

15006 THRU 15011

15006 THRU 15011

NOAA FORM 76-35

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT

Type of Survey Storm Evacuation Mapping...
T-15006 thru
Job No. PH-7125..... Map No. T-15011...
Classification No. Edition No. 1st.....

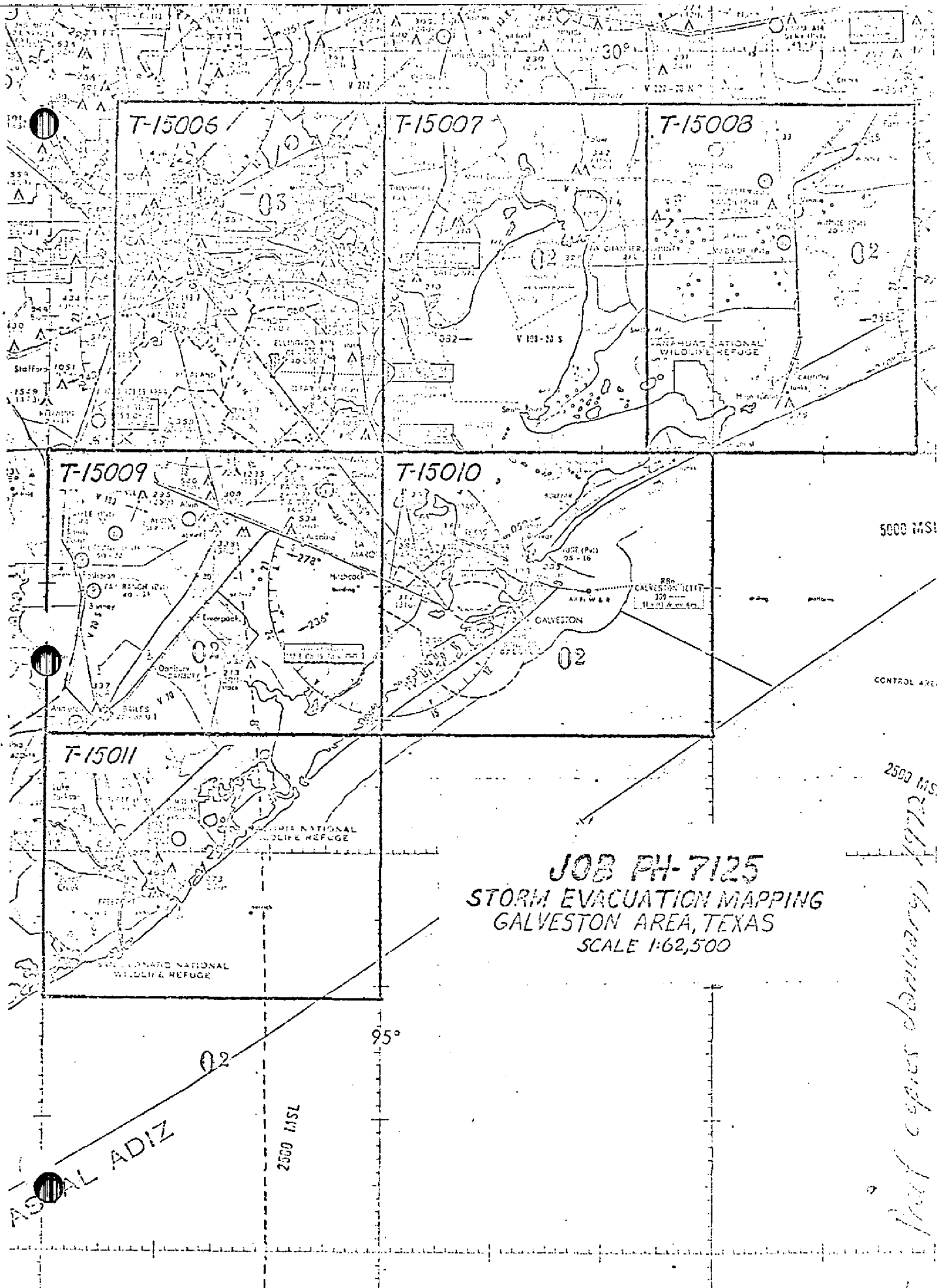
LOCALITY

State Texas.....
General Locality Galveston, Texas.....
Locality

1971 TO 1972

REGISTRY IN ARCHIVES

DATE



JOB PH-7125
STORM EVACUATION MAPPING
GALVESTON AREA, TEXAS
SCALE 1:62,500

first copies January 1972

STORM EVACUATION MAPPING

The Storm Evacuation Mapping Program is a series of maps prepared by NOS at a scale of 1:62,500 in cooperation with the National Weather Service.

They are assigned to provide evacuation information in the event of severe coastal storms. Shown on the maps are principal evacuation routes, critical elevations along these routes, and five-foot contours with color gradients for guidance to high ground.

Details are sufficiently clear so that the maps can be reproduced by mass-communication media, including newspapers and television.

The program will eventually cover those areas of the Gulf and East Coasts which are vulnerable to flooding as a result of tropical cyclones and hurricanes.

Guidance and data received by National Ocean Survey from the National Weather Service include priority areas to be mapped, historical hurricanes and coastal storm-water levels at selected locations.

The maps are used by authorized emergency officials to determine probable areas of inundation by relating predicted maximum water elevations to the map contours.

The body of the map includes delineation of the main evacuation routes and feeder routes, low points along the road that might be engulfed, and high areas which are likely to remain above flood waters, thus affording some degree of refuge. These critical elevations are spaced on the map at intervals of at least two miles.

Both surfaced and unsurfaced evacuation roads are identified, along with county, state, and federal route designations, and the number of lanes for each road.

Contours on the maps provide a means of estimating areas of possible flooding. These areas are shown in increments of 5 and 10 feet in distinctive color tones.

Urban populations and normal and summer populations of resort areas are also shown.

A data block on each map gives the storm-water levels at selected locations of previous hurricanes.

Submitted:

A.K. Heywood

November 23, 1973

Storm Evacuation Mapping
PH-7125

Galveston, Texas
T-15006 thru T-15011

This project consists of 6 manuscripts compiled at a scale of 1:62,500.

In addition to the U.S. Geological Survey Quadrangles that were used to delineate the manuscript, the following U.S. Department of Agriculture photo mosaics were used:

Galveston County	flown 1968	parts 1,2,3,&4
Chambers County	flown 1970	parts 1,2,3,&4
Harris County	flown 1964	parts 8 & 9
Liberty County	flown 1964	parts 6,7,&8
Jefferson County	flown 1966	parts 1,2,3,4,&5
Brazoria County	flown 1965	parts 1,2,3,4,5,6,&7

Road map of Brazoria County, 1971

General Highway Map, Galveston County, revised to May 1970

T-15006 U.S. Geological Survey Quads: 1:24,000

Aldine (1967)
Houston Heights (1967)
Bellaire (1967)
Almeda (1969)
Humble (1967)
Settegast (1967)
Park Place (1967)
Pearland (1969)
Harmaston (1967)
Jacinto City (1967)
Pasadena (1967)
Friendswood (1969)
Crosby (1967)
Highlands (1967)
La Porte (1967)
League City (1969)

T-15007 U.S. Geological Survey Quads: 1:24,000

Sheeks (1961)
Moss Bluff (1961)
Shiloh (1961)
Whites Bayou (1961)
Mont Belvieu (1969)
Cove (1961)
Anahuac (1961)
Monroe City (1961)

T-15007 (Cont.)

Morgan Point (1969)
Umbrella Point (1961)
Oak Island (1961)
Oyster Bayou (1961)
Bacliff (1969)
Smith Point (1961)
Lake Stephenson (1961)
Frozen Point (1962)

T-15008 U.S. Geological Survey Quads: 1:24,000

Whites Bayou (1961)
Winnie N.W. (1962)
Fannett West (1962)
Fannett East (1962)
Monroe City (1961)
Stowell (1952)
Hamshire (1962)
Alligator Hole Marsh (1962)
Oyster Bayou (1961)
Stanolind Reservoir (1962)
Whites Ranch (1962)
Star Lake (1961)
South of Star Lake (1962)
Mud Lake (1961)
High Island (1962)
Frozen Point (1962)

T-15009 U.S. Geological Survey Quads: 1:24,000

Juliff (1963)
Manvel (1969)
Algoa (1969)
Dickinson (1969)
Rosharon (1963)
Liverpool (1963)
Mustang Bayou (1963)
Hitchcock (1969)
Angleton (1963)
Danbury (1963)
Hoskins Mound (1963)
Sea Isle (1963)

T-15010 U.S. Geological Survey Quads: 1:24,000

Texas City (1969)
Port Bolivar (1969)
Flake (1969)
Caplen (1969)
Virginia Point (1969)
Galveston (1969)
The Jetties (1969)
Lake Como (1969)

T-15011 U.S. Geological Survey Quads: 1:24,000

Angleton (1963)
Danbury (1963)
Hoskins Mound (1963)
Sea Isle (1963)
Lake Jackson (1963)
Oyster Creek (1963)
Christmas Point (1965)
San Luis Pass (1963)
Jones Creek (1963)
Freeport (1964)
Cedar Lakes East (1964)

The field work for the Galveston, Texas, area was started in July 1971 and completed in November 1971.

These maps were published in January 1972.

Submitted by:

J.B. Phillips
J.B. Phillips

Approved and Forwarded:

Federal Records Center

Quads having field inspection notes:

(1:24,000)

Sea Isle, Texas	Crosby, Texas
Jones Creek, Texas	League City, Texas
Freeport, Texas	Park Place, Texas
Oyster Creek, Texas	Harmaston, Texas
Danbury, Texas	Smith Point, Texas
Cedar Lakes East, Texas	Jacinto City, Texas
Christmas Point, Texas	La Porte, Texas
San Luis Pass, Texas	Bacliff, Texas
Angleton, Texas	Lake Stephenson, Texas
Lake Jackson, Texas	Mont Belvieu, Texas
Hoskins Mound, Texas	Shiloh, Texas
Lake Como, Texas	Morgan Point, Texas
The Jetties, Texas	Umbrella Point, Texas
Port Bolivar, Texas	Sheeks, Texas
Flake, Texas	Almeda, Texas
Caplen, Texas	Pasadena, Texas
Texas City, Texas	Anahuac, Texas
Virginia Point, Texas	Cove, Texas
Galveston, Texas	Houston Heights, Texas
Dickinson, Texas	Bellaire, Texas
Hitchcock, Texas	Moss Bluff, Texas
Mustang Bayou, Texas	Friendswood, Texas
Algoa, Texas	Pearland, Texas
Manvel, Texas	Oak Island, Texas
Liverpool, Texas	
Rosharon, Texas	
Juliff, Texas	
Winnie N.W., Texas	
High Island, Texas	
Frozen Point, Texas	
Fannett East, Texas	
Whites Bayou, Texas	
Monroe City, Texas	
Oyster Bayou, Texas	
Stanolind Reservoir, Texas	
Whites Ranch, Texas	
Star Lake, Texas	
Mud Lake, Texas	
South of Star Lake, Texas	
Stowell, Texas	
Alligator Hole Marsh, Texas	
Fannett West, Texas	
Hamshire, Texas	
Settegast, Texas	
Humble, Texas	
Highlands, Texas	

38 Form 685A
Recovery Note, Bench Mark

6 Wye Level Books:

(1 for each manuscript - T-15006, T-15007, T-15008,
T-15009, T-15010, T-15011)

2 Hurricane - Flood Protection Maps "Status of Project"
May 1971 (one of Freeport and vicinity - the other of
Texas City and vicinity)

Ozolid copies of manuscripts with field inspection:

T-15006 (2 copies)

T-15007

T-15008 (2 copies)

T-15009

T-15010

T-15011

Also used to compile Galveston Area:

General Highway Map, Galveston County, Texas, 1962, revised
to May 1, 1970

Road Map of Brazoria County, Texas 1971

Street Map of Brazosport, Texas, 1971

Chambers County Road Map 1965

Bureau Archives

Copy of published maps

Descriptive Report (one report for T-15006 thru T-15011)

Reproduction Division

Negatives of the published maps are filed by "T" number in
the Reproduction Division.

PHOTO PARTY 63

JOB 7125

Galveston, Texas

Storm Evacuation Mapping

July, 1971

T-15006

Field Inspection Report

Respectfully Submitted,

Dale M. Fuller

Dale M. Fuller

Chief, Photo Party 63

H.O.A.A. - L.O.S.

PHOTO PARTY 63

Job 7125

Galveston, Texas

Storm Evacuation Mapping

July, 1971

T-15006

1. Assignment:

Field work was assigned to Photo Party 63. Field work was done in accordance with Project Instructions dated 2 July, 1971.

2. Unusual Conditions:

Local engineers and surveying organizations state that due to subsidence U.S.C. & G.S. level lines along Galveston Bay area are sinking at a rate of approximately .01 ft to 0.20 ft per year. Their studies are based on the 1964 level circuit. All elevations used by this party were of the latest published elevations of the N.O.S.

3. Additional Information:

Mr. Volbrecht MIC of Houston and Mr. Benton MIC of Galveston were contacted and provided assistance in the selection of routes and information relative to the area encompassed by this map.

4. Evacuation Routes:

All evacuation routes and critical elevations were delineated in red ink on the USGS quads or a red check mark was placed by the route number and name if found correct as mapped to alleviate congestion of detail. This was also done if the number of lanes were correct.

Respectfully Submitted:

Dale M. Fuller

Dale M. Fuller

Chief, Photo Party 63

Field Edit Report
Maps T-15006 and T-15007
Galveston, Texas Area
Storm Evacuation Mapping
Photo Party 63
November, 1971

T-15006

All field edit questions were answered in red ink on the field edit copy of the manuscript (ozalid).

T-15007

All field edit questions were answered in red ink on the field edit ozalid. Two additional elevations were determined and recorded on the Oak Island Quadrangle. They were also annotated on the ozalid.

Respectfully Submitted,
Dale M. Fuller
Dale M. Fuller
Chief, Photo Party 63
N.O.A.A. - N.O.S.

Field Edit Report

Map T-15008

Storm Evacuation Mapping

Galveston, Texas Area

Photo Party 63

November, 1971

All corrections and questions were answered in red ink
on the ozalid copy of the field edit manuscript.

Dale M. Fuller
Dale M. Fuller
Chief, Photo Party 63

Field Inspection Report

Photo Party 63

Storm Evacuation Mapping

T-15007

July, 1971

Dale M. Fuller

Dale M. Fuller
Chief, Photo Party 63

Field Inspection Report

Photo Party 63

Storm Evacuation Mapping

Job 7125

Map T-15007 July, 1971

1. General Area:

The area encompassed by this map in general are the northern and eastern shorelines of Galveston Bay. The land area in general is flat. Critical elevations generally were found to be 1 to 2 feet above or below the normal contours. The northern portion of this map is traversed by I-10 a 4 lane divided highway. A plethora of elevations were determined on this highway though it is mostly above the 20 foot contour to enhance the map.

2. Critical Elevations:

Critical elevations were recorded in the Wye Level Volume and also annotated on the USGS Quads in red ink.

3. Unusual Conditions:

As stated in the field inspection report for T-15006, a general subsidence is occurring in the area and level lines are reported by surveying organizations to be subsiding at a rate of 0.1 to 0.2 foot per year.

4. Additional Information:

Mr. Benton M I C of Galveston, Texas was contacted and informed of the criteria for the selection of evacuation routes. It is recommended by Mr. Benton that the first 5 foot contour of the final map be shown in a separate shade of red.

The four USGS Quads on the eastern border of this map overlap T-15008 and will be submitted with this map.

Respectfully Submitted,

Dale M. Fuller

Dale H. Fuller

Chief, Photo Party 63

N.O.A.A. - H.O.S.

Field Inspection Report

Photo Party 63

Storm Evacuation Mapping

T-15008

September, 1971

Dale M. Fuller

Dale M. Fuller

Chief, Photo Party 63

N.C.A.A. - H.O.S.

General:

Map T-15008 was Field Inspected by Photo Party 63 in accordance with Project Instructions dated 2 July, 1971 and amended 30 August, 1971.

The area encompassed by this Map is generally low and flat. It is mainly farm land and oil fields. Three major roads traverse the Map. I-10 to the north, State 87 to the south, and State 124 in the center.

Critical Elevations:

Critical elevations were determined in accordance with Project Instructions, annotated in red ink on their respective USGS Quads, and recorded in the Wye Level Volume. Critical Elevations were indexed on the fly leaf of the Wye Volume by page, number, and Quad.

Unusual Conditions:

Two road locations were noted as not being current. The proper location was sketched on the appropriate USGS quad and verified by Chambers County Engineer.

Also one route number was changed and corrected on the Quad.

Additional Information:

Mr. Benton of the MMS Galveston, Texas was informed of the Map and shown the evacuation routes.

The four USGS Quads of the western boundary of this Map overlap Map T-15007.

STORM EVACUATION MAPPING

OCTOBER, 1971

PHOTO PARTY 63

JOB PH-7125

MAP T-15009

Respectfully Submitted,

Dale M. Fuller

Dale M. Fuller

Chief, Photo Party 63

R.O.A.A. - H.O.S.

Job PH-7125

Map T-15009

General:

Map T-15009 was Field Inspected by Photo Party 63 in accordance with Project Instructions dated 2 July, 1971 and amended 30 August, 1971.

The area encompassed by this map is generally low and flat.

Critical Elevations:

Critical elevations were determined in accordance with Project Instructions, annotated on their respective USGS Quads in red ink, and recorded in the Wye Level Volume. Critical elevations were indexed on the fly leaf cover of the Wye Level Volume by page, number, and Quadrangle.

The ozalid copy of this map should be considered as a complete inventory of all evacuation routes used and their location.

Unusual Conditions:

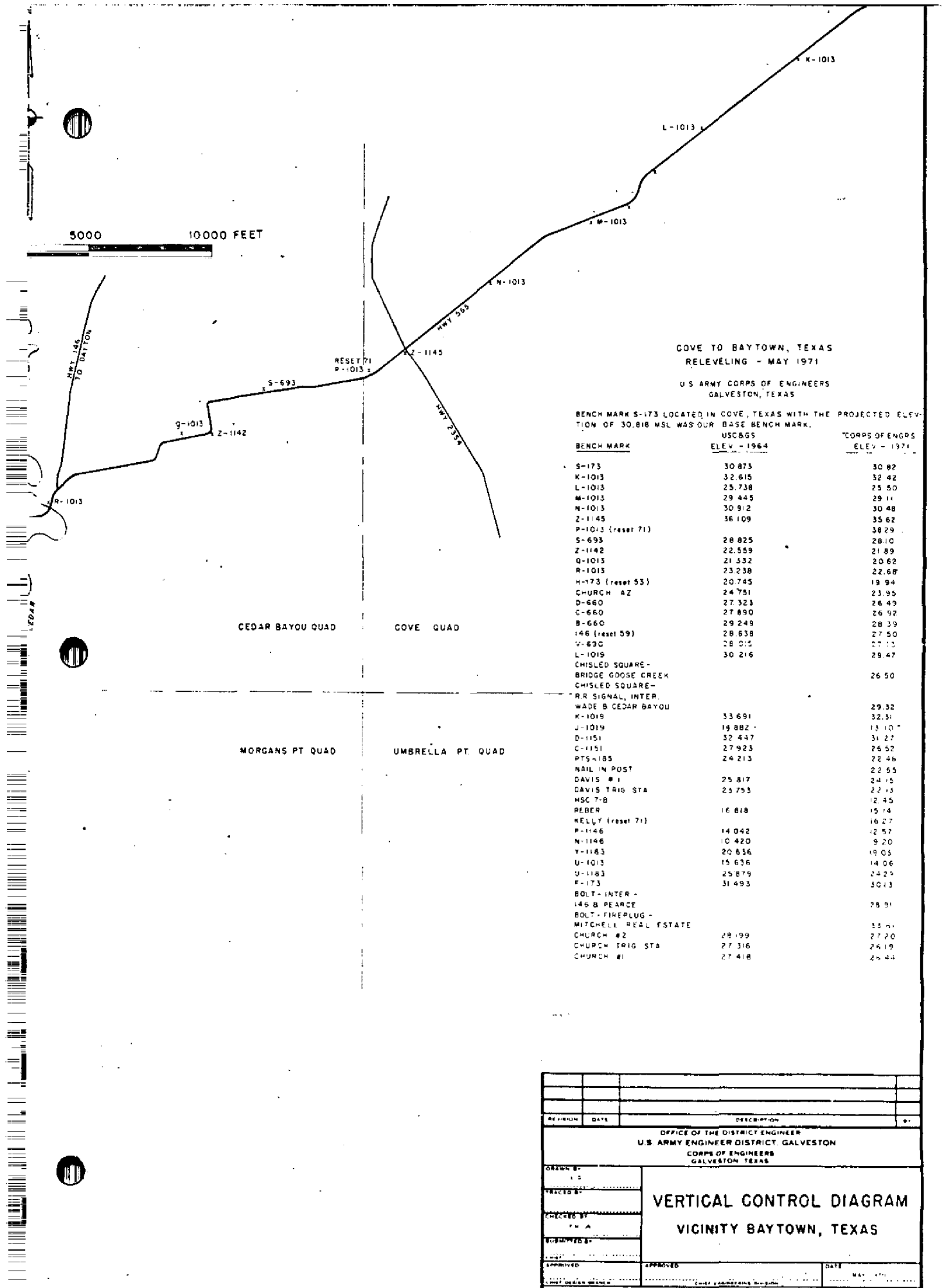
One road location was not current (south section of route 2917) and was drawn correctly on the appropriate quad in red ink.

Various engineering concerns are aware of a general subsidence in the area. Data has been submitted with this report concerning the subsidence of USC&GS level marks. No attempt was made to adjust or otherwise use this material in leveling. All elevations were of the published elevations by the USC&GS.

Additional Information:

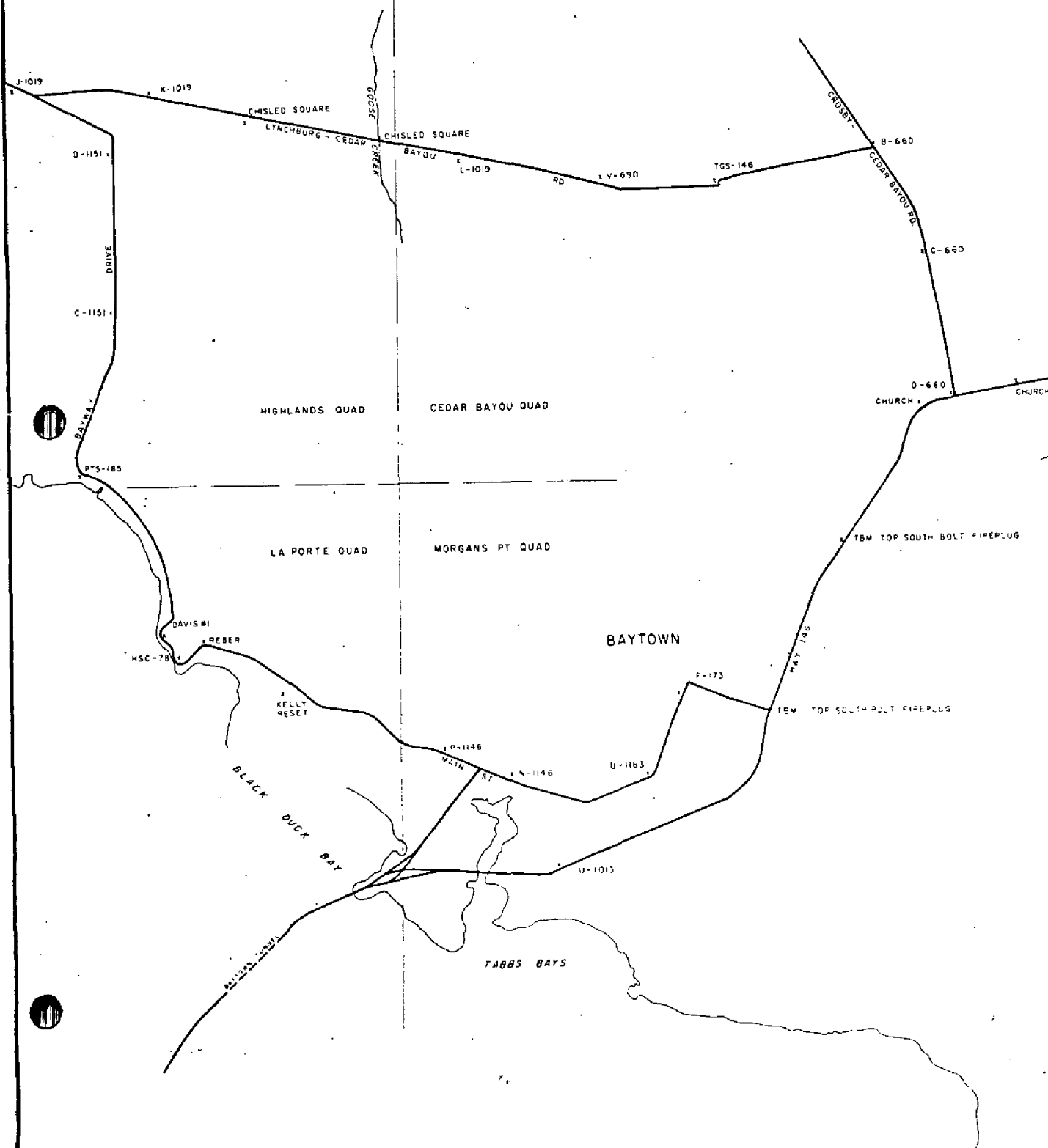
Mr. Benton of the NWS Galveston, Texas was informed of the evacuation routes selected.

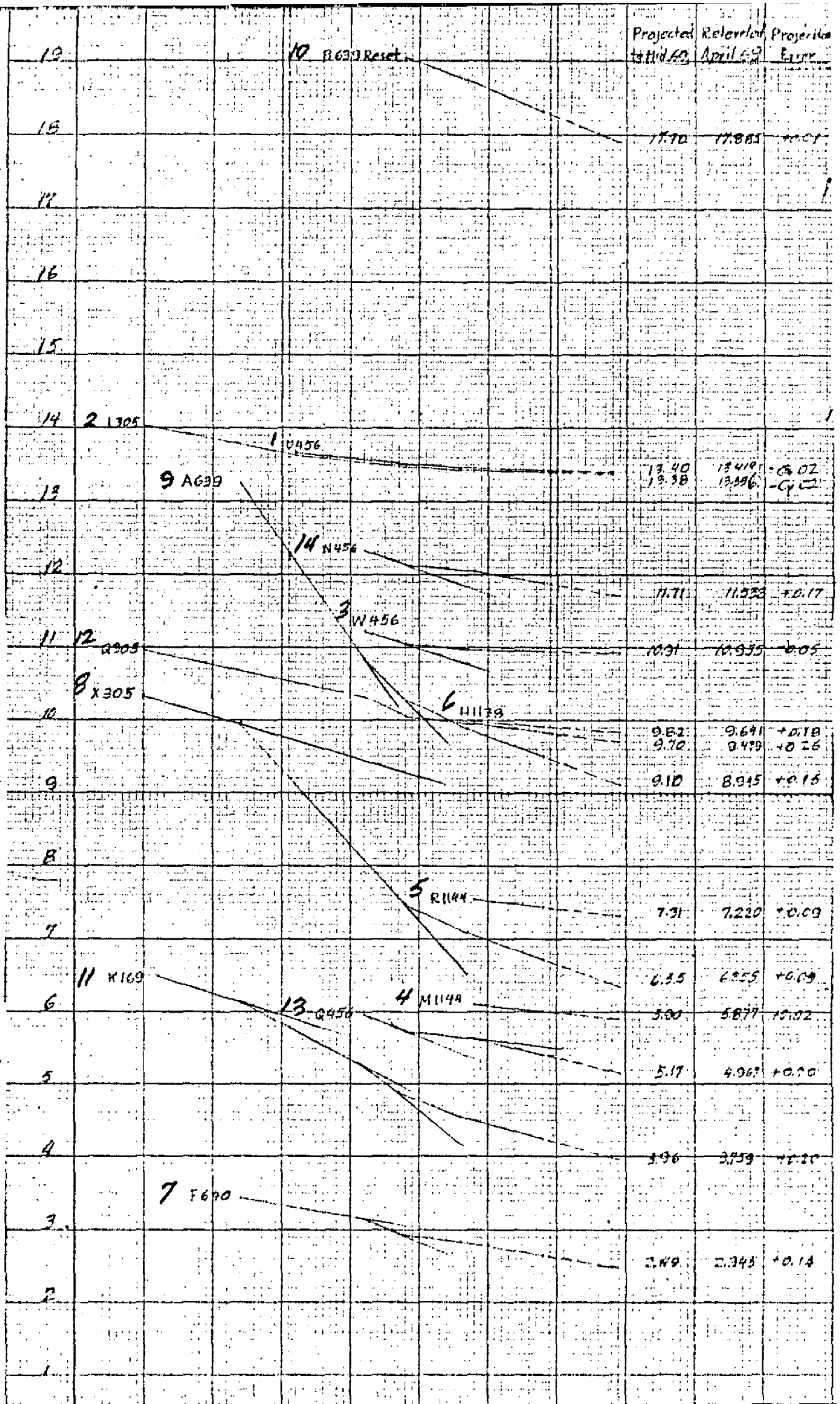
The four quadrangles on the south boundary of this Map also effect Map T-15011.





5000





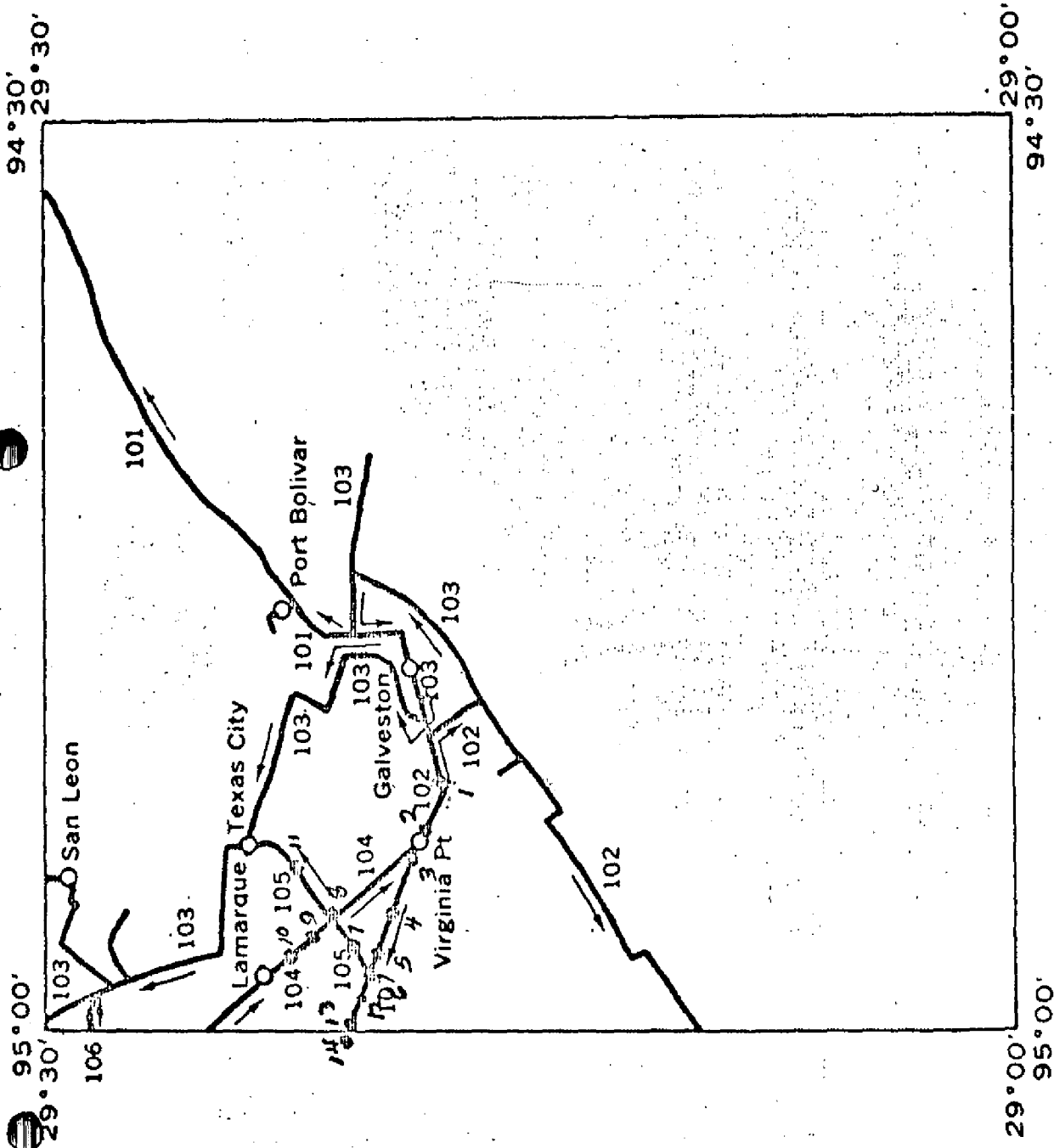


Fig 2

Fig 2

290943

VERTICAL CONTROL DATA

PAGE NO. 3

ISSUED AND PRINTED BY:
U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
WASHINGTON D.C.

Coast and Geodetic Survey
SEA-LEVEL DATUM OF 1929

QUAD C50043

TEXAS
LATITUDE 29°00' to 29°30'
LONGITUDE 94°30' to 95°00'
DIAGRAM MI 15-7 HOUSTON

LINE 102 - - ADJUSTED ELEVATIONS

Bench Mark	1936 First- order (feet)	1951 First- order (feet)	1953-54 First- order (feet)	1958 First- order (feet)	1954 First- order (feet)
V 305	14.009	13.619	13.421	13.415	13.425
V 456		15.718	15.524	15.522	15.522
TIDAL 2 CAUSEWAY	13.891	13.465	13.330	13.271	13.255
TIDAL 3 CAUSEWAY	14.350	13.914	13.779	13.717	13.634
M 465		13.684	13.530	13.455	13.449
T 456		8.084	7.930	7.877	7.828
M 305	10.276	4.160	3.960	3.816	3.757
S 456				7.503	7.451
L 1137				4.980	Destroyed
M 1137					3.583
M 1137 RESET (1954)					Destroyed
10 + 00 (USED)		8.130	Not recovered	Not recovered	14.797
B 1137 (USED)				14.888	14.731
C 1137 (USED)		7.152	Not recovered	Not recovered	14.888
20 + 00 (USED)					Destroyed
D 1137 (USED)		7.456		14.905	14.905
30 + 00 (USED)				7.333	7.323
E 1137 (USED)				14.892	14.892
40 + 00 (USED)		7.051	Not recovered	Not recovered	Destroyed
F 1137 (USED)				14.924	14.984
J 168	7.224	Destroyed			
J 168 RESET (1951)		7.224	Not recovered	Not recovered	Destroyed
50 + 00 (USED)		6.358	Not recovered	Not recovered	Destroyed
60 + 00 (USED)		7.349		7.172	7.110
TIDAL 2 OFFATS BAYOU	7.264	Destroyed			
TIDAL 1 OFFATS BAYOU	5.151	Destroyed			
70 + 00 (USED)		6.670		6.509	6.430
TIDAL 3 OFFATS BAYOU	6.699	Not recovered		Not recovered	Destroyed
M 168	5.020	4.882	Not recovered	Destroyed	
X 639	5.732	5.486		5.282	5.239
X 179		6.516		6.286	6.240
HIGH POINT		6.7		5.1	6.241
AIRPORT 2 (USED)		5.801		5.604	5.548

SPUR LINE TO GALVESTON MUNICIPAL AIRPORT

END OF THE SPUR LINE

VERTICAL CONTROL DATA

By the
Coast and Geodetic Survey
BASELINE DATUM OF 1929

PAGE NO. 9

CHAD 260943

TRAIS
LATITUDE 29° 22' 30"
LONGITUDE 91° 39' 29 1/2"
DIAGRAM NH 15-7 HOUSTON

LINE 101 (CONTINUED) ADJUSTED ELEVATIONS

Bench Mark	1905-6 First- order (Feet)	1936 First- order (Feet)	1951 First- order (Feet)	1953-54 First- order (Feet)	1958 First- order (Feet)	1964 First- order (Feet)
EAGLE POINT RM 1						
TIDAL 2 EDWARDS POINT		12.031		11.558	11.447	11.283
EAGLE POINT - TIDAL 1						
EDWARDS POINT		11.854		11.266	11.181	10.991
D 1187						9.633

END OF THE SPUR LINE

W 169 RESET 1945
WELL TO A (USCG)
X 169 RESET 1945
V 1186

12.153
17.711

11.096
11.306
16.627

10.235
11.835
Destroyed
15.715

LINE 104 - - ADJUSTED ELEVATIONS

Bench Mark	1905-6 First- order (Feet)	1935 First- order (Feet)	1942 First- order (Feet)	1951 First- order (Feet)	1954 First- order (Feet)	1958-59 First- order (Feet)	1963 First- order (Feet)
E 639							
M.M. 34	18.045	17.762	15.745	15.230	15.046	14.529	14.583
D 639			17.146	16.827	16.680	Not recovered	Destroyed
C 639 RESET 1951				17.894	17.520	16.435	16.355
U 1006					15.476	17.385	17.133
A 2	18.658	18.405	18.107	17.497	Destroyed	15.249	14.502
B 639			20.203	19.173	18.871	Not recovered	Destroyed
B 639 RESET 1956					* 19.038	18.489	18.192
A 639			11.228	10.851	10.823	10.775	10.722
T 1157							
X 305	10.322 (1936)	9.947	7.999	7.474	7.035	7.035	6.775
S 1157							
Y 457				7.428	7.277	Not recovered	Destroyed
X 1138						4.513	4.513
A 1126							
X 457				1.250	1.089	0.988	Not recovered
W 457				3.530	3.399	3.300	3.221
X 457				11.214	11.061	10.934	10.861

o Second-order elevation.

VERTICAL CONTROL DATA

PAGE NO. 1

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COAST AND GEODETIC SURVEY
WASHINGTON D.C.

by the

Coast and Geodetic Survey
SEALEVEL DATUM OF 1929

QUAD 270311

TEXAS
LATITUDE 29° 01' to 29° 02'
LONGITUDE 98° 30' to 98° 31'
DIAGRAM RI 15-7 B00000

LINE 106 - - ADJUSTED ELEVATIONS

Bench Mark	1949 Second- order (feet)	1954 Second- order (feet)	1959 First- order (feet)	1964 First- order (feet)
Z 640 RESET 1949	13.640	13.110	12.884	12.634
X 846 RESET 1949	11.809	11.369	11.146	10.951
W 1186				10.459

LINE 107 - - ADJUSTED ELEVATIONS

Bench Mark	1935 First- order (feet)	1951 First- order (feet)	1954 First- order (feet)	1959 First- order (feet)	1964 First- order (feet)
X 455		7.520		Not recovered	Destroyed
L 1144		7.415		6.437	6.342
P 305				6.182	Destroyed
R 1144		8.045		Not recovered	Destroyed
Z 455		7.795		Not recovered	Destroyed
Q 455				7.543	7.441
Q 305				5.697	5.489
				9.830	9.833
				5.735	
				10.042	
				10.305	
				9.045	
				6.900	
				7.543	
				5.965	
				10.305	
				5.735	
				10.042	
				9.830	
				9.833	

VERTICAL CONTROL DATA

by the
Coast and Geodetic Survey
SEA LEVEL DATUM OF 1929

QUAD 2905/43 PAGE NO. 12
TEXAS
29° 00' to 29° 30'
94° 30' to 95° 00'
LONGITUDE
DIAGRAM
MH 15-7 LONGITUDE

LINE 106 - - ADJUSTED ELEVATIONS

Bench Mark	1936 First- order (Feet)	1942 First- order (Feet)	1951 First- order (Feet)	1953-54 First- order (Feet)	1958 First- order (Feet)	1964 First- order (Feet)
H 1128	6.532		5.235	4.974	10.000	9.509
TM 30 A	6.489			4.882	Not recovered	Destroyed
E 640		6.699	5.801	5.482	Not recovered	Destroyed
11 (G.C. & S.P.R.V.)	11.867	11.539	11.043		Not recovered	Destroyed
P 640		3.717	3.143	2.940	2.831	2.651
B 1133					4.822	3.822
P 1133		6.122	5.217	4.882	6.343	6.119
X 169	6.429		6.555	6.056	4.554	4.213
L 159	7.586				5.164	5.509
M 169	9.406		8.317	8.100	7.936	7.769
U 1187						8.123
120.45 (PANO)						12.812
WELL 608 (USGS)				8.845	Destroyed	-8.445
WELL 228 (USGS)				8.740	8.565	
TM 30 M	10.830		9.636	9.390	7.575	9.009
N 169					9.170	

JANUARY 1966

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COAST AND GEODETIC SURVEY
WASHINGTON D.C.

VERTICAL CONTROL DATA

by the
Coast and Geodetic Survey
SEA LEVEL DATUM OF 1929

QUAD 200952 PAGE NO. 6
TEXAS
LATITUDE 29°00' TO 29°20'
LONGITUDE 95°00' TO 95°30'
DIAGRAM MM 15-7 HOUSTON

LINE 108 - - ADJUSTED ELEVATIONS

Bench Mark	1935 Second- order (Feet)	1942 Second- order (Feet)	1944 Second- order (Feet)	1951 First- order (Feet)	1954 First- order (Feet)	1959 First- order (Feet)	1964 First- order (Feet)
K 455	20.256			12.310	12.126	12.051	11.885
S 114				19.662	19.665	19.573	19.482
15 (GC&SP RV)	17.641					13.340	13.199
						Not Recovered	DESTROYED
K 456				16.542		16.270	16.135
B 901			20.043	19.610	19.147		18.986

SPUR LINE TO HITCHCOCK NAVAL AIR STATION (ABANDONED)

C 901	18.524
D 901	20.938
E 901	15.659

END OF SPUR LINE

S 305	18.343	17.982	17.710	17.549
T 305	25.659	25.190	21.854	Not Recovered
2 112			22.018	22.018
18 RESET (GC&SP RV.)			22.126	21.926
C 753 RESET 1951			24.304	24.091
ALTA LOMA			DESTROYED	
ALTA LOMA 1931 1960			25.823	26.440
ALTA LOMA RM 1			27.569	25.600
ALTA LOMA RM 2			30.774	27.329
V 305	31.529	31.083		30.574
Y 114				28.071
U 305	36.207	35.718	33.225	31.028
P 456		32.654	32.385	32.211
K 1144			33.353	33.176
W 1144			32.759	32.575
W 305	34.724	34.183		DESTROYED

were continued through the area and a 3rd order closure obtained.

The results of this releveing compared to the 1964 LFE's are shown in the following table:

<u>Monument</u>	<u>LFE 1964</u>	<u>Releveled 1969</u>	<u>Indicated Settlement</u>
U-456	13.419	13.419	0.000
L-305	13.399	13.396	-0.003
W-456	10.955	10.955	0.000
M-1144	6.004	5.877	-0.127
R-1144	7.441	7.220	-0.221
H-1135	9.902	9.681	-0.267
F-640	2.651	2.345	-0.346
X-305	6.706	6.255	-0.451
A-639	9.498	8.945	-0.553
B-639 (Reset)	13.307	17.888	-0.422
K-169	4.216	3.759	-0.457
Q-305	9.833	9.439	-0.394
Q-456	5.400	4.967	-0.433
N-456	11.836	11.538	-0.348

The releveing results were added to Fig. 1 and the difference ^{or} "error of projection" shown in the right hand column. The releveing indicates that most of the monuments are settling at a slightly more rapid rate than is indicated by the straight line projections. This is reasonable as a considerable amount of heavy construction is underway by the chemical and oil industries in Texas City. *(insert in water page)*

It can be argued that projection of earlier and more severe settlement rates would have introduced an unusually large error. However, projection of the settlement rate of a single monument is not advocated. The settlement rates of several monuments in the area of interest should be projected and levels run through them to determine if they are in reasonable agreement. *Comparison*

Releveling from UASC or L 305 to any of these monuments would have introduced change in settlement rate.

*Port Arthur**Use*

MARCH 1970 RERUN AND ADJUSTMENT OF BENCH MARKS
IN AREA OF PORT ARTHUR, TEXAS UNDERGOING DIFFERENTIAL SUBSIDENCE

1	2	3	4	5	6	7
Bench Mark	USC&GS 1918	USC&GS 1954	USC&GS 1959	Projected to 1970	70 Rerun Adj to V-57 Proj to 70	Diff from Proj to 70
ROW (USE)		4.938	4.902	4.823	4.788	-0.035
P-1015		4.856	4.800	4.677	4.649	-0.028
V-57	9.957	9.678	9.633	9.534	9.534	0.000
H-1135			9.213		9.054	
M-1016		7.172	7.149	7.098	6.997	-0.101
L-1016		9.265	9.232	9.161	9.048	-0.113
S-1015		6.549	6.506	6.464	6.050	0.414
Q-1015		2.989	2.953	2.087	2.274	+0.187
R-1015		5.098	5.046	4.932	4.014	-0.918
F-1016		5.810	5.778	5.708	3.673	-2.035
G-1016		6.381	6.322	6.192	4.075	-2.117
H-1016		7.972	7.972	7.972	6.265	-1.707
J-1135			8.986		7.873	
J-1016		11.145	11.106	11.020	10.372	-0.648
K-1016		10.705	10.669	10.590	10.175	-0.415
D-1017		15.797	15.725	15.567	15.361	-0.206
F-1017		16.516	16.473	16.378	16.073	-0.305
TBM-U					15.645	
TBM-W					14.432	
Q-1016		16.841	16.831	16.809	16.552	-0.257

Use

MARCH 1970 RERUN AND ADJUSTMENT OF BENCH MARKS
IN AREA OF PORT ARTHUR, TEXAS UNDERGOING DIFFERENTIAL SUBSIDENCE

1	2	3	4	5	6	7
<u>Bench Mark</u>	<u>USC&GS</u> <u>1918</u>	<u>USC&GS</u> <u>1954</u>	<u>USC&GS</u> <u>1959</u>	<u>Projected</u> <u>to 1970</u>	<u>70 Rerun</u> <u>Adj to V-57</u> <u>Proj to 70</u>	<u>Diff from</u> <u>Proj to 70</u>
TBM-X					16.994	
P-1016		16.965	16.965	16.965	16.713	-0.252
K-1135		16.470	16.453	16.416	16.525	
R-1016		22.293	22.234	22.104	21.801	-0.303
T-1016		16.440	16.299	15.989	15.409	-0.530
V-1016		18.258	18.212	18.111	17.698	-0.413

Storm Evacuation Mapping

PH 7125

Map T 15010

Galveston, Texas

October, 1971

Respectfully Submitted,

Dale M. Fuller

Dale M. Fuller

Chief, Photo Party 63

N.O.A.A. - N.O.S.

Job PH-7125
Map T - 15010

General:

Map T 15010 was Field Inspected in accordance with Project Instructions dated 2 July, 1971 and amended 30 August, 1971.

The area encompassed by this Map is generally low and flat. Two large communities are within the Map.

Critical Elevations:

Critical elevations were determined in accordance with Project Instructions, annotated on their respective USGS Quads in red ink, and recorded on the fly leaf cover of the Wye Volume by page, number, and Quadrangle.

The ozalid copy of this Map should be considered as a complete inventory of all evacuation routes, also by name, route number, and number of lanes. On one quad it was impossible to label all routes and this was done on the Ozalid.

Unusual Conditions:

One new route was constructed since the printing of the Quadrangle. This route was drawn on the Ozalid in red ink and supplemented by a Galveston County Map.

A series of Levees have been constructed in the Texas City area. Maps, data, elevations were obtained from the Corps of Engineers and submitted. No elevations of the levees were submitted as critical elevation points as their horizontal position could not be plotted precisely by the Field Party. Office compilation of the points and elevations are necessary. These points are P.I. of the curves on the levee and will represent the levee as the external distance is generally less than three feet. These levees are built of earth and are 250 feet wide at their base and 24 feet wide on top.

Adequacy of the USGS Quadrangles:

With the exceptions of the discrepancies mentioned under the previous heading of this report, Quad elevations (street intersections in Texas City, on or near Texas Avenue) were found incorrect. A Level line was run between at least two US&GS bench marks to validate this.

Additional Information:

Mr. Benton of the NWS in Galveston, Texas was shown all evacuation routes selected and suggestions by he incorporated in the field inspection of this Map.

A general subsidence of all level marks has been reported by various engine ring organizations. All elevations used by this party were of the 1964 US&GS leveling .

Storm Evacuation Mapping

Galveston, Texas Area

Map T-15011

Photo Party 63

November, 1971

Respectfully submitted,

Dale M. Fuller

Dale M. Fuller

Chief, Photo Party 63

N.O.A.A. - N.O.S.

Job Ph- 7125

Map T-15011

General:

Map T-15011 was field inspected by Photo party 63 in accordance with Project Instructions dated 2 July, 1971 and amended 30 August, 1971.

The area encompassed by this Map is generally low and flat. Several communities in the southwest section of this Map form an area known as Brazosport. The principal industry being chemical plants.

Critical Elevations:

Critical elevations were determined in accordance with Project Instructions, annotated on the quadrangles in red ink, and recorded on the fly leaf cover of the Wye Volume by page, number, and quadrangle.

A number of elevations were determined or obtained from the Corps of Engineers, Valasco Drainage Commission, and directly from the Quad.

Ozalid:

The ozalid of this Map should be considered as a complete inventory of all evacuation routes. Dashed red lines indicate new routes, and green ink indicates deletions.

Populations:

Additional population figures were obtained from Chamber of Commerces, City Halls, and Civil Defense. Difficulty was encountered obtaining populations of specific isolated sub-divisions. A notation was made on the ozalid concerning this.

Unusual Conditions:

The levees on this map are defined on the USGS quads. One new levee was constructed and drawn on the ozalid. There are roads on top of most of the levees for mainly maintenance purposes. The roads on levees to be used as evacuation routes are so marked on the quad and ozalid.

Additional Information:

Mr. Benton of the NWS and the Civil Defense Director of Brazoria County were shown the ozalid copy of the Map and their ideas used in field inspection.

Adequacy Of USGS Quadrangles:

The USGS quads are adequate with the exception of the extension of state route 1495 on the Freeport Quad.