



# Federal Emergency Management Agency

Washington, D.C. 20472

April 29, 2011

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

The Honorable Tony Kennon  
Mayor, City of Orange Beach  
Post Office Box 458  
Orange Beach, AL 36561

IN REPLY REFER TO:

Case No.: 11-04-0533P  
Community Name: City of Orange Beach, AL  
Community No.: 015011  
Effective Date of  
This Revision: **April 29, 2011**

Dear Mayor Kennon:

The Flood Insurance Rate Map for your community has been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panel(s) revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed which provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other attachments specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer for your community. If you have any technical questions regarding this LOMR, please contact the Director, Mitigation Division of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) in Atlanta, Georgia, at (770) 220-5400, or the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at <http://www.fema.gov/nfip>.

Sincerely,

*Beth A. Norton*

Beth A. Norton, Program Specialist  
Engineering Management Branch  
Federal Insurance and Mitigation Administration

For: Luis Rodriguez, P.E., Chief  
Engineering Management Branch  
Federal Insurance and Mitigation Administration

List of Enclosures:

Letter of Map Revision Determination Document  
Annotated Flood Insurance Rate Map

cc: (see attached list)

**RECEIVED**  
5-9-2011

PDF copy sent to Louise Smith

List of Courtesy Copies - City of Orange Beach, AL

Mr. Landon Smith, CBO,CFM  
Building Official/Floodplain Administrator  
City of Orange Beach

Mr. Phillip Hicks  
ADECA Office of Water Resources

Mr. Sayed Mahmoudpour, P.E.  
Senior Manager  
Flood Zone Correction Inc.

Ms. Jennifer Davison,  
Project Manager  
Flood Zone Correction, Inc.



# Federal Emergency Management Agency

Washington, D.C. 20472

## LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	City of Orange Beach Baldwin County Alabama	NO PROJECT	COASTAL ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 015011		
IDENTIFIER	Turquoise Place Condominium	APPROXIMATE LATITUDE & LONGITUDE: 30.273, -87.576 SOURCE: USGS QUADRANGLE      DATUM: NAD 27	
ANNOTATED MAPPING ENCLOSURES		ANNOTATED STUDY ENCLOSURES	
TYPE: FIRM*      NO.: 01003C0964L      DATE: July 17, 2007		NO REVISION TO THE FLOOD INSURANCE STUDY REPORT	

Enclosures reflect changes to flooding sources affected by this revision.

\* FIRM - Flood Insurance Rate Map; \*\* FBFM - Flood Boundary and Floodway Map; \*\*\* FHBM - Flood Hazard Boundary Map

### FLOODING SOURCE(S) & REVISED REACH(ES)

Gulf of Mexico - an area extending from approximately 190 feet to 430 feet south of Perdido Beach Boulevard and from 240 feet to 830 feet southwest of the intersection of Perdido Beach Boulevard and Jefferson Avenue.

### SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Gulf of Mexico	Zone VE	Zone X (unshaded)	NONE	YES
	*BFEs	BFEs	NONE	YES
	Zone VE	Zone VE	NONE	YES

\* BFEs - Base Flood Elevations

### DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 7390 Coca Cola Drive, Suite 240, Hanover, MD 21076. Additional Information about the NFIP is available on our website at <http://www.fema.gov/nfip>.

*Beth A. Norton*

Beth A. Norton, Program Specialist  
Engineering Management Branch  
Federal Insurance and Mitigation Administration



# Federal Emergency Management Agency

Washington, D.C. 20472

## LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

### COMMUNITY INFORMATION

#### APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

#### COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance stillwater elevations computed in the FIS for your community. A comprehensive restudy of your community's flood hazards could establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Brad Loar  
Director, Mitigation Division  
Federal Emergency Management Agency, Region IV  
Koger Center - Rutgers Building, 3003 Chamblee Tucker Road  
Atlanta, GA 30341  
(770) 220-5400

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 7390 Coca Cola Drive, Suite 240, Hanover, MD 21076. Additional Information about the NFIP is available on our website at <http://www.fema.gov/nfip>.

A handwritten signature in cursive script that reads "Beth A. Norton".

Beth A. Norton, Program Specialist  
Engineering Management Branch  
Federal Insurance and Mitigation Administration



Federal Emergency Management Agency  
Washington, D.C. 20472

**LETTER OF MAP REVISION  
DETERMINATION DOCUMENT (CONTINUED)**

**STATUS OF THE COMMUNITY NFIP MAPS**

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

The submitted information indicated that the corporate limits for your community have changed because of annexations. The subject area is shown on the above-referenced FIRM to be within the unincorporated areas of Baldwin County; however, the City of Orange Beach has annexed this area. We have not reflected these corporate limit changes in the LOMR.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 7390 Coca Cola Drive, Suite 240, Hanover, MD 21076. Additional information about the NFIP is available on our website at <http://www.fema.gov/nfip>.

*Beth A Norton*

Beth A. Norton, Program Specialist  
Engineering Management Branch  
Federal Insurance and Mitigation Administration



Federal Emergency Management Agency  
Washington, D.C. 20472

**LETTER OF MAP REVISION  
DETERMINATION DOCUMENT (CONTINUED)**

**PUBLIC NOTIFICATION OF REVISION**

**PUBLIC NOTIFICATION**

FLOODING SOURCE	LOCATION OF REFERENCED ELEVATION	BFE (FEET NAVD 88)		MAP PANEL NUMBER(S)
		EFFECTIVE	REVISED	
Gulf of Mexico	At a point approximately 660 feet southwest of the intersection of Perdido Beach Boulevard and Jefferson Avenue	13	12	01003C0964L

Within 90 days of the second publication in the local newspaper, any interested party may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. This revision is effective as of the date of this letter. However, until the 90-day period has elapsed, the revised BFEs presented in this LOMR may be changed.

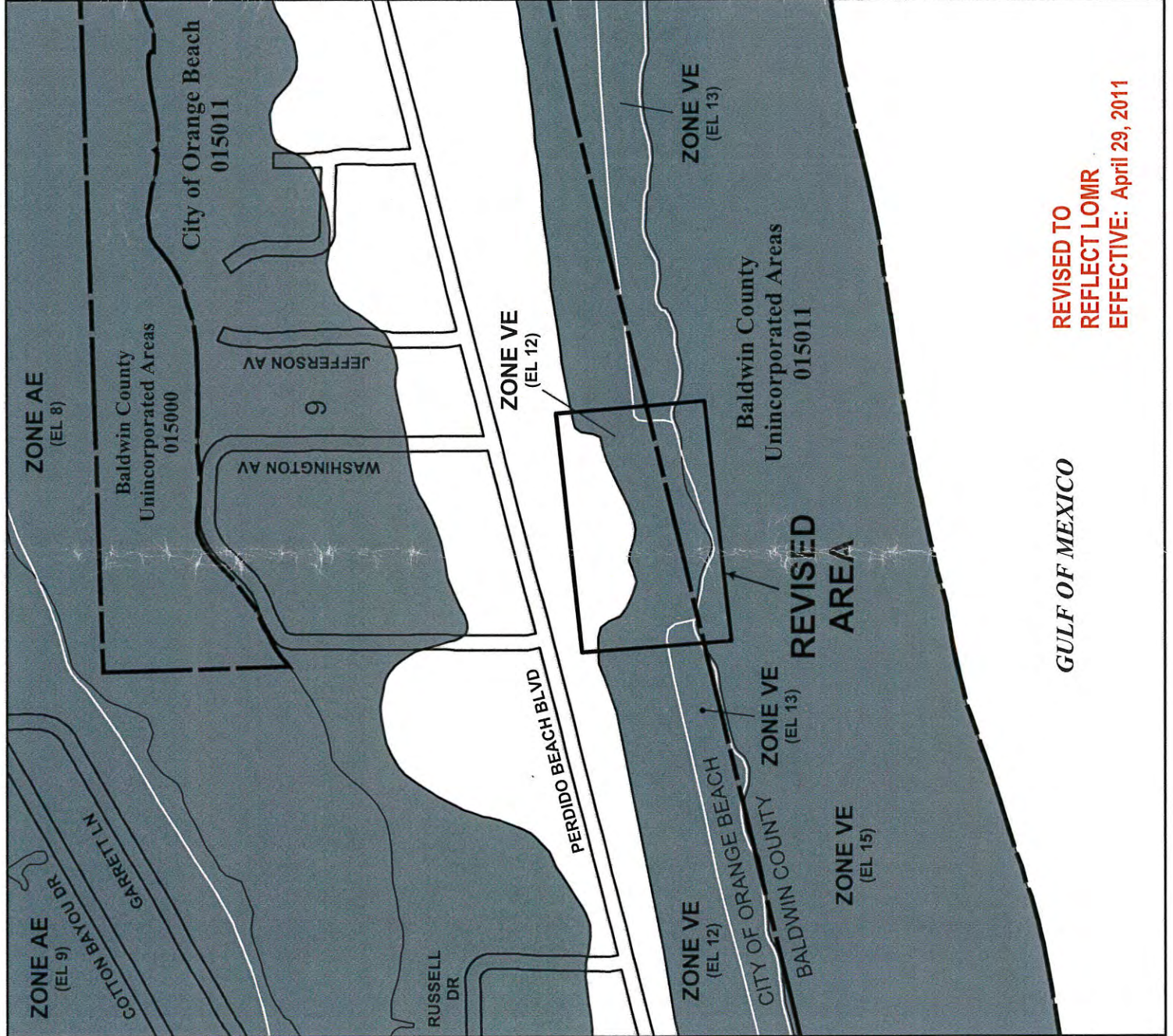
A notice of changes will be published in the *Federal Register*. A short notice also will be published in your local newspaper on or about the dates listed below. Please refer to FEMA's website at [https://www.floodmaps.fema.gov/fhm/Scripts/bfe\\_main.asp](https://www.floodmaps.fema.gov/fhm/Scripts/bfe_main.asp) for a more detailed description of proposed BFE changes, which will be posted approximately within a week of the date of this letter.

LOCAL NEWSPAPER      Name: *The Islander*  
Dates: 05/06 /2011 and 05/13/2011

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 7390 Coca Cola Drive, Suite 240, Hanover, MD 21076. Additional Information about the NFIP is available on our website at <http://www.fema.gov/nfip>.

*Beth A. Norton*

Beth A. Norton, Program Specialist  
Engineering Management Branch  
Federal Insurance and Mitigation Administration



**REVISED TO  
REFLECT LOMR  
EFFECTIVE: April 29, 2011**

**Legend**

-  1% annual chance (100-Year) Floodplain
-  1% annual chance (100-Year) Floodway
-  0.2% annual chance (500-Year) Floodplain



**NFIP**  
**NATIONAL FLOOD INSURANCE PROGRAM**

**PANEL 0964L**

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**BALDWIN COUNTY,**  
**ALABAMA**  
**AND INCORPORATED AREAS**

**PANEL 964 OF 1100**

(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

**CONTAINS:**

COMMUNITY	NUMBER	PANEL	SUFFIX
BALDWIN COUNTY	015000	0964	L
GULF SHORES, CITY OF	015005	0964	L
ORANGE BEACH, CITY OF	015011	0964	L

Notes to User: The Map Number shown below should be used when referring to the Community Number above should be used on insurance applications for the subject community.

**MAP REVISED**  
**JULY 17, 2007**

**MAP NUMBER**  
**01003C0964L**



State of Alabama  
Federal Emergency Management Agency

City of  
**Orange Beach**  
A L A B A M A  
Life is better here



April 5, 2011

**Lauren Clem**  
LOMR Delegation Coordinator  
FEMA PTS Contractor - BakerAECOM  
Michael Baker, Jr., Inc.  
13601 Eisenhower Avenue | Alexandria, VA 22304

Re: Turquoise Condominiums  
Case No.: 11-04-0533P  
Community: City of Orange Beach, Al.  
Community No.: 015011

Dear Ms. Clem:

This letter is provided per your request of March 17, 2011 in reference to the MT-2 application noted above. Our response comes to you in the form of a letter rather than a signed concurrence form due to our local knowledge of the storm surge characteristics at the subject property and our inability to concur that the property and improvements would be reasonably safe from flooding per the definition found in 44CFR.

We do acknowledge as you requested that the City of Orange Beach has reviewed the revision request and understands the effects of the revision on flooding conditions in the community. We have been provided with output from the modeling performed by Flood Zone Corrections, Inc and copies of the proposed FIRM revision. We respectfully defer to FEMA and their consultants to evaluate the proposal based on the data submitted.

For the City of Orange Beach,

Landon K. Smith, CBO, CFM  
**BUILDING OFFICIAL / FLOODPLAIN ADMINISTRATOR**

cc: Jennifer Davison, Project Manager  
Flood Zone Correction, Inc.  
1801 S. Australian Avenue, Ste. 100  
West Palm Beach, FL 33409

James K. Meredith, CFM  
Alabama, State NFIP Coordinator

via email

**COMMUNITY DEVELOPMENT**  
**P.O. BOX 2432, 4101 ORANGE BEACH BLVD.**  
**ORANGE BEACH, ALABAMA 36561**  
**PHONE: 251.981.2610 FAX: 251.981.3725**





FLOOD ZONE CORRECTION, INC.

January 25, 2011

Mr. Syed Qayum, CFM

LOMR Technical Manager

BakerAECOM

Re: LOMR Case No: 11-04-0533P

Community: City of Orange Beach, AL

Community No: 015011

Dear Mr. Qayum:

This letter is in response to your correspondence letter dated January 11, 2011 requesting additional information regarding LOMR Case No: 11-04-0533P.

Enclosed please find our responses and revised information in support of your request for additional information:

**Response to Item 1:**

Attached you will find the previously submitted MT-2 Form 1 entitled, "Overview and Concurrence Form" along with an email response from the community official. We corresponded with the community official (Mr. Landon Smith) and requested his signature, however, he was unwilling to sign said form. Based on the instructions for the MT-2 forms, it states on page 7 "If the community or communities disagree with the proposed revision, a signed statement should be attached to the request explaining the reasons or basis for disagreement." It should also be noted that if the community has reviewed the request and declined to concur, the application can be forwarded for review without the local community concurrence in accordance with the Code of Federal Regulations 44 § 65.4(b). Attached you will also find the revised MT-2 Form 4 entitled, "Coastal Analysis Form" which now reflects our most recent revisions to the CHAMP modeling.

**Response to Item 2:**

We have revised the Erosion, WHAFIS, and RUNUP models in CHAMP using more detailed transect information in an attempt to provide even more accurate results than previously submitted. All revisions were made in accordance with the procedures which are outlined in FEMA’s Guidelines and Specifications for Flood Hazard Mapping Partners (February 2007) as well as the CHAMP User Manual. With regard to the “Sandy Bluff Feature” which has been identified in your letter to be landward of the Primary Frontal Dune (PFD), we believe that this area of the property parcel has been erroneously identified as a sandy bluff due to the natural high elevation of this area within the parcel. It should also be noted that the property’s current and historic Flood Insurance Rate Maps for Baldwin County Alabama and Incorporated Areas (Map Panel No. 01003C0964L, Effective Date July 17, 2007 and Map Panel No. 01003C0839K, Effective Date June 17, 2002) show the subject building mostly in an X-Zone within this area of the parcel as well. Furthermore, the area that your letter has identified as a sandy bluff does not match the bluff description found in FEMA’s Guidelines and Specifications for Flood Hazard Mapping Partners (February 2007) or the U.S. Army Corps of Engineers Coastal Engineering Manual. Please see Graphics 1 and 2 below which provide further evidence that the above referenced area landward of the PFD is not a sandy bluff at all, rather it is an area of higher elevation both prior to and after construction of the subject building.

**Graphic 1**



## Graphic 2

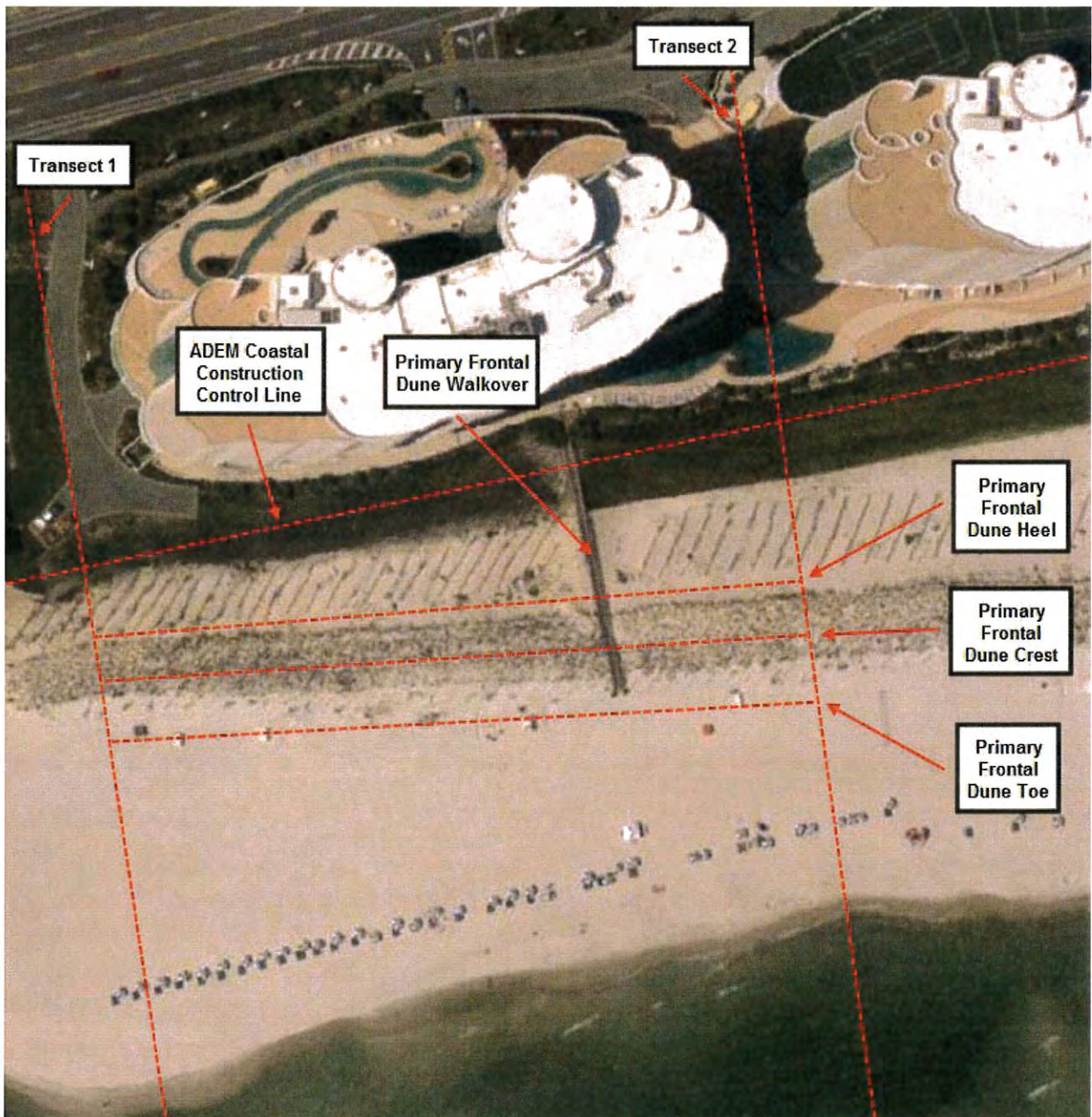


The above graphics as well as the enclosed asbuilt survey by Lucido & Oliver dated 5/30/2008, which we have used as a base map in order to generate out topographic work map, also show that the subject building is located landward of the Alabama Department of Environmental Management (ADEM) Coastal Construction Control Line (CCCL), which by definition places the structure landward of the entire Primary Dune System. The asbuilt survey also delineates the effective flood zones, however, during the process of creating an overlay it became apparent that the zones on the survey were erroneously delineated. The proper delineation of the effective flood zones have been shown on the topographic work map with a purple line with the zones called out on the Western side of said map. The ADEM Coastal Monuments that are closest to the subject building are BC-38, BC-39, and BC-40. The subject building was designed and constructed landward of the ADEM CCCL and Primary Dune System in accordance with Sections 8(1) and 8(2) of the City of Orange Beach Coastal Construction Ordinance No. 2005-943 as well as Section 335-8-2-.08(1) of the ADEM Administrative Code R.335-8-2-08(1) which state that no person shall remove primary dune or beach sands and/or vegetation or otherwise alter the beach and primary dune system, construct any new structure, or make any substantial improvement to any existing structure, on, beneath or above the surface of any land located between mean high tide and

the construction control line, except for the construction of an approved dune enhancement or beach nourishment project or dune walkovers, sand fencing, or piers which are used for regional benefit.

In addition, as depicted in Graphics 3 and 4 below, the Primary Frontal Dune Walkover clearly goes over the entire PFD as it was constructed to provide adequate protection and preservation to the Primary Dune System in accordance with the City of Orange Beach Coastal Construction Ordinance No. 2005-943 and the ADEM Administrative Code R.335-8-1-.02(z) which define the "Dune Walkover" as a raised walkway constructed for the purpose of protecting the beach and dune system between mean high tide and the construction control line from damage that may result from anticipated pedestrian traffic to the beach.

**Graphic 3**



**Graphic 4**



**Response to Item 3:**

The transects have been revised in order to show more detailed and accurate cross sections of the beach profiles. All enclosed maps have also been revised and the contour map reflects the correct base (1% annual chance) floodplain boundary delineations that correspond to the CHAMP model output.

**Response to Item 4:**

All certified work maps have been revised. Please see the response to Item 2 concerning the area that was identified as being a sandy bluff. The boundary delineations of the effective base floodplain have been depicted on the work maps as a purple line with the zones appropriately noted.

**Response to Item 5:**

The revised annotated Flood Insurance Rate Map (FIRM) has been resubmitted as requested showing only the proposed base floodplain boundary delineations for the Coastal High Hazard Area and the proposed Special Flood Hazard Area and how they tie into the effective base floodplain boundary delineations along the Gulf of Mexico shoreline.

In conclusion, the results from the revised Erosion analysis still indicate dune removal cases for both transects and the results from the revised RUNUP analysis show no overtopping as the 2% runup does not exceed the dune peak elevation. The results also indicate that the heel of the PFD is the most landward limit of the 4 criteria listed in Section D.2.11.2.1 of FEMA's Guidelines and Specifications for Flood Hazard Mapping Partners (February 2007) and therefore this location was used to map the landward extent of the VE-Zone. Due to the AE-Zone not meeting the minimum zone width requirement for the scale of this FIRM, the VE-Zone has been assigned to the AE-Zone area, thus shifting the VE-Zone slightly further inland. Based on the revised analyses, the VE-Zone has shifted a maximum of 106 feet seaward of its current location on the Western side of the property and a maximum of 75 feet seaward of its current location on the Eastern side of the property. Therefore, the subject building is located in the revised X-Unshaded Zone because the elevations are above the 500-year SWEL.

Thank you for your attention to and consideration of our responses to your letter in support of our request for a Letter of Map Revision. Please do not hesitate to contact me if any additional information is required.

Sincerely,

Nader Mahmoudpour, P.E.



**U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY  
OVERVIEW & CONCURRENCE FORM**

*O.M.B No. 1660-0016  
Expires: 12/31/2010*

**PAPERWORK BURDEN DISCLOSURE NOTICE**

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

**A. REQUESTED RESPONSE FROM DHS-FEMA**

This request is for a (check one):

- CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).
- LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

**B. OVERVIEW**

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301	City of Katy	TX	480301	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
015011	City of Orange Beach	AL	01003C	0964L	07/17/07

2. a. Flooding Source: Gulf of Mexico

- b. Types of Flooding:  Riverine  Coastal  Shallow Flooding (e.g., Zones AO and AH)  
 Alluvial fan  Lakes  Other (Attach Description)

3. Project Name/Identifier: Turquoise Place Condominium

4. FEMA zone designations affected: VE and X (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

- Physical Change  Improved Methodology/Data  Regulatory Floodway Revision  Base Map Changes  
 Coastal Analysis  Hydraulic Analysis  Hydrologic Analysis  Corrections  
 Weir-Dam Changes  Levee Certification  Alluvial Fan Analysis  Natural Changes  
 New Topographic Data  Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following structures (check all that apply)

- Structures:  Channelization  Levee/Floodwall  Bridge/Culvert  
 Dam  Fill  Other (Attach Description)

**C. REVIEW FEE**

Has the review fee for the appropriate request category been included?	<input type="checkbox"/> Yes	Fee amount: \$_____
	<input type="checkbox"/> No, Attach Explanation	

Please see the DHS-FEMA Web site at [http://www.fema.gov/plan/prevent/fhm/frm\\_fees.shtm](http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm) for Fee Amounts and Exemptions.

**D. SIGNATURE**

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Nader Mahmoudpour, P.E.	Company: Flood Zone Correction, Inc.	
Mailing Address: 1801 South Australian Avenue, Suite 100 West Palm Beach, FL 33409	Daytime Telephone No.: (561) 616-8443	Fax No.: (561) 616-8859
	E-Mail Address: n.mahmoudpour@gmail.com	
Signature of Requester (required): <i>S. G. Mahmoudpour</i>	Date: 1/24/2011	

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: Landon Smith, CBO, CFM		Community Name: City of Orange Beach	
Mailing Address: P.O. Box 458 Orange Beach, AL 36561	PO Box 458 Orange Beach, AL 36561	Daytime Telephone No.: (251) 981-2610	Fax No.: (251) 981-6981
	E-Mail Address: lsmith@cityoforangebeach.com		
Community Official's Signature (required): See attached email		Date: 11/8/2010	


**CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR**

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting data. All documents submitted in support of this request are correct to the best of my knowledge. All analyses have been performed correctly and in accordance with sound engineering practices. All project works are designed in accordance with sound engineering practices to provide protection from the 1% annual chance flood. If "as-built" conditions data/plan provided, then the structure(s) has been built according to the plans being certified, is in place, and is fully functioning. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Sayed G. Mahmoudpour	License No.: 039623	Expiration Date: 08/31/2011
Company Name: Flood Zone Correction, Inc.	Telephone No.: (561) 616-8443	Fax No.: (561) 616-8859
Signature: <i>S. G. Mahmoudpour</i>	Date: 1/24/2011	

Ensure the forms that are appropriate to your revision request are included in your submittal.

<u>Form Name and (Number)</u>	<u>Required If ...</u>
<input type="checkbox"/> Riverine Hydrology and Hydraulics Form (Form 2)	New or revised discharges or water-surface elevations
<input type="checkbox"/> Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
<input checked="" type="checkbox"/> Coastal Analysis Form (Form 4)	New or revised coastal elevations
<input type="checkbox"/> Coastal Structures Form (Form 5)	Addition/revision of coastal structure
<input type="checkbox"/> Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans





**PAPERWORK REDUCTION ACT**

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Gulf of Mexico

**Note:** Fill out one form for each flooding source studied

**A. COASTLINE TO BE REVISED**

Describe limits of study area: At the shoreline approximately (3290' - 3740') ENE of Orange Beach Blvd.

**B. EFFECTIVE FIS**

The area being revised in the effective FIS was studied by detailed methods using (check all that apply):

- |   |   |
|---|---|
| <input type="checkbox"/> Storm surge modeling                       | <input type="checkbox"/> Wave setup computations                    |
| <input checked="" type="checkbox"/> Wave height computations        | <input checked="" type="checkbox"/> Wave runup computations         |
| <input checked="" type="checkbox"/> Wave overtopping computations   | <input checked="" type="checkbox"/> Dune erosion computations       |
| <input checked="" type="checkbox"/> Primary Frontal Dune Assessment | <input type="checkbox"/> N/A (area not studied by detailed methods) |

**C. REVISED ANALYSIS**

1. Number of transects in revised analysis: 2

2. Information used to prepare the revision (check all that apply):

- Wave setup analyses (complete Items 3, 4, and 5 below)
- Stillwater elevation determinations (complete Item 3)
- Erosion considerations (complete Item 4)
- Wave runup analysis (complete Items 4 and 5)
- Wave height analysis (complete Items 4 and 5)
- Wave overtopping assessment (complete Items 4 and 5)
- More detailed topographic information (complete Section E)
- Shore protection structures (attach completed Coastal Structures Form - Form 5)
- Primary frontal dune assessment (complete Item 5)
- Other, attach basis of revision request with explanation

3. Stillwater Elevation Determination

a. How were stillwater elevations determined?

- Gage analysis (If revised gage analysis was used, provide copies of gage data and revised analysis.)
- Storm surge analysis
- Other (Describe): Used the 2007 Baldwin County FIS Storm Surge Data

b. Specify what datum was used in the calculations: NAVD 88

If not the FIS datum, have the calculations been adjusted to the FIS datum?  Yes  No Conversion factor:

c. If revised storm surge analysis, was FEMA's storm surge model utilized?  Yes  No

d. If FEMA's storm surge model was used, attach a detailed description of the differences between the current and the revised analyses, and why the revised analysis should replace the current analysis.

e. If wave setup was computed, attach a description of methodology used.

Amount of wave setup added to stillwater elevation: 2.2 feet

### C. REVISED ANALYSIS (CONTINUED)

#### 4. Revised Analysis (i.e., erosion, wave height, wave runup, primary frontal dune, and wave overtopping)

If DHS-FEMA procedures were utilized to perform the revision, attach a detailed description of differences between the current and the revised analyses, and why the revised analysis should replace the current analysis.

If DHS-FEMA procedures were not utilized to perform the revision, provide full documentation on methodology and/or models used; including operational program, detailed differences between methodology and/or models utilized and DHS-FEMA's methodology and/or models. Also, attach an explanation of why new methodology and/or models should replace current methodology and/or models.

If revision reflects more detailed topographic information and fill has been/will be placed in a V Zone, and is not protected from erosion by a shore protection structure, provide a detailed description of how the fill has been treated in the revised analysis.

#### 5. Wave Runup, Wave Height, And Wave Overtopping Analysis

Wave height analyses along a transect are greatly affected by starting wave conditions that propagate inland. Wave runup and overtopping analyses are typically considered when wave heights and/or wave runup are close to or greater than the crest of shore protection structures or natural land forms.

a. Was an analysis performed to determine starting wave height and period for input into WHAFIS?

Yes  No

If Yes, attach an explanation of the method utilized. If No, explain why these analyses were not performed.

b. Was wave setup included in wave height analysis and removed for erosion and wave runup analyses?

Yes  No

c. Was an overtopping analysis performed for any coastal shore protection structures or natural land forms that may be overtopped?

Yes  No

If Yes, attach an explanation of the methodology utilized and describe in detail the results of the analysis.

If overtopping was not analyzed, attach an explanation for why these analyses were not performed.

### D. RESULTS

1. Stillwater storm surge elevation: 7.7 feet NAVD 88 Datum

2. Wave setup: 2.2 feet

3. Starting deep-water significant wave condition:  
height: 34.28 feet period: 12.49 sec

4. Maximum wave height elevation: 15.2 feet

5. Maximum wave runup elevation: 9.1 feet

6. Estimated amount of maximum overtopping: NA cfs/feet

7. The areas designated as coastal high hazard areas (V Zones) have:  
 increased  decreased  both

Attach a description where they have increased and/or decreased.

8. As a result of the revised analyses, the V Zone location has shifted a maximum of 106 feet seaward and 0.0 feet landward of its existing position.

9. The Base Flood Elevations have:  
 increased  decreased

a. What was the greatest increase? 0.0 feet

b. What was the greatest decrease? 3.0 feet

10. The special flood hazard area has:  
 increased  decreased  both

Attach a description where it has increased or decreased.

### E. MAPPING REQUIREMENTS

A certified topographic map must be submitted showing the following information (where applicable): effective, existing conditions, and proposed conditions 1%-annual-chance floodplain boundaries, revised shoreline due to either erosion or accretion, location and alignment of all transects, correct location and alignment of any structures, current community easements and boundaries, boundary of the requester's property, certification of a professional engineer registered in the subject State, location and description of reference marks, and the referenced vertical datum (NGVD, NAVD, etc.).

Note that the existing or proposed conditions floodplain boundaries to be shown on the revised FIRM must tie-in with the effective floodplain boundaries. Please attach a copy of the current FIRM annotated to show the revised 1%-annual-chance floodplain boundaries that tie-in with effective 1%-annual-chance floodplain boundaries along the entire extent of the area of revision.

						mg.dat
0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.23	.0042	.0043	.0043	.041	300	277
0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.39	.0184	.0143	.746	.746	45.4	43.5
1.86	.0175	.0139	.33	.33	36.8	39.5
0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.03	.0025	.0025	.0519	.0519	409	376
0.0	0.0	0.0	0.0	0.0	0.0	0.0
.78	.0039	.0037	-.285	-.285	211	201
1.23	.0042	.0043	.0413	.0413	300	277
2.45	.0095	.0007	2.4	2.4	147	917
1.06	.0103	.0101	.562	.562	36.1	31.7
2.21	.0169	.0130	.277	.277	17.7	14.6
0.0	0.0	0.0	0.0	0.0	0.0	0.0
.85	.0019	.0020	.0338	.0338	327	306
0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	.0038	.0037	.213	.213	243	230
0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.95	.0095	.0007	2.4	2.4	147	917
1.63	.0141	.0112	.428	.428	11.8	16.2
3.2	.0183	.0132	.284	.284	10	12.5
8.2	.0492	.0271	.283	.283	5.56	7.41
1.65	.0019	.0023	-.497	-.497	236	207
7.5	.0656	.0371	.283	.283	5.8	7.64
1	.0038	.0038	.0213	.0213	248	230
0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.63	.0141	.0112	.428	.428	11.8	16.2
3.2	.0183	.0132	.284	.284	10	12.5
0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	.0260	.0157	.283	.283	5.76	7.36
0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.95	.0095	.0007	2.4	2.4	147	917
0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.58	.0026	.0042	-.497	-.497	236	207
0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.08	.0035	.0036	-.19	-.19	102	94.6
0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	.0106	.0007	2.39	2.39	83.3	975
1.67	.0141	.0112	.43	.43	21.3	20.9
3.2	.0183	.0132	.284	.284	10	12.5
4	.0267	.0179	.284	.284	6.76	8.17
1.88	.0016	.0023	-.565	-.565	333	3646
0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.08	.0035	.0036	-.19	-.19	102	94.6
0.0	0.0	0.0	0.0	0.0	0.0	0.0

2.95	.0095	.0007	2.4	147	917	mg.dat	
2.62	.0211	.0108	.7	16.3	16.3	-1.8	
3.2	.0183	.0132	.284	10	12.5	-.0001	
0.0	0.0	0.0	0.0	0.0	0.0	-.2035	
1.88	.0019	.0023	-.565	333	3646	0.0	
.6	.35	5.84				-3.79	
.5	.25	1.75					
.83	.42	.8					
.5	.5	0					
.4	.2	1.59					
.4	.2	1.59					
.57	.22	1.41					
.5	.5	1.38					
CLAD	DIST	JUNM	JUNR	SALM	SALT	SCYN	SPAT

12.0  
-36.1-6682. 1.  
-26.2-5682. 1.  
-23. -4045. 1.  
-19.7-2364. 1.  
-16.4-727. 1.  
-14. -437. 1.  
-13. -395. 1.  
-3. -57. 1.  
-2. -27. 1.  
-1. -5. 1.  
8.4 246. 1.  
10. 267. 1.  
12.8 283. 1.  
15.4 300. 1.  
16.7 309. 1.  
1 18.5 331. 1.  
7.7 20.4 10.1  
7.7 20.4 10.6  
7.7 20.4 11.1  
7.7 21.5 10.1  
7.7 21.5 10.6  
7.7 21.5 11.1  
7.7 22.5 10.1  
7.7 22.5 10.6  
7.7 22.5 11.1

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CROSS SECTION PROFILE

	LENGTH	ELEV.	SLOPE	ROUGHNESS
1	-6682.0	-36.0	100.00	1.00
2	-5682.0	-26.0	545.67	1.00
3	-4045.0	-23.0	420.25	1.00
4	-2364.0	-19.0	545.67	1.00
5	-727.0	-16.0	145.00	1.00
6	-437.0	-14.0	42.00	1.00
7	-395.0	-13.0	33.80	1.00
8	-57.0	-3.0	30.00	1.00
9	-27.0	-2.0	22.00	1.00
10	-5.0	-1.0	26.70	1.00
11	246.0	8.4	13.13	1.00
12	267.0	10.0	5.71	1.00
13	283.0	12.8	6.54	1.00
14	300.0	15.4	6.92	1.00
15	309.0	16.7	12.22	1.00
16	331.0	18.5		

LAST SLOPE 12.00 LAST SLOPE 12.00  
 \*\* WAVE RUNUP-VERSION 2.0 \*\* LAST ROUGHNESS 1.00 \*\*

R1.OUT

OUTPUT TABLE

ABOVE LEVEL	INPUT PARAMETERS				RUNUP RESULTS			
	WATER LEVEL BREAKER ABOVE DATUM DEPTH (FT.)	DEEP WATER WAVE HEIGHT (FT.)	WAVE PERIOD (SEC.)	BREAKING SLOPE NUMBER	RUNUP SLOPE NUMBER	RUNUP WATER (FT.)		
7.70 31.43	20.40	10.10	2	10	.61			
7.70 31.85	20.40	10.60	2	10	.61			
7.70 32.26	20.40	11.10	2	10	.61			
7.70 32.90	21.50	10.10	2	10	.64			
7.70 33.32	21.50	10.60	2	10	.64			
7.70 33.75	21.50	11.10	1	10	.64			
7.70 34.22	22.50	10.10	1	10	.68			
7.70 34.66	22.50	10.60	1	10	.68			
7.70 35.10	22.50	11.10	1	10	.68			

```
7.0 -36.1-6682. 1.  
-26.2-5682. 1.  
-23. -4045. 1.  
-19.7-2364. 1.  
-16.4-727. 1.  
-15. -314. 1.  
 3.2 34. 1.  
 4.7 60. 1.  
 5.3 78. 1.  
 6.2 114. 1.  
 7.1 157. 1.  
 8.6 230. 1.  
 9.8 315. 1.  
11.4 328. 1.  
 1 15.2 356. 1.  
 7.7 20.4 10.1  
 7.7 20.4 10.6  
 7.7 20.4 11.1  
 7.7 21.5 10.1  
 7.7 21.5 10.6  
 7.7 21.5 11.1  
 7.7 22.5 10.1  
 7.7 22.5 10.6  
 7.7 22.5 11.1
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CLIENT- PROJECT- RUN 2 PAGE 1

R2.OUT  
 \*\* WAVE RUNUP-VERSION 2.0 \*\*  
 ENGINEERED BY

\*\*\*\*\*

CROSS SECTION PROFILE

	LENGTH	ELEV.	SLOPE	ROUGHNESS
1	-6682.0	-36.0	100.00	1.00
2	-5682.0	-26.0	545.67	1.00
3	-4045.0	-23.0	420.25	1.00
4	-2364.0	-19.0	545.67	1.00
5	-727.0	-16.0	413.00	1.00
6	-314.0	-15.0	20.93	1.00
7	.0	.0	10.63	1.00
8	34.0	3.2	17.33	1.00
9	60.0	4.7	30.00	1.00
10	78.0	5.3	40.00	1.00
11	114.0	6.2	47.78	1.00
12	157.0	7.1	48.67	1.00
13	230.0	8.6	70.83	1.00
14	315.0	9.8	8.13	1.00
15	328.0	11.4	7.37	1.00
16	356.0	15.2		

LAST SLOPE 7.00 \*\* LAST ROUGHNESS 1.00 \*\*  
 WAVE RUNUP-VERSION 2.0 \*\*

ENGINEERED BY

CLIENT- PROJECT- RUN 2 PAGE 2



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- Transect: 1 Date: 1/20/2011
IE 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
IF 11 2.80 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
IF 22 4.60 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
IF 53 5.70 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
IF 105 5.90 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
IF 155 6.40 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
IF 179 7.30 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
IF 243 8.59 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
IF 246 8.40 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
IF 266 9.90 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
AS 267 10.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
AS 283 12.80 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
AS 300 15.40 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
AS 309 16.70 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
AS 331 18.52 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
AS 564 19.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
ET

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WAVE HEIGHT COMPUTATIONS FOR FLOOD INSURANCE STUDIES (WHAFIS VERSION 4.0G, 08\_2007) w1.out  
 Executed on: Thu Jan 20 17:32:41 2011  
 Input file: L:\Projects\Turquoise Project\RAI Submittal 2\CHAMP\Output\Turquoise Project\w1.dat  
 Output file: L:\Projects\Turquoise Project\RAI Submittal 2\CHAMP\Output\Turquoise Project\w1.out

- Transect: 1 Date: 1/20/2011

THIS IS A 100-YEAR CASE

	PART1 INPUT									
IE	0.000	0.000	0.000	4.600	9.900	54.800	12.490	0.000	0.000	0.000
0.255	0.000	2.800	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
IF	11.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.209	0.000	4.600	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
IF	22.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.069	0.000	5.700	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
IF	53.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.016	0.000	5.900	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
IF	105.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.007	0.000	6.400	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
IF	155.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.019	0.000	7.300	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
IF	179.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.025	0.000	8.590	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
IF	243.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.016	0.000	8.400	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
IF	246.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.057	0.000	9.900	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
IF	266.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.075	0.000	10.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
AS	267.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.075	0.000	12.800	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
AS	283.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.075	0.000	15.400	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
AS	300.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.075	0.000	16.700	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
AS	309.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.075	0.000	18.520	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
AS	331.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.075	0.000	19.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
AS	564.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000
0.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

w1.out

	END AVERAGE STATION ELEVATION	END ELEVATION	FETCH LENGTH	SURGE 10-YEAR	ELEV 4.600	SURGE 100-YEAR	ELEV 9.900	WAVE HEIGHT	INITIAL 54.800	INITIAL W. PERIOD
BOTTOM										
SLOPE	0.000	0.000	0.000	4.600	9.900	54.800	12.490	0.000		
IF	0.000									
0.255										
BOTTOM										
SLOPE	2.800	2.800	0.000	9.900	0.000	0.000	0.000	0.000		
IF	11.000									
0.209	0.000									
BOTTOM										
SLOPE	4.600	4.600	0.000	9.900	0.000	0.000	0.000	0.000		
IF	22.000									
0.069	0.000									
BOTTOM										
SLOPE	5.700	5.700	0.000	9.900	0.000	0.000	0.000	0.000		
IF	53.000									
0.016	0.000									
BOTTOM										
SLOPE	5.900	5.900	0.000	9.900	0.000	0.000	0.000	0.000		
IF	105.000									
0.007	0.000									
BOTTOM										
SLOPE	6.400	6.400	0.000	9.900	0.000	0.000	0.000	0.000		
IF	155.000									
0.019	0.000									
BOTTOM										
SLOPE										
IF										
0.019										

	STATION	ELEVATION	10-YEAR	100-YEAR	w1.out
SLOPE	A-ZONES				
IF	179.000	7.300	0.000	9.900	0.000
0.025	0.000				0.000
BOTTOM	END	END	NEW SURGE	NEW SURGE	
	AVERAGE	STATION	10-YEAR	100-YEAR	
SLOPE	A-ZONES	ELEVATION			
IF	243.000	8.590	0.000	9.900	0.000
0.016	0.000				0.000
BOTTOM	END	END	NEW SURGE	NEW SURGE	
	AVERAGE	STATION	10-YEAR	100-YEAR	
SLOPE	A-ZONES	ELEVATION			
IF	246.000	8.400	0.000	9.900	0.000
0.057	0.000				0.000
BOTTOM	END	END	NEW SURGE	NEW SURGE	
	AVERAGE	STATION	10-YEAR	100-YEAR	
SLOPE	A-ZONES	ELEVATION			
IF	266.000	9.900	0.000	9.900	0.000
0.075	0.000				0.000
BOTTOM	END	END	NEW SURGE	NEW SURGE	
	AVERAGE	STATION	10-YEAR	100-YEAR	
SLOPE	A-ZONES	ELEVATION			
AS	267.000	10.000	0.000	9.900	0.000
0.075	0.000				0.000
BOTTOM	END	END	NEW SURGE	NEW SURGE	
	AVERAGE	STATION	10-YEAR	100-YEAR	
SLOPE	A-ZONES	ELEVATION			
AS	283.000	12.800	0.000	9.900	0.000
0.075	0.000				0.000
BOTTOM	END	END	NEW SURGE	NEW SURGE	
	AVERAGE	STATION	10-YEAR	100-YEAR	
SLOPE	A-ZONES	ELEVATION			
AS	300.000	15.400	0.000	9.900	0.000
					0.000

w1.out

0.075 0.000

END AVERAGE STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR	NEW SURGE
BOTTOM				
SLOPE AS	16.700	0.000	9.900	0.000
0.075	0.000	0.000	0.000	0.000

END AVERAGE STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR	NEW SURGE
BOTTOM				
SLOPE AS	18.520	0.000	9.900	0.000
0.075	0.000	0.000	0.000	0.000

END AVERAGE STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR	NEW SURGE
BOTTOM				
SLOPE AS	19.000	0.000	9.900	0.000
0.075	0.000	0.000	0.000	0.000

-----END OF TRANSECT-----

NOTE:

1 SURGE ELEVATION INCLUDES CONTRIBUTIONS FROM ASTRONOMICAL AND STORM TIDES.

PART2: CONTROLLING WAVE HEIGHTS, SPECTRAL PEAK WAVE PERIOD, AND WAVE CREST ELEVATIONS

LOCATION	CONTROLLING WAVE HEIGHT	SPECTRAL PEAK WAVE PERIOD	WAVE CREST ELEVATION
IE	7.57	12.49	15.20
IF	5.46	12.49	13.72
IF	4.09	12.49	12.76
IF	3.25	12.49	12.17

	w1.out				
IF	105.00	3.10	12.49	12.07	
IF	155.00	2.71	12.49	11.80	
IF	179.00	2.02	12.49	11.31	
IF	243.00	1.02	12.49	10.61	
IF	246.00	1.05	12.49	10.64	
IF	266.00	0.01	12.49	9.91	
AS	267.00	0.00	0.00	10.00	
AS	283.00	0.00	0.00	12.80	
AS	300.00	0.00	0.00	15.40	
AS	309.00	0.00	0.00	16.70	
AS	331.00	0.00	0.00	18.52	
AS	564.00	0.00	0.00	19.00	

PART3 LOCATION OF AREAS ABOVE 100-YEAR SURGE

BETWEEN	266.00 AND	267.00
BETWEEN	267.00 AND	283.00
BETWEEN	283.00 AND	300.00
BETWEEN	300.00 AND	309.00
BETWEEN	309.00 AND	331.00
BETWEEN	331.00 AND	564.00

PART4 LOCATION OF SURGE CHANGES

STATION	10-YEAR SURGE	100-YEAR SURGE
	NO SURGE CHANGES IN THIS TRANSECT	



w1.out PART5 LOCATION OF V ZONES  
 STATION OF GUTTER LOCATION OF ZONE  
 117.43 WINDWARD

PART6 NUMBERED A ZONES AND V ZONES

STATION OF GUTTER	ELEVATION	ZONE DESIGNATION	FHF
0.00	15.20		
5.22	14.50	V16 EL=15	80
13.56	13.50	V16 EL=14	80
35.87	12.50	V16 EL=13	80
117.43	12.00	V16 EL=12	80
169.72	11.50	A21 EL=12	110
249.73	10.50	A21 EL=11	110
266.00	9.91	A21 EL=10	110
267.00	10.00		
283.00	12.80		
300.00	15.40		

w1.out

309.00 16.70

331.00 18.52

564.00 19.00

ZONE TERMINATED AT END OF TRANSECT

PART 7 POSTSCRIPT NOTES



WAVE HEIGHT COMPUTATIONS FOR FLOOD INSURANCE STUDIES (WHAFIS VERSION 4.0G, 08\_2007)  
 Executed on: wed Jan 19 16:39:30 2011  
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 Output file: L:\Projects\Turquoise Project\RAI Submittal 2\CHAMP\Output\Turquoise Project\w2.out

- Transect: 2 Date: 1/19/2011

THIS IS A 100-YEAR CASE

	PART I INPUT									
IE	0.000	0.000	0.000	0.000	0.000	4.600	9.900	54.800	12.490	0.000
0.094	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
IF	34.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
0.078	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
IF	60.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
0.048	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
IF	78.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
0.028	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
IF	114.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
0.023	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
IF	157.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
0.020	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
IF	230.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
0.006	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
IF	238.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
-0.012	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
IF	292.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
0.029	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
IF	315.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
0.087	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
IF	316.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
0.100	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
AS	328.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
0.100	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
AS	356.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
0.100	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
AS	546.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
0.100	0.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
AS	582.000	0.000	0.000	0.000	0.000	9.900	0.000	0.000	0.000	0.000
0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

END                    END                    END                    END                    END                    END                    END                    END                    END                    INITIAL                    INITIAL

w2.out

BOTTOM AVERAGE STATION ELEVATION LENGTH 10-YEAR 100-YEAR WAVE HEIGHT W. PERIOD  
 SLOPE A-ZONES 0.000 0.000 4.600 9.900 54.800 12.490 0.000  
 IE 0.000  
 0.094 0.000

BOTTOM END AVERAGE STATION ELEVATION NEW SURGE 10-YEAR 100-YEAR  
 SLOPE A-ZONES 3.200 0.000 9.900 0.000 0.000 0.000 0.000  
 IF 34.000  
 0.078 0.000

BOTTOM END AVERAGE STATION ELEVATION NEW SURGE 10-YEAR 100-YEAR  
 SLOPE A-ZONES 4.700 0.000 9.900 0.000 0.000 0.000 0.000  
 IF 60.000  
 0.048 0.000

BOTTOM END AVERAGE STATION ELEVATION NEW SURGE 10-YEAR 100-YEAR  
 SLOPE A-ZONES 5.300 0.000 9.900 0.000 0.000 0.000 0.000  
 IF 78.000  
 0.028 0.000

BOTTOM END AVERAGE STATION ELEVATION NEW SURGE 10-YEAR 100-YEAR  
 SLOPE A-ZONES 6.200 0.000 9.900 0.000 0.000 0.000 0.000  
 IF 114.000  
 0.023 0.000

BOTTOM END AVERAGE STATION ELEVATION NEW SURGE 10-YEAR 100-YEAR  
 SLOPE A-ZONES 7.100 0.000 9.900 0.000 0.000 0.000 0.000  
 IF 157.000  
 0.020 0.000

BOTTOM END AVERAGE STATION ELEVATION NEW SURGE 10-YEAR 100-YEAR  
 SLOPE A-ZONES 0.000 0.000 0.000 0.000 0.000 0.000 0.000

									w2.out			
IF	230.000	8.560	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.006											
BOTTOM	END	END	NEW SURGE	NEW SURGE	NEW SURGE							
	AVERAGE	ELEVATION	10-YEAR	100-YEAR	100-YEAR							
SLOPE	STATION											
IF	A-ZONES	7.600	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		0.000										
BOTTOM	END	END	NEW SURGE	NEW SURGE	NEW SURGE							
	AVERAGE	ELEVATION	10-YEAR	100-YEAR	100-YEAR							
SLOPE	STATION											
IF	A-ZONES	7.800	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		0.000										
BOTTOM	END	END	NEW SURGE	NEW SURGE	NEW SURGE							
	AVERAGE	ELEVATION	10-YEAR	100-YEAR	100-YEAR							
SLOPE	STATION											
IF	A-ZONES	9.800	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		0.000										
BOTTOM	END	END	NEW SURGE	NEW SURGE	NEW SURGE							
	AVERAGE	ELEVATION	10-YEAR	100-YEAR	100-YEAR							
SLOPE	STATION											
IF	A-ZONES	9.900	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		0.000										
BOTTOM	END	END	NEW SURGE	NEW SURGE	NEW SURGE							
	AVERAGE	ELEVATION	10-YEAR	100-YEAR	100-YEAR							
SLOPE	STATION											
AS	A-ZONES	11.400	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		0.000										
BOTTOM	END	END	NEW SURGE	NEW SURGE	NEW SURGE							
	AVERAGE	ELEVATION	10-YEAR	100-YEAR	100-YEAR							
SLOPE	STATION											
AS	A-ZONES	15.200	0.000	9.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		0.000										

w2.out

	END AVERAGE STATION ELEVATION	END NEW SURGE 10-YEAR	END NEW SURGE 100-YEAR	
BOTTOM SLOPE AS 0.100	546.000 0.000	0.000	9.900	0.000

	END AVERAGE STATION ELEVATION	END NEW SURGE 10-YEAR	END NEW SURGE 100-YEAR	
BOTTOM SLOPE AS 0.100	582.000 0.000	0.000	9.900	0.000

-----END OF TRANSECT-----

NOTE:

1 SURGE ELEVATION INCLUDES CONTRIBUTIONS FROM ASTRONOMICAL AND STORM TIDES.

PART2: CONTROLLING WAVE HEIGHTS, SPECTRAL PEAK WAVE PERIOD, AND WAVE CREST ELEVATIONS

LOCATION	CONTROLLING WAVE HEIGHT	SPECTRAL PEAK WAVE PERIOD	WAVE CREST ELEVATION
IE 0.00	7.57	12.49	15.20
IF 34.00	5.16	12.49	13.51
IF 60.00	4.01	12.49	12.71
IF 78.00	3.56	12.49	12.39
IF 114.00	2.87	12.49	11.91
IF 157.00	2.17	12.49	11.42
IF 230.00	1.04	12.49	10.63
IF 238.00	1.13	12.49	10.69
IF 292.00	1.26	12.49	10.78

	w2.out				
IF	315.00	0.08	12.49	9.95	
IF	316.00	0.01	12.49	9.91	
AS	328.00	0.00	0.00	11.40	
AS	356.00	0.00	0.00	15.20	
AS	546.00	0.00	0.00	16.50	
AS	582.00	0.00	0.00	16.50	

PART3 LOCATION OF AREAS ABOVE 100-YEAR SURGE

BETWEEN	316.00 AND	328.00
BETWEEN	328.00 AND	356.00
BETWEEN	356.00 AND	546.00
BETWEEN	546.00 AND	582.00

PART4 LOCATION OF SURGE CHANGES

STATION	10-YEAR SURGE	100-YEAR SURGE
	NO SURGE CHANGES IN THIS TRANSECT	

PART5 LOCATION OF V ZONES

STATION OF GUTTER	LOCATION OF ZONE
106.97	WINDWARD

PART6 NUMBERED A ZONES AND V ZONES

STATION OF GUTTER	ELEVATION	ZONE DESIGNATION	FHF
0.00	15.20		

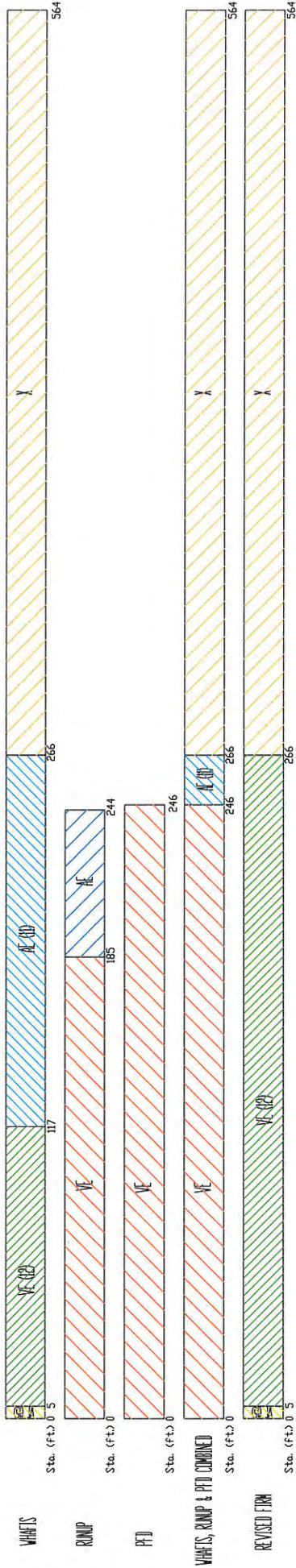


w2.out				
14.11	14.50			
34.34	13.50	V16 EL=14	80	
71.78	12.50	V16 EL=13	80	
106.97	12.00	V16 EL=12	80	
149.94	11.50	A14 EL=12	70	
299.87	10.50	A14 EL=11	70	
316.00	9.91	A14 EL=10	70	
328.00	11.40			
356.00	15.20			
546.00	16.50			
582.00	16.50			

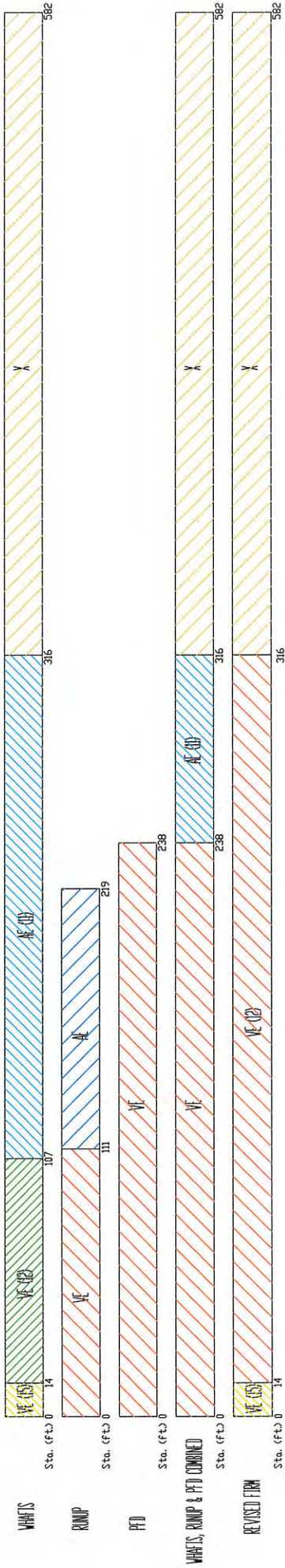
ZONE TERMINATED AT END OF TRANSECT

PART 7 POSTSCRIPT NOTES

TRANSECT ONE



TRANSECT TWO





**NFIP**  
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0964L

**FIRM**  
FLOOD INSURANCE RATE MAP  
BALDWIN COUNTY,  
ALABAMA  
AND INCORPORATED AREAS

PANEL 964 OF 1100  
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR  
FIRM PANEL LAYOUT)

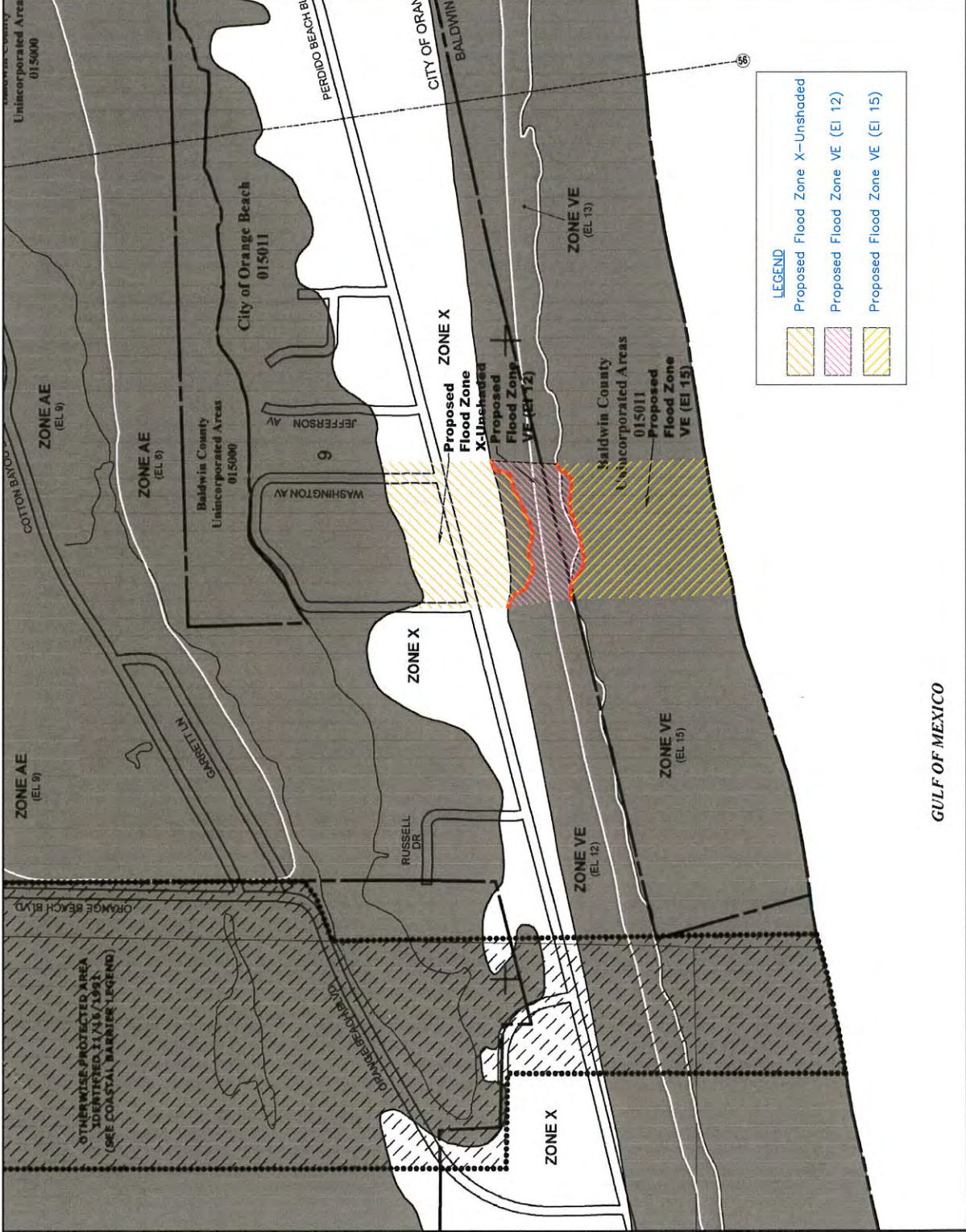
CONTAINS:  
BALDWIN COUNTY  
UNINCORPORATED AREAS  
CITY OF ORANGE BEACH  
CITY OF PERDIDO BEACH

SUBJECT: PANEL: SHEET:  
015000 0964 1  
015001 0964 2  
015002 0964 3

Notice to User: The Map Number, shown below, follows the NFIP numbering system. The map does not show the actual boundaries of the flood zones. The map is intended to be used in conjunction with the Flood Insurance Rate Manual, which may be obtained from the National Flood Insurance Program. For the latest product information about National Flood Insurance Program flood maps, check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

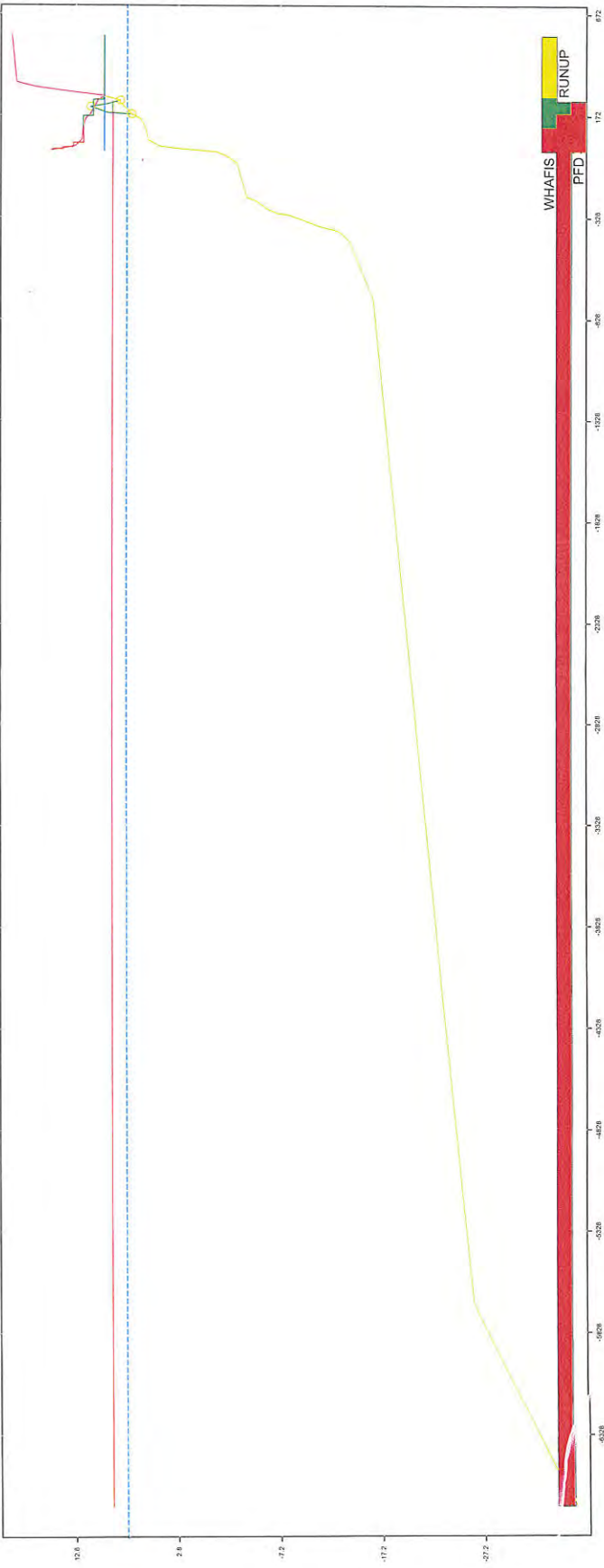
MAP REVISED JULY 17, 2007 MAP NUMBER 01003C0964L

State of Alabama  
Federal Emergency Management Agency

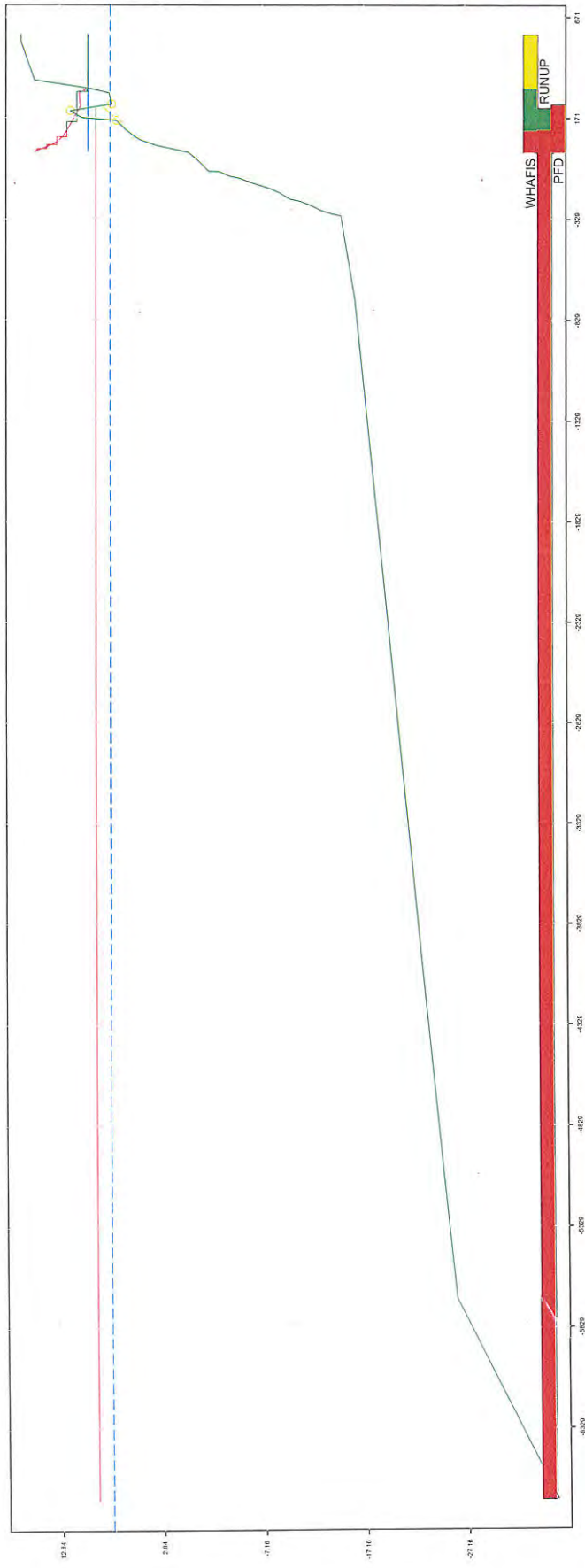
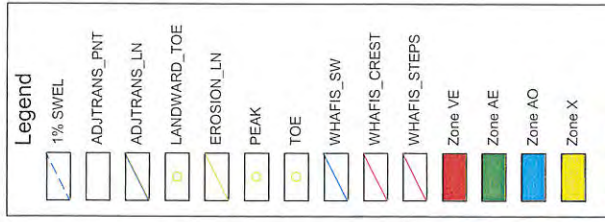


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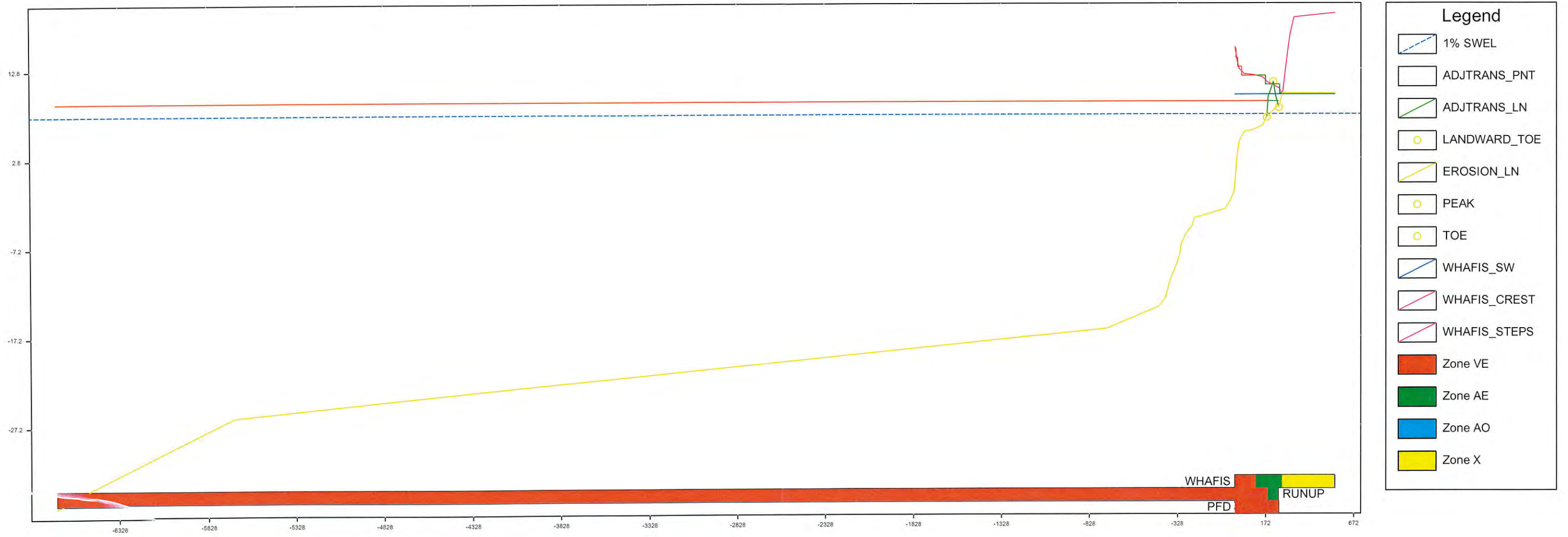
l.dxf



2.dxf



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