



Waterway Suitability Assessment



PROPOSED LPG RAIL-to-SHIP PROJECT



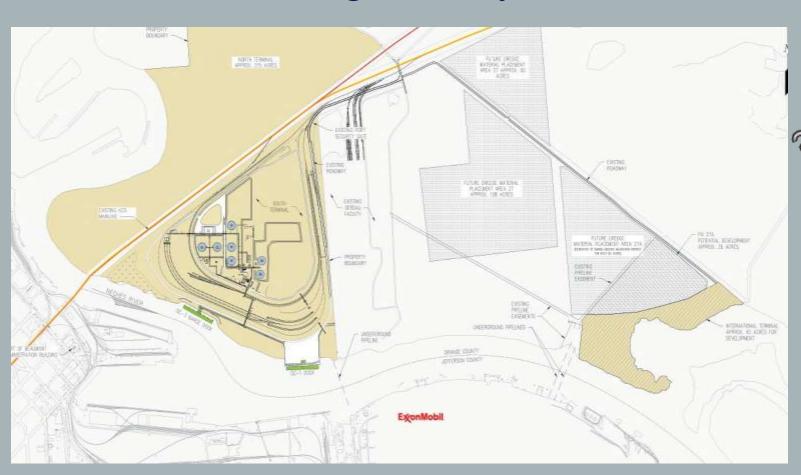
policy and confidential

Who's Here & Why

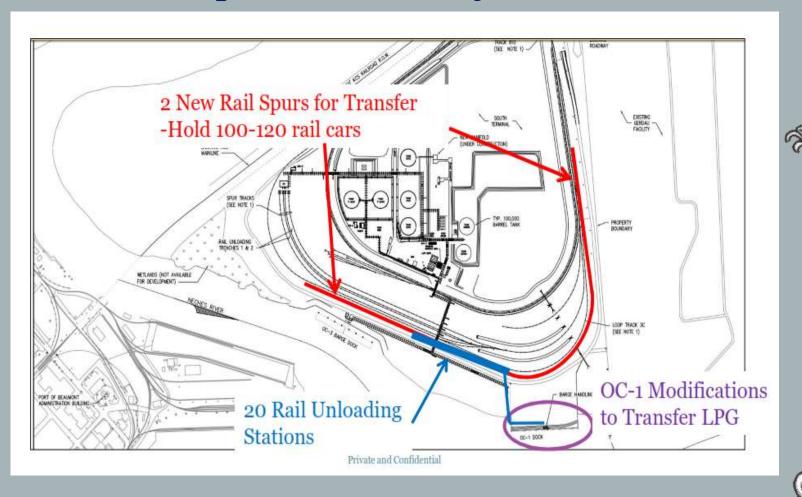
- ▲ Jefferson Railport proposes to export LPG
- ▲ Jefferson Energy Companies
 - ▲ Philip Trew
- **▲** Lanier & Associates
- ▲ Rodino, Inc. preparing the WSA
- ▲ SETWAC members



Existing Site Layout



Proposed LPG Project Plan



Project Details

- ▲ Receive LPG by rail for transfer to selfpropelled LPG carriers
- ▲ Direct transfer to ships; no storage
- ▲ Approx. 320,000 barrels per month
- ▲ 6 8 vessels per month
- ▲ WSA to address waterway, navigation, public safety, security



LPG Transfer Infrastructure

- ▲ Existing Dock OC1
 - ▲ Suitable for small LPGCs
- New rail, unloading racks, piping, hoses
- ▲ Vapor balance system
- ▲ Firefighting system



LPG Carriers

- $-32K 65K \, bbl / 5K 10 \, K \, m^3$
- **^**~500' LOA, 30' draft
- **▲** 6-8 /month
- ▲ Smaller than vessels calling at POB
- ▲ Smaller than LPGCs calling at Sunoco



Consultations

- ▲ Port of Beaumont
- ▲ Sabine Neches Navigation District
- ▲ Sabine Pilots
- ▲ Jefferson County Sheriff
- ▲ Sabine Neches Chiefs Association
- ▲ Industry partners
- **▲ USCG MSU**
- ▲ USCG Station



Characterize the Port Region

- ▲ 125MM tons of cargo for energy, petrochemical and military users
- ★#1 bulk liquid cargo waterway in the nation
- *★#1 U.S. crude oil importer*
- ▲ Potential largest US LNG exporter
- ▲ LHGs already moving by ship



Characterize the SNWW

- ▲ Pass residential and industrial areas
- ▲ Environmental Resources
- ▲ Formal risk assessment in 2013 up to Nederland
- ▲ LPG operations presented no unmanageable able risks for waterway or communities



Characterize the LPGC Route

- ▲ Same as for LNG up to Golden Pass
- ▲ Same as for other LPG up to Nederland
- ▲ Sunoco LOR in 2013; OPS in 2015
- ▲ Look at changes since 2013
- ▲ Look at 8 miles of river from Nederland to Vidor



Nederland to Beaumont

- ▲ Industrial facilities, oil & gas industryrelated
- ▲ No residential development
- ▲ Nearest residential area in Beaumont
 - ~ 1.5 miles away, similar to Nederland
- ▲ No sensitive resources
- ▲ No natural hazards
- ▲ No bridges



Characterize the Site

- ▲ Industrial area
- ▲ Remote from residential
- ▲ Opposite bulk liquids terminal
- ▲ Covered by POB Facility Security Plan
- ▲ Vapor dispersion modeling



Marine Safety Change Analysis

- ▲ Small increase in vessel traffic
 - **→~75,000** *vessel transits annually*
 - ▲~20% go to/beyond Sunoco
 - $\blacktriangle 8 LPGCs/mo = 96/yr$
 - = fewer than 200 transits O/A
- ▲ Comparatively small ships
- ▲ No new risk factors



Impacts on Local Services

- ▲ Pilots
 - ▲ Adequate for expected levels of operations
- ightharpoonup Tugs local fleet = 12 vessels
 - ▲ Fleet increased from 11 to 12 since 2013
 - ▲ Might have to grow more to meet overall SNWW demand



Prelim. Safety Risk Assessment

Table 11-2 Safety Risk Assessment Summary								
	Grou	nding		ision		sion	Snill whil	e Loading
Location	Probability	Consequences	Probability	Consequences	Probability	Consequence	Probability	Consequence
Outer Bar & Jetty Channels	Low	Low	Low	Low	N/A	N/A	N/A	N/A
Sabine Pass Channel	Low	Low	Low	Low	Low	Low	N/A	N/A
Port Arthur Ship Canal	Low	Low	Low	Mod	Low	Low	N/A	N/A
Sabine Neches Canal	Low	Low	Low	Mod	Low	Mod	N/A	N/A
Neches River	Low	Low	Low	Mod	Low	Low	Low	Mod

Prelim. Security Risk Assessment

Table 14-2 Security Risk Assessment Summary										
Locatio	Sabotage		Projectile Attack		Aerial Attack		Surface Attack		Underwater Attack	
n	Prob.	Conseq.	Prob.	Conseq.	Prob.	Conseq.	Prob.	Conseq.	Prob.	Conseq.
Outer Bar & Jetty Chann el	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Sabine Pass Chann el	Low	Mod	Low	Mod	Low	High	Low	High	Low	Mod
Port Arthur Ship Canal	Low	Mod	Low	Mod	Low	Mod	Low	Mod	Low	Mod
Sabine Neches Canal	Low	Mod	Low	Mod	Low	High	Low	High	Low	Mod
Neches River	Low	Mod	Low	Mod	Low	High	Low	High	Low	Mod



Conclusion

- ▲ Waterways leading to the Jefferson Railport LPG Terminal are suitable for marine LPG operations
- ▲ There are no conditions at the terminal site that would preclude loading of **LPGCs**





PILOT SIMULATOR



Port Welfare Sub-Committee Report Southeast Texas Waterway Advisory Committee Fr. Sinclair Oubre, Apostleship of the Sea



SHIP BILLING VOLUNTARY TARIFF



MARITIME MEMORIAL



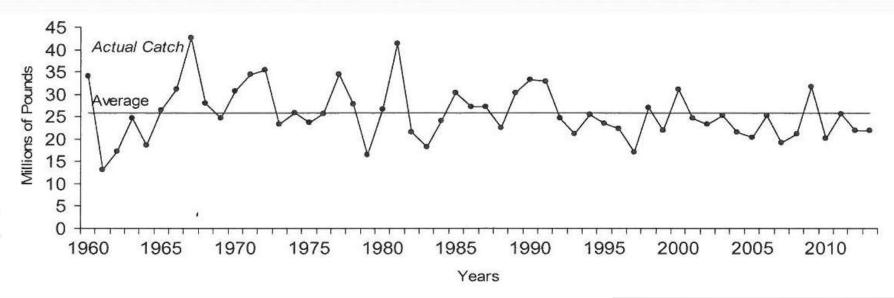
Texas Shrimp Value

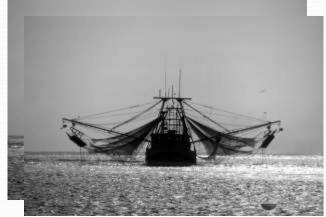


- Terrie Looney, Ph.D
- Coastal and Marine Resource Agent
- Jefferson and Chambers Counties



Historical Shrimp Landings





\$245 70,000 Harvest Value (2014 \$ millions) \$210 60,000 Harvest Weight (1000 lbs) 50,000 \$175 40,000 \$140 30,000 \$105 20,000 \$70 10,000 \$35 \$-0 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014

Figure 1. Annual Shrimp Harvest Statistics (2005-2014)

Data provided by NOAA Fisheries

Texas Harvest (\$)

■Texas Harvest (lbs)

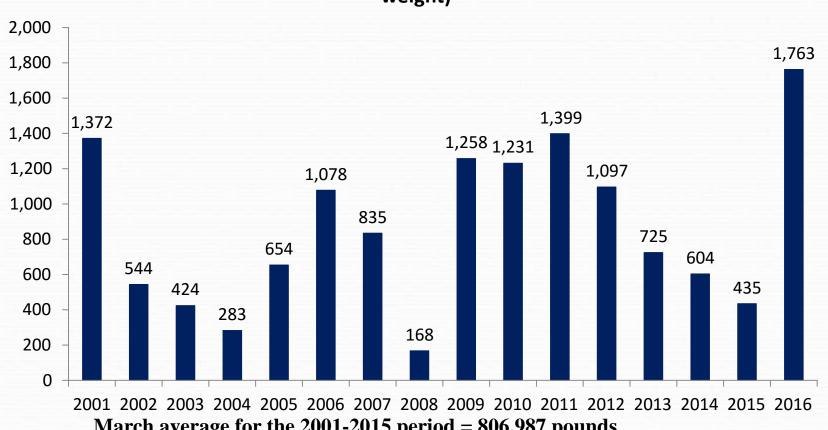
Figure 1. Annual Shrimp Harvest Statistics (2005-2014) 70,000 \$245 60,000 \$210 Harvest Value (2014 \$ millions) Harvest Weight (1000 lbs) 50,000 \$175 40,000 \$140 30,000 \$105 20,000 \$70 10,000 \$35 \$-0 2005 2006 2009 2011 2007 2008 2010 2012 2013 2014 Jefferson Co Harvest (lbs.) Jefferson Co. Harvest (\$) Texas Harvest (\$) Texas Harvest (lbs)

Data provided by NOAA Fisheries

March Landings in Texas Were 118.4% Above Historical Averages



Texas Landings, March 2001-2016 (thousands of pounds, HLSOweight)



March average for the 2001-2015 period = 806,987 pounds

Questions?

Terrie Looney, Ph.D.

tslooney@ag.tamu.edu

• 409-835-8461



Coastal Science Serving Texans



Waterway Maintenance and Improvement Sub-Committee Report Randy Reese, Sabine-Neches Navigation District



Update on Deepening Project

Sabine-Neches Waterway

Operations and Maintenance Update

CPT(P) Haley E. Mercer Operations Manager USACE –Galveston District

SETWAC Meeting April 28, 2015



US Army Corps of Engineers **BUILDING STRONG**®

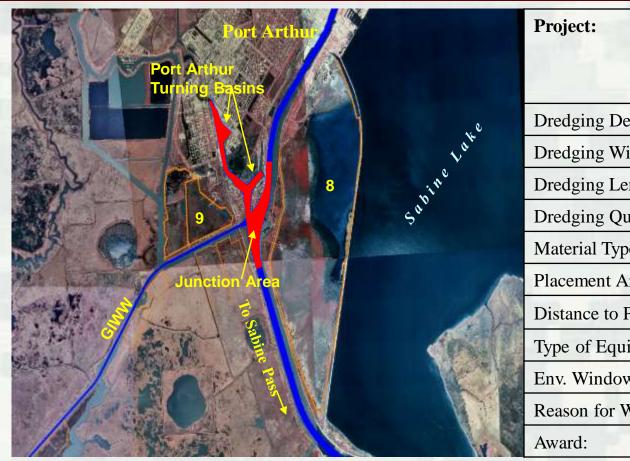


FY 2016 Dredging Contracts Sabine-Neches Waterway





SABINE-NECHES WATERWAY PORT ARTHUR CANAL, TURNING BASIN, JUNCTION AREA AND TAYLORS BAYOU



Project:	Sabine-Neches Waterway Port Arthur Canal, Turning Basin, Junction Area and Taylors Bayou				
Dredging Depth:	42 ft. Required Depth				
Dredging Width:	400 - 1200 ft.				
Dredging Length:	Varies				
Dredging Quantity:	Est. 1.2 MCYs				
Material Type:	Silt/Clay				
Placement Area:	PA 25, PA 8				
Distance to Place Area:	1.5 - 2 Miles Avg.				
Type of Equipment:	Pipeline				
Env. Window:	NA				
Reason for Window:	NA				
Award:	5 July 2016				

NOTE: Evaluating current and project shoaling so extent of dredging and award date may change; Will include shoaling areas near Port of Beaumont into contract scope.





SABINE-NECHES WATERWAY OUTER BAR AND BANK CHANNEL



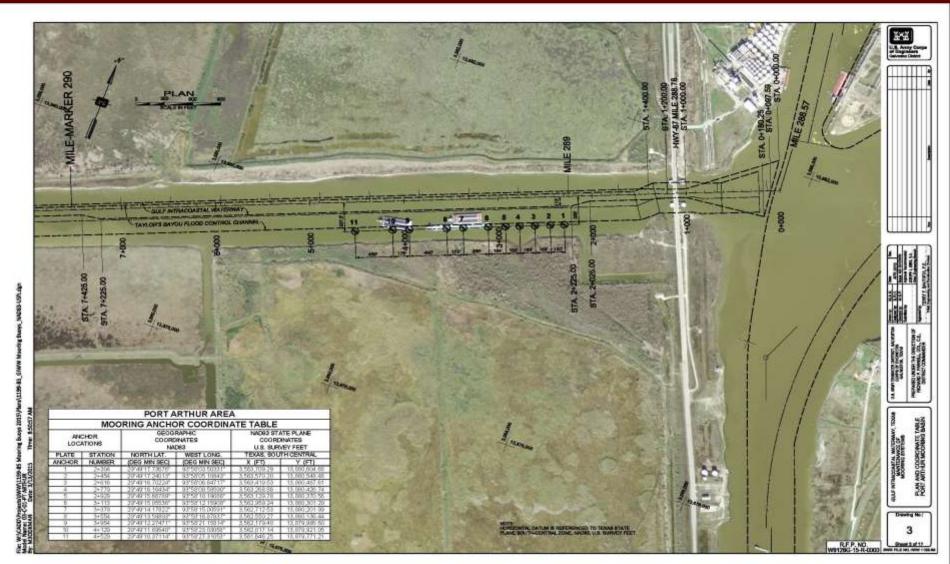
Project:	Sabine Neches Waterway Outer Bar and Bank Channel				
Dredging Depth:	44 ft. Required Depth				
Dredging Width:	800 ft.				
Dredging Length:	Varies				
Dredging Quantity:	Est. 4.4 MCYs				
Material Type:	Silt/Clay				
Placement Area:	ODMDS 1-4				
Distance to Placement Area:	3 Mile Avg.				
Type of Equipment:	Hopper				
Env. Window	April 1 thru Nov. 30				
Reason for Window:	Sea Turtles				
Award:	18 August 2016				

NOTE: Evaluating current and project shoaling so award date may change





SABINE-NECHES WATERWAY Buoy Maintenance





SABINE-NECHES WATERWAY Setback Policy Update

- SOP signed by SWG District Engineer on 7 April 2016
- URL (SOP):

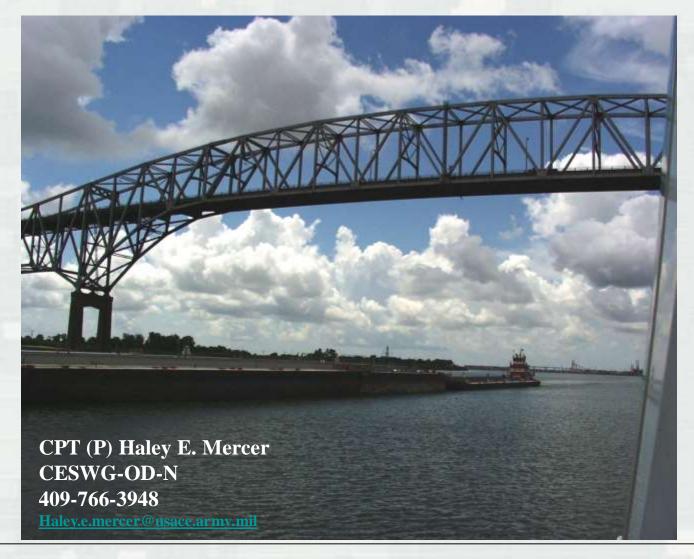
http://www.swg.usace.army.mil/Portals/26/docs/Navigation/Media/Executed%20SNWW%20SOP.pdf

URL (Maps):

http://www.swg.usace.army.mil/Portals/26/docs/Navigation/Media/Sabine%20Neches%20Setback%20Mapbook%202016%20(600dpi).pdf



Questions?





SETWAC Dredging Operations Subcommittee Brief

28 April 2016

Presented by Ed Morgan

Current Dredging Operations SNWW

Private Industry Work

Company	Application Submitted	Permit Signed	Work Start	CuYds	PA
Valero	1/26/16	4/7/16	No	24,200	9
Kinder Morgan	2/29/16	4/22/16	No	20,000	16
Valero (PI Dock)					
Motiva	3/2/16	Pending	No	35,000	17
Total	3/2/16	Pending	No	25,000	16

Pipeline Conflicts and SNWW

Background:

- Recent contract identified several issues with existing elevations of various pipelines crossing the SNWW
- Safety and environmental issues should a line be hit.
- Result was the dredging was not conducted but waterway along centerline remains navigable.

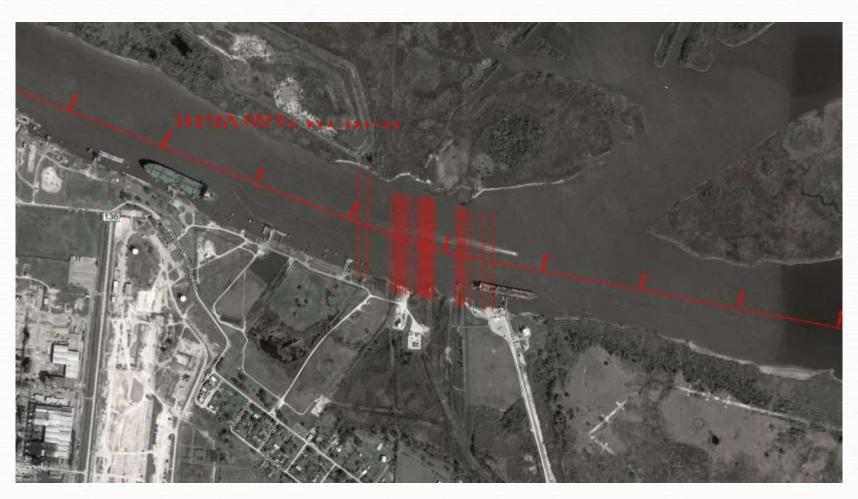
Actions:

- Appear some pipelines may need to be lowered in many areas prior to next dredging cycle.
- Galveston District (ACOE) is working to issue letters on approximately 11 lines that need to be lowered. There may be others as we go through this process but this is the starting point based on information received from owners.

Pipeline Conflict Area Below Deer Bayou TB



Pipeline Conflict Area Texaco Dock



Pipeline Conflict Area Below Reserve Fleet



Pipeline Conflict Area Above Reserve Fleet



MEAN LOWER LOW WATER (MILLW)

WHY CONVERT TO MEAN LOWER LOW WATER (MLLW)?

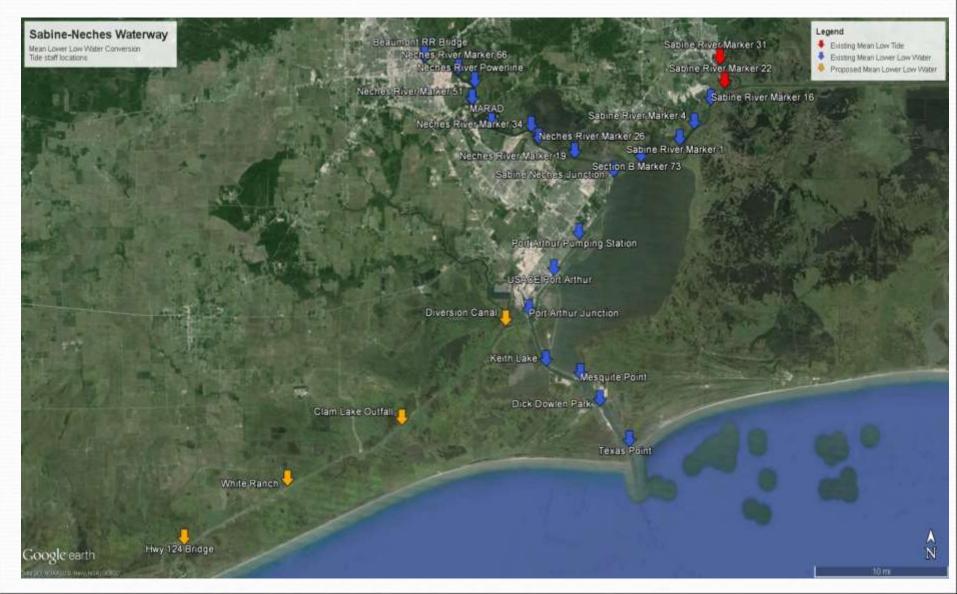
- Consistency Across Federal agencies:
 - NOAA
 - USCG
 - USACE

Internationally recognized vertical datum

WHAT IS MLLW?

- It is the depth (sounding) datum used on NOAA nautical charts; and internationally recognized.
- It is the *average* minimum *tidal* depth likely to be encountered by maritime operators

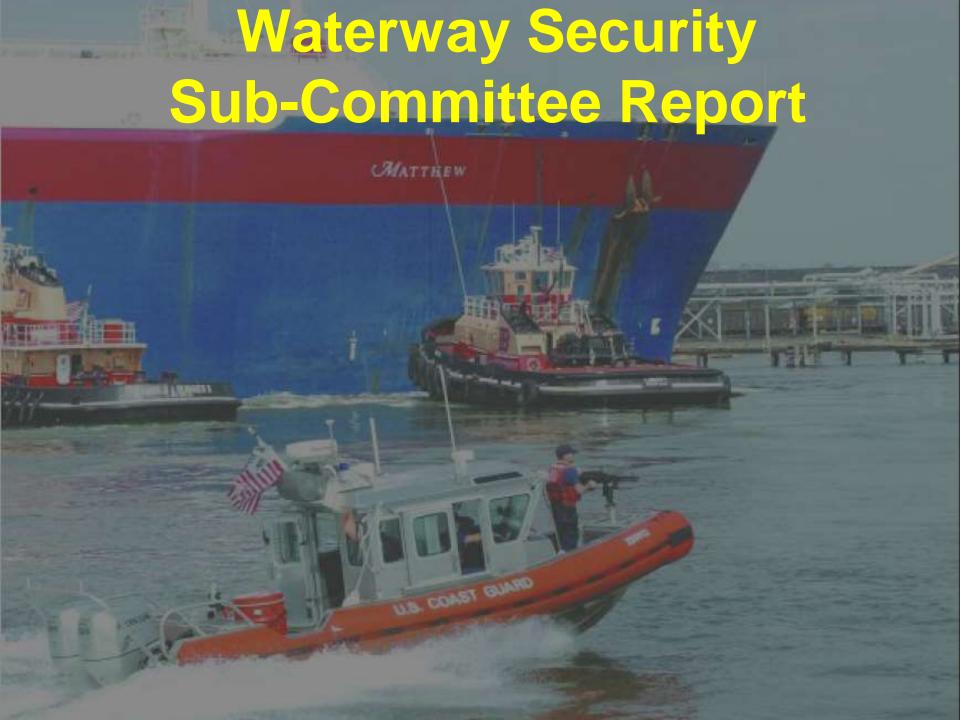
MLLW Tide Staff Locations



Facility Issues and Permits

- We have noted in performing surveys of the waterway that there are some structures that are in disrepair or just not being used or maintained. This is a possible concern to have parts of a structure end up in the navigation channel.
- Permits issued for these facilities require maintenance or removal to alleviate possible waterway obstructions.
- Identification of these structures/facilities will be brought to the attention of SWG Regulatory Compliance for possible action to remediate the problem.
- Where are we? PARO is still photographing and getting coordinates on areas of concern.

ANY QUESTIONS?





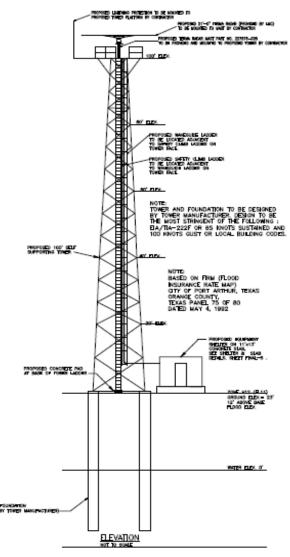
Sabine Neches Canal N RRL

New 100' self supporting Vessel Traffic Safety (VTS) tower and new Sabine Neches Canal N RRL, Jefferson County, Port Arthur, TX.

Construction start date May-June 2016

New (LED) 24hrs, Day/Night light.





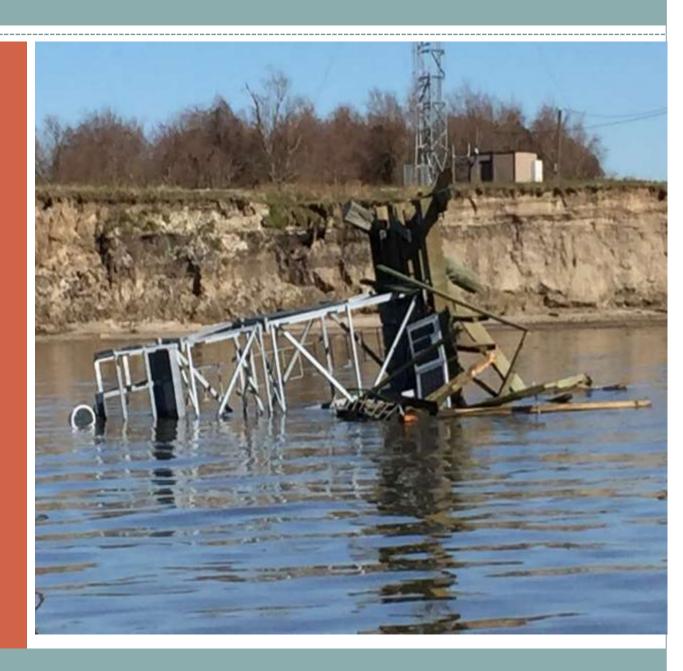
Destroyed ATON:

1/29/16 Sabine-Neches Canal M Upper RFL -UTV Matt Devall . \$125,360

2/7/16 Sabine River Light 22. UNK

2/18/16 Sabine Pass Anchorage Basin Light A. UNK

3/11/16 Sabine-Neches Canal LT 66 - UTV Nicholas. \$7822





Anticipated 100% completion by FY 19 – FY20

Major Ranges in SETWAC

Approximately 44% converted:

- 17 Range lights using 24hrs Day/Night LED's
- 21 Range lights using incandescent lamps

Minor ATON in SETWAC

Approximately 90% converted: (Continuing Process)

QUESTIONS/COMMENTS?



Port Hurricane Preparedness 2016





EXTENDED RANGE FORECAST OF ATLANTIC SEASONAL HURRICANE ACTIVITY AND LANDFALL STRIKE PROBABILITY FOR 2016



We anticipate that the 2016 Atlantic basin hurricane season will have approximately average activity. The current weakening El Niño is likely to transition to either neutral or La Niña conditions by the peak of the Atlantic hurricane season. While the tropical Atlantic is relatively warm, the far North Atlantic is quite cold, potentially indicative of a negative phase of the Atlantic Multi-Decadal Oscillation. We anticipate a near-average probability for major hurricanes making landfall along the United States coastline and in the Caribbean. As is the case with all hurricane seasons, coastal residents are reminded that it only takes one hurricane making landfall to make it an active season for them. They should prepare the same for every season, regardless of how much activity is predicted.

(as of 14 April 2016)

Source: Department of Atmospheric Science Colorado State University

Fort Collins, CO 80523

http://hurricane.atmos.colostate.edu/forecasts/





ATLANTIC BASIN SEASONAL HURRICANE FORECAST FOR 2016

Forecast Parameter and 1981-2010 Median (in parentheses)	Issue Date 14 April 2016	Observed Activity Through March 2016	Total Seasonal Forecast (Including Alex)*
Named Storms (NS) (12.0)	12	1	13
Named Storm Days (NSD) (60.1)	50	2	52
Hurricanes (H) (6.5)	5	1	6
Hurricane Days (HD) (21.3)	20	1	21
Major Hurricanes (MH) (2.0)	2	0	2
Major Hurricane Days (MHD) (3.9)	4	0	4
Accumulated Cyclone Energy (ACE) (92)	90	3	93
Net Tropical Cyclone Activity (NTC) (103%)	95	6	101

^{*}Hurricane Alex formed in January 2016. Over the remainder of the document, our seasonal forecast numbers refer to TCs forming after Alex.

Source: Department of Atmospheric Science

Colorado State University Fort Collins, CO 80523

http://hurricane.atmos.colostate.edu/forecasts/



Discussion



- Industry Hurricane Plan
- Port Conditions
- Communications MSIBs / Port Coordination Team
 (PCT) Calls Remaining In Port Notifications
- NO Safe Haven
- Facility concerns
 - Dock Surveys
- U.S. Coast Guard POC (Hurricane Duty Officer)
 ENS Leanna Marlin



Industry Hurricane Plan



- Circumstances arising during any particular storm may require that the COTP make some recommendations of this plan mandatory using the authority granted in 33 CFR 160 and 33 CFR 165.
- Affected parties will be notified via Marine Safety Information Bulletin (MSIB) and/or Broadcast Notice to Mariners (BNTM).
- For safety and security the Ports and waterways may be closed to commercial traffic prior to the landfall of a hurricane.
- Commercial ocean-going vessels and ocean-going tug/barge combinations over 500 gross tons should take early and decisive action to depart the port and evade the storm as it approaches.
- Facility operators should be advised that the COTP will not order vessels to depart the facility if doing so would unduly hazard the vessel. Masters or agents of vessels over 500 GT unable to depart should report their intentions to the COTP. Requests to remain in port should contain detailed information about the facility where the vessel will remain moored, and an indication of whether the facility operator concurs with the request to remain.

UNCLAS



Port Conditions



Port Hurricane Condition	Recommended Actions for Commercial, Oceangoing Vessels and Barges Over 200 GT	
CONDITION WHISKEY (Alert – 72 Hrs)	Make all preparations to get underway. Set navigation and radio watch. "Dead" ships, vessels, or barges unable to put to sea must contact VTS Port Arthur. Information should be submitted prior to setting Condition X-Ray.	
Condition X-Ray (Readiness – 48 Hrs)	All vessels should prepare to complete cargo operations and depart port within 24 hours, or when Condition Yankee is set. Vessels and barges unable to depart must contact VTS Port Arthur before setting Condition Yankee.	
Condition Yankee (Warning – 24 Hrs)	Port is closed to incoming traffic without specific approval of the COTP. All cargo operations should be secured. All vessels are encouraged to put to sea.	
Condition Zulu (Danger – 12 Hrs)	Port is closed. No terminal, facility, or vessel operations are permitted.	



Communications



Method	How Transmitted	When Used
Marine Safety Information Bulletin (MSIB)	Homeport, E-mail, & Internet	When Port Hurricane Conditions change, as needed to update status and announce meetings.
Broadcast Notice To Mariners (BTM)	VHF-FM Channels 16, 13, & 22A	When Port Hurricane Conditions change and when safety zones are enforced.
VTS Advisory	VHF-FM Channels 65A and 01A	When Port Hurricane Conditions change and when safety zones are enforced.
 Landline MSU Port Arthur VTS Port Arthur Station Sabine 	(409) 723-6500 (409) 723-5070 (409) 971-2194	To make request, reports or inquires to the Coast Guard. SAR ONLY
Fax ■ MSU Port Arthur ■ VTS Port Arthur ■ Station Sabine	(409) 723-6534 (409) 719-5090 (409) 971-2194	To make request, reports or inquires to the Coast Guard.
VHF-FM ■ VTS Port Arthur	Channel 65A & 01A	To make request, reports or inquires to the Coast Guard.
Port Coordination Team	Teleconference Call with designated industry representatives	



VTS Port Arthur



http://www.uscg.mil/d8/vtsportarthur/Hurricanes.asp



No Designated Safe Haven

• As there are no safe havens in the Port Arthur Captain of the Port Zone, the risk of damage to our ports is reduced when the number of commercial vessels is minimized.

Accordingly, commercial ocean-going vessels and ocean-going tug/barge combinations over 500 GT will generally be encouraged to depart the port when hurricanes approach.

• Masters or agents of vessels unable to depart the port should contact VTS Port Arthur before Condition YANKEE is set for the region. Survey information that needs to be provided to the VTS

is included in this pre-event plan.



No Designated Safe Haven



- Commercial vessels, including fishing vessels, less than 500 gross tons will be directed to seek shelter north of the Intracoastal Waterway on the Calcasieu River and north of Texaco Island Intersection on the Sabine-Neches Waterway.
- Shallow draft vessels that intend to seek shelter upriver should anticipate draw bridges and locks closing due to high winds or storm surge and proceed accordingly. A prudent mariner should know under what conditions the bridges in the area would close.
- Barge fleets, particularly those carrying hazardous cargoes, should make every attempt to protect fleet populations. Upon notification of an impending hurricane and if possible, standby vessels should be positioned for quick recovery in the event of a breakaway.



Dock Surveys



Annual pre-storm season survey is a good practice to establish a baseline regarding underwater conditions at a facility. This is important if there is insurance coverage or to recover money from federal (FEMA) or State disaster relief programs. If the facility only needs one survey per year (from Best Practices analysis of sedimentation rates) then the pre-storm season time-frame is as good as any.

Chris Ransome and Assoc.

Houston, TX





Thank you



EMERGENCY MANAGEMENT



COASTAL AND ICW PROTECTION



- Multibeam Depth Sounding Systems
- Side Scan Sonars
- Imaging Sonars

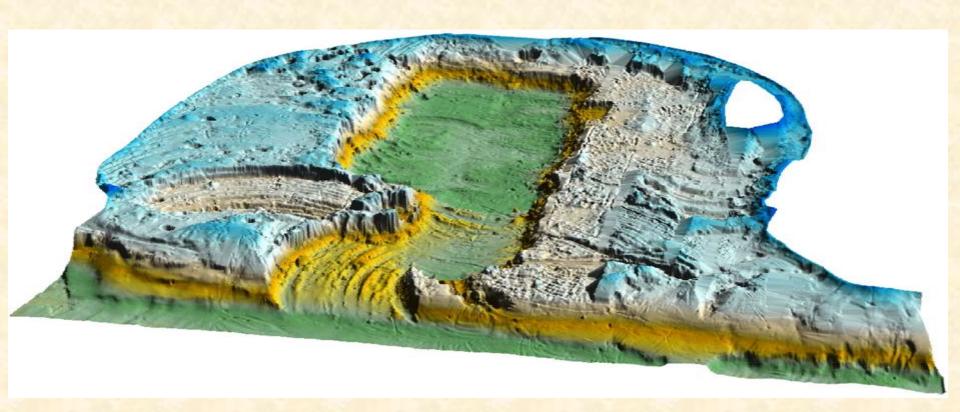
Chris Ransome

President

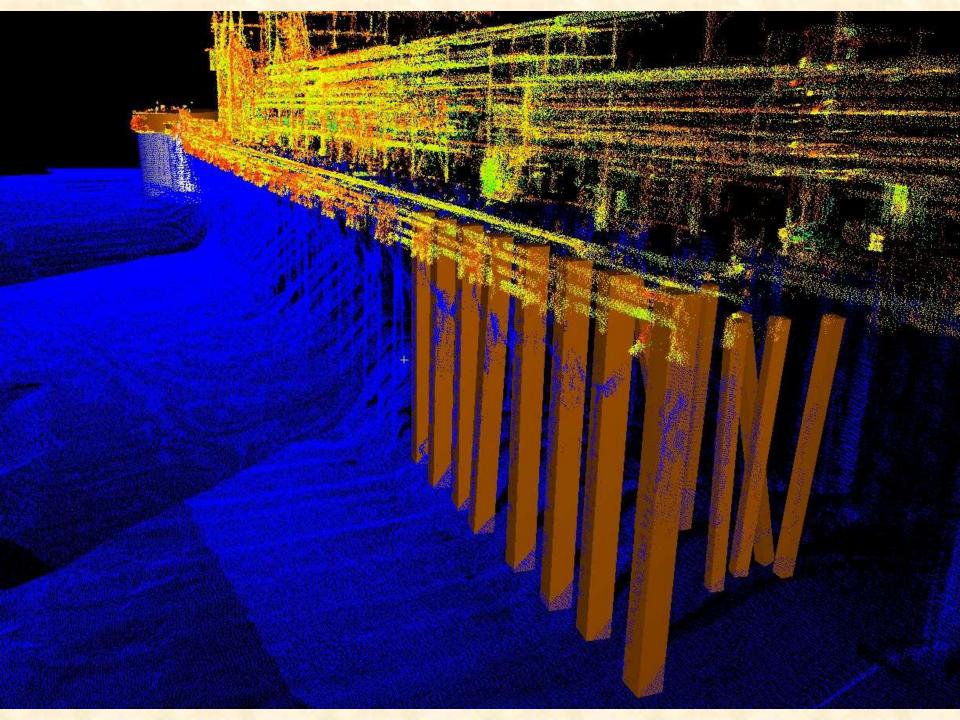
CRA, Houston, Texas

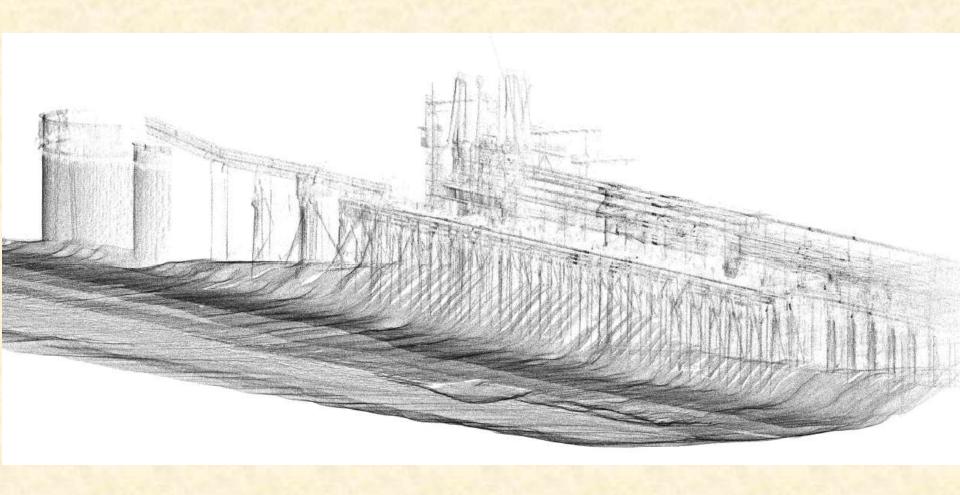
Multibeam Systems

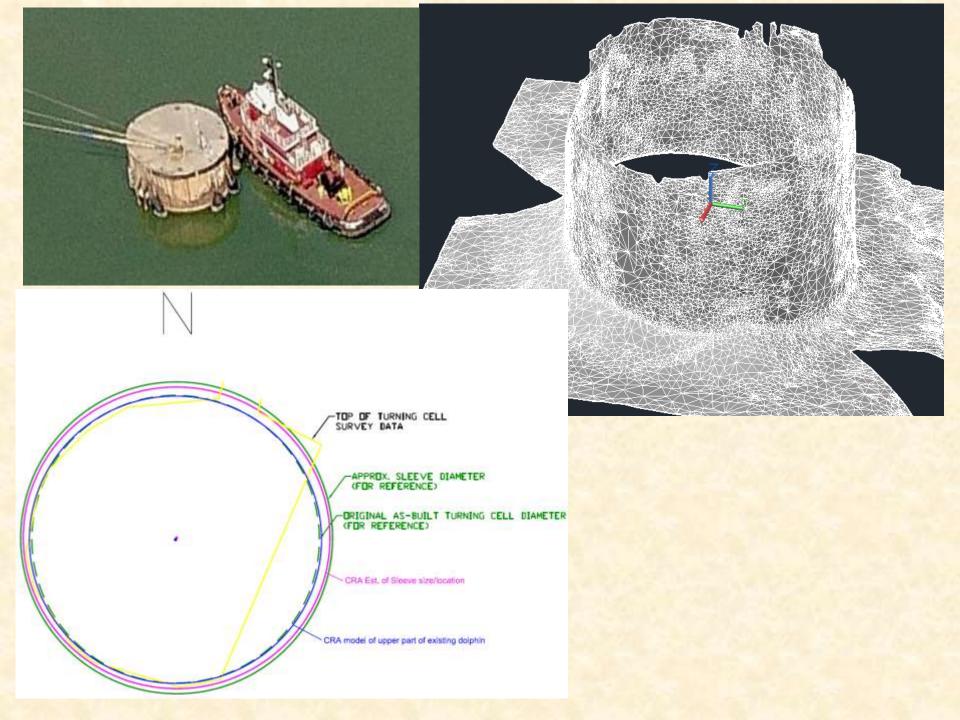
- Cover swath up to 2.5 to 6 times water depth
- Produces terrain model down to 1ft x 1ft grid over area surveyed
- Can see under some vessels and all piled docks
- 200kHz to 400 kHz normal operating frequencies + 700 kHz high frequency option
- Requires sophisticated motion and heading sensors

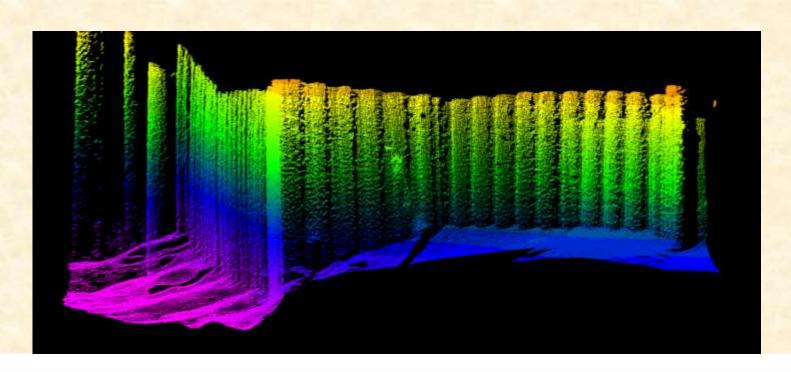


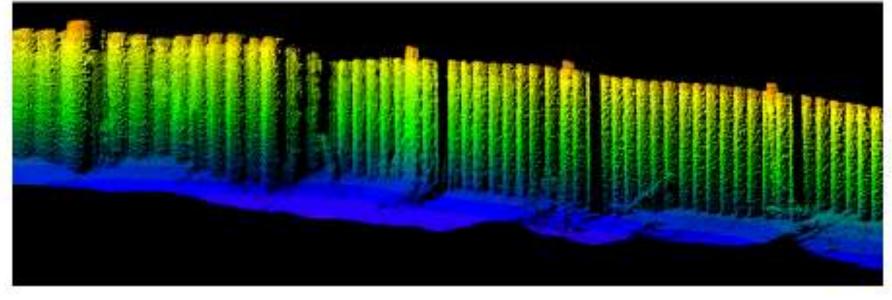












Scanning Imaging Sonars

- Mounted either on a pole over the side of a boat or on a tripod lowered to the sea bed.
- Typically operates around 700 MHz but can go up to 1.35MHz and even 2.25 MHz.
- Mechanically scanning sonar head
- Limited coverage but very good resolution (no motion "smear").
- 3-D "Multibeam" models now available



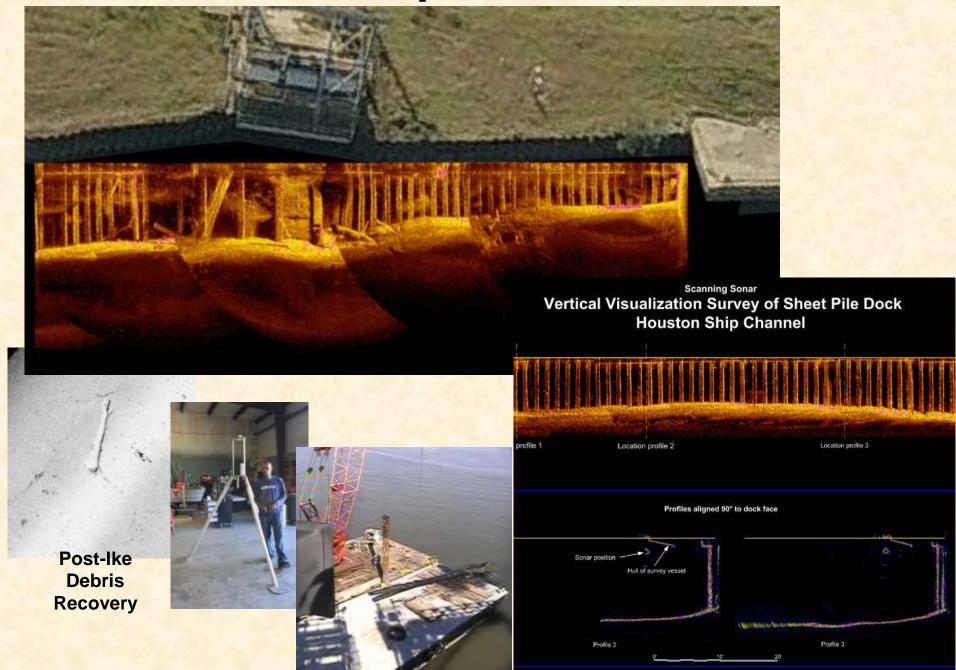
The BlueView BV5000 3-D mechanically scanning sonar head creates high resolution imagery of structures and objects and a 3-D point cloud that can be brought into CAD for modeling.



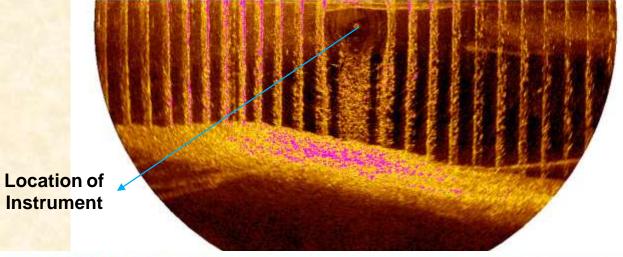
The Kongsberg Mesotech MS1000 series
1171 sonar head in a tripod.

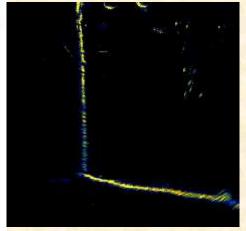


Examples of Data











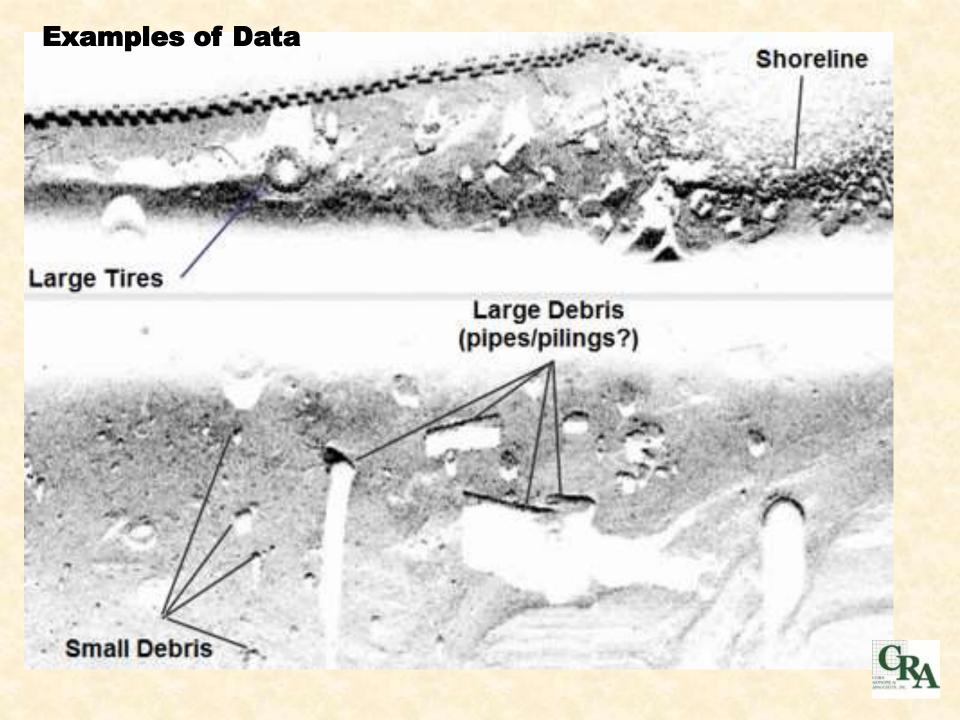
Side Scan Sonar

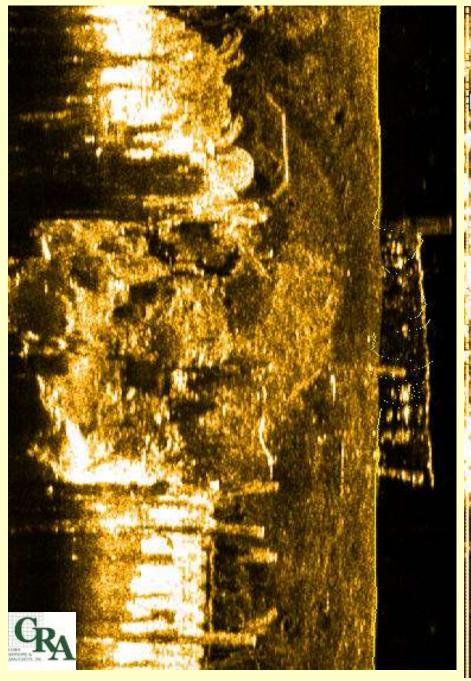
- New dual (high) frequency Units
 - 400/900 kHz
 - 600/1600 kHz
- All Digital
- Chirp Technology
- More sophisticated processing

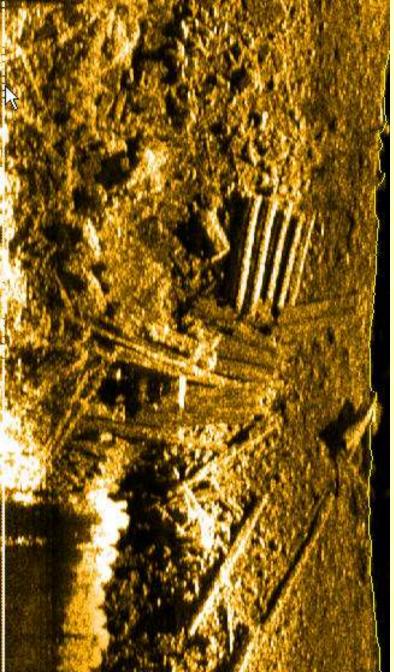












Menhaden Report Rich Russell, AET









Menhaden Report

Questionnaire available at: VTS Port Arthur Website and Homeport

Mark Your Calendars Upcoming SETWAC Meetings

Working Group Meeting

Thursday, July 14, 2016 10:00 am

Sabine-Neches Navigation District Office

Full Committee Meeting

Thursday, July 28, 2016 10:00 am MSU Port Arthur