



Sewer Investigation: Bloomingdale Neighborhood

**Final** 

October 2006

Engineering Program Management Consultant-3A Program Manager: SGREELEY AND HANSEN

**Delon Hampton & Associates** 

#### DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY Washington, D.C.

# Sewer Investigation: Bloomingdale Neighborhood

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#### **Executive Summary**

Residents of the Bloomingdale neighborhood reported flooding of their basements during the severe storms that occurred from June 25 to June 26, 2006 from either sewer backups, overland flows or both. The purposes of this report were to determine the causes of surface flooding and sewer backups and to provide recommendations on mitigation measures

Bloomingdale community leaders collected information from residents on the nature of the flooding and written narratives were provided by some of the residents. Most of the reports of flooding were on U St, Thomas Street and Flagler Place. Most of the reports describe flooding due to basement backups from plumbing fixtures and/or water ponding in the street, cresting the curb and then entering basements.

Bloomingdale is located in the drainage area served by the Northeast Boundary Trunk (NEBT) Sewer. The NEBT Sewer is one of the oldest combined sewers in the District. It begins on the west side of McMillian Reservoir and flows to the southeast primarily along Florida Avenue toward the Anacostia River. The area served by the NEB Sewer has experienced sewer backup problems and surface water flooding for many years.

This assessment consisted of reviewing the hydraulic capacity of the existing system, inspecting the physical condition of the sewers, and identifying mitigation measures in public and private space.

The findings of this study are as follows:

- The storm of June 25-26, 2006 exceeded the 15-year return frequency design standard of the sewer system.
- The Northeast Boundary Trunk Sewer and the Flagler Place Trunk Sewer do not have the capacity to convey the storm of June 25-26, 2006 or the 15-year design storm without flooding. This resulted in basement backups and flooding in streets and basements.
- The Northeast Boundary Trunk Sewer and the Flagler Place Trunk Sewer were constructed prior to 1910. The flooding associated with the Northeast Boundary area has been recognized as a longstanding problem. Projects to relieve flooding have not been constructed in the past due to the complexity and great expense of constructing large relief sewers in a highly developed urban area.
- As part of the implementation of its Long Term Control Plan, WASA will construct a tunnel and appurtenances in the Northeast Boundary area to relieve the flooding. According to the

terms of a Consent Decree with EPA, WASA will place this tunnel in operation by 2025. The cost of construction, along with practical implementation factors such as the size of the project, prevents completion of the tunnel sooner.

- Improvements to the local sewers in the Bloomingdale area will not relieve flooding because the NEBT Sewer and Flagler Place trunk sewer do not have capacity to convey additional flows out of the area. However, some improvements to the local sewer system have the potential to reduce flooding severity during lower frequency storms and to reduce the magnitude and duration of ponding.
- Inspections of the local sewers in the Bloomingdale area were conducted and sewers were found to be in good condition with no significant blockages or obstructions.
- Since the LTCP tunnel will not be operational for a considerable time, and since improvements to the local drainage system will not provide flooding protection without the tunnel in service, interim flood protection measures implemented on private property appear to be the most practical approach for interim relief of flooding.

Measures To Prevent Basement Backups	Measures to Prevent Surface Flooding from Entering Basements
Install Backflow Preventor (BPF)	Construct barriers at basement entrances
Install pump-around system (ejector pump)	Waterproof basements
Install an elevated sewer system	Address roof downspouts
Install sump pump system	Improve lot grading
Install plumbers plugs	
Ensure sewer laterals are clean	

• Possible methods of interim flood protection include:

The following are recommendations associated with flood improvements to the local drainage system in the Bloomingdale Neighborhood:

- Construct additional inlets at the intersection of Flagler and U Street, NW
- Construct a relief sewer along Thomas Street between 1<sup>st</sup> and 2<sup>nd</sup> Street, NW
- Fix damaged catch basin inlets located at intersection of 2nd St and Florida Ave, NW.

Note that these improvements to the local storm drainage system will not alleviate flooding during large rain events when the NEBT Sewer and Flagler Place Trunk Sewer are surcharged. However, the improvements may reduce the magnitude of flooding during lower frequency storms and may reduce the extent and duration of ponding.

Based on the CCTV inspections, point repair or relining the following pipe sections is recommended:

- M-30566 to M-30568 this combined sewer on Flagler Place between W and V Streets was found to have an approximately 6" hole in the crown, with dirt visible.
- M-30563 to M-30569 this combined sewer on Flagler Place between W and V Streets was found to have several horizontal and circumferential cracks and some staining at the pipe joints.

The above noted pipe conditions do not affect the hydraulic carrying capacity of the pipes. The recommended repairs are to preserve the long-term integrity of the pipe. The repairs could be completed following normal capital improvement plan (CIP) scheduling.

#### DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY Washington, D.C.

# Sewer Investigation: Bloomingdale Neighborhood

Engineering Program Management Consultant – 3A Program Manager - Greeley and Hansen LLC October 2006

#### 1. INTRODUCTION

The District of Columbia Water and Sewer Authority (WASA) requested an assessment of the cause of sewer back-ups and basement flooding in the Bloomingdale Neighborhood (Bloomingdale) of Northwest Washington (see Fig.1-1). Residents reported flooding of their basements during the severe storms that occurred from June 25 to June 26, 2006 from either sewer backups, overland flows or both. Residents reported that overland flows entered basements through leaks in the walls and floors and over low door sills and sewage backflows occurred through toilets, tubs and sinks.

#### 1.1 Purpose

The purposes of this investigation are to:

- Determine the causes of surface flooding and sewer backups
- Provide recommendations on mitigation measures

#### 1.2 Approach

The approach followed by this study is described below:

- Review previous studies on flood problems related to Northeast Boundary Trunk Sewer
- Review the existing combined sewer system serving the area to determine how the system functions
- Collect complaints of residents affected by the floods to better understand the nature of the problem
- Conduct field investigation surveys to check if there are physical evidences of the causes of flooding in the areas where complaints have been reported
- Inspect the sewer system utilizing remote closed circuit television (CCTV) equipment
- Assess the capacity of selected sewers of the local drainage network for storm recurrence frequencies of 2, 5, 10 and 15-years
- Summarize the results of the investigations and identify measures to mitigate future flooding.

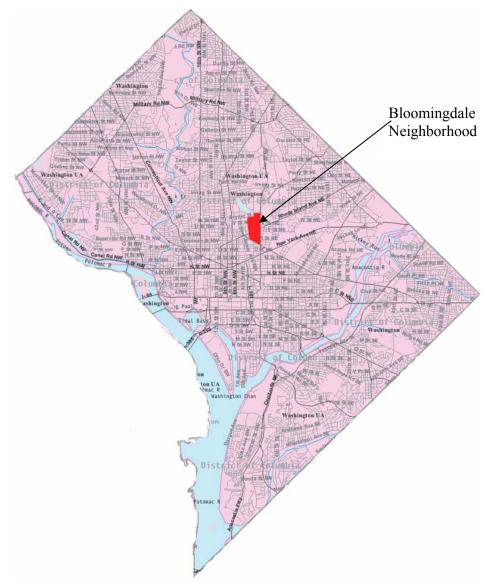


Fig. 1-1: Location Map of Bloomingdale Neighborhood [source: <u>http://upload.wikimedia.org/wikipedia/en/c/cc/Map\_bloomingdale.jpg</u>].

#### 2. HISTORY OF NORTHEAST BOUNDARY DRAINAGE AREA

#### 2.1 Type of Sewer System

Like many older cities in the United States, the sewer system in the District is comprised of both combined sewers and separate sanitary sewers. A combined sewer carries both sewage and runoff from storms. Modern practice is to build separate sewers for sewage and storm water, and no new combined sewers have been built in the District since the early 1900's. Approximately one-third of the District (12,478 acres) is served by combined sewers. The majority of the area served by combined sewers is in the older developed sections of the District.

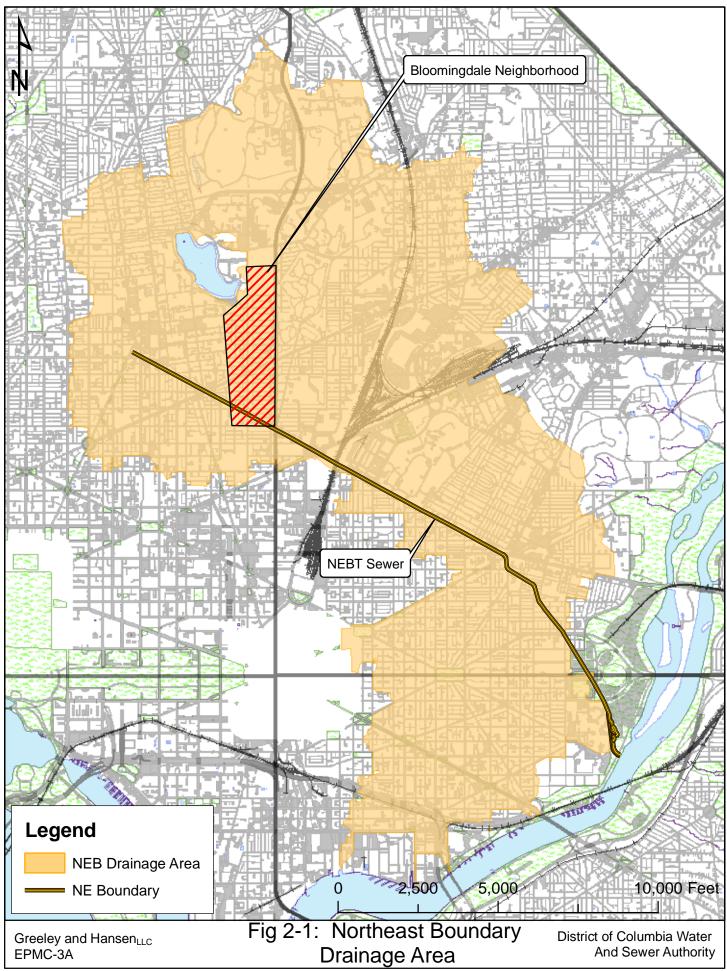
In the combined sewer system, sewage from homes and businesses during dry weather conditions is conveyed to the District of Columbia Wastewater Treatment Plant at Blue Plains, which is located in the southwestern part of the District on the east bank of the Potomac River. There, the wastewater is treated to remove pollutants before being discharged to the Potomac River. When the capacity of a combined sewer is exceeded during storms, the excess flow, which is a mixture of sewage and storm water runoff, is discharged to the Anacostia and Potomac Rivers, Rock Creek and tributary waters. The excess flow is called Combined Sewer Overflow (CSO).

Bloomingdale is located in the drainage area served by the Northeast Boundary Trunk (NEBT) Sewer. The NEBT Sewer is one of the oldest combined sewers in the District. It begins on the west side of McMillian Reservoir and flows to the southeast primarily along Florida Avenue toward the Anacostia River. The sewer is approximately 23,000 feet long and varies in size and shape from about 4.5' x 3' in the upper reaches to over 22' x 18' in the lower reaches. The drainage area of the NEBT Sewer is approximately 4,242 acres and comprises highly developed areas in the District. Numerous branch sewers convey wastewater and storm water to the NEBT Sewer. Figure 2-1 shows the NEBT sewer drainage area and the Bloomingdale Neighborhood.

#### 2.2 Historical Development of Sewer System

In 1879, construction of the NEBT Sewer was initiated to relieve the Tiber Creek Trunk Sewer. The majority of the NEBT Sewer system was constructed from 1880-1905. The major older sewers are of brick and plain portland cement construction. More recent additions to the system have been constructed of precast and cast-in-place pipe. A variety of shapes were used including egg, circular, and basket handle. The outlet portion of the NEBT Sewer is a three span reinforced concrete box culvert.

After construction of the NEBT Sewer and as the District continued to develop, connections to the trunk sewer were made, often at elevations significantly below the crown. As a result, these connections suffer from reduced capacity when the NEB is flowing full. In addition, a major revision



to design criteria was adopted during the period of 1879 to 1886, which lead to the upper sections of the NEB Sewer being redesigned and constructed with less capacity than originally planned.

### 2.3 Historical Flooding in Northeast Boundary Area

Flooding along the NEBT Sewer and its branch sewers have been reported since the late 1800s. As a result, several engineering studies have been conducted over the years in an attempt to address these flooding complaints. These studies include, but are not limited to, the following:

- "Report to David V. Auld, Director of Sanitary Engineering Upon Investigation of Sewerage System,", Metcalf & Eddy, 1955
- "Improvements to Sewerage System", Board of Engineers, 1957
- "Report on Planning Studies NE Boundary Relief Sewer, Burns & McDonnell, 1968
- "Northeast Boundary Relief Sewer Alignment Study", Advanced Engineering, 1997
- "Combined Sewer System Long Term Control Plan", Greeley and Hansen, 2002

These studies have determined the following:

- The NEB Sewer and portions of its branch sewers have inadequate capacities to carry storm water flows generated by moderate rain storms
- Surcharge of the trunk and branch sewers can occur during intense storms sufficient to cause overflow from catch basins and basement backups in certain areas
- Certain collecting sewers that drain the area were of adequate capacity, but operated ineffectively due to backwater conditions in the NEBT Sewer
- Certain areas served by branch sewers were at a lower elevation than the crown of the NEBT Sewer at the point of connection

Various projects have been identified to provide relief for the NEB area. However, these projects have not been constructed in the past due to the complexity and great expense of constructing large relief sewers in a highly developed urban area.

#### 2.4 Long Term Flooding Relief in Northeast Boundary Area

In 1998, WASA initiated a study to control combined sewer overflows to improve the quality of the receiving waters in the District. In 2002, a final plan for controlling CSOs (called a Long Term Control Plan or LTCP) was completed and was subsequently approved by the D.C. Department of Health and the U.S. Environmental Protection Agency. Among other performance features, flood relief of the NEB area was a principal component of the plan.

The LTCP was selected to provide a significant improvement in the quality of receiving waters of Anacostia River, Rock Creek, and the Potomac River. The recommended LTCP consists of a number of elements and program components. The principal activities of LTCP include rehabilitation of pumping stations, construction of storage tunnels, consolidating and closing of some of the Combined Sewer Overflows (CSOs).

One of the components of the LTCP is the construction of a tunnel in the Northeast Boundary area and along the Anacostia River waterfront. During moderate rainstorms, the tunnel will store combined sewage that would normally overflow to the receiving waters. During intense rain events, the tunnel will act like a pipeline and will convey storm water runoff and captured combined sewage out to the Anacostia River. The tunnel will be sized to convey the 15-year return frequency storm without causing flooding in NEB areas that have suffered longstanding flooding. In essence, the tunnel will act like a relief sewer to control flooding in the NEB area.

The schedule for implementation of the tunnel project is governed by a consent decree between the U.S. Environmental Protection Agency and WASA. The schedule calls for completion of the tunnel in phases with the complete tunnel in service by 2025. The schedule is dictated by the large cost of the project (\$1.9 billion) and the need to mitigate the impact on sewer rates.

#### 3. CAPACITY EVALUATION OF EXISTING SEWERS

#### 3.1 Reports of Flooding

Bloomingdale community leaders collected information from residents on the nature of the flooding. Written narratives were provided by the residents and these are included in Appendix A. Figure 3-1 plots the locations of flooding complaints on a map of the sewer system. Most of the reports of flooding were on U St, Thomas Street and Flagler Place. Most of the reports describe flooding due to basement backups from plumbing fixtures and/or water ponding in the street, cresting the curb and then entering basements.

#### 3.2 Configuration of Existing Sewer System

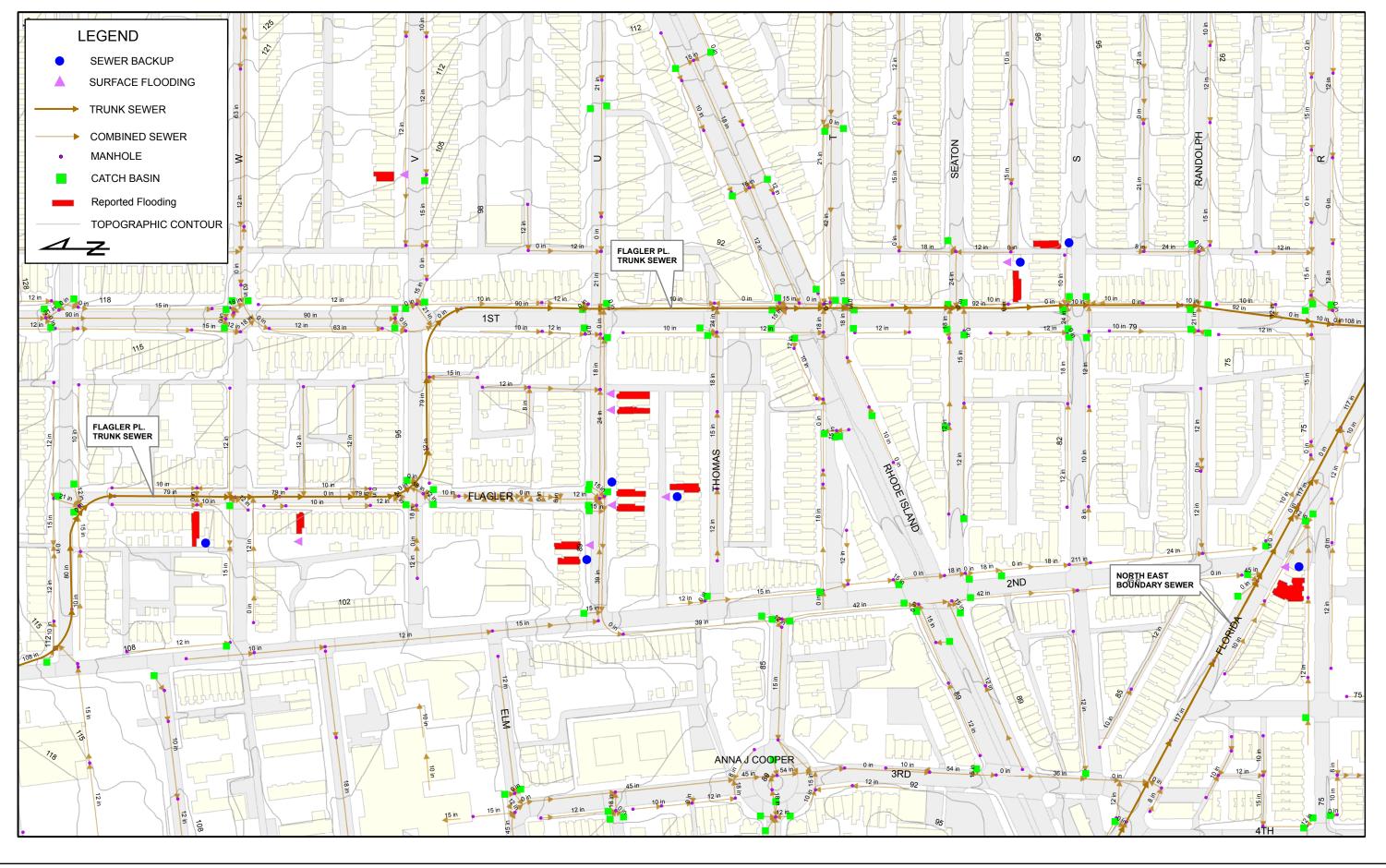
The combined sewers in Bloomingdale flow mainly eastward into a trunk sewer that runs north-south along Flagler Place then onto V St and finally along 1st Street towards the NEB trunk sewer in Florida Avenue. The branch sewers (collectors from laterals) are mainly aligned in the north-south direction. The combined sewers serving the area vary in size from 10-inch to 39-inch and most of them were built from about 1895 to 1910.

Manholes were typically installed every 100 to 400 feet to allow WASA to access the pipelines for maintenance. The manholes were originally made of brick. Catch basins are built mainly at street intersections.

#### 3.3 Topography

The grades in the area slope toward Flagler Place, which forms a valley that then slopes southward toward a low point at Florida Avenue. Flagler Place does not extend all the way to Florida Avenue. Instead, it is interrupted by U Street and Thomas Street. The topography shows that runoff which cannot enter sewers along the Flagler Place "valley" will run downhill to a flat spot near U Street and Thomas Street. Overland flow would then be forced to go around U Street and Thomas Street to reach Florida Avenue.

Review of maps from the 1860's shows an old stream used to run north-south along the Flagler Place area toward Florida Avenue. This is consistent with the construction of the trunk sewer along Flagler Place and the construction of the Northeast Boundary Trunk Sewer along Florida Avenue.



Plan Layout of the Existing Sewer System in the Bloomingdale Neighborhood Scale 1" = 200 ft. 200 Feet 200 100 0

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#### 3.4 Evaluation of Existing Sewers

For storm water collection and conveyance, WASA has established the 15-year storm as the design standard for the system. Most of the pipes in the Bloomingdale and Northeast Boundary areas were constructed before 1910, well before the 15-year storm was established as the design standard for the system. As described in Section 2, the existing NEBT sewer and many of its trunk sewers do not have the capacity to convey storms with return frequencies between 2 and 15 years without flooding.

As an example, Figures 3-2 and 3-3 show predicted hydraulic profiles of the existing NEBT sewer and the trunk sewer on Flagler during 15-year storms. The profiles show the NEBT sewer and the Flagler Place trunk sewer do not have the capacity to convey the 15-year design storm without flooding. Similar conditions, to a less severe extent, are predicted to occur for storms with 2, 5 and 10-year return frequencies. Note that the June 25 to 26, 2006 storm was a very rare event and was reported as a 200-year storm by the National Weather Service. This greatly exceeded the design capacity of the system.

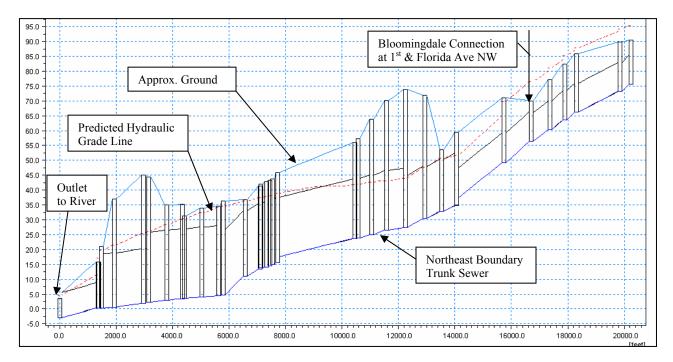


Figure 3-2: Predicted Northeast Boundary Sewer Hydraulic Profile - 15-Year Design Storm

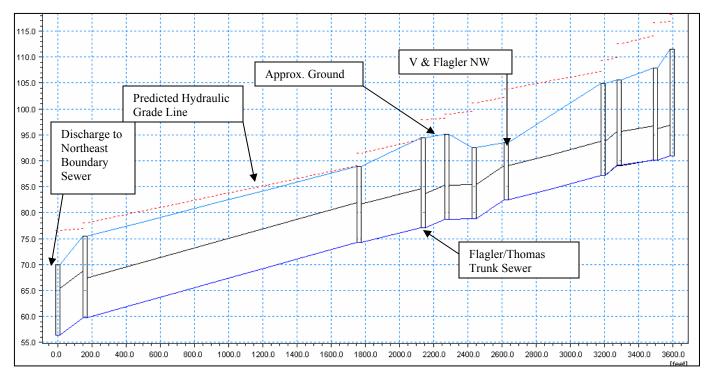


Figure 3-3: Predicted Flagler/Thomas Trunk Sewer Hydraulic Profile - 15-Year Design Storm

Because the NEBT Sewer and the trunk sewer on Flagler do not have adequate capacities to convey large storms, improvements to the local storm drainage system will not alleviate flooding during large rain events because there is no "outlet" for the storm water. Even if the local storm drainage pipes were made larger to carry more storm water, that storm water would have no place to go because the existing outlet sewers are filled to capacity.

As a result of this, the capacity of the local sewers was evaluated to determine if any improvements could be made that might reduce flooding during lower intensity storms or that might reduce the extent or duration of ponding. These assessments are described below.

#### 3.4.1 Data Collection

A number of laterals, main sewers and trunk sewers run through the Bloomingdale Neighborhood. The first step in our assessment was selecting sewers expected to have contributed in the sewer backup and surface flooding of the area. Based on the topography of the area, the vicinity of Flagler, U and Thomas Streets is a low point or "sag" in the area. The capacity of sewers and inlets in these areas were evaluated on the rationale that overland flow and backups from other areas would collect in the low spots causing flooding. Figure 3-4 provides the sewer layout plan of the area with locations of reported flooded basements and the selected sewers.

The second step was collecting data on these sewers, such as diameter and type of sewer, ground levels of manholes, invert levels of sewers at manholes, year of installation, manhole IDs and sewer plan layout. Sources of these data were Sewer Contour Maps, EMAP, and the GIS Map of DC Sewerage Network. Brief descriptions of the selected sewers are given in Table 3-1.

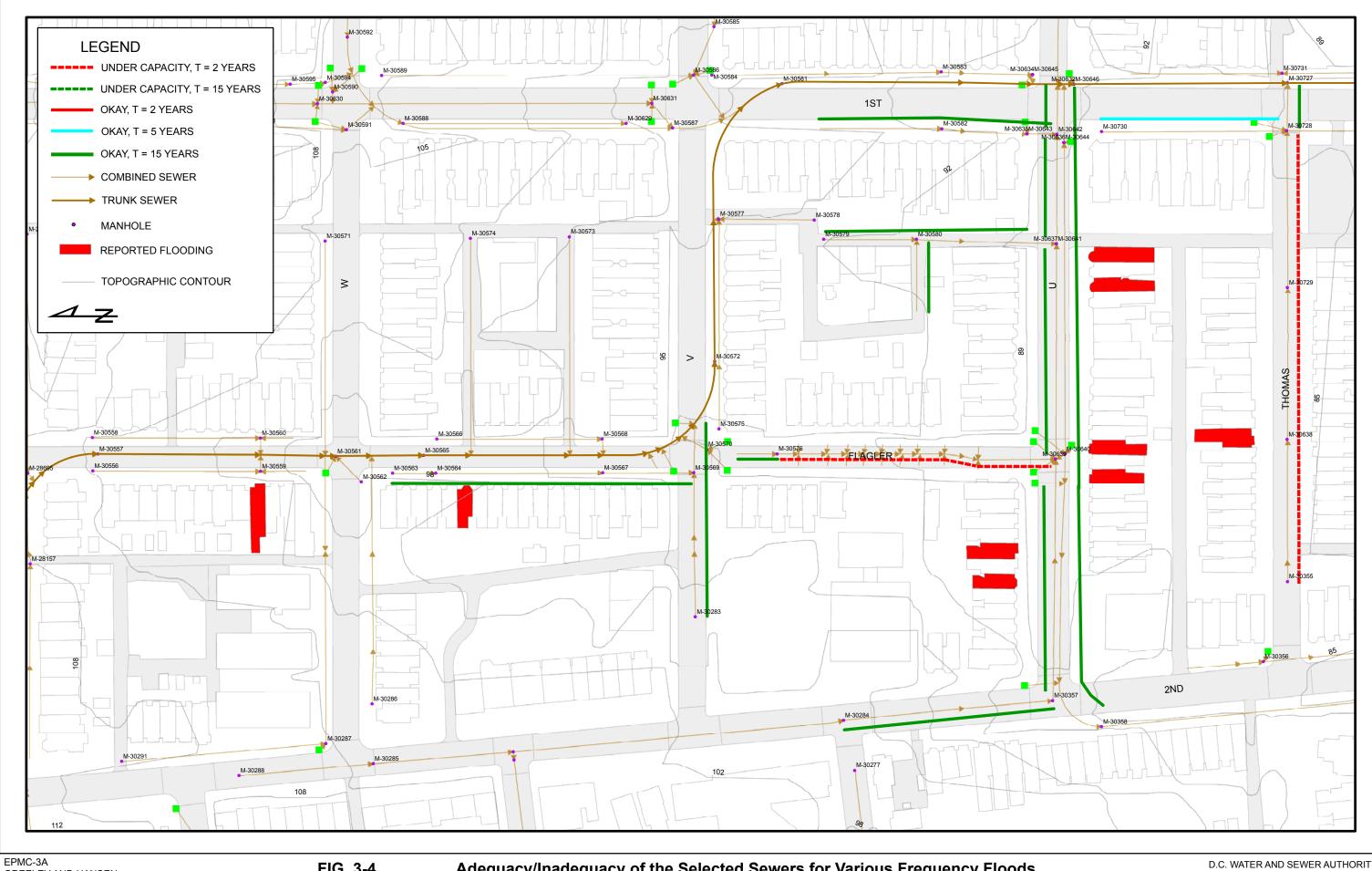
#### 3.4.2 Conveyance Capacity of Existing Sewers

The capacities of combined sewers in the Bloomingdale Neighborhood were evaluated for full pipe flow conditions. Though the sewer system in this Neighborhood is built to convey both dry weather flow (DWF) and storm flow, the effect of DWF during storms is negligible, hence not considered in the analyses.

#### **3.4.3** Computations of Storm Floods

Beginning at the upper end of the selected combined sewer, the storm-generated flow expected to be conveyed by each segment of sewer between manholes was computed. And added to that computed for the next downstream segment. These estimated storm flows were compared with the calculated carrying capacity of each segment of existing sewers.

The basic data collected, the procedures followed and the results obtained are provided in detail in Appendix B. Summary of the adequacy of the selected sewers to convey storm flows of various frequencies are shown in Fig. 3-4.



Adequacy/Inadequacy of the Selected Sewers for Various Frequency Floods 100 Feet Scale 1" = 100 ft. 100 50 0

D.C. WATER AND SEWER AUTHORITY

<b>Table 3-1: Salient Features of</b>	Selected	Sewers
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Sewer Name	Location	Size	Material	Year of installation	Total Length	Remark
Thomas St Sewer	On Thomas St between 2 <sup>nd</sup> St, NW and 1 <sup>st</sup> St, NW	12 in to 24 in	Vitrified Clay	1900	565 ft	
Thomas-1	West of 1 <sup>st</sup> St and North of Thomas St, NW	10 in	Vitrified Clay	1899	210 ft	branch sewer to Thomas St Sewer
U St Sewer	On U St between 1 <sup>st</sup> and 2 <sup>nd</sup> Sts, NW, on the left side it extends along the 2 <sup>nd</sup> St towards W St, NW	10 in to 18 in	Vitrified Clay	1893 - 1924	1500 ft	
U-1	Between 1 <sup>st</sup> St and Flagler Pl, NW	12 in	Vitrified Clay	1904	258 ft	branch sewer to U St
U-2	West of 1 <sup>st</sup> St, NW	10 in to 15 in	Vitrified Clay	1899 and 1930	256 ft	branch sewer to U St
U-3	On Flagler Pl between U and V Sts, NW	10 in to 12 in	Vitrified Clay	1905	355 ft	branch sewer to U St
U-4	Parallel to U-St Sewer between 1 <sup>st</sup> and 2 <sup>nd</sup> St, NW	21 in to 39 in	Vitrified Clay	1905 and 1908	413.6 ft	relief sewer, carries overflow sewage from U St
Flagler-1	Between V St and W St, NW	10 in to 18 in	Clay Tile	1900 - 1906	389.5 ft	
Flagler 1-1	On V St, NW	18 in	Vitrified Clay	1903	176 ft	branch sewer to Flagler-1

#### 3.5 FINDINGS OF HYDRAULIC ASSESSMENT

Based on site visits, hydraulic calculations of local sewer and review of the hydraulic capacity of the NEBT Sewer and its appurtenances, the following are findings of the hydraulic assessment:

- The NEBT Sewer and the Flagler/Thomas trunk sewer do not have the capacity to convey the 15-year design storms
- Improvements to the local sewers in the Bloomingdale area will not relieve flooding because the NEBT Sewer and Flagler Pl trunk sewer do not have capacity to convey additional flows.
- Additional inlet capacity (catch basins) at the intersection of U Street and Flagler Place may help reduce the duration and extent of ponding during some rain storms. However, note that these improvements will not prevent flooding due to surcharge of the NEBT Sewer or the Flagler Trunk Sewer.
- The combined sewer on Thomas Street, between 1st and 2nd Streets was found to have a capacity to convey less than the two year design storm. Relief of this sewer may help relieve flooding for lower frequency storms. The proposed relief sewer on Thomas St will be laid parallel to existing combined sewer from M-30355 to M-30728 and will be 18-in diameter and 505 LF length. Again, this improvement will not prevent flooding due to surcharge of the NEBT Sewer or the Flagler Trunk Sewer.

### 4. SEWER CONDITION ASSESSMENT

### 4.1 Closed Circuit TV Inspection (CCTV)

More than 2,500 feet of combined sewers in the Bloomingdale Neighborhood were inspected using remote CCTV equipment. The inspections were performed to determine if conditions such as blockages, debris buildup, etc. restricted pipe capacity. REI/DRAYCO performed the CCTV inspection work from August 1 to August 9, 2006. The information was recorded onto videotape and the TV operator generated a log report of the pipeline defects. Figure 4-1 shows the pipes inspected and the inspection reports are attached in Appendix C.

#### 4.2 **Results of CCTV Inspections**

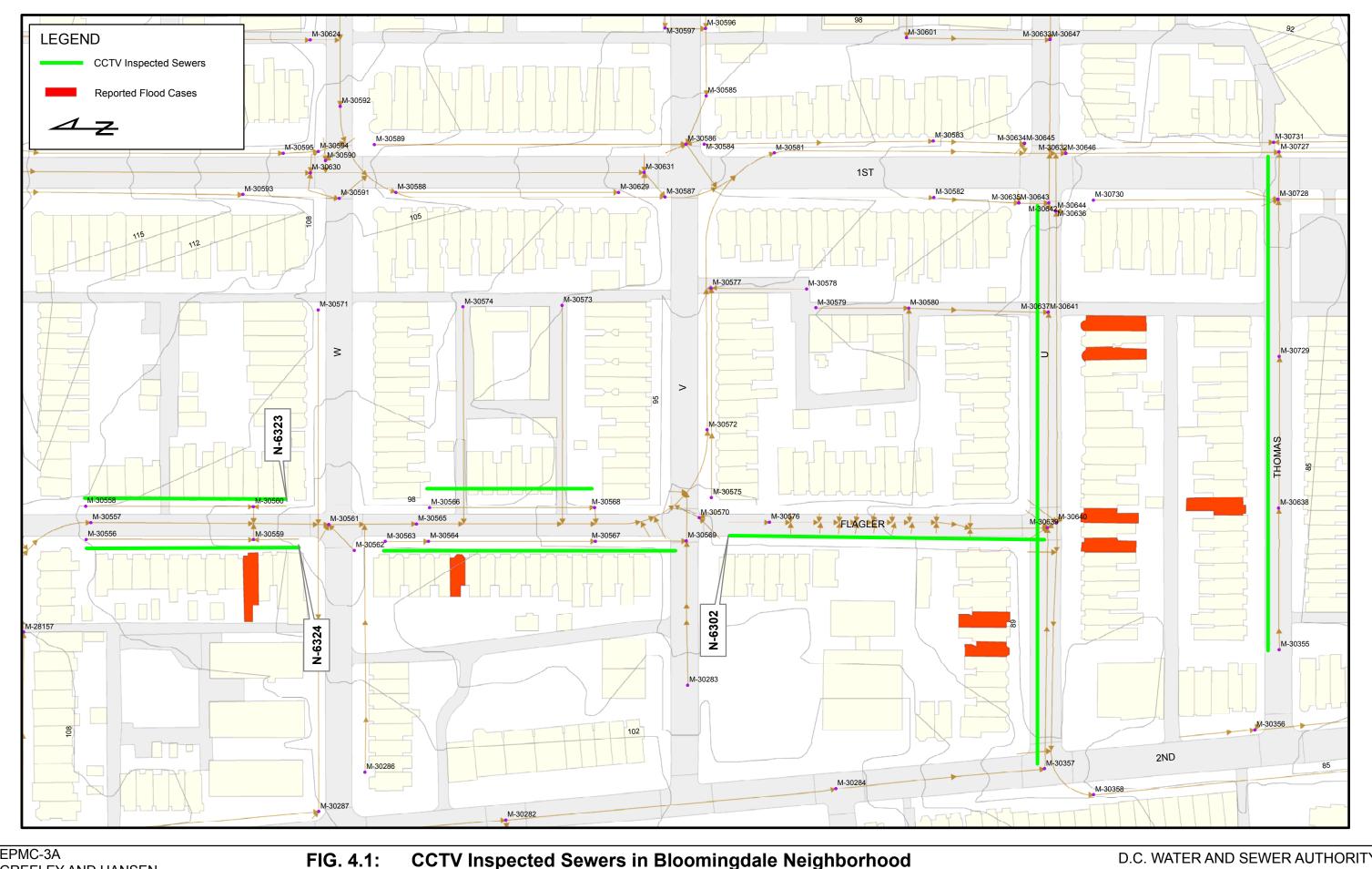
Pipes were found to be in good to excellent condition. No conditions (such as pipe collapses, debris buildup, etc) were observed which would significantly reduce the capacity of the sewers in the street. Photos of typical pipe conditions are shown below:

#### **Photo 4-1:** Typical Pipe Condition – Sewer on Thomas St









EPMC-3A **GREELEY AND HANSEN**  **CCTV Inspected Sewers in Bloomingdale Neighborhood** Scale 1" = 100 ft 100 50 0 100 Feet Scale 1" = 100 ft.

Two pipe segments warrant repair to preserve the structural integrity of the pipe:

- M-30566 to M-30568 this combined sewer on Flagler Pl between W and V Streets was found to have an approximately 6" hole in the crown, with dirt visible. Point repair or relining this section of pipe is recommended.
- M-30563 to M-30569 this combined sewer on Flagler Pl between W and V Streets was found to have several horizontal and circumferential cracks and some staining at the pipe joints. Point repair or relining this section of pipe is recommended. In addition, roots and soils were observed covering about 15% of the flow area at about 154 ft from M-30563. These roots need to be cut.

The above noted pipe conditions do not affect the hydraulic carrying capacity of the pipes. The recommended repairs are to preserve the long-term integrity of the pipe. The repairs could be completed following normal capital improvement plan (CIP) scheduling.

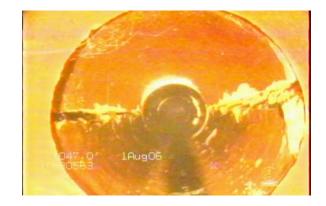
The photos below show the cracks observed in the combined sewer on Flagler Pl between W and V Streets.

#### Photo 4-3:

Longitudinal crack on U St sewer. This crack is located about 215 ft from M-30357.



**Photo 4-4:** Longitudinal fracture starting about 47 ft from M-30563



#### 4.3 Status of Catch Basins

Most of the catch basin inlets are in good condition. Storm water flooding at the intersection of  $2^{nd}$  St and Florida Ave, however, is aggravated by damaged catch basin inlets located north of the intersection (refer photos 4-5 and 4-6). The catch basin covers and nearby curbs need to be repaired and readjusted to facilitate proper operation of the two catch basins.

#### **Photo: 4-5**:

Current status of catch basin located at the intersection of Florida Ave and 2<sup>nd</sup> St, NW



**Photo: 4-6**: Current status of catch basin on Florida Ave west of the intersection with 2<sup>nd</sup> St, NW



#### 5. FLOOD MITIGATION OPTIONS FOR PRIVATE PROPERTIES

#### 5.1 Introduction

The Long Term Control Plan for combined sewer overflows recommended the construction of a 77million gallon storage/conveyance tunnel parallel to Northeast Boundary Sewer. This tunnel will be designed to relieve flooding in the area up to the 15-year frequency design storm. Due to the magnitude and cost of the project, the complete tunnel will not be in service till 2025. Since the LTCP tunnel will not be operational for a considerable time, and since improvements to the local drainage system will not provide flooding protection without the tunnel in service, this section considers interim measures that could be implemented on private property to provide flood protection.

#### 5.2 Interim Mitigation Measures

After considering the causes of the flooding and reviewing residents' reports, the following are property protection measures that may be applicable to provide interim flood protection at the household level:

#### • Measures to Prevent Basement Backups

✓ Install Backflow Preventor (BFP)

A BFP is a valve on the sewer line which is closed to prevent backups. Valves can be operated manually or automatically and some types include battery operated alarms to advise the resident when it is opened or closed. It is important to note that when the backwater valve closes, water from the inside of the house also cannot go out. Therefore, when surcharge occurs, the family should avoid using the toilet, sink, shower, dishwasher or any other appliance that releases water into the sanitary system. Different types of BPFs are summarized in Table 5-1.

Type of BPF	Operation	Advantages	Disadvantages
Manually Operated Valve	Valve installed in the building sewer pipe that must be manually closed to prevent a backup.	✓ Simplicity	<ul> <li>A person must be at home and awake at the time of the rain event to close the valve, otherwise the system will not function</li> <li>The homeowner must remember to open the valve once the storm event has passed, so that wastewater may leave the residence through the sewer lateral.</li> </ul>

Table 5-1: Backflow Preventor Summary

Type of BPF	Operation	Advantages	Disadvantages
Flapper-type Check Valve	This is a valve installed in the sewer pipe. When the sewer begins to back up, the sewage/water moving backward in the pipe automatically closes the valve.	✓ Valve operation is automatic	<ul> <li>Valve has a tendency to clog, and may not provide protection. Regular cleaning may also be required.</li> <li>Plumbing fixtures cannot be used while the valve is closed</li> </ul>
Automatic Gate-type Check Valve	This performs like a flapper type check valve except it is uses a gate to shut off the pipe. Some can be equipped with a battery-operated alarm and lights to indicate when it is open or closed. Some of these types of valves are also less prone to clogging.	<ul> <li>✓ Valve operation is automatic</li> <li>✓ Can include alarms and lights to indicate operation</li> </ul>	<ul> <li>✓ Higher cost</li> <li>✓ Plumbing fixtures cannot be used while the valve is closed</li> </ul>

- Pump-Around System (Ejector Pump)
   The homeowner disconnects from the existing sewer lateral and installs a sewer system that collects and pumps the wastewater into the public sewer. The use of the pump prevents the wastewater from backing up through the lateral and into the residence. The system would not work during a power outage.
- $\checkmark$  Install an elevated sewer system

This system abandons the existing sewer line that serves the basement and other floors. It requires diversion of sewage from existing plumbing fixtures to a new sewer line that runs above the basement floor. The old sewer system in the basement is sealed and any drainage from the basement level is pumped up into the elevated sewer.

✓ Install sump pump system.

If there is only a floor drain but no toilet or shower in the basement, it is recommended to install a sump pump system only. This would involve capping the existing floor drain, installing a sump pump and installing a new floor drain connected to the sump pit. To ensure operation of the pump during severe flooding, provision of back-up power seems an important component.

#### ✓ Install Plumbers Plugs

This is a plug that has a wing nut that allows the plug to be tightened against the opening in the fixture. This may be practical if there are few plumbing fixtures (like

a laundry sink) in the basement. The approach may not be practical for toilets or washing machines.

- Ensure Sewer Laterals are Clean
   Flooding might be caused by a blocked connection between the house and the main sewer. Therefore, arrange for cleaning of the lateral regularly, avoid pouring grease into drains and avoid putting inappropriate objects into the plumbing system.
- Measures to Prevent Surface Flooding from Entering Basements
  - Construct Barriers at Basement Entrances
    - Construct permanent or temporary barriers to stop floodwater from entering basements. An example is shown on Photo 5-1.

#### Photo 5-1:

Example of extending the stairs of the main house to the basement to act as permanent barriers against floods.



✓ Waterproof basements

Cracks in the walls or floor act as conduits for groundwater seepage. Waterproofing basements can be done by sealing cracks and fissures. A more effective way can e to construct a French drain inside the basement wall and direct the pipe discharge to a sump pump which pumps water outside the house.

✓ Address Roof Downspouts Clean roof gutters and downspouts of leaves and other debris. Disconnect

downspouts from the sewer system and extend and reroute them away from basement walls but not such that they would flood a neighbor's property.

✓ Improve Lot Grading Improve lot grading so the ground slopes away from the house. Also, examine sidewalks, patios and driveways. These can settle over time and cause water to drain back towards the house. The cost and practicality of many of these measures depend significantly on the configuration in buildings, the configuration of the basement, the location of other utilities in the building and other factors. Soliciting information from several licensed plumbers, after they have made a site visit, is probably the best way to obtain information on cost and practicality.

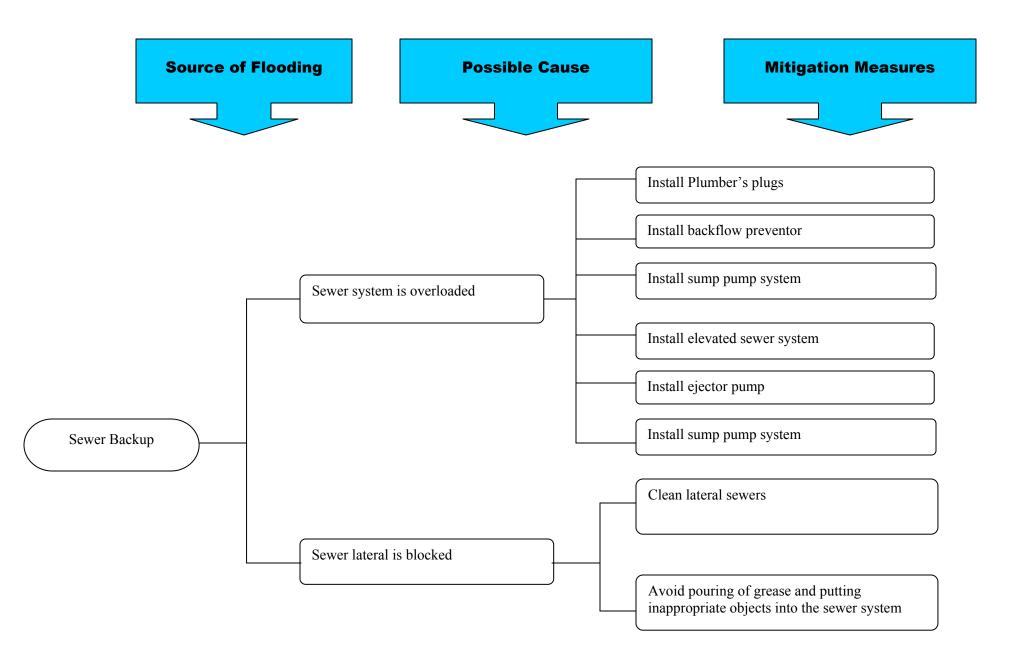


Figure 5-1: Summary Chart of Flood Source, Cause and Mitigation Measures

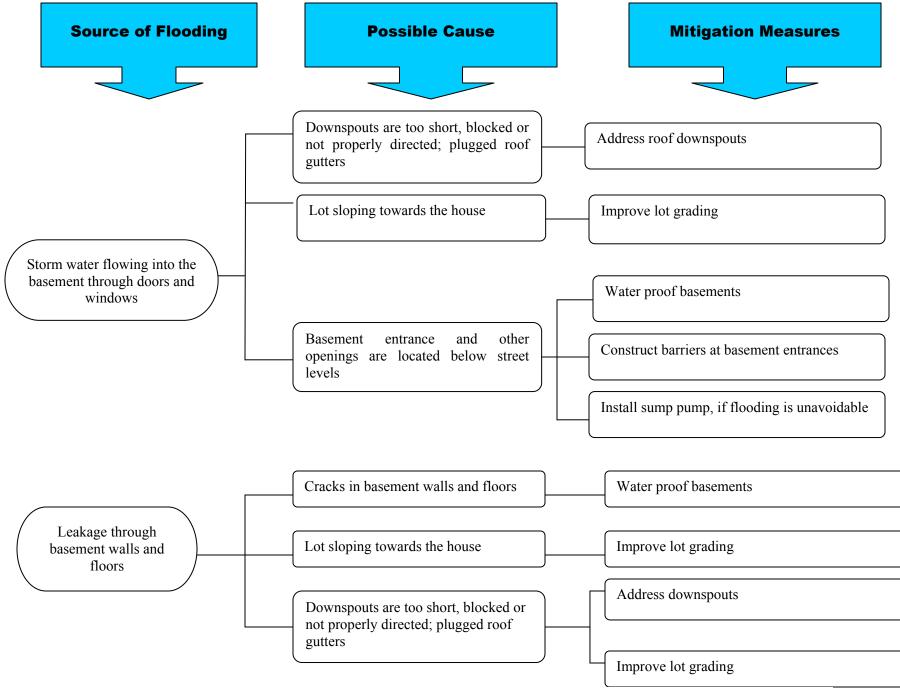


Figure 5-1: Summary Chart of Flood Source, Cause and Mitigation Measures (Continued)

#### 6. FINDINGS AND RECOMMENDATIONS

The findings of this study are as follows:

- The storm of June 25-26, 2006 exceeded the 15-year return frequency design standard of the sewer system.
- The Northeast Boundary Trunk Sewer and the Flagler Place Trunk Sewer do not have the capacity to convey the storm of June 25-26, 2006 or the 15-year design storm without flooding. This resulted in basement backups and flooding in streets and basements.
- The Northeast Boundary Trunk Sewer and the Flagler Place Trunk Sewer were constructed prior to 1910. The flooding associated with the Northeast Boundary area has been recognized as a longstanding problem. Projects to relieve flooding have not been constructed in the past due to the complexity and great expense of constructing large relief sewers in a highly developed urban area.
- As part of the implementation of its Long Term Control Plan, WASA will construct a tunnel and appurtenances in the Northeast Boundary area to relieve the flooding. According to the terms of a Consent Decree with EPA, WASA will place this tunnel in operation by 2025. The cost of construction, along with practical implementation factors such as the size of the project, prevents completion of the tunnel sooner.
- Improvements to the local sewers in the Bloomingdale area will not relieve flooding because the NEBT Sewer and Flagler Pl trunk sewer do not have capacity to convey additional flows out of the area. However, improvements to the local sewer system have the potential to reduce flooding severity during lower frequency storms and to reduce the magnitude and duration of ponding.
- Inspections of the local sewers in the Bloomingdale area were conducted and sewers were found to be in good condition with no significant blockages or obstructions
- Since the LTCP tunnel will not be operational for a considerable time, and since improvements to the local drainage system will not provide flooding protection without the tunnel in service, interim flood protection measures implemented on private property appear to be the most practical approach for interim relief of flooding.

• Possible methods of interim flood protection include:

Measures To Prevent Basement Backups	Measures to Prevent Surface Flooding from Entering Basements	
Install Backflow Preventor (BPF)	Construct barriers at basement entrances	
Install pump-around system (ejector pump)	Waterproof basements	
Install an elevated sewer system	Address roof downspouts	
Install sump pump system	Improve lot grading	
Install plumbers plugs		
Ensure sewer laterals are clean		

The following are recommendations associated with flood improvements to the local drainage system in the Bloomingdale Neighborhood:

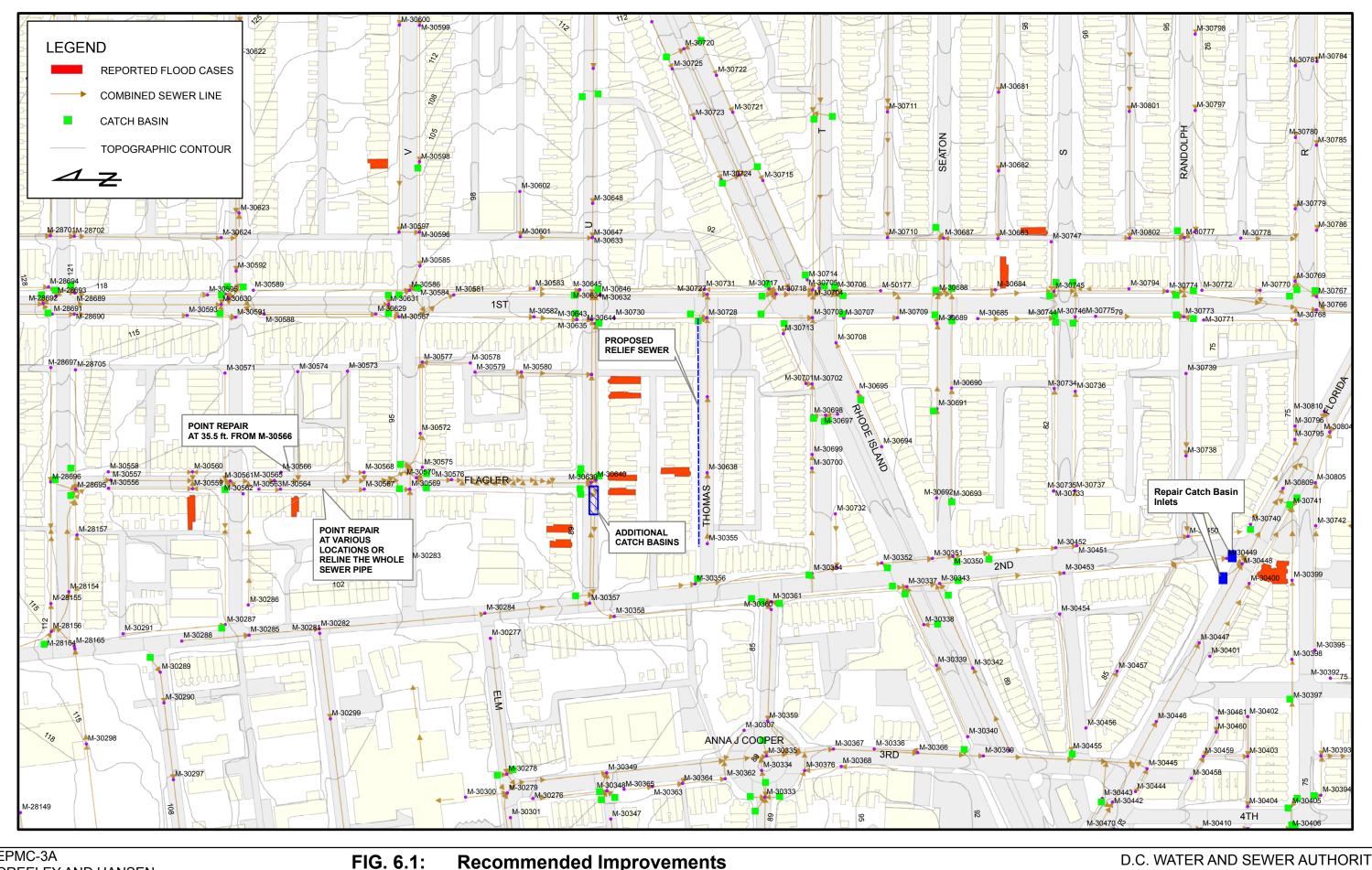
- Construct additional inlets at the intersection of Flagler and U Street, NW
- Construct a relief sewer along Thomas Street between 1<sup>st</sup> and 2<sup>nd</sup> Street, NW
- Fix damaged catch basin inlets located at intersection of 2nd St and Florida Ave, NW.

Note that these improvements to the local storm drainage system will not alleviate flooding during large rain events when the NEBT Sewer and Flagler Place Trunk Sewer are surcharged. However, the improvements may reduce the magnitude of flooding during lower frequency storms and may reduce the extent and duration of ponding. These improvements should be implemented in the short-term, as their benefits would accrue immediately. Figure 6-1 shows the recommended improvements to the existing local drainage network.

Based on the CCTV inspections, point repair or relining the following pipe sections is recommended:

- M-30566 to M-30568 this combined sewer on Flagler Pl between W and V Streets was found to have an approximately 6" hole in the crown, with dirt visible.
- M-30563 to M-30569 this combined sewer on Flagler Pl between W and V Streets was found to have several horizontal and circumferential cracks and some staining at the pipe joints.

The above noted pipe conditions do not affect the hydraulic carrying capacity of the pipes. The recommended repairs are to preserve the long-term integrity of the pipe. The repairs could be completed following normal capital improvement plan (CIP) scheduling.



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EPMC-3A **GREELEY AND HANSEN** 

FIG. 6.1:

Scale 1" = 200 ft. 190

190 Feet



# **Appendix A**

# Summary of Complaints Filed by Residents

#### Table A-1. Summary of June 25-26, 2006 Flood Complaints by Residents and Their Recommended Solutions

S.no	Address	Resident's Observations	Resident's Recommended Solutions
1	1800 block of 1st St NW	Back flow through shower drain flooded the basement	
		Surface flow (possibly including rainwater through down spout) has also flooded the	
		basement	
		Water drained back fast when the rain slowed down	
2	2200 block of Flagler PI NW	Back flow through shower drain flooded the basement	Keep drains clean and free of debris
3	2100 block of Flagler PI NW	Down spout and surface runoff flooded the basement	Make sure each property is properly drained and the drains function properly
		The pipe that connects the downspout with the sewer was clogged	
		Water accumulated in the poorly drained neighbor eventually flooded this house	
4	200 block of Florida Ave NW	Water backs up at the intersection of 2nd St and Florida Ave, NW	Keep drains clean and free of debris and check this occasionally but this was not enough for severe
		The ground slope from the road curb is towards the house, which facilitated the flow	storm
		of water from the street into the house	
		Sewage back flow through the drain of the bath flooded the basement	
		The basement was flooded partly from surface runoff through the front door	
5	Unit block of S Str NW	Sewage back flow through sewer lines flooded the basement	Install back flow prevention valves on the sewer lines
6	100 block of Thomas St NW	Sewage backflow through sewer lines (toilet and bathtub) flooded the basement	Install sumps and sewage pumps
		Surface runoff through the doors flooded the basement	
7	100 block of U Str NW	Backflow of storm water from the drain located outside the house flooded the basement	Clogging of the sewer downstream causes sewage backup, therefore, sewers should be cleaned
		The embankment provided to protect the house has protected their other house on the other side of the street	Provide embankment around the perimeter of the property
			Flow from McMillan reservoir might have aggravated the problem
8	100 block of U Str NW	Basement flooded by surface storm water	Cover drains inlets with mesh metal and drain holes with sheet metal to prevent debris and other clogging material from entering the system
9	100 block of U Str NW	Surface water flooded the basement	Keep drains clean and free of debris
-		Reason for flooding include clogging of the street gutters and street inlets	
		Sewer downstream of the MH at the intersection of Flagler and U St is	
		overstressed, causing flooding of the area	
10	100 blcok of U Str NW	Sewage back flow through the drain of the shower and the toilet flooded the basement	
		The basement was flooded partly from surface runoff through the front and back doors	
11	100 block of U Str NW	Basement flooded by surface storm water	Make sure each property is properly drained and the drains function properly
			Check effect of construction at the Gage school. They might have diverted the underground stream into the storm sewers
			Building renovation permission certificates should address flood requirements
			City (WASA) should provide engineering services to check private properties if they are susceptible to floodi
			and recommend the type of improvements needed for efficient drainage and for minimizing flood risks
12	100 block of U Str NW	Basement flooded by surface storm water	Keep drains clean and free of debris
13	Unit block of V Str NW	Basement flooded by surface storm water	Install sumps and sewage pumps
	L		

Note: Names and addresses have been redacted

#### Flooding Reports Provided by Residents June 25–26, 2006 Flooding

Note: Names and addresses have been redacted.

#### 200 block of Florida Ave NW

The drain across the street from my house backs up frequently when it rains heavily creating a HUGE puddle at the intersection of 2nd and Florida. The bricks on my street and the sidewalk curbing all slope toward the houses on Florida causing water to come towards houses when it rains.

My basement unit flooded with about a foot of water. Sewage also backed up from the bathtub. The water receeded pretty quickly and I didn't need to use anything to get it out but it left behind a lot of dirt. The water primarily came in through the front door of the basement. I have a drain immediately outside of it but assume the amount of water became too much for it. I keep it cleaned and free of debris and had specifically checked it that day because of the heavy rain.

I happen to know that every house on my block with a basement unit flooded.....several of the houses on my street have their front on R and their rear on Florida....of these I know 200 block of R street and 200 block of Florida flooded.

At our house at 100 block of U Street, NW, as in August of 2001, Memo and I had water come in from underneath and around the basement back door of our house, where the outside drain is located. Water was actually coming up through the outside drain, much like an artesian well. See the attached image that I think seems to reflect our combined sewer/septic system situation: http://www.bartleby.com/61/imagepages/A4artwel.html

Personally, I suspect that there is a bottleneck somewhere "downstream" from us, and as a result, during heavy downpours the water in our part of the city gets backed up.

Hopefully the McMillan reservoir isn't to blame, Last time this happened several of us thought they may have released water into the system. I think several neighbors found fish on the street, and in their basements. Bob and Mike of the 100 block of U Street may have been two neighbors who saw this. I'm not an engineer but it seems possible that they need to keep the reservoir below a certain level to protect machinery and to keep it from breeching it's levees.

Despite the 3+ feet of water in the street, our house on the other side of the street did not have any internal flooding. The soil we added to the perimeter seems to have kept the waters at bay this time.

#### 100 block of U Street, NW

We live at 100 block of U Street NW, dead center of the rain waters that ran down Flagler PL NW, as well as in front of the 3 drains our street has at the same intersection.

Our 2004 Ford Exlorer was totaled (we are taking a loss on that, Thanks to WASA and DC Govt). Our basement got about 6 inches of rain that came in from our neighbors basement, 100 block of U Street NW.

I am a realtor, and when I was out showing condos downtown yesterday, I saw drains that had metal mash and metal sheets with holes on it protecting the sewer drains so no debris, bottles etc could enter. I t looks like it was professionally done and approved by WASA or DC. Can we ask for this to be done ASAP while we wait for WASA/DC Govt to fix the lines?

### 2200 block of Flagler Pl., NW

My basement flooded with approximately 1 inch of water. The water came up through the shower stall drain, and under the rear and front doors. My basement is approximately 4 1/2 feet below the ground level, there is 1 drain in the backyard, and there are drains in front of each door at the entrance level. These drains were clear of trash before and after the flood.

### 100 block of U Street, NW

I was alerted to the fact that there was a problem on Sunday, June 25th 2006 when the power went out sometime between 11:30pm-12am. I look out my front window and saw a lake outside! The water in the street in front of my house was up to the bottom of the car doors. My automobile was parked in front of my house; water had gotten inside and the carpet was soaked on the floor.

I have French drains in the front and rear outside of my house; both were backed up and water was coming up from them.

I have 2 steps leading from the sidewalk to my walkway, which measures 11.5" high. The water was about 11" deep on the street, just ready to some pouring over the steps, over my walkway, and down my basement steps and into the basement. Lucky for me, the rain subsided just in time and the water began to drain back. I did not suffer major damage from the sewer backup.

I did get leaking in the rear of my house due to the neighbors gutters overflowing, leaking into cracks in the pavement, and streaming its way through the foundation into my basement.

The next night, Monday June 26th wasn't much better. Neighbors were literally outside in the rain for hours that

night, using brooms and rakes, sweeping away debris from the street drains to keep them clear. A sewer backup on 1st Street, NW caused a river of water to come pouring down 1st St then onto U St. Water was gushing out of a manhole on 1st St at V St. Water also poured down Flagler. The street drains at the corner of Flagler and U St did again back up that night and the intersection was a pond. Flagler is a big issue; much of the water from surrounding streets drains into Flagler and that flows downhill into U St. The drains at the intersection of Flagler and U St just cannot handle the amount of water coming in.

In Aug of 2001 I was not so lucky. The street sewer backup was so bad it filled the street to over 12" deep. Water poured up and over the front steps and down into the basement, filling it with 1-2" of water.

I'm on edge any time it rains!

### V Street, NW

FYI, Bolling Air Force Base in the District places a wire mesh over their storm drains. I would imagine that WASA would be willing to do the same or allow citizens to install them ourselves...

V ST Resident who fortunately did not have flood damage...

### 100 block of U St NW

On Sunday, June 25, the storm drains on backed up and caused extensive flooding throughout my block due to the heavy rains during the night. I received a phone call at 2am (June 26) from my basement tenant, Annika Jordan, informing me that the basement was entirely flooded. Water was coming up from the shower, the toilet, and from the rear and front doors and covered the entire basement floor with 4 inches of dirty water. The worst source of the flooding was storm water that came through the front door. Storm water flooded in from the street and flowed into the front basement entrance and the water line reached above 1 ft high. Of course when the water was so high, it started to leak into the basement through the door and covered the entire floor with 3-4 inches of water.

There was nothing I could do until the next morning since the weather was so bad. Apparently, the electricity was gone for a few hours that night and the fire department was sent to my block. Fortunately, my tenant managed to sweep out most of the water by the next morning, however there was extensive water damage left behind.

### 1800 block of 1<sup>st</sup> St NW

I had water coming up from my shower drain, front and rear exterior drains. This happened 3 different times. Around 2:30am was the worst. At one point I had 6 inches of water in the basement. When the rain slowed down, the water all drained back into the sewer system. I did call WASA the next day and they said someone would come by to take a look. I was home all day and no one showed up.

### Unit block of S Street, N.W.

I would like to suggest to WASA that they install back flow valves into each of our home sewer lines to prevent sewage from coming out of the drains and flooding our basements. It's our responsibility to keep our outside drains clean but it's theirs to keep sewage from flowing the wrong direction and poses more of a health risk too.

### 2100 block of Flagler

We had some minor flooding in our basement at 2100 block of Flagler Place. It was partially due to my downspout and drain not working as well as it should have because the trap in the downspout was clogged with about 100 years of sediment. We just dug it up and replaced it and it was unbelievable any water got through at all. A good bit of our problem was caused by the lot next to us, which was no drain installed near the back of the house and a concrete driveway which drops off 6-8 inches near the house and pools several inches of water against his foundation every time it rains, with no where to go but down along his foundation and into my yard.

### Unit block of V Street NW

We flooded with about three inches of water. Our address is unit block of V Street NW. We have flooded before, but our problems had stopped since we installed a sump pump on the back of the house where flooding had become a big problem. Until that historic rain overnight on June 26, we had no problems since the sump pump was put in a year ago.

This time, the water came in on the other side of the back of our house, very close to the common wall with our uphill neighbor, who floods often and seems resigned to it. She has lived in the house for many years and I don't think she can afford to address her problem. Her roof also leaked in this series of storms.

John

I had three feet of water in my basement in 2001. It was a direct result of the overwhelmed water systems. I've made changes to drainage around my home, in the rear where the flood waters came in, so this problem wasn't an issue this time---yet I did have water damage to ceilings and walls in my home because of the volume of rain. This year, the damage came from the roofline down (water overflow from the roof to the walls on the rear of my flat roof. There was definitely areas where water was backed up in the neighborhood (e.g. First and R & Randolph and Florida and First (all NW)). These drains always overflow when there is a lot of rain and they take a long time to dissipate.

### Unit block of Florida Ave NW

I was not affected, but want to report the problem on Florida Ave NW.

It appears that the water was flowing from the back alley (quincy pl NW and Florida Ave houses) and the street drain was not able to absorb it fully, creating a massive flooding at the intersection of Florida Ave NW and First St NW. The water was about foot deep, and even the sidewalks were covered. I am not aware of the cause of the problem. However, this problem occurs at every rainfall, even smaller ones.

I will be happy to provide more info if needed. I also reported this problem to WASA.

### 100 block of Thomas St NW

On Sunday, June 24, heavy rains fell and my basement was flooded repeatedly throughout the night in surges. My drains outside were clear and performing adequately to drain the rain water, but I witnessed the drains gushing water up from the system in a backflow for periods of time twice as I tried to cleanup before giving up.

Sewage and waste, including leaves and other clearly external debris, came up through my basement toilet and bathtub, overflowing both and flooding my basement. Additionally, water forced into the front and rear entry ways into my downstairs unit by the backflow from the city water system entered the unit under the doors. Debris marked a waterline on my back door of about 14 inches and on my front door of about 5 inches. I have a sump pump in the unit, so between surges, most of the water drained from the unit, leaving about 1/2 inch to one inch of water on the wood laminate flooring. The first of these surges occurred sometime before 9:00 pm Sunday night. We discovered the aftermath of it when we went to the basement on a routine nightly check of the property. While we were cleaning up the residual water from the first surge, we witnessed the second one at about 10:00 pm. When we witnessed that one, we realized that there was nothing that we could do to stop the flooding. I went to the basement one more time, at about 11:30, and it had just surged again, because I again witnessed a new round of water built up in front of both doors. I could not enter the unit that time, without allowing the water to rush in, I suspect that it was on that occasion that the water came up through the toilet and tub inside.

I have photos of the water that remained in the unit the next morning, The debris in the bathroom, and the waterlines for the front and back doors. I have technical problems with sending them electronically, but I can bring copies to the next meeting, if you need them.

I've only lived in this house since last July, so I don't have Additional information to offer regarding previous flooding.

### 100 block of U St. NW

We bought the house in 2004, so I don't know what sort of damage it took in 2001. Flooding was NOT listed on the information provided on the house, but neighbors tell us it did flood.

This time our French drains did not drain properly. We took about 3 inches of water in the basement. I view this as a maintenance problem - we sweep up small leaves and such regularly (and had actually done it about 2 weeks before the flood), but the run off from our yard carried too much detritus and clogged the drain cover. We plan a landscape engineering solution - as soon as we can figure out what one might be.

The alley behind our house does sit higher than most of the yards on our block, so water runs toward our houses when it rains.

We did not get water backed up thru the tub or toilet.

My car was totaled. It was parked near 100 block of U street and was in about 1 1/2 feet of water. This was enough to flood the engine. My car is an antique and cannot be insured for damage - unless I call it a show car and promise not to drive it!

From the government or other agency I'd like to see:

- an assessment showing that the new construction at the Gage school did not exacerbate the problem. I bet that it did. They dug an enormous hole right where the underground stream runs and they had major water problems last fall. Then the water disappeared. I assume they diverted the stream - how much did that have to do with our most recent problem?

- When people pull permits for renovation, water engineering should be reviewed. The damage to the condo at 150 (or 152, I forget the address), is largely due to stupid construction. The builder lowered the front steps on the lowest house on the block. And, surprise! surprise!, the water rushed in.

- The city (or WASA or whomever) should perform an assessment of water run off. Not the storm drains, but the homes and the land. We, as property owners, can do many things to help avoid problems, but we don't know how. A professional could determine things that we, as a neighborhood, can do to in the future. From making sure that our yards slope down from the houses, to making sure our front steps are tall enough, to making sure there is enough green space to absorb the water. I'm sure there are many other things we can do, but that is the extent of my knowledge base.

### 100 block of U St. N.W

We got minimal flooding inside the basement this time. The drains are kept free and clear of debris in both the front and rear drains. However, this time a plastic bag somehow made its way into the front drain area. When the waters that flooded the street and then poured down to the basement drain area, the bag then sort of acted as a seal or cover. The basement was not completely flooded it was actually negligible compared to others. The neighbors at 100 block of U did not get any flood, so I know it was the bag covering the drain. I live on the alley and the new construction resulting from the 2001 flooding properly diverted the flood waters to the nearby drains. There was no flooding in the alley that runs north to south, nor the rear that runs east to west.

The front street was a different story; it however, at 2:30 am Monday morning (6/26) looked like a river. I was told that the Gage school looked like a lake. Unfortunately, my car was flooded and still inoperable (7/19).

The tree boxes were completely flooded. That was about a foot and one half of water. Some front yards were flooded. Since my yard (and most others) are high up, that protected us from getting a rush or surge of flood water hurdling to the basement area. That would have been catastrophic.

Amazingly, in less than 2 minutes all of the water receded from the streets. That was about 2:35am to 2:45am. Most of the 100 block U street residents were out (the rain temporarily subsided) cleaning out their cars.

# Appendix B Computation Tables for Estimating Conveyance Capacity of Existing Sewers

		Table D.T.													
м	I ID	Creare	l Laval	T	Tanal	D:= . C:= .	Din a Lanath	Watershed Area	Residential	Cutu	Pavement	Chr	Green	Cha	
NIE	110	Ground	i Levei	Invert	Level	Pipe Size	Pipe Length	Α	Ar	CrAr	Ар	САр	Ag	CAg	Weighted C
		From		From											
From	То	MH	To MH	MH	To MH	in	ft	ft <sup>2</sup>	$ft^2$	ft <sup>2</sup>					
Sewer	Main Sewe	r													
M-30355	M-30638	86.2	86.45	80.43	79.34	12	160	83905.65	37440.51	33696.46	28596.24	25736.61	17868.90	5360.67	0.77
M-30638	M-30729	86.45	84.7	79.34	78.44	15	170	47328.98	25921.49	23329.34	6428.58	5785.72	14978.91	4493.67	0.71
M-30729	M-30728	84.7	85.15	78.44	76.71	18	174.5	17513.10	0.00	0.00	15036.34	13532.71	2476.76	743.03	0.82
M-30728	M-30727	85.15	88.21	76.71	74	24	60.5			0.00		0.00		0.00	
Sewer	Thomas-1														
M-30730	M-30728	91.6	85.15	80.08	77	10	210	32602.21	13304.07	11973.66	5680.56	5112.50	13617.58	4085.27	0.65

 Table B.1: Computation Table for Evaluation of Existing Sewers for Generated Floods of Various Frequencies: Sewers along Thomas Street, NW

 Table B.1.1: Basic Data of the Main Sewer and Its Tributaries

		Table D.1.2.						., .							
м	IID			Flo	w Time Co	omputatio	n			Inlet	Time of Concentration		Inter	nsity	
IVIT		D	А	Р	R	S	n	V	Flow Time	Time	tc	2	5	10	15
From	То	ft	ft2	ft	ft			ft/sec	min	min	min	in/hr	in/hr	in/hr	in/hr
Sewer	Main Sewe														
M-30355	M-30638	1.00	0.7854	3.14159	0.25	0.00681	0.015	3.24495	0.82	10.00	10.82	4.33	5.17	5.92	6.14
M-30638	M-30729	1.25	1.22718	3.92699	0.3125	0.00529	0.015	3.31939	0.85	10.82	11.67	4.25	5.04	5.75	5.98
M-30729	M-30728	1.50	1.76715	4.71239	0.375	0.00991	0.015	5.12948	0.57	11.67	12.24	4.14	4.97	5.67	5.88
M-30728	M-30727	2.00	3.14159	6.28319	0.5	0.04479	0.015	13.2083	0.08	12.24	12.32	4.11	4.94	5.64	5.87
Sewer	Thomas-1														
M-30730	M-30728	0.83	0.54542	2.61799	0.20833	0.01467	0.015	4.21631	0.83	10	10.83	4.33	5.17	5.92	6.14

Table B.1.2: Determination of Time of Concentration an
--

		Table B.L.	5: Computati	on of Conve	yance Ca	pacity of Ex	isitng Sewers									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		From							1	Existing Condi	tions					
Sec	tion	Branch		Elevat	ion		Length	Slope of	Pipe Dia	X-sectional	Wetted	Hydraulic	Longitudinal	Manning's	Velocity	Drain
			G	L	Inv	ert L	L	conduit	Tipe Dia	area	Perimeter	Radius	Slope	roughness	velocity	Capacity
From MH	To MH	(if any)	Upper end	Lower end	Upper end	Lower end	ft	s	D	Α	Р	R	s	n	v	Q
ID	ID	ID	mASL	mASL	mASL	mASL		0/00	in	ft2	ft	ft			ft/s	ft3/s
M-30355	M-30638		86.20	86.45	80.43	79.34	160	6.81	12	0.79	3.14	0.25	0.01	0.015	3.24	2.55
M-30638	M-30729		86.45	84.70	79.34	78.44	170	5.29	15	1.23	3.93	0.31	0.01	0.015	3.32	4.07
M-30729	M-30728		84.70	85.15	78.44	76.71	174.5	9.91	18	1.77	4.71	0.38	0.01	0.015	5.13	9.06
M-30728	M-30727	M-30730	85.15	88.21	76.71	74.00	60.5	44.79	24	3.14	6.28	0.50	0.04	0.015	13.21	41.50
M-30730	M-30728		91.60	85.15	80.08	77.00	210.00	14.67	10	0.55	2.62	0.21	0.01	0.015	4.22	2.30

Table B.1.3: Computation of Conveyance Capacity of Exisitng Sewers

Table B.1.4: Evaluation of Existing Sewers Against Generated Floods of Various Frequencies

1	2	3	4	5	6	7	8	9	10	8	9	10	8	9	10	8	9	10
	ection	From	Wa	tershed Ch	aracterst	tics	1	2-Year Frequen	cy		5-Year Frequen	icy	10-	Year Frequei	ıcy	15	-Year Freq	uency
30	ection	Branch						Flow			Flow			Flow			Flow	
From MI	H To MH	(if any)	Drainage Area	Wieghted C	CA	Cummu AC	Intensity of Rainfall, I	Q = I*CA	Remark	Intensity of Rainfall, I	Q = I*CA	Remark	Intensity of Rainfall, I	Q = I*CA	Remark	Intensity of Rainfall, I		Remark
ID	ID	ID	Acre		Acre	min	in-ha	ft3/sec		in-ha	ft3/sec		in-ha	ft3/sec		in-ha	ft3/sec	
M-30355	M-30638		1.93	0.77	1.49	1.49	4.33	6.44	Under Capacity	5.17	7.69	Under Capacity	5.92	8.81	Under Capacity	6.14	9.13	Under Capacity
M-30638	M-30729		1.09	0.71	0.77	2.26	4.25	9.60	Under Capacity	5.04	11.39	Under Capacity	5.75	12.99	Under Capacity	5.98	13.51	Under Capacity
M-30729	M-30728		0.40	0.82	0.33	2.59	4.14	10.71	Under Capacity	4.97	12.86	Under Capacity	5.67	14.67	Under Capacity	5.88	15.21	Under Capacity
M-30728	M-30727	M-30730	0.00	0.00	0.00	3.07	4.11	12.63	OKAY	4.94	15.18	OKAY	5.64	17.33	OKAY	5.87	18.04	OKAY
M-30730	M-30728		0.75	0.65	0.49	0.49	4.33	2.10	OKAY	5.17	2.51	Under Capacity	5.92	2.88	Under Capacity	6.14	2.98	Under Capacity

#### Table B.1.5: Determination of Size of Relief Sewer on Thomas Street

From MH	То МН	Groun	d Level	Invert I	Level	Lund	Slope	Manning's	15-year	Required	Hydraulic	Nolo etca	Comments 1.0		Exist Sewer	Relief Sewer
F FOIL MIT	10 МП	Upper end	Lower end	Upper end	Lower end	Length	Slope	roughness	Frequency Flow	Pipe Dia	Radius	Velocity	Computed Q	Remark	Dia	Dia
ID	ID	mASL	mASL	mASL	mASL	ft			ft3/sec	in	in	ft/sec	ft3/sec		in	in
M-30355	M-30638	86.2	86.45	80.43	79.34	160	0.007	0.015	9.13	21	0.44	4.71	11.33	OKAY	12	18
M-30638	M-30729	86.45	84.7	79.34	78.44	170	0.005	0.015	13.51	24	0.50	4.54	14.27	OKAY	15	18
M-30729	M-30728	84.7	85.15	78.44	76.71	174.5	0.010	0.015	15.21	24	0.50	6.21	19.52	OKAY	18	18
M-30728	M-30727	85.15	88.21	76.71	74	60.5	0.045	0.015	18.04	24	0.50	13.21	41.50	OKAY	24	-

		Table B.2.1:1	Dasie Data	of the with	in bewei a	nu no mou	itaries								
MF	1 ID	Ground	Level	Invert	Level	Pine Size	Pipe Length	Watershed Area	Residential	CrAr	Pavemen t	САр	Green	CAg	
		orbunu	Lever		Lever	1 -pe sille	r ipe hengen	А	Ar	enn	Ар	e. p	Ag	ong	Weighted C
From	То	From MH	To MH	From MH	To MH	in	ft	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	
M-30284	M-30357	98.70	90.5	88.46	80.17	15	135	67411.67	14702.86	13232.57	15987.00	14388.30	36721.81	11016.54	0.57
M-30357	M-30639	90.50	89.7	79.10	77.43	18	270	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M-30639	M-30641	89.70	88.9	77.43	76.73	30	240	17166.84	6012.81	5411.53	7508.72	6757.85	3645.31	1093.59	0.77
M-30641	M-30642	88.90	89.54	76.73	75.29	30	120	9323.61	2717.93	2446.14	3927.67	3534.90	2678.01	803.40	0.73
M-30642	C-04	89.54	90.50	75.29	75.00	30	56	4709.57	0.00	0.00	4709.57	4238.61	0.00	0.00	0.90
Sewer	Sewer-U-1	Connected to	U-St sewe	r at MH-30	0637										
M-30579	M-30580	0.00	91.26	82.93	82.21	12	104	20637.35	8407.29	7566.56	5697.04	5127.34	6533.02	1959.91	0.71
M-30580	M-30641	91.26	88.90	82.21	76.73	12	154	9368.50	1892.58	1703.32	4164.44	3748.00	3311.48	993.44	0.69
Sewer		Connected to								0	1	0			
U-I-01	M-30580	91.06	91.26	84.09		8	77	12472.60	5748.18	5173.36	3321.33	2989.20	3403.09	1020.93	0.74
Sewer	Sewer -U-2	Connected to				-									
U-I-02	M-30582	91.71	92.00	85.36	82.52	10	140	29785.21	15574.13	14016.72	0.00	0.00	14211.08	4263.32	0.61
M-30582	M-30635	92.00	90.04	82.52	80.77	12	83	8264.59	2539.84	2285.86	2757.93	2482.14	2966.82	890.05	0.68
M-30635	M-30642	90.04	89.31	77.03	76.33	15	33	7456.41	2539.84	2285.86	2273.84	2046.46	2642.73	792.82	0.69
Sewer	Sewer -U-3	Connected to	the U st se	wer at MH	[-30639								-		
N-6302	M-30576	91.71	91.03	82.12	80.16	10	45	15529.84	7521.27	6769.14	2695.46	2425.91	5313.11	1593.93	0.69
M-30576	M-30639	91.03	89.70	80.00	77.56	12	310	54049.68	19137.98	17224.18	0.00	0.00	34911.70	10473.51	0.51
Sewer	Relief Sewe	r from MH-30	)640 to MI	I-30358											
M-30640	M-30358	87.28	90.5	76.08	74.08	39	346	29583.63	10391.27	9352.14	6121.43	5509.29	13070.93	3921.28	0.63

 Table B.2: Computation Table for Evaluation of Existing Sewers for Generated Floods of Various Frequencies: Sewers along U Street, NW

 Table B.2.1: Basic Data of the Main Sewer and Its Tributaries

r		Tuore B.2.2.	Betermina	tion of Time of	concentra	non unu m	consity of	. cumun							1
м	H ID			Flow T	ime Com	putation				Inlet	Time of Concentration		Inter	nsity	
		D	A	Р	R	s	n	v	Flow Time	Time	tc	2	5	10	15
From	То	ft	ft2	ft	ft			ft/sec	min	min	min	in/hr	in/hr	in/hr	in/hr
M-30284	M-30357	1.25	1.22718	3.926990817	0.3125	0.06	0.015	11.305	0.20	13.81	14.01	3.98	4.74	5.38	5.59
M-30357	M-30639	1.50	1.76715	4.71238898	0.375	0.00619	0.015	4.05158	1.11	14.01	15.12	3.85	4.58	5.20	5.43
M-30639	M-30641	2.50	4.90874	7.853981634	0.625	0.00	0.015	3.91103	1.02	15.12	16.14	3.75	4.50	5.08	5.28
M-30641	M-30642	2.50	4.90874	7.853981634	0.625	0.012	0.015	7.93301	0.25	16.14	16.39	3.74	4.45	5.02	5.25
M-30642	C-04	2.50	4.90874	7.853981634	0.625	0.01	0.015	5.21138	0.18	16.39	16.57	3.71	4.40	5.00	5.23
Sewer	Sewer-U-1														
M-30579	M-30580	1.00	0.79	3.14	0.25	0.01	0.015	3.27	0.53	10.00	10.53	4.34	5.20	5.92	6.19
M-30580	M-30641	1.00	0.79	3.14	0.25	0.04	0.015	7.42	0.35	10.53	10.88	4.27	5.16	5.89	6.13
Sewer	Sewer-U -1-														
U-I-01	M-30580	0.67	0.35	2.09	0.17	0.02	0.015	4.69	0.27	10.00	10.27	4.50	5.28	6.01	6.25
Sewer	Sewer -U-2														
U-I-02	M-30582	0.83	0.55	2.62	0.21	0.02	0.015	4.96	0.47	10.00	10.47	4.35	5.21	5.95	6.21
M-30582	M-30635	1.00	0.79	3.14	0.25	0.02	0.015	5.71	0.24	10.47	10.71	4.33	5.19	5.92	6.16
M-30635	M-30642	1.25	1.23	3.93	0.31	0.02	0.015	6.64	0.08	10.71	10.79	4.31	5.17	5.9	6.14
Sewer	Sewer -U-3														
N-6302	M-30576	0.83	0.55	2.62	0.21	0.04	0.015	7.27	0.10	10.00	10.10	4.43	5.29	6.04	6.28
M-30576	M-30639	1.00	0.79	3.14	0.25	0.01	0.015	3.49	1.48	10.10	11.58	4.25	5.04	5.75	6.00
Sewer	Relief Sewe														
M-30640	M-30358	3.25	8.30	10.21	0.81	0.01	0.015	6.56	0.88	10.00	10.88	4.27	5.16	5.89	6.13

Table B 2.2	: Determination	of Time of	Concentration a	nd Intensity	of Rainfall

Ir			· · · · ·			cupaenty	of Existing Sewe							i i		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Sect		From								Existing Con	ditions					
Sect	1011	Branch		Elevati	on		Length	Slope of		X-sectional	Wetted	Hydraulics	longitudinal	Manning's		Drain
From MH	То МН	(if any)	G	βL	Inve	rt L	L	conduit	Pipe Dia	area	Perimeter	Radius	Slope	roughness	Velocity	Capacity
FTOIL MIT	10 МП	(II any)	Upper	Lower		Lower		s	D		,	1				Q
			end	end	end	end	ft			Α	Р	R	S	n	V	
ID	ID	ID	mASL	mASL	mASL	mASL		0/00	in	ft2	ft	ft			ft/s	ft3/s
Main Sewe																
M-30284	M-30357		98.70	90.50		80.17	135.00	61.41	15.00	1.23	3.93	0.31	0.06	0.015	11.31	13.87
M-30357	M-30639		90.50	89.70	79.10	77.43	270.00	6.19	18.00	1.77	4.71	0.38	0.01	0.015	4.05	7.16
M-30639	M-30641	N-6302	89.70	88.90	77.43	76.73	240.00	2.92	30.00	4.91	7.85	0.63	0.00	0.015	3.91	19.20
M-30641	M-30642	M-30579	88.90	89.54	76.73	75.29	120.00	12.00	30.00	4.91	7.85	0.63	0.01	0.015	7.93	38.94
M-30642	C-04	U-I-02	89.54	90.50	75.29	75.00	56.00	5.18	30.00	4.91	7.85	0.63	0.01	0.015	5.21	25.58
N-6302	M-30576		91.71	91.03	82.12	80.16	45.00	43.56	10.00	0.55	2.62	0.21	0.04	0.015	7.27	3.96
M-30576	M-30639		91.03	89.70	80.00	77.56	310.00	7.87	12.00	0.79	3.14	0.25	0.01	0.015	3.49	2.74
M-30579	M-30580		0.00	91.26	82.93	82.21	104.00	6.92	12.00	0.79	3.14	0.25	0.01	0.015	3.27	2.57
M-30580	M-30641	U-I-01	91.26	88.90	82.21	76.73	154.00	35.58	12.00	0.79	3.14	0.25	0.04	0.015	7.42	5.82
U-I-01	M-30580		91.06	91.26	84.09	82.21	77.00	24.42	8.00	0.35	2.09	0.17	0.02	0.015	4.69	1.64
U-I-02	M-30582		91.71	92.00	85.36	82.52	140.00	20.29	10.00	0.55	2.62	0.21	0.02	0.015	4.96	2.70
M-30582	M-30635		92.00	90.04	82.52	80.77	83.00	21.08	12.00	0.79	3.14	0.25	0.02	0.015	5.71	4.48
M-30635	M-30642		90.04	89.31	77.03	76.33	33.00	21.21	15.00	1.23	3.93	0.31	0.02	0.015	6.64	8.15
Relief Sewe	er															
M-30639	M-30640		89.70	87.28	77.56	76.08	12.00	123.33	21.00	2.41	5.50	0.44	0.12	0.015	20.05	48.23
M-30640	M-30358		87.28	90.50	76.08	74.08	334.00	5.99	39.00	8.30	10.21	0.81	0.01	0.015	6.68	55.37
0	0		87.28	89.45	77.21	75.10	413.60	5.10	24.00	3.14	6.28	0.50	0.01	0.015	4.46	14.00
L		1														

#### Table B.2.3: Computation of Conveyance Capacity of Existing Sewers

		Table B.2.	4. Evalua	HOIL OF EXIST	ing Sewe	15 Agams	st Generated Floor		is rrequencies									
1	2	3	4	5	6	7	8	9	10	8	9	10	8	9	10	8	9	10
<b>S</b> -1	ction	From		tershed Cha		ics	2-Y	ear Freque	ency		5-Year Frequ	iency	10	-Year Frequ	ency	15-	Year Fr	equency
Se	cuon	Branch	Drainago	Wieghted		Cumm	Intensity of	Flow		Intensity of	Flow		Intensity of	Flow		Intensity of	Flow	
From MH	To MH	(:6)	Area	Wieghted	CA	u CA		Q = I*CA	Remark	Rainfall, I		Remark	Rainfall, I	Q = I*CA	Remark	Rainfall, I	Q =	Remark
r rom MI	TOMH	(if any)	Area	С		u CA	Kainian, I	Q=I"CA	кешагк	Kainian, I	Q=I"CA	кешагк	Kaiman, i	Q=I°CA	кешагк	Kaiinan, I	I*CA	Kelliark
ID	ID	ID	Acre		Acre	min	in-ha	ft3/sec		in-ha	ft3/sec		in-ha	ft3/sec		in-ha	ft3/sec	
M-30284	M-30357		1.55	0.57	0.89	1.17	3.98	4.64	OKAY	4.74	5.52	OKAY	5.38	6.27	OKAY	5.59	6.52	OKAY
M-30357	M-30639		0.00	0.00	0.00	1.17	3.85	4.49	OKAY	4.58	5.34	OKAY	5.20	6.06	OKAY	5.43	6.33	OKAY
M-30639	M-30641	N-6302	0.39	0.77	0.30	0.98	3.75	1.47	OKAY	4.50	1.76	OKAY	5.08	1.99	OKAY	5.28	2.07	OKAY
M-30641	M-30642	M-30579	0.21	0.73	0.16	1.83	3.74	6.85	OKAY	4.45	8.16	OKAY	5.02	9.20	OKAY	5.25	9.62	OKAY
M-30642	C-04	U-I-02	0.11	0.90	0.10	2.60	3.71	9.64	OKAY	4.40	11.43	OKAY	5.00	12.99	OKAY	5.23	13.58	OKAY
N-6302	M-30576		0.36	0.69	0.25	0.25	4.43	1.10	OKAY	5.29	1.31	OKAY	6.04	1.50	OKAY	6.28	1.56	OKAY
M-30576	M-30639		1.24	0.51	0.64	0.88	4.25	3.76	Under Capacity	5.04	4.45	Under Capacity	5.75	5.08	Under Capacity	6.00	5.30	Under Capacity
M-30579	M-30580		0.47	0.71	0.34	0.34	4.34	1.46	OKAY	5.20	1.75	OKAY	5.92	1.99	OKAY	6.19	2.08	OKAY
M-30580	M-30641	U-I-01	0.22	0.69	0.15	0.70	4.27	2.97	OKAY	5.16	3.59	OKAY	5.89	4.09	OKAY	6.13	4.26	OKAY
U-I-01	M-30580		0.29	0.74	0.21	0.21	4.50	0.95	OKAY	5.28	1.11	OKAY	6.01	1.27	OKAY	6.25	1.32	OKAY
U-I-02	M-30582		0.68	0.61	0.42	0.42	4.35	1.83	OKAY	5.21	2.19	OKAY	5.95	2.50	OKAY	6.21	2.61	OKAY
M-30582	M-30635		0.19	0.68	0.13	0.55	4.33	2.38	OKAY	5.19	2.85	OKAY	5.92	3.25	OKAY	6.16	3.39	OKAY
M-30635	M-30642		0.17	0.69	0.12	0.67	4.31	2.88	OKAY	5.17	3.45	OKAY	5.90	3.94	OKAY	6.14	4.10	OKAY

Table B.2.4: Evaluation of Exisitng Sewers Against Generated Floods of Various Frequencies

		Tuble D.5.1.													
			<b>.</b> .	T A	· ·	<b>D</b> ' C'	D' I d	Watershed Area	Residential	<b>C</b> •	Pavement	<b>C 1</b>	Green	<u> </u>	
NI	H ID	Ground	Level	Invert	Level	Pipe Size	Pipe Length	Α	Ar	CrAr	Ар	САр	Ag	CAg	Weighted C
From	То	From MH	To MH	From MH	То МН	in	ft	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	
Sewer	Main Sewer	- Flagler-1													
M-30563	M-30564	96.84	96.10	88.88	88.39	10.00	49.00	6,779.53	2,095.71	1,886.14	389.04	350.14	4,294.78	1,288.43	0.52
M-30564	M-30567	96.10	93.80	88.39	86.52	10.00	187.00	14,064.54	5,651.03	5,085.93	973.50	876.15	7,440.01	2,232.00	0.58
M-30567	M-30569	93.80	93.17	86.27	84.20	12.00	103.50	14,586.48	7,046.47	6,341.82	1,133.05	1,019.75	6,406.96	1,922.09	0.64
M-30569	C-01	93.17	92.76	84.20	83.00	18.00	50.00	8,176.11	1,083.07	974.76	4,897.94	4,408.15	2,195.10	658.53	0.74
Sewer	Flagler-1-1														
M-30283	M-30569	97.01	93.17	86.96	83.5	18	176	40811.14	3333.26	2999.93	6817.45	6135.71	30660.43	9198.13	0.45

 Table B.3: Computation Table for Evaluation of Existing Sewers for Generated Floods of Various Frequencies: Sewers along Flagler Pl, NW [b/n V and W Sts]

 Table B.3.1: Basic Data of the Main Sewer and Its Tributaries

				Flo	w Time Co	omputatio	n			Inlet	Time of Concentration		Inter	nsity	
MI	1 ID	D	А	Р	R	s	n	V	Flow Time	Time	tc	2	5	10	15
From	То	ft	ft2	ft	ft			ft/sec	min	min	min	in/hr	in/hr	in/hr	in/hr
Sewer	Main Sewer														
M-30563	M-30564	0.83	0.55	2.62	0.21	0.01	0.013	4.017118	0.20	10.00	10.20	4.42	5.30	6.00	6.26
M-30564	M-30567	0.83	0.55	2.62	0.21	0.01	0.013	4.017118	0.78	10.20	10.98	4.30	5.13	5.85	6.11
M-30567	M-30569	1.00	0.79	3.14	0.25	0.02	0.013	6.415302	0.27	10.98	11.25	4.27	5.08	5.80	6.06
M-30569	C-01	1.50	1.77	4.71	0.38	0.024	0.013	9.208776	0.09	11.25	11.34	4.25	5.05	5.77	6.04
Sewer	Flagler-1-1														
M-30283	M-30569	1.50	1.767146	4.712389	0.375	0.019659	0.013	8.334471	0.35	10.00	10.35	4.40	5.27	5.97	6.23

Table B.3.2: Determination of Time of Concentration and Intensity of Rainfa		Table B.3.2:	Determination	of Time of	Concentration	and Intensit	y of Rainfall
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		Tuble D.J.	.5. Computut	ion of Convey	unee Cup	ueny of Ex	isting beweis									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
~		From							Exis	ting Conditions						
Sec	tion	Branch		Elevatio	on		Length	Slope of	pipe Dia	X-sectional	Wetted	Hydraulics	longitudinal	Manning's	Velocity	Drain
			0	L	Inv	ert L	L	conduit	pipe Dia	area	Perimeter	Radius	Slope	roughness	velocity	Capacity
From MH	To MH	(if any)	Upper end	Lower end	Upper end	Lower end	ft	S	D	А	Р	R	s	n	v	Q
ID	ID	ID	mASL	mASL	mASL	mASL		0/00	in	ft2	ft	ft			ft/s	ft3/s
Sewer	Main Sewe	r - Flagler-	1													
M-30563	M-30564		96.84	96.10	88.88	88.39	49.00	10.00	10.00	0.55	2.62	0.21	0.01	0.013	4.02	2.19
M-30564	M-30567		96.10	93.80	88.39	86.52	187.00	10.00	10.00	0.55	2.62	0.21	0.01	0.013	4.02	2.19
M-30567	M-30569		93.80	93.17	86.27	84.20	103.50	20.00	12.00	0.79	3.14	0.25	0.02	0.013	6.42	5.04
M-30569	C-01	M-30283	93.17	92.76	84.20	83.00	50.00	24.00	18.00	1.77	4.71	0.38	0.02	0.013	9.21	16.27
Sewer	Flagler-1-1															
M-30283	M-30569		97.01	93.17	86.96	83.50	176.00	19.66	18.00	1.77	4.71	0.38	0.02	0.013	8.33	14.73

Table B.3.3: Computation of Conveyance Capacity of Existing Sewers

Table B.3.4: Evaluation of Exisitng Sewers Against Generated Floods of Various Frequencies

1	2	3	4	5	6	7	8	9	10	8	9	10	8	9	10	8	9	10
6		From					2-Ye	ar Freque	ncv	5-Y	ear Frequen	cv	10-Y	ear Frequency	v	15-Y	ear Free	uency
Sect	tion	Branch	Dusinasa			Cummu	Intensity of	Flow		Intensity of	Flow		Intensity of	Flow		Intonsity of	Flow	
From MH	To MH	(if any)	Area	Wieghted C	CA	CA		Q = I*CA	Remark	Rainfall, I	Q = I*CA	Remark	Rainfall, I	Q = I*CA	Remark	Intensity of Rainfall, I	Q = I*CA	Remark
ID	ID	ID	Acre		Acre	min	in-ha	ft3/sec		in-ha	ft3/sec		in-ha	ft3/sec		in-ha	ft3/sec	
Sewer	Main Sewe	r - Flagler-	1															
M-30563	M-30564		0.16	0.52	0.08	0.08	4.42	0.36	OKAY	5.30	0.43	OKAY	6.00	0.49	OKAY	6.26	0.51	OKAY
M-30564	M-30567		0.32	0.58	0.19	0.27	4.30	1.16	OKAY	5.13	1.38	OKAY	5.85	1.57	OKAY	6.11	1.64	OKAY
M-30567	M-30569		0.33	0.64	0.21	0.48	4.27	2.06	OKAY	5.08	2.45	OKAY	5.80	2.80	OKAY	6.06	2.92	OKAY
M-30569	C-01	M-30283	0.19	0.74	0.14	1.04	4.25	4.43	OKAY	5.05	5.26	OKAY	5.77	6.01	OKAY	6.04	6.29	OKAY
Sewer	Flagler-1-1																	
M-30283	M-30569		0.94	0.45	0.42	0.42	4.40	1.85	OKAY	5.27	2.22	OKAY	5.97	2.51	OKAY	6.23	2.62	OKAY

# Appendix C

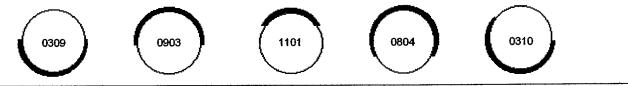
## **Sewer Inspection Results**

Street (from-to)	Size	MH Nos.	Length ft
Street (IT 0III-t0)	in	14111 1405.	Length R
Thomas St. (1st-2nd)	12	M-30355	160
		M-30638	
	15	M-30638	170
		M-30729	
	18	M-30729	174
		M-30728	
	24	M-30728	55
		M-30727	
U St. (1st-2nd)	18	M-30357	635
		M-30639	
		M-30641	
		M-30642	
Flagler Pl. (U St-V St)	10	N-6302	42
		M-30576	
	12	M-30576	310
		M-30639	
Flagler Pl. (V St-W St)	10	M-30563	236
		M-30564	
		M-30567	
	10	M-30566	184
		M-30568	
	12	M-30567	101
		M-30569	
Flagler Pl. (W St-Adams St)	10	M-30556	234
		M-30559	
		N-6324	
	10	M-30558	231
		M-30560	
		N-6323	
TOTAL			2,532

Table C-1: Location, Size and Length of Sewers Inspected by CCTV

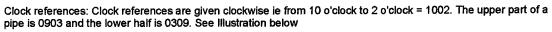
Tabula	r Repo	ort of	PSR	M-30357	х		fc	)r	DCI	NA	SA					k t ra
Setup	14	Surve	eyor A	THOMPSON	Certificate	#	U-10	06-24	462			Syster	n Owner	DCWA	SA	
Drainag		V. D.C	. SL	rvey Customer De	CWASA											
P/O #	-			Date 08/08/2006	Time 9:25	:00	S	tree	U	ST 1	IST	@ 2NE	)			
Locality	V WAS	HING	TON,D.	C. Further lo	cation detai	ls II	D-23	4								
Start	M-3035	57		Rim to in	vert		Gra	de to	o inv	ert			Rim to g	rade		Ft
Finish	M-3063	9		Rim to in	vert		Gra	de to	o inv	ert			Rim to g	rade		Ft
Use C	ombined	ł		Direction	Down		Flo	W C	ontro	ol				Tape/M	edia #	REI 016
Shape	Circular	r		Height	18 <b>Widt</b>	1	i	ins	Pre	clea	an .	J		Year Cl	leaned	
Materia	d Vitrifi	ied Cla	ay Pipe	Joint	length	Ft	: 1	<b>Fota</b>	l len	gth	26	8.3 <i> </i>	Ft Len	gth Surv	veyed 2	268.3
Lining				Year	laid	Yea	ar re	hab	litat	ed		W	'eather	Dry		
Purpos	e					C	Cat									
Additio	nal info	•								T	Str	uctural	C	&M	C	onstructional
Locatio	n Light	Highv	way (rura	al, light traffic, town bac	k st, estate st	& p	arkin	g			Mis	scellane	eous H	ydraulic		
Count V			Code						.Int	Fr	Το	ImRef	Remar	(5		
0.0 0			ST	Start of Survey		1	1112	70				winter				
0.0 0			AMH	Manhole									M-30357	7		
0.0 0			MWL	Water Level				05								
31.6			Н	Hole						03			HOLE IN			<u>.                                    </u>
44.3			ТВА	Tap Break-in Active		06				09		L				
61.8		!	ТВА	Tap Break-in Active		06				09						
79.8			TBA	Tap Break-in Active		06				09						
86.4			ТВА	Tap Break-in Active		06				03						
89.3	<u>.</u>		ТВА	Tap Break-in Active		08				03						
95.4			TBD	Tap Break-in Defectiv	re	06	02			09			is			
112.8			ТВА	Tap Break-in Active		06				09						
127.7			TBA	Tap Break-in Active		06				10		1 Alert				
130.0			TBD	Tap Break-in Defectiv	re l	08	02			03	İ					
148.0			TBA	Tap Break-in Active		06				02	ł					
151.2			TBA	Tap Break-in Active		06				09	ĺ					
162.6			CM	Crack Multiple					J	11	01					
163.5			TBA	Tap Break-in Active		06				03						
168.9			TBA	Tap Break-in Active		06				09						
178.8			TBA	Tap Break-in Active		06				03						
185.0			TBA	Tap Break-in Active		06				09						······
196.5			TBA	Tap Break-in Active		06				03						
202.4			TBA	Tap Break-in Active		06				09						
211.9			TBA	Tap Break-in Active		06				03						
213.8		S01	CL	Crack Longitudinal					J	12						
218.3			тва	Tap Break-in Active		06				09						
229.2			ТВА	Tap Break-in Active		06				02						
244.0			TBA	Tap Break-in Active		06				03						

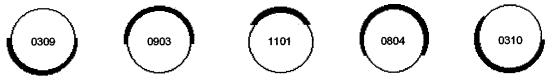
Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



		to #						n Owner	DCWASA	
		( <b>c</b> #	0-10	0-24	02		oysten		0011/0/	
-										
Date 08/08/2006	<b>Time</b> 9:	25:00	St	reet	U S1	r 1st	@ 2NE	}		
N,D.C. Further	location del	ails I	D-234	ŀ						
Rim to	invert		Grad	le to	inver	t		Rim to g	rade	Ft
Rim to	invert		Grad	le to	inver	rt 🛛		Rim to g	rade	Ft
Directio	on Down		Flo	w co	ntrol				Tape/Med	ia # REI 016
Heigi	ht 18 Wie	dth	iı	าร	Precl	ean	J		Year Clea	ned
Pipe Joir	nt length	F	t T	otal	lengt	<b>h</b> 26	8.3 <b>I</b>	-t Len	gth Survey	<b>ed</b> 268.3
Yea	r laid	Ye	ar rel	habil	itateo	1	W	eather	Dry	
		(	Cat							
	,					St	ructural	0	&M	Constructiona
/ (rural, light traffic, town bi	ack st, estate	st&p	arking	,		Mi	scellan	eous H	ydraulic	
•		In1	In2	% J	Int F	r To	ImRef	Remark	s	
de										
rBA Tap Break-in Active		06			0	3				
	•					3 2				
<b>TBA</b> Tap Break-in Active							   	M-30639	¢	
	or A.THOMPSON Survey Customer I Date 08/08/2006 DN,D.C. Further I Rim to Rim to Direction Heigh Pipe Join Yea	Survey Customer DCWASA Date 08/08/2006 Time 9: DN,D.C. Further location det Rim to invert Rim to invert Direction Down Height 18 Wid Pipe Joint length Year laid	or A.THOMPSON Certificate # Survey Customer DCWASA Date 08/08/2006 Time 9:25:00 DN,D.C. Further location details I Rim to invert Rim to invert Direction Down Height 18 Width Pipe Joint length Fi Year laid Ye	or A.THOMPSON Certificate # U-10 Survey Customer DCWASA Date 08/08/2006 Time 9:25:00 St DN,D.C. Further location details ID-234 Rim to invert Grad Rim to invert Grad Direction Down Flow Height 18 Width in Pipe Joint length Ft T Year laid Year rel Cat	or A.THOMPSON Certificate # U-106-24 Survey Customer DCWASA Date 08/08/2006 Time 9:25:00 Street DN,D.C. Further location details ID-234 Rim to invert Grade to Rim to invert Grade to Direction Down Flow co Height 18 Width ins Pipe Joint length Ft Total Year laid Year rehabil	or A.THOMPSON Certificate # U-106-2462 Survey Customer DCWASA Date 08/08/2006 Time 9:25:00 Street UST DN,D.C. Further location details ID-234 Rim to invert Grade to invert Rim to invert Grade to invert Direction Down Flow control Height 18 Width ins Preci Pipe Joint length Ft Total lengt Year laid Year rehabilitated Cat	or A.THOMPSON Certificate # U-106-2462 Survey Customer DCWASA Date 08/08/2006 Time 9:25:00 Street U ST 1ST DN,D.C. Further location details ID-234 Rim to invert Grade to invert Rim to invert Grade to invert Direction Down Flow control Height 18 Width ins Preclean Pipe Joint length Ft Total length 26 Year laid Year rehabilitated Cat	or A.THOMPSON Certificate # U-106-2462 System Survey Customer DCWASA Date 08/08/2006 Time 9:25:00 Street U ST 1ST @ 2NE ON,D.C. Further location details ID-234 Rim to invert Grade to invert Rim to invert Grade to invert Direction Down Flow control Height 18 Width ins Preclean J Pipe Joint length Ft Total length 268.3 H Year laid Year rehabilitated W Cat	or A.THOMPSON Certificate # U-106-2462 System Owner Survey Customer DCWASA Date 08/08/2006 Time 9:25:00 Street U ST 1ST @ 2ND DN,D.C. Further location details ID-234 Rim to invert Grade to invert Rim to g Rim to invert Grade to invert Rim to g Direction Down Flow control Height 18 Width ins Preclean J Pipe Joint length Ft Total length 268.3 Ft Leng Year laid Year rehabilitated Weather Cat	or A.THOMPSON Certificate # U-106-2462 System Owner DCWASA Survey Customer DCWASA Date 08/08/2006 Time 9:25:00 Street U ST 1ST @ 2ND DN,D.C. Further location details ID-234 Rim to invert Grade to invert Rim to grade Rim to invert Grade to invert Rim to grade Direction Down Flow control Tape/Med. Height 18 Width ins Preclean J Year Clear Pipe Joint length Ft Total length 268.3 Ft Length Survey Year laid Year rehabilitated Weather Dry Cat

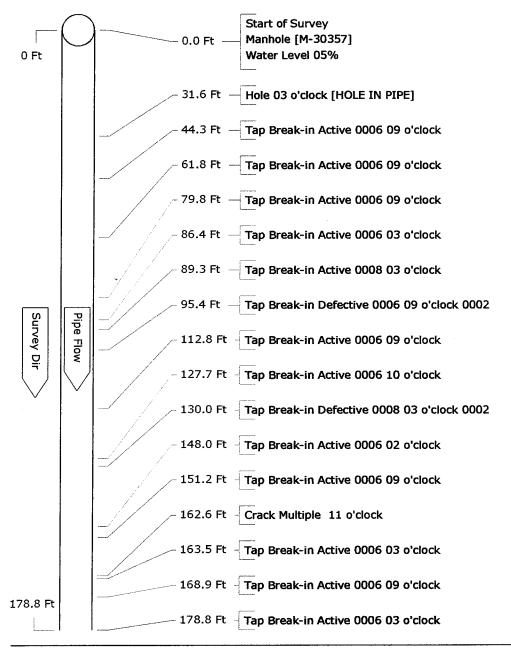
Scores	Structural:	Total 28	Mean Defect 2.2	Peak 3	Mean Pipe 0.1
Notes	Service:	Total 6	Mean Defect 3	Peak 3	Mean Pipe 0





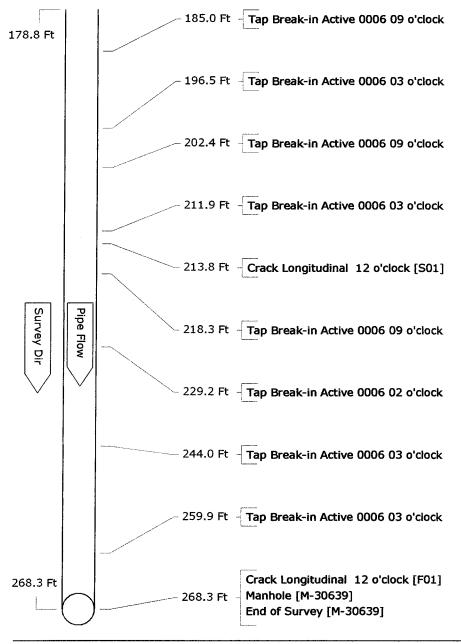
### Pipe Graphic Report of PLR M-30357 X for DCWASA

Setup 14 Surveyor A.THO	APSON Certifica	te # U-106-2462	System Owner DCWAS	Ą
Drainage N.W. D.C. Survey	Customer DCWASA			
P/O # ID 234 Date	2006/08/08 <b>Time</b> 09	9:25:00 Street UST 1S	T @ 2ND	
Locality WASHINGTON, D.C.	Further location det	tails ID-234		
Start M-30357	Rim to Invert	Grade to invert	Rim to grade	Ft
<b>Finish</b> M-30639	Rim to invert	Grade to invert	Rim to grade	Ft
Use Combined	Direction Downstr	eam Flow control	Tape/Mee	dia # REI 016
<b>Shape</b> Circular	Height 18 Wi	dth ins Preclean	J Year Clea	aned
Material Vitrified Clay Pipe	Joint length	Ft Total length 2	268.3 Ft Length Surve	yed 268.30
Lining	Year laid	Year rehabilitated	Weather Dry	
Purpose		Cat		
Additional info				
Location Light Highway (rural, light	traffic, town back st, estate	st & parking		



### Pipe Graphic Report of PLR M-30357 X for DCWASA

Setup 14 Surveyor A.THOM	IPSON Certificate	e # U-106-2462	System Owner DCWASA	λ
Drainage N.W. D.C. Survey	Customer DCWASA			
P/O # ID 234 Date	2006/08/08 Time 09:	25:00 Street UST 1ST	r@ 2ND	
Locality WASHINGTON, D.C.	Further location deta	<b>ils</b> ID-234		
Start M-30357	Rim to invert	Grade to invert	Rim to grade	Ft
<b>Finish</b> M-30639	Rim to invert	Grade to invert	Rim to grade	Ft
Use Combined	Direction Downstre	am <b>Flow control</b>	Tape/Meo	lia # REI 016
<b>Shape</b> Circular	Height 18 Wid	th ins Preclean	J Year Clea	ned
Material Vitrified Clay Pipe	Joint length	Ft Total length 26	68.3 Ft Length Surve	<b>/ed</b> 268.30
Lining	Year laid	Year rehabilitated	Weather Dry	
Purpose		Cat		
Additional info	••••••••••••••••••••••••••••••••••••••			
Location Light Highway (rural, light	traffic, town back st, estate s	st & parking		



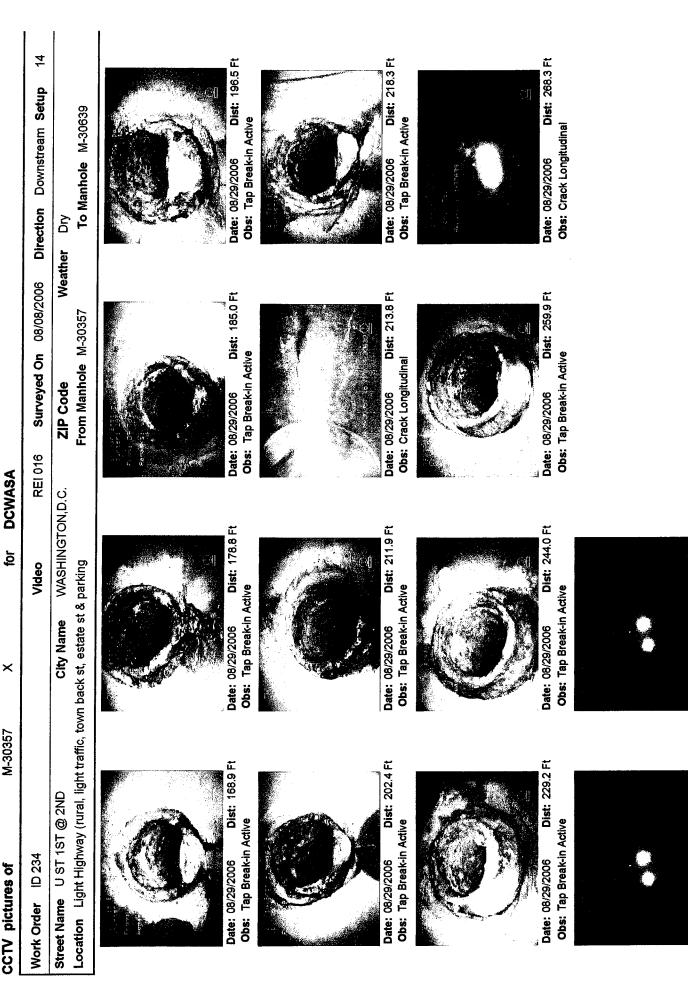
		REI 016 Surveyed On 08/08/2006	Direction Downstream Setup 14
Street Name UST 1ST @ 2ND City Name Location Light Highway (rural, light traffic, town back st, estate st	<b>City Name</b> WASHINGTON,D.C. town back st, estate st & parking	V,D.C. ZIP Code Weather From Manhole M-30357	her Dry To Manhole M-30639
The second secon	Tarts: 06/29/2006 Dist: 31.6 Ft Dist: 10.6 Pt Dist: 10.6 Pt Dist: 10.6 Pt Dist: 10.6 Pt Dist: 10.6 Pt Dist: 10.6 Pt Dist: 10.7 Ft Dist: 10.6 Pt Dist: 10.6 P	The set of	Tap Breakin Active Bate: 06/29/2006 Dist: 61.8 Ft Dist: 7ap Breakin Active Dist: 35.4 Ft Dist: 35.4

for **DCWASA** 

×

M-30357

**CCTV** pictures of



Dist: 268.3 Ft

Obs: End of Survey

Date: 08/29/2006

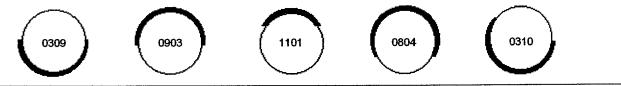
Dist: 268.3 Ft

Date: 08/29/2006

Obs: Manhole

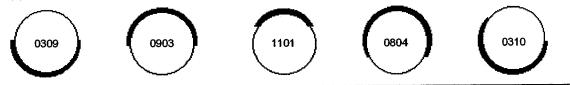
Tabul	ar Repo	ort of	PSR	M-30639	x		fo	or	DC/	NA	SA					
Setu	<b>)</b> 15	Surv	eyor A	THOMPSON	Certificate	#	U-1(	)6-2	462			Syster	n Owner	DCWAS	6A	
Drain	age 1S	T STR	EET Su	rvey Customer DC	WASA											
P/O #	ID 234	•		Date 08/08/2006	Time 11:0	09:00	) <b>S</b>	tree	t 20	30 F	-LA	GLER F	PLACE			
Loca	l <b>ity</b> WAS	HING	TON D.	C. Further lo	cation deta	ils										
Start	M-3063	39		Rim to in	vert 10.20	)	Gra	de to	o inv	ert			Rim to g	rade		Ft
Finis	h M-3064	41		Rim to in	vert		Gra	de ta	) inv	ert			Rim to g	rade		Ft
Use	Sanitary			Direction	Down		Flo	W C	ontr	ol				Tape/Me	edia #	REI 016
Shap	e Circula	r		Height	12 Widt	ħ	i	ns	Pre	clea	an	J		Year Cle	eaned	8/7/2006
Mater	<b>rial</b> Vitril	ied Cl	ay Pipe	Joint	length 7.00	) <b>F</b>	t 1	Tota	l len	gth		F	-t Len	gth Surv	eyed	243.5
Linin	g			Year l	aid	Ye	ar re	hab	ilitat	ed		W	eather	Dry		
Purp	ose					(	Cat									
	ional info											uctural		&M	C	Constructiona
Loca	tion Ligh	t High	way (rura	I, light traffic, town bac	k st, estate s	t & p	arkin	g			MIS	scellane	eous H	ydraulic		
Count	Video	CD	Code			ln1	ln2	%	Jnt	Fr	То	ImRef	Remark	(S		
0.0	02746		ST	Start of Survey												
0.0	02746		AMH	Manhole									M-30639	)		
0.0	02746		MWL.	Water Level				5								
4.3			CL	Crack Longitudinal					J	04						
8.6			CL	Crack Longitudinal					J	08						
10.2			TBA	Tap Break-in Active		06				03						
14.5		S01	СМ	Crack Multiple					l,	07	05		DEFECT	WANDE	RS	
25.1			TBA	Tap Break-in Active		06				03						
38.0		1	ТВА	Tap Break-in Active		06				09						
41.1			TBA	Tap Break-in Active		06			l.,	02						
55.6	L	<u> </u>	TBA	Tap Break-in Active		06		I		09						
58.2			TBA	Tap Break-in Active		06				03						
72.1			TBA	Tap Break-in Active		06				09						
74.1		L	TBA	Tap Break-in Active		06				03			<u> </u>			
88.0			TBA	Tap Break-in Active		06				09						
98.1			TBA	Tap Break-in Active		06				03						
106.0	L		TBA	Tap Break-in Active		06				09						
121.9			TBA	Tap Break-in Active		06				09						
140.0		l	TBA	Tap Break-in Active		06				09						
155.2		L	TBA	Tap Break-in Active		06				09	L					
155.3		<u> </u>	н	Hole		<u> </u>		-	,	03						
171.0		S02	DAGS	Deposits Attached Gro	ease	<u> </u>		10	J	07	05		LIGHT G	BREASE		
173.1			TBA	Tap Break-in Active		06				09						
173.2			TBA	Tap Break-in Active		06				03						-
187. <del>9</del>			TBA	Tap Break-in Active		06				09	L					
187.9			TBA	Tap Break-in Active		06				03						
204.3			TBA	Tap Break-in Active		06				09						

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



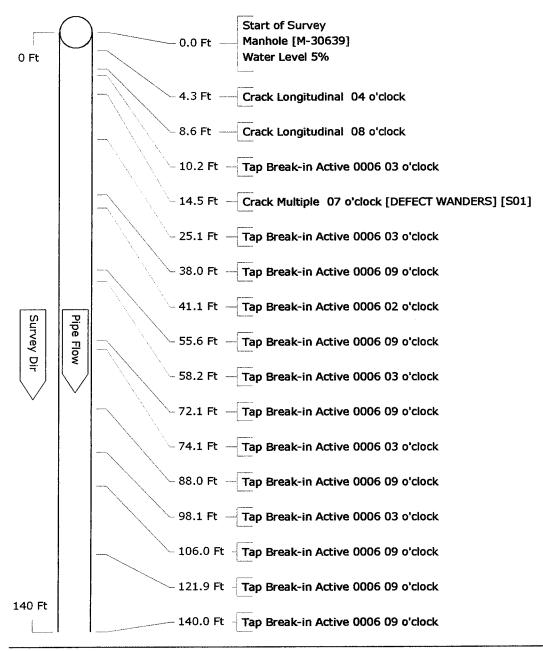
			FOR	M-3063	9	<u> </u>		1	for	DCV	VAS	SA					,,	
Setup 👘	15	Surve	<b>eyor</b> A.	THOMP	SON	Certi	ficate #	U-	106-2	462		:	System	Owne	r DCW/	ASA		
Drainag(	e 1S1	T STR	EET <i>Su</i>	rvey Cu	stomer	DCWASA	4											
P/O #	ID 234		L	Date 08	3/08/2006	Time	11:09	00	Stree	t 20	30 F	LAC	GLER P	ACE				
Locality	was	HING	TON D.C		Further	location	details											
Start	M-3063	39			Rim to	invert	10.20	Gr	ade t	o inv	ert		I	Rim to	grade		Ft	
Finish	<b>M-306</b> 4	<b>#1</b>			Rim to	invert		Gr	ade t	o inv	ert		1	Rim to g	grade		Ft	
Use Sa	nitary				Directi	on Dow	/n	F	low c	ontro	)				Tape/M	<i>ledia</i> #	REI 016	5
Shape	Circula	r			Heig	ht 12	Width		ins	Pre	clea	n .	J		Year C	leaned	8/7/200	6
Material			y Pipe		-	nt length	7.00	Ft	Tota	i leng	yth		F	t Lei	ngth Sui	veyed	243.5	
Lining						ar laid			ehab	ilitate	ed		We	ather	Dry			
Purpose	•							Cat							-			
Addition		>			, .	<u></u>			·····			Str	uctural	(	D&M	С	onstructi	ona
		-	vay (rura	l, light tra	ffic, town b	oack st, es	state st &	bark	ina			Mis	cellane	ous ł	-lydraulic			
					· · · · · ·			· •							·			
Jount Vio	deo	CD	Code							Jnt	Fr	То	ImRef	Remar	'ks			
207.5	deo	CD	Code TBA	Tap Brea	ak-in Active	e	lr			Jnt	Fr 03	Го	ImRef	Remar	ks			•
207.5	deo	CD			ak-in Activo ak-in Activo		r   (	1 In:		Jnt		Го	ImRef	Remar	ʻks			
207.5 221.5	deo	CD	TBA	Tap Bre		9	r   (   (	1 In: 16		Jnt	03	Го	ImRef	Remar	ks			
207.5 221.5 222.2	deo	CD	TBA TBA	Tap Bre	ak-in Active ak-in Active	9	r   (   (	11 In: 16		Jnt	03 02				KS T WAND			· · · · · · · · · · · · · · · · · · ·
	deo		TBA TBA TBA CM	Tap Brea Tap Brea Crack M	ak-in Active ak-in Active	e e	r   (   (	11 In: 16			03 02 09	05		DEFEC		ERS		
207.5 221.5 222.2 235.0		F01	TBA TBA TBA CM DAGS	Tap Brea Tap Brea Crack M	ak-in Active ak-in Active luttiple s Attached	e e	r   (   (	11 In: 16	2 %		03 02 09 07	05		DEFEC	T WAND	ERS		· · · · · · · · · · · · · · · · · · ·
207.5       221.5       222.2       235.0       235.0       243.5		F01	TBA TBA TBA CM DAGS	Tap Brea Tap Brea Crack M Deposits	ak-in Active ak-in Active luitiple s Attached	e e	r   (   (	11 In: 16	2 %		03 02 09 07	05		DEFEC LIGHT	T WAND GREASE	ERS		· · · · · · · · · · · · · · · · · · ·
207.5       221.5       222.2       235.0       235.0       243.5		F01	TBA TBA TBA CM DAGS AMH	Tap Brea Tap Brea Crack M Deposits Manhole End of S	ak-in Active ak-in Active luitiple s Attached	e e	r   (   (	11 In: 16	2 %		03 02 09 07	05		DEFEC LIGHT M-3064	T WAND GREASE	ERS		· · · · · · · · · · · · · · · · · · ·
207.5       221.5       222.2       235.0       235.0       243.5		F01 F02	TBA TBA TBA CM DAGS AMH FH	Tap Brea Tap Brea Crack M Deposits Manhole End of S	ak-in Active ak-in Active luttiple s Attached survey	e e		11 In: 16	2 %             		03 02 09 07 07	05		DEFEC LIGHT M-3064	T WAND GREASE	ERS	n Pipe n Pipe	

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



### Pipe Graphic Report of PLR M-30639 X for DCWASA

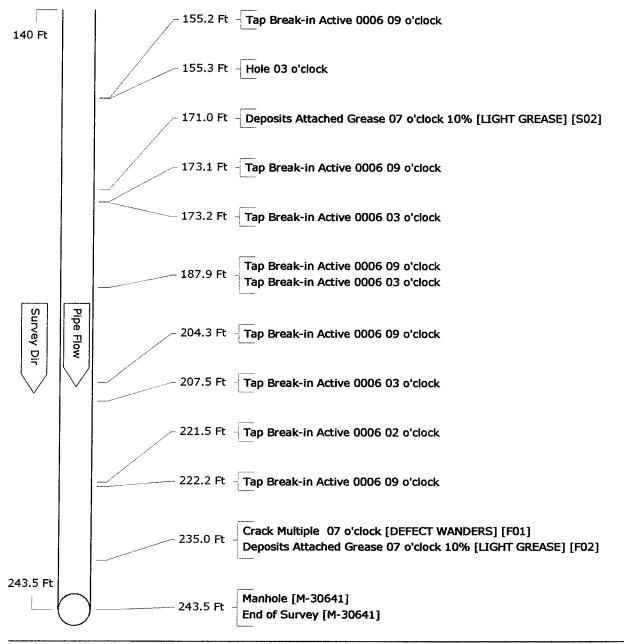
Setup 15 Surveyor A.THOM	APSON Certificate	# U-106-2462	System Owner DCWASA	A Contraction of the second seco
Drainage 1ST STREET Survey	Customer DCWASA			
P/O # ID 234 Date	2006/08/08 Time 11:0	9:00 Street 2030 FLA	GLER PLACE	
Locality WASHINGTON D.C.	Further location detail	ils		
Start M-30639	Rim to invert 10.20	) Grade to invert	Rim to grade	Ft
Finish M-30641	Rim to invert	Grade to invert	Rim to grade	Ft
<b>Use</b> Sanitary	Direction Downstrea	nm Flow control	Tape/Meo	lia # REI 016
<b>Shape</b> Circular	Height 12 Widt	h ins Preclean	J Year Clea	ned 8/7/2006
Material Vitrified Clay Pipe	Joint length 7.0	Ft Total length	Ft Length Surve	<b>yed</b> 243.50
Lining	Year laid	Year rehabilitated	Weather Dry	
Purpose		Cat		
Additional info				
Location Light Highway (rural, light	traffic, town back st, estate s	t & parking		



### Pipe Graphic Report of PLR M-30639 X for DCWASA

1

Setup 15 Surveyor A.THO	MPSON Certificat	e# U-106-2462	System Owner DCWASA	λ
Drainage 1ST STREET Survey	Customer DCWASA			
P/O # ID 234 Date	2006/08/08 Time 11	:09:00 Street 2030 F	LAGLER PLACE	
Locality WASHINGTON D.C.	Further location deta	ails		
Start M-30639	Rim to invert 10.2	0 Grade to invert	Rim to grade	Ft
Finish M-30641	Rim to invert	Grade to invert	Rim to grade	Ft
<b>Use</b> Sanitary	Direction Downstre	am Flow control	Tape/Med	lia # REI 016
<b>Shape</b> Circular	Height 12 Wid	th ins Preclea	n J Year Clea	ned 8/7/2006
<b>Material</b> Vitrified Clay Pipe	Joint length 7.0	Ft Total length	Ft Length Surve	yed 243.50
Lining	Year laid	Year rehabilitated	Weather Dry	
Purpose		Cat		
Additional info				·····
Location Light Highway (rural, light	traffic, town back st, estate	st & parking		



15		
Downstream Setup	Dry <b>To Manhole</b> M-30641	Pate: 08/29/2006 Dist: 10.2 Ft Obs: Tap Break-in Active Date: 08/29/2006 Dist: 41.1 Ft Obs: Tap Break-in Active Date: 08/29/2006 Dist: 41.1 Ft Obs: Tap Break-in Active Date: 08/29/2006 Dist: 74.1 Ft Obs: Tap Break-in Active Date: 08/29/2006 Dist: 74.1 Ft Obs: Tap Break-in Active Date: 08/29/2006 Dist: 74.1 Ft Obs: Tap Break-in Active
Direction	Weather Dry To	Date: Date: Obs: Obs: Date:
Surveyed On 08/08/2006	ZIP Code We From Manhole M-30639	Date: 08/29/2006 Dist: 8.6 Ft Dest: 08/29/2006 Dist: 8.6 Ft Dest: Crack Longitudinal Dete: 08/29/2006 Dist: 38.0 Ft Dest: Tap Break-In Active Dest: Tap Break-In Active
REI 016	N D.C.	Obs: Date: Date: Obs: Obs: Obs:
Video	<b>City Name</b> WASHINGTON D.C. town back st, estate st & parking	The set of
Work Order ID 234	Street Name         2030 FLAGLER PLACE         City Name           Location         Light Highway (rural, light traffic, town back st, estate st	The second provided the second provided the second provided provid

for DCWASA

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M-30639

CCTV pictures of

Work Order ID 234		-0	
	Video	KEI 016 Surveyed On 08/08/2006	Direction Downstream Setup 15
Street Name 2030 FLAGLER PLACE City Name Location Light Highway (rural, light traffic, town back st, estate st	City Name WASHINGTON D.C. own back st, estate st & parking	D.C. ZIP Code Weather From Manhole M-30639	her Dry To Manhole M-30641
Date: 08/29/2006 Dist: 140.0 Ft Obs: Tap Break-in Active	Date: 08/29/2006 Dist: 155.2 Ft Obs: Tap Break-in Active	Date: 08/29/2006 Dist: 155.3 Ft Obs: Hole	Date: 08/29/2006 Dist: 171.0 Ft Obs: Deposits Attached Grease
Date: 08/29/2006 Dist: 173.1 Ft Obs: Tap Break-in Active	Date: 08/29/2006 Dist: 173.2 Ft Obs: Tap Break-in Active	Date: 08/29/2006 Dist: 187.9 Ft Obs: Tap Break-in Active	Date: 08/29/2006 Dist: 187.9 Ft Obs: Tap Break-in Active
Date: 08/29/2006 Dist: 204.3 Ft	Date: 08/29/2006 Dist: 207.5 Ft	Date: 08/29/2006 Dist: 271.5 Ft	Date: 08/29/2006 Dist: 222.2 Ft
in Acti	in Acti	n Acti	n Acti
	Date: OBJOD/2006 Dict: 735.0 Et	Berter and a second sec	Dete: 08/20/2006 Diet: 243.5 Et
ble ble	lachec		ey

for DCWASA

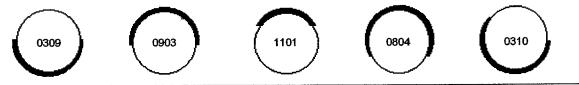
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M-30639

**CCTV** pictures of

Tabul	ar Repo	ort of	PSR	M-30556	x		fc	or	DC\	NA	SA					
Setup	<b>)</b> 17	Surve	eyor A	THOMPSON	Certificate	#	U-10	<b>)6-2</b>	462	_	s	ysten	n Owner	DCWA	SA	
Drain	age N.V	N. D.C	. SI	Irvey Customer DC	WASA											
	ID 234	ļ		Date 08/08/2006	Time 12:4	8:00	) S	treet	t FL	AG	LER	PLW		IS ST		
Local	lity WAS	SHING	TON,D.	C. Further loc	ation detail	ls II	D-23	4								
Start	M-305	56		Rim to in	/ert 15.00		Gra	de to	o inv	ert			Rim to g	grade	Ft	
Finisi	h M-3058	59		Rim to inv	/ert		Gra	de to	o inv	ert			Rim to g	grade	Ft	
Use	Combine	d		Direction	Down		Flo	w c	ontr	ol				Tape/M	edia # REI	016
Shap	e Circula	r		Height	10 Width	7	i	ns	Pre	clea	an J			Year Cl	eaned	
Mater	rial <sup>Vitril</sup>	ied Cla	ay Pipe	Joint l	ength	Ft	t 7	Tota	l len	gth	185	.6 F	t Len	ngth Surv	<b>eyed</b> 185.6	
Linin	g			Year la	aid	Yea	ar re	hab	ilitat	ed		W	eather	Dry		
Purpe	ose					C	Cat									
Addit	ional infe	<b>b</b>								T	Stru	ctural	C	0&M	Constr	uctional
Locat	t <i>ion</i> Light	t Highv	vay (rura	al, light traffic, town back	st, estate st	& p	arkin	g			Mis	cellane	ous H	lydraulic		
Count	Video	CD	Code			In1	In2	%	Jnt	Fr	To I	mRef	Remar	ks		
	00000		ST	Start of Survey				,0	<u>, , , , , , , , , , , , , , , , , , , </u>		Γ.					
	00000	1	AMH	Manhole									M-3055	6		
	00000	1	MWL	Water Level				00								
1.0		İ	DSF	Deposits Settled Fine				10		05	07		LIGHT I	DEBRIS		
5.8		1	СМ	Crack Multiple						07	05					
21.2			TBD	Tap Break-in Defective	•	04	01			03						
21.2		1	TBA	Tap Break-in Active	[	04				12						
30.5			TFC	Tap Factory Capped		04				02						
30.6		İ	CM	Crack Multiple	1				J	03	05					
41.7			TBA	Tap Break-in Active		04				03						
41.7		S01	CM	Crack Multiple						07	05		DEFEC		RS	
50.7			TFC	Tap Factory Capped		04				02						
62.1			TBD	Tap Break-in Defective	•	04	01			03						
70.9			TFC	Tap Factory Capped		04				02		]				
77.9			DAE	Deposits Attached End	rustation			05	J	03	04					
80.6			DAE	Deposits Attached End	rustation			10	J	02	05					
81.0		F01	СМ	Crack Multiple							05		DEFEC	T WANDE	RS	
82.8	L		TBD	Tap Break-in Defective	•	04	01			03						
91.4			TFC	Tap Factory Capped		04				02						
103.8			TBD	Tap Break-in Defective	•	04	01			02						
103.8			DAE	Deposits Attached End				05	J		05					· · · · · · · · · · · · · · · · · · ·
111.6			TFC	Tap Factory Capped		04				02	Цļ					
116.7			CM	Crack Multiple					J		05					
125.5			TBA	Tap Break-in Active		04				03	ļĻļ				<u> </u>	
125.5			CM	Crack Multiple							05		DEFEC	T WANDE	RS	
131.5			TFC	Tap Factory Capped		04				02	Ļļ					
143.2			DAE	Deposits Attached End	rustation		l	05	J	01	05					

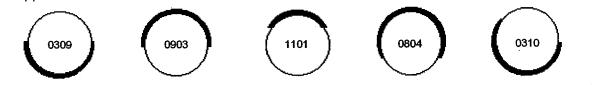
Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Setup 17 Surv	evor A	THOMPSON Ce	rtificate #	IJ-1	06-24	162		S	vsten	OW	ner	DCWA	SA	
Drainage N.W. D.(	•	irvey Customer DCWA		•••										
P/O # ID 234		Date 08/08/2006 Tin		n s	troot	FL	۵GI	FR F	a ws		AMS	ST		
Locality WASHING									2			•••		
Start M-30556	51011,0.1	Rim to invert			de to	invi	ert			Rim (	o arz	ade	<u>_</u>	Ft
Finish M-30559		Rim to invert			de to					Rim (	-			Ft
Use Combined			own		w co								edia i	# REI 016
Shape Circular		Heiaht 10						an J				lear Ci		
Material Vitrified C	lav Pipe	Joint lend						185.	6 F	¥ 1	-	th Surv		-
ivia (ci ia)		Year laid	•	ear re				100.		athe		Dry		
Lining		rear laiu	r	car re Cat	Παρι	ntate	;u			aurc	7 6	Jiy		
Purpose		· · · · · · · · · · · · · · · · · · ·		Cat							0&			Construction
								Strue		<u></u>				Construction
	way (rura	II, light traffic, town back st,	estate st &	parkir	g				ellane	ous		<b>Iraulic</b>		
Location Light High	way (rura Code	nl, light traffic, town back st,	estate st &			Jnt	Fr	Misc			Нус	<b>Iraulic</b>		
Location Light High Count Video CD		II, light traffic, town back st, Tap Break-in Defective		In2			Fr 03	Misc	ellane		Нус	<b>Iraulic</b>		
Location Light High Count Video CD 146.1	Code		In	In2    02				Misc	ellane		Нус	<b>Iraulic</b>		
Location Light High Count Video CD 146.1	Code TBD	Tap Break-in Defective	ln 0	In2    02			03	Misc To Ir	ellane	Ren	Hyc narks	<b>Iraulic</b>		
Location     Light High       Count     Video     CD       146.1     1       152.7     1       158.4     1	Code TBD TFC	Tap Break-in Defective Tap Factory Capped	n   0   0	In2    02			03 02	Misc To II	ellane	Ren	Hyc narks	<b>Irauli</b> c		
	Code TBD TFC CM	Tap Break-in Defective Tap Factory Capped Crack Multiple	n   0   0   	In2    02	%		03 02 07	Misc To II	ellane	Ren	Hyc narks	<b>Irauli</b> c		
Location         Light High           Count         Video         CD           146.1	Code TBD TFC CM DAE	Tap Break-in Defective Tap Factory Capped Crack Multiple Deposits Attached Encrus	n   0   0   	In2   02   	%	J	03 02 07 02	Misc To II	ellane	Ren	Hyc narks	<b>Irauli</b> c		
Location         Light High           Count         Video         CD           146.1         1         1           152.7         1         1           158.4         1         1           169.1         1         1	Code TBD TFC CM DAE DAE	Tap Break-in Defective Tap Factory Capped Crack Multiple Deposits Attached Encrus Deposits Attached Encrus	In 0 0 0 station station	In2   02   	%	J	03 02 07 02 05	Misc To II	ellane	Ren	Hyc narks	<b>Irauli</b> c		
Location         Light High           Count         Video         CD           146.1	Code TBD TFC CM DAE DAE TBA	Tap Break-in Defective Tap Factory Capped Crack Multiple Deposits Attached Encrus Deposits Attached Encrus Tap Break-in Active	In 0 0 0 station station	In2   02   	%	J	03 02 07 02 05 05	Misc To II	ellane	Ren	Hyc narks ECT \	<b>Irauli</b> c		
Location         Light High           Count         Video         CD           146.1	Code TBD TFC CM DAE DAE TBA CL	Tap Break-in Defective Tap Factory Capped Crack Multiple Deposits Attached Encrus Deposits Attached Encrus Tap Break-in Active Crack Longitudinal	In 0 0 0 station station	In2   02   	%	J	03 02 07 02 05 05	Misc To II	ellane	Ren DEF	Hyc narks ECT V	<b>Irauli</b> c		

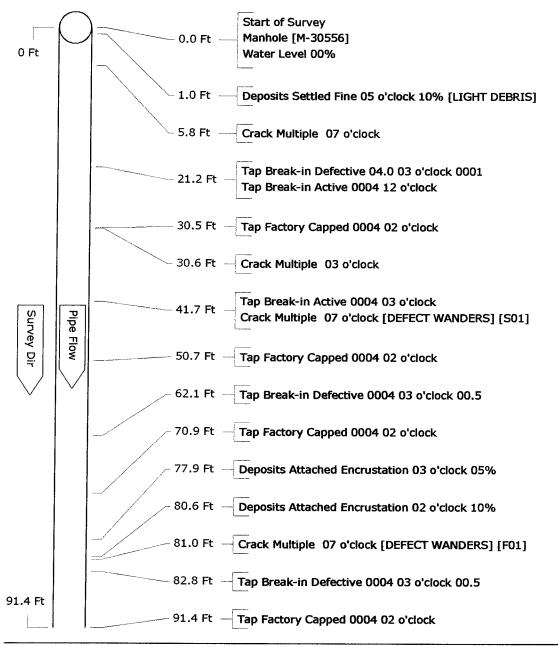
	Scores	Structural:	Total 74	Mean Defect 3	Peak 3	Mean Pipe 0.4
Notes		Service:	Total 43	Mean Defect 2.3	Peak 5	Mean Pipe 0.2
Notes						

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below

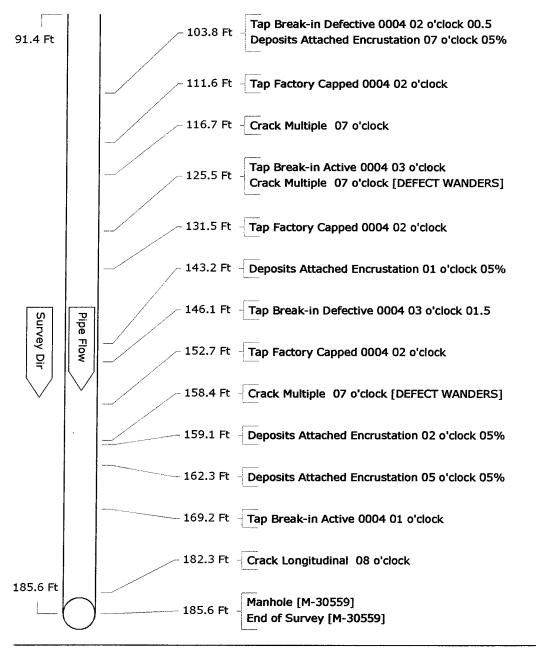


## Pipe Graphic Report of PLR M-30556 X for DCWASA

Setup 17 Surveyor A.THO	MPSON Cer	tificate #	U-106-2462	System Owner	DCWASA	
Drainage N.W. D.C. Survey	Customer DCWAS	SA				
P/O # ID 234 Date	2006/08/08 Tim	e 12:48:00	) <b>Street</b> FLAGLI	ER PL W ST ADAMS	ST	
Locality WASHINGTON, D.C.	Further locatio	n details l	D-234			
Start M-30556	Rim to invert	15.00	Grade to invert	Rim to gra	ide	Ft
Finish M-30559	Rim to invert		Grade to invert	Rim to gra	ide	Ft
Use Combined	Direction Do	wnstream	Flow control	7	ape/Media #	REI 016
<b>Shape</b> Circular	Height 10	Width	ins Preclear	n J Y	ear Cleaned	
Material Vitrified Clay Pipe	Joint leng	th Fi	t Total length	185.6 <b>Ft Leng</b> t	th Surveyed	185.60
Lining	Year laid	Yea	ar rehabilitated	Weather [	)ry	
Purpose		Ċ	Cat			
Additional info						· · · · · · · ·
Location Light Highway (rural, light	traffic, town back st, e	estate st & p	arking			



Pipe Graphic Report of PLR	M-30556	Х	for	DCWASA		
Setup 17 Surveyor A.THO	MPSON Ce	ertificate #	U-106-2462	System Owner	DCWASA	
Drainage N.W. D.C. Survey	Customer DCWA	SA				
P/O # ID 234 Date	2006/08/08 Tir	<b>ne</b> 12:48:00	Street FLA	GLER PL W ST ADAMS	ST	
Locality WASHINGTON, D.C.	Further locati	on details	D-234			
Start M-30556	Rim to inver	t 15.00	Grade to inve	rt Rim to gra	ade	Ft
Finish M-30559	Rim to inver	t	Grade to inve	rt Rim to gra	ade	Ft
Use Combined	Direction D	ownstream	Flow control	7	ape/Media #	REI 016
<b>Shape</b> Circular	Height 10	Width	ins Prec	lean J	ear Cleaned	
Material Vitrified Clay Pipe	Joint leng	gth Ft	Total leng	th 185.6 Ft Leng	th Surveyed 1	85.60
Lining	Year laid	Yea	ar rehabilitateo	d Weather [	Dry	
Purpose		c	Cat			
Additional info	· · · · · · · · · · · · · · · · · · ·					
Location Light Highway (rural, light	traffic, town back st,	estate st & p	arking			



on Downstream Setup 17 y	To Manhole M-30559	Date: 08/29/2006 Dist: 21.2 Ft Obs: Tap Breakin Defective Dist: 31.2 Ft Obs: Tap Breakin Defective Dist: 41.7 Ft Dist: 41.7 Ft Dist: 70.9 Ft Dist: 70.9 Ft Obs: Tap Factory Capped Dist: 70.9 Ft Obs: Tap Factory Capped Dist: 32.8 Ft Obs: Tap Breakin Defective
016 Surveyed On 08/08/2006 Direction ZIP Code Weather Dry	From Manhole M-30556	Date: 08/29/2006 Dist: 5.8 Ft Date: Obs: Crack Multiple Obs: Crack Multiple Date: 06/29/2006 Dist: 30.6 Ft Obs: Obs: Obs: Crack Multiple Date: 06/29/2006 Dist: 30.6 Ft Obs: Dist: 30.6 Ft Obs: Dist: 30.6 Ft Obs: Crack Multiple Date: 06/29/2006 Dist: 62.1 Ft Obs: Dist: 60.0 bist: 60.0 bist: 60.0 bist: 62.1 ft Obs: Dist: 61.0 Ft Obs: Obs: Crack Multiple Dist: 61.0 Ft Obs: Crack Multiple Dist: 61.0 Ft Obs: Crack Multiple Dist: 61.0 Ft Obs: Crack Multiple Dist: 61.0 Ft Obs: Crack Multiple Dist: 61.0 Ft Obs: Crack Multiple Dist: 61.0 Ft Obs: Crack Multiple Dist: 61.0 Ft Obs: Crack Multiple Dist: 61.0 Ft Obs: Crack Multiple Dist: 61.0 Ft Obs: Crack Multiple Dist: 61.0 Ft Obs: Crack Multiple Dist: 61.0 Ft Obs: Crack Multiple Dist: 61.0 Ft Obs: Crack Multiple Dist: 61.0 Ft Obs: Crack Multiple Dis
Video REI 016 City Name WASHINGTON,D.C.	wn back st, estate st & parking	Date: 08/29/2006 Dist: 1.0 Ft Date: 08/29/2006 Dist: 1.0 Ft Date: 08/29/2006 Dist: 30.5 Ft Date: 08/29/2006 Dist: 30.5 Ft Date: 08/29/2006 Dist: 30.5 Ft Date: 08/29/2006 Dist: 30.5 Ft Date: 08/29/2006 Dist: 50.7 Ft Date: 08/29/2006 Dist: 50.7 Ft Date: 08/29/2006 Dist: 50.7 Ft Date: 08/29/2006 Dist: 50.7 Ft Date: 08/29/2006 Dist: 50.7 Ft Date: 08/29/2006 Dist: 50.7 Ft Date: 08/29/2006 Dist: 50.7 Ft Date: 08/29/2006 Dist: 50.7 Ft
Work Order ID 234 Street Name FLAGLER PL W ST ADAMS ST	Location Light Highway (rural, light traffic, town back st, estate st	Tate: 08/29/2006 Dist: 0.0 Ft bas: Manhole Dist: Manhole Dist: Manhole Dist: 21.2 Ft Dist: 21.2 Ft D

DCWASA

for

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M-30556

CCTV pictures of

Work Order ID 234	Video	REI 016 Surveyed On 08/08/2006	Direction Downstream Setup 17
Street Name FLAGLER PL W ST ADAMS ST			ther Dry
Location Light Highway (rural, light traffic, town back st, estate st	i back st, estate st & parking	From Manhole M-30556	To Manhole M-30559
t: 91.4 Ft		Date: 08/29/2006 Dist: 103.8 Ft	Date: 08/29/2006 Dist: 111.6 Ft
ODS: 1 ap Factory Capped	Obs: Tap Break-in Defective	Obs: Deposits Attached Encrustation	Obs: Tap Factory Capped
S. No.			
Date: 08/29/2006 Dist: 116.7 Ft D. Obs: Crack Multiple C	Date: 08/29/2006 Dist: 125.5 Ft Obs: Tap Break-in Active	Date: 08/29/2006 Dist: 125.5 Ft Obs: Crack Multiple	Date: 08/29/2006 Dist: 131.5 Ft Obs: Tap Factory Capped
🛥	Date: 08/29/2006 Dist: 146.1 Ft	Date: 08/29/2006 Dist: 152.7 Ft	Date: 08/29/2006 Dist: 158.4 Ft
Obs: Deposits Attached Encrustation C	Obs: Tap Break-in Defective	Obs: Tap Factory Capped	Obs: Crack Multiple
	5		
Date: 08/29/2006 Dist: 159.1 Ft Di	Date: 08/29/2006 Dist: 162.3 Ft	Date: 08/29/2006 Dist: 169.2 Ft	Date: 08/29/2006 Dist: 182.3 Ft
Obs: Deposits Attached Encrustation O	Obs: Deposits Attached Encrustation	in Activ	itudine

for DCWASA

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M-30556

CCTV pictures of

Street Name       FLAGLER PL UN ST ADAMIS ST City Name       KowsHINGTON.D.C.       ZP Code       Watther       Dy         Location       Light Highway (rural light traffic, town back st, existe st & parking       From Manhole       Manho	NGTON.D.C. ZIP Code Weather I From Manhole M-30556 M-30556	Work Order ID 23	ID 234			Video	REI 016	Surveyed On	08/08/2006	Direction	Downstream Setup	17
Dist: 185.6 Ft Dist: 185.6 Ft Dist: End of Survey	Dist: 185.6 Ft Dist: 185.6 Ft Dist: 185.6 Ft	Street Name ocation Li	FLAGLER PL W {	ST ADAMS ST light traffic, town I	City Name back st, estate st &	WASHINGTON k parking		ZIP Code From Manhole N			anhole M-30559	
Dist: 185.6 Ft Date: 08/29/2006 Obs: End of Survey	Dist: 185.6 Ft Date: 08/29/2006 Obs: End of Survey											- -
		Date: 08/ Obs: Ma			ate: 08/29/2006 Ibs: End of Survey	Dist: 185.6 Ft						

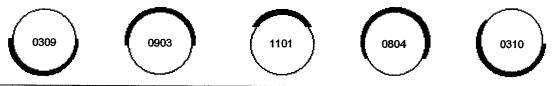
Tabu	lar Rep	ort o	f PSR	N-6302 X		f	or	DC	WA	SA	L		
Setu	p 22	Surv	eyor /	A.THOMPSON Certifica	nte #	U-1	06-2	462			Syste	m Owner DCWA	SA
	n <mark>age</mark> N.		C. <b>S</b>	u <b>rvey Customer</b> DCWASA									
P/0 1	# ID 23-	4		Date 08/09/2006 Time 14	4:32:0	0 5	Stree	t F	LAG	ILER	R PL U :	ST V ST	
Loca	lity WA	SHING	STON,D.	C. Further location de	tails	ID-23	34						
Start	M-305	76		Rim to invert 14	.00	Gra	nde t	o in	/ert	•		Rim to grade	Ft
Finis	h N-630	2		Rim to invert		Gra	de t	o inv	/ert			Rim to grade	Ft
Use	Sanitary			Direction Up		Fl	ow c	ontr	ol			Tape/M	edia # REI 017
•	e Circula			Height 10 Wi	dth		ins	Pre	cle	an	J	Year Cl	eaned
Mate	<b>rial <sup>Vitri</sup></b>	ified Cl	lay Pipe	Joint length	F	ŧ	Tota	l len	gth	41	.3	Ft Length Surv	eyed 41.3
Linin	g			Year laid	Ye	ear re			-			/eather Dry	-
Purp	ose					Cat						•	
Addi	tional inf	ò								Str	uctural	O&M	Constructiona
Loca	<i>tion</i> Ligh	nt High	way (rura	al, light traffic, town back st, estate	st&p	barkir	ng			Mi	scellan	eous Hydraulic	
	Video		Code					1	 		L. D. 1		
	03841		ST	Start of Survey		in2	<u>%</u>	Jnt	Fr	10	ImRef	Remarks	
	03841	1	AMH	Manhole		<u> </u> 	I	l l	I	I	l	M-30576	
	03841	- <u> </u>	MWL	Water Level		<u> </u>	5	 	L	<u> </u> 	l	M-30376	
2.0	00011		DAE	Deposits Attached Encrustation	-	 	05	L		09			
2.0		1	CM	Crack Multiple		/ 		J		09		LIGHT DEPOSITS	• 
2.0	·	S01		Deposits Attached Grease	<u></u>	 	05	<b>.</b>		05	[]		
4.0		S02	DAG	Deposits Attached Encrustation		<u> </u>	10	J		05		LIGHT GREASE	
9.4			TBA	Tap Break-in Active	04	 	10	J		00		LIGHT DEPOSITS	
11.1		F01		Deposits Attached Grease	04	I	05		11				
11.1	<u> </u>	F02	DAGO	Deposits Attached Encrustation		1	10	J		05 05		LIGHT GREASE	
15.4			DAE	Deposits Attached Encrustation			05			· · · · · ·		LIGHT DEPOSITS	·
21.2		1	TBA	Tap Break-in Active	04		60	J		07			
23.0		S03	DAE		104		05		11		 		
30.9		1303	DAE	Deposits Attached Encrustation		L	05		05		1	LIGHT DEPOSITS	
33.0		<u> </u>	DAE	Deposits Attached Encrustation			05	J		05		LIGHT DEPOSITS	
41.1		I	TBA	Deposits Attached Encrustation			05	J	04	09		LIGHT EPOSITS	
41.3		F03	DAE	Tap Break-in Active	04		05		11				
41.3				Deposits Attached Encrustation	<u> </u>		05		05	07		LIGHT DEPOSITS	······································
41.3			AEP	End of Pipe	<u> </u>							N-6302	
	<b>F</b> A <b>T</b> -4	I	FH	End of Survey								N-6302	

41.3 Ft Total Length Surveyed

	Scores	Structural:	Total 3	Mean Defect 3	Peak 3	Mean Pipe 0.1
Notes		Service:	Total 30	Mean Defect 2.5	Peak 4	Mean Pipe 0.7

Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below

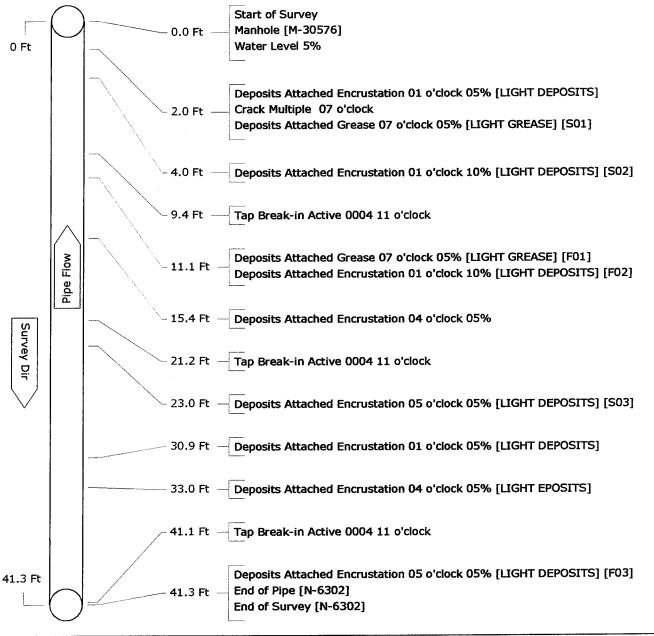


### Pipe Graphic Report of PLR N-6302

for DCWASA

Setup 22 Surveyor A.THO	MPSON Certificate # U-106-2462	System Owner DCWASA	4
Drainage N.W. D.C. Survey	Customer DCWASA		
P/O # ID 234 Date	2006/08/09 Time 14:32:00 Street FL/	AGLER PL U ST V ST	
Locality WASHINGTON, D.C.	Further location details ID-234		<u> </u>
Start M-30576	Rim to invert 14.00 Grade to inve	ert Rim to grade	Ft
Finish N-6302	Rim to invert Grade to inve	ert Rim to grade	Ft
Use Sanitary	Direction Upstream Flow control	ol Tape/Med	lia # REI 017
Shape Circular	Height 10 Width ins Pred	clean J Year Clea	aned
Material Vitrified Clay Pipe	Joint length Ft Total leng	yth 41.3 Ft Length Surve	<b>yed</b> 41.30
Lining	Year laid Year rehabilitate	ed Weather Dry	
Purpose	Cat		
Additional info			
Location Light Highway (rural, ligh	t traffic, town back st, estate st & parking		

Х



ID 234 FLAGLER PL U ST V ST	Video RI City Name WASHINGTON.D.C.	El 017 Surveyed On 08/09/2006 ZIP Code Weath	Direction Upstream Setup 22 er Drv
≷	t &	From Manhole M-30576	
	Date: 08/29/2006 Dist: 2.0 Ft	Date: 08/29/2006 Dist: 2.0 Ft Obs: Crack Multiple	Ders: Deposits Attached Grease
	Date: 08/29/2006 Dist: 9.4 Ft Obs: Tap Break-in Active	Date: 08/29/2006 Dist: 11.1 Ft Obs: Deposits Attached Grease	Date: 08/29/2006 Dist: 11.1 Ft Obs: Deposits Attached Encrustation
	Date: 08/29/2006 Dist: 21.2 Ft	Date: 08/29/2006 Dist: 23.0 Ft Obs: Deposits Attached Encrustation	Date: 08/29/2006 Dist: 30.9 Ft Obs: Deposits Attached Encrustation
	Date: 08/29/2006 Dist: 41.1 Ft Obs: Tap Break-in Active	Date: 08/29/2006 Dist: 41.3 Ft Obs: Deposits Attached Encrustation	Date: 08/29/2006 Dist: 41.3 Ft Obs: End of Pipe

DCWASA

for

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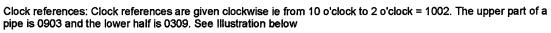
N-6302

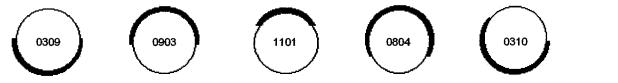
CCTV pictures of

	iai nepu	ort of	PSR	N-6324	X		fo	r DC	:WA	SA					
Setuj	<b>p</b> 18	Surv	eyor A	THOMPSON	Cert	ificate #	U-10	5-2462	2		Syster	n Owner	DCWAS	SA	
Drain	age N.V	N. D.C	. SI	rvey Customer	DCWAS,	A								,	
P/O #	ID 234	ł		Date 08/08/2006	Time	e 13:34:0	0 <b>St</b>	eet f	LAG	LER	PL W	ST ADAM	IS ST		
Loca	lity WAS	SHING	TON,D.	C. <i>Furthe</i>	r location	n details	ID-234								
Start	M-305	59		Rim t	o invert	15.00	Grad	e to in	vert			Rim to g	rade		Ft
Finisi	<b>h</b> N-6324	4		Rim t	o invert		Grad	e to in	vert			Rim to g	rade		Ft
Use	Combine	d	· · ·	Direc	<i>tion</i> Up		Flow	v con	rol				Tape/Me	edia #	REI 016
Shap	e Circula	r		Hei	<b>ght</b> 10	Width	in	s Pi	ecle	an	J		Year Cle	eaned	
Mater	rial <sup>Vitrif</sup>	fied Cl	ay Pipe	Jo	oint lengt	h F	t Te	otal le	ngth	47	.8 /	=t Len	gth Surv	eyed 4	7.8
Linin	g			Ye	ear laid	Ye	ar reh	abilita	ted		W	eather	Dry		
Purpe	ose						Cat								
Addit	tional info	2		· . · · · · · ·						Str	uctural	0	&M	Co	nstructiona
Loca															
LUCA	aon Lign	t High	way (rura	al, light traffic, town	back st, e	state st & p	arking			Mis	scellan	eous H	ydraulic		
	Video		vay (rura Code	al, light traffic, town	back st, e	•		% Jnt	Fr			eous H Remark	-		
Count	·			al, light traffic, town Start of Survey	back st, e	•		% Jnt	Fr				-		
Count 0.0	Video		Code		back st, e	•		% Jnt	Fr				(S		
Count 0.0 0.0	Video 00000		Code ST	Start of Survey	back st, e	•	In2	% Jnt	Fr			Remark	(S		
Count 0.0 0.0	Video 00000 00000		Code ST AMH	Start of Survey Manhole	· · · · · · · · · ·	•	In2		Fr	To		Remark	(S		
Count 0.0 0.0 0.0	Video 00000 00000		Code ST AMH MWL	Start of Survey Manhole Water Level	/e	In1	In2			To		Remark	(S		
Count 0.0 0.0 0.0 2.5	Video 00000 00000		Code ST AMH MWL TBA	Start of Survey Manhole Water Level Tap Break-in Activ	/e Im	In1	In2			To		Remark	(S		
Count 0.0 0.0 0.0 2.5 16.5	Video 00000 00000		Code ST AMH MWL TBA JOM	Start of Survey Manhole Water Level Tap Break-in Activ Joint Offset Mediu	ve Im Ve	n1 	In2		02	To		Remark	(S)		
Count 0.0 0.0 2.5 16.5 18.7	Video 00000 00000		Code ST AMH MWL TBA JOM TBA	Start of Survey Manhole Water Level Tap Break-in Actin Joint Offset Media Tap Break-in Actin	ve im ve Compacted	n1 		<b>)</b>	02			Remark	(S)		
Count 0.0 0.0 2.5 16.5 18.7 18.7	Video 00000 00000		Code ST AMH MWL TBA JOM TBA DSC	Start of Survey Manhole Water Level Tap Break-in Actin Joint Offset Mediu Tap Break-in Actin Deposits Settled (	ve im ve Compacted ve	n1   		<b>)</b>	02 02 02 06 02			Remark	(S)		
Count 0.0 0.0 2.5 16.5 18.7 18.7 35.1	Video 00000 00000		Code ST AMH MWL TBA JOM TBA DSC TBA	Start of Survey Manhole Water Level Tap Break-in Actin Joint Offset Mediu Tap Break-in Actin Deposits Settled O Tap Break-in Actin	ve im ve Compacted ve fine	n1   			02 02 02 06 02			Remark	(S)		
Count 0.0 0.0 2.5 16.5 18.7 18.7 35.1 38.0	Video 00000 00000		Code ST AMH MWL TBA JOM TBA DSC TBA DSF	Start of Survey Manhole Water Level Tap Break-in Actin Joint Offset Mediu Tap Break-in Actin Deposits Settled ( Tap Break-in Actin Deposits Settled F	/e Im /e Compacted /e Fine /e	n1   			02 02 02 06 02 06 02			Remark	(S)		
Count 0.0 0.0 2.5 16.5 18.7 18.7 35.1 38.0 46.5	Video 00000 00000	CD	Code ST AMH MWL TBA JOM TBA DSC TBA DSF TBA	Start of Survey Manhole Water Level Tap Break-in Actin Joint Offset Mediu Tap Break-in Actin Deposits Settled C Tap Break-in Actin Deposits Settled F Tap Break-in Actin	/e Im /e Compacted /e Fine /e	n1   		) ) ) ) ) ) ) ) ) ) ) ) ) ) ) ) ) ) )	02 02 02 06 02 06 02			Remark	(S)		

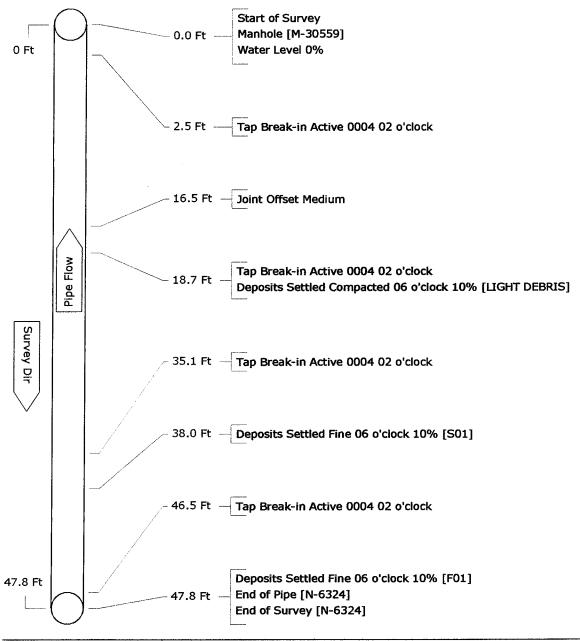
47.8 Ft Total Length Surveyed

Scores	Structural:	Total 1	Mean Defect 1	Peak 1	Mean Pipe 0
Notes	Service:	Total 6	Mean Defect 2	Peak 2	Mean Pipe 0.1





Pipe Graphic Report of PLR	N-6324	Х	for	DCWASA		
		Certificate #	U-106-2462	System Owner	DCWASA	_
Drainage N.W. D.C. Survey	Customer DCV	VASA				
P/O # ID 234 Date	2006/08/08	Time 13:34:00	0 Street FLA	GLER PL W ST ADAMS	ST	
Locality WASHINGTON, D.C.	Further loca	ation details	ID-234			
Start M-30559	Rim to inve	ert 15.00	Grade to inver	t Rim to gra	ade	Ft
Finish N-6324	Rim to inve	ert	Grade to inver	t Rim to gra	ade	Ft
Use Combined	Direction	Upstream	Flow control	1	<b>Tape/Media #</b>	<b>REI 016</b>
<b>Shape</b> Circular	Height '	10 <b>Width</b>	ins Precl	ean J	Year Cleaned	
Material Vitrified Clay Pipe	Joint le	ngth F	t Total lengt	h 47.8 Ft Leng	th Surveyed 4	7.80
Lining	Year la	id Ye	ar rehabilitated	Weather [	Dry	
Purpose		(	Cat			
Additional info						
Location Light Highway (rural, ligh	t traffic, town back	st, estate st & r	parking			



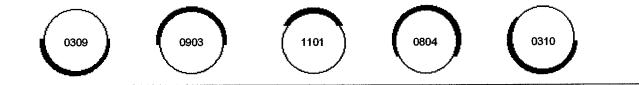
CCTV pictures of N-6324	×	for DO	DCWASA						
Work Order ID 234		Video	REI 016	Surveyed On 08	08/08/2006	Direction	Upstream	Setup	18
Street Name FLAGLER PL W ST ADAMS ST City Nam Location Light Highway (rural, light traffic, town back st, estate		WASHINGTON, D.C. st & parking		ZiP Code From Manhole M-30559	Weather 1559		Dry <b>To Manhole</b> N-6324	324	
The second section of the second section of the second section of the second section of the second section of the section of t	Date: 08/29/2006 Di Date: 08/29/2006 Di Obs: Tap Break-in Active Date: 08/29/2006 Di Date: 08/29/2006 Di Date: 08/29/2006 Di Obs: End of Pipe Obs: End of Pipe	Dist: 2.5 Ft Active Dist: 35.1 Ft Active Dist: 47.8 Ft	O Bate: O Bate:	Date: 08/29/2006 Dist: Dint Offset Medium Date: 08/29/2006 Dist: Date: 08/29/2006 Dist: Obs: Deposits Settled Fine	Dist: 16.5 Ft Dist: 38.0 Ft	Date: 08/29/2006 Obs: Tap Break- Date: 09/29/2006 Obs: Tap Break-	Date: 08/29/2006 Di Dos: Tap Break-in Active Date: 08/29/2006 Di Date: 17p Break-in Active	Dist: 18.7 Ft Ve Dist: 46.5 Ft Ve	

abular Re	port of	<b>PSR</b>	N-6323	Х		fo	or	DCW	VAS	Α			
Setup 20	Surv	eyor A	THOMPSON	Cert	ificate #	U-10	)6-24	462		Syster	m Owne	r DCWAS	SA
Drainage	I.W. D.C	. SI	rvey Customer	DCWAS	Ą								
P/O # ID 23	34		Date 08/09/2006	Time	14:02:0	) <b>S</b> i	reet	FL/	AGLI	R PL W	ST ADA	MS ST	
Locality W	ASHING	TON,D.	C. <i>Further</i>	location	i details	D-234	4						
Start M-30	560		Rim to	invert	15.00	Grad	de to	o inve	ərt		Rim to	grade	Ft
Finish N-63	23		Rim to	invert		Grae	de to	o inve	ert		Rim to	grade	Ft
Use Sanitar	/		Directi	i <b>on</b> Up		Flo	wc	ontro	1			Tape/Me	edia # REI 017
Shape Circu	lar		Heig	<b>ht</b> 10	Width	i.	ns	Prec	lea	J		Year Cle	eaned
Material <sup>Vit</sup>	rified Cl	ay Pipe	Joi	nt lengti	h F	t 7	otal	l leng	th -	45.0 <i>i</i>	Ft Le	ngth Surv	<b>eyed</b> 45.0
Lining			Yea	ar laid	Ye	ar re	habi	litate	d	И	/eather	Dry	
Purpose						Cat							
Additional ir	fo									Structural	•	0&M	Constructiona
Location Lie	ht High	way (rura	al, light traffic, town t	oack st, e	state st & p	arkin	g			discellan	eous I	Hydraulic	
Count Video	CD	Code			In1	In2	%	Jnt	Fr T	o ImRet	f Remai	rks	
0.0 03237		ST	Start of Survey	••••						1			
0.0 03237		AMH	Manhole								M-3056	60	
0.0 03237		MWL	Water Level				5						
2.0		TBA	Tap Break-in Activ	e	04				11				
16.5		TBA	Tap Break-in Activ	e	04			Î	11				
23.2		RFJ	Roots Fine Joint						03				
42.4		TBA	Tap Break-in Activ	e	04				11				
45.0		AEP	End of Pipe							1	N-6323		
	1		F-1-60		1	1 1	1		Ì	1	N-6323		
45.0		FH	End of Survey								114-0020	)	

	Scores	Structural:	Total 0	Mean Defect 0	Peak 0	Mean Pipe 0
Votoo		Service:	Total 1	Mean Defect 1	Peak 1	Mean Pipe 0

Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below

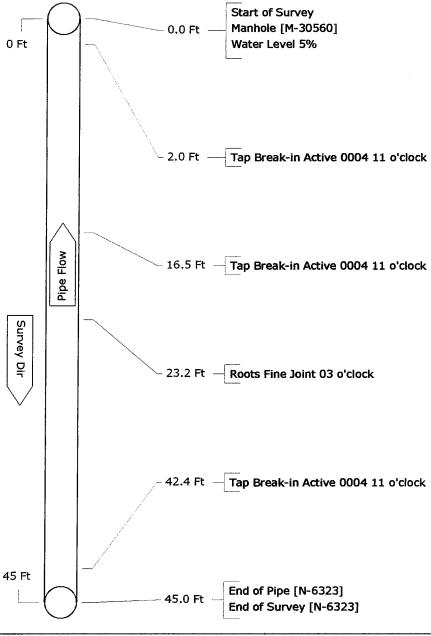


## Pipe Graphic Report of PLR N-6323

for DCWASA

Setup 20 Surveyor A.THOM	PSON Certificate # U-106-2462	System Owner DCWASA	
Drainage N.W. D.C. Survey C	ustomer DCWASA		
P/O # ID 234 Date	2006/08/09 <b>Time</b> 14:02:00 <b>Street</b> FLAGLI	ER PL W ST ADAMS ST	
Locality WASHINGTON, D.C.	Further location details ID-234		
Start M-30560	Rim to invert 15.00 Grade to invert	Rim to grade	Ft
Finish N-6323	Rim to invert Grade to invert	Rim to grade	Ft
<b>Use</b> Sanitary	Direction Upstream Flow control	Tape/Media #	REI 017
<b>Shape</b> Circular	Height 10 Width ins Preclea	n J <b>Year Cleaned</b>	T
Material Vitrified Clay Pipe	Joint length Ft Total length	45.0 Ft Length Surveyed	45.00
Lining	Year laid Year rehabilitated	Weather Dry	
Purpose	Cat		
Additional info			
Location Light Highway (rural, light t	raffic, town back st, estate st & parking		

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CCTV pictures of	N-6323	×	for	DCWASA						
Work Order ID 234	4		Video	REI 017	Surveyed On 08/09/2006	08/09/2006	Direction Upstream	Upstream	Setup	50
Street Name FLAC Location Light Higi	Street Name FLAGLER PL W ST ADAMS ST Location Light Highway (rural, light traffic, tow	Street Name FLAGLER PL W ST ADAMS ST City Name WASHI Location Light Highway (rural, light traffic, town back st, estate st & parking	WASHINGTON,D.C. & parking		ZIP Code From Manhole M-30560	Weather 1-30560		Dry To Manhole N-6323	323	
Date: 08/29/2005 Obs: Manhole	Dist: 0.0 F	Date: 08/29/2006 Di Obs: Tap Break-In Active	Dist: 2.0 Ft		Date: 08/29/2006 Di Obs: Tap Break-in Active	Dist: 16.5 Ft	Date: R	Date: 08/29/2006 Obs: Roots Fine Joint	Dist: 23.2 Ft	The second second second second second second second second second second second second second second second se

Dist: 45.0 Ft

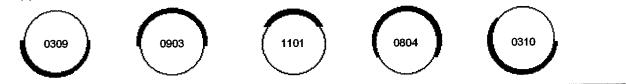
Date: 08/29/2006 Obs: End of Pipe

Date: 08/29/2006 Dist: 42.4 Ft Obs: Tap Break-in Active

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Tabul	ar Repo	ort of	PSR	M-30558 X		fc	or	DC\	NA	SA			
Setup	19	Surv	eyor A	THOMPSON Certificate	;#	U-1(	06-24	462		Syster	m Owner	DCWASA	
Drain		N. D.C	. Si	Irvey Customer DCWASA									
P/O #	D 234	•		Date 08/09/2006 Time 9:23	8:00	S	treel	t FL	AGI	LER PL W	ST ADAMS	ST	
Local	ity WAS	SHING	TON,D.	C. Further location deta	ils l	D-23	4						
Start	M-3055	58		Rim to invert		Gra	de ta	o inv	ert		Rim to gr	ade	Ft
Finisl	h M-3056	60		Rim to invert		Gra	de to	o inv	ert		Rim to gr	ade	Ft
Use	Sanitary			Direction Down		Flo	W C	ontr	ol			Tape/Media	# REI 017
Shap	e Circula	r		Height 10 Widt	th	i	ins	Pre	clea	an J		Year Clean	ed
Mater	<b>ial</b> Vitril	ied Cla	ay Pipe	Joint length	F	t i	Tota	l len	gth	185.8	Ft Leng	th Surveye	<b>d</b> 185.8
Lining	g			Year laid	Ye	ar re	hab	ilitat	eđ	И	/eather	Dry	
Purpo	- Dse				(	Cat							
Addit	ional infe	>		· · · · · · · · · · · · · · · · · · ·						Structural	I 08	M	Constructional
Locat	ion Light	t High\	way (rura	al, light traffic, town back st, estate s	t&p	arkin	g			Miscellan	eous Hy	draulic	
Count	Video	CD	Code		In1	ln2	%	Jnt	Fr	To ImRef	f Remarks	;	
	00000		ST	Start of Survey			-						
0.0	00000	Ì	AMH	Manhole	1						M-30558		
0.0	00000	1	MWL	Water Level	Ì		0						
12.2		S01	CL	Crack Longitudinal				J	12				
16.9		İ	ТВА	Tap Break-in Active	04				09				
17.5		F01	CL	Crack Longitudinal				J	12				·····
31.0		İ	TFC	Tap Factory Capped	04				10				
35.5			CL	Crack Longitudinal				J	12				
36.4			TBA	Tap Break-in Active	04				09				
38.6		S02	CL	Crack Longitudinal				J	12				· · · · · · · · · · · · · · · · · · ·
41.2			CL	Crack Longitudinal				J	03				
47.1		S03	CL	Crack Longitudinal	1			J	03				
51.3			TFC	Tap Factory Capped	04				10				
56.3			TBD	Tap Break-in Defective	04	01			12				
56.8			TBA	Tap Break-in Active	04				09				
58.9		F03	CL	Crack Longitudinal				J	03				
65.0			СМ	Crack Multiple				J		03			
71.7			TFC	Tap Factory Capped	04				10				
75.1			TBD	Tap Break-in Defective	04	01	<u> </u>		09	·	<u> </u>		, <u>,,, , , , , , , , , , , , , , , </u>
79.5			RFJ	Roots Fine Joint					09	03			
84.4		F02	CL	Crack Longitudinal				J	12		<u> </u>		
91.8			TFC	Tap Factory Capped	04			<u> </u>	10		<u> </u>		
99.8			TBD	Tap Break-in Defective	04	01	<u> </u>		09	<u></u>	<u> </u>		
99.8			CL	Crack Longitudinal				J	09	<u> </u>			
101.2			ID	Infil Dripper	<u> </u>	İ			11		<u> </u>		<u></u>
101.3			н	Hole	1			ļ	11		<u> </u>		
112.3			TFC	Tap Factory Capped	04				10		<u> </u>	<u></u>	

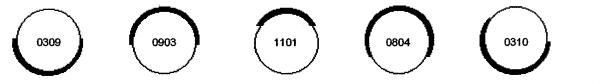
Clock references; Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



<b>Tabular</b>				· · ·	·····	×					DCI	NA								
Setup			eyor /			-	ertificate	<del>?</del> #	U-1	06-2	462		-	Syster	n Owi	ier	DCW	ASA		
Drainag	e N.V	N. D.C	. SI	irvey (	Custome	r DCW	ASA													
P/O #	ID 234			Date	08/09/20	06 <b>T</b>	<b>ime</b> 9:2	8:00	S	tree	t FL	AG	LER	PL W	STAD	AMS	ST			
Locality	WAS	SHING	TON,D.	С.	Furt	ner local	tion deta	ils	D-23	4						_				
Start	M-3055	58			Rim	to inve	rt		Gra	de t	o inv	ert			Rim t	o gra	ade		Ft	
Finish	M-3056	<b>50</b>			Rim	to inve	rt		Gra	de t	o inv	ert			Rim t	o gra	ade		Ft	
Use Sa	nitary				Dire	ection	Down		Flo	ow c	ontr	ol				1	[ape/l	Media	# REI 0	17
Shape (	Circula	r			н	eight 10	D Wid	th		ins	Pre	clea	an .	J		Ŋ	fear C	Cleane	d	
Material	Vitrif	ied Cla	ay Pipe			Joint len	ngth	F	ť	Tota	i len	gth	185	5.8 <b>/</b>	=t L	.eng	th Su	rveye	185.8	
Lining						Year laid	1	Ye	ar re	hab	ilitat	eđ		W	eathe	r [	Dry			
Purpose	•							(	Cat											
Addition	al info	)											Stri	uctural		0&	M		Constru	ctiona
Location	Light	t Highv	way (rura	al, light	traffic, tow	n back s	t, estate s	# & p	arkin	Ig			Mis	cellane	eous	Нус	Iraulic			
Count Via	teo	CD	Code					In1	ln2	%	Jnt	Fr	То	ImRef	Rem	arks				
120.7			TBD	Tap B	ireak-in De	efective		04	01			09								
134.3			TFC	Tap F	actory Ca	pped		04				10								
135.1			TBD	Tap B	Ireak-in De	efective		04	01	<u> </u>		10								
156.0			TBD	Tap B	reak-in De	efective		04	01			11								
169.9			TBD	Tap B	reak-in De	efective		04	01			09								
185.8			AMH	Manh	ole										M-30	560				
185.8			FH	End o	f Survey										M-30	560				
185.8 <i>Ft</i>	Tot	tal Ler	ngth Su	rveyed																
	Sco	res	St	ructur		Tota					n De				Peak				an Pipe	
lotes				Servic	:e:	Tota	25			Меа	in De	efec	t 2.	8	Peak	3		Me	ean Pipe	0.1

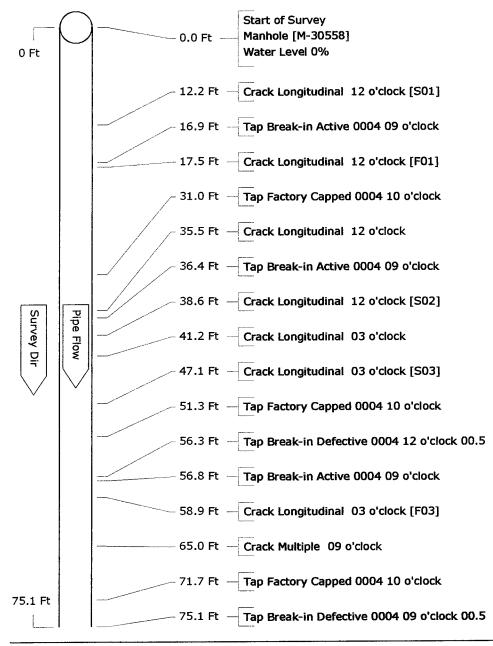
Notes

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



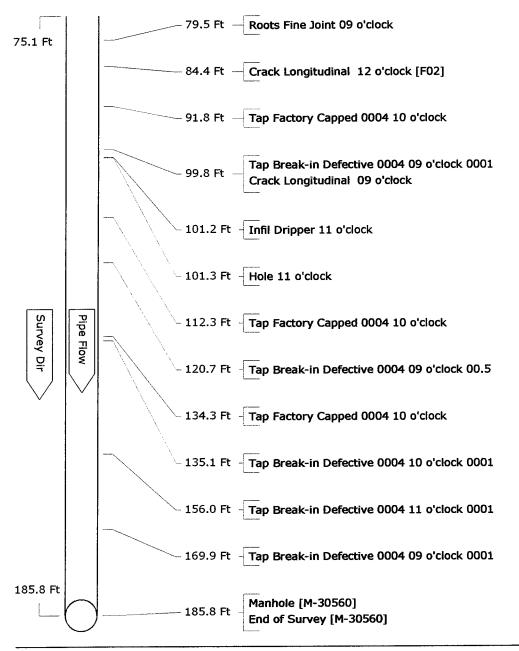
#### Pipe Graphic Report of PLR M-30558 X for DCWASA

Setup 19 Surveyor A.THOM	APSON Certificat	e# U-106-2462	System Owner DCWA	SA
Drainage N.W. D.C. Survey	Customer DCWASA			
P/O # ID 234 Date	2006/08/09 Time 09	:28:00 Street FLAGLE	R PL W ST ADAMS ST	
Locality WASHINGTON, D.C.	Further location det	ails ID-234		
Start M-30558	Rim to invert	Grade to invert	Rim to grade	Ft
Finish M-30560	<b>Rim to invert</b>	Grade to invert	Rim to grade	Ft
<b>Use</b> Sanitary	Direction Downstre	eam Flow control	Tape/M	edia # REI 017
<b>Shape</b> Circular	Height 10 Wid	Ith ins Preclean	i J Year Cl	eaned
Material Vitrified Clay Pipe	Joint length	Ft Total length	85.8 Ft Length Surv	/eyed 185.80
Lining	Year laid	Year rehabilitated	Weather Dry	
Purpose		Cat		
Additional info				
Location Light Highway (rural, light	traffic, town back st, estate	st & parking		



## Pipe Graphic Report of PLR M-30558 X for DCWASA

Setup 19 Surveyor	A.THOMPSON	Certificate #	U-106-2462	System Owner	DCWASA	
Drainage N.W. D.C. S	urvey Customer	DCWASA				
P/O # ID 234	Date 2006/08/09	Time 09:28:0	0 Street FLAGLE	ER PL W ST ADAMS	ST	
Locality WASHINGTON,D.	.C. Further	location details	ID-234			
Start M-30558	Rim to	invert	Grade to invert	Rim to gr	ade	Ft
Finish M-30560	Rim to	invert	Grade to invert	Rim to gr	ade	Ft
Use Sanitary	Directi	on Downstream	Flow control		Tape/Media #	REI 017
Shape Circular	Heig	ht 10 Width	ins Preclea	n J	Year Cleaned	
Material Vitrified Clay Pipe	Joi	nt length	Ft Total length	185.8 <i>Ft Len</i> g	th Surveyed	185.80
Lining	Yea	r laid Y	ear rehabilitated	Weather	Dry	
Purpose			Cat			
Additional info						
Location Light Highway (rur	ral, light traffic, town b	ack st, estate st &	parking			



2006 Direc Weather [	And the Made Made Made Made Made Made Made Mad
WASHINGTON,D.C. ZIP Code parking From Manhole M-30558	From Manhole M-30558 EFt Date: 08/29/2005 Dist: 16.9 Ft Date: 08/29/2005 Dist: 16.9 Ft Date: 08/29/2006 Dist: 38.6 Ft Date: 08/29/2006 Dist: 38.6 Ft Date: 08/29/2006 Dist: 38.6 Ft Date: 08/29/2006 Dist: 38.6 Ft Date: 08/29/2006 Dist: 56.3 Ft Date: 15.7 Pt Date: 15.7 Pt Date: 15.7 Pt Date: 15.7 Pt Date: 08/29/2006 Dist: 56.3 Ft Date: 15.7 Pt Date: 15.
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Light Highway (rural, light traffic, town back st, estate st & parking
Work Order         ID 234           Street Name         FLAGLER PL W ST ADAMS ST           Location         Light Highway (rural. light traffic. tow	Location Light Highway (rural, light the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second sec

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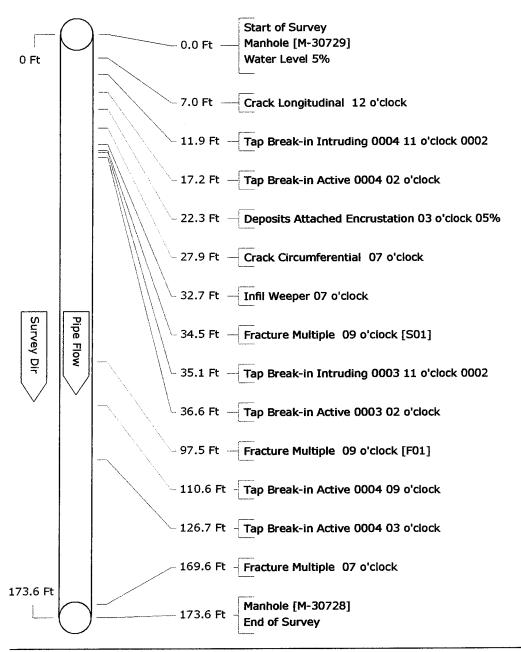
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M-30558

CCTV pictures of

## Pipe Graphic Report of PLR M-30729 X for DCWASA

Setup 80 Surveyor A. OGL	ARA Cert	ificate #	U-405-2141	System Owner	DCWASA	
Drainage 1ST STREET Survey	Customer DCWAS	A				
P/O # ID 234 Date	2006/08/07 Time	e 13:15:00	Street 115 T	HOMAS STREET,N.V	V	
Locality WASHINGTON D.C.	Further location	n details			······································	
Start M-30729	Rim to invert	8.30	Grade to invert	Rim to g	rade	Ft
Finish M-30728	Rim to invert	8.90	Grade to invert	Rim to g	rade	Ft
<b>Use</b> Sanitary	Direction Dov	wnstream	Flow control	Not controlled	Tape/Media #	REI 015
Shape Circular	Height 18	Width	ins Precle	an J	Year Cleaned	8/7/2006
Material Vitrified Clay Pipe	Joint lengt	h 7.0 Ft	Total length	173.6 <b>Ft Len</b> g	gth Surveyed	73.60
Lining	Year laid	Yea	r rehabilitated	Weather	Dry	
Purpose Routine Assessment		C	at		-	
Additional info						
Location Light Highway (rural, light	traffic, town back st, e	state st & pa	arking			



80					
	)728	Dist: 33.6 Ft Dist: 36.6 Ft			
Downstream Setup	Dry <b>To Manhole</b> M-30728	Date: 08/29/2006 Dist: Date: 08/29/2006 Dist: Dbs: Tap Break-in Intruding Dbs: Infli Weeper Date: 08/29/2006 Dist: Date: 08/29/2006 Dist: Date: 08/29/2006 Dist: Date: 08/29/2006 Dist: Date: 08/29/2006 Dist: Dbs: Fracture Multiple Dbs: Fracture Multiple			
Direction D		Pate: 08/29/2006 Obs: Tap Breakin Obs: Infil Weeper Date: 08/29/2006 Obs: Infil Weeper Obs: Tap Breakin			
	Weather				
<b>On</b> 08/07/2006	e M-30729	Dist: 7.0 Ft all Dist: 27.9 Ft ential Dist: 35.1 Ft ruding			
Surveyed On	ZIP Code From Manhole M-30729	Date: 08/29/2006 Dist Date: 08/29/2006 Dist Obs: Crack Longitudinal Date: 08/29/2006 Dist Obs: Crack Circumferential Date: 08/29/2006 Dist Date: 08/29/2006 Dist Date: 08/29/2006 Dist Date: 08/29/2006 Dist Date: 08/29/2006 Dist Date: 08/29/2006 Dist Obs: Tap Break-In Active Obs: Tap Break-In Active			
REI 015		Date: 08/29/2006 Des: Crack Long Date: 08/22/2006 Des: Crack Circu Date: 08/22/2006 Des: Tap Break-			
μ α	WASHINGTON D.C. parking				
Video	WASHIN & parking	Dist: 0.0 Ft Dist: 0.0 Ft Dist: 22.3 Ft hed Encrustation Dist: 34.5 Ft Dist: 110.6 Ft cotive			
		bate: 06/29/2006 Dist: 0.0 Ft Obs: Water Level Dist: 0.0 Ft Dist: 0.0			
	Ci own back st	Date: 08 Date:		REET,N.W ght traffic, t	
	115 THOMAS STREET,N.W nt Highway (rural, light traffic,	Dist: 0.0 Ft Dist: 0.0 Ft Dist: 17.2 Ft Active Dist: 34.5 Ft blat: 97.5 Ft			
r ID 234	le 115 TH Light Highw	Date: 08/29/2006 Di Date: 08/29/2006 Di Dbs: Manhole Di Dbs: Tap Break-In Active Date: 08/07/2006 Di Dbs: Fracture Multiple Dbs: Fracture Multiple Dbs: Fracture Multiple			
Work Order	Street Name         115 THOMAS STREET,N.W         City Name           Location         Light Highway (rural, light traffic, town back st, estate st	Date: 0 Obs: 7 Obs: 7 Obs: 7 Obs: 7 Obs: 7			

DCWASA

for

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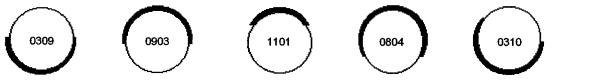
M-30729

CCTV pictures of

<b>CCTV</b> pictures of	M-30729	×	for [	DCWASA					
Work Order ID 234			Video	REI 015	Surveyed On 08/07/2006	08/07/2006	Direction	Downstream Setup	80
Street Name 115 THOMAS STREET,N.W Location Light Highway (rural, light traffic,	Street Name         115 THOMAS STREET, N.W         City Name         WASHI           Location         Light Highway (rural, light traffic, town back st, estate st & parking	<b>City Name</b> n back st, estate st &	WASHINGTON D.C. k parking	a 6 7	ZIP Code From Manhole M-30729	Meather A-30729	-	Dry <b>To Manhole</b> M-30728	
Date: 08/29/2006 Obs: Manhole	Dist: 173.6 Ft	Date: 08/29/2006 Obs: End of Survey	Dist: 173.6 Ft						

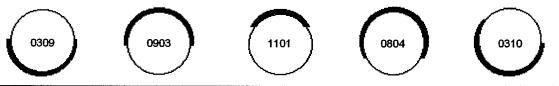
Tabu	lar Repo	ort of	f PSR	M-30	638	х		1	for	DC	WA	SA	L .						
Setu	<b>p</b> 81	Surv	eyor /	A. OGU	IARA	Certif	icate #	U-4	105-2	2141			Syste	m Ow	ner	DCW	IASA		
Drain	age 1S	TSTR	EET S	urvey	Customer D	CWASA							·						
P/0 #	ID 234	ļ		Date	08/07/2006	Time	12:27:0	ю	Stree	et 15	51 T	но	MAS S	TREET	,N.E				
Loca	lity WAS	SHING	TON D.	С.	Further lo	cation	details												
Start	M-3063	38			Rim to in	vert	8.00	Gra	ade	to inv	ert		×	Rim	to gr	ade			Ft
<b>Finis</b>	h M-3072	2 <b>9</b>			Rim to in	vert	8.30	Gra	ade i	to inv	ert			Rim	to gr	ade			Ft
Use	Sanitary				Direction	Dow	n	FI	ow o	contr	ol	Not	contro	lled	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Tape/	Media	a# R	EI 015
Shap	e Circula	r			Height	15	Width		ins	Pre	cle	an	J			Year (	Clean	<b>ed</b> 8,	7/2006
Mater	<b>rial</b> Vitrif	ied Cl	ay Pipe		Joint	length	7.00 <b>F</b>	-t	Tota	al len	gth	17	0.0	Ft i	Leng	th Su	rveye	d 17	0.0
Linin	g				Year	aid	Ye	ear n	ehat	oilitat	ed		И	/eathe	er I	Dry			
Purpo	ose Rout	tine As	ssessme	ent				Cat											
Addit	ional info	>										St	uctura	1	80	М		Con	structional
Locat	<b>ion</b> Light	High	way (rura	al, light	traffic, town bac	k st, est	ate st &	parki	ng			Mi	scellan	eous	Hye	draulic	;		
Count	Video	CD	Code				In1	In?	%	Jnt	Fr	To	ImRet	f Ren	narks				
	00:00:00	· · · · · · · · · · · · · · · · · · ·	ST	Start	of Survey				<u> </u>		Ľ.	1							
0.0	00:00:00	1	AMH	Manh	ole			1	1	1		İ		M-30	638				
0.0	00:00:00		MWL	Wate	r Level			1	5		}	İ	l	İ					
2.8			TFA	Tap F	actory Active	·	06	;]	1	1	02	1		l					<u> </u>
15.1			TBI	Tap E	Break-in Intruding	}	06	01			10			1					
16.7			TBA	Tap E	Break-in Active		06		1	1	01	1						<b>·</b>	
20.1			TFA	Tap F	actory Active		06			1	02								
34.3			TFA	Tap F	actory Active		06	Ì	1	1	03								
36.2			TBA	Tap B	<b>Ireak-in Active</b>		04		1	1	10	1							
51.5			TFA	Tap F	actory Active		06			1	03	Ī		1					
55.5			TBA	Tap B	reak-in Active		03				09								
57.8			TBA	Тар В	reak-in Active		04				10								
68.6			TFA	Tap F	actory Active		06				02								
71.5			TBI	Tap B	reak-in Intruding		04	01			10								
77.7			TBI	Tap B	reak-in Intruding		06	01	l		11								
83.1			TBA	Tap B	reak-in Active		04				02								
92.6			SSSC	Surfac	e Spalling Chen	nical		L	<u> </u>		07	02		İ					
97.1			TBA	Tap B	reak-in Active		04	<u> </u>			11								
99.7			TFA		actory Active		06		<u> </u>		02								
105.9		S01	SSSC	Surfac	e Spalling Chen	nical			L		07	03							
113.6			TBA	Tap B	reak-in Active		04	<u> </u>	<u> </u>		09			<u> </u>					
116.9			TFA	Tap F	actory Active		06	L	<u> </u>		03								
131.0	l		TBA	Tap B	reak-in Active		04	<u>.</u>	<u> </u>		10								
134.2			TFA	Tap F	actory Active		06				02								
148.7			TBI	Tap B	reak-in Intruding		04	01			09			CM A	ROU	ND C	ONN		
150.7			TFA	Tap F	actory Active		06		l		02					<u>.</u>			
158.9			DAGS	Depos	its Attached Gre	ase			05		05	07							

# Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below

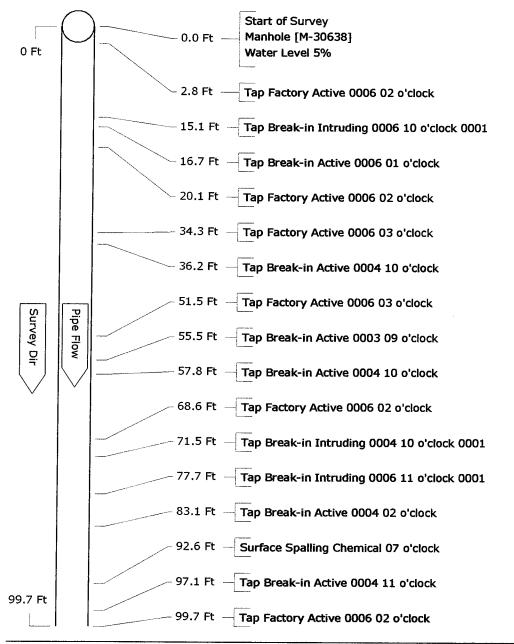


Tabular	Repo	ort of	PSR	M-30	638		X			fe	or	DC	WA	SA							
Setup	B1	Surv	eyor A	. ogu	ARA		Cer	tificate	<b>;</b> #	U-4	05-2	2141			Syste	em Oi	vner	DCW	ASA		
Drainage	e 1S]	r str	EET Su	irvey	Custon	ner [	OCWAS	SA													
<i>P/O</i> # 1	D 234			Date	08/07/	2006	Tim	e 12:	27:00	) <b>s</b>	tree	t 15	51 T	HON	/AS S	TREE	T,N.E				
Locality	WAS	HING	TON D.	<b>C</b> .	Fu	irther l	ocatio	n deta	ils												
Start I	<b>M-3063</b>	8	,		F	Rim to i	invert	8.00		Gra	de t	o inv	vert			Rim	to gi	rade		Ft	
Finish N	<b>VI-307</b> 2	9			F	Rim to i	invert	8.30		Gra	de t	o inv	rert			Rim	to gi	rade		Ft	
Use Sa	nitary				D	)irectio	n Do	wn		Flo	w c	ontr	ol	Not	contre	olled		Tape/	Media	# REIO	15
Shape (	Circular	r				Heigh	<b>it</b> 15	Widt	h	i	ins	Pre	cle	an	J			Year (	Cleane	d 8/7/20	006
Material	Vitrifi	ed Cla	ay Pipe			Join	t lengi	h 7.0	) <b>F</b>	t	Tota	l len	gth	17	0.0	Ft	Leng	th Su	rveyed	<b>d</b> 170.0	
Lining						Year	' laid		Ye	ar re	hab	ilitat	ed			Veath	er	Dry			
Purpose	Rout	ine As	sessmei	nt					(	Cat											
Addition	al info	)												Str	uctura	al	08	κM		Constru	ctional
Location	Light	Highv	vay (rura	I, light	traffic, f	town ba	ick st, e	state s	t&p	arkin	g			Mis	scella	neous	Hy	draulic			
Count Vid	eo	CD	Code			· · · · · ·			In1	In2	%	Jnt	Fr	То	ImRe	f Re	marks	3			
161.0			TBA	Tap E	Break-in	Active			06				09			T					
164.6			TBI	Tap E	Break-in	Intrudi	ng		06	01			02			1					
170.0		F01	SSSC	Surfa	ce Spal	ling Ch	emical		1			1	07	03		1					
170.0			AMH	Manh	ole				1							M-3	0729				
170.0			FH	End o	of Surve	y												· · · · ·			
170.0 <i>Ft</i>	Tot	al Ler	ngth Sur	veyed	I	····			•••••						L		<u></u>				
	Sco	res	St	ructu	ral:	7	otal 2	28		•••••	Mea	an De	efec	t 2		Pea	<b>k</b> 2		Me	an Pipe	0.2
				Servi			otal 1					an De					k 2			an Pipe	

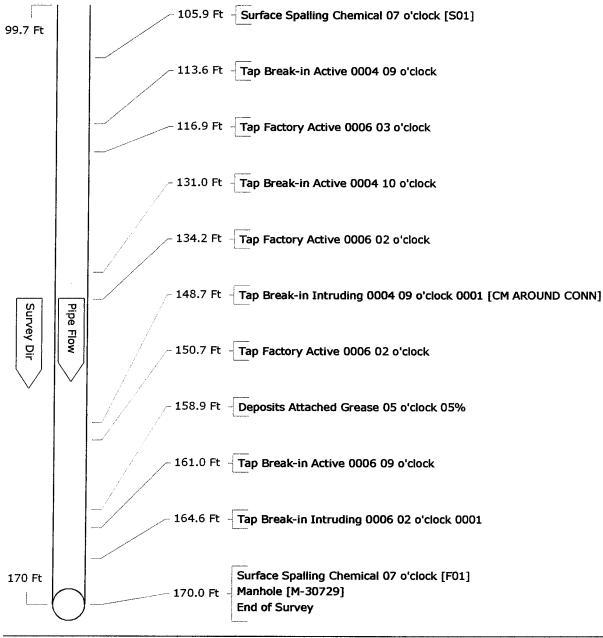
Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Pipe Graphic Report of PLR	M-30638	Х	for	DCWASA		
Setup 81 Surveyor A. OGUA Drainage 1ST STREET Survey C		Certificate #	U-405-2141	System Owne	r DCWASA	
	2006/08/07	Time 12:27:0 ation details	0 <b>Street</b> 151	THOMAS STREET,N	I.E	
Start M-30638	Rim to inv	ert 8.00	Grade to inver	t Rim to	grade F	-t
Finish M-30729	Rim to inv	ert 8.30	Grade to inver	t Rim to	grade F	=t
<b>Use</b> Sanitary	Direction	Downstream	Flow control	Not controlled	Tape/Media # RI	El 015
<b>Shape</b> Circular	Height	15 <b>Width</b>	ins Precl	ean J	Year Cleaned 8/	7/2006
Material Vitrified Clay Pipe	Joint le	ngth 7.0 F	t Total lengt	h 170.0 Ft Le	ngth Surveyed 170	0.00
Lining	Year la	id Ye	ar rehabilitated	Weather	Dry	
Purpose Routine Assessment			Cat		·	
Additional info				1	<u>, i, , i ,</u>	•
Location Light Highway (rural, light ti	raffic, town back	st, estate st & p	parking	1		



Pipe Graphic Report of PLR	M-30638	Х	for	DCWASA	
Setup 81 Surveyor A. OGU	ARA	Certificate #	U-405-2141	System Owner DCWASA	
Drainage 1ST STREET Survey	Customer DC	WASA			
P/O # ID 234 Date	2006/08/07	Time 12:27:0	0 Street 151 7	THOMAS STREET, N.E	
Locality WASHINGTON D.C.	Further loc	ation details			
Start M-30638	Rim to inv	ert 8.00	Grade to invert	t Rim to grade	Ft
Finish M-30729	Rim to inv	ert 8.30	Grade to invert	t Rim to grade	Ft
<b>Use</b> Sanitary	Direction	Downstream	Flow control	Not controlled Tape/Medi	a# REI 015
<b>Shape</b> Circular	Height	15 <i>Width</i>	ins Precle	ean J Year Clear	ned 8/7/2006
Material Vitrified Clay Pipe	Joint le	ength 7.0 F	t Total lengt	h 170.0 Ft Length Survey	ed 170.00
Lining	Year la	id Ye	ar rehabilitated	Weather Dry	
Purpose Routine Assessment		•	Cat		
Additional info					
Location Light Highway (rural, light	traffic, town back	st, estate st & p	parking		



	Direction Downstream Setup 81	r Dry <b>To Manhole</b> M-30729	Date: 08/29/2006 Dist: 16.7 Ft Date: 08/29/2006 Dist: 16.7 Ft Date: 08/29/2006 Dist: 51.5 Ft Date: 08/29/2006 Dist: 51.5 Ft Date: 08/29/2006 Dist: 51.5 Ft Date: 08/29/2006 Dist: 51.5 Ft Date: 08/29/2006 Dist: 71.5 Ft Date: 08/29/2006 Dist: 71.5 Ft Date: 08/29/2006 Dist: 71.5 Ft Date: 08/29/2006 Dist: 71.5 Ft Date: 08/29/2006 Dist: 71.5 Ft Date: 08/29/2006 Dist: 71.5 Ft Date: 08/29/2006 Dist: 71.5 Ft Date: 08/29/2006 Dist: 71.5 Ft
4SA	REI 015 Surveyed On 08/07/2006 D	C. ZIP Code Weather From Manhole M-30638	Tate: 08/29/2006 Dist: 15.1 F Date: 08/29/2006 Dist: 15.1 F Dus: Tap Break-in Intruding Dist: 08/29/2006 Dist: 36.2 F Dus: Tap Break-in Active Dist: 36.2 F Dist: 36.2 F Dist: 68.6 Ft Dist:
X for DCWASA	Video R	City Name WASHINGTON D.C. wn back st, estate st & parking	Tap Factory Active Date: 09/29/2006 Dist: 2.8 Ft Dis: Tap Factory Active Dis: Tap Factory Active Dis: 34.3 Ft Dis: 34.3 Ft Dis: Tap Factory Active Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft Dis: 57.8 Ft D
CCTV pictures of M-30638	Work Order ID 234	Street Name         151 THOMAS STREET, N.E         City Name           Location         Light Highway (rural, light traffic, town back st, estate st	Trice Set Set Set Set Set Set Set Set Set Se

21	×	5	DCWASA						
		Video	REI 015	Surveyed On	08/07/2006	Direction	Downstream Se	Setup	81
Street Name 151 THOMAS STREET,N.E City Name Location Light Highway (rural, light traffic, town back st, estate st		WASHINGTON D.C. & parking		ZIP Code From Manhole M-30638	Weather M-30638	<u>с</u> ,	Jry <b>To Manhole</b> M-30729	•	
Date: 09/29/2006 Dist: 99.7 Ft Obs: Tap Factory Active Date: 08/29/2006 Dist: 99.7 Ft Obs: Tap Factory Active Date: 08/29/2006 Dist: 131.0 Ft Obs: Tap Break-in Active Des: 1ap Break-in Active Dist: 150.9 Ft Obs: Deposits Attached Grease	Date: 08/29/2006 Dist: 10 Dist: 10 Dist: 10 Dist: 10 Dist: 10 Dist: 13 Dist: 16 Dist: 16 Dist: 16 Dist: 16 Dist: 16 Dist: 16	Dist: 105.9 Ft Bist: 105.9 Ft Bist: 134.2 Ft bist: 134.2 Ft tive Dist: 161.0 Ft tive	Date: ( Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - Obs: - O	Date: 08/29/2006 Dist Date: 08/29/2006 Dist Obs: Tap Break-in Active Date: 08/29/2006 Dist Date: 08/29/2006 Dist Obs: Tap Break-in Intruding Date: 08/29/2006 Dist Date: 08/29/2006 Dist	Dist: 113.6 Ft Ve Dist: 113.6 Ft Ve Dist: 148.7 Ft Dist: 148.7 Ft Dist: 164.6 Ft ding	Date: 08/29/2006 Obs: Tap Factor	alling o	Dist: 116.9 Ft e bist: 150.7 Ft Dist: 170.0 Ft Chemical	

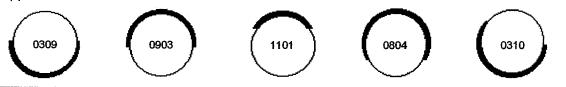
Date: 08/29/2006 Dist: 170.0 Ft Obs: Manhole

Tabular Rep	ort o	f PSR	M-30567 X		f	Dr	DC	WA	SA	L		
Setup 169	Surv	eyor /	A.THOMPSON Certifica	te #	U-1	06-2	2462			Systen	<b>Owner</b> DCWAS	4
<i>Drainage</i> N	E.BOU	JNDARS	urvey Customer DCWASA									
P/O # ID 23	4		Date 08/01/2006 Time 14	1:08:0	0 <b>S</b>	tree	t F	AG	LER	PL V S	T-W ST	
Locality WA	SHING	STON D.	C. Further location det	ails	N.W.							
Start M-305	567		Rim to invert		Gra	de t	o in	/ert			Rim to grade	Ft
Finish M-305	569		Rim to invert		Gra	de t	o in	/ert			Rim to grade	Ft
Use Combine	ed		<b>Direction</b> Down		Flo	ow c	ontr	ol	Not	controll	ed <b>Tape/Me</b> d	<b>dia #</b> REI 014
Shape Circul			Height 12 Wid	<b>tth</b> 10	0,	ins	Pre	ec/e	an	J	Year Clea	aned
Material <sup>Cla</sup>	y Tile		Joint length	F	t	Tota	l len	gth	10	1.2 <b>F</b>	t Length Surve	yed 101.2
Lining			Year laid	Ye	ar re	hab	ilitat	ed		We	e <b>ather</b> Dry	
Purpose Rou	utine A	ssessme	ent	(	Cat							
Additional in	fo								Str	uctural	O&M	Constructiona
Location Ligi	ht High	way (rur	al, light traffic, town back st, estate	st&p	arkin	g			Mi	scellane	ous Hydraulic	
Count Video	CD	Code		In1	ln2	%	Jnt	Fr	То	ImRef	Remarks	
0.0 13814		ST	Start of Survey				[					· _ · · · · · · · · · · · · · · ·
0.0 13814		AMH	Manhole								M-30567	
0.0 13814		MWL	Water Level			0	1		1			
17.5		TFA	Tap Factory Active	04				02				
30.3		RFJ	Roots Fine Joint	1			1	05			LIGHT ROOTS	
32.3		RFB	Roots Fine Barrel					12			LIGHT ROOTS	
34.3		TFA	Tap Factory Active	04			1	02		Í		
51.5		TFA	Tap Factory Active	04				02				
55.6		RFJ	Roots Fine Joint					07	08		LIGHT ROOTS	
61.9		СМ	Crack Multiple					12	01			
64.6		CL	Crack Longitudinal	1			J	09				
66.2		ТВ	Tap Break-in	04				09				
66.3		СМ	Crack Multiple					06	09			
67.9		CL	Crack Longitudinal				J	02				
70.4	S01	СМ	Crack Multiple				J	11	01			
73.4	F01	СМ	Crack Multiple				J	11	01			
79.6		RFJ	Roots Fine Joint					03	04			
89.4	S02	DSZ	Deposits Settled Other			10		07			METAL ROD IN LIN	E
101.2	F02	DSZ	Deposits Settled Other			10		07			METAL ROD IN LIN	E
101.2		AMH	Manhole								M-30569	
101.2		FH	End of Survey								M-30569	
101.2 Ft To	tai Le	ngth Su	rveyed									

101.2 Ft Total Length Surveyed

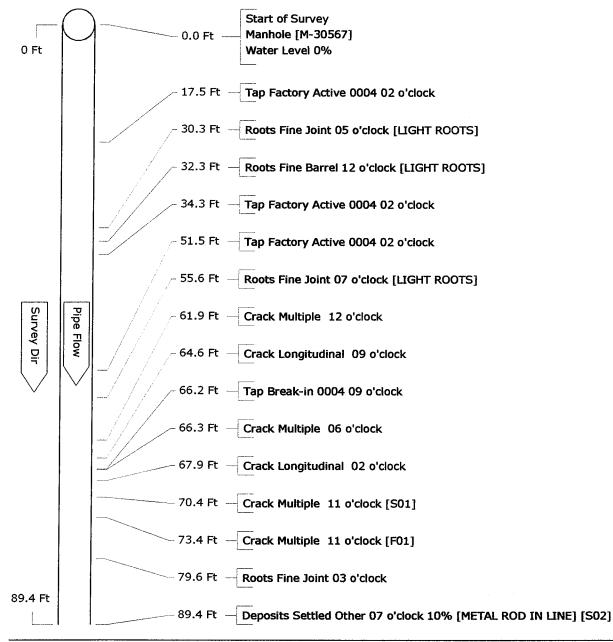
Scores	Structural:	Total 16	Mean Defect 2.7	Peak 3	Mean Pipe 0.2
Notes	Service:	Total 11	Mean Defect 1.4	Peak 2	Mean Pipe 0.1

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



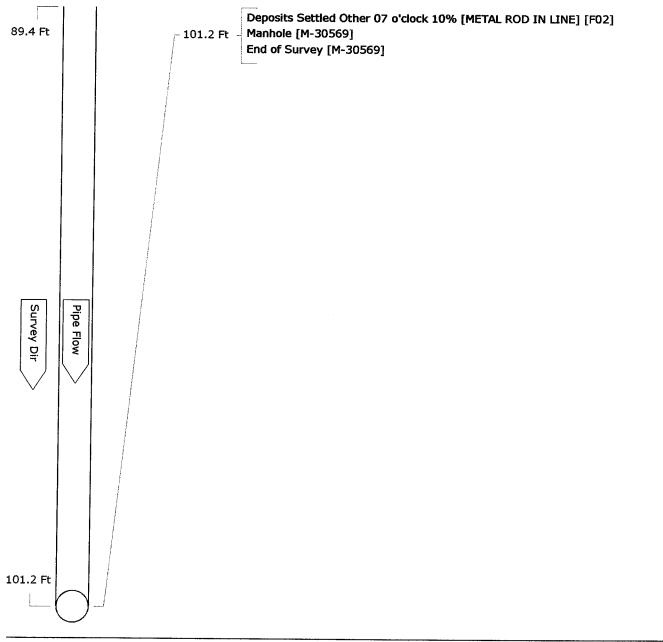
## Pipe Graphic Report of PLR M-30567 X for DCWASA

Setup 169 Surveyor A.	HOMPSON Cer	ificate # U-106-2462	System Owner	DCWASA
Drainage N.E.BOUNDARSu	vey Customer DCWAS	A		
P/O # ID 234 D	ate 2006/08/01 Tim	e 14:08:00 Street FLA	AGLER PL V ST-W ST	
Locality WASHINGTON D.C	Further location	n details N.W.		
Start M-30567	Rim to invert	Grade to inve	ert Rim to gra	de Ft
Finish M-30569	Rim to invert	Grade to inve	ert Rim to gra	de Ft
Use Combined	Direction Do	wnstream Flow contro	Not controlled 7	ape/Media # REI 014
Shape Circular	Height 12	Width 10 ins Pred	clean J Y	ear Cleaned
Material Clay Tile	Joint lengt	h Ft Total leng	th 101.2 Ft Lengt	h Surveyed 101.20
Lining	Year laid	Year rehabilitate	<b>d Weather</b> D	ry
Purpose Routine Assessment		Cat		
Additional info			······	
Location Light Highway (rural	light traffic, town back st, e	state st & parking		



Pipe Graphic Report of PLR	M-30567	Х	for DCWASA
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Setup 169 Surveyor A.THO	MPSON Certific	ate # U-106-2462	System Owner DCWASA	4
Drainage N.E.BOUNDARSurvey	Customer DCWASA			
P/O # ID 234 Date	2006/08/01 Time 1	4:08:00 Street FLAGL	ER PL V ST-W ST	
Locality WASHINGTON D.C.	Further location de	etails N.W.		
Start M-30567	Rim to invert	Grade to invert	Rim to grade	Ft
Finish M-30569	Rim to invert	Grade to invert	Rim to grade	Ft
Use Combined	Direction Downs	ream <b>Flow control</b> N	lot controlled Tape/Med	lia # REI 014
<b>Shape</b> Circular	Height 12 W	idth 10 ins Preclear	n J Year Clea	ned
<b>Material</b> Clay Tile	Joint length	Ft Total length	101.2 Ft Length Surve	yed 101.20
Lining	Year laid	Year rehabilitated	Weather Dry	-
Purpose Routine Assessment		Cat	·	
Additional info				
Location Light Highway (rural, light	traffic, town back st, estate	e st & parking		



Work Order ID 234	Video	REI 014 Surveyed On 08/01/2006	Direction Downstream Setup 169
Street Name         FLAGLER PL V ST-W ST         City Name           Location         Light Highway (rural, light traffic, town back st, estate st	<b>City Name</b> WASHINGTON D.C. town back st, estate st & parking	I D.C. ZIP Code Weather From Manhole M-30567	ner Dry To Manhole M-30569
Date: 08/24/2006 Dist: 0.0 Ft Date: 08/24/2006 Dist: 0.0 Ft Obs: Manhole Date: 08/01/2006 Dist: 34.3 Ft Obs: Tap Factory Active Dist: 64.6 Ft Obs: Crack Longitudinal Date: 08/01/2006 Dist: 64.6 Ft Obs: Crack Longitudinal Date: 08/01/2006 Dist: 70.4 Ft Obs: Crack Multiple	Pate: 08/01/2006 Dist: 17.5 Ft Date: 08/01/2006 Dist: 51.5 Ft Date: 08/01/2006 Dist: 51.5 Ft Date: 08/01/2006 Dist: 51.5 Ft Date: 08/01/2006 Dist: 51.5 Ft Date: 08/01/2006 Dist: 51.5 Ft Date: 08/01/2006 Dist: 51.5 Ft Date: 08/01/2006 Dist: 51.5 Ft Date: 08/01/2006 Dist: 51.5 Ft Date: 08/01/2006 Dist: 79.6 Ft Date: 08/01/2006 Dist: 79.6 Ft Date: 08/01/2006 Dist: 79.6 Ft Date: 08/01/2006 Dist: 79.6 Ft	Date: 08/01/2006 Dist: 30.3 Ft Date: 08/01/2006 Dist: 30.3 Ft Dist: 30.3 Ft Date: 08/01/2006 Dist: 55.6 Ft Date: 08/24/2006 Dist: 55.6 Ft Dist: Crack Multiple Dist: Crack Multiple Dist: Crack Multiple Dist: Crack Multiple Dist: Crack Multiple	Date: 08/01/2006 Dist: 32.3 Ft Date: 08/01/2006 Dist: 61.9 Ft Dist: 61.9 Ft Dist: 61.9 Ft Dist: 61.9 Ft Dist: 61.9 Ft Dist: 61.9 Ft Dist: 61.9 Ft Dist: 61.9 Ft Dist: 61.9 Ft Dist: 61.2 Ft Dist: 61.101.2 Ft Dist: 101.2 Ft Dist: 101.2 Ft Dist: 101.2 Ft Dist: 101.2 Ft

for DCWASA

×

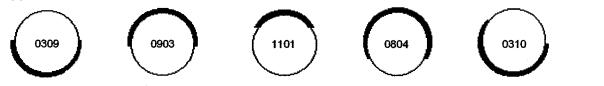
M-30567

**CCTV** pictures of

CCTV pictures of M-30567 X	for DCWASA	
Work Order ID 234	Video REI 014	Surveyed On 08/01/2006 Direction Downstream Setup 169
Street Name FLAGLER PL V ST-W ST City Name Location Light Highway (rural light traffic fown back st estate st)	WASHINGTON D.C.	Weather Dry
הסמוסו השווי ואוויזימל (ומומו, וושנוג גומוווט, גטאון ממכע או, פאמופ או כ	a parkirg	rrom mannole M-30569 Io Manhole M-30569
Date: 08/01/2006 Dist: 101.2 Ft		
Obs: End of Survey		

Tabu	lar Rep	ort of	PSR	M-30357	х		fo	or	DC	WA	SA					
Setu	> 14	Surv	eyor /	THOMPSON	Certificate	#	U-1	06-2	462			Syster	n Owner	DCWA	SA	
Drain	age N.	W. D.C	. SI	rvey Customer D	CWASA							-				
P/0 #	ID 234	1		Date 08/08/2006	Time 9:25	5:00	s	tree	t U	ST	1ST	@ 2NC	)			
Loca	lity WA	SHING	TON,D.	C. <i>Further lo</i>	cation deta	ils I	D-23	4								
Start	M-303	57		Rim to in	vert		Gra	de t	o inv	ert			Rim to g	rade		Ft
Finisi	h M-306	3 <del>9</del>		Rim to in	vert		Gra	de t	o inv	ert			Rim to g	rade		Ft
Use	Combine	d		Direction	Down		Flo	w c	ontr	ol				Tape/M	edia #	REI 016
Shap	e Circula	аг		Height	18 <b>Widt</b>	h	I	ins	Pre	cle	an	J		Year Cl	eaned	1
Mater	<b>rial <sup>Vitri</sup></b>	fied Cl	ay Pipe	Joint	length	F	t i	Tota	i len	gth	26	8.3 <b> </b>	-t Len	gth Sur	/eyed	268.3
Linin	g			Year	laid	Ye	ar re	hab	ilitat	ed		W	eather	Dry		
Purpe	ose					(	Cat									
Addit	ional inf	0		*******		-					Str	uctural	С	&M	C	Constructional
Locat	t <b>ion</b> Ligh	t High	way (rura	al, light traffic, town bac	k st, estate s	t&p	arkin	g			Mi	scellane	eous H	ydraulic		
Count	Video	CD	Code	· · · · · · · · · · · · · · · · · · ·		In1	In?	0/2	Int	Fr	To	ImPef	Remar			
	00000		ST	Start of Survey			112	70	311			IIIIVei	Remain	13		
	00000	1	AMH	Manhole		· 					1	 	M-30357	7		
	00000		MWL	Water Level		I 		05								
31.6		1	н	Hole						03			HOLE IN	IPIPE		
44.3	<u> </u>	1	TBA	Tap Break-in Active		06		 		09						
61.8			TBA	Tap Break-in Active	· · · · · · · · · · · · · · · · · · ·	06				09	1					
79.8		1	TBA	Tap Break-in Active		06				09	[					·····
86.4		1	TBA	Tap Break-in Active		06				03						
89.3			TBA	Tap Break-in Active		08				03	<u>.</u>					
95.4		Ì	TBD	Tap Break-in Defectiv	e	06	02			09						
112.8		1	TBA	Tap Break-in Active	·····	06				09						
127.7			TBA	Tap Break-in Active		06				10	ŀ					
130.0			TBD	Tap Break-in Defectiv	e	08	02			03						
148,0			TBA	Tap Break-in Active		06				02						· · ·
151.2			TBA	Tap Break-in Active		06				09						
162.6			СМ	Crack Multiple					J	11	01					
163.5			TBA	Tap Break-in Active		06				03						
168.9			TBA	Tap Break-in Active		06				09						
178.8			TBA	Tap Break-in Active		06				03						
185.0			TBA	Tap Break-in Active		06				09						
196.5			ТВА	Tap Break-in Active		06				03						
202.4			TBA	Tap Break-in Active		06				09						
211.9			TBA	Tap Break-in Active		06				03						
213.8		S01	CL	Crack Longitudinal					J	12						
218.3			TBA	Tap Break-in Active		06				09						
229.2			TBA	Tap Break-in Active		<b>0</b> 6				02						
244.0			TBA	Tap Break-in Active		06				03						

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below

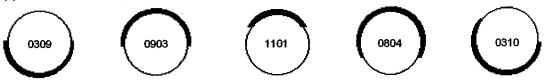


Tabular Report of PSR M-30357	Х	for	DCW	ASA		
Setup 14 Surveyor A.THOMPSON	Certificate #	U-106-	2462	Syst	em Owner 🛛	DCWASA
Drainage N.W. D.C. Survey Customer	DCWASA					
P/O # iD 234 Date 08/08/2006	6 <b>Time</b> 9:25:0	0 Stre	et US	r 1st @ 21	1D	
Locality WASHINGTON,D.C. Furthe	er location details	ID-234				
Start M-30357 Rim	to invert	Grade	to inve	rt	Rim to grad	de Ft
Finish M-30639 Rim	to invert	Grade	to inve	rt	Rim to grad	de Ft
Use Combined Direc	tion Down	Flow	control		Ta	pe/Media # REI 016
Shape Circular He	ight 18 Width	ins	Prec	lean J	Ye	ear Cleaned
Material Vitrified Clay Pipe J	oint length	Ft Tot	al lengt	<b>h</b> 268.3	Ft Length	n Surveyed 268.3
Lining Y	ear laid \	Year reha	bilitateo	1	Weather Dr	у
Purpose		Cat				
Additional info				Structur	al O&M	Constructional
Location Light Highway (rural, light traffic, town	back st, estate st 8	& parking		Miscella	neous Hydr	aulic
Count Video CD Code	in	1 In2 %	Jnt F	r To ImR	ef Remarks	, <u>, , ,</u>
259.9 TBA Tap Break-in Act	······································	)6	······	13		
268.3 F01 CL Crack Longitudin	al		J ] 1	2		
268.3 AMH Manhole					M-30639	
268.3 FH End of Survey			1		M-30639	

268.3 Ft Total Length Surveyed

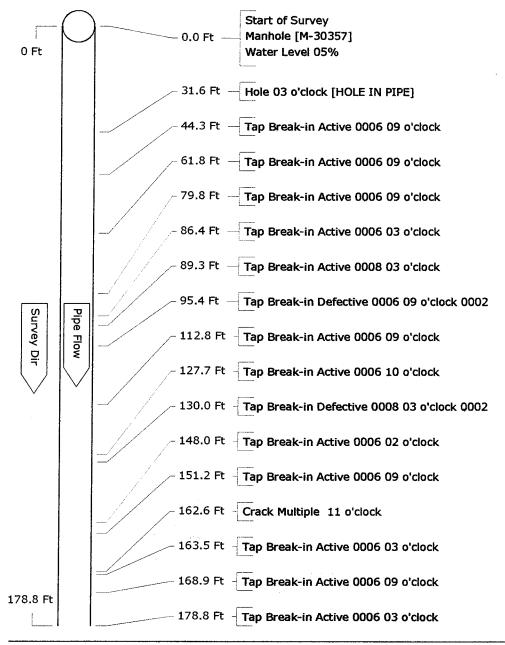
	Scores	Structural:	Total 28	Mean Defect 2.2	Peak 3	Mean Pipe 0.1
Natao		Service:	Total 6	Mean Defect 3	Peak 3	Mean Pipe 0
Notes						

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



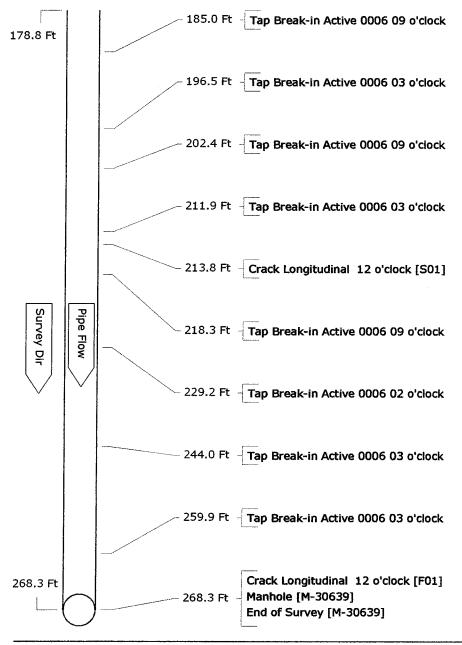
#### Pipe Graphic Report of PLR M-30357 X for DCWASA

Setup 14 Surveyor A.THON	APSON Certifica	te # U-106-2462	System Owner DCWAS	A
Drainage N.W. D.C. Survey	Customer DCWASA		-	
P/O # ID 234 Date	2006/08/08 Time 09	:25:00 Street UST 1S	ST @ 2ND	
Locality WASHINGTON, D.C.	Further location det	ails ID-234		
Start M-30357	Rim to invert	Grade to invert	Rim to grade	Ft
<b>Finish</b> M-30639	Rim to invert	Grade to invert	Rim to grade	Ft
Use Combined	Direction Downstre	eam Flow control	Tape/Me	dia # REI 016
<b>Shape</b> Circular	Height 18 Wid	ith ins Preclean	J Year Cle	aned
Material Vitrified Clay Pipe	Joint length	Ft Total length 2	268.3 Ft Length Surve	yed 268.30
Lining	Year laid	Year rehabilitated	Weather Dry	
Purpose		Cat		
Additional info				,
Location Light Highway (rural, light	traffic, town back st, estate	st & parking		



Pipe Graphic Report of PLR	M-30357	Х	for I	DCWASA
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Setup 14 Surveyor A.THOM	APSON Certifica	te # U-106-2462	System Owner DCWA	SA
Drainage N.W. D.C. Survey	Customer DCWASA			
P/O # 1D 234 Date	2006/08/08 Time 09	9:25:00 Street UST 1S	T @ 2ND	
Locality WASHINGTON, D.C.	Further location de	tails ID-234		
Start M-30357	Rim to invert	Grade to invert	Rim to grade	Ft
Finish M-30639	Rim to invert	Grade to invert	Rim to grade	Ft
Use Combined	Direction Downstr	eam Flow control	Tape/M	edia # REI 016
<b>Shape</b> Circular	Height 18 Wi	dth ins Preclean	J Year Cl	eaned
Material Vitrified Clay Pipe	Joint length	Ft Total length 2	268.3 Ft Length Surv	eyed 268.30
Lining	Year laid	Year rehabilitated	Weather Dry	
Purpose		Cat		
Additional info				
Location Light Highway (rural, light	traffic, town back st, estate	st & parking		



Work Order ID 234		El 016 Surveyed On 08/08/20	2
Street Name U ST 1ST @ 2ND City Name Location Light Highway (rural, light traffic, town back st, estate st	<b>City Name</b> WASHINGTON,D.C.	,D.C. <b>ZiP Code</b> Weather	er Dry
	town back st, estate st & parking	From Manhole M-30357	To Manhole M-30639
Date: 08/29/2006 Dist: 0.0 Ft	Date: 08/29/2006 Dist: 31.6 Ft	Date: 08/29/2006 Dist: 44.3 Ft Obs: Tap Break-in Active	Date: 08/29/2006 Dist: 61.8 Ft Obs: Tap Break-In Active
Date: 08/29/2006 Dist: 79.8 Ft	Date: 08/29/2006 Dist: 86.4 Ft	Date: 08/29/2006 Dist: 89.3 Ft	Date: 08/29/2006 Dist: 95.4 Ft
	Obs: Tap Break-In Active	Obs: Tap Break-in Active	Obs: Tap Break-In Defective
Date: 08/29/2006 Dist: 112.8 Ft	Date: 09/29/2006 Dist: 1277 Ft Dots: Tap Break-In Active	Date: 08/29/2006 Dist: 127.7 Ft	Des: Tap Break-in Defective
Date: 08/29/2006 Dist: 148.0 Ft	Date: 08/29/2006 Dist: 151.2 Ft	Date: 08/29/2006 Dist: 162.6 Ft	Date: 08/29/2006 Dist: 163.5 Ft
Obs: Tap Break-in Active	Obs: Tap Break-in Active	Obs: Crack Multiple	Obs: Tap Break-In Active

for **DCWASA** 

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M-30357

CCTV pictures of

	p 14		Dist: 196.5 Ft Ve Dist: 218.3 Ft Ve
	Downstream Setup	Dry <b>To Manhole</b> M-30639	
	Direction D	Weather Dry To Man	Date: 08/29/2006 Obs: Tap Break-I Date: 08/29/2006 Obs: Tap Sreak-I Date: 08/29/2006 Obs: Crack Longi
	n 08/08/2006	ł	Dist: 185.0 Ft Ve Dist: 213.8 Ft Dist: 213.8 Ft
	Surveyed On	ZIP Code From Manhole M-30357	Date: 08/29/2006 Di Date: 08/29/2006 Di Obs: Tap Break-in Active Date: 08/29/2006 Di Obs: Crack Longitudinal Obs: Crack Longitudinal Obs: Tap Break-in Active
DCWASA	REI 016		
for I	Video	WASHINGTON,D.C. & parking	Dist: 211.9 Ft Active Dist: 211.9 Ft Active Dist: 244.0 Ft Active
×			Date: 08/29/2006 Obs: Tap Break-In A Date: 08/29/2006 Obs: Tap Break-In A Date: 08/29/2006 Obs: Tap Break-In A
M-30357		4D I, light traffic, tow	Dist: 202.4 Ft Dist: 229.2 Ft Uve
CCTV pictures of	Work Order ID 234	Street Name UST 1ST @ 2ND City Name Location Light Highway (rural, light traffic, town back st, estate st	Date: 08/29/2006 Dist: Obs: Tap Breakin Active Date: 08/29/2006 Dist: Obs: Tap Breakin Active Date: 08/29/2006 Dist: Obs: Tap Breakin Active Date: 08/29/2006 Dist: Obs: Tap Breakin Active Date: 08/29/2006 Dist:









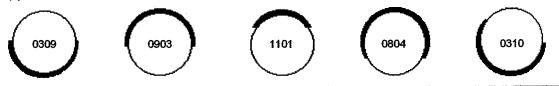






Setup	15	Surve	eyor A	THOMPS	ON	Certi	ficate #	U-'	106-2	462			Syster	n Owr	ner (	DCWAS	SA		
Drainag	e 1ST	STR	EET Su	rvey Cus	tomer D	CWASA	4												
P/O #	ID 234		l	- Date 08/	/08/2006	Time	11:09:	00 3	Stree	t 20	30 F	LAC	<b>SLER</b>	LACE					
Locality	WAS	HING	TON D.C		Further lo	cation	details												
	M-3063				Rim to in		10.20	Gr	ade t	o inv	ert			Rim t	o ara	de		Ft	
Finish		-			Rim to in			Gr	ade t	o inv	ert			Rim t	-			Ft	
Use Sa				· , ··· · · · ···	Direction				low c								edia #	REI 01	6
Shape	•				Height		Width			Pre						-		8/7/20	
Snape Material			y Pipe		•			<b>2</b> 4		l leng				=t L	•		eyed 2		
	viam		y i ipc			-	7.00			•	-				-		eyeu 2	240.0	
Lining					Year	aid	1		ehab	iiitate	9a		vv	eathe	rυ	iy			
Purpose								Cat											
Addition	nai info	•											uctural 		0&N		C	onstruc	iona
			vay (rura	l, light trafi	fic, town bac	k st, es	state st &	parki	ng				uctural cellan			<i>n</i> raulic		onstruc	iona
Location	ı Light	Highv	vay (rura Code	l, light trafi	fic, town bac	k st, es		·····		Jnt	Fr	Mis		eous	Hyd				iona
Location	ı Light	Highv		· · · · · · · · · · · · · · · · · · ·	fic, town bac	k st, es		1 In:		Jnt	Fr 03	Mis	cellan	eous	Hyd				iona
Location Count Vic	ı Light	Highv	Code	Тар Вгеа		k st, es	ln 0	1 In:		Jnt		Mis	cellan	eous	Hyd				iona
Location Count Vid 207.5	ı Light	Highv	Code TBA	Tap Brea Tap Brea	k-in Active	k st, es	ln 0	1 In: 6		Jnt	03	Mis	cellan	eous	Hyd				iona
Location Count Vic 207.5 221.5 222.2	n Light deo	Highv CD	Code TBA TBA TBA	Tap Brea Tap Brea Tap Brea	k-in Active k-in Active k-in Active	k st, es	n   0   0	1 In: 6		Jnt	03 02 09	Mis To	cellan	Rem	Hyd arks				iona
Location Count Vid 207.5 221.5 222.2 235.0	n Light deo	Highv CD F01	Code TBA TBA TBA CM	Tap Brea Tap Brea Tap Brea Crack Mu	k-in Active k-in Active k-in Active Ittiple		n   0   0	1 In: 6	2 %     		03 02 09 07	Mis To 05	cellan	Rem DEFE	Hyd Iarks ECT V	raulic /ANDE			ional
Location Count Vid 207.5 221.5 222.2 235.0 235.0	n Light deo	Highv CD	Code TBA TBA TBA CM DAGS	Tap Brea Tap Brea Tap Brea Crack Mu Deposits	k-in Active k-in Active k-in Active		n   0   0	1 In: 6			03 02 09	Mis To 05	cellan	Rem DEFE	Hyd Iarks ECT W T GRI	raulic /ANDE		onstruc	
Location Count Vic 207.5 221.5 222.2 235.0 235.0 235.0 243.5	n Light deo	Highv CD F01	Code TBA TBA TBA CM DAGS AMH	Tap Brea Tap Brea Tap Brea Crack Mu Deposits Manhole	k-in Active k-in Active k-in Active Ittiple Attached Gr		n   0   0	1 In: 6	2 %     		03 02 09 07	Mis To 05	cellan	Rem DEFE LIGH	Hydr Iarks ECT W T GRI 641	raulic /ANDE			
Location Count Vid 207.5 221.5 222.2 235.0 235.0 243.5 243.5	7 Light deo	F01 F02	Code TBA TBA TBA CM DAGS AMH FH	Tap Brea Tap Brea Tap Brea Crack Mu Deposits Manhole End of Su	k-in Active k-in Active k-in Active Ittiple Attached Gr		n   0   0	1 In: 6	2 %     		03 02 09 07	Mis To 05	cellan	Rem DEFE	Hydr Iarks ECT W T GRI 641	raulic /ANDE			
Location Count Vic 207.5 221.5 222.2 235.0 235.0 243.5 243.5	7 Light deo	F01 F02	Code TBA TBA TBA CM DAGS AMH	Tap Brea Tap Brea Tap Brea Crack Mu Deposits Manhole End of Su	k-in Active k-in Active k-in Active Ittiple Attached Gr		n   0   0	1 In: 6	2 %     		03 02 09 07	Mis To 05	cellan	Rem DEFE LIGH	Hydr Iarks ECT W T GRI 641	raulic /ANDE			
Addition Location Count Vid 207.5 221.5 222.2 235.0 235.0 243.5 243.5 243.5 Ft	7 Light deo	Highw CD F01 F02 al Ler	Code TBA TBA TBA CM DAGS AMH FH FH Stur	Tap Brea Tap Brea Tap Brea Crack Mu Deposits Manhole End of Su	k-in Active k-in Active k-in Active k-in Active Attached Gr Irvey		In 0 0 0	1 In: 6	2 %                                 		03 02 09 07 07	Mis To 05 05	cellan	Rem DEFE LIGH	Hydr harks ECT M T GRI 641 641	raulic /ANDE	RS	n Pipe n Pipe	0.6

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below

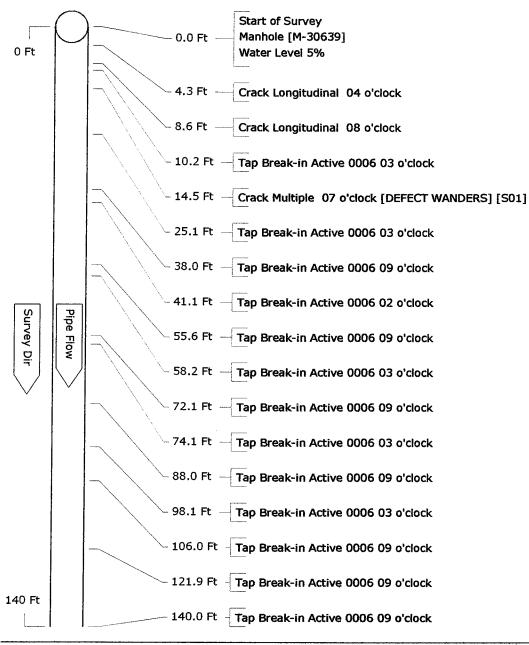


## Pipe Graphic Report of PLR M-30639

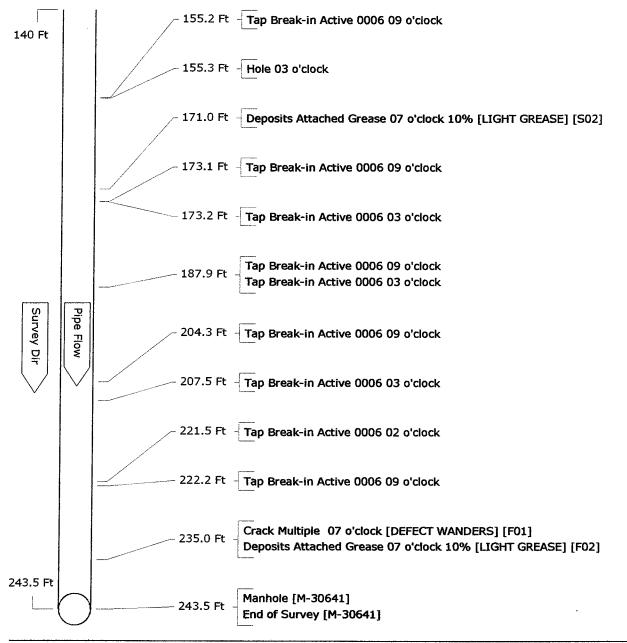
for DCWASA

Setup 15 Surveyor A.THON	IPSON Certificate # U-106-	2462 System Owner	DCWASA
Drainage 1ST STREET Survey	Customer DCWASA		
P/O # ID 234 Date	2006/08/08 Time 11:09:00 Stre	et 2030 FLAGLER PLACE	
Locality WASHINGTON D.C.	Further location details		
Start M-30639	Rim to invert 10.20 Grade	to invert Rim to gi	rade Ft
Finish M-30641	Rim to invert Grade	to invert Rim to gr	rade Ft
<b>Use</b> Sanitary	Direction Downstream Flow	control	Tape/Media # REI 016
<b>Shape</b> Circular	Height 12 Width ins	Preclean J	Year Cleaned 8/7/2006
Material · Vitrified Clay Pipe	Joint length 7.0 Ft Tot	al length Ft Leng	th Surveyed 243.50
Lining	Year laid Year reha	bilitated Weather	Dry
Purpose	Cat		
Additional info			
Location Light Highway (rural, light	traffic, town back st, estate st & parking		

Х



Pipe Graphic Report of PLR	M-30639	Х	for	DCWASA		
Setup 15 Surveyor A.THO Drainage 1ST STREET Survey		e <b>rtificate #</b> ASA	U-106-2462	System Owner	DCWASA	
P/O # ID 234 Date		i <b>me</b> 11:09:0	0 <b>Street</b> 2030	FLAGLER PLACE		
Locality WASHINGTON D.C.	Further locat	ion details				
Start M-30639	Rim to inver	10.20	Grade to inve	rt Rim to gr	ade	Ft
Finish M-30641	Rim to inver	1	Grade to inve	rt Rim to gr	ade	Ft
<b>Use</b> Sanitary	Direction [	Downstream	Flow control	•	Tape/Media #	REI 016
Shape Circular	Height 12	2. Width	ins Preci	ean J	Year Cleaned	8/7/2006
<b>Material</b> Vitrified Clay Pipe	Joint len	gth 7.0 F	t Total lengt	h Ft Leng	th Surveyed	243.50
Lining	Year laid	Ye	ear rehabilitated	Weather	Dry	
Purpose			Cat			
Additional info	·····					
Location Light Highway (rural, light	traffic, town back st	, estate st & j	parking			



Direction Downstream Setup 15	ier Dry To Manhole M-30641	Tate: 06/29/2006 Dist: 10.2 Ft Dist: 10.2 Ft Dist: 10.2 Ft Dist: 10.2 Ft Dist: 10.2 Ft Dist: 10.2 Ft Dist: 10.2 Ft Dist: 10.2 Ft Dist: 10.2 Ft Dist: 10.2 Ft Dist: 121.9 Ft Dist: 121.9 Ft Dist: 121.9 Ft Dist: 121.9 Ft Dist: 121.9 Ft
EI 016	C. ZIP Code Weather From Manhole M-30639	Des: Crack Longitudinal Date: 08/29/2006 Dist: 8.6 Ft Des: Crack Longitudinal Date: 08/29/2006 Dist: 38.0 Ft Des: Tap Breakin Active Des: Tap Breakin Active Des: Tap Breakin Active Des: Tap Breakin Active Des: Tap Breakin Active Des: Tap Breakin Active Des: Tap Breakin Active Des: Tap Breakin Active
	<b>City Name</b> WASHINGTON D.C. town back st, estate st & parking	Table Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature
Work Order ID 234	Street Name 2030 FLAGLER PLACE Cocation Light Highway (rural, light traffic, town back st, estate st	Date:       CB/24/2006       Dist:       0.0.Ft         Date:       CB/24/2006       Dist:       0.0.Ft         Date:       CB/29/2006       Dist:       14.5.Ft         Date:       CB/29/2006       Dist:       14.5.Ft         Date:       CB/29/2006       Dist:       14.5.Ft         Date:       CSCKM Multiple       Dist:       14.5.Ft         Date:       CB/29/2006       Dist:       14.5.Ft         Date:       CB/29/2006       Dist:       14.5.Ft         Date:       CB/29/2006       Dist:       14.5.Ft         Date:       CB/29/2006       Dist:       14.5.Ft         Date:       CB/29/2006       Dist:       26.5.Ft         Date:       CB/29/2006       Dist:       26.5.Ft         Date:       CB/29/2006       Dist:       26.5.Ft         Date:       CB/29/2006       Dist:       28.0.6Ft         Date:       CB/29/2006       Dist:       28.0.6Ft         Date:       CB/29/2006       Dist:       28.0.7Ft         Date:       CB/29/2006       Dist:       26.2.5.500Ft         Date:       CB/29/2006       Dist:       20.5.5.500Ft         Date: <td< td=""></td<>

for DCWASA

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M-30639

CCTV pictures of

Work Order ID 234 Street Name 2030 FLAGLER PLACE	Video RI Citv Name WASHINGTON D.C.	REI 016 Surveyed On 08/08/2006 Di	Direction Downstream Setup 15 ther Drv
ural, light traffic, t	t &	<b>From Manhole</b> M-30639	
08/29/2006 Dist: 140.0 Ft Tap Break-in Active	Date: 08/29/2006 Dist: 155.2 Ft Obs: Tap Break-in Active	Date: 08/29/2006 Dist: 155.3 Ft Obs: Hole	Date: 08/29/2006 Dist: 171.0 Ft Obs: Deposits Attached Grease
Date: 08/29/2006 Dist: 173.1 Ft Obs: Tap Break-in Active	Date: 08/29/2006 Dist: 173.2 Ft Obs: Tap Break-in Active	Date: 08/29/2006 Dist: 187.9 Ft Obs: Tap Break-in Active	Date: 08/29/2006 Dist: 187.9 Ft Obs: Tap Break-In Active
Dist: 204.3 Ft	Date: 08/29/2006 Dist: 207.5 Ft	Date: 08/29/2006 Dist: 221.5 Ft	Date: 08/29/2006 Dist: 222.2 Ft
Date: Tap Breat-In Active	Date: OB/29/2006 Dist: 2350 FF	Date: 08/29/2006 Dist: 243.5 Ft	Date: 08/29/2006 Dist: 243.5 Ft
DI31 2000 11	achec		ey.

DCWASA

for

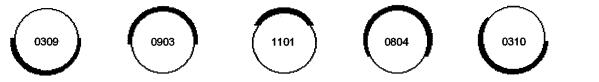
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M-30639

CCTV pictures of

CCTV pictures of M-3	M-30558	×	for	DCWASA					
Work Order ID 234			Video	REI 017	Surveyed On	08/09/2006	Direction	Downstream Setup	<b>p</b> 19
Street Name         FLAGLER PL W ST ADAMS ST         City Name           Location         Light Highway (rural, light traffic, town back st, estate st	AMS ST iffic, town bae		WASHINGTON,D.C. & parking		ZIP Code From Manhole M-30558	Weather- -30558		Dry <b>To Manhole</b> M-30560	
The control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the co	Bate: Obs: Obs:	08/29/2006 Crack Longit Crack Longit 08/29/2006 Infil Dripper 08/29/2006 Tap Factory	Dist: 84.4 Ft Udinal Dist: 101.2 Ft Dist: 134.3 Ft Capped Dist: 185.8 Ft	ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bate: Ob Bat	B/29/2006 B/29/2006 B/29/2006 Hole B/29/2006 B/29/2006 B/29/2006 Tap Break-in Defe Tap Break-in Defe Tap Break-in Defe Tap Break-in Defe	Dist: 91.8 Ft Dist: 101.3 Ft Dist: 185.8 Ft	Date: 08/29/2006 Date: 08/29/2006 Date: 08/29/2006 Date: 08/29/2006 Date: 08/29/2006 Date: 08/29/2006	r Defe	Dist: 99.8 Ft octive Dist: 156.0 Ft octive

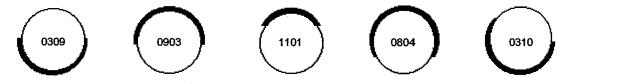
Tabu	lar Repo	ort of	PSR	M-30563 X		1	for	DC	WA	SA			
Setu	<b>b</b> 170	Surv	eyor /	A.THOMPSON Certi	ficate #	U-'	106-2	462			Syster	m Owner DCWASA	
Drain	age N.I	E.BOU	NDARS	urvey Customer DCWASA	<b>۱</b>								
P/0 #	ID 234	1		Date 08/01/2006 Time	12:12:0	ю	Stree	t Fl	LAG	LER	PLVS	ST-W ST	
Loca	lity WAS	SHING	TON D.	C. Further location	details	N.W	2						
Start	M-305	63	. <u>, .</u>	Rim to invert	12.00	Gr	ade t	o inv	/ert			Rim to grade	Ft
Finis	h M-305	67		Rim to invert		Gra	ade t	o inv	/ert			Rim to grade	Ft
Use	Combine	d		Direction Dow	n	F	low c	ontr	ol	Not	contro	lled <b>Tape/Medi</b>	a# REI 014
Shap	e Circula	IF		Height 10	Width '	0	ins	Pre	cle	an	J	Year Clean	ed
Mater	r <b>ial</b> Clay	/ Tile		Joint length	, <b>1</b>	-t	Tota	l len	gth	23	5.8	Ft Length Surveye	ed 235.8
Linin	g			Year laid	Y	ear r	ehab	ilitat	ed		W	<b>/eather</b> Dry	
Purp	ose Rou	tine As	sessme	nt		Cat							
Addit	ional infe	0								Sti	uctural	O&M	Constructional
Loca	t <b>ion</b> Ligh	t High	way (rura	al, light traffic, town back st, es	tate st &	parki	ng			Mi	scellan	eous Hydraulic	
Count	Video	CD	Code	· · · ·	in1	In2	2 %	Jint	Fr	То	ImRef	Remarks	
	03627	1	ST	Start of Survey		T			<u> </u>	1		T	· · · · · · · · · · · · · · · · · · ·
0.0	03627		AMH	Manhole	İ	1						M-30563	
0.0	03627		MWL	Water Level	ĺ		0						
3.4		1	TBA	Tap Break-in Active	04	<u>ا</u> ر	1		02			1	
9.8		S01	DSF	Deposits Settled Fine	İ		10		06	ĺ		LIGHT DEBRIS 1IN	
14.2			DSF	Deposits Settled Fine	l	1	15		05	07		1IN-1 1/2IN	
20.7			TBA	Tap Break-in Active	04				02				
20.8			DAE	Deposits Attached Encrustati	on	1	05	J	05	1			, <u>, , , , , ,</u> ,
20.8		F01	DSF	Deposits Settled Fine	1	1	10		06	1		LIGHT DEBRIS 1IN	
27.4		S02	DSF	Deposits Settled Fine	1		05	İ	05	07		LIGHT DEBRIS	
36.1			DSZ	Deposits Settled Other	1		05	İ	06	<u> </u>		METAL ROD IN LINE	
37.6			TBA	Tap Break-in Active	04	ļ	İ		02	Ì			
37.6			DAE	Deposits Attached Encrustati	on	Ì	05	J	01	06			
44.0			DSF	Deposits Settled Fine	1	1	05	J	06			l	
47.6		S03	FL	Fracture Longitudinal		Î	1	J	03			· · · · · · · · · · · · · · · · · · ·	
47.6		S04	FL	Fracture Longitudinal				J	09				
48.0			BSV	Broken Soil Visible					03				
51.1		F03	FL	Fracture Longitudinal				J	03				
51.1		F04	FL	Fracture Longitudinal				J	09				
52.9			TBA	Tap Break-in Active	04				03				
54.5		F02	DSF	Deposits Settled Fine			05		05	07		LIGHT DEBRIS	
69.0			TBD	Tap Break-in Defective	04	02			03				
82.7			TFC	Tap Factory Capped	04				02			······	
85.6			TBD	Tap Break-in Defective	04	01			02				
104.0			TBD	Tap Break-in Defective	04	01		İ	03				
104.0			DAE	Deposits Attached Encrustati	on		05	J	03	06			
106.8			DAE	Deposits Attached Encrustati	on		05	J	03	06			



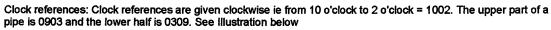
Tabular Rep	ort o	f PSR	M-30563	х		f	or	DC	WA	SA							
Setup 170	Surv	eyor A	THOMPSON	Certificate	e #	U-1	06-2	462			Syste	m Owi	ner	DCWA	SA		
Drainage N	E.BOL	JNDAR <b>S</b>	Irvey Customer D	CWASA							·						
P/O # ID 23	4		Date 08/01/2006	<b>Time</b> 12:	12:0	0 <b>s</b>	tree	t Fl	AG	LER	PL V	ST-W S	ST				
Locality WA	SHING	STON D.	C. Further lo	cation deta	ils	N.W.											
Start M-305	563		Rim to in	vert 12.0	)	Gra	de t	o inv	ert			Rim t	o gra	de		Ft	
Finish M-305	67		Rim to in	vert		Gra	de t	o inv	ert			Rim t	o gra	de		Ft	
Use Combine	ed		Direction	Down		Fle	ow c	ontr	ol	Not	contro	lled	Τ	ape/M	edia	# REI	014
Shape Circul	ar		Height	10 <b>Wid</b>	th 10	0	ins	Pre	cle	an	J		Y	'ear Cl	eane	d	
Material <sup>Cla</sup>	y Tile		Joint	length	F	t	Tota	l len	gth	23	5.8	Ft L	.engt	h Surv	/eyea	235.8	
Lining			Year	laid	Ye	ar re	ehab	ilitat	ed		И	/eathe	r D	iry			
Purpose Rol	utine A	ssessmei	nt			Cat											
Additional in	ю									Str	uctural		0&1	A		Constr	uctional
Location Ligi	nt High	way (rura	II, light traffic, town bac	k st, estate s	# & p	barkir	ng			Mi	scellan	eous	Hyd	raulic			
Count Video	CD	Code			Int	In2	%	Jnt	Fr	То	ImRet	Rem	arks				
109.0		TFC	Tap Factory Capped	••••	04	<b>.</b>			02	r · · ·							
118.7		CL	Crack Longitudinal		Î	1	i – –	J	12			]					
120.0	1	СС	Crack Circumferentia		1					12							
120.2	1	TBD	Tap Break-in Defectiv	'e	04	01		İ	03	1							
121.5	S05	DAGS	Deposits Attached Gr	ease		1	05	<u> </u>	12			LIGH	T GR	EASE			
121.5	1	CL	Crack Longitudinal		1			J	12								
124.8		DAE	Deposits Attached En	crustation		1	05	J	03	05	• • •				· · · · ·		
129.2	Ī	TFC	Tap Factory Capped		04	1			02								
129.2	F05	DAGS	Deposits Attached Gr	ease	1	İ	05		12			LIGH	T GRI	EASE			
136.0		DAE	Deposits Attached En	crustation			05	J	02	05							
137.4		TBD	Tap Break-in Defectiv	e	04	01			03								
139.2	S06	DAE	Deposits Attached En	crustation	L		05	J	07	05							
149.5		TFC	Tap Factory Capped		04				02								
153.8		RTC	Roots Tap Connection	n		ĺ	15		03	06							
154.4		TBA	Tap Break-in Active		04				03								
169.4		TFA	Tap Factory Active		04				02								
175.0		CL	Crack Longitudinal						12								
182.2		OBI	Obstacle Intruding Th	ru Wali			10		03	06		META	AL RO	D IN J	OINT	LINE	
189.8		TFA	Tap Factory Active		04				02								
198.6		TBA	Tap Break-in Active		04				03								
213.3		TFC	Tap Factory Capped		04				02								
216.4		TBA	Tap Break-in Active		04				02								
232.6		TBA	Tap Break-in Active		04				03								
235.8	F06	DAE	Deposits Attached En	crustation			05	J	07	05							
235.8		AMH	Manhole									M-30	567				
235.8		FH	End of Survey									M-30	567				

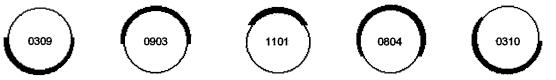
235.8 Ft Total Length Surveyed

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



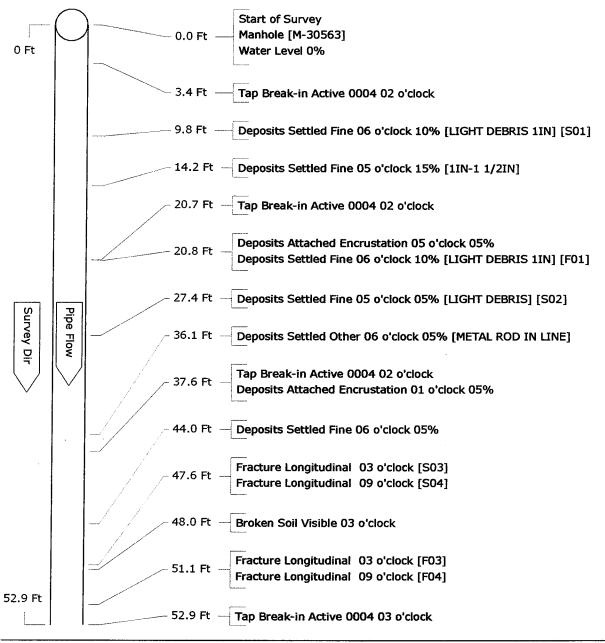
Tabular	Report of PS	SR M-30563	Х		for DCWAS	6A		
Setup Drainage	•	A.THOMPSO AR <b>Survey Custo</b>		<b>tificate #</b> SA	U-106-2462	System Own	er DCWASA	
P/O # i Locality	d 234 Washingto		1/2006 Tim Further locatio			ER PL V ST-W S	т	
Start N	M-30563		Rim to invert	12.00	Grade to invert	Rim te	o grade	Ft
Finish N	<b>/I-3056</b> 7		Rim to invert		Grade to invert	Rim te	o grade	Ft
Use Col Shape ( Material			Direction Do Height 10 Joint leng	Width 1	Flow control N 0 ins Preclea it Total length	<b>n</b> J	Tape/Med Year Clea ength Survey	
Lining			Year laid	Ye	ar rehabilitated	Weather	r Dry	
Purpose	Routine Asses	sment			Cat			
Addition Location		(rural, light traffic	, town back st, (	estate st & j		Structural Miscellaneous	O&M Hydraulic	Constructiona
lotes	Scores	Structural: Service:	Total Total		Mean Defect Mean Defect			Mean Pipe 0.1 Mean Pipe 0.5





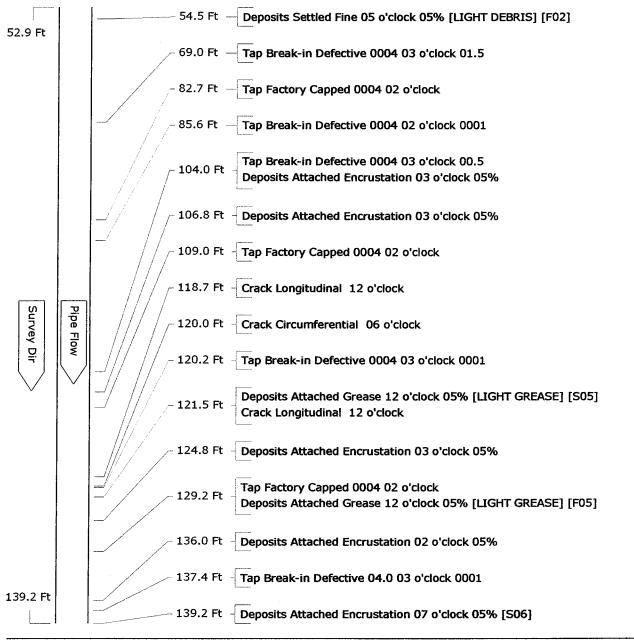
## Pipe Graphic Report of PLR M-30563 X for DCWASA

Setup 1	70 Surveyor	A.THOMPS	ON	Certificate #	U-106-2462	System Owner	DCWASA	
Drainage	N.E.BOUNDARS	urvey Cus	tomer DC	WASA		-		
<i>P/O</i> # IC	234	Date 20	06/08/01	Time 12:12:0	0 <b>Street</b> FLAG	ELER PL V ST-W ST		
Locality	WASHINGTON D.	.C.	Further loca	ation details	N.W.			
Start M	-30563		Rim to inv	ert 12.00	Grade to invert	Rim to g	rade	Ft
Finish M	-30567		Rim to inv	ert	Grade to invert	Rim to g	rade	Ft
Use Com	bined		Direction	Downstream	Flow control	Not controlled	Tape/Media #	REI 014
<b>Shape</b> Ci	<b>ircular</b>		Height	10 Width 1	0 ins Precle	an J	Year Cleaned	
Material	Clay Tile		Joint le	ength F	t Total length	235.8 Ft Len	gth Surveyed	235.80
Lining			Year la	id Ye	ar rehabilitated	Weather	Dry	
Purpose	Routine Assessme	ent			Cat			
Additiona	l info							
ocation	Light Highway (run	al, light trafi	fic, town back	st, estate st & j	parking			



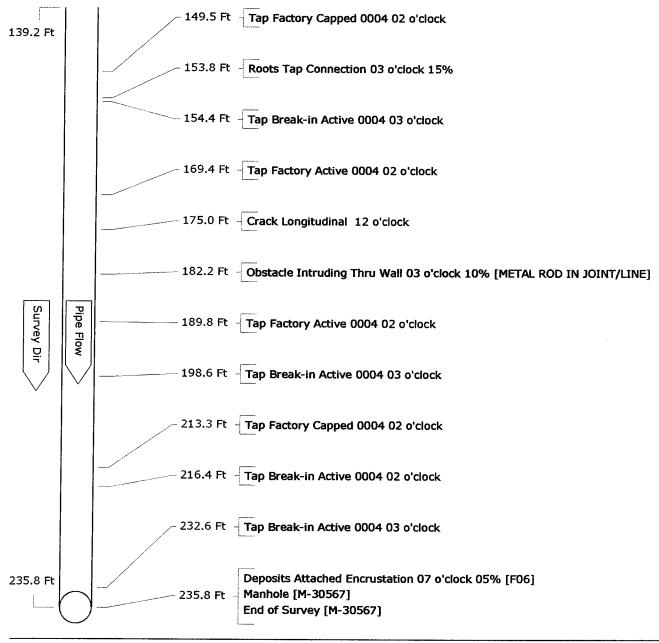
## Pipe Graphic Report of PLR M-30563 X for DCWASA

Setup 170 Surveyor A.THOM	PSON Certificate # U-106-2462	System Owner DCWASA	
Drainage N.E.BOUNDARSurvey C	ustomer DCWASA		
P/O # ID 234 Date	2006/08/01 Time 12:12:00 Street FLAGLE	R PL V ST-W ST	
Locality WASHINGTON D.C.	Further location details N.W.		
Start M-30563	Rim to invert 12.00 Grade to invert	Rim to grade	Ft
Finish M-30567	Rim to invert Grade to invert	Rim to grade	Ft
Use Combined	Direction Downstream Flow control No	ot controlled Tape/Medi	a# REI 014
<b>Shape</b> Circular	Height 10 Width 10 ins Preclean	J Year Clear	ned
<b>Material</b> Clay Tile	Joint length Ft Total length 2	235.8 Ft Length Survey	ed 235.80
Lining	Year laid Year rehabilitated	Weather Dry	
Purpose Routine Assessment	Cat		
Additional info	· · · · ·		
Location Light Highway (rural, light t	raffic, town back st, estate st & parking		



Pipe Graphic Report of PLR	M-30563	Х	for DCWASA
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PSON Certificate # U-106	-2462 System Owner	DCWASA
ustomer DCWASA		
2006/08/01 Time 12:12:00 Stre	et FLAGLER PL V ST-W ST	
Further location details N.W.		
Rim to invert 12.00 Grade	to invert Rim to g	rade Ft
Rim to invert Grade	to invert Rim to g	rade Ft
Direction Downstream Flow	control Not controlled	Tape/Media # REI 014
Height 10 Width 10 ins	<b>Preclean</b> J	Year Cleaned
Joint length Ft To	tal length 235.8 Ft Leng	<b>th Surveyed</b> 235.80
Year laid Year reha	bilitated Weather	Dry
Cat		
······································		
affic, town back st, estate st & parking		
	ustomer DCWASA 2006/08/01 Time 12:12:00 Stree Further location details N.W. Rim to invert 12.00 Grade Rim to invert Grade Direction Downstream Flow Height 10 Width 10 ins Joint length Ft To Year laid Year reha Cat	ustomer DCWASA 2006/08/01 Time 12:12:00 Street FLAGLER PL V ST-W ST Further location details N.W. Rim to invert 12:00 Grade to invert Rim to gu Rim to invert Grade to invert Rim to gu Direction Downstream Flow control Not controlled Height 10 Width 10 ins Preclean J Joint length Ft Total length 235.8 Ft Leng Year laid Year rehabilitated Weather Cat



Video     REI 014     Surveyed On     08/01/2006     Direction     Downstream     Set       ame     WASHINGTON D.C.     ZIP Code     Weather     Dry     To Manhole     M-30563       tets st & parking     From Manhole     M-30563     To Manhole     M-30563       tets st & parking     From Manhole     M-30563     To Manhole     M-30567       tets st & parking     Proposition     Dist     Dist     Dist     Dist       006     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft       006     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft       006     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft       006     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft       006     Dist: 20.7 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft       008     Dist: 20.7 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft       008     Dist: 20.7 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft       018     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft     Dist: 0.0 Ft	Image: Form REI 014       Surveyed On 08/01/2006       Direction         SHINGTON D.C.       ZIP Code       Weatther       I         King       From Manhole M-30563       Weatther       I         Rith Code       Manhole M-30563       Meatther       I         Rith Code       Manhole M-30563       Meatther       I         Rith Code       Manhole M-30563       Meatther       I         Rith Code       Manhole M-30563       Meatther       I         Rith Code       Manhole M-30563       Meatther       I         Rith Code       Meather       Meather       I         Manhole M-30563       Meather       Meatther       I         Manhole M-30563       Meather       Meather       I         Manhole M-30563       Meather       Meather       I         Manhole M-30563       Meather       Meather       Meather         Manhole M-30563       Meather       Meather       Meather         Manhole M-30563       Meather       Meather       Meather         Manhole M-30565       Meather       Meather       Meather         Manhole M-30565       Meather       Meather       Meather         Meater       Meather       Me
Video REI C WASHINGTON D.C. & parking Dist: 0.0 Ft Dist: 0.0 Ft Active	Video REI O WASHINGTON D.C. & parking Dist: 0.0 Ft Dist: 20.7 Ft Active
	ST-W ST City N ST-W ST City N light traffic, town back st, es 0.0 Ft Date: 08/24/ 0.0 St Date: 08/24/ 14.2 Ft Date: 08/01/ 0bs: Tap B

for DCWASA

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M-30563

CCTV pictures of

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Dist: 121.5 Ft

**Obs:** Deposits Attached Grease

Date: 08/01/2006

DCWASA õ ×

ID 234 Work Order

M-30563

**CCTV** pictures of

Direction Downstream Setup δ Weather Surveyed On 08/01/2006 **ZIP** Code **REI 014** WASHINGTON D.C. Video **City Name** 

From Manhole M-30563

170

To Manhole M-30567

Location Light Highway (rural, light traffic, town back st, estate st & parking

Street Name FLAGLER PL V ST-W ST



Obs: Tap Break-in Active

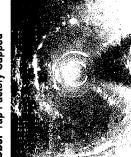
**Obs:** Deposits Settled Fine



Dist: 85.6 Ft **Obs:** Tap Break-in Defective Date: 08/01/2006



Dist: 109.0 Ft **Obs:** Tap Factory Capped Date: 08/01/2006



Dist: 54.5 Ft Date: 09/11/2006



Dist: 104.0 Ft **Obs:** Tap Break-in Defective Date: 08/01/2006



Dist: 121.5 Ft **Obs:** Crack Longitudinal **Obs:** Crack Longitudinal Date: 08/01/2006



Dist: 69.0 Ft **Obs:** Tap Break-in Defective Date: 08/01/2006

Dist: 82.7 Ft

Obs: Tap Factory Capped

Date: 08/01/2006



Dist: 104.0 Ft **Obs:** Deposits Attached Encrustation Date: 08/01/2006

Dist: 106.8 Ft

Date: 08/01/2006

**Obs:** Deposits Attached Encrustation





Dist: 120.0 Ft



**Obs:** Tap Break-in Defective Date: 08/01/2006



Dist: 120.2 Ft

Dist: 129.2 Ft Obs: Tap Factory Capped Date: 08/01/2006

Dist: 124.8 Ft

Date: 08/01/2006

**Obs:** Deposits Attached Encrustation

CCTV pictures of M-30	M-30563 X	for DC	DCWASA					
Work Order ID 234		Video	REI 014	Surveyed On	08/01/2006	Direction	Downstream Setup	170
Street Name         FLAGLER PL V ST-W ST         City Name           Location         Light Highway (rural, light traffic, town back st, estate st		WASHINGTON D.C. & parking		ZIP Code From Manhole M-30563	Weather -30563		Dry To Manhole M-30567	
Pate: 08/11/2006 Dist: 129.2 Ft Date: 09/11/2006 Dist: 129.2 Ft Deposits Attached Grease Eade: 08/01/2006 Dist: 149.5 Ft Dist: Tap Factory Capped Dist: Tap Factory Capped Dist: 175.0 Ft Dist: Crack Longtudinal	Date: 08/01/2006 Dist: 136. Date: 08/01/2006 Dist: 136. Date: 08/01/2006 Dist: 153. Date: 08/01/2006 Dist: 153. Date: 08/01/2006 Dist: 153. Date: 08/01/2006 Dist: 182. Date: 08/01/2006 Dist: 182. Date: 08/01/2006 Dist: 182. Date: 08/01/2006 Dist: 182.	ob/or/2006 Dist: 136.0 Ft Deposits Attached Encrustation Deposits Attached Encrustation Defosits Tag Connection Cocts Tap Connection S00/1/2006 Dist: 153.8 Ft Roots Tap Connection Destacle Intruding Thru Wall Obstacle Intruding Thru Wall	Date: 0 Obs: 1 Date: 0 Obs: 1 Date: 0 Obs: 1	Pate: 08/01/2006 Dist: Date: 08/01/2006 Dist: Obs: Tap Break-in Defective Date: 08/01/2006 Dist: Obs: Tap Break-in Active Date: 08/01/2006 Dist: Obs: Tap Factory Active Date: 08/01/2006 Dist: Obs: Tap Factory Active	Dist: 137.4 Ft octive Dist: 154.4 Ft lost: 189.8 Ft Dist: 232.6 Ft	Date: 08/01/2006 Date: 08/01/2006 Date: 08/01/2006 Date: 08/01/2006 Obs: Tap Factor	ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttached ttache	Dist: 138.6 Ft bis:: 138.6 Ft bis:: 198.6 Ft bis:: 198.6 Ft bis:: 235.8 Ft

WASHINGTON D.C.     ZIP Code     Weather     Diy       parking     From Manhole     M-30563     To Manhole     M-30567       Dist: 236.8 Ft     Dist: 236.8 Ft     From Manhole     M-30563     From Manhole     M-30567	ZIP Code Weather From Manhole M-30563	ZIP Code Weather From Manhole M-30563	ZIP Code Weather From Manhole M-30563	X for Video
				Street Name         FLAGLER         PL V ST-W ST         City Name         WASHI           Location         Light Highway (rural, light traffic, town back st, estate st & parking
235.8 Ft				٠
				Date: 08/01/2006 Dist Obs: End of Survey

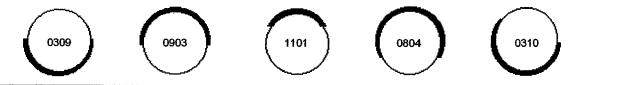
Tabu	lar Rep	ort o	f PSR	M-30566 X			f	or	DC	WA	SA					
Setu	<b>p</b> 171	Surv	eyor	A.THOMPSON Ce	ertificate	#	U-1	06-2	462			Syster	n Ownei	r DCWA	SA	
Drair	nage N.I	E.BOU	INDARS	urvey Customer DCWA	\SA											
P/0 #	# ID 234	1		Date 08/01/2006 Til	<b>me</b> 9:35	:00	S	tree	t Fl	LAG	LER	PL V S	st-w st			
Loca	lity WA	SHING	STON D.	C. Further locati	ion detai	ls i	N.W.									
Start	M-305	66		Rim to inver	t 12.00		Gra	de t	o inv	/ert			Rim to g	grade		Ft
Finis	h M-305	68		Rim to inver	t 12.00		Gra	de t	o inv	/ert			Rim to g	grade		Ft
Use	Combine	d		Direction D	)own		Fle	ow c	ontr	ol	Not	control	ed	Tape/Me	edia # 1	REI 014
	e Circula			Height 10	Widt	h 1(	D	ins	Pre	ecle	an	J		Year Cle	eaned	
Mate	<b>rial</b> Clay	/ Tile		Joint len	gth	F	t	Tota	l len	gth	18	4.0 <i>I</i>	=t Ler	ngth Surv	eyed 18	4.0
Linin	g			Year laid		Ye	ar re	ehab	ilitat	ted		W	eather	Dry		
Purp	ose Rou	tine As	ssessme	nt		(	Cat									
Addi	tional infe	0		······································							Str	uctural	c	0&M	Cor	structional
Loca	<i>tion</i> Ligh	t High	way (rura	al, light traffic, town back st,	estate st	& р	arkir	ю			Mis	scellane	eous H	lydraulic		
Count	Video	CD	Code			In1	In?	%	.int	Fr	To	ImPef	Remar	ke		
	00000		ST	Start of Survey		111	<u> </u>	/0				IIII(CI	Neman	N9		
	00000	1	AMH	Manhole									M-3056	5		
	00000	1	MWL	Water Level				00								<u>.</u>
13.5		1	СМ	Crack Multiple	i				J	09	04				• • • • •	
27.3	1	1	TFC	Tap Factory Capped		06				10						
35.3	1	1	HSV	Hole Soil Visible	1					06		I				
35.5		S01	DSF	Deposits Settled Fine				05	J	06			LESS 1/	2 IN		
41.8	ĺ		DSZ	Deposits Settled Other				10		06			METAL	ROD IN LI	NE	
42.7	ĺ	F01	DSF	Deposits Settled Fine	· · · · · · · · · · · · · · · · · · ·			05	J	06			LESS 1/	2 IN		
45.6	1		TBD	Tap Break-in Defective		04	01			09						
49.1			DSF	Deposits Settled Fine	ĺ			05	l	06			1/2 IN			
53.6			TFC	Tap Factory Capped		04				10						
63.1			TBD	Tap Break-in Defective		04	02			09						
74.0			TFC	Tap Factory Capped		04				10						
79.5			TBD	Tap Break-in Defective		04	02			10				· · ·		
94.0			TFC	Tap Factory Capped		04				10		ĺ				
96.4			TBD	Tap Break-in Defective		04	01			11						
114.2			TBA	Tap Break-in Active		04				10						
129.2			TBD	Tap Break-in Defective	i	04	01			10						
137.7			TFD	Tap Factory Defective		04				10						
160.9			TFD	Tap Factory Defective		04				10		i				
181.1			DSZ	Deposits Settled Other				05		06			METAL	ROD IN LI	NE	
184.0			АМН	Manhole									M-30568	3		
184.0		1	FH	End of Survey			-	_			!					

### 184.0 Ft Total Length Surveyed

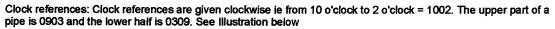
Notes

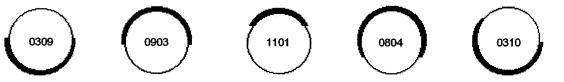
Scores	Structural:	Total 8	Mean Defect 4	Peak 5	Mean Pipe 0
	Service:	Total 31	Mean Defect 2.6	Peak 4	Mean Pipe 0.2

Clock references: Clock references are given clockwise ie from 10 o'clock to 2 o'clock = 1002. The upper part of a pipe is 0903 and the lower half is 0309. See Illustration below



Tabular Report of PSR M-3	0566 X	for	DCWASA			
Setup 171 Surveyor A.THO	MPSON Certi	ficate # U-106-2	2462 <b>S</b>	ystem Owner	DCWASA	
Drainage N.E.BOUNDARSurvey	Customer DCWASA	N Contraction of the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second seco				
P/O # ID 234 Date	08/01/2006 Time	9:35:00 Stree	t FLAGLER	PL V ST-W ST		
Locality WASHINGTON D.C.	Further location	details N.W.				
Start M-30566	Rim to invert	12.00 Grade 1	o invert	Rim to gi	rade	Ft
Finish M-30568	<b>Rim to invert</b>	12.00 Grade (	o invert	Rim to gi	rade	Ft
Use Combined	Direction Dow	m <b>Flow</b> d	ontrol Not o	ontrolled	Tape/Media #	REI 014
<b>Shape</b> Circular	Height 10	Width 10 ins	<b>Preclean</b> J		Year Cleaned	
<i>Material</i> Clay Tile	Joint length	Ft Tota	<b>l length</b> 184	0 Ft Leng	th Surveyed	184.0
Lining	Year laid	Year rehat	oilitated	Weather	Dry	
Purpose Routine Assessment		Cat				
Additional info			Stru	ctural O8	M C	onstructional
Location Light Highway (rural, ligh	t traffic, town back st, es	tate st & parking	Miso	ellaneous Hy	draulic	



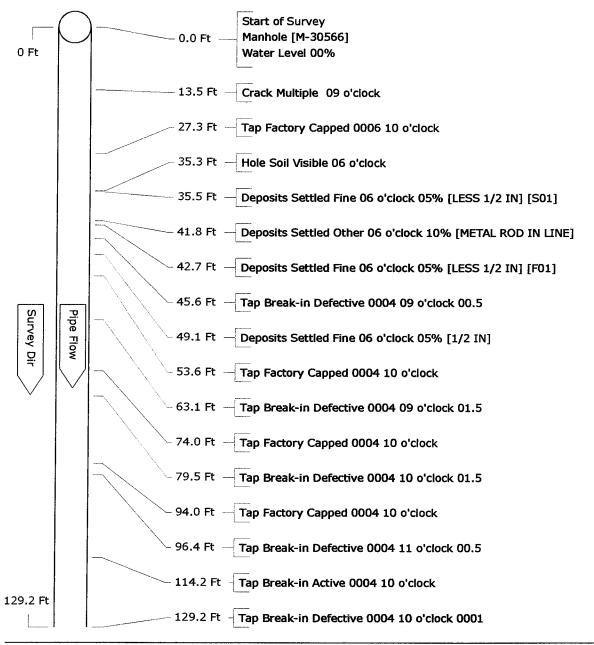


### Pipe Graphic Report of PLR M-30566

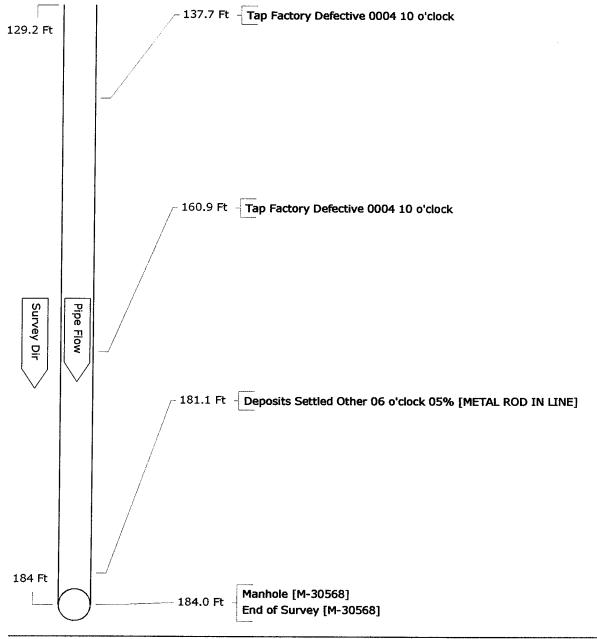
for DCWASA

Setup 171 Surveyor	A.THOMPSON	Certificate #	U-106-2462	System Owner	DCWASA	
Drainage N.E.BOUNDARS	urvey Customer D	CWASA				
P/O # ID 234	Date 2006/08/01	Time 09:35:00	) <b>Street</b> FLAG	LER PL V ST-W ST		
Locality WASHINGTON D.	C. Further lo	ocation details	1.W.			
Start M-30566	Rim to i	nvert 12.00	Grade to invert	Rim to gr	ade	Ft
Finish M-30568	Rim to il	nvert 12.00	Grade to invert	Rim to gr	ade	Ft
Use Combined	Directio	n Downstream	Flow control	Not controlled	Tape/Media #	REI 014
<b>Shape</b> Circular	Heigh	t 10 Width 10	) ins Preclea	an J	Year Cleaned	
<b>Material</b> Clay Tile	Joint	length Fi	Total length	184.0 Ft Leng	th Surveyed	184.00
Lining	Year	laid Yea	ar rehabilitated	Weather	Dry	
Purpose Routine Assessme	nt	Ċ	Cat			
Additional info				· · · · · · · · · · · · · · · · · · ·		
Location Light Highway (rura	al, light traffic, town ba	ck st, estate st & p	arking			

Х



Pipe Graphic Report of PLR	M-30566	Х	for	DCWASA		
Setup 171 Surveyor A.THO Drainage N.E.BOUNDARSurvey	-	<b>Certificate #</b> /ASA	U-106-2462	System Owner	r DCWASA	
P/O # ID 234 Date	2006/08/01 7	<i>Time</i> 09:35:0		GLER PL V ST-W ST		
Locality WASHINGTON D.C.	Further loca	tion details	N.W.		<b>.</b>	
Start M-30566	Rim to inve	rt 12.00	Grade to inver	t Rim to g	grade	Ft
Finish M-30568	Rim to inve	rt 12.00	Grade to invert	t Rim to g	grade	Ft
Use Combined	Direction	Downstream	Flow control	Not controlled	Tape/Media #	<b>REI 014</b>
<b>Shape</b> Circular	Height 1	0 Width 1	0 ins Precie	ean J	Year Cleaned	
<b>Material</b> Clay Tile	Joint le	ngth F	t Total lengt	n 184.0 Ft Ler	ngth Surveyed	184.00
Lining	Year lai	d Ye	ar rehabilitated	Weather	Dry	
Purpose Routine Assessment			Cat			
Additional info	· · · · · · · · · · · · · · · · · · ·		······	T		
Location Light Highway (rural, light	traffic, town back s	t. estate st & i	parking			



CCTV pictures of M-30566	×	for DC	DCWASA						
Work Order ID 234		Video	REI 014	Surveyed On	08/01/2006	Direction	Downstream Setup	l Setup	171
Street Name FLAGLER PL V ST-W ST City Name Location Light Highway (rural, light traffic, town back st, estate st		WASHINGTON D.C. & parking		ZIP Code From Manhole M-30566	-30566		Jry To Manhole M-30568	1568	
		0						0000	
									ar Storages
									stor united from the
Date: 08/01/2006 Dist: 0.0 Ft Obs: Manhole	Date: 08/01/2006 Obs: Water Level	Dist: 0.0 Ft	Date: 0 Obs: 6	Date: 08/01/2006 Di	<b>Dist:</b> 13.5 Ft	Date: 08 Obs: Ta	Date: 08/01/2006 Dis Obs: Tap Factory Capped	Dist: 27.3 Ft ped	ı.ដ
Date: 08/01/2006 Dist: 35.3 Ft Obs: Hole Soil Visible	Date: 08/01/2006 Dist Obs: Deposits Settled Fine	Dist: 35.5 Ft d Fine	Date: 0 Obs: [	Date: 08/01/2006 Dist: Obs: Deposits Settled Other	Dist: 41.8 Ft Other	Date: 08 Obs: Ta	Date: 08/01/2006 Dist: Obs: Tap Break-in Defective	Dist: 45.6 Ft ective	Ť
							•	•	
								2.62 C{]	5- 10- 10 <b>-25</b> M
Date: 09/01/2006 Dist: 49.1 Ft Obs: Deposits Settled Fine	Date: 08/01/2006 Obs: Tap Factory Cal	Dist: 53.6 Ft Capped	Date: 0 Obs: 1	Date: 08/01/2006 Dist: Obs: Tap Break-in Defective	Dist: 63.1 Ft ective	Date: 08 Obs: Ta	Date: 08/01/2006 Dis Obs: Tap Factory Capped	Dist: 74.0 Ft ped	t ت

Date: 08/01/2006 Dist: 94.0 Ft Obs: Tap Factory Capped

 
 Date:
 08/01/2006
 Dist:

 Obs:
 Tap Break-in Defective
 .



Dist: 114.2 Ft





Dist: 79.5 Ft Date: 08/01/2006 Dist: Obs: Tap Break-in Defective



<b>CCTV</b> pictures of	M-30566	×	for	for DCWASA					
Work Order ID 234			Video	REI 014	Surveyed On 08/01/2006	08/01/2006	Direction	Direction Downstream Setup 171	171
Street Name FLAGLER PL V ST-W ST	-WST	City Name	WASHINGTON D.C.	ON D.C.	ZIP Code	Weat	Weather Dry		
Location Light Highway (rural, light traffic, town back st, estate st & parking	ght traffic, tow	n back st, estate st	& parking		From Manhole M-30566	1-30566	To M	<b>To Manhole</b> M-30568	



Date: 08/01/2006 Dist: 129.2 Ft Obs: Tap Break-in Defective



Dist: 184.0 Ft Date: 08/01/2006 Obs: End of Survey

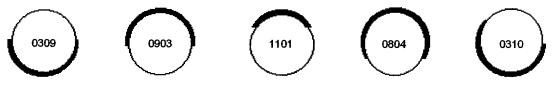


Date: 08/01/2006 Dist: 137.7 Ft Obs: Tap Factory Defective



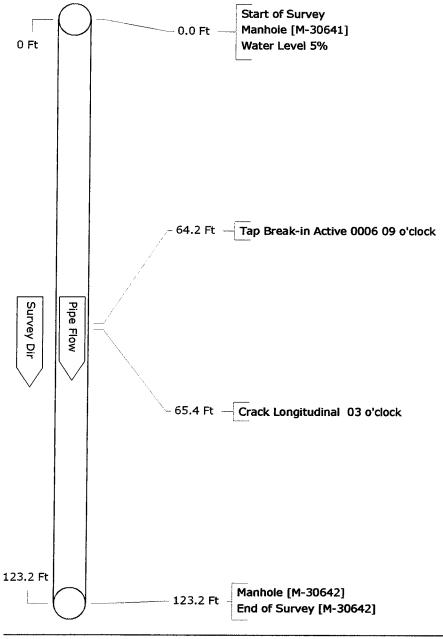


Tabular Report o	f PSR M-30641 X		for	DCW/	SA		
Setup 214 Surv	veyor A.THOMPSON Cert	tificate #	U-106-2	2462	Syste	em Owner DCWASA	λ
Drainage N.W. D.C	C. Survey Customer DCWAS	A					
<i>P/O</i> # ID 234	Date 08/08/2006 Time	e 11:56:00	Stree	t UST	1ST @ 2N	ID	
Locality WASHING	GTON,D.C. Further location	n details	D-234				
Start M-30641	Rim to invert	11.00	Grade	o inver	:	Rim to grade	Ft
Finish M-30642	Rim to invert	13.00	Grade a	o invert	:	Rim to grade	Ft
Use Combined	Direction Dow	wn	Flow	ontrol		Tape/Med	lia # REI 016
Shape Circular	Height 18	Width	ins	Precie	an J	Year Clea	ned
Material Vitrified Cl	ay Pipe Joint lengt	h Fi	t Tota	al length	123.2	Ft Length Survey	yed 123.2
Lining	Year laid	Ye	ar rehat	oilitated	v	<i>Veather</i> Dry	
Purpose		(	Cat				
Additional info					Structura	al O&M	Constructiona
Location Light High	way (rural, light traffic, town back st, e	state st & p	arking		Miscellar	neous Hydraulic	
Count Video CD	Code	In1	In2 %	Jnt Fr	To ImRe	f Remarks	
0.0 05714	ST Start of Survey						·····
0.0 05714	AMH Manhole					M-30641	
0.0 05714	MWL Water Level		5				
64.2	TBA Tap Break-in Active	06		09			
65.4	CL Crack Longitudinal			J 03			
	AMH Manhole					M-30642	
123.2						M-30642	
123.2 123.2	FH End of Survey						
123.2	FH End of Survey ngth Surveyed	11	L				
123.2		·	Me	an Defe	ct 2	Peak 2	Mean Pipe 0



# Pipe Graphic Report of PLR M-30641 X for DCWASA

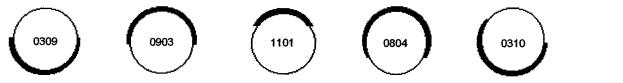
Setup 214 Surveyor A.THOM	MPSON Cer	tificate # U-10	6-2462	System Owner	DCWASA	
Drainage N.W. D.C. Survey	Customer DCWAS	A				
P/O # ID 234 Date	2006/08/08 Time	e 11:56:00 <b>St</b>	reet UST 1ST	@ 2ND		
Locality WASHINGTON, D.C.	Further location	n details ID-234	Ļ			
Start M-30641	Rim to invert	11.00 Grad	le to invert	Rim to gr	ade	Ft
Finish M-30642	Rim to invert	13.00 Grad	le to invert	Rim to gr	ade	Ft
Use Combined	Direction Dov	wnstream Flo	w control		Tape/Media #	REI 016
<b>Shape</b> Circular	Height 18	Width i	ns Preclean .	· ۱	Year Cleaned	
Material Vitrified Clay Pipe	Joint lengt	h Ft T	otal length 123	3.2 Ft Leng	th Surveyed	123.20
Lining	Year laid	Year rei	nabilitated	Weather	Dry	
Purpose		Cat				
Additional info						
Location Light Highway (rural, light	traffic, town back st, e	state st & parking				



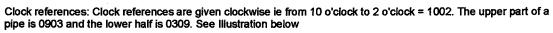
CCTV pictures of	of	M-30641	×	for	for <b>DCWASA</b>						
Work Order ID 234	234	- - - - - - - - - - - - - - - - - - -	-	Video	REI 016		Surveyed On 08/08/2006	Direction	Direction Downstream Setup		214
Street Name UST 1ST @ 2ND City Name Location Light Highway (rural, light traffic, town back st, estate st	ST 1ST @ 2ND Hghway (rural, lig	ht traffic, town ba		WASHINGTON,D.C. & parking	ON,D.C.	ZIP Code From Manhole M-30641	Weather A-30641		Dry <b>To Manhole</b> M-30642	642	
										2014년 1913년	
Date: 08/29/2006 Obs: Manhole	006 Dist: 0.0 Ft e	. —	Date: 08/29/2006 Obs: Tap Break-in Ac	Dist: 64.2 Ft Active	. —	Date: 08/29/2006 D Obs: Crack Longitudinal	Dist: 65.4 Ft I	Date: 08 Obs: N	Date: 08/29/2006   Obs: Manhole	Dist: 123.2 Ft	Ш

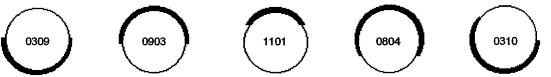
Tabula	r Repo	rt of	PSR	M-30355	х		f	or	DC	WA	SA	L L				
Setup	215	Surv	eyor /	A. OGUARA	Certificat	e #	U-4	105-2	2141			Svste	m Own	er DCV	VASA	
Drainag	je 1ST	STR	EET S	urvey Customer DO	WASA							•				
P/O #	ID 234			Date 08/07/2006	<b>Time</b> 10	:54:0	0 5	Stree	<b>t</b> 15	51 T	ног	MAS S	TREET.I	۱.E		
Locality	/ WAS	HING	TON D.	C. Further lo												
Start	M-3035	5		Rim to in	vert 6.00	)	Gra	nde t	o inv	ert			Rim to	grade	· · ·	Ft
Finish	M-3063	8		Rim to in	vert 8.00	•	Gra	nde t	o inv	ert				grade		Ft
Use Co	ombined		·	Direction	Down		FI	ow c	ontr	ol	Not	contro	·· · · · ·		/Media	# REI 015
Shape				Height	12 Wia	th		ins	Pre	cle	an	J		-		ed 8/7/2006
Material	l Vitrifie	ed Cla	ay Pipe	Joint	ength 7.0	0 F	t	Tota	l len	gth	16	0.3	Ft Le	ength Su	ırveye	<b>d</b> 160.3
Lining				Year l	aid	Ye	ear re	ehab	ilitat	ed		И	/eather	Dry	-	
Purpose	e Routi	ne As	sessme	nt			Cat									
Addition	nal info							-			Str	uctura		O&M		Constructiona
Location	n Light	Highv	vay (rura	al, light traffic, town back	st, estate	st & j	oarkir	ng			Mi	scellan	eous	Hydrauli	0	
Count Vi	deo	CD	Code			In1	In?	%	.Int	Fr	To	ImRet	Rema	rke	•	
	00:00:00		ST	Start of Survey	····		112					1111/01	I I I I I I I I I I I I I I I I I I I	11.5		····
0.0 00	00:00		AMH	Manhole		1	1						M-303	55		• • • • • • • • • • • • • • • • • • • •
0.0 00	00:00		MWL	Water Level		1	<u> </u>	5			1					·····
3.0			TFC	Tap Factory Capped		06				02						
20.1			TBA	Tap Break-in Active		04	1	L 		09	<u> </u>					
30.4	1		TBI	Tap Break-in Intruding		04	01			10			 			••• ••• •• ••
38.8			TBA	Tap Break-in Active		04				09						
50.1	Ī		TFA	Tap Factory Active		06				03						
54.5			TBA	Tap Break-in Active		04				09		,,			·	
68.5			TFA	Tap Factory Active		06				03						
73.2			TBA	Tap Break-in Active		04				09						
82.6			TFA	Tap Factory Active	•	06				03		i	·			
91.2			TBA	Tap Break-in Active		06				09						
92.9			СМ	Crack Multiple							03					
99.4			TFA	Tap Factory Active		06				03						
109.8			TBA	Tap Break-in Active	<del></del>	04				09			····	· · · · · · · · · · · · · · · · · · ·		
114.7			TFA	Tap Factory Active		06				03						
119.1			СМ	Crack Multiple		1			البر خينا		03		<u>-</u> -	<b>-</b>		
119.1	1		TBA	Tap Break-in Active	······	04				03				, a.		
126.6			TBA	Tap Break-in Active		06				09		ر ا				
131.5			TFA	Tap Factory Active		06				03						· · · · · · · · · · ·
142.8	1		ТВА	Tap Break-in Active		06		 		09	Ī			••••		<u>.</u>
147.8			TFA	Tap Factory Active	· · · · · · · · · · · · · · ·	06				02						···· · · · · · · · · · · · · · · · · ·
156.1			TBI	Tap Break-in Intruding			01	L		09						
160.3			AMH	Manhole								1	M-3063	8		· · · · · · · · · · · · · · · · · · ·
160.3	I		FH	End of Survey		1										• • • • • • • • • • • • • • • • • • • •

160.3 Ft Total Length Surveyed



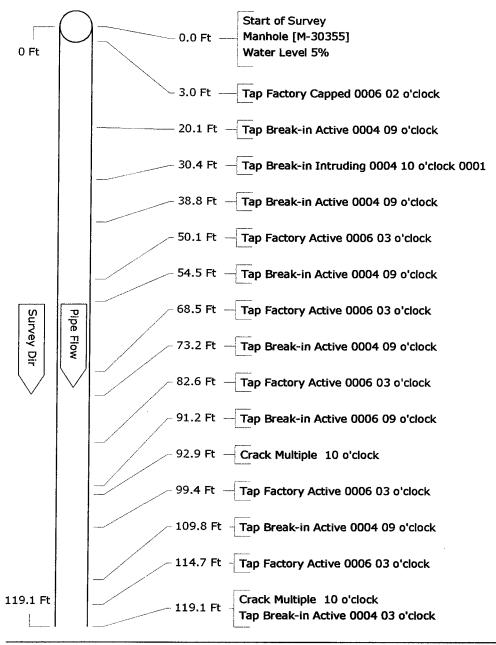
Tabular Repo	rt of PSR M-30	355 X	for	DCWASA	A		
Setup 215	Surveyor A. OGU	ARA Cert	ificate # U-405	2141	System Owne	er DCWASA	
<b>Drainage</b> 1ST	STREET Survey	Customer DCWAS	A				
P/O # ID 234	Date	08/07/2006 <b>Time</b>	• 10:54:00 Stre	et 151 THO	MAS STREET,N	I.E	
Locality WAS	HINGTON D.C.	Further location	n details				
Start M-3035	5	Rim to invert	6.00 Grade	to invert	Rim to	grade	Ft
Finish M-3063	3	<b>Rim to invert</b>	8.00 Grade	to invert	Rim to	grade	Ft
Use Combined		Direction Dov	vn <b>Flow</b>	control No	t controlled	Tape/Media	# REI 015
Shape Circular		Height 12	Width ins	Preclean	J	Year Cleane	<b>d</b> 8/7/2006
<b>Material</b> Vitrifie	ed Clay Pipe	Joint lengt	h 7.00 Ft To	al length 1	60.3 Ft Le	ength Surveyed	160.3
Lining		Year laid	Year reha	bilitated	Weather	Dry	
Purpose Routi	ne Assessment		Cat				
Additional info				S	tructural	0&M	Constructiona
Location Light	Highway (rural, light	traffic, town back st, es	state st & parking	м	liscellaneous	Hydraulic	<u></u>
Scol	es Structur	ral: Total 1	8 <b>M</b>	an Defect	0 Peak	3 Me	an Pipe 0.1
lotes	Servi	ce: Total 4	M	ean Defect	2 <b>Peak</b>	2 Ме	an Pipe 0





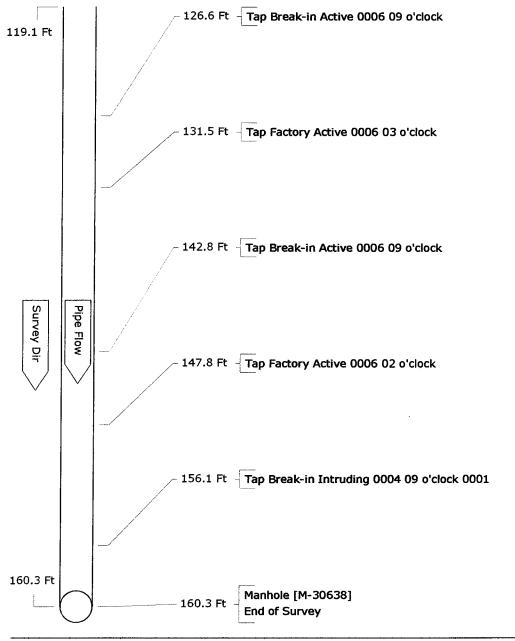
### Pipe Graphic Report of PLR M-30355 X for DCWASA

Setup 215 Surveyor A. OGL	ARA Cert	tificate # U-405-214	1 System Owner	DCWASA
Drainage 1ST STREET Survey	Customer DCWAS	A		
<i>P/O</i> # ID 234 <i>Date</i>	2006/08/07 Tim	e 10:54:00 Street	151 THOMAS STREET, N.E	
Locality WASHINGTON D.C.	Further location	n details		
Start M-30355	Rim to invert	6.00 Grade to i	nvert Rim to gi	rade Ft
Finish M-30638	Rim to invert	8.00 Grade to i	nvert Rim to gi	ade Ft
Use Combined	Direction Dov	wnstream Flow cor	trol Not controlled	Tape/Media # REI 015
<b>Shape</b> Circular	Height 12	Width ins F	Preclean J	Year Cleaned 8/7/2006
Material Vitrified Clay Pipe	Joint lengt	h 7.0 Ft Total l	ength 160.3 Ft Leng	th Surveyed 160.30
Lining	Year laid	Year rehabilit	ated Weather	Dry
Purpose Routine Assessment		Cat		
Additional info		······································		
Location Light Highway (rural, light	traffic, town back st, e	state st & parking		



# Pipe Graphic Report of PLR M-30355 X for DCWASA

Setup 2	15 <b>Surveyor</b>	A. OGUAR	RA	Certif	icate #	U-405-21	41	System O	wner	DCWASA	
Drainage	1ST STREET	Survey Cu	stomer D	WASA							
<i>P/O</i> # IC	) 234	Date 2	006/08/07	Time	10:54:00	Street	151 TI	HOMAS STREE	ET,N.E		
Locality	WASHINGTON D	).C.	Further lo	cation	details						
Start M	-30355		Rim to in	vert	6.00	Grade to	invert	Rin	n to gr	ade	Ft
<b>Finish</b> M	-30638		Rim to in	vert	8.00	Grade to	invert	Rin	n to gr	ade	Ft
Use Com	nbined		Direction	Dow	nstream	Flow co	ntrol	Not controlled		Tape/Media #	REI 015
<b>Shape</b> C	ircular		Height	12	Width	ins	Preclea	an J		Year Cleaned	8/7/2006
Material	Vitrified Clay Pipe	•	Joint	length	7.0 <b>Ft</b>	Total	length	160.3 <b>Ft</b>	Leng	th Surveyed	160.30
Lining			Year	aid	Yea	r rehabil	itated	Weat	her	Dry	
Purpose	Routine Assessm	ent			С	at					
Additiona	l info			• • • • •	••••••						
Location	Light Highway (ru	ral, light tra	iffic, town bac	k st, est	tate st & pa	arking					



215		
Direction Downstream Setup 21	ler Dry To Manhole M-30638	The control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the co
REI 015 Surveyed On 08/07/2006	C. ZIP Code Weather From Manhole M-30355	Tarte concernent of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of t
Video	<b>City Name</b> WASHINGTON D.C. own back st, estate st & parking	Tape: 08/29/2006 Dist: 3.0 Fr Date: 08/29/2006 Dist: 3.0 Fr Date: 08/29/2006 Dist: 3.0 Fr Date: 08/29/2006 Dist: 50.1 Fr Date: 08/29/2006 Dist: 50.1 Fr Date: 08/29/2006 Dist: 82.6 Fr Date: 08/29/2006 Dist: 82.6 Fr Date: 08/29/2006 Dist: 82.6 Fr Date: 08/29/2006 Dist: 82.6 Fr Date: 08/29/2006 Dist: 82.6 Fr Date: 08/29/2006 Dist: 82.6 Fr Date: 08/29/2006 Dist: 82.6 Fr
Work Order ID 234	Street Name         151 THOMAS STREET,N.E         City Name           Location         Light Highway (rural, light traffic, town back st, estate st	Tate: 06/29/2006 Dist: 0.0 Ft Dos: Manhole Dist: 0.0 Ft Dos: Manhole Dist: 0.0 Ft Dos: Manhole Dist: 38.8 Ft Dos: Tap Break-In Active Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33.8 Ft Dist: 33

for DCWASA

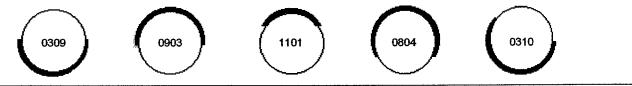
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M-30355

CCTV pictures of

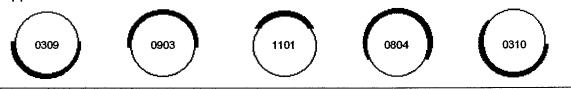
CCTV pictures of	M-30355	×	for	DCWASA						
Work Order ID 234			Video	REI 015	Surveyed On 08/07/2006	08/07/2006	Direction	Direction Downstream Setup		215
Street Name         151 THOMAS STREET,N.E         City Name         WASHI           Location         Light Highway (rural, light traffic, town back st, estate st & parking	REET,N.E ght traffic, town b	<b>City Name</b> ack st, estate st &	WASHINGTON D.C. parking		ZIP Code From Manhole M-30355	Weather 4-30355		Dry <b>To Manhole</b> M-30638		
Date: 08/29/2006 Dist: 119.1 Ft Obs: Tap Break-in Active Date: 08/29/2005 Dist: 119.1 Ft Dist: 147.8 Ft Dist: 147.8 Ft Dist: 147.8 Ft		Date: 08/29/2006 Di Obs: Tap Break-in Active	Dist: 126.6 Ft Dist: 126.6 Ft Dist: 156.1 Ft Intruding		Date: 08/29/2006 D Obs: Tap Factory Active Obs: Aanhole	Dist: 131.5 Ft e	Date: 08/29/2006 Obs: Tap Break		Ve Ulst: 142.8 Ft	

Tabu	ar Repo	ort of	PSR	M-30576	Х		fo	or	DC\	NA	SA					
Setu	<b>7</b> 8	Surv	eyor A	. OGUARA	Certificate	e #	U-4	05-2	141			Syster	n Owne	r DCV	VASA	
Drain	age 1ST	T STR	EET Su	Irvey Customer D	CWASA											
P/O #	ID 234			Date 08/07/2006	<b>Time</b> 14:	35:00	) <b>s</b>	tree	t 20	30 F	FLA	GLER F	PLACE			
Loca	lity WAS	HING	TON D.	C. <b>Further Ic</b>	ocation deta	ils										
Start	M-3057	76	• •	Rim to i	nvert 11.5	0	Gra	de t	o inv	ert			Rim to	grade		Ft
Finis	h M-3063	39		Rim to i	nvert 10.2	D	Gra	de t	o inv	ert			Rim to	grade		Ft
Use	Sanitary			Direction	n Down		Flo	w c	ontr	ol	Not	control	led	Таре	/Media #	REI 015
Shap	e Circula	r		Heigh	t 12 Wide	th	i	ins	Pre	clea	an	J		Year	Cleaned	8/7/2006
Mater	<b>rial</b> Vitrifi	ied Cl	ay Pipe	Joint	length 7.0	0 <b>F</b>	t i	Tota	l len	gth	31	D.3 /	Ft Lei	ngth Se	urveyed	310.3
Linin	g			Year	laid	Ye	ar re	hab	ilitat	eđ		W	eather	Dry		
Purp	ose Rout	ine As	sessme	nt		(	Cat									
Addit	ional info	>	· · · · ·						• • •		Str	uctural	(	D&M	······································	Constructional
Loca	t <i>ion</i> Light	High	way (rura	al, light traffic, town bac	ck st, estate s	t & p	arkin	g			Mi	scellane	eous ł	lydrauli	c	
Count	Video	CD	Code			In1	In2	%	Jnt	Fr	То	ImRef	Remar	ks		
	00:00:00		ST	Start of Survey												
0.0	00:00:00		AMH	Manhole		1							M-3057	6		
0.0	00:00:00		MWL.	Water Level		1		5								
9.9		1	ТВА	Tap Break-in Active		04				02						
12.5		1	DAE	Deposits Attached Er	ncrustation	1		05		03	05					
15.6			DAGS	Deposits Attached G	rease	I		95		09						
16.6			TBA	Tap Break-in Active		04	ĺ			09						
21.9			TBI	Tap Break-in Intrudin	g	04	01			10						·
24.7			TBI	Tap Break-in Intrudin	g	04	01			02						<u></u>
31.0			TBA	Tap Break-in Active		04				10						
37.0			TBA	Tap Break-in Active		04				02	Ĺ					<u></u>
51.6		S01	DAE	Deposits Attached Er	ncrustation			05		03	05				<u></u>	<u></u>
54.5			TFA	Tap Factory Active		06				11						
56.8			TFA	Tap Factory Active		06		ĺ		03						
66.3			TBA	Tap Break-in Active		06				03						
67.8			TBA	Tap Break-in Active	<u> </u>	04				09						
77.1			TFA	Tap Factory Active	<u>.</u>	06				09						
79.1			TFA	Tap Factory Active		06				02						······
89.7		S02	DAGS	Deposits Attached G	rease	ļ		05		03	09					
96.0			TBA	Tap Break-in Active		06				03						
97.8			TBA	Tap Break-in Active		06				09	L					
98.5			TFA	Tap Factory Active		06				09						
115.3			TFA	Tap Factory Active		06				10						
117.7			TFA	Tap Factory Active		06				02						
137.7			TFA	Tap Factory Active		06				10						A
140.0			TFA	Tap Factory Active		06				02	L					
147.1			TBA	Tap Break-in Active		06				03	I					



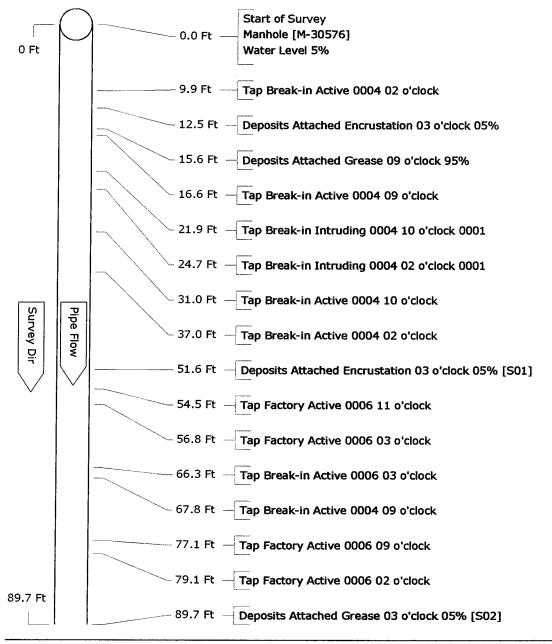
Setup				M-30576	X	icate #						<i>ictor</i>		er DC		
-			-	rvey Customer [			0-4	00-2	1-11		5	316/1				
	iD 2			Date 08/07/2006		14:35:0		troo	• 203			EP C				
			STON D.O				്യ	uee	. 200				LAOL			
Start		0576	STON D.	Rim to		11.50	Gra	do t	o inve				Dim t	o grade		Ft
	h M-3			Rim to		10.20			o inve					o grade		Ft
	Sanita				n Dow				ontro		ot co					ia # REI 015
	e Circ			Heigi		Width			Prec			ARION	cu	-		ned 8/7/2006
		itrified Cl	av Pipe	-	t length				l leng		-	2 <b>-</b>	÷ 1			red 310.3
Lining					r laid				ilitate		,10.		eathei	-	54,705	
		outine A	ssessmei				Cat	, iau	nuate	u .			caurci	51,		
	ional i		5353311151			·	Jai				Struc	tural	<u> </u>	O&M		Constructio
			way (mea	ıl, light traffic, town ba	oket en	ata et 9	narkiz	va				ellane	ous	Hydrau	ılic	001304000
		yaaraya	way (iuia		104 31, 63			ry 				-				
Count	Video	CD	Code			In1		<u>%</u>			<u>ln</u>	nRef	Rem	arks		
157.2			TFA	Tap Factory Active		06	+	<u> </u>		10						
159.2			TFA	Tap Factory Active		06	-	<u> </u>		02	_ <u> </u>					
168.8	·		TBA	Tap Break-in Active		04	<u> </u>	<u> </u>	!	09						
172.1		<u> </u>	JOM	Joint Offset Medium			ļ	ļ								
175.1			TBA	Tap Break-in Active		04	- <u>-</u>			02	4					
183.5			TBI	Tap Break-in Intrudi	ng		01	ļ		10	<u> </u>					
186.7		<u> </u>	TBA	Tap Break-in Active	<del></del>	04	·	ļ		03						
215.6		<u> </u>	СМ	Crack Multiple			<u> </u>	ļ		<u>07 0</u>	5					
217.3			TBI	Tap Break-in Intrudi			01	<u> </u>		10						
220.7			TBI	Tap Break-in Intrudi	ng	06	01			03	╇				. <u></u>	
231.5			CM	Crack Multiple	· · · ·	<u> </u>	<u> </u>			070			···· · · · ·			
254.0		<u> </u>	FC	Fracture Circumfere	ntial		ļ			09 1	1					
300.8			VR	Vermin Rat		01		L								
300.8		_	TBB	Tap Break-in Aband	· · · ·	03	<u> </u>	<u> </u>		10						
310.3	<u></u>	F01	DAE	Deposits Attached E	ncrustati	on	Ļ	05		0 53	-	]				
310.3		F02	DAGS	Deposits Attached G	Grease		Ļ	05	(	030	9	ļ				
310.3			AMH	Manhole		<u> </u>	<u> </u>		Ļ		Ļ		M-306	539		
310.3			FH	End of Survey												
310.3	Ft	Total Le	ngth Sur	veyed												

	Scores	Structural:	Total 9	Mean Defect 2.3	Peak 3	Mean Pipe 0
Notes		Service:	Total 231	Mean Defect 2.2	Peak 6	Mean Pipe 0.7
110163						

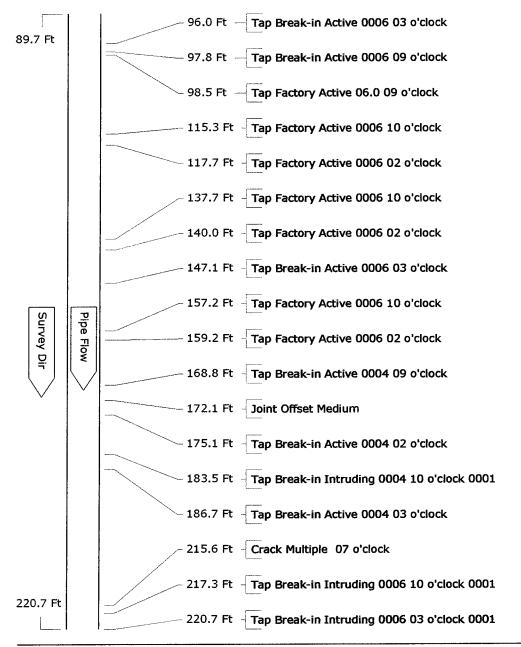


## Pipe Graphic Report of PLR M-30576 X for DCWASA

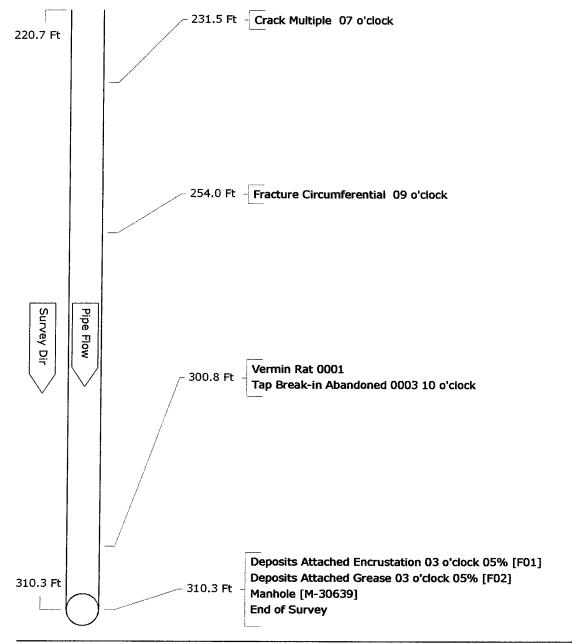
Setup 78 Surveyor A. OGL	ARA <b>Certificate #</b> U-405-2141	System Owner DCWASA	
Drainage 1ST STREET Survey	ustomer DCWASA		
P/O # ID 234 Date	2006/08/07 Time 14:35:00 Street 2030	FLAGLER PLACE	
Locality WASHINGTON D.C.	Further location details		
Start M-30576	Rim to invert 11.50 Grade to invert	t Rim to grade	Ft
Finish M-30639	Rim to invert 10.20 Grade to invert	t Rim to grade	Ft
<b>Use</b> Sanitary	Direction Downstream Flow control	Not controlled Tape/Media #	REI 015
<b>Shape</b> Circular	Height 12 Width ins Precie	ean J Year Cleaned	8/7/2006
Material Vitrified Clay Pipe	Joint length 7.0 Ft Total length	n 310.3 Ft Length Surveyed	310.30
Lining	Year laid Year rehabilitated	Weather Dry	
Purpose Routine Assessment	Cat		
Additional info			
Location Light Highway (rural, light	raffic, town back st, estate st & parking		



Pipe Graphic Report of PLR	M-30576	Х	for	DCWASA		
Setup 78 Surveyor A. OGU	ARA Cei	rtificate #	U-405-2141	System Owner	DCWASA	
Drainage 1ST STREET Survey	Customer DCWA	SA				
P/O # ID 234 Date	2006/08/07 Tin	<b>14:35:0</b>	0 <b>Street</b> 2030	FLAGLER PLACE		
Locality WASHINGTON D.C.	Further location	on details				
Start M-30576	Rim to invert	11.50	Grade to inver	t Rim to g	rade	Ft
Finish M-30639	Rim to invert	10.20	Grade to inver	t Rim to g	rade	Ft
<b>Use</b> Sanitary	Direction De	ownstream	Flow control	Not controlled	Tape/Media #	REI 015
<b>Shape</b> Circular	Height 12	Width	ins Precl	ean J	Year Cleaned	8/7/2006
Material Vitrified Clay Pipe	Joint leng	th 7.0 F	t Total lengt	h 310.3 Ft Leng	yth Surveyed	310.30
Lining	Year laid	Ye	ar rehabilitated	Weather	Dry	
Purpose Routine Assessment		4	Cat			
Additional info						
Location Light Highway (rural, light	traffic, town back st,	estate st & p	parking			



Pipe Graphic Report of PLR	M-30576	Х	for	DCWASA		
Setup 78 Surveyor A. OGU	ARA	Certificate #	U-405-2141	System Owner	DCWASA	
Drainage 1ST STREET Survey	Customer DC\	NASA				
P/O # ID 234 Date	2006/08/07	Time 14:35:00	0 Street 2030	FLAGLER PLACE		
Locality WASHINGTON D.C.	Further loca	ation details				
Start M-30576	Rim to inv	ert 11.50	Grade to inver	t Rim to gi	rade	Ft
<b>Finish</b> M-30639	Rim to inv	ert 10.20	Grade to inver	t Rim to gi	rade	Ft
<b>Use</b> Sanitary	Direction	Downstream	Flow control	Not controlled	Tape/Media #	REI 015
<b>Shape</b> Circular	Height	12 <b>Width</b>	ins Precie	ean j	Year Cleaned	8/7/2006
Material Vitrified Clay Pipe	Joint le	ength 7.0 F	t Total lengti	n 310.3 Ft Leng	th Surveyed	310.30
Lining	Year la	id Ye	ar rehabilitated	Weather	Dry	
Purpose Routine Assessment			Cat			
Additional info	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·			
Location Light Highway (rural, light	traffic, town back	st, estate st & p	arking			



Bate: (Obs: Obs: Obs: Obs: Obs: Obs: Obs: Obs:	Work Order ID 234		Video	REI 015	Surveyed On	08/07/2006	Direction Downstream Setup	78
Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f       Dist. tol. f <th< td=""><td>· 2030 FLAGLER PLACE ight Highway (rural, light traffic, t</td><td>~</td><td>SHINGTON D.( king</td><td></td><td>IP Code om Manhole</td><td></td><td></td><td></td></th<>	· 2030 FLAGLER PLACE ight Highway (rural, light traffic, t	~	SHINGTON D.( king		IP Code om Manhole			
Dir. U.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.       Dir. U.G.R.								
Dist: 15.6 H       Dist: 0120:000       Dist: 16.6 H       Dist: 00:29:000       Dist: 10.6 H         Dist: 31.0 H       Dist: 00:29:000       Dist: 10.6 H       Dist: 00:29:000       Dist: 00:29:000         Dist: 31.0 H       Dist: 00:29:000       Dist: 10.6 H       Dist: 00:29:000       Dist: 00:29:000         Dist: 31.0 H       Dist: 31.0 H       Dist: 00:29:000       Dist: 51.6 H       Dist: 00:29:000         Dist: 31.0 H       Dist: 31.0 H       Dist: 00:29:000       Dist: 51.6 H       Dist: 00:29:000         Dist: 31.0 H       Dist: 31.0 H       Dist: 00:29:000       Dist: 51.6 H       Dist: 00:29:000         Dist: 31.0 H       Dist: 00:29:000       Dist: 51.6 H       Dist: 00:29:000       Dist: 51.6 H         Dist: 31.0 H       Dist: 00:29:000       Dist: 51.6 H       Dist: 00:29:000       Dist: 00:29:000         Dist: 31.0 H       Dist: 00:29:000       Dist: 51.6 H       Dist: 00:29:000       Dist: 00:29:000         Dist: 31.0 H       Dist: 00:29:000       Dist: 51.6 H       Dist: 00:29:000       Dist: 00:29:000         Dist: 30.0 H       Dist: 00:29:000       Dist: 51.6 H       Dist: 00:29:000       Dist: 00:29:000         Dist: 30.0 H       Dist: 00:29:000       Dist: 51.6 H       Dist: 00:29:000       Dist: 00:29:000         Dist: 30.0 H <td></td> <td>-</td> <td>st: 0.0 Ft</td> <td>Date: 08/ Obs: Ta</td> <td>29/2006 p Break-in Acti</td> <td>Dist: 9.9 Ft ve</td> <td>Date: 08/29/2006 Dist: 1 Obs: Deposits Attached Encru</td> <td>2.5 Ft station</td>		-	st: 0.0 Ft	Date: 08/ Obs: Ta	29/2006 p Break-in Acti	Dist: 9.9 Ft ve	Date: 08/29/2006 Dist: 1 Obs: Deposits Attached Encru	2.5 Ft station
Dist. 15.6 H       Dist. 15.6 H       Dist. 15.6 H       Dist. 02/23/2006       Dist. 16.6 H       Dist. 02/23/2006       Dist. 16.8 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 21.9 H       Dist. 02/23/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006       Dist. 02/22/2006 <thdist. 02="" 2006<="" 22="" th=""> <thd< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></thd<></thdist.>								
Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution       Image: Solution	tachec	in Activ	t: 16.6 Ft	Date: 08/ Obs: Ta	29/2006 Break-in Intru	Dist: 21.9 Ft	in Intr	1.7 Ft
Dist: 31.0 Ft       Date: 08/29/2006       Dist: 37.0 Ft       Date: 08/29/2006       Dist: 37.0 Ft       Date: 08/29/2006       Dist: 37.0 Ft       Date: 08/29/2006       Dist: 31.0 Ft       Date: 08/29/2006       Dist: 37.0 Ft       Date: 08/29/2006       Dist: 37.0 Ft       Date: 08/29/2006       Dist: 37.0 Ft       Date: 08/29/2006       Dist: 37.0 Ft       Date: 08/29/2006       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 31.0 Ft       Dist: 30.29/2006       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 30.29/2006       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 67.8 Ft       Dist: 78.8 Ft       Dist: 78.8 Ft       Dist: 78.8				A				
Addve Addve Obs: Tap Break-In Addve Obs: Tap Fractory Addve Obs: Tap Break-In Addve Obs: Tap Break-In Addve Obs: Tap Break-In Addve Obs: Tap Break-In Addve Obs: Tap Break-In Addve Obs: Tap Fractory Addv	n Acti	in Acti	tt: 37.0 Ft	Date: 08/ Obs: De	29/2006 posits Attachec	Dist: 51.6 Ft Encrustation	, Activ	l.5 Ft
y Active Obs: Tap Break-in Active Obs: Tap Break-in Active Obs: Tap Break-in Active Obs: Tap Factory Activ								
	/ Activ	Acti	1 C C C I	Obs: Ta	zer∠uuo o Break-in Activ	<b>UISC:</b> 07.0 FL /e	/ Activ	Ľ

for DCWASA

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M-30576

CCTV pictures of

REI/DRAYCO Phone: 301-420-7197 Fax: 301-420-0317

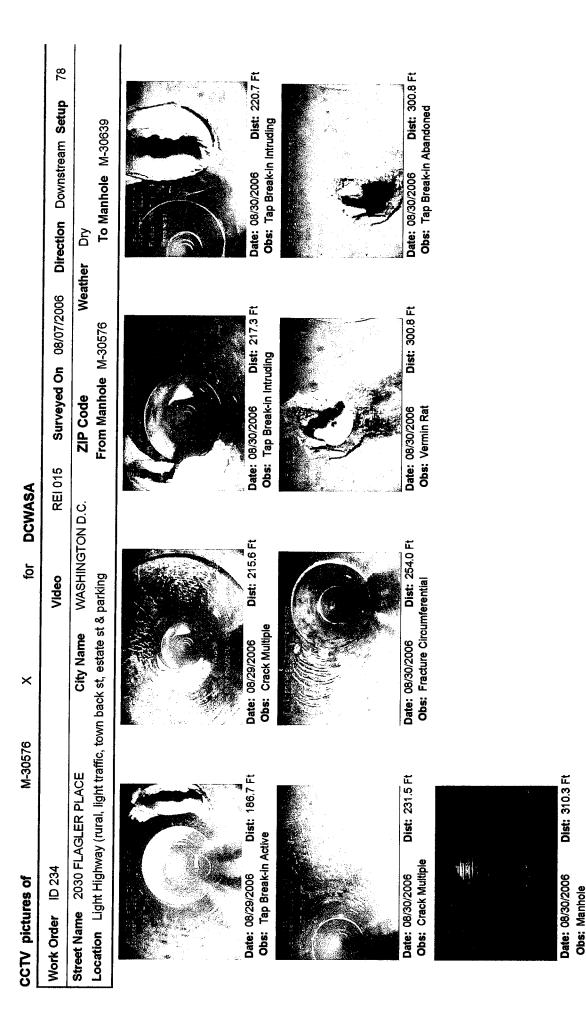
DCWASA

for

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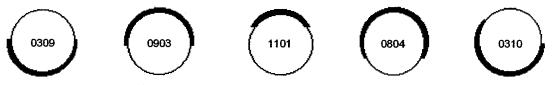
M-30576

CCTV pictures of

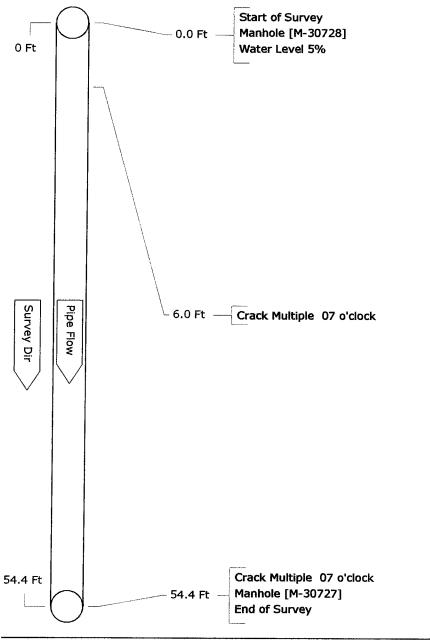


REI/DRAYCO Phone: 301-420-7197 Fax: 301-420-0317

Tabu	lar Repo	ort of PSR	M-30728	Х		fo	r DC	WA	SA				
Setu	<b>p</b> 79	Surveyor	A. OGUARA	Certi	ficate #	U-40	5-2141		,	Syster	m Owner	DCWASA	
Drain	nage 1ST	STREET S	urvey Customer	DCWAS	4								
P/O #	# ID 234		Date 08/07/2006	Time	13:53:0	0 <b>St</b>	eet 1	15 T	HON	AS ST	REET,N.	N	
Loca	<i>lity</i> was	HINGTON D	.C. Furthe	r location	details								
Start	M-3072	28	Rim te	o invert	8.90	Grad	e to in	vert			Rim to g	rade	Ft
Finis	h M-3072	27	Rim te	o invert	15.50	Grad	e to in	vert			Rim to g	rade	Ft
Use	Sanitary		Direct	tion Dow	/n	Flow	v cont	rol	Not	contro	led	Tape/Medi	a # REI 015
Shap	e Circulai	r	Hei	<b>ght</b> 24	Width	in	s Pr	ecle	an	J		Year Clear	ned 8/7/2006
Mater	<b>rial <sup>Vitrifi</sup></b>	ied Clay Pipe	Jo	int length	7.00 F	t T	otal ler	ngth	54	.4 1	Ft Len	gth Survey	ed 54.4
Linin	g		Ye	ar laid	Ye	ear reh	abilita	ted		W	eather	Dry	
Purpe	ose Rout	ine Assessm	ent			Cat							
Addit	tional info	•							Str	uctural	0	&M	Constructiona
Loca	<b>tion</b> Light	Highway (ru	ral, light traffic, town	back st, es	state st &	parking			Mis	scellan	eous H	ydraulic	
Count	Video	CD Code			Int	In2	% Int	Fr	То	ImRef	Remark	~e	
0.0	00:00:00	ST	Start of Survey					T	Ē	8711 (01	Iteman		
0.0	00:00:00	AMH			· · · · · · · · · · · · · · · · · · ·			1			M-30728		
0.0	00:00:00	MWL	Water Level				5	1					
6.0		CM	Crack Multiple					07	05				
54.4	ĺ	CM	Crack Multiple					· · · · ·	05			· , · ·	
54.4		AMH	Manhole				1	İ			M-30727	,	
54.4		FH	End of Survey				1						
54.4	Ft Tot	al Length St	irveyed						1		L		
	Sco	res s	tructural:	Total 30	)	٨	lean D	efec	t 0		Peak 3	٨	lean Pipe 0.6
		· · · · · · · · · · · · · · · · · · ·	Service:	Total 0			lean D				Peak 0		Mean Pipe 0



Pipe Graphic Report of PLR	M-30728	Х	for	DCWASA		
Setup 79 Surveyor A. OGU	ARA Ce	rtificate #	U-405-2141	System Owner	DCWASA	
Drainage 1ST STREET Survey	Customer DCWA	SA				
P/O # ID 234 Date	2006/08/07 Tin	ne 13:53:0	0 Street 115	THOMAS STREET,N.V	N	
Locality WASHINGTON D.C.	Further location	on details				
Start M-30728	Rim to invert	8.90	Grade to inver	t Rim to g	rade	Ft
Finish M-30727	Rim to invert	15.50	Grade to inver	t Rim to g	rade	Ft
<b>Use</b> Sanitary	Direction D	ownstream	Flow control	Not controlled	Tape/Media #	REI 015
<b>Shape</b> Circular	Height 24	Width	ins Preci	ean J	Year Cleaned	8/7/2006
Material Vitrified Clay Pipe	Joint leng	th 7.0 F	t Total lengt	h 54.4 <b>Ft Len</b> g	gth Surveyed	54.40
Lining	Year laid	Ye	ar rehabilitated	Weather	Dry	
Purpose Routine Assessment			Cat			
Additional info	· · · · · · · · · · · · · · · · · · ·					<u></u>
Location Light Highway (rural, light	traffic, town back st,	estate st & r	parking			



CCTV pictures of	M-30728	'28 X	for	for <b>DCWASA</b>						
Work Order ID 234	4		Video	REI 015	Surveyed On 08/07/2006		Direction	Direction Downstream Setup	1	79
Street Name 115 T Location Light High	Street Name 115 THOMAS STREET,N.W Location Light Highway (rural, light traffic,	<b>City Name</b> town back st, estate st	WASHINGTON D.C. & parking	ON D.C.	ZIP Code From Manhole M-30728		Weather Dry To M	Dry <b>To Manhole</b> M-30727	0727	
Date: 09/11/2006 Obs: Water Level	Dist: 0.0 Ft	Date: 09/11/2006 Obs: Crack Multiple	Dist: 6.0 Ft	Date: Obs:	Date: 09/11/2006 Dist: 5.	Dist: 54.4 Ft	Date: 09/11/200 Obs: Manhole	٥	Dist: 54.4 Ft	т

Setu	<b>b</b> 80	Surv	evor /	A. OGUARA Certif	icate #	U-4	05-2	141			Svster	<b>n Owner</b> D	CWASA	
-			•	urvey Customer DCWASA										
	ID 234					0 <b>s</b>	tree	t 11	5 T	HON	IAS ST	REET.N.W		
Loca	lity WAS	HING										,		
Start	M-3072	29		Rim to invert	8.30	Gra	de t	o inv	ert			Rim to grad	e	Ft
Finis	h M-3072	28		Rim to invert	8.90	Gra	de t	o inv	ert			Rim to grad	e	Ft
Use	Sanitary			Direction Dow	n	Fl	ow c	ontr	ol	Not	control	led Ta	pe/Media	# REI 015
Shap	e Circula	F		Height 18	Width		ins	Pre	c/e	an	J	Ye	ar Cleane	<b>d</b> 8/7/2006
Mater	rial Vitrif	ied Cl	ay Pipe	Joint length	7.00 F	t	Tota	l len	gth	17	3.6	-t Length	Surveyed	173.6
Linin	g			Year laid			ehab	ilitat	ed		W	eather Dry	,	
Purpe	ose Rout	ine As	ssessme	nt		Cat								
Addit	ional info	)								Str	uctural	O&M		Constructiona
Loca	tion Light	High	way (rura	al, light traffic, town back st, es	tate st &	oarkir	ng			Mi	scellan	eous Hydra	ulic	
` aumt	Video	00	Code	· · · · · · · · · · · ·	1-4	I	%	l		т.	lun D a f	Remarks		
	00:00:00		ST	Start of Survey	<u>In1</u>	112	70	JIIL			IIIIKei	Remarks		
	00:00:00		AMH	Manhole				l		l		M-30729		
	00:00:00		MWL	Water Level	I		5		! 	<u>l</u>				
7.0			CL	Crack Longitudinal	I	 	L	J	12	<u>}</u>		<b>.</b>	• • • • • • •	
11.9			тві	Tap Break-in Intruding	04	02			11					
17.2			TBA	Tap Break-in Active	04				02					· · · · · · · · · · · · · · · · · · ·
22.3			DAE	Deposits Attached Encrustati	on	1	05			05				
27.9			СС	Crack Circumferential					<u> </u>	09			, , ,	
32.7			IW	Infil Weeper				J	07	08				
34.5		S01	FM	Fracture Multiple	1			J		03				
35.1			TBI	Tap Break-in Intruding	03	02			11					
36.6			TBA	Tap Break-in Active	03	Ì			02					
97.5		F01	FM	Fracture Multiple				J	09	03				
110.6			TBA	Tap Break-in Active	04	İ			09					
126.7			TBA	Tap Break-in Active	04	1			03					
169.6			FM	Fracture Multiple	j	[			07	05				
173.6			AMH	Manhole		1						M-30728		
173.6			FH	End of Survey										
173.6	Et Tot	allo	ngth Sui	novod	•									

Scores Stru	ctural: Tota	1 59	Mean Defect 3.7	Peak 4	Mean Pipe 0.3
Notos	ervice: Tota	1 10	Mean Defect 2.5	Peak 3	Mean Pipe 0.1

