Potomac Interceptor

INSPECTION REPORTS

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Dear Community Partners,

On January 19, 2026, DC Water experienced a structural collapse on a section of the Potomac Interceptor - one of the region's largest and most critical wastewater conveyance assets. Since that day, our teams have been fully focused on responding to the incident with urgency, protecting the environment, and restoring this vital piece of infrastructure as safely and efficiently as possible.

We recognize that events like this raise important questions for our community, our partners, and the public we serve. Those questions are both understandable and appropriate. People want to know why this occurred, whether it could have been anticipated, and how similar incidents can be prevented in the future.

This packet is intended to provide important context and transparency around those questions.

As part of our review, DC Water leadership and engineering teams conducted a thorough examination of the most recent documents related to this section of the Potomac Interceptor. This review included inspection reports, structural condition ratings, engineering assessments, repair schedules, and video documentation.

In the materials included here, you will find additional information explaining how DC Water evaluates the structural condition of our large-diameter sewer infrastructure, how inspection data informs engineering judgment, and how repair priorities are determined across a complex regional system that spans more than 54 miles.

While we are confident in the process that guided those decisions, we also understand the importance of continuing to examine this event closely. Our teams are actively investigating the cause of the collapse. Although it is too early to draw definitive conclusions, preliminary indications suggest this may have been a highly unusual event - one that could not have been reasonably predicted based on the available inspection data.

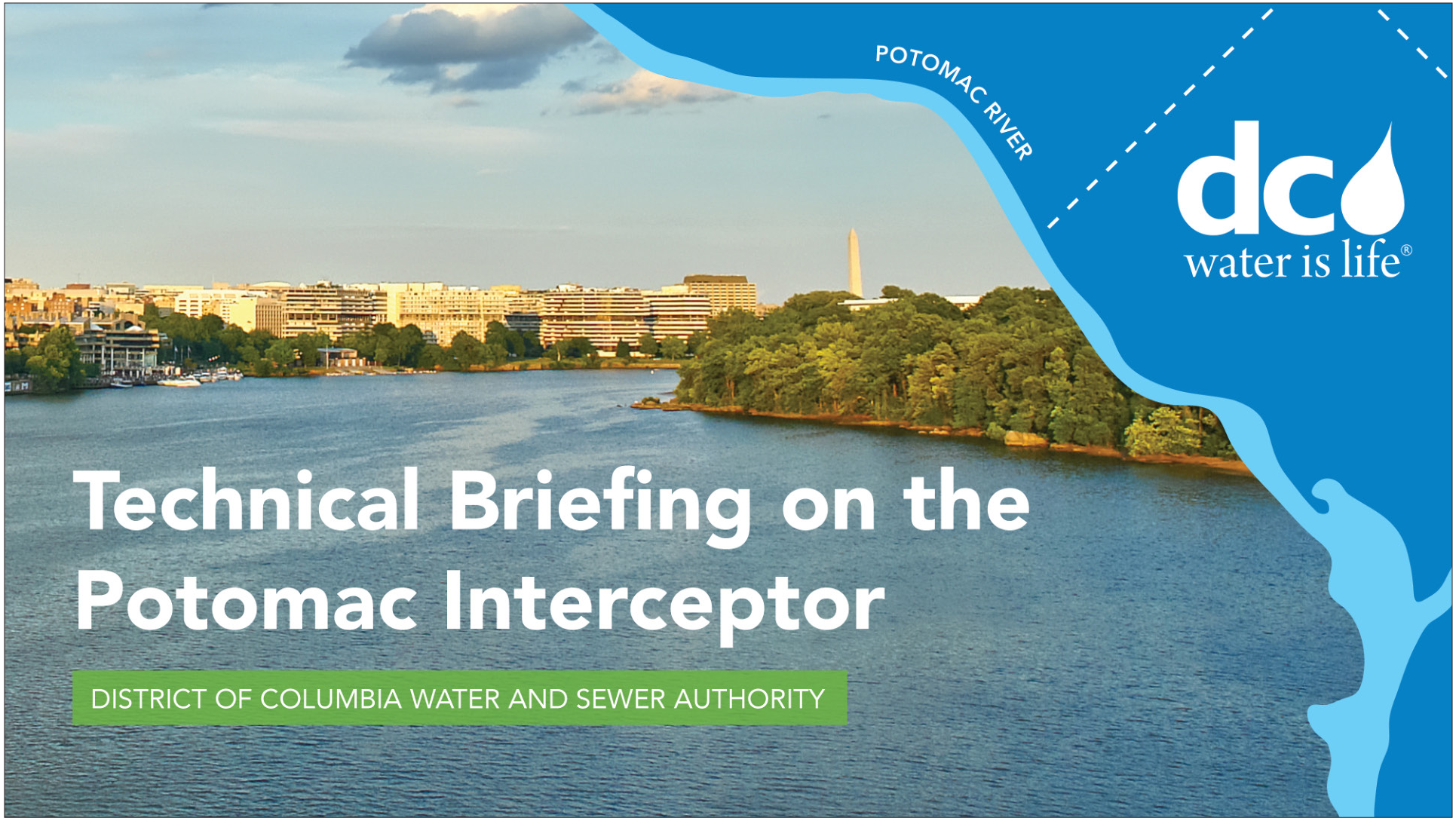
As part of this examination, as is common in situations like this, we have commissioned an independent, third-party review not only of our assessments of the entire Potomac Infrastructure line, but also the methodology by which we conduct those assessments. That work is ongoing.

DC Water is committed to transparency, accountability, and continuous improvement. We will continue sharing information as it becomes available and will keep our partners, stakeholders, and the community informed as our work progresses.

Thank you for your continued engagement and interest in this important issue.

Sincerely,

David L. Gadis
Chief Executive Officer and General Manager
DC Water



Technical Briefing on the Potomac Interceptor

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

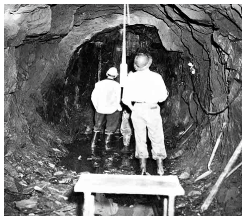
TECHINICAL BRIEFING ON THE POTOMAC INTERCEPTOR

Potomac River Break

- Potomac River watershed includes 14,670 square miles through Virginia, Maryland, West Virginia, Pennsylvania, and the District
- During the overflow incident, approximately 2% of the total river flow was impacted.
- With time and increasing river flows, bacteria levels are decreasing at and near the overflow site
- No overflows since February 9
- DC Water committed to cleaning/rehabilitating impacted areas

BRIEFING ON THE POTOMAC INTERCEPTOR

Potomac Interceptor



- 86th U.S. Congress authorized Public Law 86-515 for the funding of the construction of the Potomac Interceptor (PI) on June 12, 1960, to serve Dulles Airport and safeguard the Potomac River
- Serves 376 square miles (511,000 people)
- Serves Fairfax & Loudoun Counties, Town of Vienna, Herndon, Dulles Airport in VA, and Montgomery County, MD

BRIEFING ON THE POTOMAC INTERCEPTOR

Response and Repair

CURRENT

STEP	ACTIVITY	TIMELINE
1	**Bypass Installation** - Install temporary bypass pumping to reroute flow through canal around damaged pipe section	Completed
2	**Investigation and Excavation** - Excavate downstream of pipe, clean and identify scope of blockage	Completed
3	**Repair and Flow Restoration** – Install bulkhead and bypass chamber; remove rock dam and repair collapsed section to restore flow	February to mid-March
4	**Environmental Rehabilitation** – Restore affected areas including drainage channel, C&O Canal and Potomac River shoreline to Swainson Island	Following repair

BRIEFING ON THE POTOMAC INTERCEPTOR

Timeline

Majority of overflow stopped evening Saturday, January 24

Environmental rehabilitation consultant developing plan

Daily Potomac River bacteria testing Jan 29 – present

Jan 25 – 26
Snow/Ice

Jan 19 | **Jan 20** | **Jan 21** | **Jan 24** | **Jan 27** | **Jan 28 – Feb 5** | **Feb 6** | **Present**

Respond
- Reported in evening
- Secured site
- Prelim assessment

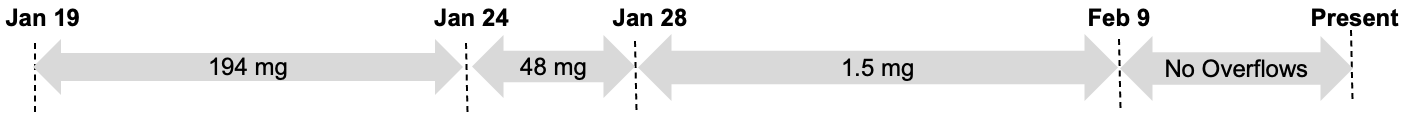
Investigate
- Assess options
- Bypass plan developed
- NPS cooperation

Construct Bypass
- Jan 24: 40 mgd, 6 pumps
- Jan 27: 60 mgd, 8 pumps
- Clear canal
- Remove lock gates
- Downstream channels
- Strengthen PI to receive flow

Excavate Pipe, Found Rock Blockage
- Site prep & grading
- Excavate pit downstream of blockage
- Clean to access pipe
- Found rock blockage

Construct Bulkhead and Bypass Chamber (ongoing)
- Feb 15: 52 mgd, 4 pumps added
- New chamber for bypass and temp bulkhead
- 3rd bypass channel excavation
- Excavate to pipe to remove rocks

Estimated overflow volume to surface waters:



TECHINICAL BRIEFING ON THE POTOMAC INTERCEPTOR

Environmental Clean-Up

- Working with Environmental Protection Agency (EPA), National Park Service (NPS), Maryland Department of the Environment (MDE), Army Corps of Engineers (USACE) and other agencies to determine means, methods and scope
- Environmental consultant retained, assessed conditions and submitted an Environmental Rehabilitation Plan
- Beginning cleanup as soon as possible to minimize impacts to high-use areas before weather turns warm
- DC Water has installed a sandbag and pumping diversion at the tributary at the overflow site to prevent the further discharge of pollutants to the Potomac River

TECHINICAL BRIEFING ON THE POTOMAC INTERCEPTOR

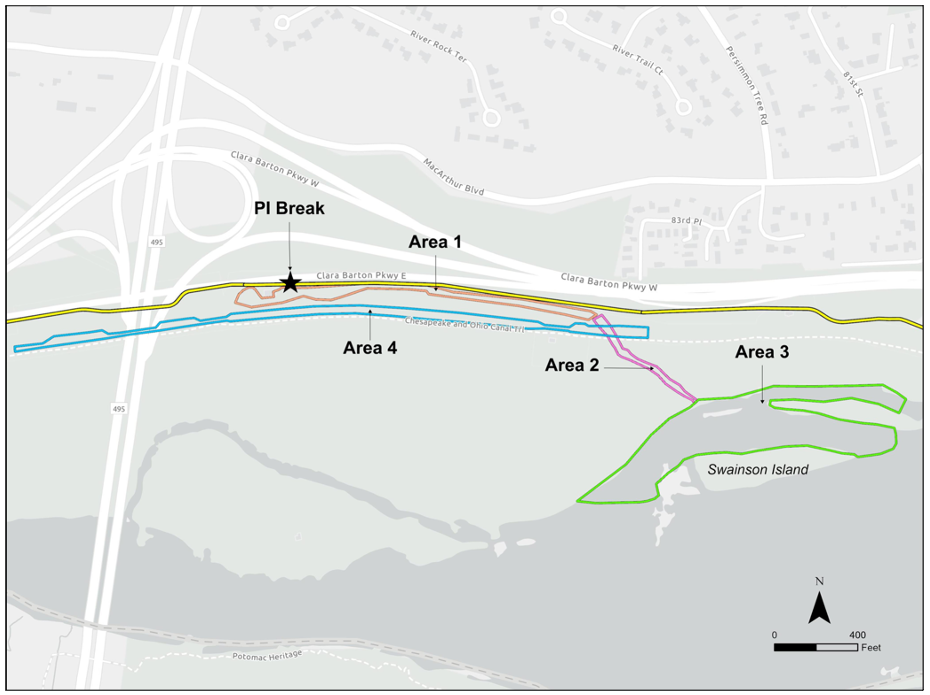
Clean-Up Areas

Uncontrolled Overflow Areas

- Area 1 = Drainage channel along Clara Barton Parkway
- Area 2 = Culvert under C&O Canal and tributary to the Potomac River
- Area 3 = Potomac River from shore to Swainson Island

Controlled Bypass Area

- Area 4 = C&O Canal



TECHINICAL BRIEFING ON THE POTOMAC INTERCEPTOR

Restoration Plan

Initial Coordination

- Install clear water diversions
- Pump water in Clara Barton channel to PI
- Coordinate Environmental Rehabilitation Plan with EPA, USACE, NPS, MDE, and DOEE
- NPS Special Use Permit
- Identify Waste Subtitle D landfill
- Conduct pre-construction meetings
- Keep Canal's intake closed (NPS)
- Stake out Limits of Disturbance and access routes
- Identify and locate trees that will be removed

Restoration will be completed in 2 phases

Uncontrolled Overflow Areas

- Phase I = Immediately
- Phase II = After PI flow is restored

C&O Canal Restoration

- Phase I = After PI flow is restored
- Phase II = After Final Coordination with NPS

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TECHNICAL BRIEFING ON THE POTOMAC INTERCEPTOR

Potomac Interceptor Alignment

1. Inspection Resulting in High Priority Rehab Downstream of MH19

- Based on Inspection, DC Water implemented a high priority project to slip line MH19 to MH18A
- Construction completed Jan 2026

2021

2021

2024

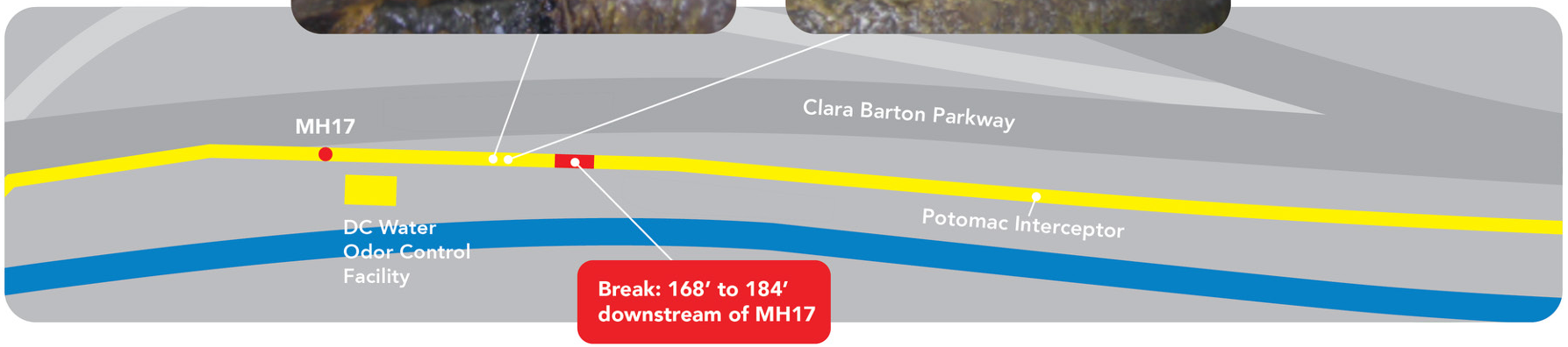
TECHNICAL BRIEFING ON THE POTOMAC INTERCEPTOR

2. Inspection Upstream of Break

(OCTOBER 2024)

157.4′ – "Hole Void Visible," Structural Grade 5 incorrect; do not see hole in video. (It's concrete)

162′ – "Hole Soil Visible," Structural Grade 5 incorrect; do not see soil in video. (It's concrete)



TECHNICAL BRIEFING ON THE POTOMAC INTERCEPTOR

3. Inspection at Break

(OCTOBER 2024, 168′ TO 184′ DOWNSTREAM OF MH17)

TECHNICAL BRIEFING ON THE POTOMAC INTERCEPTOR

Boulders in Trench Backfill Created "Once in Lifetime" Pipe Blockage

- Large boulders observed in pipe and in trench backfill (30"+ in size)
- Not a normal or acceptable practice
- Typical pipe failures **do not** cause nearly complete blockage that occurred here

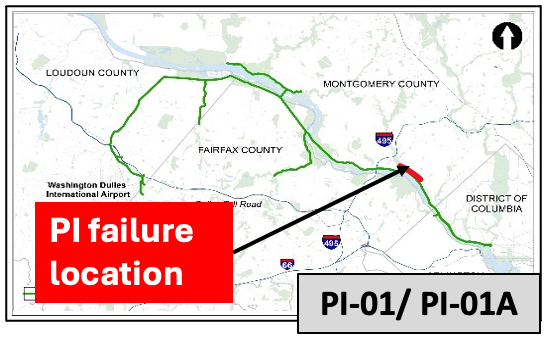
BRIEFING ON THE POTOMAC INTERCEPTOR

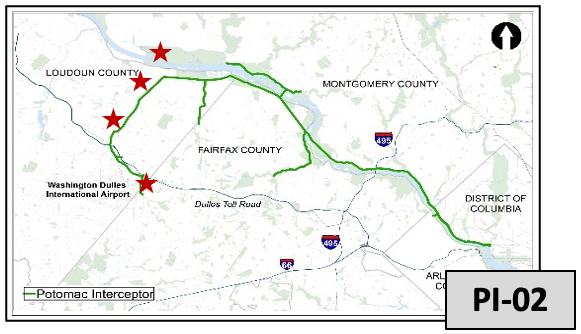
Capital Improvement Program Planned for Potomac Interceptor

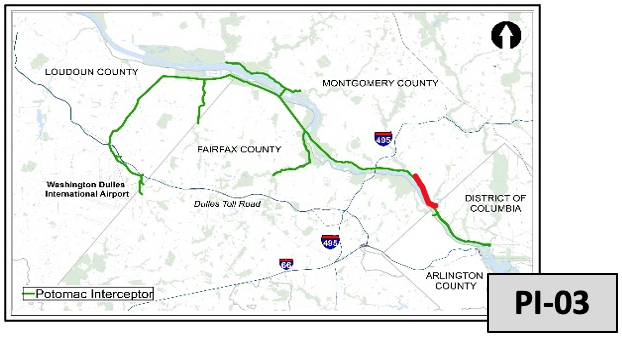
Near Term Projects:

Project	Rehabilitation	Approximate Cost	Construction
PI-01A	2,700 LF (Slipline and Geopolymer)	$30M	Spring – Fall 2026
PI-01 Rock Run (Lock 10 / Cabin John)	7,300 LF (Geopolymer)	$95M - $135M	Spring 2027-Fall 2029
PI-02 Broad Run / FFX	3,300 LF (Geopolymer) 2,700 LF (CIPP)	$6M - $9M	Spring 2027 - Summer 2028
PI-03 Cabin John / MH 4252	16,000 LF (Geopolymer)	$150M - $210M	Summer 2028 - Winter 2030

$350M over next 5 years, more than $600M over 10 years







TECHNICAL BRIEFING ON THE POTOMAC INTERCEPTOR

Summary

INSPECTION	STRUCTURAL CONDITION OBSERVATIONS	
	150' TO 200' DOWNSTREAM OF MH17	AT PI BREAK (ESTIMATED 168' TO 184' DOWNSTREAM OF MH17)
December 11, 2017 July 21, 2021 June 9, 2024	• Exposed aggregate and surface reinforcement visible • No specific defects identified in zone	• Exposed aggregate and surface reinforcement visible
October 6, 2024	• Exposed aggregate and surface reinforcement visible • 157.4' – reported hole with a structural grade of 5. Review of the video indicates the dark colored area is not hole but instead concrete pipe. The indication of soil present or hole in the pipe was not observed in the video. • 162.0' – reported with soil visible, structural grade 5. Again, review of the video indicates the dark colored area is not soil, but instead concrete pipe. The indication of soil present or hole in the pipe was not observed in the video.	

TECHINICAL BRIEFING ON THE POTOMAC INTERCEPTOR

Independent Analysis of PI Collapse by Board of Directors

1. 3rd Party Review of Assessment Report
2. 3rd Party Root Cause Analysis
3. Independent Review of the Management of Sewer System Assessments, Maintenance and Rehabilitation Prioritization

TECHNICAL BRIEFING ON THE POTOMAC INTERCEPTOR

National Association of Sewer Service Companies

- NASSCO = National Association of Sewer Service Companies
- PACP = Pipeline Assessment and Certification Program
- Two types of inspections:
  - CCTV
  - Laser/Sonar
- CCTV Scoring system for grading pipeline conditions – attempt to standardize inspection results
- CCTV Grading falls into 4 categories:
  - Structural – cracks, wall defect, reinforcing shown, etc.
  - O&M – infiltration, sediment, roots, grease, etc.
  - Construction Features – connections, joint types, etc.
  - Miscellaneous Features – general data
- Score of 1 to 5, with 5 being the worst

CCTV: How is Pipe Graded?

- Operator in the truck runs the camera through the pipe.
- Looks for defects on screen in truck. Pans and tilts camera to look at defects.
- Operator identifies types of standard defects such as "infiltration weeper," "hole," "surface reinforcing visible." There are predefined scores in NASSCO system.
- Key consideration:
  - Identification of defects is dependent on operator diligence, skill and judgment.
  - Operators can miss defects entirely.
  - Operators can make different interpretations.
  - Different operators can score the same defect differently – it happened in this pipe.

TECHNICAL BRIEFING ON THE POTOMAC INTERCEPTOR

CCTV: Structural Index and Structural Quick Rating

4 2 3 2

HIGHEST SEVERITY GRADE	TOTAL NUMBER OF OCCURRENCES OF HIGHEST SEVERITY GRADE	NEXT HIGHEST SEVERITY GRADE	TOTAL NUMBER OF OCCURRENCES OF 2ND HIGHEST SEVERITY GRADE
5	A number or letter code indicating number of occurrences	5	A number or letter code indicating number of occurrences
4		4	
3		3	
2		2	
1		1	

They help asset managers quickly prioritize rehabilitation or repairs by identifying the peak severity grade and frequency of defects (e.g., 4 or 5)

- Structural Index = Sum of Structural Scores / Number of Structural Scores*

  – It helps prioritize sewer rehabilitation by assessing the average, rather than just the worst, defect in a segment

- Structural Quick Rating

*IT'S AN AVERAGE

TECHNICAL BRIEFING ON THE POTOMAC INTERCEPTOR

CCTV: What do NASSCO Scores Mean?

- Language from NASSCO: *"Further, condition grade alone is inadequate for determining if a pipe segment should be replaced or rehabilitated. The condition grades cannot take the place of an engineer's judgment."*
- Language from NASSCO: *"The PACP Condition Grading System should be used only as a tool for screening pipe segment inspections for severity of defects and one of many considerations for capital and maintenance improvement program decisions."*

NASSCO Guidance (2010) – PACP Observation Descriptions Prior to Version 6 (2010)

GRADE	DESCRIPTION	DEFINITION
5	Immediate Attention	Defects requiring immediate attention **RUL: Pipe has failed or will likely fall within the next 5 years**
4	Poor	Severe defects that will become Grade 5 defects within the foreseeable future **RUL: Pipe will probably fall in 5 to 10 years**
3	Fair	Moderate defects that will continue to deteriorate **RUL: Pipe may fall in 10 to 20 years**
2	Good	Defects that have not begun to deteriorate **RUL: Pipe unlikely to fall for at least 20 years**
1	Excellent	Minor defects **RUL: Failure unlikely in the foreseeable future**

NASSCO Guidance (2010) – Current PACP Observation Descriptions

GRADE	DESCRIPTION	
5	Most Significant Defect Grade	**Remaining Useful Life Not Defined for Any PACP Grade**
4	Significant Defect Grade	
3	Moderate Defect Grade	
2	Minor to Moderate Defect Grade	
1	Minor Defect Grade	

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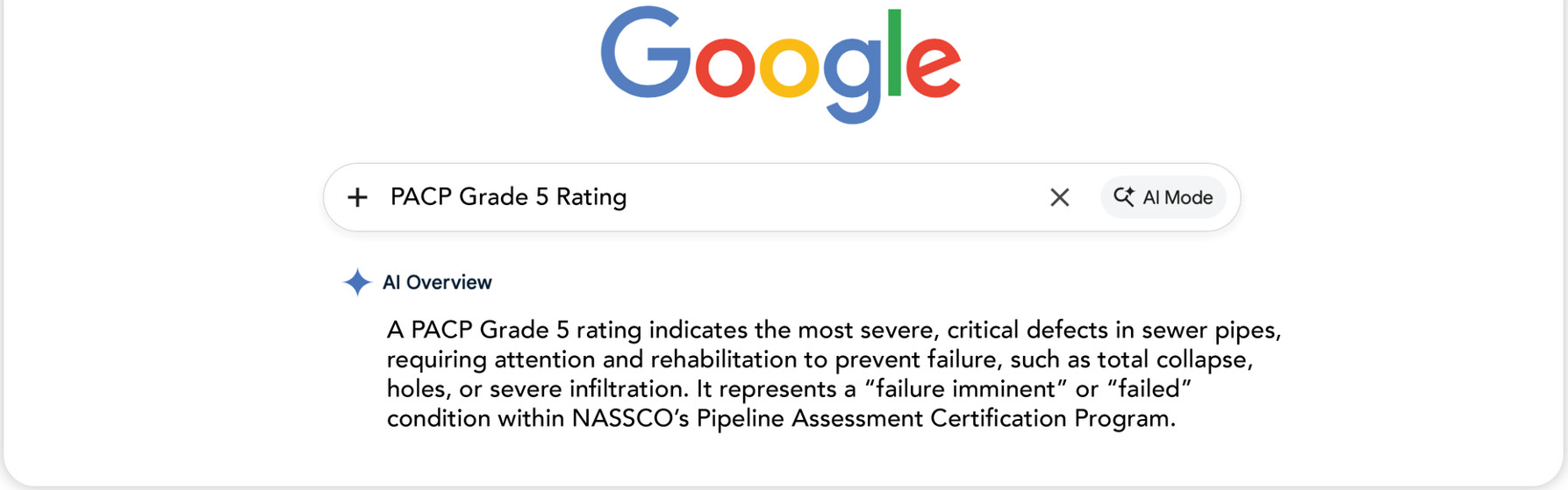
TECHNICAL BRIEFING ON THE POTOMAC INTERCEPTOR

CCTV: There is a Lot of Contradictory Language Online



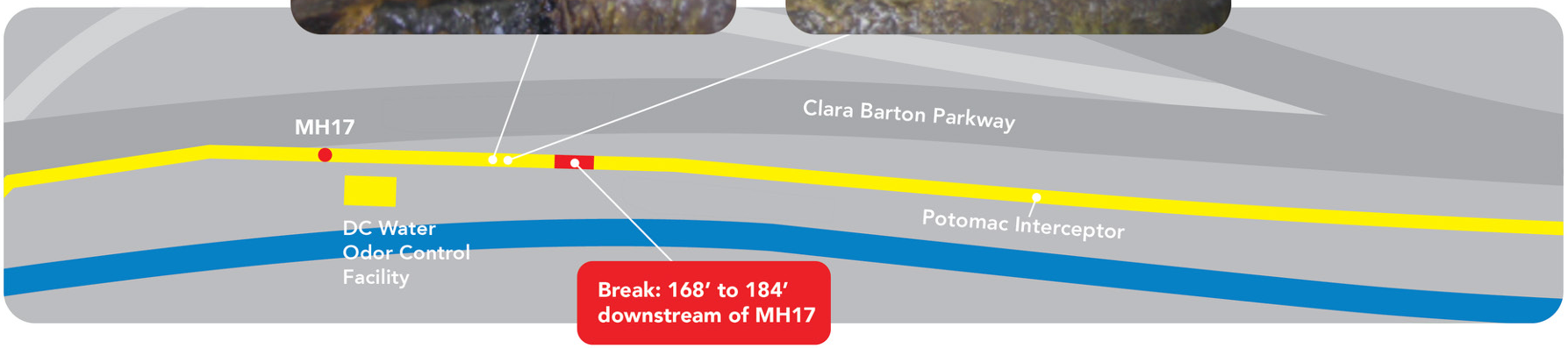
TECHNICAL BRIEFING ON THE POTOMAC INTERCEPTOR

CCTV: Site Plan, Inspection Report

(OCTOBER 2024)

157.4′ – "Hole Void Visible," Structural Grade 5 incorrect; do not see hole in video. (It's concrete)

162′ – "Hole Soil Visible," Structural Grade 5 incorrect; do not see soil in video. (It's concrete)



TECHNICAL BRIEFING ON THE POTOMAC INTERCEPTOR

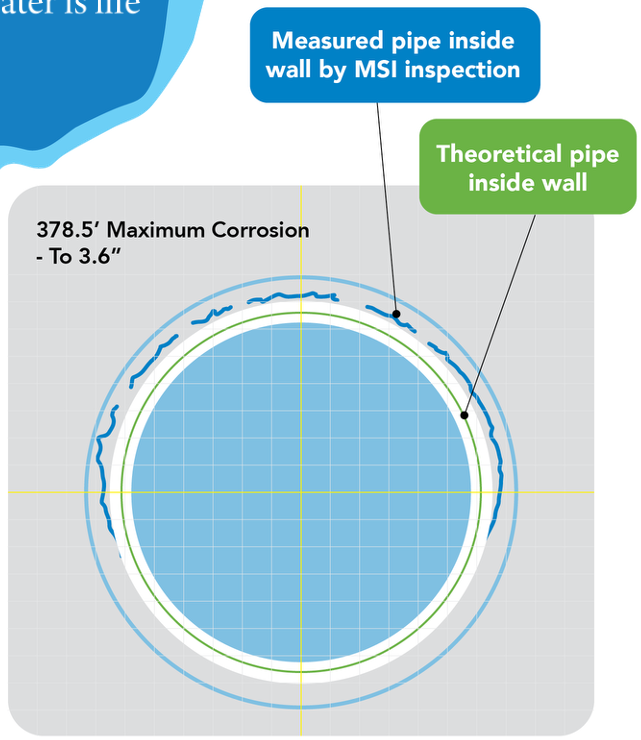
CCTV: 157.4′ – “Hole Void Visible,” Structural Grade 5 Incorrect, Do Not See Hole in Video

In June 2024, this defect was identified as “infiltration gusher” with structural grade of 0. In October 2024, this defect was identified as “hole void visible” with structural grade of 5.

CCTV: 162′ – "Hole Soil Visible," Structural Grade 5 Incorrect – Do Not See Soil in Video

TECHNICAL BRIEFING ON THE POTOMAC INTERCEPTOR

Laser / Sonar Inspection



DATE	MSI RESULTS MH16 TO MH17
2021	• Not performed • Upstream section was performed
June 2024	• Inspection rejected due to poor quality/splashing • No data 0′ to 237′ (in break zone) • Up to 5.7″ corrosion at 237.5′ (break occurred at 168′ to 184′) • Up to 5.6″ corrosion at 292.9′ (break occurred at 168′ to 184′)
October 2024	• No data 0′ to 378.5′ due to flow conditions (in break zone) • Up to 3.6″ corrosion at 378.5′ (break occurred at 168′ to 184′)

- Laser above water level/sonar below water level
- Called “Multi Sensor Inspection” or MSI

Other Examples of Dark Concrete

Other Examples of Dark Concrete

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TECHNICAL BRIEFING ON THE POTOMAC INTERCEPTOR

Structural Index and Structural Quick Rating

David L. Gadis, Chief Executive Officer
DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY | 1385 CANAL STREET, SE | WASHINGTON, DC 20003

MEMORANDUM

March 3, 2026

TO: Matthew Brown
COO and Executive Vice President

THROUGH: Moussa Wone
Chief Engineer

FROM: John Cassidy, P.E.
Clean Rivers and Potomac Interceptor Program Manager

SUBJECT: Potomac Interceptor Break Downstream of Manhole 17
Review of Inspection Reports

Background

The Potomac Interceptor (PI) is a sanitary sewer approximately 54 miles long ranging in size from 30" to 96" inside diameter. The sewer serves approximately 376 square miles and about 500,000 people in Fairfax and Loudoun Counties, the Town of Vienna, the Town of Herndon, Dulles Airport in Virginia and Montgomery Count in Maryland. The pipeline carries about 60 million gallons of wastewater daily to the Potomac Pumping Station in Washington, DC, and flows are then conveyed to the Blue Plains Advanced Wastewater Treatment Plant for treatment before discharge into the Potomac River.

The PI was constructed pursuant to Public Law 86-515 (the Act), enacted by the 86th Congress, on June 12, 1960. The Act authorized the District of Columbia to plan, construct, operate, and maintain a sanitary sewer to connect Dulles to the Washington, DC sewer system. The PI began to convey sewage in 1964 and is owned by the District of Columbia and operated and maintained by DC Water.

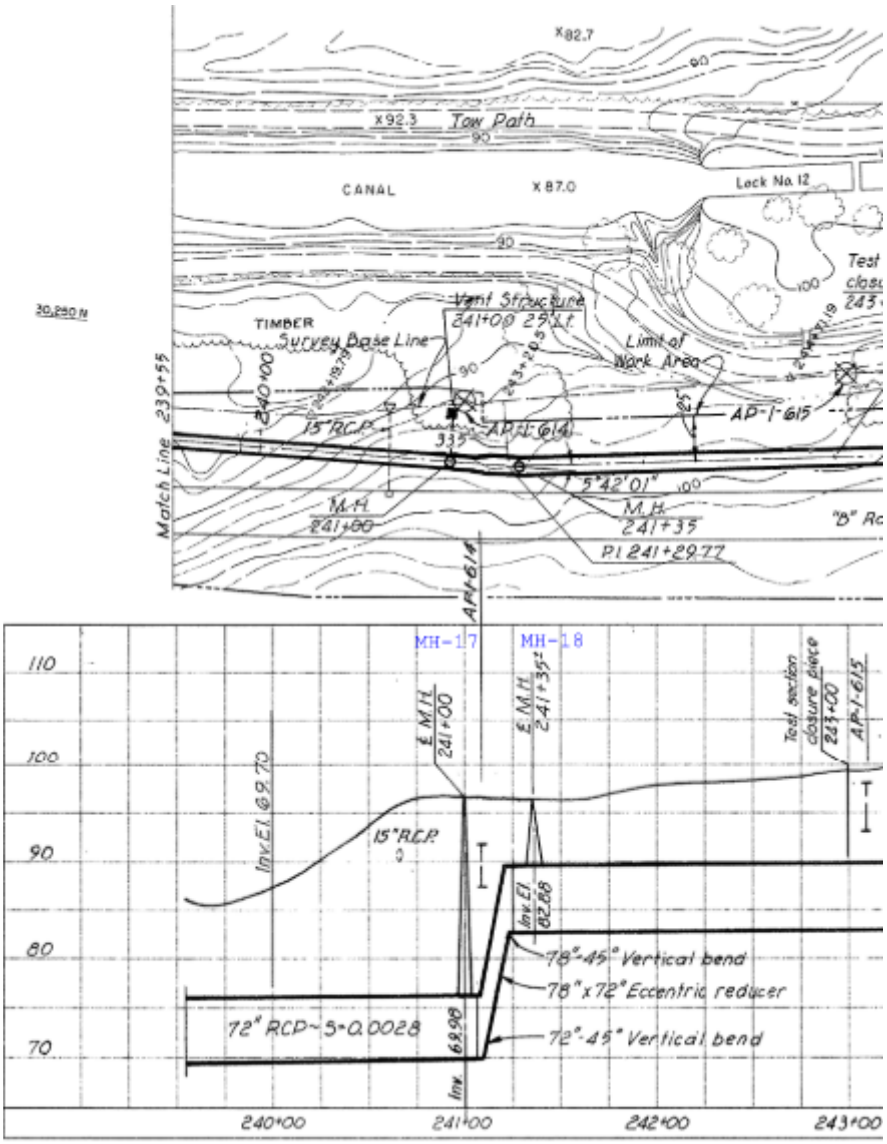
Break in PI

On January 19, 2026, a break in the PI occurred downstream of Manhole (MH) 17 near the entrance to DC Water's Odor Control Facility. The break resulted in a substantial blockage in the PI due to boulders around the Pipe falling into the Pipe. This also resulted in a large sinkhole near the break and overflows from the sinkhole and upstream MH17 and MH18. As of the date of this memo, DC Water's emergency contractors have dewatered the sinkhole, installed support of excavation systems, excavated down to the pipe and begun removing the blockage. Because of the large size of the sinkhole and the resulting excavation which removed remove portions of the top of the pipe, the exact location of the initial break is not known. However, field measurements using a measuring wheel indicate the center of the support of excavation at the sink hole is about 176' downstream of downstream of MH17. The support of excavation is 16' long with the pipe protruding past the support of excavation into the pit on each end.

Using the face of the support of excavation for measuring, this this places the break between approximately 168’ and 184’ downstream of MH17.

PI Record Drawings

The PI Record Drawings are the Unit 10 Anglers Inn Segment, Contract D.C.F - C18966, dated February 1962. The drawings indicate the pipe is 72” reinforced concrete pipe (RCP) and excerpts from the plan and profile are shown below:



Inspection Data

The following four internal CCTV inspections of the PI between upstream MH17 and downstream MH16 were reviewed:

- December 11, 2017
- July 21, 2021
- June 9, 2024
- October 6, 2024

All were performed by Redzone Robotics from MH17 to MH16 (upstream to downstream) with sanitary flow in the pipe. The inspection reports use the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) scoring system for grading pipeline conditions. In the scoring system, each individual defect is assigned a grade from 1 to 5, with 5 being the most significant. The grade of an observed defect is assigned by looking up in the PCAP manual or automatically via software. Grades fall into two categories – **structural**, which indicate pipe condition and **operation and maintenance** (O&M), which indicate conditions that may warrant maintenance but do not generally affect the pipeline structural integrity. Examples of maintenance activities include pipe cleaning, root removal and sealing leaks.

In each case, the inspection report and video of the pipe interior was reviewed, with observations summarized below. For brevity and clarity, observations are summarized for the reach between 150' to 200' downstream of MH17 and not the entire reach of pipe between the two manholes which is more than 1,800' long.

- December 11, 2017 Inspection
  - Report contents:
    - 146.1' – surface reinforcement visible, structural grade 5, between approximately 10 o'clock and 2 o'clock in crown. This is approximately 22' to 38' upstream of the break area.
    - 153.9' – general observation indicating rapid flows and turbulence throughout impacting the clarity of the video.
    - For the entire 1,800' pipe section between MH16 and MH17, the structural index was 3.69 and the structural quick score was 5Z3Z (more than 10 structural grade 5 defects and more than 10 structural grade 3 defects in entire pipe).
  - Video review:
    - While the quality of the video is poor due to turbulent flow conditions, exposed aggregate and surface reinforcement are observable in the reach between 150' to 200' downstream of MH17.

- July 21, 2021 Inspection
  - Report contents:
    - There are no observations in the report between 150' and 200' downstream of MH17.

        - For the entire 1,800' pipe section between MH16 and MH17, the structural index for the entire pipe section was 3.59 and the structural quick score was 5N4J (more than 10 structural grade 5 defects and more than 10 structural grade 4 defects in entire pipe).

    - Video review:
        - Review of the video indicates that flow in the pipe and splashing around the inspection unit make viewing the inside of the pipe 150' to 200' downstream of MH17 difficult. In this reach, there are indications of exposed aggregate and surface reinforcement indentations in the video.

- June 9, 2024 Inspection
    - Report contents:
        - 156.9' – infiltration gusher with structural grade of 0 and an operation and maintenance grade of 5. Infiltration is groundwater leaking through pipe defects which can affect pipe capacity and increase pumping and treatment costs at downstream facilities. Some amount of infiltration and inflow is expected and planned for in all subsurface gravity sewer pipelines.
        - For the entire 1,800' pipe section between MH16 and MH17, the structural index was 2.60 and the structural quick score was 5Y4Z (more than 10 structural grade 5 defects and more than 10 structural grade 4 defects in entire pipe).
    - Video review:
        - Review of the video between 150' to 200' downstream of MH17 indicates exposed aggregate in the concrete and surface reinforcement indentations, similar to prior videos.

- October 6, 2024
    - Report contents:
        - 147.8', 164.6' and 195.6' - infiltration weepers, each with O&M ratings of 2.
        - 157.4' – this defect was an infiltration runner with an O&M grade of 4 that was also scored as a hole with a structural grade of 5. Based on review of the video, this is the same defect identified in the June 2024 report at 156.9' and the size and shape look similar to the June 2024 inspection. The infiltration observation is correct, but the 'hole void visible' assertion appears to be a misidentification. There is dark colored concrete above and around the infiltration area. This area has the surface texture of concrete, gray areas indicative of concrete, and has a tapered zone around the perimeter showing the transition in concrete thickness. This area is located between 10' and 26' upstream of the break area.
        - 162.0' – hole soil visible, structural grade 5. This area (162' feet downstream of MH 17) is located between 6' and 22' upstream of the break location. Because the inspection report indicated a hole in the pipe with soil visible, we performed a critical review of the video in this section of pipe. Close inspection of the video

shows that this defect was misidentified and the dark area at approximately the 9 o'clock position is concrete pipe. This is supported by the following:

- The video is far clearer than the picture in the report. Review of the video allows close-up observation of the discolored area.
- The video shows concrete coloration (gray) at various locations within the discolored zone, indicative of concrete.
- The video shows surface texture similar to concrete at various locations within the discolored zone.
- The video shows a tapered area at the perimeter where the discolored area meets the gray concrete, indicative of continuous material. There are not distinct interfaces between disparate materials. Instead, there is a transition zone indicative of the loss of a portion, but not all, of the concrete pipe wall thickness.
- As shown by the other infiltration weepers in the video, the pipe is subject to infiltration by groundwater. If the discolored area were soil, one would expect to see infiltration into the pipe at this location, which is not present in the video.
- If the discolored area were soil, substantial soil intrusion would be expected due to external groundwater and soil pressure. This is not present in the video.

- For the entire 1,800' pipe section between MH16 and MH17, the structural index was 3.01 and the structural quick score was 544Z (four grade 5 structural defects and more than 10 grade 4 structural defects in entire pipe).

- Video review
  - Review of the video between 150' to 200' downstream of MH17 indicates exposed aggregate in the concrete and surface reinforcement indentations, similar to prior videos.
  - In the break zone between 168' and 184' downstream of MH17, the video shows exposed aggregate in the concrete and surface reinforcement visible, but no other significant pipe defects.
  - Because the quality of this video is higher than the prior inspections, there is a greater ability to accurately identify and tabulate individual pipe defects and conditions.

Summary
Field measurements indicate the approximate center of the sinkhole at the break is 176 feet downstream of MH17 and that the break occurred between approximately 168’ and 184’ downstream of MH17. Four inspection videos are available over a seven-year period. Review of the inspection videos identified the following structural conditions in the zone 150’ to 200’ downstream of MH17 and in the break zone:

Inspection	Structural Condition Observations	
	150’ to 200’ downstream of MH17	At PI Break (Estimated 168’ to 184’ Downstream of MH17)
December 11, 2017 July 21, 2021 June 9, 2024	• Exposed aggregate and surface reinforcement visible • No specific defects identified in zone	• Exposed aggregate in the concrete and surface reinforcement visible
October 6, 2024	• Exposed aggregate in the concrete and surface reinforcement visible • 157.4’ – reported hole with a structural grade of 5. Review of the video indicates the dark colored area is not soil, but instead concrete pipe. The indication of soil present or hole in the pipe was not observed in the video. • 162.0’ – reported hole with soil visible, structural grade 5. Again, review of the video indicates the dark colored area is not soil, but instead concrete pipe. The indication of soil present or hole in the pipe was not observed in the video.	

Exposed aggregate in the concrete and surface reinforcement visible were the internal pipe conditions observed in the inspections in the estimated break area which is 168’ to 184’ downstream of MH 17, which were not indicative of a risk of near-term failure of the asset.

Summary
Field measurements indicate the approximate center of the sinkhole at the break is 176 feet downstream of MH17 and that the break occurred between approximately 168’ and 184’ downstream of MH17. Four inspection videos are available over a seven-year period. Review of the inspection videos identified the following structural conditions in the zone 150’ to 200’ downstream of MH17 and in the break zone:

Inspection	Structural Condition Observations	
	150’ to 200’ downstream of MH17	At PI Break (Estimated 168’ to 184’ Downstream of MH17)
December 11, 2017 July 21, 2021 June 9, 2024	• Exposed aggregate and surface reinforcement visible • No specific defects identified in zone	• Exposed aggregate in the concrete and surface reinforcement visible
October 6, 2024	• Exposed aggregate in the concrete and surface reinforcement visible • 157.4’ – reported hole with a structural grade of 5. Review of the video indicates the dark colored area is not soil, but instead concrete pipe. The indication of soil present or hole in the pipe was not observed in the video. • 162.0’ – reported hole with soil visible, structural grade 5. Again, review of the video indicates the dark colored area is not soil, but instead concrete pipe. The indication of soil present or hole in the pipe was not observed in the video.	

Exposed aggregate in the concrete and surface reinforcement visible were the internal pipe conditions observed in the inspections in the estimated break area which is 168’ to 184’ downstream of MH 17, which were not indicative of a risk of near-term failure of the asset.

Potomac Interceptor

INSPECTION REPORTS

M-114-160-030-213 to M-119-159-159-659-688

2017-2024

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DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

Potomac Interceptor

INSPECTION REPORTS

October 2024

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DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

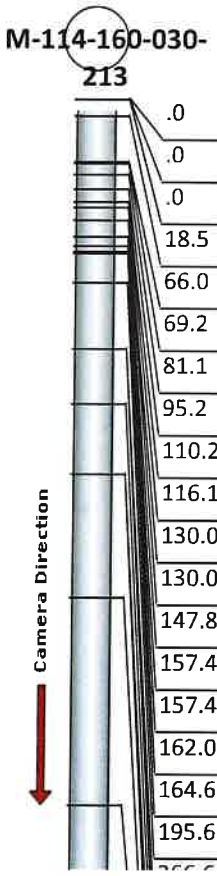
Profile/Photo Observation Report

RedZone ROBOTICS

Date:	10/06/2024	Weather:		Coding:	PACP 7.0
Pipe Length (ft):	1847.3	Owner:	DC Water	Pre Clean:	Not Known
P.O.#:	DCFA-490	Surveyor:	B. Allerton	PSR:	P-114-160-030-213
Customer:	Arcadis	Clean Date:		Shape:	C

Street:	Clara Barton Parkway	Flow Control:	
City:	Washington, DC	Year Renewed:	
Location:		Tape/Media #:	
Purpose:	Routine Assessment	Dia/Height:	72"
Use:	Sanitary Sewage Pipe	Material:	RCP
Drain Area:		Lining:	
Category:	NA		
Comment:			
Location Details:		Direction of Survey:	Downstream
US MH:	M-114-160-030-213	DS MH:	M-119-159-659-688
Total Length Surveyed (ft):	1847.3		

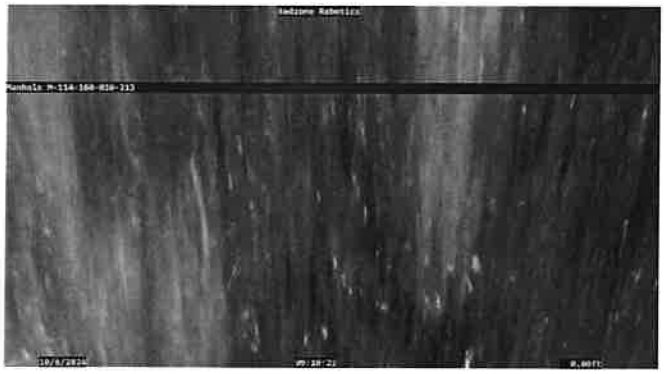
O&M Index:	2.20	O&M Quick:	4129	O&M Rating:	22.00
Structural Index:	3.01	Structural Quick:	544Z	Structural Rating:	1040.00
Overall Index:	2.99	Overall Quick:	544Z	Overall Rating:	1062.00



Position	Code	Observation	Video (sec)	Grade
.0	AMH	Manhole	26	NA
.0	MWL	Miscellaneous Water Level	57	NA
.0	SRV(S01)	Surface Damage Reinforcement Visible	100	S 4
18.5	MGO	Miscellaneous General Observation	394	NA
66.0	MGP	Miscellaneous General Photograph	599	NA
69.2	MGO	Miscellaneous General Observation	660	NA
81.1	IW	Infiltration Weeper	721	M 2
95.2	IW	Infiltration Weeper	822	M 2
110.2	IW	Infiltration Weeper	885	M 2
116.1	IW	Infiltration Weeper	924	M 2
130.0	IWJ	Infiltration Weeper Joint	980	M 2
130.0	SRP	Surface Damage Reinforcement Projecting	985	S 5
147.8	IWJ	Infiltration Weeper Joint	1058	M 2
157.4	HVV	Hole Void Visible	1162	S 5
157.4	IR	Infiltration Runner	1183	M 4
162.0	HSV	Hole Soil Visible	1262	S 5
164.6	IWJ	Infiltration Weeper Joint	1295	M 2
195.6	IWJ	Infiltration Weeper Joint	1408	M 2

266.6	SRV(F01)	Surface Damage Reinforcement Visible	1636	S 4
266.6	SZ(S02)	Surface Damage Other	1701	NA
324.4	MGP	Miscellaneous General Photograph	1938	NA
399.7	SZ(F02)	Surface Damage Other	2186	NA
399.7	SRV(S03)	Surface Damage Reinforcement Visible	2205	S 4
531.1	MGP	Miscellaneous General Photograph	2634	NA
752.8	MGP	Miscellaneous General Photograph	3387	NA
823.3	MGP	Miscellaneous General Photograph	3609	NA
914.4	MGP	Miscellaneous General Photograph	3871	NA
925.4	SRV(F03)	Surface Damage Reinforcement Visible	3919	S 4
925.4	SAV(S04)	Surface Damage Aggregate Visible	3944	S 2
943.5	SAV(F04)	Surface Damage Aggregate Visible	4008	S 2
943.5	SRV(S05)	Surface Damage Reinforcement Visible	4026	S 4
994.7	SRV(F05)	Surface Damage Reinforcement Visible	4181	S 4
994.7	SAV(S06)	Surface Damage Aggregate Visible	4200	S 2
1081.4	SRP	Surface Damage Reinforcement Projecting	4420	S 5
1103.2	SRV	Surface Damage Reinforcement Visible	4489	S 4
1352.9	ISZ	Intruding Sealing Material Other	5175	M 2
1605.2	TBA	Tap Break-in Activity	5869	NA
1649.1	SAV(F06)	Surface Damage Aggregate Visible	6003	S 2
1658.9	SAV(S07)	Surface Damage Aggregate Visible	6054	S 2
1844.4	SAV(F07)	Surface Damage Aggregate Visible	6569	S 2
1847.3	AMH	Manhole	6612	NA

M-119-159-659-688



Code: **AMH**
Description: **Manhole**

Distance (ft): **.0**
Structural Grade: **0**
O&M Grade: **0**
Clock Start/From:
Clock To:
1st Value:
2nd Value:
Value Percent:
Continuous Index:
Within 8" of Joint: **NO**
Remarks: **M-114-160-030-213**

Code:	**MWL**
Description:	**Miscellaneous Water Level**
Distance (ft):	**.0**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	**15.000**
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**High Velocity**

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**.0**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S01**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**MGO**
Description:	**Miscellaneous General Observation**
Distance (ft):	**18.5**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**Flow overr camera**

Code:	**MGP**
Description:	**Miscellaneous General Photograph**
Distance (ft):	**66.0**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**SRV**

Code:	**MGO**
Description:	**Miscellaneous General Observation**
Distance (ft):	**69.2**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**Camera out of water. Water coving over the back**

Code:	**IW**
Description:	**Infiltration Weeper**
Distance (ft):	**81.1**
Structural Grade:	**0**
O&M Grade:	**2**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**IW**
Description:	**Infiltration Weeper**
Distance (ft):	**95.2**
Structural Grade:	**0**
O&M Grade:	**2**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**IW**
Description:	**Infiltration Weeper**
Distance (ft):	**110.2**
Structural Grade:	**0**
O&M Grade:	**2**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**IW**
Description:	**Infiltration Weeper**
Distance (ft):	**116.1**
Structural Grade:	**0**
O&M Grade.	**2**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**IWJ**
Description:	**Infiltration Weeper Joint**
Distance (ft):	**130.0**
Structural Grade:	**0**
O&M Grade:	**2**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**YES**
Remarks:	

Code:	**SRP**
Description:	**Surface Damage Reinforcement Projecting**
Distance (ft):	**130.0**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**2**
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**YES**
Remarks:	**hanging**

Code:	**IWJ**
Description:	**Infiltration Weeper Joint**
Distance (ft):	**147.8**
Structural Grade:	**0**
O&M Grade:	**2**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**YES**
Remarks:	

Code:	**HVV**
Description:	**Hole Void Visible**
Distance (ft):	**157.4**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**9**
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**IR**
Description:	**Infiltration Runner**
Distance (ft):	**157.4**
Structural Grade:	**0**
O&M Grade:	**4**
Clock Start/From:	**9**
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**From Hole**

Code:	**HSV**
Description:	**Hole Soil Visible**
Distance (ft):	**162.0**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**9**
Clock To:	
1st Value:	**24.000**
2nd Value:	**24.000**
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**pipe missing**

Code:	**IWJ**
Description:	**Infiltration Weeper Joint**
Distance (ft):	**164.6**
Structural Grade:	**0**
O&M Grade:	**2**
Clock Start/From:	**9**
Clock To:	**3**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**YES**
Remarks:	

Code:	**IWJ**
Description:	**Infiltration Weeper Joint**
Distance (ft):	**195.6**
Structural Grade:	**0**
O&M Grade:	**2**
Clock Start/From:	**9**
Clock To:	**3**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**YES**
Remarks:	

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**266.6**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F01**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SZ**
Description:	**Surface Damage Other**
Distance (ft):	**266.6**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S02**
Within 8" of Joint:	**NO**
Remarks:	**SR Missing**

Code:	**MGP**
Description:	**Miscellaneous General Photograph**
Distance (ft):	**324.4**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**Surface Damage**

Code:	**SZ**
Description:	**Surface Damage Other**
Distance (ft):	**399.7**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F02**
Within 8" of Joint:	**NO**
Remarks:	**SR Missing**

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**399.7**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S03**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**MGP**
Description:	**Miscellaneous General Photograph**
Distance (ft):	**531.1**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	**9**
Clock To:	**3**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**SRV**

Code:	**MGP**
Description:	**Miscellaneous General Photograph**
Distance (ft):	**752.8**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**11**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**SRV**

Code:	**MGP**
Description:	**Miscellaneous General Photograph**
Distance (ft):	**823.3**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	**9**
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**SRV**

Code:	**MGP**
Description:	**Miscellaneous General Photograph**
Distance (ft):	**914.4**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**10**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**SRV**

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**925.4**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F03**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SAV**
Description:	**Surface Damage Aggregate Visible**
Distance (ft):	**925.4**
Structural Grade:	**2**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S04**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SAV**
Description:	**Surface Damage Aggregate Visible**
Distance (ft):	**943.5**
Structural Grade:	**2**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F04**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**943.5**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S05**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**994.7**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F05**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SAV**
Description:	**Surface Damage Aggregate Visible**
Distance (ft):	**994.7**
Structural Grade:	**2**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S06**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SRP**
Description:	**Surface Damage Reinforcement Projecting**
Distance (ft):	**1081.4**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**11**
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	
Remarks:	

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**1103.2**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**9**
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**ISZ**
Description:	**Intruding Sealing Material Other**
Distance (ft):	**1352.9**
Structural Grade:	**0**
O&M Grade:	**2**
Clock Start/From:	**4**
Clock To:	**5**
1st Value:	
2nd Value:	
Value Percent:	**5.000**
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**intruding sealing material**

Code:	**TBA**
Description:	**Tap Break-in Activity**
Distance (ft):	**1605.2**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	**9**
Clock To:	
1st Value:	**12.000**
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SAV**
Description:	**Surface Damage Aggregate Visible**
Distance (ft):	**1649.1**
Structural Grade:	**2**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F06**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SAV**
Description:	**Surface Damage Aggregate Visible**
Distance (ft):	**1658.9**
Structural Grade:	**2**
O&M Grade:	**0**
Clock Start/From:	**9**
Clock To:	**3**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S07**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SAV**
Description:	**Surface Damage Aggregate Visible**
Distance (ft):	**1844.4**
Structural Grade:	**2**
O&M Grade:	**0**
Clock Start/From:	**9**
Clock To:	**3**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F07**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**AMH**
Description:	**Manhole**
Distance (ft):	**1847.3**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**M-119-159-659-688**

Potomac Interceptor

INSPECTION REPORTS

June 2024

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DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

Profile/Photo Observation Report

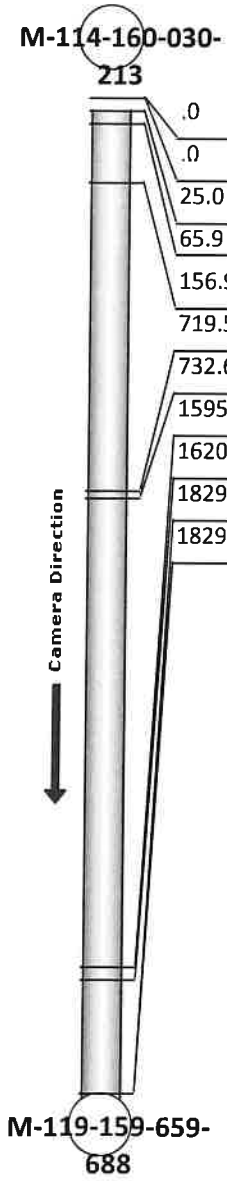
RedZone ROBOTICS

Date:	**06/09/2024**	Weather:		Coding:	**PACP 7.0**
Pipe Length (ft):	**1829.2**	Owner:	**DC Water**	Pre Clean:	**Not Known**
P.O.#:		Surveyor:	**B. Jones**	PSR:	**P-114-160-030-213**
Customer:	**Arcadis Philadelphia**	Clean Date:		Shape:	**C**

Street:	**Clara Barton Parkway**	Flow Control:	
City:	**Washington DC**	Year Renewed:	
Location:		Tape/Media #:	
Purpose:	**Routine Assessment**	Dia/Height:	**72"**
Use:	**Sanitary Sewage Pipe**	Material:	**RCP**
Drain Area:		Lining:	**None**
Category:	**NA**		
Comment:	**SJ502609**		
Location Details:		Direction of Survey:	**Downstream**

US MH: **M-114-160-030-213** DS MH: **M-119-159-659-688** Total Length Surveyed (ft): **1829.2**

O&M Index:	**5.00**	O&M Quick:	**5100**	O&M Rating:	**5.00**
Structural Index:	**2.60**	Structural Quick:	**5Y4Z**	Structural Rating:	**1728.00**
Overall Index:	**2.60**	Overall Quick:	**5Y4Z**	Overall Rating:	**1733.00**



Position	Code	Observation	Video (sec)	Grade
.0	AMH	Manhole	31	NA
.0	MWI	Miscellaneous Water Level	80	NA
25.0	SSC(S01)	Surface Spalling of Damage Coating	203	S 1
65.9	SRP(S02)	Surface Damage Reinforcement Projecting	393	S 5
156.9	IG	Infiltration Gusher	601	M 5
719.5	SRP(F02)	Surface Damage Reinforcement Projecting	2037	S 5
732.6	SRV(S03)	Surface Damage Reinforcement Visible	2096	S 4
1595.2	TFA	Tap Factory Activity	4263	NA
1620.6	SRV(F03)	Surface Damage Reinforcement Visible	4340	S 4
1829.2	SSC(F01)	Surface Spalling of Damage Coating	4762	S 1
1829.2	AMH	Manhole	4798	NA

Code:	**AMH**
Description:	**Manhole**
Distance (ft):	**.0**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**M-114-160-030213 CAN NOT SEE MH DO TO FLOW**

Code:	**MWL**
Description:	**Miscellaneous Water Level**
Distance (ft):	**.0**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	**20.000**
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SSC**
Description:	**Surface Spalling of Damage Coating**
Distance (ft):	**25.0**
Structural Grade:	**1**
O&M Grade:	**0**
Clock Start/From:	**7**
Clock To:	**5**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S01**
Within 8" of Joint:	**YES**
Remarks:	

Code:	**SRP**
Description:	**Surface Damage Reinforcement Projecting**
Distance (ft):	**65.9**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**7**
Clock To:	**5**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S02**
Within 8" of Joint:	**YES**
Remarks:	

Code:	**IG**
Description:	**Infiltration Gusher**
Distance (ft):	**156.9**
Structural Grade:	**0**
O&M Grade:	**5**
Clock Start/From:	**7**
Clock To:	**9**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

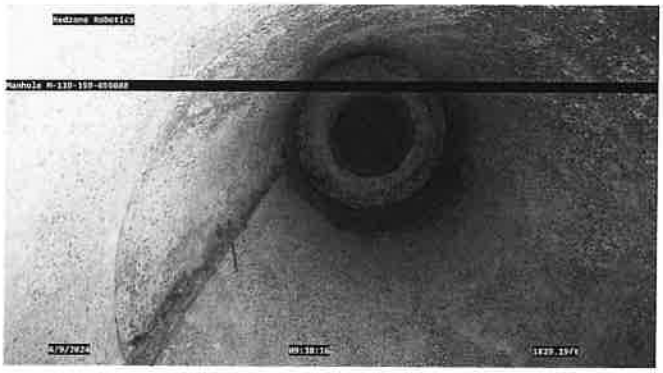
Code:	**SRP**
Description:	**Surface Damage Reinforcement Projecting**
Distance (ft):	**719.5**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**7**
Clock To:	**5**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F02**
Within 8" of Joint:	**YES**
Remarks:	

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**732.6**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**7**
Clock To:	**5**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S03**
Within 8" of Joint:	**YES**
Remarks:	

Code:	**TFA**
Description:	**Tap Factory Activity**
Distance (ft):	**1595.2**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	
1st Value:	**10.000**
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**YES**
Remarks:	

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**1620.6**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**7**
Clock To:	**5**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F03**
Within 8" of Joint:	**YES**
Remarks:	

Code:	**SSC**
Description:	**Surface Spalling of Damage Coating**
Distance (ft):	**1829.2**
Structural Grade:	**1**
O&M Grade:	**0**
Clock Start/From:	**7**
Clock To:	**5**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F01**
Within 8" of Joint:	**YES**
Remarks:	



Code:	**AMH**
Description:	**Manhole**
Distance (ft):	**1829.2**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**M-119-159-659688**

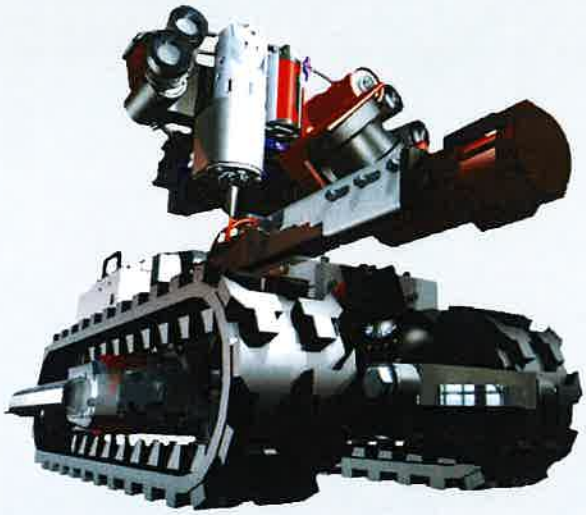
ADVANCED PIPELINE ASSESSMENT

DC Water Potomac Interceptor PI15 thru PI20 TO6

Responder

MULTI SENSOR INSPECTION REPORT

26 June 2024



RedZone ROBOTICS

TABLE OF CONTENTS

PROJECT OVERVIEW

PROJECT OVERVIEW

Project Name	DC Water Potomac Interceptor PI15 thru PI20 TO6
Profiler System	Responder - 3D LIDAR
Client	Arcadis Philadelphia
Contractor	RedZone Robotics
Date Profiled	June 2024
Date Reported	26 June 2024

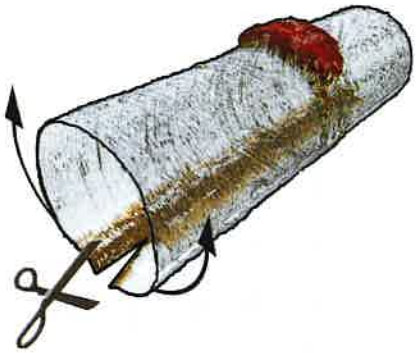
PIPE OVERVIEW

Asset No.	Distance Profiled (ft)	Debris (ft^3)	Average Water Level (in)	Diameter (in)
P-109-159-188-556	1475	13	35	78
P-113-160-877-218	13	N/A	N/A	78
P-114-160-030-213	1776	8	37	72
Totals	**3264 ft**	**21 ft^3**	-	-

Flat Reports

The Flat Graph is used to topographically map pipe radial variances from the reference shape and size from start to end of the pipe. Based upon this reference shape and size the Flat Graph is drawn with the pipe being split at the 6 o'clock position and flattened out. Colours represent how the data matches the reference shape by:

- Appearing white when the data lies close to the reference shape
- Appearing on a yellow to red scale when there is any deviation outside of the reference shape (e.g. corrosion)
- Appearing on a blue scale when there is any deviation inside the reference shape (e.g. debris)

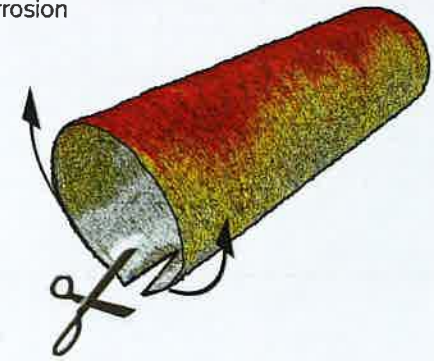


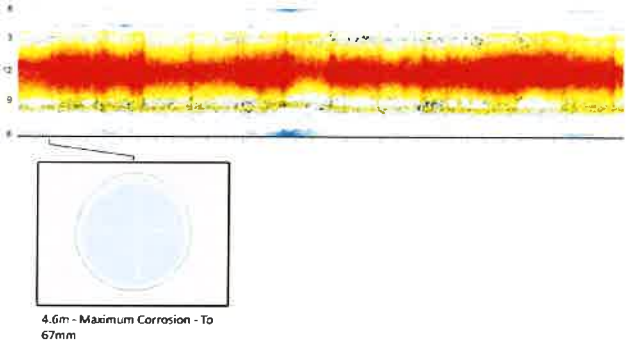
TOPOGRAPHICAL DATA REPRESENTATION

Assess whole pipes at a glance • Accurate corrosion/debris mapping • Spot points of interest instantly
3D presentation views • Laser/Sonar topographical graphs

EXAMPLES

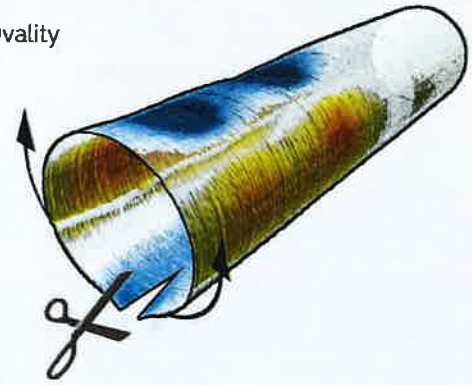
Corrosion

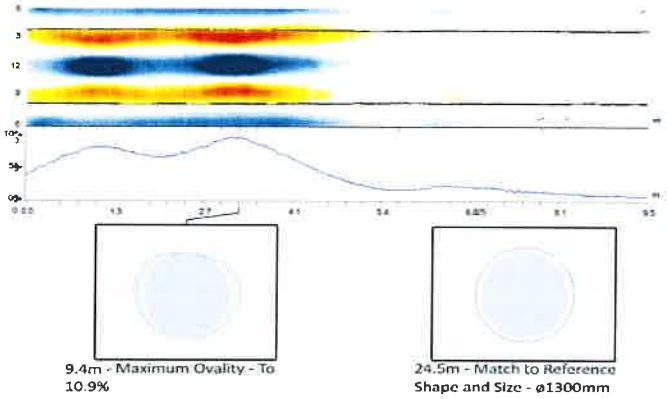




4.6m - Maximum Corrosion - To 67mm

Ovality





9.4m - Maximum Ovality - To 10.9%

24.5m - Match to Reference Shape and Size - ø1300mm

REPORT INTERPRETATION

Sonar Reports

Debris reports provide information surrounding the nature of the volumes of sediment within the inspected pipelines.

Underwater information is presented through both the topographical flat graph to map the radial variances from the reference shape, and a simple line graph representing the length of the pipe inspected (x axis) and the height of the pipe (y axis).

From the data collected the average debris depth, average water level and debris volume can be calculated and accompany the graph reports

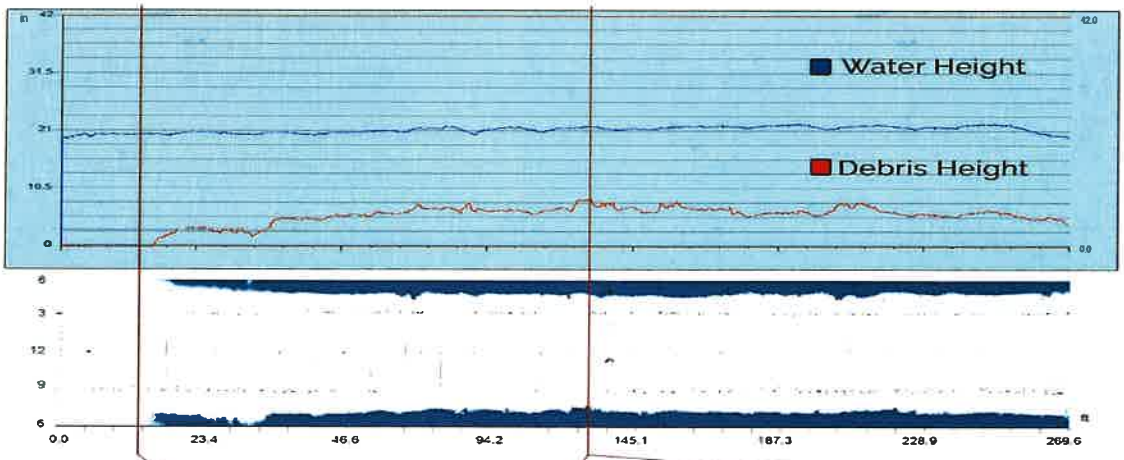
MDSub

MSI Systems

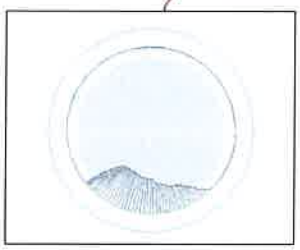
UNDERWATER DATA REPRESENTATION

Assess whole pipes at a glance • Accurate volumetric debris volumes • Spot points of interest instantly
Debris and water level information • Sonar topographical graphs when combined with laser

EXAMPLES



10.6ft 3D Observation - 3D Laser-Sonar Scan

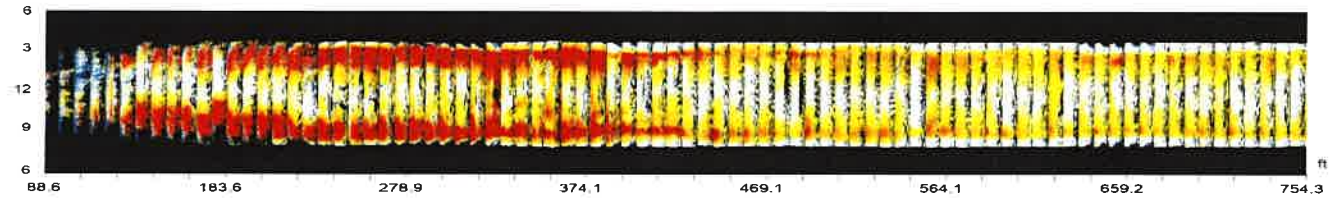


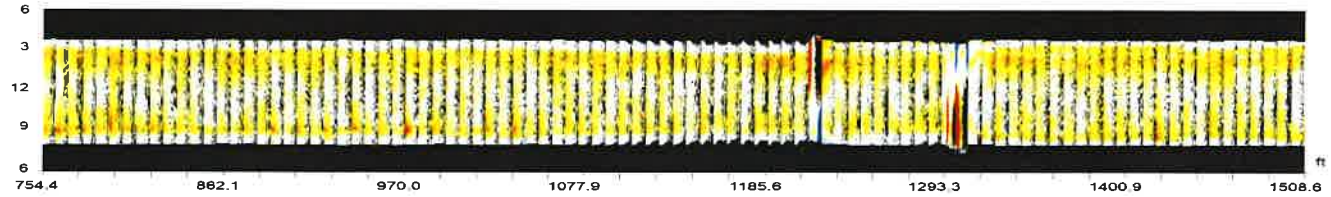
128.9ft Maximum Debris - To 8.6"

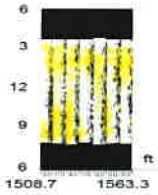
128.9ft 3D Observation - 3D Laser-Sonar Scan

FLAT GRAPH SUMMARY

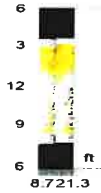
P-109-159-188-556, 78in Page 7 CCTV LASER SONAR



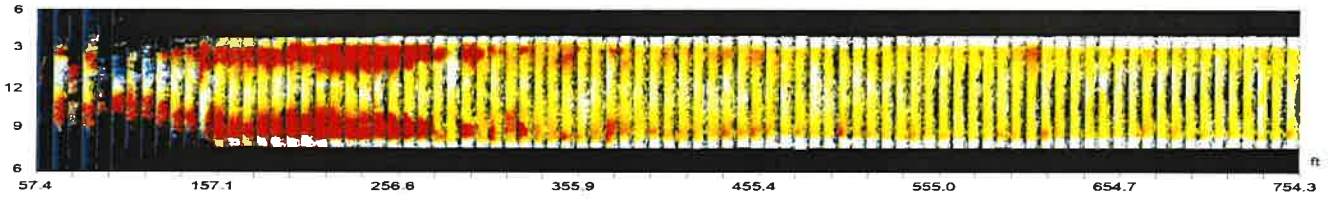


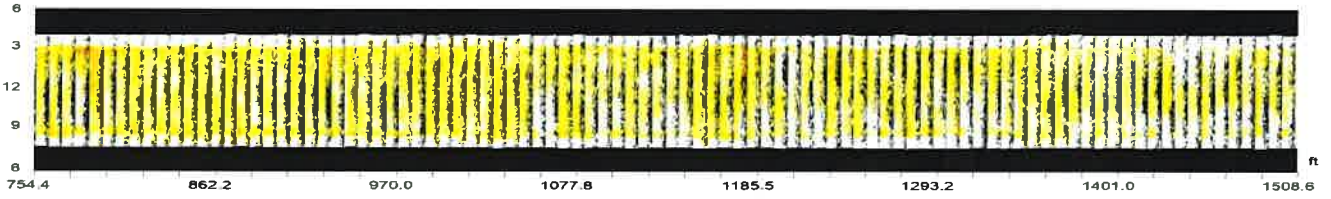


P-113-160-877-218, 78in Page 11 CCTV LASER ~~SONAR~~



P-114-160-030-213, 72in Page 13 CCTV LASER SONAR

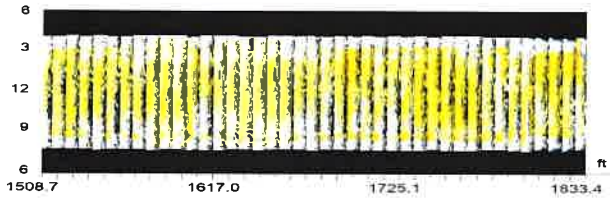




FLAT GRAPH SUMMARY

P-114-160-030-213, 72in Page 13

CCTV LASER SONAR



OVERVIEW - P-109-159-188-556

Asset Number	P-109-159-188-556		
Upstream MH	M-109-159-188-556	Material	Reinforced Concrete Pipe
Downstream MH	M-113-160-877-218	Size & Shape	78 in Circle
Survey Direction	Downstream	Match to Reference	0 ft

Distance	Observation	Comment
88.6 ft	**Beginning of Inspection**	**M-109-159-188-556**
116.1	Note	Laser distorted due to flow velocity and water on lens throughout the entire run
235.2	Maximum Corrosion	To 5.0"
409.9	General Observation	Corrosion to 4.0"
444.9	General Observation	Corrosion to 3.7"
555.2	General Observation	Corrosion to 3.4"
619	General Observation	Corrosion to 3.2"
732.5	General Observation	Corrosion to 2.6"
874.9	General Observation	Corrosion to 2.4"
1003	General Observation	Corrosion to 2.1"
1084.4	General Observation	Corrosion to 2.4"
1214	Note	Profile distorted by bend in pipe until 1310ft
1447.6	General Observation	Corrosion to 2.3"
1562.9 ft	**End of Inspection**	**M-113-160-877-218**

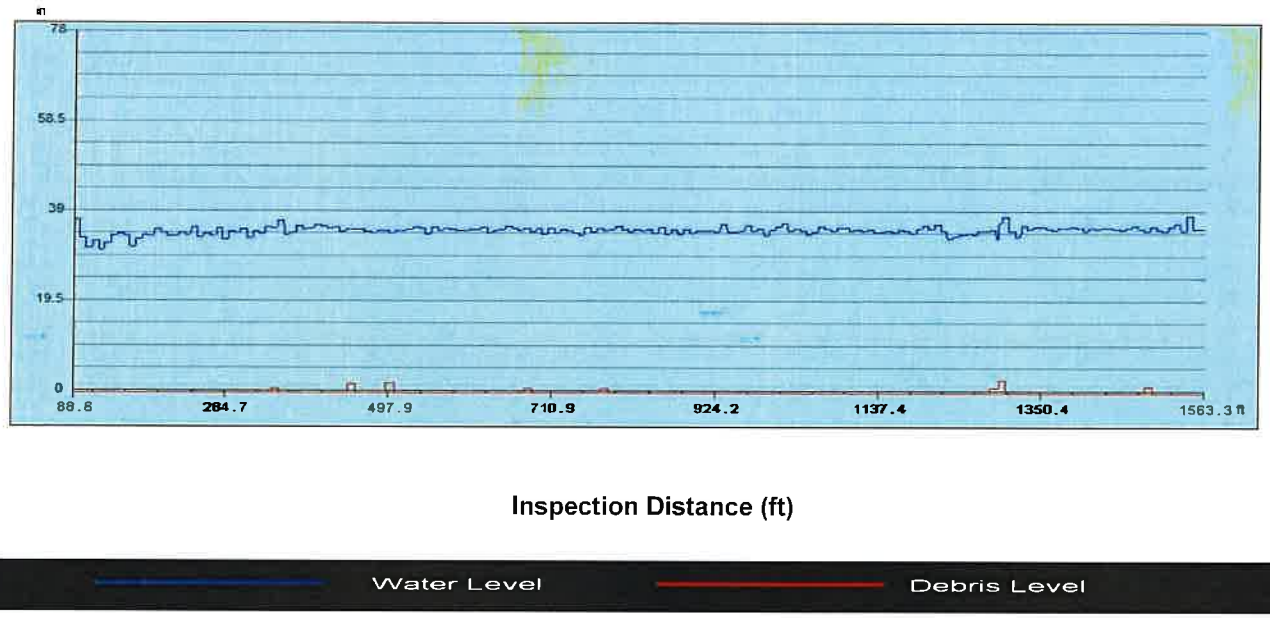
P-109-159-188-556

Asset Number	P-109-159-188-556	Profiled Length	1475 ft
Upstream MH	M-109-159-188-556	Diameter	78 in
Downstream MH	M-113-160-877-218	Material	Reinforced Concrete Pipe
Survey Direction	Downstream	Shape	Circle
Date Installed		Match to Reference *	0 ft
Date Profiled	6 June 2024	Operator	

Observations

Average Debris Depth	0 in
Average Water Level	35 in
Debris Volume	13.3 cubic feet

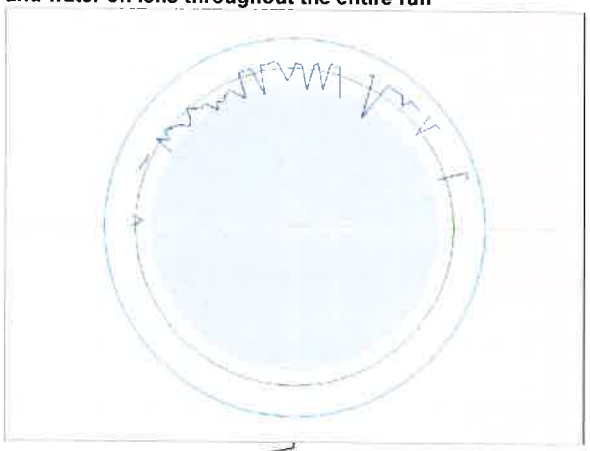
Debris Graph



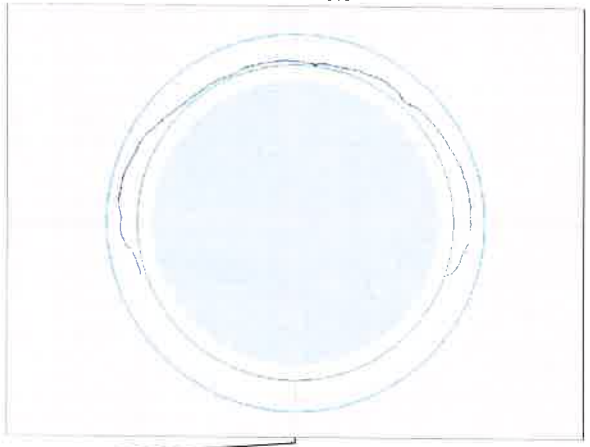
* The match to reference is the point that best indicates the shape and size of the original condition of the pipe.

Observation Report

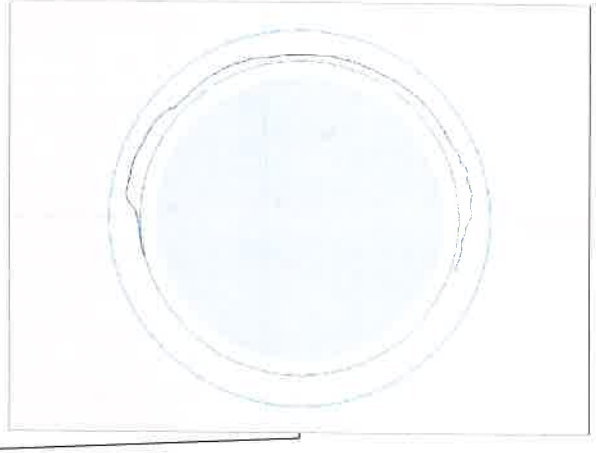
116.1ft Note - Laser distorted due to flow velocity and water on lens throughout the entire run

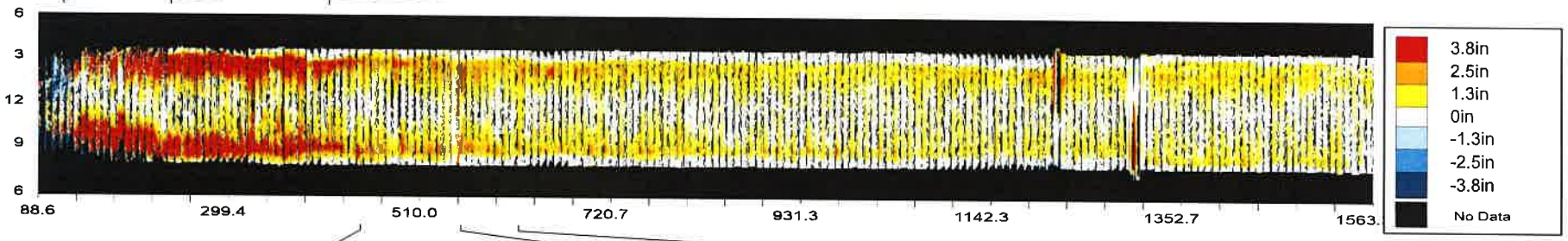


235.2ft Maximum Corrosion - To 5.0"

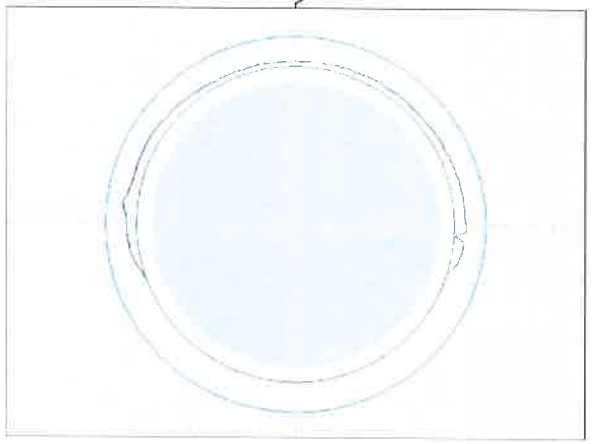


409.9ft General Observation - Corrosion to 4.0"

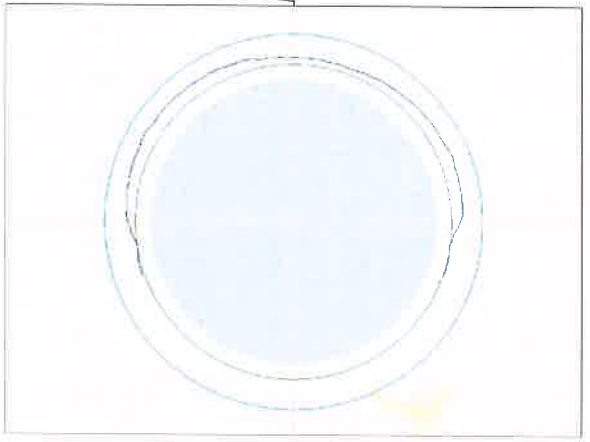




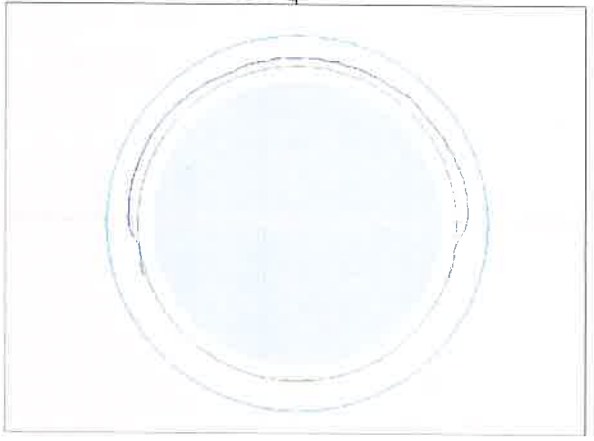
444.9ft General Observation - Corrosion to 3.7"



555.2ft General Observation - Corrosion to 3.4"

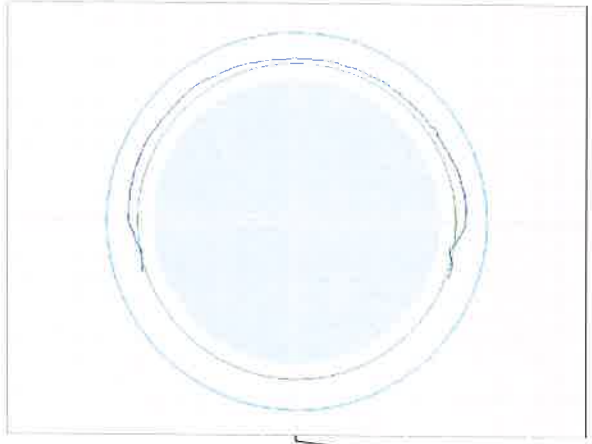


619ft General Observation - Corrosion to 3.2"

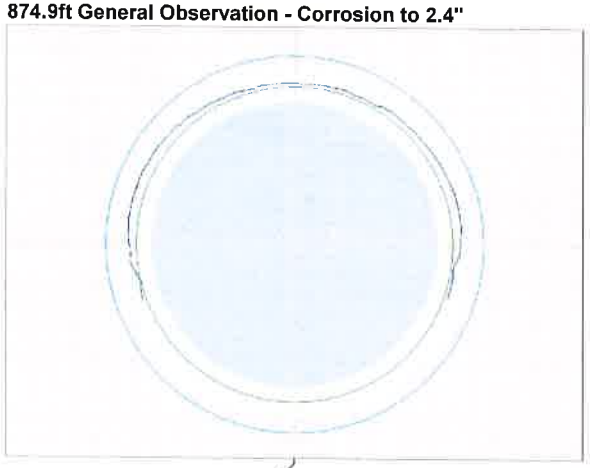


Observation Report

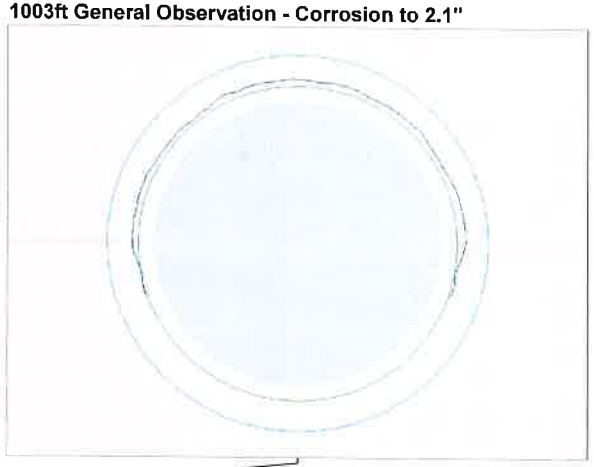
732.5ft General Observation - Corrosion to 2.6"

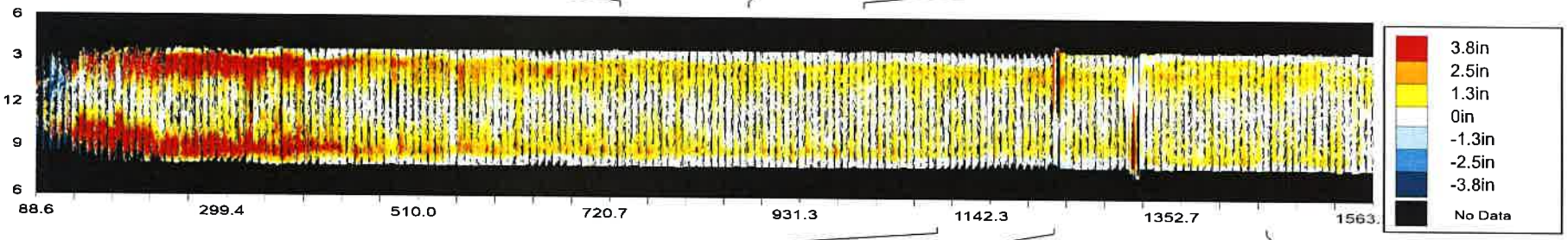


874.9ft General Observation - Corrosion to 2.4"

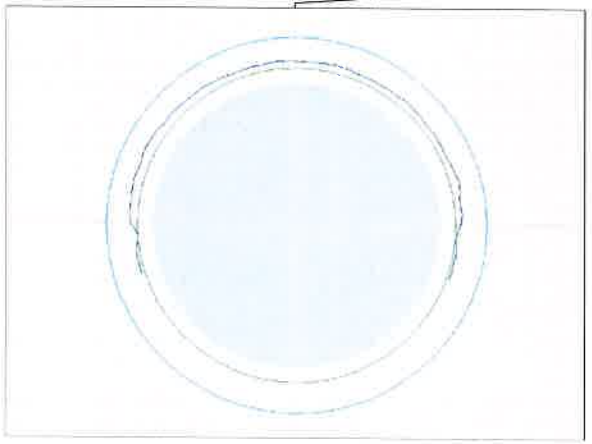


1003ft General Observation - Corrosion to 2.1"

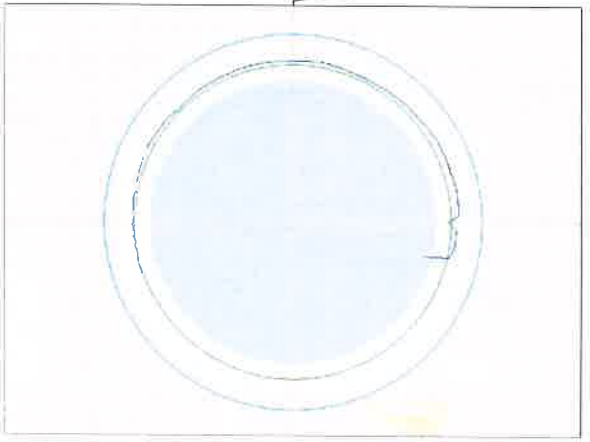




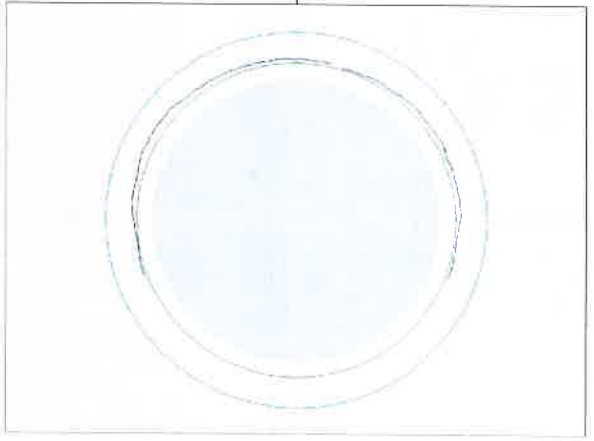
1084.4ft General Observation - Corrosion to 2.4"



1214ft Note - Profile distorted by bend in pipe until 1310ft



1447.6ft General Observation - Corrosion to 2.3"

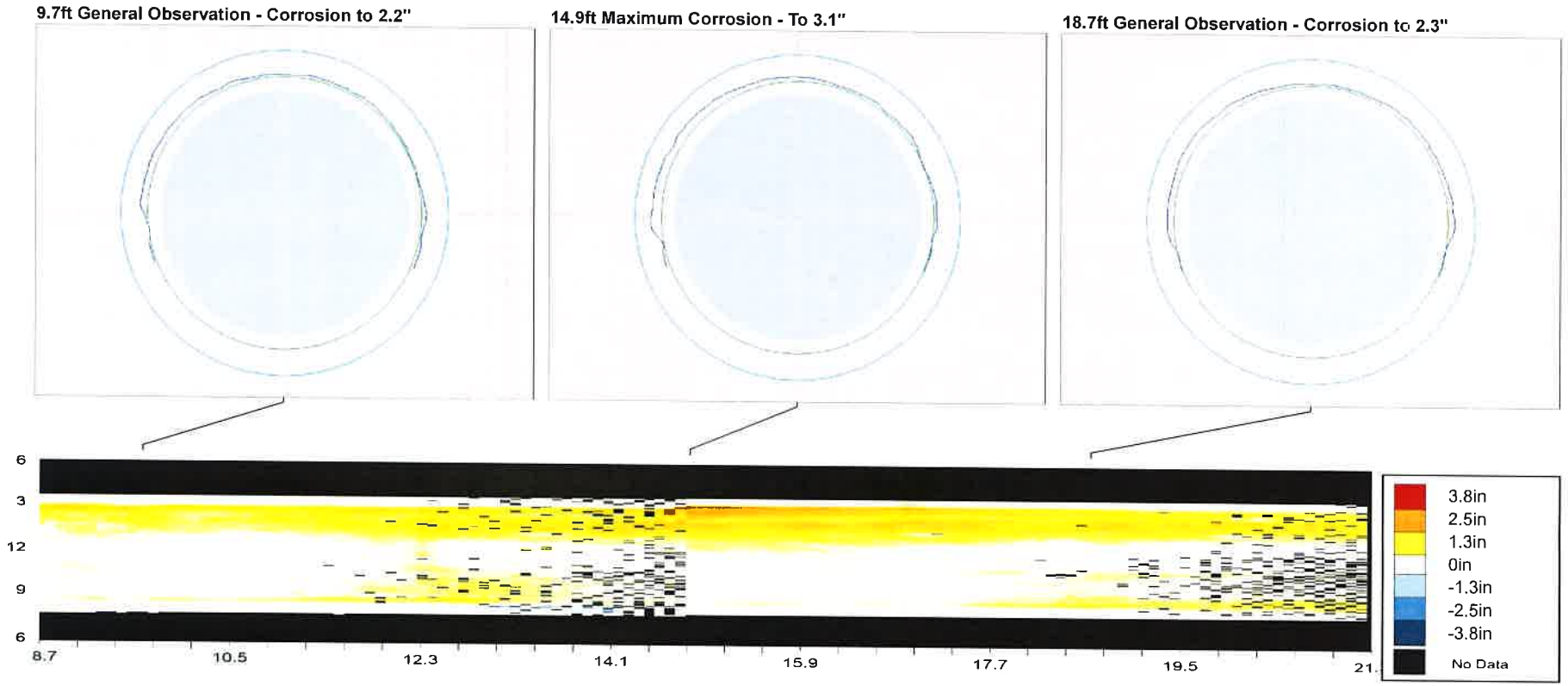


OVERVIEW - P-113-160-877-218

Asset Number	P-113-160-877-218		
Upstream MH	M-113-160-877-218	Material	Reinforced Concrete Pipe
Downstream MH	M-114-160-030 213	Size & Shape	78 in Circle
Survey Direction	Downstream	Match to Reference	0 ft

Distance	Observation	Comment
8.7 ft	**Beginning of Inspection**	**M-113-160-877-218**
9.7	General Observation	Corrosion to 2.2"
14.9	Maximum Corrosion	To 3.1"
18.7	General Observation	Corrosion to 2.3"
21.3 ft	**End of Inspection**	**M-114-160-030-213**

Observation Report



OVERVIEW - P-114-160-030-213

Asset Number	P-114-160-030-213		
Upstream MH	M-114-160-030-213	Material	Reinforced Concrete Pipe
Downstream MH	M-119-159-659-688	Size & Shape	72 in Circle
Survey Direction	Downstream	Match to Reference	0 ft

Distance	Observation	Comment
57.4 ft	**Beginning of Inspection**	**M-114-160-030-213**
81.5	Note	Laser distorted due to flow velocity and water on lens throughout the entire run
237.5	Maximum Corrosion	To 5.7"
292.9	General Observation	Corrosion to 5.6"
445.3	General Observation	Corrosion to 2.7"
604.9	General Observation	Corrosion to 3.0"
788.7	General Observation	Corrosion to 2.6"
972.8	General Observation	Corrosion to 1.7"
1101.1	General Observation	Corrosion to 1.6"
1236.3	General Observation	Corrosion to 1.6"
1427.2	General Observation	Corrosion to 1.9"
1541.6	General Observation	Corrosion to 1.7"
1739.3	General Observation	Corrosion to 2.1"
1832.9 ft	**End of Inspection**	**M-119-159-659-688**

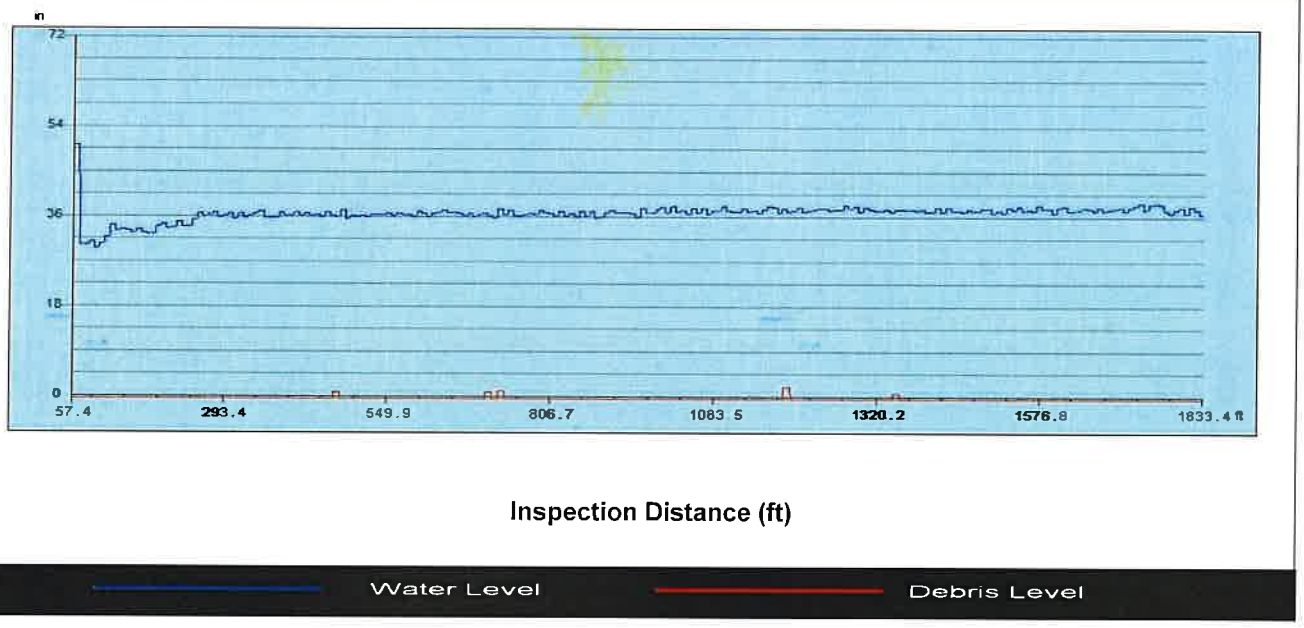
P-114-160-030-213

Asset Number	P-114-160-030-213	Profiled Length	1776 ft
Upstream MH	M-114-160-030-213	Diameter	72 in
Downstream MH	M-119-159-659-688	Material	Reinforced Concrete Pipe
Survey Direction	Downstream	Shape	Circle
Date Installed		Match to Reference *	0 ft
Date Profiled	9 June 2024	Operator	

Observations

Average Debris Depth	0 in
Average Water Level	37 in
Debris Volume	7.5 cubic feet

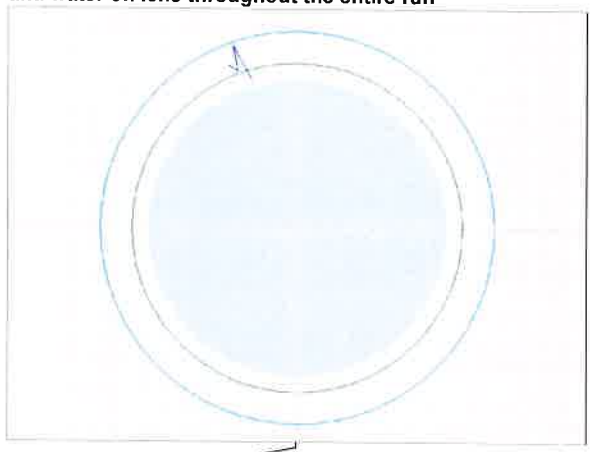
Debris Graph



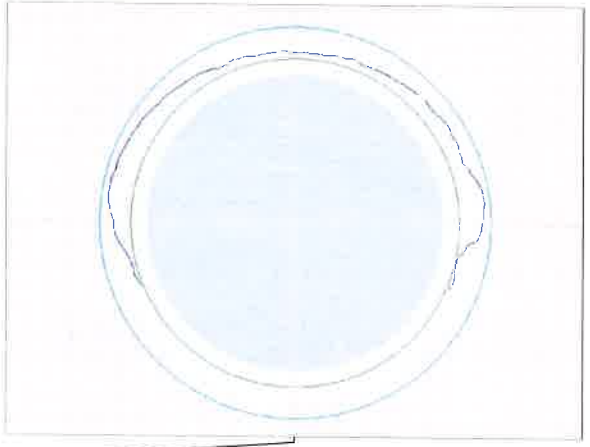
* The match to reference is the point that best indicates the shape and size of the original condition of the pipe.

Observation Report

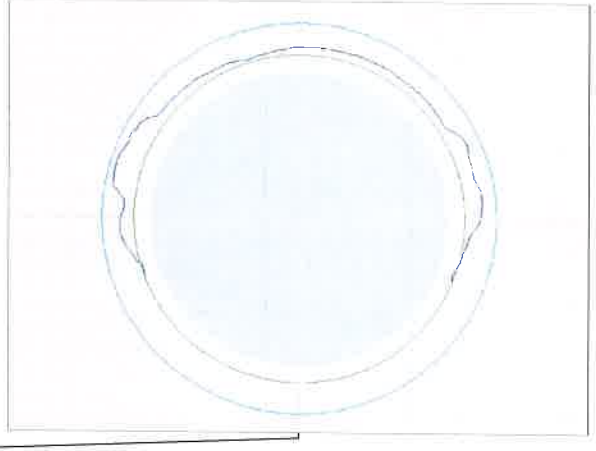
81.5ft Note - Laser distorted due to flow velocity and water on lens throughout the entire run

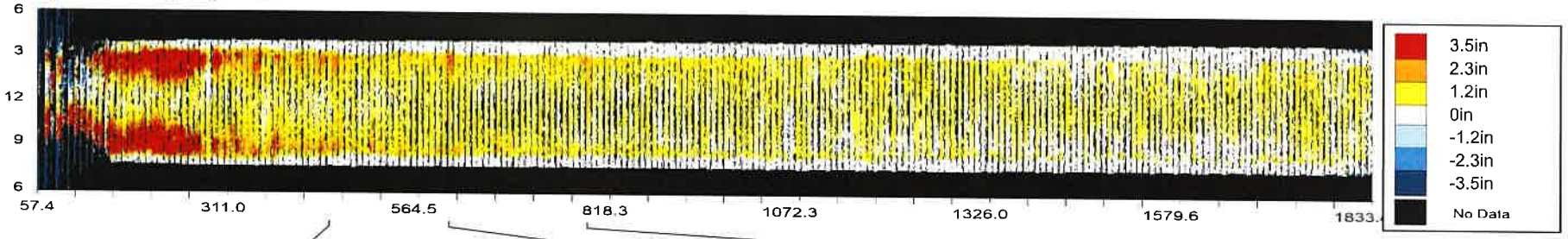


237.5ft Maximum Corrosion - To 5.7"

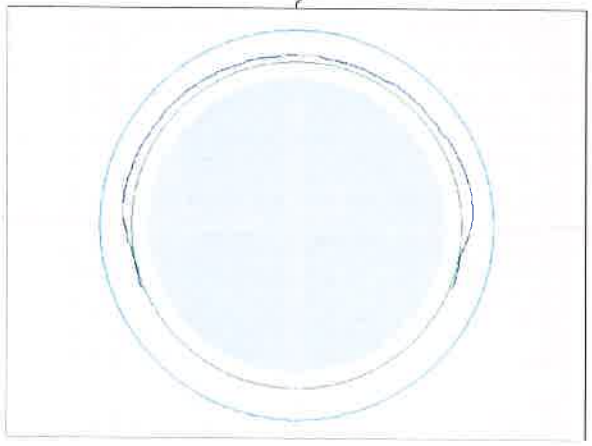


292.9ft General Observation - Corrosion to 5.6"

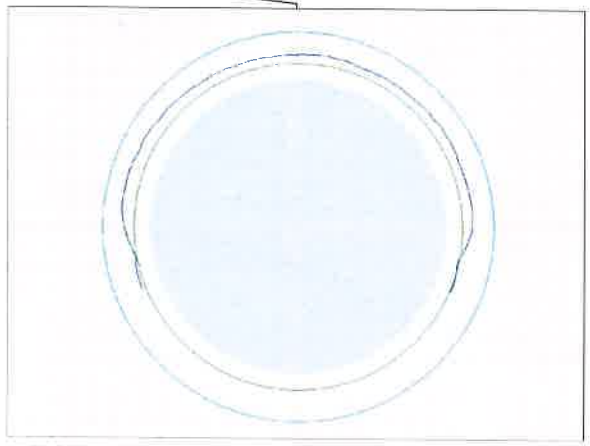




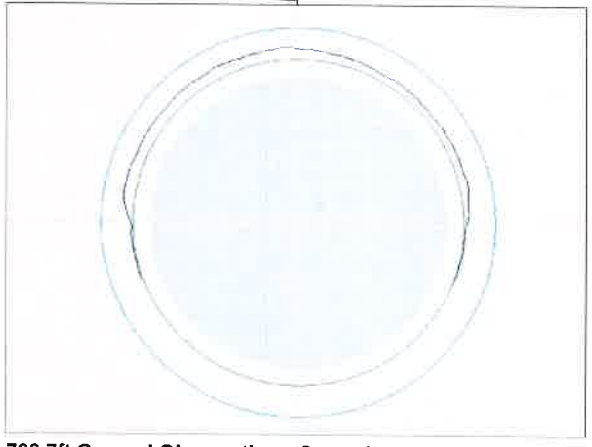
445.3ft General Observation - Corrosion to 2.7"



604.9ft General Observation - Corrosion to 3.0"

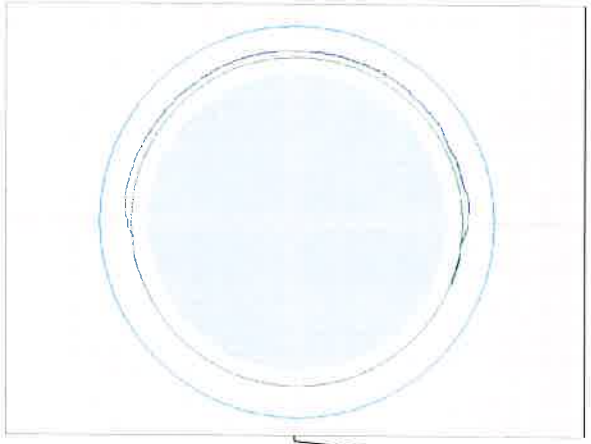


788.7ft General Observation - Corrosion to 2.6"

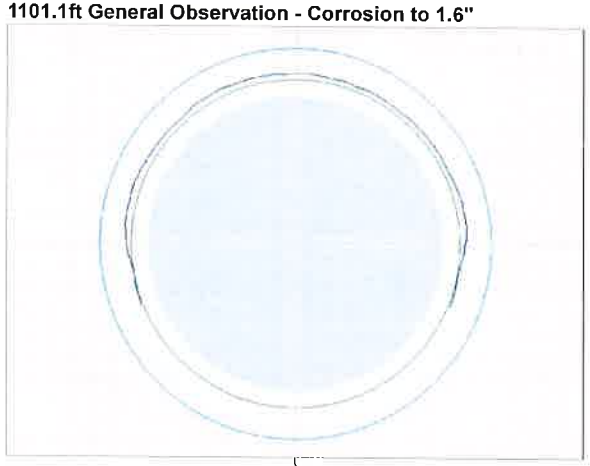


Observation Report

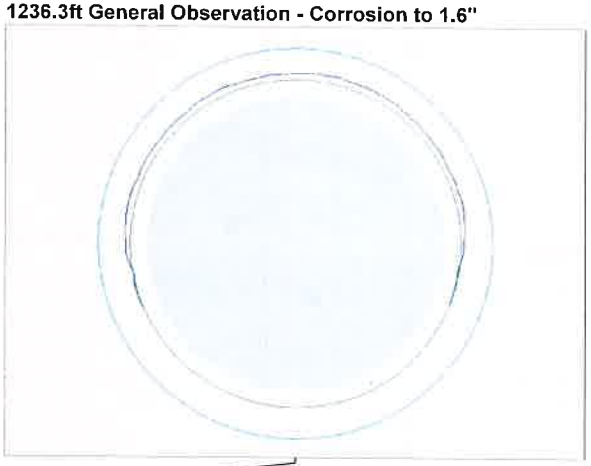
972.8ft General Observation - Corrosion to 1.7"

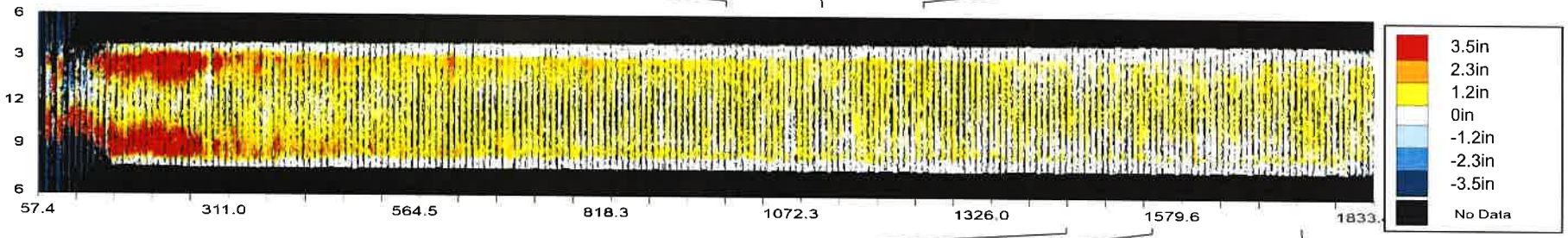


1101.1ft General Observation - Corrosion to 1.6"

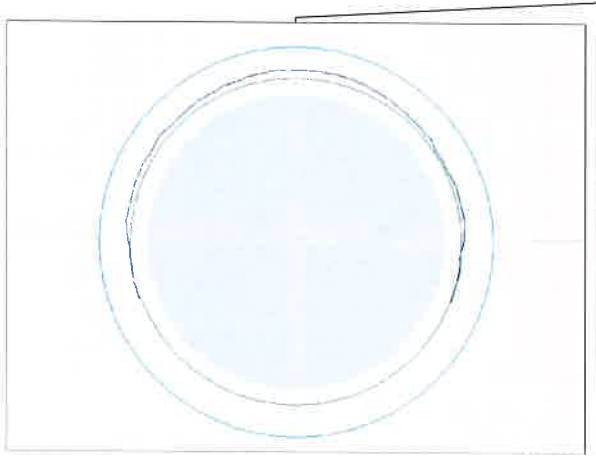


1236.3ft General Observation - Corrosion to 1.6"

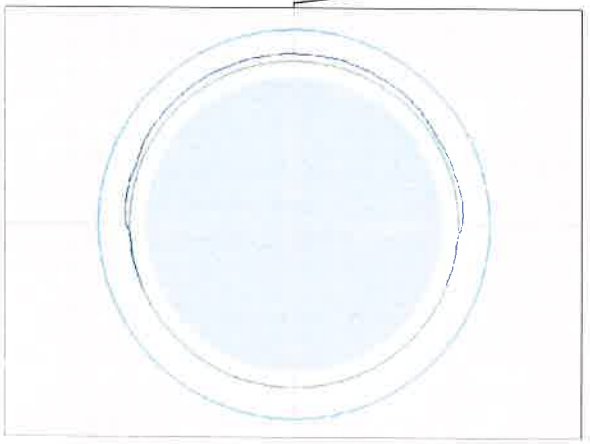




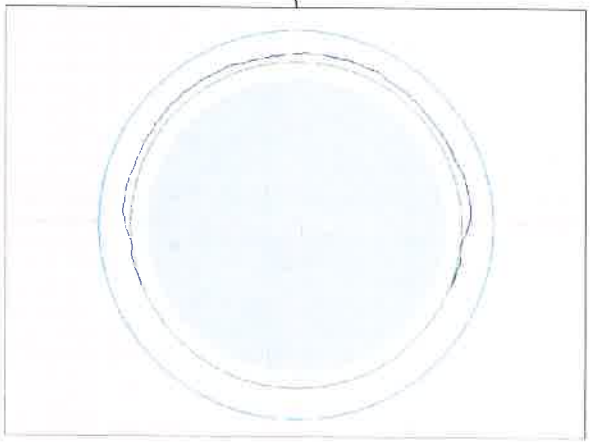
1427.2ft General Observation - Corrosion to 1.9"



1541.6ft General Observation - Corrosion to 1.7"



1739.3ft General Observation - Corrosion to 2.1"



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Potomac Interceptor

INSPECTION REPORTS

July 2021

dc water is life®

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

Profile/Photo Observation Report

RedZone ROBOTICS

Date:	**07/21/2021**	Weather:	**Dry - No precipitation during**	Coding:	**PACP 7.0**
Pipe Length (ft):	**1860.0**	Owner:	**DC Water**	Pre Clean:	**No Pre-Cleaning**
P.O.#:	**3_1**	Surveyor:	**J. Brenneman**	PSR:	**P-114-160-030-213**
Customer:	**Arcadis**	Clean Date:		Shape:	**C**

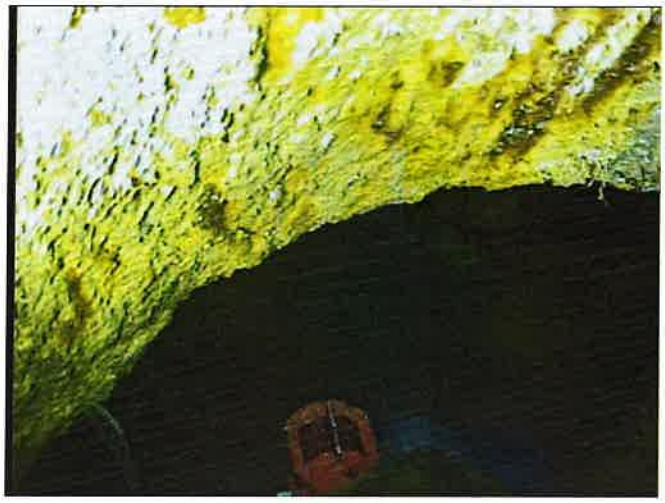
Street:	**Off Clara Barton Parkway**	Flow Control:	**Not Controlled**
City:	**Washington, DC**	Year Renewed:	
Location:	**Easement/Right of Way**	Tape/Media #:	**T2**
Purpose:	**Maintenance Related**	Dia/Height:	
Use:	**Sanitary Sewage Pipe**	Material:	**RCP**
Drain Area:		Lining:	
Category:	**NA**		
Comment:	**USMH GIS#: M-114-160-030-213, DSMH GIS#: M-119-159-659-688**		
Location Details:		Direction of Survey:	**Downstream**

US MH: **M-52422-PI-17** DS MH: **M-52424-PI-16** Total Length Surveyed (ft): **1862.3**

O&M Index:	**1.02**	O&M Quick:	**211K**	O&M Rating:	**62.00**
Structural Index:	**3.59**	Structural Quick:	**5N4J**	Structural Rating:	**1254.00**
Overall Index:	**3.21**	Overall Quick:	**5N4J**	Overall Rating:	**1316.00**

Position	Code	Observation	Video (sec)	Grade
.0	AMH	Manhole	0	NA
.0	MWL	Miscellaneous Water Level	22	NA
5.0	MGO	Miscellaneous General Observation	12	NA
21.3	SRV	Surface Damage Reinforcement Visible	211	S 4
92.8	MGO	Miscellaneous General Observation	11658	NA
126.3	SRP(S01)	Surface Damage Reinforcement Projecting	11770	S 5
233.4	IS(S02)	Infitration Stain	11984	M 1
270.9	MGO	Miscellaneous General Observation	1241	NA
276.4	SRP(F01)	Surface Damage Reinforcement Projecting	12081	S 5
276.8	SRC(S06)	Surface Damage Reinforcement Corroded	12082	S 5
520.4	SRC(F06)	Surface Damage Reinforcement Corroded	12519	S 5
520.4	SRV(S03)	Surface Damage Reinforcement Visible	12527	S 4
535.8	IS(F02)	Infitration Stain	12591	M 1
800.4	SRV(F03)	Surface Damage Reinforcement Visible	13074	S 4
801.3	SAP(S07)	Surface Damage Aggregate Projecting	13076	S 3
1048.6	SRV(S10)	Surface Damage Reinforcement Visible	13540	S 4
1054.8	SRV(F10)	Surface Damage Reinforcement Visible	13550	S 4
1276.3	SRV	Surface Damage Reinforcement Visible	13980	S 4
1621.5	TF	Tap Factory	14622	NA
1626.0	SAP(F07)	Surface Damage Aggregate Projecting	14676	S 3
1626.8	SAV(S08)	Surface Damage Aggregate Visible	14678	S 2
1678.9	SAV(F08)	Surface Damage Aggregate Visible	14768	S 2
1679.7	SAP(S11)	Surface Damage Aggregate Projecting	14770	S 3
1853.8	OBP	Obstruction External Pipe or Cable	15127	M 2
1857.9	SAP(F11)	Surface Damage Aggregate Projecting	15183	S 3
1862.3	AMH	Manhole	15211	NA

Code:	**AMH**
Description:	**Manhole**
Distance (ft):	**.0**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**M-52422-PI-17**

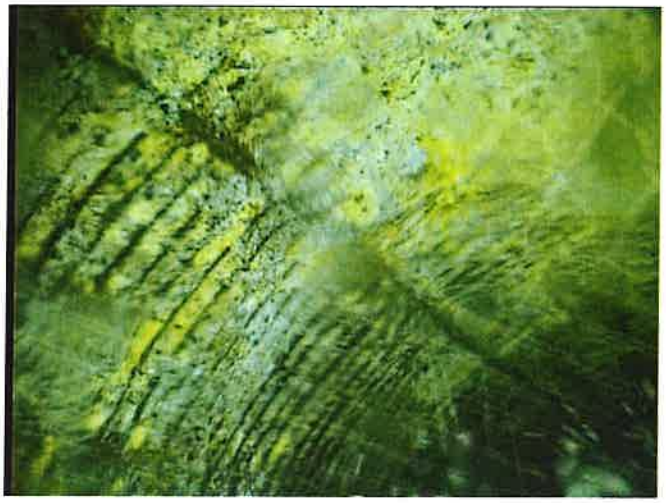


Code:	**MWL**
Description:	**Miscellaneous Water Level**
Distance (ft):	**.0**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	**15.000**
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**MGO**
Description:	**Miscellaneous General Observation**
Distance (ft):	**5.0**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**Limited visibility due to turbulent flow**

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**21.3**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**2**
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**MGO**
Description:	**Miscellaneous General Observation**
Distance (ft):	**92.8**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**Resume Inspection after Camera replacement**



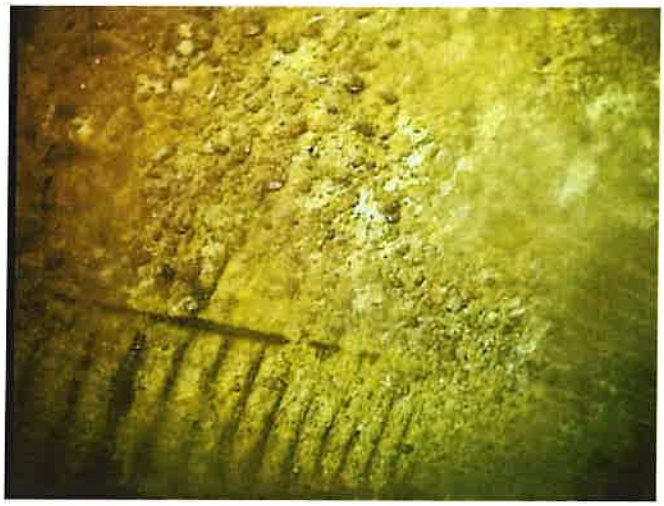
Code:	**SRP**
Description:	**Surface Damage Reinforcement Projecting**
Distance (ft):	**126.3**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S01**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**IS**
Description:	**Infitration Stain**
Distance (ft):	**233.4**
Structural Grade:	**0**
O&M Grade:	**1**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S02**
Within 8" of Joint:	**NO**
Remarks:	

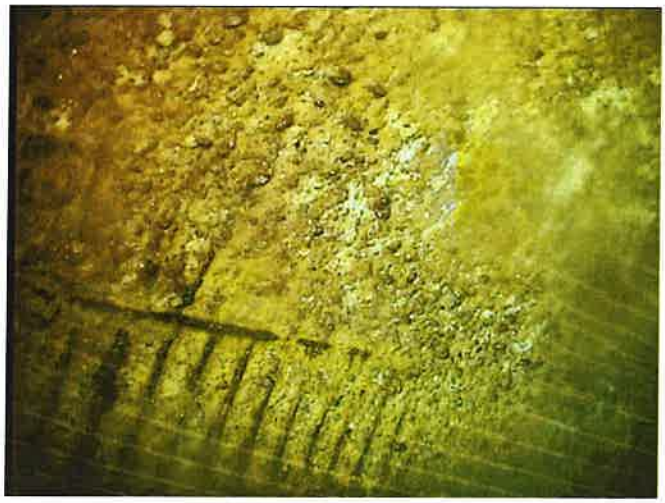
Code:	**MGO**
Description:	**Miscellaneous General Observation**
Distance (ft):	**270.9**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**Camera Issues**

Code:	**SRP**
Description:	**Surface Damage Reinforcement Projecting**
Distance (ft):	**276.4**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F01**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SRC**
Description:	**Surface Damage Reinforcement Corroded**
Distance (ft):	**276.8**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S06**
Within 8" of Joint:	**NO**
Remarks:	



Code:	**SRC**
Description:	**Surface Damage Reinforcement Corroded**
Distance (ft):	**520.4**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F06**
Within 8" of Joint:	**NO**
Remarks:	



Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**520.4**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S03**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**IS**
Description:	**Infitration Stain**
Distance (ft):	**535.8**
Structural Grade:	**0**
O&M Grade:	**1**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F02**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**800.4**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F03**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SAP**
Description:	**Surface Damage Aggregate Projecting**
Distance (ft):	**801.3**
Structural Grade:	**3**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S07**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**1048.6**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**1**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S10**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**1054.8**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**1**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F10**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SRV**
Description:	**Surface Damage Reinforcement Visible**
Distance (ft):	**1276.3**
Structural Grade:	**4**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**TF**
Description:	**Tap Factory**
Distance (ft):	**1621.5**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	
1st Value:	**12.000**
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SAP**
Description:	**Surface Damage Aggregate Projecting**
Distance (ft):	**1626.0**
Structural Grade:	**3**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F07**
Within 8" of Joint:	**NO**
Remarks:	

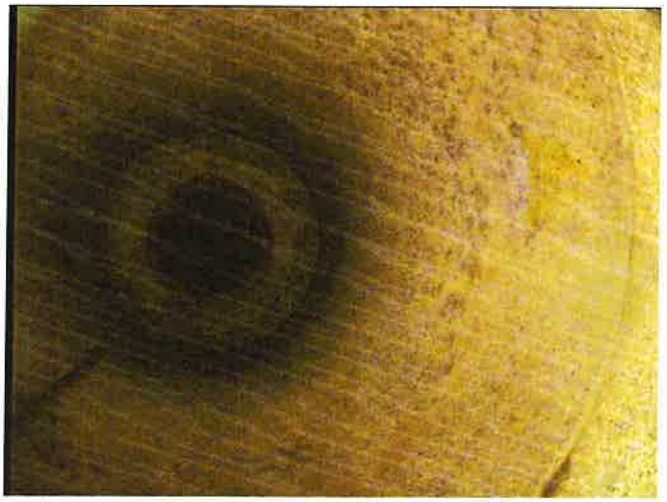
Code:	**SAV**
Description:	**Surface Damage Aggregate Visible**
Distance (ft):	**1626.8**
Structural Grade:	**2**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S08**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SAV**
Description:	**Surface Damage Aggregate Visible**
Distance (ft):	**1678.9**
Structural Grade:	**2**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F08**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SAP**
Description:	**Surface Damage Aggregate Projecting**
Distance (ft):	**1679.7**
Structural Grade:	**3**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S11**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**OBP**
Description:	**Obstruction External Pipe or Cable**
Distance (ft):	**1853.8**
Structural Grade:	**0**
O&M Grade:	**2**
Clock Start/From:	**9**
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	**5.000**
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SAP**
Description:	**Surface Damage Aggregate Projecting**
Distance (ft):	**1857.9**
Structural Grade:	**3**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F11**
Within 8" of Joint:	**NO**
Remarks:	



Code:	**AMH**
Description:	**Manhole**
Distance (ft):	**1862.3**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**M-52424-PI-16**

ADVANCED PIPELINE ASSESSMENT

DC Washington Potomac Interceptor Unit 10 MH20-MH16 Assessment

V2.0

Responder

MULTI SENSOR INSPECTION REPORT

19 January 2022

RedZone ROBOTICS

TABLE OF CONTENTS

PROJECT OVERVIEW

PROJECT OVERVIEW

Project Name	DC Washington Potomac Interceptor Unit 10 MH20-MH16 Assessment
Profiler System	Responder - 3D LIDAR
Client	DC Water
Contractor	RedZone Robotics
Date Profiled	August 2021
Date Reported	17 August 2021

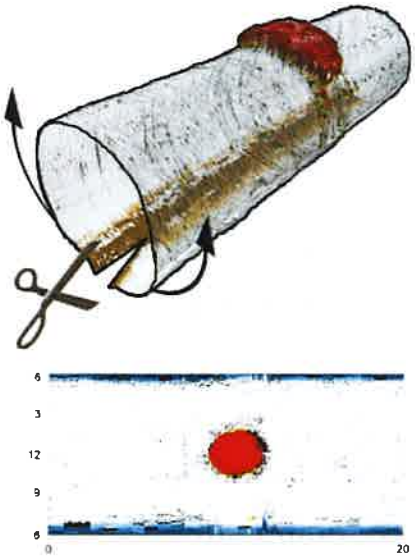
PIPE OVERVIEW

Asset No.	Distance Profiled (ft)	Debris (ft^3)	Average Water Level (in)	Diameter (in)
P-109-159-188-556-down	1494	0	37	78
P-113-160-877-218-down	24	0	38	78
Totals	**1518 ft**	**0 ft^3**	**-**	**-**

Flat Reports

The Flat Graph is used to topographically map pipe radial variances from the reference shape and size from start to end of the pipe. Based upon this reference shape and size the Flat Graph is drawn with the pipe being split at the 6 o'clock position and flattened out. Colours represent how the data matches the reference shape by:

- Appearing white when the data lies close to the reference shape
- Appearing on a yellow to red scale when there is any deviation outside of the reference shape (e.g. corrosion)
- Appearing on a blue scale when there is any deviation inside the reference shape (e.g. debris)

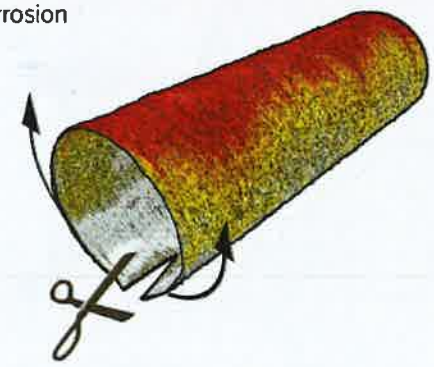


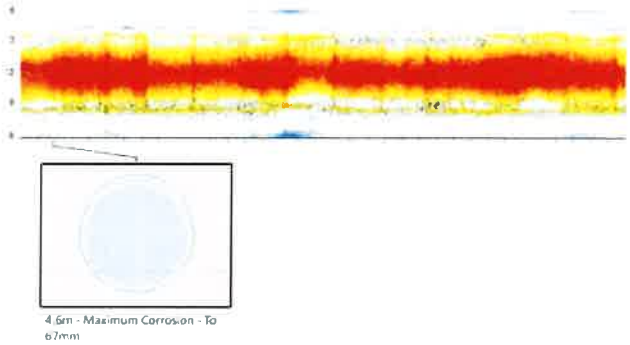
TOPOGRAPHICAL DATA REPRESENTATION

Assess whole pipes at a glance • Accurate corrosion/debris mapping • Spot points of interest instantly
3D presentation views • Laser/Sonar topographical graphs

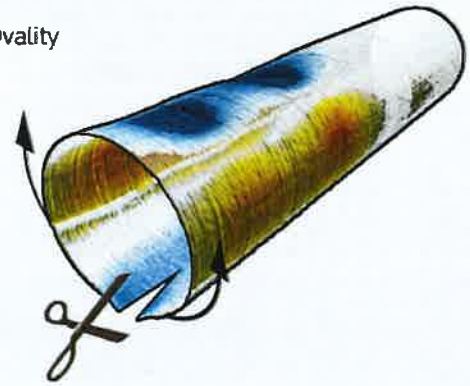
EXAMPLES

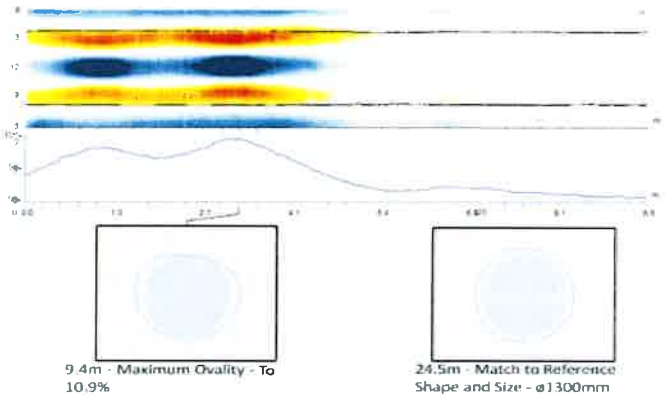
Corrosion





Ovality





REPORT INTERPRETATION

Sonar Reports

Debris reports provide information surrounding the nature of the volumes of sediment within the inspected pipelines.

Underwater information is presented through both the topographical flat graph to map the radial variances from the reference shape, and a simple line graph representing the length of the pipe inspected (x axis) and the height of the pipe (y axis).

From the data collected the average debris depth, average water level and debris volume can be calculated and accompany the graph reports

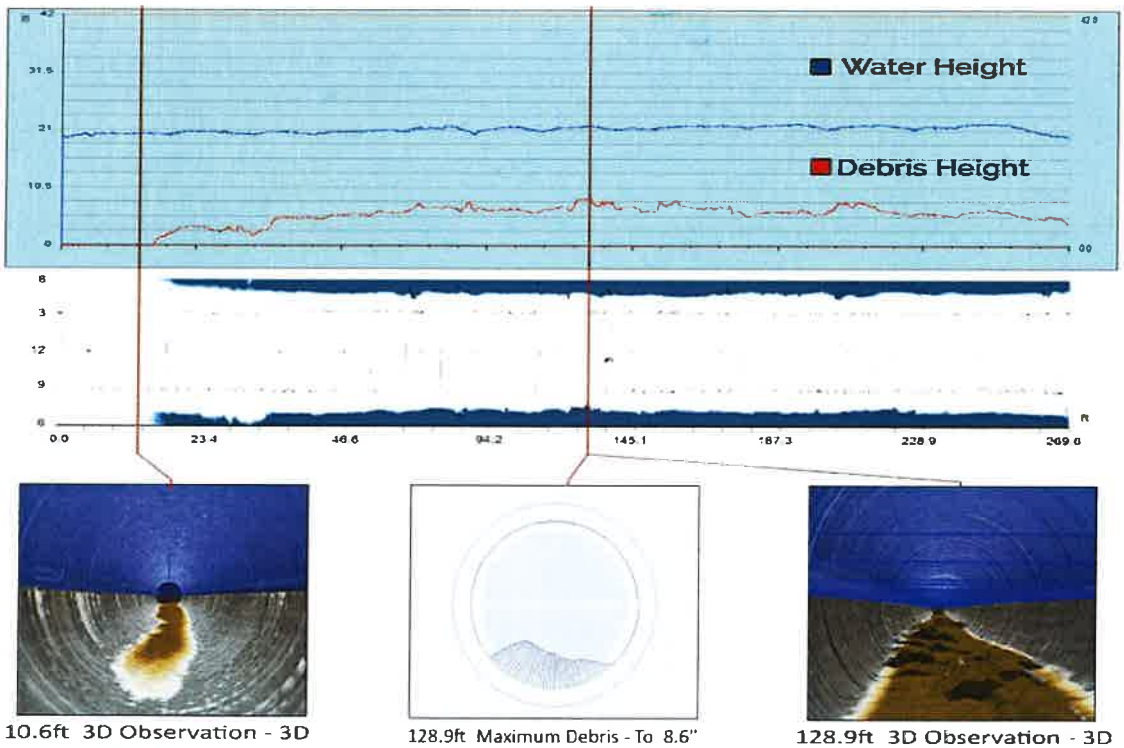
MDSub

MSI Systems

UNDERWATER DATA REPRESENTATION

Assess whole pipes at a glance • Accurate volumetric debris volumes • Spot points of interest instantly
Debris and water level information • Sonar topographical graphs when combined with laser

EXAMPLES



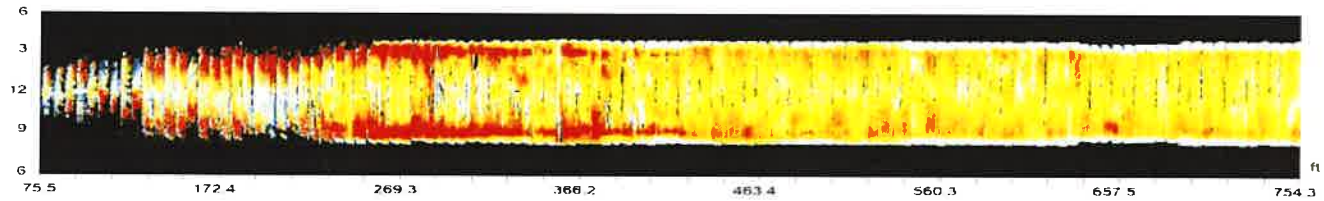
10.6ft 3D Observation - 3D Laser-Sonar Scan

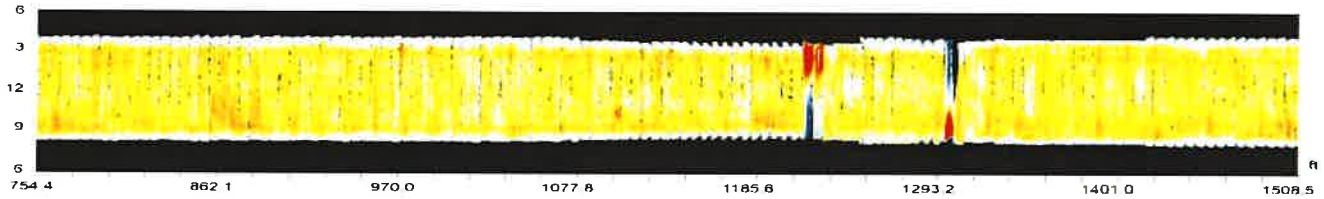
128.9ft Maximum Debris - To 8.6"

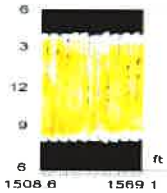
128.9ft 3D Observation - 3D Laser-Sonar Scan

FLAT GRAPH SUMMARY

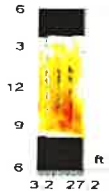
P-109-159-188-556-down, 78in Page 6 CCTV LASER SONAR







P-113-160-877-218-down, 78in Page 9 CCTV LASER SONAR



OVERVIEW - P-109-159-188-556-down

Asset Number	P-109-159-188-556-down		
Upstream MH	M-52418-PI-19	Material	Reinforced Concrete Pipe
Downstream MH	M-52420-PI-18	Size & Shape	78 in Circle
Survey Direction	Downstream	Match to Reference	0 ft

Distance	Observation	Comment
75.4 ft	**Beginning of Inspection**	**M-52418-PI-19**
78.1	Note	Water on lens affects laser data until 260ft
276.2	Maximum Corrosion	To 6.1"
433.9	General Observation	Corrosion to 3.3"
863.6	General Observation	Corrosion to 2.7"
1212.9	Note	Profile distorted briefly by bend in pipe
1446.3	General Observation	Corrosion to 2.3"
1568.7 ft	**End of Inspection**	**M-52420-PI-18**

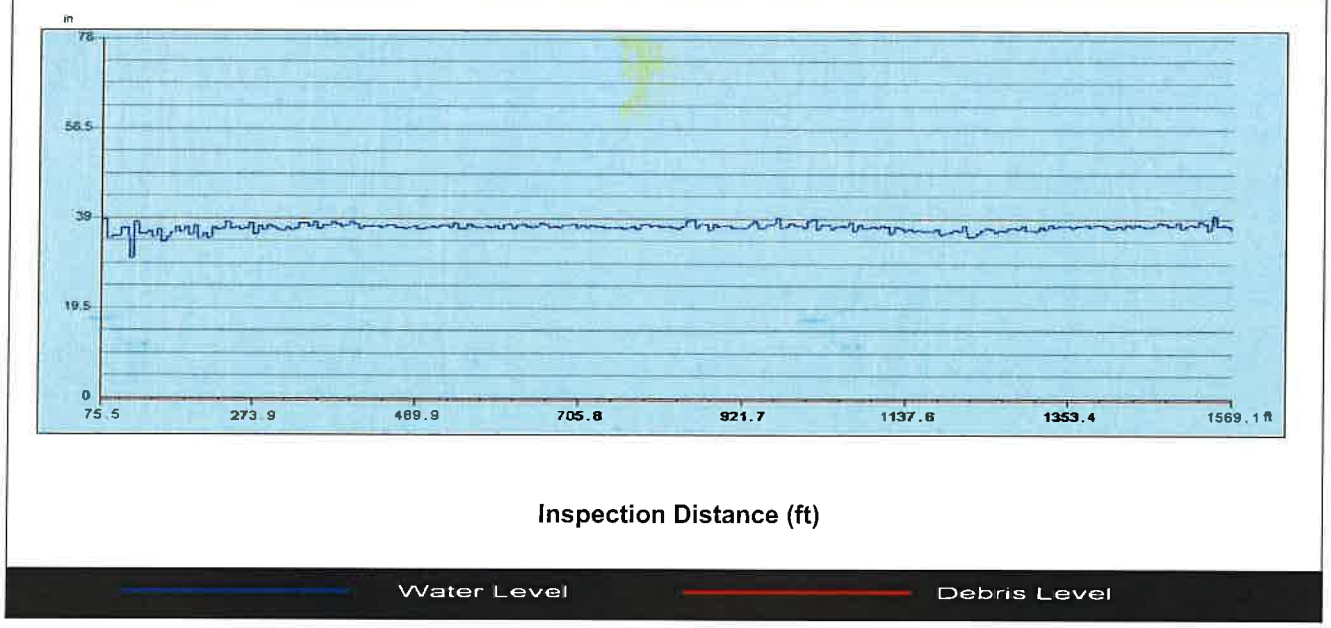
P-109-159-188-556-down

Asset Number	P-109-159-188-556-down	Profiled Length	1494 ft
Upstream MH	M-52418-PI-19	Diameter	78 in
Downstream MH	M-52420-PI-18	Material	Reinforced Concrete Pipe
Survey Direction	Downstream	Shape	Circle
Date Installed		Match to Reference *	0 ft
Date Profiled	20 July 2021	Operator	

Observations

Average Debris Depth	0 in
Average Water Level	37 in
Debris Volume	0 cubic feet

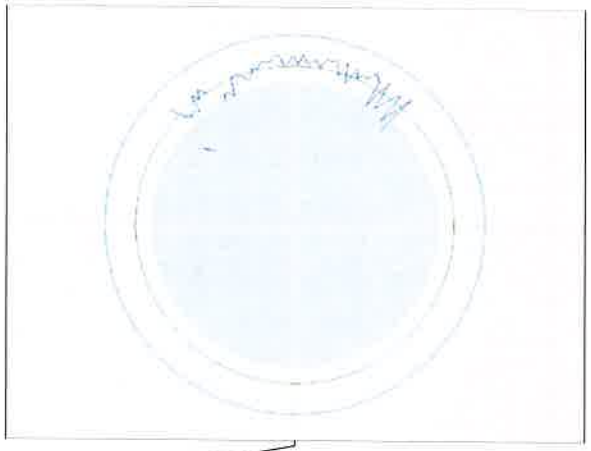
Debris Graph



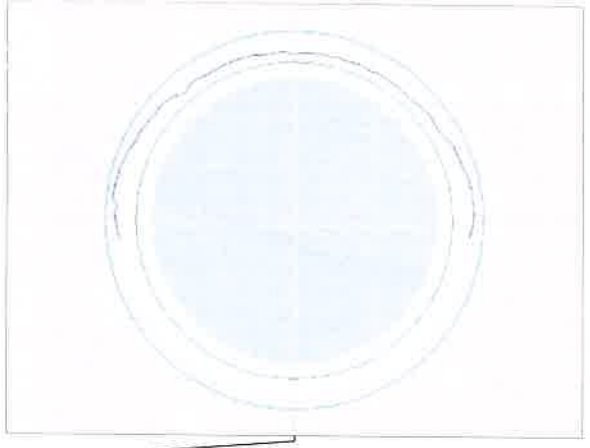
* The match to reference is the point that best indicates the shape and size of the original condition of the pipe.

Observation Report

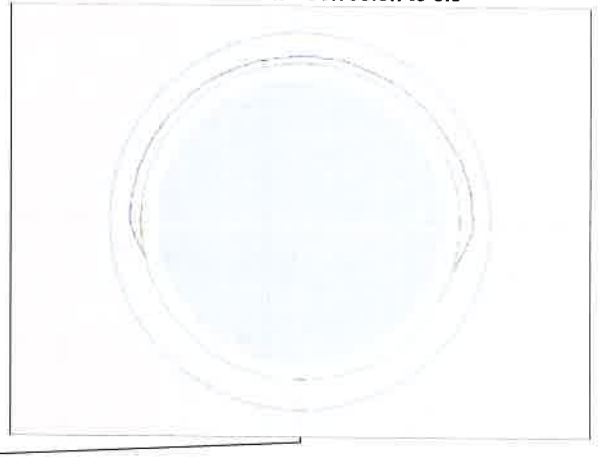
78.1ft Note - Water on lens affects laser data until 260ft

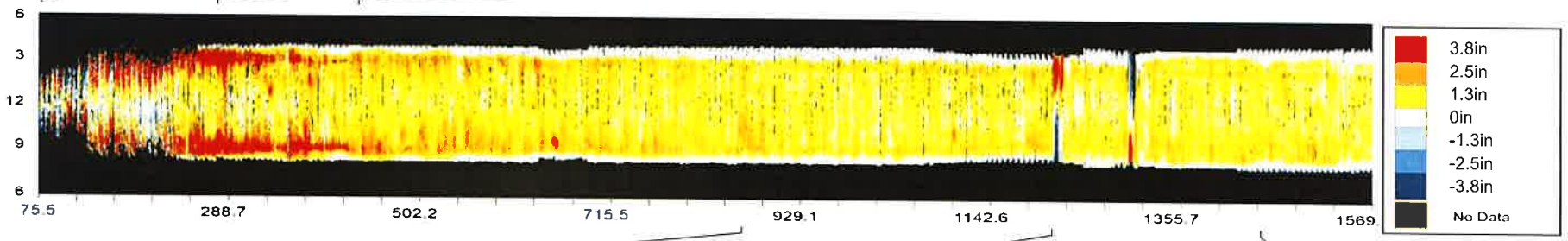


276.2ft Maximum Corrosion - To 6.1"

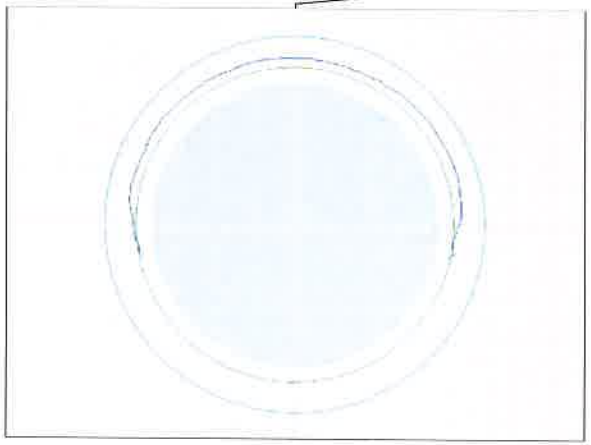


433.9ft General Observation - Corrosion to 3.3"

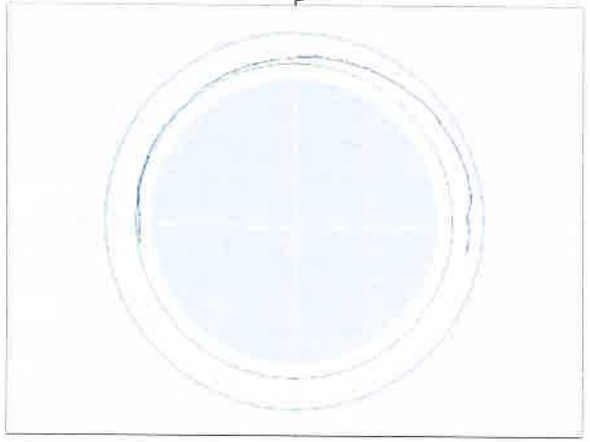




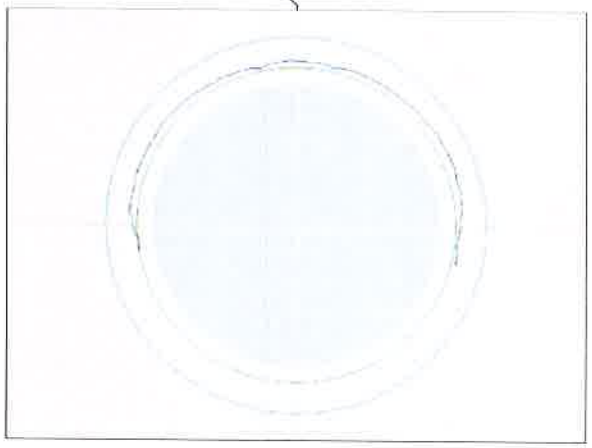
863.6ft General Observation - Corrosion to 2.7"



1212.9ft Note - Profile distorted briefly by bend in pipe



1446.3ft General Observation - Corrosion to 2.3"



OVERVIEW - P-113-160-877-218-down

Asset Number	P-113-160-877-218-down		
Upstream MH	M-52420-PI-18	Material	Reinforced Concrete Pipe
Downstream MH	M-52422-PI-17	Size & Shape	78 in Circle
Survey Direction	Downstream	Match to Reference	0 ft

Distance	Observation	Comment
3.2 ft	**Beginning of Inspection**	**M-52420-PI-18**
3.7	General Observation	Corrosion to 2.9"
14.6	Maximum Corrosion	To 3.1"
21.1	General Observation	Corrosion to 3.0"
27.2 ft	**End of Inspection**	**M-52422-PI-17**

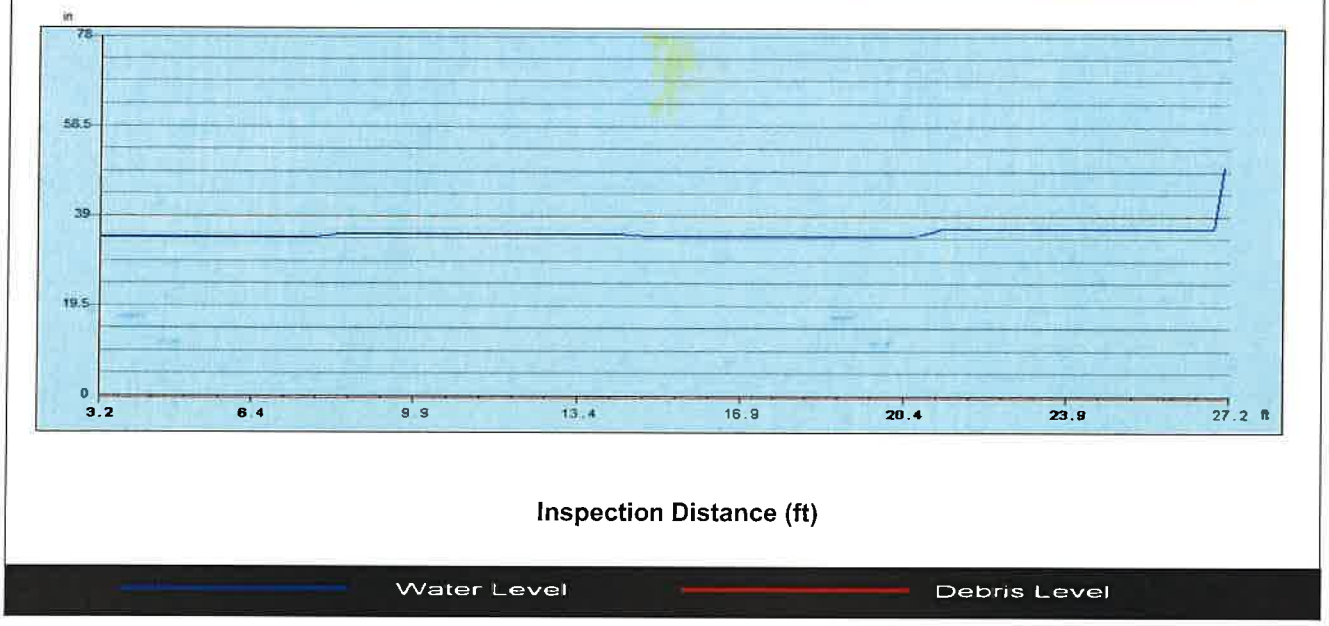
P-113-160-877-218-down

Asset Number	P-113-160-877-218-down	Profiled Length	24 ft
Upstream MH	M-52420-PI-18	Diameter	78 in
Downstream MH	M-52422-PI-17	Material	Reinforced Concrete Pipe
Survey Direction	Downstream	Shape	Circle
Date Installed		Match to Reference *	0 ft
Date Profiled	20 July 2021	Operator	

Observations

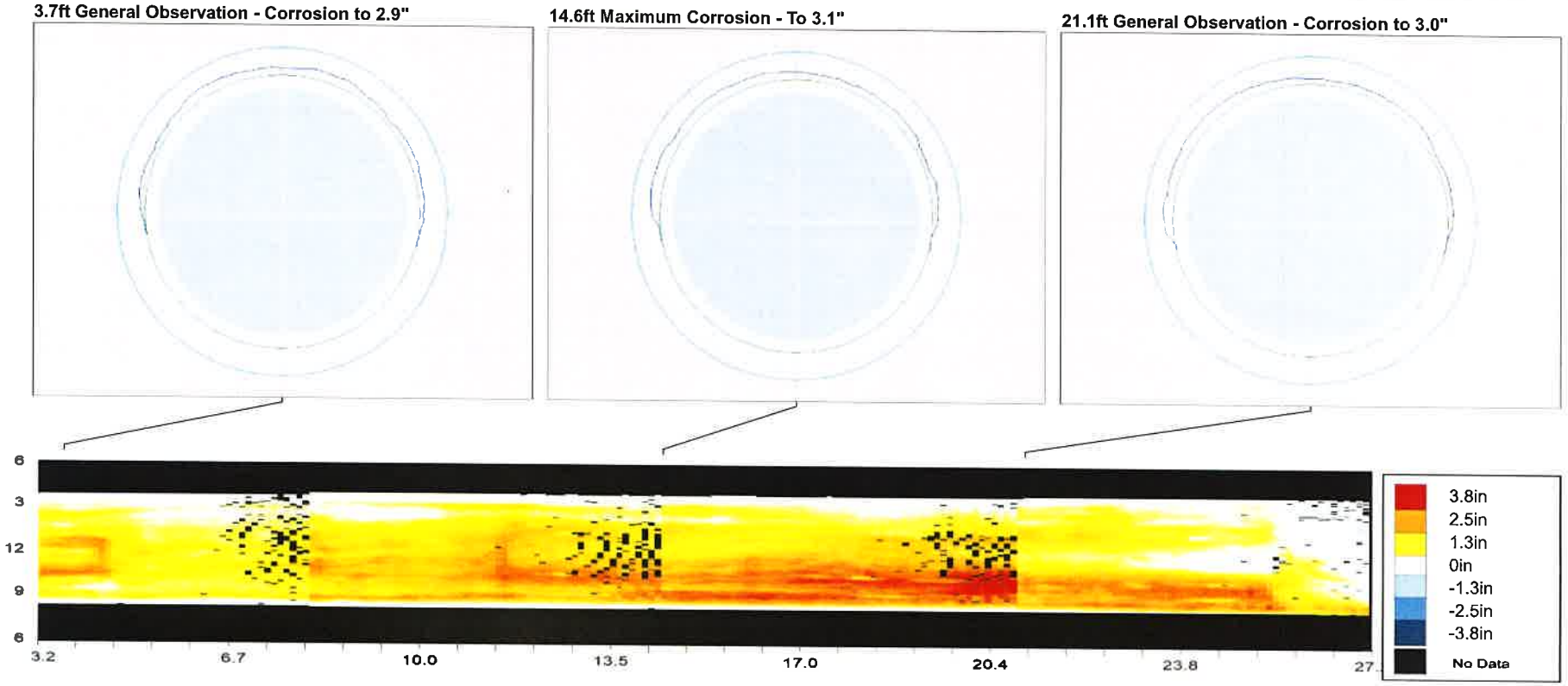
Average Debris Depth	0 in
Average Water Level	38 in
Debris Volume	0 cubic feet

Debris Graph



* The match to reference is the point that best indicates the shape and size of the original condition of the pipe.

Observation Report



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Potomac Interceptor

INSPECTION REPORTS

December 2017

dc water is life®

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

Profile/Photo Observation Report

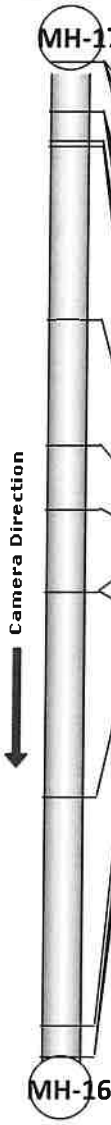
RedZone ROBOTICS

Date:	12/11/2017	Weather:		Coding:	PACP 7.0
Pipe Length (ft):	.0	Owner:	DC Water	Pre Clean:	No Pre-Cleaning
P.O.#:		Surveyor:	Jen Costello	PSR:	MH-17_MH-16
Customer:	Pipe and Plant Solutio	Clean Date:		Shape:	C

Street:	Great Falls Park	Flow Control:	Not Controlled
City:	Washington, DC	Year Renewed:	
Location:	Other	Tape/Media #:	
Purpose:	Routine Assessment	Dia/Height:	72"
Use:	Sanitary	Material:	RCP
Drain Area:		Lining:	
Category:	NA		
Comment:	SJ501774 - DC Water		
Location Details:		Direction of Survey:	Downstream

US MH: MH-17 DS MH: MH-16 Total Length Surveyed (ft): 1821.5

O&M Index:	2.00	O&M Quick:	2Z00	O&M Rating:	352.00
Structural Index:	3.69	Structural Quick:	5Z3Z	Structural Rating:	1948.00
Overall Index:	3.27	Overall Quick:	5Z3Z	Overall Rating:	2300.00



Position	Code	Observation	Video (sec)	Grade
.0	AMH	Manhole	11	NA
.0	SRV(S01)	Surface Reinforcement Visible	22	S 5
.0	MWL	Water Level	33	NA
89.3	SAP(S03)	Surface Aggregate Projecting	223	S 3
89.3	DAGS(S02)	Deposits Attached Grease	234	M 2
89.3	SRV(F01)	Surface Reinforcement Visible	245	S 5
146.1	SRV(S04)	Surface Reinforcement Visible	371	S 5
153.9	MGO	General Observation	399	NA
471.7	MGO	General Observation	1048	NA
699.1	MGO	General Observation	1516	NA
818.0	MGO	General Observation	1767	NA
968.6	SRV(F04)	Surface Reinforcement Visible	2081	S 5
968.6	DAGS(F02)	Deposits Attached Grease	2092	M 2
1344.6	MGO	General Observation	2857	NA
1764.8	MGO	General Observation	3711	NA
1821.5	AMH	Manhole	3837	NA
1821.5	SAP(F03)	Surface Aggregate Projecting	3848	S 3

Code: **AMH**
Description: **Manhole**

Distance (ft): **.0**
Structural Grade: **0**
O&M Grade: **0**
Clock Start/From:
Clock To:
1st Value:
2nd Value:
Value Percent:
Continuous Index:
Within 8" of Joint: **NO**
Remarks: **MH-17**

Code:	**SRV**
Description:	**Surface Reinforcement Visible**
Distance (ft):	**.0**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S01**
Within 8" of Joint:	
Remarks:	

Code:	**MWL**
Description:	**Water Level**
Distance (ft):	**.0**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	**10**
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SAP**
Description:	**Surface Aggregate Projecting**
Distance (ft):	**89.3**
Structural Grade:	**3**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S03**
Within 8" of Joint:	
Remarks:	

Code:	**DAGS**
Description:	**Deposits Attached Grease**
Distance (ft):	**89.3**
Structural Grade:	**0**
O&M Grade:	**2**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	**5**
Continuous Index:	**S02**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**SRV**
Description:	**Surface Reinforcement Visible**
Distance (ft):	**89.3**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F01**
Within 8" of Joint:	
Remarks:	

Code:	**SRV**
Description:	**Surface Reinforcement Visible**
Distance (ft):	**146.1**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**10**
Clock To:	**2**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**S04**
Within 8" of Joint:	
Remarks:	

Code:	**MGO**
Description:	**General Observation**
Distance (ft):	**153.9**
Structural Grade:	
O&M Grade:	
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**Note - Rapid flows and turbulence throughout asset distort profile**

Code:	**MGO**
Description:	**General Observation**
Distance (ft):	**471.7**
Structural Grade:	
O&M Grade:	
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**General Observation**

Code:	**MGO**
Description:	**General Observation**
Distance (ft):	**699.1**
Structural Grade:	
O&M Grade:	
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**General Observation**

Code:	**MGO**
Description:	**General Observation**
Distance (ft):	**818.0**
Structural Grade:	
O&M Grade:	
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**General Observation**

Code:	**SRV**
Description:	**Surface Reinforcement Visible**
Distance (ft):	**968.6**
Structural Grade:	**5**
O&M Grade:	**0**
Clock Start/From:	**10**
Clock To:	**2**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F04**
Within 8" of Joint:	
Remarks:	

Code:	**DAGS**
Description:	**Deposits Attached Grease**
Distance (ft):	**968.6**
Structural Grade:	**0**
O&M Grade:	**2**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	**5**
Continuous Index:	**F02**
Within 8" of Joint:	**NO**
Remarks:	

Code:	**MGO**
Description:	**General Observation**
Distance (ft):	**1344.6**
Structural Grade:	
O&M Grade:	
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**General Observation**

Code:	**MGO**
Description:	**General Observation**
Distance (ft):	**1764.8**
Structural Grade:	
O&M Grade:	
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**General Observation**

Code:	**AMH**
Description:	**Manhole**
Distance (ft):	**1821.5**
Structural Grade:	**0**
O&M Grade:	**0**
Clock Start/From:	
Clock To:	
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	
Within 8" of Joint:	**NO**
Remarks:	**MH-16**

Code:	**SAP**
Description:	**Surface Aggregate Projecting**
Distance (ft):	**1821.5**
Structural Grade:	**3**
O&M Grade:	**0**
Clock Start/From:	**8**
Clock To:	**4**
1st Value:	
2nd Value:	
Value Percent:	
Continuous Index:	**F03**
Within 8" of Joint:	
Remarks:	