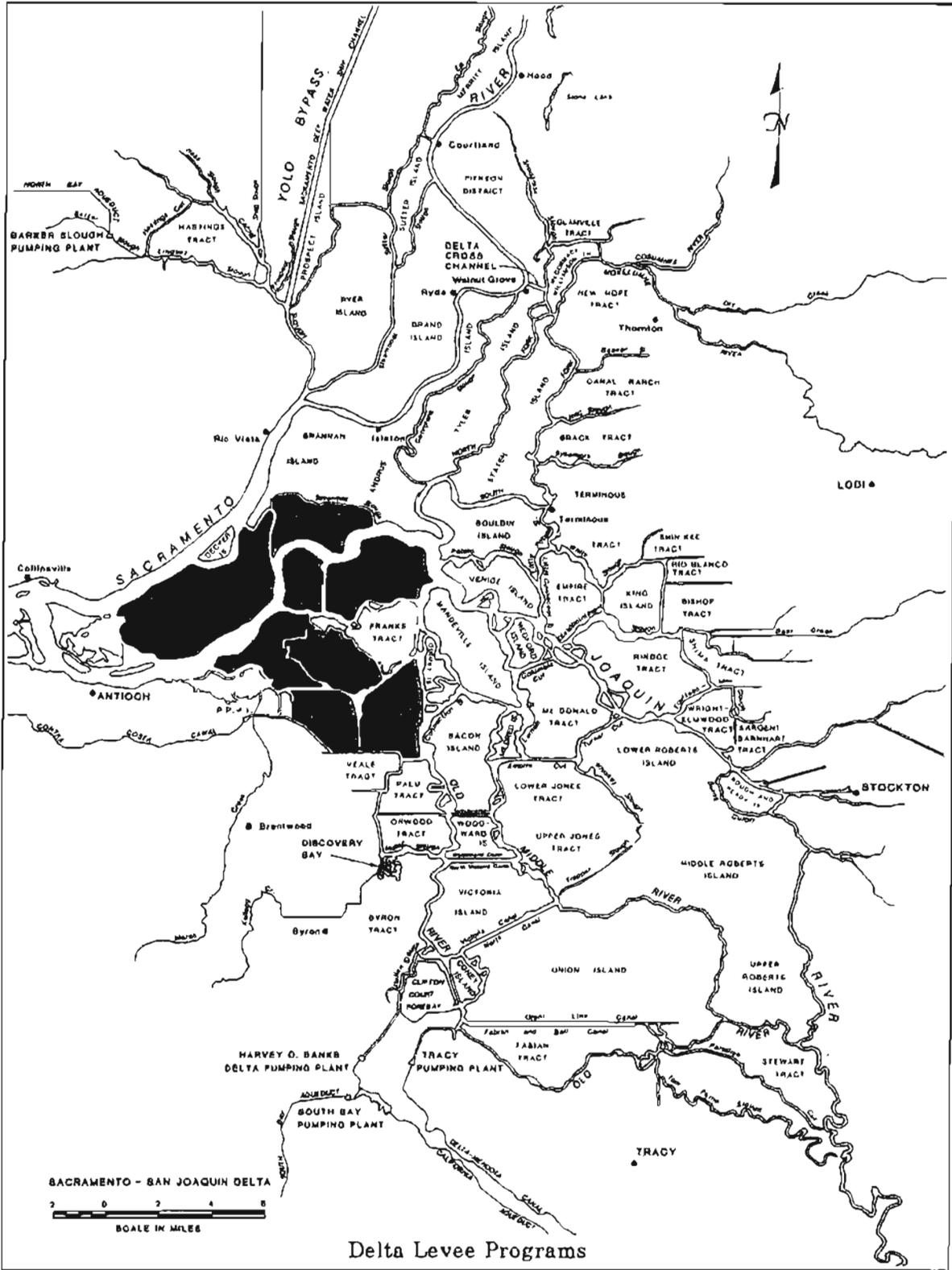


Figure 2 - Bethel Island - Contextual Site Plan of eight western Delta Islands

Bethel Island – Site Access

Bethel Island is accessed via Bethel Island Road approximately 1.4 miles north of the Bethel Island Road/Cypress Road intersection. The island proper can be accessed by crossing the Bethel Island Bridge. The bridge spans Dutch Slough from Hotchkiss Tract to the south. The bridge is maintained by Contra Costa County and bridge widening improvements were recently completed in 2010. The bridge abutment is located at approximately station 465+00. On island circulation consists of several predominant roads: Bethel Island Road is the main north-south collector street which essentially bisects the island. The newly construction Bethel Island Bridge feeds directly on to Bethel Island Road. Taylor Road borders the southerly, southwesterly and westerly limits of the island and is situated westerly of Bethel Island Road. Taylor Road intersects Canal Road at the far westerly tip of the island. Stone Road borders the southerly, southeasterly limits of the island and is situated easterly of Bethel Island Road. Riverview Drive and Willow Road border the easterly limits of the island.

BIMID Ability to Pay Study

Currently Bethel Island has an approved 25%/75% cost sharing agreement with the State for all SB34 expenditures. On all proposed levee enhancement projects undertaken during this 5 year plan the approved work agreement will seek an enhanced cost sharing contribution of 10 percent (10%), resulting in a 15/85 % cost sharing allocation. The enhanced cost sharing contribution is based upon the significant contribution that Bethel Island levee improvements make in protecting State interests and protecting California's Delta water quality. Catastrophic water quality and water delivery impacts would occur with a Bethel Island Levee failure due to the residential and commercial on-island development. Water quality impacts due to contamination from onsite septic tanks, agricultural pesticides, herbicides, fertilizer, fuel oil, household solvents, chemical and cleaning agents pose considerable adverse impacts. In addition, floatables, such as propane tanks, large wood debris and other residential/commercial related debris pose adverse navigation impediments to both private and commercial vessels. This would occur both in the Delta environment and ultimately the San Francisco Bay as debris is transported downstream with river flows. These potential catastrophic impacts must also be considered in parallel with the potential loss and damage to on-island improvements, public and private, as well as potential loss of life. The costs associated with the 2004 Upper Jones Tract levee failure pale in comparison to a similar type levee failure on Bethel Island.

Levee System Evaluation

Levee Stationing Protocol

The 11.5 mile levee system for Bethel Island maintains a basis of stationing with Station 0+00 taken at the westerly terminus of the main east-west drainage canal. Stationing proceeds in a clockwise direction terminating roughly at Station 608+00 (0+00). As part of the 5 year plan BIMID will undertake a more rigorous field survey protocol to establish on and off island horizontal and vertical control to comply with NAD 83 and NAVD 88 survey requirements and develop an overall island stationing scheme which is tied directly to either the levee crest or levee road centerline. The current on island levee stationing protocol is reflected on Figure 3.

Levee Evaluation

The existing levee system is approximately 11.5 miles long and defines the boundary of Bethel Island. Bethel Island is bounded by tidal sloughs comprised of Dutch Slough, Piper Slough, Taylor Slough and Sand Mound Slough. Unlike many of the western islands the levees on Bethel Island provide full time flood protection from tidal waters. Typical tide elevations range from Elevation 0 feet to Elevation 4 feet. Minus tides and High Tides range from Elevation -2 to Elevation 5. The 1993 Sacramento -San Joaquin Delta Atlas reflects anticipated 100 year flood elevations will range from an elevation of 6.7 feet on the western side of Bethel Island up to elevation 7.0 at the far eastern side of the island. Most of Bethel Island is situated below the tidal elevations contained within the adjoining sloughs. Existing ground surface elevations along the toe of the land side levee slope vary from Elevation 0 to Elevation -12. The following table reflects the approximate land side surface elevations adjacent to the levee toe of slope.

Station Range	Approximate Elevation at Land Side Toe of Slope (NGVD '29 datum)
0+00 to 20+00	-10 feet
20+00 to 70+00	-8 feet to -12 feet
70+00 to 190+00	-6 feet to -12 feet
190+00 to 570+00	0 feet to -5 feet
570+00 to 608+00 (0+00)(End)	-10 feet

Land side elevation is below mean sea level.

The landside height of the perimeter levees ranges from ten feet (10') to fifteen feet (15') along much of the islands developed perimeter (Station 190+ 00 to Station 590+00) with the height differential increasing to approximately twenty (20') to twenty-five feet (25') along a majority of the levee complex where development has not occurred (Station 590+00 to Station 190+00).

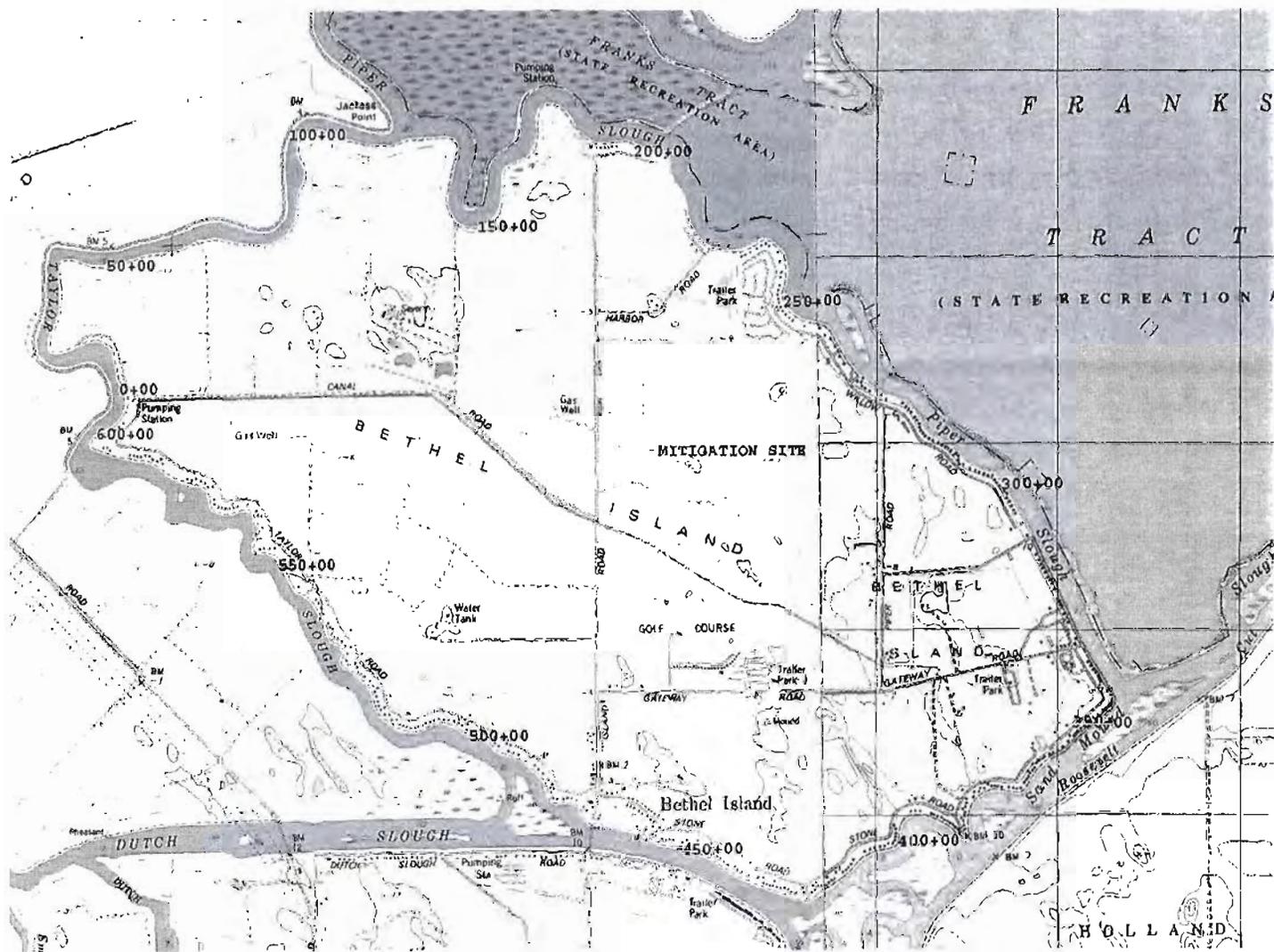
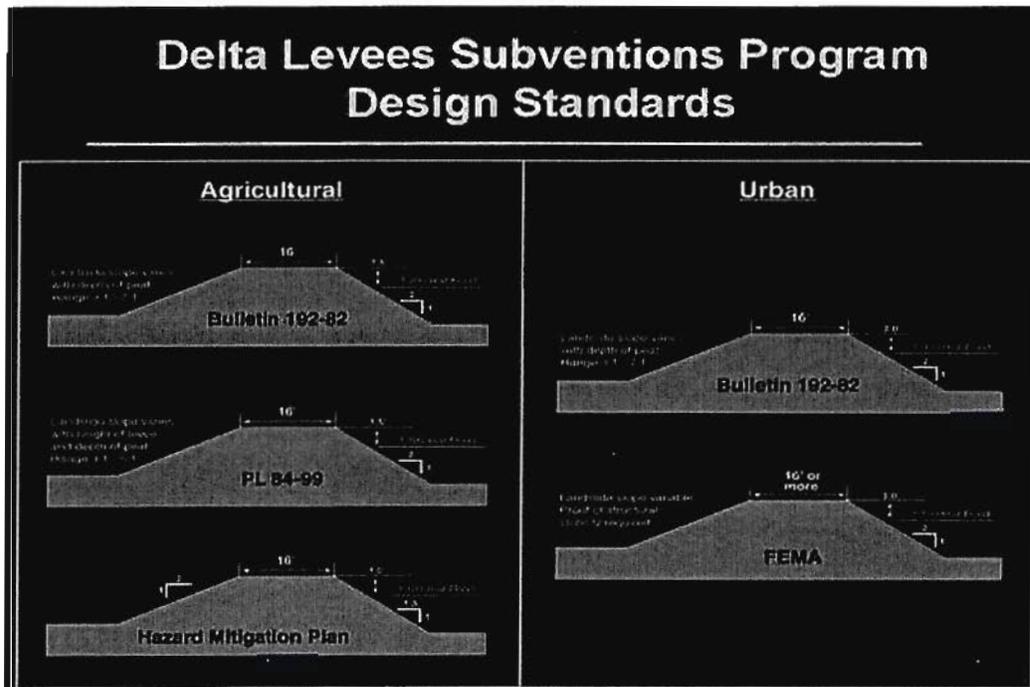


Figure 3; Bethel Island - Levee Stationing



<http://www.water.ca.gov/floodmgmt/dsmo/images/Levee-Design-Standards.png>

9/19/2011

Figure 4 - Delta Levee Design Standards

Existing Level of Protection

The interior areas of Bethel Island are below mean sea level; consequently the island levees provide continuous flood water protection. Typical levee systems are designed to protect against anticipated storm flood events, typically the 100 year or 300 year storm recurrence event. Since the Bethel Island levees are constantly subject to hydrostatic forces these levees function more as a dam rather than a conventional flood control levee. The constant exposure to hydrostatic forces results in increased risk of a levee breach or breaches, uncontrolled seepage and adverse performance during dynamic earthquake events, such as differential settlement and lateral deformation.

Since levee construction has been the principal historic method in the reclamation of tidal, marsh and submerged lands for agricultural purposes levee standards have been developed and refined over the last one hundred years. Minimum levee standards have been developed for participation in Federal Funding programs and the National Flood Insurance Program (NFIP). Figure 4 reflects the various levee sections that have been applied to various projects within the San Joaquin-Sacramento River watershed.

Within the Delta two standards are widely utilized in the construction and rehabilitation of levee facilities, 1) the Hazard Mitigation Plan (HMP) and 2) the Army Corps of Engineers PL84-99. The HMP and the PL84-99 set levee crown elevations relative to the 100 year flood event. DWR Bulletin 192-82 sets levee crown elevations relative to the 300 year flood event. Levees constructed or rehabilitated to comply with these levee cross section geometries can apply for and receive State and Federal funding support through DWR. Bulletin 192-82 sets the upper limit of levee work which would be considered for either partial or complete funding through DWR. The standards also set parameters for levee crest top widths and slope gradients for both water side and land side embankment slopes.

The levee cross sections reflected on Figure 4 reflect years of engineering experience in evaluating and developing effective flood control measures. These levee cross sections are essentially geometric shapes which address static conditions. Additional elements need to be considered in the effectiveness, safety and reliability of levee systems. These include seepage considerations and levee performance relative to dynamic forces such as earthquake loads. These considerations apply not only to the geometric levee improvements themselves but also to the underlying soils that support the levee facilities.

These additional elements are critical to the ongoing performance of the Bethel Island levees. The 5 year plan will need to address levee performance relative to not just levee geometrics (HMP v. PL 84-99) but must also address ongoing seepage and potential adverse settlement and potential lateral spread during earthquake events.

HMP Standard

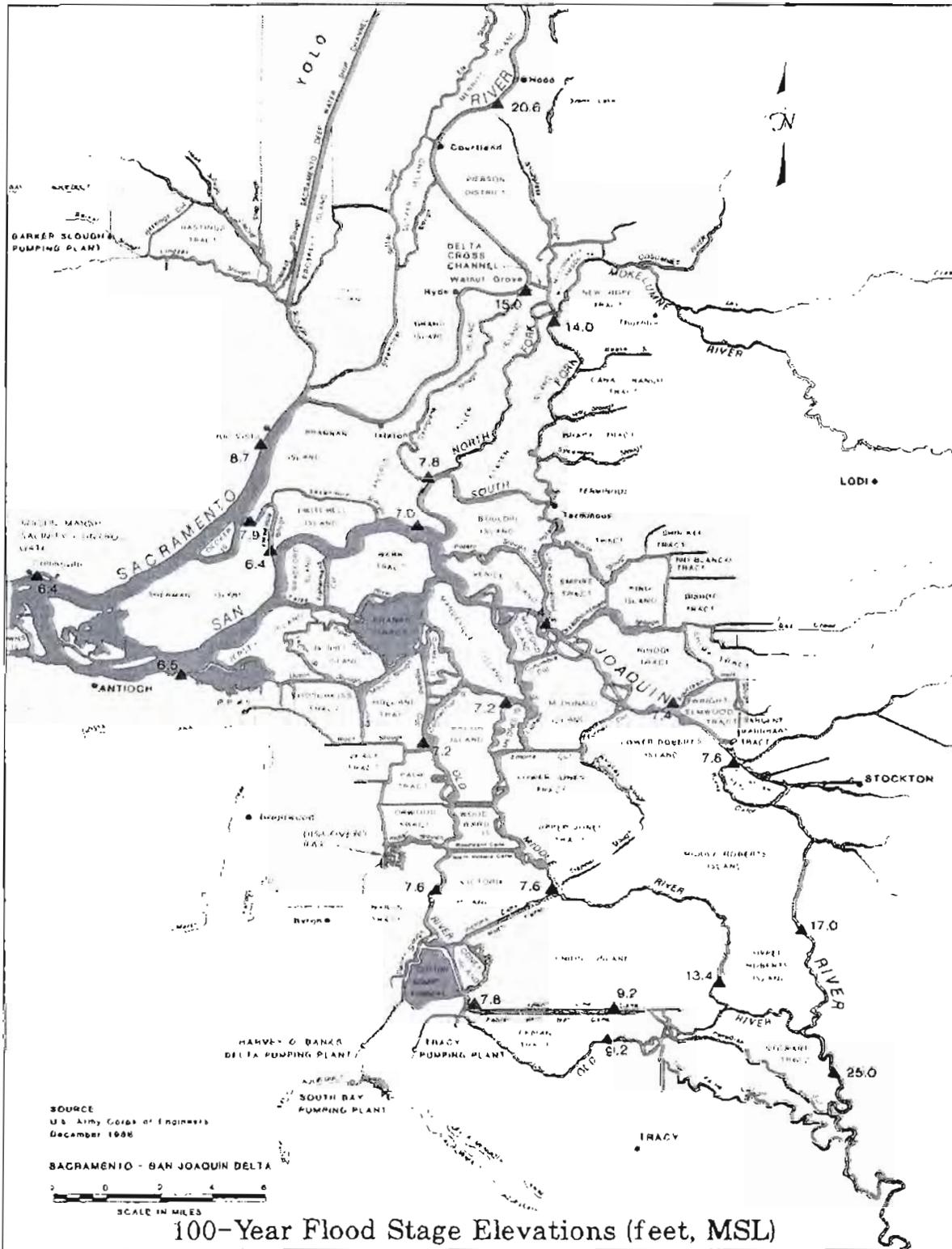
The 1993 Sacramento -San Joaquin Delta Atlas reflects anticipated 100 year flood elevations will range from an elevation of 6.7 feet on the western side of Bethel Island up to elevation 7.0 at the far eastern side of the island (refer to Figure 5)(NGVD '29 datum). The levee crown elevation compliance evaluation for HMP standards can be found in the appendix section of this report. A review of the table reflects that the current perimeter levee crest elevation exceeds the HMP elevation of 1 foot above the 100 year flood elevation; however, the current levee system is not compliant relative to levee crest width (16' min.) and both water side and land side levee slope gradients in many locations.

PL84-99

The 1993 Sacramento -San Joaquin Delta Atlas reflects anticipated 100 year flood elevations will range from an elevation of 6.7 feet on the western side of Bethel Island up to elevation 7.0 at the far eastern side of the island (refer to Figure 5) (NGVD '29 datum). The majority of the current perimeter levee crest does meet the levee crest elevation of 1.5 foot above the 100 year flood elevation; however, the current levee system is not compliant relative to levee crest width (16' min.) and both water side and land side levee slope gradients in many locations. The levee crown elevation compliance evaluation for PL84-99 standards can be found in the appendix section of this report. A review of the table reflects that a small portion of the levee system is not compliant with PL84-99 requirements as noted in the table below:

Levee Stationing –Non Compliance with PL 84-99 Standards	Total Length of Levee
223+00	100 lf
258+00	100 lf
261+00	100 lf
279+00	100 lf
298+00 TO 302+00	400 lf
308+00	100 lf
326+00 to 327+00	200 lf
465+00	100 lf
584+00	100 lf
	1,300 lf

The results indicate that at many of the non-compliant levee locations are out of tolerance by approximately 0.2'. The results indicate that a more rigorous as built survey with more accurate information will be useful in determining levee crown compliance relative to PL 84-99 requirements.



Sacramento-San Joaquin Delta Atlas

Department of Water Resources
Revised 7/95

Figure 5 - 100 year flood stage elevations

BIMID Levee Crest Elevation 9.2

The BIMID board of directors has established a desired levee crest Elevation of 9.2 (NGVD'29).

The levee crown elevation compliance evaluation for the Boards desired crest elevation of 9.2' can be found in the appendix section of this report. A review of the table reflects that a large portion of the Bethel Island levee system is not compliant with Boards 9.2' desired levee crest elevation.

Levee Stationing –Non Compliance with BIMID Goal of 9.2' (NGVD '29)	Total Length of Levee
7+00 to 9+00	200 lf
13+00 to 14+00	100 lf
17+00 TO 18+00	100 lf
29+00 to 38+00	900 lf
55+00 TO 58+00	300 lf
74+00 to 77+00	300 lf
192+00 to 199+00	700 lf
221+00 to 223+00	200 lf
228+00 to 241+00	1300 lf
257+00 to 261+00	400 lf
279+00 to 280+00	100 lf
291+00	100 lf
298+00 to 302+00	400 lf
307+00 to 309+00	200 lf
326+00 to 327+00	100 lf
378+00 to 380+00	200 lf
451+00 to 453+00	200 lf
463+00 to 466+00	100 lf
495+00	100 lf
501+00	100 lf
513+00 to 519+00	600 lf
528+00	100 lf
532+00 to 535+00	200 lf
558+00 to 559+00	100 lf
563+00	100 lf
568+00 to 573+00	500 lf
578+00 to 586+00	800 lf
591+00 to 605+00	1400 lf
	9,900 lf = 1.87 miles (approx 16% of total levee facilities)

Desired Level of protects at end of 5 year plan:

At the conclusion of the 5 year plan all levee crest elevations will meet or exceed PL84-99 criterion and be compliant with the BIMID Board of Directors directive of maintaining levee crest elevations at a minimum elevation of 9.2' (NGVD '29 datum). This can be accomplished since less than 2 miles of levee crest falls below the desired elevation with a maximum differential of 1 foot with an average of approximately 0.5 feet.

Other Levee Safety Criterion

As discussed earlier other considerations must be addressed in evaluating levee safety and the effectiveness for the Bethel Island levee system due to its unique sub-sea level orientation. Geometric properties have historically proven their reliability with the underlying assumption that the supporting foundation material supporting the levee mass was stable. Since 1) Bethel Island relies entirely on the ongoing performance of its levee system to maintain the land side activities and 2) the levees are continuously exposed to hydrostatic forces the following additional parameters must be evaluated in order to prioritize on island improvements within the duration of this 5 year plan. These additional considerations include:

- Seepage
- Water side erosion protection
- Ongoing settlement and lateral deformation
- Seismic Performance relative to permanent deformation and underlying soil liquefaction potential.

The Geotechnical Investigation report prepared by Hulgren-Tillis specifically addresses this additional levee safety criterion. The report generally concludes that Bethel Island is at risk from a levee breach(s) which could occur during a significant seismic event as well as a seepage induced levee breach.

Constraints to Maintenance and Levee Rehabilitation

Levee repairs and levee rehabilitation on Bethel Island are subject to a number of significant constraints. Unlike the other western islands Bethel Island has seen a significant level of on island development, the majority of which is located adjacent to the existing levee improvements and in some cases encroach directly in to the levee cross section.

BIMID operations are not only constrained by physical constraints, but unlike the other western islands is subject to significant political constraints as well.

Political Constraints:

Bethel Island is unincorporated; consequently all development requests and building permit applications fall under the jurisdiction of the Contra Costa County Planning and Public Works Departments. All development applications must be consistent with the County's current General Plan and Zoning Districts. A copy of the current County General Plan Land Use Map and Zoning District Map can be found in the appendix section of this report. Also included in the Appendix section of the 5 year plan are the current General Plan Development goals and policies developed for Bethel Island as one of the unincorporated regions of the Contra Cost County. The General plan provides for and sets guidelines and regulations for anticipated development opportunities on Bethel Island. The Contra Costa County Board of Supervisors is the agency possessing oversight and final development approvals for all new land development applications on Bethel Island. BIMID has the opportunity to review and comment on all applications but does not have any authoritative position in the legislative approval process. The recently constructed Delta Cove Project is an example of this process. The master developer and owner of the Delta Cove Project sued Contra Costa County and ultimately obtained an entitlement approval for the master planned residential community. A copy of the Court's Final Judgement can be found in the appendix section of this report.

Bethel Island will most likely be subject to additional residential and commercial subdivision requests in the future and BIMID will remain unable to execute any effective legislative action to deny or levy effective conditions of approval that will address past DWR concerns relative to on island development. Sections of the General Plan policies and goals are contained in the appendix section of this plan. Attention is called to Policies Regarding Flooding Due to Levee or Dam Failure, or Tsunami - Section 10-52. Bethel Island and Discovery Bay are specifically exempt from conforming or adhering to this General Plan policy.

Physical Constraints:

A large portion of the perimeter levee system is impacted by existing development. Development improvements consist mainly of residential single family residences located in close proximity the landside levee toe and in some case actually encroach in to the structural levee landside slope. Several marina facilities are also operating within the levee footprint.

Landside improvements can be typically characterized as retaining walls constructed in to the landside levee face, deck foundations, ramp elements providing access from a residential structures to the levee crest as well buried utilities. Waterside development typically consists of private and commercial marina boat docks, associated gangways for water side boat dock access, bulkhead walls and miscellaneous underground utilities supporting the water side improvements. Approximately 8.3 miles of levee improvements and operations are impacted by existing improvements, largely from Station 0+00 to Station 20+00 and from Station 190+00 to Station 608+00 (0+00). This constraint impacts approximately 72% of the Bethel Island perimeter Levee System and poses a significant impediment to normal and tradition levee rehabilitation activities to improve levee safety performance.

Habitat Mitigation Measures

All levee rehabilitation efforts, both on the land side and on the water side will potentially impact existing habitat. As part of the 5 year plan BIMID will work with the Department of Fish & Game to identify and map existing habitat elements which may be impacted by works of improvement undertaken as part of the 5 year work plan. Mitigation ratios will be developed and on island mitigation will be explored. It is anticipated that all habitat impacts will most likely be mitigated though the purchase of off island mitigation bank lands on a project by project basis. BIMID does own and maintain a 106 acre mitigation area on island and has successfully utilized this area to mitigate construction related habitat impacts encountered during prior BIMID levee rehabilitation projects. Currently 44.2 acres of the 106 acre site (41.7%) is currently utilized as active mitigation and is part of the annual operating budget for BIMID. The BIMID Board has expressed a preference to mitigate habitat impacts through the purchase of off island mitigation banks in an effort to offset ongoing on-island habitat mitigation maintenance costs.

Conceptual Rehabilitation Schemes

Due to the complexity of on island development effective rehabilitation schemes must be broken down and prioritized for two separate conditions 1) levee sections in undeveloped areas (Station 20+00 to 190+00) and 2) levee sections where development has occurred adjacent to the landside levee toe, water side of the levee or both.

Levee rehabilitation efforts will focus on rehabilitation schemes which address and mitigate levee performance concerns as outlined in the 2007 Hultgren-Tillis Levee Assessment and Conceptual Design geotechnical investigation report.

Levee rehabilitation schemes conducted as part of this 5 year plan will focus on levee improvements which will bring the levee crest in compliance with the desired 9.2' elevation and water side slope face rip rap installation to address ongoing erosion protection concerns.

Water Side Rehabilitation Schemes

Water side rehabilitation efforts will be limited to placement of new rip rap or augmentation of existing rip rap for erosion protection. Placement of water side rip rap to control seepage in developed areas does not appear to be cost effective. Placement of rip rap in the developed areas can only be placed from the land side top of levee due to existing private and public dock facilities. Limited working room along the top of levee complicates staging and storing of rock and the type of equipment that can be utilized. In addition, since residential occupied areas are active living areas work must consider restricted work hours and increased safety concerns, all of which result in higher than normal construction costs in comparison with similar type work conducted on the other western islands.

Land Side Rehabilitation Schemes

Land side levee rehabilitation schemes in developed areas as noted in the Hultgren-Tillis report (Report) will be limited efforts which will focus on improving levee performance to reduce seepage and address potential liquefaction considerations. The Report concluded that the most cost effective and reliable mitigation method was a dual sheet pile system. This 5 year plan will undertake a pilot program to evaluate the constructability and effectiveness of a dual sheet pile system. The dual sheet pile system will also explore sheet pile placement to accommodate levee crest widening to meet the minimum 16' width requirement.

Land side levee rehabilitation in the undeveloped areas of the island, with the exception of Horseshoe Bend, will use more conventional rehabilitation schemes which rely upon conventional earthwork methods. This levee rehabilitation scheme will address a widened levee crest with a seepage barrier and the introduction of additional fill to create a landside toe mass for additional seismic safety. All fill requirements can be provided from on island borrow sites. BIMID owns and maintains a 106 acre habitat mitigation site. Excavation from this area will provide a source for needed fill material.

Horseshoe Bend

In July 2010 BIMID has entered in to a cost sharing agreement with the Army Corps of Engineers to undertake a study to evaluate various options for levee improvements at Horseshoe bend. The study has been estimated to cost \$1,300,000. The 5 year plan will need to address a funding mechanism to meet its cost sharing participation levels. The agreement specifies that the cost sharing will be a 50/50 cost sharing obligation with BIMID portion being \$600,000. The 5 year funding plan will need to address BIMID obligation in participating in the Horseshoe Bend Levee Stability Study.

Projected 5 Year Plan Cost Estimate:

The improvements to be undertaken within this 5 year plan include:

- Ongoing participation in the Corps Horseshoe Bend Levee Stabilization Study
- Development and implementation of a dual sheet pile pilot study for levee rehabilitation in the developed areas of the island.
- Conventional levee rehabilitation along portions of the undeveloped areas of the island utilizing on island fill material.
- Purchase of off island mitigation credits for construction related Habitat impacts
- Water side slope rip rap for erosion protection
- Raising levee crest to conform with PL84-99 standards and the desired crest elevation of 9.2' (NGVD '29 datum)
- Install aggregate base rock to create an all weather access road over the entire 11.5 mile levee complex
- Raise district pump facilities above anticipated inundation levels.
- Development of an on island horizontal and vertical control network utilizing NAD '83 and NAVD'88 standards. Work will include development of a levee crest road stationing scheme and installation of levee crest station markers.

A comprehensive cost estimate can be found in the appendix section of this report.

Levee Maintenance

Regular maintenance is critical maintaining the integrity and sustainability of the Bethel Island levee system. BIMID maintains an aggressive and ongoing levee inspection and maintenance program. BIMID's maintenance activities include:

1. Periodic inspection of the entire 11.5 mile levee system by the District Foreman.
2. Periodic inspection and cleaning of all land side levee toe ditches
3. Control of vegetative growth.
4. Periodic trimming of trees to provide vertical clearance in non residential use areas.
5. Requiring periodic homeowner maintenance of trees and shrubs planted within the levee geometrics through inspections and notices of abatement to cure horizontal and vertical encroachments to levee access.
6. Periodic inspection of residential areas to validate construction activities are compliant with approved County and BIMID permits and issue stop work and abate order for non-permitted construction activities.
7. Repair and restoration of waterside slope protection
8. Removal of encroachments where permitted.
9. Ongoing rodent control within the levee geometrics.
10. Periodic repair of minor slumps, erosion and boils.

All maintenance and minor levee repair operations are conducted by BIMID Staff. Large more complex maintenance and repair operations are contracted out subject to BIMID contracting protocol.

Emergency Evacuation & Response Plan:

BIMID maintains an active emergency evacuation and response plan. This plan includes the following:

1. Monthly testing of the emergency safety siren.
2. Periodic neighborhood meetings to review and reinforce on island emergency evacuation procedures, rally points and emergency staging areas on a neighborhood by neighborhood basis.
3. Provide written evacuation procedures to all on island residences and places of business and rally points should emergency evacuation procedures be implemented.
4. Post emergency signage to inform residences should safety sirens sound in an emergency situation.

BIMID maintains an active website www.bimid.com. A pull down menu button titled "Emergency Help and Planning" directs a person to directions and instruction in the case of a levee break or breach.

The following is a sample of the information provided at the BIMID web site:

IN THE EVENT OF A LEVEE BREAK OR BREACH

In the event of a Bethel Island levee break or breach, the Bethel Island siren system will be activated by a representative of the Bethel Island Municipal Improvement District. In conjunction with the activation of the siren system, the Contra Costa County Telephone Emergency Notification System (TENS) will be activated and the following message will go out to every telephone with a billing address in the 94511 zip code.

"This is a message from the Contra Costa County Sheriff's Office.

There is an Immediate Evacuation of Bethel Island. Due to a levee breach at LOCATION if verified by BIMID, an immediate evacuation has been ordered for all residents on Bethel Island.

Do not attempt to drive off the island or onto the levee, as emergency vehicles need to get through. Move onto the levee and walk to the nearest evacuation point.

If able, help a neighbor in need of evacuation assistance. Take only those essential items you have ready and can carry with you. Household pets must be in a carrier or on a leash. Stay off the phone unless you need to report a life-threatening emergency at your location.

For more information tune to local radio station 740 am, marine radio station 16, or television."

The web site provides information regarding emergency information signage in the event of a evacuation:

- **Emergency Evacuation Signs:** In the unlikely event of an emergency there are a total of 13 rally points that currently all have **EVACUATION ROUTE SIGNS** in place at the street entrance to the following marinas: San Joaquin YC, Mariner Cove Marina, Caliente Harbor, Anchor Marina, D'Anna Yacht Center, Emerald Pointe Marina, Frank's Marina, Lundborg Landing, Sugar Barge Marina, Russo's Marina, Beaton Harbor, Betnel Harbor and WilloWest Harbor. The community thanks these businesses for their cooperation! Emergency planning will remain a high priority for our community. If you would like to volunteer to assist the community during an emergency please call the BIMID office (925) 684-2210 and leave your name, address and phone number, you will be contacted.



Sample evacuation distribution material prepared by BIMID staff and distributed to on island residences can be found in the appendix section of this report.

Opportunities for Joint Participation:

The primary goal of the BIMID Board is to attain a sustainable levee crest elevation at Elevation 9.2 (NGVD'29 datum) along the entire 11.5 mile levee system. Maintaining a sustainable levee system meets several local objectives 1) of protecting on island residences, their personal property as well as private businesses 2) protecting on island public facilities and 3) providing on island residences and off island visitor active recreational water based activities. The overriding larger objective is to maintain water quality objectives within the Delta which provides ongoing, reliable water to farmers and a host of other end users. In addition, BIMID has committed to participate with the Army Corp of Engineers with the ongoing development and implementation of the Horseshoe Bend Rehabilitation project.

Prioritization of Improvements & 5 Year Cash Flow projections:

The primary goal of the BIMID Board is to attain a sustainable levee crest elevation at Elevation 9.2 (NGVD'29 datum) along the entire 11.5 mile levee system and to develop and effective and cost effective sheet pile levee stabilization program.

The sheet pile pilot program will be initiated in the first two years of the overall 5 year plan. The following two years will evaluate the effectiveness of the pilot program to meet design and performance objectives relative to project costs.

Raising of the levee crest to meet the Board's desired minimum Elevation of 9.2 will be initiate in year one of the 5 year plan and will be completed by the end of the 5 year corresponding to fiscal year 15/16. This will bring the levee crest elevation in compliance with PL84-99.

A 5 year cash flow project can be found in the appendix section of this report.

Appendix

Bethel Island - Contra Costa County General Plan:

Contra Costa County General Plan Land Use Map – Bethel Island

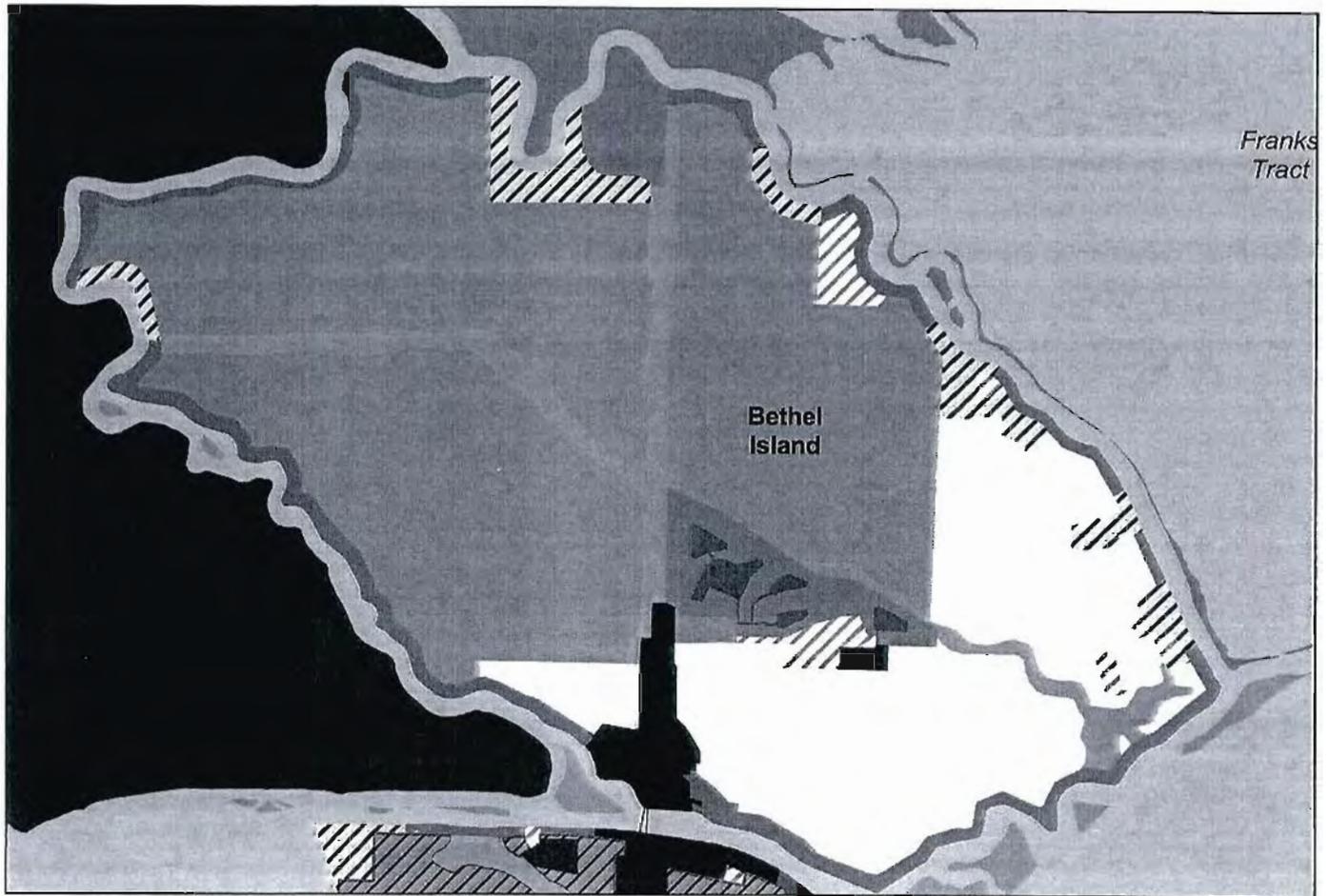


Figure 6: Contra Costa County General Plan Land Use Element – Bethel Island

See Following Page for Land Use Designation Legend

General Plan Land Use Element



General Plan Designations for Land Within Contra Costa County

M-1 (Parker Avenue)	ML (Multiple Family Residential - Low)	CR (Commercial Recreation)
M-2 (Downtown/Waterfront Bodeo)	MM (Multiple Family Residential - Medium)	ACQ (Airport Commercial)
M-3 (Pleasant Hill BART)	MH (Multiple Family Residential - High)	LF (Landfill)
M-4 (Willow Pass Road)	MV (Multiple Family Residential - Very High)	MU (Mixed Use)
M-5 (Willow Pass Road Commercial)	MS (Multiple Family Residential - Very High Special)	PS (Public/Semi-Public)
M-6 (Bay Point Residential)	CC (Congregate Care/Senior Housing)	PR (Parks and Recreation)
M-7 (Pittsburg/Bay Point BART Station)	MO (Mobile Home)	OS (Open Space)
M-8 (Dougherty Valley Village Center)	CO (Commercial)	AL (Agricultural Lands)
M-9 (Montalvo Manor)	OE (Office)	AC (Agricultural Core)
SV (Single Family Residential - Very Low)	BP (Business Park)	DR (Delta Recreation)
SL (Single Family Residential - Low)	LI (Light Industry)	WA (Water)
SM (Single Family Residential - Medium)	HI (Heavy Industry)	WS (Watershed)
SH (Single Family Residential - High)	AI (Agricultural Lands & Off-Island Bonus Area)	

Figure 7: Contra Costa County General Plan Land Use Legend

Contra Costa County Zoning Map – Bethel Island

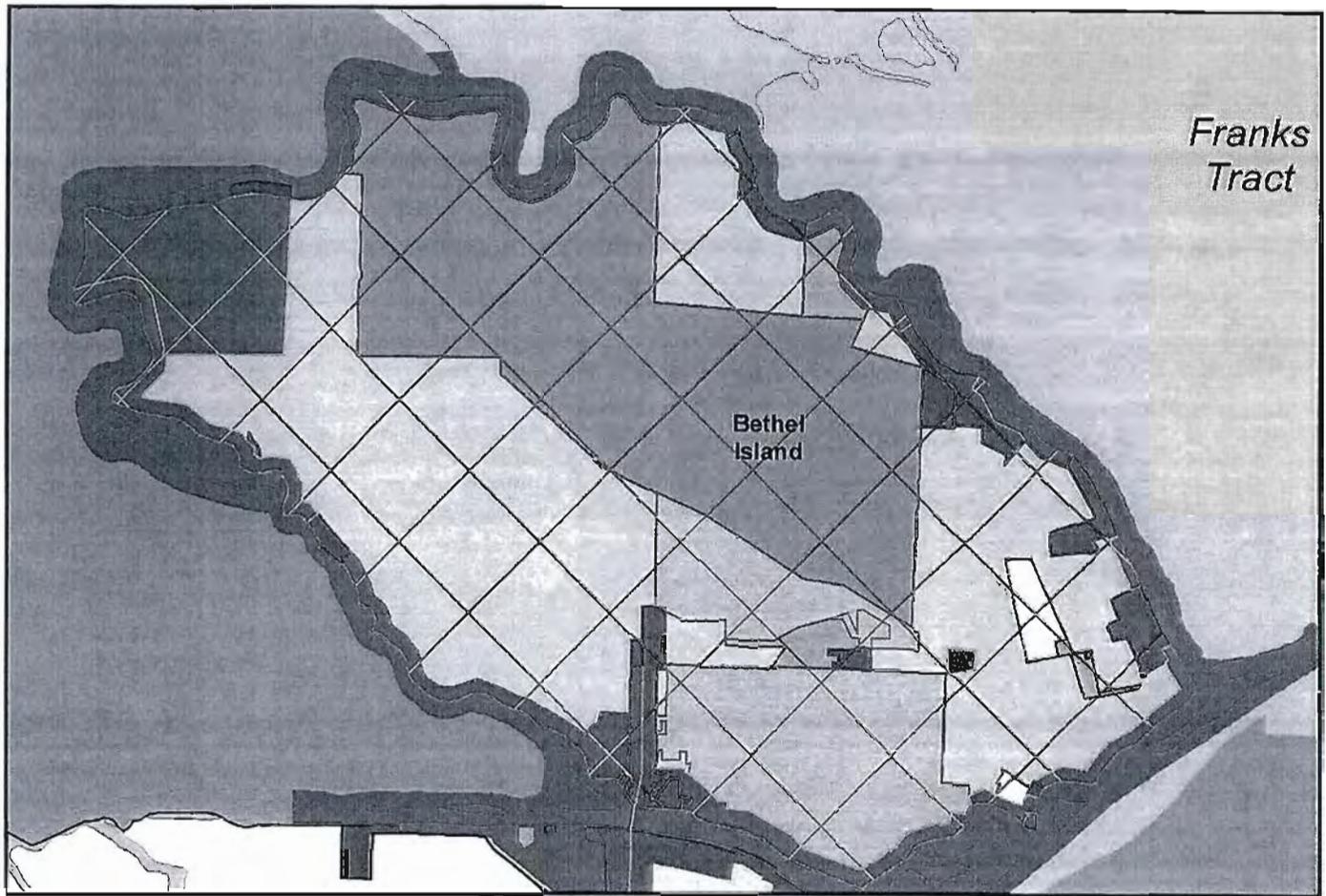


Figure 8: Contra Costa County Zoning - Bethel Island

See Following Page for Zoning Map Legend

Contra Costa County Zoning Map Legend – Bethel Island

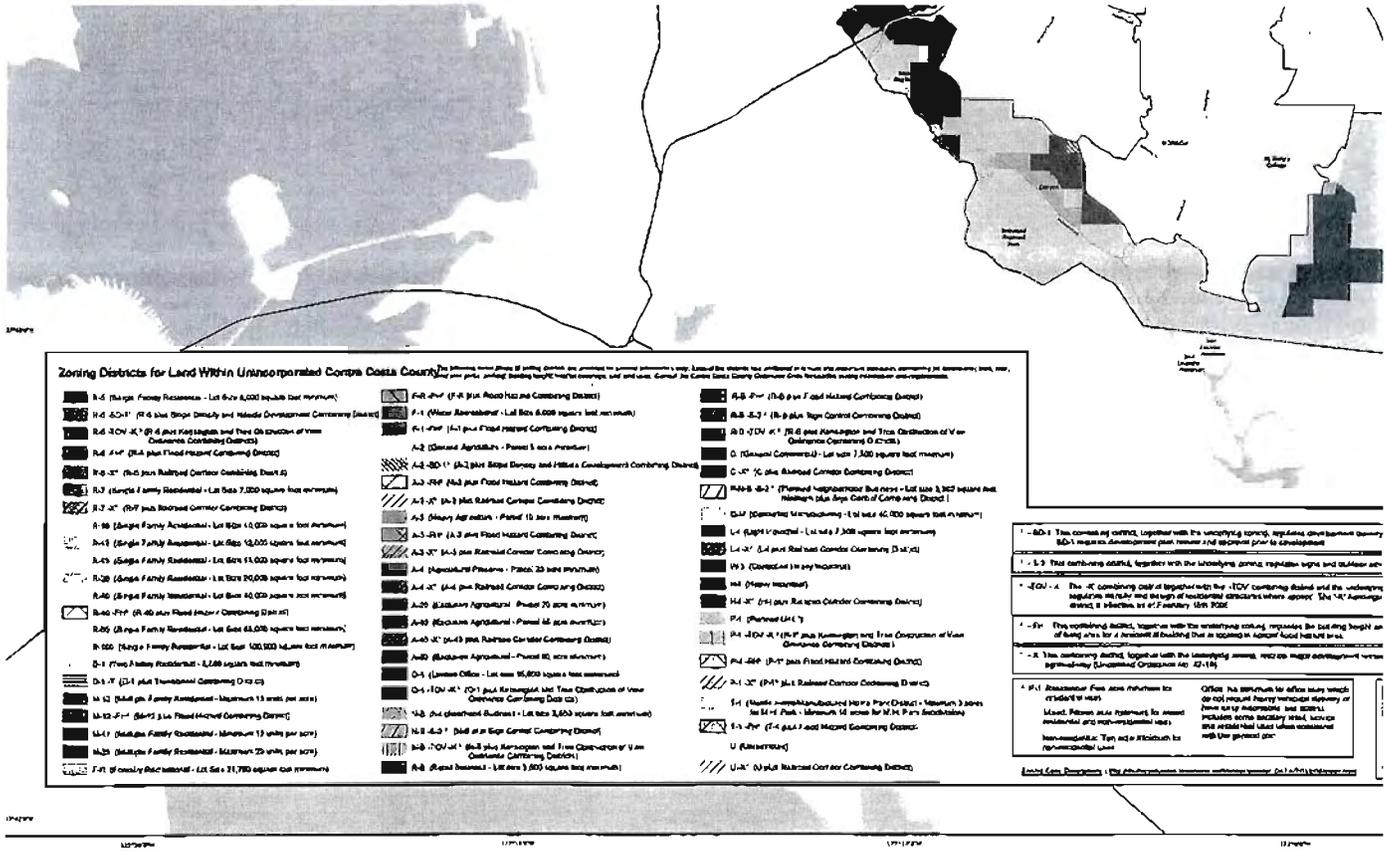


Figure 9: Bethel Island Zoning Map – Legend

Contra Costa County General Plan Policies for Bethel Island

The following excerpts have been taken from the current General Plan for Contra Costa County. The following sections pertain to certain portions of the unincorporated areas of Eastern Contra Costa County, in particular **Bethel Island**:

Section 3 - Land Use Element

Policies for the Bethel Island Area

Policies 3-55 thru 3-67

Section 10 – Safety Element

10.8 Flood Hazard

Flood Hazard Goals 10-G & 10-H

General Policies 10-33 thru 10-40

Flood Hazard Policies 10-41 thru 10-45

Policies Regarding Subsidence - Policies 10-46 thru 10-50

Policies regarding Flooding due to Levee or Dam Failure or Tsunami – Policies 10-51 thru 10-60

Flood Hazard Implementation Measures – Measures 10-s thru 10-y.

These General Plan Policies and Implementation measures can be found on the following pages 32 thru 42 of the appendix section of this report.

3. Land Use Element

- (d) where off-site improvements, such as required access roads, can be assigned to development;
 - (e) where adequate on-site sewage disposal can be provided;
 - (f) where located in an area served by a public fire protection district; and
 - (g) where such uses will not conflict with adjacent agricultural uses.
- 3-49. The density and development of single family homes in the East County area, in lands designated for residential or other urban uses, shall be related to service availability criteria, as defined below:

Service Availability

Minimum Allowable Parcel Size

No public water or sewer connection available.	5 acres
One public service (sewer or water) connection available.	1 acre
Both public water and sewer connections available.	Minimum parcel size consistent with the specified General Plan densities, as well as drainage, health, and other applicable standards.

Transportation

- 3-50. Restrict access on to State Route 4 and within those areas designated for residential development.
- 3-51. Improve existing interchanges and establish new interchanges over State Route 4 by developing plans in coordination with Caltrans and the Cities of Pittsburg, Antioch and Brentwood.
- 3-52. Encourage the State to incorporate the Delta Expressway into the State Highway System as a bypass to State Route 4 and upgrade the facility to a freeway.
- 3-53. The County shall encourage the expansion of regularly scheduled transit service and express bus service to urbanizing areas east of Antioch.

POLICIES FOR THE PRIMARY ZONE OF THE DELTA

- 3-54. All public and private management and development activities within the Primary Zone of the Delta shall be consistent with the goals, policies and provisions of the "Land Use and Resource Management Plan for the Primary zone of the Delta as adopted and as may be amended by the Delta Protection Commission.

POLICIES FOR THE BETHEL ISLAND AREA

The Bethel Island Area is comprised of on- and off-island areas (Hotchkiss Tract). The two areas differ with respect to soils, topographic and geographic conditions, and levee stability. As a result, different development and planning considerations must be given to each area. The on-island area consists of weak, organic soils that underlie the perimeter levee system, provides limited opportunities for evacuation in the event of a levee failure, is generally below sea level and subsiding, and provides limited opportunities for safe disbursement of flood water because it is a small island closed by levees. In the off-island area, on the other hand, the soil is sandy and less subject to subsidence, the elevation is higher, the levee system is in an improved condition and not as long, there are several evacuation alternatives, it is part of the mainland, and disbursements of flood waters are not artificially contained such that internal systems around new development will not adversely affect existing residences and structures in the flood plain. The concept for the Bethel Island Area is to preserve and enhance the rural and recreational quality of the unique area, while providing opportunities for additional residential and

3. Land Use Element

commercial growth tied to water-oriented recreation. The following policies shall guide development in the Bethel Island Area:

- 3-55. The approval of new development shall be limited to 2,909 primarily recreation-oriented units in the off-island area (i.e., 3,000 additional units including the 91 units already approved, but not yet built).
- 3-56. New residential development in the on-island area shall be limited at this time to approved development and one dwelling unit per parcel.

3. Land Use Element

- 3-57. Additional residential density in the on-island area may be considered through subsequent amendment at the discretion of the Board of Supervisors, provided at least the following are accomplished:
- (a) a financing mechanism is fully and completely assured for improvements to the entire perimeter on-island levee system;
 - (b) the levee improvement plans are approved by Bethel Island Municipal Improvements District and the Army Corps of Engineers; and
 - (c) subsidence, as well as impacts on wetlands, are adequately mitigated.
- 3-58. Levee breaches on-island are prohibited unless the entire perimeter levee is improved to Army Corps of Engineers' standards.
- 3-59. Levee breaching off-island shall be permitted on a project-by-project basis and shall only be allowed subject to the Army Corps of Engineers approval.
- 3-60. Any internal levees must meet Army Corps of Engineers' standards. New construction must be set back from levee centerlines a minimum of 100 feet unless adequate substantiation for reduction is approved by RD-799 or BIMID. New construction not protected by certified levees must meet FEMA standards.
- 3-61. Stilt residential structures shall be allowed only on the basis of one unit per existing parcel. Such elevated structures shall not be allowed in any new subdivisions.
- 3-62. The off-island and on-island areas can develop 100,000 square feet of commercial development and 500 hotel rooms, consistent with FEMA standards.
- 3-63. Marine and waterfront facilities will require a use permit to address site-specific aquatic and other issues such as wetlands, water quality, public access, and the Delta's carrying capacity for such facilities in the Bethel Island Area.
- 3-64. To retain the characteristics of Bethel Island that make it an unique place in the Delta with its own separate identity, development shall be limited to a low overall density, and open space buffers shall be required. In addition, agricultural, open space, and wetland areas, along with rare plant communities, shall be preserved and protected.
- 3-65. Residential development on Agricultural Lands, to the extent permitted beyond one unit per parcel in the off-island area, shall be clustered with development rights on the undeveloped land dedicated to the County.
- 3-66. A Protection Fee shall be imposed on each new residential unit in the Bethel Island Area to acquire development rights on agricultural lands, open space or wetland areas, or to provide financing for farmers to continue agricultural production. Priority for the acquisition of open space and wetlands shall be given to the on-island area. Additional funding sources shall be explored to supplement or replace the Protection Fee.
- 3-67. New development in the Bethel Island Area must comply with an improved financing plan for infrastructure improvements.

POLICIES FOR THE SOUTHEAST COUNTY AREA

Land Use

- 3-68. Many of the specific policy statements of this plan support the concept of allowing for multiple uses, compatible with the predominantly agricultural watershed and public purposes of the area. The policies stress the need to preserve designated agricultural lands for agricultural use, and also to allow certain other uses in the area, such as wind energy farms, mineral extraction, and reservoirs.

10. Safety Element

- 10-25.** Subdivision of rural lands outside planned urban areas down to the allowed minimum parcel size shall be discouraged, if the parcels are within, or only accessible through, geologically unstable areas.
- 10-26.** Approvals of public and private development projects in areas subject to slope failures shall be contingent on geologic and engineering studies which define and delineate potentially hazardous conditions and recommend adequate mitigation.
- 10-27.** Soil and geological reports shall be subject to the review and approval of the County Planning Geologist.
- 10-28.** Generally, residential density shall decrease as slope increases, especially above a 15 percent slope.
- 10-29.** Significant very steep hillsides shall be considered unsuitable for types of development which require extensive grading or other land disturbance.
- 10-30.** Development shall be precluded in areas when landslides cannot be adequately repaired.
- 10-31.** Subdivisions approved on hillsides which include individual lots to be resold at a later time shall be large enough to provide flexibility in finding a stable buildable site and driveway location.
- 10-32.** The County shall not accept dedication of public roads in unstable hillside areas, or allow construction of private roads there which would require an excessive degree of maintenance and repair costs.

GROUND FAILURE AND LANDSLIDE HAZARD IMPLEMENTATION MEASURES

- 10-m.** Encourage the State Geological Survey to make preparation of Seismic Hazards maps of Contra Costa County a priority.
- 10-n.** Analyze the slope failure records of the Conservation and Development Department and U.S. Geological Survey and recommend any needed improvements in the County's grading ordinance.
- 10-o.** Consider adoption of a hillside preservation ordinance in order to implement the policies of the Safety Element and other elements of the General Plan.
- 10-p.** Refer development proposals in areas of potential land instability or geologic hazards to a registered engineering geologist for review and recommendation.
- 10-q.** Through the environmental review process, require geologic and engineering studies as necessary to evaluate proposed development in areas subject to potential landslide hazards.
- 10-r.** General Plan amendment requests which involve parcels with slopes of over 15 percent shall be accompanied by a geological/soils report.

10.8 FLOOD HAZARDS

INTRODUCTION

Substantial areas within Contra Costa County are subject to flooding. According to records maintained by the Federal Emergency Management Agency (FEMA), the majority of the County's creeks and shoreline areas lie within the 100-year flood plain, i.e., an area subject to flooding in a storm that is likely to occur (according to averages based upon recorded measurements) once every 100 years. The FEMA records are maintained as a means of determining flood insurance rates through the National Flood Insurance Program.

10-26

10. Safety Element

In the West and Central County, these areas include portions of the shoreline in the vicinity of Richmond, Hercules, Rodeo, Crockett, Port Costa, and Martinez; most creeks in urbanized areas, including Concord, Walnut Creek, and the San Ramon Valley; and reservoirs and creeks located on undeveloped East Bay Regional Park District (EBRPD) and East Bay Municipal Utility District (EBMUD) lands. In the East County, substantial acreage lies within the 100-year flood plain, including Bethel Island, the Veale Tract, Holland Tract, Franks Tract, Jersey Island, and the area in the Byron vicinity. Portions of the Pittsburg, Antioch, and Brentwood areas, as well as a number of creeks in East County, are also subject to flooding.

The most serious flood hazard that exists in Contra Costa County relates to the system of levees that protect the islands and adjacent mainland in the San Joaquin-Sacramento River Delta area in eastern Contra Costa. Levees are basically long, continuous dams that keep water out of a lower area, such as the Delta Islands, many of which are at an elevation just above or below sea level.

The islands in the California Delta were drained during the nineteenth century to create high quality agricultural land. Since then, the peat-laden soil of many of the islands has oxidized, resulting in a sinking of their island floors and consequently requiring the construction of higher and heavier levees. Levee failure occurs in some areas where levees rest on soft mud, silt, or peat.

The islands continue to flood. In general, the islands have been reclaimed after each flood. However, Franks Tract State Park, essentially a lake east of Bethel Island, and the Big Break area of water north of Oakley, are visible reminders that it is not always practical or economical to reclaim flooded lands. Flooding problems in the Delta area have also been exacerbated by boat movement (primarily recreational) on the waterways which causes waves that accelerate the natural process of levee erosion.

The threat of levee failure during periods of high water is constant. In the years 1973, 1980, 1982, 1983, and 1986, one or more Delta island levees failed or were overtopped, and some of these events were summer breaks that did not occur at times of high storm runoff. Some islands in the Delta have been flooded two or three times since 1980.

The possibility that flooding will occur on the islands in the Delta is greatly increased by two ongoing, natural processes, which compound the dangers that periodic high tides or strong winter storms may breach a portion of the existing levee system. The two natural processes which impact the integrity of the levee are rising sea levels, caused by the world-wide "greenhouse effect," and "subsidence."

The greenhouse effect is a phenomenon that is projected to cause a rise in sea level over the next century, thus creating potential flooding problems. Hydrologists estimate the rate of rise may increase from the present one-half foot per century to approximately two to eight feet. The anticipated rise is believed to be caused by warming of the global climate due to accumulation in the atmosphere of gases such as carbon dioxide, methane, and chlorofluorocarbons which result from fossil fuel burning and deforestation of tropical rain forests. Since many factors affect global climates, the rate of change over a relatively short time-period, even a century, is very difficult to establish. The U.S. Environmental Protection Agency suggests that a rate of four feet per century be assumed for planning purposes for the San Francisco Bay Area. It is important to note that the existing FEMA flood hazard maps do not include the greenhouse effect in their potential flooding analysis.

10. Safety Element

In Contra Costa County, subsidence is caused by the natural process of oxidation of island peat soils, resulting in a gradual sinking of the ground. As many of the islands in the Delta (along with their levees) sink in elevation, the levees that protect the island's agricultural and/or residential uses must be raised and reinforced by adding more earth fill to the top of the levees. Recent evidence indicates that many islands have experienced significant subsidence over the last several decades. For example, it is estimated that Webb Tract in Contra Costa County has subsided up to 17 feet, and Bacon Island adjacent to Contra Costa County has subsided approximately 14 feet. Most reclaimed portions of the Delta in the County have subsided at least 10 feet. Areas that have experienced a measurable amount of subsidence are illustrated in Figure 10-8, Flood Hazards Map included in a later section of this chapter. These areas are highly susceptible to flooding.

A number of causes for subsidence have been identified. The oxidation-decay and shrinkage of peat and other soils which are rich in organic matter and fine clay particles may be the largest contributor to the problem. However, the withdrawal of shallow ground water for surface drainage may also cause surface compaction and/or soil shrinkage, which results in a loss of elevation. There is also evidence that the pumping of groundwater, oil, or gas supplies from underneath several of the islands may be contributing to the natural consolidation and subsidence. Natural "tectonic" subsidence may also be contributing to the problem.

There are great difficulties involved in estimating the amounts and rates of subsidence from island to island in the Delta, since subsidence changes the elevation of bench marks, the survey points from which elevations are determined. It is first necessary to establish elevation control from stable areas outside the Delta, which requires very long survey lines. Recent work is concentrating on the use of an unmanned space satellite as a "survey platform" from which to study changes in elevations.

The consequence of subsidence and the possibility of sea levels rising due to the greenhouse effect is the increased potential that levees will fail and tidewater and high river water will inundate farmed and populated areas in the Delta. The California Delta in Contra Costa and in the adjoining counties has historically been devoted to agriculture and its population has remained small. However, growing commercial recreation and residential uses, as evidenced by the success of year-round subdivisions such as Discovery Bay, are leading to increases in the permanent population of the area. It will become increasingly more important, but also more difficult, for the County to provide adequate flood protection to residents and businesses in the Delta area. New urban development should be allowed only if long term, year-round flood protection can be provided to the area.

Allowing more residential and commercial development on or near the islands of the Delta increases the disaster potential of subsidence and flooding when levees fail. Approving land uses in the Delta area that support significant new populations must be carefully measured in terms of the potential loss of lives and property that could occur in the event of a major flood. The economic consequences of certain development should also be studied.

Seismicity presents additional special problems in the Delta. Delta levees are, in places, underlain by sands that are susceptible to ground failures including liquefaction during an earthquake. Strong earthquake shaking can cause the entire levee foundation to lose strength, leading to levee failure. Many levees are themselves constructed of liquefiable sand.

10. Safety Element

According to a report prepared for the East Bay Municipal Utility District, whose aqueduct pipes cross the Delta, twelve separate faults are capable of causing ground motion sufficient to cause liquefaction, requiring accelerations on the order of 7 to 27 percent of gravity (0.07 to 0.27g), with shaking lasting from about 5 to 23 seconds. A 1985 study by a State Department of Water Resources geologist noted levee slips and cracks from five recent earthquakes, some as distant as 150 miles away from Contra Costa County. A large nearby earthquake could cause a number of simultaneous levee failures, making repairs difficult because the levees are the only land access to many points following a levee break.

In addition to the flooding hazards associated with levee failure caused by an earthquake, fault ruptures or ground shaking during an earthquake can cause the collapse of dams, as well as seiche and tsunami ("tidal waves").

Dam safety is regulated by the State Department of Water Resources, Division of Safety of Dams. All large reservoirs in the County have been investigated and many have been strengthened. Further, the Office of Emergency Services has produced inundation maps and emergency plans covering various scenarios of dam failure in the County.

The safety of small dams, which are mostly used for stock watering and other agricultural activities, is largely a private concern, with present standards set by the County Grading Ordinance. Many small dams predate even this regulation. However, seismic activity is not considered a significant hazard to small dams.

Tsunamis are sea waves created by undersea fault movement. Travelling through the deep ocean, a tsunami wave is a broad, shallow, and fast moving wave. When it reaches the coastline, the wave form pushes upward from the ocean bottom and becomes a high swell of water that breaks and washes inland with great force. The waves may reach fifty feet in height on unprotected coasts, and one recorded tsunami (in Japan in 1896) killed nearly 30,000 people and destroyed over 10,000 homes. Several people were drowned in Crescent City, California, in 1964 by the tsunami generated by the "Good Friday" Alaska earthquake.

Historic records of the Bay Area used by one study indicate that 19 tsunamis were recorded in San Francisco Bay during the period of 1868-1968. The maximum wave height recorded at the Golden Gate Tide Gage was 7.4 feet, which may be regarded as a reasonable maximum for future events.

The available data indicate a systematic diminishment of wave height from the Golden Gate to about half that height on the shoreline near Richmond, and to nil at the head of the Carquinez Strait. Thus, the damage potential of a tsunami will tend to be greater in the Richmond area and show a general decrease toward the head of Carquinez Strait.

Flooding can also result from seiche, which is a long wave-length, large-scale wave action set up in a closed body of water such as a lake or reservoir. Seiche is known to occur during earthquakes, but is not well understood. No occurrences have been recorded in the Bay Area. Elongated and deep (relative to width) bodies of water seem most likely to be affected, and earthquake wave orientation may also play a role in seiche formation. Seiche can temporarily flood a shoreline in a manner similar to tsunami; however, its destructive capacity is not as great. Seiche may cause overtopping of impoundments such as dams, particularly when the impoundment is in a near-filled condition, releasing flow downstream.

Maps of Flood Hazard Areas

Figure 10-8 depicts the general location of the FEMA flood hazard areas throughout Contra Costa County. Flood Hazard Areas are those areas which have statistical chance of flooding once in 100 years. This map is not intended to be used to locate parcel-

10-30

10. Safety Element

specific sites in relation to Flood Hazard Areas, but to convey the general extent and location of such areas. The map also indicates areas of subsidence in the County, but does not presently include consideration of the greenhouse effect.

FLOOD HAZARD GOALS

- 10-G.** To ensure public safety by directing development away from areas which may pose a risk to life from flooding, and to mitigate flood risks to property.
- 10-H.** To mitigate the risk of flooding and hazards to life, health, structures, transportation and utilities due to subsidence, especially in the San Joaquin-Sacramento Delta area.

GENERAL POLICIES

- 10-33.** The areas designated on Figure 10-8 shall be considered inappropriate for conventional urban development due to unmitigated flood hazards as defined by FEMA. Applications for development at urban or suburban densities in areas where there is a serious risk to life shall demonstrate appropriate solutions or be denied.
- 10-34.** In mainland areas affected by creeks, development within the 100-year flood plain shall be limited until a flood management plan can be adopted, which may include regional and local facilities if needed. The riparian habitat shall be protected by providing a cross section of channel suitable to carry the 100-year flow. Flood management shall be accomplished within the guidelines contained in the Open Space/Conservation Element.
- 10-35.** In mainland areas along the rivers and bays affected by water backing up into the watercourse, it shall be demonstrated prior to development that adequate protection exists either through levee protection or change of elevation.
- 10-36.** On islands in East County, development shall not be allowed until a study is performed to resolve issues and determine appropriate locations for development. This study shall be a high priority for the County and should include the following:
 - o a risk assessment of development in that area; and
 - o an analysis of flooding due to runoff and tides, settlement of shallow soils, deep subsidence, liquefaction, and adequacy of insurance programs.
- 10-37.** A uniform set of flood damage prevention standards should be established by the cooperative efforts of all County, State, and federal agencies with responsibilities for flood control works and development in flood-prone areas in the County.
- 10-38.** Flood-proofing of structures shall be required in any area subject to flooding; this shall occur both adjacent to watercourses as well as in the Delta or along the waterfront.
- 10-39.** In developing areas which are subject to the provisions of the Flood Insurance Program, for which there is no reasonable expectation of flood control project participation by the Corps of Engineers and where a significant number of properties will be affected, the Flood Control District shall be permitted to construct 100-year flood protection works when so directed by the Board of Supervisors.
- 10-40.** Planning Agency and Flood Control District review of any significant project proposed for areas in the County which are not presently in Flood Zones shall include an evaluation of the potential downstream flood damages which may result from the project.

FLOOD HAZARD POLICIES

- 10-41. Buildings in urban development near the shoreline and in flood-prone areas shall be protected from flood dangers, including consideration of rising sea levels caused by the greenhouse effect.
- 10-42. Habitable areas of structures near the shore line and in flood-prone areas shall be sited above the highest water level expected during the life of the project, or shall be protected for the expected life of the project by levees of an adequate design.
- 10-43. Rights-of-way for levees protecting inland areas from tidal flooding shall be sufficiently wide on the upland side to allow for future levee widening to support additional levee height.
- 10-44. The County shall review flooding policies in the General Plan on an annual basis, in order to incorporate any new scientific findings regarding project sea level rise due to the greenhouse effect.
- 10-45. The County shall review flooding policies as they relate to properties designated by FEMA as within both the 100- and the 500-year floodplains.

Policies Regarding Subsidence

- 10-46. Whenever studies indicate subsidence is or may become a flood-threatening problem, the County should continue to monitor subsidence until flood protection is assured.
- 10-47. In accordance with the following policies, the General Plan shall not permit a substantial non-agricultural, residential population to be subjected to increased flood hazard due to subsidence.
- 10-48. Low density development of lands subject to subsidence shall take into account and fully mitigate the potential impacts of flooding based on the best currently available techniques.
- 10-49. Any development approvals for areas subject to subsidence shall include conditions which account for the need to support Delta reclamation and irrigation districts, and to strengthen weak and low levees prior to development.
- 10-50. The pumping of substantial quantities of water, oil, and gas in an area protected by levees is inconsistent with new major development approvals.

Policies Regarding Flooding Due to Levee or Dam Failure, or Tsunami

- 10-51. In order to protect lives and property, intensive urban and suburban development shall not be permitted in reclaimed areas unless flood protection in such areas is constructed, at a minimum, to the standards of the Flood Disaster Protection Act of 1973. Levees protecting these areas shall meet the standards of the U.S. Army Corps of Engineers.
- 10-52. Delta levees shall be rehabilitated and maintained to protect beneficial uses of the Delta and its water. Only those uses appropriate in areas subject to risk of flooding and seismic activity, such as agriculture and recreation, should be planned and approved. This policy shall not apply to Bethel Island or Discovery Bay.
- 10-53. Development of levee rehabilitation plans should consider methods to foster riparian habitat to the fullest extent possible consistent with levee integrity.

10. Safety Element

- 10-54.** Agencies whose projects benefit from Delta levee protection, including the State and federal government (water, highway, fish and wildlife, and recreational projects), PG&E, and private railroad companies, shall participate in funding Delta levee improvements and maintenance.
- 10-55.** The potential effects of dam or levee failure are so substantial that geologic and engineering investigation shall be warranted as a prerequisite for authorizing public and private construction of either public facilities or private development in affected areas.
- 10-56.** Development proposals should be reviewed with reference to dam failure inundation maps, as these become available, in order to determine evacuation routes.
- 10-57.** Dam and levee failure, as well as potential inundation from tsunamis and seiche, shall be a significant consideration of the appropriateness of land use proposals.
- 10-58.** Dams and levees should be designed to withstand the forces of anticipated (design) earthquakes at their locations.
- 10-59.** Important dams and coastal levees shall be regarded as critical facilities that should not be sited over the trace of an active or potentially active fault.
- 10-60.** Structures for human occupancy, and particularly critical structures, and potentially dangerous commercial or industrial facilities (e.g., plants for the manufacture or storage of hazardous materials) shall be protected against tsunami hazard.

FLOOD HAZARD IMPLEMENTATION MEASURES

- 10-s.** Revise the creek setback ordinance for residential and commercial structures in order to prevent property damages from bank failure along natural water courses.
- 10-t.** Encourage the County Flood Control District to proceed with drainage improvements in areas subject to flooding from inadequate facilities, and to ensure that additional new drainage facilities, including road culverts and bridges, are designed to pass the flow specified by County Ordinance Code.
- 10-u.** Develop Flood Control Zone plans based on the concepts found in this General Plan. As adopted zone plans are revised, they should be brought into conformity with these concepts.
- 10-v.** Draft and adopt a flood management plan for mainland areas affected by creeks, in accordance with the guidelines contained in the Safety Element and Open Space/Conservation Element of this General Plan.
- 10-w.** Conduct a study of flooding conditions on islands in East County, including a risk assessment of development in that area and an analysis of flooding due to runoff and tides, settlement of shallow soils, deep subsidence, liquefaction, and adequacy of insurance programs.
- 10-x.** Establish a uniform set of flood damage prevention standards in cooperation with appropriate County, State, and federal agencies.
- 10-y.** Through the environmental review process, ensure that potential flooding impacts, due to new development, including on-site and downstream flood damage, subsidence, dam or levee failure, and potential inundation from tsunamis and seiche, are adequately assessed. Impose appropriate mitigation measures (e.g. flood-proofing, levee protection, Delta reclamations).

Delta Cove - Court's Final Amended Judgement:

FEB-08-1995 11:03 FROM OCC COUNSEL TO 9-6840724 P.002/012
UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

L.E. WEISENBURG, JR. and
DELTA COVES, a limited
partnership,

Plaintiffs,

v.

COUNTY OF CONTRA COSTA,

Defendant.

No. C-86-842-MHP

AMENDED JUDGMENT

FILED
MAR 30 6 12 AM '89
U.S. DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

RECEIVED

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IT IS ORDERED, DECLARED AND ADJUDGED that:

1. Judgment on the jury verdict is entered in favor of plaintiffs and against defendant County of Contra Costa County for One Million Five Hundred Thousand Dollars (\$1,500,000.00).

2. Pursuant to the July 26, 1988 Order of the Contra Costa County Board of Supervisors submitted to the Court, IT IS FURTHER ORDERED, DECLARED AND ADJUDGED that the Final Development Plan for Delta Coves (#3024-82) and Tentative Subdivision Map #6013 as presented to the Board of Supervisors on June 28, 1988 is approved subject to the following conditions:

a. The conditions to be imposed on the subdivision are attached hereto as Exhibit A.

b. The conditions listed in Exhibit A shall not be changed or modified without the written consent of Delta Coves. Specifically, the fees listed in paragraphs 29C, 32, 36, and 37 shall not be increased by the County at any time, nor shall any additional fees of any kind be imposed including but not limited to (1) fees as conditions for

MAR 30 1989

1 development approval, and (2) fees as conditions for the
2 issuance of building permit(s).

3 c. The County (including the Board of Supervisors,
4 Planning Department, and County-sponsored organizations)
5 shall fully cooperate with Delta Covas' request to the U.S.
6 Army Corps of Engineers to reissue the permit for the breach
7 of the Sand Mound Slough levee without need for a new or
8 supplemental EIS. County officials (including but not
9 limited to the Board of Supervisors, Planning Commission and
10 County-sponsored organizations), in either their individual
11 or official capacity, shall not take any action that might
12 have an adverse impact on the reissuance of the Corps of
13 Engineers permit or otherwise have an adverse impact on the
14 Amended Judgment

15 3. Plaintiffs are adjudged to be the prevailing parties in
16 this action, as defined in 42 U.S.C. Section 1988. The court
17 reserves ruling on the amount of attorneys' fees and litigation
18 expenses to be awarded plaintiffs until application is made
19 pursuant to 42 U.S.C. Section 1988.

20 4. Plaintiffs are awarded costs of litigation. Costs will
21 be taxed upon compliance with Local Rule 270.

22 5. Post-judgment interest is awarded pursuant to 28 U.S.C.
23 Section 1961.

24 Dated: MAR 30 1988

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26 
27 MARILYN HALL PATEL
28 UNITED STATES DISTRICT JUDGE

AMENDED JUDGMENT Case No. C-86-5842-MHP

- 2 -

CONDITIONS OF APPROVAL FOR 3024-B2 & SUB 6013:

1. This approval is based on the Final Development Plan exhibits received by the Community Development Department and modified by these conditions:

Exhibit "A"- Final Development Plan for 560 dwelling units as summarized in the staff report.

Exhibit "B"- The Tentative Subdivision Map and Grading Plan.

Exhibit "C"- The Delta Coves Typical Lot and Dock Plans.

Exhibit "D"- The conceptual landscape architectural plans.

Exhibit "E"- Report on Investigation of Tidal Flushing, prepared by R. B. Krone and Associates.

Exhibit "F"- The Soils and Geologic Investigation for Delta Coves prepared by William F. Jones, Inc.

Exhibit "G"- "The Woodlanding Traffic Impact Study" prepared by TJKM, July 9, 1982.

Exhibit "H"- "Water Circulation of Project Waters" and "Delta Coves Project--Flooding of the Bethel Island 'Corridor,'" December 28, 1987, prepared by Ray B. Krone & Associates.

Exhibit "I"- "Settlement of Off-Site Improvements," January 11, 1988, prepared by William F. Jones, Inc.

Exhibit "J"- "The Delta Coves Project, Bethel Island, CA," April 14, 1988, prepared by William F. Jones, Inc.

The above exhibits are on file with the Clerk of the Board, and are incorporated herein by this reference, as if set out in full.

2. All land uses, yard and height measurements shall be subject to review and approval by the Director of Planning. The guide used to establish these requirements shall be the R-9 Single Family Residential District of the Zoning Code. Exhibit "C" indicates 15 ft. setback which is not granted with this approval, but subject to review by the Director of Community Development.
3. Proposed Covenants, Conditions and Restrictions, Articles of Incorporation and by-laws for a mandatory homeowners' association shall be submitted with the application for approval of a Final Subdivision Map for the first phase of the project. These documents shall provide for establishment, ownership, and maintenance of the common open space.
4. Detailed plans for the development of the commercial areas on Parcels D, E, M, and N must be submitted for approval by the Planning Commission under the Final Development Plan procedures.

5. The design of all the units in the condominium area, Parcel "B", shall be subject to review by the Planning Commission as to layout design, building plans and elevations, building materials and other pertinent physical features.
6. The phasing schedule as shown on the tentative map is approved and may be modified upon request to the Director of Community Development.
7. A deed of development rights shall be granted to the County for all open space and common areas prior to filing of the Final Subdivision Map. The grant of this deed is intended to preclude residential development of the common areas. The deed of development rights is not intended to preclude or prohibit owners or the homeowners' association from erecting in the common areas improvements such as (but not limited to) moorings, launching ramps, gates, gas docks, and pilings.
8. A bridle trail may be developed on the periphery of the project at the base of the levee(s). A bike trail will be developed on the periphery of the property at the top of the levee(s). The designs of these trails shall be shown on the development plan and will be developed in increments with each phase of the project.
9. Landscaping plans shall be submitted, for review and approval of the Zoning Administrator, in accordance with the County's Water Conservation Policies. The landscaping of the common areas shall be accomplished during each phase of development and coordinated with the erosion control planting of the perimeter levee.
10. The perimeter levee shall be planted for erosion control according to the recommendations of a qualified landscape architect, with plants requiring a minimum of water and maintenance. The plans shall be approved by the Community Development Department and made part of the subdivision grading and improvement plans. Maintenance of landscaping shall become the responsibility of the Homeowners Association.
11. Levee design and construction specifications as shown on subdivision improvement plans and grading plans shall incorporate liquefaction-resistant design acceptable to the Corps of Engineers. The developer shall obtain the concurrence of the design and construction specifications from the County Geologist, which concurrence shall not be unreasonably withheld.
12. Prior to breaching of the levee an automatically recording tide gauge or other subsidence measuring instrument approved by the County Community Development Department shall be installed at a place in the marina area that is protected from wave action. The gauge's foundation support will be founded at or below elevation -25 and be designed to withstand lateral loads from wind, seismic forces and water. Maintenance of the gauge will be responsibility of the Bethel Island Municipal Improvement District, or other County-approved agency, or if necessary a Homeowner's Association. The developer, and eventually the Bethel Island Municipal Improvement District, or a county-approved agency, shall work with the California Department of

Water Resources to assure annual evaluation of the record obtained from the gauge. For five years following installation of the gauge the record shall be evaluated for subsidence annually, and a report shall be presented to the Contra Costa County Water Agency during the month of January each year. In succeeding years the record shall be evaluated at intervals specified by the Bethel Island Municipal Improvement District, or a County-approved agency, or if necessary, a Homeowner's Association. If at any time the maintenance agency has reason to believe subsidence threatens the development it shall report its finding to the Contra Costa County Water Agency with recommendations to mitigate the hazard of flooding due to subsidence.

13. Prior to issuance of any County permit for work required as a condition of approval the developer shall enter into a consultant services agreement with the County and Bethel Island Municipal Improvement District, or other County approved agency for geotechnical field inspection and consultation. The developer shall provide the necessary funds to reimburse the County for the services of the geotechnical consultant.

The services performed by the consultant will include: 1) Submittal of reports on geotechnical work accomplished by the developer; 2) Adequacy of work accomplished; 3) Copies of results of test and observations performed; 4) Recommendations for any changes in developer's plans, specifications, or work procedures so long as any such recommendations are based upon a specifically identified substantial change in circumstances; 5) Daily inspection and reports will be submitted to the Community Development Department on whether the work has been satisfactorily accomplished in a manner that will prevent appreciable settlement or subsidence of the installed facilities, and if the work is not deemed satisfactory, recommendations that, if implemented, would prevent appreciable settlement or subsidence. However, the absence of the inspector shall not be grounds for work stoppage.

14. Geotechnical work shall include levee breaching, soil and excavation dewatering, removal, replacement and compaction of soil, on-site water development, erosion control measures, and design and installation of subsidence measurement.
15. Grading permits shall be required for each phase. All grading and earthwork plans, whether temporary or permanent changes, shall be reviewed and approved by the County Community Development Department prior to issuance of a permit.
16. All earthwork covered by grading permits for earthwork in excess of 50 cubic yards shall be supervised by an engineer specializing in soil engineering. The developer will provide this specialist.
17. A bond guaranteeing satisfactory performance and completion of grading shall be secured by the applicant prior to issuance of any permit covering excavations or fills in excess of 50 cubic yards. The bond may be part of any bond instrument required by an agency of Contra Costa County for public or private facilities, except for archaeological excavation, and shall not be duplicative of any other required bond.

18. Comply with the requirements of the Bethel Island Fire Protection District.
19. All utilities shall be placed in an underground system except for portions of the property within a Flood Hazard Area. The development shall be serviced by a cable television underground system. No television antennas shall be permitted.
20. The individual dock shall be installed by the homeowner when each residence is constructed for the associated lot in accordance with the design and requirements of the C.C. & R.'s.
21. The portion of Stone Road affected by the breaching of the levee shall be abandoned before construction begins.
22. The developer shall obtain a resolution from the Bethel Island Municipal Improvement District, or county-approved agency, or, if necessary, a Homeowner's Association which shall indicate the district's agreement to accept and maintain the new levees and lagoon.
23. If archaeological materials are uncovered during grading, trenching or other on-site excavation, earthwork within 30 meters of these materials shall be stopped until a professional archaeologist, who is certified by the Society for California Archaeology (SCA) and/or the Society of Professional Archaeology (SOPA) has had an opportunity to evaluate the significance of the find and suggest appropriate mitigation measures, if they are deemed necessary.
24. Plans for the development of the recreation center and its ownership and maintenance shall be provided to the staff for review and approval after the sale of 250 homes.
25. Prior to the filing of the Final Map, the applicant shall prepare a Lagoon Management Program designed to maintain the lagoon water quality to a level at least as high as the water quality in the surrounding sloughs.
26. All street names are subject to review and approval by the Community Development Department prior to recording the Final Subdivision Map.
27. Obtain a Floodplain Permit and elevate the lowest finished floor of the proposed structure to above the base flood elevation. The applicant is requested to observe an additional 2 feet of freeboard above the base flood elevation due to anticipated wave action and unknown factors that could contribute to greater flood heights.
28. The entrance to Sandmound Slough will be designed, to the extent practicable, to minimize and mitigate silting and wave action from existing boat traffic to the entrance and to berths adjacent to the entrance. The design will be submitted to the County Community Development Department and the Corps of Engineers.
29. Comply with the Department of Public Works requirements as follows:

- A. In accordance with Section 92-2.006 of the County Ordinance Code, this subdivision shall conform to the provisions of the County Subdivision Ordinance (Title 9). Any exceptions therefrom must be specifically listed in these Conditions of Approval.
- B. All interior subdivision streets shall be dedicated to the County and constructed to County public road standards.
- C. Contribute \$1,800 per unit to a Road Improvement Fee Trust (Fund No. 819200-0800) designated for road improvements along Cypress Road and/or Bethel Island Road between State Hwy 4 and this development.
- D. Design and construct the storm drainage system so that the flow line of the outlet pipes is above mean sea level.
- E. The minimum top of levee elevation of the perimeter levee shall be at 10 foot USGS datum.
- F. Improve and protect all levees with rock or an alternate method acceptable to the Public Works Department, prior to the breaching of the Bethel Island Levee.
- G. The developer shall install an adequate lagoon flushing system approved by the Public Works Department.
- H. Comply with the requirements of Sanitation District No. 15 as follows:
1. Sewer Collection System
 - a. The District has been able to reduce the inflow/infiltration so that there should be sufficient capacity in the system to service the proposed 560 dwelling units. The developer will be given credit for the money previously paid towards the District's connection charge.
 - b. The treatment plant has been constructed and the Oakley Bethel Island Wastewater Management Authority will provide treatment capacity in accordance with its policy.
 - c. The funds for expanding the treatment facilities are provided for by the Facilities Capacity Fee that is charged for each connection.
 - d. Construct a monitoring and metering manhole at a mutually agreed upon location. The manhole shall be equipped with monitoring and flow metering equipment, all approved by the District prior to construction and installation.

2. Water System

- a. Submit a detailed comprehensive plan for water service. The Final Map shall not be recorded until this plan is approved by the District and County Health Department, State Health Department and Planning Geologist.
- b. Conform to "AWWA Standards" published by the American Water Works Association for materials and construction of the water system.
- c. Equip each potable waterwell with chlorination facilities, a water meter and a spare water meter.
- d. Provide the water system with standby power on both pumps with automatic switchover to provide adequate backup for failure of wells, pumps and power.
- e. Conform to the drinking water standards of the State of California Department of Health and provide any necessary treatment facilities to meet these standards.
- f. All cross connections to the water system are prohibited.
- g. Backflow prevention devices shall be required on all service lines.
- h. Obtain approval from the Bethel Island Fire Protection District and the Board of Fire Underwriters on the fire hydrants.

3. Water and Sewer System

- a. Conform to Contra Costa County Sanitation District No. 15 ordinances and requirements for sanitary sewer and water facilities serving the development.
- b. Plans and specifications for the sanitary sewers and the water supply and distribution system shall be approved the District prior to issuance of any building permits.
- c. Execute an improvement agreement between Sanitation District No. 15 and the developer with respect to the water and sewerage facilities and bond for the Water and Sewer Systems. Any such bond shall not be duplicative of other required bonds. The developer shall be responsible for correcting any damage to existing facilities caused by this project.
- d. The developer shall install sewer and water systems that meet the approval of Sanitation district No. 15 and dedicate the systems and all required access and maintenance easements to the District.

- e. Construct the main sewers and the water supply and distribution system in:
 1. Easements or fee title dedicated to the District; or
 2. In the County road right of way.
 - f. Each individual living unit and commercial unit shall be served by a separate water service and sewer lateral.
 - g. Certification that the soils will support the sanitary sewers (maintain grade) and the water distribution system and all appurtenances to the systems by an engineer regularly engaged in the field of "soils engineering."
 - h. Structures and trees are not allowed to be over sewer and waterlines. This restriction shall be stated in the Grant of Easement.
- I. Furnish proof to the Public Works Department, Engineering Services Division, of the acquisition of all necessary rights of entry, permits and/or easements for the construction of off-site, temporary or permanent, road and drainage improvements.
 - J. Construct pavement/widening to provide a 22-foot interim half-width roadway with longitudinal and transverse drainage along the frontage of Gateway Road between Stone Road East and Bethel Island Road.
 - K. Convey to the County, by Offer of Dedication, 12 feet of additional right-of-way on Gateway Road as required for the planned future width of 84 feet.
 - L. Convey to the County, by Offer of Dedication, 5 feet of additional right-of-way on Stone Road as required for the planned future width of 60 feet.
 - M. Realign Sandy Lane so the center line is opposite the center line of Cottage Lane. If the applicant is unable to obtain adequate right-of-way, he shall request the county to enter into condemnation proceedings.
30. Building numbers shall be illuminated and posted in a position visible from the street.
 31. Applications for building permit approvals for multiple family residential projects will indicate a suitably enclosed area for the purpose of locating recycling bins for paper, glass and cans. For projects of 50 units or less, such area will not be less than 10 feet by 12 feet in area, and the enclosure shall be at least six feet high. For projects of more than 50 units, proportionately greater areas will be required. This area will be

Included in the computation of the 25 percent of lot "open area" required of such development plans.

32. Comply with the requirements of the Bridge/Thoroughfare Fee Ordinance for the East/Central County Travel Corridor Area of Benefit as adopted by the Board of Supervisors by paying \$380 per unit.
33. On the provision of police service, the applicant agrees to vote its property into a "special tax area" for police service at an initial level of \$100 per parcel annually. This amount shall be adjusted yearly according to the Bay Area CPI. Furthermore, the Board of Supervisors shall review the assessment amount and adjust it to a higher level as conditions warrant it. Review shall be made of the initial assessment amount after budget hearings and after the pending elections of the general community on the question of additional police services.
34. Prior to the issuance of building permits the applicant shall comply with the provisions of Ordinance No. 87-95 as of the date the tentative subdivision map is approved. An approved TSM plan shall be operative prior to final inspection by the Building Inspection Department.
35. The applicant shall add the following to the deed of each newly created parcel:

"This document should serve as notification that you have purchased land in an agricultural area where you may regularly find farm equipment using local roads, farm equipment causing dust, crop dusting and spraying occurring regularly, burning associated with agricultural activities, noise associated with farm equipment and aerial crop dusting, and certain animals and flies may exist on surrounding properties. This is, again, notification that this is part of the agricultural way of life in East Contra Costa County and you should be fully aware of this at the time of purchase."
36. The applicant shall pay a traffic mitigation fee of \$100 per unit to mitigate impact of traffic through the Oakley area.
37. The applicant shall comply with the Park Dedication Ordinance as follows:

\$850 per unit for the last 250 units and \$400 per unit for the remaining units.
38. The fees required by conditions 29C, 32, 36 and 37 shall be paid at the time building permits are issued.

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May 17, 1988

SUPPLEMENT TO DELTA COVES CONDITIONS OF APPROVAL
(DP #3024-B2, Subd. #601J)

Condition #6 is amended to read as follows:

"6. The phasing schedule for the residential lots as shown on the tentative map may be modified by the Director of Community Development upon request of the developer. The perimeter levees will be constructed in three phases. They will be constructed in parallel so as to allow the construction of a cofferdam, if necessary, at the completion of either of the first two phases. Construction of the perimeter levees shall be completed within seven years of ground-breaking for the project. This seven-year period shall be tolled for any of the following reasons:

- (a) Acts of God;
- (b) Natural catastrophes;
- (c) Acts of war;
- (d) External conditions beyond the developer's control which, in the opinion of the Director of Community Development, substantially interfere with the developer's ability to construct and/or market the subdivision;
- (e) Unreasonable delays attributable to governmental action or inaction, including but not limited to delays in granting grading permits;
- (f) Labor strikes or slow-downs;
- (g) Vandalism;
- (h) Other unforeseen conditions beyond the control of the developer which interfere with levee construction.

Bethel Island – Levee Crown Compliance Spread Sheet – HMP, PL84-99, Elevation 9.2’

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year + 1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year + 1.5'	Variation PL 84-99 Compliance)
0	11.4	6.8	7.8	3.6	9.2	2.2	8.3	3.1
100	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
200	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
300	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
400	10.1	6.8	7.8	2.1	9.2	0.9	8.3	1.8
500	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
600	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
700	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	0.6
800	8.8	6.8	7.8	1	9.2	(0.4)	8.3	0.5
900	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
1000	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
1100	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4
1200	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
1300	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	0.6
1400	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
1500	9.1	6.8	7.8	1.5	9.2	0.1	8.3	1.0
1600	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
1700	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
1800	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
1900	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
2000	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
2100	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
2200	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
2300	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4
2400	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
2500	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
2600	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
2700	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
2800	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
2900	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	0.4
3000	8.3	6.8	7.8	0.5	9.2	(0.9)	8.3	0.0
3100	8.6	6.8	7.8	0.8	9.2	(0.6)	8.3	0.3
3200	8.4	6.8	7.8	0.6	9.2	(0.8)	8.3	0.1
3300	8.8	6.8	7.8	1	9.2	(0.4)	8.3	0.5
3400	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
3500	8.6	6.8	7.8	0.8	9.2	(0.6)	8.3	0.3
3600	8.5	6.8	7.8	0.7	9.2	(0.7)	8.3	0.2
3700	8.6	6.8	7.8	0.8	9.2	(0.6)	8.3	0.3
3800	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	0.6
3900	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2

Sheet 3 of 15

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation PL 84-99 Compliance)
4000	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
4100	10.1	6.8	7.8	2.1	9.2	0.9	8.3	1.8
4200	10.1	6.8	7.8	2.5	9.2	1.1	8.3	2.0
4300	10.5	6.8	7.8	2.7	9.2	1.1	8.1	2.2
4400	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
4500	10.7	6.8	7.8	2.9	9.2	1.5	8.3	2.4
4600	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.3
4700	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5
4800	10.9	6.8	7.8	3.1	9.2	1.7	8.3	2.6
4900	10.6	6.8	7.8	2.8	9.2	1.4	8.1	2.3
5000	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
5100	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2
5200	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
5300	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
5400	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4
5500	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
5600	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
5700	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
5800	9.1	6.8	7.8	1.3	9.1	(0.1)	8.3	0.8
5900	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
6000	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
6100	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
6200	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4
6300	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
6400	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
6500	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
6600	9.1	6.8	7.8	1.5	9.2	0.1	8.1	1.0
6700	9.4	6.8	7.8	1.6	9.2	0.2	8.1	1.1
6800	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
6900	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
7000	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4
7100	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
7200	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
7300	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
7400	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	0.6
7500	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
7600	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
7700	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
7800	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
7900	10.9	6.8	7.8	3.1	9.2	1.7	8.3	2.6
8000	11.2	6.8	7.8	3.4	9.2	2.0	8.1	2.9
8100	10.7	6.8	7.8	2.9	9.2	1.5	8.3	2.4

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation PL 84-99 Compliance)
8200	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
8300	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
8400	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
8500	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
8600	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
8700	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
8800	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
8900	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
9000	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
9100	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
9200	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
9300	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5
9400	10.7	6.8	7.8	2.9	9.2	1.5	8.3	2.4
9500	10.9	6.8	7.8	3.1	9.2	1.7	8.3	2.6
9600	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5
9700	11.3	6.8	7.8	3.5	9.2	2.1	8.3	3.0
9800	11.6	6.8	7.8	3.8	9.2	2.4	8.3	3.3
9900	11.3	6.8	7.8	3.5	9.2	2.1	8.3	3.0
10000	10.7	6.8	7.8	2.9	9.2	1.5	8.3	2.4
10100	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
10200	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
10300	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
10400	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
10500	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2
10600	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
10700	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
10800	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
10900	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
11000	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
11100	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
11200	11	6.8	7.8	3.2	9.2	1.8	8.3	2.7
11300	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5
11400	11	6.8	7.8	3.2	9.2	1.8	8.3	2.7
11500	11.1	6.8	7.8	3.3	9.2	1.9	8.3	2.8
11600	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2
11700	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
11800	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5
11900	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
12000	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
12100	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
12200	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
12300	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL-84-99 100 year +1.5'	Variation PL 84-99 Compliance)
12400	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
12500	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
12600	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
12700	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
12800	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
12900	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
13000	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
13100	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
13200	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
13300	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
13400	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
13500	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
13600	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
13700	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
13800	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
13900	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
14000	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
14100	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
14200	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
14300	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
14400	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
14500	10.7	6.8	7.8	2.9	9.2	1.5	8.3	2.4
14600	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5
14700	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2
14800	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
14900	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
15000	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
15100	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
15200	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2
15300	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2
15400	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
15500	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
15600	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
15700	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
15800	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
15900	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
16000	10.7	6.8	7.8	2.9	9.2	1.5	8.3	2.4
16100	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2
16200	10.9	6.8	7.8	3.1	9.2	1.7	8.3	2.6
16300	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
16400	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
16500	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100-Year Flood Elevation	HMP		BIMID Desired Crest Elevation 9.2	Variation	PL 84-99	
			100 year + 1'	Variation (HMP Compliance)			100 year + 1.5'	Variation (PL 84-99 Compliance)
16600	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
16700	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
16800	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
16900	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2
17000	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
17100	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
17200	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
17300	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
17400	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5
17500	10.7	6.8	7.8	2.9	9.2	1.5	8.3	2.4
17600	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
17700	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
17800	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
17900	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
18000	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
18100	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
18200	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
18104	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
18400	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
18500	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
18600	11.7	6.8	7.8	3.4	9.2	2.0	8.3	2.9
18700	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
18800	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
18900	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
19000	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
19100	9.5	6.8	7.8	1.7	9.2	0.1	8.3	1.2
19200	9.1	6.8	7.8	1.3	9.2	(0.3)	8.3	0.8
19100	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	0.6
19400	8.7	6.8	7.8	0.9	9.2	(0.3)	8.3	0.4
19500	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	0.6
19600	8.7	6.8	7.8	0.9	9.2	(0.3)	8.3	0.4
19700	8.5	6.8	7.8	0.7	9.2	(0.7)	8.3	0.2
19800	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	0.4
19900	8.5	6.8	7.8	0.7	9.2	(0.7)	8.3	0.2
20000	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
20100	10.1	6.8	7.8	2.5	9.2	1.1	8.3	2.0
20200	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
20300	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
20400	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
20500	10.4	6.8	7.8	2.5	9.2	1.2	8.4	2.0
20600	10.2	6.8	7.8	2.3	9.2	1.0	8.4	1.8
20700	10.3	6.8	7.8	2.4	9.2	1.1	8.4	1.9

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation PL 84-99 Compliance)
20800	9.9	6.9	7.9	.2	9.2	0.7	8.4	1.5
20900	9.8	6.9	7.9	1.9	9.2	0.6	8.4	1.4
21000	9.9	6.9	7.9	.2	9.2	0.7	8.4	1.5
21100	10.1	6.9	7.9	2.2	9.2	0.9	8.4	1.7
21200	10.5	6.9	7.9	2.6	9.2	1.7	8.4	2.1
21300	10.4	6.9	7.9	2.5	9.2	1.2	8.4	2.0
21400	10.4	6.9	7.9	2.5	9.2	1.2	8.4	2.0
21500	10	6.9	7.9	2.1	9.2	0.8	8.4	1.6
21600	9.5	6.9	7.9	1.6	9.2	0.3	8.4	1.1
21700	9.4	6.9	7.9	1.7	9.2	0.4	8.4	1.2
21800	9.5	6.9	7.9	1.6	9.2	0.3	8.4	1.1
21900	9.7	6.9	7.9	1.8	9.2	0.5	8.4	1.3
22000	9.2	6.9	7.9	1.3	9.2	0.0	8.4	0.8
22100	8.6	6.9	7.9	0.7	9.2	(0.6)	8.4	0.2
22200	8.4	6.9	7.9	0.5	9.2	(0.8)	8.4	0.0
22300	8.2	6.9	7.9	0.3	9.2	(1.0)	8.4	(0.2)
22400	9.3	6.9	7.9	1.4	9.2	0.1	8.4	0.9
22500	9.7	6.9	7.9	1.8	9.2	0.5	8.4	1.3
22600	9.4	6.9	7.9	1.7	9.2	0.4	8.4	1.2
22700	9.3	6.9	7.9	1.4	9.2	0.1	8.4	0.9
22800	9.1	6.9	7.9	1.2	9.2	(0.1)	8.4	0.7
22900	9.1	6.9	7.9	1.2	9.2	(0.1)	8.4	0.7
23000	8.9	6.9	7.9	1	9.2	(0.3)	8.4	0.5
23100	8.8	6.9	7.9	0.5	9.2	(0.8)	8.4	0.0
23200	8.6	6.9	7.9	0.7	9.2	(0.6)	8.4	0.2
23300	9	6.9	7.9	1.1	9.2	(0.2)	8.4	0.6
23400	9	6.9	7.9	1.1	9.2	(0.2)	8.4	0.6
23500	8.5	7	8	0.5	9.2	(0.7)	8.5	0.0
23600	8.9	7	8	0.9	9.2	(0.3)	8.5	0.4
23700	8.8	7	8	0.8	9.2	(0.4)	8.5	0.3
23800	8.6	7	8	0.6	9.2	(0.6)	8.5	0.1
23900	8.7	7	8	0.7	9.2	(0.5)	8.5	0.2
24000	8.5	7	8	0.5	9.2	(0.7)	8.5	0.0
24100	8.8	7	8	0.8	9.2	(0.4)	8.5	0.3
24200	9.4	7	8	1.4	9.2	0.2	8.5	0.9
24300	10.3	7	8	2.3	9.2	1.1	8.5	1.8
24400	9.8	7	8	1.8	9.2	0.6	8.5	1.3
24500	9.2	7	8	1.2	9.2	0.0	8.5	0.7
24600	9.5	7	8	1.5	9.2	0.3	8.5	1.0
24700	9.4	7	8	1.4	9.2	0.2	8.5	0.9
24800	9.2	7	8	1.2	9.2	0.0	8.5	0.7
24900	9.4	7	8	1.4	9.2	0.2	8.5	0.9

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP Compliance	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation PL 84-99 Compliance)
25000	9.5	7	8	1.5	9.2	0.3	8.5	1.0
25100	10.3	7	8	2.3	9.2	1.1	8.5	1.8
25200	9.0	7	8	1.9	9.2	0.7	8.5	1.4
25300	9.8	7	8	1.8	9.2	0.6	8.5	1.3
25400	9.3	7	8	1.7	9.2	0.1	8.5	0.8
25500	9.4	7	8	1.4	9.2	0.2	8.5	0.9
25600	9.4	7	8	1.4	9.2	0.2	8.5	0.9
25700	8.6	7	8	0.6	9.2	(0.6)	8.5	0.1
25800	8.4	7	8	0.4	9.2	(0.8)	8.5	(0.1)
25900	8.8	7.1	8.1	0.7	9.2	(0.4)	8.6	0.2
26000	9.3	7.1	8.1	1.2	9.2	0.1	8.6	0.7
26100	8.4	7.1	8.1	0.3	9.2	(0.8)	8.6	(0.7)
26200	10.3	7.1	8.1	3	9.2	0.9	8.6	1.5
26300	10.4	7.1	8.1	2.3	9.2	1.2	8.6	1.8
26400	10.2	7.1	8.1	2.1	9.2	1.0	8.6	1.6
26500	10.4	7.1	8.1	2.1	9.2	1.2	8.6	1.8
26600	10.4	7.1	8.1	2.3	9.2	1.2	8.6	1.8
26700	10.7	7.1	8.1	2.6	9.2	1.5	8.6	2.1
26800	11	7.1	8.1	2.0	9.2	1.8	8.6	1.4
26900	10.9	7.1	8.1	2.8	9.2	1.7	8.6	2.3
27000	10.4	7.1	8.1	2.3	9.2	1.2	8.6	1.8
27100	10.8	7.1	8.1	2.7	9.2	1.6	8.6	2.2
27200	10.9	7.1	8.1	2.8	9.2	1.7	8.6	2.3
27300	10.7	7.1	8.1	2.6	9.2	1.5	8.6	2.1
27400	10.8	7.1	8.1	2.7	9.2	1.6	8.6	2.2
27500	11.4	7.2	8.2	3.2	9.2	2.2	8.7	2.7
27600	11.5	7.2	8.2	3.3	9.2	2.3	8.7	2.8
27700	11	7.2	8.2	2.8	9.2	1.8	8.7	2.3
27800	9.3	7.2	8.2	1.1	9.2	0.1	8.7	0.6
27900	8.6	7.2	8.2	0.4	9.2	(0.6)	8.7	(0.1)
28000	9	7.2	8.2	0.8	9.2	(0.7)	8.7	0.3
28100	9.5	7.2	8.2	1.1	9.2	0.3	8.7	0.8
28200	9.2	7.2	8.2	1	9.2	0.0	8.7	0.5
28300	9.5	7.2	8.2	1.1	9.2	0.3	8.7	0.8
28400	9.4	7.2	8.2	1.2	9.2	0.2	8.7	0.7
28500	9.4	7.2	8.2	1.2	9.2	0.2	8.7	0.7
28600	9.7	7.2	8.2	1.5	9.2	0.5	8.7	1.0
28700	9.4	7.2	8.2	1.1	9.2	0.2	8.7	0.7
28800	9.4	7.2	8.2	1.2	9.2	0.2	8.7	0.7
28900	9.3	7.2	8.2	1.1	9.2	0.1	8.7	0.6
29000	9.2	7.2	8.2	1	9.2	0.0	8.7	0.5
29100	9.1	7.2	8.2	0.9	9.2	(0.1)	8.7	0.4

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Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year + 1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation	Variation	PL 84-99 100 year + 1.5'	Variation PL 84-99 Compliance)
29200	9.5	7.3	8.3	1.2	9.2	0.3	8.8	0.7
29300	9.5	7.3	8.3	1.2	9.2	0.3	8.8	0.7
29400	9.5	7.3	8.3	1.2	9.2	0.3	8.8	0.7
29500	10.5	7.3	8.3	2.2	9.2	1.3	8.8	1.7
29600	10	7.3	8.3	1.7	9.2	0.8	8.8	1.2
29700	9.7	7.3	8.3	1.4	9.2	0.5	8.8	0.9
29800	8.3	7.3	8.3	0	9.2	(0.9)	8.8	(0.5)
29900	8.7	7.3	8.3	0.4	9.2	(0.5)	8.8	(0.1)
30000	8.8	7.3	8.3	0.5	9.2	(0.4)	8.8	0.0
30100	8.6	7.3	8.3	0.3	9.2	(0.6)	8.8	(0.2)
30200	9.1	7.3	8.3	0.8	9.2	(0.1)	8.8	0.3
30300	9.6	7.3	8.3	1.3	9.2	0.4	8.8	0.8
30400	10.6	7.3	8.3	2.3	9.2	1.4	8.8	1.8
30500	9.7	7.3	8.3	1.4	9.2	0.5	8.8	0.5
30600	9.3	7.3	8.3	1	9.2	0.1	8.8	0.5
30700	9.1	7.3	8.3	0.8	9.2	(0.1)	8.8	0.3
30800	8.7	7.3	8.3	0.4	9.2	(0.5)	8.8	(0.1)
30900	9.1	7.3	8.3	0.8	9.2	(0.1)	8.8	0.3
31000	9.6	7.3	8.3	1.3	9.2	0.4	8.8	0.8
31100	9.8	7.3	8.3	1.5	9.2	0.6	8.8	1.0
31200	9.7	7.3	8.3	0.9	9.2	0.0	8.8	0.4
31300	9.7	7.4	8.4	1.3	9.2	0.5	8.9	0.8
31400	10.1	7.4	8.4	1.7	9.2	0.9	8.9	1.2
31500	10.3	7.4	8.4	1.9	9.2	1.1	8.9	1.4
31600	10.5	7.4	8.4	2.1	9.2	1.3	8.9	1.6
31700	10.8	7.4	8.4	2.4	9.2	1.6	8.9	1.9
31800	11.1	7.4	8.4	2.7	9.2	1.9	8.9	2.2
31900	11.2	7.4	8.4	2.8	9.2	2.0	8.9	2.3
32000	11.3	7.4	8.4	2.9	9.2	2.1	8.9	2.4
32100	11.4	7.4	8.4	3	9.2	2.1	8.9	2.5
32200	11.4	7.4	8.4	3	9.2	2.2	8.9	2.5
32300	11.3	7.4	8.4	2.9	9.2	2.1	8.9	2.4
32400	11.1	7.4	8.4	2.7	9.2	1.9	8.9	2.2
32500	10.5	7.4	8.4	2.1	9.2	1.3	8.9	1.6
32600	8.5	7.4	8.4	0.1	9.2	(0.7)	8.9	(0.4)
32700	8.3	7.4	8.4	-0.1	9.2	(0.9)	8.9	(0.6)
32800	9.4	7.4	8.4	1	9.2	0.2	8.9	0.5
32900	10.3	7.4	8.4	1.9	9.2	1.1	8.9	1.4
33000	10.7	7.4	8.4	2.3	9.2	1.5	8.9	1.8
33100	10.4	7.4	8.4	2	9.2	1.2	8.9	1.5
33200	9.2	7.4	8.4	0.8	9.2	0.0	8.9	0.3
33300	9.9	7.4	8.4	1.5	9.2	0.7	8.9	1.0

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Daslrod Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP (HMP Compliance) 100 year +1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation PL 84-99 Compliance)
33400	10.8	7.4	8.4	2.4	9.2	1.6	8.9	1.9
33500	10.4	7.5	8.5	1.9	9.2	1.2	9.0	1.4
33600	10.6	7.5	8.5	2.1	9.2	1.4	9.0	1.6
33700	10	7.5	8.5	1.5	9.2	0.8	9.0	1.0
33800	10.5	7.5	8.5	2	9.2	1.3	9.0	1.5
33900	10.3	7.5	8.5	1.8	9.2	1.1	9.0	1.3
34000	10.5	7.5	8.5	2	9.2	1.3	9.0	1.5
34100	10.6	7.5	8.5	2.1	9.2	1.4	9.0	1.6
34200	10.9	7.5	8.5	2.4	9.2	1.7	9.0	1.9
34300	10.5	7.5	8.5	2	9.2	1.3	9.0	1.5
34400	10.1	7.5	8.5	1.6	9.2	0.9	9.0	1.1
34500	9.9	7.5	8.5	1.4	9.2	0.7	9.0	0.9
34600	9.9	7.5	8.5	1.4	9.2	0.7	9.0	0.9
34700	9.7	7.5	8.5	1.2	9.2	0.5	9.0	0.7
34800	10.4	7.5	8.5	1.9	9.2	1.2	9.0	1.4
34900	10.2	7.5	8.5	1.7	9.2	1.0	9.0	1.2
35000	9.7	7.5	8.5	1.2	9.2	0.5	9.0	0.7
35100	9.5	7.5	8.5	1	9.2	0.3	9.0	0.5
35200	9.7	7.5	8.5	1.2	9.2	0.5	9.0	0.7
35300	9.8	7.5	8.5	1.3	9.2	0.6	9.0	0.8
35400	9.9	7.5	8.5	1.4	9.2	0.7	9.0	0.9
35500	9.9	7.5	8.5	1.4	9.2	0.7	9.0	0.9
35600	9.9	7.5	8.5	1.4	9.2	0.7	9.0	0.9
35700	10.2	7.5	8.5	1.7	9.2	1.0	9.0	1.2
35800	9.9	7.5	8.5	1.4	9.2	0.7	9.0	0.9
35900	9.8	7.4	8.4	1.4	9.2	0.6	8.9	0.9
36000	10.1	7.4	8.4	1.7	9.2	0.9	8.9	1.2
36100	10.6	7.4	8.4	2.2	9.2	1.4	8.9	1.7
36200	10.3	7.4	8.4	1.9	9.2	1.1	8.9	1.4
36300	10.4	7.4	8.4	2	9.2	1.2	8.9	1.5
36400	9.9	7.4	8.4	1.5	9.2	0.7	8.9	1.0
36500	10.3	7.4	8.4	1.7	9.2	0.9	8.9	1.2
36600	10.1	7.4	8.4	1.7	9.2	0.9	8.9	1.2
36700	10.5	7.4	8.4	2.1	9.2	1.3	8.9	1.6
36800	11.7	7.4	8.4	3.3	9.2	2.5	8.9	2.8
36900	11.7	7.4	8.4	3.3	9.2	2.5	8.9	2.8
37000	10.4	7.4	8.4	2	9.2	1.2	8.9	1.5
37100	10.9	7.4	8.4	2.5	9.2	1.7	8.9	2.0
37200	10.2	7.4	8.4	1.8	9.2	1.0	8.9	1.3
37300	9.8	7.4	8.4	1.4	9.2	0.6	8.9	0.9
37400	9.8	7.4	8.4	1.4	9.2	0.6	8.9	0.9
37500	9.6	7.4	8.4	1.7	9.2	0.4	8.9	0.7

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100-Year Flood Elevation	HMP 100 year +1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation PL 84-99 Compliance)
37600	9.8	7.4	8.4	1.4	9.2	0.6	8.9	0.9
37700	10	7.4	8.4	1.6	9.2	0.8	8.9	1.1
37800	9.1	7.4	8.4	0.7	9.2	(0.1)	8.9	0.2
37900	9	7.4	8.4	0.6	9.2	(0.2)	8.9	0.1
38000	9.1	7.4	8.4	0.7	9.2	(0.1)	8.9	0.2
38100	9.7	7.4	8.4	1.1	9.2	0.5	8.9	0.8
38200	10.1	7.4	8.4	1.9	9.2	1.1	8.9	1.4
38300	10.2	7.4	8.4	1.8	9.2	1.0	8.9	1.3
38400	10.2	7.4	8.4	1.8	9.2	1.0	8.9	1.3
38500	9.7	7.4	8.4	1.3	9.2	0.5	8.9	0.8
38600	9.5	7.4	8.4	1.1	9.2	0.3	8.9	0.6
38700	10.1	7.3	8.3	1.8	9.2	0.9	8.8	1.3
38800	9.9	7.3	8.3	1.6	9.2	0.7	8.8	1.1
38900	10.2	7.3	8.3	1.9	9.2	1.0	8.8	1.4
39000	10.1	7.3	8.3	1.8	9.2	0.9	8.8	1.3
39100	10	7.3	8.3	1.7	9.2	0.8	8.8	1.2
39200	9.2	7.3	8.3	0.9	9.2	0.0	8.8	0.4
39300	9.7	7.3	8.3	1.4	9.2	0.5	8.8	0.9
39400	9.6	7.3	8.3	1.3	9.2	0.4	8.8	0.8
39500	10.4	7.3	8.3	2.1	9.2	1.2	8.8	1.6
39600	10.3	7.3	8.3	2	9.2	1.1	8.8	1.5
39700	9.7	7.3	8.3	1.4	9.2	0.5	8.8	0.9
39800	10.4	7.3	8.3	2.1	9.2	1.2	8.8	1.6
39900	10.4	7.3	8.3	2.1	9.2	1.2	8.8	1.6
40000	10.1	7.3	8.3	1.8	9.2	0.9	8.8	1.3
40100	10.2	7.3	8.3	1.9	9.2	1.0	8.8	1.4
40200	9.8	7.3	8.3	1.5	9.2	0.6	8.8	1.0
40300	9.9	7.3	8.3	1.6	9.2	0.7	8.8	1.1
40400	10	7.3	8.3	1.7	9.2	0.8	8.8	1.2
40500	10.1	7.3	8.3	1.8	9.2	0.9	8.8	1.3
40600	10.9	7.1	8.3	2.6	9.2	1.7	8.8	2.1
40700	10.1	7.3	8.3	1.8	9.2	0.9	8.8	1.3
40800	9.9	7.3	8.3	1.6	9.2	0.7	8.8	1.1
40900	9.5	7.2	8.2	1.3	9.2	0.5	8.7	0.8
41000	9.5	7.2	8.2	1.3	9.2	0.5	8.7	0.8
41100	9.6	7.2	8.2	1.4	9.2	0.4	8.7	0.9
41200	9.7	7.2	8.2	1.5	9.2	0.5	8.7	1.0
41300	9.4	7.2	8.2	1.2	9.2	0.2	8.7	0.7
41400	10.4	7.2	8.2	2.2	9.2	1.1	8.7	1.7
41500	10.9	7.2	8.2	2.7	9.2	1.7	8.7	2.2
41600	10.9	7.2	8.2	2.7	9.2	1.7	8.7	2.2
41700	10	7.2	8.2	1.8	9.2	0.8	8.7	1.3

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year+1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year+1.5'	Variation PL 84-99 Compliance)
41800	10.1	7.2	8.2	1.9	9.2	0.9	8.7	1.4
41900	10.8	7.2	8.2	2.6	9.2	1.6	8.7	2.1
42000	11.5	7.2	8.2	3.7	9.2	2.7	8.7	3.2
42100	11.4	7.2	8.2	3.2	9.2	2.2	8.7	2.7
42200	10.8	7.2	8.2	2.6	9.2	1.6	8.7	2.1
42300	10.8	7.2	8.2	2.6	9.2	1.6	8.7	2.1
42400	10.1	7.2	8.2	1.9	9.2	0.9	8.7	1.4
42500	10.8	7.2	8.2	2.6	9.2	1.6	8.7	2.1
42600	9.9	7.1	8.1	1.8	9.2	0.7	8.6	1.3
42700	10.2	7.1	8.1	2.1	9.2	1.0	8.6	1.6
42800	9.3	7.1	8.1	1.2	9.2	0.1	8.6	0.7
42900	10	7.1	8.1	1.9	9.2	0.8	8.6	1.4
43000	9.8	7.1	8.1	1.7	9.2	0.6	8.6	1.2
43100	10.1	7.1	8.1	2	9.2	0.9	8.6	1.5
43200	9.4	7.1	8.1	1.1	9.2	0.2	8.6	0.8
43300	10.3	7.1	8.1	2.4	9.2	1.3	8.6	1.9
43400	10	7.1	8.1	1.9	9.2	0.8	8.6	1.4
43500	9.8	7.1	8.1	1.7	9.2	0.6	8.6	1.2
43600	9.2	7.1	8.1	1.1	9.2	0.0	8.6	0.6
43700	9.3	7.1	8.1	1.2	9.2	0.1	8.6	0.7
43800	9.7	7.1	8.1	1.6	9.2	0.5	8.6	1.1
43900	9.9	7.1	8.1	1.8	9.2	0.7	8.6	1.3
44000	9.8	7.1	8.1	1.7	9.2	0.6	8.6	1.2
44100	9.2	7.1	8.1	1.1	9.2	0.0	8.6	0.6
44200	9.2	7	8	1.2	9.2	0.0	8.5	0.7
44300	9.2	7	8	1.7	9.2	0.3	8.5	1.2
44400	10.1	7	8	2.1	9.2	0.9	8.5	1.6
44500	10.5	7	8	2.5	9.2	1.3	8.5	2.0
44600	9.2	7	8	1.2	9.2	0.0	8.5	0.7
44700	9.2	7	8	1.2	9.2	0.0	8.5	0.7
44800	9.2	7	8	1.2	9.2	0.0	8.5	0.7
44900	9.6	7	8	1.6	9.2	0.4	8.5	1.1
45000	9.3	7	8	1.3	9.2	0.1	8.5	0.8
45100	8.8	7	8	0.8	9.2	(0.4)	8.5	0.3
45200	9.2	7	8	1.2	9.2	0.0	8.5	0.7
45300	9.1	7	8	1.1	9.2	(0.1)	8.5	0.6
45400	9.4	6.9	7.9	1.5	9.2	0.2	8.4	1.0
45500	9.6	6.9	7.9	1.7	9.2	0.4	8.4	1.2
45600	9.7	6.9	7.9	1.8	9.2	0.5	8.4	1.3
45700	10.2	6.9	7.9	2.3	9.2	1.0	8.4	1.8
45800	10.2	6.9	7.9	2.3	9.2	1.0	8.4	1.8
45900	10.5	6.9	7.9	2.6	9.2	1.3	8.4	2.1

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation PL 84-99 Compliance)
46000	10.9	6.9	7.9	3	9.2	1.7	8.4	2.5
46100	10.3	6.9	7.9	2.4	9.2	1.1	8.4	1.9
46200	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4
46300	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
46400	9.1	6.8	7.8	1.1	9.2	(0.1)	8.3	0.8
46500	8.2	6.8	7.8	0.4	9.2	(1.0)	8.3	(0.1)
46600	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	0.4
46700	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
46800	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
46900	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
47000	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
47100	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
47200	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
47300	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
47400	9.3	6.8	7.8	1.4	9.2	0.0	8.3	0.9
47500	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
47600	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
47700	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
47800	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
47900	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
48000	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
48100	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
48200	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
48300	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
48400	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
48500	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
48600	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
48700	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
48800	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
48900	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
49000	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
49100	9.8	6.8	7.8	1.8	9.2	0.4	8.3	1.3
49200	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
49300	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
49400	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
49500	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
49600	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
49700	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4
49800	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
49900	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
50000	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
50100	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year + 1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year + 1.5'	Variation PL 84-99 Compliance)
S0200	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
S0300	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
S0400	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4
S0500	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
S0600	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
S0700	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
S0800	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
S0900	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
S1000	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
S1100	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
S1200	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
S1300	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
S1400	8.8	6.8	7.8	1	9.2	(0.4)	8.3	0.5
S1500	9.0	6.8	7.8	2.1	9.2	0.7	8.3	1.6
S1600	8.8	6.8	7.8	1	9.2	(0.4)	8.3	0.5
S1700	9.1	6.8	7.8	1.5	9.2	0.1	8.3	1.0
S1800	8.6	6.8	7.8	0.8	9.2	(0.6)	8.3	0.3
S1900	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
S2000	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
S2100	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
S2200	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
S2300	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
S2400	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
S2500	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
S2600	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
S2700	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
S2800	8.0	6.8	7.8	1.1	9.2	(0.1)	8.3	0.6
S2900	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
S3000	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
S3100	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
S3200	8.8	6.8	7.8	1	9.2	(0.4)	8.3	0.5
S3300	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	0.4
S3400	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
S3500	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
S3600	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
S3700	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
S3800	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
S3900	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
S4000	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
S4100	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5
S4200	11.1	6.8	7.8	3.3	9.2	1.9	8.4	2.8
S4300	11	6.8	7.8	3.2	9.2	1.8	8.3	2.7

Bethel Island - Levee Crown HMP, Pl. 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation PL 84-99 Compliance)
54400	11.3	6.8	7.8	3.5	9.2	2.1	8.3	3.0
54500	11.3	6.8	7.8	3.5	9.2	2.1	8.3	3.0
54600	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2
54700	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
54800	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
54900	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
55000	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
55100	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
55200	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
55300	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
55400	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
55500	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
55600	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
55700	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
55800	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	0.4
55900	8.6	6.8	7.8	0.8	9.2	(0.6)	8.3	0.3
56000	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
56100	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
56200	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
56300	8.5	6.8	7.8	0.7	9.2	(0.7)	8.3	0.2
56400	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
56500	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
56600	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4
56700	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
56800	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	0.4
56900	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	0.6
57000	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
57100	8.8	6.8	7.8	1	9.2	(0.4)	8.3	0.5
57200	8.5	6.8	7.8	0.7	9.2	(0.7)	8.3	0.2
57300	8.4	6.8	7.8	0.6	9.2	(0.8)	8.3	0.1
57400	9.7	6.8	7.8	1.4	9.2	0.0	8.3	0.9
57500	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
57600	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
57700	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
57800	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
57900	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
58000	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
58100	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
58200	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
58300	8.3	6.8	7.8	0.5	9.2	(0.9)	8.3	0.0
58400	8	6.8	7.8	0.2	9.2	(1.2)	8.3	(0.3)
58500	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	0.6

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Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'								
Compliance Evaluation (Elevations per NGVD '29 datum)								
Station	Levee Crown Elevation	100-Year Flood Elevation	HMP 100 year +1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation	Variation	PL 84-99 100 year +1.5'	Variation PL 84-99 Compliance)
58600	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
58700	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
58800	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4
58900	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
59000	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
59100	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
59200	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
59300	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	0.4
59400	8.8	6.8	7.8	1	9.2	(0.4)	8.3	0.5
59500	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	0.4
59600	8.6	6.8	7.8	0.8	9.2	(0.6)	8.3	0.3
59700	8.8	6.8	7.8	1	9.2	(0.4)	8.3	0.5
59800	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
59900	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
60000	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	0.6
60100	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	0.4
60200	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
60300	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
60400	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
60500	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	0.6
60600	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
60700	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
60800	11.4	6.8	7.8	3.6	9.2	2.2	8.3	3.1

Sheet 15 of 15

Projected 5 Year Improvement Cost Estimate:

Bethel Island Municipal Improvement District - 5 year Plan - Estimated On Island Improvement Costs - 2011 thru 2016					
DRAFT					
Item	Description	Quantity	Unit	Unit Cost	Total Estimated
1	Levee Face Rip Rap - 11.5 miles				
	Rip Rap - 12" Minus	50,000	Ton	30	1,500,000
	Labor	50,000	Ton	20	1,000,000
2	Allocation for Emergency Rip Rap				
	Rip Rap - 12" Minus	10,000	Ton	30	300,000
3	Levee Crown - All weather maintenance Road				
	3/4 " Aggregate Base Rock	40,000	Ton	28	1,120,000
	Labor	40,000	Ton	11	440,000
4	Allocation for Levee Raising - PL 84-99	2417 LF			
	Onsite Sand	30,900	cy	8	247,200
	Labor	1	LS	86,000	86,000
5	Allocation for Vegetation Control				
	Vegetation Control (per mile)(Includes Labor & Materials)	11.5	Mile	12,000	138,000
6	Pump Station Retrofit - Raise to above 100 year flood elevation	1	LS	980,000	980,000
7	FY 2009-2010 Funding Request (See Note 1 below)	1,000,000	%	0.150	150,000
	Levee Rehab Sta 190+00 to 507+00				
	Pilot Sheet Pile Project Sta 20 Sta 60				
8	Horseshoe Bend Levee Stability Study- District Contribution	1,200,000	%	0.125	150,000
9	Allocation for Levee Widening Projects (see note 2)	1	LS	5,000,000	5,000,000
	Total				\$11,110,000
	Contingency @ 10%				1,111,000
	Grand Total (Rounded to nearest \$10,000)				\$12,220,000
Notes:					
Legend					
1	Fiscal Year Funding request as noted in Hultgren-Tillis Proposal. Work Agreement 81-07-1.0	LS	Lump Sum		
	Assumes 15% BIMID participation per State Guidelines	LF	Lineal Feet		
2	Assumes 1 mile of levee improvement per fiscal year	CY	Cubic Yard		

BETHEL ISLAND MUNICIPAL IMPROVEMENT DISTRICT
3085 STONE ROAD - PO BOX 244
BETHEL ISLAND, CA 94511-0244
TELEPHONE: 925 684-2210
FAX: 925 684-0724
EMAIL: blmid@sbcglobal.net

DIRECTORS

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STAFF

District Foreman Lawrence Martins	925 516-1798	925 383-8310		
District Clerk Julie Hugel	925 679-0572	510 590-3016 925 956-9791		
Assistant Secretary Denece Bixby	925 684-0312	925 382-1515		
Emergency Coordinator David Graas	925 684-9979	925 437-6592		

ENGINEERS

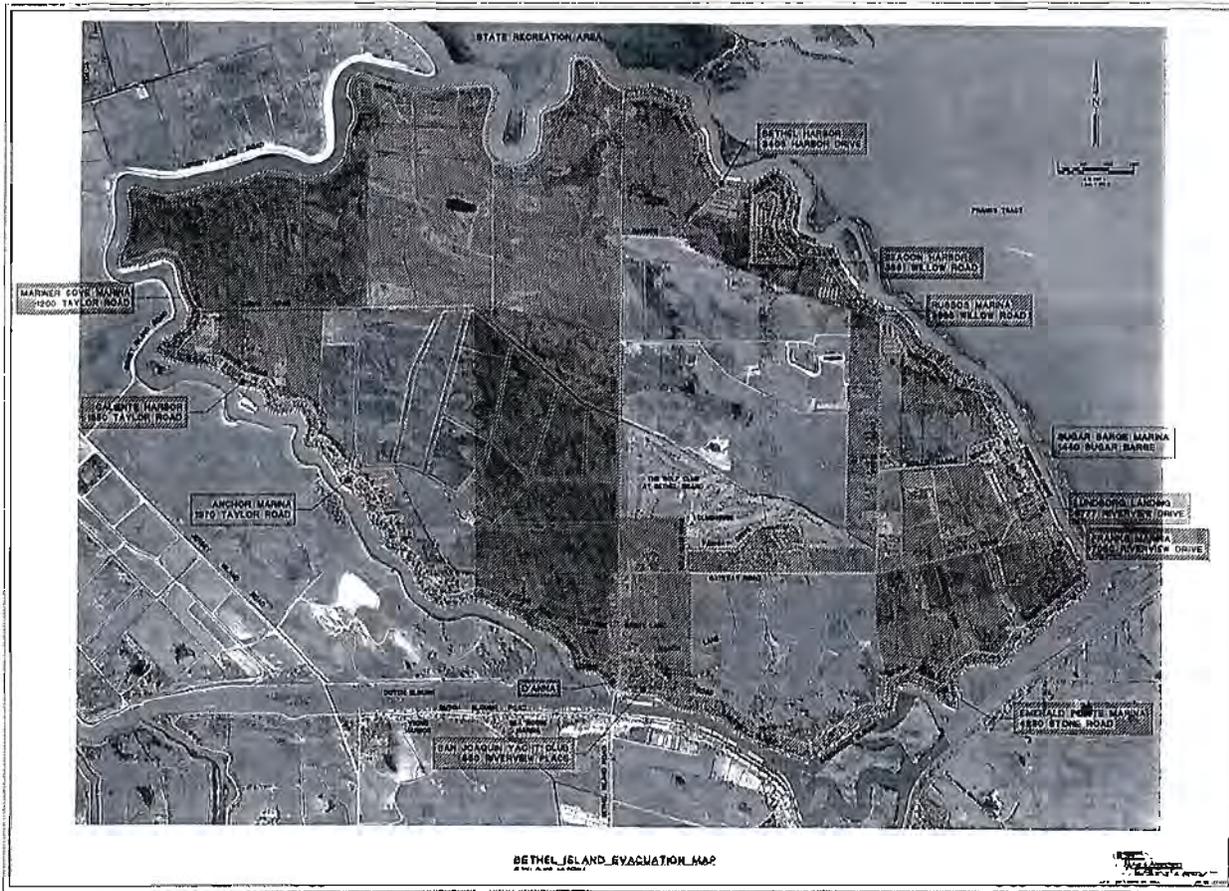
	OFFICE NO.	CELL	FAX	EMAIL
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effective 092711

Bethel Island Evacuation Map:



BETHEL ISLAND RALLY POINT AND EVACUATION PLAN

Rally Point	Rally Point Address	If directed to do so, report to the levee at the Rally Point indicated to the left of your address.
Marlner Cove Marina	1200 Taylor Road	1200 Taylor Road to 1338 Taylor Road
Caliente Harbor	1550 Taylor Road	1338 Taylor Road to 1864 Taylor Road
Anchor Marina	1970 Taylor Road	1868 Taylor Road to 2926 Taylor Road
D'Anna Yacht Center	6500 Bethel Island Rd.	Cottage Lane Bethel Island Road - odd numbered addresses
San Joaquin Yacht Club	550 Riverview Place	3025 Stone Road to 4038 Stone Road Park Lane Ranch Lane Sandy Lane Bethel Island Road - even numbered addresses
Emerald Pointe Marina	4230 Stone Road	4080 Stone Road to 4566 Stone Road
Frank's Marina	7050 Riverview Drive	4606 N. Stone Road to 4930 N. Stone Road Gateway Road - even numbered addresses Flamingo Mobile Home Park
Lundborg Landing	6777 Riverview Drive	6809 Riverview Drive to 7050 Riverview Drive Golf Club Road Fairway Drive Island Mobile Home Park Gateway Road - odd numbered addresses
Sugar Barge Marina	1440 Sugar Barge Rd.	4355 Willow Road to 4515 Willow Road Sugar Barge Road Piper Road -South of Sugar Barge Road
Russo's Marina	3995 Willow Road	3995 Willow Road to 4349 Willow Road Russo's Mobile Home Park Piper Road - North of Sugar Barge Road
Beacon Harbor	3861 Willow Road	3667 Willow Road to 3995 Willow Road
Bethel Harbor	3405 Harbor Drive	3507 Willow Road to 3663 Willow Road 3101 Willow Rd West to 3215 Willow Rd West Willows Mobile Home Park
Willowest Harbor	3215 Willow Road West	Overflow from Bethel Harbor

Five Year Cash Flow Analysis:

Bethel Island Municipal Improvement District

5 Year Cash Flow Analysis

Fiscal Year - July 2011 through June 2012

DRAFT

Item	Description	FY 2011/2012	
		Income	Expenses
	Income:		
1	Cash Carry over from prior year	35,057.00	
2	BIMID 15% Cost Sharing Allocation - WA B1-07-1.0	150,000.00	
3	DWR85% Cost Sharing Allocation - WA B1-07-1.0	850,000.00	
4	BIMID 25% Cost Sharing Allocation		
5	DWR 75% Cost Sharing Allocation		
6	Supplemental Revenue - Special Parcel Tax	0.00	
	Total Income	\$1,035,057.00	
	Expenses:		
1	Levee Rip Rap (\$220k/mile)		0.00
2	Levee Crown Raising - PL84-99		170,000.00
3	Levee Widening		180,000.00
4	Levee Road - AB Placement (160K/mile)		
5	Levee Sheet Pile Program - Pilot Test Program - Construction Allocation -B1-07-1.0		400,000.00
6	Horse Shoe Bend Project		
7	Advertising costs		2,000.00
8	Accounting Fees - Certified Payroll		8,000.00
9	Engineering Consulting Fees - Design & Staking - WA B1-07-1.0		25,000.00
10	Engineering Consulting Fees - Geotechnical Engineering - Design WA B1-07-1.0		50,000.00
11	Engineering Consulting Fees - Geotechnical Engineering -Field Inspection -WA B1-07-1.0		25,000.00
12	Engineering Consulting Fees - Design & Staking		30,000.00
13	Engineering Consulting Fees - Geotechnical Engineering - Design		15,000.00
14	Engineering Consulting Fees - Geotechnical Engineering -Field Inspection		20,000.00
12	Consultant Fees - Environmental - Biological Assessment & Resource Agency Coordination.		25,000.00
13	Legal Fees		5,000.00
14	Licenses & Permits		2,500.00
15	Mitigation Fees		15,000.00
16	Printing & Reprographics		5,000.00
17	BIMID Inspection and Project Management allocation		10,000.00
18	Contingency		15,000.00
	Total Expenses		\$1,002,500.00
	Net Cash - Carry over to FY 12/13		\$32,557.00

Bethel Island Municipal Improvement District			
5 Year Cash Flow Analysis			
Fiscal Year - July 2012 through June 2013			
DRAFT			
		FY 2012/2013	
Item	Description	Income	Expenses
Income:			
1	Cash Carry over from prior year	32,557.00	
2	BIMID 15% Cost Sharing Allocation - WA B1-07-1.0		
3	DWR85% Cost Sharing Allocation - WA B1-07-1.0		
4	BIMID 15% Cost Sharing Allocation	317,475.00	
5	DWR 85% Cost Sharing Allocation	1,799,025.00	
6	Supplemental Revenue - Special Parcel Tax		
	Total Income	\$2,149,057.00	
Expenses:			
1	Levee Rip Rap (\$220k/mile)		220,000.00
2	Levee Crown Raising - PL84-99		170,000.00
3	Levee Widening		1,000,000.00
4	Levee Road - AB Placement (160K/mile)		160,000.00
5	Levee Sheet Pile Program - Pilot Test Program - Construction Allocation -B1-07-1.0		
6	Horse Shoe Bend Project		
7	Advertising costs		1,000.00
8	Accounting Fees - Certified Payroll		8,000.00
9	Engineering Consulting Fees - Design & Staking - WA B1-07-1.0		
10	Engineering Consulting Fees - Geotechnical Engineering - Design WA B1-07-1.0		
11	Engineering Consulting Fees - Geotechnical Engineering -Field Inspection -WA B1-07-1.0		
12	Engineering Consulting Fees - Design & Staking		186,000.00
13	Engineering Consulting Fees - Geotechnical Engineering - Design		124,000.00
14	Engineering Consulting Fees - Geotechnical Engineering -Field Inspection		155,000.00
12	Consultant Fees - Environmental - Biological Assessment & Resource Agency Coordination.		25,000.00
13	Legal Fees		5,000.00
14	Licenses & Permits		2,500.00
15	Mitigation Fees		25,000.00
16	Printing & Reprographics		5,000.00
17	BIMID Inspection and Project Management allocation		15,000.00
18	Contingency		15,000.00
	Total Expenses		\$2,116,500.00
	Net Cash - Carry over to FY 13/14		\$32,557.00

Bethel Island Municipal Improvement District

5 Year Cash Flow Analysis

Fiscal Year - July 2013 through June 2014

DRAFT

Item	Description	FY 2013/2014	
		Income	Expenses
	Income:		
1	Cash Carry over from prior year	32,557.00	
2	BIMID 15% Cost Sharing Allocation - WA B1-07-1.0		
3	DWR85% Cost Sharing Allocation - WA B1-07-1.0		
4	BIMID 15% Cost Sharing Allocation	285,075.00	
5	DWR 85% Cost Sharing Allocation	1,615,425.00	
6	Supplemental Revenue - Special Parcel Tax		
	Total Income	\$1,933,057.00	
	Expenses:		
1	Levee Rip Rap (\$220k/mile)		220,000.00
2	Levee Crown Raising - PL84-99		0.00
3	Levee Widening		1,000,000.00
4	Levee Road - AB Placement (160K/mile)		160,000.00
5	Levee Sheet Pile Program - Pilot Test Program - Construction Allocation -B1-07-1.0		
6	Horse Shoe Bend Project		
7	Advertising costs		1,000.00
8	Accounting Fees - Certified Payroll		8,500.00
9	Engineering Consulting Fees - Design & Staking - WA B1-07-1.0		
10	Engineering Consulting Fees - Geotechnical Engineering - Design WA B1-07-1.0		
11	Engineering Consulting Fees - Geotechnical Engineering -Field Inspection -WA B1-07-1.0		
12	Engineering Consulting Fees - Design & Staking		165,600.00
13	Engineering Consulting Fees - Geotechnical Engineering - Design		110,400.00
14	Engineering Consulting Fees - Geotechnical Engineering -Field Inspection		138,000.00
12	Consultant Fees - Environmental - Biological Assessment & Resource Agency Coordination.		26,500.00
13	Legal Fees		5,000.00
14	Licenses & Permits		2,500.00
15	Mitigation Fees		25,000.00
16	Printing & Reprographics		5,000.00
17	BIMID Inspection and Project Management allocation		15,000.00
18	Contingency		18,000.00
	Total Expenses		\$1,900,500.00
	Net Cash - Carry over to FY 14/15		\$32,557.00

Bethel Island Municipal Improvement District

5 Year Cash Flow Analysis

Fiscal Year - July 2014 through June 2015

DRAFT

Item	Description	FY 2014/2015	
		Income	Expenses
Income:			
1	Cash Carry over from prior year	32,557.00	
2	BIMID 15% Cost Sharing Allocation - WA B1-07-1.0		
3	DWR85% Cost Sharing Allocation - WA B1-07-1.0		
4	BIMID 15% Cost Sharing Allocation	285,675.00	
5	DWR 85% Cost Sharing Allocation	1,618,825.00	
6	Supplemental Revenue - Special Parcel Tax		
	Total Income	\$1,937,057.00	
Expenses:			
1	Levee Rip Rap (\$220k/mile)		220,000.00
2	Levee Crown Raising - PL84-99		0.00
3	Levee Widening		1,000,000.00
4	Levee Road - AB Placement (160K/mile)		160,000.00
5	Levee Sheet Pile Program - Pilot Test Program - Construction Allocation -B1-07-1.0		
6	Horse Shoe Bend Project		
7	Advertising costs		1,000.00
8	Accounting Fees - Certified Payroll		8,500.00
9	Engineering Consulting Fees - Design & Staking - WA B1-07-1.0		
10	Engineering Consulting Fees - Geotechnical Engineering - Design WA B1-07-1.0		
11	Engineering Consulting Fees - Geotechnical Engineering -Field Inspection -WA B1-07-1.0		
12	Engineering Consulting Fees - Design & Staking		165,600.00
13	Engineering Consulting Fees - Geotechnical Engineering - Design		110,400.00
14	Engineering Consulting Fees - Geotechnical Engineering -Field Inspection		138,000.00
12	Consultant Fees - Environmental - Biological Assessment & Resource Agency Coordination.		27,000.00
13	Legal Fees		5,500.00
14	Licenses & Permits		2,500.00
15	Mitigation Fees		25,000.00
16	Printing & Reprographics		6,000.00
17	BIMID Inspection and Project Management allocation		15,000.00
18	Contingency		20,000.00
	Total Expenses		\$1,904,500.00
	Net Cash - Carry over to FY 15/16		32,557.00

Bethel Island Municipal Improvement District

5 Year Cash Flow Analysis

Fiscal Year - July 2015 through June 2016

DRAFT

Item	Description	FY 2015/2016	
		Income	Expenses
	Income:		
1	Cash Carry over from prior year	32,557.00	
2	BIMID 15% Cost Sharing Allocation - WA B1-07-1.0		
3	DWR85% Cost Sharing Allocation - WA B1-07-1.0		
4	BIMID 15% Cost Sharing Allocation	286,050.00	
5	DWR 85% Cost Sharing Allocation	1,620,950.00	
6	Supplemental Revenue - Special Parcel Tax		
	Total Income	\$1,939,557.00	
	Expenses:		
1	Levee Rip Rap (\$220k/mile)		220,000.00
2	Levee Crown Raising - PL84-99		0.00
3	Levee Widening		1,000,000.00
4	Levee Road - AB Placement (160K/mile)		160,000.00
5	Levee Sheet Pile Program - Pilot Test Program - Construction Allocation -B1-07-1.0		
6	Horse Shoe Bend Project		
7	Advertising costs		1,000.00
8	Accounting Fees - Certified Payroll		9,000.00
9	Engineering Consulting Fees - Design & Staking - WA B1-07-1.0		
10	Engineering Consulting Fees - Geotechnical Engineering - Design WA B1-07-1.0		
11	Engineering Consulting Fees - Geotechnical Engineering -Field Inspection -WA B1-07-1.0		
12	Engineering Consulting Fees - Design & Staking		165,600.00
13	Engineering Consulting Fees - Geotechnical Engineering - Design		110,400.00
14	Engineering Consulting Fees - Geotechnical Engineering -Field Inspection		138,000.00
12	Consultant Fees - Environmental - Biological Assessment & Resource Agency Coordination.		28,000.00
13	Legal Fees		6,000.00
14	Licenses & Permits		2,500.00
15	Mitigation Fees		25,000.00
16	Printing & Reprographics		6,500.00
17	BIMID Inspection and Project Management allocation		15,000.00
18	Contingency		20,000.00
	Total Expenses		\$1,907,000.00
	Net Cash - Carry over to FY 16/17		\$32,557.00

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'							
Compliance Evaluation (Elevations per NGVD '29 datum)							
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation	Variation	Variation PL 84-99 100 year +1.5'
0	11.4	6.8	7.8	3.6	9.2	2.2	8.3
100	9.9	6.8	7.8	2.1	9.2	0.7	8.3
200	10	6.8	7.8	2.2	9.2	0.8	8.3
300	10.3	6.8	7.8	2.5	9.2	1.1	8.3
400	10.1	6.8	7.8	2.3	9.2	0.9	8.3
500	9.8	6.8	7.8	2	9.2	0.6	8.3
600	9.4	6.8	7.8	1.6	9.2	0.2	8.3
700	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3
800	8.8	6.8	7.8	1	9.2	(0.4)	8.3
900	9	6.8	7.8	1.2	9.2	(0.2)	8.3
1000	9.3	6.8	7.8	1.5	9.2	0.1	8.3
1100	9.7	6.8	7.8	1.9	9.2	0.5	8.3
1200	9.5	6.8	7.8	1.7	9.2	0.3	8.3
1300	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3
1400	9	6.8	7.8	1.2	9.2	(0.2)	8.3
1500	9.3	6.8	7.8	1.5	9.2	0.1	8.3
1600	9.6	6.8	7.8	1.8	9.2	0.4	8.3
1700	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3
1800	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3
1900	9.3	6.8	7.8	1.5	9.2	0.1	8.3
2000	10	6.8	7.8	2.2	9.2	0.8	8.3
2100	10.1	6.8	7.8	2.3	9.2	0.9	8.3
2200	10	6.8	7.8	2.2	9.2	0.8	8.3
2300	9.7	6.8	7.8	1.9	9.2	0.5	8.3
2400	9.5	6.8	7.8	1.7	9.2	0.3	8.3
2500	9.9	6.8	7.8	2.1	9.2	0.7	8.3
2600	10.3	6.8	7.8	2.5	9.2	1.1	8.3
2700	10.1	6.8	7.8	2.3	9.2	0.9	8.3
2800	9.5	6.8	7.8	1.7	9.2	0.3	8.3
2900	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3
3000	8.3	6.8	7.8	0.5	9.2	(0.9)	8.3
3100	8.6	6.8	7.8	0.8	9.2	(0.6)	8.3
3200	8.4	6.8	7.8	0.6	9.2	(0.8)	8.3
3300	8.8	6.8	7.8	1	9.2	(0.4)	8.3
3400	9	6.8	7.8	1.2	9.2	(0.2)	8.3
3500	8.6	6.8	7.8	0.8	9.2	(0.6)	8.3
3600	8.5	6.8	7.8	0.7	9.2	(0.7)	8.3
3700	8.6	6.8	7.8	0.8	9.2	(0.6)	8.3
3800	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3
3900	9.5	6.8	7.8	1.7	9.2	0.3	8.3

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'									
Compliance Evaluation (Elevations per NGVD '29 datum)									
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1' Compliance	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation PL 84-99 Compliance)	
4000	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7	
4100	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8	
4200	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0	
4300	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2	
4400	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3	
4500	10.7	6.8	7.8	2.9	9.2	1.5	8.3	2.4	
4600	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1	
4700	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5	
4800	10.9	6.8	7.8	3.1	9.2	1.7	8.3	2.6	
4900	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3	
5000	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3	
5100	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2	
5200	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1	
5300	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1	
5400	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4	
5500	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7	
5600	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8	
5700	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9	
5800	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8	
5900	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2	
6000	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3	
6100	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9	
6200	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4	
6300	9.5	6.8	7.8	1.8	9.2	0.4	8.3	1.3	
6400	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1	
6500	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1	
6600	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0	
6700	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1	
6800	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1	
6900	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6	
7000	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4	
7100	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3	
7200	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5	
7300	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5	
7400	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	0.6	
7500	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8	
7600	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1	
7700	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8	
7800	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0	
7900	10.9	6.8	7.8	3.1	9.2	1.7	8.3	2.6	
8000	11.2	6.8	7.8	3.4	9.2	2.0	8.3	2.9	
8100	10.7	6.8	7.8	2.9	9.2	1.5	8.3	2.4	

Bethel Island - Levee Crown HMP , PL 84-99 and Levee Crown Desired Elevation 9.2'
Compliance Evaluation (Elevations per NGVD '29 datum)

Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1' Compliance	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation PL 84-99 Compliance)
8200	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
8300	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
8400	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
8500	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
8600	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
8700	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
8800	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
8900	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
9000	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
9100	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
9200	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
9300	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5
9400	10.7	6.8	7.8	2.9	9.2	1.5	8.3	2.4
9500	10.9	6.8	7.8	3.1	9.2	1.7	8.3	2.6
9600	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5
9700	11.3	6.8	7.8	3.5	9.2	2.1	8.3	3.0
9800	11.6	6.8	7.8	3.8	9.2	2.4	8.3	3.3
9900	11.3	6.8	7.8	3.5	9.2	2.1	8.3	3.0
10000	10.7	6.8	7.8	2.9	9.2	1.5	8.3	2.4
10100	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
10200	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
10300	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
10400	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0
10500	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2
10600	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
10700	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
10800	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
10900	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
11000	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
11100	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1
11200	11	6.8	7.8	3.2	9.2	1.8	8.3	2.7
11300	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5
11400	11	6.8	7.8	3.2	9.2	1.8	8.3	2.7
11500	11.1	6.8	7.8	3.3	9.2	1.9	8.3	2.8
11600	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2
11700	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
11800	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5
11900	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
12000	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
12100	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
12200	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
12300	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'

Compliance Evaluation (Elevations per NGVD '29 datum)

Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1' Elevation	HMP 100 year +1' Compliance	Variation (HMP)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5' Compliance	Variation PL 84-99 Compliance
12400	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2	
12500	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3	
12600	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1	
12700	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1	
12800	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0	
12900	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8	
13000	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9	
13100	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2	
13200	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6	
13300	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5	
13400	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0	
13500	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1	
13600	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9	
13700	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9	
13800	10.4	6.8	7.8	2.5	9.2	1.2	8.3	2.1	
13900	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1	
14000	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9	
14100	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3	
14200	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9	
14300	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8	
14400	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9	
14500	10.7	6.8	7.8	2.9	9.2	1.5	8.3	2.4	
14600	10.8	6.8	7.8	3	9.2	1.6	8.3	2.5	
14700	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2	
14800	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1	
14900	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8	
15000	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8	
15100	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0	
15200	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2	
15300	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2	
15400	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1	
15500	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8	
15600	10.3	6.8	7.8	2.5	9.2	1.1	8.3	2.0	
15700	10.4	6.8	7.8	2.6	9.2	1.2	8.3	2.1	
15800	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9	
15900	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6	
16000	10.7	6.8	7.8	2.9	9.2	1.5	8.3	2.4	
16100	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2	
16200	10.9	6.8	7.8	3.1	9.2	1.7	8.3	2.6	
16300	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9	
16400	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8	
16500	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9	

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'									
Compliance Evaluation (Elevations per NGVD '29 datum)									
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1' Elevation	HMP Compliance	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5' Elevation	Variation	Variation PL 84-99 Compliance
16600	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.0	1.9
16700	10.3	6.8	7.8	2.5	9.2	1.1	8.3	1.1	2.0
16800	10.3	6.8	7.8	2.5	9.2	1.1	8.3	1.1	2.0
16900	10.5	6.8	7.8	2.7	9.2	1.3	8.3	1.3	2.2
17000	10.6	6.8	7.8	2.8	9.2	1.4	8.3	1.4	2.3
17100	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.0	1.9
17200	10.3	6.8	7.8	2.5	9.2	1.1	8.3	1.1	2.0
17300	10.6	6.8	7.8	2.8	9.2	1.4	8.3	1.4	2.3
17400	10.8	6.8	7.8	3	9.2	1.6	8.3	1.6	2.5
17500	10.7	6.8	7.8	2.9	9.2	1.5	8.3	1.5	2.4
17600	10.3	6.8	7.8	2.5	9.2	1.1	8.3	1.1	2.0
17700	10.3	6.8	7.8	2.5	9.2	1.1	8.3	1.1	2.0
17800	10	6.8	7.8	2.2	9.2	0.8	8.3	0.8	1.7
17900	9.9	6.8	7.8	2.1	9.2	0.7	8.3	0.7	1.6
18000	9.8	6.8	7.8	2	9.2	0.6	8.3	0.6	1.5
18100	9.3	6.8	7.8	1.5	9.2	0.1	8.3	0.1	1.0
18200	9.3	6.8	7.8	1.5	9.2	0.1	8.3	0.1	1.0
18300	9.9	6.8	7.8	2.1	9.2	0.7	8.3	0.7	1.6
18400	10.4	6.8	7.8	2.6	9.2	1.2	8.3	1.2	2.1
18500	10.6	6.8	7.8	2.8	9.2	1.4	8.3	1.4	2.3
18600	11.2	6.8	7.8	3.4	9.2	2.0	8.3	2.0	2.9
18700	10.4	6.8	7.8	2.6	9.2	1.2	8.3	1.2	2.1
18800	10.1	6.8	7.8	2.3	9.2	0.9	8.3	0.9	1.8
18900	9.9	6.8	7.8	2.1	9.2	0.7	8.3	0.7	1.6
19000	10.4	6.8	7.8	2.6	9.2	1.2	8.3	1.2	2.1
19100	9.5	6.8	7.8	1.7	9.2	0.3	8.3	0.3	1.2
19200	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	(0.1)	0.8
19300	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	(0.3)	0.6
19400	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	(0.5)	0.4
19500	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	(0.3)	0.6
19600	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	(0.5)	0.4
19700	8.5	6.8	7.8	0.7	9.2	(0.7)	8.3	(0.7)	0.2
19800	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	(0.5)	0.4
19900	8.5	6.8	7.8	0.7	9.2	(0.7)	8.3	(0.7)	0.2
20000	9.5	6.8	7.8	1.7	9.2	0.3	8.3	0.3	1.2
20100	10.3	6.8	7.8	2.5	9.2	1.1	8.3	1.1	2.0
20200	10.3	6.8	7.8	2.5	9.2	1.1	8.3	1.1	2.0
20300	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.0	1.9
20400	10.6	6.8	7.8	2.8	9.2	1.4	8.3	1.4	2.3
20500	10.4	6.9	7.9	2.5	9.2	1.2	8.4	1.2	2.0
20600	10.2	6.9	7.9	2.3	9.2	1.0	8.4	1.0	1.8
20700	10.3	6.9	7.9	2.4	9.2	1.1	8.4	1.1	1.9

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'							
Compliance Evaluation (Elevations per NGVD '29 datum)							
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1' Compliance	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	Variation PL 84-99 100 year +1.5' Compliance
20800	9.9	6.9	7.9	2	9.2	0.7	8.4
20900	9.8	6.9	7.9	1.9	9.2	0.6	8.4
21000	9.9	6.9	7.9	2	9.2	0.7	8.4
21100	10.1	6.9	7.9	2.2	9.2	0.9	8.4
21200	10.5	6.9	7.9	2.6	9.2	1.3	8.4
21300	10.4	6.9	7.9	2.5	9.2	1.2	8.4
21400	10.4	6.9	7.9	2.5	9.2	1.2	8.4
21500	10	6.9	7.9	2.1	9.2	0.8	8.4
21600	9.5	6.9	7.9	1.6	9.2	0.3	8.4
21700	9.6	6.9	7.9	1.7	9.2	0.4	8.4
21800	9.5	6.9	7.9	1.6	9.2	0.3	8.4
21900	9.7	6.9	7.9	1.8	9.2	0.5	8.4
22000	9.2	6.9	7.9	1.3	9.2	0.0	8.4
22100	8.6	6.9	7.9	0.7	9.2	(0.6)	8.4
22200	8.4	6.9	7.9	0.5	9.2	(0.8)	8.4
22300	8.2	6.9	7.9	0.3	9.2	(1.0)	8.4
22400	9.3	6.9	7.9	1.4	9.2	0.1	8.4
22500	9.7	6.9	7.9	1.8	9.2	0.5	8.4
22600	9.6	6.9	7.9	1.7	9.2	0.4	8.4
22700	9.3	6.9	7.9	1.4	9.2	0.1	8.4
22800	9.1	6.9	7.9	1.2	9.2	(0.1)	8.4
22900	9.1	6.9	7.9	1.2	9.2	(0.1)	8.4
23000	8.9	6.9	7.9	1	9.2	(0.3)	8.4
23100	8.4	6.9	7.9	0.5	9.2	(0.8)	8.4
23200	8.6	6.9	7.9	0.7	9.2	(0.6)	8.4
23300	9	6.9	7.9	1.1	9.2	(0.2)	8.4
23400	9	6.9	7.9	1.1	9.2	(0.2)	8.4
23500	8.5	7	8	0.5	9.2	(0.7)	8.5
23600	8.9	7	8	0.9	9.2	(0.3)	8.5
23700	8.8	7	8	0.8	9.2	(0.4)	8.5
23800	8.6	7	8	0.6	9.2	(0.6)	8.5
23900	8.7	7	8	0.7	9.2	(0.5)	8.5
24000	8.5	7	8	0.5	9.2	(0.7)	8.5
24100	8.8	7	8	0.8	9.2	(0.4)	8.5
24200	9.4	7	8	1.4	9.2	0.2	8.5
24300	10.3	7	8	2.3	9.2	1.1	8.5
24400	9.8	7	8	1.8	9.2	0.6	8.5
24500	9.2	7	8	1.2	9.2	0.0	8.5
24600	9.5	7	8	1.5	9.2	0.3	8.5
24700	9.4	7	8	1.4	9.2	0.2	8.5
24800	9.2	7	8	1.2	9.2	0.0	8.5
24900	9.4	7	8	1.4	9.2	0.2	8.5

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'									
Compliance Evaluation (Elevations per NGVD '29 datum)									
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1' Compliance	Variation (HMP)	BIMID Desired Crest Elevation	Variation	PL 84-99 100 year +1.5' Compliance	Variation	Variation PL 84-99 Compliance)
25000	9.5	7	8	1.5	9.2	0.3	8.5	0.3	1.0
25100	10.3	7	8	2.3	9.2	1.1	8.5	1.1	1.8
25200	9.9	7	8	1.9	9.2	0.7	8.5	0.7	1.4
25300	9.8	7	8	1.8	9.2	0.6	8.5	0.6	1.3
25400	9.3	7	8	1.3	9.2	0.1	8.5	0.2	0.8
25500	9.4	7	8	1.4	9.2	0.2	8.5	0.2	0.9
25600	9.4	7	8	1.4	9.2	0.2	8.5	0.2	0.9
25700	8.6	7	8	0.6	9.2	(0.6)	8.5	(0.6)	0.1
25800	8.4	7	8	0.4	9.2	(0.8)	8.5	(0.8)	(0.1)
25900	8.8	7.1	8.1	0.7	9.2	(0.4)	8.6	0.2	0.2
26000	9.3	7.1	8.1	1.2	9.2	0.1	8.6	0.7	0.7
26100	8.4	7.1	8.1	0.3	9.2	(0.8)	8.6	(0.2)	(0.2)
26200	10.1	7.1	8.1	2	9.2	0.9	8.6	0.9	1.5
26300	10.4	7.1	8.1	2.3	9.2	1.2	8.6	1.2	1.8
26400	10.2	7.1	8.1	2.1	9.2	1.0	8.6	1.0	1.6
26500	10.4	7.1	8.1	2.3	9.2	1.2	8.6	1.2	1.8
26600	10.4	7.1	8.1	2.3	9.2	1.2	8.6	1.2	1.8
26700	10.7	7.1	8.1	2.6	9.2	1.5	8.6	1.5	2.1
26800	11	7.1	8.1	2.9	9.2	1.8	8.6	1.8	2.4
26900	10.9	7.1	8.1	2.8	9.2	1.7	8.6	1.7	2.3
27000	10.4	7.1	8.1	2.3	9.2	1.2	8.6	1.2	1.8
27100	10.8	7.1	8.1	2.7	9.2	1.6	8.6	1.6	2.2
27200	10.9	7.1	8.1	2.8	9.2	1.7	8.6	1.7	2.3
27300	10.7	7.1	8.1	2.6	9.2	1.5	8.6	1.5	2.1
27400	10.8	7.1	8.1	2.7	9.2	1.6	8.6	1.6	2.2
27500	11.4	7.2	8.2	3.2	9.2	2.2	8.7	2.2	2.7
27600	11.5	7.2	8.2	3.3	9.2	2.3	8.7	2.3	2.8
27700	11	7.2	8.2	2.8	9.2	1.8	8.7	1.8	2.3
27800	9.3	7.2	8.2	1.1	9.2	0.1	8.7	0.1	0.6
27900	8.6	7.2	8.2	0.4	9.2	(0.6)	8.7	(0.6)	(0.1)
28000	9	7.2	8.2	0.8	9.2	(0.2)	8.7	(0.2)	0.3
28100	9.5	7.2	8.2	1.3	9.2	0.3	8.7	0.3	0.8
28200	9.2	7.2	8.2	1	9.2	0.0	8.7	0.0	0.5
28300	9.5	7.2	8.2	1.3	9.2	0.3	8.7	0.3	0.8
28400	9.4	7.2	8.2	1.2	9.2	0.2	8.7	0.2	0.7
28500	9.4	7.2	8.2	1.2	9.2	0.2	8.7	0.2	0.7
28600	9.7	7.2	8.2	1.5	9.2	0.5	8.7	0.5	1.0
28700	9.4	7.2	8.2	1.2	9.2	0.2	8.7	0.2	0.7
28800	9.4	7.2	8.2	1.2	9.2	0.2	8.7	0.2	0.7
28900	9.3	7.2	8.2	1.1	9.2	0.1	8.7	0.1	0.6
29000	9.2	7.2	8.2	1	9.2	0.0	8.7	0.0	0.5
29100	9.1	7.2	8.2	0.9	9.2	(0.1)	8.7	(0.1)	0.4

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'									
Compliance Evaluation (Elevations per NGVD '29 datum)									
Station	Levee Crown Elevation	100 Year Flood Elevation	HIMP 100 year +1'	Variation (HIMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation	Variation PL 84-99 Compliance)
29200	9.5	7.3	8.3	1.2	9.2	0.3	8.8	0.7	0.7
29300	9.5	7.3	8.3	1.2	9.2	0.3	8.8	0.7	0.7
29400	9.5	7.3	8.3	1.2	9.2	0.3	8.8	0.7	0.7
29500	10.5	7.3	8.3	2.2	9.2	1.3	8.8	1.7	1.7
29600	10	7.3	8.3	1.7	9.2	0.8	8.8	1.2	1.2
29700	9.7	7.3	8.3	1.4	9.2	0.5	8.8	0.9	0.9
29800	8.3	7.3	8.3	0	9.2	(0.9)	8.8	(0.5)	(0.5)
29900	8.7	7.3	8.3	0.4	9.2	(0.5)	8.8	(0.1)	(0.1)
30000	8.8	7.3	8.3	0.5	9.2	(0.4)	8.8	0.0	0.0
30100	8.6	7.3	8.3	0.3	9.2	(0.6)	8.8	(0.2)	(0.2)
30200	9.1	7.3	8.3	0.8	9.2	(0.1)	8.8	0.3	0.3
30300	9.6	7.3	8.3	1.3	9.2	0.4	8.8	0.8	0.8
30400	10.6	7.3	8.3	2.3	9.2	1.4	8.8	1.8	1.8
30500	9.7	7.3	8.3	1.4	9.2	0.5	8.8	0.9	0.9
30600	9.3	7.3	8.3	1	9.2	0.1	8.8	0.5	0.5
30700	9.1	7.3	8.3	0.8	9.2	(0.1)	8.8	0.3	0.3
30800	8.7	7.3	8.3	0.4	9.2	(0.5)	8.8	(0.1)	(0.1)
30900	9.1	7.3	8.3	0.8	9.2	(0.1)	8.8	0.3	0.3
31000	9.6	7.3	8.3	1.3	9.2	0.4	8.8	0.8	0.8
31100	9.8	7.3	8.3	1.5	9.2	0.6	8.8	1.0	1.0
31200	9.2	7.3	8.3	0.9	9.2	0.0	8.8	0.4	0.4
31300	9.7	7.4	8.4	1.3	9.2	0.5	8.9	0.8	0.8
31400	10.1	7.4	8.4	1.7	9.2	0.9	8.9	1.2	1.2
31500	10.3	7.4	8.4	1.9	9.2	1.1	8.9	1.4	1.4
31600	10.5	7.4	8.4	2.1	9.2	1.3	8.9	1.6	1.6
31700	10.8	7.4	8.4	2.4	9.2	1.6	8.9	1.9	1.9
31800	11.1	7.4	8.4	2.7	9.2	1.9	8.9	2.2	2.2
31900	11.2	7.4	8.4	2.8	9.2	2.0	8.9	2.3	2.3
32000	11.3	7.4	8.4	2.9	9.2	2.1	8.9	2.4	2.4
32100	11.4	7.4	8.4	3	9.2	2.2	8.9	2.5	2.5
32200	11.4	7.4	8.4	3	9.2	2.2	8.9	2.5	2.5
32300	11.3	7.4	8.4	2.9	9.2	2.1	8.9	2.4	2.4
32400	11.1	7.4	8.4	2.7	9.2	1.9	8.9	2.2	2.2
32500	10.5	7.4	8.4	2.1	9.2	1.3	8.9	1.6	1.6
32600	8.5	7.4	8.4	0.1	9.2	(0.7)	8.9	(0.4)	(0.4)
32700	8.3	7.4	8.4	-0.1	9.2	(0.9)	8.9	(0.6)	(0.6)
32800	9.4	7.4	8.4	1	9.2	0.2	8.9	0.5	0.5
32900	10.3	7.4	8.4	1.9	9.2	1.1	8.9	1.4	1.4
33000	10.7	7.4	8.4	2.3	9.2	1.5	8.9	1.8	1.8
33100	10.4	7.4	8.4	2	9.2	1.2	8.9	1.5	1.5
33200	9.2	7.4	8.4	0.8	9.2	0.0	8.9	0.3	0.3
33300	9.9	7.4	8.4	1.5	9.2	0.7	8.9	1.0	1.0

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'									
Compliance Evaluation (Elevations per NGVD '29 datum)									
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1' Compliance	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation	Variation PL 84-99 Compliance)
33400	10.8	7.4	8.4	2.4	9.2	1.6	8.9	1.6	1.9
33500	10.4	7.5	8.5	1.9	9.2	1.2	9.0	1.2	1.4
33600	10.6	7.5	8.5	2.1	9.2	1.4	9.0	1.4	1.6
33700	10	7.5	8.5	1.5	9.2	0.8	9.0	0.8	1.0
33800	10.5	7.5	8.5	2	9.2	1.3	9.0	1.3	1.5
33900	10.3	7.5	8.5	1.8	9.2	1.1	9.0	1.1	1.3
34000	10.5	7.5	8.5	2	9.2	1.3	9.0	1.3	1.5
34100	10.6	7.5	8.5	2.1	9.2	1.4	9.0	1.4	1.6
34200	10.9	7.5	8.5	2.4	9.2	1.7	9.0	1.7	1.9
34300	10.5	7.5	8.5	2	9.2	1.3	9.0	1.3	1.5
34400	10.1	7.5	8.5	1.6	9.2	0.9	9.0	0.9	1.1
34500	9.9	7.5	8.5	1.4	9.2	0.7	9.0	0.7	0.9
34600	9.9	7.5	8.5	1.4	9.2	0.7	9.0	0.7	0.9
34700	9.7	7.5	8.5	1.2	9.2	0.5	9.0	0.5	0.7
34800	10.4	7.5	8.5	1.9	9.2	1.2	9.0	1.2	1.4
34900	10.2	7.5	8.5	1.7	9.2	1.0	9.0	1.0	1.2
35000	9.7	7.5	8.5	1.2	9.2	0.5	9.0	0.5	0.7
35100	9.5	7.5	8.5	1	9.2	0.3	9.0	0.3	0.5
35200	9.7	7.5	8.5	1.2	9.2	0.5	9.0	0.5	0.7
35300	9.8	7.5	8.5	1.3	9.2	0.6	9.0	0.6	0.8
35400	9.9	7.5	8.5	1.4	9.2	0.7	9.0	0.7	0.9
35500	9.9	7.5	8.5	1.4	9.2	0.7	9.0	0.7	0.9
35600	9.9	7.5	8.5	1.4	9.2	0.7	9.0	0.7	0.9
35700	10.2	7.5	8.5	1.7	9.2	1.0	9.0	1.0	1.2
35800	9.9	7.5	8.5	1.4	9.2	0.7	9.0	0.7	0.9
35900	9.8	7.4	8.4	1.4	9.2	0.6	8.9	0.6	0.9
36000	10.1	7.4	8.4	1.7	9.2	0.9	8.9	0.9	1.2
36100	10.6	7.4	8.4	2.2	9.2	1.4	8.9	1.4	1.7
36200	10.3	7.4	8.4	1.9	9.2	1.1	8.9	1.1	1.4
36300	10.4	7.4	8.4	2	9.2	1.2	8.9	1.2	1.5
36400	9.9	7.4	8.4	1.5	9.2	0.7	8.9	0.7	1.0
36500	10.1	7.4	8.4	1.7	9.2	0.9	8.9	0.9	1.2
36600	10.1	7.4	8.4	1.7	9.2	0.9	8.9	0.9	1.2
36700	10.5	7.4	8.4	2.1	9.2	1.3	8.9	1.3	1.6
36800	11.7	7.4	8.4	3.3	9.2	2.5	8.9	2.5	2.8
36900	11.7	7.4	8.4	3.3	9.2	2.5	8.9	2.5	2.8
37000	10.4	7.4	8.4	2	9.2	1.2	8.9	1.2	1.5
37100	10.9	7.4	8.4	2.5	9.2	1.7	8.9	1.7	2.0
37200	10.2	7.4	8.4	1.8	9.2	1.0	8.9	1.0	1.3
37300	9.8	7.4	8.4	1.4	9.2	0.6	8.9	0.6	0.9
37400	9.8	7.4	8.4	1.4	9.2	0.6	8.9	0.6	0.9
37500	9.6	7.4	8.4	1.2	9.2	0.4	8.9	0.4	0.7

**Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'
Compliance Evaluation (Elevations per NGVD '29 datum)**

Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1' Elevation	HMP Compliance	Variation (HMP)	BIMD Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5' Compliance	Variation PL 84-99 Compliance
37600	9.8	7.4	8.4	1.4	0.6	9.2	0.6	8.9	0.9
37700	10	7.4	8.4	1.6	0.8	9.2	0.8	8.9	1.1
37800	9.1	7.4	8.4	0.7	(0.1)	9.2	(0.1)	8.9	0.2
37900	9	7.4	8.4	0.6	(0.2)	9.2	(0.2)	8.9	0.1
38000	9.1	7.4	8.4	0.7	(0.1)	9.2	(0.1)	8.9	0.2
38100	9.7	7.4	8.4	1.3	0.5	9.2	0.5	8.9	0.8
38200	10.3	7.4	8.4	1.9	1.1	9.2	1.1	8.9	1.4
38300	10.2	7.4	8.4	1.8	1.0	9.2	1.0	8.9	1.3
38400	10.2	7.4	8.4	1.8	1.0	9.2	1.0	8.9	1.3
38500	9.7	7.4	8.4	1.3	0.5	9.2	0.5	8.9	0.8
38600	9.5	7.4	8.4	1.1	0.3	9.2	0.3	8.9	0.6
38700	10.1	7.3	8.3	1.8	0.9	9.2	0.9	8.8	1.3
38800	9.9	7.3	8.3	1.6	0.7	9.2	0.7	8.8	1.1
38900	10.2	7.3	8.3	1.9	1.0	9.2	1.0	8.8	1.4
39000	10.1	7.3	8.3	1.8	0.9	9.2	0.9	8.8	1.3
39100	10	7.3	8.3	1.7	0.8	9.2	0.8	8.8	1.2
39200	9.2	7.3	8.3	0.9	0.0	9.2	0.0	8.8	0.4
39300	9.7	7.3	8.3	1.4	0.5	9.2	0.5	8.8	0.9
39400	9.6	7.3	8.3	1.3	0.4	9.2	0.4	8.8	0.8
39500	10.4	7.3	8.3	2.1	1.2	9.2	1.2	8.8	1.6
39600	10.3	7.3	8.3	2	1.1	9.2	1.1	8.8	1.5
39700	9.7	7.3	8.3	1.4	0.5	9.2	0.5	8.8	0.9
39800	10.4	7.3	8.3	2.1	1.2	9.2	1.2	8.8	1.6
39900	10.4	7.3	8.3	2.1	1.2	9.2	1.2	8.8	1.6
40000	10.1	7.3	8.3	1.8	0.9	9.2	0.9	8.8	1.3
40100	10.2	7.3	8.3	1.9	1.0	9.2	1.0	8.8	1.4
40200	9.8	7.3	8.3	1.5	0.6	9.2	0.6	8.8	1.0
40300	9.9	7.3	8.3	1.6	0.7	9.2	0.7	8.8	1.1
40400	10	7.3	8.3	1.7	0.8	9.2	0.8	8.8	1.2
40500	10.1	7.3	8.3	1.8	0.9	9.2	0.9	8.8	1.3
40600	10.9	7.3	8.3	2.6	1.7	9.2	1.7	8.8	2.1
40700	10.1	7.3	8.3	1.8	0.9	9.2	0.9	8.8	1.3
40800	9.9	7.3	8.3	1.6	0.7	9.2	0.7	8.8	1.1
40900	9.5	7.2	8.2	1.3	0.3	9.2	0.3	8.7	0.8
41000	9.5	7.2	8.2	1.3	0.3	9.2	0.3	8.7	0.8
41100	9.6	7.2	8.2	1.4	0.4	9.2	0.4	8.7	0.9
41200	9.7	7.2	8.2	1.5	0.5	9.2	0.5	8.7	1.0
41300	9.4	7.2	8.2	1.2	0.2	9.2	0.2	8.7	0.7
41400	10.4	7.2	8.2	2.2	1.2	9.2	1.2	8.7	1.7
41500	10.9	7.2	8.2	2.7	1.7	9.2	1.7	8.7	2.2
41600	10.9	7.2	8.2	2.7	1.7	9.2	1.7	8.7	2.2
41700	10	7.2	8.2	1.8	0.8	9.2	0.8	8.7	1.3

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'

Compliance Evaluation (Elevations per NGVD '29 datum)									
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1' Compliance	Variation (HMP Compliance)	BIMID Desired Crest Elevation	Variation	PL 84-99 100 year +1.5' Compliance	Variation PL 84-99 Compliance	
41800	10.1	7.2	8.2	1.9	9.2	0.9	8.7	1.4	
41900	10.8	7.2	8.2	2.6	9.2	1.6	8.7	2.1	
42000	11.9	7.2	8.2	3.7	9.2	2.7	8.7	3.2	
42100	11.4	7.2	8.2	3.2	9.2	2.2	8.7	2.7	
42200	10.8	7.2	8.2	2.6	9.2	1.6	8.7	2.1	
42300	10.8	7.2	8.2	2.6	9.2	1.6	8.7	2.1	
42400	10.1	7.2	8.2	1.9	9.2	0.9	8.7	1.4	
42500	10.8	7.2	8.2	2.6	9.2	1.6	8.7	2.1	
42600	9.9	7.1	8.1	1.8	9.2	0.7	8.6	1.3	
42700	10.2	7.1	8.1	2.1	9.2	1.0	8.6	1.6	
42800	9.3	7.1	8.1	1.2	9.2	0.1	8.6	0.7	
42900	10	7.1	8.1	1.9	9.2	0.8	8.6	1.4	
43000	9.8	7.1	8.1	1.7	9.2	0.6	8.6	1.2	
43100	10.1	7.1	8.1	2	9.2	0.9	8.6	1.5	
43200	9.4	7.1	8.1	1.3	9.2	0.2	8.6	0.8	
43300	10.5	7.1	8.1	2.4	9.2	1.3	8.6	1.9	
43400	10	7.1	8.1	1.9	9.2	0.8	8.6	1.4	
43500	9.8	7.1	8.1	1.7	9.2	0.6	8.6	1.2	
43600	9.2	7.1	8.1	1.1	9.2	0.0	8.6	0.6	
43700	9.3	7.1	8.1	1.2	9.2	0.1	8.6	0.7	
43800	9.7	7.1	8.1	1.5	9.2	0.5	8.6	1.1	
43900	9.9	7.1	8.1	1.8	9.2	0.7	8.6	1.3	
44000	9.8	7.1	8.1	1.7	9.2	0.6	8.6	1.2	
44100	9.2	7.1	8.1	1.1	9.2	0.0	8.6	0.6	
44200	9.2	7	8	1.2	9.2	0.0	8.5	0.7	
44300	9.7	7	8	1.7	9.2	0.5	8.5	1.2	
44400	10.1	7	8	2.1	9.2	0.9	8.5	1.6	
44500	10.5	7	8	2.5	9.2	1.3	8.5	2.0	
44600	9.2	7	8	1.2	9.2	0.0	8.5	0.7	
44700	9.2	7	8	1.2	9.2	0.0	8.5	0.7	
44800	9.2	7	8	1.2	9.2	0.0	8.5	0.7	
44900	9.6	7	8	1.6	9.2	0.4	8.5	1.1	
45000	9.3	7	8	1.3	9.2	0.1	8.5	0.8	
45100	8.8	7	8	0.8	9.2	(0.4)	8.5	0.3	
45200	9.2	7	8	1.2	9.2	0.0	8.5	0.7	
45300	9.1	7	8	1.1	9.2	(0.1)	8.5	0.6	
45400	9.4	6.9	7.9	1.5	9.2	0.2	8.4	1.0	
45500	9.6	6.9	7.9	1.7	9.2	0.4	8.4	1.2	
45600	9.7	6.9	7.9	1.8	9.2	0.5	8.4	1.3	
45700	10.2	6.9	7.9	2.3	9.2	1.0	8.4	1.8	
45800	10.2	6.9	7.9	2.3	9.2	1.0	8.4	1.8	
45900	10.5	6.9	7.9	2.6	9.2	1.3	8.4	2.1	

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'

Compliance Evaluation (Elevations per NGVD '29 datum)

Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1' Compliance	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation PL 84-99 Compliance
46000	10.9	6.9	7.9	3	9.2	1.7	8.4	2.5
46100	10.3	6.9	7.9	2.4	9.2	1.1	8.4	1.9
46200	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4
46300	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
46400	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
46500	8.2	6.8	7.8	0.4	9.2	(1.0)	8.3	(0.1)
46600	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	0.4
46700	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
46800	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
46900	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
47000	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
47100	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
47200	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
47300	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
47400	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
47500	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
47600	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
47700	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
47800	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
47900	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
48000	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
48100	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
48200	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
48300	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
48400	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
48500	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
48600	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
48700	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
48800	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
48900	10.6	6.8	7.8	2.8	9.2	1.4	8.3	2.3
49000	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
49100	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
49200	10	6.8	7.8	2.2	9.2	0.8	8.3	1.7
49300	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.9
49400	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
49500	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
49600	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
49700	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4
49800	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
49900	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
50000	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
50100	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'									
Compliance Evaluation (Elevations per NGVD '29 datum)									
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1' Compliance	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation	Variation PL 84-99 Compliance
50200	9.4	6.8	7.8	1.6	9.2	0.2	8.3	0.2	1.1
50300	9.5	6.8	7.8	1.7	9.2	0.3	8.3	0.3	1.2
50400	9.7	6.8	7.8	1.9	9.2	0.5	8.3	0.5	1.4
50500	9.5	6.8	7.8	1.7	9.2	0.3	8.3	0.3	1.2
50600	9.6	6.8	7.8	1.8	9.2	0.4	8.3	0.4	1.3
50700	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	(0.1)	0.8
50800	9.4	6.8	7.8	1.6	9.2	0.2	8.3	0.2	1.1
50900	9.3	6.8	7.8	1.5	9.2	0.1	8.3	0.1	1.0
51000	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.0	0.9
51100	9.3	6.8	7.8	1.5	9.2	0.1	8.3	0.1	1.0
51200	9.4	6.8	7.8	1.6	9.2	0.2	8.3	0.2	1.1
51300	9	6.8	7.8	1.2	9.2	(0.2)	8.3	(0.2)	0.7
51400	8.8	6.8	7.8	1	9.2	(0.4)	8.3	(0.4)	0.5
51500	9.9	6.8	7.8	2.1	9.2	0.7	8.3	0.7	1.6
51600	8.8	6.8	7.8	1	9.2	(0.4)	8.3	(0.4)	0.5
51700	9.3	6.8	7.8	1.5	9.2	0.1	8.3	0.1	1.0
51800	8.6	6.8	7.8	0.8	9.2	(0.6)	8.3	(0.6)	0.3
51900	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	(0.1)	0.8
52000	9.5	6.8	7.8	1.7	9.2	0.3	8.3	0.3	1.2
52100	9.8	6.8	7.8	2	9.2	0.6	8.3	0.6	1.5
52200	10.1	6.8	7.8	2.3	9.2	0.9	8.3	0.9	1.8
52300	10.1	6.8	7.8	2.3	9.2	0.9	8.3	0.9	1.8
52400	9.6	6.8	7.8	1.8	9.2	0.4	8.3	0.4	1.3
52500	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.0	0.9
52600	10	6.8	7.8	2.2	9.2	0.8	8.3	0.8	1.7
52700	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.0	0.9
52800	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	(0.3)	0.6
52900	9.5	6.8	7.8	1.7	9.2	0.3	8.3	0.3	1.2
53000	9.4	6.8	7.8	1.6	9.2	0.2	8.3	0.2	1.1
53100	9.5	6.8	7.8	1.7	9.2	0.3	8.3	0.3	1.2
53200	8.8	6.8	7.8	1	9.2	(0.4)	8.3	(0.4)	0.5
53300	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	(0.5)	0.4
53400	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	(0.1)	0.8
53500	9.3	6.8	7.8	1.5	9.2	0.1	8.3	0.1	1.0
53600	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.0	0.9
53700	9.5	6.8	7.8	1.7	9.2	0.3	8.3	0.3	1.2
53800	9.4	6.8	7.8	1.6	9.2	0.2	8.3	0.2	1.1
53900	9.8	6.8	7.8	2	9.2	0.6	8.3	0.6	1.5
54000	10.2	6.8	7.8	2.4	9.2	1.0	8.3	1.0	1.9
54100	10.8	6.8	7.8	3	9.2	1.6	8.3	1.6	2.5
54200	11.1	6.8	7.8	3.3	9.2	1.9	8.3	1.9	2.8
54300	11	6.8	7.8	3.2	9.2	1.8	8.3	1.8	2.7

Bethel Island - Levee Crown HMP, PL 84-99 and Levee Crown Desired Elevation 9.2'

Compliance Evaluation (Elevations per NGVD '29 datum)

Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1' Compliance	Variation (HMP Compliance)	BIMD Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5' Compliance	Variation
54400	11.3	6.8	7.8	3.5	9.2	2.1	8.3	3.0
54500	11.3	6.8	7.8	3.5	9.2	2.1	8.3	3.0
54600	10.5	6.8	7.8	2.7	9.2	1.3	8.3	2.2
54700	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
54800	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
54900	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
55000	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.6
55100	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
55200	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
55300	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
55400	10.1	6.8	7.8	2.3	9.2	0.9	8.3	1.8
55500	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
55600	9.5	6.8	7.8	1.7	9.2	0.3	8.3	1.2
55700	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
55800	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	0.4
55900	8.6	6.8	7.8	0.8	9.2	(0.6)	8.3	0.3
56000	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
56100	9.9	6.8	7.8	2.1	9.2	0.7	8.3	1.5
56200	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
56300	8.5	6.8	7.8	0.7	9.2	(0.7)	8.3	0.2
56400	9.3	6.8	7.8	1.5	9.2	0.1	8.3	1.0
56500	9.6	6.8	7.8	1.8	9.2	0.4	8.3	1.3
56600	9.7	6.8	7.8	1.9	9.2	0.5	8.3	1.4
56700	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
56800	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	0.4
56900	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	0.6
57000	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
57100	8.8	6.8	7.8	1	9.2	(0.4)	8.3	0.5
57200	8.5	6.8	7.8	0.7	9.2	(0.7)	8.3	0.2
57300	8.4	6.8	7.8	0.6	9.2	(0.8)	8.3	0.1
57400	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.9
57500	9.8	6.8	7.8	2	9.2	0.6	8.3	1.5
57600	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
57700	9.4	6.8	7.8	1.6	9.2	0.2	8.3	1.1
57800	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
57900	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
58000	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
58100	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	0.8
58200	9	6.8	7.8	1.2	9.2	(0.2)	8.3	0.7
58300	8.3	6.8	7.8	0.5	9.2	(0.9)	8.3	0.0
58400	8	6.8	7.8	0.2	9.2	(1.2)	8.3	(0.3)
58500	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	0.6

Bethel Island - Levee Crown HMP , PL 84-99 and Levee Crown Desired Elevation 9.2'									
Compliance Evaluation (Elevations per NGVD '29 datum)									
Station	Levee Crown Elevation	100 Year Flood Elevation	HMP 100 year +1'	Variation (HMP Compliance)	BIMID Desired Crest Elevation 9.2	Variation	PL 84-99 100 year +1.5'	Variation	Variation PL 84-99 Compliance)
58600	9.6	6.8	7.8	1.8	9.2	0.4	8.3	0.4	1.3
58700	9.5	6.8	7.8	1.7	9.2	0.3	8.3	0.3	1.2
58800	9.7	6.8	7.8	1.9	9.2	0.5	8.3	0.5	1.4
58900	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	(0.1)	0.8
59000	9.2	6.8	7.8	1.4	9.2	0.0	8.3	0.0	0.9
59100	9	6.8	7.8	1.2	9.2	(0.2)	8.3	(0.2)	0.7
59200	9.1	6.8	7.8	1.3	9.2	(0.1)	8.3	(0.1)	0.8
59300	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	(0.5)	0.4
59400	8.8	6.8	7.8	1	9.2	(0.4)	8.3	(0.4)	0.5
59500	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	(0.5)	0.4
59600	8.6	6.8	7.8	0.8	9.2	(0.6)	8.3	(0.6)	0.3
59700	8.8	6.8	7.8	1	9.2	(0.4)	8.3	(0.4)	0.5
59800	9	6.8	7.8	1.2	9.2	(0.2)	8.3	(0.2)	0.7
59900	9	6.8	7.8	1.2	9.2	(0.2)	8.3	(0.2)	0.7
60000	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	(0.3)	0.6
60100	8.7	6.8	7.8	0.9	9.2	(0.5)	8.3	(0.5)	0.4
60200	9	6.8	7.8	1.2	9.2	(0.2)	8.3	(0.2)	0.7
60300	9	6.8	7.8	1.2	9.2	(0.2)	8.3	(0.2)	0.7
60400	9	6.8	7.8	1.2	9.2	(0.2)	8.3	(0.2)	0.7
60500	8.9	6.8	7.8	1.1	9.2	(0.3)	8.3	(0.3)	0.6
60600	9.4	6.8	7.8	1.6	9.2	0.2	8.3	0.2	1.1
60700	9.6	6.8	7.8	1.8	9.2	0.4	8.3	0.4	1.3
60800	11.4	6.8	7.8	3.6	9.2	2.2	8.3	2.2	3.1