



Phase II Early Action Program

July 22, 2015

Revision 1: October 27, 2015



PHASE II EARLY ACTION PROGRAM

TABLE OF CONTENTS

1.0 INTRODUCTION.....	1-1
1.1 Purpose	1-1
1.2 Regulatory Requirements	1-1
2.0 OVERALL DESCRIPTION OF REMEDIAL MEASURES.....	2-1
2.1 Small Diameter Condition Remedial Measures	2-1
2.2 Large Diameter Condition Remedial Measures	2-1
2.3 Large Diameter Capacity Remedial Measures	2-2
3.0 TABLES SUMMARIZING PHASE II EAP WORK.....	3-1
4.0 DETAILED INFORMATION ON PROPOSED PHASE II EAP WORK	4-1
4.1 SD Condition Remediation.....	4-1
4.2 LD Condition Remediation.....	4-19
4.3 LD Capacity Remediation.....	4-21
5.0 MAP OF PHASE II EARLY ACTION PROGRAM WORK	5-1
6.0 CERTIFICATION.....	6-1

1	10/27/2015	Table 3-2: Corrected Project Numbers from <i>10, 11, 12</i> to <i>9, 10, 11</i>	Jeffrey J Haby VP, Production & Treatment
Revision	Date	Revision Description	Approved By

LIST OF TABLES

Table 3-1: Summary of Remedial Measures for Phase II EAP..... 3-1

Table 3-2: Remediation Project List for Phase II EAP..... 3-3

Table 4-1: SD Condition Remediation..... 4-1

Table 4-2: Large Diameter (LD) Condition Remediation..... 4-19

Table 4-3: LD Capacity Remedial Measures..... 4-21

Table 4-4: Proposed Capacity Remediation..... 4-25

LIST OF FIGURES

Figure 5-1: Map of Phase II Early Action Program Work 5-2

Acronym and Abbreviation List:

- CCTV Closed-Circuit Television
- CD Consent Decree
- EAP Early Action Program
- LD Large Diameter
- NASSCO National Association of Sewer Service Companies
- PACP Pipeline Assessment Certification Program
- SAWS San Antonio Water System
- SD Small Diameter
- SSO Sanitary Sewer Overflow

1.0 INTRODUCTION

1.1 Purpose

On October 15, 2013 a Consent Decree (CD) between San Antonio Water System (SAWS) and the United States of America and the State of Texas was entered in Civil Action No. 5:13-cv-00666-DAE in the United States District Court for the Western District of Texas, San Antonio Division.

This Program was prepared and submitted pursuant to Paragraph 21.b of the CD.

1.2 Regulatory Requirements

As required by the CD, no later than twenty-four (24) months following the Date of Lodging, SAWS is required to submit a Phase II Early Action Program (EAP) in a format consistent with Appendix F. The Phase II EAP identifies and prioritizes assets where structural defects and/or capacity constraints have caused or significantly contributed to previous sanitary sewer overflows (SSOs); and/or are likely to cause or significantly contribute to future occurrences of SSOs and have been evaluated for Remedial Measures Alternative Analysis consistent with Appendices C and D of the CD.

In addition, SAWS has provided, as required, the following information for assets requiring remediation of structural defects:

- Investigative technique(s)
- National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) Quick Rating
- SAWS Condition Assessment Category

For assets requiring remediation for capacity constraints, SAWS has provided:

- Full pipe hydraulic capacity of existing and remediated pipe segment
- Minimum hydraulic capacity required to transport the SAWS assessment storm as predicted by SAWS hydraulic model in accordance with Appendix D
- Overview map of Phase II EAP work with project location

2.0 OVERALL DESCRIPTION OF REMEDIAL MEASURES

SAWS Phase II EAP consists of the following types of Remedial Measures:

- Small Diameter Condition
- Large Diameter Condition
- Large Diameter Capacity

The projects associated with these remedial measures are summarized in the table in Section 3.0 of this document.

2.1 Small Diameter Condition Remedial Measures

SAWS gravity sewer main condition assessment program has identified structural defects in some small diameter (less than twenty-four (24) inches in diameter) sewer mains that require remedial measures. SAWS Phase II EAP Small Diameter Condition Remedial Measures include small diameter assets (pipe segments) that have been through SAWS condition alternatives analysis process and were selected for rehabilitation or replacement prior to January 23, 2015.

Over 70 miles (71.3) miles of these pipe segments were remediated for structural defects in 2013 and 2014 in addition to pipe segments that were remediated as part of the Phase I EAP. These assets were reported in Appendix C of the 2013 and 2014 Annual Reports. They are included in Phase II EAP remediation totals.

An additional 17.6 miles of small diameter sanitary sewers remain to be rehabilitated under Phase II EAP. These assets are separately listed as part of this Phase II Early Action Program.

The Phase II EAP Small Diameter Condition Remedial Measures program is summarized in the tables included in Section 3.0 of this document. Detailed information (including pipe segment identification number, the investigative technique(s) employed to identify the remedial measures required, the NASSCO PACP quick rating of the existing segment, and the SAWS Condition Assessment Category) is included in Table 4-1 of Section 4.0 of this document for those assets not reported as remediated in either the 2013 or 2014 Annual Report.

2.2 Large Diameter Condition Remedial Measures

SAWS gravity sewer main condition assessment program has identified structural defects in some large diameter (twenty-four (24) inches or greater in diameter) mains that require remedial measures. SAWS Phase II EAP Large Diameter Condition Remedial Measures include large diameter assets (pipe segments) that have been through SAWS condition alternatives

analysis process and were selected for rehabilitation or replacement prior to January 23, 2015 and are not part of Phase I EAP Large Diameter Condition Remediation.

The Phase II EAP Large Diameter Condition Remedial Measures program is summarized in the tables included in Section 3.0 of this document. Detailed information (including pipe segment identification number, the investigative technique(s) employed to identify the remedial measures required, the NASSCO PACP Quick Rating of the existing segment, and the SAWS Condition Assessment Category) is included in Table 4-2 of Section 4.0 of this document.

2.3 Large Diameter Capacity Remedial Measures

SAWS initiated a significant increase in sanitary sewer system monitoring in 2013 by increasing the number of flow meters and rain gauges installed in SAWS system. This additional data is enabling SAWS to improve the hydraulic modeling of the gravity sewer mains. Capacity remediation projects are being developed as the improved model information and field verification information becomes available.

One major project, C-5/C-28 S. Laredo/W. Houston – Phase 3, has progressed through capacity assessment and alternatives analysis and is part of the Phase II Early Action Program. This capacity remedial measures project is anticipated to include approximately 2.2 miles of new or rehabilitated pipeline as shown in Table 4-4.

Project W-45 Governmental LC-17 Phase 2 also has been included in Phase II EAP Large Diameter Capacity Remedial Measures. This capacity remedial measures project is anticipated to include approximately 2.0 miles of new, larger sewer main replacing an existing sewer main as shown in Table 4-4.

The proposed Phase II EAP Capacity Remedial Measures program is summarized in the tables included in Section 3.0 of this document. Detailed information (including pipe segment identification number, existing segment capacity, required segment capacity, and proposed remediated capacity) is shown in Table 4-3 in Section 4.0 of this document.

Note that Table 4-3 shows existing pipe segments and pipe lengths associated with Phase II EAP projects as required by the CD; Table 4-4 includes the length of the proposed capacity remedial measures projects. The length of the projects in Table 4-4 may differ from the length of pipes shown in Table 4-3 due to differences in sewer alignment.

3.0 TABLES SUMMARIZING PHASE II EAP WORK

Table 3-1: Summary of Remedial Measures for Phase II EAP		
Remediation Type	Miles	Summary of Remedial Measures
1. Small Diameter (SD) Condition Remediation		
SD Remediation – Remediation Complete	71.3 ¹	Identified through SAWS Condition Assessment Program as requiring remedial measures; remediation complete and reported in 2013 or 2014 Annual Report.
SD Remediation – Design Completed	15.3	Identified through SAWS Condition Assessment Program as requiring remedial measures; design complete. Actual mileage may change slightly due to modifications required during construction. See Project List Below.
SD Remediation – Under Design	2.3	Identified through SAWS Condition Assessment Program as requiring remedial measures; design is in progress. Actual mileage may change slightly due to modifications required during construction. See Project List Below.
Total	88.9	
2. Large Diameter (LD) Condition Remediation		
LD Remediation – Design Completed	0.4	Identified through SAWS Condition Assessment Program as requiring remedial measures; design complete. Actual mileage may change slightly due to modifications required during construction. See Project List Below.
LD Remediation – Under Design	0.3	Identified through SAWS Condition Assessment Program as requiring remedial measures; design is in progress. Actual mileage may change due to decisions made during design and later during construction. See Project List Below.
Total	0.7	

Table 3-1: Summary of Remedial Measures for Phase II EAP		
Remediation Type	Miles	Summary of Remedial Measures
3. LD Capacity Remediation		
LD Capacity Remediation Projects	4.2	Large sewer segments that have been identified through the Capacity Assessment Task as having capacity constraints that have or may cause sanitary sewer overflows under the assessment storm and that have gone through alternatives analysis. Required condition remediation of associated pipelines is included in the mileage. See Project List in Table 4-4.
<p>Note 1: 71.3 miles of gravity sewer mains were remediated for structural defects during 2013 and 2014 in addition to pipe segments that were remediated as part of the Phase I EAP. These assets were reported in Appendix C of the 2013 and 2014 Annual Reports. These pipes are included in the Phase II EAP totals.</p>		

Table 3-2: Remediation Project List for Phase II EAP		
Project Name	Miles	Target Project Completion Schedule
1. SD Condition Remediation		
Phase II EAP: Remediation completed in 2013	19.5 ¹	Reported in 2013 Annual Report
Phase II EAP: Remediation completed in 2014	51.8 ¹	Reported in 2014 Annual Report
Phase II EAP: Project 9 – 2015 SD Rehab Program	2.0	3 years from Date of Lodging
Phase II EAP: Project 10 – 2016 SD Rehab Program	7.1	4 years from Date of Lodging
Phase II EAP: Project 11 – 2017 SD Rehab Program	8.5	5 years from Date of Lodging
<i>SD Condition Total</i>	<i>88.9</i>	
2. LD Condition Remediation		
Phase II EAP: Project 12 – 2020 LD Rehab Program	0.7	5 years from Phase II EAP Submittal
<i>LD Condition Total</i>	<i>0.7</i>	
3. LD Capacity Remediation		
C-5/C-28 S Laredo/ W Houston – Phase 3	2.2	5 years from Phase II EAP Submittal
W-45 Governmental LC-17 Phase 2	2.0	5 years from Phase II EAP Submittal
<i>LD Capacity Total</i>	<i>4.2</i>	
<p>Note 1: 71.3 miles of gravity sewer mains were remediated for structural defects during 2013 and 2014 in addition to pipe segments that were remediated as part of the Phase I EAP. These assets were reported in Appendix C of the 2013 and 2014 Annual Reports. These pipes are included in the Phase II EAP totals.</p>		

4.0 DETAILED INFORMATION ON PROPOSED PHASE II EAP WORK
4.1 SD Condition Remediation

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 9 - 2015 SD Rehab	1018276	279.5	CCTV	4117	E - VERY POOR
Project 9 - 2015 SD Rehab	1018500	300.3	CCTV	0000	E - VERY POOR
Project 9 - 2015 SD Rehab	1018507	298.9	CCTV	2100	E - VERY POOR
Project 9 - 2015 SD Rehab	995205	262.42	CCTV	4422	E - VERY POOR
Project 9 - 2015 SD Rehab	1016673	341.31	CCTV	4135	E - VERY POOR
Project 9 - 2015 SD Rehab	1022831	280	CCTV	5B3G	E - VERY POOR
Project 9 - 2015 SD Rehab	988874	42	CCTV	5100	D - POOR
Project 9 - 2015 SD Rehab	1052864	148.2	CCTV	5111	D - POOR
Project 9 - 2015 SD Rehab	988451	352	CCTV	5300	E - VERY POOR
Project 9 - 2015 SD Rehab	997797	216.62	CCTV	5231	D - POOR
Project 9 - 2015 SD Rehab	988154	230	CCTV	4634	E - VERY POOR
Project 9 - 2015 SD Rehab	2388896	445	CCTV	4121	E - VERY POOR
Project 9 - 2015 SD Rehab	1059706	300.4	CCTV	423C	D - POOR
Project 9 - 2015 SD Rehab	1053064	375.7	CCTV	5145	E - VERY POOR
Project 9 - 2015 SD Rehab	1054001	280.5	CCTV	5249	E - VERY POOR
Project 9 - 2015 SD Rehab	979382	405	CCTV	5A41	E - VERY POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 9 - 2015 SD Rehab	990173	170	CCTV	5C32	E - VERY POOR
Project 9 - 2015 SD Rehab	974626	318.5	CCTV	5231	D - POOR
Project 9 - 2015 SD Rehab	982808	432	CCTV	4100	E - VERY POOR
Project 9 - 2015 SD Rehab	984460	395.5	CCTV	5243	E - VERY POOR
Project 9 - 2015 SD Rehab	984500	384.7	CCTV	4931	E - VERY POOR
Project 9 - 2015 SD Rehab	1030977	399.9	CCTV	5342	D - POOR
Project 9 - 2015 SD Rehab	966956	265	CCTV	5E3V	E - VERY POOR
Project 9 - 2015 SD Rehab	978880	50	CCTV	5800	E - VERY POOR
Project 9 - 2015 SD Rehab	979432	400	CCTV	5942	E - VERY POOR
Project 9 - 2015 SD Rehab	988583	312	CCTV	5834	E - VERY POOR
Project 9 - 2015 SD Rehab	998516	300	CCTV	2100	E - VERY POOR
Project 9 - 2015 SD Rehab	976915	272	CCTV	4231	D - POOR
Project 9 - 2015 SD Rehab	985734	20	CCTV	3100	D - POOR
Project 9 - 2015 SD Rehab	987171	319	CCTV	5200	D - POOR
Project 9 - 2015 SD Rehab	967319	154	CCTV	5141	E - VERY POOR
Project 9 - 2015 SD Rehab	988132	381.9	CCTV	5B44	E - VERY POOR
Project 9 - 2015 SD Rehab	988841	400	CCTV	523N	D - POOR
Project 9 - 2015 SD Rehab	989123	400	CCTV	5142	E - VERY POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 9 - 2015 SD Rehab	977363	297.2	CCTV	524A	D - POOR
Project 9 - 2015 SD Rehab	965113	213.1	CCTV	5143	D - POOR
Project 9 Total Mileage		2.0			
Project 10 - 2016 SD Rehab	976142	120	CCTV	4B38	D - POOR
Project 10 - 2016 SD Rehab	976441	304	CCTV	4332	D - POOR
Project 10 - 2016 SD Rehab	986242	360	CCTV	5845	E - VERY POOR
Project 10 - 2016 SD Rehab	998571	400	CCTV	524A	E - VERY POOR
Project 10 - 2016 SD Rehab	998572	105	CCTV	4911	E - VERY POOR
Project 10 - 2016 SD Rehab	1008388	170	CCTV	5243	E - VERY POOR
Project 10 - 2016 SD Rehab	1049621	370.16	CCTV	5741	E - VERY POOR
Project 10 - 2016 SD Rehab	968162	300.1	CCTV	4A31	E - VERY POOR
Project 10 - 2016 SD Rehab	979131	310	CCTV	514A	E - VERY POOR
Project 10 - 2016 SD Rehab	974073	398	CCTV	3121	D - POOR
Project 10 - 2016 SD Rehab	977790	286	CCTV	5A00	E - VERY POOR
Project 10 - 2016 SD Rehab	978170	161.1	CCTV	4700	D - POOR
Project 10 - 2016 SD Rehab	985918	276	CCTV	453I	D - POOR
Project 10 - 2016 SD Rehab	969370	274	CCTV	3712	D - POOR
Project 10 - 2016 SD Rehab	977674	270.17	CCTV	4100	D - POOR
Project 10 - 2016 SD Rehab	972552	36	CCTV	5400	E - VERY POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 10 - 2016 SD Rehab	997793	99	CCTV	5343	E - VERY POOR
Project 10 - 2016 SD Rehab	997794	347	CCTV	5141	E - VERY POOR
Project 10 - 2016 SD Rehab	965963	497	CCTV	534C	E - VERY POOR
Project 10 - 2016 SD Rehab	966814	42	CCTV	5544	E - VERY POOR
Project 10 - 2016 SD Rehab	1049884	335	CCTV	524B	E - VERY POOR
Project 10 - 2016 SD Rehab	977764	239	CCTV	5100	E - VERY POOR
Project 10 - 2016 SD Rehab	976961	300	CCTV	5634	E - VERY POOR
Project 10 - 2016 SD Rehab	966825	400	CCTV	5100	D - POOR
Project 10 - 2016 SD Rehab	971760	408.1	CCTV	5332	E - VERY POOR
Project 10 - 2016 SD Rehab	1015454	432	CCTV	5631	E - VERY POOR
Project 10 - 2016 SD Rehab	964106	186.6	CCTV	5334	E - VERY POOR
Project 10 - 2016 SD Rehab	985761	370	CCTV	5141	E - VERY POOR
Project 10 - 2016 SD Rehab	970829	344.43	CCTV	4234	E - VERY POOR
Project 10 - 2016 SD Rehab	989794	354	CCTV	5D36	E - VERY POOR
Project 10 - 2016 SD Rehab	1017560	329.18	CCTV	5242	E - VERY POOR
Project 10 - 2016 SD Rehab	1015003	235.78	CCTV	523Q	E - VERY POOR
Project 10 - 2016 SD Rehab	990546	314	CCTV	5542	E - VERY POOR
Project 10 - 2016 SD Rehab	1023103	468	CCTV	5443	E - VERY POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 10 - 2016 SD Rehab	1048511	254	CCTV	5300	E - VERY POOR
Project 10 - 2016 SD Rehab	1059560	114	CCTV	5A00	E - VERY POOR
Project 10 - 2016 SD Rehab	1059558	359	CCTV	3121	E - VERY POOR
Project 10 - 2016 SD Rehab	1059559	395	CCTV	4132	D - POOR
Project 10 - 2016 SD Rehab	1030987	302.7	CCTV	3200	D - POOR
Project 10 - 2016 SD Rehab	991306	128	CCTV	5A31	E - VERY POOR
Project 10 - 2016 SD Rehab	991407	337.7	CCTV	4100	E - VERY POOR
Project 10 - 2016 SD Rehab	2406174	153	CCTV	2700	E - VERY POOR
Project 10 - 2016 SD Rehab	998276	286	CCTV	5100	D - POOR
Project 10 - 2016 SD Rehab	980119	288	CCTV	524H	D - POOR
Project 10 - 2016 SD Rehab	986743	26	CCTV	5143	D - POOR
Project 10 - 2016 SD Rehab	986043	57.5	CCTV	5545	D - POOR
Project 10 - 2016 SD Rehab	1053666	215	CCTV	5341	E - VERY POOR
Project 10 - 2016 SD Rehab	1050991	273	CCTV	5531	E - VERY POOR
Project 10 - 2016 SD Rehab	1058017	216	CCTV	544A	E - VERY POOR
Project 10 - 2016 SD Rehab	978327	35	CCTV	5431	D - POOR
Project 10 - 2016 SD Rehab	1059511	357	CCTV	5343	E - VERY POOR
Project 10 - 2016 SD Rehab	965159	322	CCTV	5131	E - VERY POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 10 - 2016 SD Rehab	966128	301	CCTV	4131	E - VERY POOR
Project 10 - 2016 SD Rehab	972207	403	CCTV	5331	E - VERY POOR
Project 10 - 2016 SD Rehab	983959	475	CCTV	3321	E - VERY POOR
Project 10 - 2016 SD Rehab	963955	403	CCTV	5100	E - VERY POOR
Project 10 - 2016 SD Rehab	965105	130	CCTV	5641	E - VERY POOR
Project 10 - 2016 SD Rehab	965407	320	CCTV	5242	E - VERY POOR
Project 10 - 2016 SD Rehab	967227	388	CCTV	4300	D - POOR
Project 10 - 2016 SD Rehab	974377	136	CCTV	4331	E - VERY POOR
Project 10 - 2016 SD Rehab	975880	155	CCTV	5247	D - POOR
Project 10 - 2016 SD Rehab	979317	170	CCTV	514A	E - VERY POOR
Project 10 - 2016 SD Rehab	979318	354.6	CCTV	5441	E - VERY POOR
Project 10 - 2016 SD Rehab	2645254	191	CCTV	5142	D - POOR
Project 10 - 2016 SD Rehab	1064323	434	CCTV	5543	E - VERY POOR
Project 10 - 2016 SD Rehab	1066026	372.4	CCTV	5641	E - VERY POOR
Project 10 - 2016 SD Rehab	996416	400	CCTV	5321	E - VERY POOR
Project 10 - 2016 SD Rehab	996958	400	CCTV	5600	E - VERY POOR
Project 10 - 2016 SD Rehab	977299	358	CCTV	1100	D - POOR
Project 10 - 2016 SD Rehab	1054101	425.1	CCTV	5443	D - POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 10 - 2016 SD Rehab	1064687	274.3	CCTV	5442	D - POOR
Project 10 - 2016 SD Rehab	964963	395.7	CCTV	533N	D - POOR
Project 10 - 2016 SD Rehab	977754	383	CCTV	533C	E - VERY POOR
Project 10 - 2016 SD Rehab	987649	374	CCTV	5223	E - VERY POOR
Project 10 - 2016 SD Rehab	972720	150	CCTV	5B31	E - VERY POOR
Project 10 - 2016 SD Rehab	977721	374	CCTV	5100	D - POOR
Project 10 - 2016 SD Rehab	983246	425	CCTV	5245	E - VERY POOR
Project 10 - 2016 SD Rehab	968248	172	CCTV	5237	E - VERY POOR
Project 10 - 2016 SD Rehab	996488	436.4	CCTV	3100	E - VERY POOR
Project 10 - 2016 SD Rehab	999858	385.5	CCTV	413C	E - VERY POOR
Project 10 - 2016 SD Rehab	1009556	198.1	CCTV	5442	E - VERY POOR
Project 10 - 2016 SD Rehab	999444	403	CCTV	3515	E - VERY POOR
Project 10 - 2016 SD Rehab	982856	327	CCTV	5B4E	E - VERY POOR
Project 10 - 2016 SD Rehab	984288	325	CCTV	5145	E - VERY POOR
Project 10 - 2016 SD Rehab	992977	107.5	CCTV	5431	E - VERY POOR
Project 10 - 2016 SD Rehab	993309	408.3	CCTV	5C3B	E - VERY POOR
Project 10 - 2016 SD Rehab	1064512	385	CCTV	5141	E - VERY POOR
Project 10 - 2016 SD Rehab	1065855	61	CCTV	3200	E - VERY POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 10 - 2016 SD Rehab	1066085	91.43	CCTV	5241	E - VERY POOR
Project 10 - 2016 SD Rehab	3131583	192.95	CCTV	5441	E - VERY POOR
Project 10 - 2016 SD Rehab	1064483	191.9	CCTV	5141	E - VERY POOR
Project 10 - 2016 SD Rehab	1066211	195	CCTV	5142	E - VERY POOR
Project 10 - 2016 SD Rehab	1064397	429	CCTV	5443	E - VERY POOR
Project 10 - 2016 SD Rehab	1065482	484	CCTV	5311	D - POOR
Project 10 - 2016 SD Rehab	1066154	259	CCTV	3521	D - POOR
Project 10 - 2016 SD Rehab	1053442	357.8	CCTV	564X	E - VERY POOR
Project 10 - 2016 SD Rehab	997437	217	CCTV	5200	D - POOR
Project 10 - 2016 SD Rehab	987527	350	CCTV	5347	D - POOR
Project 10 - 2016 SD Rehab	1049643	262	CCTV	5A11	E - VERY POOR
Project 10 - 2016 SD Rehab	994794	341	CCTV	5248	D - POOR
Project 10 - 2016 SD Rehab	994834	341	CCTV	5141	D - POOR
Project 10 - 2016 SD Rehab	994835	100	CCTV	4422	D - POOR
Project 10 - 2016 SD Rehab	994836	185.5	CCTV	574A	E - VERY POOR
Project 10 - 2016 SD Rehab	1050943	259.4	CCTV	5941	D - POOR
Project 10 - 2016 SD Rehab	1050298	92.8	CCTV	4600	D - POOR
Project 10 - 2016 SD Rehab	1050147	290.5	CCTV	574D	E - VERY POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 10 - 2016 SD Rehab	2389831	347	CCTV	413Z	E - VERY POOR
Project 10 - 2016 SD Rehab	975233	295	CCTV	534H	E - VERY POOR
Project 10 - 2016 SD Rehab	970998	148.6	CCTV	5141	E - VERY POOR
Project 10 - 2016 SD Rehab	2388845	220	CCTV	5200	E - VERY POOR
Project 10 - 2016 SD Rehab	966729	356	CCTV	5A3J	E - VERY POOR
Project 10 - 2016 SD Rehab	972943	405	CCTV	5100	E - VERY POOR
Project 10 - 2016 SD Rehab	974353	321.7	CCTV	413Z	E - VERY POOR
Project 10 - 2016 SD Rehab	964987	260.2	CCTV	5D41	E - VERY POOR
Project 10 - 2016 SD Rehab	965978	316	CCTV	5H3K	E - VERY POOR
Project 10 - 2016 SD Rehab	966235	323.3	CCTV	3P22	E - VERY POOR
Project 10 - 2016 SD Rehab	1065312	302.2	CCTV	3300	E - VERY POOR
Project 10 - 2016 SD Rehab	976729	287	CCTV	5631	E - VERY POOR
Project 10 - 2016 SD Rehab	1064066	400	CCTV	4A3C	E - VERY POOR
Project 10 - 2016 SD Rehab	968829	384	CCTV	5E41	E - VERY POOR
Project 10 - 2016 SD Rehab	973818	83.5	CCTV	552B	E - VERY POOR
Project 10 - 2016 SD Rehab	977441	400	CCTV	5125	E - VERY POOR
Project 10 - 2016 SD Rehab	968211	270	CCTV	4200	E - VERY POOR
Project 10 - 2016 SD Rehab	977365	299	CCTV	584A	E - VERY POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 10 - 2016 SD Rehab	967591	373.6	CCTV	5A3B	E - VERY POOR
Project 10 - 2016 SD Rehab	975858	320	CCTV	5100	E - VERY POOR
Project 10 - 2016 SD Rehab	1065462	241	CCTV	5232	E - VERY POOR
Project 10 - 2016 SD Rehab	967890	310	CCTV	3B23	E - VERY POOR
Project 10 - 2016 SD Rehab	972524	358	CCTV	5144	E - VERY POOR
Project 10 - 2016 SD Rehab	972621	338	CCTV	5400	E - VERY POOR
Project 10 - 2016 SD Rehab	966008	340	CCTV	1100	D - POOR
Project 10 Total Mileage		7.1			
Project 11 - 2017 SD Rehab	967668	230	CCTV	5121	D - POOR
Project 11 - 2017 SD Rehab	977097	480	CCTV	5341	E - VERY POOR
Project 11 - 2017 SD Rehab	1063763	325.7	CCTV	5443	E - VERY POOR
Project 11 - 2017 SD Rehab	984896	304.1	CCTV	5842	E - VERY POOR
Project 11 - 2017 SD Rehab	1024306	348.24	CCTV	5141	E - VERY POOR
Project 11 - 2017 SD Rehab	987769	300	CCTV	5211	E - VERY POOR
Project 11 - 2017 SD Rehab	996623	350	CCTV	5143	E - VERY POOR
Project 11 - 2017 SD Rehab	1066191	365	CCTV	563M	E - VERY POOR
Project 11 - 2017 SD Rehab	965960	402.1	CCTV	5342	E - VERY POOR
Project 11 - 2017 SD Rehab	995535	346.6	CCTV	524C	E - VERY POOR
Project 11 - 2017 SD Rehab	983245	529.1	CCTV	5546	E - VERY POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 11 - 2017 SD Rehab	984077	300	CCTV	5441	E - VERY POOR
Project 11 - 2017 SD Rehab	994741	419.1	CCTV	594A	E - VERY POOR
Project 11 - 2017 SD Rehab	994782	285.3	CCTV	534A	E - VERY POOR
Project 11 - 2017 SD Rehab	1058724	228.1	CCTV	5A43	E - VERY POOR
Project 11 - 2017 SD Rehab	979232	346	CCTV	5100	E - VERY POOR
Project 11 - 2017 SD Rehab	979741	354.2	CCTV	5200	E - VERY POOR
Project 11 - 2017 SD Rehab	987360	350	CCTV	5246	E - VERY POOR
Project 11 - 2017 SD Rehab	1061454	38	CCTV	4121	E - VERY POOR
Project 11 - 2017 SD Rehab	970433	138.3	CCTV	5200	E - VERY POOR
Project 11 - 2017 SD Rehab	1029186	249	CCTV	5300	E - VERY POOR
Project 11 - 2017 SD Rehab	970432	355.4	CCTV	5931	E - VERY POOR
Project 11 - 2017 SD Rehab	992368	275	CCTV	5B4C	E - VERY POOR
Project 11 - 2017 SD Rehab	1048700	403.8	CCTV	514B	E - VERY POOR
Project 11 - 2017 SD Rehab	1053067	74	CCTV	5200	E - VERY POOR
Project 11 - 2017 SD Rehab	2795700	205	CCTV	544D	E - VERY POOR
Project 11 - 2017 SD Rehab	969018	43	CCTV	5949	E - VERY POOR
Project 11 - 2017 SD Rehab	969020	220	CCTV	5100	E - VERY POOR
Project 11 - 2017 SD Rehab	969019	96	CCTV	5131	E - VERY POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 11 - 2017 SD Rehab	990652	378	CCTV	5D4D	E - VERY POOR
Project 11 - 2017 SD Rehab	983560	400	CCTV	5943	E - VERY POOR
Project 11 - 2017 SD Rehab	984398	290	CCTV	5542	E - VERY POOR
Project 11 - 2017 SD Rehab	976900	112.1	CCTV	5645	D - POOR
Project 11 - 2017 SD Rehab	977100	275	CCTV	5B4C	D - POOR
Project 11 - 2017 SD Rehab	979043	364	CCTV	5C41	D - POOR
Project 11 - 2017 SD Rehab	1001610	233.45	CCTV	3121	D - POOR
Project 11 - 2017 SD Rehab	2395162	364.58	CCTV	574A	D - POOR
Project 11 - 2017 SD Rehab	977352	364	CCTV	4223	E - VERY POOR
Project 11 - 2017 SD Rehab	975630	379.1	CCTV	564D	D - POOR
Project 11 - 2017 SD Rehab	975633	204.8	CCTV	564C	D - POOR
Project 11 - 2017 SD Rehab	968107	181	CCTV	514A	D - POOR
Project 11 - 2017 SD Rehab	999263	213	CCTV	5342	D - POOR
Project 11 - 2017 SD Rehab	2565190	139	CCTV	5146	D - POOR
Project 11 - 2017 SD Rehab	1066104	594	CCTV	5242	E - VERY POOR
Project 11 - 2017 SD Rehab	991929	301	CCTV	5C42	E - VERY POOR
Project 11 - 2017 SD Rehab	986902	396.1	CCTV	5641	E - VERY POOR
Project 11 - 2017 SD Rehab	976717	300	CCTV	513W	D - POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 11 - 2017 SD Rehab	985304	300	CCTV	423Z	D - POOR
Project 11 - 2017 SD Rehab	972618	300	CCTV	5141	D - POOR
Project 11 - 2017 SD Rehab	973004	300	CCTV	5343	D - POOR
Project 11 - 2017 SD Rehab	973237	275	CCTV	5243	E - VERY POOR
Project 11 - 2017 SD Rehab	975761	220	CCTV	5344	E - VERY POOR
Project 11 - 2017 SD Rehab	998121	270	CCTV	5322	E - VERY POOR
Project 11 - 2017 SD Rehab	1048057	257.9	CCTV	5542	E - VERY POOR
Project 11 - 2017 SD Rehab	1050759	349.4	CCTV	5246	E - VERY POOR
Project 11 - 2017 SD Rehab	1048430	225.5	CCTV	5141	E - VERY POOR
Project 11 - 2017 SD Rehab	1048060	57.2	CCTV	4121	E - VERY POOR
Project 11 - 2017 SD Rehab	1034500	367.3	CCTV	5241	E - VERY POOR
Project 11 - 2017 SD Rehab	978390	376	CCTV	5342	E - VERY POOR
Project 11 - 2017 SD Rehab	1052302	392	CCTV	5200	D - POOR
Project 11 - 2017 SD Rehab	1018110	318.26	CCTV	413W	D - POOR
Project 11 - 2017 SD Rehab	1021177	309.3	CCTV	5148	E - VERY POOR
Project 11 - 2017 SD Rehab	1030918	303.5	CCTV	524A	E - VERY POOR
Project 11 - 2017 SD Rehab	972603	281	CCTV	5135	E - VERY POOR
Project 11 - 2017 SD Rehab	967947	140	CCTV	5B3D	E - VERY POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 11 - 2017 SD Rehab	976715	300	CCTV	5231	E - VERY POOR
Project 11 - 2017 SD Rehab	983697	323.05	CCTV	5148	E - VERY POOR
Project 11 - 2017 SD Rehab	987557	303.9	CCTV	5D36	E - VERY POOR
Project 11 - 2017 SD Rehab	1012786	160	CCTV	5221	E - VERY POOR
Project 11 - 2017 SD Rehab	984484	344.2	CCTV	554L	E - VERY POOR
Project 11 - 2017 SD Rehab	984239	194.9	CCTV	5347	E - VERY POOR
Project 11 - 2017 SD Rehab	978984	353	CCTV	5841	E - VERY POOR
Project 11 - 2017 SD Rehab	977096	544	CCTV	534S	E - VERY POOR
Project 11 - 2017 SD Rehab	980173	311	CCTV	5648	E - VERY POOR
Project 11 - 2017 SD Rehab	989248	278.8	CCTV	5121	E - VERY POOR
Project 11 - 2017 SD Rehab	1053855	64	CCTV	5200	D - POOR
Project 11 - 2017 SD Rehab	966820	182.6	CCTV	5231	E - VERY POOR
Project 11 - 2017 SD Rehab	968019	370	CCTV	5145	E - VERY POOR
Project 11 - 2017 SD Rehab	992816	316	CCTV	4131	E - VERY POOR
Project 11 - 2017 SD Rehab	992994	291	CCTV	5121	E - VERY POOR
Project 11 - 2017 SD Rehab	962906	270	CCTV	5143	E - VERY POOR
Project 11 - 2017 SD Rehab	963316	359	CCTV	5241	E - VERY POOR
Project 11 - 2017 SD Rehab	974102	332	CCTV	5B4D	E - VERY POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 11 - 2017 SD Rehab	975849	382	CCTV	4235	E - VERY POOR
Project 11 - 2017 SD Rehab	976215	400	CCTV	5343	E - VERY POOR
Project 11 - 2017 SD Rehab	967682	203	CCTV	514G	D - POOR
Project 11 - 2017 SD Rehab	966899	366	CCTV	514E	E - VERY POOR
Project 11 - 2017 SD Rehab	976773	400	CCTV	5141	E - VERY POOR
Project 11 - 2017 SD Rehab	977250	419.4	CCTV	532M	E - VERY POOR
Project 11 - 2017 SD Rehab	968250	388	CCTV	562C	E - VERY POOR
Project 11 - 2017 SD Rehab	981749	350	CCTV	3100	E - VERY POOR
Project 11 - 2017 SD Rehab	982027	129	CCTV	4100	E - VERY POOR
Project 11 - 2017 SD Rehab	982295	185.6	CCTV	3121	E - VERY POOR
Project 11 - 2017 SD Rehab	981932	350.7	CCTV	3100	E - VERY POOR
Project 11 - 2017 SD Rehab	965219	385	CCTV	5441	D - POOR
Project 11 - 2017 SD Rehab	973912	343	CCTV	514C	D - POOR
Project 11 - 2017 SD Rehab	975759	330	CCTV	554E	D - POOR
Project 11 - 2017 SD Rehab	975388	185	CCTV	413B	D - POOR
Project 11 - 2017 SD Rehab	976875	342	CCTV	563G	D - POOR
Project 11 - 2017 SD Rehab	2390098	350	CCTV	544M	D - POOR
Project 11 - 2017 SD Rehab	967770	170	CCTV	3B2S	D - POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 11 - 2017 SD Rehab	980022	12	CCTV	5100	D - POOR
Project 11 - 2017 SD Rehab	970080	342	CCTV	5642	E - VERY POOR
Project 11 - 2017 SD Rehab	975076	449	CCTV	534A	E - VERY POOR
Project 11 - 2017 SD Rehab	980687	307.4	CCTV	5249	E - VERY POOR
Project 11 - 2017 SD Rehab	967382	62.2	CCTV	533A	E - VERY POOR
Project 11 - 2017 SD Rehab	970692	70	CCTV	5742	E - VERY POOR
Project 11 - 2017 SD Rehab	972615	251.47	CCTV	514B	E - VERY POOR
Project 11 - 2017 SD Rehab	990095	335	CCTV	5141	D - POOR
Project 11 - 2017 SD Rehab	1050961	350	CCTV	5622	E - VERY POOR
Project 11 - 2017 SD Rehab	983583	143	CCTV	5A41	D - POOR
Project 11 - 2017 SD Rehab	986269	415.2	CCTV	4M00	D - POOR
Project 11 - 2017 SD Rehab	986079	284.93	CCTV	5600	E - VERY POOR
Project 11 - 2017 SD Rehab	968124	149.4	CCTV	2C00	E - VERY POOR
Project 11 - 2017 SD Rehab	974011	148	CCTV	5C43	E - VERY POOR
Project 11 - 2017 SD Rehab	964215	356.7	CCTV	5632	E - VERY POOR
Project 11 - 2017 SD Rehab	990644	360	CCTV	5741	E - VERY POOR
Project 11 - 2017 SD Rehab	976099	350	CCTV	5100	D - POOR
Project 11 - 2017 SD Rehab	977637	340	CCTV	4332	D - POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 11 - 2017 SD Rehab	979100	225	CCTV	3100	E - VERY POOR
Project 11 - 2017 SD Rehab	979263	351	CCTV	4135	E - VERY POOR
Project 11 - 2017 SD Rehab	979715	348	CCTV	3500	E - VERY POOR
Project 11 - 2017 SD Rehab	980369	362	CCTV	5241	E - VERY POOR
Project 11 - 2017 SD Rehab	978825	349	CCTV	5134	E - VERY POOR
Project 11 - 2017 SD Rehab	990587	363	CCTV	4133	E - VERY POOR
Project 11 - 2017 SD Rehab	977516	90	CCTV	5A31	E - VERY POOR
Project 11 - 2017 SD Rehab	981053	140	CCTV	5342	E - VERY POOR
Project 11 - 2017 SD Rehab	980916	360	CCTV	3300	D - POOR
Project 11 - 2017 SD Rehab	990588	347	CCTV	5144	E - VERY POOR
Project 11 - 2017 SD Rehab	990586	374	CCTV	3521	E - VERY POOR
Project 11 - 2017 SD Rehab	979756	360	CCTV	5345	E - VERY POOR
Project 11 - 2017 SD Rehab	978590	360	CCTV	5241	E - VERY POOR
Project 11 - 2017 SD Rehab	1064300	355	CCTV	574D	D - POOR
Project 11 - 2017 SD Rehab	994979	320	CCTV	534B	D - POOR
Project 11 - 2017 SD Rehab	976668	313	CCTV	5C43	E - VERY POOR
Project 11 - 2017 SD Rehab	976525	307	CCTV	5143	E - VERY POOR
Project 11 - 2017 SD Rehab	1051056	500	CCTV	5142	E - VERY POOR

Table 4-1: SD Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 11 - 2017 SD Rehab	976526	57.8	CCTV	5632	E - VERY POOR
Project 11 - 2017 SD Rehab	979556	354	CCTV	594E	E - VERY POOR
Project 11 - 2017 SD Rehab	976044	363	CCTV	5541	E - VERY POOR
Project 11 - 2017 SD Rehab	1002493	229.53	CCTV	544A	D - POOR
Project 11 - 2017 SD Rehab	984834	477	CCTV	4133	D - POOR
Project 11 - 2017 SD Rehab	984725	297	CCTV	534C	D - POOR
Project 11 - 2017 SD Rehab	994632	464	CCTV	513A	E - VERY POOR
Project 11 - 2017 SD Rehab	987776	400	CCTV	554B	E - VERY POOR
Project 11 - 2017 SD Rehab	2389328	300	CCTV	5643	E - VERY POOR
Project 11 - 2017 SD Rehab	966396	185	CCTV	4131	E - VERY POOR
Project 11 - 2017 SD Rehab	974776	325	CCTV	5139	D - POOR
Project 11 - 2017 SD Rehab	966015	400	CCTV	5141	D - POOR
Project 11 - 2017 SD Rehab	966874	240	CCTV	5441	E - VERY POOR
Project 11 - 2017 SD Rehab	965719	397.12	CCTV	4132	E - VERY POOR
Project 11 - 2017 SD Rehab	974328	192.1	CCTV	5141	E - VERY POOR
Project 11 Total Mileage		8.5			

4.2 LD Condition Remediation

Table 4-2: Large Diameter (LD) Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 12 - LD Rehab	970278	162.6	CCTV	5143	E - VERY POOR
Project 12 - LD Rehab	980656	471	CCTV	3122	E - VERY POOR
Project 12 - LD Rehab	995298	323.8	CCTV	412L	E - VERY POOR
Project 12 - LD Rehab	1002970	314.5	CCTV	2A00	E - VERY POOR
Project 12 - LD Rehab	1011157	529.25	CCTV	5L36	E - VERY POOR
Project 12 - LD Rehab	988366	48	CCTV	5131	D - POOR
Project 12 - LD Rehab	988405	10	CCTV	5131	D - POOR
Project 12 - LD Rehab	990764	154	CCTV	3100	D - POOR
Project 12 - LD Rehab	997921	142	CCTV	544B	D - POOR
Project 12 - LD Rehab	1010673	474.9	CCTV	5131	E - VERY POOR
Project 12 - LD Rehab	981343	382.9	CCTV	4131	D - POOR
Project 12 - LD Rehab	988314	27.85	CCTV	5331	E - VERY POOR
Project 12 - LD Rehab	988355	21.2	CCTV	5331	E - VERY POOR
Project 12 - LD Rehab	988418	37	CCTV	5100	E - VERY POOR
Project 12 - LD Rehab	989798	18.7	CCTV	3100	D - POOR
Project 12 - LD Rehab	990724	432	CCTV	3621	D - POOR
Project 12 - LD Rehab	2383387	256	CCTV	5131	E - VERY POOR

Table 4-2: Large Diameter (LD) Condition Remediation					
Project Name	Asset ID	Pipe Length (Feet)	Investigative Technique	NASSCO PACP Quick Rating	SAWS Condition Assessment Category
Project 12 - LD Rehab	990479	192	CCTV	5141	E - VERY POOR
Project 12 Total Mileage		0.7			



4.3 LD Capacity Remediation

Table 4-3 shows existing pipe segments and pipe lengths associated with Phase II EAP projects as required by the CD; Table 4-4 includes the length of the proposed capacity remedial measures projects. The length of the projects in Table 4-4 may differ from the length of pipes shown in Table 4-3 due to differences in sewer alignment.

Table 4-3: LD Capacity Remedial Measures					
Project Name	Existing Asset ID	Existing Length (Feet)	Existing Capacity (mgd)	Required Flow (mgd)	Proposed Capacity (mgd)
C-5/C-28 S Laredo/ W Houston - Phase 3	975754	385	2.27	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	976675	160.45	7.03	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	983904	401	2.23	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	984747	384.1	5.68	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	986250	362.9	0.93	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	1065765	34.7	3.92	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	1065769	221	0.78	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	1065773	100	1.27	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	1065774	84	1.34	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	1065913	74	3.29	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	1065914	183	1.15	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	1065915	304	1.50	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	1065917	45	0.55	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	1065918	273.7	2.85	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	2383197	322.65	2.11	2.83	4.38

Table 4-3: LD Capacity Remedial Measures					
Project Name	Existing Asset ID	Existing Length (Feet)	Existing Capacity (mgd)	Required Flow (mgd)	Proposed Capacity (mgd)
C-5/C-28 S Laredo/ W Houston - Phase 3	2384749	401.7	2.07	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	2385823	221.3	6.04	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	2385824	191	13.70	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	3219580	337	0.50	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	3219581	337	0.50	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	3219589	353	0.50	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	3238883	49.08	2.05	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	3238884	205.3	1.96	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	3238885	258.19	1.96	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	3238888	153.06	2.05	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	3238891	223.71	2.05	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	3238892	92.53	3.37	2.83	4.38
C-5/C-28 S Laredo/ W Houston - Phase 3	972236	400	1.62	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	972449	262.2	2.03	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	972680	250	2.13	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	972929	151	1.61	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	972930	400	1.62	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	973085	61.6	2.07	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	973136	209	1.62	1.74	2.78

Table 4-3: LD Capacity Remedial Measures					
Project Name	Existing Asset ID	Existing Length (Feet)	Existing Capacity (mgd)	Required Flow (mgd)	Proposed Capacity (mgd)
C-5/C-28 S Laredo/ W Houston - Phase 3	978122	394.95	1.63	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	986508	36.31	1.70	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	1048100	263	0.91	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	1048251	140.53	1.62	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	1048504	242	0.89	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	1048505	178	1.60	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	1057614	95	1.66	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	1058256	348	1.25	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	1058257	346	1.81	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	1058258	301	1.47	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	2392331	305	1.45	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	3107928	43	1.62	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	3107929	12	1.65	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	3107930	38	1.62	1.74	2.78
C-5/C-28 S Laredo/ W Houston - Phase 3	3107931	12	1.62	1.74	2.78
W-45 Governmental LC-17 Phase 2	1012886	1204.9	6.56	18.2	25.26
W-45 Governmental LC-17 Phase 2	1048979	454	6.55	18.2	25.26
W-45 Governmental LC-17 Phase 2	1049026	1091	6.56	18.2	25.26
W-45 Governmental LC-17 Phase 2	1012516	380.4	14.13	18.2	25.26

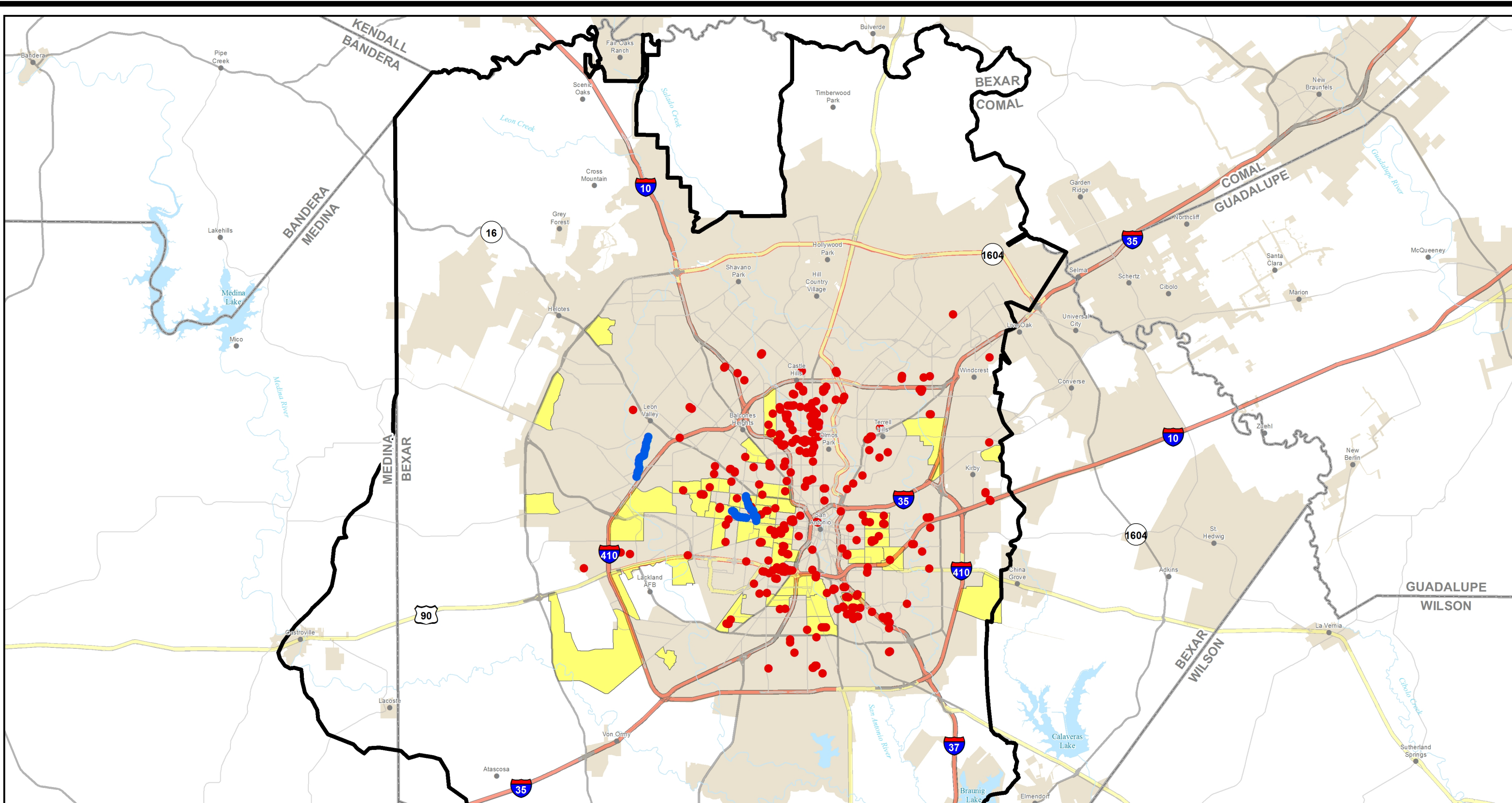
Table 4-3: LD Capacity Remedial Measures					
Project Name	Existing Asset ID	Existing Length (Feet)	Existing Capacity (mgd)	Required Flow (mgd)	Proposed Capacity (mgd)
W-45 Governmental LC-17 Phase 2	1012517	228	6.36	18.2	25.26
W-45 Governmental LC-17 Phase 2	1010179	565	6.50	18.2	25.26
W-45 Governmental LC-17 Phase 2	1012971	407	6.56	18.2	25.26
W-45 Governmental LC-17 Phase 2	1010666	750	6.56	18.2	25.26
W-45 Governmental LC-17 Phase 2	1021426	242.4	6.56	18.2	25.26
W-45 Governmental LC-17 Phase 2	1010189	234.05	6.56	18.2	25.26
W-45 Governmental LC-17 Phase 2	1021922	474.48	7.18	18.2	25.26
W-45 Governmental LC-17 Phase 2	1019898	129.07	4.40	18.2	25.26
W-45 Governmental LC-17 Phase 2	1012021	400	6.56	18.2	25.26
W-45 Governmental LC-17 Phase 2	1019897	722	10.78	18.2	25.26
W-45 Governmental LC-17 Phase 2	1011596	948	12.51	18.2	25.26
W-45 Governmental LC-17 Phase 2	1012466	870	7.33	18.2	25.26
W-45 Governmental LC-17 Phase 2	1012548	472.4	25.82	18.2	25.26
W-45 Governmental LC-17 Phase 2	1012870	670	46.12	18.2	25.26
W-45 Governmental LC-17 Phase 2	2561742	31.86	77.35	18.2	25.26


Table 4-4: Proposed Capacity Remediation		
Project Name	Remediated Length (Miles)	New Outlet Capacity (mgd)
C-5/C-28 S Laredo/W Houston – Phase 3	2.2	
C-5		4.38
C-28		2.78
W-45 Governmental LC-17 Phase 2	2	25.26
Total	4.2	

5.0 MAP OF PHASE II EARLY ACTION PROGRAM WORK

A map of the identified capacity constraints and the proposed remediation alternatives is shown in **Figure 5-1**.





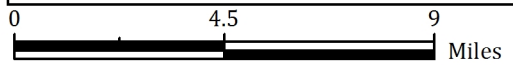


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 July 13, 2015 GIS Division

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Figure 5-1 Map of Phase II Early Action Program Work



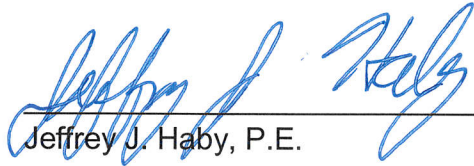
Legend

Project Type

- Phase II Early Action Program Condition Remediation Work
- Phase II Early Action Program Capacity Remediation Work
- SAWS Boundary
- Low Income Census Tracts

6.0 CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Jeffrey J. Haby, P.E.

Senior Director – Sewer System Improvements



(Date)

