



sanitation

Edward Grayson Commissioner

Sarah Dolinar

SWM Dir.,
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March 23, 2021

Kenneth B. Brezner, Regional Materials Management Engineer
Division of Materials Management
NYSDEC, Region 2
47-40 21st Street
Long Island City, NY 11101

Re: Southwest Brooklyn Marine Transfer Station (MTS)
NYSDEC Permit # 2-6106-00002/00022
2020 Bulkhead Inspection Report

Dear Mr. Brezner:

On behalf of the New York City Department of Sanitation, enclosed please find the 2020 Bulkhead Inspection Report provided in compliance with Condition 15a) and 15c) of the above-referenced Part 360 Permit for the MTS.

In further compliance with the Part 360 Permit, this letter and the Report will be posted on the DSNY website shortly.

Please contact me with any questions.

Sincerely,

A handwritten signature in blue ink that reads "Sarah Dolinar".

Sarah Dolinar

Enclosure (1): 2020 Bulkhead Inspection Report

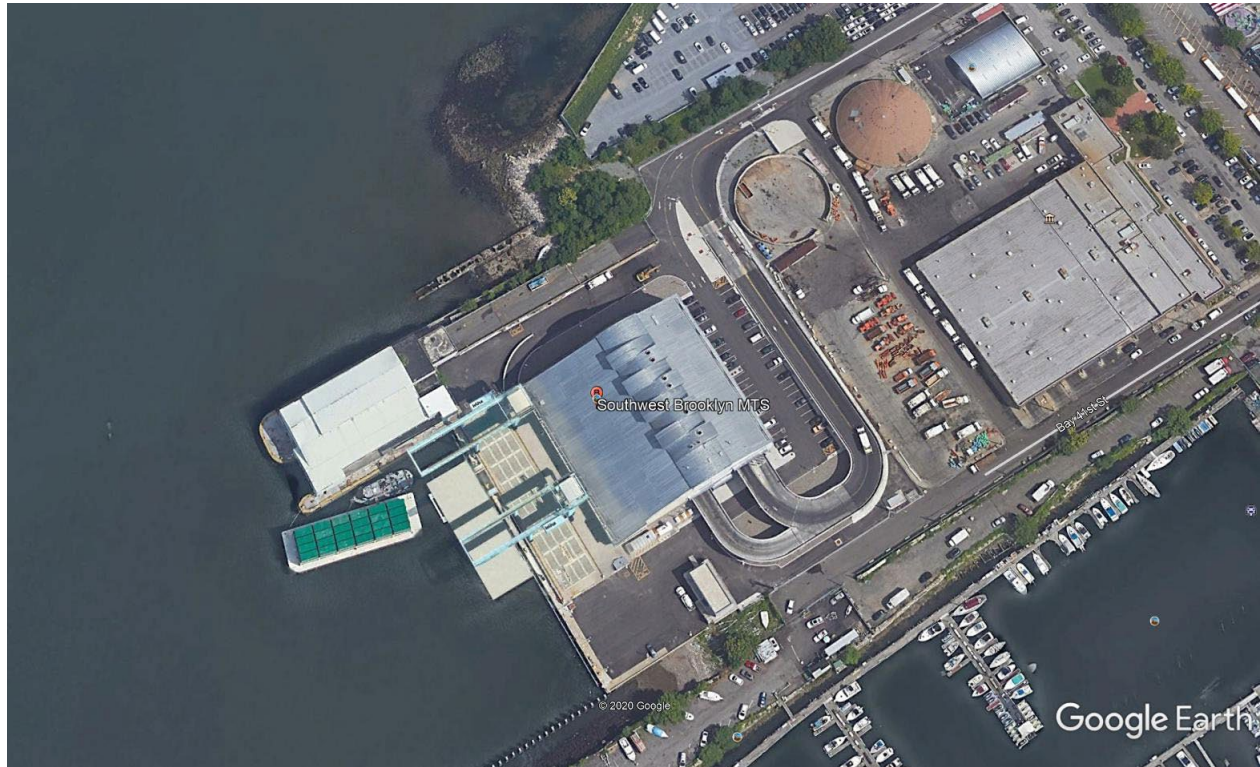
Cc: J. Atkinson, J. Capo, A. Conanan, A. Bianco, M. Petkanas, DSNY
J. O'Connell, NYSDEC, Region 2

SOUTHWEST BROOKLYN MARINE TRANSFER STATION

2020 BULKHEAD INSPECTION REPORT



**REPORT OF THE INSPECTION OF THE NORTH BULKHEAD FENDER SYSTEM
at the
SOUTHWEST BROOKLYN MARINE TRANSFER STATION**



For

**Savin Engineers, P.C.
3 Campus Drive
Pleasantville, NY 10570**

Inspection performed and report prepared by:
UNDERWATER CONSULTANTS INTERNATIONAL, INC.
6428 Bartz Road, Lockport, NY 14094
www.underwaterconsultants.com

1. INTRODUCTION

Underwater Consultants International, Inc. (UCI) conducted an underwater inspection of the North Bulkhead Fender System in accordance with the agreement for services dated July 26, 2020 and September 26, 2020.

On October 03, 2020 UCI mobilized personnel and equipment to the SW Brooklyn Marine Transfer Station to perform the proposed inspection.

Present during all or part of this project were the following personnel:

Art Schmidt - UCI Project Manager / Diver
Troy Alderman - UCI Diving Supervisor / Diver
Mark Callan - UCI Stand-By Diver
Trenton Sykes – UCI Tender
Alexander Martin – UCI Tender
John Franco - Savin Engineers, P.C., Senior Project Engineer

The inspection team was requested to begin the inspection on the morning of Saturday 10/03/20 and to complete the inspection by the end of the work day on 10/04/20.

2. INSPECTION PROCEDURES

UCI was contracted to perform a Level One inspection as defined by the American Society of Civil Engineers (ASCE). All discussion of direction is based upon the fender bulkhead running from northwest to southeast. For simplicity when performing the inspection, we referred to direction as north, south, inshore side, and offshore side.



Photo 1

The main building at the Southwest Brooklyn Marine Transfer Station

2.1 INSPECTION CONTROL AND METHODOLOGY

While performing the underwater inspection depths to specific places were measured using the diver's pneumofathometer. It should be noted that a tide gauge was not employed during the inspection so depths as measured were not tied to an elevation.

Breathing air was supplied by a diesel powered diving air compressor and two independent banks of

high pressure cylinders were used as a back-up source. The inspector/diver wore a “bail-out bottle” as an emergency third source of air.

A Deep Sea Power & Light underwater color video camera was used to record the underwater video portion of the inspection along with an Amron diver’s air radio used to record the diver and supervisor audio.

The diver’s visibility was estimated to be 3 feet when not causing sediment to be suspended into the water column. When sediment became suspended the diver’s visibility was reduced to between less than a foot and zero. When watching the video recording of the inspection the viewer is reminded that the video camera shows greater clarity than that which can be seen by the inspecting diver.

It should be noted that all inspection work is recorded in real time (both audio and video) and is never edited. Therefore, comments that are occasionally made during the inspection may later found to be incorrect. This is generally discovered when reviewing the recording and/or plans. Those incorrect comments, when discovered, are always corrected in the report.

3. INSPECTION RESULTS

3.1 North Bulkhead – Fender System

The North Bulkhead follows a line from northwest to south east. The inspection of the North Bulkhead – Fender System was begun at the northwest end. There are twenty individual timber fenders that comprise this fender system. Each of the twenty timber fenders are comprised of fifteen individual 10 inch x 12 inch face boards. Each timber fender is 10 feet 5 inches tall.

The timbers are held in place by having been bolted to three horizontally oriented W12 x 106 steel whalers. Each individual timber was bolted to each whaler through the whalers upper and lower flanges. Therefore, each timber had six bolts mounting it to the whalers. The whalers were designated as upper, middle and lower. During the inspection due to fluctuating tidal elevations only the lower whaler and bolts attaching the fender timbers was continuously submerged. At times the middle whaler was submerged but the upper whaler was always above water. This meant that the upper whaler could not be inspected and at times depending on the tidal elevation the middle whaler and bolts attaching the timber fender could not be inspected.

There are two piles designated as HP12 x 84 which support each fender. Each of the three whalers are bolted to each pile with four bolts through the offshore flange of the pile with two bolts to the north side of the pile’s web and two bolts to the south side of the pile’s web.

Each of the fenders is structurally strengthened with the use of tie rods arranged in an X pattern and a pair of chains also arranged in an X pattern. The chains and tie rods were observed for the inspection but the inspecting divers were not able to actually put hands on these components due to their position on the fender and also due to the fact that they were generally above water.

The drawing of this structure numbers the piles from number 1 to 40. Each individual fender is supported by two piles. The drawing does not number each fender but for our purposes of this inspection we numbered the fenders from Fender One (F1) to Fender Twenty (F20). Therefore, Fender One (F1) is supported by piles P1 and P2 and so forth proceeding from north to south with Fender Twenty (F20) being

supported by piles P39 and P40.

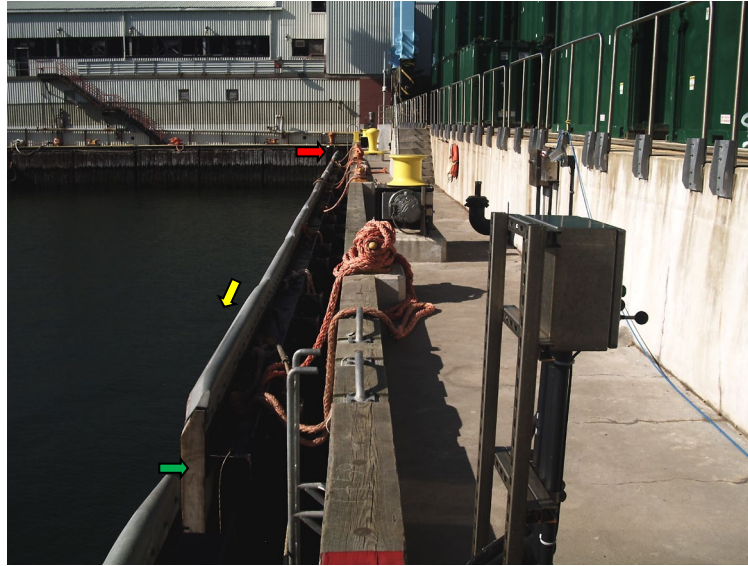


Photo 2

Looking south to north along the timber fender bulkhead. The red arrow is pointing to the north end of the fender where we began the inspection. The yellow arrow points toward the south in the direction in which the inspection progressed. The green arrow is pointing at the end of one of the fender panels.



Photo 3

Looking down at the inshore side of the fender shows how each timber is bolted through the flange of the whaler both above the whaler's web (blue & white arrows) and (although not visible in this photo) below the whaler's web.



Photo 4

A close-up view of the bolts through the upper flange of the upper whaler holding the fender timbers in place.



Photo 5

The four bolts seen in this photo show the typical arrangement of the connection between a whaler and a pile.

3.2 Results of the North Bulkhead Fender System Inspection

Timber Fender F1 Date: 10/3/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation
	Timber to whaler connection	All hardware intact. Only bottom whaler accessible.
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible.
	Tie rods & chain bracing	In place but above water
	Pile P1	Excellent. No pitting or corrosion
	Bottom @ P1	Depth 14.5 feet. Bottom sand/shell
	Pile P2	Excellent. No pitting or corrosion
	Bottom @ P2	Depth 15 feet. Bottom sand/shell
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	

Timber Fender F2 Date: 10/3/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation
	Timber to whaler connection	All hardware intact. Only bottom whaler accessible
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P3	Excellent. No pitting or corrosion
	Bottom @ P3	Depth 15.5 feet. Bottom sand/shell
	Pile P4	Excellent. No pitting or corrosion. PVC electrical conduit strapped to P4.
	Bottom @ P4	Depth 15.5 feet. Bottom sand/shell
	Other	PVC electrical conduit strapped to P4
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F3 Date: 10/3/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation. Slight rubbing from barges but no damage
	Timber to whaler connection	All hardware intact. Only bottom whaler accessible
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P5	Excellent. No pitting or corrosion
	Bottom @ P5	Depth 15.5 feet. Bottom sand/shell
	Pile P6	Excellent. No pitting or corrosion
	Bottom @ P6	Depth 15 feet. Bottom sand/shell
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F4 Date: 10/3/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation. Slight rubbing from barges but no damage
	Timber to whaler connection	All hardware intact. Only bottom whaler accessible
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P7	Excellent. No pitting or corrosion
	Bottom @ P7	Depth 14.5 feet. Bottom sand/shell
	Pile P8	Excellent. No pitting or corrosion
	Bottom @ P8	Depth 15 feet. Bottom sand/shell
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F5 Date: 10/3/20	Timbers Condition	Very good, no cracks, checks, or shakes. Timber #1 (from north) has a 1/8 inch wide split (offshore side) with a 3/8 inch width on inshore side. The split is approximately 2 feet high from bottom of timber. The split does not present a concern at this time. No marine borer infestation. Slight rubbing from barges but no damage
	Timber to whaler connection	Hardware intact except for the 5 th timber from north. See Other. Only bottom whaler accessible
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P9	Excellent. No pitting or corrosion
	Bottom @ P9	Depth 15.5 feet. Bottom sand/shell
	Pile P10	Excellent. No pitting or corrosion
	Bottom @ P10	Depth 15 feet. Bottom sand/shell
	Other	The 5 th timber from the north is missing both of the bolts to the bottom whaler.
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F6 Date: 10/3/20	Timbers Condition	Very good, no cracks, checks, or shakes. Timber #1 (from north) has a very minor split through the south outer corner of the timber. The split is approximately 2 feet high from bottom of timber. The split does not present a concern at this time. No marine borer infestation.
	Timber to whaler connection	Hardware intact except. Only bottom whaler accessible
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P11	Excellent. No pitting or corrosion
	Bottom @ P11	Depth 16 feet. Bottom sand/shell
	Pile P12	Excellent. No pitting or corrosion
	Bottom @ P12	Depth 15 feet. Bottom sand/shell
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	

Timber Fender F7 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation.
	Timber to whaler connection	Hardware intact. Bottom and middle whaler accessible
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Bottom and middle whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P13	Excellent. No pitting or corrosion
	Bottom @ P13	Depth 19 feet. Bottom sand/shell
	Pile P14	Excellent. No pitting or corrosion
	Bottom @ P14	Depth 19 feet. Bottom sand/shell
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F8 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation.
	Timber to whaler connection	Hardware intact. Bottom and middle whaler accessible
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P15	Excellent. No pitting or corrosion
	Bottom @ P15	Depth 19.5 feet. Bottom sand/shell
	Pile P16	Excellent. No pitting or corrosion
	Bottom @ P16	Depth 19.5 feet. Bottom sand/shell
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F9 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation. The second timber from the south has two extra or mis-drilled holes for attachment to both the middle and bottom whaler (not a concern at this time).
	Timber to whaler connection	Hardware intact. Bottom and middle whaler accessible
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P17	Excellent. No pitting or corrosion
	Bottom @ P17	Depth 19 feet. Bottom silt over sand/shell
	Pile P18	Excellent. No pitting or corrosion
	Bottom @ P18	Depth 19 feet. Bottom silt over sand/shell
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F10 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, or shakes. Fender shows intermittent very light checks. No marine borer infestation.
	Timber to whaler connection	Hardware intact. Bottom and middle whaler accessible
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P19	Excellent. No pitting or corrosion
	Bottom @ P19	Depth 19 feet. Bottom sand/shell
	Pile P20	Excellent. No pitting or corrosion
	Bottom @ P20	Depth 20 feet. Bottom silt over sand/shell
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F11 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, checks or shakes. No marine borer infestation.
	Timber to whaler connection	Timbers to middle whaler hardware intact. See Other below for timber to bottom whaler connection.
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P21	Excellent. No pitting or corrosion
	Bottom @ P21	Depth 21 feet. Bottom silt over sand/shell
	Pile P22	Excellent. No pitting or corrosion
	Bottom @ P22	Depth 21 feet. Bottom silt over sand/shell
	Other	Between timbers 3 to 13 the bolt holes for the connection between the timbers and the bottom whaler were not recessed or counter sunk properly leaving the head of both of the bolts at each location above the face of the timbers. This has left the bolt heads exposed to the sides of the barges. Condition as follows: Bolts in timbers # (from north) 3, 4 & 5 have the

		heads exposed and worn by rubbing on the barges. Bolt in timber #6 has the head of the bolt sheared off. Bolt in timber #7 has the head worn partially off. Head of the bolt in timber #8 is sheared off and remaining bolt badly bent. The upper bolt in timber #9 has the head partially worn off and the lower bolt head has been sheared off. The bolts at timber # 10 have had the bolt heads worn down from barge contact. The upper bolt at timber #11 has been worn down and the lower bolt has been sheared off. Both the upper and lower bolts at timber #12 have had the bolt heads sheared off. The bolt hole for timbers #1, 2, 14 & 15 were properly drilled and those bolts are intact. (See at 1 hour 31 minutes 48 seconds from beginning of recording)
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F12 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation.
	Timber to whaler connection	Hardware intact between timbers and middle whaler. At the connection to the bottom whaler the lowest bolt connecting the 4th timber from the north is loose and the 5th timber from the north is missing the bottom bolt. Other bolts intact.
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P23	Excellent. No pitting or corrosion
	Bottom @ P23	Depth 20.5 feet. Bottom silt over sand/shell
	Pile P24	Excellent. No pitting or corrosion
	Bottom @ P24	Depth 21 feet. Bottom silt over sand/shell
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F13 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation.
	Timber to whaler connection	Hardware intact. Bottom and middle whaler accessible
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P25	Excellent. No pitting or corrosion
	Bottom @ P25	Depth 21 feet. Bottom silt over sand/shell
	Pile P26	Excellent. No pitting or corrosion
	Bottom @ P26	Depth 21.5 feet. Bottom silt over sand/shell
	Other	PVC electrical conduit attached to P25 is broken exposing wires (see at 2 hours 04 minutes 12 seconds from beginning of recording). Two old 1' x 1' timbers are lying on the bottom inshore of P26 and offshore of P27.
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F14 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation.
	Timber to whaler connection	Hardware intact. Bottom whaler accessible. Can see hardware at middle whaler but cannot touch.
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P27	Excellent. No pitting or corrosion
	Bottom @ P27	Depth 21 feet. Bottom silt over sand/shell
	Pile P28	Excellent. No pitting or corrosion
	Bottom @ P28	Depth 22 feet. Bottom silt over sand/shell
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F15 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, or shakes. No marine borer infestation.
	Timber to whaler connection	Hardware intact. Bottom whaler accessible. Can see hardware at middle whaler but cannot touch.
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact except the lower bolt on the south side of P29 is loose. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P29	Excellent. No pitting or corrosion
	Bottom @ P29	Depth 22.5 feet. Bottom silt over sand/shell
	Pile P30	Excellent. No pitting or corrosion
	Bottom @ P30	Depth 25 feet. Bottom silt over sand/shell
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	

Timber Fender F16 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation.
	Timber to whaler connection	Hardware intact. Bottom whaler accessible. Can see hardware at middle whaler but cannot touch.
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P31	Excellent. No pitting or corrosion
	Bottom @ P31	Depth 26 feet. Bottom silt over sand/shell. Silt over 8 inches thick
	Pile P32	Excellent. No pitting or corrosion
	Bottom @ P32	Depth 27.5 feet. Bottom silt over sand/shell. Silt over 8 inches thick
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F17 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation.
	Timber to whaler connection	Bottom whaler accessible and hardware intact except for the 2nd timber from the north where the upper bolt is loose. Can see hardware at middle whaler but cannot touch.
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P33	Excellent. No pitting or corrosion
	Bottom @ P33	Depth 27.5 feet. Bottom silt over sand/shell. Silt over 8 inches thick
	Pile P34	Excellent. No pitting or corrosion
	Bottom @ P34	Depth 28 feet. Bottom silt over sand/shell. Silt over 8 inches thick
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F18 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation.
	Timber to whaler connection	Hardware intact. Bottom whaler accessible. Can see hardware at middle whaler but cannot touch.
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	The bottom bolt on the south side of P35 to the whaler is loose. All other hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P35	Excellent. No pitting or corrosion
	Bottom @ P35	Depth 27.5 feet. Bottom silt over sand/shell. Silt over 8 inches thick
	Pile P36	Excellent. No pitting or corrosion
	Bottom @ P36	Depth 27.5 feet. Bottom silt over sand/shell. Silt over 8 inches thick
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F19 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, or shakes. Slight check in one board less than 1/8 inch wide. No marine borer infestation.
	Timber to whaler connection	Hardware connecting to whalers intact. Bottom whaler accessible. Can see hardware at middle whaler but cannot touch.
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	Hardware connecting P37 to whalers intact but only bottom whaler accessible. At P38 to bottom whaler the lower bolt on the north side is loose. On the south side both the upper and lower bolts are loose. All other hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P37	Excellent. No pitting or corrosion
	Bottom @ P37	Depth 25 feet. Bottom silt over sand/shell. Silt over 8 inches thick
	Pile P38	Excellent. No pitting or corrosion
	Bottom @ P38	Depth 22.5 feet. Bottom silt over sand/shell. Silt over 8 inches thick
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	
Timber Fender F20 Date: 10/4/20	Timbers Condition	Very good, no cracks, splits, checks, or shakes. No marine borer infestation.
	Timber to whaler connection	Hardware intact. Bottom whaler accessible. Can see hardware at middle whaler but cannot touch.
	Whaler condition	Excellent. No pitting or corrosion
	Whaler to pile connection	All hardware intact. Only bottom whaler accessible
	Tie rods & chain bracing	In place but above water
	Pile P39	Excellent. No pitting or corrosion
	Bottom @ P39	Depth 21 feet. Bottom silt over sand/shell. Silt over 8 inches thick
	Pile P40	Excellent. No pitting or corrosion

	Bottom @ P40	Depth 17.5 feet. Bottom silt over sand/shell. Silt over 8 inches thick
	Other	N/A
	All components covered by a light layer of marine growth. Orange areas are not corrosion but are marine growth.	

4. Recommendations

- All locations with missing bolts should have new bolts installed in the vacant holes.
- All locations with loose bolts should have the hardware properly tightened.
- The damaged bolts at Fender F11 should be removed. The holes for the bolts in the timber fender should be properly recessed so as to keep the bolt head beneath the face of the timbers.
- Consider repairing any broken PVC electrical conduits.
- Consider a more secure method of fastening the electrical conduits to the piles other than with nylon strapping which is degrading. Note that the presence of winter ice in the harbor which has occurred in the past has the potential to severely damage these poorly secured conduits.