



Annette DeMaria, P.E., PMP
Executive Director

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Henry Ford College
Inkster
Lathrup Village
Livonia
Melvindale
Northville
Northville Twp.
Novi
Oak Park
Oakland County
Orchard Lake
Plymouth
Plymouth Twp.
Redford Twp.
Rochester Hills
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University of Michigan-Dearborn
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Wayne County
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TO: Karen Mondora, ARC Technical Committee Chair
FROM: Emily Levine, Technical Committee Coordinator
DATE: February 15, 2023
SUBJECT: 2022 IDEP Investigation Summary

In 2022, ARC staff continued to work on an ongoing illicit discharge investigation in Oakland County and assisted Wayne County with investigations in Livonia and Inkster. These investigations were in accordance with the Rouge River Collaborative Illicit Discharge Elimination Plan. These investigations were prompted by the outfall screening efforts conducted in 2018 and 2019, as well as additional sampling conducted by Wayne County in 2020.

The results of the investigations are summarized in Table 1. More detail can be found in the investigation reports which were sent to the communities (Attachment A).

Table 1. Status and Results of Illicit Discharge Investigations

Permittee	Outfall ID	Status	Result
Beverly Hills	BV51	Ongoing	Further investigation required
Livonia	U2008221	Ongoing	An illicit connection was identified and corrected. Follow-up investigation revealed that an additional pollutant source may be present, resulting in further investigation required
Livonia	L1619	Ongoing	Further investigation required
Inkster	Perrin Drain	Ongoing	Tap identified, further investigation required

In addition, ARC staff conducted sampling in accordance with the ARC's Collaborative Total Maximum Daily Load (TMDL) Implementation Plan requirements. This included completing DO monitoring in Johnson Creek for two months, screening 83 outfalls for *E. coli*, and sampling 28 instream sites for suspended sediment. More information about this can be found in the 2022 Rouge River Water Quality Assessment Report.

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Southeastern Oakland County Water Authority

In 2023, ARC staff will continue source investigations on the outstanding issues in accordance with the Plan and as directed by the Technical Committee. This will also include additional investigations that are in response to results from the 2022 TMDL sampling efforts.

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Attachment A
Community-specific Investigation Reports



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Great Lakes Water Authority
Rouge River Advisory Council
SEMCOG
Southeastern Oakland
County Water Authority

TO: Neil Johnson, Village of Beverly Hills Director of Public Services

FROM: Emily Levine, ARC Staff

DATE: November 7, 2022

SUBJECT: IDEP Investigation Results: Outfall BV51 (Sleepy Hollow Lane)

ARC staff continued illicit discharge investigation on storm drain outfall BV51 in response to findings from the 2018 outfall screening and 2019 and 2020 investigations. Our investigations did not reveal the source of *E. coli* entering the drain and no illicit connection has been identified.

Background

Outfall BV51 was investigated due to the high *E. coli* concentrations found during the outfall survey conducted in 2018. At that time, the *E. coli* concentration was 3,076 MPN/100 ml which can be indicative of an illicit discharge containing sanitary sewage. ARC staff reinspected the outfall in 2019 and found *E. coli* concentrations at 201 and >24,196 MPN/100 ml respectively.

ARC staff reinspected the outfall on August 19, September 15, and November 17, 2020. As was the case in 2019, the results varied greatly in 2020, with *E. coli* concentrations of 573, >24,196, and 1,081 MPN/100 ml respectively (See Table 1). The results from the September and November sampling events showed Human *Bacteroides* concentrations of 72,000 and <354 gene copies/100 ml respectively. There were no physical signs (ex: odor, staining, debris, organic growth) of a sewage discharge to the storm drain in the outfall or any of the manholes. Likewise, there were no obvious signs of animal fecal impacts to the drain.

The outfall drains a portion of Sleepy Hollow Lane, Fiddlers Cove Road, and Metamora Lane. The receiving water is an unnamed tributary of the Rouge River (Figure 1).

Results

Based on sampling results from previous inspections, ARC staff coordinated with the Oakland County Water Resource Commissioner (OCWRC) to televise the drain west of Outfall BV51 on May 19, 2021. Only the west line was televised because flow had not been observed coming from the north and south during dry weather. A tap was identified in the storm drain that was believed to be a possible illicit connection, although no staining or evidence of sewage was observed (Figure 2). Based on the pipe's location and direction, it appeared to be coming from the house at 31349 Sleepy Hollow Lane. On July 23, 2021, ARC staff coordinated with the Village of Beverly Hills to dye test 31349 Sleepy Hollow Lane. The dye testing revealed that all three bathrooms in the house were correctly connected to the sanitary drain and no dye was observed entering the storm drain.

ARC staff coordinated with the Village of Beverly Hills and OCWRC to televise the remainder of the storm drain on July 26, 2022. The drains from BV51-1 to BV51-2, and the drain from BV51-3 to BV51-2 were televised. BV51-2 is buried. No possible illicit connection was identified.

Table 1. Sampling Results (*E. coli* in MPN/100 mL and Human *Bacteroides* in gene copies/100 ml)

	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>	Human <i>Bacteroides</i>	<i>E. coli</i>	Human <i>Bacteroides</i>
	7/9/18	8/15/19	9/19/19	8/19/20	9/15/20	9/15/20	11/17/20	11/17/20
BV51-0	3,076	201	>24,196	573	>24,196	72,000	1,081	<354

Conclusions and Recommendations

Work to date indicates that no illicit connection has been identified upstream of BV51. The manhole at BV51-2 is buried. We recommend digging up BV51-2 to be able to further investigate it and sample the manhole.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the Village’s MS4 permit and as a result of your ARC membership. If you have any questions, I can be reached at 313-963-6600 or elevine@ectinc.com.

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Figure 1. Storm Drain and Sampling Locations

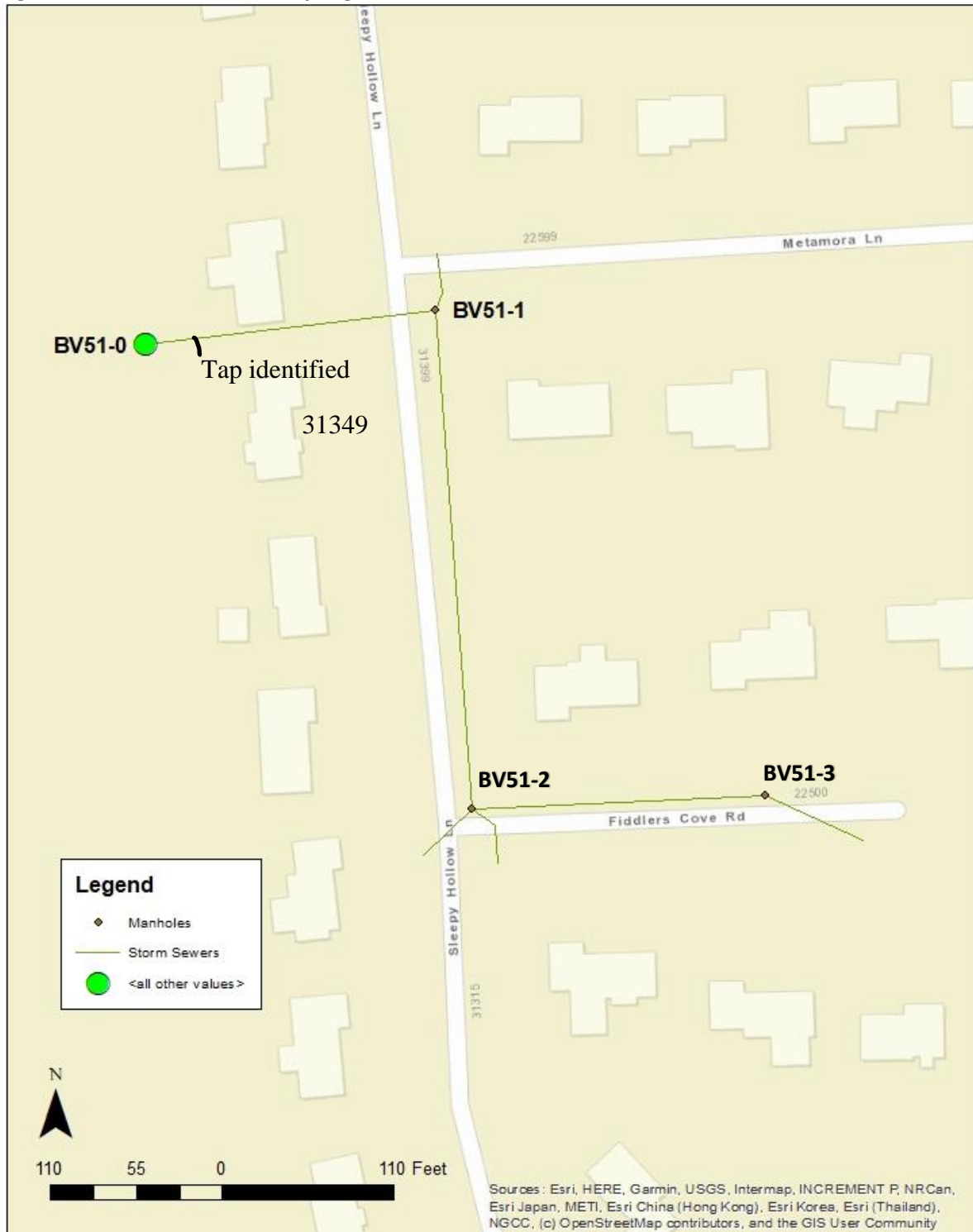


Figure 2. Tap to Storm Drain at 14.2 ft east of BV51-0





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TO: Doug Moore, City of Livonia
FROM: Emily Levine, ARC Staff
DATE: January 6, 2023
SUBJECT: IDEP Investigation Results: Outfall L1619

ARC staff continued the illicit discharge investigation on storm drain outfall L1619 in response to findings from the 2018 outfall screening and subsequent investigations conducted by Wayne County. Our investigations have not identified an illicit connection and further investigation is recommended.

Background

Outfall L1619 was investigated due to the high *E. coli* concentrations found during the outfall survey conducted in 2018. At that time, the *E. coli* concentration was 15,531 MPN/100 ml which is indicative of an illicit discharge containing sanitary sewage. Wayne County conducted follow-up investigations, which narrowed down the source to being upstream of a manhole located in the grass along the north side of Seven Mile Road, near a Chicken Shack restaurant (Figure 1). *E. coli* and Human *Bacteroides* levels at this manhole have been found to be elevated (Table 1).

The drainage area of the manhole in front of the Chicken Shack was unclear, as the storm drain map provided by the City of Livonia appears to be incomplete. Therefore, televising was recommended to determine the extent of the storm drain and search for any illicit connections.

Results

ECT worked with a televising crew on December 21, 2022 to televise the line starting at the manhole by the Chicken Shack along Seven Mile Road and ending at Middlebelt Road (Figure 2). Eight manholes were encountered along this section of pipe. No taps were found between manholes and the line ended at a 12" pipe that was bulkheaded. Inlets in the manholes appear to connect to catch basins along Seven Mile Road and to the parking areas of the businesses to the north of the storm drain. The CCTV report is included as Attachment A.

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Great Lakes Water Authority
Rouge River Advisory Council
SEMCOG
Southeastern Oakland
County Water Authority

Table 1. Sampling Results (*E. coli* in MPN/100 mL and Human *Bacteroides* in gene copies/100 ml)

	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>	Human <i>Bacteroides</i>
	7/16/18	12/9/20	12/16/20	11/10/21	11/10/21
L1619	15,531	630		3,076	95
29050 Dardanella		<100			
Seven Mile WC MS4 East			61		
Chicken Shack			2,000	1,616	1,541,053

Conclusions and Recommendations

The source of the elevated *E. coli* at this outfall remains unclear. Additional inspections of catch basins and their connections along Seven Mile Road, upstream of the Chicken Shack are recommended.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the City’s MS4 permit and as a result of your ARC membership. If you have any questions, you can reach me at 248-763-1407 or elevine@ectinc.com.

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Figure 1. Storm Drain and Sampling Location



Figure 2. Televised Line Map

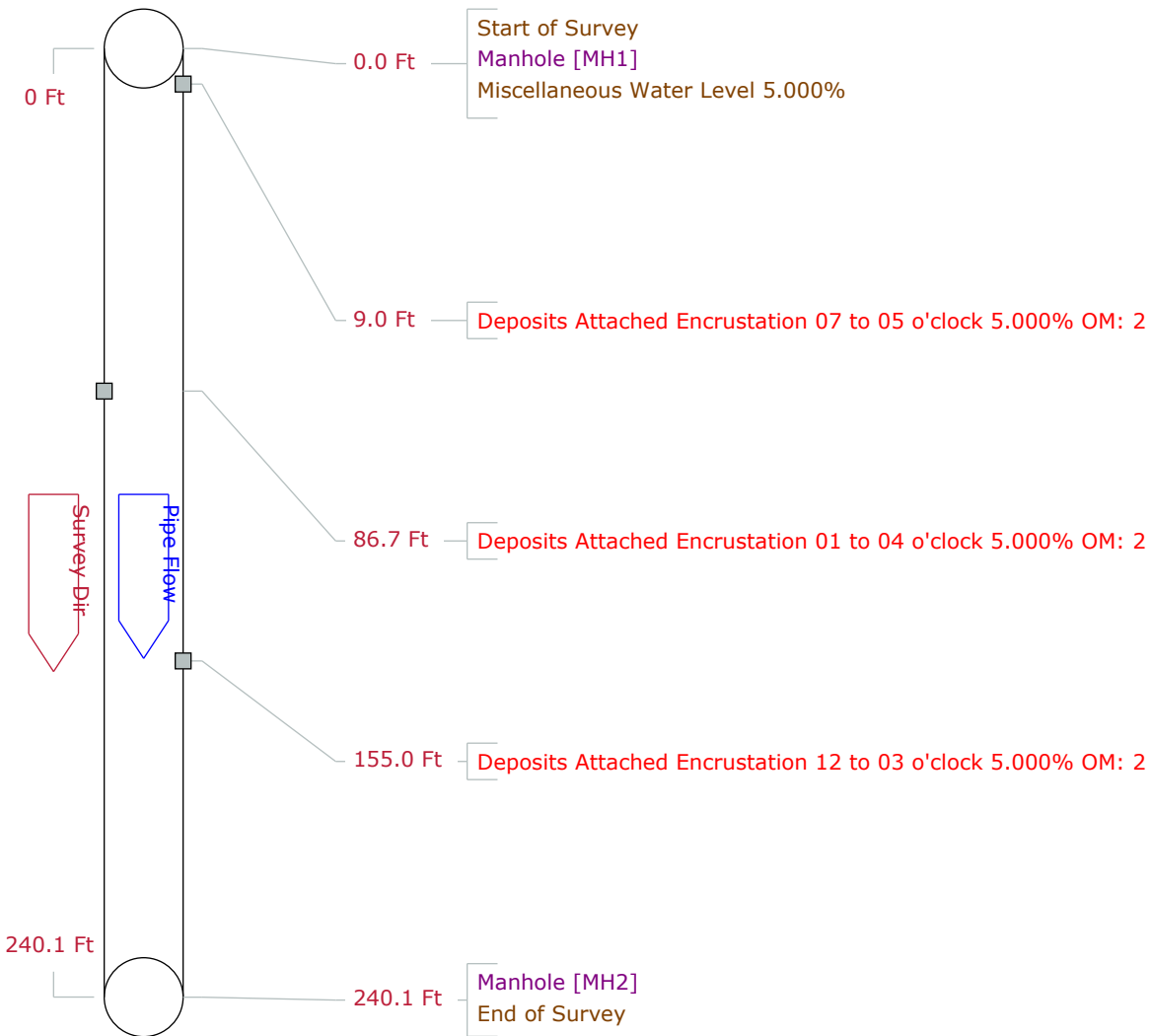


Attachment A. CCTV Inspection Reports

Pipe Graphic Report of PLR MH1A

for ECT

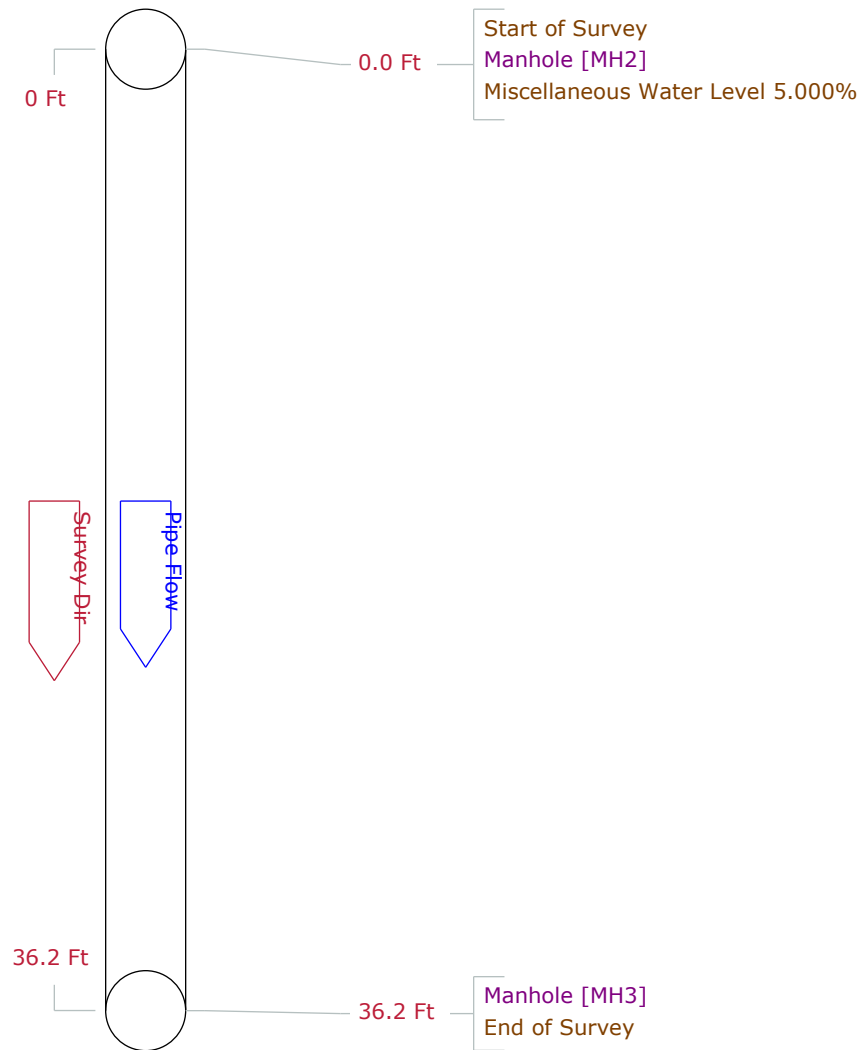
Setup	1	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	LIVONIA
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	MH1A	Project	ETC_STORM_TV_RD_12-21-2022				
Date	2022/12/21	Time	8:49	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned	
Street	7 MILE	City	LIVONIA	Drainage area			
Location Code		Pipe Use	Stormwater Pipe				
Location details	CHICKEN SHACK	Height	18	Width	ins		
Shape	Circular	Material	Reinforced Concrete Pipe	Lining			
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M
Length Surveyed	240.10 Ft	Year Constructed		Year Renewed		Miscellaneous	Constructional
Additional info							
Up	MH1	Rim to invert		Grade to invert		Rim to grade	Ft
Down	MH2	Rim to invert		Grade to invert		Rim to grade	Ft



Pipe Graphic Report of PLR MH2A

for ECT

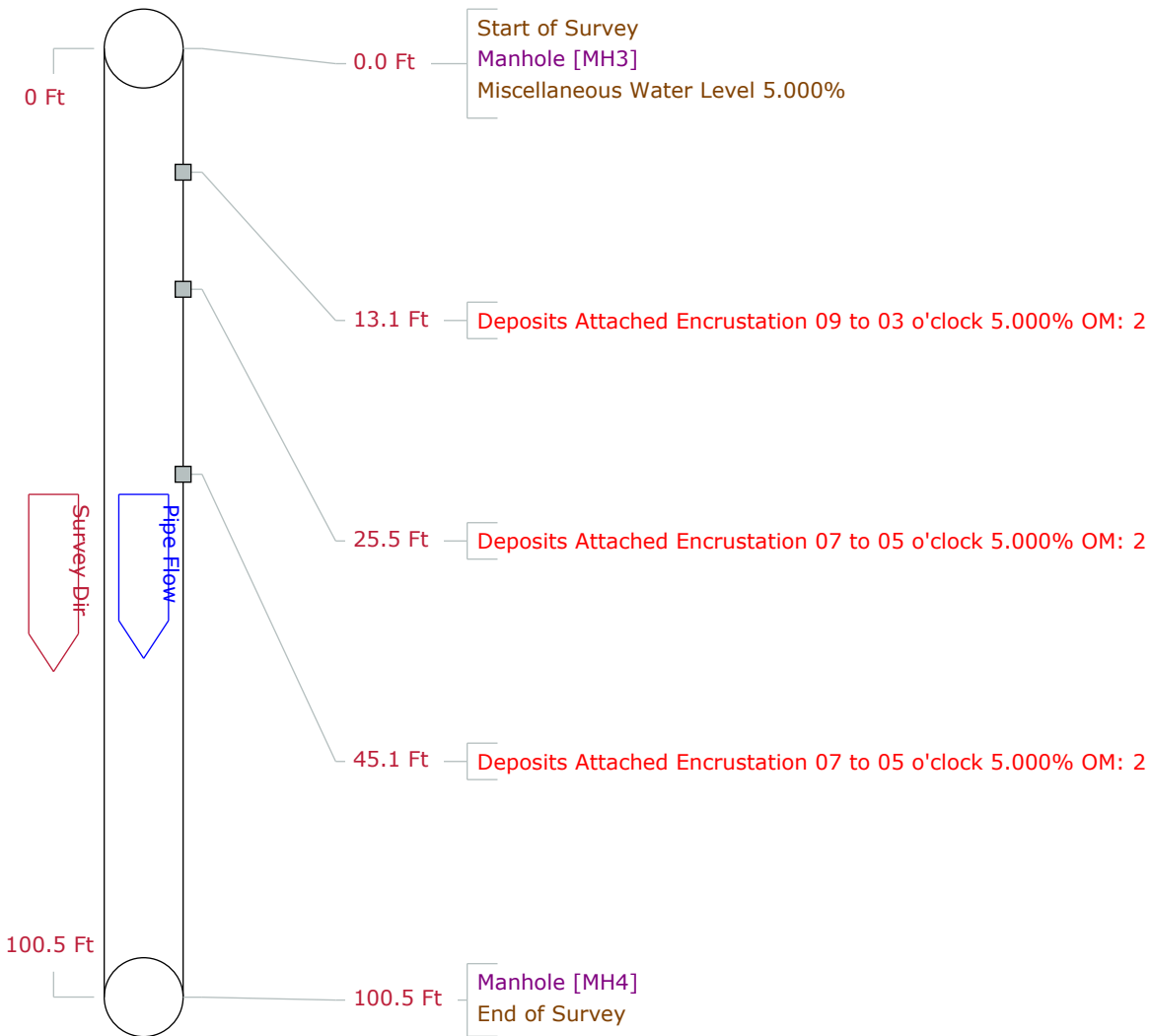
Setup	2	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	LIVONIA
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	MH2A	Project	ETC_STORM_TV_RD_12-21-2022				
Date	2022/12/21	Time	9:11	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned	
Street	7 MILE	City	LIVONIA		Drainage area		
Location Code				Pipe Use	Stormwater Pipe		
Location details				Height	18	Width	ins
Shape	Circular	Material	Reinforced Concrete Pipe		Lining		
Coating		Pipe Joint length	Ft	Total length	Ft	<div style="border: 1px solid black; padding: 2px;"> Structural O & M Miscellaneous Constructional </div>	
Length Surveyed	36.20	Year Constructed		Year Renewed			
Additional info							
Up	MH2	Rim to invert		Grade to invert		Rim to grade	Ft
Down	MH3	Rim to invert		Grade to invert		Rim to grade	Ft



Pipe Graphic Report of PLR MH3A

for ECT

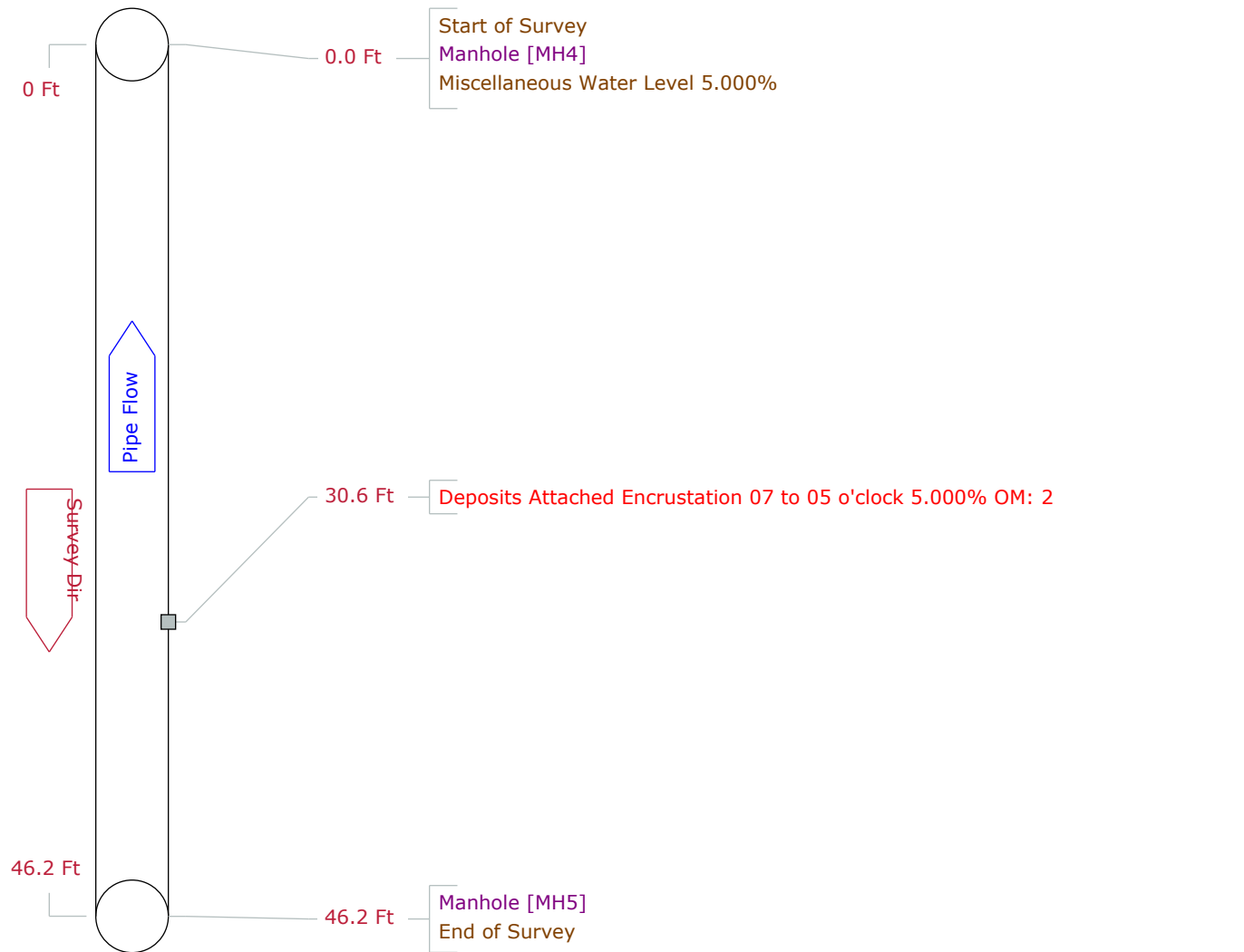
Setup	3	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	LIVONIA
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	MH3A	Project	ETC_STORM_TV_RD_12-21-2022				
Date	2022/12/21	Time	9:41	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned	
Street	7 MILE	City	LIVONIA	Drainage area			
Location Code		Pipe Use	Stormwater Pipe				
Location details		Height	18	Width	ins		
Shape	Circular	Material	Reinforced Concrete Pipe	Lining			
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M
Length Surveyed	100.50 Ft	Year Constructed		Year Renewed		Miscellaneous	Constructional
Additional info							
Up	MH3	Rim to invert		Grade to invert		Rim to grade	Ft
Down	MH4	Rim to invert		Grade to invert		Rim to grade	Ft



Pipe Graphic Report of PLR MH4A

for ECT

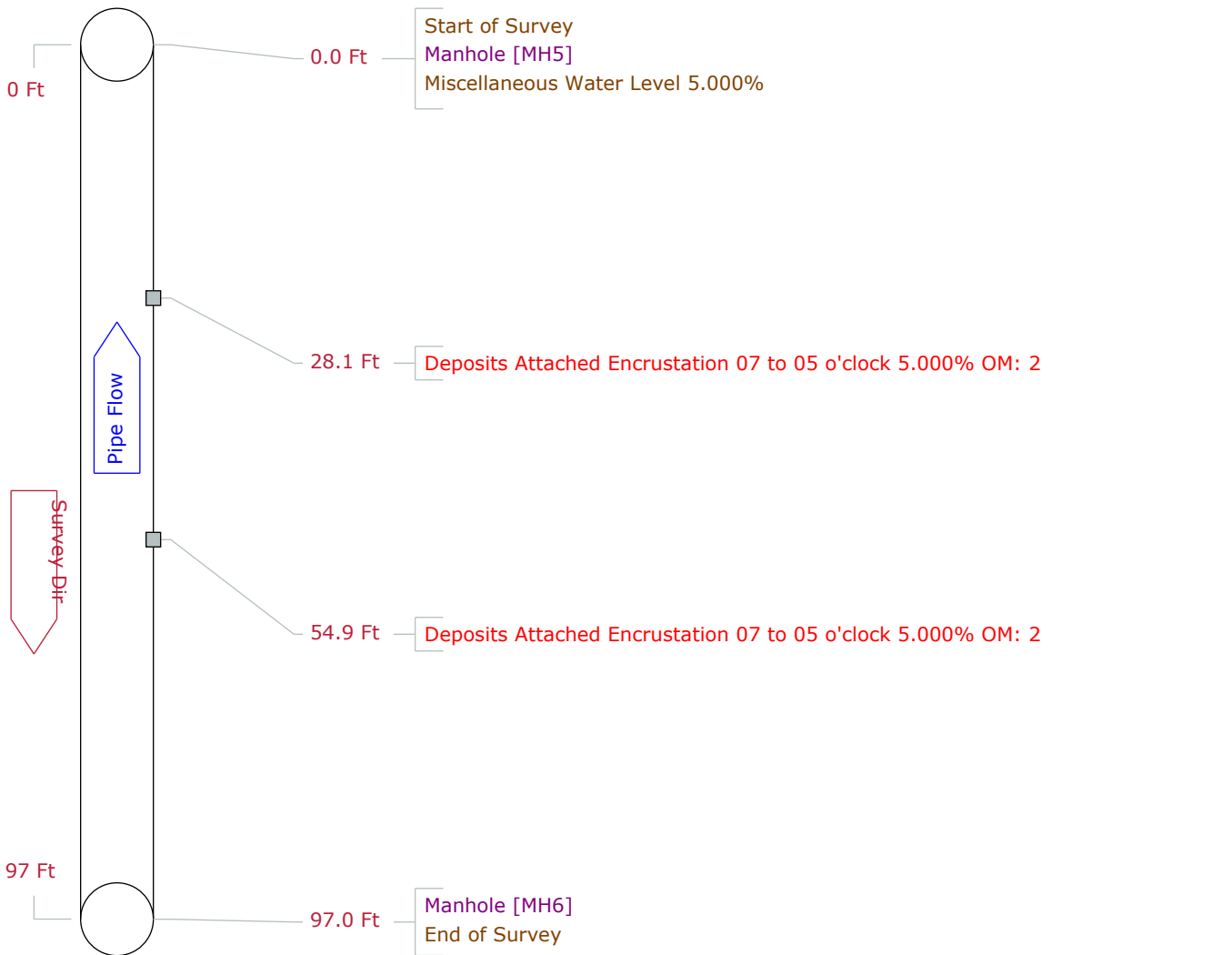
Setup	4	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	LIVONIA
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	MH4A	Project	ETC_STORM_TV_RD_12-21-2022				
Date	2022/12/21	Time	9:52	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned	
Street	7 MILE	City	LIVONIA	Drainage area			
Location Code				Pipe Use	Stormwater Pipe		
Location details				Height	18	Width	ins
Shape	Circular	Material	Reinforced Concrete Pipe	Lining			
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M
Length Surveyed	46.20	Year Constructed		Year Renewed		Miscellaneous	Constructional
Additional info							
Up	MH5	Rim to invert		Grade to invert		Rim to grade	Ft
Down	MH4	Rim to invert		Grade to invert		Rim to grade	Ft



Pipe Graphic Report of PLR MH5A

for ECT

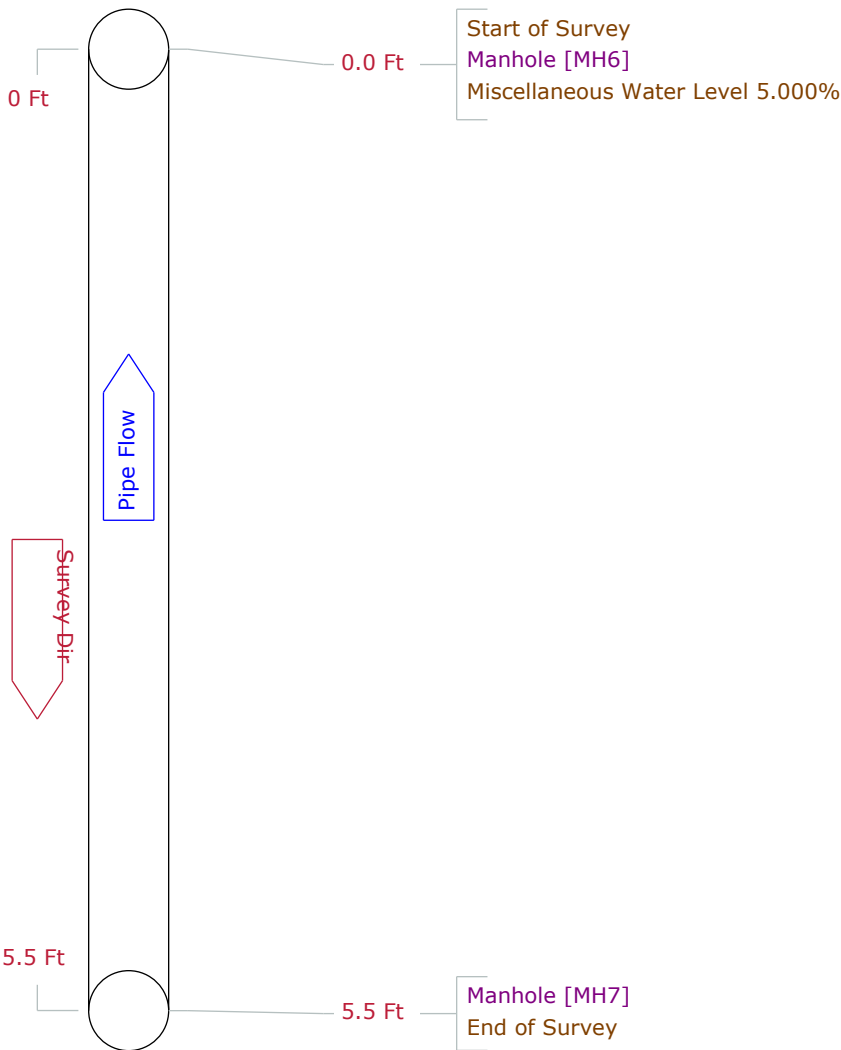
Setup	5	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	LIVONIA
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	MH5A	Project	ETC_STORM_TV_RD_12-21-2022				
Date	2022/12/21	Time	10:13	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned	
Street	7 MILE	City	LIVONIA	Drainage area			
Location Code		Pipe Use	Stormwater Pipe	Height	18	Width	ins
Location details							
Shape	Circular	Material	Reinforced Concrete Pipe	Lining			
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M
Length Surveyed	97.00	Year Constructed		Year Renewed		Miscellaneous	Constructional
Additional info							
Up	MH6	Rim to invert		Grade to invert		Rim to grade	Ft
Down	MH5	Rim to invert		Grade to invert		Rim to grade	Ft



Pipe Graphic Report of PLR MH6A

for ECT

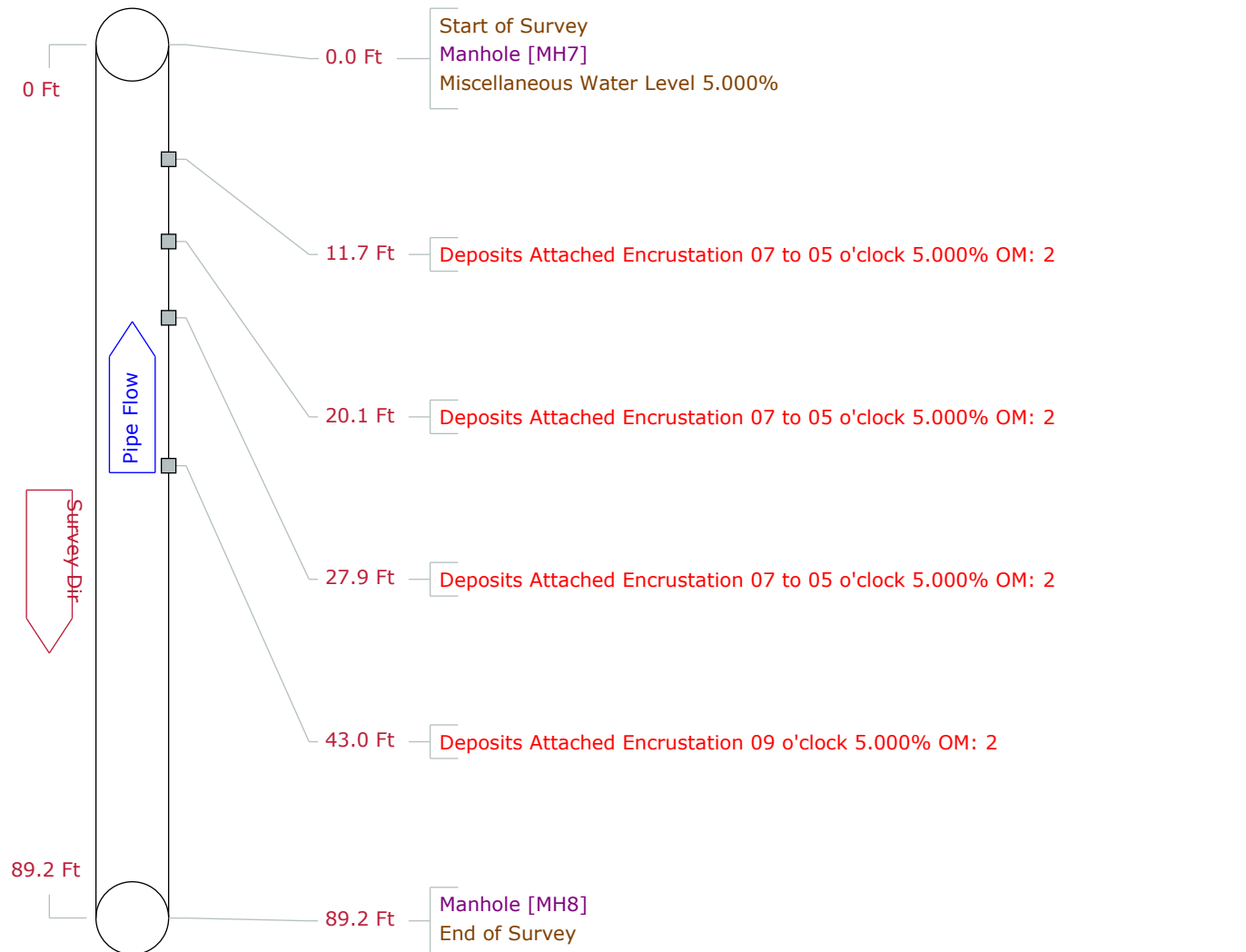
Setup	6	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	LIVONIA
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	MH6A	Project	ETC_STORM_TV_RD_12-21-2022				
Date	2022/12/21	Time	10:36	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned	
Street	7 MILE	City	LIVONIA	Drainage area			
Location Code				Pipe Use	Stormwater Pipe		
Location details				Height	18	Width	ins
Shape	Circular	Material	Reinforced Concrete Pipe	Lining			
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M
Length Surveyed	05.50	Year Constructed		Year Renewed		Miscellaneous	Constructional
Additional info							
Up	MH7	Rim to invert		Grade to invert		Rim to grade	Ft
Down	MH6	Rim to invert		Grade to invert		Rim to grade	Ft



Pipe Graphic Report of PLR MH7A

for ECT

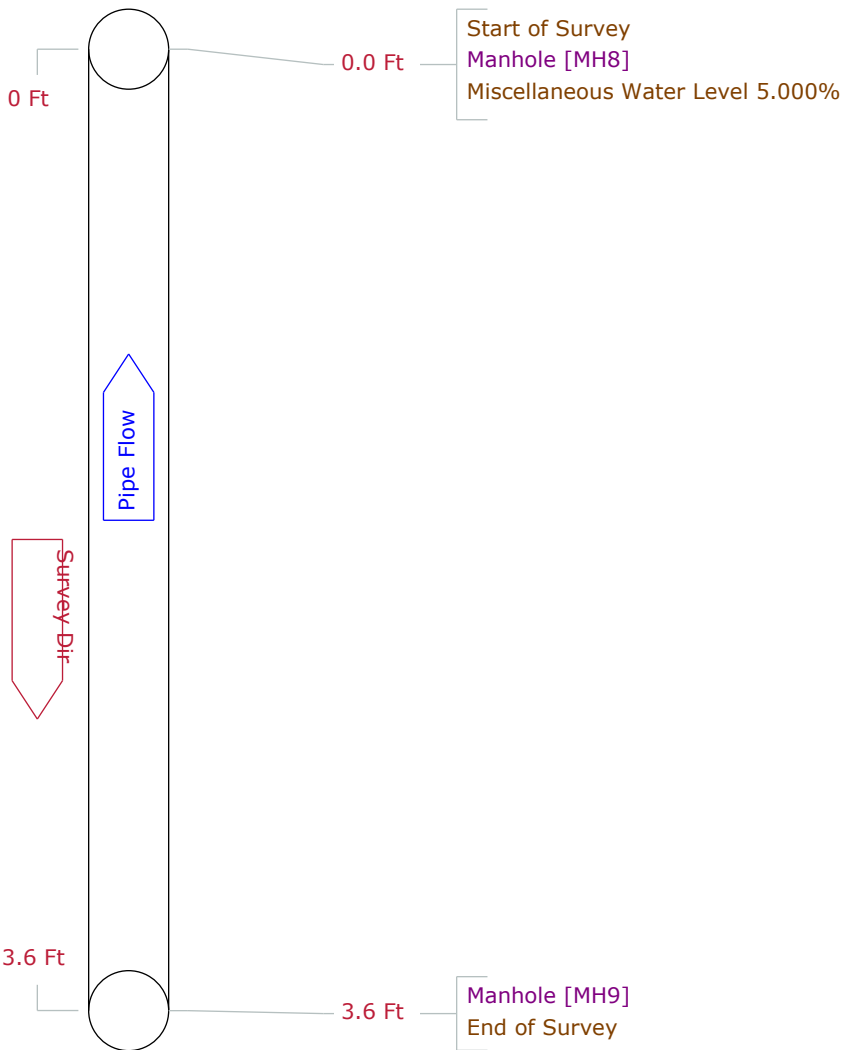
Setup	7	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	LIVONIA
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	MH7A	Project	ETC_STORM_TV_RD_12-21-2022				
Date	2022/12/21	Time	11:03	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned	
Street	7 MILE	City	LIVONIA	Drainage area			
Location Code		Pipe Use	Stormwater Pipe				
Location details		Height	18	Width	ins		
Shape	Circular	Material	Reinforced Concrete Pipe	Lining			
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M
Length Surveyed	89.20	Year Constructed		Year Renewed		Miscellaneous	Constructional
Additional info							
Up	MH8	Rim to invert		Grade to invert		Rim to grade	Ft
Down	MH7	Rim to invert		Grade to invert		Rim to grade	Ft



Pipe Graphic Report of PLR MH8A

for ECT

Setup	8	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	LIVONIA
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	MH8A	Project	ETC_STORM_TV_RD_12-21-2022				
Date	2022/12/21	Time	11:34	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned	
Street	7 MILE	City	LIVONIA	Drainage area			
Location Code				Pipe Use	Stormwater Pipe		
Location details				Height	12	Width	ins
Shape	Circular	Material	Reinforced Concrete Pipe	Lining			
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M
Length Surveyed	03.60	Year Constructed		Year Renewed		Miscellaneous	Constructional
Additional info							
Up	MH9	Rim to invert		Grade to invert		Rim to grade	Ft
Down	MH8	Rim to invert		Grade to invert		Rim to grade	Ft





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TO: Doug Moore, City of Livonia
FROM: Emily Levine, ARC Staff
DATE: January 6, 2023
SUBJECT: IDEP Investigation Results: Outfall U2008221

ARC staff continued the illicit discharge investigation on storm drain outfall U2008221 in response to findings from the 2018 outfall screening and subsequent investigations. Our 2022 investigations identified an illicit connection coming from Saint Mary's Hospital. This connection was corrected by the hospital. Follow-up sampling to confirm that the connection was corrected revealed that a suspicious discharge still exists. Investigations to identify the source of this second discharge remain underway.

Background

Outfall U2008221 was investigated due to the high *E. coli* concentrations found during the outfall survey conducted in 2018. At that time, the *E. coli* concentration was >24,196 MPN/100 ml which is indicative of an illicit discharge containing sanitary sewage. ARC staff reinspected the outfall in 2019 and found *E. coli* concentrations at non-detect and >6,000 MPN/100 ml respectively, with Human *Bacteroides* concentrations of 1,010,000 gene copies/100 ml coinciding with the elevated *E. coli* levels.

It was initially uncertain where the outfall was draining from, as it is located in a culvert underneath Levan Road (Figure 1). Nonetheless, in 2019 and 2021 Wayne County conducted sampling within the manholes along the east side of Levan Road. However, these investigations did not reveal the source of the suspicious discharge.

Results

In May of 2022, the outfall was resampled by ARC staff and *E. coli* concentrations were >24,196 MPN/100 ml, with Human *Bacteroides* concentrations of 631,578,947 gene copies/100 ml (Table 1). At that time, it was determined that the outfall connects to private storm drains in the parking lot of Saint Mary's Hospital, located on the west side of Levan Road.

Inspections of manholes and review of utility drawings for the Hospital parking lot revealed a suspicious tap to the storm drain (Figure 2). Representatives from the Hospital cooperated with the City of Livonia and dye tested the area of the hospital closest to the tap. It was found that a section of the old emergency room had an illicit connection to the storm drain, which was subsequently corrected.

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ECT resampled the outfall on November 3, 2022 to confirm that the corrected illicit connection had effectively reduced the *E. coli* levels coming from the outfall and found *E. coli* levels of 10 MPN/100 ml. However, during this sampling, bubbles that looked like soap were observed coming from the outfall (Figure 3). A test for surfactants was conducted in the field and surfactants level of 2.0 ppm was found. This indicates that although the *E. coli* source has been effectively eliminated, an additional pollutant source appears to be present that has been contributing surfactants to the river. Follow-up investigations were conducted later in November 2022. Surfactants levels of 2.0 ppm were consistently found in manholes in the hospital parking lot upstream of the outfall leading to the southern section of the parking lot. Due to a car being parked over a manhole, the investigation was not completed, and additional investigation is needed to narrow down the source of the surfactants.

Table 1. Sampling Results (*E. coli* in MPN/100 mL and Human *Bacteroides* in gene copies/100 ml)

	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>	Human <i>Bacteroides</i>	<i>E. coli</i>	Human <i>Bacteroides</i>	<i>E. coli</i>	Surfactants
	7/16/18	12/12/19	12/19/19	12/19/19	5/13/22	5/13/22	11/3/22	11/3/22
U2008221	>24,196	ND	>6,000	1,010,000	>24,196	631,578,947	10	2.0 ppm

Conclusions and Recommendations

Work to date indicates that correcting an illicit connection has effectively eliminated the *E. coli* source for this outfall. However, an additional pollutant source remains that is contributing surfactants to the stormwater. Further investigation is necessary to determine where the surfactants are coming from and eliminate this pollutant source.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the City’s MS4 permit and as a result of your ARC membership. If you have any questions, you can reach me at 248-763-1407 or levine@ectinc.com.

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Figure 1. Storm Drain and Sampling Location



Figure 2. Tap to Storm Drain in parking lot of Saint Mary's Hospital



Figure 3. Bubbly water coming from the outfall





Annette DeMaria, P.E., PMP
Executive Director

Auburn Hills
Beverly Hills
Bingham Farms
Birmingham
Bloomfield Hills
Bloomfield Twp.
Canton Twp.
Commerce Twp.
Dearborn Heights
Farmington
Farmington Hills
Franklin
Garden City
Henry Ford College
Inkster
Lathrup Village
Livonia
Melvindale
Northville
Northville Twp.
Novi
Oak Park
Oakland County
Orchard Lake
Plymouth
Plymouth Twp.
Redford Twp.
Rochester Hills
Romulus
Schoolcraft College
Southfield
Troy
University of
Michigan-Dearborn
Van Buren Twp.
Walled Lake
Washtenaw County
Wayne
Wayne County
Wayne County Airport
Authority
West Bloomfield Twp.
Westland
Wixom

TO: Patrick Cullen, Wayne County Deputy Drain Commissioner

FROM: Emily Levine, ARC Staff

DATE: February 7, 2023

SUBJECT: IDEP Investigation Results: Perrin Drain

Cc: Jerome Bivens, City of Inkster
Sue Thompson, Wayne County Department of Public Works
Environmental Services Division

ARC staff has partnered with Wayne County to conduct an illicit discharge investigation on the Perrin Drain in response to findings of high *E. coli* in samples collected from the Lower Rouge River by Wayne County.

Background

The Perrin Drain flows into the Lower Rouge River upstream of John Daly Road. Once an open creek, the drain is now contained in an underground pipe from southeast of Inkster Road and Avondale Street, continuing upstream through the neighborhood to the northwest of that intersection, towards Cherry Hill Road and Middlebelt Road (Figure 1). Samples collected from near the outlet in September and October of 2020 had elevated *E. coli* levels. Additional samples collected from various upstream manholes on October 29, 2020 showed some elevated *E. coli* levels. Additional sampling was conducted in March 2021 which resulted in a recommendation to televise portions of the storm drain system.

Results

Based on the sample results from 2020 and 2021, ARC staff had the drains along Helen Street and Tromley Street televised in December of 2022. Although excessive sediment was found in the storm drain on Tromley Street, no evidence was found of illicit connections. On Helen Street, a tap was identified coming from the east side of Helen Street, south of the intersection with Cherry Hill Road (Figure 1).

Conclusions and Recommendations

It is unclear whether the tap that was identified is an illicit connection or draining stormwater. Therefore, additional sampling immediately downstream of the tap is recommended to test for *E. coli* and human *Bacteroides*. If elevated levels are found, then dye testing the nearby apartment building may be the recommended next step.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the County's and City's MS4 permits and as a result of your ARC membership. If you have any questions, I can be reached at 248-763-1407 or elevine@ectinc.com.

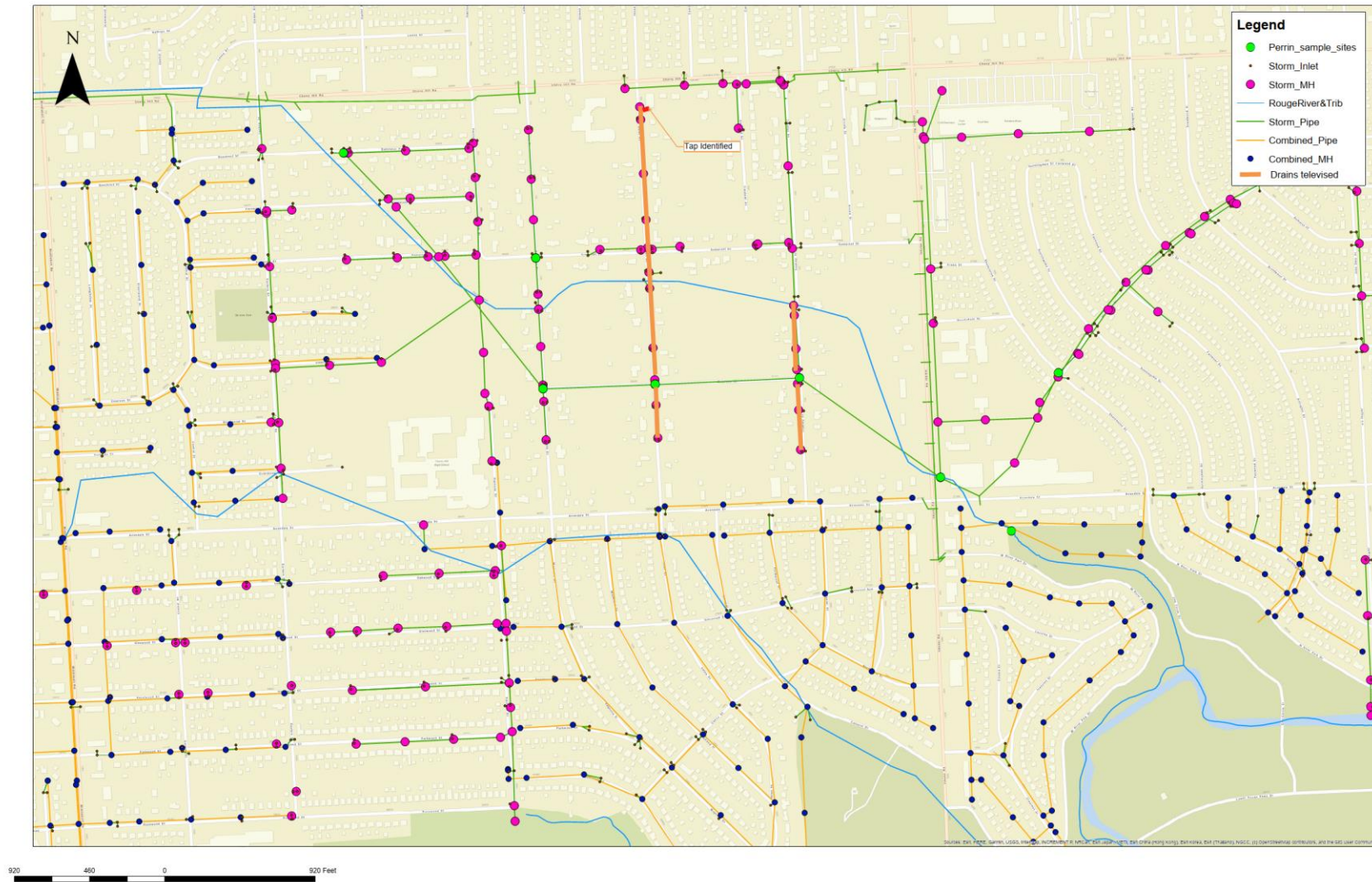
Cooperating Partners:

Cranbrook Institute of Science
Friends of the Rouge
Great Lakes Water Authority
Rouge River Advisory Council
SEMCOG
Southeastern Oakland
County Water Authority

P:\Alliance of Rouge Communities\2022 Alliance of Rouge Communities\Tech Committee\IDEP investigations\Lower Rouge\Perrin Drain Summary 2022.docx

Figure 1. Storm Drain and Sampling Locations

Perrin Drain Televising Locations



[Type here]

Figure 2. Tap in drain along Helen Street, south of Cherry Hill Road



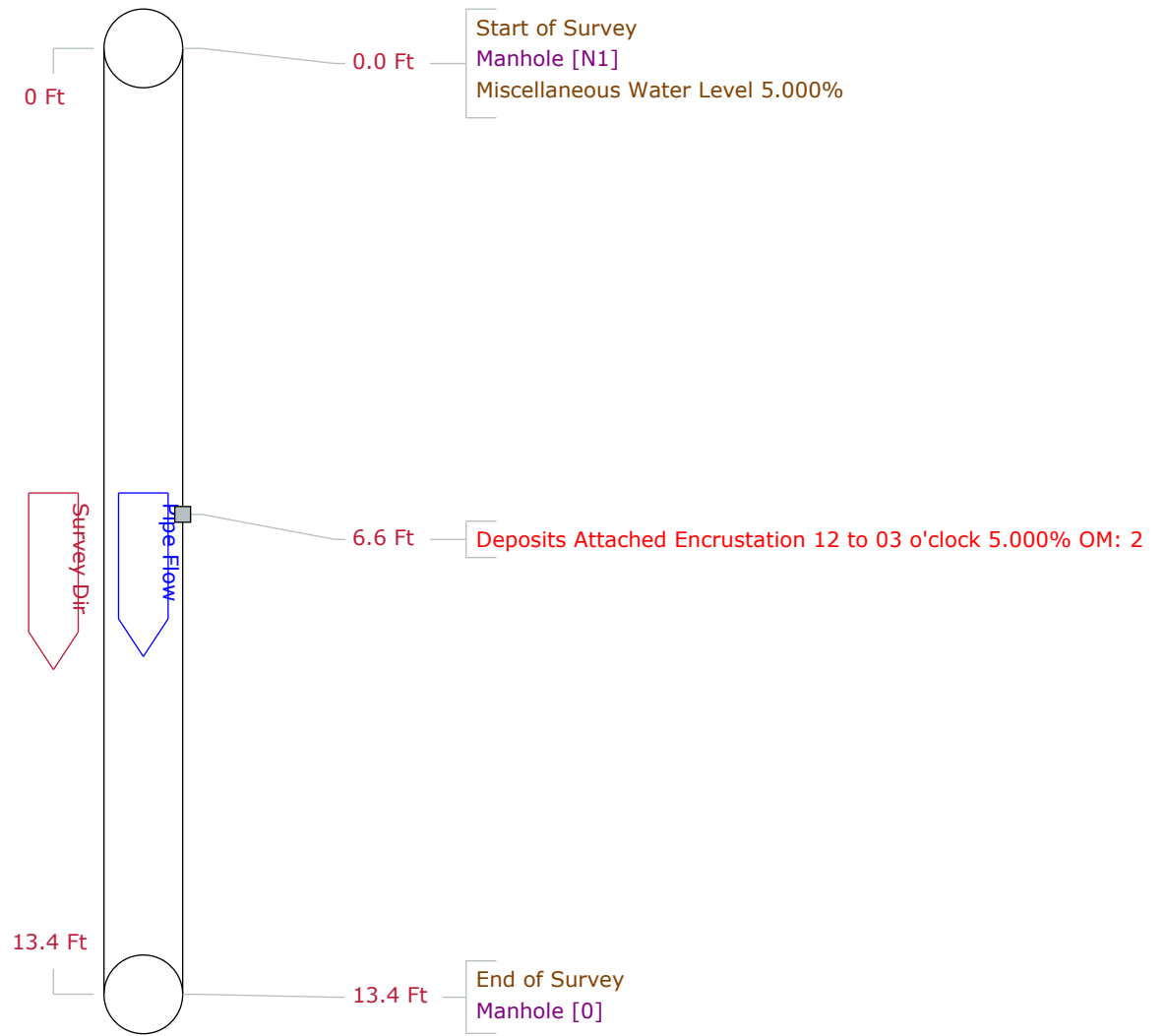
Attachment A: CCTV Inspection Reports

Pipe Graphic Report of PLR S2A

for ECT

Setup	9	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER	
Reviewed By		Reviewer #		Work Order				
Customer	ETC			P/O #				
Media Label	N1A	Project	ETC_STORM_TV_RD_12-21-2022					
Date	2022/12/21	Time	13:02	Weather		Pre-Cleaning	N	
Flow control	Not Controlled	Survey Purpose	Routine Assessment				Direction	Downstream
Street	TROMLEY (SOUTH)			City	INKSTER	Drainage area		
Location Code				Pipe Use	Stormwater Pipe			
Location details	PERRIN			Height	12	Width	ins	
Shape	Circular			Material	Reinforced Concrete Pipe			
Coating				Lining				
Length Surveyed	13.40	Ft	Year Constructed	Year Renewed	Ft	Total length		
Additional info								
Up	S2	Rim to invert		Grade to invert		Rim to grade	Ft	
Down	S3	Rim to invert		Grade to invert		Rim to grade	Ft	

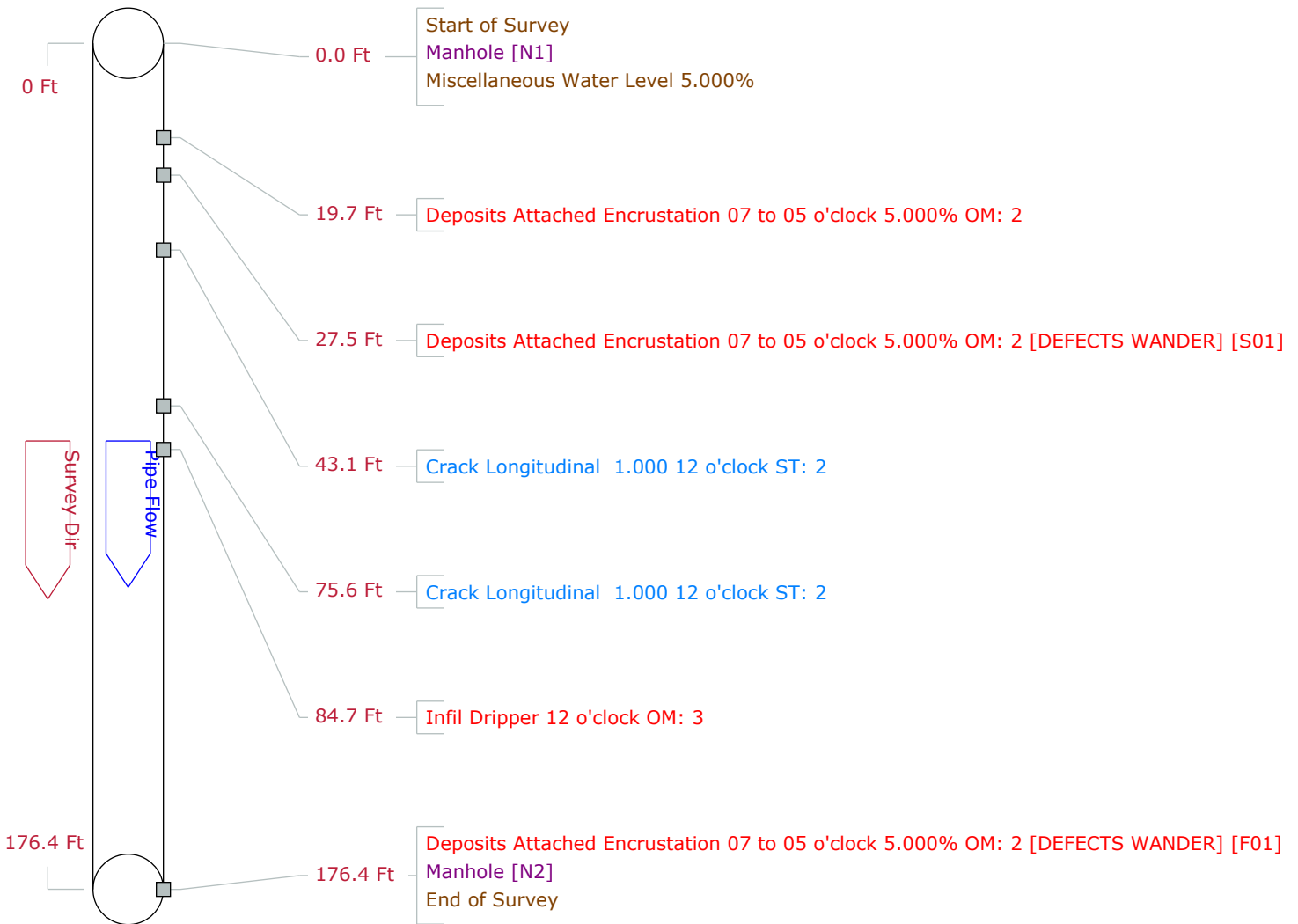
Structural	O & M
Miscellaneous	Constructional



Pipe Graphic Report of PLR N1A-1

for ECT

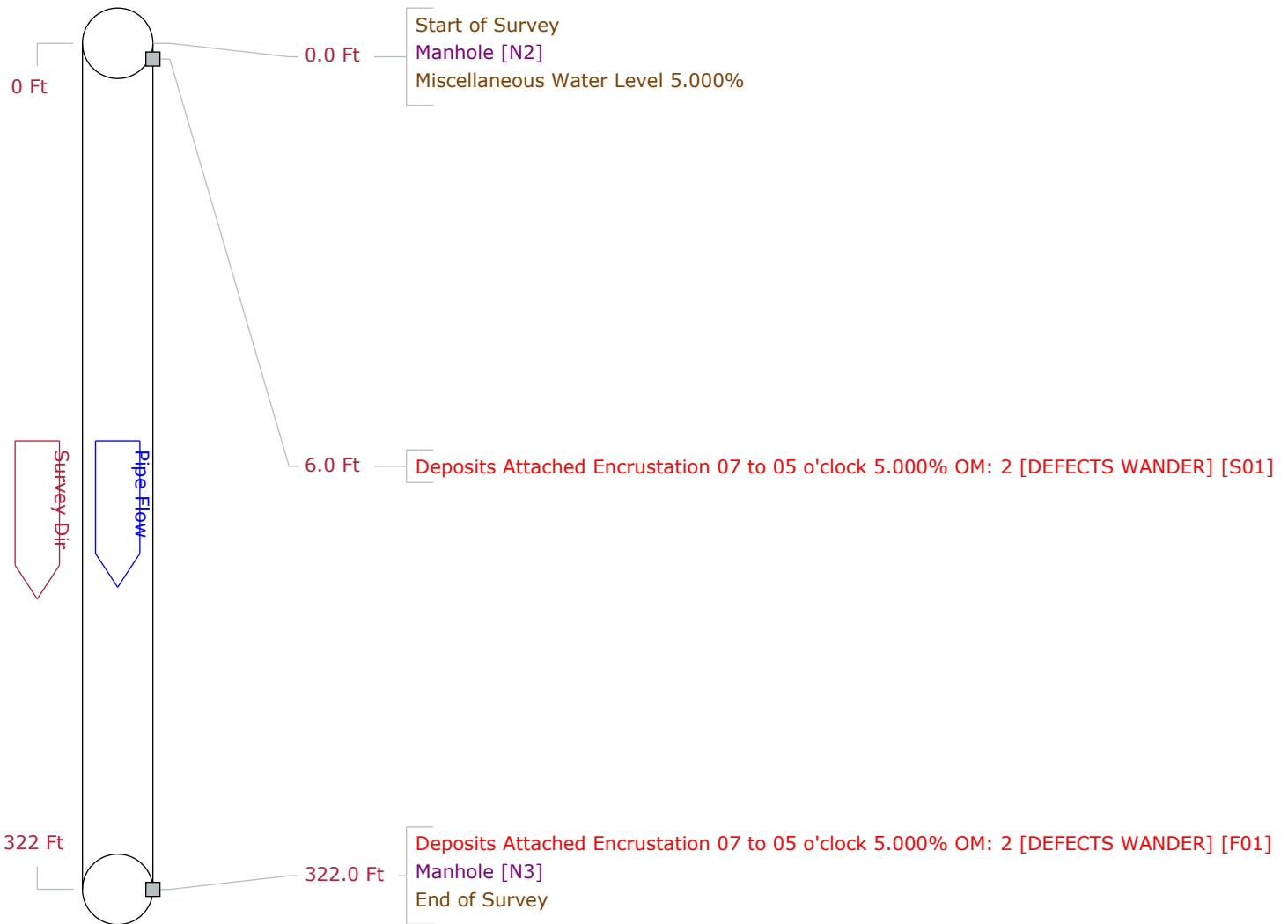
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Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	N1A-1	Project	ETC_STORM_TV_RD_12-21-2022				
Date	2022/12/21	Time	13:11	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned	
Street	TROMLEY (SOUTH)	City	INKSTER	Drainage area			
Location Code				Pipe Use	Stormwater Pipe		
Location details	PERRIN			Height	12	Width	ins
Shape	Circular	Material	Reinforced Concrete Pipe	Lining			
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M
Length Surveyed	176.40 Ft	Year Constructed		Year Renewed		Miscellaneous	Constructional
Additional info							
Up	N1	Rim to invert		Grade to invert		Rim to grade	Ft
Down	N2	Rim to invert		Grade to invert		Rim to grade	Ft



Pipe Graphic Report of PLR N2A

for ECT

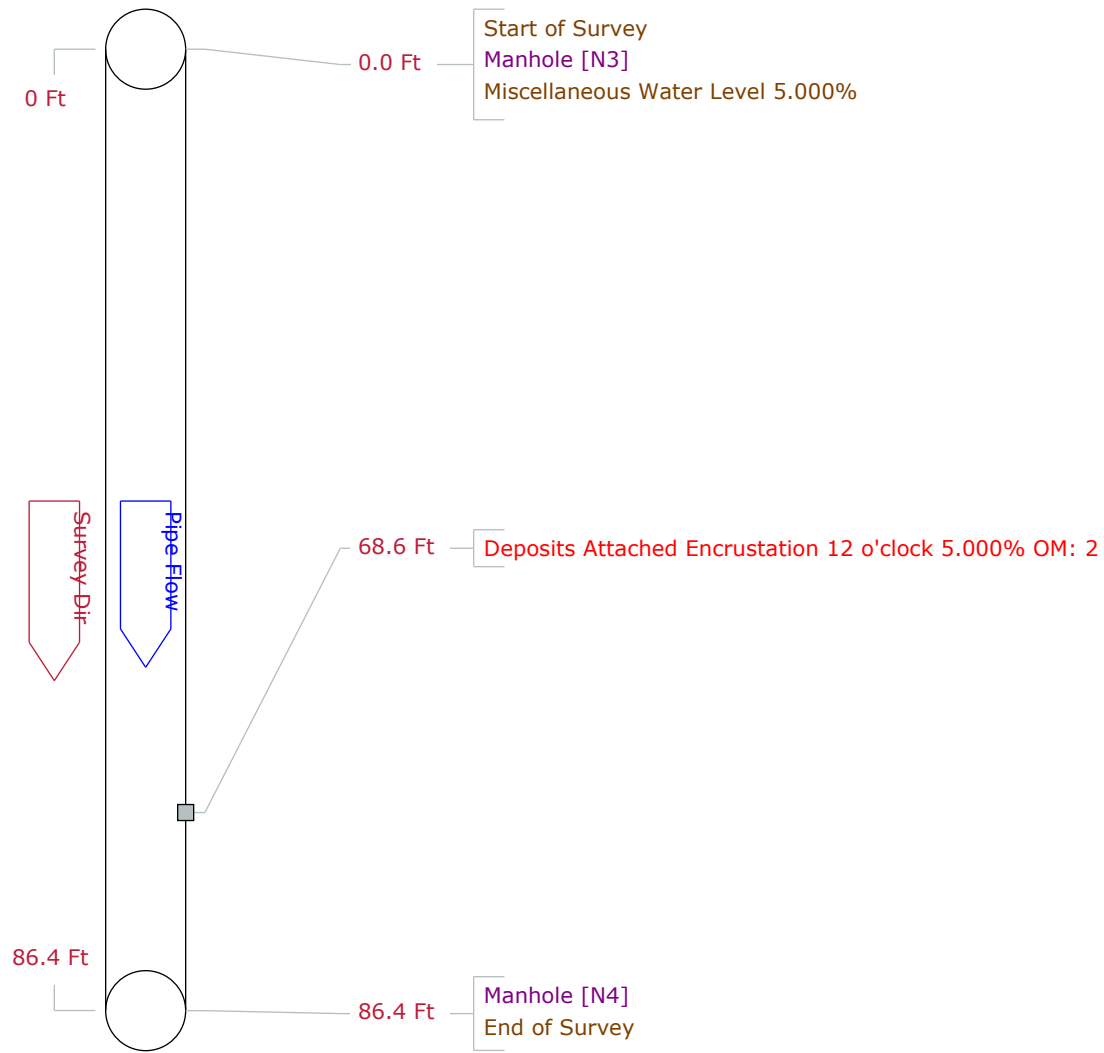
Setup	11	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	N2A	Project	ETC_STORM_TV_RD_12-21-2022				
Date	2022/12/21	Time	13:48	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned	
Street	TROMLEY (SOUTH)		City	INKSTER		Drainage area	
Location Code				Pipe Use	Stormwater Pipe		
Location details	PERRIN			Height	12	Width	ins
Shape	Circular		Material	Reinforced Concrete Pipe		Lining	
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M
Length Surveyed	322.00 Ft	Year Constructed		Year Renewed		Miscellaneous	Constructional
Additional info							
Up	N2	Rim to invert		Grade to invert		Rim to grade	Ft
Down	N3	Rim to invert		Grade to invert		Rim to grade	Ft



Pipe Graphic Report of PLR N3A

for ECT

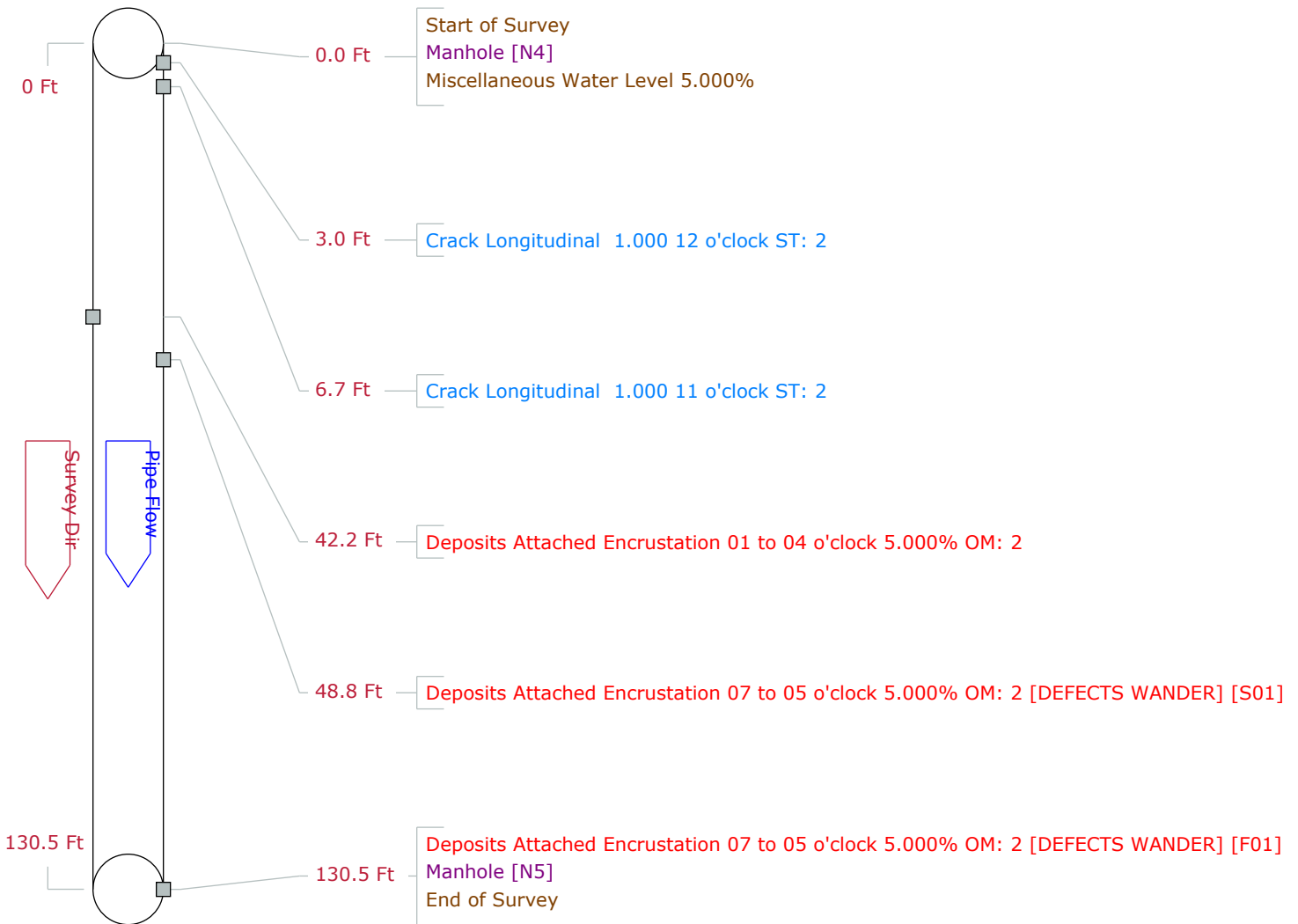
Setup	12	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER	
Reviewed By		Reviewer #		Work Order				
Customer	ETC			P/O #				
Media Label	N3A	Project	ETC_STORM_TV_RD_12-21-2022					
Date	2022/12/21	Time	14:05	Weather		Pre-Cleaning	N	
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned		
Street	TROMLEY (SOUTH)		City	INKSTER		Drainage area		
Location Code				Pipe Use	Stormwater Pipe			
Location details	PERRIN			Height	12	Width	ins	
Shape	Circular		Material	Reinforced Concrete Pipe		Lining		
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M	
Length Surveyed	86.40	Year Constructed		Year Renewed		Miscellaneous	Constructional	
Additional info								
Up	N3	Rim to invert		Grade to invert		Rim to grade	Ft	
Down	N4	Rim to invert		Grade to invert		Rim to grade	Ft	



Pipe Graphic Report of PLR N4A

for ECT

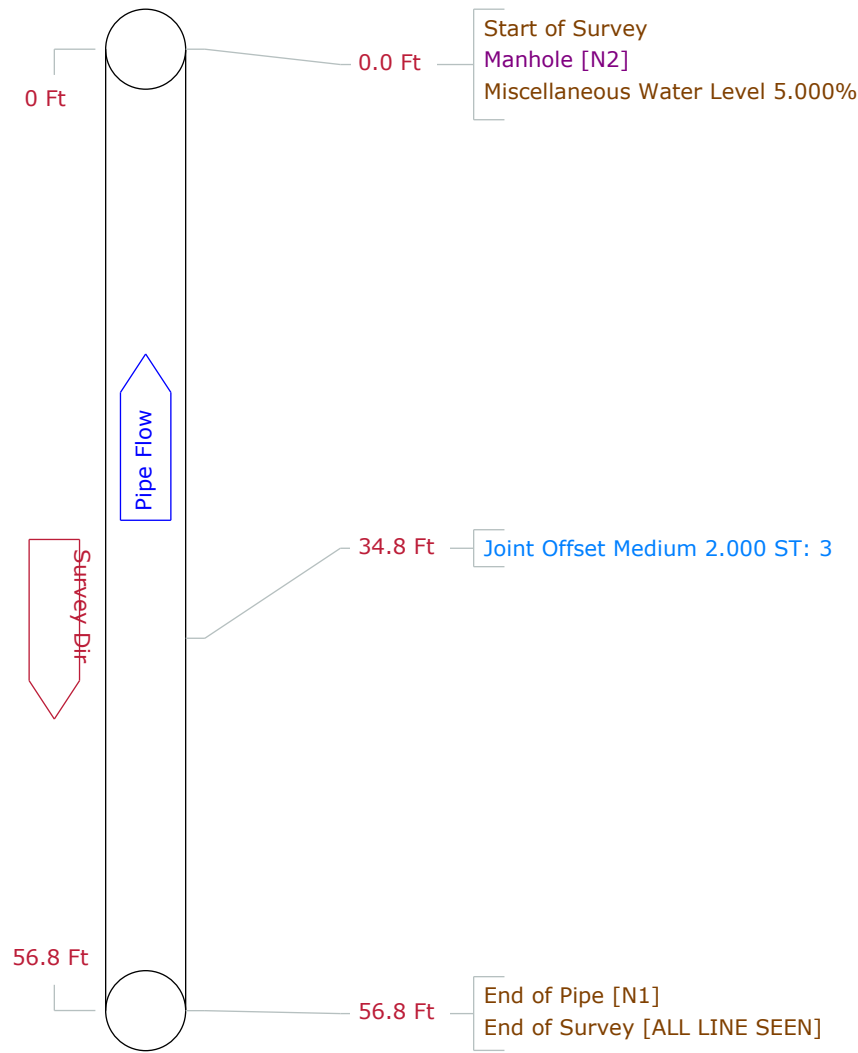
Setup	13	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER	
Reviewed By		Reviewer #		Work Order				
Customer	ETC			P/O #				
Media Label	N4A	Project	ETC_STORM_TV_RD_12-21-2022					
Date	2022/12/21	Time	14:39	Weather		Pre-Cleaning	N	
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned		
Street	HELEN	City	INKSTER		Drainage area			
Location Code		Pipe Use	Stormwater Pipe					
Location details	PERRIN	Height	18	Width	ins			
Shape	Circular	Material	Reinforced Concrete Pipe		Lining			
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M	
Length Surveyed	130.50 Ft	Year Constructed		Year Renewed		Miscellaneous	Constructional	
Additional info								
Up	N4	Rim to invert		Grade to invert		Rim to grade	Ft	
Down	N5	Rim to invert		Grade to invert		Rim to grade	Ft	



Pipe Graphic Report of PLR N1A-1

for ECT

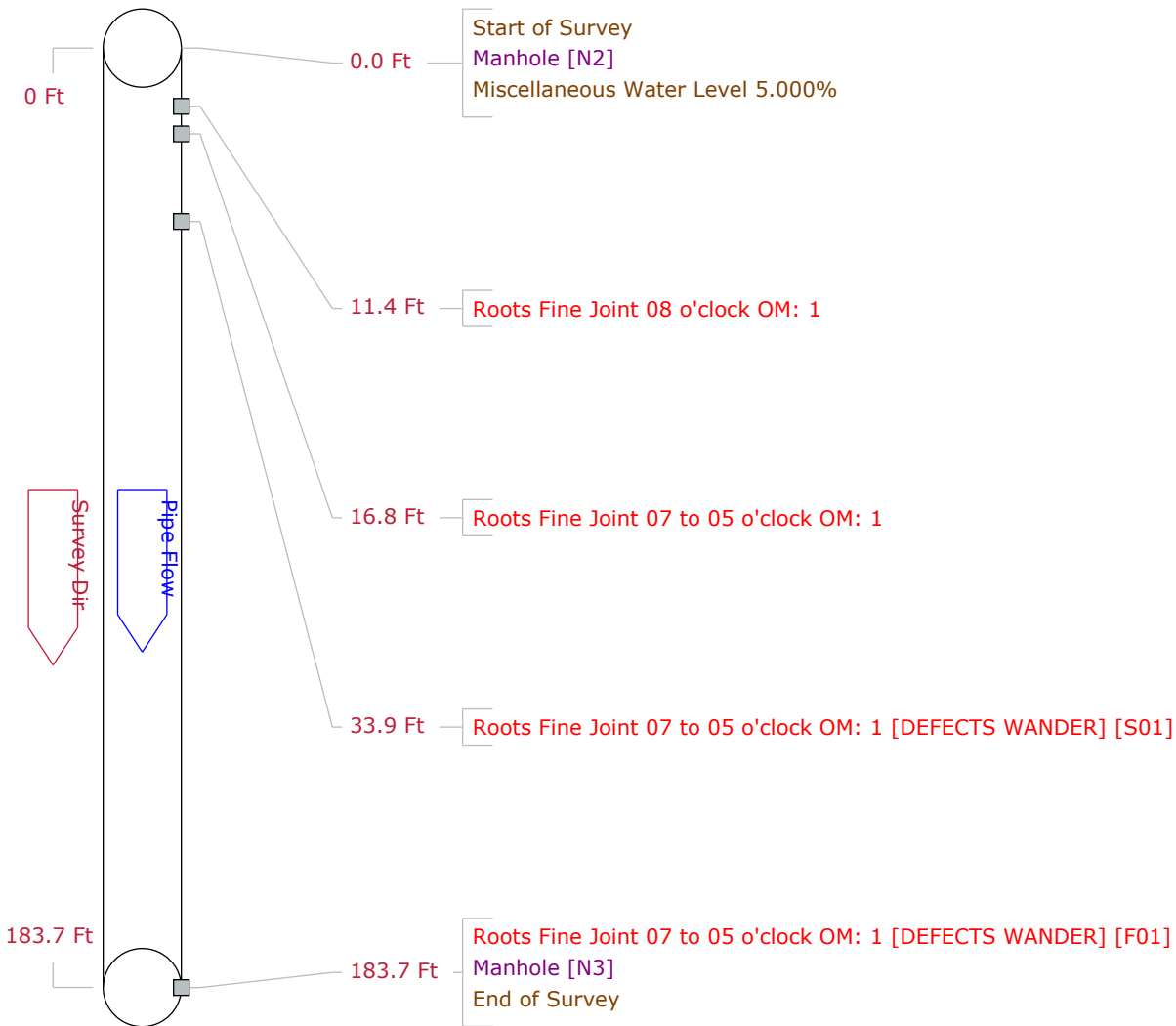
Setup	14/28	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER				
Reviewed By		Reviewer #		Work Order							
Customer	ETC			P/O #							
Media Label	N1A-1	Project	ECT_STORM_TV_RD_12-21-2022								
Date	2022/12/22	Time	12:46	Weather		Pre-Cleaning	N				
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Direction	Upstream				
Street	TROMLEY (SOUTH)			City	INKSTER	Drainage area					
Location Code				Pipe Use	Stormwater Pipe						
Location details	PERRIN			Height	12	Width	ins				
Shape	Circular			Material	Reinforced Concrete Pipe						
Coating				Lining							
Length Surveyed	56.80	Ft	Year Constructed	Year Renewed	Ft	<table border="1"> <tr> <td>Structural</td> <td>O & M</td> </tr> <tr> <td>Miscellaneous</td> <td>Constructional</td> </tr> </table>		Structural	O & M	Miscellaneous	Constructional
Structural	O & M										
Miscellaneous	Constructional										
Additional info	Reverse set up on sheet:29										
Up	N1	Rim to invert	Grade to invert	Rim to grade	Ft						
Down	N2	Rim to invert	Grade to invert	Rim to grade	Ft						



Pipe Graphic Report of PLR N2A

for ECT

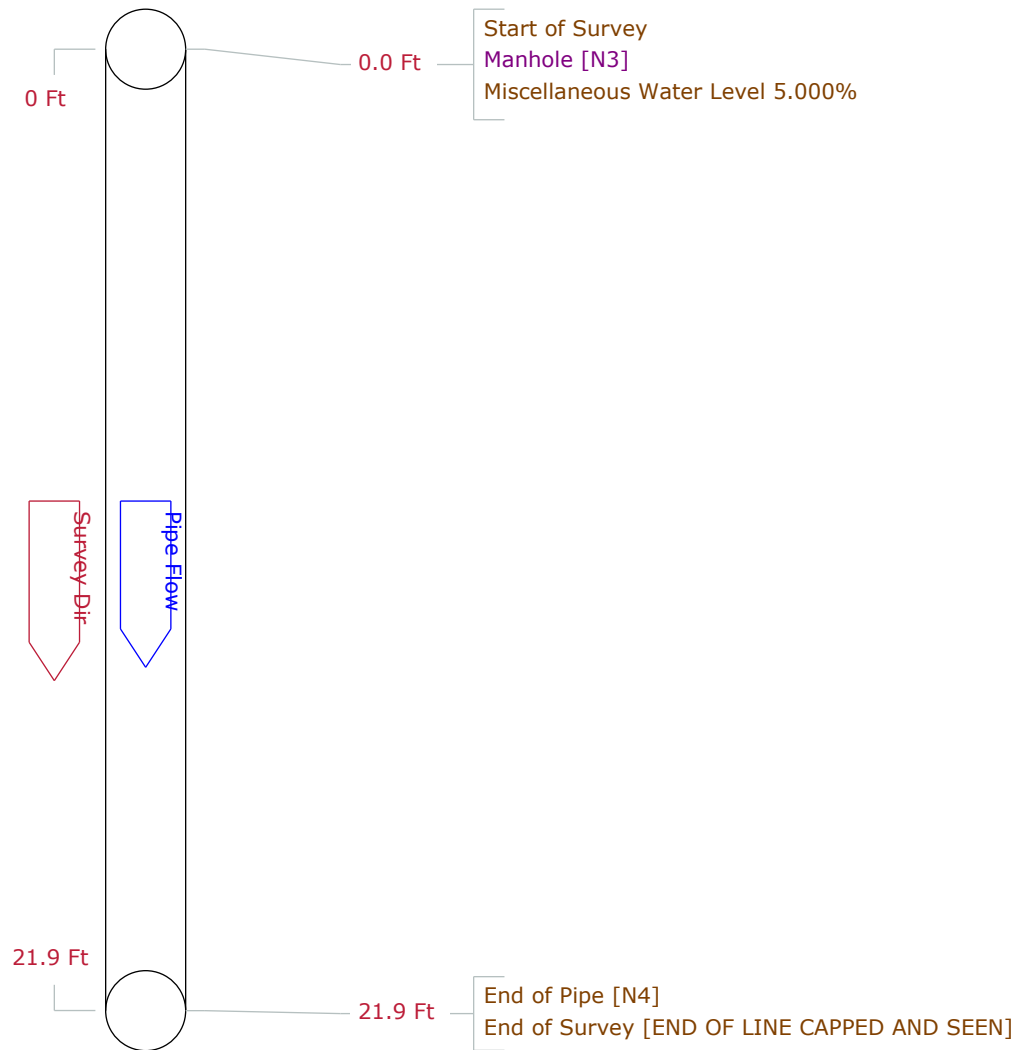
Setup	15	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER	
Reviewed By		Reviewer #		Work Order				
Customer	ETC			P/O #				
Media Label	N2A	Project	ECT_STORM_TV_RD_12-21-2022					
Date	2022/12/22	Time	13:02	Weather		Pre-Cleaning	N	
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned		
Street	TROMLEY (SOUTH)		City	INKSTER		Drainage area		
Location Code				Pipe Use	Stormwater Pipe			
Location details	PERRIN			Height	12	Width	ins	
Shape	Circular		Material	Reinforced Concrete Pipe		Lining		
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M	
Length Surveyed	183.70 Ft	Year Constructed		Year Renewed		Miscellaneous	Constructional	
Additional info								
Up	N2	Rim to invert		Grade to invert		Rim to grade	Ft	
Down	N3	Rim to invert		Grade to invert		Rim to grade	Ft	



Pipe Graphic Report of PLR N3A

for ECT

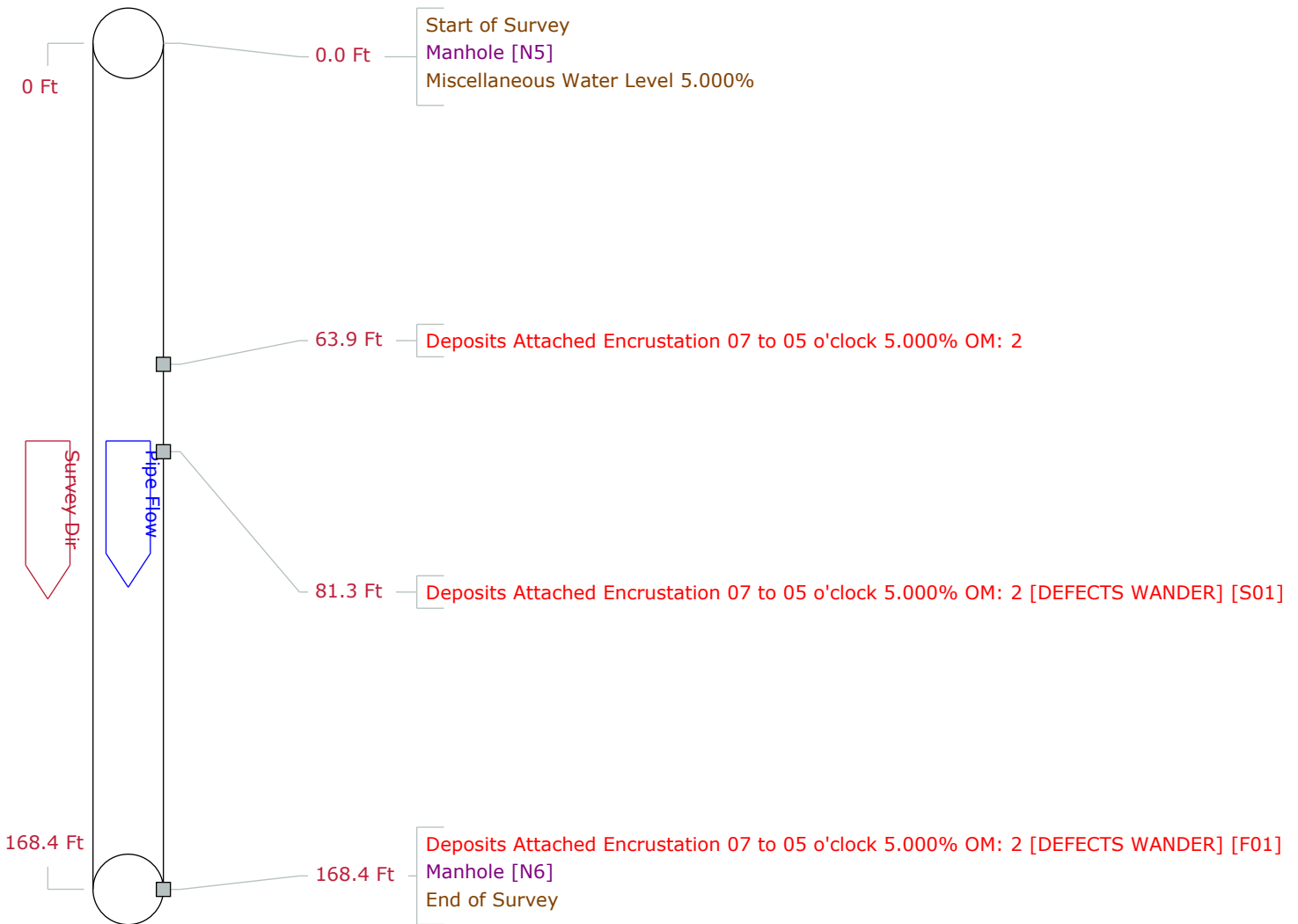
Setup	16	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER				
Reviewed By		Reviewer #		Work Order							
Customer	ETC			P/O #							
Media Label	N3A	Project	ECT_STORM_TV_RD_12-21-2022								
Date	2022/12/22	Time	13:37	Weather		Pre-Cleaning	N				
Flow control	Not Controlled	Survey Purpose	Routine Assessment				Direction	Downstream			
Street	TROMLEY (SOUTH)			City	INKSTER	Drainage area					
Location Code				Pipe Use	Stormwater Pipe						
Location details	PERRIN			Height	12	Width	ins				
Shape	Circular			Material	Reinforced Concrete Pipe						
Coating				Lining							
Length Surveyed	21.90	Ft	Year Constructed	Year Renewed	Ft	<table border="1"> <tr> <td>Structural</td> <td>O & M</td> </tr> <tr> <td>Miscellaneous</td> <td>Constructional</td> </tr> </table>		Structural	O & M	Miscellaneous	Constructional
Structural	O & M										
Miscellaneous	Constructional										
Additional info											
Up	N3	Rim to invert	Grade to invert	Rim to grade	Ft						
Down	N4	Rim to invert	Grade to invert	Rim to grade	Ft						



Pipe Graphic Report of PLR N5A

for ECT

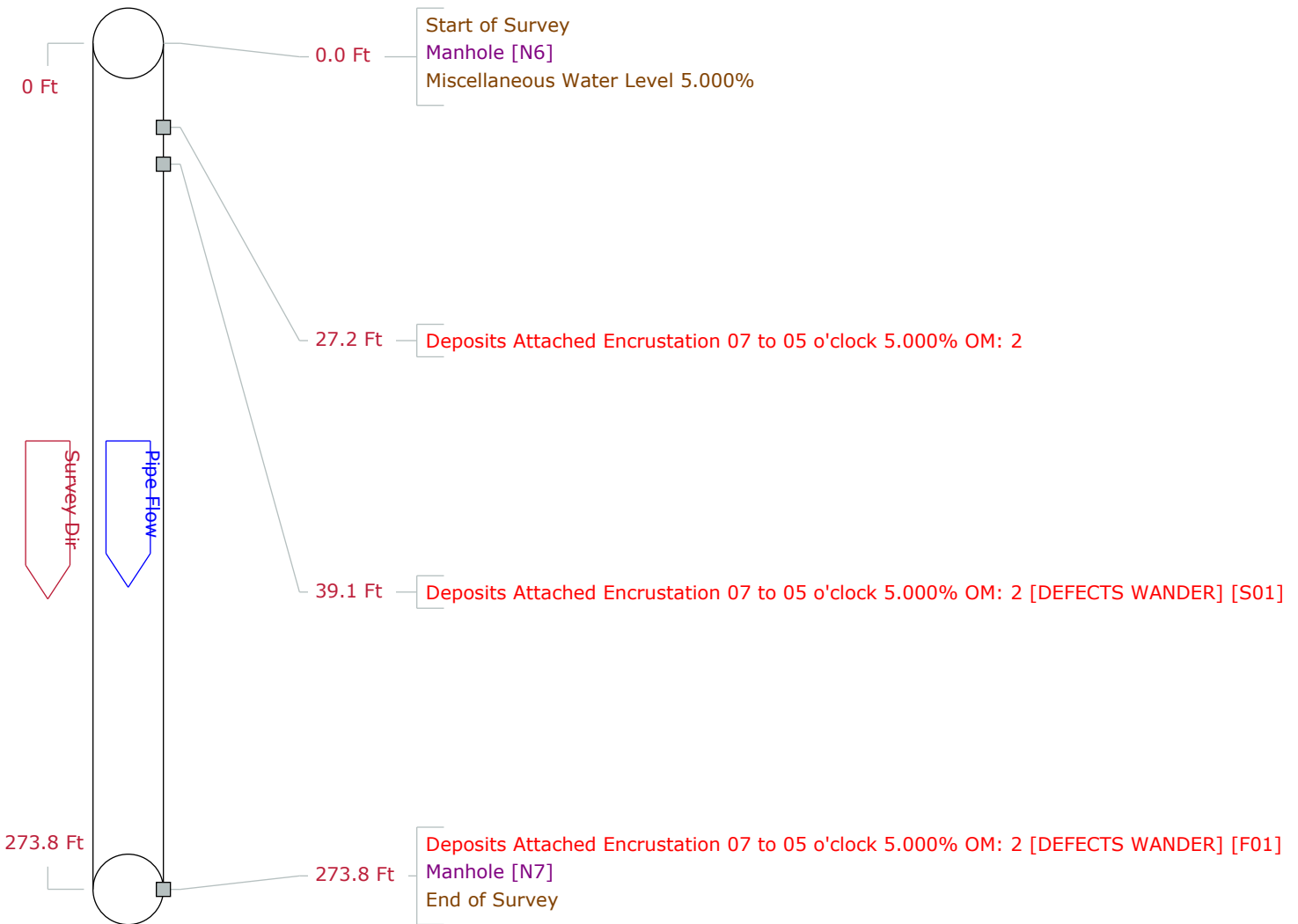
Setup	17	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	N5A	Project	ECT_STORM_TV_RD_12-21-2022				
Date	2022/12/22	Time	8:45	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Direction	Downstream
Street	HELEN	City	INKSTER		Drainage area		
Location Code		Pipe Use	Stormwater Pipe				
Location details	PERRIN	Height	18	Width	ins		
Shape	Circular	Material	Reinforced Concrete Pipe		Lining		
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M
Length Surveyed	168.40 Ft	Year Constructed		Year Renewed		Miscellaneous	Constructional
Additional info							
Up	N5	Rim to invert		Grade to invert		Rim to grade	Ft
Down	N6	Rim to invert		Grade to invert		Rim to grade	Ft



Pipe Graphic Report of PLR N6A

for ECT

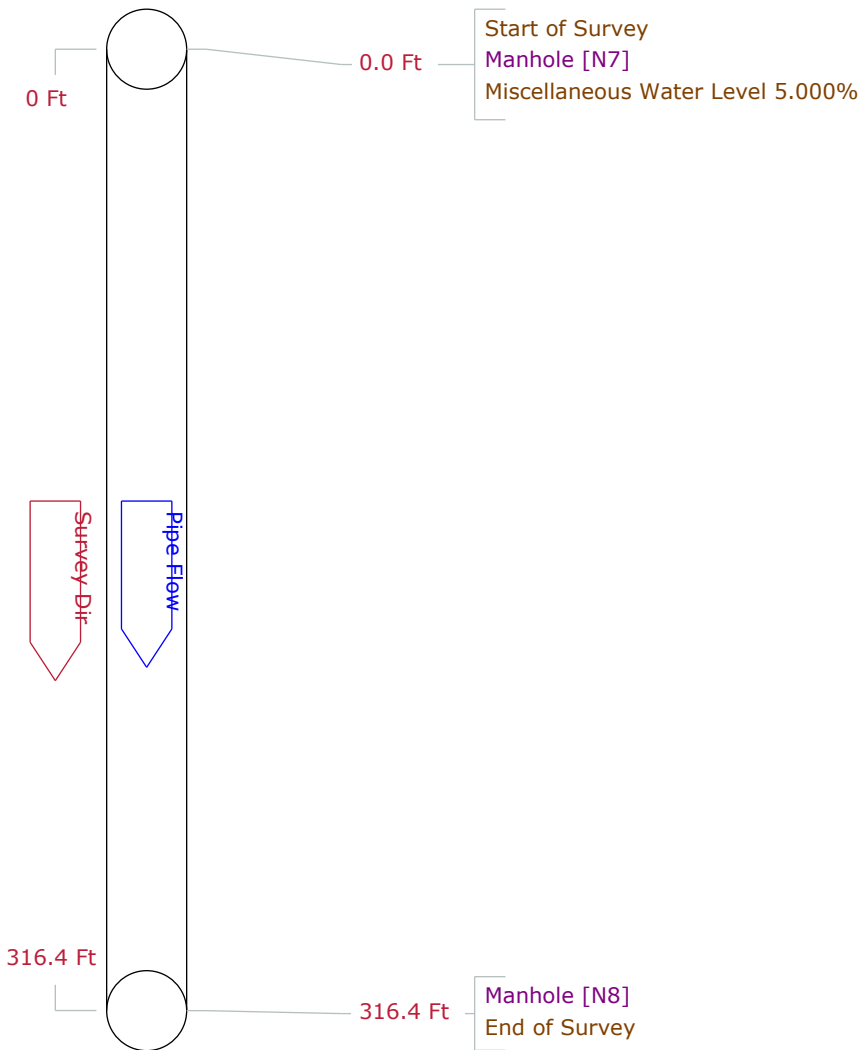
Setup	18	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	N6A	Project	ECT_STORM_TV_RD_12-21-2022				
Date	2022/12/22	Time	9:31	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Direction	Downstream
Street	HELEN	City	INKSTER		Drainage area		
Location Code		Pipe Use	Stormwater Pipe				
Location details	PERRIN	Height	18	Width	ins		
Shape	Circular	Material	Reinforced Concrete Pipe		Lining		
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M
Length Surveyed	273.80 Ft	Year Constructed		Year Renewed		Miscellaneous	Constructional
Additional info							
Up	N6	Rim to invert		Grade to invert		Rim to grade	Ft
Down	N7	Rim to invert		Grade to invert		Rim to grade	Ft



Pipe Graphic Report of PLR N7A

for ECT

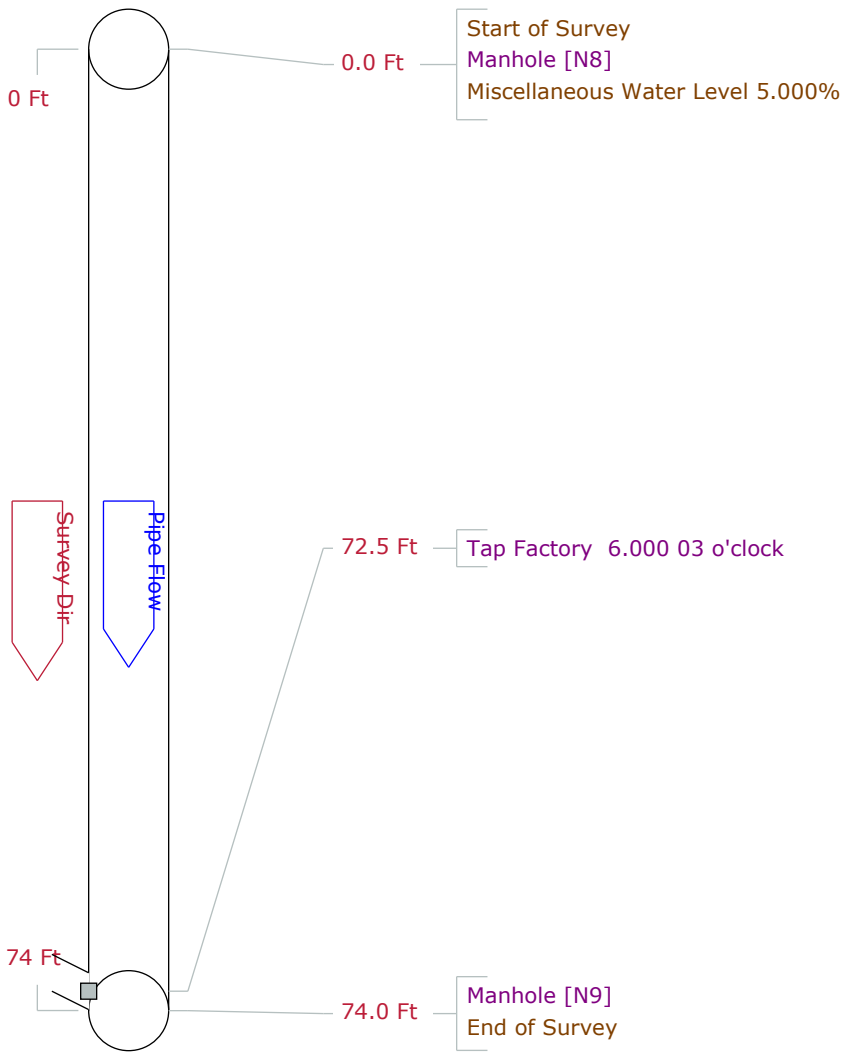
Setup	19	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	N7A	Project	ECT_STORM_TV_RD_12-21-2022				
Date	2022/12/22	Time	9:41	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Direction	Downstream
Street	HELEN	City	INKSTER		Drainage area		
Location Code		Pipe Use	Stormwater Pipe				
Location details	PERRIN	Height	18	Width	ins		
Shape	Circular	Material	Reinforced Concrete Pipe		Lining		
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M
Length Surveyed	316.40 Ft	Year Constructed		Year Renewed		Miscellaneous	Constructional
Additional info							
Up	N7	Rim to invert		Grade to invert		Rim to grade	Ft
Down	N8	Rim to invert		Grade to invert		Rim to grade	Ft



Pipe Graphic Report of PLR N8A

for ECT

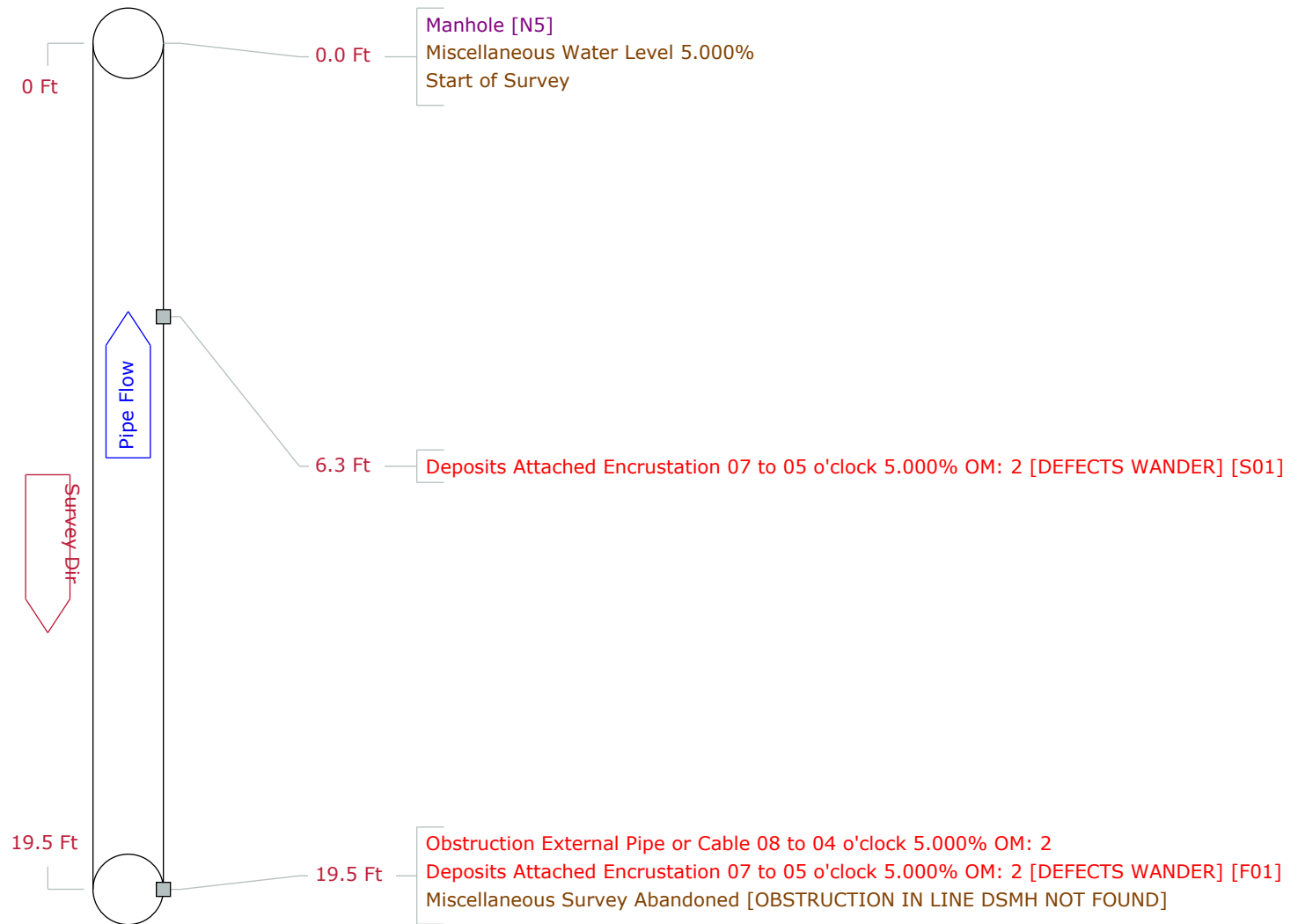
Setup	20	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER				
Reviewed By		Reviewer #		Work Order							
Customer	ETC			P/O #							
Media Label	N8A	Project	ECT_STORM_TV_RD_12-21-2022								
Date	2022/12/22	Time	9:52	Weather		Pre-Cleaning	N				
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned					
Street	HELEN	City	INKSTER		Drainage area						
Location Code				Pipe Use	Stormwater Pipe						
Location details	PERRIN			Height	12	Width	ins				
Shape	Circular	Material	Reinforced Concrete Pipe		Lining						
Coating		Pipe Joint length	Ft	Total length	Ft	<table border="1"> <tr> <td>Structural</td> <td>O & M</td> </tr> <tr> <td>Miscellaneous</td> <td>Constructional</td> </tr> </table>		Structural	O & M	Miscellaneous	Constructional
Structural	O & M										
Miscellaneous	Constructional										
Length Surveyed	74.00	Year Constructed		Year Renewed							
Additional info											
Up	N8	Rim to invert		Grade to invert		Rim to grade	Ft				
Down	N9	Rim to invert		Grade to invert		Rim to grade	Ft				



Pipe Graphic Report of PLR N5B

for ECT

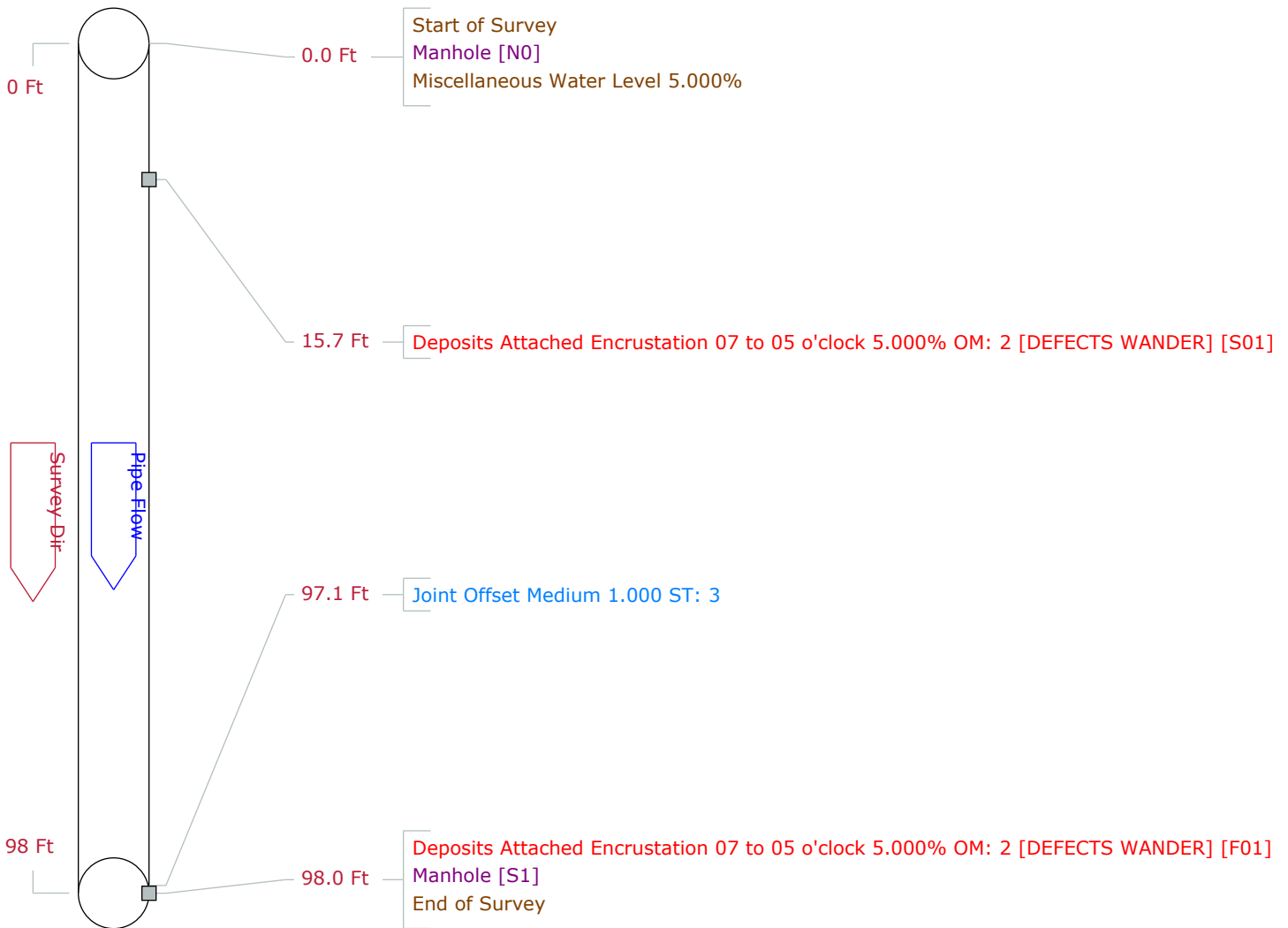
Setup	21	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER				
Reviewed By		Reviewer #		Work Order							
Customer	ETC			P/O #							
Media Label	N5B	Project	ECT_STORM_TV_RD_12-21-2022								
Date	2022/12/22	Time	10:30	Weather		Pre-Cleaning	N				
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Direction	Upstream				
Street	HELEN	City	INKSTER		Drainage area						
Location Code				Pipe Use	Stormwater Pipe						
Location details	PERRIN			Height	18	Width	ins				
Shape	Circular	Material	Reinforced Concrete Pipe		Lining						
Coating		Pipe Joint length	Ft	Total length	Ft	<table border="1"> <tr> <td>Structural</td> <td>O & M</td> </tr> <tr> <td>Miscellaneous</td> <td>Constructional</td> </tr> </table>		Structural	O & M	Miscellaneous	Constructional
Structural	O & M										
Miscellaneous	Constructional										
Length Surveyed	19.50	Year Constructed		Year Renewed							
Additional info											
Up	SOMERSET EAST	Rim to invert		Grade to invert		Rim to grade	Ft				
Down	N5	Rim to invert		Grade to invert		Rim to grade	Ft				



Pipe Graphic Report of PLR N0A

for ECT

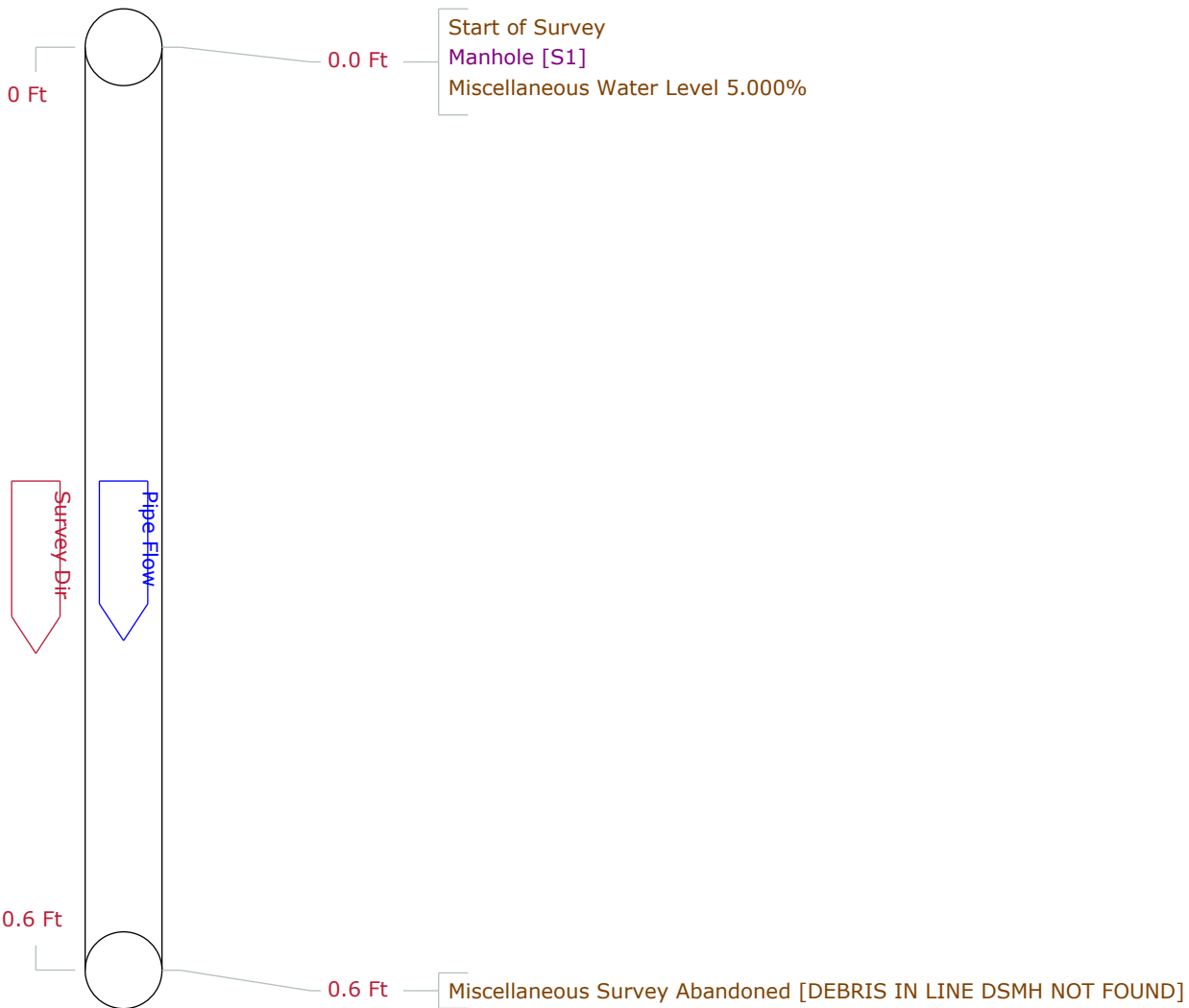
Setup	22	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER	
Reviewed By		Reviewer #		Work Order				
Customer	ETC			P/O #				
Media Label	N0A	Project	ECT_STORM_TV_RD_12-21-2022					
Date	2022/12/22	Time	10:59	Weather		Pre-Cleaning	N	
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned		
Street	HELEN (SOUTH)	City	INKSTER		Drainage area			
Location Code				Pipe Use	Stormwater Pipe			
Location details	PERRIN			Height	12	Width	ins	
Shape	Circular	Material	Reinforced Concrete Pipe		Lining			
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M	
Length Surveyed	98.00	Year Constructed		Year Renewed		Miscellaneous	Constructional	
Additional info								
Up	N0	Rim to invert		Grade to invert		Rim to grade	Ft	
Down	S1	Rim to invert		Grade to invert		Rim to grade	Ft	



Pipe Graphic Report of PLR SOUTH 1

for ECT

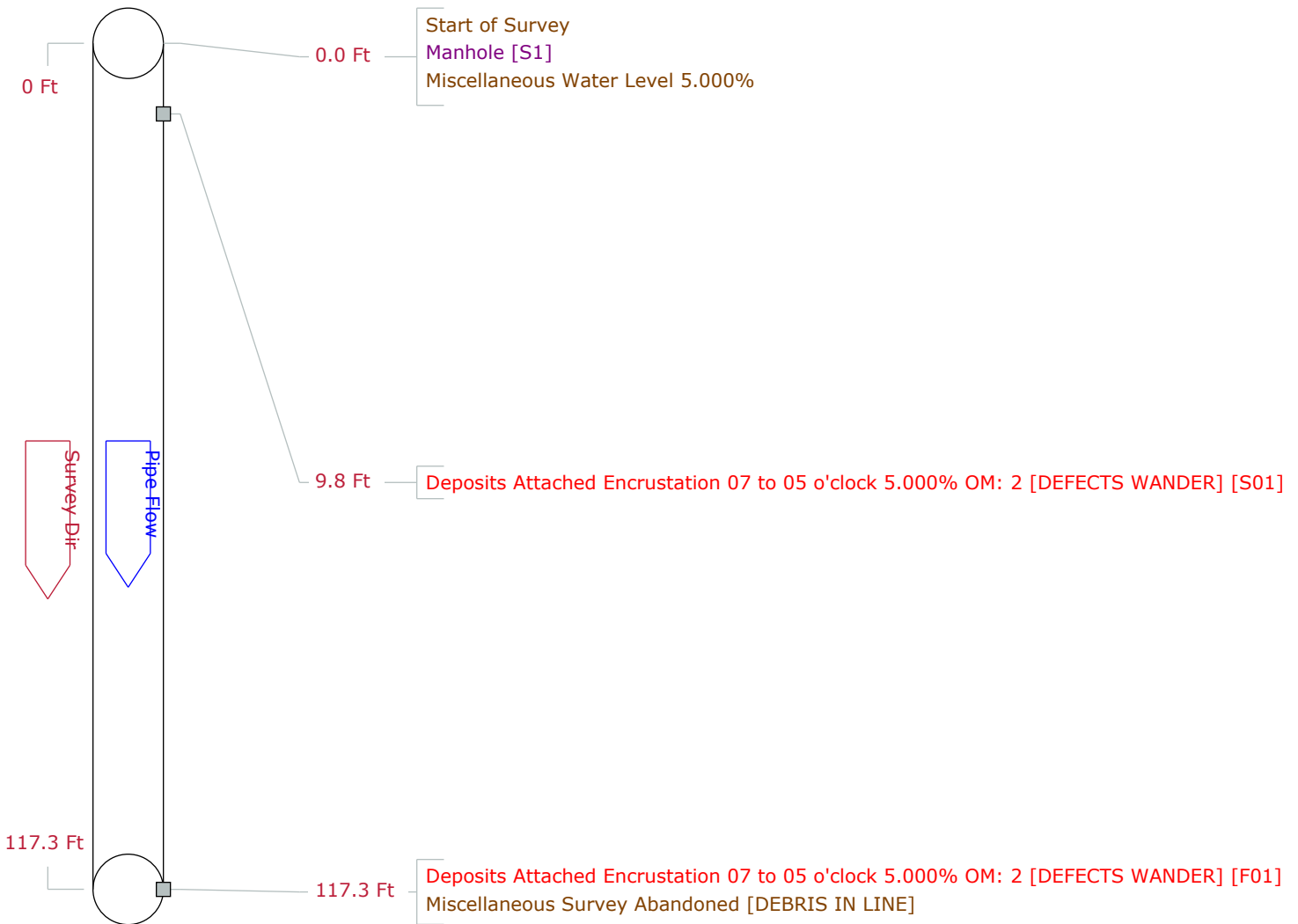
Setup	23	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	SOUTH 1	Project	ECT_STORM_TV_RD_12-21-2022				
Date	2022/12/22	Time	11:41	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned	
Street	TROMLEY (SOUTH)	City	INKSTER	Drainage area			
Location Code				Pipe Use	Stormwater Pipe		
Location details	PERRIN			Height	12	Width	ins
Shape	Circular	Material	Reinforced Concrete Pipe	Lining			
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M
Length Surveyed	00.60	Year Constructed		Year Renewed		Miscellaneous	Constructional
Additional info	DSMH Not Found						
Up	S1	Rim to invert		Grade to invert		Rim to grade	Ft
Down	0	Rim to invert		Grade to invert		Rim to grade	Ft



Pipe Graphic Report of PLR S1A

for ECT

Setup	24/25	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER	
Reviewed By		Reviewer #		Work Order				
Customer	ETC			P/O #				
Media Label	S1A	Project	ECT_STORM_TV_RD_12-21-2022					
Date	2022/12/22	Time	11:51	Weather		Pre-Cleaning	N	
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned		
Street	TROMLEY (SOUTH)		City	INKSTER		Drainage area		
Location Code				Pipe Use	Stormwater Pipe			
Location details	PERRIN			Height	12	Width	ins	
Shape	Circular		Material	Reinforced Concrete Pipe		Lining		
Coating		Pipe Joint length	Ft	Total length	Ft	Structural	O & M	
Length Surveyed	117.30 Ft	Year Constructed		Year Renewed		Miscellaneous	Constructional	
Additional info								
Up	S1	Rim to invert		Grade to invert		Rim to grade	Ft	
Down	S2	Rim to invert		Grade to invert		Rim to grade	Ft	

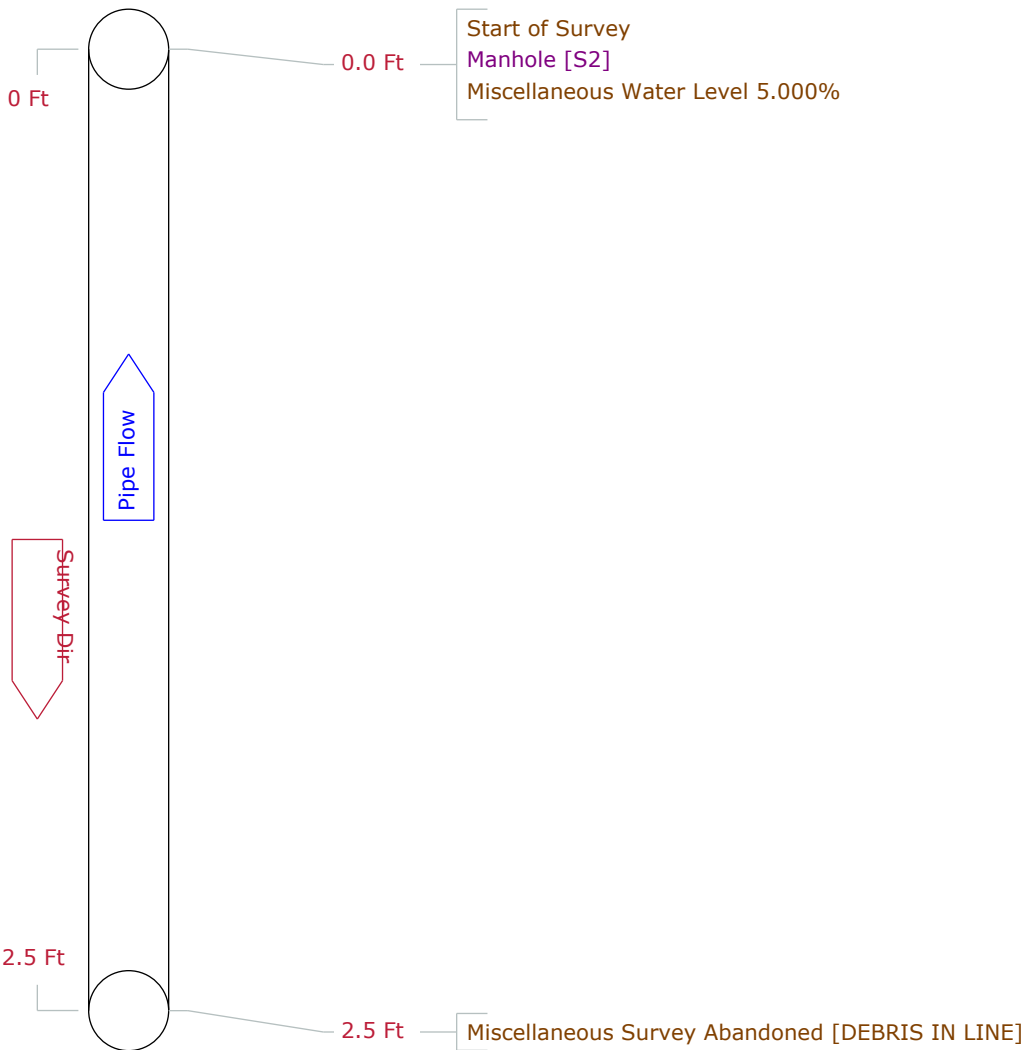


Pipe Graphic Report of PLR S1A

for ECT

Setup	25/24	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER
Reviewed By		Reviewer #		Work Order			
Customer	ETC			P/O #			
Media Label	S1A	Project	ECT_STORM_TV_RD_12-21-2022				
Date	2022/12/22	Time	12:03	Weather		Pre-Cleaning	N
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Date Cleaned	
Direction	Upstream						
Street	TROMLEY (SOUTH)			City	INKSTER	Drainage area	
Location Code				Pipe Use	Stormwater Pipe		
Location details	PERRIN			Height	12	Width	ins
Shape	Circular			Material	Reinforced Concrete Pipe		
Coating				Lining			
Length Surveyed	02.50	Ft	Year Constructed		Year Renewed		
Additional info	Reverse set up on sheet:24						
Up	S1	Rim to invert		Grade to invert		Rim to grade	Ft
Down	S2	Rim to invert		Grade to invert		Rim to grade	Ft

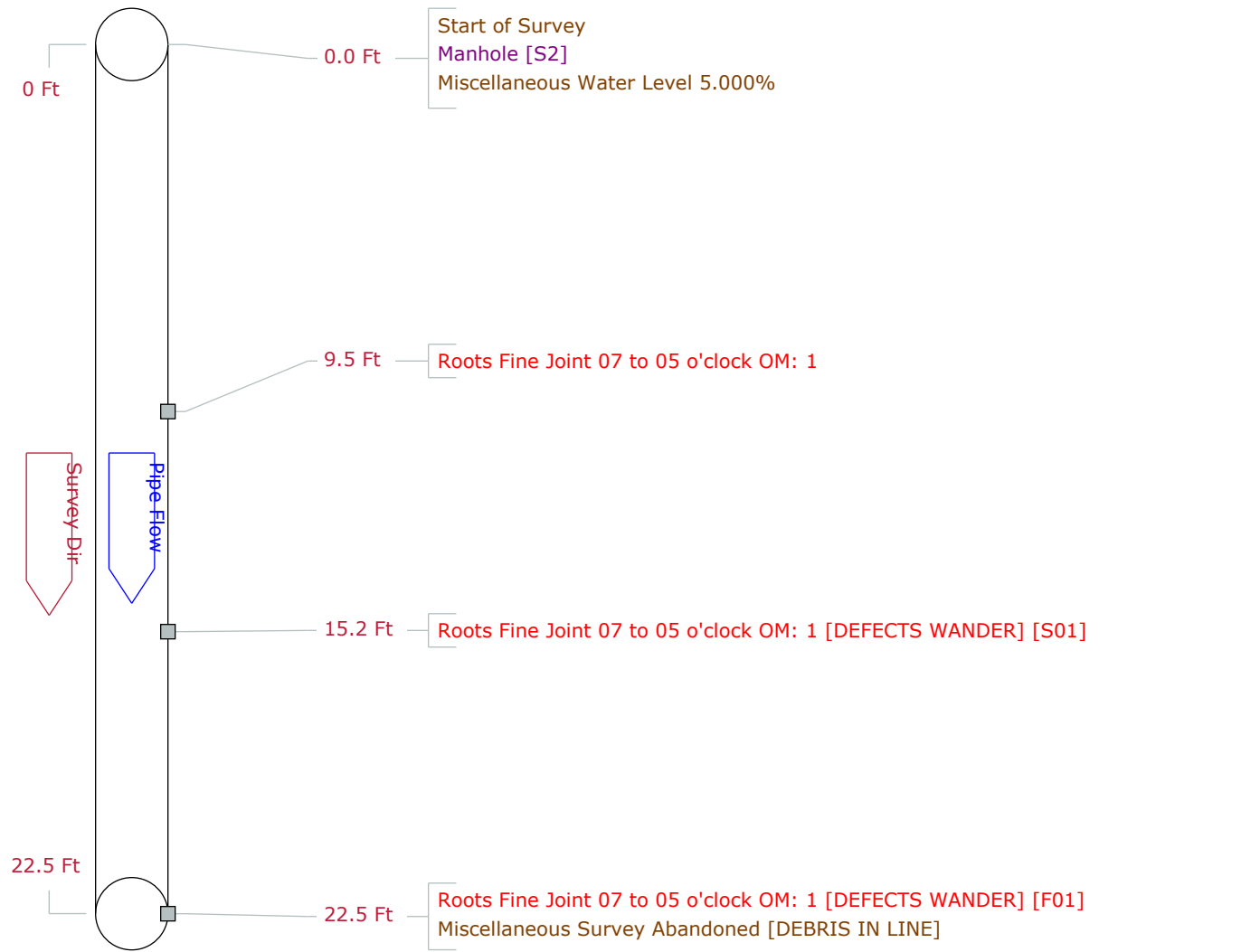
Structural	O & M
Miscellaneous	Constructional



Pipe Graphic Report of PLR S2A

for ECT

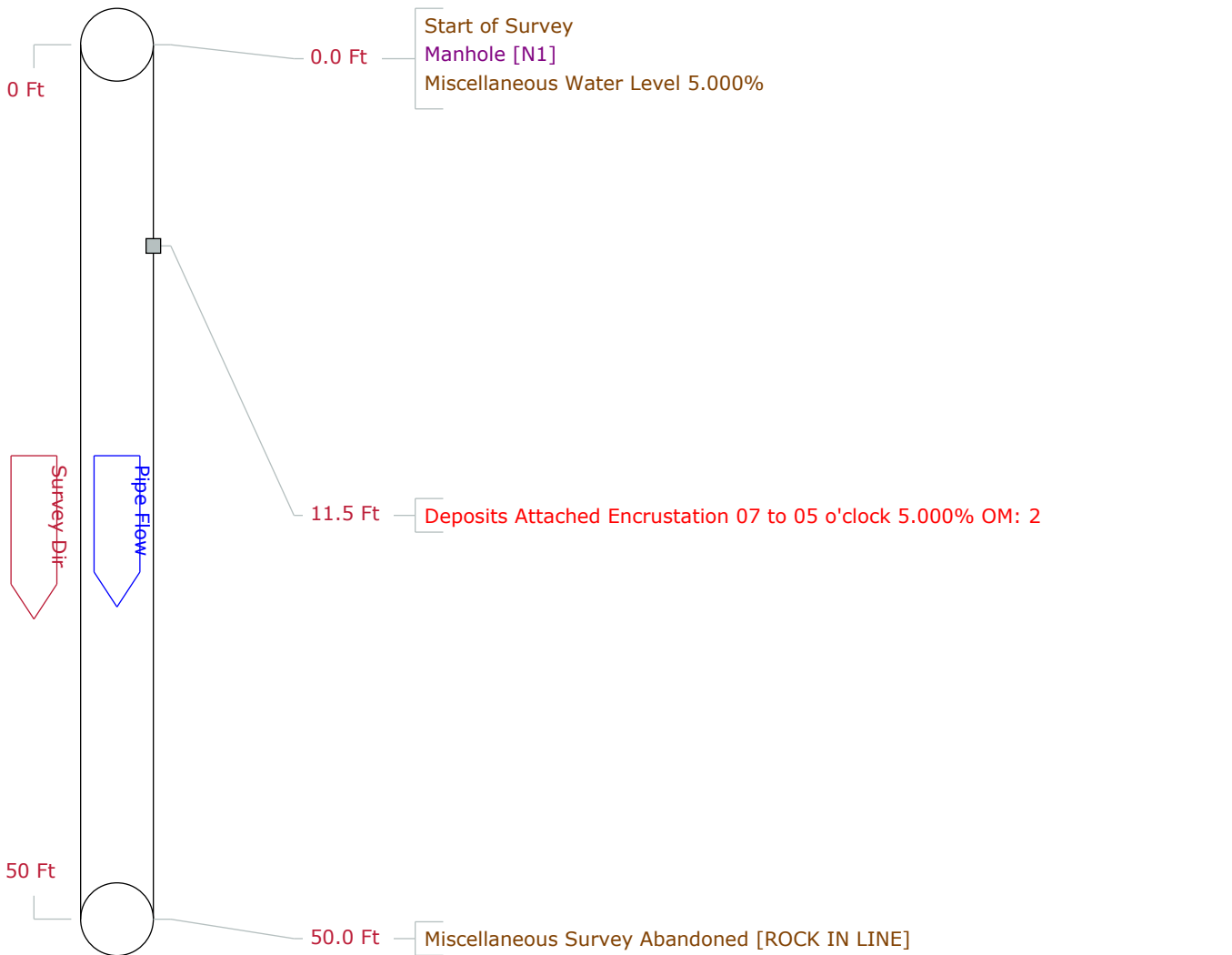
Setup	26	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER				
Reviewed By		Reviewer #		Work Order							
Customer	ETC			P/O #							
Media Label	S2A	Project	ECT_STORM_TV_RD_12-21-2022								
Date	2022/12/22	Time	12:14	Weather		Pre-Cleaning	N				
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Direction	Downstream				
Street	TROMLEY (SOUTH)			City	INKSTER	Drainage area					
Location Code				Pipe Use	Stormwater Pipe						
Location details	PERRIN			Height	12	Width	ins				
Shape	Circular			Material	Reinforced Concrete Pipe						
Coating				Lining							
Length Surveyed	22.50	Ft	Year Constructed	Year Renewed	Ft	<table border="1"> <tr> <td>Structural</td> <td>O & M</td> </tr> <tr> <td>Miscellaneous</td> <td>Constructional</td> </tr> </table>		Structural	O & M	Miscellaneous	Constructional
Structural	O & M										
Miscellaneous	Constructional										
Additional info											
Up	S2	Rim to invert	Grade to invert	Rim to grade	Ft						
Down	S3	Rim to invert	Grade to invert	Rim to grade	Ft						



Pipe Graphic Report of PLR N1A-1

for ECT

Setup	28/14	Surveyed By	PIPETEK-RD	Certificate #	P0038923-082022	Owner	INKSTER				
Reviewed By		Reviewer #		Work Order							
Customer	ETC			P/O #							
Media Label	N1A-1	Project	ECT_STORM_TV_RD_12-21-2022								
Date	2022/12/22	Time	12:38	Weather		Pre-Cleaning	N				
Flow control	Not Controlled	Survey Purpose	Routine Assessment			Direction	Downstream				
Street	TROMLEY (SOUTH)			City	INKSTER	Drainage area					
Location Code				Pipe Use	Stormwater Pipe						
Location details	PERRIN			Height	12	Width	ins				
Shape	Circular			Material	Reinforced Concrete Pipe						
Coating				Lining							
Length Surveyed	50.00	Ft	Year Constructed	Year Renewed	Ft	<table border="1"> <tr> <td>Structural</td> <td>O & M</td> </tr> <tr> <td>Miscellaneous</td> <td>Constructional</td> </tr> </table>		Structural	O & M	Miscellaneous	Constructional
Structural	O & M										
Miscellaneous	Constructional										
Additional info											
Up	N1	Rim to invert	Grade to invert	Rim to grade	Ft						
Down	N2	Rim to invert	Grade to invert	Rim to grade	Ft						





John O'Meara, P.E
Executive Director

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Garden City
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Redford Twp.
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Romulus
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Southfield
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Washtenaw County
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Wayne County
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TO: Tyler Sonoga, ARC Technical Committee Chair
FROM: Emily Levine, Technical Committee Coordinator
DATE: March 5, 2024
SUBJECT: 2023 IDEP Investigation Summary

In 2023, ARC staff continued to work on illicit discharge investigations in Oakland County and assisted Wayne County with investigations in Livonia and Inkster. These investigations were in accordance with the Rouge River Collaborative Illicit Discharge Elimination Plan. These investigations were prompted by the outfall screening efforts conducted in 2018 and 2019, as well as sampling done in compliance with the collaborative TMDL plan in 2022.

The results of the investigations are summarized in Table 1. More detail can be found in the investigation reports which were sent to the communities (Attachment A).

Table 1. Status and Results of Illicit Discharge Investigations

Permittee	Outfall ID	Status	Result
Beverly Hills	BV51	Ongoing	Further investigation required
Livonia	U2008221	Closed	Issue identified is outside the parameters of the MS4
Livonia	L1619	Ongoing	Further investigation required
Inkster	Perrin Drain	Closed	Three samples taken downstream of the tap that was identified did not have elevated <i>E. coli</i> levels
Dearborn Heights	OUT20SW001	Closed	Combined sewer overflow addressed by Wayne County
Dearborn Heights	OUT05SW001	Ongoing	Further investigation required
Novi	ON20	Ongoing	Further investigation required

In 2024, ARC staff will continue source investigations on the outstanding issues in accordance with the Plan and as directed by the Technical Committee. Additional sampling will be determined pending EGLE approval of the updated Collaborative IDEP Plan.

Cooperating Partners:

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Rouge River Advisory Council
SEMCOG
Southeastern Oakland County Water Authority

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Attachment A
Community-specific Investigation Reports



John O'Meara, PE
Executive Director

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Birmingham
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Bloomfield Twp.
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Farmington
Farmington Hills
Franklin
Garden City
Henry Ford College
Inkster
Lathrup Village
Livonia
Melvindale
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Orchard Lake
Plymouth
Plymouth Twp.
Redford Twp.
Rochester Hills
Romulus
Schoolcraft College
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Walled Lake
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Wayne County Airport
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Cooperating Partners:

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Rouge River Advisory Council
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TO: Neil Johnson, Village of Beverly Hills Director of Public Services
FROM: Emily Levine, ARC Staff
DATE: January 29, 2024
SUBJECT: IDEP Investigation Results: Outfall BV51 (Sleepy Hollow Lane)

ARC staff continued illicit discharge investigation on storm drain outfall BV51 in response to findings from the 2018 outfall screening and subsequent investigations. Our investigations did not reveal the source of *E. coli* entering the drain and no illicit connection has been identified.

The outfall drains a portion of Sleepy Hollow Lane, Fiddlers Cove Road, and Metamora Lane. The receiving water is an unnamed tributary of the Rouge River (Figure 1).

Background

Outfall BV51 was investigated due to the high *E. coli* concentrations found during the outfall survey conducted in 2018. At that time, the *E. coli* concentration was 3,076 MPN/100 ml which can be indicative of an illicit discharge containing sanitary sewage. ARC staff reinspected the outfall in 2019 and 2020 and found elevated *E. coli* and human *Bacteroides* concentrations (See Table 1). There were no physical signs (ex: odor, staining, debris, organic growth) of a sewage discharge to the storm drain in the outfall or any of the manholes. Likewise, there were no obvious signs of animal fecal impacts to the drain.

Results

In 2021 and 2022, ARC staff coordinated with the Oakland County Water Resources Commissioner (OCWRC) to televise the drain. The drains from BV51-1 to the outfall, BV51-1 to BV51-2, and the drain from BV51-3 to BV51-2 were televised. BV51-2 is buried. A tap was identified in the storm drain between the outfall and BV51-1 that was believed to be a possible illicit connection, although no staining or evidence of sewage was observed (Figure 2).

In 2021, ARC staff coordinated with the Village of Beverly Hills to dye test 31349 Sleepy Hollow Lane. The dye testing revealed that all three bathrooms in the house were correctly connected to the sanitary drain and no dye was observed entering the storm drain. In 2023, ARC staff coordinated with the Village of Beverly Hills to dye test 31403 Sleepy Hollow Lane. No illicit connections were found. In addition, the manhole BV51-2 was dug up by the city staff and inspected by ARC staff, with no signs of illicit connections identified.

Table 1. Sampling Results (*E. coli* in MPN/100 mL and Human *Bacteroides* in gene copies/100 ml)

	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>	Human <i>Bacteroides</i>	<i>E. coli</i>	Human <i>Bacteroides</i>
	7/9/18	8/15/19	9/19/19	8/19/20	9/15/20	9/15/20	11/17/20	11/17/20
BV51-0	3,076	201	>24,196	573	>24,196	72,000	1,081	<354

Conclusions and Recommendations

Work to date indicates that no illicit connection has been identified upstream of BV51. Planned work includes blocking a tap in the north side of BV51-1 to cause water to backup in a connecting catch basin and sample there. If this does not help locate an illicit connection, then dye testing additional homes in the drainage area may be necessary.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the Village’s MS4 permit and as a result of your ARC membership. If you have any questions, I can be reached at 313-963-6600 or elevine@ectinc.com.

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Figure 1. Storm Drain and Sampling Locations



Figure 2. Tap to Storm Drain at 14.2 ft east of BV51-0





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Franklin
Garden City
Henry Ford College
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Orchard Lake
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Redford Twp.
Rochester Hills
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Southfield
Troy
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Michigan-Dearborn
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Washtenaw County
Wayne
Wayne County
Wayne County Airport
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TO: Doug Moore, City of Livonia
FROM: Emily Levine, ARC Staff
DATE: January 6, 2024
SUBJECT: IDEP Investigation Results: Outfall U2008221

ARC staff continued the illicit discharge investigation on storm drain outfall U2008221 in response to findings from the 2018 outfall screening and subsequent investigations. Our 2022 investigations identified an illicit connection coming from Saint Mary's Hospital. This connection was corrected by the hospital. Follow-up sampling to confirm that the connection was corrected revealed that a suspicious discharge still exists, since elevated surfactants were identified. Investigations to identify the source of this second discharge have shown that a stormwater retention basin beneath the parking lot on the south side of the hospital is releasing water with elevated surfactants into the storm drain (Figure 1). The city has informed the hospital that this issue needs to be addressed. Since this discharge is not impacting city-owned stormwater infrastructure, this issue is outside the scope of the MS4 permit and does not require any further action from the perspective of the MS4 permit.

This work was completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the City's MS4 permit and as a result of your ARC membership. If you have any questions, you can reach me at 248-763-1407 or elevine@ectinc.com.

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Cooperating Partners:

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Figure 1. Surfactants discharge locations





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Michigan-Dearborn
Van Buren Twp.
Walled Lake
Washtenaw County
Wayne
Wayne County
Wayne County Airport
Authority
West Bloomfield Twp.
Westland
Wixom

TO: Doug Moore, City of Livonia
FROM: Emily Levine, ARC Staff
DATE: January 6, 2024
SUBJECT: IDEP Investigation Results: Outfall L1619

ARC staff continued the illicit discharge investigation on storm drain outfall L1619 in response to findings from the 2018 outfall screening and subsequent investigations conducted by Wayne County. Our investigations have not identified an illicit connection and further investigation is recommended.

Background

Outfall L1619 was investigated due to the high *E. coli* concentrations found during the outfall survey conducted in 2018. At that time, the *E. coli* concentration was 15,531 MPN/100 ml which is indicative of an illicit discharge containing sanitary sewage. Wayne County conducted follow-up investigations, which narrowed down the source to being upstream of a manhole located in the grass along the north side of Seven Mile Road, near a Chicken Shack restaurant (Figure 1). *E. coli* and Human *Bacteroides* levels at this manhole have been found to be elevated (Table 1).

The drainage area of the manhole in front of the Chicken Shack was unclear, as the storm drain map provided by the City of Livonia appears to be incomplete. Therefore, televising was done of the drain along 7 Mile Road in 2022. No signs of illicit connections were identified and additional investigation was determined to be necessary.

Results

ECT worked with Wayne County to conduct additional sampling and dye testing in 2023. Elevated *E. coli* and human DNA were found in the manhole located in the grassy area northwest of the Chicken Shack manhole (Table 1). Dye testing showed all buildings in the vicinity to be correctly connected, except for the car wash. Dye was not found in the drains after dye testing the car wash and the building plan for the car wash was reexamined but found to be uninformative.

Cooperating Partners:

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Great Lakes Water Authority
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Table 1. Sampling Results (*E. coli* in MPN/100 mL and Human *Bacteroides* in gene copies/100 ml)

	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>	Human DNA	<i>E. coli</i>	<i>E. coli</i>	Human DNA
	7/16/18	12/9/20	12/16/20	11/10/21	11/10/21	7/18/23	8/10/23	8/10/23
L1619	15,531	630		3,076	95			
29050 Dardanella		<100						
Seven Mile WC MS4 East			61					
Chicken Shack			2,000	1,616	1,541,053	96	6,867	736
MH SE of car wash in grassy area						97	9,208	816
MH SW of car wash next to tree						160		
MH near 7 Mile SE of car wash						31	31	

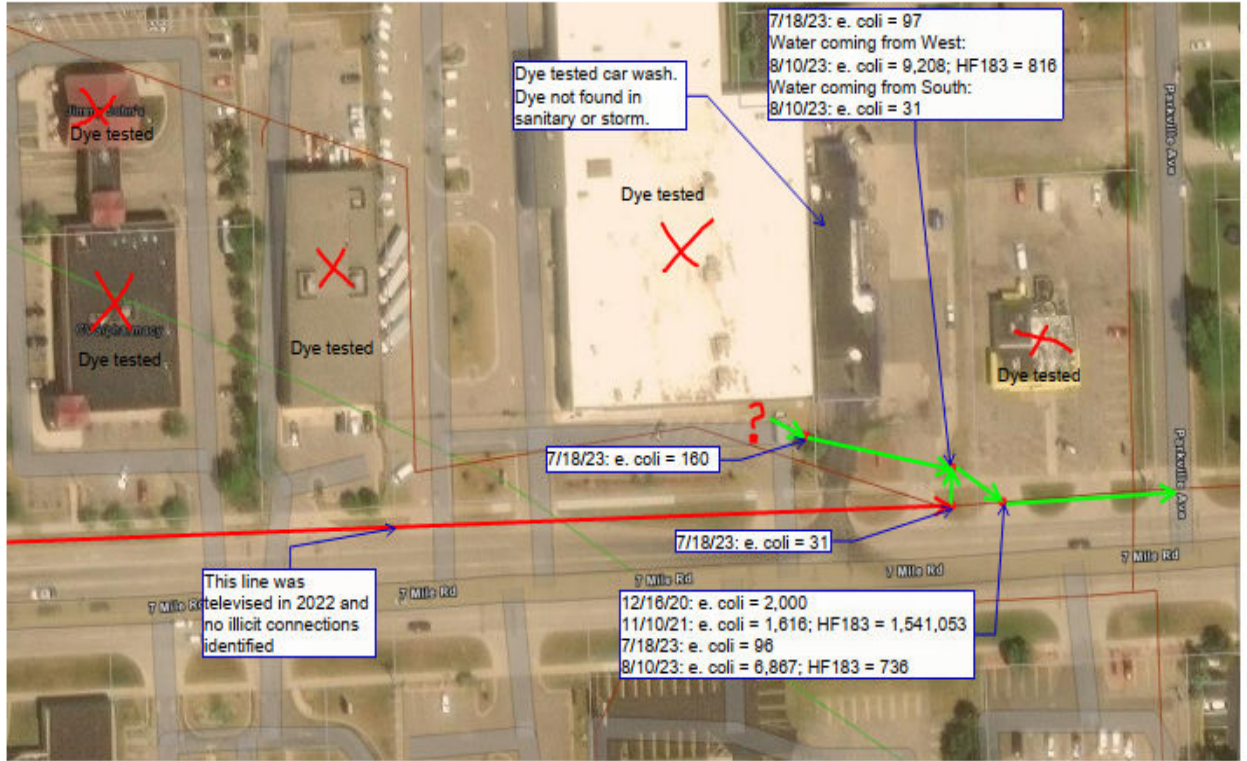
Conclusions and Recommendations

The source of the elevated *E. coli* at this outfall remains unclear. Redoing the dye testing of the car wash is the recommended next step.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the City’s MS4 permit and as a result of your ARC membership. If you have any questions, you can reach me at 248-763-1407 or elevine@ectinc.com.

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Figure 1. Storm Drain and Sampling Location





John O'Meara, PE
Executive Director

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Cooperating Partners:

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Rouge River Advisory Council
SEMCOG
Southeastern Oakland
County Water Authority

TO: Patrick Cullen, Wayne County Deputy Drain Commissioner

FROM: Emily Levine, ARC Staff

DATE: February 7, 2024

SUBJECT: IDEP Investigation Results: Perrin Drain

Cc: Jerome Bivens, City of Inkster
Sue Thompson, Wayne County Department of Public Works
Environmental Services Division

ARC staff has partnered with Wayne County to conduct an illicit discharge investigation on the Perrin Drain in response to findings of high *E. coli* in samples collected from the Lower Rouge River by Wayne County.

Background

The Perrin Drain flows into the Lower Rouge River upstream of John Daly Road. Once an open creek, the drain is now contained in an underground pipe from southeast of Inkster Road and Avondale Street, continuing upstream through the neighborhood to the northwest of that intersection, towards Cherry Hill Road and Middlebelt Road (Figure 1). Samples collected from near the outlet in September and October of 2020 had elevated *E. coli* levels. Additional samples collected from various upstream manholes on October 29, 2020 showed some elevated *E. coli* levels. Additional sampling was conducted in March 2021 which resulted in a recommendation to televise portions of the storm drain system.

ARC staff had the drains along Helen Street and Tromley Street televised in December of 2022. Although excessive sediment was found in the storm drain on Tromley Street, no evidence was found of illicit connections. On Helen Street, a tap was identified coming from the east side of Helen Street, south of the intersection with Cherry Hill Road (Figure 1).

Results

Samples were collected three times from the outfall directly downstream from the tap that was identified on Helen Street. Although the first sample result showed *e. coli* at 932 MPN/100mL, the human DNA levels for that sample were not elevated and subsequent samples found low *E. coli* levels (Table 1).

Table 1. Sample Results

Location	<i>E. coli</i>	Human <i>Bacteroides</i>	<i>E. coli</i>	<i>E. coli</i>
	5/22/23	5/22/23	7/18/23	8/10/23
147 Helen	932	95	272	145

Conclusions and Recommendations

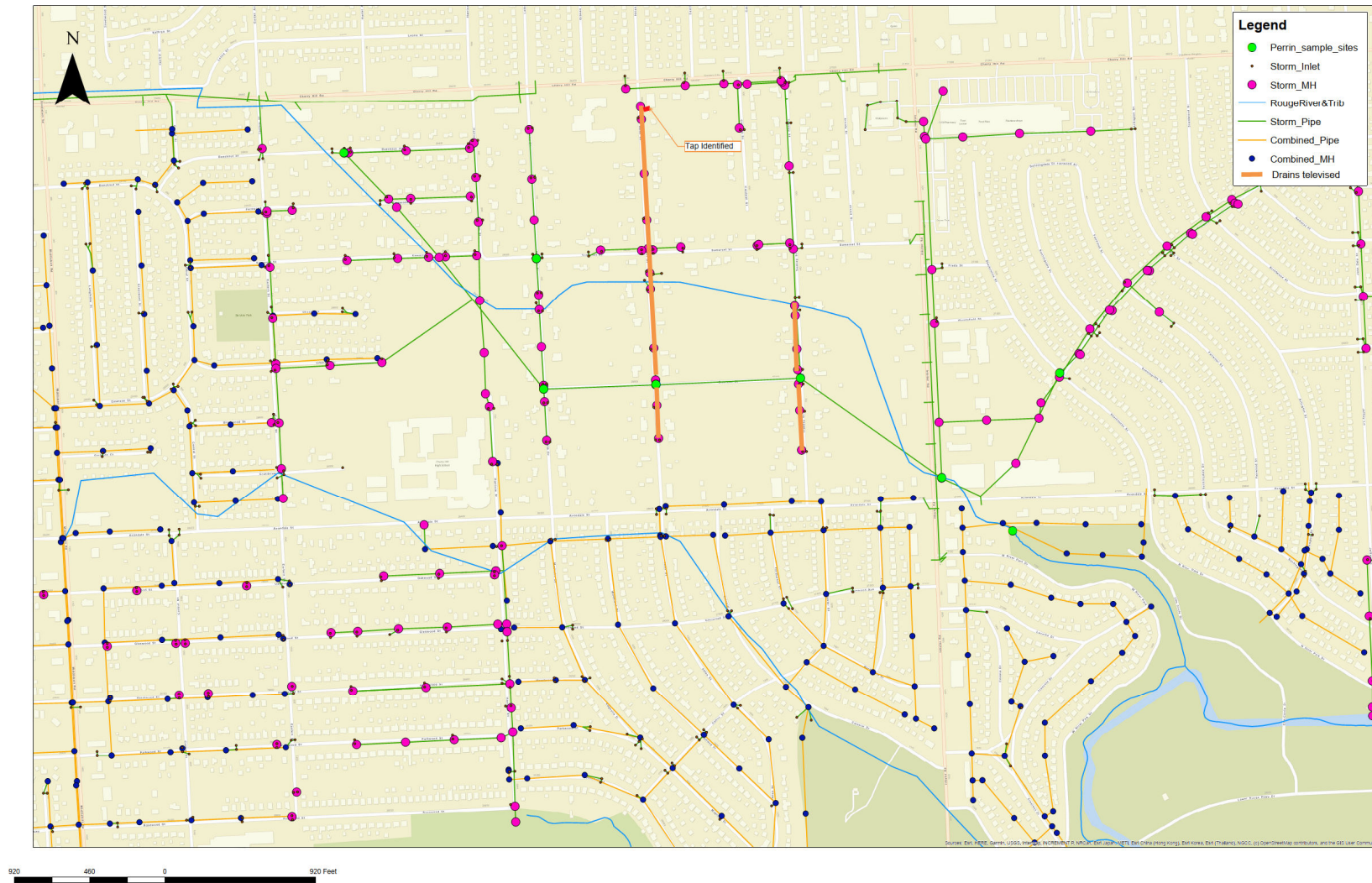
Findings from sample results indicate that the tap that was identified is not a source of illicit discharge. Therefore, this investigation can be closed.

This work was completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the County’s and City’s MS4 permits and as a result of your ARC membership. If you have any questions, I can be reached at 248-763-1407 or elevine@ectinc.com.

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Figure 1. Storm Drain and Sampling Locations

Perrin Drain Televising Locations





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Executive Director

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Walled Lake
Washtenaw County
Wayne
Wayne County
Wayne County Airport
Authority
West Bloomfield Twp.
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TO: Rebecca Runkel
FROM: Emily Levine, ARC Staff
DATE: January 29, 2024
SUBJECT: IDEP Investigation Results: Outfall NO20

ARC staff conducted an illicit discharge investigation on storm drain outfall NO20 in response to findings from the ARC's 2022 outfall screening conducted in accordance with the ARC's Collaborative TMDL Plan. Our investigations did not reveal the source of *E. coli* entering the drain and no illicit connection has been identified. ARC Staff recommends additional IDEP investigations at this location.

Background

Outfall NO20 was investigated due to high *E. coli* concentration (11,119 MPN/100 ml) found during an outfall screening conducted in 2022. There was no observed color, odor, turbidity, or other unusual characteristics noted during the initial screening.

The outfall drains Willowbrook Drive and its adjoining roads. The receiving water is a tributary of the Middle Branch of the Rouge (See Figure 1).

Results

ARC staff reinspected outfall NO20 on May 22, 2023 and found an *E. coli* concentration of 882 MPN/100 ml and human *Bacteroides* concentration of 9,284 MNP/100mL. ARC staff reinspected the outfall and collected samples from three upstream manholes to narrow down possible sources of *E. coli* contamination four more times in 2023 (Table 1). The first three sets of results had *E. coli* concentrations below 500 MNP/100mL, which indicated that testing for *Bacteroides* was not necessary and an illicit connection was unlikely. The fourth set of samples was collected incase the illicit connection was coming from the nearby school, since the first three sets of samples were collected during the summer when school was not in session. This fourth set of samples found elevated *E. coli* and *Bacteroides* at manhole NO20-4 Willow.

Cooperating Partners:

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County Water Authority

Table 1. Sampling Results

Structure		NO20	NO20-3	NO20-4 Oak	NO20-4 Willow
Location		Outfall on south side of the creek, west of Willowbrook Dr.	Manhole at the northeast corner of Willowbrook and Oak Tree Road	Manhole next to driveway of 40440 Oak Tree Road	Manhole in the sidewalk on east side of Willowbrook Dr, south of Oak Tree Road
9/1/2022	<i>E. coli</i>	11,199			
5/22/23	<i>E. coli</i>	882			
	Human <i>Bacteroides</i>	9,284			
7/20/23	<i>E. coli</i>	31	218	158	109
8/10/23	<i>E. coli</i>	98	41	20	
8/29/23	<i>E. coli</i>	10	31	10	30
9/11/23	<i>E. coli</i>	583	537	10	512
	Human <i>Bacteroides</i>	240	240		667

Conclusions and Recommendations

Due to the presence of elevated *E. coli* during the school year and not during the summer time, it is likely that there is an illicit tap coming from the school located on the west side of Willowbrook Drive. Dye testing the school and possible additional sampling is recommended as the next steps.

This work is being completed as outlined in the Rouge River Collaborative IDEP Plan in compliance with the City’s MS4 permit and as a result of your ARC membership. If you have any questions, I can be reached at 313-963-6600 or elevine@ectinc.com.

Attachment: Figure 1. Storm Drain and Sampling Location

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Figure 1. Storm Drain and Sampling Locations

