



US Army Corps
of Engineers®

Regulatory Branch
333 Market Street
San Francisco, CA 94105-2197

SAN FRANCISCO DISTRICT

PUBLIC NOTICE

Project: Reclamation District 768 Levee Repair – 10 year Permit

NUMBER: 400235N

DATE: 24 January 2007

RESPONSE REQUIRED BY: 23 February 2007

PROJECT MANAGER: David Ammerman PHONE: 707-443-0855

David.a.ammerman@spd02.usace.army.mil

1. **INTRODUCTION:** Reclamation District 768, 4150 Old Samoa Road, Arcata, California 95521, through their agent, Oscar Larson and Associates (Contact: Mr. Stein Coriell at 707-445-2043), has applied for a Department of the Army permit to discharge fill into navigable waters of the United States (Humboldt Bay and Mad River Slough) for the purpose of repair, for the 2007 season, of 20,212 linear feet (6,161 meters) of eroded and damaged levee located within the Reclamation District 768's (District's) 4.9 mile earthen levee system (See Sheet 3 of 13). The District has also applied for a Department of the Army permit to discharge fill in connection with long-term, routine or as-needed repair and maintenance of the 4.9 mile (25,872 lineal foot or 7,886 meter) long levee system over a ten-year permit duration. Work would include construction of temporary access roads and borrow ditch crossings for equipment access to the levees, construct staging areas for construction equipment, and repair to culverts and tide gates where needed. The levees protect approximately 1,600 acres of agricultural land, homes, farm buildings, public utilities, and roads. The project area is bounded by Humboldt Bay or Arcata Bay on the south, by the City of Arcata and its Arcata Marsh on the east, by Samoa Boulevard on the northeast, and Mad River Slough and adjacent private lands on the northwest. The project is in Humboldt County, California. This application is being processed pursuant to the provisions of Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C.

Section 403) and Section 404 of the Clean Water Act (33 U.S.C. Section 1344).

2. **PROPOSED PROJECT:** Reclamation District 768 is responsible for maintaining and repairing the 4.9 mile levee system (approximately 25,872 lineal feet). Winter storms and high water have caused levee collapse, perforation, or complete breaching at various points along the earthen levees. The levee system has numerous locations where repairs or restoration are needed. In addition, future winter storms could cause new levee damage in places where repairs have occurred before or in relatively undisturbed portions of the levee. Continual inspection of the levees after storms and extreme high tides are necessary. Repair points would be adjacent to both tidal and non-tidal waters of Humboldt Bay and Mad River Slough and non-tidal waters adjacent to these waters. Reclamation District 768 has received funding from the Federal Emergency Management Agency (FEMA) which would be applied towards repair of the entire levee system that was damaged during the 2005-2006 winter storms.

Recent repairs under previous Corps permits:

Reclamation District 768 applied in 2006 for Corps permits to conduct immediate repairs to portions of the levees bordering Mad River Slough and Humboldt Bay. These repairs are separate actions from the proposed 2007 and long-term levee repairs described in this Public Notice. Corps permit No.

301770N under Regional General Permit No. 5 (Repair and Protection Activities in Emergency Situations) dated October 19, 2006 authorized repair in 2006 of 11,435 lineal feet of levees (7,131 cubic yards of engineered fill and 9,095 cubic yards of rock slope protection. Due to interruptions from weather delays and other factors, two extensions under Regional General Permit 5 were granted, the first on November 29, 2006 and the second on January 10, 2007. These permits covered levee repairs that needed immediate attention before the onset of major winter storms that would cause flooding or erosion in late 2006 and 2007. These emergency repairs are continuing during breaks in the weather in 2007. So far, the following repairs have been completed: 3,700 lineal feet of the 6,000 foot length of Jackson Ranch levee (levee face and levee tops) along Mad River Slough and repair of breaches at four other levee sections along Humboldt Bay. Reclamation District 768 also received a Corps permit under Regional General Permit 5 to retrieve and reattach an existing tide gate near the mouth of McDaniel Slough (issued November 28, 2006).

Repair activities for 2007: This Public Notice and the Corps permit process addresses only the following activities: To prepare damaged areas for repair in 2007, the applicant estimates that 3,924 cubic yards of soil, rock and other debris would be excavated and removed from the levee sections. This material includes but is not limited to slumped and collapsed earthen levee sections, old concrete rubble or rock rip-rap, clay tile and woody debris where necessary (floating logs tend to act as battering rams against levee faces). The applicant estimates that 13,563 cubic yards of engineered fill and 19,563 CY of rock slope protection (RSP) would be placed against the toe and face of the levees (See Sheet 5 of 13 for typical drawings). The footprint of the repaired levee would match the original footprint and would not extend into Humboldt Bay, the sloughs or landward wetland areas further than they did originally, with one exception: At a location on the Jackson Ranch levee approximately 1,500 feet north of State Highway 255 (See Sheet 2 of 13 for location of Jackson Ranch Road), Mad River Slough has cut into

the levee, steepened the slope of the levee face and deepening the slough in front of the levee. There are three options to repair this section: (1) Restore the levee to its historical footprint by restoring the slope of the levee face and placing RSP out into the deep water of the slough; (2) Restore the levee to its original width and height, but expand the levee footprint on the landward (pasture) side, involving fill and relocation of the inboard borrow ditch and some wetland fill; and (3) the preferred alternative is to construct sheet piling driven against the levee face on the slough side which would allow a steeper levee face and prevent encroachment further into the slough (See Sheet 9 of 13). To conduct the preferred alternative, all debris would be removed, and clearing and grubbing would occur prior to fill placement. The area of damaged levee would be excavated to the lowest point of damage. Sheet piles would be driven with a pile-driver. The preferred method of operation would be to work from the Mad River Slough. It is expected that the slough is of sufficient depth for the use of a barge mounted pile driver. The applicant's agent states sheet pile would be designed to current U.S. Army Corps of Engineers standards which may include additional appurtenances such as tie-back rods, vertical bracing and horizontal bracing, and may require different material and specifications. A level bench would be created and backfilled with engineered fill in 8-inch lifts maximum. Lifts would be compacted to 90% relative compaction minimum. All non-tidal disturbed earth surfaces would be hydro seeded or broadcast seeded.

Routine and other as-needed levee repairs beyond 2007 over a ten-year permit duration: The District proposes to excavate 1,450 cy of old fill from levees needing repair or maintenance over a ten period. The District estimates that 6,120 tons of debris, concrete rubble, and other materials would be removed. Some materials may be reused in place, but concrete rubble would not be reused and would be hauled off to an upland disposal site, including old broken clay roof tiles.

Once cleaned of debris, imported earth fill and/or rock rip-rap from outside commercial sources or other

private stockpiles would be placed against or on the levee to perform repairs. The applicant estimates that 5,000 cubic yards engineered earth fill and approximately 7,210 cubic yards of rock slope protection would be placed on or against the levees. These figures are totals over the ten year permit duration with some expected variation. (The applicant estimates that the annual fill placement to repair levees would total 500 cubic yards per year). The levee sections would be repaired to the original height and width of the levee that existed prior to the storm damage. There would be no need to expand, widen, or raise the levees beyond the original footprint unless there are locations where this might be necessary. The following types of levee repair are anticipated:

Levee Repair in Tidal Waters - After removal of all debris, the area of damaged levee would be excavated to the lowest point of damage. A level bench would be created and backfilled with engineered fill in 8-inch lifts maximum. Each lift would be compacted to 90% relative compaction minimum. Rock Slope Protection (RSP) geotextile fabric would be placed on the graded soil slope of the levee and anchored at the toe and top of the levee. Light class RSP would be placed on top of the fabric, and above that ½ ton RSP placed above the light class RSP (See Sheet 5 of 13 for typical section). All non-tidal surfaces would be reseeded.

Fissure Repair in Non-tidal Waters - The damage at these locations is generally a vertical crack or fissure perpendicular to ground surface, caused by tension forces at the top of the levee or by a sinkhole effect on the top of the levee. The area surrounding the fissure would be excavated to 4 feet minimum or to the terminus of the fissure, whichever is greater. The excavated area would be backfilled with engineered fill (same compaction and lift depth as the previous paragraph). On slopes greater than or equal to 1:1, coconut/straw erosion control blankets would be installed on all disturbed earth surfaces (See Sheet 8 of 13)

Top of Levee Erosion Repair - This damage is usually horizontal shearing or overtopping of the levee (See Sheet 7 of 13). The eroded levee surface would be regraded, compacted and an average of 12-inch California Department of Transportation (Caltrans) class 2 aggregate base or engineered fill would be imported, placed on top of the levee, and compacted to 95% relative compaction.

Levee Repair in Non-Tidal Areas - The area of damaged levee would be excavated to lowest point of damage. A level bench would be created and backfilled with engineered fill in same fill lists and compaction as tidal levee repair (See Sheet 8 of 13). Coconut/straw erosion control blankets would be used where appropriate.

Access and Staging Areas - The lands of Reclamation District 768 are accessible from State Highway 255, Jackson Ranch Road, Old Samoa Road, and the Arcata Marsh and Wildlife Sanctuary. In 2007, the project would include the placement of temporary access roadways and staging areas for the contractors to store equipment and materials. Four temporary staging areas, each approximately 25,000 square feet in size would be created (After 2007 and for the duration of the permit, the staging area size would be limited to 10,000 square feet). Approximately 8,000 linear feet of temporary access roads (12 feet wide) would be installed to provide access to the levees across the seasonal agricultural wetlands (See Sheet 4 of 13. The temporary access roads and staging areas would be surfaced with 8-inches of redwood bark over road stabilization fabric, an average of 6 inches of road base, or an equivalent stabilization method. The access roads would be created in either of two ways: the existing topsoil would be removed and set aside in a temporary stockpile, then the road base and bark placed on the exposed surface; or the bark and road base materials and fabric would be placed directly over the existing top soil surface. To cross the borrow ditch (open water ditch created when the levees were first built and running parallel and inboard of the levees), temporary culvert ditch crossing or free span ditch

crossings would be utilized (See Sheet 10 and 11 of 13).

3. Mitigation and Minimization of Impacts:

Construction activities on the levee shall be limited to the times in which low tides occur, or shall be limited to area above mean high water (approximately 6.5 feet above Mean Lower Low Water). Construction would not occur outside the window of April 15 to October 15. All equipment work would be performed from the top of the levee; no equipment would enter the wetted channel of the slough or bay. Any construction materials that are sloughed off into the bay, slough, or other wetland areas during construction shall be removed. All excess fills or materials not used for levee repair would be hauled off site and disposed of at designated upland areas or construction material stockpiles outside of the project area. All repair activities that include the removal or replacement of levee materials (whether for structural purposes or protection, such as riprap) shall incorporate silt fences, floating turbidity curtains, or equivalent similar structures that meet sediment control requirements to reduce the discharge of materials into the bay, slough or wetland areas (Transmittal and Project Description, dated December 12, 2006, Oscar Larson and Associates).

The placement of materials in 2007 for the staging areas and access roads would temporarily impact approximately 4.5 acres of seasonal agricultural wetlands (areas containing introduced livestock herbaceous plants as well as native wetland plant species). The roads would be removed or regraded to pre-project condition, planted with agricultural seed mix and tilled. (Tilling and planting is also a normal agricultural activity conducted with or without the project). No jurisdictional wetlands are anticipated to be permanently impacted by this project. Fill volume and area impact calculations are shown in Sheets 12, 12b, and 13 of 13).

3. COMPLIANCE WITH VARIOUS FEDERAL LAWS:

National Environmental Policy Act of 1969 (NEPA): The U.S. Army Corps of Engineers (Corps) will assess the environmental impacts of the proposed action in accordance with the requirements of the National Environmental Policy Act of 1969 (42 U.S.C. Section 4371 et. seq.), the Council on Environmental Quality's Regulations (40 C.F.R. Parts 1500-1508), and the Corps' Regulations (33 C.F.R. Part 230 and Part 325, Appendix B). Unless otherwise stated, the Environmental Assessment will describe only the impacts (direct, indirect, and cumulative) resulting from activities within the Corps' jurisdiction. The documents used in the preparation of the Environmental Assessment will be on file with the U.S. Army Corps of Engineers, San Francisco District, Regulatory Branch, 333 Market Street, San Francisco, California 94105-2197.

Endangered Species Act of 1973 (ESA): Section 7 of the Endangered Species Act requires formal consultation with the U.S. Fish and Wildlife Service (FWS) and/or the National Marine Fisheries Service (NMFS) if a Corps permitted project may adversely affect any Federally listed threatened or endangered species or its designated critical habitat. The project site is adjacent to navigable waters of the U.S. that are known to contain listed species under the ESA. Humboldt Bay and its tributaries and Mad River Slough are critical habitat for the Southern Oregon/Northern California Coastal (SONCC) Evolutionarily Significant Unit (ESU) coho salmon (*Oncorhynchus kisutch*), California Coastal (CC) ESU Chinook salmon (*O. tshawytscha*), and Northern California Distinct Population Segment (DPS) steelhead (*O. mykiss*). All three of these anadromous fish species are listed as threatened under the ESA by the NMFS. In addition, the endangered tidewater goby (*Eucyclogobius newberryi*) has been known to inhabit Humboldt Bay and Mad River Slough waters in the project vicinity, currently or historically. This species is listed as endangered by the USFWS. The Corps will be initiating Section 7 consultation under the ESA with both NMFS and USFWS regarding

potential impacts of the levee repair project to the respective listed species and their habitat. The scope of consultation would include the remaining emergency or priority repairs of the levee system planned during the normal construction season of April 15 through October 15 of 2007 and subsequent repairs or maintenance to the levee system over a ten-year period (2007-2016). No tide gate or culvert repairs are anticipated for 2007, but in subsequent years there may be a need to repair or replace such structures should damage occur to these structures in the future.

Magnuson-Stevens Fisheries Conservation and Management Act: Essential Fish Habitat - The Magnuson-Stevens Fishery Conservation and Management Act requires all Federal agencies to consult with the National Marine Fisheries Service (NMFS) on all actions, or proposed actions permitted by the agency that may adversely affect Essential Fish Habitat (EFH). This notice initiates the EFH consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. The proposed project would impact approximately 2.3 acres of EFH utilized by coho salmon, Chinook salmon, and a variety of marine and estuarine fish species that appear on the list of EFH species managed by the Pacific Groundfish Management Council and Pacific Pelagic Fish Management Councils in coordination with NMFS. The Corps' initial determination is that the proposed action would not have a substantial adverse impact on EFH or federally managed fisheries in California Waters. Our final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the NMFS.

Clean Water Act of 1972 (CWA):

a. Water Quality: Under Section 401 of the Clean Water Act (33 U.S.C. Section 1341); an applicant for a Corps permit must first obtain a State water quality certification before a Corps permit may be issued. The applicant has applied for Section 401 Conditional Water Quality Certification from the California Regional Water Quality Control Board, (RWQCB)

North Coast Region. No Corps permit will be granted until the applicant obtains the required water quality certification. The Corps may assume that water quality certification has been obtained if the State fails or refuses to act on a valid request for certification within 60 days after the receipt of a valid request, unless the District Engineer determines a shorter or longer period is reasonable for the State to act.

Those parties concerned with any water quality issue that may be associated with this project should write to the Executive Officer, California Regional Water Quality Control Board, North Coast Region, 5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403 by the close of the comment period of this Public Notice.

b. Alternatives: Evaluation of this proposed activity's impact includes application of the guidelines promulgated by the Administrator of the Environmental Protection Agency under Section 404(b)(1) of the Clean Water Act (33 U.S.C. Section 1344(b)). An evaluation has been made by this office under the guidelines and it was determined that the proposed project is water dependent, since the existing levee structure is situated in close proximity to tidal waters and wetlands. The only other alternative (no action alternative) is to allow the levees to deteriorate to the point where tidal action and storms flood and erode livestock pasture and farm roads, and where other facilities inside the levees would be damaged or destroyed. Landowners would be forced to move, relocate, or sell the damaged properties, probably at deflated values. No landowner has expressed any intentions to do the above actions. There are otherwise no other less environmentally damaging practical alternatives to the proposed project. Environmental impacts would be minimized to the extent possible using a variety of methods of levee repair.

Coastal Zone Management Act of 1972 (CZMA): Section 307 of the Coastal Zone Management Act requires the applicant to certify that the proposed project is consistent with the State's Coastal Zone Management Program, if applicable. The proposed

project is within the Coastal Zone. The applicant obtained Coastal Development Permit No. 1-03-004 on March 17, 2005, which expires on March 17, 2010. This permit covers routine repair and maintenance activities on the levee system.

National Historic Preservation Act of 1966 (NHPA): Based on a review of survey data on file with various City, State and Federal agencies, no historic or archeological resources are known to occur in the project vicinity. If unrecorded resources are discovered during construction of the project, operations will be suspended until the Corps completes consultation with the State Historic Preservation Office (SHPO) in accordance with Section 106 of the National Historic Preservation Act.

4. PUBLIC INTEREST EVALUATION: The decision whether to issue a permit will be based on an evaluation of the probable impact, including cumulative impact, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits that reasonably may be expected to accrue from the proposed activity must be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposal will be considered, including its cumulative effects. Among those factors are: conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people.

5. CONSIDERATION OF COMMENTS: The Corps of Engineers is soliciting comments from the public, Federal, State and local agencies and officials, Indian Tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, condition or deny a permit for this proposal. To make this

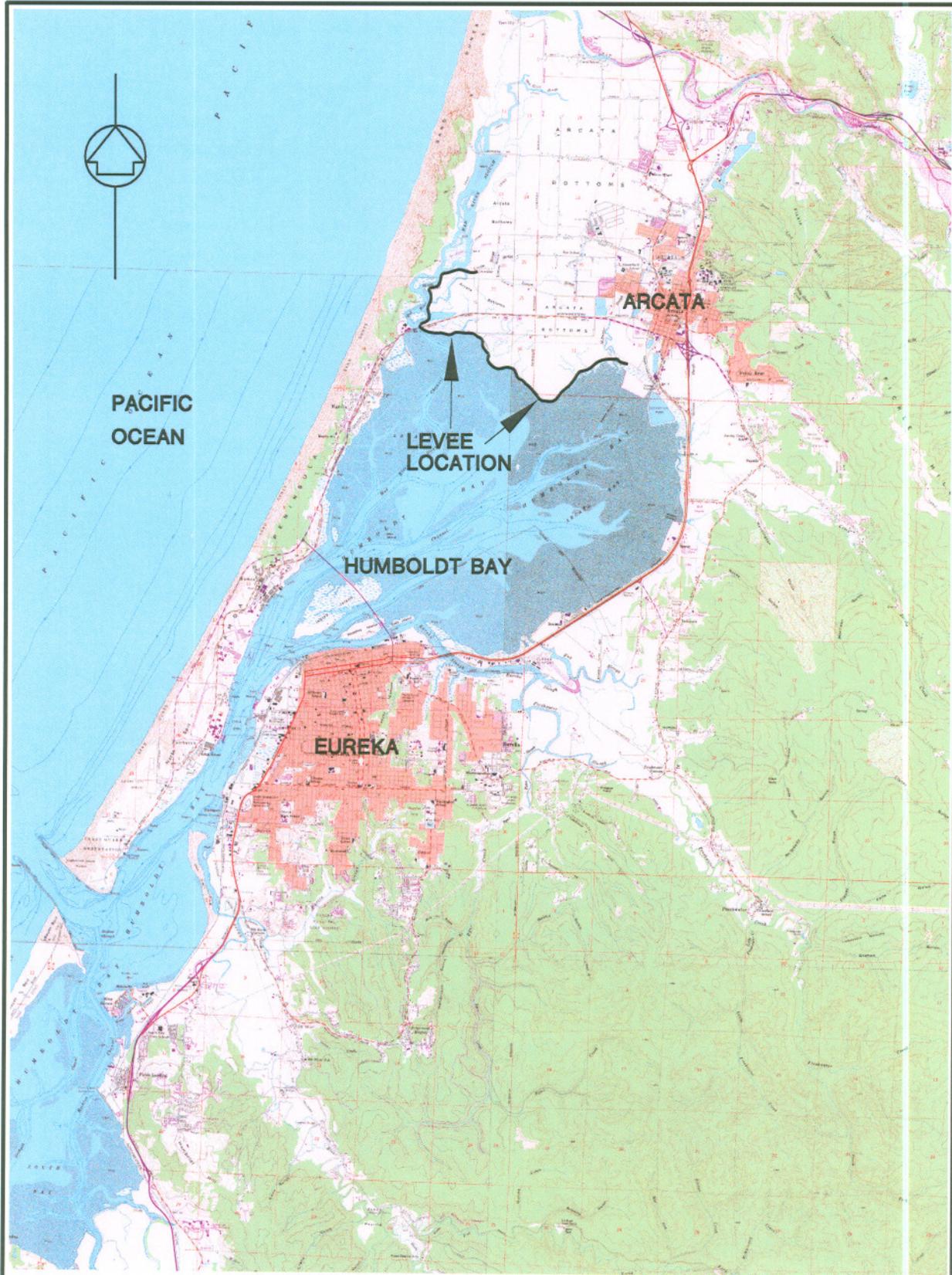
decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest in the proposed activity.

6. SUBMISSION OF COMMENTS: Interested parties may submit, in writing, any comments concerning this activity. Comments should include the applicant's name and the number and the date of this Public Notice, and should be forwarded so as to reach this office within the comment period specified on Page 1. Comments should be sent to the District Commander at: Lieutenant Colonel Craig W. Kiley, San Francisco District, U.S. Army Corps of Engineers, 333 Market Street, San Francisco, California 94105-2197. It is the Corps' policy to forward any such comments that include objections to the applicant for resolution or rebuttal. Any person may also request, in writing, within the comment period of this Public Notice that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing. Additional details may be obtained by contacting the applicant whose name and address are indicated in the first paragraph of this Public Notice or by contacting David Ammerman of our Eureka office at telephone 707-443-0855 or E-mail: David.a.ammerman@spd02.usace.army.mil. Details on any changes of a minor nature that are made in the final permit action will be provided upon request.

File No. 40023510

**LOCATION MAP
RECLAMATION DISTRICT 768**

SCALE: 1" = 10,000' ±



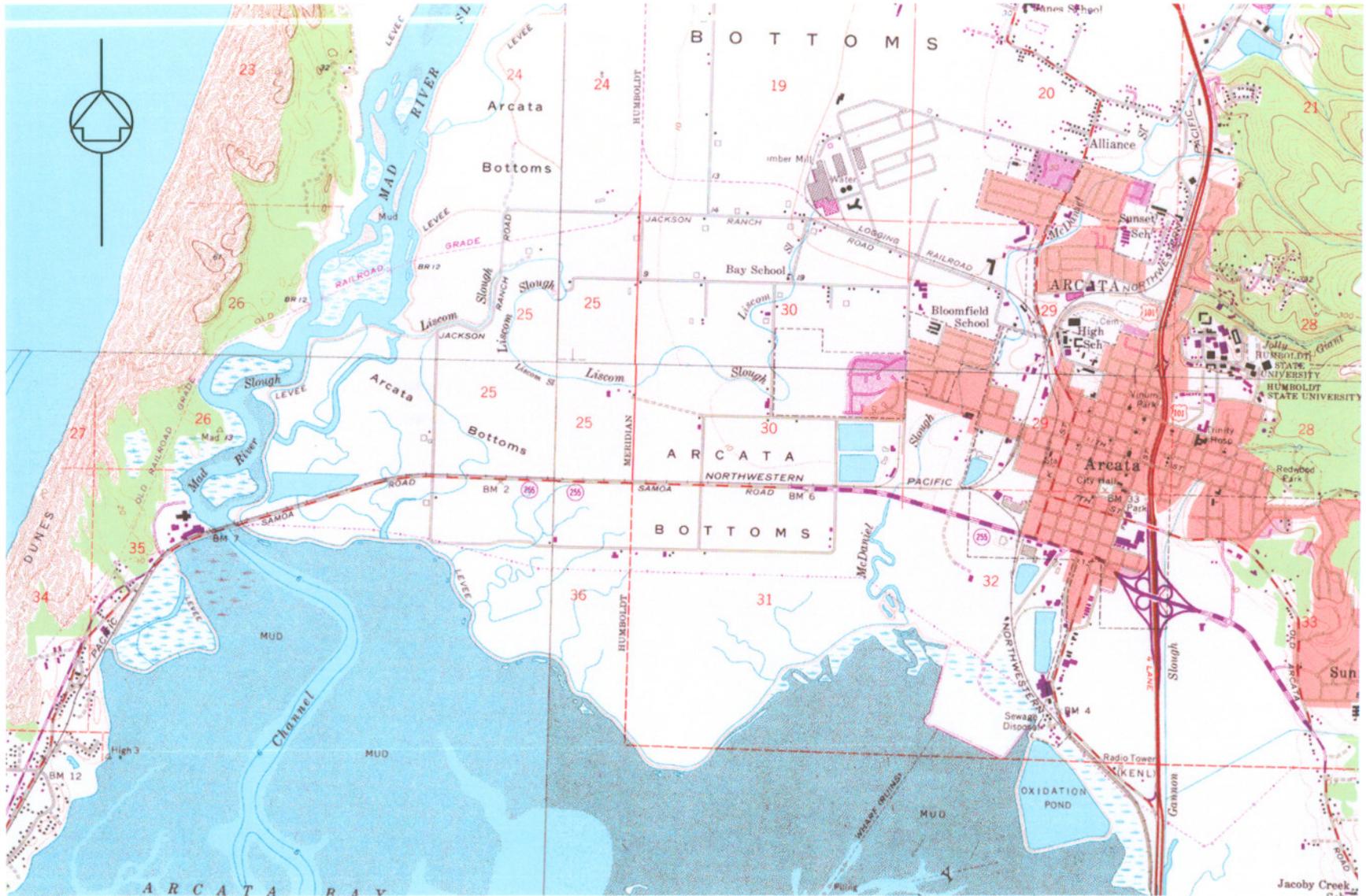
Sheet 1 of 13

Figure 2

File No. 400235A

VICINITY MAP

SCALE: 1" = 3000' ±



LEVEES WEST OF ARCATA

OSCAR LARSON & ASSOCIATES

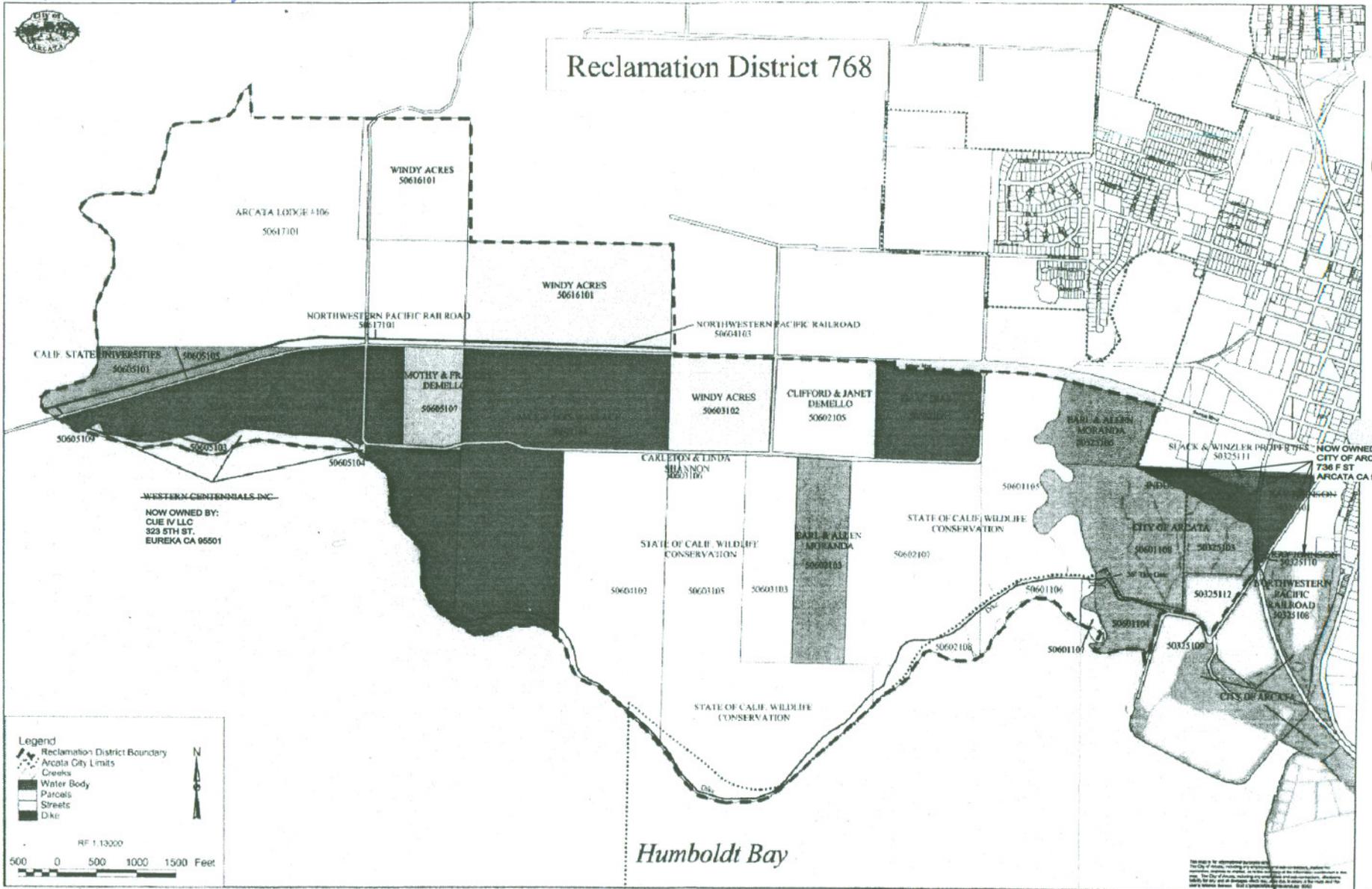


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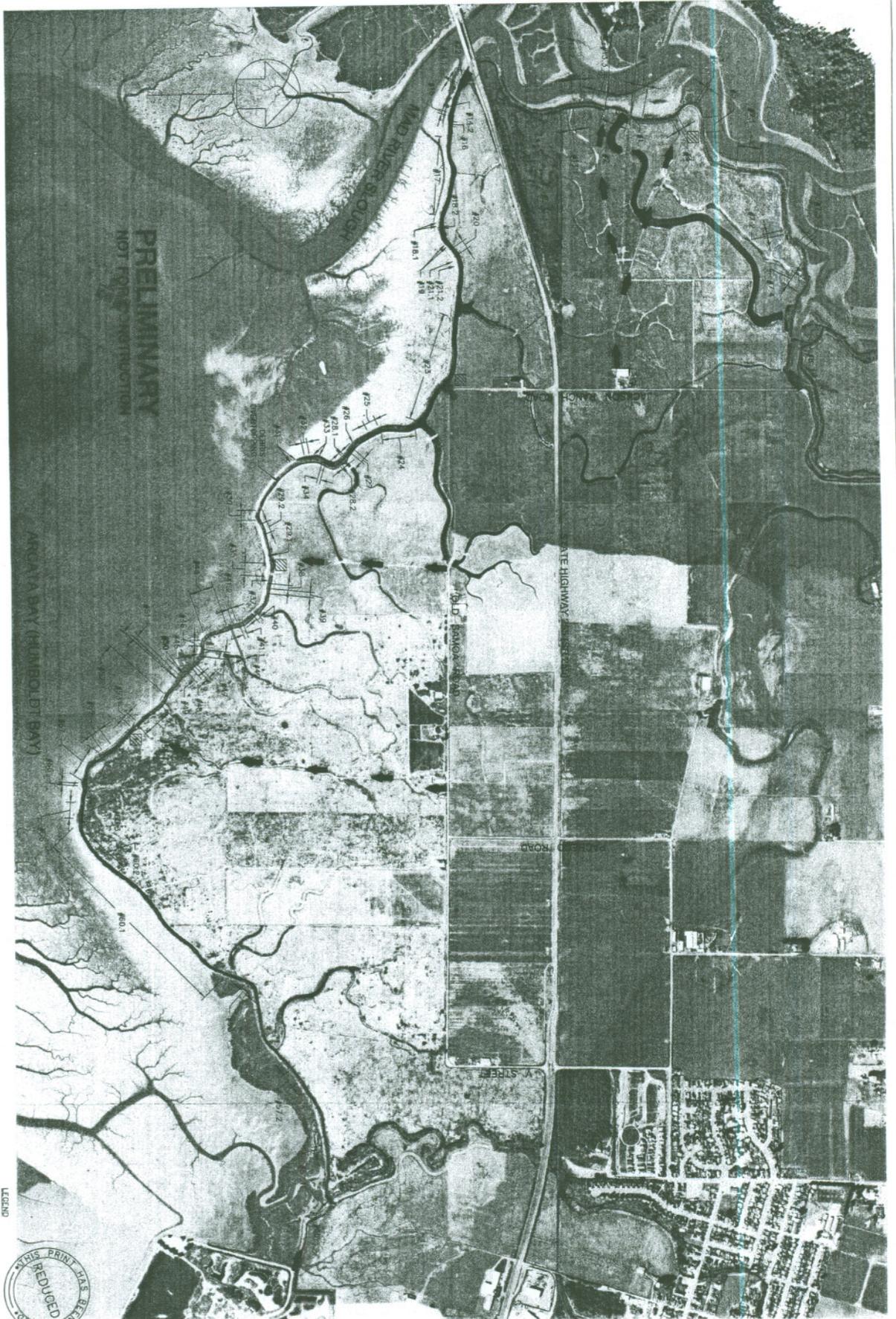


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Figure 1

File No. 482235N

Sheet 4 of 13



LEGEND

ACCESS ROUTE

STAGING AREA (25,000 SQ FT EACH)



Figure 4

RECLAMATION DISTRICT #768
LEVEE REPAIR MAP

RECLAMATION DISTRICT #768
4160 OLD SAMOA ROAD
ARCATA, CALIFORNIA 95521

Oscar Larson & Associates
Consulting Engineers & Land Surveyors
317 Third Street • P.O. Box 3806 • Eureka CA • 95501

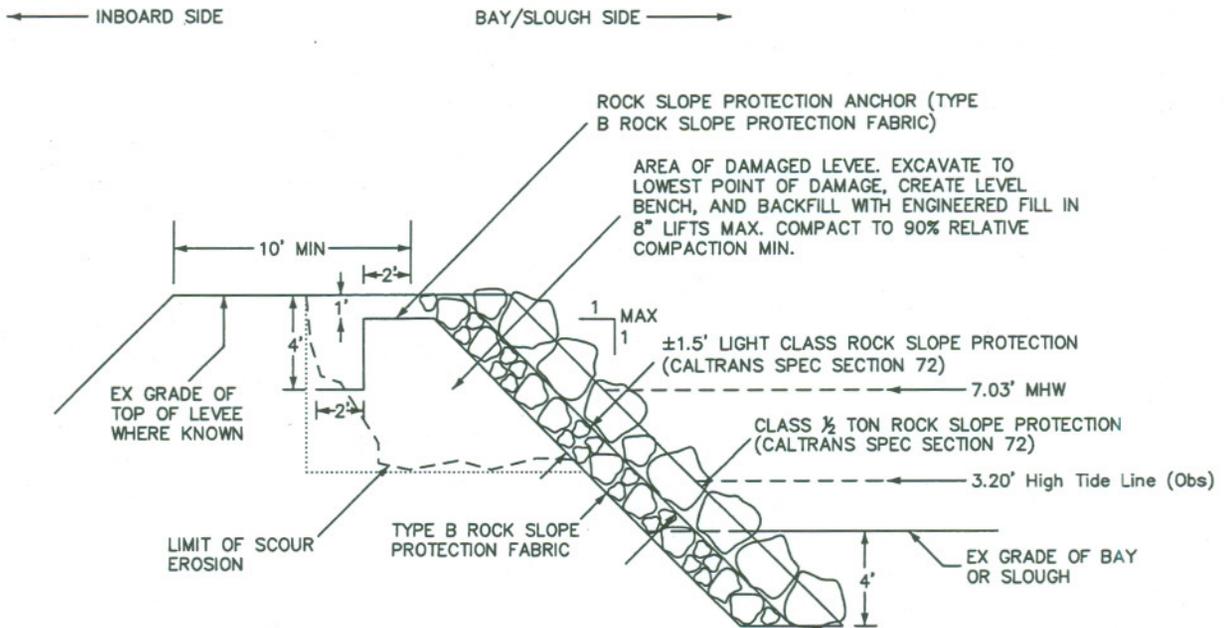
DEC 08 2006
PRINT DATE



No.	Date	By	Approv.

Designed by: MAH Date: 4/1/06
 Drawn by: MAH Date: 4/1/06
 Checked by: MAH Date: 4/16/06

File No. 400235N



- NOTES:
1. HYDROSEED ALL NONTIDAL DISTURBED EARTH SURFACES.
 2. REMOVE ALL DEBRIS FROM AREA OF REPAIR PRIOR TO WORK.

TIDAL INFLUENCED LEVEE REPAIR

CROSS-SECTION

SCALE: 1/8 INCH = 1'±

PURPOSE: REPAIR LEVEE DAMAGE
AT: HUMBOLDT LEVEE
IN: HUMBOLDT BAY & MAD RIVER SLOUGH
CO: HUMBOLDT
STATE: CALIFORNIA
APPLICATION BY: RECLAMATION DISTRICT 768

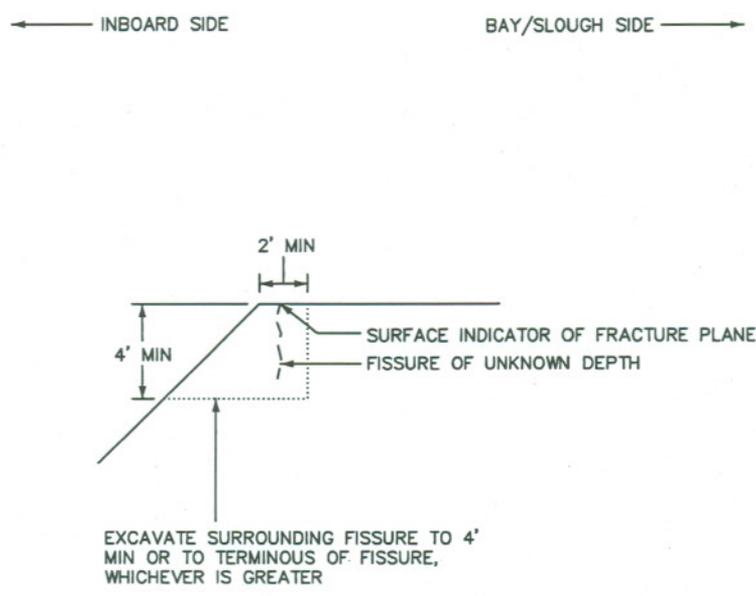
Sheet 5 of 13

OSCAR LARSON & ASSOCIATES



Figure 5

File No. 400235A



- NOTES:**
1. HYDROSEED ALL NONTIDAL DISTURBED EARTH SURFACES.
 2. BACKFILL EXCAVATED AREA WITH ENGINEERED FILL IN 8" LIFTS MAX. COMPACT TO 90% RELATIVE COMPACTION MIN.
 3. AREAS WHERE NONTIDAL LEVEE SLOPE IS GREATER THAN OR EQUAL TO 1:1, INSTALL COCONUT/STRAW EROSION BLANKETS ON ALL DISTURBED EARTH SURFACES.

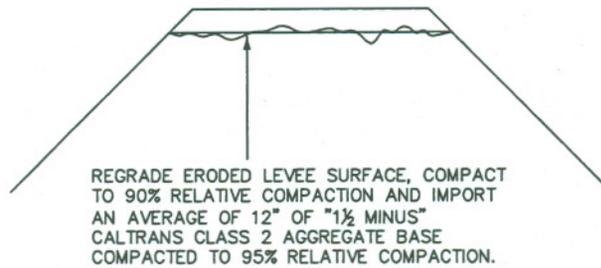
NONTIDAL FISSURE REPAIR
CROSS-SECTION
 SCALE: 1/8 INCH = 1'±

PURPOSE: REPAIR LEVEE DAMAGE
 AT: HUMBOLDT LEVEE
 IN: HUMBOLDT BAY & MAD RIVER SLOUGH
 CO: HUMBOLDT
 STATE: CALIFORNIA
 APPLICATION BY: RECLAMATION DISTRICT 768

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Figure 6

File No. 400235N



NOTES:

1. HYDROSEED ALL NONTIDAL DISTURBED EARTH SURFACES EXCLUDING IMPORTED AGGREGATE BASE.
2. REMOVE ALL DEBRIS AND CLEAR AND GRUB PRIOR TO WORK.

TOP OF LEVEE EROSION REPAIR
CROSS-SECTION

SCALE: 1/8 INCH = 1'±

PURPOSE: REPAIR LEVEE DAMAGE
AT: HUMBOLDT LEVEE
IN: HUMBOLDT BAY & MAD RIVER SLOUGH
CO: HUMBOLDT
STATE: CALIFORNIA
APPLICATION BY: RECLAMATION DISTRICT 768

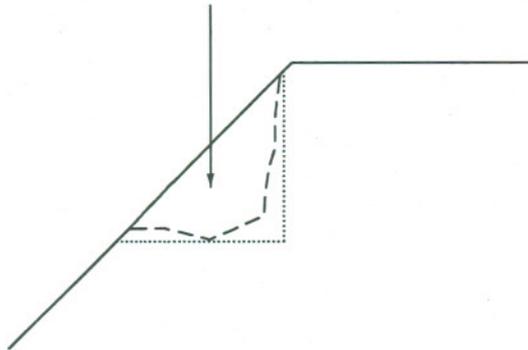
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File No. 400235A

← INBOARD SIDE BAY/SLOUGH SIDE →

AREA OF DAMAGED LEVEE. EXCAVATE TO LOWEST POINT OF DAMAGE, CREATE LEVEL BENCH, AND BACKFILL WITH ENGINEERED FILL IN 8" LIFTS MAX. COMPACT TO 90% RELATIVE COMPACTION MIN.



NOTES:

1. HYDROSEED ALL NONTIDAL DISTURBED EARTH SURFACES.
2. REMOVE ALL DEBRIS AND CLEAR AND GRUB PRIOR TO WORK.
3. AREAS WHERE NONTIDAL LEVEE SLOPE IS GREATER THAN OR EQUAL TO 1:1, INSTALL COCONUT/STRAW EROSION BLANKETS ON ALL DISTURBED EARTH SURFACES.

NONTIDAL LEVEE REPAIR
CROSS-SECTION

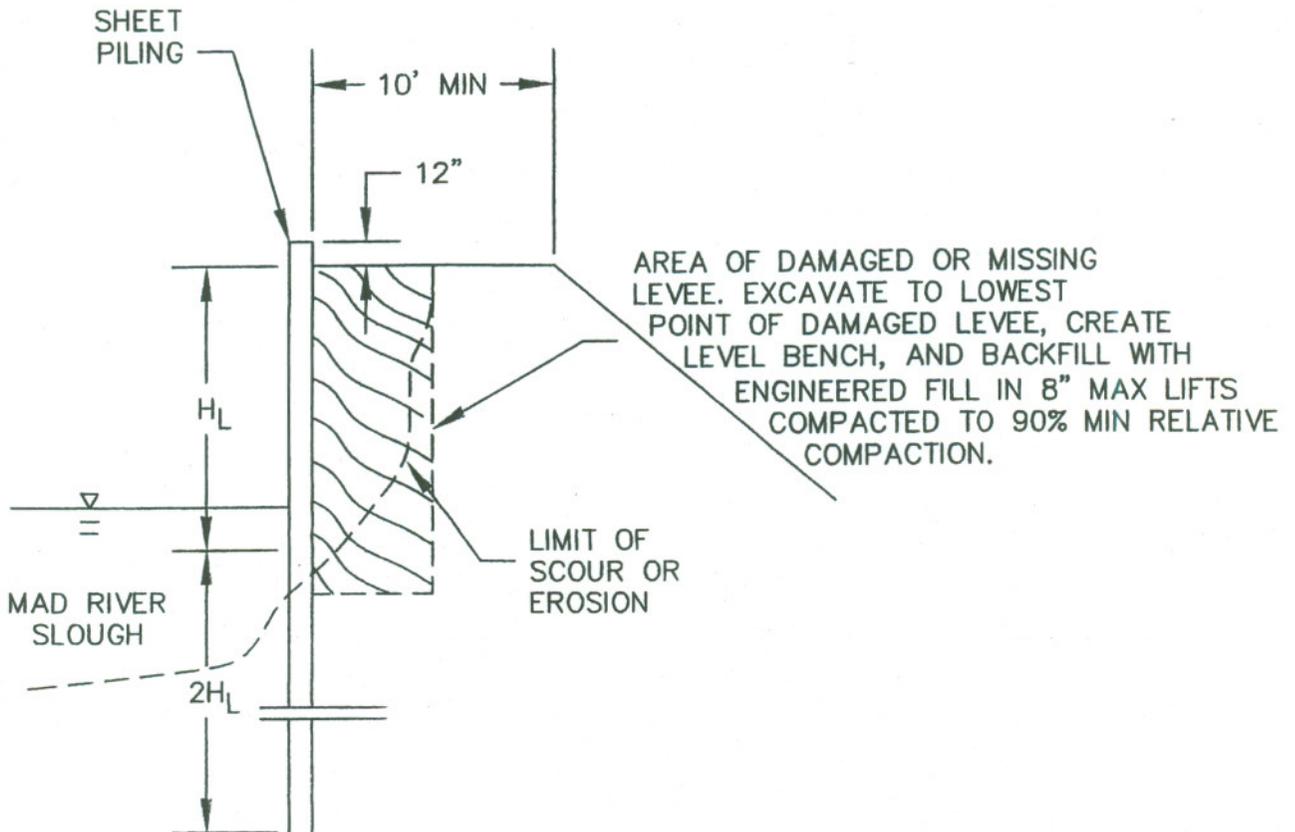
SCALE: 1/8 INCH = 1'±

PURPOSE: REPAIR LEVEE DAMAGE
AT: HUMBOLDT LEVEE
IN: HUMBOLDT BAY & MAD RIVER SLOUGH
CO: HUMBOLDT
STATE: CALIFORNIA
APPLICATION BY: RECLAMATION DISTRICT 768

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File No. 400235A

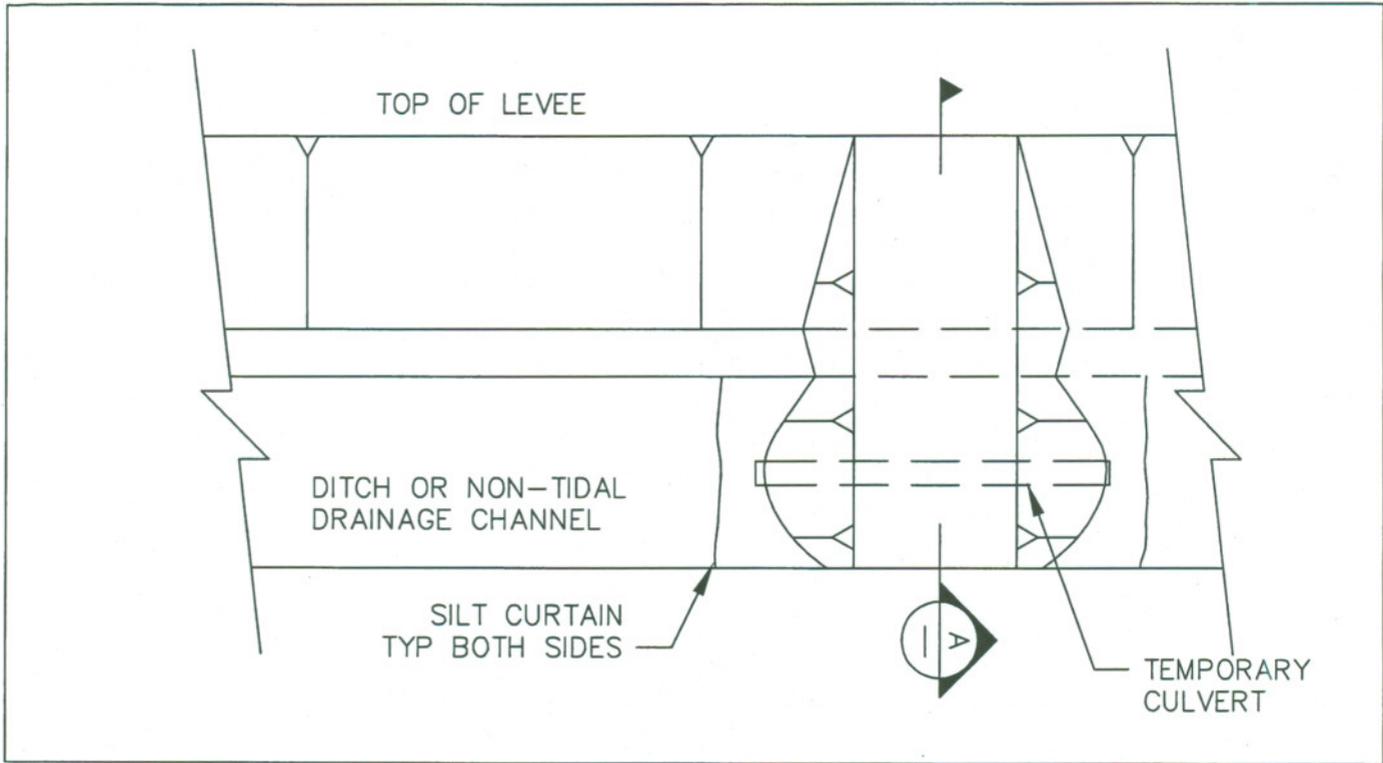


LEVEE REPAIR W/ SHEET PILING
SCALE: 1/8" = 1'

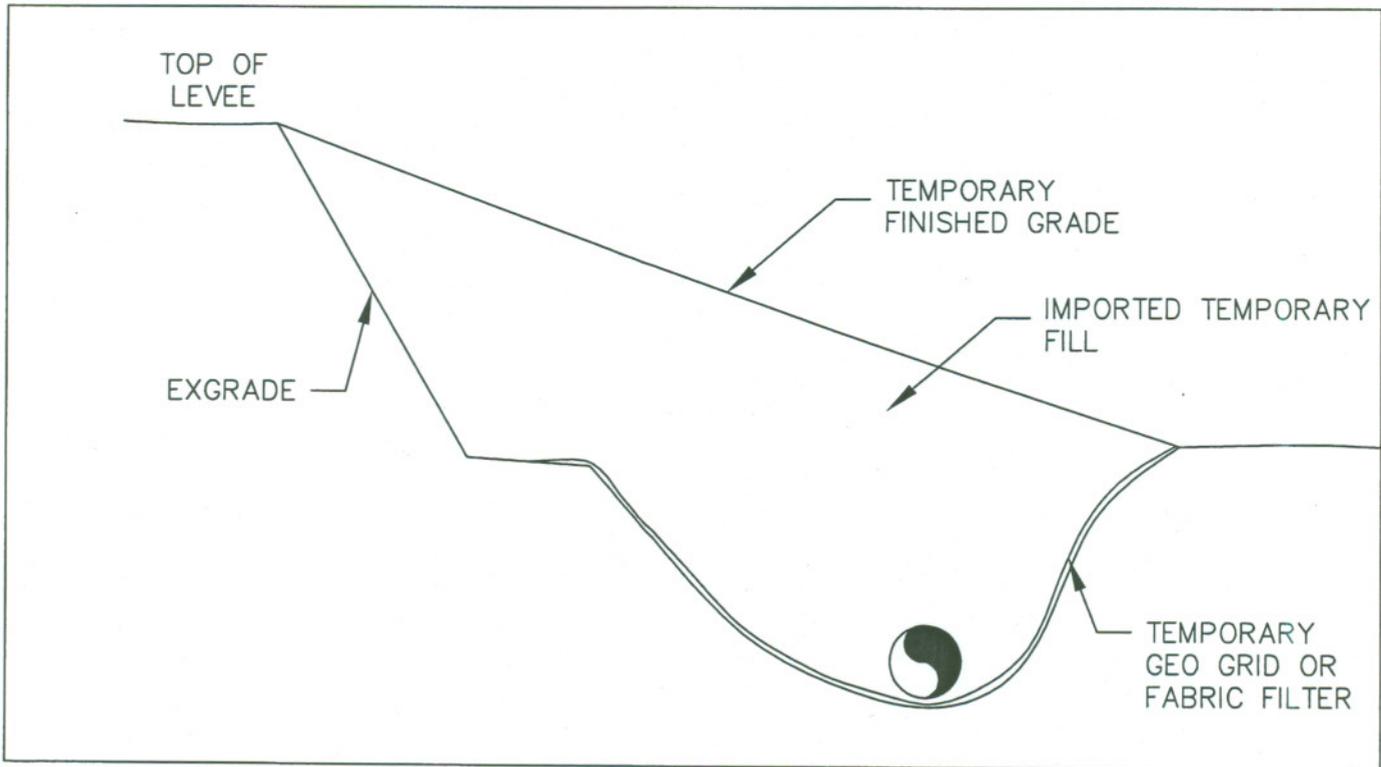
NOTES:

1. HYDROSEED ALL NON-TIDAL DISTURBED EARTH SURFACES.
2. REMOVE ALL DEBRIS AND CLEAR AND GRUB PRIOR TO WORK.
3. THIS IS NOT A FINAL DESIGN. SHEET PILES WILL BE DESIGNED TO CURRENT ARMY CORP OF ENGINEERS STANDARDS WHICH MAY INCLUDE ADDITIONAL APPURTENANCES SUCH AS TIE-BACK RODS, VERTICAL BRACING AND HORIZONTAL BRACING, AND MAY REQUIRE DIFFERENT GRADING THAN SHOWN IN THIS DETAIL.

File No. 400235N



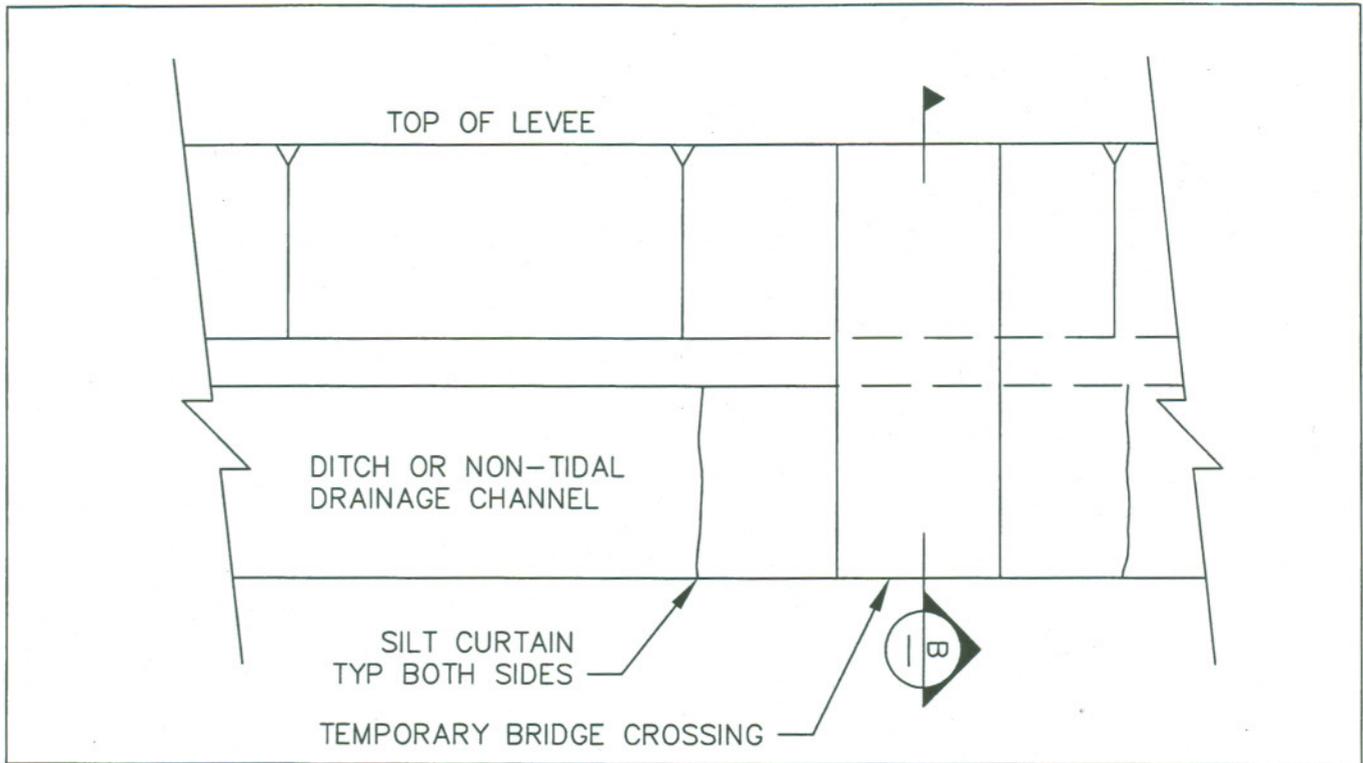
1 PLAN - TEMPORARY DITCH CROSSING - CULVERT
SCALE: NTS



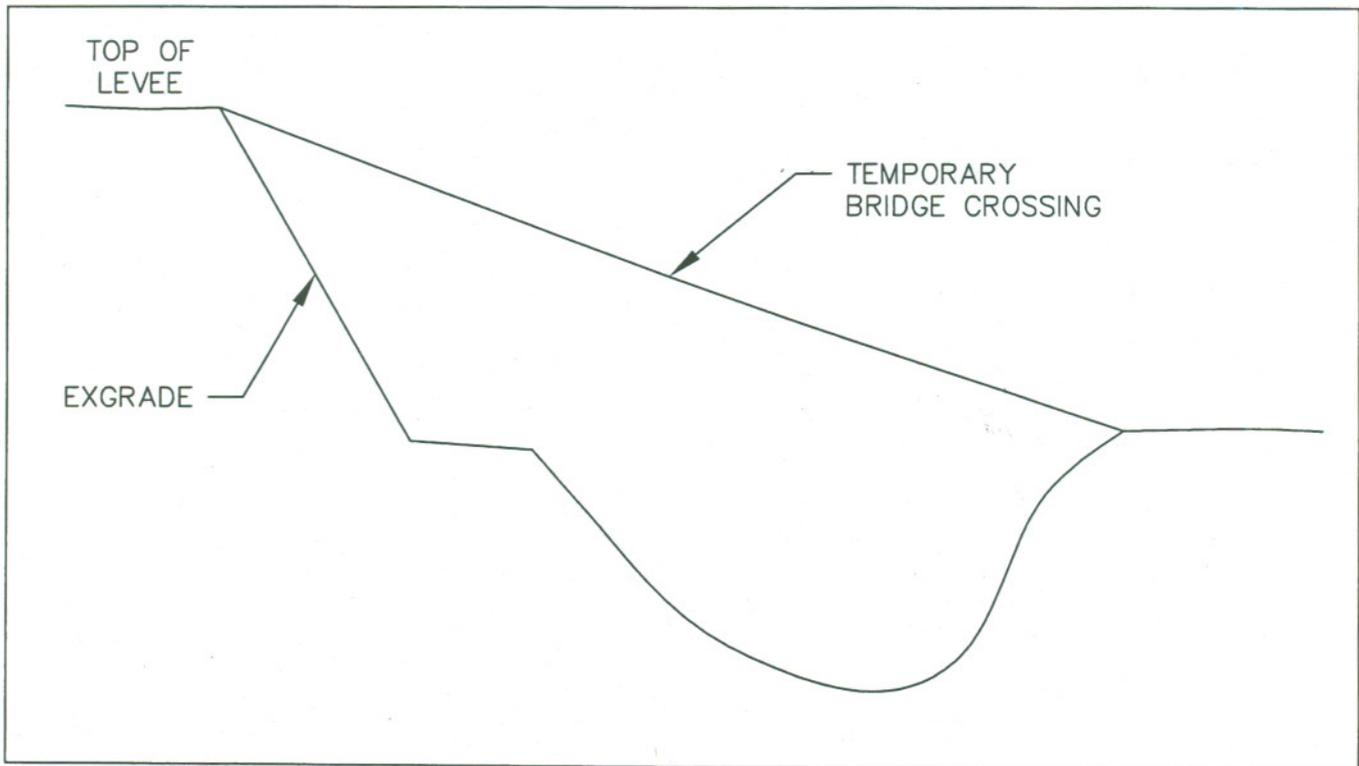
A SECTION
SCALE: NTS



File No. 400235 N



2 PLAN - TEMPORARY DITCH CROSSING - BRIDGE
SCALE: NTS



B SECTION
SCALE: NTS

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File No. 400235N

Table 1 - Construction Quantity Breakdown

Failure or Damage Area	Average Levee Height (feet)	Average Top of Damaged Levee Width (feet)	Sideslope (#feet:1)	Length of Damage (feet)	Average Depth of Damage (feet)	Location of Damage	Clearing and Grubbing Required?	Debris Removal Required?	Clear, Grub and Debris Removal ^{3,4,5,6} (tons)	Excavation ¹ (tons)	Required Backfill ² (tons)	Rock Slope Protection Fabric ^{7,9,10} (sq. ft.)	Rock Slope Protection ^{7,8,10} (tons)	Specific Design Required? (Yes/No)
1	3	7	3	10	3	Tidal	No	Yes	14	4	15	305	38	Yes
2	3	7	1	400	3	Tidal	Yes	No	140	91	365	5,891	687	No
3	3.5	7	1	155	3.5	Tidal	Yes	No	58	43	174	2,392	289	No
4	5	7	1	82	5	Tidal	Yes	No	37	38	152	1,440	188	No
5	8	8	1	200	8	Tidal	No	Yes	339	162	648	4,360	630	No
6	6	8	1	30	4	Non-tidal	Yes	No	12	10	41	0	0	No
7.1	7	7	1	300	5	Non-tidal	Yes	No	135	165	658	0	0	No
7.2	7	7	1	50	4	Non-tidal	Yes	No	20	25	101	0	0	No
7.3	6	7	1	100	4	Non-tidal	Yes	No	40	44	176	0	0	No
7.4	6	8	2	200	2	Non-tidal	Yes	No	80	74	297	0	0	No
8	6	8	1	40	2	Tidal	No	Yes	51	9	38	759	103	No
9	10	5	1.5	900	7	Tidal	Yes	No	653	1,276	5103	27,760	4,271	No
10														
11														
12														
13.1	5	7	1	100	4	Tidal	Yes	No	40	37	149	1,756	229	No
13.2	5	7	1	120	4	Tidal	Yes	No	48	45	178	2,107	275	No
13.3	6	7	1	120	5	Tidal	Yes	No	54	56	223	2,276	309	No
HBMWD to Jackson Ranch Road. 10 feet wide 12" average fill for 6,000 linear feet						Non-tidal	No	No	0	1,125	4500	0	0	No
14.1	8	10	1	20	2.5	Tidal	No	Yes	34	1	4	436	63	No
14.2	Damaged Tide Gate													Yes
15	8	10	1	40	1.5	Tidal	No	Yes	68	1	3	872	126	No
16	8	10	1	60	1.5	Tidal	No	Yes	102	1	5	1,308	189	No
17	8	10	2	20 +/- smaller damage sites. 1 cu. yd. fill per site, rip rap entire slope.	2	Tidal	No	Yes	322	9	36	3,997	598	No
18.1	8	10	2	2 medium damage sites. 2 cu. yd. fill per site, rip rap entire slope.	3	Tidal	No	Yes	54	2	7	666	100	No
18.2	8	10	1	20	5	Tidal	No	Yes	34	4	17	436	63	No
19	8	10	2	2 smaller damage sites. 1 cu. yd. fill per site, rip rap entire slope	2	Tidal	No	Yes	32	1	4	400	60	No
20	8	10	2	4 medium damage sites. 2 cu. yd. fill per site, rip rap entire slope.	3	Tidal	No	Yes	107	4	15	1,332	199	No
21.1	8	10	2	1 smaller damage site. 1 cu. yd. fill, rip rap entire slope	2	Tidal	No	Yes	16	0	2	200	30	No
21.2	8	10	2	1 smaller damage site. 1 cu. yd. fill, rip rap entire slope	2	Tidal	No	Yes	16	0	2	200	30	No
22	8	10	3	30	3	Tidal	No	Yes	114	7	27	1,388	211	No

Table 1

Sheet 12 of 13

File No. YDD 23512

Table 1 - Construction Quantity Breakdown

Failure or Damage Area	Average Levee Height (feet)	Average Top of Damaged Levee Width (feet)	Sideslope (#feet:1)	Length of Damage (feet)	Average Depth of Damage (feet)	Location of Damage	Clearing and Grubbing Required?	Debris Removal Required?	Clear, Grub and Debris Removal ^{3,4,5,6} (tons)	Excavation ¹ (tons)	Required Backfill ² (tons)	Rock Slope Protection Fabric ^{7,8,10} (sq. ft.)	Rock Slope Protection ^{7,8,10} (tons)	Specific Design Required? (Yes/No)
23	8	10	2	25 +/- smaller damage sites. 1 cu. yd. fill per site, rip rap entire slope.	2	Tidal	No	Yes	402	11	46	4,996	747	No
24	8	10	2	7 medium damage sites. 2 cu. yd. fill per site, rip rap entire slope.	3	Tidal	No	Yes	188	6	26	2,331	349	No
25	8	10	1	150	6	Tidal	No	Yes	255	46	182	3,270	473	No
26	8	10	2	1 smaller damage site. 1 cu. yd. fill, rip rap entire slope	2	Tidal	No	Yes	16	0	2	200	30	No
27	8	10	2	60	4	Tidal	No	Yes	161	16	65	1,998	299	No
28.1	8	10	2	15	4	Tidal	No	Yes	40	4	16	500	75	No
28.2	8	10	3	20	2	Tidal	No	Yes	76	2	8	925	141	No
29.1	8	10	2	15	2	Tidal	No	Yes	40	1	4	500	75	No
29.2	8	10	2	150	8	Tidal	No	Yes	402	162	648	4,996	747	No
30	8	10	3	150	4	Tidal	No	Yes	569	61	243	6,941	1,057	No
31	8	10	2	2 smaller damage sites. 1 cu. yd. fill per site, rip rap entire slope	2	Tidal	No	Yes	32	1	4	400	60	No
32	8	10	1	80	5	Tidal	No	Yes	136	17	68	1,744	252	No
33	6	10	2	2 medium damage sites. 2 cu. yd. fill per site, rip rap entire slope.	3	Tidal	No	Yes	40	2	7	577	82	No
34	4	10	2	40	2	Tidal	No	Yes	54	3	11	974	127	No
35	3	10	3	170	2	Tidal	No	Yes	242	17	69	5,178	653	No
36														
37	5	10	2	1 medium damage site. 2 cu. yd fill, rip rap entire slope.	3	Tidal	No	Yes	17	1	4	266	36	No
38	5	10	3	60	2	Tidal	No	Yes	142	6	24	2,207	307	No
39	5	10	2	60	4	Tidal	No	Yes	101	16	65	1,596	217	No
40	6	10	3	80	8	Tidal	No	Yes	228	130	518	3,196	461	No
41.1	6	10	3	60	3	Tidal	No	Yes	171	14	55	2,397	346	No
41.2	6	10	3	60	3	Tidal	No	Yes	171	14	55	2,397	346	No
42	6	10	1.5	20	8	Tidal	No	Yes	32	16	65	473	66	No
43	6	10	2	300	8	Tidal	No	Yes	604	324	1296	8,650	1,223	No
44														

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File No. 400235A

Table 1 - Construction Quantity Breakdown

Failure or Damage Area	Average Levee Height (feet)	Average Top of Damaged Levee Width (feet)	Sideslope (#feet:1)	Length of Damage (feet)	Average Depth of Damage (feet)	Location of Damage	Clearing and Grubbing Required?	Debris Removal Required?	Clear, Grub and Debris Removal ^{3,4,5,6} (tons)	Excavation ¹ (tons)	Required Backfill ² (tons)	Rock Slope Protection Fabric ^{7,9,10} (sq. ft.)	Rock Slope Protection ^{7,8,10} (tons)	Specific Design Required? (Yes/No)	
45	8	10	2	1 medium damage site. 2 cu. yd fill, rip rap entire slope.	3	Tidal	No	Yes	27	1	4	333	50	No	
46	8	10	1	80	4	Tidal	No	Yes	136	11	43	1,744	252	No	
47	8	10	1	110	4.5	Tidal	Yes	No	47	19	75	2,398	347	No	
48	6	10	1	45	5	Tidal	Yes	No	20	9	38	854	116	No	
49	8	10	1	85	7.5	Tidal	Yes	No	49	40	161	1,853	268	No	
50	8	10	2	1 medium damage site. 2 cu. yd. fill, rip rap entire slope	2	Tidal	No	Yes	27	1	4	333	50	No	
51	8	10	1	40	6.5	Tidal	No	Yes	68	14	57	872	126	No	
52	6	10	3	300	5	Tidal	No	Yes	854	190	759	11,984	1,729	No	
53	8	10	2	100	4	Tidal	No	Yes	268	27	108	3,330	498	No	
54	8	10	1	400	4	Non-tidal	Yes	No	200	432	432	0	0	No	
55															
56	Damaged Tide Gate													Yes	
57.1	6	10	1	75	5	Non-tidal	Yes	No	34	16	63	0	0	No	
57.2	6	10	3	200	4.5	Non-tidal	Yes	No	175	103	410	0	0	No	
58	4	10	2	105	2	Tidal	Yes	No	42	7	28	2,558	333	No	
59															
60.1	6	9	2	3000	3.5	Tidal	No	Yes	6037	1,152	4607	86,498	12,226	No	
60.2	8	10	1	300	4	Non-tidal	Yes	No	150	324	324	0	0	No	
60.3	8	10	1	500	4	Non-tidal	Yes	No	250	540	540	0	0	No	
61															
62															
63															
64															
65	8	10	1	225	4	Tidal	No	Yes	382	30	122	4,905	709	No	
66	5	10	1	30	2	Tidal	No	Yes	32	1	4	527	69	No	
67	8	10	1	450	5.5	Tidal	No	Yes	764	115	459	9,810	1,418	No	
68															
69	6	10	2	150	2.5	Tidal	No	Yes	302	16	63	4,325	611	No	
70															
Total Project Length				20,212 linear feet (3.8 linear miles)					Totals	16,602	7,152 (3,924 yd ³)	24,719 (13,563 yd ³)	249,313	35,654 (19,563 yd ³)	

- 1 Excavation of ex levee prior to backfill (% of backfill) 25%
- 2 Backfill density is assumed to be 135 # per cu.ft.
- 3 Clearing and Grubbing is assumed to be 100 # per sq.ft.
- 4 Width of Clearing and Grubbing is Width of Failure plus 4 feet
- 5 Debris Removal is assumed to be 150 # per cu.ft.
- 6 Debris Removal thickness is assumed to be 2 feet
- 7 Rock Slope Protection depth is assumed to be 3 feet
- 8 Rock Slope Protection is assumed to be 135 # per cu.ft.
- 9 Rock Slope Protection Fabric keyed into top 2 feet
- 10 Rock Slope Protection Fabric keyed into bottom of slope 3 feet (vertical depth)
- * These notes do not pertain to fissure or top of levee repairs.

- Spot repair
- Fissure
- Top of Levee
- Specific Design Req'd
- Not Used

Sheet 13 of 13

Table 1