

Jonathan's Landing

Annual Inspection Report



Prepared for:
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UESI Job No. COM2400039.00

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On Nov 18, 19 of 2024 UESI performed the annual underwater Inspection of the (WCS) Water Control Structures located within Jonathan's Landing. This inspection included: (1) Water Blasting the exterior gate, frame and 6" of head wall around gate frame. (2) Assessing the condition of the exterior concrete head wall, gate frame hardware and gate seals (3) Clean and lubricate moving parts. (4) Determine the percentage of hard and soft growth (5) Identify any sediment/debris located outside the WCS. This process was performed at (WCS) 1,2,3,4,5 and 6.

WATER CONTROL STRUCTURE #1



- **Hard Growth on the Exterior side** of the WCS had a total of 0% coverage of Hard Growth at an estimated height of **N/A**. Soft Growth on the Exterior side was an estimated total coverage of 5%

NOTES:

- **Natural Bottom Report on the gate Exterior side:** was reported as sand at bottom on the gate exterior side with 8" of freeboard below the gates invert on the north side and 8" on the Southernmost.

- **Exterior Concrete Headwall** appeared to be in moderate condition with light pop outs noted. The average pop out dimensions were 1/4" in diameter and 1/8" in depth. The total coverage of the pop out was an estimated at 100% There is heavy indication of cracking or spalling noted. All Cracks are currently being repaired at the time of inspection.
- **The Gate and Gate frame Condition** was excellent with light surface corrosion noted with an estimated total coverage of 5%.

NOTES: Small amount of surface corrosion. No Pitting.

- **Hardware on the Gate and Gate Frame** showed signs of LIGHT SURFACE corrosion noted. All hardware/cotter pins were present and tight.
Bolt Count_16 total concrete anchors were exposed.
COTTER PINS_6 total cotter pins

NOTES: Northernmost cotter pin is damaged and needs replacing. Gates have no seals and according to the homeowner the gates slam open and closed with the wake from passing boats.



Photo of northern cotter pin which has corroded away.

WATER CONTROL STRUCTURE #2



- **Hard Growth on the Exterior side** of the WCS had a total of 0% coverage of Hard Growth at an estimated height of N/A” Soft Growth on the Exterior side was an estimated total coverage of 10% and a height of 1/8”.

NOTES:

- **Natural Bottom Report on the gate Exterior side:** was reported as Rock bottom on the gate exterior side with 40” of freeboard below the gates invert.
- **Exterior Concrete Headwall** appeared to be in Excellent condition with Light pop outs noted. The average pop out dimensions were 1/4” in diameter and 1/8” in depth? The total coverage of the pop out was an estimated at 10% There was no indication of cracking or spalling noted.

NOTES: Previous Head wall repairs appear to be in excellent condition



- **The Gate and Gate frame Condition** was Excellent with Light Surface corrosion noted with an estimated total coverage of 10%.

NOTES: Minor surface corrosion. No Pitting

- **Hardware on the Gate and Gate Frame** showed signs of light surface corrosion noted. All hardware/cotter pins were present Yes and tight Yes
Bolt Count 72 total concrete anchors
COTTER PINS 24 total cotter pins

Notes: there are underfilled welds at the corners of the base plates, with the top southern side of the middle gate being the most pronounced. There is no structural concern.



WATER CONTROL STRUCTURE #3



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- **Hard Growth on the Exterior side** of the WCS had a total of 0% coverage of Hard Growth at an estimated height of 0" **Soft Growth on the Exterior side** was an estimated total coverage of 0% and a height of 0".
- **Natural Bottom Report on the gate Exterior side:** was reported as a Concrete slab with no material covering.
- **Exterior Concrete Headwall** appeared to be in EXCELLENT condition with NO pop outs noted. The average pop out dimensions were N/A" in diameter and N/A " in depth? The total coverage of the pop out was an estimated at 0%. There was No indication of cracking and loss in wall definition noted.
- **The Gate and Gate frame Condition** was moderate with no corrosion noted with an estimated total coverage of 5%.
- **Hardware on the Gate and Gate Frame** showed signs of light corrosion. All hardware/cotter pins were present yes and tight yes
16 bolts
- **Gates seals** showed no indication of dry rot, splits or tearing. Overall condition of gate seals appeared to be in excellent. Needs replaced no

NOTES: Everything was as expected from previous inspection.



WATER CONTROL STRUCTURE #4

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- **Hard Growth on the Exterior side** of the WCS had a total of 15% coverage of Hard Growth at an estimated height of 1/2" Soft Growth on the Exterior side was an estimated total coverage of 90% and a height of 1/2".
- **Natural Bottom Report on the gate Exterior side:** was reported as mud at bottom on the gate exterior side with 0" of freeboard below the gate. During the initial as found inspection there was soft silt covering the northern half of the gate with a depth above gate bottom of 6". The soft silt was removed by the diver to 1-2" below the bottom of the gate. UESI recommends dredging the area in front of the gate.

NOTES: Bottom sediment comes all the way up to the bottom of the swing gate. This is going to adversely affect the gates function in opening/closing. And creating a proper seal.

- **Exterior Concrete Headwall** appeared to be in moderate condition with light pop outs noted. The average pop out dimensions were 1/4" in diameter and 1/8" in depth. The total coverage of the pop out was an estimated at 5% There was no indication of cracking or spalling noted.
NOTES: Splash zone epoxy seal around gate frame appears to be in excellent condition.

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- **The Gate and Gate frame Condition** was excellent with light/moderate SURFACE corrosion noted with an estimated total coverage of 50%.

NOTES: Moderate surface corrosion. No Pitting



- **Hardware on the Gate and Gate Frame** showed signs of light surface corrosion noted. all hardware/cotter pins were present yes and tight yes
 Bolt count_32 total concrete anchors
 Cotter pins 8 total cotter pins

NOTES: Everything was as expected from previous inspection. UESI recommends dredging out material from bottom of gate to maximize gate performance.



WATER CONTROL STRUCTURE #5

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- **Hard Growth on the Exterior side** of the WCS had a total of 25% coverage of Hard Growth at an estimated height of 1/4" Soft Growth on the Exterior side was an estimated total coverage of 90% and a height of 1/4".
- **Natural Bottom Report on the gate Exterior side:** was reported as a rock/mud bottom on the gate exterior side with 48" of freeboard below the gates invert.
- **Exterior Concrete Headwall** appeared to be in excellent condition. There was no indication of cracking or spalling noted.
- **The Gate and Gate frame Condition** was excellent with light corrosion noted with an estimated total coverage of 10%.
NOTES: Moderate surface corrosion. No Pitting
- **Hardware on the Gate and Gate Frame** showed signs of light corrosion noted. All hardware/cotter pins were present yes and tight yes ?
Bolt Count 32

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Cotter pin count 8

NOTES: while not part of the inspection, UESI examined issues that had been identified during the annual inspection of this structure in November 2023, namely a void that has opened on the north side of the culvert approximately 6ft east of the flap gate, and root intrusion into the 2nd storm grate east of the gate. Matt Herold showed Lucas Jones of Jonathan's Landing both of these issues.

WATER CONTROL STRUCTURE #6



- ***Upstream Exterior Concrete Headwall*** appeared to be in moderate condition with moderate pop outs noted. the average pop out dimensions were 1/4 " in diameter and 1/8 " in depth? the total coverage of the pop out was an estimated at 15 %. there was no indication of cracking and loss in wall definition noted.

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- **Downstream Exterior Concrete Headwall** appeared to be in moderate condition with moderate pop outs noted. the average pop out dimensions were $\frac{1}{4}$ " in diameter and $\frac{1}{8}$ " in depth? the total coverage of the pop out was an estimated at 15%. there was no indication of cracking and loss in wall definition noted.
- **Natural Bottom Report on the upstream side of both the Northern and Southern culvert risers** was reported as an organic/mud bottom on the upstream side with freeboard below the culvert riser opening to top of sediment ranging from 16" to 33" on both north and south.
- **Natural Bottom Report on the downstream side of both Northern and Southern culverts:** was reported as an organic/sand/mud bottom on the downstream side with <1 " to 2 " of freeboard below the culverts invert.
- **Sediment reported within both culverts** the diver reported minimal sediment within the two culverts.

Below are the gap measurements of the concrete joints, and sediment levels.
Joints are numbered from traveling east to west

North Culvert					
Joint #	12 O'clock	3 O'clock	6 O'clock	9 O'clock	Sediment
1	$\frac{1}{4}$ "	$\frac{1}{8}$ "	$\frac{1}{8}$ "	$\frac{1}{8}$ "	0"
2	$\frac{1}{8}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "	0"
3	$\frac{1}{2}$ "	$\frac{3}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	0"
4	$1-\frac{3}{8}$ "	1"	$\frac{3}{8}$ "	1"	1"
5	$<\frac{1}{8}$ "	$\frac{3}{4}$ "	1"	$1-\frac{1}{4}$ "	1"
6	$1-\frac{1}{2}$ "	$\frac{3}{4}$ "	$\frac{1}{8}$ "	1"	1"
7	$<\frac{1}{8}$ "	$<\frac{1}{8}$ "	$\frac{1}{8}$ "	$\frac{1}{2}$ "	0"
South Culvert					
Joint #	12 O'clock	3 O'clock	6 O'clock	9 O'clock	Sediment
1	$<\frac{1}{8}$ "	$\frac{1}{8}$ "	$\frac{1}{8}$ "	$\frac{1}{8}$ "	2"
2	$\frac{3}{8}$ "	$\frac{3}{4}$ "	1"	$1-\frac{1}{8}$ "	2"
3	$1-\frac{1}{4}$ "	$\frac{3}{4}$ "	$\frac{1}{8}$ "	$1-\frac{1}{8}$ "	1"
4	$\frac{3}{4}$ "	$\frac{1}{2}$ "	$\frac{1}{8}$ "	$\frac{3}{4}$ "	1"
5	$1-\frac{1}{4}$ "	$\frac{3}{4}$ "	$\frac{1}{8}$ "	$\frac{7}{8}$ "	1"
6	$\frac{3}{4}$ "	$\frac{3}{8}$ "	$<\frac{1}{8}$ "	$\frac{3}{4}$ "	1"
7	$\frac{1}{2}$ "	$\frac{1}{8}$ "	1"	$\frac{3}{4}$ "	0"

Material Depths at West Risers



20"

30"

24"

14"

30"

26"

NOTES: Everything was as expected from previous inspection.

REVIEW

1. WCS #1 Already noted in previous inspection reports, all three gates had no seals. However, the concrete headwall is currently being repaired by another company. While it appears that the repairs are going well, the condition of the wall after the repairs cannot be determined at this time. Bottom sediment is not blocking the gates as previously noted in past inspections.
2. WCS #2 overall was in excellent condition. Everything was as expected from previous inspection.
3. WCS #3 gate and headwall was in excellent condition. Everything was as expected from previous inspection.
4. WCS #4 gate and headwall was in excellent condition. Bottom sediment is going to drastically affect gates performance. UESI recommends dredging out material.
5. WCS #5 gate and headwall was in excellent condition. UESI recommends performing a cleaning of the interior of the culvert to remove sedimentation and repair the joints where soil intrusion has occurred. UESI also recommends removing the split leaf philodendron from around the storm drains and remove the roots from the structure.
6. WCS #6 headwall and culverts are in excellent condition. No attention needed.