

Jacksonville Wastewater Utility



248 Cloverdale Road, Jacksonville, AR 72076
Phone: (501) 982-0581 Fax: (501) 982-5791
www.jwwu.com

December 6, 2016

Ms. Leslie Allen-Daniel, Enforcement Analyst
Water Division Enforcement Branch
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

RE: NPDES Permit No.: AR0041335, AFIN: 60-00543
Sanitary Sewer Overflows (SSOs)

Dear Ms. Allen-Daniel:

This Corrective Action Plan (CAP) is being provided in response to your letter dated November 7, 2016. I would like to provide some history of inflow/infiltration (I/I) repairs done as a part of our on-going CAP depicting the serious consideration given and actions taken by Jacksonville Wastewater Utility (JWWU) in an attempt to eliminate SSOs from 1995 to date.

Sewer System Evaluation Studies

JWWU conducted its first sanitary sewer system evaluation study (SSES) in 1995-1996 to quantify infiltration and inflow (I/I) and identify system defects contributing to excessive wet-weather flow rates. The system was sub-divided into five (5) sub-basins for flow monitoring and field investigation purposes, and defects were prioritized for repair according to severity. Sub-basins One (1) and Five (5) were determined to be priority areas and repairs in those basins were completed in 1999. A Post-Rehabilitation Flow Data Analysis was completed by Crist Engineers in 2001 which showed a significant improvement in wet-weather performance with reductions of 16% to 40% over pre-rehab conditions. The summary from the Post-rehab Flow Data Analysis Report dated January 21, 2001 is enclosed (Attachment A).

JWWU contracted Pipeline Analysis, LLC to conduct a second SSES in 2008, at which time the collection system was sub-divided into nine (9) specified areas. Flow monitoring began in March 2008, and was followed by an SSES of the high priority areas to identify collection system defects and recommend repair methods and estimated costs. See attached report summary from Pipeline Analysis, LLC (Attachment B).

Rehabilitation

To date, JWWU has remained focused on rehabilitation and has continued to budget annually for contracted pipe bursting, cured-in-place pipe, and in-house main line repair and relay. In 2009, the City of Jacksonville approved the issuance of bonds to complete several large projects, followed by rate increases in 2012, 2013, and 2014. Bond funds in the amount of \$7,470,201 were used toward rehabilitation of existing sewer lines and construction of two new interceptors. The new interceptors consisted of 14,715 feet of new main line and 52 new manholes and allowed the decommission of four lift stations.

Actual costs expended toward this purpose using contract forces were as follows:

	<u>Cost</u>	<u>Footage</u>
2008	\$2,328,567	25,226
2009	\$1,203,104	13,403
2010	\$2,119,503	30,156
2011	\$1,935,831	29,246
2012	\$4,314,948	22,172
2013	\$465,693	8,361
2014	\$347,945	6,474
2015	\$161,448	2,660
2016	\$488,679	7,415

Total manholes repaired/replaced = 351

In-house forces account for additional rehab work, televising, and cleaning performed during this time and budgeted through our operations and maintenance budget. From 2013-2016, 9,657 feet of line was replaced and 450 manholes were repaired or replaced by in-house crews.

Flow Analysis

A post-rehab flow analysis was completed in 2012. The study showed the overall percentage reduction in wet weather volume averaged 45% in all study areas, with as much as a 63% reduction in one sub-basin. See attached flow data analysis report from Pipeline Analysis (Attachment C).

On-going Investigation

JWWU has a daily cleaning, televising, and investigative program. Our system is routinely cleaned on a three-year basis, with special attention given to problem areas. In addition, it is our policy to followup on every customer call received by investigating the source of the problem through closed-circuit-televising, smoke testing, and physical inspection of lines and manholes. As part of the investigation, the line is cleaned, televised, and assigned for rehab based on priority. Records for the November 2013-October 2016 timeframe show that our crews cleaned 211 miles, televised 48 miles, and smoke tested 7 miles of sewer line in our investigations and through daily routine maintenance.

Several SSOs are caused by grease or non-dispersibles (wipes) blocking the lines. Upon discovery of grease or non-dispersibles blocking main lines, JWWU sends residents a postcard asking them to "Can the Grease" and "Shut the Lid on Wipes". During the time frame of November 2013-October

2016, over 1200 postcards were mailed in an effort to educate the public on the proper and improper uses of the sewer system (Attachment D). Other public education efforts have included the regular use (twice annually) of a billboard on Highway 67/167 telling residents to “Can the Grease”, public presentations at landlords’ association meeting, neighborhood meetings, and civic clubs, and reminders printed on water bills, bill stuffers, and newspaper advertisements. The Utility’s cleaning truck and televising truck are covered with a vinyl laminate reminding residents to “Can the Grease” and “Shut the Lid on Wipes”, and JWWU pick-up trucks have a similar message on the doors.

JWWU has a service line repair policy, enforced and authorized by City Ordinance #1360 (#3-09) which requires homeowners to repair faulty service lines to eliminate sources of I/I into the system. The following chart indicates service line repairs performed by homeowners in the City of Jacksonville.

YEAR	SERVICE LINES REPAIRED
1995 – 2000	873
2001	27
2002	25
2003	8
2004	15
2005	6
2006	11
2007	41
2008	70
2009	77
2010	93
2011	21
2012	12
2013	8
2014	19
2015	19
2016 thru Oct.	28

SSOs

In reviewing the eighty (80) SSOs reported from November 1, 2013 – October 31, 2016, seventeen (17) occurred at the Little Rock Air Force Base (LRAFB), which is a privately owned system. The LRAFB reports SSOs to JWWU per their discharge permit, which are then reported to ADEQ. Enclosed is a report from the LRAFB outlining their past rehabilitation efforts and future corrective action plan (Attachment E).

One (1) other line is privately owned by the school district. Of the remaining sixty-two (62) SSOs that are in the JWWU system, all lines involved in the SSOs, with exception of eleven (11), have

been rehabilitated. Of the remaining eleven (11) SSOs, one (1) line is currently being repaired and ten (10) are scheduled in 2017 (Attachment F).

The following graphs depict the causes of SSOs and amount of rainfall for 2013-2016.

Figure 1: A breakdown of the source of SSOs from 2013-2016.

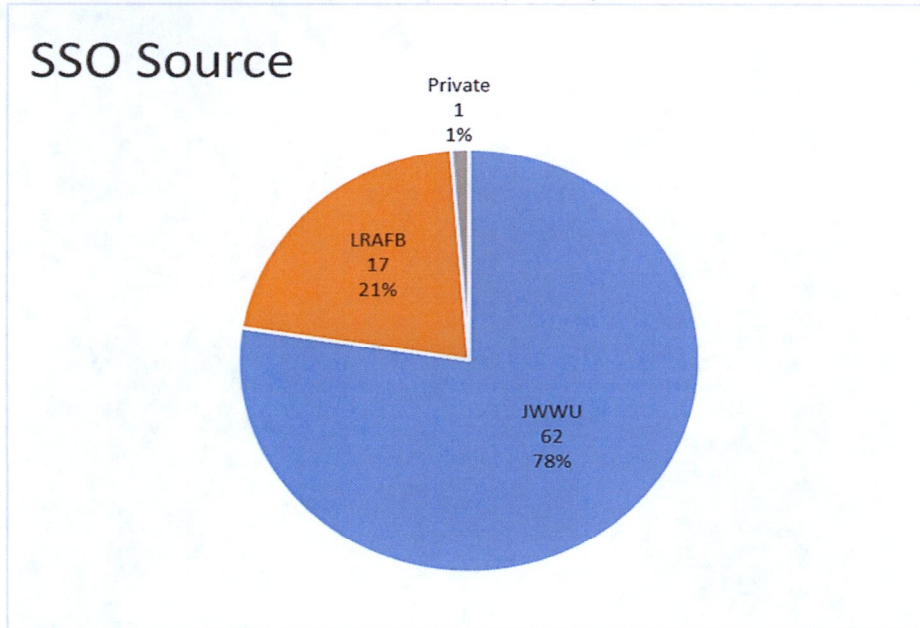


Figure 2: A breakdown of the causes of SSOs from 2013 and amount of rainfall.

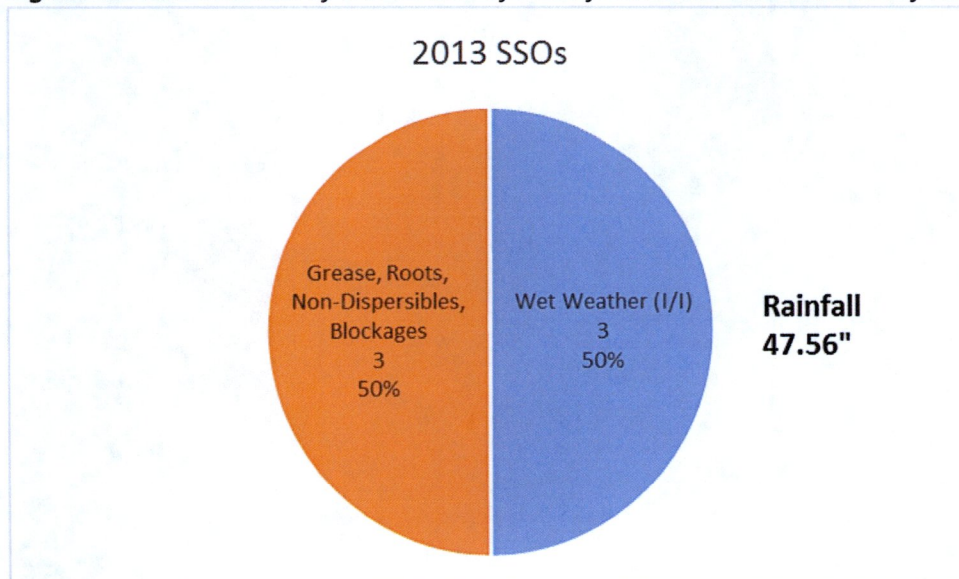


Figure 3: A breakdown of the causes of SSOs from 2014 and amount of rainfall.

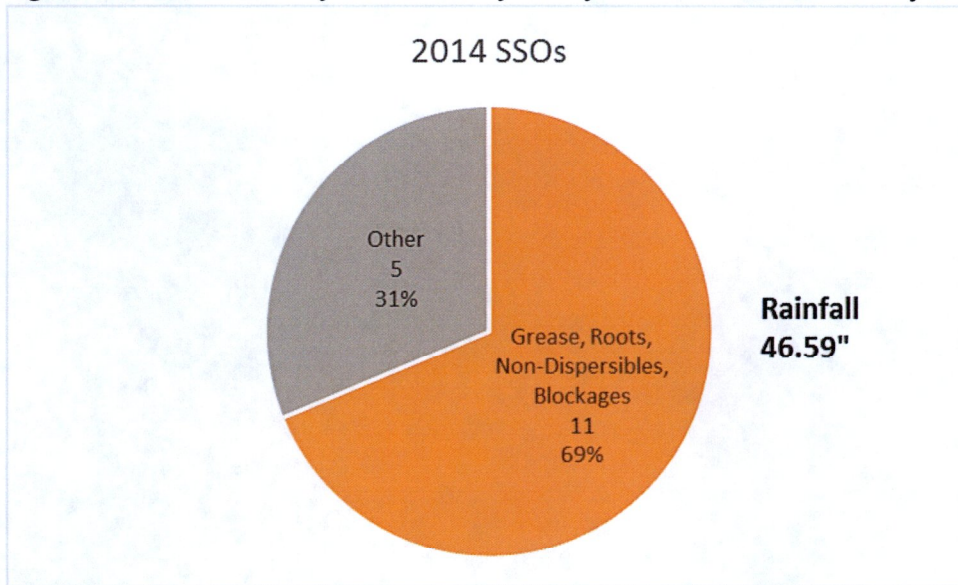


Figure 4: A breakdown of the causes of SSOs from 2015 and amount of rainfall.

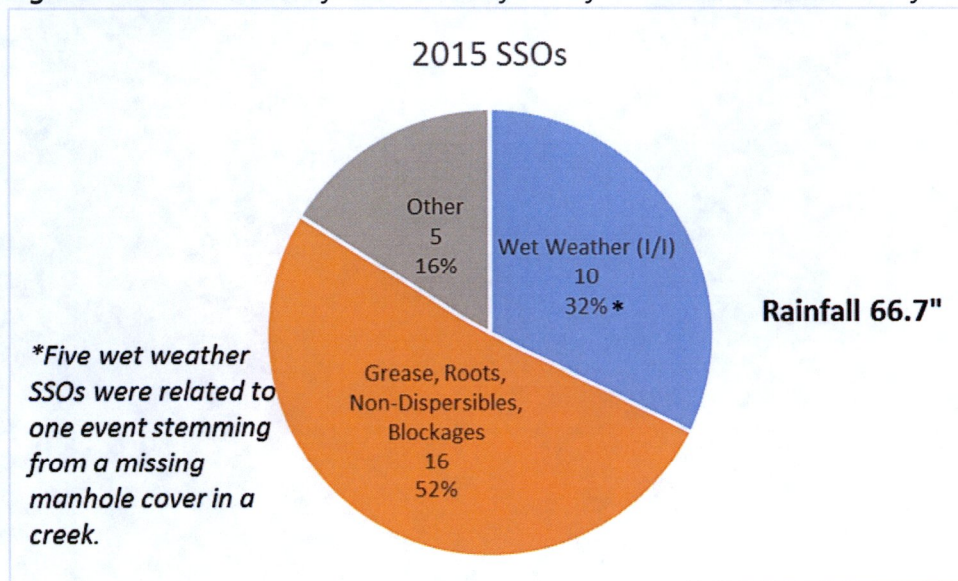
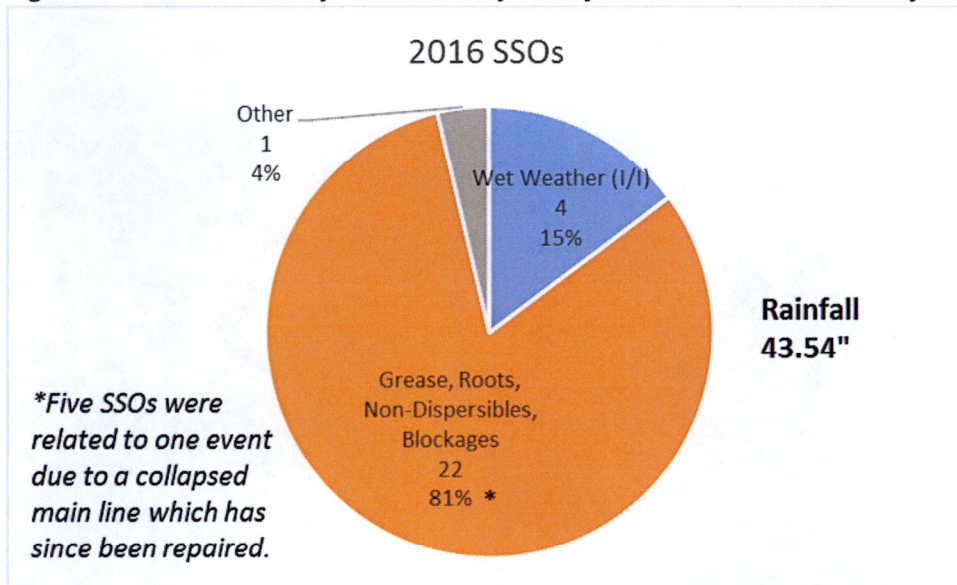


Figure 5: A breakdown of the causes of SSOs from 2016 and amount of rainfall.



Corrective Action Plan (CAP)

As can be seen from this history, JWWU is committed to funding and exercising all capabilities within our means to eliminate SSOs. JWWU’s focus has been and continues to be on I/I as a part of a long-term CAP. Using daily, routine investigation and follow-up, JWWU is continuing to examine the system through flow monitoring, routine and emergency cleaning and televising, smoke testing, and visual inspections. Based on the results from this continual investigation, the Utility has planned the following rehabilitation in 2017 and 2018. JWWU will continue to investigate the system and will schedule rehab on each line as determined necessary, and will continue our public education program in efforts to eliminate blockages from grease and non-dispersibles.

1) CAP Schedule for Contracted Rehab (pipe burst)

JWWU has identified the following rehabilitation work to be completed by contracted pipebursting in 2017 and 2018.

	<u>Estimated Cost</u>	<u>Footage</u>
2017	\$356,410	5,341 feet
2018	\$330,742	5,232 feet

2) CAP Schedule for In-House Rehab

JWWU has identified 825 feet of main line and 25 manhole repairs in 2017 and 1908 feet of main line in 2018 to be completed by in-house forces.

JWWU has eight (8) employees dedicated to investigation, cleaning, televising, and planning the necessary rehab of the system. The Technical Services staff is directed by Paul Richards who has a Bachelor of Science degree in Construction Management and has worked in the Jacksonville system for ten (10) years. The GIS and CivicInsight data is provided by Alecia Patton who has a Bachelor of Science degree in Spatial Information Systems and is currently pursuing a Master’s degree in

Operations Management. The Utility regularly contracts with consulting engineers for design, study, and assistance in our rehabilitation efforts.

3) Data Analysis and Targeting

JWWU has launched two technological efforts (GIS and CivicInsight) to help target future investigations in an effort to find and rehabilitate lines before they create significant issues such as overflows.

a) G.I.S.

The creation of our Geographic Information System (G.I.S.) database was started in 2013. It contains features from the collection system including main lines, manholes, force mains, pump stations, and grease traps. JWWU has been working towards populating all of these features with asset data from a variety of sources. Televising reports and inspections from 2001 to present are attached to each manhole and mainline. These reports have assisted in populating attribute data (Figure 6) for 52% of our main lines and 56% of our manholes. JWWU also began documenting the main lines with the dates they were cleaned starting from 2014 to present. As-builts and other construction data are also being researched in an effort to populate install dates for G.I.S features.

Figure 6: A sample of populated manhole data in G.I.S. database.

gid	facilityid	depth	type	drop	inspect	install	previd	previd2	owner
3624	106I57	7.3	POURED	NO	3/15/2011	2011	4012	08-4009	JWWU
14	106H57	11.6	POURED	NO	3/8/2011	2011	4009	08-4011	JWWU
15	106H58	8.1	POURED	NO	3/8/2011	2011	4011	08-4012	JWWU

A populated G.I.S. database permits JWWU to target investigative work based on an asset’s attribute data such as age, pipe size, or material or based on spatial analysis such as proximity. Several dynamic maps have been created such as identifying assets that have not been televised and cleaned (Figures 7 and 8). JWWU also created a cluster map based on proximity analysis that documents all overflows and another map showing SSOs caused by rainfall (Figure 9 and 10).

Figure 7: A map at zoom level that displays lines currently with no televising report attached.

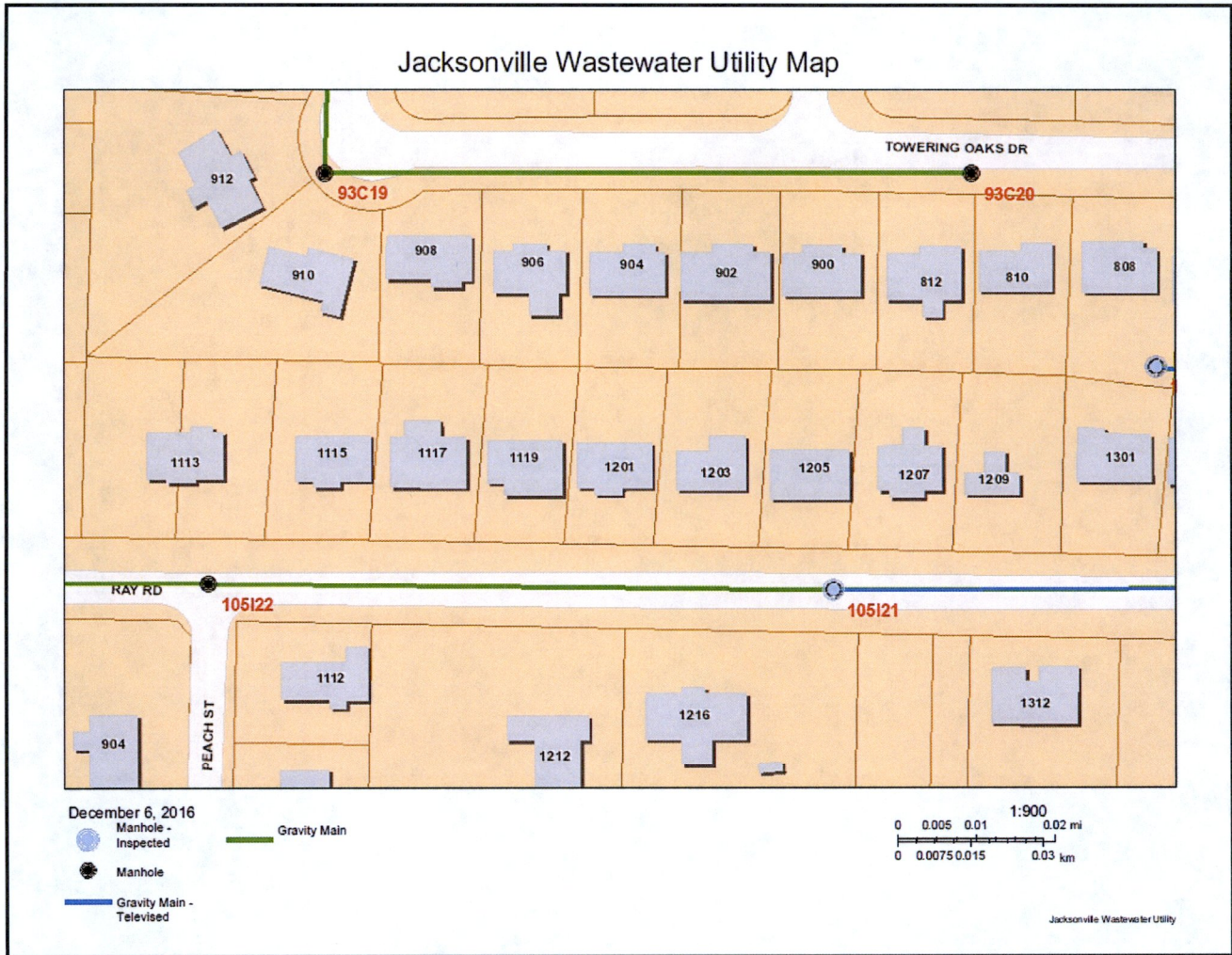


Figure 8: A map at zoom level that displays lines which have not yet been cleaned in the routine cleaning cycle (estimated 3 years).

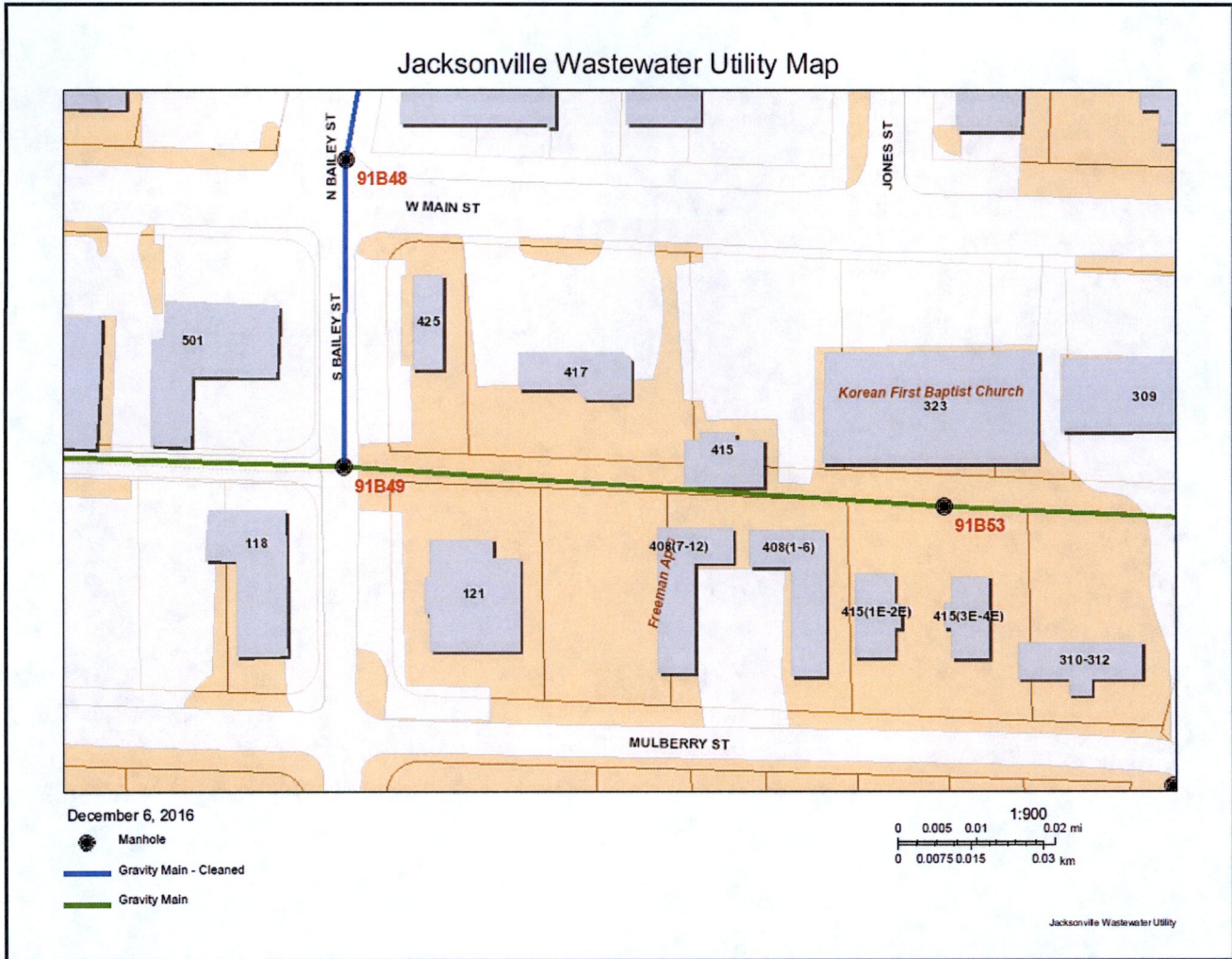


Figure 9: A cluster map at various zoom levels that displays SSOs related to rainfall from 2008-2015.

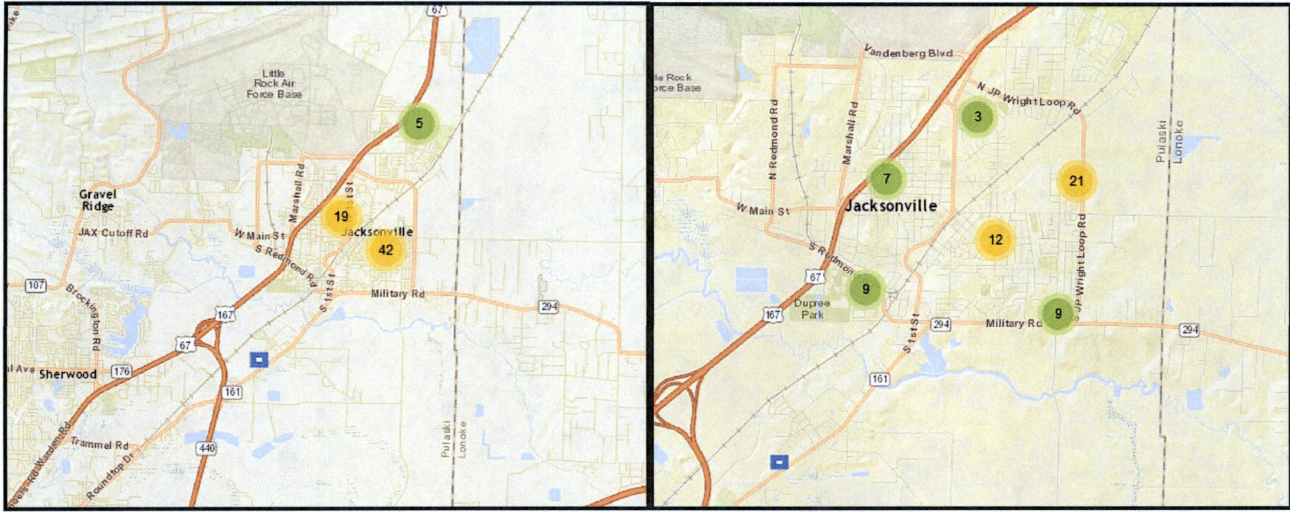
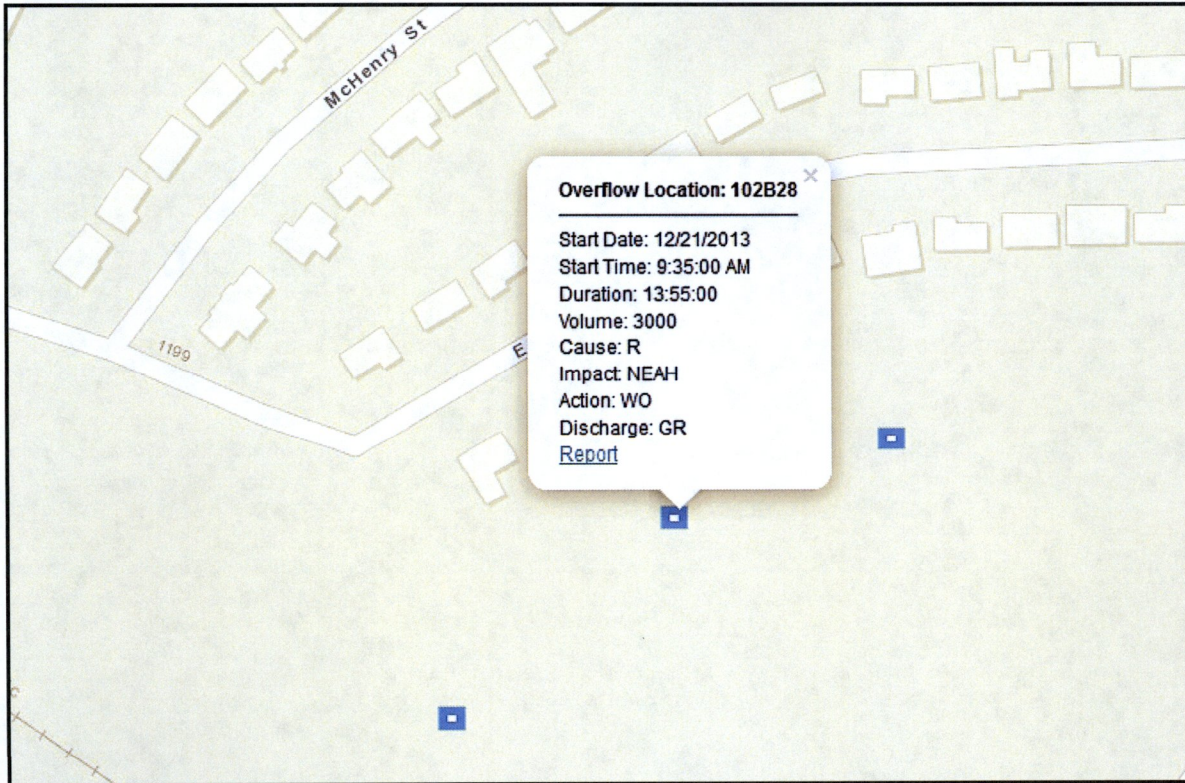


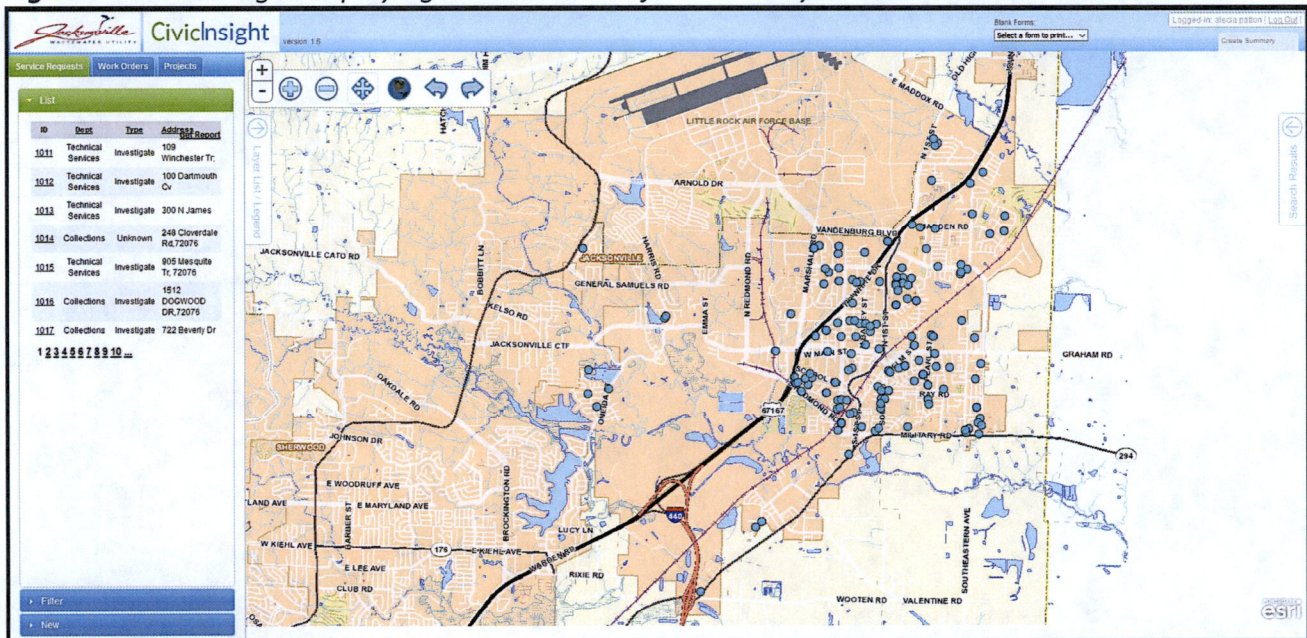
Figure 10: A cluster map at various zoom levels that displays SSOs related to rainfall beginning in 2008.



b) CivicInsight

CivicInsight is an online-based computerized maintenance management system that launched in January 2016. This system tracks data regarding service calls, work orders, and preventative maintenance work completed for the Utility. Previously this work was being tracked in different databases and software. Having all this data in one centralized location makes it easier to spot trends and create more detailed reports. All employees have access, even in the field, through the use of tablets which allows more rigorous quality control and ensures follow through and review of all work. This system is also connected to the G.I.S. which allows the connection of all work orders or service call data to spatial features and data. For example, in Figure 11, the system can show a visual analysis of the service call for any given time period highlighting trends and clustering. This allows JWWU to target investigative work in that area which could prevent any serious issues from arising.

Figure 11: CivicInsight displaying all service calls from January 2016 – November 2016.



JWWU has been and remains committed to taking all reasonable measures to eliminate SSOs from our system. The Jacksonville Sewer Commission took this effort seriously beginning in 1995 and have continued to provide funds annually through rate increases and bond issue to continue the effort.

Thank you for your review of our data. If you have any questions, I would be happy to meet with you at your convenience.

Sincerely,
Thea Hughes
Thea Hughes
General Manager
Attachments: A - F

ATTACHMENT A

As can be seen from Table 13, the dry-weather flow depths remained well within available pipe depth of 20.5 inches for this location. The wet-weather flow depth shows a reduction of only 14 percent over the pre-rehabilitation; however, the monitoring period maximum flow rate and the average wet-weather rate were both substantially reduced over corresponding pre-rehabilitation values.

The significant increase in post-rehabilitation monitoring period minimum flow rate suggests that the rehabilitation work accomplished in sub-basin five may have been more effective in reducing inflow than in reducing infiltration. The very low pre-rehabilitation minimum flow rate recorded was likely the result of a near static condition (low velocity) at this meter location caused by system surcharges downstream. Sewer system rehabilitation work in adjacent sub-basins has apparently improved downstream wet-weather conditions that have a "backwater" effect on flow at the manhole 1422 meter location.

Given that there appears to be adequate dry-weather flow capacity at this location and there were no overflows experienced in sub-basin five during the post-rehabilitation monitoring period, it may be concluded that no supplemental or relief sewers are required at this time for that portion of sub-basin five represented by the manhole 1422 flow data.

Summary And Conclusions

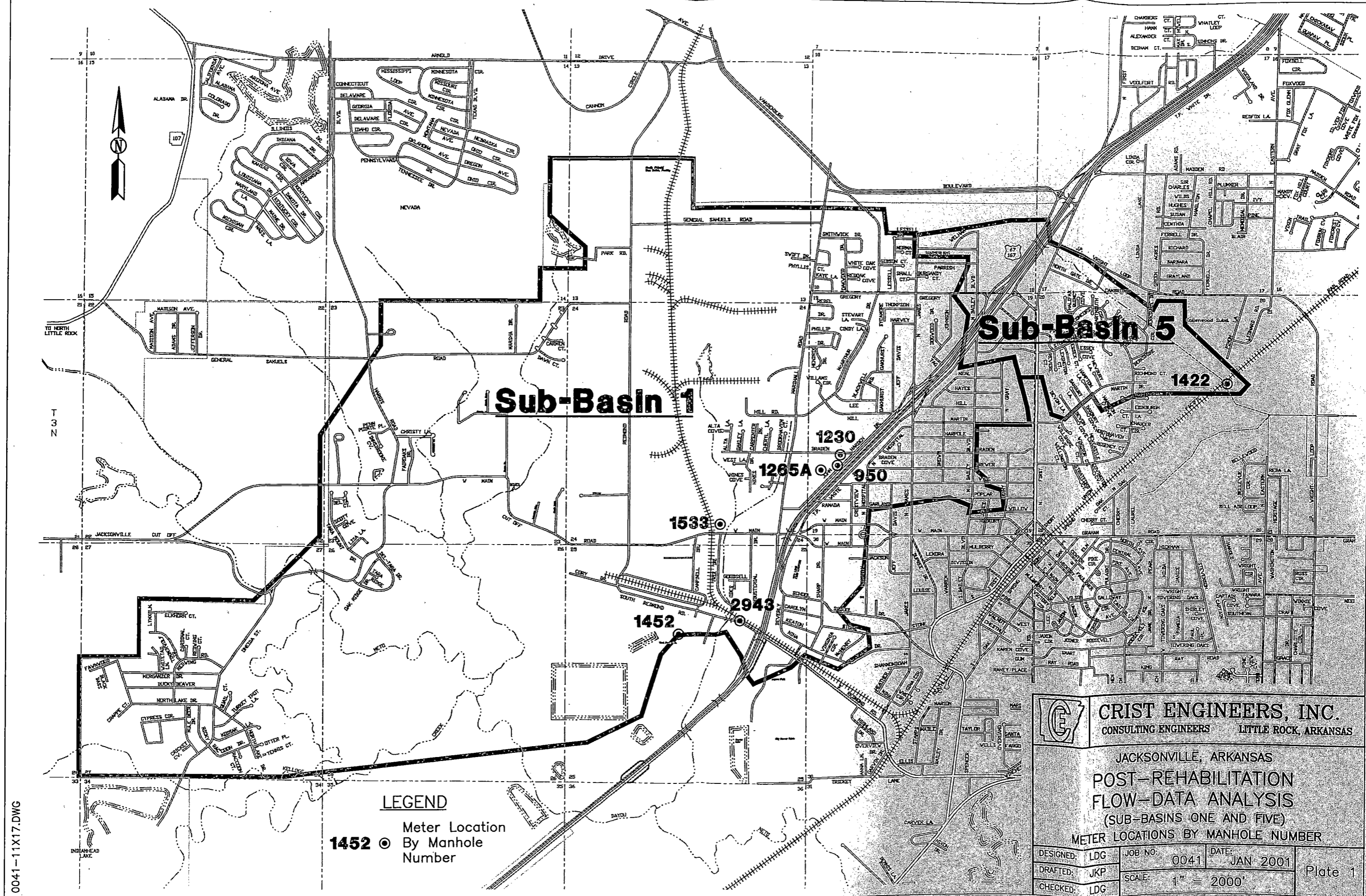
The Jacksonville Sewer Commission performed wastewater flow data monitoring study in early 1995. The results of this study suggested that the Jacksonville municipal sewer system was subject to excessive wet-weather infiltration and inflow as evidenced by wet-weather flow depths exceeding pipe depths by significant amounts and numerous sanitary sewer overflows. Based on the results of the flow-data study, a system-wide sewer evaluation study was conducted to determine the probable extent and nature of sewer system defects causing the excessive wet-weather flow rates. This study identified numerous system defects and prioritized them for repair according to severity. Commission developed a comprehensive program for sewer system rehabilitation and repair based on the results of the evaluation study.

Sewer system rehabilitation work included in the comprehensive program for sub-basins one and five was completed in late 1999, and post-rehabilitation flow data was gathered by Commission from these two sub-basins from late December, 1999 through November 2000. Post-rehabilitation wet-weather monitoring periods were selected from the available data, and flow data gathered during these periods was compared with corresponding data gathered during the 1995 flow data study in order to evaluate the effectiveness of the sewer system rehabilitation work and to identify the need for supplemental sewer system capacity and relief sewers in rehabilitated sub-basins one and five.

Flow data from six metering sites (five representing sub-basin one and one representing sub-basin five) was analyzed. Generally speaking, the data analysis show a significant improvement in wet-weather performance at all monitoring sites when compared to pre-rehabilitation conditions. Taking the flow-data from sub-basin one and five as a whole, the pre- and post-rehabilitation data analysis shows improvement in wet-weather performance as given in Table 14.

Given the performance data of Table 14 and the fact that there were no system overflows during the selected post-rehabilitation monitoring periods, it is concluded that there appears to be no need for supplemental system capacity or relief sewers in sub-basins one or five at this time.

Table 14 Combined Improvement In Sub-basin (One and Five) Wet-weather Performance	
Parameter	Reduction Over Pre-Rehabilitation Condition
Minimum Monitoring Period Flow Rate	Reduced by 34 percent
Average Wet-weather Flow Rate	Reduced by 29 percent
Monitoring Period Maximum Flow Rate	Reduced 16 percent
Dry-weather Flow Depth	Reduced 26 percent
Wet-weather Flow Depth	Reduced 40 percent



LEGEND
 1452 ○ Meter Location
 By Manhole
 Number

Sub-Basin 5

Sub-Basin 1



CRIST ENGINEERS, INC.
 CONSULTING ENGINEERS LITTLE ROCK, ARKANSAS

JACKSONVILLE, ARKANSAS
 POST-REHABILITATION
 FLOW-DATA ANALYSIS
 (SUB-BASINS ONE AND FIVE)
 METER LOCATIONS BY MANHOLE NUMBER

DESIGNED: LDG	JOB NO: 0041	DATE: JAN 2001	Plate 1
DRAFTED: JKP	SCALE: 1" = 2000'		
CHECKED: LDG			

0041-11X17.DWG

ATTACHMENT B

I. Executive Summary

The Jacksonville Wastewater Utility contracted with Pipeline Analysis, LLC to install temporary wastewater flow meters within a portion of the wastewater collection system and prioritize areas of excessive infiltration/inflow (Figure I-1).

Beginning in late March 2008, an evaluation of a portion of the wastewater collection system was initiated. The purpose of the initial phase of the project was to quantify and determine dry and wet weather flows within nine (9) specified areas of the collection system. The temporary flow monitoring evaluated the collection system dry and wet weather hydraulic conditions. Following is a summary of those findings:

1. Dry weather flows for all nine meter sites are transported without surcharge or overflow.
2. Peak dry weather depth of flow to diameter (d/D) ranged from 22% at site 6 to 43% at site 7.
3. Dry weather peaking factors (the ratio of peak dry weather flow rate to average dry weather flow rate) ranged from 1.28 at Site 3 to 2.33 at Site 1.
4. Dry weather average flow for the study area was recorded to be 2.2 mgd.
5. Wet weather has a major impact on the collection system with surcharge at all nine sites.
6. Peak wet weather depth of flow to diameter (d/D) ratios ranged from 251% at site 6 to 1528% at site 9.
7. Extraneous water from infiltration/inflow (I/I) sources reduces the capacity of the collection system to transport wastewater and may result in Sanitary Sewer Overflows (SSO's).
8. Rainfall dependent infiltration/inflow is significant within the Jacksonville wastewater collection system. Analysis indicates approximately 1.3 million gallons of extraneous infiltration/inflow enters the collection system for each inch of rainfall.
9. The highest to the lowest priority areas of the collection system have been identified as 7, 2, 5, 9, 8, 6, 1, 4 and 3 respectively.
10. Basins 7, 2, 5, 9, 8, 6 accounts for 84% of the total RDII.
11. Rainfall of one inch or less has minimal impact on the system while rainfall greater than 1 inch has a profound impact on the system capacity to transport flow.

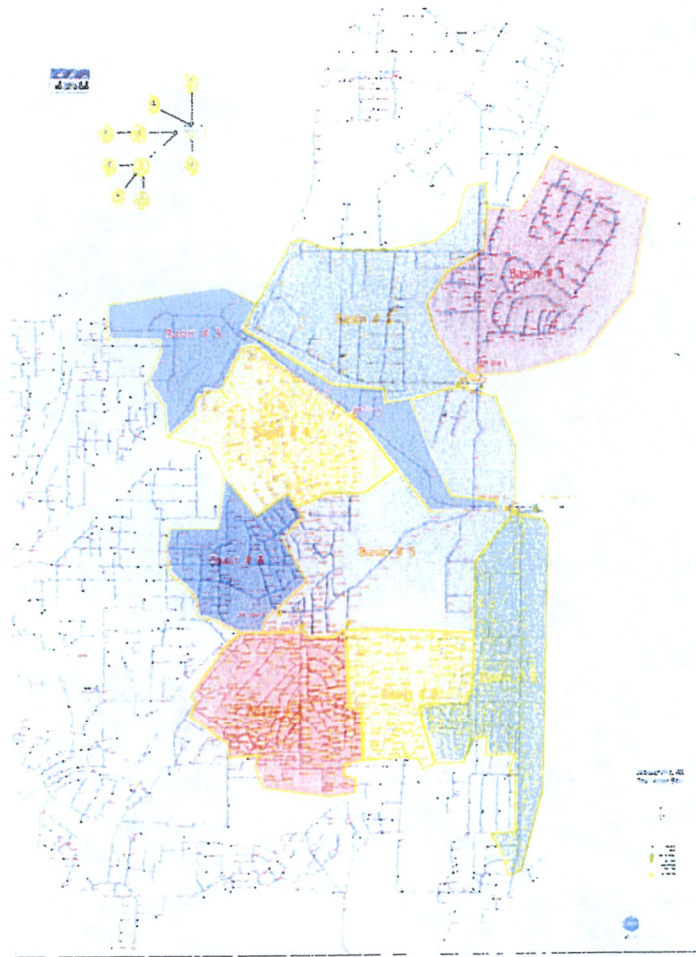


Figure I-1
Study Area Map

Upon completion of the flow monitoring, a sewer system evaluation survey was initiated in the high priority areas (Basins 7, 2, 5, 9, 8 and 6) to identify collection system defects and recommend repair methods and estimated costs. Manhole inspection, smoke testing and CCTV inspection was undertaken to identify sources of extraneous

infiltration/inflow and establish estimated repair costs. Table I-1 presents a summary of the estimated cost for the repairs and improvements identified in this report. The following summarizes the findings and recommendations:

1. By periodically inspecting, testing and repairing defects, the Jacksonville Wastewater Utility staff have reduced overall repair costs and extended the life of collection system assets. By identifying manhole and pipe defects early, the repairs tend to be less expensive and wet weather infiltration/inflow minimized. This on-going program of collection system renewal will extend asset life.
2. Staff should continue to address private sector rehabilitation using code enforcement, if necessary, to reduce infiltration/inflow from private sector defects.
3. The total estimated cost to correct defects for the study areas evaluated under this project is summarized in Table I-1 and is estimated at \$1,422,726.
4. JWU should implement final design for repairs presented in this report. The design effort should address current and future capacity needs for the study area.
5. Of particular concern is the amount of concrete pipe within the study area the need to address future deterioration of these pipelines. JWU should begin a planning effort to schedule the lining or replacement of concrete pipe. A twenty year CIP program may be necessary to address the concrete pipe that will continue to be problematic until it is replaced or rehabilitated.
6. The accompanying manhole and mainline rehabilitation maps provide a visualization of the recommendations. The service area maps were updated based on field inspections and GIS updates accompanying this report. The complete project database consisting of collected system data, photographs, maps, video and written report is included on the hard drive that accompanies this report.

ATTACHMENT C



Transmittal

To: Bob Williams

From: James H. Forbes, Jr., P.E.

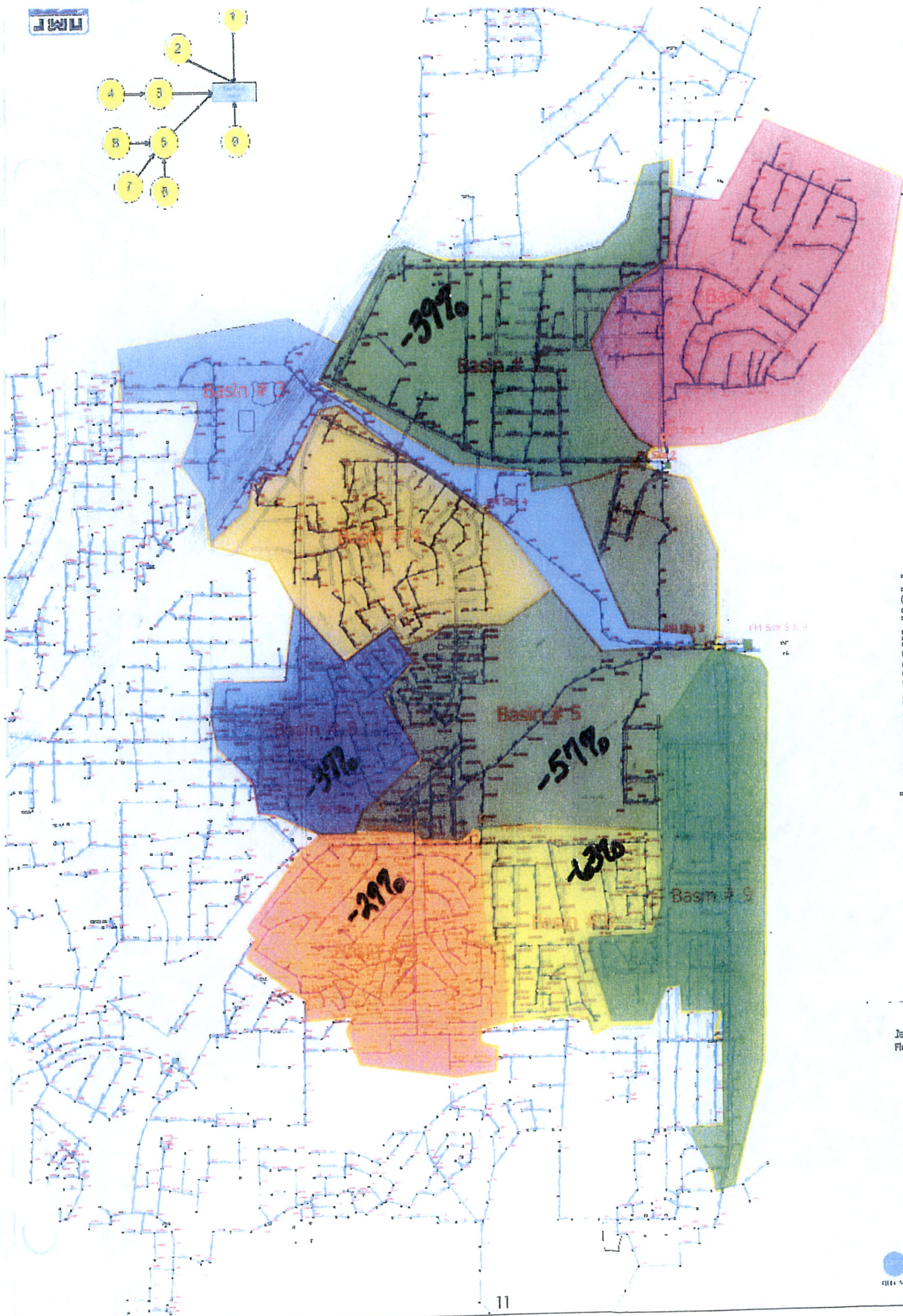
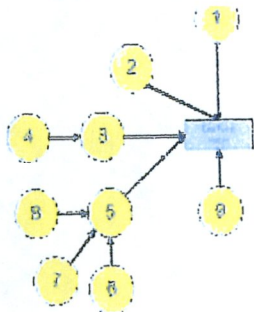
Date: September 24, 2012

Re: Flow Data Analysis

Following is a summary of the analysis of wastewater flows for 2012. This analysis evaluated the collected data for the period July 1 thru August 14, 2012 with pre-rehabilitation flow data from 2008. Overall the percentage reduction in wet weather volume of infiltration/inflow is very good and averages 45% for all study areas. Of significant impact is the lack of surcharged sewers during peak wet weather flow events. While all the sites surcharged during similar storm events in 2008, none of the sites recorded surcharge during similar events in 2012.

Basin	Manhole	Pipe Size (Inches)	2008			2012			
			Wet Weather Max. Level (inches)	Maximum d/D	Inflow mg/in.	Wet Weather Max. Level (inches)	Maximum d/D	Inflow mg/in.	Percent Reduction
2	262	12	50	417%	0.23	6.31	53%	0.14	-39%
5	134	21	154	733%	0.15	9.01	43%	0.064	-57%
6	03-0321	15	35	233%	0.1	4.38	29%	0.037	-63%
7	03-0131	15	47	313%	0.34	8.57	57%	0.24	-29%
8	03-0054	8	50	625%	0.1	3.9	49%	0.063	-37%

Data analyzed in 2011 for site 7 was reviewed. Site 7 showed no appreciable reduction in wet weather flows since 2011. Figure 1 shows a comparison of 2008, 2011 and 2012 data for site 7. Overall, the staff appears to have made very good progress in reducing wet weather infiltration/inflow. The average reduction in volume of 45% is exemplary.



Flow Meter Basin Map

Jacksonville, AR
Flow Meter Sites



- Flow Meter Site
- Flow Meter Basin
- Water Main
- Water Valve
- Flow Meter



ATTACHMENT D

**DON'T CLOG YOUR PIPES,
SHUT THE LID ON WIPES!**



**Please
dispose of
wipes in the
trash,
not the toilet.**

**PLEASE DON'T
FLUSH THAT!**



Clogged pipes can
cause sewage
overflows and costly
damage to your
property.

Fortunately, YOU can
help prevent them.



A clump of wipes like
this was recently
cleared from the pump
station or sewer line in
your neighborhood.



248 Cloverdale Road
Jacksonville, AR 72076
501-982-0581
www.jwwwu.com

- 55% of the mainline blockages in Jacksonville last year were caused by wipes, paper towels, & other products.
- “Flushable” and “disposable” products can clog sewer pipes and damage wastewater pumps and treatment plant equipment, causing thousands of dollars in repair costs and labor.
- Even if they say they are flushable, these items do not disintegrate in water, and they get caught on roots, grease, and other debris, causing overflows, pump damage, and backups into homes.
- If wipes clog our City's large sewer mains, they can definitely clog your homes' sewer line, causing you to pay a plumber for repairs.
- The ONLY product to be flushed is toilet paper.





CAN THE GREASE

PROTECTING YOUR ENVIRONMENT AND YOUR WATER

For more information, please call:
Jacksonville Wastewater Utility
501-982-0581

Dear Wastewater Customer,
Recently our crews responded to a situation resulting from a grease blockage in the sewer main on your street. While you might not have been responsible for this grease blockage, this card is being provided to our citizens for educational purposes. You can help us solve this problem by disposing of your cooking fats by pouring into a can, such as a coffee can, and throwing into your garbage. Please do not pour grease down your drains or garbage disposals. Thank you for your assistance in keeping our sewer mains flowing freely.

—Jacksonville Wastewater Utility



248 Cloverdale Road
Jacksonville, AR 72076

Jacksonville Wastewater Utility personnel are available 24/7, including holidays.
Please call us first, at 982-0581, if you experience sewer problems.

ATTACHMENT E

LRAFB Sewer Corrective Actions

Sewer Overflows & In-House Repairs					
Locations	Date	Est. Gal. Spill	Cause	Rehab	Completed
127 Louisiana	4/3/2014	100	construction	Spot Repair	2014
B-1257	8/28/2014	150	line failure/break	Spot Repair	2014
B-208	9/16/2014	50	construction	Spot Repair	2014
4150 Arnold Drive	11/9/2014	50	grease	Spot Repair	2014
B-798	3/2/2015	750	grease & vandalism	Spot Repair	2015
2365 Ohio Circle	9/15/2015	100	grease	Spot Repair	2015
B-798	9/27/2015	50	debris	Spot repair	2015
B-798	10/2/2015	2000	debris, line failure/break	Spot repair	2015
B-1255	10/6/2015	100	line failure/break	Spot repair	2015
B-798	10/7/2015	50	line failure/break	Spot repair	2015
B-884	10/26/2015	25	equipment failure	Spot repair	2015
B-798	11/10/2015	5	debris, grease	Spot repair	2015
B-798	1/13/2016	450	grease	Spot repair	2016
148 Delaware	1/26/2016	1000	grease, roots & grease	Spot repair	2016
Texas & Montana MH	6/26/2016	150	grease, debris	Spot repair	2016
B-1988 MH	8/22/2016	1000	grease	Spot repair	2016
B-744	9/27/2016	1000	line failure/break	Spot repair	2016
B-648	9/29/2016	1	line failure/break	Spot repair	2016

Base Housing (Privatized) Rprs						
Location	Date		Cause	Rehab	Completed	Cost
Privatized housing owner (Hunt LLC) manhole repair - playground area between Delaware St. and Minnesota St.	Started work 10/3/2016		Manholes were buried when remodeling of housing took place, approximately 2005 to 2009	Hunt raised 2 manholes to code, but will be raising them another 6 inches as requested by the Government	2016	\$2,000

Engineering Sewer Upgrade Projects						
Location	Year	LRAFB Project Number	Cause	Rehab	Completed	Cost
Buildings 775 through 1260 & 120 through 210; WW-5 & WW-07	FY14	NKAK-08-1035	Age-related infrastructure problems	Replaced 1950's mains, manholes, laterals, lift stations WW-07 & WW-05, Munitions Storage/Wash Rack). Scope included replacing approximately 2,436 lf of 15-inch concrete; 1,616 lf of 10-inch concrete; 6,810 lf of 8-inch vitrified clay (VC); and 1,171 lf of 6-inch VC gravity sewer main lines; approximately 42 manholes; replaced or installed approximately 890 lf of 8-inch VC and 5,091 lf of 6-inch VC gravity sewer laterals. Project included 3 bore and jacks for the 15-inch pipe; 1 bore and jack for the 10-inch pipe; and 4 bore and jacks for the 6-inch pipe.	2016	\$3,470,000

WW-08	FY15	NKAK 08-1036	Age-related infrastructure problems	<p>Replaced mains, manholes, laterals WW-08 as identified in March 2007 Final Infrastructure Investment Plan. Scope included replacing approximately 172 lf of 18-inch cast iron; 22 lf of 6-inch concrete; 101 lf of 6-inch cast iron; 260 lf of 18-inch concrete; 284 lf of 15-inch concrete; 877 lf of 12-inch concrete; 680 lf of 8-inch VC; 1,727 lf of 6-inch VC; and 466 lf of 6-inch galvanized gravity sewer main lines; replaced or installed approximately 46 manholes; and approximately 13 lf of 6-inch cast iron and 367 lf of 1.5-inch cast iron sewer force mains. Project included one bore and jack for the 6-inch pipe.</p>	Still Active	\$3,000,000
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Base housing WW-02 & WW-01	FY 12	NKAK 10-1008	Age-related infrastructure problems	Replaced 1950's era gravity sewer mains with polyvinyl chloride (PVC) pipe in the multifamily housing area. Work included replacing approximately 655 LF of 4-inch cast iron pipe; 9,364 LF of 8-inch vitrified clay (VC) pipe; 165 LF of 6-inch VC pipe; and 289 LF of 4-inch VC pipe. Project included replacing approximately 38 manholes and four bore and jacks for the 8-inch pipe.	2013	\$3,600,000
Base housing (S2) WW-02 and WW-01	FY 13	NKAK 10-1012	Age-related infrastructure problems	Replaced 1950's era sewer mains, manholes, and service connections in the multifamily housing area. Repairs included 17,735 LF pipe, 68 manholes, and 308 service connections. Included boring under roads, sod and repair of driveways that were impacted.	2014	\$3,500,000

Future Engineering Sewer Upgrade Projects						
Location	Year	LRAFB Project Number	Cause	Rehab	Completion	Cost
WW-05/06	FY 17	NKAK 111004	Age-related infrastructure problems	Repair Multifamily Housing Domestic Water/Sewer Mains	Will be sent out for bids this year	\$420,000
WW-01	FY 17	NKAK 121008	Age-related infrastructure problems	Repair Sanitary Sewer Infrastructure	Will be sent out for bids this year	\$1,750,000

ATTACHMENT F

Sanitary Sewer Overflows Reported & Actions Taken

Nov-1-2013 thru Oct-31-2016

Facility Name: Jacksonville Wastewater Utility

Permit Number: AR0041335

Summary Report Code Descriptions

Cause(s) of SSO		SSO Impact	Action(s) Taken	Investigation/Rehabilitation Actions(s) Taken		Completed
CO-Construction	D-Debris	NEAH-No Evidence of Adverse Health or Environmental Impact	WO-Work Order	SM - Smoke Test	MH - Manhole Rehab	
E-Equipment Failure	G-Grease		EC-Environmental Cleanup	TV - Tv Inspection	CG - Can the Grease Letters	
HC-Hydro Clean	LF-Line Failure/Break	OEHC-Observed or Evidence of Human Contact	HC-Hydro Cleaned	SD - Service Defect Letter	ND - Non-Dispersible Letters	
R-Rain	RG-Roots & Grease	EFK-Evidence of Fish Kill	HR-Hand Rodded	SSES - Sewer Eval.	SP - Spot Repair	
RO-Roots	V-Vandalism		EN-Referred to Engineering	PB - Pipe Bursting	CIPP - Cured in Place	
			PN-Public Notification	MR - Mainline Relay		

Location	Manhole#	Start Date of SSO	End Date of SSO	Estimated Volume (in gallons)	Cause of SSO	Investigation to Address SSO	Rehabilitation to Address SSO	Year Completed
S. Redmond Rd.	1147	11/13/13@9:45a	11/13/13@12:00p	30	G, D	TV	PB, CG	2015
2313 Loop Acres	1298	12/1/13@12:19p	12/1/13@2:40p	15	G	TV	WO, CG	2016
1209 Eastview St.	1045	12/21/13@9:35a	12/21/13@11:30p	3000	R	SSES	PB, CIPP, SP, MH	2015
2213 Loop Rd	142	12/21/13@11:55a	12/21/13@12:45p	750	R	SSES	PB, CIPP, SP, MH	2015
2312 Loop Acres	1429	12/21/13@1:00p	12/21/13@1:45p	200	R	SSES	PB, CIPP, SP, MH	2015
200 Dupree Dr.	975	12/31/13@12:25p	12/31/13@2:00p	485	D	TV	ND	2013
Puritan Street	34F41	1/8/14@9:15a	1/8/14@10:30a	50	CO	TV	WO	2014
121 Vaun St.	2603	2/3/14@1:50p	2/3/14@3:00p	175	D	TV	SP, PM	2016
401 Stonewall Dr.	221	2/5/14@1:30p	2/5/14@6:00p	140	D, G	TV	PB, MH	2016
#7	 Greenway	Cleanout	2/17/14@6:50p	2/17/14@10:00p	50	RG	TV	PB, MH	2014
118 Roosevelt St.	03-0282	3/5/14@12:20p	3/5/14@2:15p	65	G	TV	PB,MR	2015
127 Louisiana	LRAFB	4/3/14@1:10pm	4/3/14@1:20pm	100	CO	TV	SP	2014
100 Dartmouth	206	4/14/14@8:15am	4/14/14@9:12am	100	D	TV	PB	2016
872 Pearl St.	03-0332	5/3/14@7:40p	5/3/14@9:30p	5	D, G	TV	WO, MH, CG	2016
Lachmund	LRAFB, 1257	8/28/14@11:20a	8/28/14@2:30p	150	LF	TV	SP	2014
LRAFB Building	LRAFB, 208	9/16/14@2:05p	9/16/14@2:45p	50	CO	TV	SP	2014
803 Redmond Rd.	102B66	9/19/14@4:30p	9/19/14@6:30p	10	D, G	TV	PB, PM, CG	2015
4150 Arnold Drive	LRAFB	11/9/14@5:30p	11/9/14@7:30p	50	G	TV	SP	2014
300 Marshall Rd.	77A38	11/19/14@1:00p	11/19/14@2:30p	50	RO, D	TV	CG	2014

Sanitary Sewer Overflows Reported & Actions Taken

Nov-1-2013 thru Oct-31-2016

Facility Name: Jacksonville Wastewater Utility

Permit Number: AR0041335

Summary Report Code Descriptions

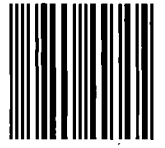
Cause(s) of SSO		SSO Impact	Action(s) Taken	Investigation/Rehabilitation Actions(s) Taken		Completed
CO-Construction	D-Debris	NEAH-No Evidence of Adverse Health or Environmental Impact	WO-Work Order	SM - Smoke Test	MH - Manhole Rehab	
E-Equipment Failure	G-Grease		EC-Environmental Cleanup	TV - Tv Inspection	CG - Can the Grease Letters	
HC-Hydro Clean	LF-Line Failure/Break	OEHC-Observed or Evidence of Human Contact	HC-Hydro Cleaned	SD - Service Defect Letter	ND - Non-Dispersible Letters	
R-Rain	RG-Roots & Grease	EFK-Evidence of Fish Kill	HR-Hand Rodded	SSES - Sewer Eval.	SP - Spot Repair	
RO-Roots	V-Vandalism		EN-Referred to Engineering	PB - Pipe Bursting	CIPP - Cured in Place	
			PN-Public Notification	MR - Mainline Relay		

Location	Manhole#	Start Date of SSO	End Date of SSO	Estimated Volume (in gallons)	Cause of SSO	Investigation to Address SSO	Rehabilitation to Address SSO	Year Completed
Building 798	LRAFB	10/2/2015 @ 9:00 am	10/2/2015 @ 6:00 pm	2000	D, LF	TV	SP	2015
Building 1255	LRAFB	10/6/2015 @ 10:15am	10/6/2015 @ 3:00 pm	100	LF	TV	SP	2015
Building 798	LRAFB	10/7/2015 @ 10:15 am	10/7/2015 @ 11:30 am	50	LF	TV	SP	2015
108 Pinehurst	68E77	10/7/2015 @ 11:20 am	10/7/2015 @ 12:50 pm	3	RG	TV	WO, CG	2016
Building 884	LRAFB	10/26/2015 @ 2:00 pm	10/26/2015 @ 3:00 pm	25	E	TV	SP	2015
1501 Elaine Dr.	63A45	11/2/2015@ 8:30am	11/2/2015 @ 10:40am	15	G	TV	CG, MR	2017
Building 798	LRAFB	11/10/2015@2:15p	11/10/2015@2:20p	5	D, G	TV	SP	2015
1012 Gregory St.	66A12	11/17/2015@1:35p	11/17/2015 @ 3:30 pm	10	G	TV	MR, CG	2016
102 Lexington Ct.	68E91	11/19/2015@9:30a	11/19/2015@11:00 am	10	G, D	TV	WO, CG	2016
106 Pinehurst	68E100	11/28/2015@1:00pm	11/28/2015@2:00pm	50	R, LF	WO	MH	2015
1701 Military Road	117H1	11/30/15 @ 7:45 am	11/30/2015 @ 11:59 pm	1000	R, LF	WO	MH	2015
1701 Military Road	117H3	11/30/15 @ 7:45 am	11/30/2015 @ 11:59 pm	1500	R, LF	WO	MH	2015
1701 Military Road	117H5	11/30/15 @ 7:45 am	11/30/2015 @ 11:59 pm	1500	R, LF	WO	MH	2015
1701 Military Road	117H5	12/2/15 @7:00am	12/2/2015 @ 12:00 pm	30	R, LF	WO	MH	2015
100 Dartmouth	68E116	1/10/16 at 2:20 pm	1/10/16 at 6:00 pm	20	D	TV	PB	2016
Building 798	LRAFB	1/13/16 at 4:00 pm	1/13/16 at 6:30 pm	450	G	TV	SP	2016
148 Delaware	LRAFB	1/26/16 at 6:40 pm	1/26/16 at 8:00 pm	1000	G, RG	TV	SP	2016
Oakhurst and Hill	78A9	2/27/16@12:01pm	2/27/16@3:00pm	1350	D	TV	PB	2017
2400 Linda Lane	56D12	3/8/16 @ 12:05pm	3/8/16 @ 1:55pm	10	D, ND	TV	ND	Jville School District
1200 Vine Street	78A68	3/9/16 @ 5:45 pm	3/9/16 @ 11:59 pm	200	R	SSES	PB, MR, MH	2017
1700 Redmond Rd.	101B8	3/9/16 @ 7:15 pm	3/9/16 @ 11:59 pm	350	R	TV, SM	PB, MH, SD, SP	2016
137 JP Wright Lp.	82I13	3/9/16 @ 8:15 pm	3/9/16 @ 11:59 pm	250	R	TV, SM	PB	2016
106 Pinehurst CV	68E100	3/17/16 @ 9:30 pm	3/18/16 @ 12:30 am	480	ND, G	TV	PB, CG, ND	2016
717 Neal Street	67A60	3/25/16 @ 1:20 pm	3/25/16 @2:30 pm	10	D	TV	PB, SD	2016
1200 Vine Street	78A68	3/30/16 @ 8:56 pm	3/30/16 @11:00pm	500	R	SSES	PB, MR, MH	2017

Jacksonville Wastewater Utility.
 248 Cloverdale Road
 Jacksonville, AR 72076

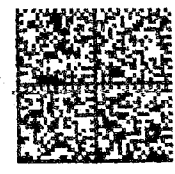


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