



Harrisonburg Public Utilities (HPU)

Annual Report of Operations

FY 2014-2015

Revised 6/12/2015

Sanitary Sewer Management Program Initiative

(SSMP)

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I. Introduction:

Harrisonburg Public Utilities (HPU) has crafted a Sanitary Sewer Management Program (SSMP) to guide ownership and operation of the system infrastructure as it increases with age. This document summarizes the SSMP strategy. The strategy underlies the effort to deliver the level of services expected today and to safeguard this level of service into the future.

The SSMP included measures for strategic, tactical, and operational performance. It was organized around a balanced scorecard that emphasized financial and nonfinancial measures with short term and long terms goals that must be part of the information system for all employees at all levels. **Figure 1** shows the SSMP Balance Scorecard.

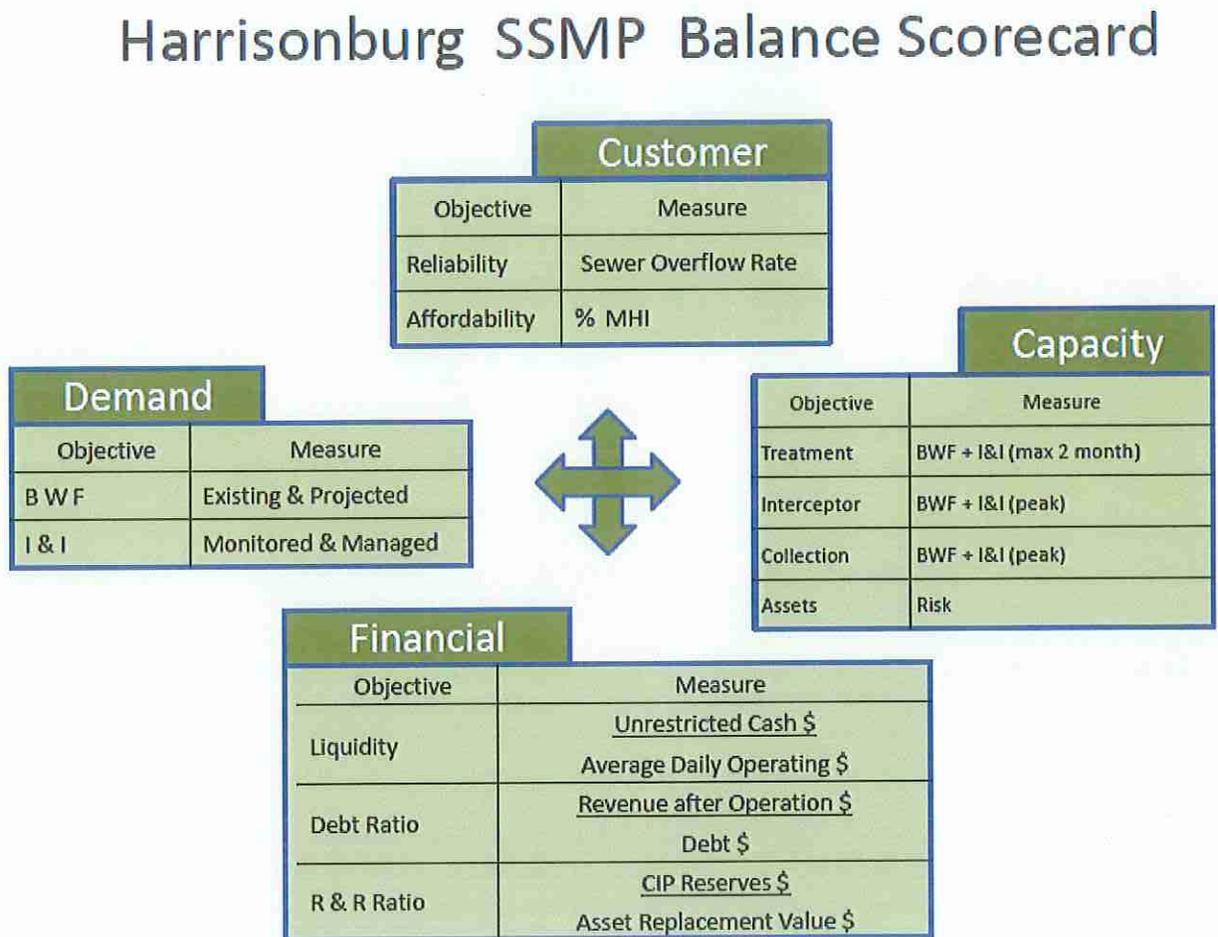


Figure 1

II. Sanitary Sewer Flow

The volumes and rate patterns of the sanitary sewer flow as it enters into the collection system and treatment plant are major topics to the SSMP. Much of the SSMP places attention to changing or accommodating these characteristics. For an understanding, there are three major components (BWF, GWI, and RDII) of wet-weather flow into a sanitary sewer system; they have been illustrated in Figure 2 below and defined thereafter:

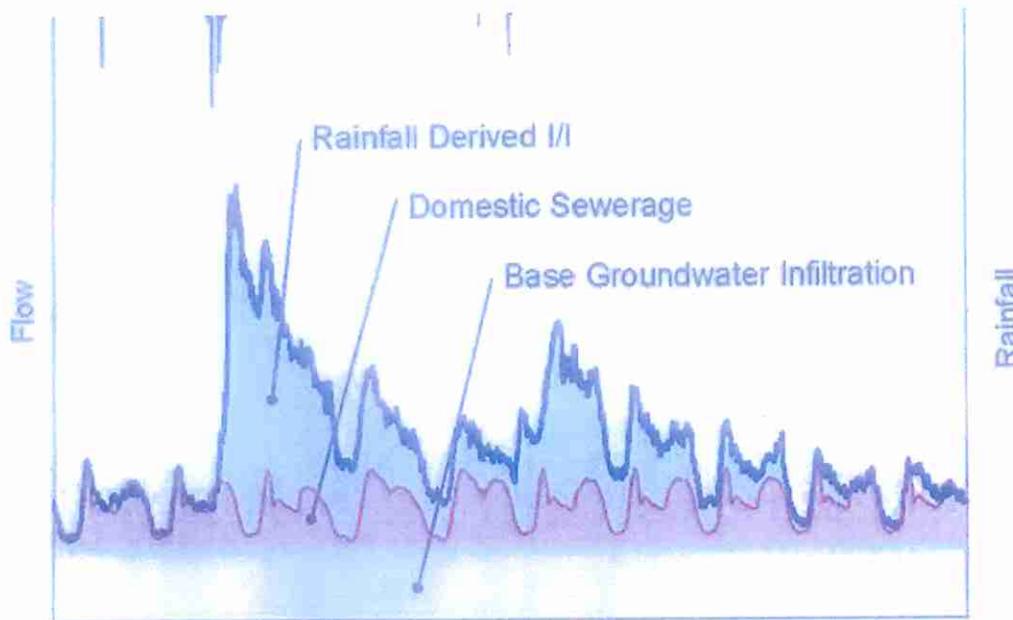


Figure 2

BWF: Base Wastewater Flow is the residential, commercial, institutional, industrial and municipal flow that discharges to a sanitary sewer system for collection and treatment. BWFs are largely a function of population density, water consumption, and land uses. The flow rate varies both diurnally and seasonally. Rates for BWF per unit source have been published under many sanitary sewer design regulations; the City has published our rates in the "Harrisonburg Design and Construction Standards Manual".

GWI: Groundwater Infiltration represents the flow that enters a collection system through leaky pipes, pipe joints, and manhole walls. GWI is generally steady in the short term but varies throughout the year by trending higher when groundwater levels and soil moisture are higher. A design criterion of 1,000 to 2,000 gallons per acre per day is typical for GWI.

DWF is dry-weather flow and is the combination of BWF plus GWI.

RDII is that portion of a sewer flow hydrograph above the normal dry weather base flow pattern. It is a sewer flow response to rainfall or snowmelt in a sewer shed. RDII is typically responsible for capacity related SSO problems and basement backups. Reported design criterion of less than 2,500 gallons per day per inch diameter mile of pipe is typical for RDII.

- Rainfall-derived “Inflow” is the water that enters a sanitary sewer system directly by way of depressed manhole lids and frames, downspouts, sump pumps, foundation drains, areaway drains, and cross connections with storm sewers. Inflow typically occurs shortly after rainfall starts and then stops quickly once it stops. Inflow is typically the major component of RDII peak flow.
- Rainfall-derived “infiltration” refers to rainfall runoff that filters through the soil before entering a sanitary sewer system through damaged pipe sections, leaky joints, or poor manhole connections; duration is generally longer than experienced with inflow.

III. Background:

Regulations: European nations have taken strong enforcement approaches by establishing designated central agencies to police compliance with infrastructure management laws and regulations. In contrast, government efforts to regulate sanitary sewer infrastructure have lagged in the United States. Notable proposed laws have arisen from recognition of the need for a strong infrastructure, but the implementation of the law has most frequently reverted to somewhat of a diluted effort. For example, **GASB 34** was originally issued to require governments to appropriately plan for proper replacement of assets; however, through lobby tactics this effort has been reduced to depreciation accounting. **CMOM** was another attempt to strengthen sanitary sewer management requirements by authorizing EPA to have strong oversight over all owners and operators. CMOM principles were proposed by the United States Environmental Protection Agency (USEPA) as a part of the draft Sanitary Sewer Overflow (SSO) rule that was subsequently withdrawn. Within this withdrawn rule, there were five general principles described that indicate CMOM compliance for a wastewater utility. The following is the text from § 122.42 (e) (1) of the withdrawn SSO Rule reflecting “General Standards” that denoted that the owner or operator must:

- Properly manage, operate, and maintain, at all times, all parts of the collection system;
- Provide adequate capacity to convey base flows and peak flows for all parts of the collection system;
- Take all feasible steps to stop, and mitigate the impact of, sanitary sewer overflows in portions of the collection system;
- Provide notification to parties with a reasonable potential for exposure to pollutants associated with the overflow event; and
- Develop a written summary of your CMOM Program and make it available to any member of the public upon request.

Best Practices: Harrisonburg, like many other owners and operators of sanitary sewer systems, has been built over the past 100 years or more using a variety of design standards, materials, construction practices, and maintenance approaches. The strength in performance can be related to engaging formal or informal best practices. A best practice is a method or technique that has consistently shown results superior to those achieved with other means, and thus is used as a benchmark. **Appendix A** includes several SSMP SOPs.

IV. HPU Sanitary Sewer Management Plan (SSMP):

With purpose that HPU plan and execute the SSMP in a consistent and sustained approach, the key element directives of the SSMP are as follows:

- Prior to the beginning of each fiscal year HPU shall establish an “Annual Plan” of activities that will be completed during the fiscal year. The activities shall be in alignment to achieving the goals of the SSMP. The activities shall be compatible with Operating and CIP budgets.
- During the fiscal year, HPU shall implement execution and monitor progress of the “Annual Plan”. A “SSMP Chronology Report” shall be published monthly to meet the latter.
- At the end of each fiscal year, HPU shall evaluate and update the SSMP with regard to approach, organization, progress, technology, data, and benchmarks with respect to the SMMP baseline goals.

Figure 3 below shows the HPU SSMP framework including responsible entities and their objectives which are defined in greater detail in this document.

Harrisonburg Sanitary Sewer Management Plan (SSMP)

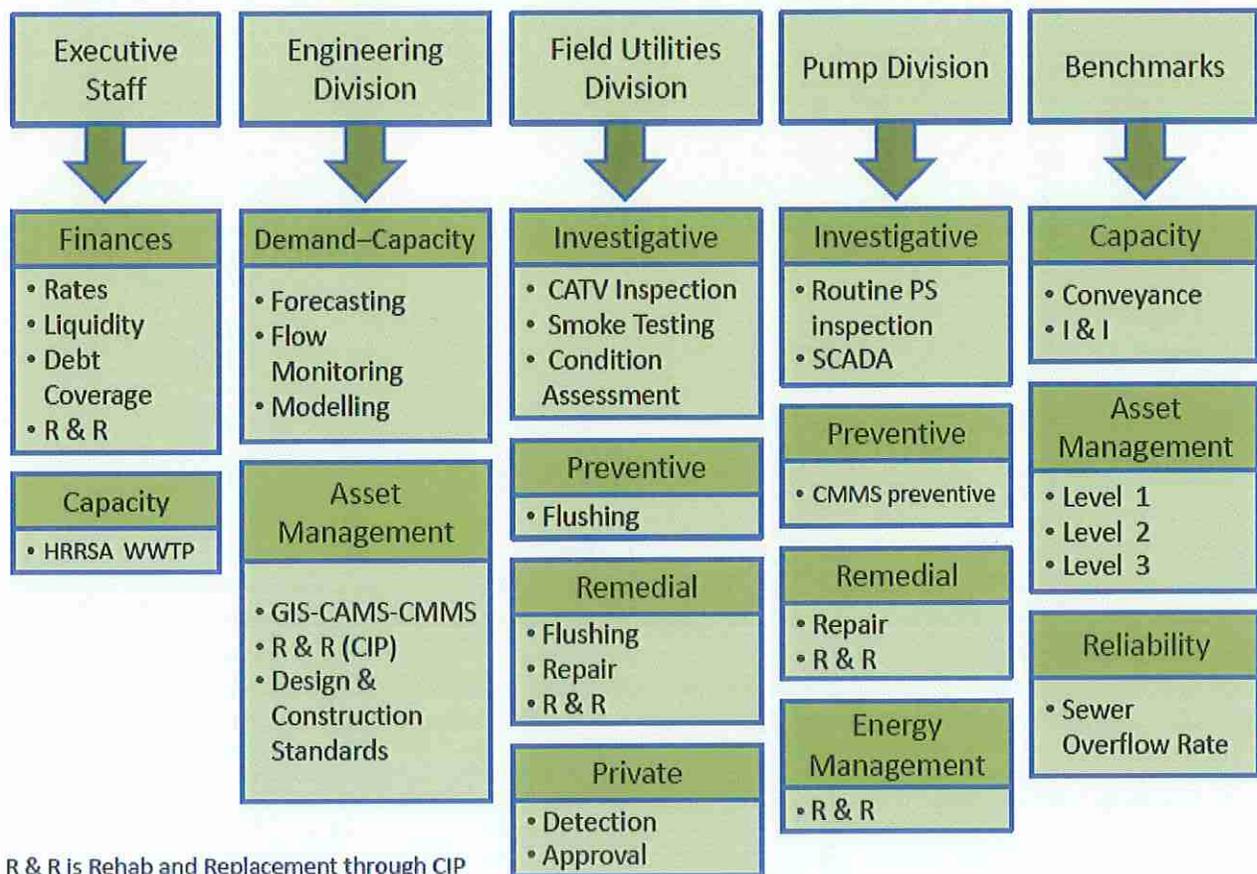


Figure 3

V. SSMP Objective #1: Forecasting Annual Average Daily BWF

Objective: Objective #1 required HPU to monitor existing sanitary sewer flows in terms of annual average daily (AAD) BWF and to then make projections for ultimate build-out conditions to the City system. This effort is with purpose to understand the demands that underlie the capacities needed to treat and to convey the volumes and flow rates of sanitary sewer.

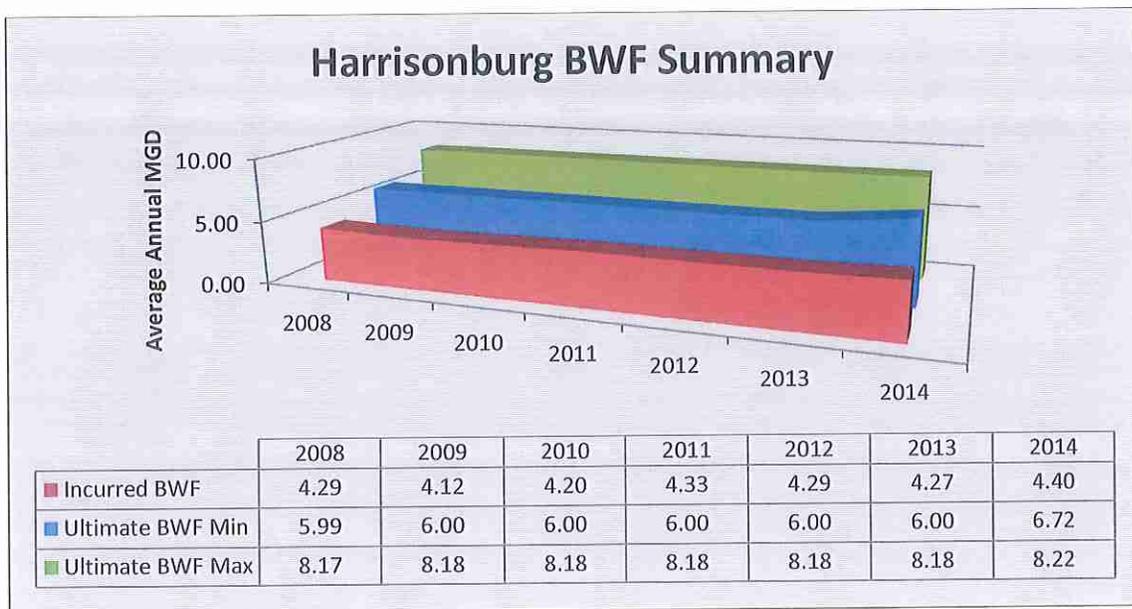
Background: To recognize existing and historic BWFs, the data were obtained from sales records at the HPU Billing Office. The format identified and assigned BWF sources to customer groups listed below.

- City residential
- City commercial
- City institutional
- City apartments
- City municipal
- Rural customer
- Rockingham County as a Contract Customer

Planning: To predict future BWFs, HPU carefully selected a dual approach that delivered both an aggressive forecast and a conservative forecast; thus providing a forecast envelope. The aggressive approach was thereafter used to make evaluations of capacity. The conservative approach has been provided for comparison and understanding of the degree for margin of error (or safety margin) in planning.

- For the aggressive approach, build out BWF was forecasted as existing BWF plus future flow with the latter defined as the product of: 1) the area of undeveloped lands associated with each user group, 2) sewer BWF design criteria per unit area of specific land use type, and 3) an assumed 75% development rate of maximum land use.
- For the conservative approach, future BWF was forecasted as existing BWF plus future flow with the latter defined as the product of: 1) the area of undeveloped lands associated with each user group and 2) historic sewer BWF unit rates as determined from generation of existing flows per unit area of specific developed land use type.

Progress: Each fiscal year from 2008 through 2014, HPU captured the annual BWF data with purpose to compare against, and to revise projection of, the forecasted build out demand. **Figure 4** comparatively displays the annual incurred BWF, the conservatively forecasted BWF at build out conditions and the aggressively forecasted BWF at build out conditions.



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Conclusion:

- The graph shows that aggressively forecasted BWFs at City build-out have been projected to be between 8.17 to 8.22 MGD. For capacity evaluations of the SSMP, this aggressive BWF value has been used.
- In contrast, the graph also shows the same forecasts but using the more conservative technique; these BWFs have been projected to be between 5.99 and 6.72 MGD.
- Inclusive to the graph are records of actual BWFs that were recorded for the respective year; actual BWFs have ranged from 4.12 to 4.40 MGD.
- The envelope approach to forecasting has provided a range differential from 1.50 to 2.18 MGD; thus defining a built in margin of safety within the HPU planning approach.
- Most recent data from FY2014 indicated maturity of BWF was at 71% and 54% of the conservative and aggressive forecasted build out BWF, respectively.

Tabulation of the most recent FY 2014 demand data is provided in **Appendix B**; the results are shown in the table as follows. The data indicated that remaining growth projection are as follows:

Residential	446,000 gpd
Commercial	753,000 gpd
Institutional	38,000 gpd
Apartment's	1,710,000 gpd
Industrial	701,000 gpd
Municipal	0 gpd
Rural	260,000 gpd
<u>Rockingham County</u>	<u>410,000 gpd</u>
Total w/o RoCo	3,908,000 gpd
Total	4,318,000 gpd

Sanitary Sewer Projections for Harrisonburg

Description	Density Criteria			Historical Criteria	
	Existing MGD	Capacity MGD	% Maturity	Capacity MGD	% Maturity
City Residential	1,270,000	1,715,654	74%	1,676,374	76%
City Commercial	1,050,000	1,802,415	58%	1,446,920	73%
City Institutional	710,000	747,479	95%	539,972	131%
City Apartments	490,000	2,199,388	22%	969,603	51%
City Industrial	700,000	1,401,373	50%	1,256,467	56%
City Municipal	20,000	20,000	100%	20,000	100%
Subtotal City	4,240,000	7,886,310	54%	5,915,798	72%
External	70,000	70,000	100%	70,000.0	100%
Michaels	-	90,000	0%	90,000.0	0%
Daley	-	170,000	0%	170,000.0	0%
Total	4,310,000	8,216,310	52%	6,245,798	69%

2014 land development: 7,268.3 acres developed; 2,376.7 acres undeveloped; 75.4 % maturity.

Excluded from the data above was 90,000 gallons per day used by Rockingham County with contract agreements extending this use to 500,000 gallons per day. The volume is credited against Rockingham County for capacity at HRRSA and therefore excluded in evaluation of treatment capacity but must be recognized in the evaluation of collection and conveyance system capacities.

VI. SSMP Objective #2: Managing Infiltration & Inflow

Objective: Objective #2 required HPU to monitor existing sanitary sewer infiltration & inflow under current conditions and to then make plans to eliminate or to accommodate the volumes under future conditions.

Background: Infiltration and inflow (I&I) is a significant source of demand that must be separately recognized from the BWF previously discussed. Each and every gallon of I&I competes for equal capacity in the treatment, interceptor, and collector systems. Generally, owners / operators must determine how much I&I its systems will accept and therefore would be added to the previously discussed BWF in order to determine future capacity requirements.

As a benchmark, EPA guidelines suggest that I&I greater than 2,500 gallons per day per inch diameter mile of pipe would be deemed excessive.

$$\text{Infiltration gallons / per inch mile of pipe} = \text{I\&I} / \text{Total Inch Diameter Miles of System Inventory}$$

Since I&I to a given system varies in definition with differing storm durations and periods of analysis, HPU evaluated its I&I issue in several perspectives as follows.

Average Annual Daily (AAD) I&I: This volume has been determined as the difference between the annual volumes of sewer recorded by HRRSA toward the City's allocation at the WWTP minus the sales volume that the City recorded over the same period of time. The use of this parameter is most applicable to make comparisons with BWFs as defined in Objective #1.

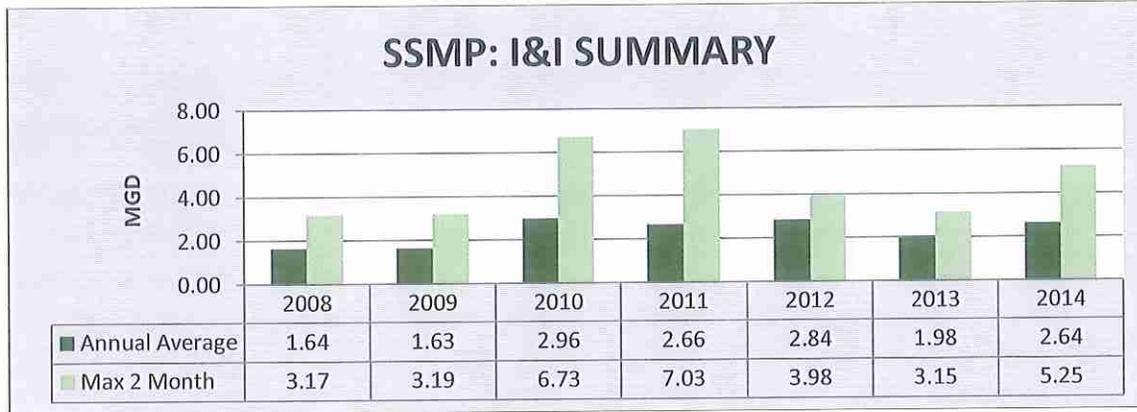
Maximum Two Consecutive Month (M2CM) I&I: This volume has been determined as the difference between the maximum two consecutive month volumes of sewer recorded by HRRSA toward the City's allocation at the WWTP minus the sales volume that the City recorded over the same period of time. The use of this parameter is most applicable to capacity evaluations for wastewater treatment at HRRSA as defined in Objective #3.

Peak I&I: Peak I&I is determined by actual flow monitoring and then quantified to a chosen storm size or duration. Typical examples include the 10 year storm and the peak daily flows. The uses of these parameters are most applicable to capacity evaluations for interceptor and collection systems as defined in Objectives #4 and #5.

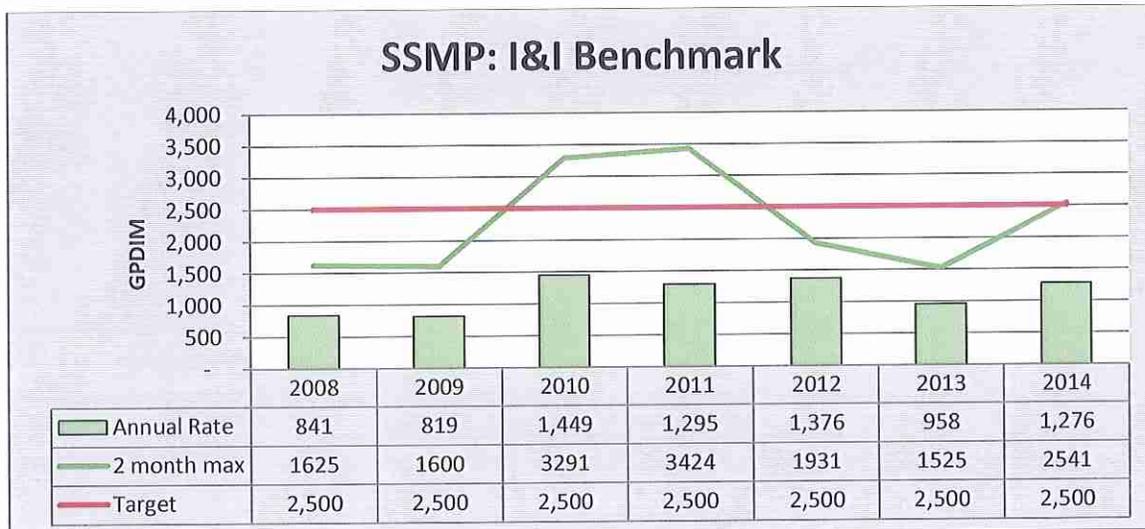
Planning

AAD I&I and M2CM I&I were calculated using flow data obtained from HRRSA and flow data obtained from HPU billing records. Peak day I&I may be added in the future pending available data collection equipment and techniques.

Progress: Figure 5 as follows shows the City's AAD I&I & M2CM I&I. Between 2008 and 2014 the AAD I&I ranged from 1.63 MGD to 2.96 MGD. Prior records indicated a recorded high of 4.21 MGD in 2001. In comparison, the M2CM I&I for the 2008 to 2014 period ranged from 3.17 MGD to 7.03 MGD. The latter two month parameter exhibited a greater value by as much as 264% of the AAD.



Conclusions: Figure 6 as follows shows the City's I&I in terms of the EPA benchmark for gallons per day per inch mile of pipe; both AAD I&I and M2CM I&I presentations have been provided along with the threshold for excessive I&I at 2,500. AAD I&I ranged from 819 to 1,449 and the M2CM I&I ranged from 1,525 to 3,424. AAD I&I flow rates do not indicate concerns but the M2CM I&I flows allowed conclusion that the Harrisonburg system is in need of I&I reductions efforts to reduce the peak.



VII. SSMP Objective #3: WWTP Capacity

Objective: The first item in CMOM, **capacity**, directs the owners of sanitary sewer systems to provide adequate capacity to treat and to convey base flows and peak flows for all parts of the sanitary sewer system. Objective #3 in Harrisonburg's SSMP placed evaluation upon treatment capacity. Harrisonburg's "Maximum Two Consecutive Month" (M2CM) average daily sewer flows were evaluated against the allocated Average Annual Daily (AAD) capacity at Harrisonburg Rockingham Regional Sewer Authority (HRRSA).

Planning: Section 5.6 of the Service Contract between the member jurisdictions and HRRSA sets forth a condition that no member shall exceed its allocated AAD capacity during any two consecutive months. The City desires to avoid any and all limitations, such as a building moratorium for example, which might be imposed under this scenario.

Progress: The figure below portrays the components of Harrisonburg's past and future sewer sales and non-sales components. Its current allocated treatment capacity is also shown. The following observations apply:

...Harrisonburg's actual M2CM total daily flows to HRRSA between 2000 and 2014 are shown in the graph below for each respective year. The value is reflected as the upper boundary of the yellow area. Statistical data suggest that the ratio of M2CM: AAD for total Harrisonburg flow is 1.30 with a recorded peak of 1.63 in 2011.

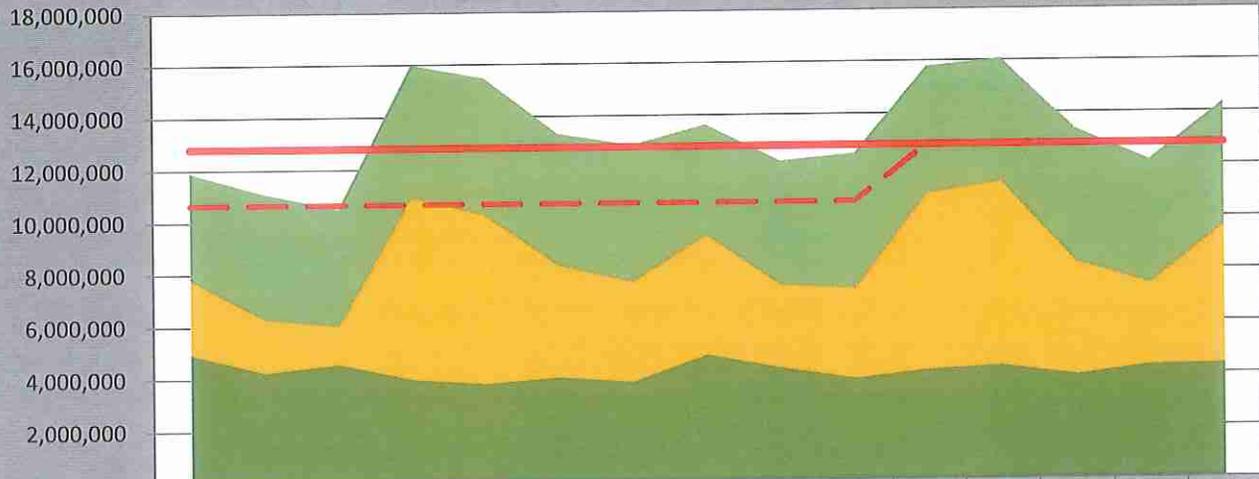
...For each respective year, the M2CM sales are shown by the darker green area with a range from 3.78 to 4.95 MGD. The highest sales occurred in the FY2000, thereafter experiencing a trend of decreased sales before steadily increasing to 4.35 MGD in FY2014. Statistical data suggest that the ratio of M2CM: AAD for total Harrisonburg flow is 1.11 with a recorded peak of 1.16.

...Past Infiltration & Inflow during the M2CM periods are shown in the yellow area and has ranged from 1.48 MGD to 7.05 MGD.

...Harrisonburg's current annual average daily capacity at HRRSA is 12.80 MGD as shown by the solid red trend line; the City's capacity increased from 10.65 MGD to 12.80 MGD in FY2010.

The volume of past sales plus I&I (yellow upper boundary) exceeded the available treatment capacity (dotted red line) in 2003, thus setting forth the City's pursuit for additional treatment capacity.

Harrisonburg 2 Consecutive Month Maximum Daily Averages



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Unrealized Growth	4,087,941	4,787,941	4,482,700	5,081,847	5,259,303	5,043,017	5,240,062	4,220,126	4,752,681	5,174,261	4,855,902	4,717,231	5,091,112	4,725,010	4,692,057
I&I	2,859,666	2,062,076	1,476,124	6,970,648	6,449,162	4,290,182	3,831,590	4,592,236	3,176,335	3,445,125	6,746,997	7,045,322	4,328,554	3,113,667	5,306,929
Sales	4,950,000	4,250,000	4,555,241	3,956,094	3,778,638	3,994,924	3,797,879	4,817,815	4,285,260	3,863,680	4,182,039	4,320,710	3,946,829	4,312,931	4,345,884
HRRSA(1)	12,800,000	12,800,000	12,800,000	12,800,000	12,800,000	12,800,000	12,800,000	12,800,000	12,800,000	12,800,000	12,800,000	12,800,000	12,800,000	12,800,000	12,800,000
HRRSA(2)	10,650,000	10,650,000	10,650,000	10,650,000	10,650,000	10,650,000	10,650,000	10,650,000	10,650,000	10,650,000	12,800,000	12,800,000	12,800,000	12,800,000	12,800,000

Conclusion: The figure above has been configured to also portray Harrisonburg's forecasted standing with its increased allocation at HRRSA and its expected increase in future sewer sales.

Future or unrealized sales have been added to previous Harrisonburg total flow to HRRSA as the latter was incurred during the past 15 years. Future sales have been established such to extend total sales in each and every year to 8.22 MGD AAD or 9.04 MGD M2CM. I&I is shown as actually occurred.

The results show that available capacity (solid red line) will not always support the future treatment requirements (upper boundaries of the lighter green area). Treatment requirements exceed treatment capacity in 9 of the 15 annual periods. A period similar to FY2011 creates the greatest shortfall at 3.28 MGD. *The SSMP has therefore adopted the goal to address a potential shortfall of approximately 3.3 MGD.*

Corrective Action:

Whereas the effort of Objective #3 is to assure that the City has adequate sewer treatment capacity when land development reaches completed status, it is concluded that the City will have three options to meet its goal:

1) Increase capacity at HRRSA

The City has already designated 36% (4.58 MGD average annual daily) of its acquired capacity at HRRSA to accommodate Infiltration & Inflow. It is unlikely that additional capacity would become available for purchase. It is also difficult to justify placing additional treatment capacity into this non beneficial purpose.

2) Reduce expected sales

- As presented in Objective #1, there is a certain degree of safety and risk within the forecasted projections; the error of margin shall be continuously monitored and shall be reevaluated annually.
- The City could revise its zoning plan to reduce sewer requirements. This type of decision would require significant political considerations of socio-economic effects. In addition, revenue effects upon the sanitary sewer enterprise fund would also need to be evaluated.

3) Reduce Infiltration & Inflow

The Public Utilities Department has targeted I&I reduction as a priority. This priority has been established under other objectives of the SSMP and is also compatible with principles of asset management for the collection system. Given the observed past conditions, the challenge will be difficult and costly to work within the 4.8 MGD annual average daily designation for I&I as stated under item 1; however, *the SSMP has adopted the goal to address a potential shortfall of approximately 3.3 MGD M2CM through I&I reduction.*

VIII. SSMP Objective #4: Interceptor Capacity & RDII Abatement

Objective: As recognized previously, the first item in CMOM, **capacity**, directs the owners of sanitary sewer systems to provide adequate capacity to treat and convey base flows and peak flows for all parts of the sanitary sewer system. Objective #4 places evaluation upon conveyance capacity in the interceptor components.

Background: HPU has chosen its larger interceptor components, shown in **Figure 8**, as first priority. As taken from a 1989 study and listed in the following table, Wiley & Wilson provided peak DWF at ultimate City build out conditions. These DWF projections became the design criteria for an interceptor capacity upgrade program:

<u>INTERCEPTOR SYSTEM</u>	<u>Length</u>	<u>DWF design</u>
Upper HRRSA	3,030	26.65 MGD
Lower West Interceptor	4,832	11.58 MGD
Upper West Interceptor	8,543	2.20 MGD
North Interceptor	14,124	8.36 MGD
West Spur Interceptor	1,975	3.71 MGD
East Interceptor	18,808	12.68 MGD
Blue Ridge Drive Interceptor	3,516	0.88 MGD
Country Club Road Interceptor	3,930	2.06 MGD
Total	58,758	

The Wiley & Wilson study provided a master plan recommending that 68 sections of the interceptor needed capacity enhancements prior to the City reaching its ultimate build out conditions. The study has underlain the HPU Capital Improvement Program (CIP) from which much of the interceptor system has been upgraded. Information pertaining to upgrades that have been completed is included in the table that is embedded into **Figure 8**. At the beginning of FY 2015, the HPU had invested \$6.37M since 1989. Because the 1989 study by Wiley & Wilson generally ignored the RDII component of the flow, the HPU implementation approach added new pipes to convey DWF and retained old pipes to convey RDII.

Planning: HPU will engage a key activity to meeting Objective #4 by repeating the Wiley & Wilson Black's Run Interceptor Study, but with integration of RDII as it relates to all objectives of the SSMP. The following activities summarize the plan:

- Flow monitoring will be repeated at the critical terminus locations of each interceptor system.
- New flow data will be collected to identify existing DWF and RDII.
- The interceptor – collector interconnection points will be redefined to match updated GIS records.
- Attributes for each collector sub-system will be identified with purpose to identify future DWF that can be expected at City build-out. This effort will be consistent with the approach used in Objective #1.
- Existing DWF, existing RDII, future DWF and future GWI will be summed to determine future unabated conveyance requirements.
- Capacities of the interceptor system shall be redefined for each asset that was included in the 1989 study; the inventory will be adjusted for additions and removals that have incurred under the HPU upgrade program.
- Comparison of capacities and flows will be made with purpose to identify pipe assets that are, or will be, stressed by hydraulic loading.
- The options for capacity expansion or RDII reduction will be evaluated for “best fit selection” that is both effective and efficient and meets the all goals of the SSMP.

Progress:

Capacity Expansion:

Since 1989, HPU has made significant progress enhancing its Blacks Run Interceptor capacities. From a qualitative perspective, the frequencies of interceptor overflows are now much less than compared to 1989. In the same qualitative perspective, observations suggested that much larger storm events are now necessary to incur hydraulic stress or overflows in the interceptor system

RDII reduction:

During the most recent years, HPU has attacked RDII reduction through a "Carpet / Sweep" approach; this approach is defined in more detail under Objective #5. Little quantification of past RDII removal success has been documented.

Conclusion: Re-evaluation of the Blacks Run Interceptor Program will begin with revised flow data when available; flow monitoring will begin FY 2016. The final master plan will be coordinated to include integration with HRRSA treatment capacity (Objective #1) and with the HRRSA downstream interceptor capacities. Quantification of RDII reduction will be made.

IX. SSMP Objective #5: Collection System Capacity & RDII Abatement:

Objective: As recognized twice previously, the first item in CMOM, **capacity**, directs the owners of sanitary sewer systems to provide adequate capacity to treat and convey base flows and peak flows for all parts of the sanitary sewer system. Objective #5 places evaluation upon conveyance capacity in the collection components.

Background: Located as upstream collector components and discharging flow into the interceptor, numerous sub-shed collection systems are comprised of the approximate 190 miles of pipe in the City inventory. HPU has managed these assets with activities previously shown in Figure 3 under the responsibility of the Field Utilities division. Most work that has been performed to date, and applies to Objective #5, can be categorized as investigative, preventive, remedial, and private focus activities.

Some work that has been planned and performed has occurred under the “Carpet / Sweep” approach. Under this approach, activities were scheduled in a progressive format to make a complete sweep of the entire asset inventory over a pre-determined duration. Activities scheduled by “Carpet / Sweep” approach included:

- Smoke-testing was conducted such that all assets were tested once per ten year cycle.
- visual manhole inspections were conducted such that all assets were tested once per ten year cycle

In contrast, some work was planned and performed in response to “priority” events. Activities scheduled by “priority” approach included:

- Investigative Camera Inspection was conducted in response to multiple occurrences of sewer blockages, sewer blockage occurrences causing property damage, or other reported event giving concern for possible repeat of undesired effects.
- Historically, flow monitoring has not been used extensively in this effort.

Planning: HPU will continue to use both the same “Carpet /Sweep” and “Priority” approaches in future planning of I&I abatement in the collection system components; however, HPU will enhance its “Priority” approach by adding flow monitoring.

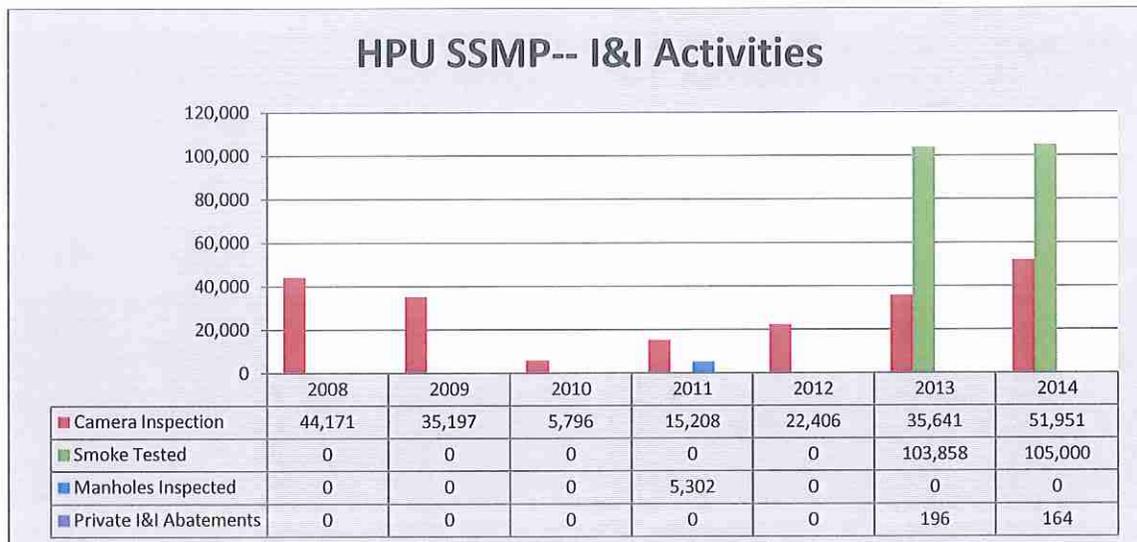
Figure 9 shows a schematic of the interceptor system and the flow contributions as provided in the Wiley and Wilson study. Completing Objective #4 will provide an update of connections and attribute data for each sub-shed collection system. Completing Objective #4 will also allow HPU to prioritize sub-sheds for RDII removal. Within prioritized sub-sections, camera inspection, smoke testing, visual inspections and sub flow monitoring will be used to target RDII reduction projects.

Until the interceptor study can be completed, HPU will randomly prioritize sub-sheds. Generally, sub-sheds located in the upper reaches of the interceptor system have greater potential to address capacity issues for the three objectives of treatment, interceptors, and collectors capacities. However, due to active flow monitoring conducted by HRRSA, Sub-section “BR65” with collector pipes in the area of Mosby Road and Pleasant Valley road will receive attention beginning FY 2015 as an initial test performance model. The sub-section is located in the lower reaches of the City’s Blacks Run Interceptor. Additional information was included in the FY2015 SSMP Implementation Section of this document.

Progress:

Priority Planning: Quantifying past RDII abatement in priority areas is not available at this time but is targeted in FY2015 activities as defined in the Appendix of this document.

Sweep Planning: **Figure 10** shows data from 2008 to 2014 for the feet of sewer main that has be smoke tested and televised, the number of manhole inspections that has been undertaken, and the attention that has been given to private I&I sources. These activities were performed under the general “carpet / sweep” approach.



Conclusions: During the period 2008 through 2014 HPU has:

- Inspected by camera 210,370 feet of sanitary sewer (19% of inventory);
- visually inspected 5,302 manholes (100% of inventory) over most recent 4 years;
- Smoke tested 208,858 feet of sanitary sewer pipe (19% of inventory) over most recent 2 years;
- Issued abatement notices for 360 private violations; the need for evaluation of an enhanced program to emphasize private I&I abatement through enticements and enforcements has been recognized.

X. SSMP Objective #6: Asset Management Planning:

Objective: Objective #6 has purpose to make inventory of all sanitary sewer assets, assign attributes, and to effectively and efficiently remove Risk from the Sanitary Sewer System.

Background: Under separate formal "Initiative", the HPU Department has committed to a "Total Asset Management Plan" (TAMP). The TAMP has strategic, tactical, and operational components.

- The strategic focus of the TAMP is to systematically preplan projected cash flow schedules that will be needed to replace assets at the end of their useful life. These recommendations are evaluated under the utility rate schedule with purpose to provide adequate funding into the CIP program.
- Upon available funding, tactical projects that are undertaken to efficiently and effectively manipulate infrastructure assets with purpose to minimize the total cost of owning and operating them, while also delivering acceptable service levels to the customer. The methodology requires staff to assign two parameters of definition to all assets; they are "Consequence of Failure" (COF) and the "Probability of Failure" (POF). The product of COF and POF is call "Risk". When the "Risk Rating" of an asset warrants the expenditure of funds to reduce the exposure, a project is considered for charter. To work within limited available funding; the "Risk" methodology is intended to place funds toward greater return of risk reduction.

Planning: Each year HPU will select a certain number of sanitary sewer pipes and manholes to inspect. Assets will then be provided ratings for COF, POF and Risk. Generally, these assets will be selected:

- If they approach recommendation for replacement based on age, or if they have been targeted by flow monitoring, or if they have experienced high frequency of stoppages / overflows
- To coordinate with Harrisonburg Public Works (HPW) paving schedule where each year roads are selected for repaving; HPU cleans and inspects pipeline and manholes such that any defects can be repaired prior to paving.

Progress: FY 2014 initiated the TAMP with goals to 1) inventory all assets, 2) obtain life cycle attribute data for all assets, and 3) establish a Level 1 funding projection based solely on asset age. The following status applied:

FY 2014 Inventory of pipe:	191.2 miles
FY 2014 Inventory of manholes:	5,875 each
FY 2014 Pipe Replacement Value:	167.0 M Dollars
FY 2014 Manholes Replacement Value:	N/A
FY 2014 Pipe Depreciated Value:	109.7 M Dollars
FY 2014 Manholes Depreciated Value:	TBD
Five years Pipe Funding Requirement:	8.2 M Dollars
Five years Manholes Funding Requirement:	TBD
Pipe Replacement Schedule by Age	Yes (data verification to be completed)
Manhole Replacement Schedule by Age	TBD

Conclusion: Validations of pipe and manhole attribute data are priority goals for FY2015. Advancement of condition assessment and Risk assignment are also a priority.

XI. SSMP Objective #7; Sewer Overflow Benchmarking:

Objective: Objective #7 required HPU to progressively monitor the City's sanitary sewer overflow rates in comparisons against AWWA published benchmarks. Trending efforts were for purpose of pursuing progressive improvements.

Background: Benchmarking matured in the 1990's with many corporations investing significant resources in efforts to learn what made leading companies to stand out. Various utility organizations followed the same effort in the early 2000s. AWWA is an example of the latter that has published benchmark data for sanitary sewer system integrity. Overflows that occurred per 100 miles of pipe is the benchmark that has provided utility managers with key information that they needed to understand the health of their sanitary sewer system. This performance indicator became useful when maintained over time to gauge how a utility internally trends through improvement or regression. When used externally, these benchmarks provided indication of performance areas that were out of typical.

AWWA has defined Sewer Overflow Rate = $[100 * ((\# \text{ public sewer stoppages}) / \text{Total Miles of Pipe})]$ and has published the following benchmark data in 2011:

Top quarter percentile	1.30 overflows per 100 miles pipe
Median	8.40 overflows per 100 miles pipe
Bottom Quartile	30.50 overflows per 100 miles pipe

Planning: The activities as listed below were designed and engaged to make continuous improvements upon the City's Sewer Overflow Benchmark. HPU's *Program 912; Sewer System Reliability*, targets the purpose of delivering uninterrupted service to customers and to avoid sewer spills to the environment. Key components included both "carpet / sweep" and "priority" approaches as previously defined. They included:

Carpet / Sweep:

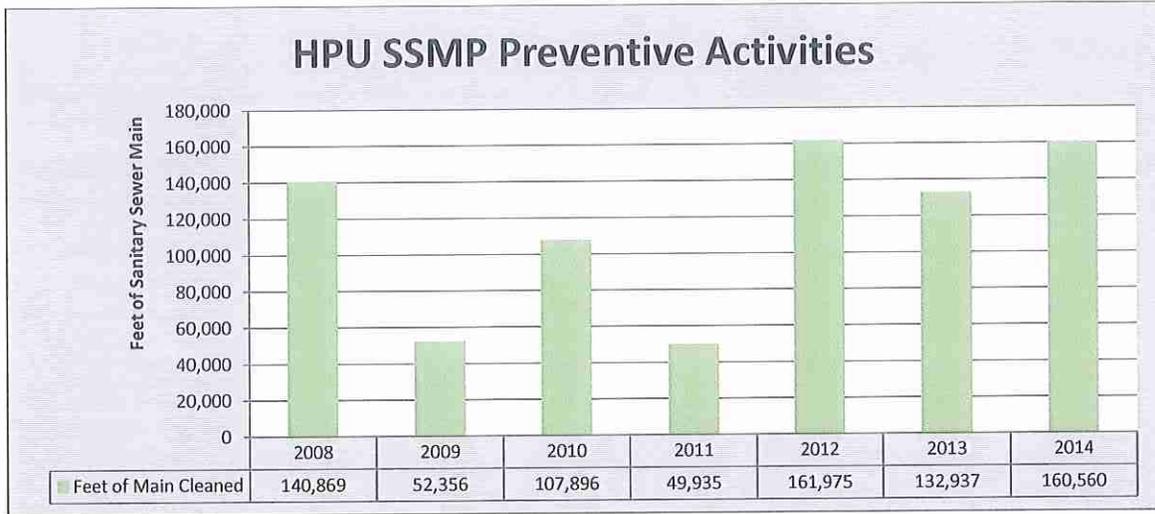
- Preventive Cleaning: Total City sanitary sewer system is prescheduled at 1/10 of inventory to be cleaned each year by jet flushing.

Priority:

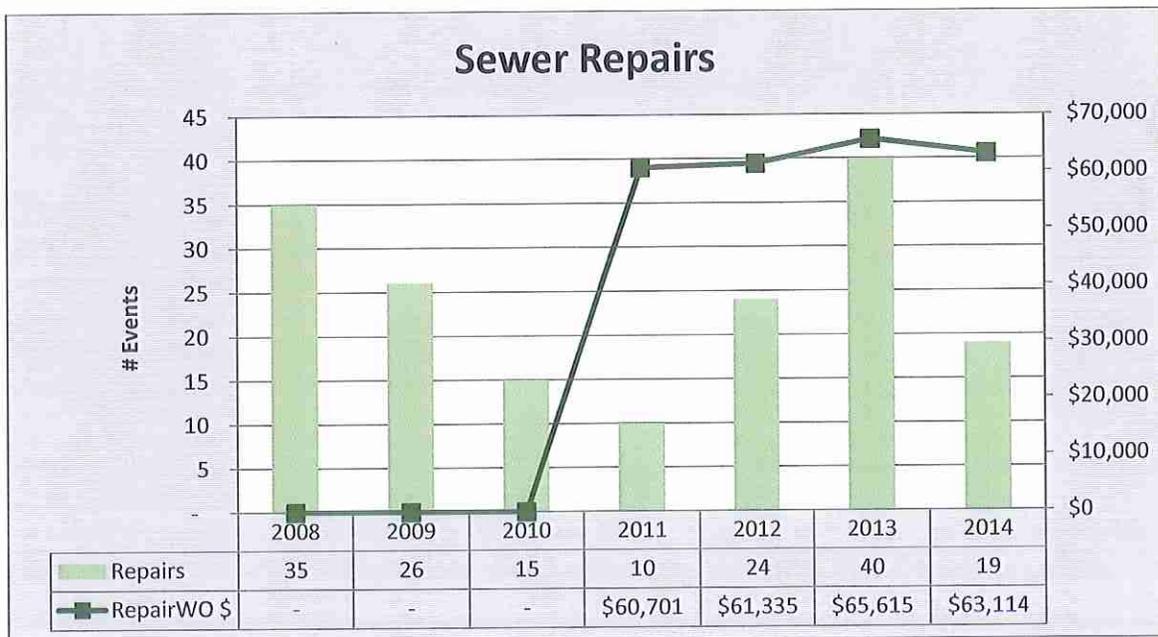
- Investigative Camera Inspection: Multiple occurrences of sewer blockages, or an occurrence causing property damage, initiated the assignment of a camera inspection.
- Remedial Response Cleaning: Sanitary sewer blockages were aggressively remediated by jet flushing response.
- Remedial Sewer Repairs: Under HPU *Program 907, Sewer System Repair*, repair work orders were assigned and tracked, respectively, to prioritize and complete repairs to mains and manholes.
- Remedial Capital Improvements. The occurrences of sewer overflows in specific pipe sections were combined with capacity and Risk assessments to prioritize the upgrade or replacements of sanitary sewer mains and manholes.
- I&I management, as presented in Section 2 above, is also an applicable prevention of sewer overflows.

Progress:

Preventive Maintenance: **Figure 11** as shown below recaptures HPU progress for preventive cleaning that was completed between 2008 and 2014. Since 2008 HPU has cleaned 805,528 feet of sanitary sewer main, or 80 % of system inventory. HPU is on schedule to complete the entire system by closure of the ten year period in 2017.



Repair Maintenance: **Figure 12** as shown below recaptures HPU progress for repairs to pipe and manholes that were completed between 2008 and 2014. The recorded annual costs as obtained from work orders have also been provided; this data from 2008 to 2010 was not available.



Rehab & Replacement:

Figure 13 shown below recaptures the appropriation and expenditures that the City of Harrisonburg has invested in R&R of its sanitary sewer system between 2008 and 2014. Earlier appropriations and CIP balances have allowed an average investments of \$80,000/yr for interceptor R&R and \$358,000/yr for collection system R&R. Maintaining appropriations has been a recent challenge in recognition of balancing cost to customers in terms of %HMI and increased funding to accommodate significant increases in HRRSA operating and debt expenses.

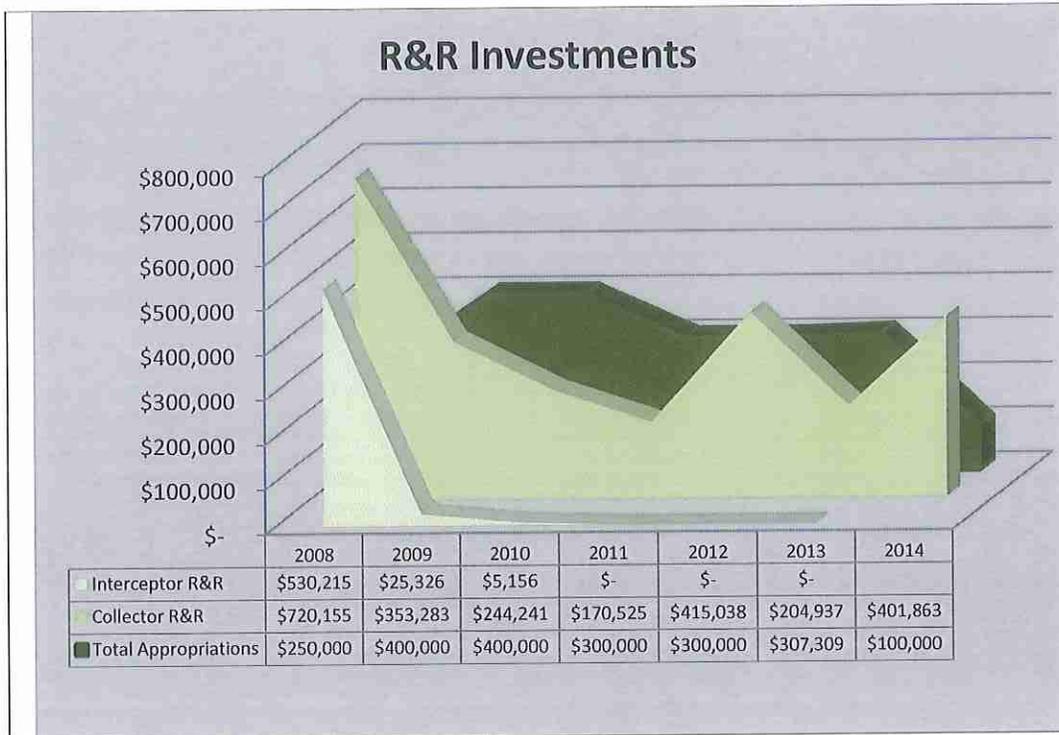
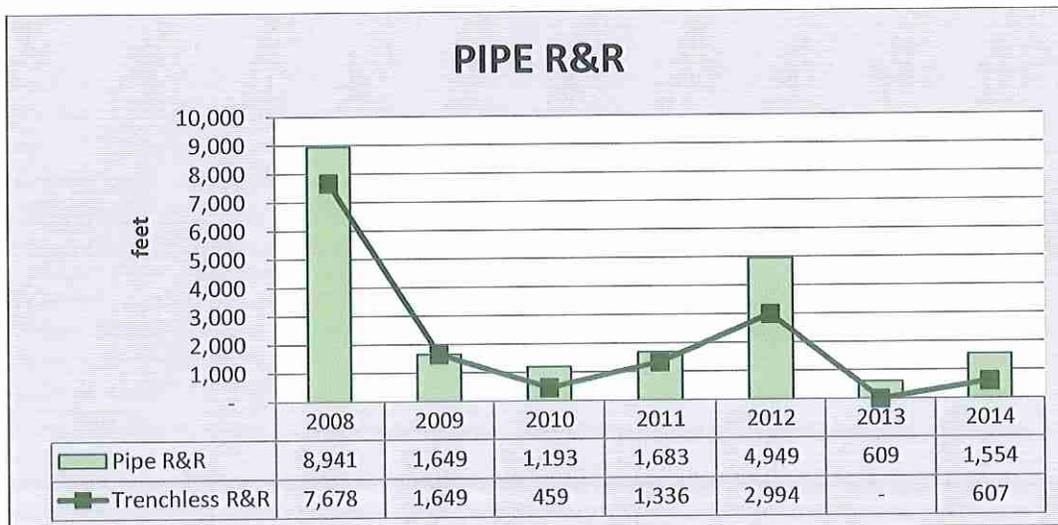
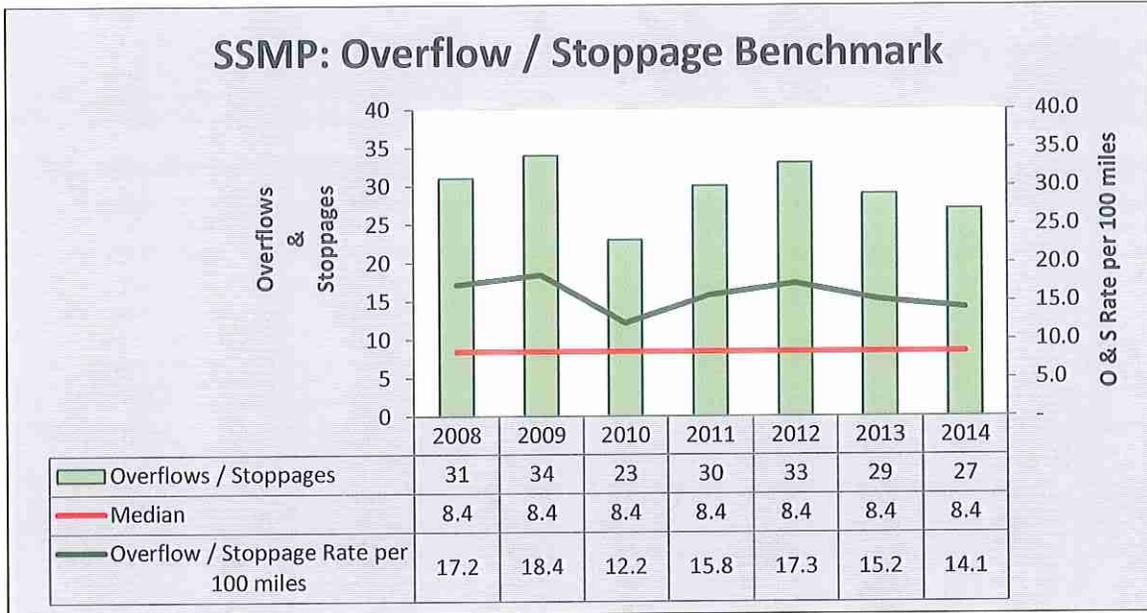


Figure 14 as shown below recaptures HPU progress for pipe rehab and replacement that was completed between 2008 and 2014. Since 2008 HPU has rehabbed or replaced 20,578 feet of pipe; 14,723 feet (72%) has been rehabbed with use of trenchless technology. The remaining pipe was replaced using conventional open cut technology. The total Risk removed from the system has not been quantified.



Conclusion: Figure 15 uses columns to show sewer overflows / stoppages in the Harrisonburg Sanitary Sewer System from 2008 through 2014. Sewer overflow rates have been shown as the trend line with reported values that had ranges between 12.2 and 18.4 events per 100 miles of pipe. A second trend line shows the same overflow benchmark as reported by EPA to be the median for all surveyed systems. The median of 8.4 overflows per 100 miles of pipe, or lower, has been recognized to be Harrisonburg's goal. The sewer overflow trend places Harrisonburg's performance in the third quartile of the published benchmarks and thereby setting the precedence for improvement.



XII. SSMP Objective #8: Financial Benchmarking

Objective: Objective #8 required HPU to monitor its sewer enterprise fund financial indicators and to strive for “Midrange” or “Stronger” designations.

Background: Fitch Ratings published its evaluation criteria in 2013; this information includes the following financial indicators.

“% Household Median Income”
“Liquidity”

“Debt Coverage Ratio”
“R&R Ratio”

Planning: Financial data has been collected from the official records from the City of Harrisonburg.

Progress: The following indicators and benchmarks for FY2014 have been calculated and then referenced to Fitch’s Rating Guide, respectively.

- **Residential Rates = 1.31% HMI;** where annual water plus sewer = \$463.56/yr; HMI = \$35,489 / yr.
(Reported for 2012 as most recent data available for HMI)

Fitch rating “Stronger”	1.2% HMI
Fitch rating “Midrange”	1.5% HMI
Fitch rating “Weaker”	2.0% HMI

- **Liquidity = 148 days;** where Fund Balance = \$3,988,263; average daily expenses = \$26,997

Fitch rating “Stronger”	365 days
Fitch rating “Midrange”	180 days
Fitch rating “Weaker”	90 days

- **Debt coverage Ratio = 1.75;** where revenue less operating = \$4,938,607; debt = \$2,814,570

Fitch rating “Stronger”	2.00
Fitch rating “Midrange”	1.50
Fitch rating “Weaker”	1.25

- **R&R Ratio = 0.5%;** where EOY CIP balance = \$917,513; asset replacement value = \$167,018,200
(Annual CIP distributions at \$400,000 per year)

Fitch rating “Stronger”	5.00%
Fitch rating “Midrange”	3.50%
Fitch rating “Weaker”	2.00%

Conclusion: Pursuant to Fitch Ratings: Rates, Liquidity and Debt Coverage are as “Midrange” status while R&R Ratio is designated “Weaker”.

XIII. Conclusion:

The SSMP status report card is provided below:

Harrisonburg Public Utilities SSMP FY 2014-2015 Status Report

Objective 1	Predict BWF at Buildout		8.22	MGD
Objective 2	I & I Benchmark	Goal	< 2,500	GPDIM
		AAD I & I	1,449	GPDIM
		M2M I & I	3,424	GPDIM
		Peak Day	N/A	GPDIM
Objective 3	I & I Reduction Goals / HRRSA-WWTP		(-2.41)	MGD
Objective 4	Re-evaluate Interceptor System Capacity Expansion & Address RDII Reduction Goals	Upper HRRSA Interceptor		FY 2016
		Lower West Interceptor		FY 2016
		Upper West Interceptor		FY 2016
		North Interceptor		FY 2016
		West Spur Interceptor		FY 2016
		East Interceptor		FY 2016
		Blue Ridge Interceptor		FY 2016
Country Club Interceptor		FY 2016		
Objective 5	Collection System Capacity Expansion & RDII Reduction Goals	BR 65		FY 2015 & FY 2016
Objective 6	Progressively move Asset Management to "Level 3" Status	Level 1 status		85%
		Age Replacement Value		\$167.0 M
Objective 7	Monitor Sewer Overflow Rate	Goal	< 8.4 /100 miles pipe	
		H'burg	12.2 - 18.4 /100 miles pipe	
Objective 8	Maintain Midrange & Financial Status	Rate Index		"Midrange"
		Liquidity		"Midrange"
		Debt Coverage Ratio		"Midrange"
		R & R Ratio		"Weaker"

Objective #3 has been revised to -3.3MGD

Appendix A: Standard Operating Procedures

Under Construction

13.0 PURPOSE

This document provides expectations and responsibilities of Public Utilities personnel, from the initial notification to the final closure, for all events that are incurred to respond to a potential sanitary sewer backup. The proper assignment of responsibility, prompt response, professional handling of incidents, complete investigation, and documentation of the incident can significantly impact the effectiveness and efficiency of the response effort.

13.1 SCOPE

This Standard Operating Procedure (SOP) has been written with intent that the Public Utilities Department is committed to providing a high level of customer service during sanitary sewer backup events. The procedure emphasizes the desire to:

- a) Minimize the customers realized effects and damages;
- b) Minimize the customers perception of abandonment when transferred among department staff; and
- c) Enhance the customer's understanding given the abundant information during unsettled conditions.

The department staff shall learn from each event and shall make process modifications in an effort to enhance customer assistance during future events. This standard has reference to the daily operations of the Field Utilities Division, the Engineering Division, and the Administrative Division.

13.3 SPECIAL REQUIRMENTS

All staff, especially the designated Sanitary Sewer Specialist (SSS), must be able to provide proficient customer service and must also be willing to step outside the box to provide an extra level of service.

In addition, the SSS must be trained and fully understand and convey to our customers all aspects of the sewer backup process:

- a) Must understand the coping brochure in order to answer customer questions.
- b) Must be able to assess what type of backup occurred and determine what additional questions may need to be asked during the follow-up call.

- c) Must be able to work with the First Responders so they understand the output reporting that is required for the organization and to assist them in collecting the proper information.
- d) Must have knowledge of which sewer backup calls typically require insurance claims. Must fully understand the insurance process and all of the information needed in order to file an insurance claim since he/she will be the single contact for the customer from beginning to end. Not all events will require the SSS to approach the insurance subject.
- e) Must fully understand the sewer renewal process and ability to transition customer into this program while retaining continuity contact. Not all events will engage the sewer renewal process.

13.4 REFERENCE DOCUMENTS

- a) Harrisonburg Public Utilities Sanitary Sewer Management Program Initiative (SSMP)
- b) Best Management Practices as pertains to the City of Harrisonburg Storm Water Management Program

13.5 PROCEDURES

The SOP and response program is organized as follows:

- a) Initiation Phase
 - Receipt of call for assistance by normal operations procedures or by off hours Standby procedures (**SOP 2**)
 - Initiation of work order including dispatch of first responder
- b) Site Remediation Phase- See **Appendix A**
 - Stakeholder contacts
 - Remediation of sewer backup & external stakeholder notification
 - Environmental Cleanup & external stakeholder notification
 - Site Remediation Closure
- c) Internal Process Phase-See **Appendix B**
 - External stakeholder contacts
 - Insurance Claim transition
 - Sewer Renewal transition
 - Work Order Closure

X.6 OTHER

All processes, forms, brochures and responsibilities should be collectively reviewed by the Director of Public Utilities and all internal stakeholders in this process as needed to assure the best delivery of service as intended herein.

X.7 MANAGEMENT REVIEW

By signature hereto, the contents of this document shall be designated as approved and therefore becoming a guideline to the operations of the City of Harrisonburg Public Utilities Department to become effective June 1, 2015.

Director of Public Utilities

Approved: Mike Cole

Date: May 6, 2015

Appendix A: Site Remediation Phase

Expectations of Field Utilities Division in the Site Remediation Phase

1) EXTERNAL STAKEHOLDER CONTACTS:

- a) The assigned First Responder is responsible for contacting the sewer backup customer with an estimated time of arrival for every backup event during both regular and off hours. This effort is a comforting feature for the customer who is experiencing a very unpleasant situation; it solidifies that his/her call for assistance has been heard and that help is en route.
- b) The First Responder may request the SSS to perform this call in order to decrease field crew response time and to eliminate the possibility of cell phone use while driving, however; the SSS may proceed only if he/she can give the field reps name and approximate time of arrival.

2) SITE REMEDIAION & EXTERNAL STAKEHOLDER NOTIFICATION:

- a) First responders shall generally use incident command to organize individual responsibilities upon arrival.
- b) All public owned sanitary sewer pipes shall be remediated of the blockage before departure; otherwise engaging incident command for additional resources.
- c) As a minimum effort, the responders shall jet flush the main as a measure of remedial or preventive maintenance; exception shall be permitted where the blockage is within the private lateral that enters into a manhole.
- d) All First Responders are expected to contact the customer in person to inform the customer that they will be getting a follow-up call from our SSS. The First Responder shall provide to the customer the Response and Assessment Form and a Coping Brochure [**Appendix C**]. The First Responder shall obtain the customers signature on the former. It is understood that the signature is only possible if the customer is home.

3) ENVIRONMENT CLEANUP & EXTERNAL STAKEHOLDER NOTIFICATION:

The DEQ Notification telephone number is 540-578-7800 or 800-468-8892

- a) During regular work hours, First Responders are responsible for immediately notifying the SSS or the Sanitary Sewer Manager (SSM) of any event that involves the overflow of solids on the ground. The SSS or SSM will handle communications with the Virginia Department of Environmental Quality (DEQ).
- b) During off hours the First Responders must make direct notification.

4) SITE REMEDIATION CLOSURE:

- a) All First Responders, after taking care of the sewer backup event, must contact the SSS (immediately if it happens during normal working hours and as soon as possible if it happens during standby hours). This could be as simple as a telephone conversation or an office visit made by a member of the First Response Group.
- b) It is imperative that the First Responders immediately transfers all written information regarding customer information and field activities to the SSS for work order closure. This will give the SSS the opportunity to understand the event and to prepare to make the follow-up courtesy call.

Appendix B: Internal Process Phase

Expectations of Customer Service / Sanitary Sewer Specialist (SSS)

1) EXTERNAL STAKEHOLDER CONTACTS:

- a) If requested as defined under the Site Remediation Phase, the SSS shall contact the sewer backup customer with an estimated time of arrival.
- b) The SSS shall place a follow-up courtesy call to the effected customer after the field crew has completed the Site Remediation Phase. The SSS will be expected to reach out to the customer in a friendly, helpful manner in order to provide any additional assistance that the customer may need. The follow-up call shall be made no more than 24 hours after the event. Follow-up courtesy calls for weekend standby events will need to be made no later than the morning of the next regularly scheduled working day.
- c) The SSS shall record each call on the required “Sewer Backup – Follow-up Telephone Log” which is a standard tool to ask general questions regarding the backup and the completed field work. The form also formats questions to provide additional sewer backup support and to make sure the customer understands the Response and Assessment Form”, the “Coping Brochure”, and the options moving forward.

2) INSURANCE CLAIM TRANSITION:

- a) If an insurance claim is applicable, the SSS will remain the contact with the customer but shall become a liaison with the Administration Division. In order to avoid appearance of abandonment and to prevent blind siding the Administrative Department, the SSS shall obtain all needed information to submit the claim and to convey this need and information to the administrative staff (see **Appendix C** for list of needed information). If an insurance claim is opened, the administrative staff shall oversee a separate work order.

3) SEWER RENEWAL TRANSITION:

- a) If a sewer renewal evaluation is applicable, the SSS must assist to make an effortless transition for the customer from the sewer backup process into the sewer renewal process. A separate work order shall be used to initiate a sewer renewal effort.

4) **WORK ORDER CLOSURE:**

- a) The SSS shall close the initial work order and shall include all information obtained during the Initiation Phase, the Site Remediation Phase, and the Internal Process Phase (only information from the external stakeholder step is required but reference to any work order id for an insurance claim or sewer renewal is needed). Format to close work orders shall be:
- The type of work shall be “Sewer Backup Response”.
 - The type of action taken shall be as appropriate
 - ❖ Public sewer blockage remediated by cleaning
 - ❖ Public sewer surcharge
 - ❖ Private sewer blockage
- b) The SSS shall post the activity to the asset record.
- c) The SSS shall immediately schedule of field television inspection of any pipeline asset that shows the following condition upon completion of item b) above:
- A third sewer backup response
 - Possible “in dwelling damage” as reported by the First Responder Team
 - The submittal of an insurance claim.
- d) The SSS shall accommodate the SSM and Director with any and all reviews of work order at time of closure as requested.

Expectations for Administrative Division

- 1) Is responsible for obtaining from the SSS all information necessary to properly file the insurance claim with the city’s insurance carrier, the Virginia Municipal League (VML).
- 2) The Administration Division will no longer need to worry about contacting the customer directly or taking a ‘blind’ call regarding a sewer backup insurance claim. The SSS will take care of that step in the process.
- 3) Is responsible for submitting the claim.
- 4) Is responsible for maintaining communication with VML, SSS, SSM, City of Harrisonburg’s Risk Manager, Public Utilities Director, and City Manager as needed.

Expectations for Engineering Division

- 1) Is responsible for assigning the SSS designation.
- 2) Is responsible for assigning the Sanitary Sewer Manager Position
- 3) Is responsible to oversee execution of this SOP and Customer Surveys

Appendix C: Sewer Backup Forms

Form A: Response and Assessment Form

Form B: Coping Brochure

Form C: Sewer Backup Follow-up Telephone Log

**Form D: Sewer Backup Investigation Summary -
Insurance Claim Form**

**Form E: Customer Service Sewer Backup Evaluation
Questionnaire**

City of Harrisonburg
Department of Public Utilities

RESPONSE AND ASSESSMENT

Date: _____
Address: _____
Time Call Received: _____
Called Customer with ETA: Yes No
Time Arrived: _____
Time Departed: _____

General Description At Site:

(check all that apply)

- Public Main Blockage Public Surcharge
- Private Lateral Blockage
- Sewage Spill / DEQ Notification

Corrective Actions Taken:

- Cleaned public main with high pressure jetting
- Cleaned & remediated sewage spill

Customer Service Outreach by Service Technician:

- Customer was not home, Expect follow-up call
- Met customer, Informed follow-up call will be made
- Referred customer to private contractor(s) for line maintenance or cleaning
- Explained and provided customer with "Sewer Backup Procedures" brochure
- Provided customer with response and assessment form
- Contacted Sanitary Sewer Specialist to discuss backup event

Department Referrals:

- Recommend TV inspection
- Recommend placement on root run listing
- Recommend placement on grease run listing
- Other: _____

We sincerely hope our personnel have been courteous and informative. Please call if we can provide you with further service or answer any questions. – City of Harrisonburg, Public Utilities Department, 434-9959

(Date) (Service Technician)

(Date) (Customer Signature)

Customer Contact #

City of Harrisonburg
Department of Public Utilities

RESPONSE AND ASSESSMENT

Date: _____
Address: _____
Time Call Received: _____
Called Customer with ETA: Yes No
Time Arrived: _____
Time Departed: _____

General Description At Site:

(check all that apply)

- Public Main Blockage Public Surcharge
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- Other: _____

We sincerely hope our personnel have been courteous and informative. Please call if we can provide you with further service or answer any questions. – City of Harrisonburg, Public Utilities Department, 434-9959

(Date) (Service Technician)

(Date) (Customer Signature)

Customer Contact #

City's Liability

Court decisions have made it clear that the locality does not and cannot guarantee that its sewer will never back up. A sewer system is not a closed system. Any resident or business that is hooked up dumps waste into the sewer. The City of Harrisonburg is liable for damages other than the public sewer main IF, and only IF, the locality's negligence caused the damage. Here are the four basic questions that the court looks at in deciding this issue. The locality is liable if the answer to **ALL FOUR** is yes:

1. Was there a defect in the locality's sewer line? (tree root, grease, diaper, sag or break in line, or ineffective design)
2. Did the locality know or should the locality have known about the defect? For example, were there previous complaints or report of the problem, should the problem have been discovered during routine inspections or maintenance of the lines?
3. Did the locality fail to correct the defect within a reasonable time after learning of it?
4. Did that failure by the locality cause damages?

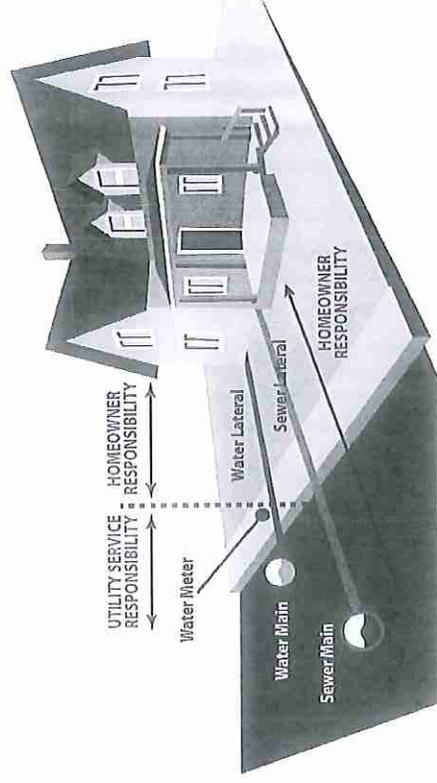
This is one reason why the Department of Public Utilities supervises the City's public main lines with an aggressive and regular maintenance schedule.

If you believe the City is liable for damages because of negligence, as outlined in all of the four points listed above, please contact us at 540.434.9959 and a representative from the department will explain our insurance claim process.

How can I Protect Myself from this Costly Inconvenience?

1. Check your homeowners' policy. All insurance companies that provide homeowners or tenant's coverage in Virginia are required to inform insurers of the availability of coverage for back-ups from sewers and drains. Consider purchasing a new policy if yours does not have this coverage.
2. Avoid disposal of prohibited objects into the sewer system.
3. Contact Public Utilities if you suspect problems or to request general information.

Coping with Sewer Backups: Understanding Your Options



CITY OF HARRISONBURG, VA

Department of Public Utilities

2155 Beery Road
Harrisonburg, VA 22801
540.434.9959

Sewer Backup Event

Sewage usually flows in a reliable path, moving along from pipes inside your home to outside lateral pipes under the lawn or street. These pipes carry sewage to the public main, which then move the sewage to the City's Wastewater Treatment Plant.

When the path reverses, for any reason, it is an unpleasant and unwelcomed surprise. We'd like to help with information on how to best cope with this turn of events.

The customer usually has two immediate questions:

1. How do I get the sewage out?
2. Who pays?

How? Always call the Public Utilities Department

First - 540.434.9959

Call Us First Before Any Other Repairman

You want to be sure to call us first because certain conditions, which may cause the most damage, are related to blockages in the public main. Only the Public Utilities response personnel can address these issues and they may find that you don't need a repairman.

Here is what you can expect from the experts in your municipal department when they arrive following your call:

1. A quick response; our employees are trained to provide an expected arrival time to you.
2. A thorough check of the pipes in the public main, testing to identify any stoppages in the public main, removing any stoppages that may exist and / or preventive maintenance cleaning in the public main. The Public Utilities Department will also clean-up and disinfect around public manholes which may have overflowed.

3. A written assessment of the condition of the public main at the time of the initial visit. At this time, the response experts may suggest that you call a plumber and / or cleaning service.

Special Circumstances - Sewer Laterals Under City Streets and Sidewalks

Occasionally after you have been referred to a plumber to investigate your private lateral blockage, it is determined that the cause of the problem may lie within a portion of your private lateral that is located between the right-of-way and the City main. Sometimes this means that the lateral is under sidewalk and City streets. The Public Utilities Department has a special program known as the Sewer Renewal Program to deal with these unique cases. Please contact us immediately at **540.434.9959** if your plumber has determined this is the case with your lateral. Our Field Utilities Superintendent or other department representative will contact you to discuss the full details of this program.

Here's what you cannot expect from municipal experts:

1. Clean-up or plumbing assistance for inside your residence or business.
2. Clean-up or plumbing repairs on private sewer laterals from the dwelling to the right-of-way.

Who Pays?

Generally speaking, recovery of costs for damages caused by a sewer backup event that occur inside a home or business is the responsibility of that resident or owner. Costs to repair the private sewer lateral are also the responsibility of the owner. Remember to save your receipts, they may be reimbursable through your homeowner's policy.

Responsabilidad de la Ciudad

La corte a determinado y a dejado claro que la ciudad no puede y no debe garantizar que el drenaje no se va a retrasar. El sistema de drenaje no es un sistema serado, todo residente o negocio que está conectado al sistema descargan desperdicios en el drenaje. La Ciudad de Harrisonburg es responsable por daños cuando y solamente si, la negligencia de la Ciudad causo daños. Las siguientes son cuatro preguntas base que la corte va hacer para decidir en este caso

1. ¿Hubo un defecto en la línea de drenaje? (por ejemplo: una raíz de un árbol, grasa, pañales, un hundimiento o rompedura en la línea, o el diseño no ha sido efectivo)
2. Si la ciudad supo o debió de haber sabido de los defectos. ¿Por ejemplo, hubo quejas o reportes del problema, el problema debió ser descubierto durante una inspección de rutina o en mantenimiento de las líneas?
3. ¿La ciudad se negó a corregir el defecto en un tiempo razonable después de haberse enterado?
4. ¿La negligencia de la Ciudad causo los daños?

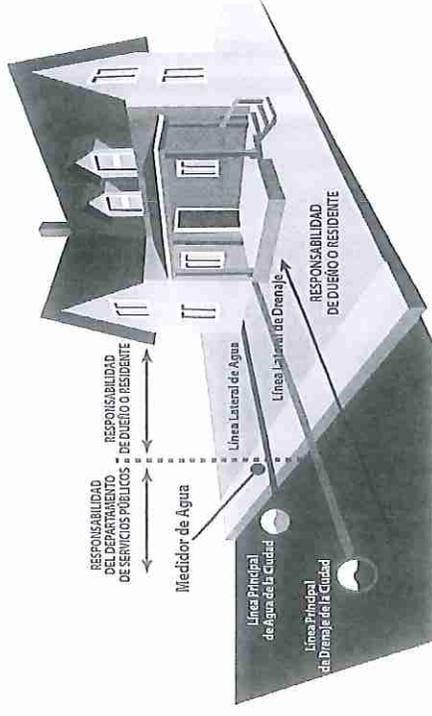
Esta es una de las razones por la cual el departamento de Servicios Públicos supervisa las líneas principales con un horario agresivo de mantenimiento de líneas.

Si usted cree que la Ciudad es responsable por daños causados por la negligencia, descrita en los cuatro puntos de arriba, por favor comuníquese con nosotros al 540-434-9959 y un representante del departamento le explicara el proceso de un reclamo con nuestra aseguradora.

¿Cómo me puedo proteger de gastos inconvenientes?

1. Verifique la póliza de seguro de su casa. Todas las aseguradoras que ofrecen seguro de casa o seguro de inquilinos en el estado de Virginia son requeridos a informar al asegurado de la protección de seguro que cubriría en un evento en cual el drenaje se bloquea o se tapa. Considere comprar una póliza diferente, si su póliza no tiene esta protección.
2. Evite disponer de objetos prohibidos en el sistema de drenaje.
3. Contacte al departamento de Servicio Públicos si usted sospecha de algún problema o para obtener información general.

Lidiando con un problema del Retraso del Alcantarillo (drenaje)



CIUDAD DE HARRISONBURG, VA

Departamento de Utilidades Públicas

2155 Beery Road

Harrisonburg, VA 22801

540.434.9959

Lidiando con un problema del Retraso del Alcantarillo (drenaje)

Normalmente las aguas residuales fluyen por un camino seguro, corriendo desde la tubería de la casa a la tubería lateral debajo de la tierra o de la calle. Esta tubería lleva las aguas residuales a la tubería pública principal, que después corre a la Planta de Tratamiento de Aguas Residuales de la Ciudad.

Cuando las aguas residuales se regresan, por cualquier razón, es una sorpresa desagradable e inoportuna. Nos gustaría ofrecer información de cómo lidiar con este tipo de eventos.

El cliente usualmente tiene dos preguntas inmediatas:

1. ¿Cómo puedo sacar las aguas residuales?
2. ¿Quién es responsable por pagar?

¿Cómo? Siempre debe llamar a El Departamento de Servicios Públicos

Primero Llame al – 540.434.9959

Llámenos Primero Antes de llamar a cualquier Reparador (técnico)

Asegúrese de llamarnos primero debido que ciertas condiciones, pueden causar daños mayor y están relacionada con bloqueos en la tubería pública principal. Solamente el Equipo de Respuesta del Departamento de Servicios Públicos puede tratar estos problemas y podrán determinar si es necesario contactar un reparador/técnico.

Esto es lo que usted puede esperar de los expertos del departamento de la municipalidad, al llegar una vez que usted haya llamado

1. Una acción rápida; Nuestros empleados son entrenados para proveerle una hora estimada de llegada.
2. Un chequeo extenso de la tubería principal de la ciudad, examinaran para identificar si ay algún paro que pueda existir y/o mantenimiento preventivo limpiando la línea principal de la ciudad. El Departamento de Servicios Publico también desinfectara y hará una limpieza alrededor de pozos de registro público que pudo haberse desbordado.

3. Una evaluación escrita de la condición de la tubería pública principal en el momento de la visita inicial. En este tiempo el experto que responde a la visita le puede sugerir que le llame a un plomero y/o una agencia de limpieza.

Circunstancias Especiales – Tubería Lateral del Alcantarillado debajo la calle o banqueta

Después de que haga sido referido a un plomero para investigar el bloque de su línea lateral privada, puede que sea determinado que el problema este en una porción de su línea lateral privada que está localizada entre medio del derecho de paso y la línea principal de la ciudad. A veces esto quiere decir que la línea lateral esta debajo de la banqueta y/o la calle de la Ciudad. El departamento de Servicios Públicos tiene un programa especial conocido como el Programa de Renovación del Drenaje para lidiar con situaciones como estas. Por favor comuníquese con nosotros de inmediato al 540-433-9959 si el plomero ha determinado, que esta es la situación en su lateral. Nuestra Gerente de utilidad del Campo u otro representante se comunicara con usted para discutir los detalles completos del programa.

Esto es lo que no debe esperar de nuestros expertos de nuestra municipal

1. Limpiar o asistir con problemas de plomería adentro de su casa.
2. Limpiar o asistir con problemas de plomería en una línea privada lateral de la vivienda del derecho de paso.

¿QUIÉN PAGA?

Generalmente hablando, los gastos de recuperación de los daños causados por un retraso del drenaje que ocurre dentro de la casa o negocio es responsabilidad del residente o dueño. El costo de reparar la línea privada también es responsabilidad del dueño. Recuerde que debe guardar recibos por si la póliza a de seguro de la casa le puede reembolsar.

Sewer Backup – Follow-up Telephone Log

Customer Name: _____

Customer Address: _____

Customer Contact #: _____

Date/Time of Follow-up Call: _____

1. GREETED CUSTOMER: YES NO

Good morning/afternoon. I'm the sanitary sewer specialist for the Dept. of Public Utilities. I've been informed that you had a sewer backup at your residence (or place of business) today. Is that correct?

2. REVIEWED FIELD WORK WITH CUSTOMER: YES NO

Were you at home during the time of the backup?

Did our field utilities crew respond to your backup? Do you feel that they responded in a timely manner?

Was the field utilities crew able to speak with you regarding their response and provide you with an explanation of their findings?

Did the field crew leave you a copy of their "Response/Assessment Form" and the "Coping with a Sewer Backup" brochure?

3. HELPED CUSTOMER UNDERSTAND STANDARD FORMS: YES NO

Do you have any questions regarding the "Response/Assessment Form?"

Do you understand the contents of the sewer brochure? Do you have any questions?

4. **PROVIDED ADDITIONAL SEWER BACKUP SUPPORT:** YES NO

Were you asked to contact a plumber to help resolve the private lateral blockage? Do you understand that you are responsible for the repair?

Did you review the section of your sewer brochure pertaining to blockages under sidewalks or streets? Do you have any questions about what you need to do if this is the case with your lateral? Do you have any question regarding our sewer renewal program?

Did the sewer back up into your house or business? Did the backup event cause any damage at your property, if so please describe? After reviewing the City's liability with regards to sewer backups, do you feel that you would like to file an insurance claim with our department?

5. **WRAPPED UP CALL WITH FINAL QUESTIONS:** YES NO

Now that we've discussed the coping brochure and your options for fixing your sewer, do you have any further questions at all regarding the backup event and is there anything else we can do to assist you?

From a customer service stand point, please describe how satisfied you are with the way the Dept. of Public Utilities helped you resolve your sewer backup.

6. **DID BACKUP RESULT IN AN INSURANCE CLAIM** YES NO
(If yes, TV inspection of the main is mandatory. SSS to create necessary work order.)

7. **PROVIDED FOLLOW-UP FORM TO CST:** YES NO

(Follow-up Call Completed By: Signature)

(Date)

Sanitary Sewer Backup Investigation Summary – Insurance Claim

1. Date of Event: _____
2. Location of Event: _____
3. Description of Event: _____

4. Field SRF # (attach copy) _____
5. Owner information: Name _____ Phone _____
6. Sanitary Sewer Pipe I D: _____
7. History of line section: (List previous backups or problems; date & description)
 - _____
 - _____
 - _____
 - _____
8. List preventative maintenance activities. Is the section on the flushing schedule?

9. List History of repairs: _____

10. List any infiltration / inflow abatement activities: _____

11. List any capital improvement activities: _____

12. Where was the blockage (private or main) and what caused the blockage?
13. Was there a defect in the locality's sewer line? _____
14. Were there previous complaints or reports of problems? _____
15. Should the problem have been discovered during routine inspection or maintenance of the lines?

16. Did the locality fail to correct the defect within a reasonable time after learning of it? _____

17. Did that failure by the locality cause damages? _____
18. Date of last tv inspection: _____

Representative Preparing this Report

Date

Customer Service – Sewer Backup Evaluation Questionnaire

Customer Name: _____

Customer Address: _____

Customer Contact #: _____

Date/Time of Follow-up Call: _____

1. Generally speaking, how do you feel about the Department of Public Utilities' service as a whole?

2. How do you feel about our field work?

3. Do you feel that the follow-up phone call from our Sanitary Sewer Specialist was useful during your backup experience?

4. On a scale from 1 -10 can you please rate your overall experience with the Department of Public Utilities.

5. What factors contributed to the overall rating?

(Evaluation Call Completed By: Signature)

(Date)

SOP Search Criteria

SOP Title	
SOP Number	
Affects which Performance Program(s)	
Key Word	
Flow Diagram	
Approval Date	
Revision Date	

Appendix B: Demand Calculations

Appendix C: FY2015 SSMP Implementation

FY 2015 Sanitary Sewer Priority Planning Project

Project scope of work includes:

Sewer System planned management	input man-hour	2,882	
	Output (miles)		n/a
Planned: Root & Grease Runs	input man-hour	150	
	Outputs (miles)		6
Planned: Sewer Main Flushing (miles)	input man-hour	300	
	outputs (miles)		21
Planned: Sewer Smoke Testing (miles)	input man-hour	450	
	Outputs (miles)		30.62
Sweep	input man-hour	300	
	Outputs (miles)		20.00
BR65	input man-hour	150	
	Outputs (miles)		10.62
CATV Work total	input man-hour	1,982	
	Output (miles)		20.22
Age	input man-hour	170	
	Output (miles)		1.10
BR 65	input man-hour	1,416	
	Output (miles)		10.62
Paving	input man-hour	396	
	Output (miles)		8.50

1) Perform field investigation of HRRSA priority (BR65-see below) and correlated to the 1980 PHR&A SSES study. Maps to be provided as follows:

- A-100 (Mosby Roads & City Shops Subsection)
- A-200 (Lower Valley Blox Subsection)
- A-300 (Pleasant Hill Subsection)
- A-400 (Dealton Avenue & South Main Subsection)
- B-200 (South Hampton Subsection)

Work to be performed:

- From previous interceptor flow monitoring, HRRSA has identified a collector sub-system known as BR65 (Mosby Road and Pleasant Hill) that contributes flows to the Upper HRRSA Interceptor. HRRSA has identified this section as having high probability of RDII contributions. HPU will repeat the flow

monitoring of the Upper HRRSA Interceptor and will complete the investigative activities for this sub-section before moving to another priority area.

- Complete a thorough re-smoke test of entire area; repeat as necessary in select locations per flow monitoring and inspections.
 - Install flow monitors at Manholes A-2, A-100, B-200; correlate inflow induced peaking events with rainfall as incurred. Plan additional smoke testing, tv inspection, and wet weather investigation as necessary. Relocation of sensors may be required.
 - Wet weather visual observations. Assign crews to field investigate the areas during rainfall events (schedule, field records, photographs to be formatted). Start with comprehensive approach and move to suspected high priority areas.
- 2) Perform field investigation of PHR&A line sections prioritized for Inflow as provided in Table 1-2 page 1-11 PHR&A Volume1. The table has been recreated with original data but also includes current day nomenclature to pipelines and manholes. The investigation should begin with smoke testing and then conclude with Catv inspection or manual inspection and possibly induced I&I.
- 3) Perform field investigation of all storm devices with possible connections to sanitary sewer per pages 5-18 through 5-23 PHR&A, Volume 1. Field maps are being provided for the following locations:
- West View & South Mason Streets
 - South side of Franklin at Main Streets
 - 3 inlets at Ash Tree and South Main Streets
 - 3 inlets at Campbell and South Main Streets
 - Storm lid between #120 and #130 Crescent Drive
 - South side of First Street west of Lee Street
 - Grate inlet on west side of Lee Street
 - Intersection at 2nd and Colicello Streets
 - Culvert back of Swift Company Parking Lot
 - Behind curb @ 72 Weaver Street
 - 12" storm pipe behind Meyers @ Creek Avenue

