

Lake Houston Pump Station



JOB REPORT

JOB NAME	LAKE HOUSTON PUMP STATION
CLIENT	San Jacinto River Authority
DATE	7/29-7/30/2019
LOCATION	CROSBY TX
JOB	SCREEN ASSESSMENT/SEDIMENT ASSESSMENT
PREPARED BY	RAYMOND PADILLA

TEXAS COMMERCIAL DIVING, INC.

1650 Dickinson Ave. Suite D
Dickinson, TX 77539

www.TexasCommercialDiving.us
E-Mail: office@Texasdiving.usi

Tel: 1-281-967-7990
Fax: 1-469-575-3003

Lake Houston Pump Station

SUMMARY

Dear Sir, Madam,

First of all, we want to thank you for choosing Texas Commercial Diving, Inc. It was a pleasure working with you and we look forward to working together in the future.

On July 29th & July 30th, 2019 we performed a screen track assessment for removal and sediment depth measurements, for the Lake Houston Pump Station in Crosby TX. The job was completed as scheduled and operations were able to resume as per customers schedule. For your quick reference, please note below a summary of our findings.

- * **Screen Channels:** Divers reported up to 70% material loss of the outer channel edges. Divers used an air chipper & water blaster for assessment of bay #1. Bay #2 divers used pressure washer only to remove corroded material for assessment. Spot assessment was carried out in bays #3, & #4 confirming similar condition as bays #1, & #2. A top side assessment of screen located in bay #2, confirmed that rollers are inoperable. No damage or large holes were noted to the screen faces and the structure of screen appears to be in tack.
- * **Pump Bays:** Divers reported small debris sticks, rocks and trash located on floor of all pump bays. Sediment levels varied from clean directly under pump intakes, to 6 inches of sediment, soft clay/mud in the corners of pump bays. Sediment levels were taken every 5ft and are outlined below.
- * **Distribution Box:** No debris was located in the area of distribution box. Sediment levels varied from 6 inches to 0.25 inches and are outlined in detail below. Sediment depth measurements were obtained every 5ft from North-South & East-West.
- * **Intake Structures:** Sediment levels varied from 0.25 inches to 18 inches and are outlined in detail below. Sediment consisted of soft clay/mud and depths were obtained with ruler to the concrete floor. No major cracks were noted during inspection and no large debris was found inside intake structure.
- * **Trash Rack:** Grating bars spaced every 6 inches, no damage or obstructions were found on inside or outside of trash rack. Racks appeared to be in excellent condition, with no signs of damage and lifting eyes in excellent condition.
- * **Sediment Lake Side:** Sediment levels were obtained using a 6ft probe to 10ft in-front of intake structure. A large hill of soft sediment begins at 15ft outside intake and was up to 89 inches in depth. Depth was confirmed using a 10ft probe, once probe contacted the rip rap bottom rocks installed during initial construction. Depth measurements of sediment indicate a shallow channel with light sediment running northwest of intake structure.

On the next pages you will find our detailed notes and photos are added at the end. A copy of the video survey will be mailed to your office or a download link will be provided for you.

Kind Regards,

Raymond Padilla

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office@Texasdiving.us

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JOB SPECIFICS

JOB DETAILS

Job Name LAKE HOUSTON PUMP STATION

Date: 7/29-7/30/2019

Location Crosby TX

Job Description: SCREEN ASSESSMENT/SEDIMENT ASSESSMENT

Job Number: 1907047

Representative: Daniel Hilderbrandt.

Signature: _____.

SEA STATE / WEATHER CONDITIONS

Depth

<u>Seas:</u>	Calm	<u>Pump bay</u>	24 Feet
<u>Visibility:</u>	0.5 Feet	<u>Distribution box</u>	24 Feet
<u>Weather:</u>	Rain	<u>Lakeside</u>	27 Feet
<u>Current:</u>	Nil		

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PUMP BAY #4

SEDIMENT READINGS:

NW - 2.5"	NORTH - 1.5"	NE - 4"
WEST - 3"	UNDER PUMP - 0"	EAST - 3"
SW - 2"	SOUTH - 1"	SE - 4"

SCREEN CONDITION Diver reported 10% soft growth obstructed within the 1" openings, no damage observed by diver. Screen was not removed as per customers request due to condition of tracks.

TRACK CONDITION Diver reported 50% - 70% depletion of hardware. 60% material loss of rail. Screen track was clean in a one-foot area for condition assessment.

CONCRETE CONDITION Small aggregate loss, no spalling or cracking noted, joints tightly spaced every 6" running perpendicular to screen.

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PUMP BAY #3

SEDIMENT READINGS:

NW - 5"	NORTH - 0.25"	NE - 6"
WEST - 4"	UNDER PUMP - 0"	EAST - 0.5"
SW - 4"	SOUTH - 0.5"	SE - 5"

SCREEN CONDITION Screen found to be in tracks and in tack, 0.25" soft marine growth in the one-inch squares was noted with 10% obstruction.

TRACK CONDITION Hard ware spaced every 24" approximately 16 pairs including what's was out of water. Heavy scale and corrosion, missing areas up to 4" in length, screen not removed as per customer request. Same condition as bay #1 & # 2. Hardware connecting rails to walls was reported by diver to be 70% depleted of studs.

CONCRETE CONDITION Small aggregate loss, no spalling or cracking noted, joints tightly spaced every 6" running perpendicular to screen.

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PUMP BAY #2

SEDIMENT READINGS: Gravel Debris noted in this bay.

NW - 2"	NORTH - 0.25"	NE - 1"
WEST - 1.5"	UNDER PUMP - 0.25"	EAST - 0.5"
SW - 0.5"	SOUTH - 0.5"	SE - 2"

SCREEN Screen found to be in tracks. Screen was rigged and removed by divers for topside
CONDITION: assessment. Divers were able to reinstall screen after cleaning of tracks.

TRACK 16 pairs of fasteners on north and south tracks was noted 70% depletion of studs.
CONDITION: 60% - 70% missing material on track. Divers cleaned tracks using a water blaster to remove deteriorated material.

CONCRETE West area, south-side, minor aggregate loss , joint spaced 6" apart, no spalls or
CONDITION: cracks noted, north wall was found to be in same condition as south wall.

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PUMP BAY #1

SEDIMENT READINGS:

NW - 0.5"	NORTH - 2.5"	NE - 4"
WEST - 0.5"	UNDER PUMP - 0.25"	EAST - 3"
SW - 0.1"	SOUTH - 1.5"	SE - 3"

SCREEN Screen #1 was found dislodged from tracks, resting on the west bulkhead, blocking
CONDITION: distribution box. Screen appeared to be in tack with no damage or holes noted.

TRACK Diver reported 70% deterioration of rails, large areas of scale and scale detachment.
CONDITION: Brackets were found in fair condition, hardware was in place, L-brackets found in fair condition, hardware deterioration 40% - 60% spacing of hardware north 3'9" from bottom, 2ft at top was out of water. Total of 16 brackets on each side spaced every 24".

CONCRETE West area of wall south-side, minor aggregate loss, joint spaced 6" apart, no spalls or
CONDITION cracks, North wall was found in same condition.

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Distribution Box

SEDIMENT READINGS:

	NORTH				
	1 INCH	0.5 INCH	1 INCH	2.5 INCH	PUMP 4
	1 INCH	0.5 INCH	1 INCH	3 INCH	
	1 INCH	1 INCH	1 INCH	2,5 INCH	PUMP 3
Intake 4	0.5 INCH	0.5 INCH	1 INCH	5 INCH	
Intake 3	3 INCH	0.25 INCH	1 INCH	4 INCH	
Intake 2	0.5 INCH	0.5 INCH	0.5 INCH	3.5 INCH	PUMP 2
Intake 1	3 INCH	1 INCH	0.25 INCH	2.0 INCH	
	6 INCH	0.25 INCH	0.5 INCH	1.5 INCH	
	1 INCH	1 INCH	0.5 INCH	0.5 INCH	PUMP 1
	1 INCH	1 INCH	1 INCH	0.5 INCH	
	SOUTH				

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Intakes

SEDIMENT READINGS: All measurements below are taken in 5 foot increments.

<u>Intake 4</u>	<u>Intake 3</u>	<u>Intake 2</u>	<u>Intake 1</u>
East Side Distribution Vault			
1"	0.5"	3"	0.5"
6"	4"	5"	1.5"
7"	4"	4"	2"
7"	4"	4"	3"
8"	5"	4"	4"
18"	7"	5"	4"
8"	5"	5"	3"
8"	4"	4"	4"
7'	5"	2"	5"
4"	8"	2"	4"
6"	7"	6"	5"
6"	4"	6"	5"
4"	9"	7"	5"
4"	12"	6"	5"
4"	6"	1.5"	4"
3"	3"	3.0"	4"
5"	4"	3.0"	4"
6"	0.25"	2.5"	0.25"
1"	0.25"	0.25"	0.25"
5"	0.25"	0.5"	0.25"
West End Trash Rack			

General Condition: No signs of damage were observed during inspection.

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Trash Racks

Number Four

Top of racks were located at -19' from water line. Bottom of racks were located at -26.5' from water line.

Grates: New Item

Trash rack gratings were found in like new condition.

Grate Fastenings: Secure

Sediment measurements taken to 50ft out from trash racks in 5 foot increments.

<u>South trash rack</u>	<u>Center</u>	<u>Center</u>	<u>North trash rack</u>
16 inches	17"	3"	4"
35"	33"	13"	29"
83"	60"	61"	76"
22"	75"	81"	85"
26"	82"	89"	83"
27"	90"	75"	76"
50"	81"	55"	70"
77"	85"	45"	65"
62"	89"	60"	47"
99"	75"	60"	82"
19 ft natural bottom	19 ft natural bottom	18 ft natural bottom	18Ft nat bottom

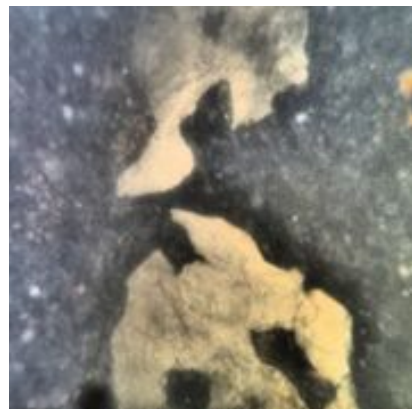
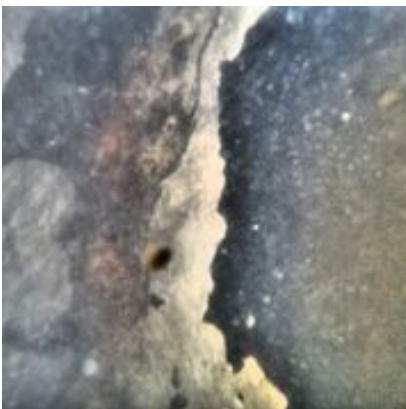
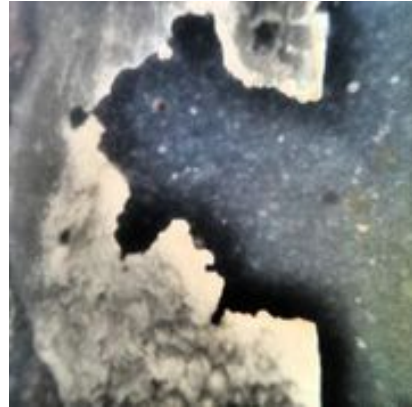
Notes: Divers confirmed depth with probe to rip rap. Hill of sediment begins 12ft - 15ft west and tapers into lake natural bottom natural bottom consist of hard packed clay/mud a layer of softer sediment up to 99 inches in depth covers riprap

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RAILS

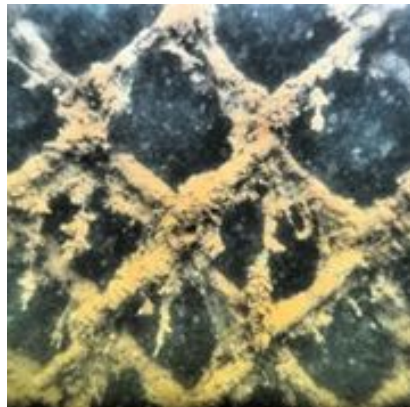
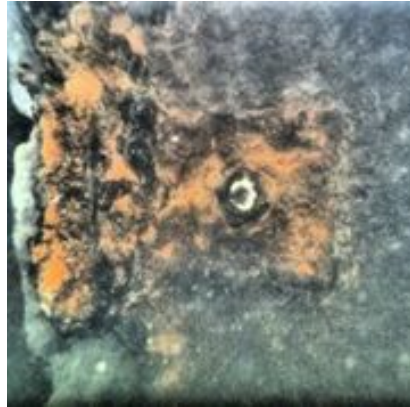
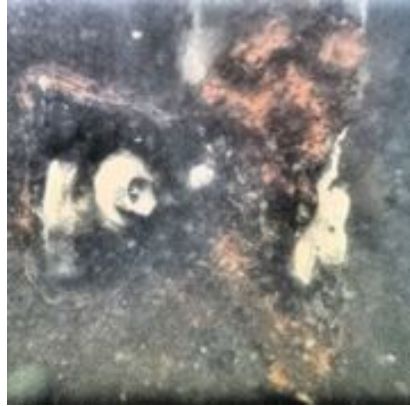


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HARDWEAR / SCREENS



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CONCRETE CONDITION

