



# National Transportation Safety Board

## Marine Accident Brief

### Barge Breakaway and Contact with Interstate 10 Bridge

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<b>Accident type</b>	Contact	<b>No.</b> DCA19FM052
<b>Vessel names</b>	<i>CBC 193, CBC 1403, CBC 1406, IB9123, IB1954, IB1960</i>	
<b>Location</b>	San Jacinto River Fleet, San Jacinto River, Channelview, Texas 29°47.57' N, 95°3.73' W	
<b>Date</b>	September 19, 2019	
<b>Time</b>	2338 central daylight time (coordinated universal time – 5 hours)	
<b>Injuries</b>	None	
<b>Property damage</b>	\$5.46 million est.	
<b>Environmental damage</b>	None reported	
<b>Weather</b>	Scattered clouds, visibility 10 miles, winds from southeast at 7 knots, air temperature 76°F, water temperature 77°F, sunset 1921. Tropical Storm Imelda brought heavy rains and caused flooding in the Houston, Texas, area.	
<b>Waterway information</b>	The Interstate 10 bridge crosses the San Jacinto River about 16 miles east of Houston, Texas. <sup>1</sup> The waterway connects the San Jacinto River to the Houston Ship Channel and is transited by towing vessels, barges, and other small craft.	

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On September 19, 2019, at 2338 local time, during historic flood waters and high river current, 11 barges broke free from a San Jacinto River barge fleeting area just north of the Interstate 10 (I-10) bridge in Channelview, Texas, and 6 barges struck pier columns supporting the I-10 bridge. No pollution or injuries were reported. Total damages, including repairs to the I-10 bridge (\$5.11 million) and removal of and repairs to the barges (\$350,000), exceeded \$5.46 million.

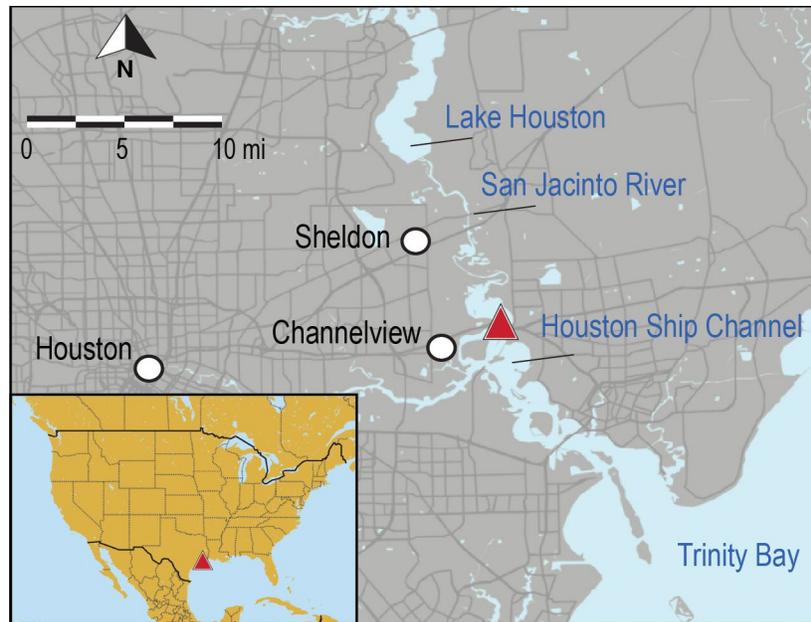


**Barges *CBC 193* and *CBC 1403* resting against I-10 bridge pilings after striking and damaging a protective cell. (Source: KJRH-TV)**

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<sup>1</sup> Unless otherwise noted, all miles in this report are statute miles.

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Area of accident where the breakaway barges struck the I-10 bridge, as indicated by a red triangle. (Background source: Google Maps)

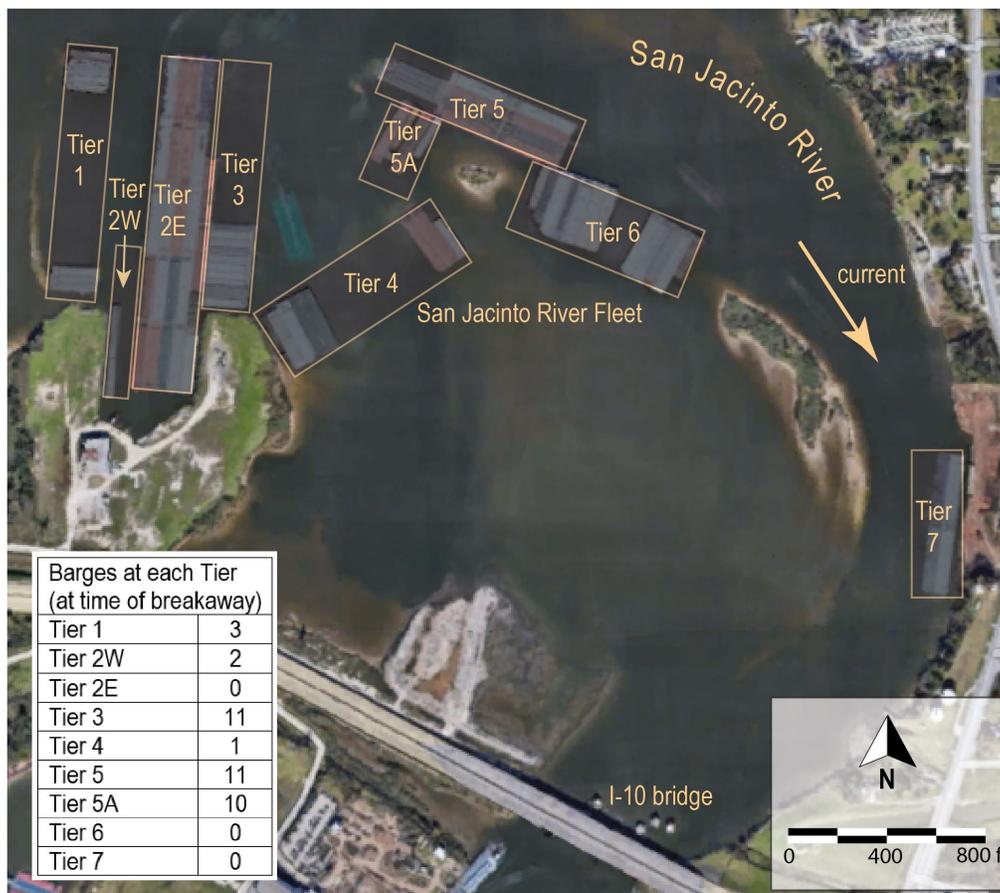
### Background

The I-10 causeway at the San Jacinto River consisted of two parallel bridges; the northern bridge carried westbound traffic and the southern bridge carried eastbound traffic. Both bridges had multiple sets of pier columns in the river. Protective cells, also referred to as dolphins, and fendering systems were installed to prevent damage to the concrete pier columns that made the boundaries for the navigable channel.

Lake Houston was 14 miles upriver from the accident location, and its watershed consisted of seven tributaries that fed into the lake. Precipitation within the watershed flowed into the tributaries and ultimately accumulated in Lake Houston. The Lake Houston dam and facilities were owned by the City of Houston and operated and maintained by the Coastal Water Authority (CWA).

Tropical Storm Imelda was the fifth-wettest tropical cyclone on record in the continental United States, causing devastating and record-breaking floods in southeast Texas. The storm formed out of an upper-level low that developed in the Gulf of Mexico and moved west. Little development occurred until the system was near the Texas coastline, where it rapidly developed into a tropical storm before moving ashore on September 17. Tropical Storm Imelda weakened after landfall, but its remnants caused 24–36 inches of rain over a 3-day period across a large area between Houston and Beaumont, Texas, before dissipating on September 21.

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**Layout of San Jacinto River Fleet’s tiers. Table in lower left corner shows number of barges at each tier at the time of the accident. Photo is not from day of accident. (Background source: Google Earth)**

## Accident Events

The San Jacinto River Fleet was located just north of the I-10 causeway on the San Jacinto River in Channelview, Texas. Established in July 2011, owned by San Jacinto River Fleet, LLC, and operated by Cheryl K Marine, LLC, the 190-plus-acre facility had seven tiers (designated areas for grouping barges) that could accommodate up to 150 barges. Fleeting operations were run by an operations manager, a port captain, dispatchers, and dayshift and nightshift crews that staffed the San Jacinto River Fleet’s towing vessels. The crews were assigned to specific towing vessels but could be used interchangeably aboard all towing vessels, as needed. There were typically enough people to crew four towing vessels each shift. There were five towing vessels available at the San Jacinto River Fleet to support fleet operations: *Cheryl K*, *Sara K*, *Caressa K*, *Tyler T*, and *JB Bloomer*. On the day of the accident, towing vessel *Tyler T* was used during the day shift but was tied up at 1524 and not used during the remainder of the evening. The towing vessels all had retractable wheelhouses for safe navigation through the 22-foot-vertical-clearance I-10 bridge.

On the morning of September 19, 2019, 11 barges were secured to tier 3 at the San Jacinto River Fleet. An empty tank barge, *IB1021*, was closest to shore and was secured to tier 3’s three mooring pilings and two shore-based “dead men” with synthetic fleet mooring lines. Dead men are concrete or steel anchors, normally embedded in the ground on shore or on the river bottom, used for mooring vessels. According to the vessel crew, fleet mooring lines belonging to the fleeting area were attached to the pilings to enable crews to quickly secure a barge to the pilings.

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Another empty barge, *IB921*, was moored outboard of *IB1021*. The 11 barges were secured side by side to each other with a combination of fleeting lines and the respective barges' wire ropes and winches that continued outward from tier 3 in the following order, with the raked bows facing east, downriver: *IB1927*, *IB1985*, *CBC 193*, *CBC 1403*, *CBC 1406*, *IB9123*, *IB1954*, *IB1960*, and *CBC 1407*.

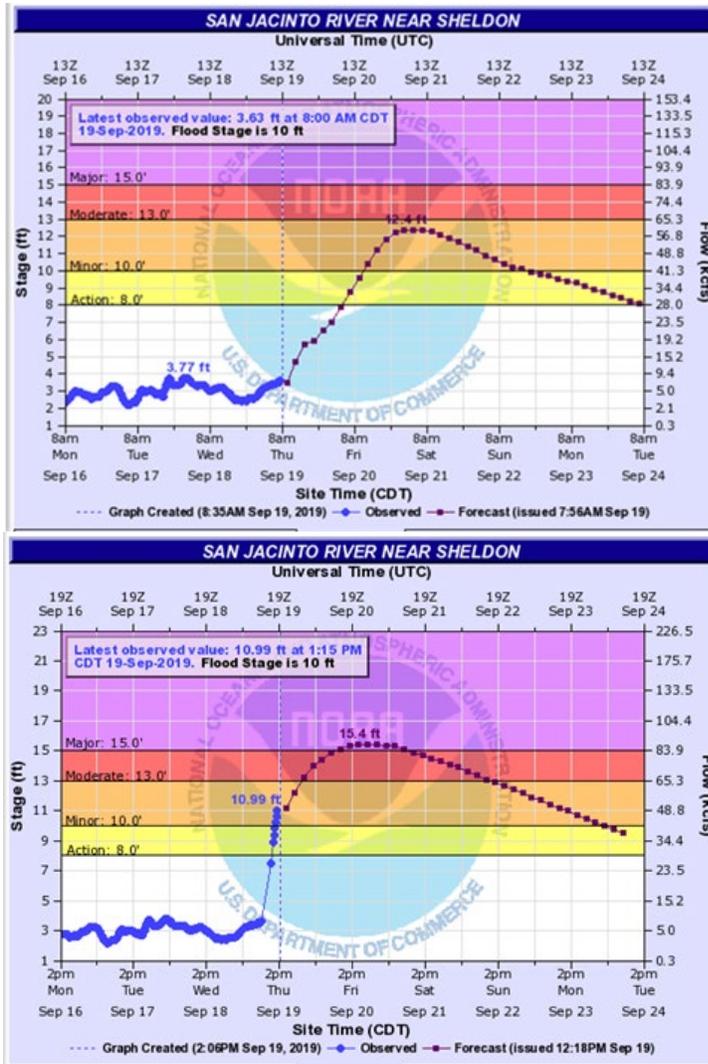
Crews aboard the towing vessels regularly performed tier checks at the San Jacinto River Fleet's seven tiers. A tier check consisted of a visual inspection of the fleet mooring lines and wires that secured the barges to one another and to the tier's pilings and dead men. The crews would check the barge fittings, spuds, pylons, and adjust mooring lines and wires to accommodate water level changes, remove slack in lines if needed, adjust wire tension on the winches, and check void spaces for water accumulation.

At 0756 on September 19, the National Oceanic and Atmospheric Administration (NOAA) National Weather Service, Advance Hydrologic Prediction Service, issued a flash flood warning that forecasted the water level would rise to a minor flood stage (10–13 feet) for the San Jacinto River near Sheldon, Texas (10.3 miles upriver from the I-10 bridge), over the next 24 hours, to 12.4 feet. The observed San Jacinto River flood stage gage height was 3.63 feet (below flood stage) at 0800 near Sheldon. San Jacinto River Fleet's operations manager, who was working remotely due to flooded roads, had monitored Tropical Storm Imelda's progress over the previous 3 days and provided periodic updates to customers (barge owners and operators). At 1015 he emailed customers an image of the 0756 flash flood warning as well as Lake Houston's current water level of 43.25 feet, which was above the 42.38-foot maximum level, meaning the Lake Houston Dam's spillway was releasing water uncontrolled into the San Jacinto River.

Throughout the afternoon, the US Coast Guard Vessel Traffic Service (VTS) Houston-Galveston announced increasingly restrictive measures in accordance with their high-water action plan, ultimately limiting all towing movements on the San Jacinto River unless allowed on a case-by-case basis.

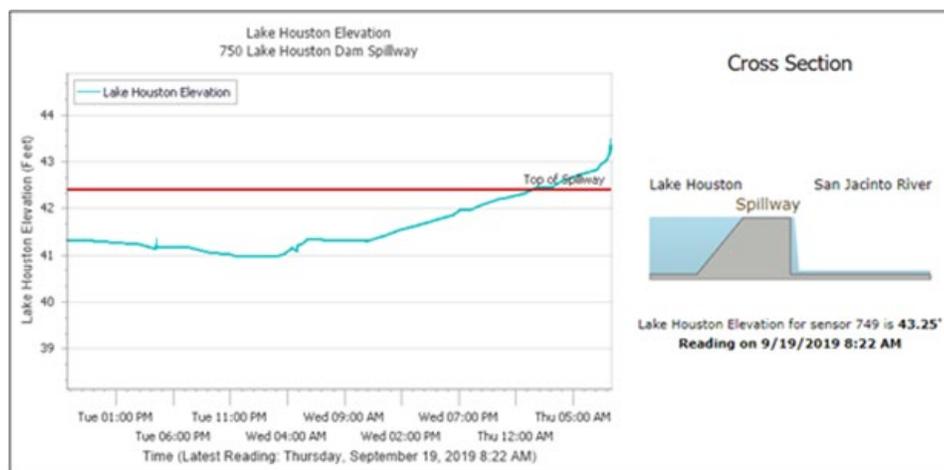
At 1526, the operations manager sent customers an updated flash flood warning that now projected river water levels would rise to a major flood stage (greater than 15 feet) over the next 24 hours, to 15.4 feet. The warning listed an observed river level of 10.99 feet (about 7 feet above average) at 1315. About 1530, the recorded water level height at Lake Houston had risen to 46.6 feet, now more than 4 feet above maximum level, releasing increasing amounts of water into the San Jacinto River via the Lake Houston Dam spillway. Shortly thereafter, the operations manager instructed dispatch and the port captain to add extra lines to all barges; however, dispatch indicated they could not get the towing vessel crews out on barges to add lines due to lightning storms. After the lightning storms passed, *Sara K* went alongside tier 3 at 1717 and crewmembers performed a tier check and added lines to the barges.

## Barge Breakaway and Contact with Interstate 10 Bridge



NOAA's observed water levels and flood stage predictions for the San Jacinto River near Sheldon, Texas, on September 19, 2019. On top, the 0756 flash flood warning predicted river level rising to a minor flood stage; on bottom, the 1218 warning reflected a steep rise in river level since the previous forecast and predicted a major flood stage. (Source: NOAA)

The lead shift captain aboard *JB Bloomer* told investigators that about 1730 he measured the river current at 3.9 miles per hour and rising, which was swifter river current than normal. *Caressa K* and crew departed the fleeting area at 1902 for a job in Mitchell Bay, 7.4 miles away. At 1920 VTS announced it was shutting the entire San Jacinto River to barge traffic and allowing daylight transits only. Roughly 40 minutes later, the operations manager notified San Jacinto River Fleet customers of this update. Crews aboard the *Sara K*, *JB Bloomer*, and *Cheryl K* continued to check the tiers and add lines on the outer tiers.



Graph of Lake Houston elevation at 0822 on September 19, 2019, showing that Lake Houston's maximum level was exceeded. The red line at 42.38 feet was the level at which water flowed uncontrolled over the dam's spillway. (Source: CWA)

## Barge Breakaway and Contact with Interstate 10 Bridge

At 2050, *Cheryl K*'s captain and crew, who were at tier 2, noticed the 11 barges at tier 3 breaking away. For roughly the next 2.5 hours, San Jacinto River Fleet towboats and crews worked to control the breakaway barges and return them to one of the tiers, attempting to remove barges from the breakaway group two at a time. The empty barges *IB1021* and *IB921* were safely returned to tier 2 east. The towboat crews struggled to control the remaining breakaway barges as they moved through normally shallow water closer to the I-10 bridge due to increasing current and floodwater.

As *Caressa K* and *Sara K* crews started to remove the wires and mooring lines from the two outermost barges, the increasing river current and rising water caused the mooring lines and wires to part on one of the barges in the breakaway group. According to *Caressa K*'s captain, at 2330 the nine barges topped around and separated into a block of six barges and a block of two barges, with one grounded barge (*CBC 1407*) remaining in the mud.

*Cheryl K* and *JB Bloomer*'s crews corralled the block of six barges as the barges drifted downriver. The port captain, who was conning *Cheryl K* on the upstream side of the barges, told investigators the block of six barges was moving too quickly in the current to control. He instructed *JB Bloomer*'s captain to request assistance of towing vessels in the area and warn vessels of loose barges heading downriver from the fleeting area via VHF radio.

*JB Bloomer* attempted to push the string of six barges up river, but the towing vessels could not hold the barges in the rising floodwaters. *JB Bloomer*'s captain maneuvered away from the barges to avoid being pinned between the barges and bridge. At 2337, the block of six barges contacted and damaged the protective cell closest to the channel on the eastern bank and then struck and damaged the western bank protective cell. The barges subsequently struck the I-10 bridge fendering system and pilings at 2338. The barges' mooring lines and wires parted upon contact, and barges *CBC 193* and *CBC 1403* became lodged between the I-10 bridge's concrete columns on the west side of the river while four barges continued under the bridge, contacting the bridge's fendering system and concrete pilings as they individually headed downriver. *JB Bloomer* and *Cheryl K* proceeded under the bridge to pursue the four loose barges.

Meanwhile, towing vessels *Sara K* and *Caressa K* were attempting to move two barges (*IB1927* and *IB1985*) to tier 2. According to the captains, they were unable to maintain control, as they were also being pushed downriver by the increasing current acting on the barges. *Caressa K*'s captain stated that both towing vessels were "doing everything they could [using their full combined 2,600 horsepower], but they were still being pushed outbound across the flats at 1.8 miles per hour." *Caressa K* moved to the east side of the barges, and the captain put all the vessel's power ahead to push the barges away from the unprotected side of the I-10 westbound bridge. The captain stated, "the east side was the side they never fixed after [Hurricane] Harvey, there's nothing protecting those pylons." According to the crews' accounts, the two barges passed under the bridge at 2347 without touching anything.

Several Good Samaritan towing vessels helped push the four loose barges into the east bank north of Hog Island, roughly a quarter mile below the I-10 bridge. *Sara K* and *Caressa K* with the assistance of the Good Samaritan vessels were able to push their two barges (*IB1927* and *IB1985*) into the east bank at 2352. According to *JB Bloomer*'s captain, all barges were safely pushed into the bank about 25 minutes later.

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The San Jacinto River Fleet operations manager and the port captain notified the Coast Guard of the bridge strike. The Coast Guard notified the Harris County Sheriff's office, who dispatched officers to close the bridge pending an evaluation by the Texas Department of Transportation (TxDOT).

### Additional Information

Postaccident drug and alcohol testing was performed on all crew members. All results were negative.

**San Jacinto River Fleet Operations.** It was a normal practice for the towing vessels' crews to secure barges in the fleeting area using synthetic lines or soft lines. Many of the barges' mooring lines were supplemented by fleeting lines provided by the San Jacinto River Fleet. San Jacinto River Fleet had synthetic lines affixed to the tier pilings and dead men to secure the barges to a tier. According to the towing vessel crewmembers interviewed, mooring lines were visually inspected by the boat crews as required by Cheryl K Marine's safety management system (SMS). No maintenance or inspection documentation for the lines was required by Cheryl K Marine's SMS or San Jacinto River Fleet LLC. During the accident events, the *JB Bloomer* deckhand noticed one parted mooring line on the bow of empty tank barge *IB1021*. Investigators observed only one parted mooring line (a roughly 2-inch white synthetic line) at one of the three pilings at tier 3 (the southwest piling). Investigators also observed two parted mooring lines on shore-based dead men. The dead men blue synthetic lines (referred to as blue steel 1-3/4-inch) parted approximately 5–10 feet from the base of the dead men.

Cheryl K Marine's SMS severe weather procedure established a severe weather plan to "adequately prepare personnel and resources to meet the challenges accompanied by severe weather events and mitigate the effects of those challenges." The severe weather plan included a set of preparatory and response-oriented tasks found on a checklist to be completed within the time frames identified. Investigators found no indication that Cheryl K Marine's senior leadership followed severe weather procedures found in the SMS for Tropical Storm Imelda. In addition, no completed or signed severe weather forms, checklists, or required actions items listed in the procedures were provided to investigators.

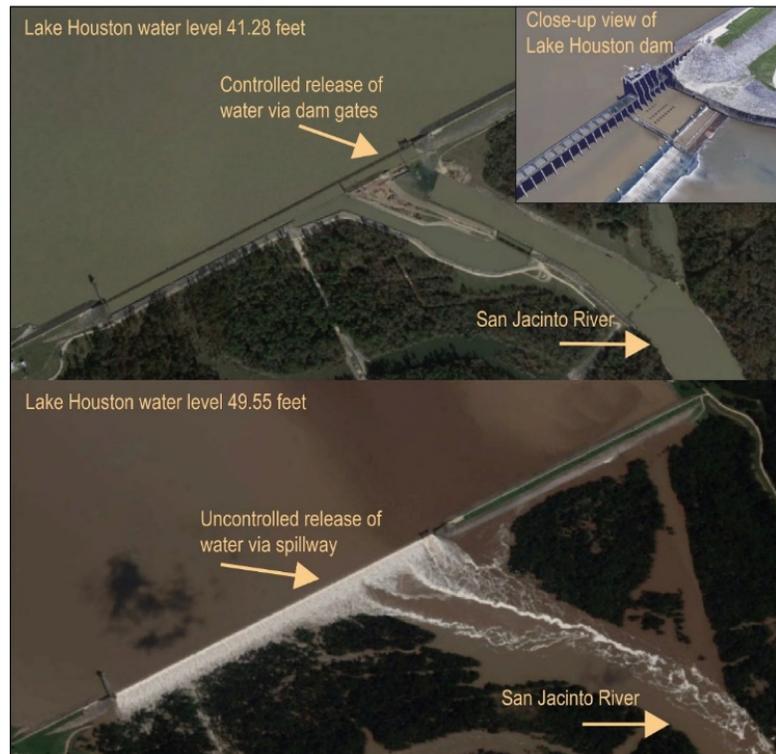
The port captain told investigators that usually, when predicted severe weather approaches, the barges from tier 3 are moved to other tiers that do not have many barges, to reduce the number of barges exposed to swifter currents. On the day of the accident, the San Jacinto River Fleet port captain had planned to remove the barges from tier 3 and place them at tier 2; however, according to the port captain, the weather changed rapidly, and they did not have a chance to remove the barges.

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**Tropical Storm Imelda and Lake Houston Flooding Impact.** Rainfall totals from Tropical Storm Imelda greatly exceeded the rainfall forecast. The CWA told investigators the National Weather Service predicted 5–7 inches of rain for the area. However, observed rain total at the Lake Houston dam from 0444 on September 18 to 0600 on September 19 was 20 inches. The United States Geological Survey (USGS) recorded up to 30 inches of rainfall at other locations in the watershed.

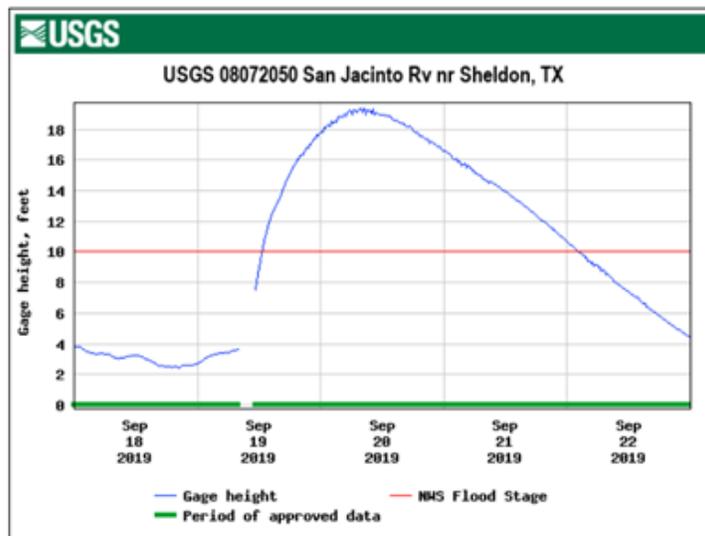
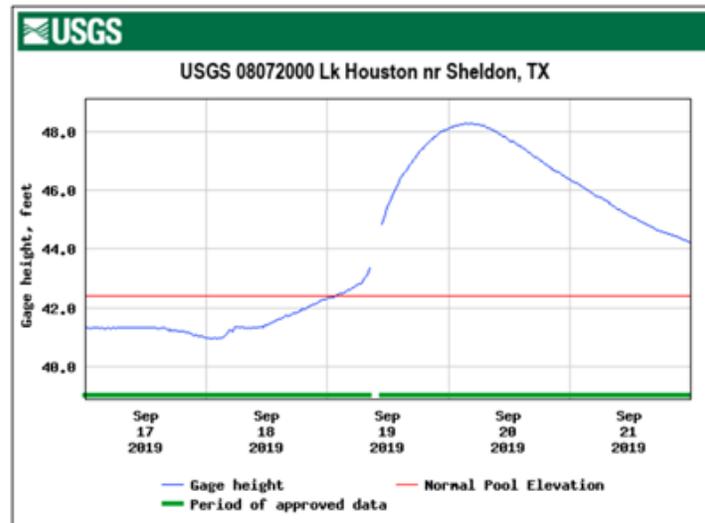
As a result of the rainfall during Tropical Storm Imelda, the Lake Houston water level, and subsequently the San Jacinto River level, rose drastically. The design of the Lake Houston dam included two tainter radial gates that could be opened in increments up to 22 feet (with actual opening limited to 20.5 feet to avoid gates getting jammed), and two flashboard gates that could be either opened to 5 feet or closed. In response to increased water level resulting from the rainfall, the two flashboard gates were opened on September 17 at 0955. The two tainter gates were opened to 12 feet at 1640 the same day, and further opened to 20.5 feet the following day at 0444. The observed lake level at that time was 41.21 feet, just below the lake's maximum 42.38-foot level where the majority of the excess water would flow uncontrolled

over the dam's 3,000-linear-foot spillway and enter the San Jacinto River. According to the CWA, observed water level at Lake Houston during Tropical Storm Imelda recorded a peak of 48.08 feet, with about 6 feet of water going directly over the uncontrolled spillway. The highest discharge rate was recorded at 171,705 cubic feet per second (cfs) at 0552 on September 20. At this peak rate, 18,394 cfs (11 percent) flowed through the Lake Houston dam's fully opened tainter and flashboard gates into the San Jacinto River, while 153,311 cfs (89 percent) of water flowed over the uncontrolled spillway directly into the San Jacinto River. As a result, 4 miles downriver the San Jacinto River gage height rose to 19.5 feet in Sheldon, Texas, a 14.5-foot increase over 24 hours.



**Comparison between the Lake Houston dam during normal conditions and during flooding conditions. (Background source: Google Earth)**

## Barge Breakaway and Contact with Interstate 10 Bridge

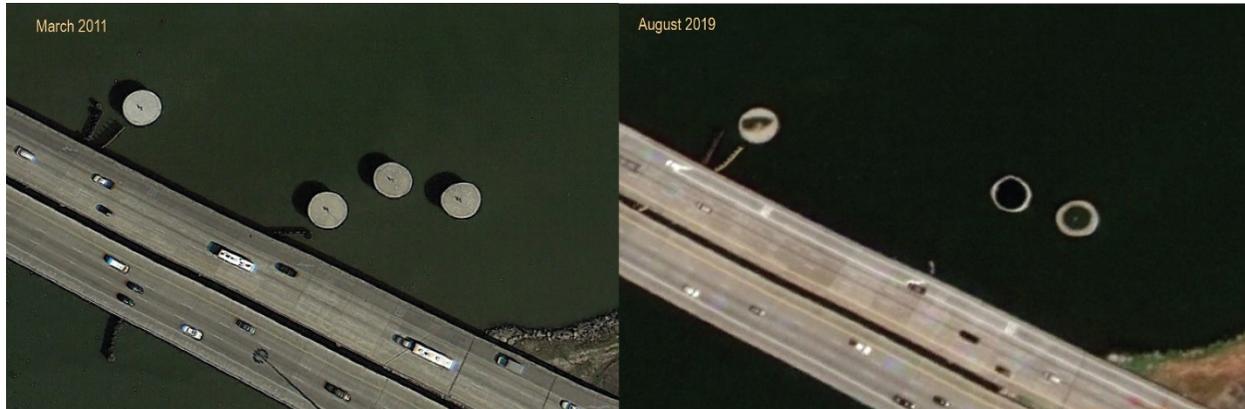


USGS graphs of Lake Houston and San Jacinto River recorded gage height during Tropical Storm Imelda. On September 19, the day of the accident, Lake Houston's gage height was several feet above normal pool elevation and the San Jacinto River near Sheldon, Texas, was above flood stage and increasing. (Source: USGS)

**Barge Damage and Repairs.** Barges *CBC 193*, *CBC 1403*, *CBC 1406*, *IB9123*, *IB1954*, and *IB1960* were damaged as a result of the accident. Total repair costs were estimated at \$350,000. There were no reported cargo releases from any of the barges.

**I-10 Bridge Damage and Repairs.** There were four protective cells on the upstream side of the I-10 bridge (three protecting the columns on the east side of the channel and one protecting the columns on the west side). The pier columns on the west side of the main channel were also protected by a series of wooden horizontal fendering beams and pilings. In 2017, destruction caused by Hurricane Harvey resulted in one damaged and one completely collapsed protective cell on the east side closest to the channel as well as damaged and missing fendering pilings. The wooden fendering systems protecting the piers for the navigable channel were later replaced.

## Barge Breakaway and Contact with Interstate 10 Bridge



**Satellite images of the San Jacinto River in March 2011 and August 2019 showing the pre-accident condition of the protective cells and fendering systems for the I-10 bridge. (Source: Google Earth)**

Dive surveys and damage assessments determined that only the westbound bridge had been significantly impacted as a result of the September 19, 2019, breakaway barge contact. Bent 26 (a row of pilings) had the three northern columns, a steel stud (from a previous repair), and the cap severely damaged. Bent 28 had the northern column and cap damaged.



**Multibeam sonar images overlaid with above-surface photograph illustrate the damaged columns postaccident (sonar survey taken September 27) on the westbound span of the I-10 bridge. (Source: TxDOT)**

The protective cells absorbed most of the barges' momentum. Damage to the western cell just outside of the channel consisted of crushed and splintered wooden fendering, a collapsed cap, and fractured concrete exterior on the northeast side that caused the cell to crumple and fold inward. Erosion from floodwaters removed the interior dirt that helped anchor the protective cell and provide absorbing energy from impacts. Damage to the eastern cell closest to the channel consisted of crushed and splintered wooden fendering and exterior fractures on the northwest side, including an inward-collapsed concrete bulkhead. The entire cell also shifted from the impact, and erosion occurred around the base.

The westbound bridge reopened on January 19, 2020. The eastbound bridge reopened to its original capacity on February 15, 2020, nearly 5 months after the accident. The cost to repair the bridge structure and provide temporary traffic control until the bridge reopened and capacity was restored was \$5,110,296.

## Barge Breakaway and Contact with Interstate 10 Bridge

One of the sets of columns damaged by the barge contact on September 19, 2019, had previously been struck by a barge on February 11, 2019, causing \$1.56 million in damage.<sup>2</sup> TxDOT has planned a \$14 million construction project for summer 2021 to replace the protective cells and fender systems for the I-10 bridge at the San Jacinto River. In addition to replacing the protective cells and fender system, TxDOT is working on strategies to deliver a project that will replace the existing I-10 bridge structures at the San Jacinto River. The new bridge could potentially reduce or eliminate bridge bents and columns in the water, minimizing the likelihood of similar strikes in the future.

### Analysis

Heavy rains led to historic floods, which, despite fully open Lake Houston dam gates, increased the water level in Lake Houston above the dam's uncontrolled spillway, ultimately releasing the excess water to the San Jacinto River. The dam's high discharge rate raised the river level and increased the current at the San Jacinto River Fleet 14 miles downriver, increasing the force acting on all the barges tied to tier 3. This force significantly strained the tier 3 moorings and caused the lines to part. After the accident, investigators found parted synthetic mooring lines attached to the pilings and dead men; the parted lines were believed to have been fastened to the empty tank barge *IB1021*. It is likely that the strain was not distributed evenly among the lines due to the current, resulting in the mooring lines exceeding maximum load and parting. Once one line failed, the strain would have been placed on the next line, which would also have failed, until the breakaway occurred.

The blue steel 1-3/4-inch lines parted approximately 10–15 feet from the base of the dead men. The string of 11 barges stayed together after they broke away from tier 3, and they were sufficiently secured to each other with their respective mooring lines and wire ropes until the barges were separated by the crews in an attempt to transport two barges back to tier 2. The mooring points at tier 3 (three pilings and two dead men) placed large strains on the mooring lines closest to the pilings and dead men. Given the strong current, rapidly rising river level, and therefore dangerous conditions for personnel on tows and potentially on barges, there likely was no safe way to effectively keep the 11 barges moored to tier 3.

The Cheryl K Marine operations manager who oversaw the San Jacinto River Fleet area monitored weather conditions and periodically updated customers, but the San Jacinto River Fleet should have also implemented its severe weather plan and taken earlier action to break down the longer tiers and secure the vessels in the fleeting area. Cheryl K Marine did not appear to follow their own SMS policies relating to severe weather and swift/flood water plans. Towing vessels were available had an order been given to break down tier 3. Had the longer string of barges at the tier been broken down and barges more evenly distributed among the tiers, the resulting shorter strings would have been less vulnerable to swift currents. The forces on the barges' mooring lines in tier 3 would have been lessened due to the lower number of barges acted on by the current.

The four towing vessels and crews worked tirelessly for hours attempting to control the barges; however, all four vessels combined were not able to succeed in rounding up the barges against the strong river currents experienced on the north side of the I-10 bridge.

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<sup>2</sup> Contact of Lindberg Cosby Tow with I-10 Bridge, Channelview, Texas, February 11, 2019 ([MAB-20/02](#)), available at [www.nts.gov](http://www.nts.gov).

## **Barge Breakaway and Contact with Interstate 10 Bridge**

### **Probable Cause**

The National Transportation Safety Board determines that the probable cause of the barge breakaway and contact with the I-10 bridge was the force of the river current acting on the moored barges at the San Jacinto River Fleet, which exceeded the capacity of the mooring lines, due to the extreme rise and flow of water in the San Jacinto River from Lake Houston dam's uncontrolled spillway release of water during a historic rainfall event. Contributing was the operating company not rearranging fleeting area tiers to mitigate the effect of current on barge tiers.

### **Severe Weather Planning**

Marine operating companies should develop and continuously evaluate severe weather plans to prepare for challenges accompanied by tropical storms and/or severe weather with the potential to cause flooding or swift water within their areas of operations. Severe weather can trigger prolonged periods of weather restrictions in navigable river watersheds and create challenging conditions due to high or swift water downstream.

## Vessel Particulars

Vessels	<i>Cheryl K</i>	<i>Sara K</i>	<i>Caressa K</i>	<i>JB Bloomer</i>	Barges
<b>Owner/operator</b>	Cheryl K Marine, LLC	Cheryl K Marine, LLC	Cheryl K Marine, LLC	Cheryl K Marine, LLC	Canal Barge Co. (3); Ingram Barge Co. (3)
<b>Port of registry</b>	Channelview, Texas	Channelview, Texas	Channelview, Texas	Channelview, Texas	New Orleans, Louisiana, and Paducah, Kentucky
<b>Flag</b>	United States	United States	United States	United States	United States
<b>Type</b>	Towing vessel	Towing vessel	Towing vessel	Towing vessel	Tank barges
<b>Year built</b>	1985	1975	1981	1970	Various
<b>Official number (US)</b>	686919	567947	640942	527604	Various
<b>IMO number</b>	N/A	N/A	N/A	N/A	N/A
<b>Construction</b>	Steel	Steel	Steel	Steel	Steel
<b>Length</b>	52 ft (31 m)	50.3 ft (39 m)	68 ft (20.7 m)	60 ft (61 m)	195–200 ft (59–61 m)
<b>Draft</b>	7 ft (2.7 m)	7.3 ft (2.9 m)	8.6 ft (2.6 m)	7 ft (4 m)	7–13 ft (2.1–4 m)
<b>Beam/width</b>	20 ft (10.4 m)	20.4 ft (12.8 m)	23 ft (7 m)	22 ft (10.7 m)	22–48 ft (7–14.6 m)
<b>Tonnage</b>	53 GRT	51 GRT	68 GRT	59 GRT	735–788 GRT
<b>Engine power; manufacturer</b>	2 x 1000 hp (746 kW); Detroit Series 60	2 x 1000 hp (746 kW); Detroit Series 60	3 x 1800 hp (142 kW); C-18 Caterpillar	2 x 1000 hp (746 kW); 3406 Caterpillar	N/A
<b>Persons on board</b>	2	2	3	2	0

NTSB investigators worked closely with our counterparts from Coast Guard Sector Houston throughout this investigation.

For more details about this accident, visit [www.nts.gov](http://www.nts.gov) and search for NTSB accident ID DCA19FM052.

**Issued: June 8, 2021**

The NTSB has authority to investigate and establish the probable cause of any major marine casualty or any marine casualty involving both public and nonpublic vessels under Title 49 *United States Code*, Section 1131(b)(1). This report is based on factual information either gathered by NTSB investigators or provided by the Coast Guard from its informal investigation of the accident.

The NTSB does not assign fault or blame for a marine casualty; rather, as specified by NTSB regulation, “[NTSB] investigations are fact-finding proceedings with no formal issues and no adverse parties . . . and are not conducted for the purpose of determining the rights or liabilities of any person.” Title 49 *Code of Federal Regulations*, Section 831.4.

Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by conducting investigations and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report. Title 49 *United States Code*, Section 1154(b).