BATHYMETRY SURVEY, DEBRIS SAMPLING AND BULKHEAD SURVEY
KEY ALLEGRO CANAL AND PROPERTY OWNER ASSOCIATION, INC.
KEY ALLEGRO SUBDIVISION
KEY ALLEGRO, ROCKPORT, ARANSAS COUNTY, TEXAS

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1.0 INTRODUCTION

Key Allegro Canal and Property Owners Association, Inc. (KACPOA) contracted Belaire Environmental, Inc. (BEI) to gather data to demonstrate the extent and type of debris that remains within the canals following Hurricane Harvey. BEI was also contracted to conduct a bathymetry survey of each canal, and to document the condition of visible bulkhead structures along each canal. The information gathered during these surveys will aid KACPOA in the decision-making process for dredging projects and determining bulkhead requirements. The below report outlines the methods and results of each survey.

2.0 METHODS

Bathymetry:
To conduct the bathymetric survey, BEI utilized a dual frequency SonarMite DFX to collect canal bottom elevations throughout the approximate 25,436 linear feet of canals. The SonarMite DFX was used in combination with a Trimble R10 rover and a handheld datalogger to record canal bottom elevations. Elevations and their position coordinates were recorded by a Trimble TSC3 data logger at 10-foot intervals. All data was then post processed in the office using ARCGIS 10.4.

Debris Sampling:
Debris sampling occurred within each canal. Grab samples were taken at approximately 200-foot intervals for a total of 135 sample points. A Ponar dredge grab sampler was used to retrieve one sample at each point. If debris was present at the sample point it was separated from the sediments using a sieve with ¼ inch mesh. Photographic documentation was obtained for all grab samples with debris present. The canal bottom elevations and coordinates for each sample location were logged using a Trimble R10 GPS and Trimble TSC3 data logger. Debris obtained at each sample point was documented and retained for appropriate disposal.

In addition to the grab samples, an oyster dredge was utilized to obtain additional debris data. The oyster dredge was tied off to the boat and lowered into the water until the dredge was on the canal bottom. The dredge was then pulled along the canal bottom for approximately 50 feet. The dredge was then lifted into the boat and the contents were emptied into a sieve with ¼ inch mesh. Photographic documentation was obtained for all grab samples with debris present. The canal beginning and ending coordinates for each 50-foot dredge location were logged using a Trimble R10 GPS and Trimble TSC3 data logger. Debris obtained at each sample point was documented and retained for appropriate disposal.

Bulkhead Survey:
BEI did not have permission to access private property to complete a detailed bulkhead analysis. Therefore, to conduct the bulkhead survey, BEI visually inspected bulkheads via boat. Bulkheads that appeared to have failed were visually inspected, recorded via photographic documentation, and geographic coordinates were obtained using a Trimble R10 GPS and Trimble TSC3 data logger system. Numerous bulkheads were unable to be observed due to structures built above and/or in front of the bulkhead obstructing the view.

3.0 RESULTS

BEI personnel conducted surveys on January 24, 25, 28, and 30, 2019. Exhibit A provides a summary of the results for each separate canal.

Bathymetry:
Exhibit B provides an overview map of the bathymetry results across all canals. Prior US Army Corps of Engineers (USACE) permits and KACPOA Deed Restrictions were used to determine the finished grade of -4.88 feet NAVD 88, the equivalent of -6.00 feet Mean Sea Level (MSL). The conversion from MSL to NAVD 88 was determined based upon data obtained from the National Oceanic and Atmospheric Administration (NOAA) Tides and Currents datums for Rockport, Texas, Station 8774770. The average canal depth, its corresponding average sediment depth, and the approximate volume of dredge material to be removed within each canal is shown in Exhibit C. Overall, the estimated dredge volume to a finished grade of -4.88 feet NAVD 88 (-6.00 feet MSL) is approximately 49,658 cubic yards. The estimated dredge volume to include one-foot for advanced maintenance (-5.88 feet NAVD 88, -7.00 feet MSL) is 97,497 cubic yards.

Debris Sampling:
Grab samples were collected with a Ponar at 135 sample points. Organic matter such as leaves, sticks, and other various small organic plant debris was present at 86 of the 135 sample locations (63.7% of the overall grab samples). At 41 of the 135 (30.37%) sample locations small debris other than organic matter was retrieved. An additional eleven instances were recorded where large debris was present at or near the grab sample location (8.14%). Large debris that was encountered within the canal bottom was unable to be retrieved for analysis. Roof shingles were the most commonly encountered non-organic small debris. Of the 41 grab sample locations where debris was retrieved, shingles were present at 30 of them (73.17%). Other debris recovered included concrete, metal, nails, plastic, and wood.

50-foot linear dredge samples were taken at 21 locations, one in each canal. 20 of the 21 dredge samples (95.24%) contained debris. All 20 of the samples where debris was retrieved included shingles. Organic matter was also present within the dredge sample locations and was recorded at 12 locations, comprising 60% of the samples containing debris. Other debris recovered included aluminum, fabric, insulation, metal, nails, plastic, and wood. At one dredge location, within Condominium Canal, a large debris item was encountered but unable to be retrieved. Exhibit A details the debris encountered within each individual canal.

As mentioned above, large debris was encountered at eleven locations during grab sampling and at one location during dredge sampling. The large debris was not able to be retrieved for disposal. Exhibit B provides an overview map of each sample location as well as the locations for the large debris that could not be retrieved. Exhibit D provides photographic documentation of the sampling efforts.

Bulkhead Survey:
BEI observed 15 bulkheads that showed obvious visual signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions. The locations of failed bulkheads are shown in the Exhibit B overview map. Canal depths and sedimentation was analyzed at these locations to determine if sediment depths increased within the vicinity of failed bulkheads. There was no discernable variation in sediment depths that could be confidently attributed to bulkhead breaches. This is not to say that land erosion from failed bulkheads definitively has not contributed to the

accumulated sediment, but merely suggests that if land erosion has caused an increase in sediment accumulation it has not remained in place adjacent to the failed bulkhead but is potentially dispersed within the canal.

The KACPOA bylaws currently require that all bulkheads maintain a minimum freeboard of 1 foot above MSL, equivalent to +2.12 feet NAVD 88. The annual high tide for the Rockport area is currently +2.65 feet NAVD 88 (+1.53 feet MSL). The annual high tide elevation is determined by examining NOAA tide data over a ten to eighteen-year period. Tides attributed to storm events are excluded from analysis. The resulting annual high tide for each year is added together and divided by the number of years included in the analysis. The result is the average annual high tide value for an area. The +2.65 feet NAVD 88 annual high tide, derived from NOAA's Rockport Station 8774770, has been previously coordinated with, and approved by, the USACE and other resource agencies. The current KACPOA minimum bulkhead requirement is approximately 0.53 feet lower than the normal high tides experienced each year in Rockport. Further, since storm surge is excluded from analysis, it is expected that bulkheads built to the minimum height requirement could experience substantial overtopping during surge events.

4.0 CONCLUSIONS

The purpose of these efforts was to provide KACPOA data necessary to make informed decisions based upon the current site conditions. Additionally, the data can be provided to dredge contractors for evaluation of appropriate dredge methods and material placement. At the request of the KACPOA, BEI will coordinate with contractors to investigate feasible methods for dredging and disposal of accumulated material.

Exhibit A

Individual Canal Summaries

Albacore Canal

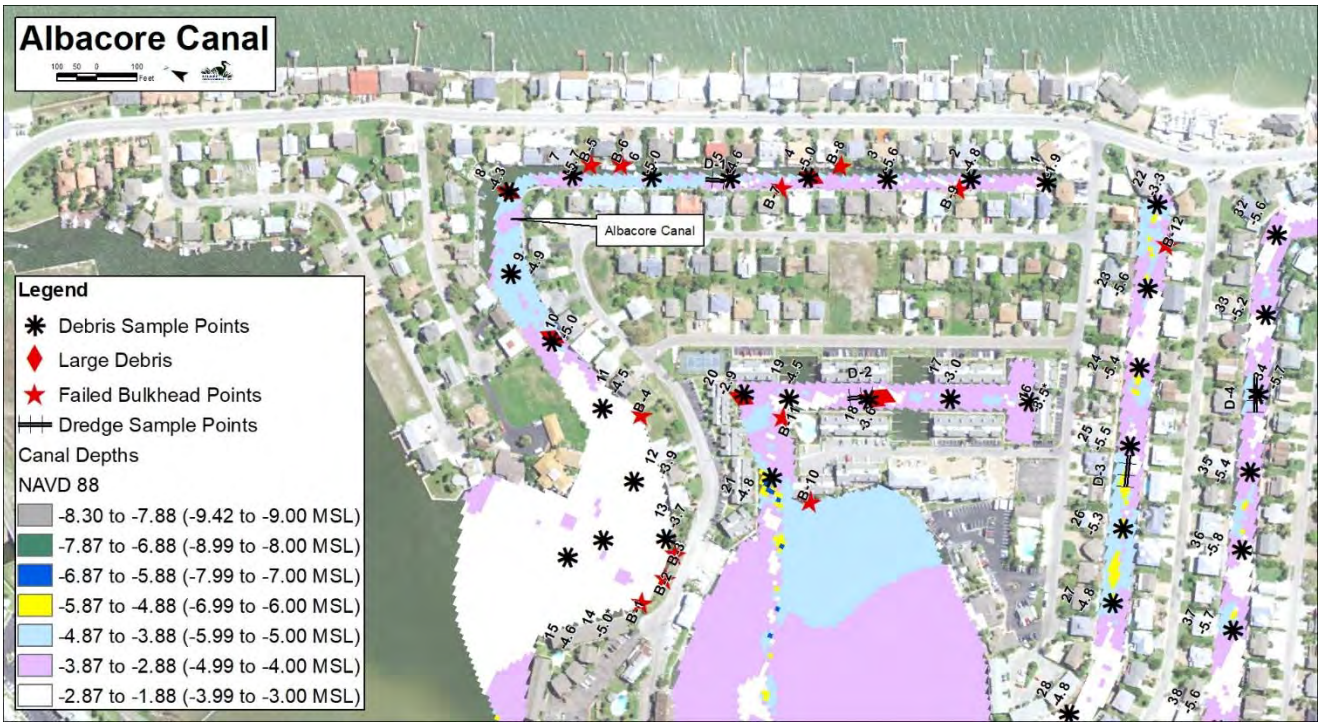
The Albacore Canal average bottom elevation was approximately -3.36 feet NAVD 88 (-4.48 feet MSL). Overall canal bottom elevations were relatively consistent through this canal. However, slight variations in bottom elevations were present. The below table documents the estimated dredge volume to achieve a finished grade of -4.88 feet NAVD 88 (-6 feet MSL). The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged (finished grade -5.88 feet NAVD 88, -7 feet MSL).

Nine visible bulkheads along Albacore Canal showed obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions. The locations of the failed bulkheads are depicted on the map below. Additionally, Exhibit D shows photographic documentation of the failed bulkheads.

The Albacore Canal debris sampling included 15 grab sample locations and one 50-foot linear dredge. Debris found at these samples included metal, fishing line, shingles, plastic, wood, and organic matter. The organic matter classification consisted of leaves, sticks, and other various small organic plant debris. In the Albacore Canal, three pieces of large debris were located that could not be removed for identification. Typically, debris found within the canal was located within the top six inches of the sediment. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Albacore Canal Debris Sample		**Number of Sample Points with Debris**
Grab	Fishing Line	1
	Shingles	8
	Plastic	1
	Wood	1
	Large Debris (Unable to Remove)	3
	Organic Matter	5
50' Drag	Metal	1
	Shingles	1

Albacore Canal Estimated Dredge Volume	
Cut (feet)	**Volume (cubic yards)**
1.52	14,853.26
2.52	24,625.15



Condominium Canal

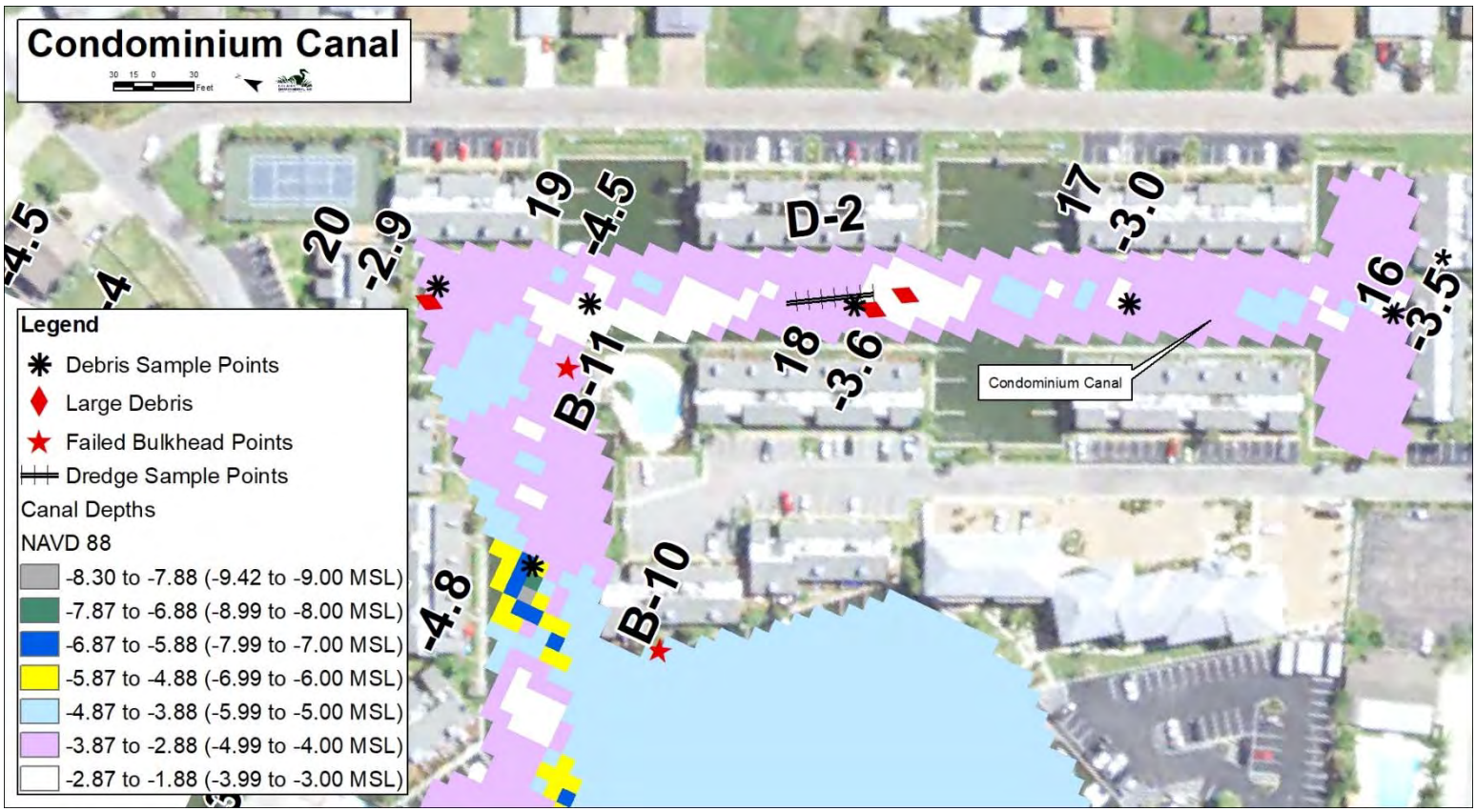
The Condominium Canal average bottom elevation was approximately -3.43 feet NAVD 88 (-4.55 feet MSL). Overall canal bottom elevations were relatively consistent through this canal. However, slight variations in bottom elevations were present. The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

Two visible bulkheads along Condominium Canal showed obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions. The locations of the failed bulkheads are depicted on the map below. Additionally, Exhibit D shows photographic documentation of the failed bulkheads.

The Condominium Canal debris sampling included six grab sample points and one 50-foot linear dredge. Debris found at these samples included large unidentified debris and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. In the Condominium Canal, three pieces of large debris were located that could not be removed for identification. Typically, debris found was located within the top six inches of sediment. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Condominium Canal Debris Sample		Number of Points
Grab	Large Debris (Unable to Remove)	2
	Organic Matter	3
50' Drag	Large Debris (Unable to Remove)	1

Condominium Canal Estimated Dredge Volume	
Cut (feet)	**Volume (cubic yards)**
1.45	3,165.21
2.45	5,348.11



Bonita Canal

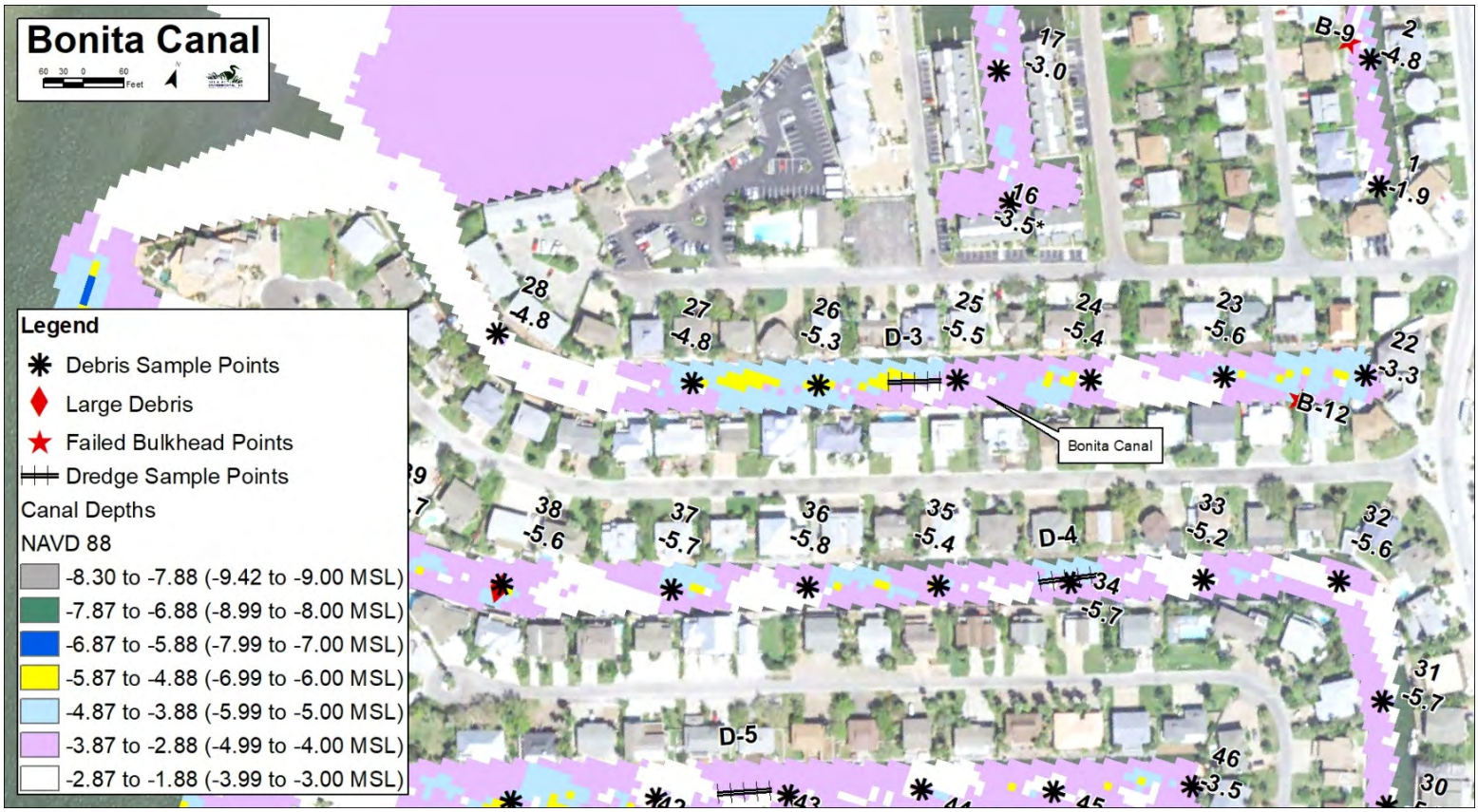
The Bonita Canal average bottom elevation was approximately -3.44 feet NAVD 88 (-4.56 feet MSL). The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

One visible bulkhead along Bonita Canal showed obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions. The location of the failed bulkhead is depicted on the map below. Exhibit D shows photographic documentation of the failed bulkheads.

The Bonita Canal debris sampling included seven grab sample points and one 50-foot linear dredge. Debris found at these samples included shingles, concrete/rock, wood, and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. Typically, debris found was located within the top six inches of sediment. No large debris was found. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Bonita Canal Debris Sample		Number of Points
Grab	Shingles	3
	Concrete/Rock	1
	Wood	1
	Organic Matter	6
50' Drag	Wood	1
	Shingles	1

Bonita Canal Estimated Dredge Volume	
Cut (feet)	Volume (cubic yards)
1.44	4,150.22
2.44	7,032.32



Redfish Canal

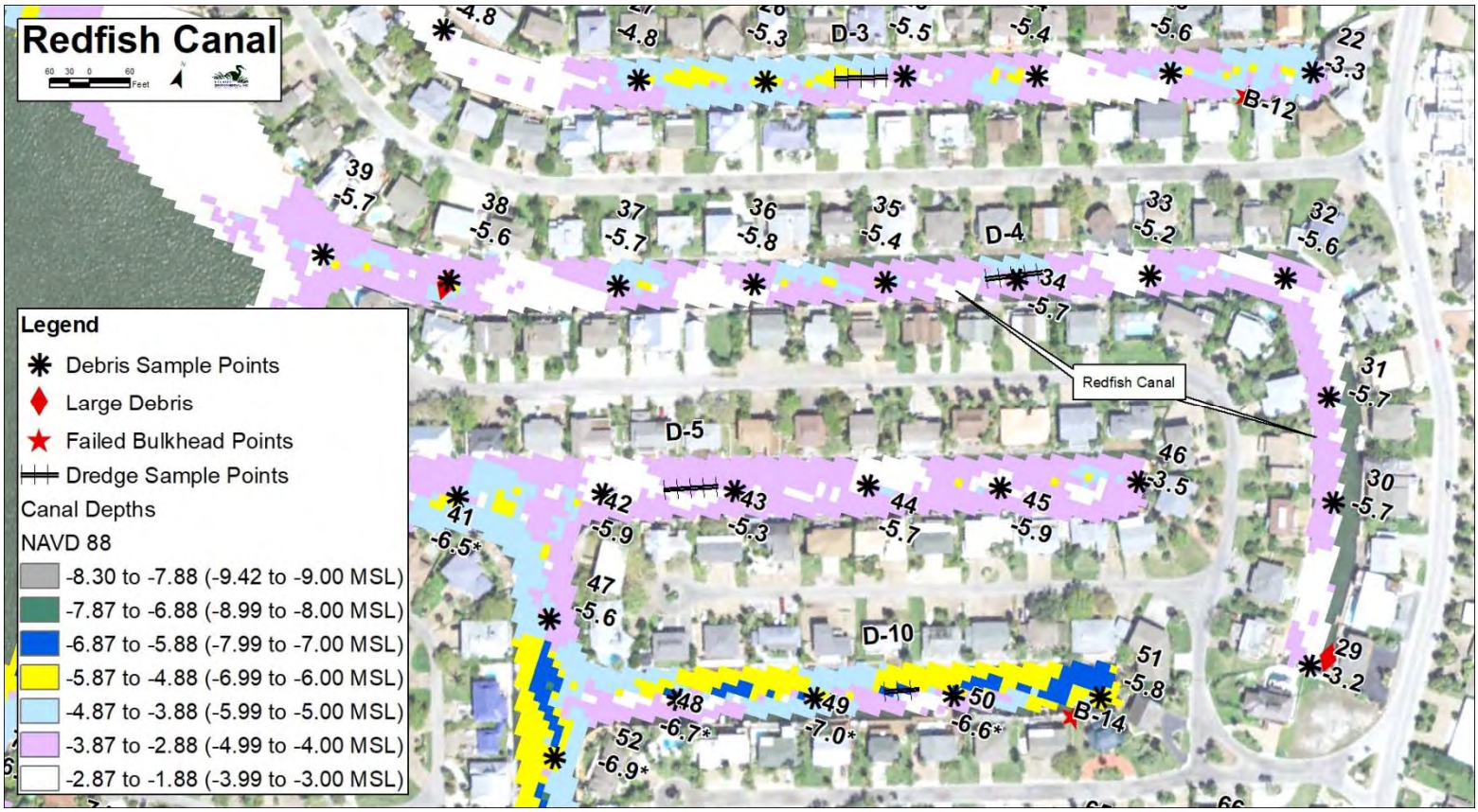
The Redfish Canal average bottom elevation was approximately -3.13 feet NAVD 88 (-4.25 MSL). Overall canal bottom elevations were relatively consistent through this canal. However, slight variations in bottom elevations did occur. The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

Visible bulkheads along Redfish Canal showed no obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions.

The Redfish Canal debris sampling included eleven grab sample points and one 50-foot linear dredge. Debris found at these samples included shingles, shingle tabs, plastic, and organic debris. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. In the Redfish Canal, two pieces of large debris were located that could not be removed for identification. Typically, debris found was located within the top six inches of sediment. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Redfish Canal Debris Sample		Number of Points
Grab	Shingle	6
	Shingle (Metal)	2
	Plastic	2
	Large Debris (Unable to Remove)	2
	Organic Matter	4
50' Drag	Plastic	1
	Shingles	1
	Organic Matter	1

Redfish Canal Estimated Dredge Volume	
Cut (feet)	Volume (cubic yards)
1.75	6,219
2.75	9,773



Flounder Canal

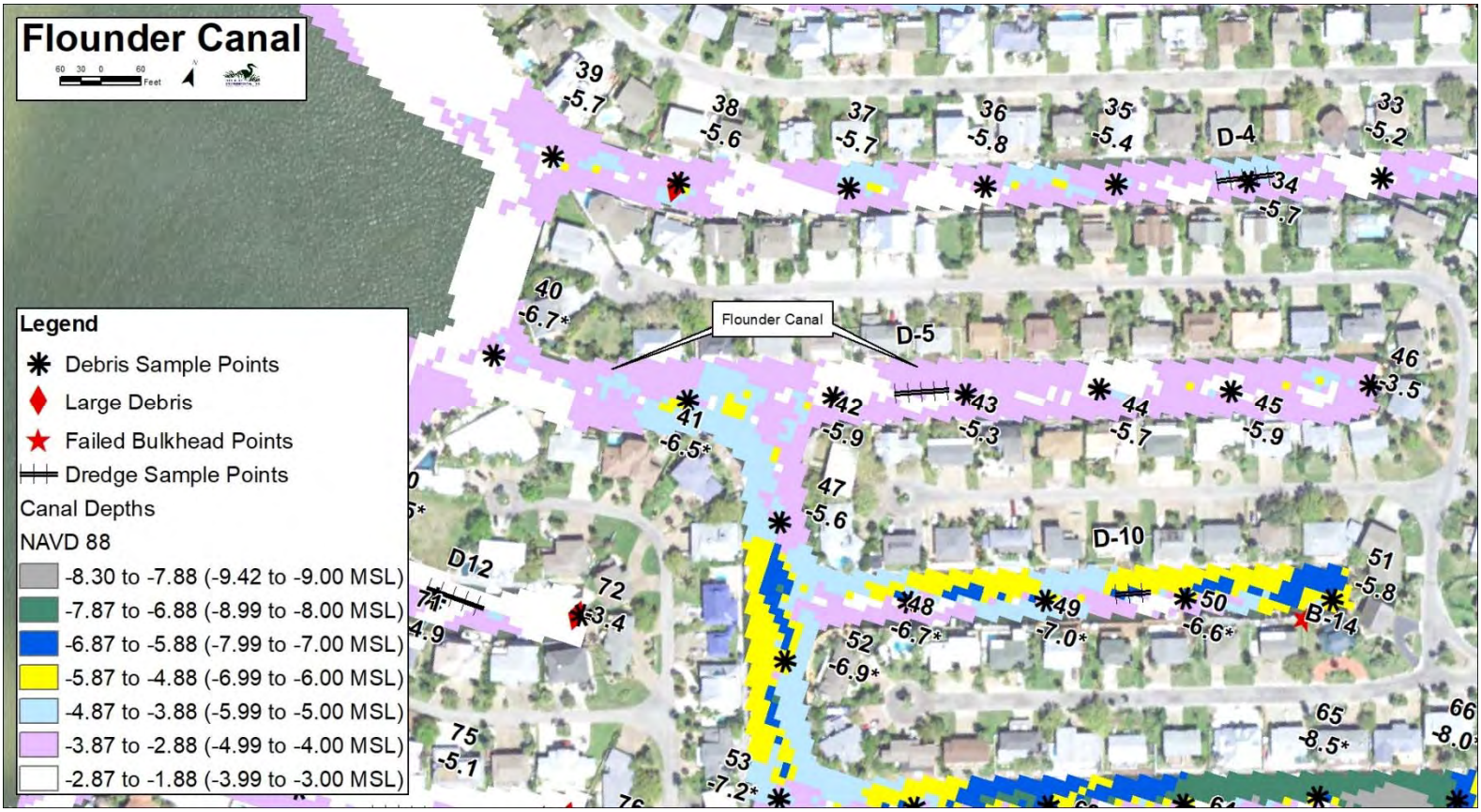
The Flounder Canal average bottom elevation was approximately -3.29 feet NAVD 88 (-4.41 MSL). Overall canal bottom elevations were relatively consistent through this canal. However, slightly deeper bottom elevations were present near the mouth of Marlin Canal. The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

Visible bulkheads along Flounder Canal showed no obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions.

The Flounder Canal debris sampling included seven grab sample points and one 50-foot linear dredge. Debris found at these samples include fabric, partial shingles, plastic, and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. Typically, debris found was located within the top six inches of sediment. No large debris was found. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Flounder Canal Debris Sample		Number of Points
Grab	Organic Matter	6
50' Drag	Plastic	1
	Shingles	1
	Fabric	1
	Organic Matter	1

Flounder Canal Estimated Dredge Volume	
Cut (feet)	**Volume (cubic yards)**
1.59	4,984.82
2.59	8,119.92



Dolphin Canal

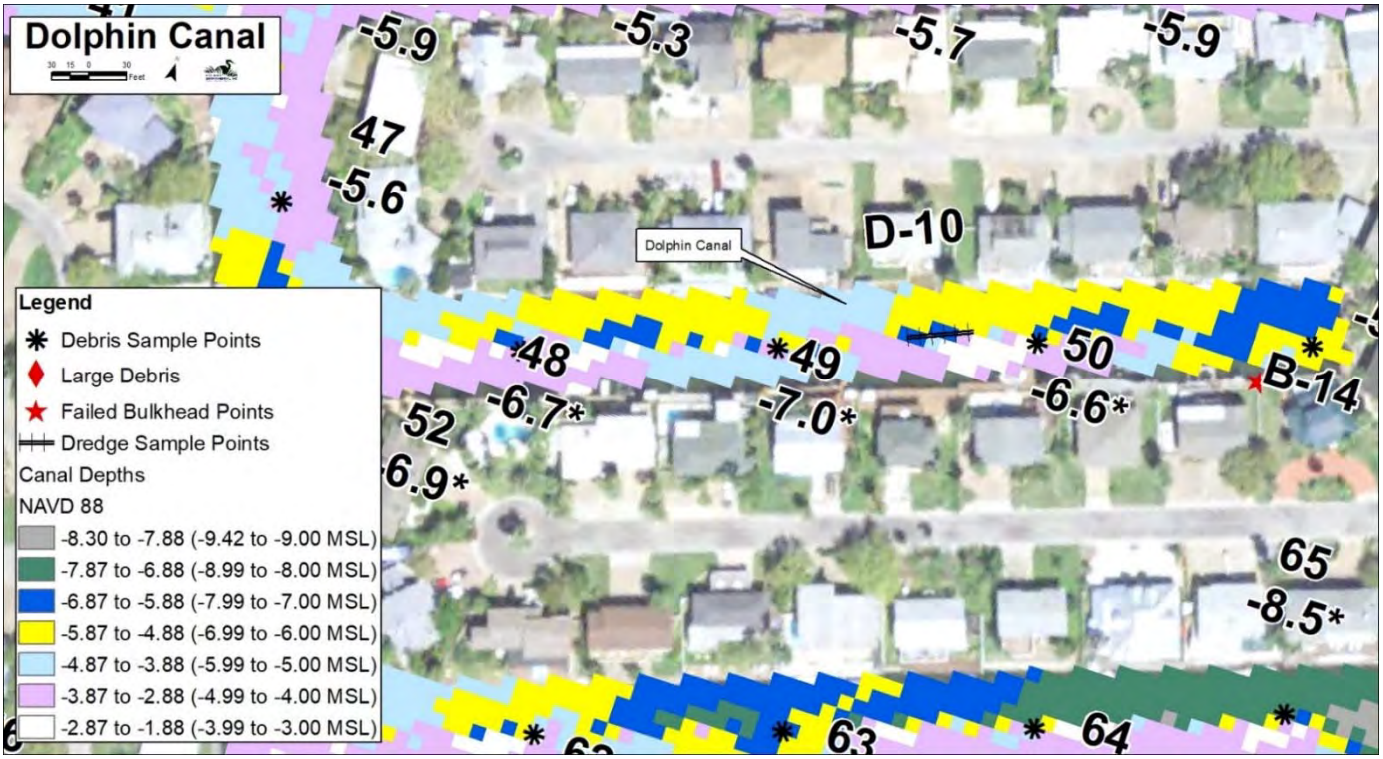
The Dolphin Canal average bottom elevation was approximately -4.54 feet NAVD 88 (-5.66 feet MSL). Canal bottom elevations were deeper on the northern side of the channel and towards the end of the canal. This pattern of canal bottom elevations was relatively consistent through this canal. However, slight variations in bottom elevations were present in areas. The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

One visible bulkhead along Dolphin Canal showed obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions. The locations of the failed bulkheads are depicted on the map below. Additionally, Exhibit D shows photographic documentation of the failed bulkheads.

The Dolphin Canal debris sampling included four grab sample points and one 50-foot linear dredge. Debris found at these samples included metal tape, insulation, partial shingles, and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. Typically, debris found was located within the top six inches of sediment. No large debris was found. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Dolphin Canal Debris Sample		Number of Points
Grab	Shingles	1
	Organic Matter	2
50' Drag	Insulation	1
	Shingles	1
	Metal Tape	1
	Organic Matter	1

Dolphin Canal Estimated Dredge Volume	
Cut (feet)	Volume (cubic yards)
0.34	511.28
1.34	2,015.03



Mackerel Canal

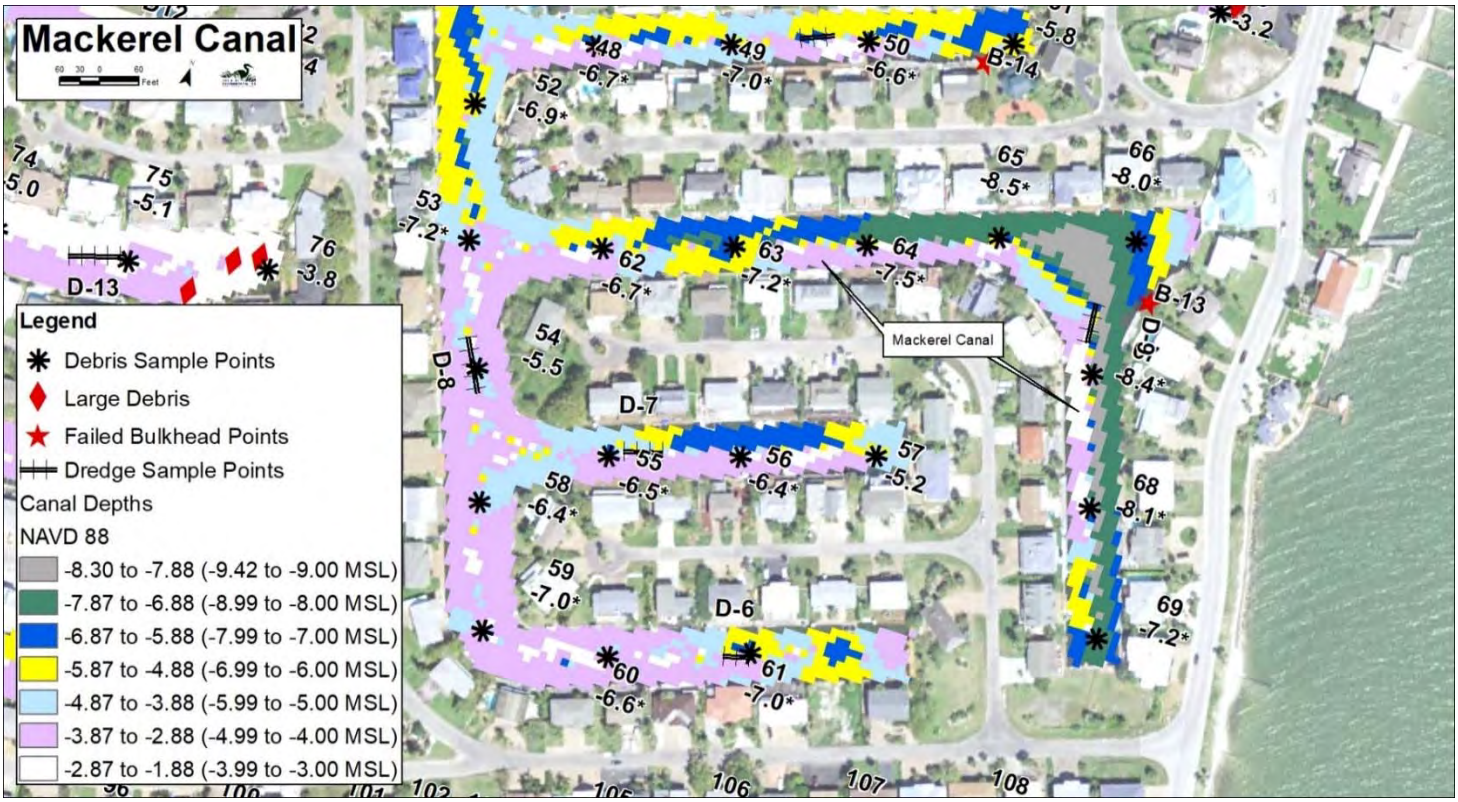
The Mackerel Canal average bottom elevation was approximately -5.82 feet NAVD 88 (-6.94 feet MSL). Canal bottom elevations tended to be deeper in the north-east corner of the canal. The canal bottom elevations were also generally deeper along the northern and eastern canal boundaries. However, slight variations in bottom elevations were present in areas. The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

One visible bulkhead along Mackerel Canal showed obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions. The location of the failed bulkhead is depicted on the map below. Additionally, Exhibit D shows photographic documentation of the failed bulkhead.

The Mackerel Canal debris sampling included eight grab sample points and one 50-foot linear dredge. Debris found at these samples included partial shingles, plastic, and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. Typically, debris found was located within the top six inches of sediment. No large debris was found. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Mackerel Canal Debris Sample		Number of Points
Grab	Shingles	2
	Plastic	1
	Organic Matter	2
50' Drag	Shingles	1
	Plastic	1
	Organic Matter	1

Mackerel Canal Estimated Dredge Volume	
Cut (feet)	Volume (cubic yards)
N/A	N/A
0.06	219.59



Trout Canal

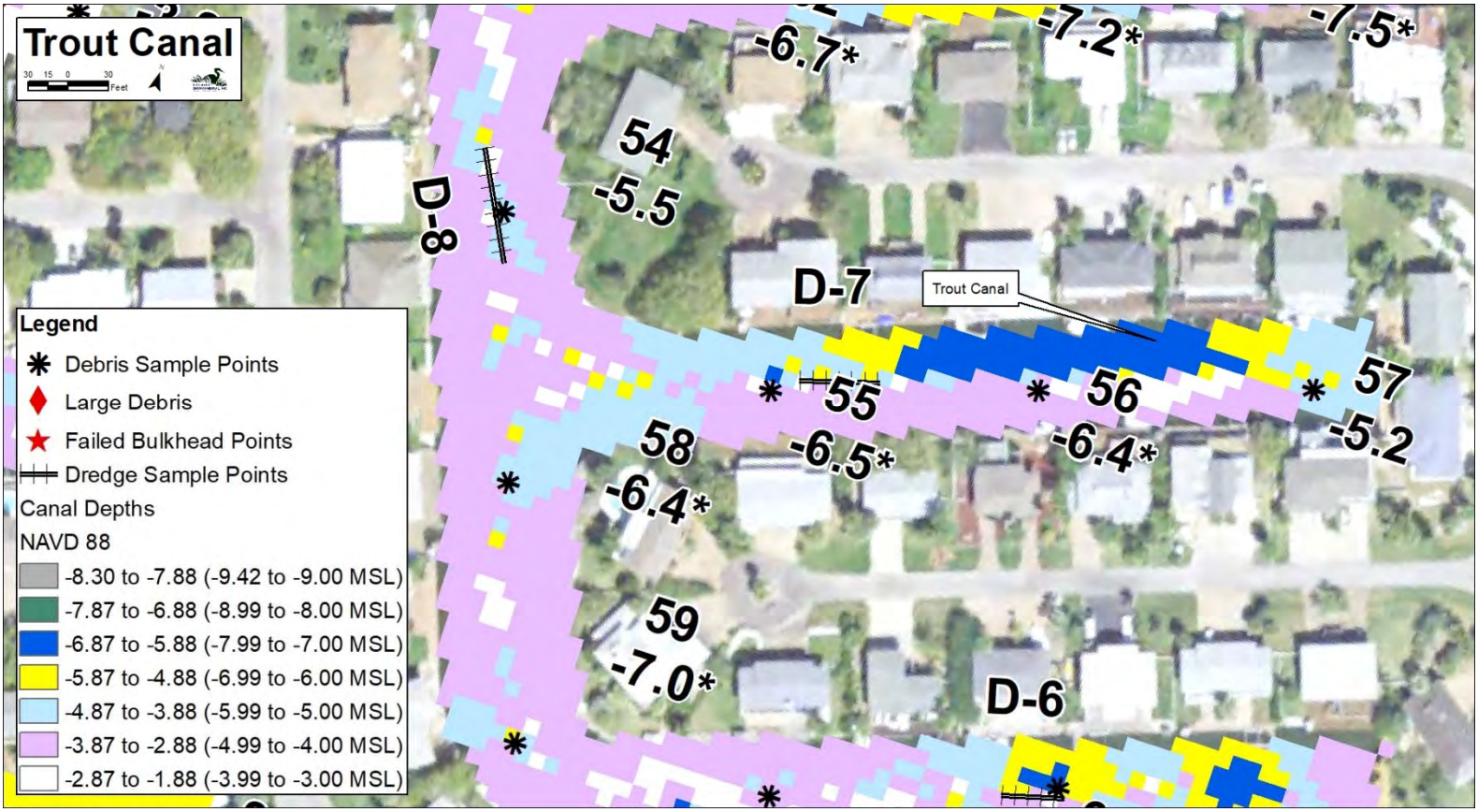
The Trout Canal average bottom elevation was approximately -4.51 feet NAVD 88 (-5.63 feet MSL). Overall canal bottom elevations were relatively consistent through this canal. However, a deeper section was observed on the northern canal border. Slight variations in bottom elevations were present in areas. If dredging is undertaken by KACPOA within Trout Canal, the below table documents the dredge volume estimates to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. Also documented within the table is the estimated dredge volume if one foot of advanced maintenance is dredged.

Visible bulkheads along Trout Canal showed no obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions.

The Trout Canal debris sampling included three grab sample points and one 50-foot linear dredge. Debris found at these samples included partial shingles, plastic, insulation, and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. Typically, debris found was located within the top six inches of sediment. No large debris was found. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Trout Canal Debris Samples		Number of Sample Points with Debris
Grab	Shingles	1
	Plastic	1
	Organic Matter	2
50' Drag	Plastic	1
	Shingles	1
	Insulation	1

Trout Canal Estimated Dredge Volume	
Cut (feet)	**Volume (cubic yards)**
0.37	418
1.37	1,481



Jackfish Canal

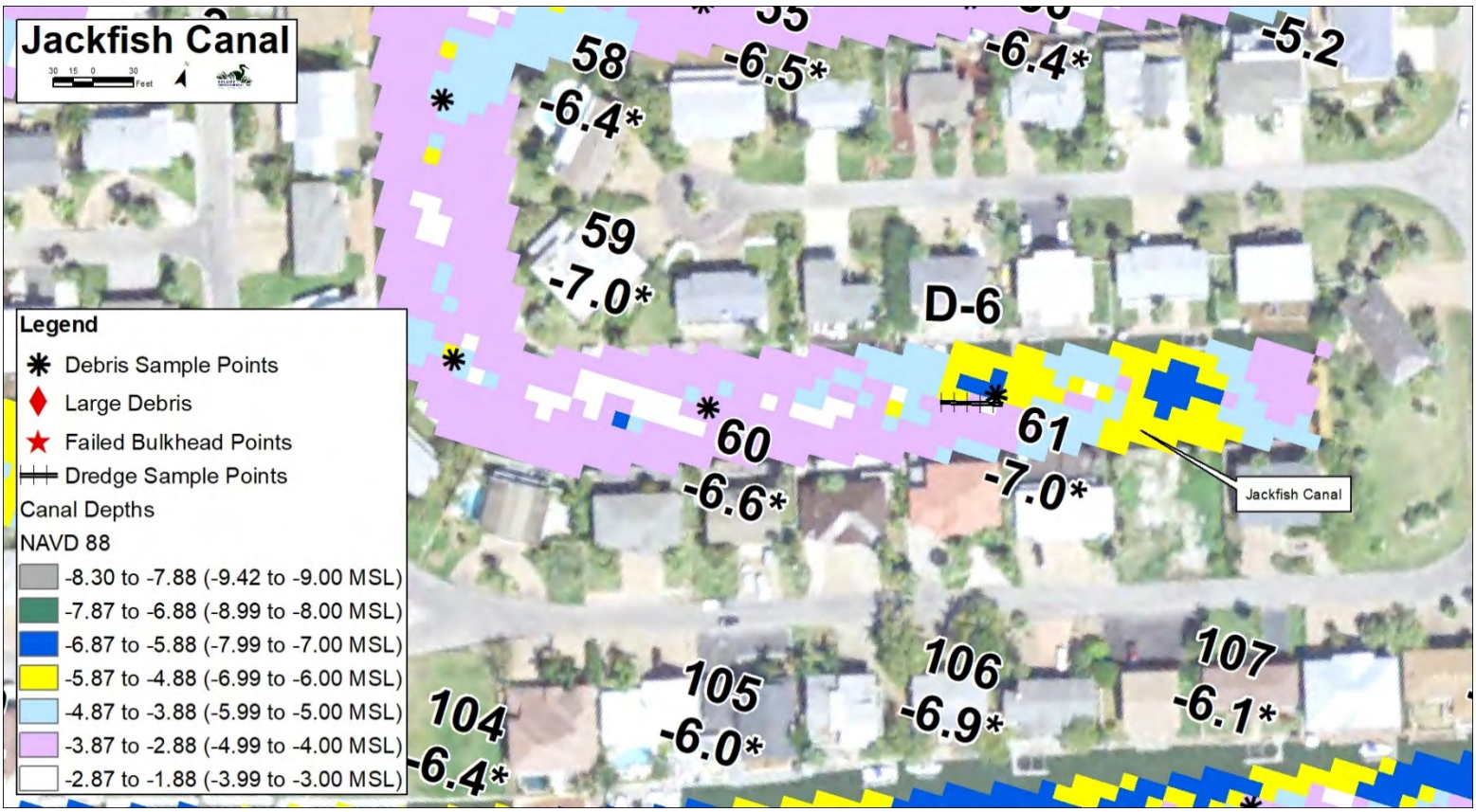
The Jackfish Canal average bottom elevation was approximately -4.15 feet NAVD 88 (-5.27 feet MSL). Overall canal bottom elevations were relatively consistent through this canal. However, two deeper sections were observed towards the end of the canal. Slight variations in bottom elevations were present in this canal. The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

Visible bulkheads along Jackfish Canal showed no obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions.

The Jackfish Canal debris sampling included two grab sample points and one 50-foot linear dredge. Debris found at these samples included shingles, plastic, wood, and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. Typically, debris found was located within the top six inches of sediment. No large debris was found. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Jackfish Canal Debris Sample		Number of Points
Grab	Shingles	1
	Plastic	1
	Organic Matter	1
50' Drag	Plastic	1
	Shingles	1
	Wood	1
	Organic Matter	1

Jackfish Canal Estimated Dredge Volume	
Cut (feet)	Volume (cubic yards)
0.73	894.92
1.73	2,120.83



Marlin Canal

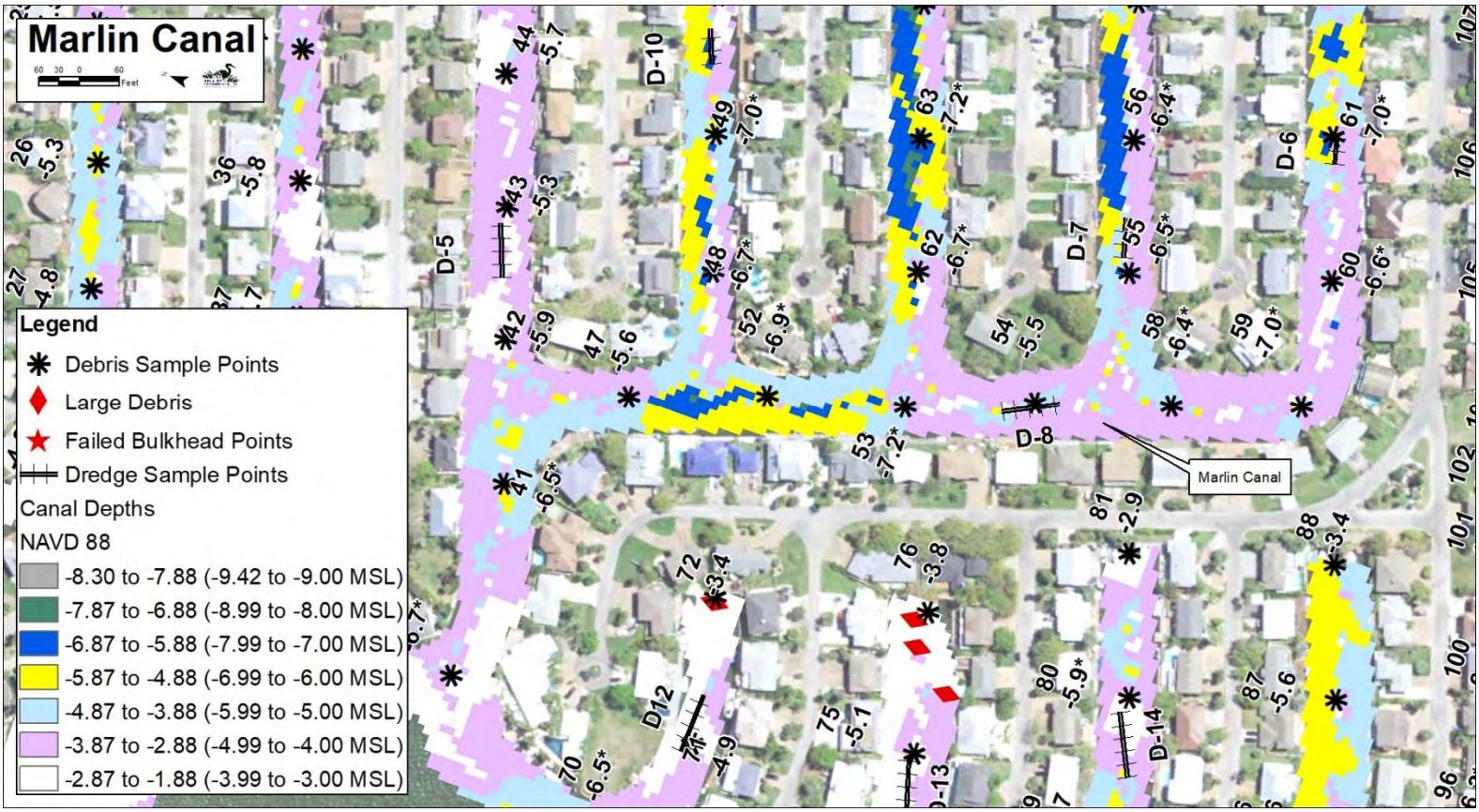
The Marlin Canal average bottom elevation was approximately -5.20 feet NAVD 88 (-6.32 feet MSL). Overall canal bottom elevations were relatively consistent through this canal. However, a deeper section was observed in the south-west portion of the canal. Slight variations in bottom elevations were present in areas. The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

Visible bulkheads along Marlin Canal showed no obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions.

The Marlin Canal debris sampling included six grab sample points and one 50-foot linear dredge. Debris found at these samples included shingles, an electrical box for a light fixture with wiring still attached, plastic, and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. Typically, debris found was located within the top six inches of sediment. No large debris was found. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Marlin Canal Debris Sample		Number of Points
Grab	Shingles	1
	Light Fixture/Wiring	1
	Organic Matter	2
50' Drag	Shingles	1
	Plastic	1

Marlin Canal Estimated Dredge Volume	
Cut (feet)	Volume (cubic yards)
0.68	2,353.51
1.68	5,814.55



Ling Canal

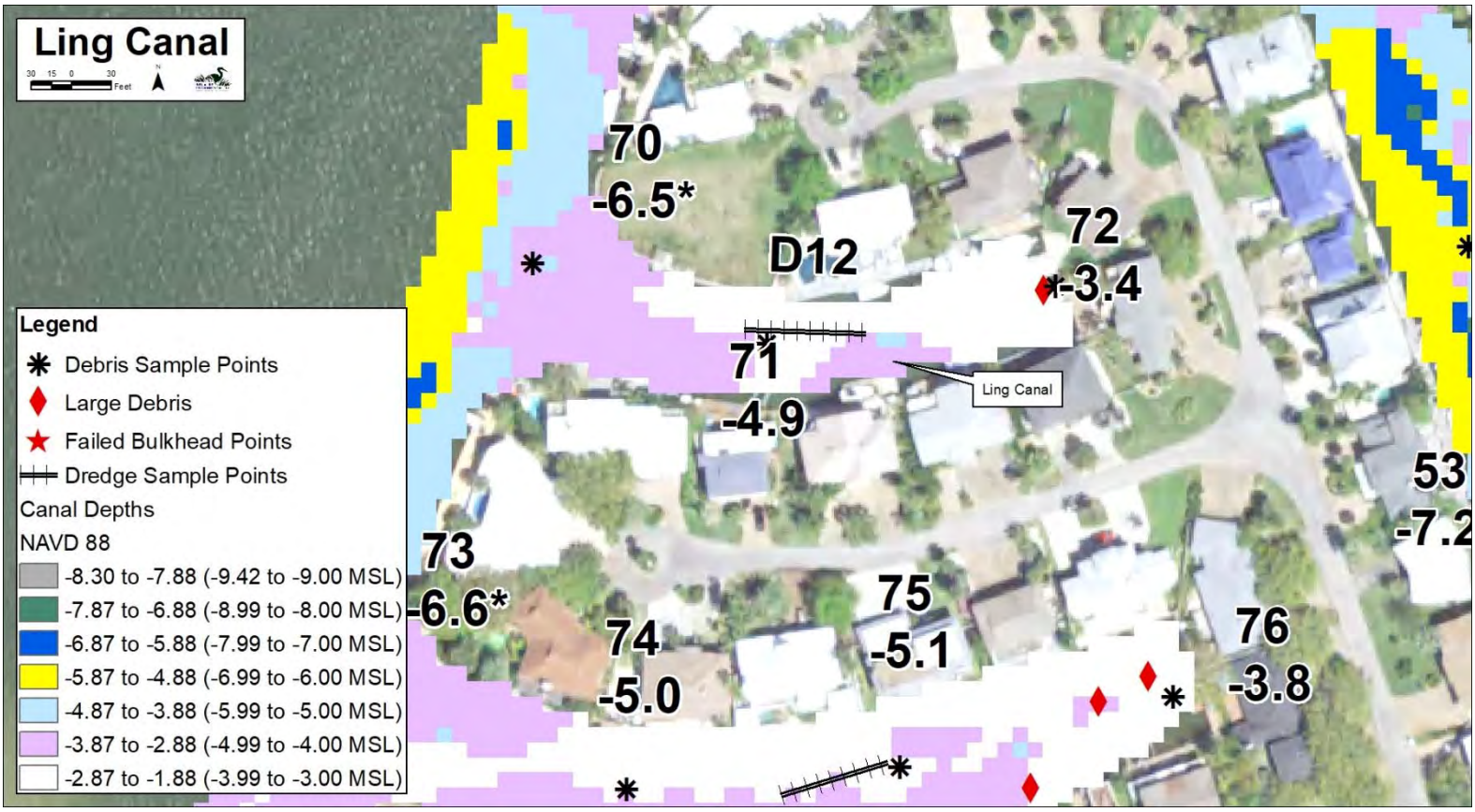
The Ling Canal average bottom elevation was approximately -2.88 feet NAVD 88 (-4 feet MSL). Overall canal bottom elevations became shallower towards the end of the canal. However, slight variations in bottom elevations were present in areas. The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

Visible bulkheads along Ling Canal showed no obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions.

The Ling Canal debris sampling included three grab sample points and one 50-foot linear dredge. Debris found at these samples included fishing line, partial shingles, and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. In the Ling Canal, one piece of large debris was located that could not be removed for identification. Typically, debris found was located within the top six inches of sediment. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Ling Canal Debris Sample		Number of Points
Grab	Large Debris	1
	Organic Matter	2
50' Drag	Fishing Line	1
	Shingles	1
	Organic Matter	1

Ling Canal Estimated Dredge Volume	
Cut (feet)	Volume (cubic yards)
2.00	1,757.47
3.00	2,636.21



Sailfish Canal

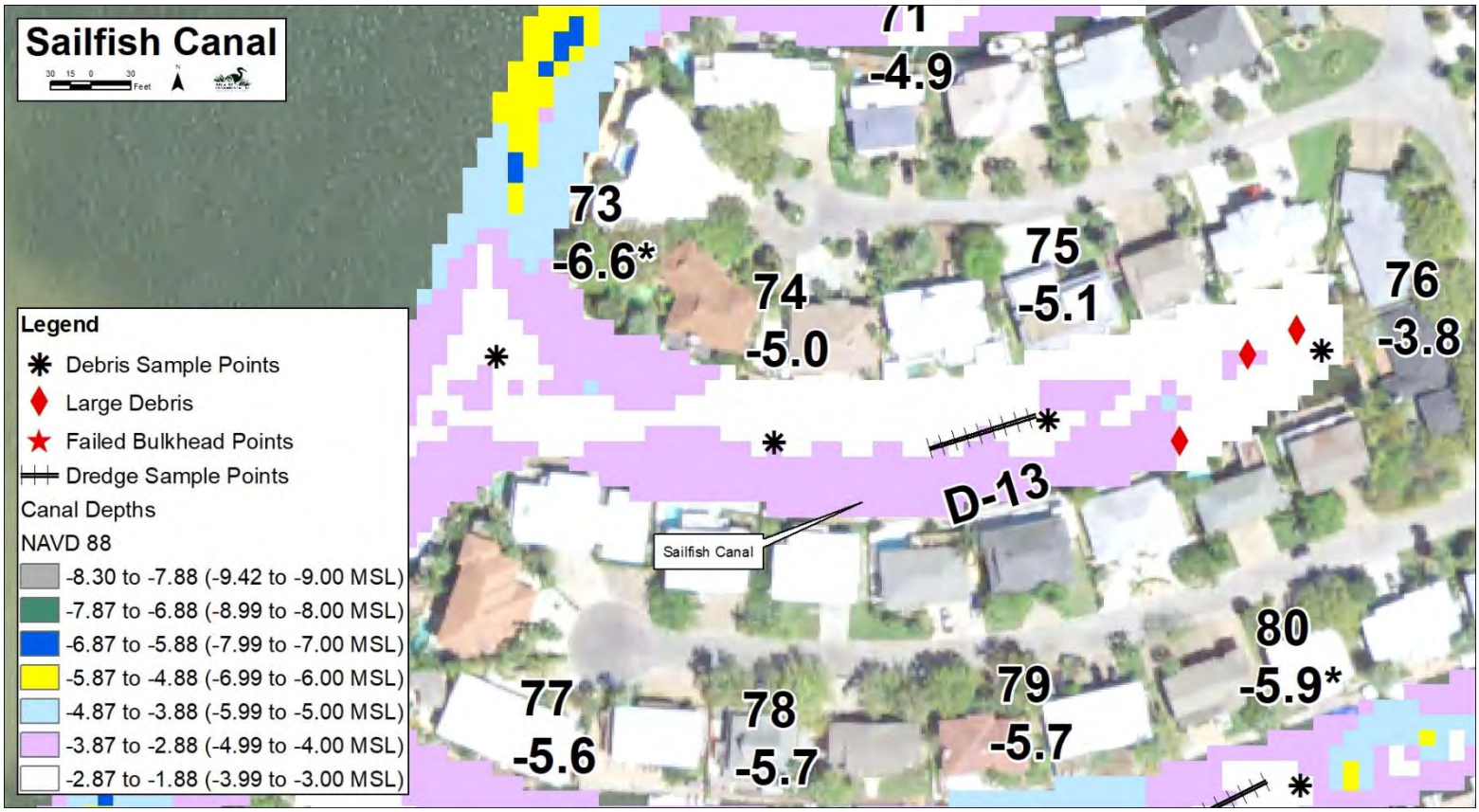
The Sailfish Canal average bottom elevation was approximately -2.88 feet NAVD 88 (-4 feet MSL). Canal bottom elevations were generally shallower on the northern boundary and towards the end of the canal. However, slight variations in bottom elevations were present in areas. The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

Visible bulkheads along Sailfish Canal showed no obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions.

The Sailfish Canal debris sampling included four grab sample points and one 50-foot linear dredge. Debris found at these samples included plastic, a whole circular saw blade, shingles, a section of a bungee strap, and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. In the Sailfish Canal, two pieces of large debris were located that could not be removed for identification. Typically, debris found was located within the top six inches of sediment. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Sailfish Canal Debris Sample		Number of Points
Grab	Large Debris	2
	plastic	1
	Organic Matter	3
50' Drag	Saw Blade	1
	Shinges	1
	Bungee (rubber)	1

Sailfish Canal Estimated Dredge Volume	
Cut (feet)	Volume (cubic yards)
2.00	3,321.93
3.00	4,982.90



Wahoo Canal

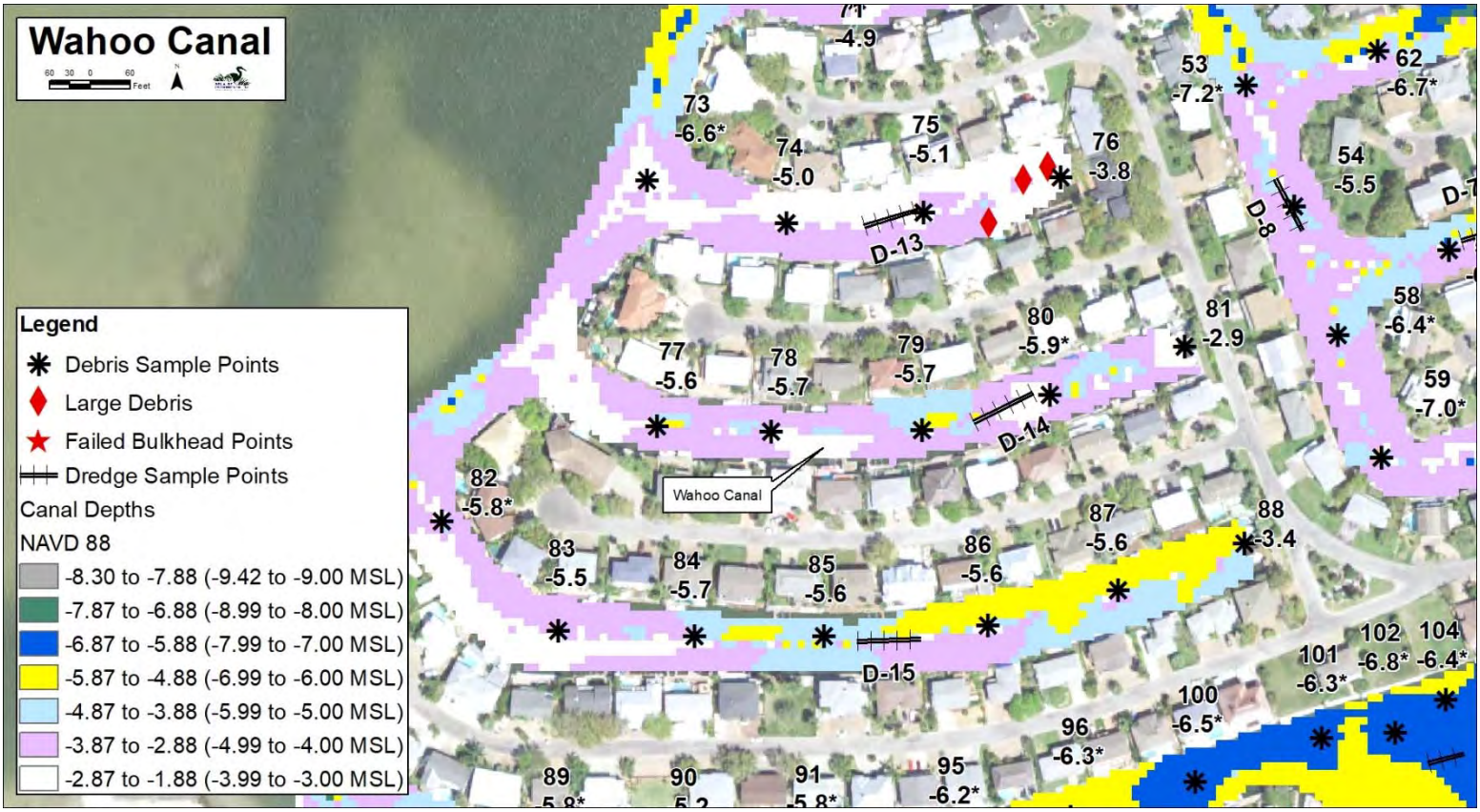
The Wahoo Canal average bottom elevation was approximately -3.26 feet NAVD 88 (-4.38 feet MSL). Overall canal bottom elevations varied down the center of the channel. These variations formed a series of rises and pockets that were relatively consistent through this canal. The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

Visible bulkheads along Wahoo Canal showed no obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions.

The Wahoo Canal debris sampling included five grab sample points and one 50-foot linear dredge. Debris found at these samples included a nail, partial shingles, plastic, and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. No large debris was found. Typically, debris found was located within the top six inches of sediment. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Wahoo Canal Debris Sample		Number of Points
Grab	Organic Matter	5
50' Drag	Nail	1
	Shingles	1
	Plastic	1
	Organic Matter	1

Wahoo Canal Estimated Dredge Volume	
Cut (feet)	**Volume (cubic yards)**
1.62	3,948.05
2.62	6,385.12



Kingfish Canal

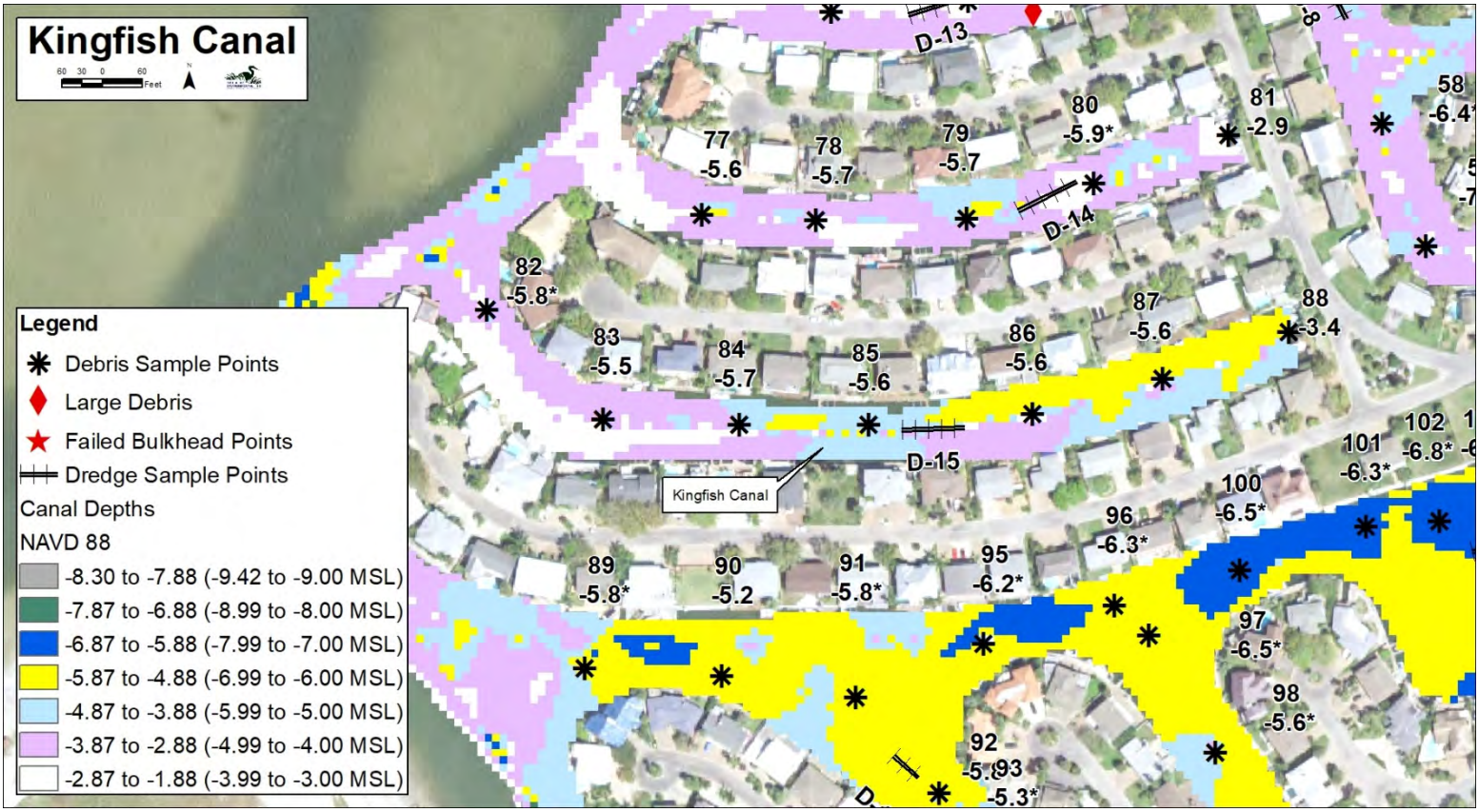
The Kingfish Canal average bottom elevation was approximately -3.99 feet NAVD 88 (-5.11 feet MSL). The north-easterner boundary of this canal shows a slightly deeper section. There is also a shallower section located near the mouth of the canal at the bend. Slight variations in bottom elevations were present in areas. The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

Visible bulkheads along Kingfish Canal showed no obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions.

The Kingfish Canal debris sampling included seven grab sample points and one 50-foot linear dredge. Debris found at these samples included shingles and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. Typically, debris found was located within the top six inches of sediment. No large debris was found. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Kingfish Canal Debris Sample		Number of Points
Grab	Shingles	1
	Organic Matter	5
50' Drag	Shingles	1
	Organic Matter	1

Kingfish Canal Estimated Dredge Volume	
Cut (feet)	**Volume (cubic yards)**
0.89	3,080.53
1.89	6,541.80



Tarpon Canal System

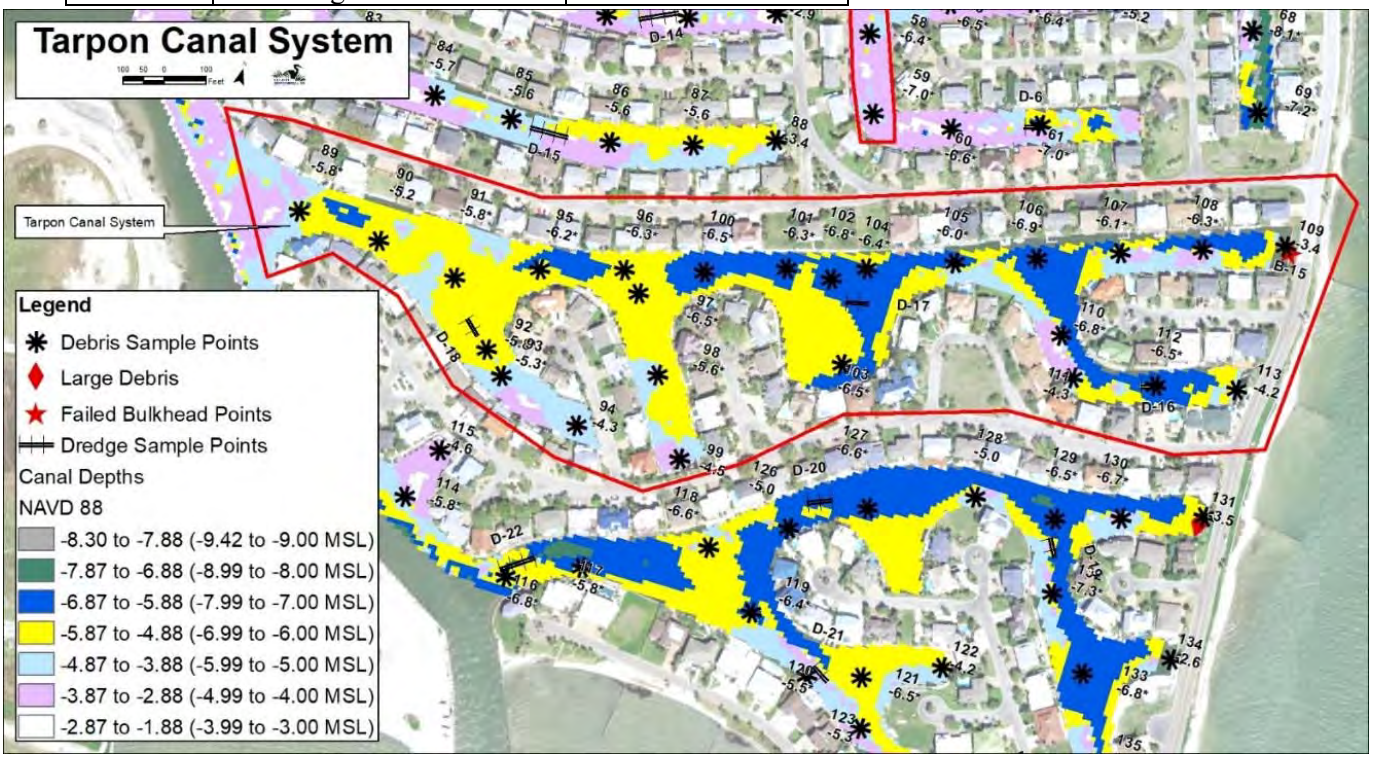
The Tarpon Canal System is made up of several smaller canals including the Tarpon Canal, Porpoise Canal, Blue Crab Bay, and the Croaker Canal. The Tarpon Canal System average bottom elevation was approximately -5.41 feet NAVD 88 (-6.53 feet MSL). Overall canal bottom elevations were relatively consistent through this canal. However, shallower sections were observed near the ends of the canals in this system. Slight variations in bottom elevations were present in areas. The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

One visible bulkhead along Tarpon Canal System showed obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions. The location of the failed bulkhead is depicted on the map below. Additionally, Exhibit D shows photographic documentation of the failed bulkheads.

The Tarpon Canal System debris sampling included twenty-five grab sample points and three 50-foot linear dredges. Debris found at these samples included shingles, plastic, nails, fishing line, and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. Typically, debris found was located within the top six inches of sediment. No large debris was found. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Tarpon Canal System Debris Sample		Number of Points
Grab	Shingles	4
	Plastics	3
	Nails	1
	Organic Matter	19
50' Drag	Shingles	3
	Nails	1
	Fishing Line	1
	Organic Matter	1

Tarpon Canal System Estimated Dredge Volume	
Cut (feet)	**Volume (cubic yards)**
N/A	N/A
0.47	6,807.74



Red Snapper Canal System

The Red Snapper Canal System is made up of several smaller canals including the Red Snapper Canal, Snapper Canal, Pompano Lagoon, and Bluefish Lagoon. The Red Snapper Canal System average bottom elevation was approximately -5.59 feet NAVD 88 (-6.71 feet MSL). Overall canal bottom elevations were relatively consistent through this canal. However, two deeper sections were observed in the Red Snapper Canal and Snapper Canal with shallower sections observed along the south and south-western boundaries of canals in this system. Slight variations in bottom elevations were present in areas. The below table documents the estimated dredge volume to achieve a -4.88 feet NAVD 88 (-6.00 feet MSL) finished grade. The table also provides estimated dredge volumes if one foot of advanced maintenance is dredged to -5.88 feet NAVD 88 (-7 feet MSL).

Visible bulkheads along Red Snapper Canal System showed no obvious signs of failure. Not all bulkheads were visible due to docks, boat slips, and other obstructions.

The Red Snapper Canal System debris sampling included twenty-two grab sample points and four 50-foot linear dredge. Debris found at these samples included metal, fishing line, partial shingles, plastic, wood, and organic matter. The organic matter classification consists of leaves, sticks, and other various small organic plant debris. In the Red Snapper Canal System, one piece of large debris was located that could not be removed for identification. Typically, debris found was located within the top six inches of sediment. Sample locations are shown in the map below and a breakdown of the debris is included within the table.

Red Snapper Canal System Debris Sample		**Number of Points**
Grab	Shingles	2
	Large Debris	1
	Organic Matter	19
50' Drag	Shingles	4
	Aluminum Can	1
	Plastic	1
	Organic Matter	2

Red Snapper Canal System Estimated Dredge Volume	
Cut (feet)	**Volume (cubic yards)**
N/A	N/A
0.29	3,527.43

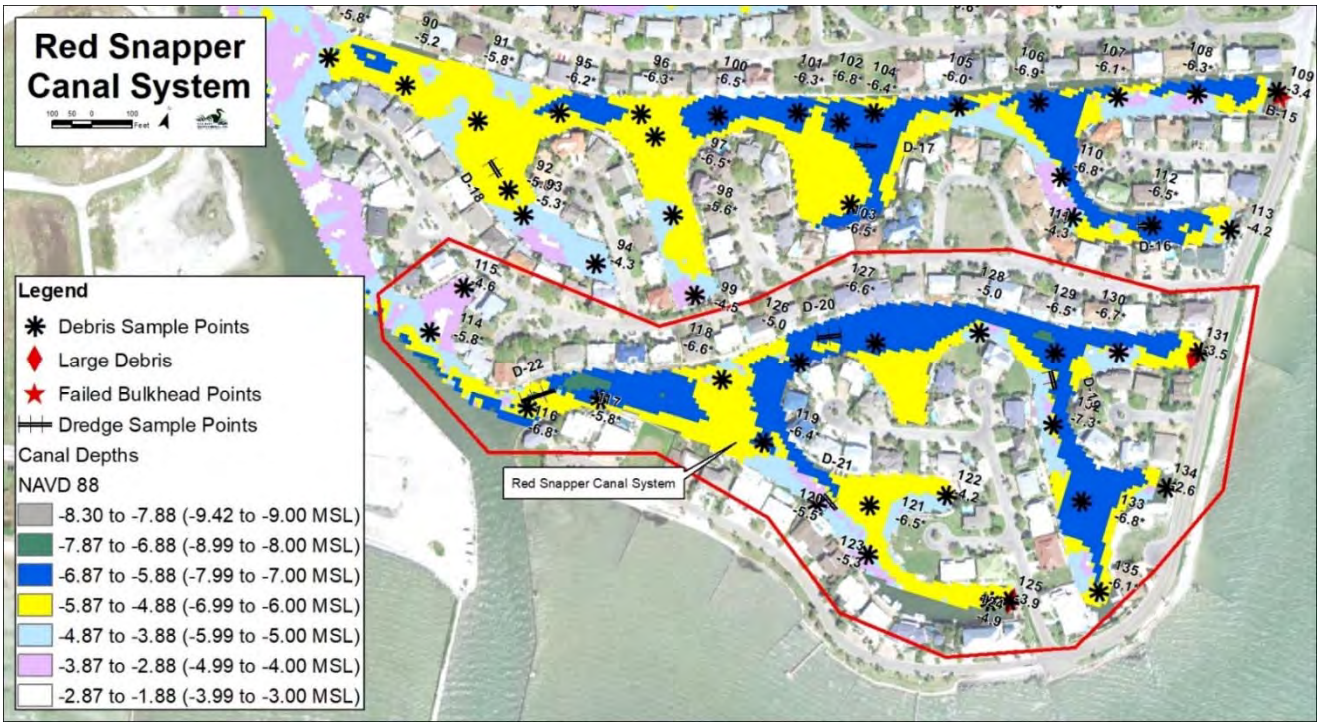


Exhibit B

Data Collection Overview Map

Survey Overview Map
Key Allegro Canal and Property Owners Association, Inc.
Key Allegro, Rockport, Aransas County, Texas

N

Notes:
-For planning purposes only; not for construction.
-Base map source: TNRIS NAIP 0.5 m aerial imagery, Aransas County, 2015.
-Prepared by Belaire Environmental, Inc., February 18, 2019 (JAM).

0 150 300 450 600 Feet

BELAIRE ENVIRONMENTAL, INC.

Notes:

Debris Sample Points:
At approximately 200-foot intervals debris sample points were taken. Debris at these points were pulled from the bay bottom via Ponar dredge. Debris at these locations typically consisted of roof shingles, nails and other small items. Bay bottom elevations were manually recorded at these points for quality control comparisons to the bathymetry results.

Large Debris:
These points were taken at the approximate locations of large debris encountered on the bay bottom. Large debris was pointed out by littoral land owners, visually observed due to low tide conditions, or were encountered by pulling the dredge behind the boat.

Dredge Sample Points:
In addition to collecting debris samples approximately every 200-feet, an oyster dredge was pulled behind the boat for approximately 50-foot intervals. The purpose of the pulled dredge was to provide longer linear samples of the frequency and types of debris encountered.

Failed Bulkheads:
Bulkheads that were visible from the boat were analyzed for obvious physical signs of failure. Failures included large cracks, subsidence, or visual washout. Not all bulkheads were visible due to boats ramps and other facilities.

MSL to NAVD 88 Conversion	
MSL	NAVD 88
+3	+4.12
+2	+3.12
+1	+2.12
0	+1.12
-1	+0.12
-2	-0.88
-3	-1.88
-4	-2.88
-5	-3.88
-6	-4.88
-7	-5.88
-8	-6.88
-9	-7.88
-9.42	-8.30

The above table depicts the conversion factor from Mean Sea Level (MSL) to the North American Vertical Datum of 1988 (NAVD 88). This conversion factor was obtained from the National Oceanic Atmospheric Administration (NOAA), Tides and Currents, Rockport Station No. 8774770. NAVD 88 is the standard elevation datum utilized by the Federal Emergency Management Agency (FEMA), most surveyors and most engineers.

Legend

- Debris Sample Points
- Large Debris
- Failed Bulkhead Points
- Dredge Sample Points

Canal Depths
NAVD 88 (MSL)

- -8.30 to -7.88 (-9.42 to -9.00 MSL)
- -7.87 to -6.88 (-8.99 to -8.00 MSL)
- -6.87 to -5.88 (-7.99 to -7.00 MSL)
- -5.87 to -4.88 (-6.99 to -6.00 MSL)
- -4.87 to -3.88 (-5.99 to -5.00 MSL)
- -3.87 to -2.88 (-4.99 to -4.00 MSL)
- -2.87 to -1.88 (-3.99 to -3.00 MSL)

Exhibit C

Average Sediment Depth, Canal Depth and Estimated Dredge Volume

Exhibit C: Average Canal Depth, Sediment Depth, and Estimated Dredge Volume Table
Debris Sampling and Bulkhead Data
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Canal Name	Average Canal Depth (NAVD 88)	Area (square feet)	Cut	Estimated Volume of Dredge (cubic yards)	Cut With 1-Foot Advanced Maintenance	Estimated Volume of Dredge with 1-Foot Advanced Maintenance (cubic yards)
Trout	-4.51	30,510.24	0.37	418.10	1.37	1,548.11
Albacore	-3.36	263,840.89	1.52	14,853.26	2.52	24,625.15
Wahoo	-3.26	65,800.90	1.62	3,948.05	2.62	6,385.12
Tarpon System	-5.41	391,082.75	N/A	N/A	0.47	6,807.74
Sailfish	-2.88	44,846.08	2.00	3,321.93	3.00	4,982.90
Kingfish	-3.99	93,454.25	0.89	3,080.53	1.89	6,541.80
Ling	-2.88	23,725.87	2.00	1,757.47	3.00	2,636.21
Red Snapper System	-5.59	328,415.90	N/A	N/A	0.29	3,527.43
Bonita	-3.44	77,816.62	1.44	4,150.22	2.44	7,032.32
Condominium	-3.43	58,938.32	1.45	3,165.21	2.45	5,348.11
Dolphin	-4.54	40,601.28	0.34	511.28	1.34	2,015.03
Flounder	-3.29	84,647.84	1.59	4,984.82	2.59	8,119.92
Redfish	-3.13	95,949.25	1.75	6,218.93	2.75	9,772.61
Mackerel	-5.82	98,817.42	N/A	N/A	0.06	219.59
Jackfish	-4.15	33,099.70	0.73	894.92	1.73	2,120.83
Marlin	-4.20	93,448.20	0.68	2,353.51	1.68	5,814.55

Exhibit D

Photographic Exhibit

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 1.

Grab Sample 2.

Grab Sample 3.

Grab Sample 4.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 5.

Grab Sample 6.

Sample 1 collected by **50-foot linear dredge.**

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 7.

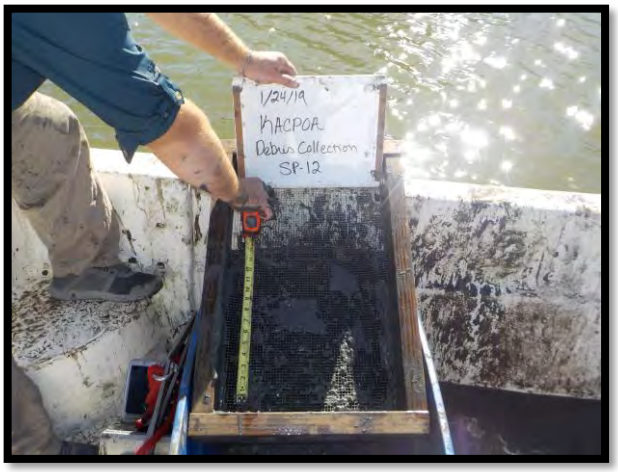
Grab Sample 8.

Grab Sample 9.

Grab Sample 10.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 11.



Grab Sample 12.

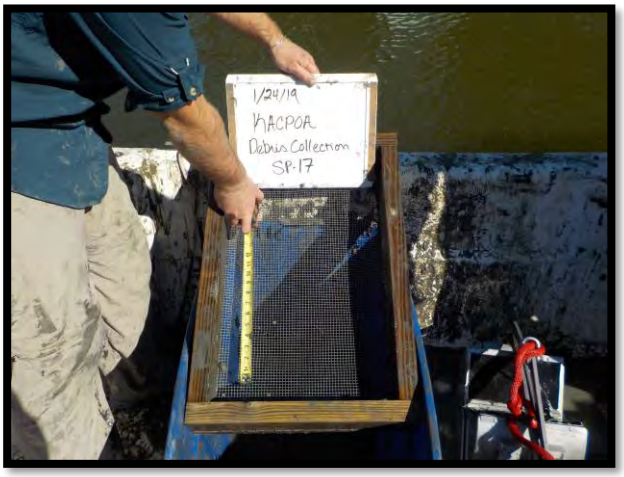
Grab Sample 13.

Grab Sample 14.

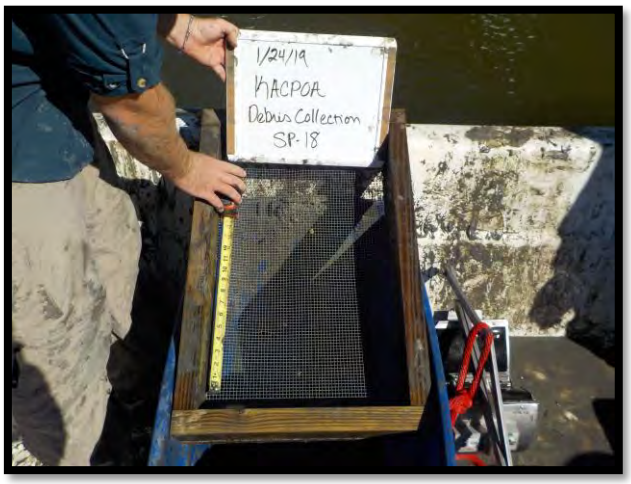
Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 15.

Grab Sample 16.



Grab Sample 17.



Grab Sample 18.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 19.

Grab Sample 20.

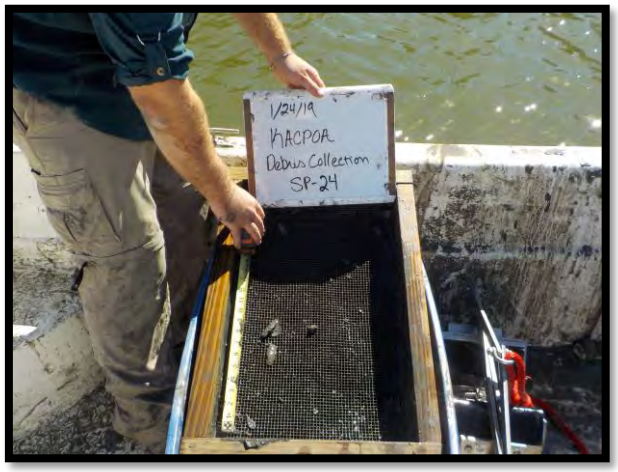
No debris was collected at sample point D-2.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 21.

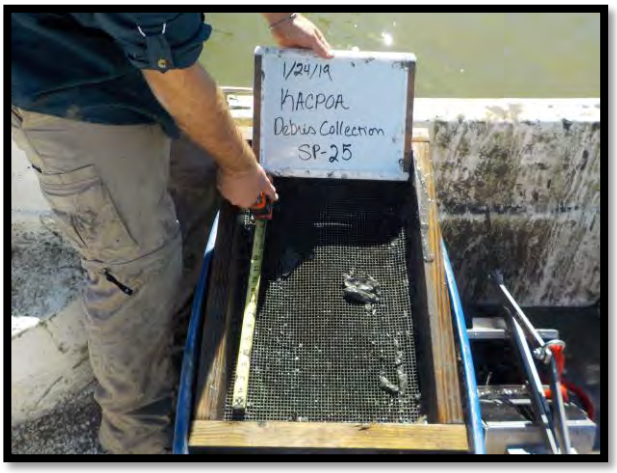
Grab Sample 22.

Grab Sample 23.



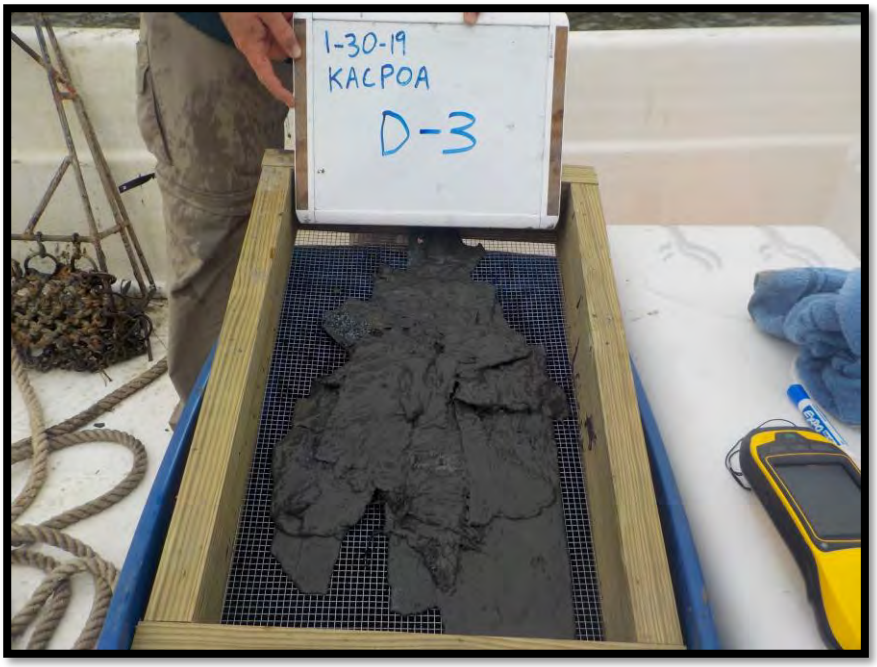
Grab Sample 24.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas



Grab Sample 25.

Grab Sample 26.



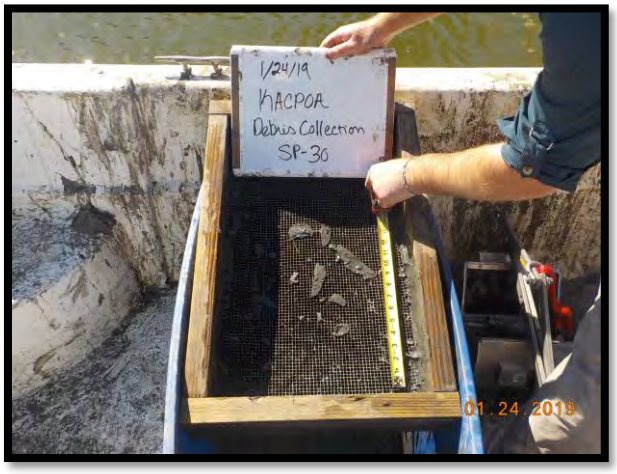
Sample 3 collected by 50-foot linear dredge.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 27.

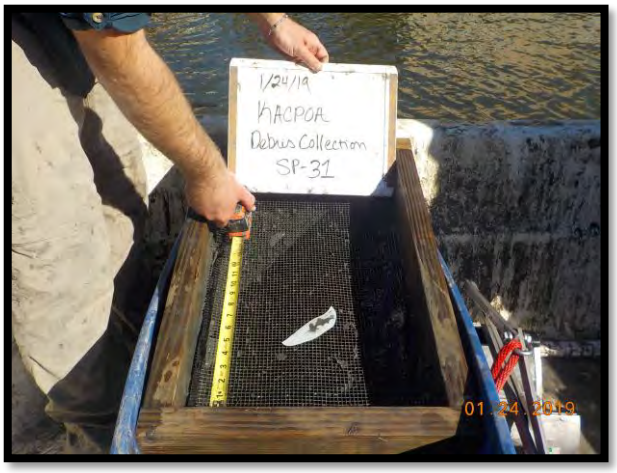
Grab Sample 28.

Sample Point 29: No photographic documentation available



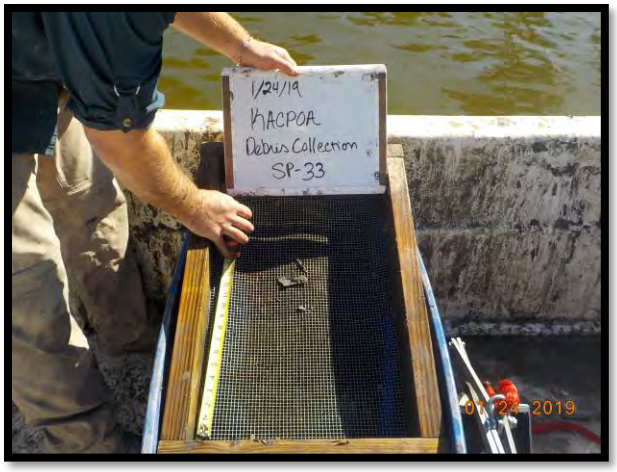
Grab Sample 30.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

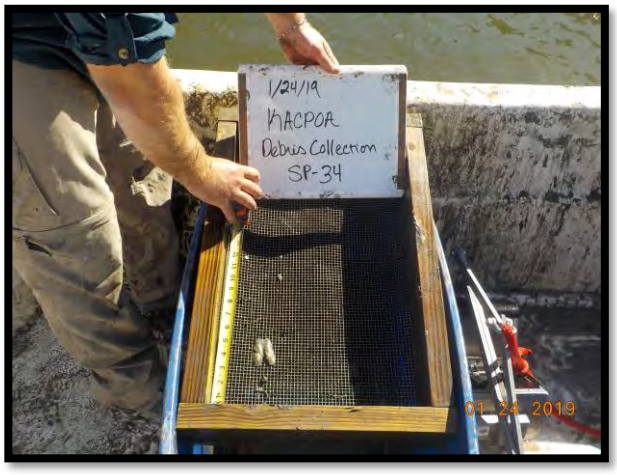


Grab Sample 31.

Grab Sample 32.

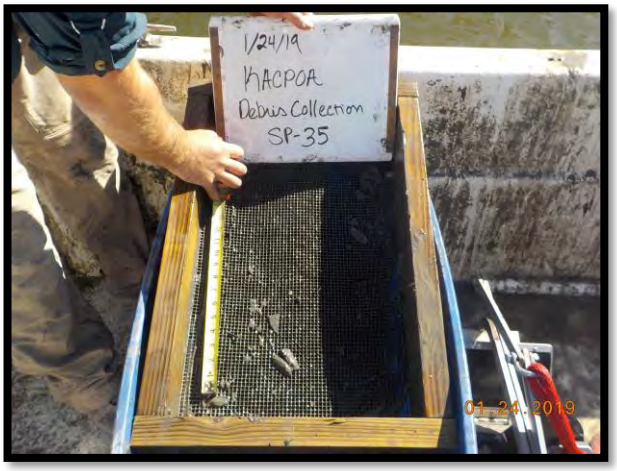


Grab Sample 33.



Grab Sample 34.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas



Grab Sample 35.

Grab Sample 36.

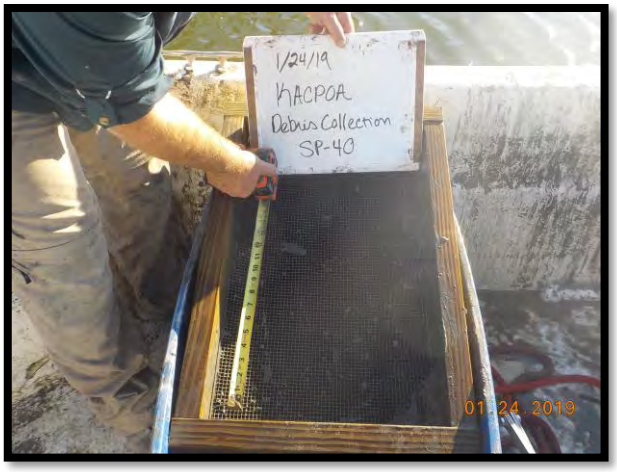
Sample 4 **collected by 50-foot linear dredge.**

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 37.

Grab Sample 38.

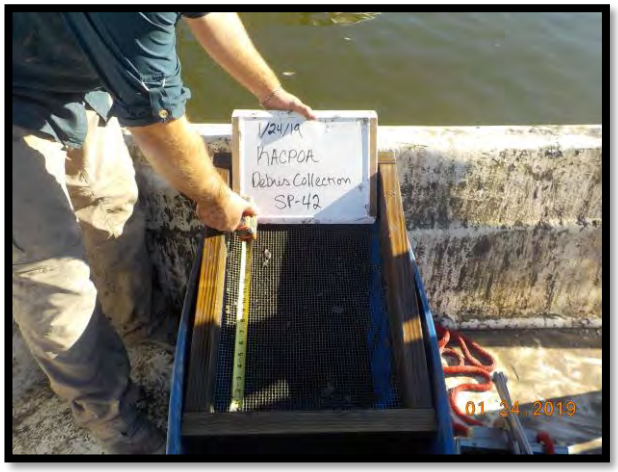
Grab Sample 39.



Grab Sample 40.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 41.



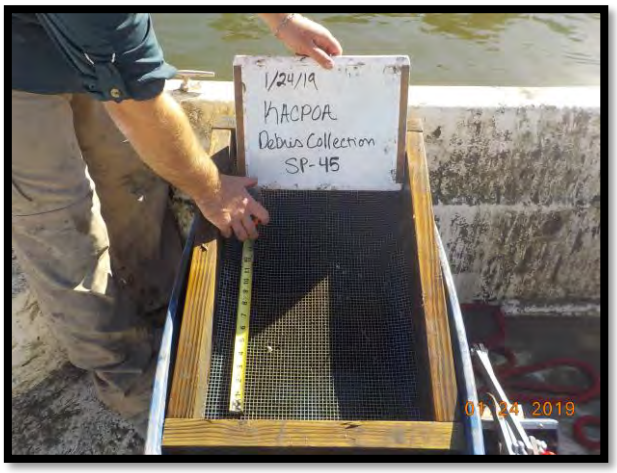
Grab Sample 42.

Sample 5 collected by 50-foot linear dredge.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 43.

Grab Sample 44.



Grab Sample 45.

Grab Sample 46.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 47.

Grab Sample 48.

Sample 10 collected by 50-foot linear dredge.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 49.

Grab Sample 50.

Grab Sample 51.

Grab Sample 52.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

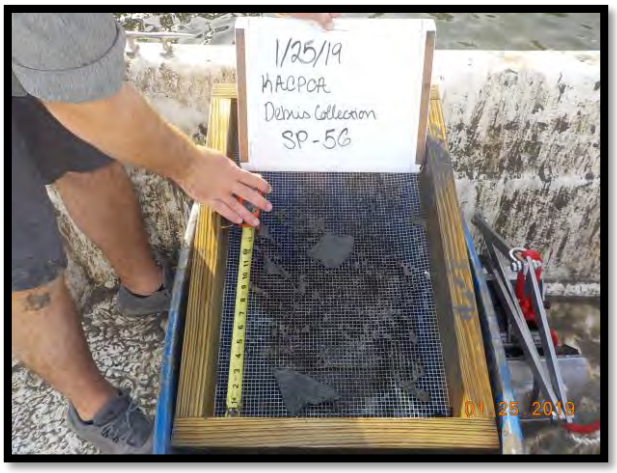
Grab Sample 53.

Grab Sample 54.

Sample 7 collected by 50-foot linear dredge.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

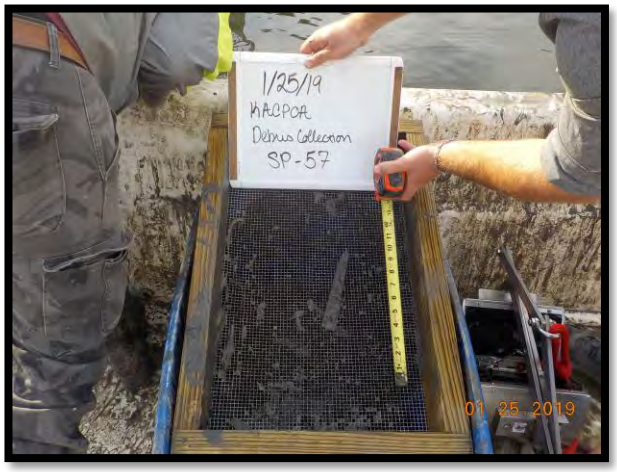
Grab Sample 55.



Grab Sample 56.

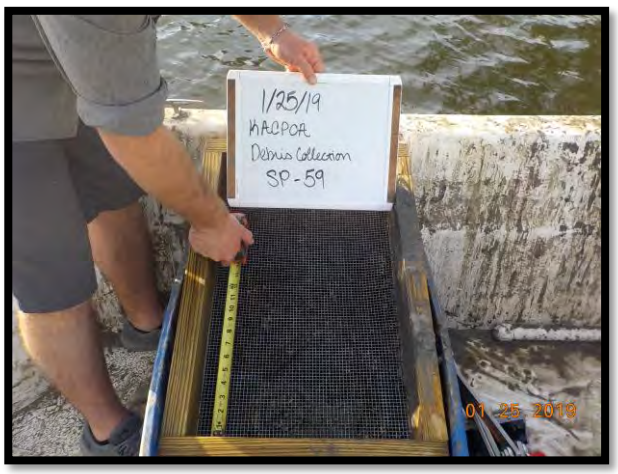
Sample 8 collected by 50-foot linear dredge.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

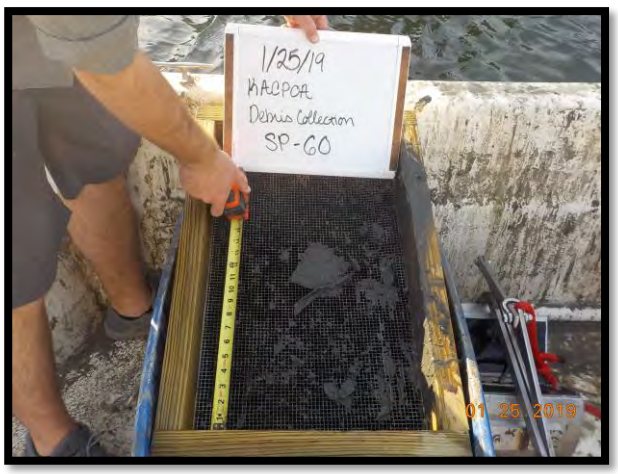


Grab Sample 57.

Grab Sample 58.

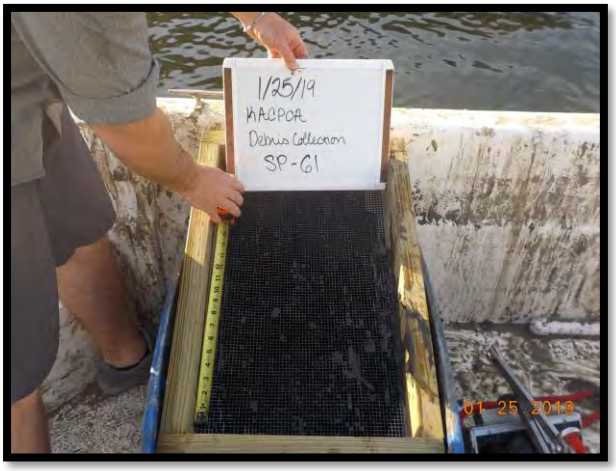


Grab Sample 59.

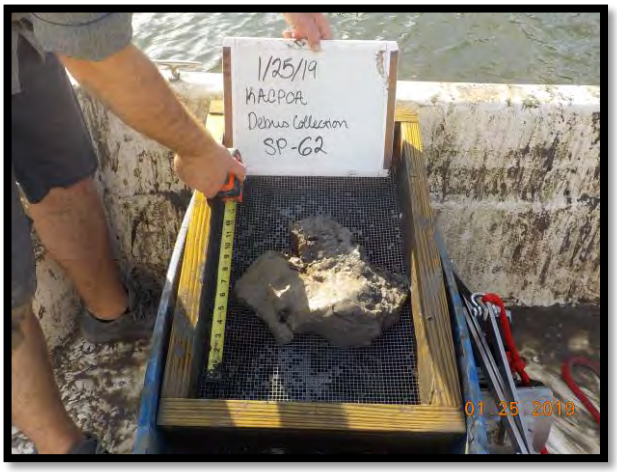


Grab Sample 60.

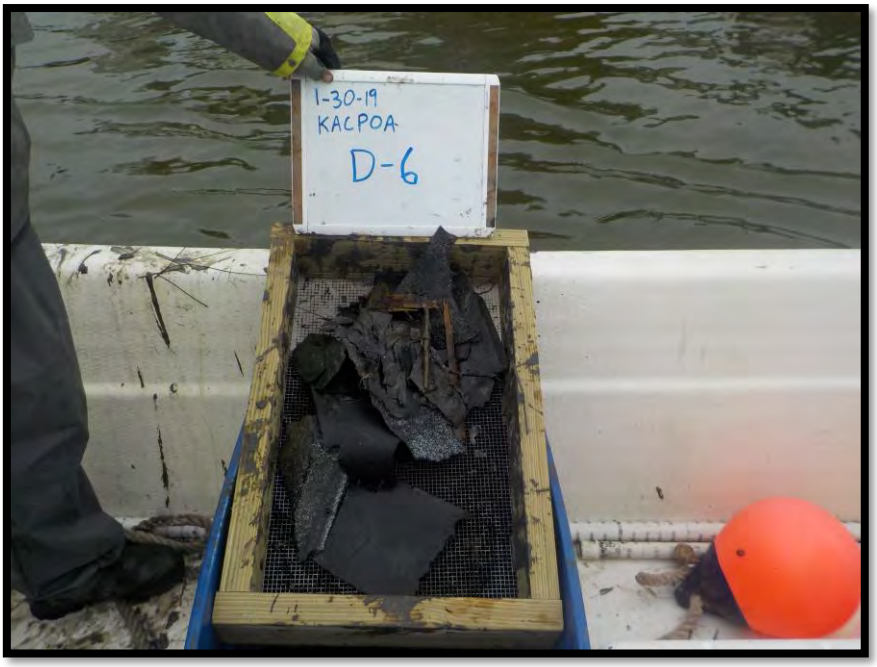
Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas



Grab Sample 61.



Grab Sample 62.



Sample 6 collected by 50-foot linear dredge.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 63.

Grab Sample 64.

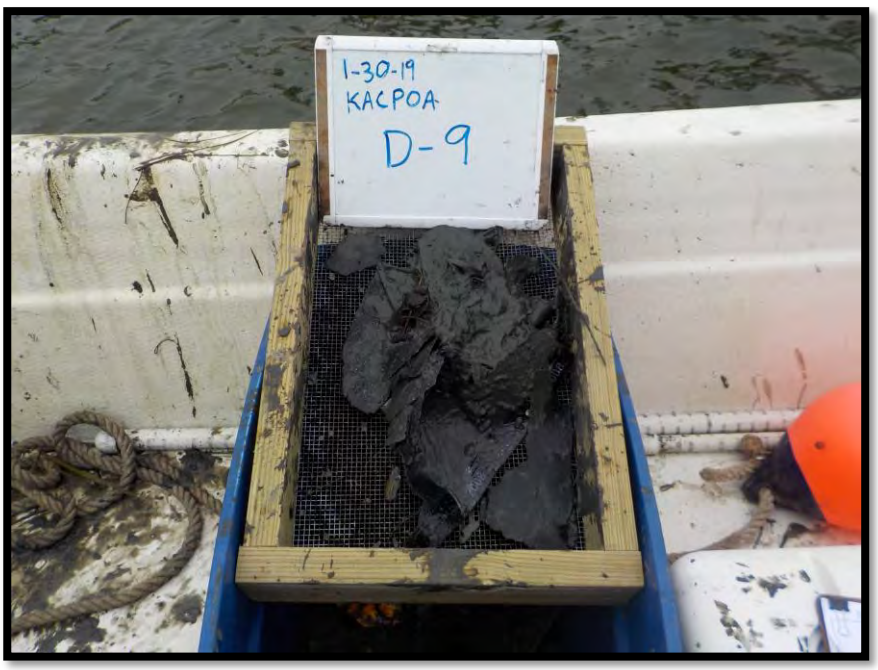
Grab Sample 65.

Grab Sample 66.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

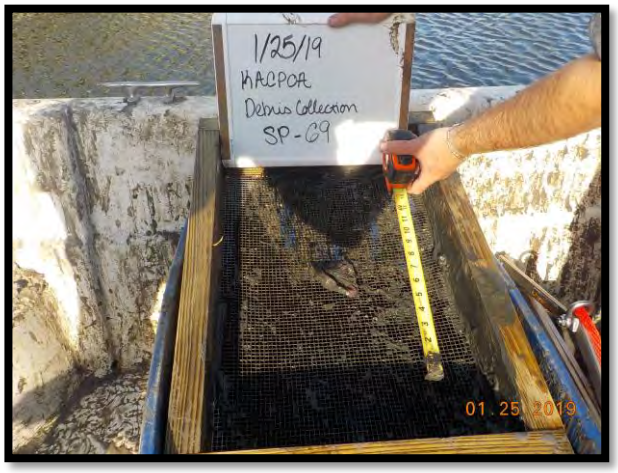
Grab Sample 67.

Grab Sample 68.



Sample 9 **collected by 50-foot linear dredge.**

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas



Grab Sample 69.

Grab Sample 70.

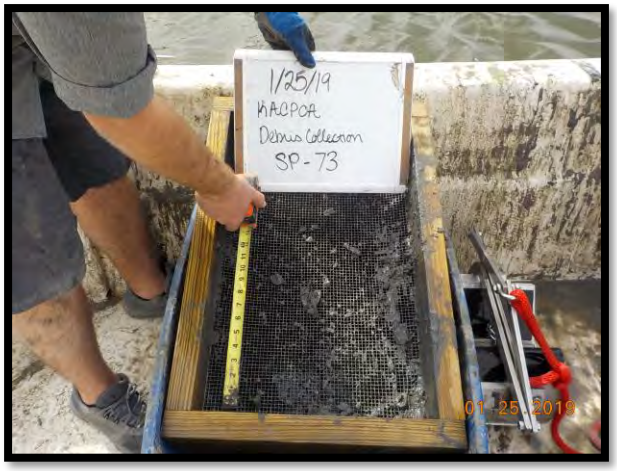
D-11 was mislabeled as D-12. Total number of dredge sample points is 21.

Sample 12 **collected by 50-foot linear dredge.**

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 71.

Grab Sample 72.



Grab Sample 73.

Grab Sample 74.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
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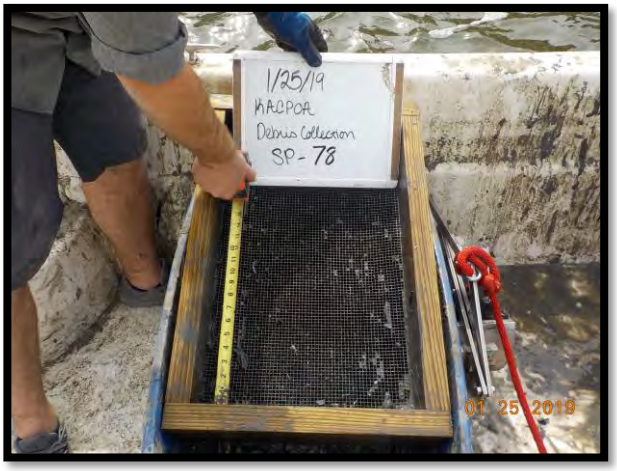
Grab Sample 75.

Grab Sample 76.

Sample 13 collected by 50-foot linear dredge.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

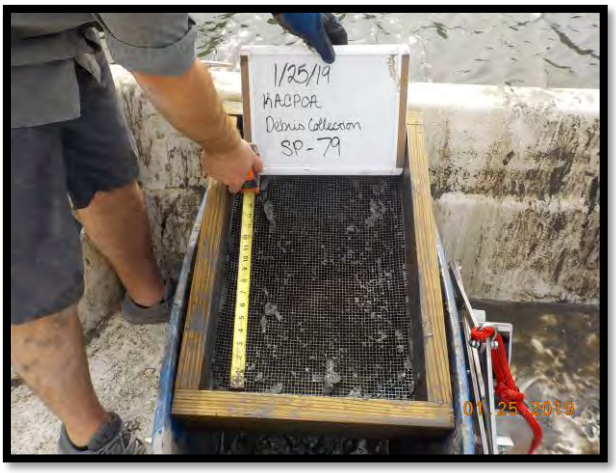
Grab Sample 77.



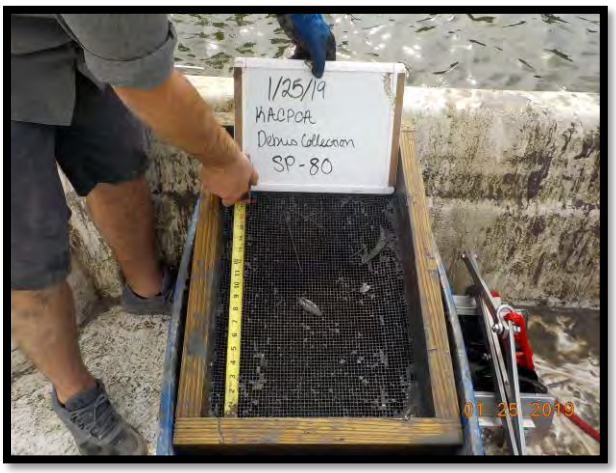
Grab Sample 78.

Sample 14 collected by 50-foot linear dredge.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas



Grab Sample 79.



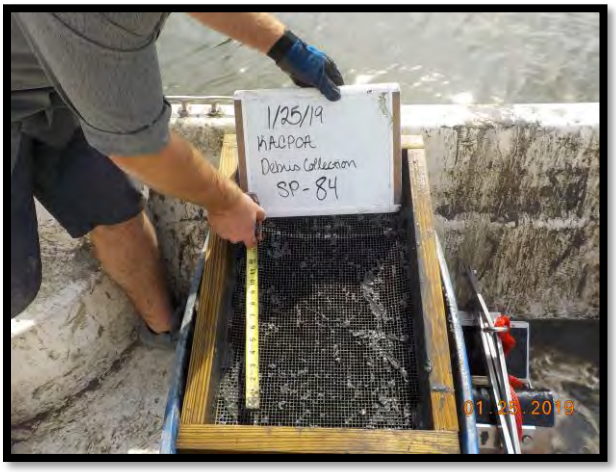
Grab Sample 80.

Grab Sample 81.

Grab Sample 82.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

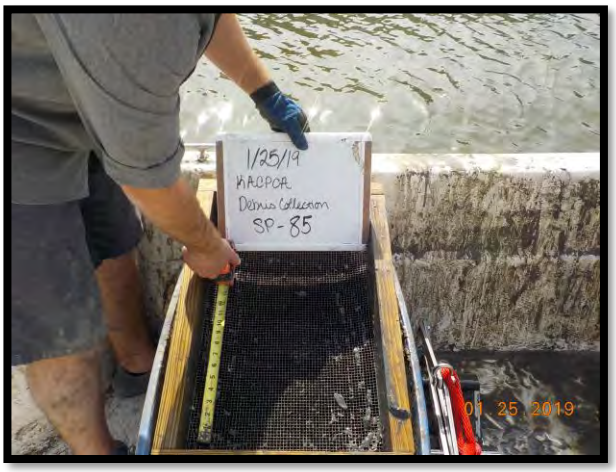
Grab Sample 83.



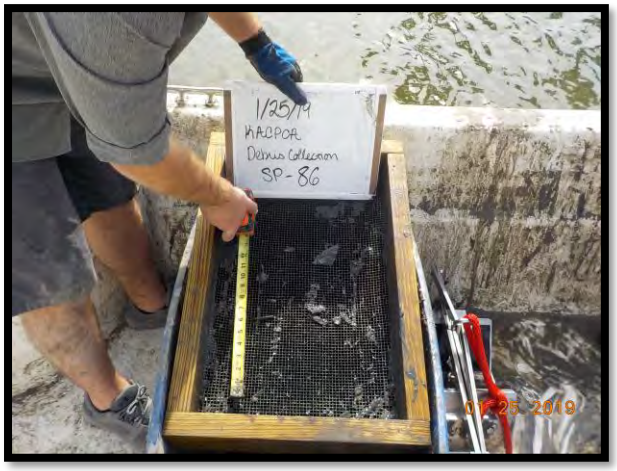
Grab Sample 84.

Sample 15 **collected by 50-foot linear dredge.**

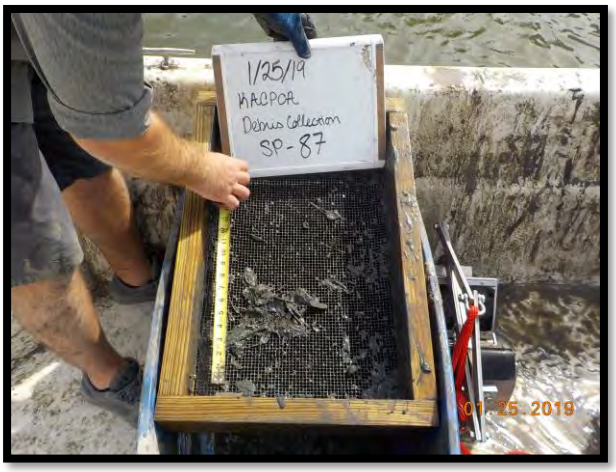
Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas



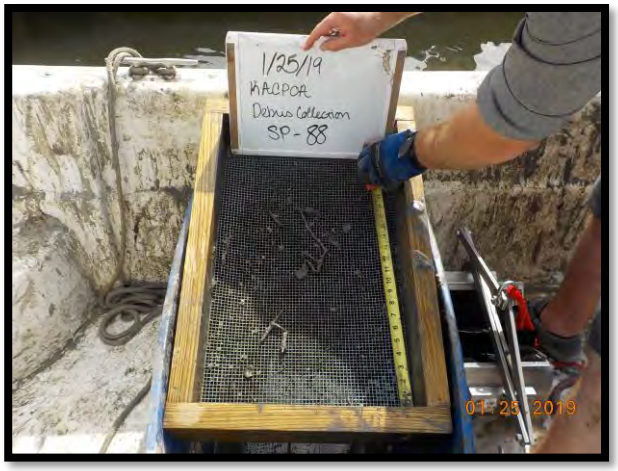
Grab Sample 85.



Grab Sample 86.



Grab Sample 87.



Grab Sample 88.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 89.

Grab Sample 90.

Grab Sample 91.

Grab Sample 92.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
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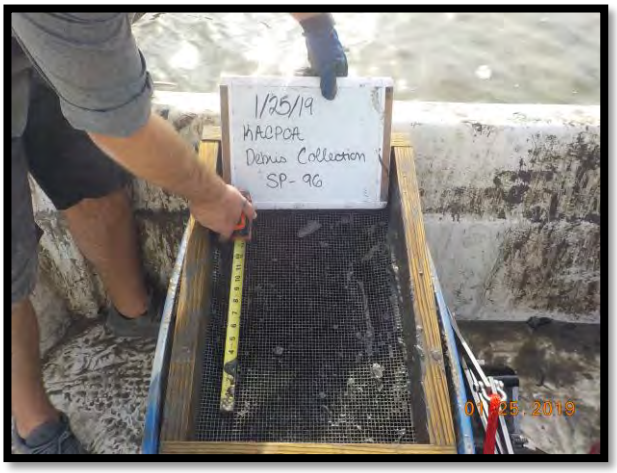
Grab Sample 93.

Grab Sample 94.

Sample 18 **collected by 50-foot linear dredge.**

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 95.



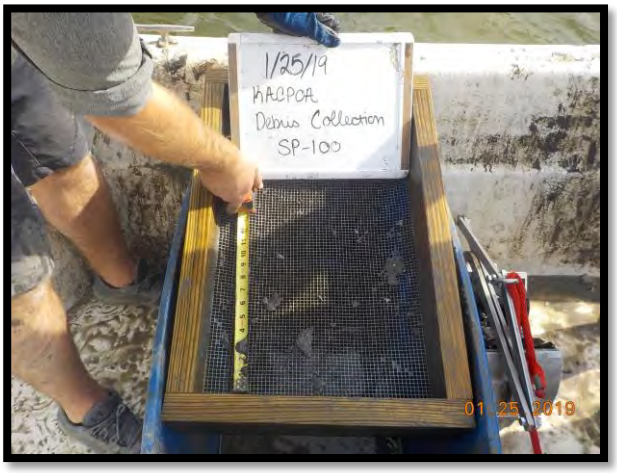
Grab Sample 96.

Grab Sample 97.

Grab Sample 98.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 99.



Grab Sample 100.

Sample 21 collected by 50-foot linear dredge.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 101.

Grab Sample 102.

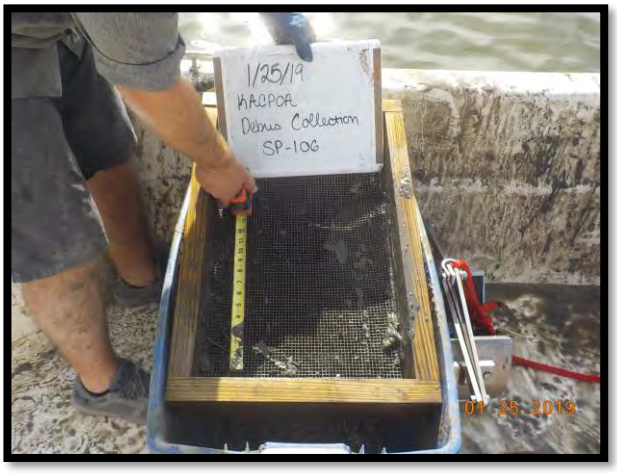
Sample 17 **collected by 50-foot linear dredge.**

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 103.

Grab Sample 104.

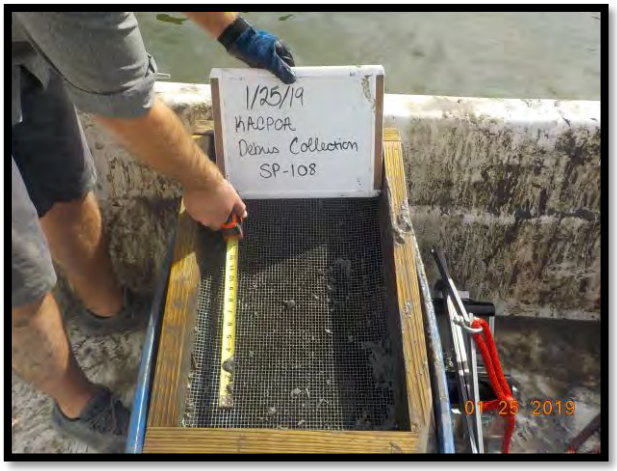
Grab Sample 105.



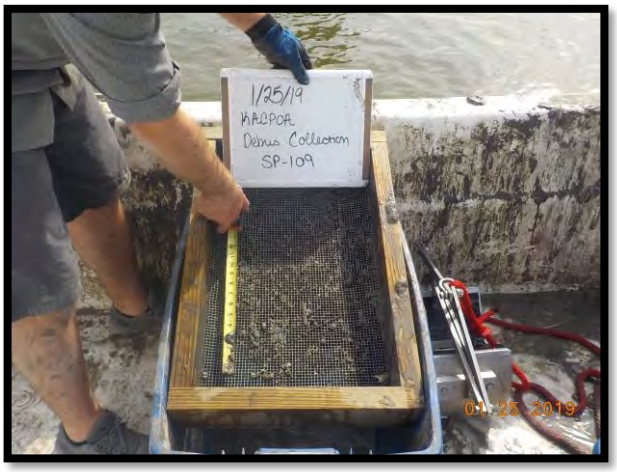
Grab Sample 106.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Grab Sample 107.



Grab Sample 108.

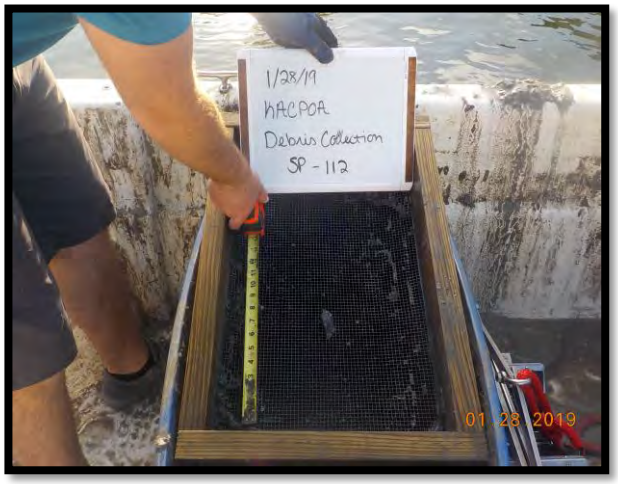


Grab Sample 109.

Grab Sample 110.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

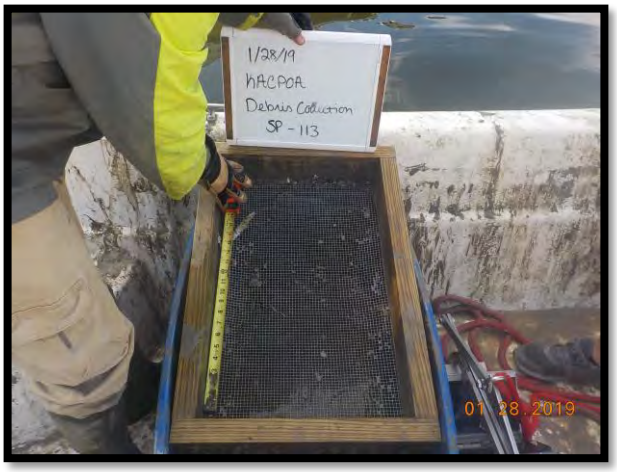
Grab Sample 111.



Grab Sample 112.

Sample 16 collected by 50-foot linear dredge.

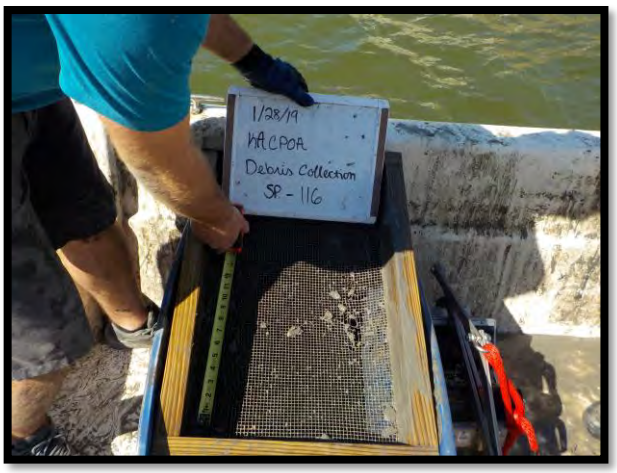
Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas



Grab Sample 113.

Grab Sample 114.

Grab Sample 115.



Grab Sample 116.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
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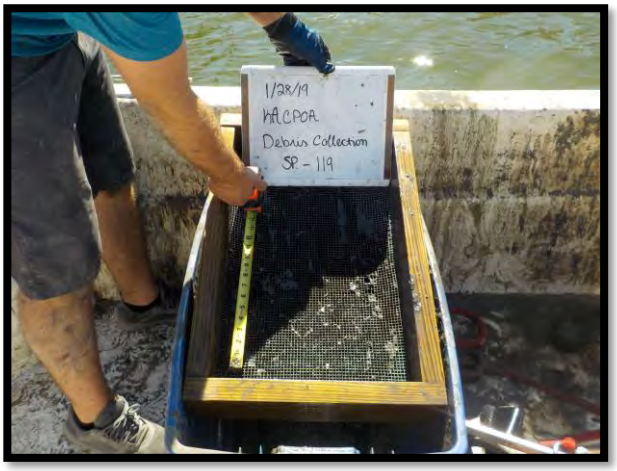
Grab Sample 117.

Grab Sample 118.

Sample 22 **collected by 50-foot linear dredge.**

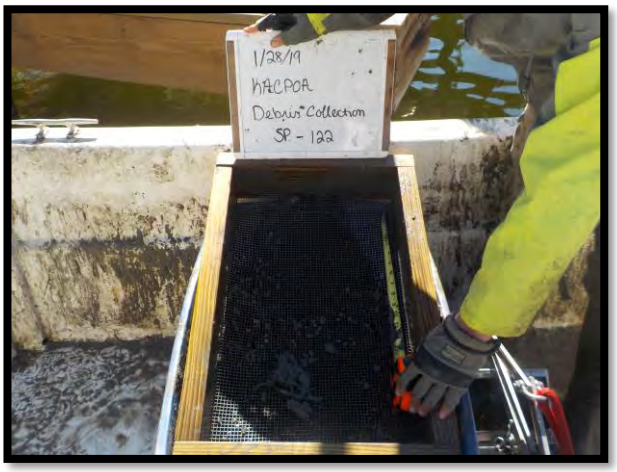
Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas



Grab Sample 119.

Grab Sample 120.

Grab Sample 121.



Grab Sample 122.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

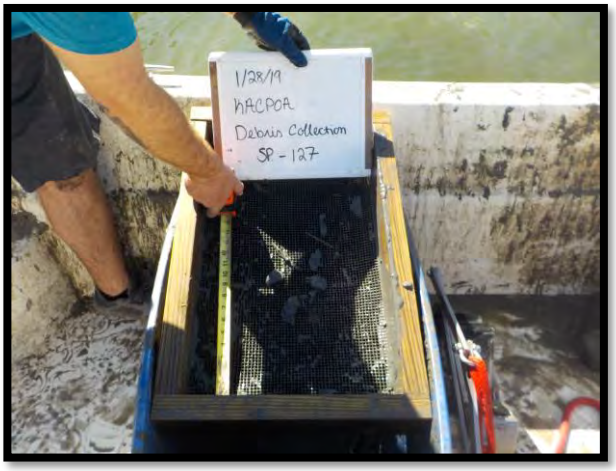
Grab Sample 123.

Grab Sample 124.

Grab Sample 125.

Grab Sample 126.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

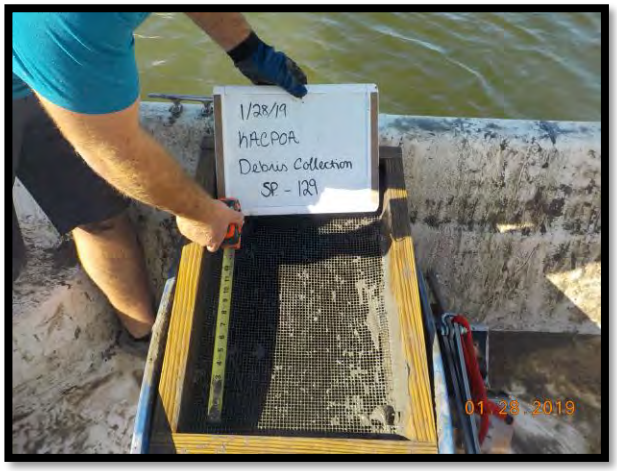


Grab Sample 127.

Grab Sample 128.

Sample 20 collected by 50-foot linear dredge.

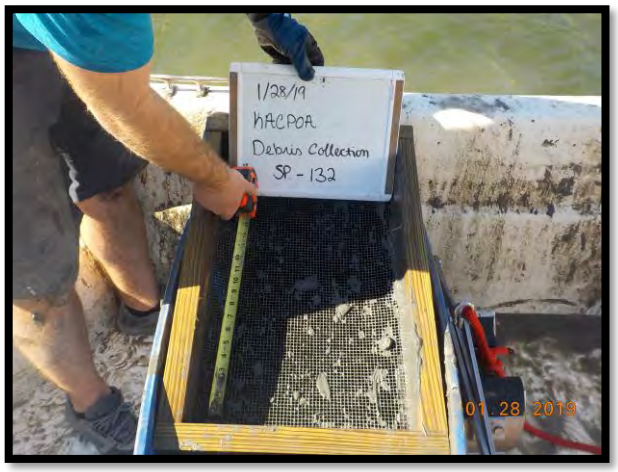
Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas



Grab Sample 129.

Grab Sample 130.

Grab Sample 131.



Grab Sample 132.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
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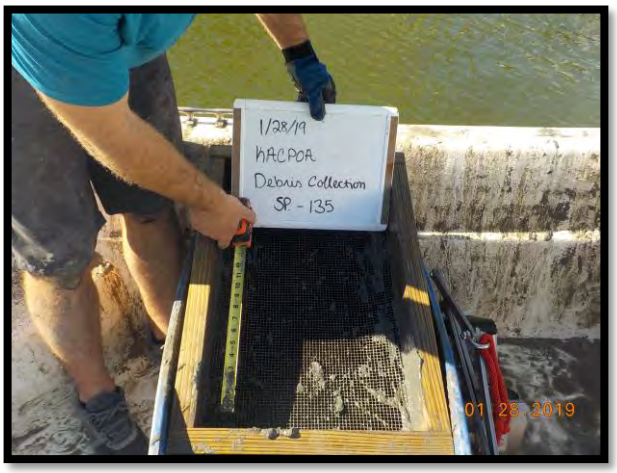
Grab Sample 133.

Grab Sample 134.

Sample 19 **collected by 50-foot linear dredge.**

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Debris Sampling
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas



Grab Sample 135.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Bulkhead Survey
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Bulkhead sample point 1.

Bulkhead sample point 2.

Bulkhead sample point 3.

Bulkhead sample point 4.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Bulkhead Survey
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Bulkhead sample point 5.

Bulkhead sample point 6.

Bulkhead sample point 7.

Bulkhead sample point 8.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Bulkhead Survey
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Bulkhead sample point 9.

Bulkhead sample point 10.

Bulkhead sample point 11.

Bulkhead sample point 12.

Photographic Exhibit
Key Allegro Canal and Property Owner Association, Inc.
Bulkhead Survey
Survey Date: January 24, 25, 28 & 30, 2019
Key Allegro, Rockport, Aransas County, Texas

Bulkhead sample point 13.

Bulkhead sample point 14.

Bulkhead sample point 15.