

Prepared for:

City of Takoma Park Department of Public Works

# Takoma Park Source ID and Elimination Recommendations



### June 2021

Prepared by:

Bay 2 and Consultants & Designers, Inc.

"Integrating Engineering and Environment"

7455 New Ridge Road, Suite T<br/>Hanover, Maryland 21076Phone: (410) 694-9401<br/>Fax: (410) 694-9405<br/>Website: www.baylandinc.com

#### TABLE OF CONTENTS

1.	INTRODUCTION	2
	1.1. Project Description	2
	1.2. Study Area Description	2
2.	DISTRIBUTION MAP OF INSPECTED OUTFALLS	3
3.	METHODS	3
4.	CCTV RESULTS	4
	4.1. Source Identification	5
5.	ELIMINATION RECOMMENDATIONS	5
6.	CONCLUSION	6
7.	REFERENCES	7

#### LIST OF TABLES

Table 1 – Evaluation of Results and Identification
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#### LIST OF ATTACHMENTS

Attachment A – Storm Drain Network Maps Attachment B – CCTV Reports Attachment C – Photos

#### 1. INTRODUCTION

#### 1.1. **Project Description**

The City of Takoma Park (City) has coverage under the Maryland Department of the Environment (MDE) National Pollutant Discharge Elimination System (NPDES) General Permit for small municipal separate storm sewer system (MS4). The conditions of the permit require the City to develop, implement and enforce a program to detect and eliminate illicit discharges. The City has contracted BayLand Consultants & Designers, Inc. (BayLand) to provide illicit discharge source identification and elimination recommendations at three outfalls in the City of Takoma Park.

Dry weather flows in stormwater drainage systems can contribute significant pollutant loadings to downstream receiving waters. The main sources are typically from sanitary wastewater, industrial and commercial pollutants, failing septic tanks and vehicle maintenance activities. BayLand performed dry weather screening for 78 outfalls within the City and illicit discharge for outfall exhibiting high levels of pollutants. From those screenings three outfalls were selected by the City, outfalls #80, #212, and #1106. The purpose of this project was to provide the City with data on non-stormwater discharges from these three outfalls that outfall into Sligo Creek which eventually drains to the Northwest Branch of the Anacostia River.

Source identification and elimination recommendations is a comprehensive task to determine where inflow is taking place, if any of the systems are eroding or failing and creating and implementing a way to eliminate and control current and future contamination. Stormwater drainage systems have no filtration, therefore any pollutants that make their way into the system are not filtered and drain directly into the nearby waterways. While there are various methods to identify pollutant sources, it was determined that the most practical method for the City of Takoma Park was to review closed-circuit television (CCTV) footage provided by the City and provide additional CCTV footage of the three storm drain networks.

CCTV inspection was conducted from outfall #80 to just above of manhole #8002. Inspection for the drainage system of outfall #212 began at the outfall and proceeded up to manhole #21203. CCTV footage was also collected from outfall #1106 to just above manhole #110601. Based on the findings from the CCTV inspections appropriate elimination recommendations can be provided to the City.

#### **1.2.** Study Area Description

Sligo Creek is a perennial tributary of the Northwest Branch of the Anacostia River. The Creek is one of the most urbanized in the Anacostia Watershed (Montgomery County Government, 2021). The Sligo Creek Watershed (USGS 01650800) is approximately 6.45 square miles and contains four major tributaries: Wheaton Branch, Comstock Branch, Takoma Park Branch and Long Branch (USGS, 2021).

The drainage area is a mix of high density commercial and urban residential land uses. The neighborhoods were developed rapidly in the 1950s and 1960s, before modern environmental standards were put into place, which has led to degraded water quality in receiving streams. Montgomery County has begun installing several stormwater management (SWM) and stream restoration projects in the watershed to help improve water quality (George, 2012). Over the last few years, the City has installed SWM facilities and has several bioretention facilities, a modular wetland and a stream restoration project which was completed in 2020 (Takoma Park, 2021).

Outfall #80 is located in the forest which borders Poplar Avenue and Fourth Avenue. This area is surrounded by residential properties. Outfall #80 flows into a small tributary that eventually leads into Sligo Creek. The structure is a twelve-foot wide by four-foot tall concrete box culvert. The flow type was substantial. Outfall #212 is in the wooded area between Poplar Ave, Spring Ave, and Cockerille Ave. This five-foot wide by fourfoot tall concrete box culvert has a moderate flow which drains into a small tributary that flows into Sligo Creek. Outfall #1106 is located at the intersection of New Hampshire Road and Sligo Creek Parkway. New Hampshire road is a major four lane road. This outfall flows directly into Sligo Creek. Outfall #1106 is 42-inch reinforced concrete pipe with substantial orange colored flow.

#### 2. DISTRIBUTION MAP OF INSPECTED OUTFALLS

CCTV inspections of three storm drain networks were conducted by Underground Services, Inc (SoftDig) (Attachment A). Inspection videos were captured from each outfall and up the storm drain network to a junction point where illicit discharge could be occurring. BayLand then conducted an advanced review of the videos to appropriately identify the sources and provide means of elimination.

#### 3. METHODS

Closed-circuit television (CCTV) footage narrows the problem to specific locations within a system. The investigation began with collecting illicit discharge samples at three targeted outfall systems which had elevated levels of pollutants, including Escherichia coli (E. coli), enterococci, chlorine, chloride, and color. Manholes up the network were noted with elevated levels of at least one targeted pollutant. Collecting CCTV footage between two locations help determine where the flow enters the storm drain system. Inspecting the storm drain system will also determine if there is any deterioration of the pipes and if septic pipes are tied into the storm drain system that could lead to elevated pollutant levels. Remedial actions can then be provided to help alleviate the problem and possibly eliminate future illicit discharge.

CCTV footage can indicate flows and leaks within the pipe that may determine illicit discharge. The videos identify the locations of cracks and pipe damage as well as discoloration beginning and ending locations. The videos will also indicate if other pipe inflows are present and if those pipes are producing discolored water.

#### 4. CCTV RESULTS

Three storm drain networks were reviewed for illicit discharge sources. The City of Takoma Park provided CCTV videos of the systems which were collected between six and ten years ago. BayLand subcontracted Underground Services, Inc. to conduct new video inspections in late April of 2021. The overall condition of the networks was evaluated and given a rating of poor, fair, or good. Poor condition consisted of numerous cracks and separation of joints with several leaks and is considered in need of repair. Fair condition displayed some leaks, cracks and staining but is not in need of immediate repair. Good condition consisted of minimal problems with minor leaking and does not need repair at this time.

#### **Outfall 80 Storm Drain Network**

Two CCTV videos were captured for the Outfall #80 network. The first video was taken inside the pipe near manhole 8001 and traveled to the outfall. The second video consisted of the storm drain pipe from manhole 8002 to manhole 8001. Pipe leaking was observed in both videos in several locations throughout the storm drain network. There were also several locations within the system where cracking and/or pipe deterioration was identified. Outfall #142 ties into the system approximately 108 feet from manhole 8001. This is also where the presence of orange-stained water begins. The orange staining is an indication of bacterial buildup where leaking is present. Outfall #142 could possibly be discharging pollutants into this storm drain system. The overall condition of the pipe network is fair.

#### **Outfall 212 Storm Drain Network**

There were six videos captured for the Outfall #212 network. The first video shows concrete deteriorating along the ceiling at the box culvert at manhole 21201 which reveals exposed rebar. Minor cracks and leaks were observed in the remaining portion of the video and three subsequent videos; overall these segments are in fair conditions. Two four-inch polyvinyl chloride (PVC) pipes tie into the system, revealed in Video 7. It is uncertain where these pipes originate, but they were identified between manholes 21202 and 21203. They could be tied into one of the residential septic systems located along Spring Avenue. The overall condition of the network is fair with a few segments noted in good condition.

#### Outfall 1106 Storm Drain Network

Two videos were captured for the Outfall #1106 network. Numerous cracks and pipe leaks were identified in the first video. Several cracks around the joints of the pipe are significant with apparent separation. There was considerable orange staining throughout most of the network indicating bacterial buildup. Deep pools of water were also present in some locations of the pipe. The overall condition of the network is in fair to poor condition.

#### 4.1. Source Identification

Underground Services, Inc. provided a report which will be included in Attachment B and photos will be provided in Attachment C.

Table 1 – Evaluation of Results and Identification				
Outfall System/ Flow Type	Exceedance Parameters 2019-2021	Results and Identification		
#80 and manholes Substantial	E. coli Enterococci Chlorine	There are several sections of pipe that are cracking and leaking. There is bacteria buildup where leaking is present. Possible sources of illicit discharge include exfiltration from the sewer system infiltrating into the cracks of the storm drain system and possible illicit discharge from Outfall #142.		
#212 and manholes Substantial	E. coli Enterococci Chlorine	There are minor cracks throughout the storm drain network. There are two 4-inch PVC pipes tied into the storm drain network between manhole 21202 and 21203. Possible sources of illicit discharge include exfiltration from the sewer system infiltrating into the cracks of the storm drain system. Discharges from the two 4-inch PVC pipes are plausible. It is beneficial to determine the origination of these two pipes.		
#1106 and manholes Moderate	E. coli Enterococci Chlorine Chloride Color	There was significant orange staining throughout the network, indicating bacteria buildup. Severe cracks and leaking were also noted throughout the network. Illicit discharge sources are likely exfiltration from the sewer system infiltrating into the severe cracks of the storm drain system. Chlorine sources could possibly be coming from commercial/institutional properties in the area.		

#### 5. ELIMINATION RECOMMENDATIONS

E. coli and Enterococci are indicators of fecal material contamination for illicit discharge detection. Chlorine and chloride are indicators of potable water sometimes found in industrial wastewater. We recommend the City should first contact Washington Suburban Sanitary Commission to determine if any sewer pipe rehabilitation is scheduled near or on the three storm drain networks that BayLand evaluated via CCTV.

Establishing a maintenance schedule and performing regular inspections would be beneficial for the networks to stop deterioration before it becomes a more significant problem (EPA, 2004). Repairing the small leaks and cracks will prevent larger issues in the future and help minimize infiltration of contaminants into the storm drain networks. Pipe rehabilitation or pipe repair may be necessary in some of the segments with more severe deterioration, especially within system #1106.

Discharge can be a result of residents utilizing storm drains to dispose wastewater or other forms of liquids. Stenciling on the storm drains to indicate the network of pipes lead directly into Sligo Creek and the Chesapeake Bay may help deter wastewater

dumping directly into the storm drain network (EPA, 2004). Public outreach and education can also be a very helpful tool in teaching the public the importance of proper disposal. There has been some success in setting up a pollution complaint hotline where the public can contact a phone number and leave a message indicating where and when the illegal dumping takes place (EPA, 2004).

On-site investigations are also recommended for the networks to further determine where specific pipes originate from. In the Outfall #212 network there were two PVC pipes with unknown origins. If these pipes are tied into an active septic system, they should be appropriately abandoned to prevent future contamination. We also recommend investigating Outfall #142 and the pipe that ties into the #80 system. There was orange staining coming from this tie in and illicit discharge is possibly coming from Outfall #142 or its network.

#### 6. CONCLUSION

The Sligo Creek Watershed has been significantly influenced by commercial and residential land uses, particularly relating to the stormwater system within Takoma Park. CCTV results indicate there are cracks, leaks, and other types of deterioration in the systems resulting in possible contamination of the networks. Undocumented pipes tied into the system could also be the source of contaminants. All three networks observed documented areas of bacterial buildup, especially where leaking was present.

Repairing the small leaks could help prevent some of the contaminants from entering the storm drain network, minimizing bacterial buildup. Some of the segments of pipe are in good to fair condition and do not require immediate repair, but the segments in poor condition may need to be rehabilitated or repaired. Determining the origin of the undocumented pipes and discovering if they are active would help eliminate a potential source of pollutants in the system. Setting up an anonymous hotline for illegal dumping into storm drains may also reduce the number of pollutants coming into the systems.

#### 7. **REFERENCES**

Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments, by Edward Brown et al., Water Permits Division, Office of Water and Wastewater, U.S. Environmental Protection Agency, 2004.

George, James. 2012. *Stream Restoration Reduces Peak Storm Flow and Improves Aquatic Life in Sligo Creek*. Section 319: Nonpoint Source Program Success Story. U.S. EPA, <u>www.epa.gov/sites/production/files/2015-10/documents/md\_sligo.pdf</u>.

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### ATTACHMENT A

### **Storm Drain Network Maps**



Ń	<b>Social Services</b> , Inc. <b>Design Accurately, Build Confidently</b> Utility Locating / Vacuum Excavation Subsurface Utility Engineering / GPR Investigations Video Pipe Inspection / Concrete Slab Imaging
	Outfall 80
A the second is the second of the second	4th Ave & Cockerille Ave - Tacoma Park, MD
	COLOR CODE   ELECTRIC: power cables, conduits, duct banks and lighting cables   COMMUNICATIONS: telephone, fiber optic, and catv cables, conduits, and duct banks   GAS: natural gas, propane, petroleum, oil, steam or gaseous chemical pipes   WATER: domestic, fire, and potable pipes   SEWER: sanitary and storm drainage pipes, chutes, and culverts   UNKNOWN: unidentified anomalies and facilities   D.O.T.: ITMS, traffic signal, and trip wire cables and conduits
	LEGEND
	CATCH BASIN OUTFALL STORM DRAIN MANHOLE
8001 TO OUTFALL 80 E CONCRETE BLOCK IS 12' WIDE X 4' 285.0'; RUN ENDED 80.	CLARIFICATIONS ALL FIELD SKETCHES ARE NOT TO SCALE AND ARE FOR RELATIVE LOCATION PURPOSES ONLY. SOFTDIG EXERCISES ITS BEST PROFESSIONAL EXPERTISE & GEOPHYSICAL PROSPECTING TECHNIQUES TO DESIGNATE SUBSURFACE UTILITIES. SOFTDIG DOES NOT GUARANTEE THAT UTILITIES MARKED CONSTITUTE ALL UTILITIES WITHIN THE PROJECT AREA. PRIOR TO ACTUAL CONSTRUCTION, UTILITIES MUST BE SUBSURFACE LOCATED BY SOFTDIG AT POTENTIAL CONFLICT POINTS TO AVOID PERSONAL INJURY AND/OR PROPERTY DAMAGE.
	QUALITY LEVEL B: INFORMATION OBTAINED BY THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND HORIZONTAL POSITION OF UTILITIES WITHIN THE PROJECT LIMITS. ALL UTILITIES SHOWN AS QL-B EXCEPT AS NOTED.
	QUALITY LEVEL C: INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE- GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D INFORMATION.
A N	UTILITIES DESIGNATED AS QL-C ARE REPRESENTED BY DASHED LINES. THESE MAY NOT HAVE CORRESPONDING FIELD MARKS. DEPTH READINGS SHOWN ARE ESTIMATIONS ONLY. THIS INFORMATION IS NOT GUARANTEED AND IS NOT TO BE USED FOR DESIGN OR BASIS FOR CONSTRUCTION. CLIENTS RELYING ON INSTRUMENT READINGS DO SO AT THEIR OWN RISK. TRUE DEPTH IS ONLY OBTAINED BY EXPOSING THE UTILITY.
	QUALITY LEVEL D: INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS
	PROVIDING UNDERGROUND UTILITY MAPPING SERVICES TO THE EASTERN UNITED STATES AND TEXAS 1-877-SoftDig www.softdig.com / softdig@softdig.com Philadelphia, PA - (484) 401-7136
	Boston, MA - (617) 716-9236 Baltimore, MD - (240) 708-8138
project number: 510620 page: 1 of 8	San Antonio, TX - (210) 908-5668 Houston, TX - (713) 597-4480

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CLIENT. Bayland CREW. J. Andrews	<sub>DATE:</sub> April 22, 2021	PROJECT NUMBER: 510620	PAGE: 2 OF 8	Houston, TX - (210) 908-5668 Houston, TX - (713) 597-4480



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	<b>DESIGN ACCURATELY, BUILD CONFIDENTLY</b> Utility Locating / Vacuum Excavation Subsurface Utility Engineering / GPR Investigations Video Pipe Inspection / Concrete Slab Imaging
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	COLOR CODE   ELECTRIC: power cables, conduits,duct banks and lighting cables   COMMUNICATIONS: telephone, fiber optic, and catv cables, conduits, and duct banks   GAS: natural gas, propane, petroleum, oil, steam or gaseous chemical pipes   WATER: domestic, fire, and potable pipes   SEWER: sanitary and storm drainage pipes, chutes, and culverts   UNKNOWN: unidentified anomalies and facilities   D.O.T.: ITMS, traffic signal, and trip wire cables and conduits
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			and a state of the	CLARIFICATIONS ALL FIELD SKETCHES ARE NOT TO SCALE AND ARE FOR RELATIVE LOCATION PURPOSES
E				ONLY. SOFTDIG EXERCISES ITS BEST PROFESSIONAL EXPERTISE & GEOPHYSICAL PROSPECTING TECHNIQUES TO DESIGNATE SUBSURFACE UTILITIES. SOFTDIG DOES NOT GUARANTEE THAT UTILITIES MARKED CONSTITUTE ALL UTILITIES WITHIN THE PROJECT AREA. PRIOR TO ACTUAL CONSTRUCTION, UTILITIES MUST BE SUBSURFACE LOCATED BY SOFTDIG AT POTENTIAL CONFLICT POINTS TO AVOID PERSONAL INJURY AND/OR PROPERTY DAMAGE.
				GUALITY LEVEL D. INFORMATION OF JAINED BT   THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE   EXISTENCE AND HORIZONTAL POSITION OF UTILITIES WITHIN THE PROJECT LIMITS. ALL   UTILITIES WITHIN THE PROJECT LIMITS. ALL UTILITIES SHOWN AS QL-B EXCEPT AS NOTED.   QUALITY LEVEL C: INFORMATION OBTAINED BY   SURVEYING AND PLOTTING VISIBLE ABOVE-
			12.39	GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D INFORMATION.
			A N	UTILITIES DESIGNATED AS QL-C ARE REPRESENTED BY DASHED LINES. THESE MAY NOT HAVE CORRESPONDING FIELD MARKS. DEPTH READINGS SHOWN ARE ESTIMATIONS ONLY. THIS INFORMATION IS NOT GUARANTEED AND IS NOT TO BE USED FOR DESIGN OR BASIS FOR CONSTRUCTION. CLIENTS RELYING ON INSTRUMENT READINGS DO SO AT THEIR OWN RISK. TRUE DEPTH IS ONLY OBTAINED BY EXPOSING THE UTILITY.
				QUALITY LEVEL D: INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS
				PROVIDING UNDERGROUND UTILITY MAPPING SERVICES TO THE EASTERN UNITED STATES AND TEXAS 1-877-SoftDig www.softdig.com / softdig@softdig.com Philadelphia, PA - (484) 401-7136 Boston, MA - (617) 716-9236 Baltimore, MD - (240) 708-8138
PROJECT NUMBER:	510620	PAGE: 8 o	F 8	San Antonio, TX - (210) 908-5668 Houston, TX - (713) 597-4480

### ATTACHMENT B

### **CCTV** Reports

#### VIDEO INSPECTION REPORT

CLIENT: Bayland	SOFTDIG PROJECT #:510620			
SITE: Tacoma Park Maryland - Outfalls 80, 212, and 1106 DATE: April 22, 2021				
PROJECT DESCRIPTION: CCTV inspection of the storm	system of outfalls at 3 locations in Tacoma Park MD.			
VIDEO LABEL Video 1 -MH 8001 to Outfall 80	TOTAL LENGTH INSPECTED 285.0'			
DESCRIPTION CCTV inspection of the storm dra	in downstream from MH 8001 to Outfall 80			
MATERIAI Concrete	PIPE SIZE Concrete Block; 12' wide x 4' tall at Outfall 80			
WATER LEVEL LOW (25% of pipe or less)	SEDIMENT LEVEL LOW			
PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE	PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE			
Camera drons (steen descent) 38.0' - 40.0				
Concrete connection at 3 o'clock (Catch Basin 80-1) 46.0'				
Concrete connection at 9 o'clock (MH 80-1) 76.0'	-			
Reached end of Outfall 80 285.0'				
VIDEO LABEL Video 2 - MH 8002 to MH 8001	TOTAL LENGTH INSPECTED 446.0'			
DESCRIPTION CCTV inspection of the storm dra	in downstream from MH 8002 to MH 8001			
MATERIAI Concrete	PIPE SIZE Concrete Block: Unknown Size			
water level Low (25% of pipe or less) SEDIMENT LEVEL LOW				
PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE				
Camera drops (steep descent) 103.0' - 110.	Camera drops (steep descent) 332.0' - 340.0'			
Concrete connection at 9 o'clock (MH 80-2) 109.0'	Camera bends to the left, section made of brick 400.0' - 410.0'			
Connection at 12 o'clock (Unknown tie-in) 154.0'	Active concrete connection at 3 o'clock (MH 80-3) 404.0'			
Possible removed connection at 9 o'clock 154.0'	Active concrete connection at 9 o'clock (MH 80-4) 425.0'			
Camera drops (steep descent) 197.0' - 204.	Reached MH 8001, MH 80-5 tie-in also visible 446.0'			
VIDEO LABEL Video 3 - MH 21201 to Outfall 212	2 TOTAL LENGTH INSPECTED 72.0'			
DESCRIPTION CCTV inspection of the storm dra	in downstream from MH 21201 to Outfall 212			
MATERIAL Concrete	PIPE SIZE Concrete Block; 5' wide x 4' tall at Outfall 212			
WATER LEVEL LOW (25% of pipe or less) SEDIMENT LEVEL LOW				
PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE	PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE			
Active concrete connection at 3 o'clock 4.0'	USI had to continue the run to Outfall 212 in a separate video			
Pipe bends to the left and heads down the driveway 5.0'				
Camera reaches a ledge and structure bends to the right $70.0' - 72.0'$				
Reached MH 212-1 72.0'				
Run ended due to the ledge before MH 212-1				

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Utility Locating | Vacuum Excavation | Subsurface Utility Engineering | GPR Investigations | Video Pipe Inspection | Concrete Slab Imaging

#### VIDEO INSPECTION REPORT

CLIENT: Bayland	SOFTDIG PROJECT #: 510620					
SITE: Tacoma Park Maryland - Outfalls 80, 212, and 1106 DATE: April 22, 2021						
PROJECT DESCRIPTION: CCTV inspection of the storm system of outfalls at 3 locations in Tacoma Park MD.						
$V_{1}$ Normalized Lange Video $A = MH 212 - 1$ to $Outfall 212$ Total LENCTLUNEDECTED 74.0'						
DESCRIPTION CCTV inspection of the storm drain downstream from MH 212-1 to Outfall 212						
MATERIAI Concrete	PIPE SIZE Concrete Block; 5' wide x 4' tall at Outfall 212					
WATER LEVEL LOW (25% of pipe or less) SEDIMENT LEVEL LOW						
PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE	PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE					
Structure bends to the left $\sim 40.0'$						
Reached end of Outfall 212 74.0'						
	-					
VIDEO LABEL VIDEO 5 - MH 21201 to MH 21203	TOTAL LENGTH INSPECTED 12.0'					
DESCRIPTION CCTV inspection of the storm dra	in upstream from MH 21201 to MH 21203					
MATERIAL Concrete	PIPE SIZE Concrete Block; Unknown Size					
WATER LEVEL Low (25% of pipe or less)	SEDIMENT LEVEL LOW					
PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE	PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE					
Connection at 9 o'clock (Unknown tie-in) 10.0'	USI had to continue the run to MH 21203 in a separate video					
USI believes the tie-in is a PVC pipe coming from a French Drain						
French Drain is believed to be on the East side of Spring Ave						
Camera reaches a ledge 12.0'						
Run ended; camera could not get over the ledge						
VIDEO LABEL Video 6 - MH 212-2 to MH 21201	TOTAL LENGTH INSPECTED 14.0'					
DESCRIPTION CCTV inspection of the storm dra	in downstream from MH 212-2 to MH 21201_					
MATERIAL Concrete	PIPE SIZEConcrete Block; Unknown Size					
WATER LEVEL LOW (25% of pipe or less) SEDIMENT LEVEL LOW						
PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE	PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE					
Camera reached a ledge (Same as Video 5)14.0'	_					
USI were able to complete the run from MH 21201 to MH 212-1	_					
	-					

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#### VIDEO INSPECTION REPORT

CLIENT: Bayland	SOFTDIG PROJECT #: 510620					
SITE: Tacoma Park Maryland - Outfalls 80, 212, and 1106 DATE: April 22, 2021						
PROJECT DESCRIPTION: CCTV inspection of the storm system of outfalls at 3 locations in Tacoma Park MD.						
V(DEG LADEL Video 7 MH 212 2 to MH 21202 TOTAL LENGTLE NICESTED 145 0'						
VIDEO LABEL VIDEO 7 - MH 212-2 to MH 21203 TOTAL LENGTH INSPECTED145.0						
DESCRIPTION COT V Inspection of the storm drain upstream from Mil 212-1 to Mil 21205						
WATERIAL CONCrete Low (25% of nine or less)						
PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE						
Two pipe tie incluithin MH 212.2	Structure changes to PCP (Reinforced Concrete Pine) 32.0'					
Pine on left is MH 212-2	Beached a square vault 145 0'					
Pipe on right is MH 212-4 (Coming at an angle)	No Manhole visible from the surface					
PVC connection at 3 o'clock (Not visible from the surface) 7.0'	Vault located on corner of Spring Ave & Poplar Ave					
PVC connection at 9 o'clock 28.0'	~ location of where MH 21203 was supposed to be					
VIDEO LAREL Video 8 - MH 212-5 to MH 21203						
DESCRIPTION CCTV inspection of the storm dra	in downstream from MH 212-5 to MH 21203					
Reinforced Concrete Pine (RCP)						
WATERIAL Low (25% of nine or less)						
See in the mine server build and managed 111.01 115	THE OBSTRUCTIONS / OBSERVATIONS FOOTAGE					
Sag in the pipe, camera brieny submerged 111.0 - 115.0	· ·					
Reached a square vault 166.0						
Same square vault from video 7						
	-					
Video 0 MH 110601 to Outfall 110						
VIDEO LABEL VIDEO 9 - MH 110601 to Outrail 1106 TOTAL LENGTH INSPECTED 560.0						
Description CCTV Inspection of the storm dram						
MATERIAL Kennorced Concrete Pipe (KCP)						
WATER LEVEL LOW (25% OF PIPE OF Tess)	_ SEDIMENT LEVEL LOW					
PIPE OBSTRUCTIONS / OBSERVATIONS FOUTAGE	PIPE OBSTRUCTIONS / OBSERVATIONS FOOTAGE					
Infiltration at 12 o'clock (from joint gap, visible water) 44.0'	USI were unable to located MH 1106-3 from the surface					
Infiltration at 12 o'clock (from joint gap, visible water) 61.0'	Believe MH 1106-3 was buried on the church property					
Reached MH 1106-1   171.0'	Reached Outfall 1106 560.0'					
Reached MH 1106-2; camera submerged in MH 265.0'	Unable to access Outfall 1106 to determine its size					
Keached MH 1106-3 303.0'						

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#### VIDEO INSPECTION REPORT

CLIENT: Bayland		SOFTDIG PRO	JECT #:	510620			
SITE: Tacoma Park Maryland - Outfalls 80, 212, and 1106 DATE: April 22, 2021							
PROJECT DESCRIPTION: CCTV inspection of the storm system of outfalls at 3 locations in Tacoma Park MD.							
VIDEO LABEL Video 10 - MH 110602 to MH 11	.0601 TOTAL	LENGTH INSPE	CTED	25.0'			
DESCRIPTION CCTV inspection of the storm drain downstream from MH 110602 to MH 110601							
MATERIAL Reinforced Concrete Pipe (RC	P) PIPE S	ZE	36"				
WATER LEVEL Low (25% of pipe or less) SEDIM		DIMENT LEVEL LOW					
PIPE OBSTRUCTIONS / OBSERVATIONS FOC	TAGE PIPE	OBSTRUCTION	S / OBSERVAT	IONS FOOTAGE			
Reached MH 110601 25	.0'						

### ATTACHMENT C

### **Photos**





![](_page_25_Picture_0.jpeg)

# MH 8002

![](_page_26_Picture_1.jpeg)

# CATCH BASIN 80-I; TIE-IN TO THE MAIN 46.0' FROM MH 800I (VIDEO I)

![](_page_27_Picture_1.jpeg)

![](_page_28_Picture_0.jpeg)

Contraction of the second

# MH 80-2; TIE-IN ON THE MAIN 109.0' FROM MH 8002 (VIDEO 2)

![](_page_29_Picture_1.jpeg)

## MH 80-3; TIE-IN ON THE MAIN 404.0' FROM MH 8002 (VIDEO 2)

![](_page_30_Picture_1.jpeg)

## MH 80-4; TIE-IN ON THE MAIN 425.0' FROM MH 8002 (VIDEO 2)

## MH 80-5; South of MH 8001 (VISIBLE IN VIDEO 2)

# OUTFALL 212 SECTION

![](_page_33_Picture_1.jpeg)

![](_page_34_Picture_0.jpeg)

![](_page_35_Picture_0.jpeg)

### MH 212-2; TIES IN WITH MH 21201 AT ~25.0' & TIES IN WITH THE SQUARE VAULT (MH 21203) AT 145' (VIDEOS 5-7)

![](_page_36_Picture_1.jpeg)

![](_page_36_Picture_2.jpeg)

# MH 212-2

![](_page_37_Picture_1.jpeg)

# MH 212-4; TIES INTO MH 212-2

![](_page_38_Picture_1.jpeg)

![](_page_39_Picture_0.jpeg)

![](_page_39_Picture_1.jpeg)

![](_page_40_Picture_1.jpeg)

![](_page_41_Picture_0.jpeg)

![](_page_41_Picture_1.jpeg)

# MH 110602

![](_page_42_Picture_1.jpeg)

### MH 1106-1; MH 110601 TO MH 1106-1 IS 171' (VIDEO 9)

![](_page_43_Picture_1.jpeg)

![](_page_44_Picture_0.jpeg)

### MH 1106-2; MH 110601 TO MH 1106-2 IS 265' (VIDEO 9)

![](_page_44_Picture_2.jpeg)