SECTION 10

CAPITAL IMPROVEMENT PROGRAM

10-1 GENERAL DESCRIPTION

The primary goal of the Capital Improvement Program (CIP) is to provide the City of Manhattan Beach with a long-range planning tool for implementing its sewer infrastructure improvements in an orderly manner and a basis for financing of these improvements. To accomplish this goal, the program is phased based upon the implementation cost of the facilities, the quantity of work the City can reasonably administer each year, and the funds available for these projects.

10-2 CAPITAL IMPROVEMENT PROJECT PRIORITIES

The capital improvement projects were selected primarily with consideration of the health and safety of the public and protection of the environment by minimizing the possibility of overflows. The projects that will eliminate the capacity deficiencies in the gravity collection system are prioritized based upon the hydraulic analyses conducted during this study. As the City completes CCTV inspection of the system, severe and major defects identified should be incorporated into the CIP and addressed. When the CCTV inspection is completed and a full condition assessment has been conducted, the capital improvement project priorities should be reevaluated.

Collection System Capacity Improvement Projects

The collection system capacity improvement projects include the areas identified with a capacity deficiency in the hydraulic model when pump capacities were implemented. It is recommended that the identified locations be flow monitored to verify the d/D ratios prior to implementing any replacement projects. Operations staff has not indicated that these areas are a problem. Therefore, until the deficiencies are verified in the field, these projects are considered low in priority. Details of the project locations are presented in Table 7-2.

Collection System Condition Improvement Projects

The condition improvement projects are prioritized solely on the condition of the pipe as determined from reviews of the CCTV recordings. The condition deficiencies with critical structural damage and severe obstructions were given the highest priority. Sewer pipes with conditions categorized as “Severe” or “Major” and manholes categorized as in poor condition are included in the recommended improvements. Details of the projects are presented in Table 8-2 and Table 8-4.

The planning level recommendations are based upon the ranking and pipe defects from the CCTV inspection reports, and reviews of recordings. It may be possible to reline, repair or perform root treatment on some of the existing gravity pipes, in lieu of replacing them. Actual improvements should be designed based upon further detailed reviews of each recording, taking into consideration other factors such as location, age, capacity of the pipe, existing utilities, and concurrent infrastructure construction projects.

The useful life gained from replacing the deficient facilities will be longer than repairs and relining projects. Root treatment is usually a temporary solution. Unless the source is removed, it is likely that the roots will get thicker as time passes and the root intrusion will continue until the pipe is replaced.

Pump Station Improvements

The recommended pump station capital improvement projects have been based upon condition assessment of each facility, capacity analysis, and conformance with the adopted criteria. The implementation priorities should be based upon the likelihood of a failure that may result in a spill, the volume of spill, and its impact on the public and the environment. The condition assessment and analysis results are described in detail Section 6 for each pump station.

10-3 CAPITAL IMPROVEMENT PROGRAM

The Capital Improvement Program is developed based upon the results of the hydraulic analyses and the established priorities. The recommended improvement project locations are illustrated on Figure 10-1.

Gravity collection system projects are listed in Table 10-1 and Table 10-2 by priority, along with cost estimates. The cost estimates presented in Table 10-1 and Table 10-2 reflect replacement of the existing facilities. Replacement costs are generally more conservative and will therefore allow the City more flexibility for each project. The pipeline construction costs are based upon $45 / diameter inch / ft. Preliminary design studies should be conducted utilizing detailed utility information to identify and evaluate project alternatives such as parallel pipes and/or diversions prior to final design. When sewers are replaced, they should be relocated into the walk ways or right-of-ways as much as possible if they are currently in a location that cannot be easily accessed.

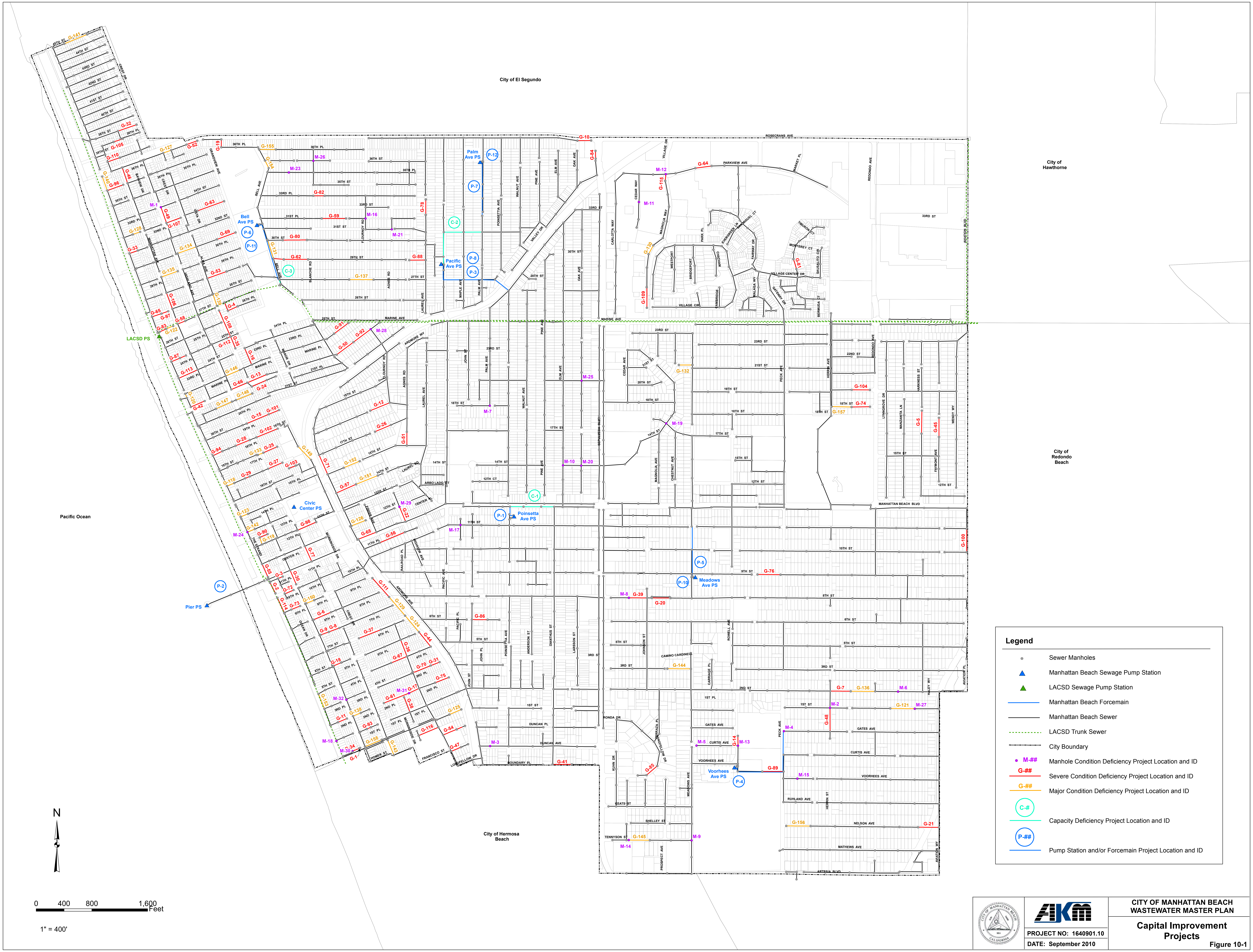
The City of Manhattan Beach is largely occupied and there are many existing utilities to consider. Therefore, the costs of replacing sewer facilities will be generally higher than in an area that is undeveloped. The total costs shown in Table 10-1 and Table 10-2 include engineering, administration and contingency costs, estimated at 35% of the construction cost.

The manhole rehabilitation and replacement projects are listed in Table 10-3. The pump station and forcemain improvement projects are listed in Table 10-4.

The recommended projects have been based upon the best information currently available. It should be updated as new information becomes available from sources such as CCTV inspections and from maintenance crew observations. The project priorities may be revised to correspond to changed conditions, such as impending facility failures, or to take advantage of concurrent construction such as street paving projects or adjacent infrastructure work.

Some of the projects recommended are small and it may not be feasible to implement them as a single project. Therefore, several projects should be combined and bid as a package. Some of the projects may be broken down into smaller components to fit the City's budgetary and other obligations.

The total Wastewater Capital Improvement Program is shown in Table 10-5. The total CIP costs are estimated at $42,042,640.



CITY OF MANHATTAN BEACH
WASTEWATER MASTER PLAN

PROJECT NO: 1640901.10
DATE: September 2010

Capital Improvement Projects

Figure 10-1

Table 10-1
Collection System Capacity Improvement Projects

Project No.	Pipe ID	U/S MH ID	D/S MH ID	Existing Dia (in)	Length (ft)	Slope	ADWF (mgd)	Pumped Flow (mgd)	PDWF (mgd)	Comments	Replacement Size (in)	Unit Cost ($)	Construction Cost ($)	Eng. & Admin. Cost ($)	Project Cost ($)
C-1	06173-06174	06-173	06-174	8	192	0.0040	0.0019	0.7363	0.7437	D/S of Poinsettia PS	15	675	429,300	150,255	579,555
	06174-06175	06-174	06-175	8	254	0.0040	0.0028	0.7363	0.7469						
	06175-06176	06-175	06-176	8	190	0.0136	0.0033	0.7363	0.7485						
C-2	08037-08052	08-037	08-052	8	262	0.0040	0.0446	0.4085	0.5430	D/S of Palm PS	12	540	541,658	189,580	731,238
	08052-08055	08-052	08-055	8	281	0.0040	0.0583	0.4085	0.5805						
	08055-08077	08-055	08-077	8	350	0.0040	0.0637	0.4085	0.5951						
	08077-08082	08-077	08-082	8	110	0.0040	0.0858	0.4085	0.6538						
C-3	16019-16022	16-019	16-022	8	68	0.0099	0.0131	0.5728	0.6164	D/S of Bell PS	12	540	46,591	16,307	62,898
	16022-070L3	16-022	07-0L3	10	18	0.0028	0.0135	0.5728	0.6176						
				Total	**1,725**									**Total**	**1,373,691**

Table 10-2
Gravity Sewer Rehabilitation and Replacment Projects

General Information																Structural Defect Coding																								Operational and Maintenance																															Construction Features																			
Project No.	DVD No.	Inspection No.	Reversal DVD No.	Reversal Inspec. No.	DVD Watched? (Y)	Location Street Name	CCTV Date	Pipe ID	Manhole Start	Manhole End	Direction of Camera	Pipe Size (in)	Pipe Mat	Pipe Atlas Length (ft)	Pipe CCTV Length (ft)	Crack C L	Crack C C	Crack C M	Fracture F L	Fracture F C	Fracture F M	Broken B SV	Broken B VV	Hole H SV	Hole H VV	Joint J O M	Joint J O L	Joint J S M	Joint J S L	Deformed D V	Deformed D H	Collapsed Pipe X P	Surface Damage S	Point Repair RP	Lining Failure	Sags	Total Structural Defects	Total Structural Defect Scor	Structural Defect Index	Deposits D AGS	Deposits D AE	Deposits D Other	Roots (R) Fine (F) B	Roots (R) Fine (F) L	Roots (R) Fine (F) J	Roots (R) Fine (F) C	Roots (R) Tap (T) B	Roots (R) Tap (T) L	Roots (R) Tap (T) J	Roots (R) Tap (T) C	Roots (R) Medium B	Roots (R) Medium L	Roots (R) Medium J	Roots (R) Medium C	Roots (R) Ball (B) B	Roots (R) Ball (B) L	Roots (R) Ball (B) J	Roots (R) Ball (B) C	Infiltration I G	Infiltration I D	Infiltration I R	Infiltration I W	Obstacles OB Other C	Obstacles OB Other Z	Obstacles OB Other %	Vermin V C	Vermin V R	Total O&M Defects	Total O&M Defect Score	O&M Defect Index	Tap (Lateral) T FD	Tap (Lateral) T BI	Tap (Lateral) T BD	Line L D	Line L L	Line L U	Line L R	Line L RD	Line L LD	Intruding Seal Material IS GT	Intruding Seal Material IS Z	Miscellaneous M SA	Miscellaneous M CU	Miscellaneous M MC	Priority	Condition Ranking	No Reverse Set-up Completed	Comments	Minimum Recommendations	Project Replacement Cost ($)
															PACP Grade	2	1	3	3	2	4	5	5	5	5	3	5	1	2	5	5	5	2	1		2				2	2	2	2	1	1	1	3	2	2	2	4	3	3	3	5	4	4	4	5	3	4	2	4	4		1	1																						
G-1	G312-011 Ph 2	11	G312-011 Ph 2	6	Y	1ST ST	7/21/09	12025A-12025	12-025A	12-025	D/S	12	VCP	70	80							1				1						1					3	13	4.3						7										1													8	12	2												2			Severe	1		64' Collapsed Pipe & 64.8' BPSV. MSA 64.2' (16.2' from D/S MH) BPVV. Inspection complete.	Spot repair	58,466
G-2	G312-003 Ph 2	8			Y	THE STRAND	7/9/09	14070-14071	14-070	14-071	U/S	6	VCP	181	5								1											1			2	6	3.0																									1	30			1	4	4.0												1			Severe	2	x	3' BPVV & 5' BPSV. 5' MSA (OBZ=OBI, Another Utility Pipe). Camera blocked by obstacle thru wall. RP=RPP.	Replace pipe	65,975
G-3	G312-004 Ph 2	2			Y	MANHATTAN BEACH BLVD	7/10/09	14059-14060	14-059	14-060	U/S	6	VCP	70	144			1			3	1	1			3											9	34	3.8	1			1		1																			1	30			4	9	2.3															Severe	3		55.4' BPSV (Another sewer line or sewer lateral in the main sewer pipe), & 108.4' BPVV. Inspection report shows Repair Patch at 104.8'. But looks like BPVV. OBZ=OBI	Spot repair or Replace pipe	52,634
G-4	G312-056	8			Y	26TH PL	1/13/09	20008-20009	20-008	20-009	D/S	8	VCP	152	161			2					2			2					1						7	27	3.9					1	18	1					2	1	3															26	40	1.5															Severe	4		144.2' to 146.6' & 157.1' BPVV. 144.2' to 146.7' Deformed Pipe Horizontal.	Spot repair 144' to 148 'BPVV & Deformed Pipe. Also Spot repair 157.1' BPVV. Root Treat and Cut.	78,149
G-5	G312-006	4	G312-006	6	Y	HARKNESS ST	10/27/08	02006-02007	02-006	02-007	U/S	8	VCP	323	326	1					2		3								3						9	40	4.4				1	2	8		1			1		1				1												15	24	1.6	1											2			Severe	5		306.7' to 316' Deformed Pipe (Also BPVV & Continuous Fracture Multiple). MSA 311.1' (14.8' from U/S MH) BPVV.	Replace 303' to 316' to Deformed Pipe	158,387
G-6	G312-033	5	G312-033	6	Y	9TH ST	12/5/08	11093-11094	11-093	11-094	D/S	6	VCP	271	278			19			3	1				20				1			11				55	161	2.9						12					1		1												1	15			15	21	1.4												2			Severe	6		55' to 61.5' Deformed Pipe Vertical & BPSV 57.8' from DS MH. MSA 137.8' (140.3' from D/S MH) Obstacle. SAVZ. OBJ	Spot repair 55' to 61' Deformed & Broken Pipe (SV). Clean obstacle @ 137' from U/S MH	101,367
G-7	G312-002	7			Y	2ND ST	10/21/08	01082-01083	01-082	01-083	D/S	8	VCP	296	303	2	2	7	2	1	10		3			3				2						4	36	117	3.3	100					2																							102	202	2.0					1										Severe	7		124.5' & 142.8' Deformed Pipe Vertical. 124.5', 142.8' & 150.8' BPVV. 120' to153.9' Continuous Fractures.	Replace 100' to 160' Deformed pipe, BPVV, & fractures.	147,404
G-8	G312-008 Ph 2	1			Y	8TH ST	7/16/09	11099-11100	11-099	11-100	D/S	8	VCP	190	164	2	2	11		2	5		2							1			5				30	88	2.9		1			1	8				1			1				2												14	24	1.7	2		2												Severe	8		99' BPVV. 156.3' BPVV & Deformed Horizontal Pipe. S=SAVZ	99' Spot repair & Replace pipe 150' to159'	79,461
G-9	G312-008 Ph 2	2			Y	8TH ST	7/16/09	11100-11101	11-100	11-101	D/S	8	VCP	120	131			11					2							1	1		6				21	65	3.1					2	8		1		1																			12	15	1.3															Severe	9		124.9 Deformed Pipe Horizontal & BPVV. 126.8' Deformed Pipe Vertical & BPVV. S=SAVZ	Replace pipe 124.9' to 127'	63,423
G-10	G312-021	3			Y	ROSECRANS AVE	11/17/08	07001-07002	07-001	07-002	U/S	8	VCP	198	185						2										1						3	13	4.3						2																							2	2	1.0			1												Severe	10		148' to 151' Deformed Pipe Horizontal.	Spot repair 148' to 151' to Deformed H. Pipe	90,007
G-11	G312-035	1			Y	3RD ST	12/9/08	12031-12032	12-031	12-032	U/S	6	VCP	138	16	1		1		2			1								2		1				8	26	3.3						1							1																2	4	2.0												1			Severe	11	x	15' to 15.8' Deformed Pipe Horizontal & BPVV. 15.8' MSA (BPVV). U/S MH is a possible C/O. SAVZ	Spot repair or Replace pipe 8' to 17'	50,122
G-12	G312-036	6			Y	18TH ST	12/10/08	15035-15036	15-035	15-036	D/S	8	VCP	302	307					1			1			1	1				1						5	20	4.0					2	12	1	1									1												17	22	1.3															Severe	12		303.7 to 304.6' Broken Pipe & Deformed Pipe Horizontal. 304.6' JOL (D/SH).	Spot repair 301' to 305' Deformed Horizontal & BPVV	149,396
G-13	G312-060	1			Y	MARINE AVE	1/19/09	21012-21016	21-012	21-016	D/S	6	VCP	303	310		4	9		1	3		1			8	3										29	89	3.1						48											2												50	56	1.1		1													Severe	13		139.1' JOL (D/SL). 140.7' JOL (D/SH) & 150.4 JOL (D/SL). 175.1' BPVV.	Spot repair 139.1' to 150.4' & 175.1'	112,959
G-14	G312-013	5	G312-013	3	Y	ROWELL AVE	11/5/08	05054-05055	05-054	05-055	D/S	6	VCP	144	151												3										3	15	5.0																													0	0	0.0												2			Severe	14		120.9' JOL (D/SL). 123' JOL (D/SH) & 148.9' JOL (D/SL). MSA 121.1' (JOL)	Spot repair 120.9', 123' & 148.9' to JOL	55,003
G-15	G312-072	8	G312-060	2	Y	20TH ST	2/11/09	22030-22031	22-030	22-031	D/S	6	VCP	342	357	1	1	13		2	2		2			10	2						41				74	186	2.5		1			5	24			4				3	1	1		6												45	78	1.7												2	1		Severe	15		6.5' &134.6' BPVV. 48' JOL (D/SL). 171.3' from D/S MH MSA (JOL). Surface Damage= SSSZ	Spot repair. Root Treat & Cut	130,090
G-16	G312-057	10	G312-058	1	Y	VISTA DR	1/14/09	21002-21005	21-002	21-005	U/S	6	VCP	256	247	1		1			1		1			9	2										15	51	3.4					2	13							2	1			5												23	44	1.9												2			Severe	16		205.5' & 208' JOL (D/SH). 208' JOL could be size change, not clear. 101.2' BPVV. MSA 240' (6.5' from U/S MH) RMJ.	Spot repair 101.2' BPVV& & 205.8 to 208' for JOL. Root Treat & Cut	89,849
G-17	G312-017 -1	2			Y	3RD ST	8/3/09	10139-10142	10-139	10-142	D/S	6	VCP	140	166	2	3	5		1	2				2	2	1							2		2	22	59	2.7				1	5	15								2															23	28	1.2							1					1			Severe	17	x	165.6' MSA (JOL). 133.3' & 133.8' HVV. 165.1' JOL (D/SH). After 165.1' there is another JOL or Joint Angular. RP=RPR	Spot repair or Replace pipe	60,361
G-18	G312-017 -1	3			Y	6TH ST	8/3/09	11120A-11122	11-120A	11-122	D/S	6	VCP	120	131	2	2	6			1		1							1			4				17	46	2.7						19								3	1		1												24	35	1.5		1													Severe	18		129.2' BPVV & Deformed Pipe Horizontal. S=SSSZ	Replace pipe after 129'	47,859
G-19	G312-005 Ph 3	5			Y	EASEMENT	8/14/09	17023-17024	17-023	17-024	U/S	8	VCP	75	112			1				1					3									13	18	49	2.7					1	2																							3	3	1.0					1		1								Severe	19		4', 74.1' & 75.9' JOL (D/SH). 4' BPSV.	Spot repair	54,626
G-20	G312-012	1			Y	8TH ST	11/4/08	04059-04060	04-059	04-060	D/S	12	VCP	263	278												2									10	12	30	2.5																													0	0	0.0															Severe	20		248.6' JOL (D/SL). 250.6' JOL (D/SH).	Spot repair 248' to 251' JOL (D/SL) & JOL (D/SH)	202,370
G-21	G312-003	10	G312-003	11	Y	NELSON AVE	10/22/08	01031-01032	01-031	01-032	D/S	8	VCP	292	307		1	7		1							2										11	34	3.1	4	15				13							2				1												35	61	1.7	1											2			Severe	21		225.9' JOL (D/SL). 238.9' JOL (D/SH). MSA 239.5' (67.2' from D/S MH) JOL.	Spot repair JOL (D/SL) 225.9' & JOL (D/SH) 238.9'	149,056
G-22	G312-031	2	G312-031	3	Y	HIGHVIEW AVE	12/3/08	11040-11041	11-040	11-041	D/S	6	VCP	233	239	3		4		1						10	2										20	60	3.0						9	1		1				1				1												13	19	1.5												2			Severe	22		67' JOL (D/SL) & 68.5' JOL (D/SH). Also lots of JOM. MSA 69.3' (170.1' from D/S MH) JOL.	Spot repair 67' to 68.5 to JOL.	87,261

Table 10-2

Gravity Sewer Rehabilitation and Replacment Projects

General Information																Structural Defect Coding																								Operational and Maintenance																															Construction Features																			
Project No.	DVD No.	Inspection No.	Reversal DVD No.	Reversal Inspec. No.	DVD Watched? (Y)	Location Street Name	CCTV Date	Pipe ID	Manhole Start	Manhole End	Direction of Camera	Pipe Size (in)	Mat	Atlas Length (ft)	CCTV Length (ft)	Crack C L	C	M	Fracture F L	C	M	Broken B SV	VV	Hole H SV	VV	Joint J O M	L	S M	L	Deformed D V	H	Collapsed Pipe X P	Surface Damage S	Point Repair RP	Lining Failure	Sags	Total Structural Defects	Total Structural Defect Scor	Structural Defect Index	Deposits D AGS	AE	Other	Roots (R) Fine (F) B	L	J	C	Tap (T) B	L	J	C	Medium B	L	J	C	Ball (B) B	L	J	C	Infiltration I G	D	R	W	Obstacles OB Other C	Z	%	Vermin V C	R	Total O&M Defects	Total O&M Defect Score	O&M Defect Index	Tap (Lateral) T FD	BI	BD	Line L D	L	U	R	RD	LD	Intruding Seal Material IS GT	Z	Miscellaneous M SA	CU	MC	Priority	Condition Ranking	No Reverse Set-up Completed	Comments	Minimum Recommendations	Project Replacement Cost ($)
														PACP Grade		2	1	3	3	2	4	5	5	5	5	3	5	1	2	5	5	5	2	1		2				2	2	2	2	1	1	1	3	2	2	2	4	3	3	3	5	4	4	4	5	3	4	2	4	4		1	1																						
G-23	G312-055	6			Y	25TH ST	1/12/09	20053-20054	20-053	20-054	U/S	6	VCP	95	109	1	1	1								1	2										6	19	3.2		1	1		2	13	1		1	1			1																21	27	1.3															Severe	23		106.1' JOL (D/SH). 108' JOL (D/SL). Both JOL looks like size change. Not clear. DSZ = DNF	Spot repair 106' to 108' to JOL	39,876
G-24	G312-059	7			Y	MARINE AVE	1/16/09	21014-21015	21-014	21-015	U/S	6	VCP	235	260			1			1					17	2										21	68	3.2						19			1																			20	21	1.1														2	Severe	24		142.7' JOL (D/SH). 205.5 JOL (D/SL).	Spot repair 142.7' & 205.5'	94,806
G-25	G312-063	11			Y	18TH ST	1/27/09	22014-22015	22-014	22-015	U/S	6	VCP	218	66								2			6	2										10	38	3.8				1		3							2																6	11	1.8						1						1			Severe	25	x	7' JOL (D/SL). 66.2' JOL (D/SL). 7' & 9.1' BPVV. 66.2' MSA (JOL). U/S MH is a CO.	7' to 9.1' & 64.6' to 66.2' Spot repair	79,282
G-26	G312-052	2			Y	17TH ST	1/7/09	15025-15026	15-025	15-026	D/S	8	VCP	247	250											5	2										7	25	3.6					1	23	1			1	1		3				1												31	42	1.4															Severe	26		123.7'JOL (D/SL). 245.5' JOL (D/SL).	Spot repair 123.7' & 245.5' JOL	121,354
G-27	G312-071	3			Y	17TH ST	2/10/09	22008-22009	22-008	22-009	U/S	6	VCP	226	194		1	4				1	1			23	1						6				37	109	2.9					3	6					1		1				3												14	26	1.9												1			Severe	27	x	1.2' BPVV, 8.5' BPSV , Also 2.4' JOL (D/SH). 194.4' MSA (Camera can't climb). U/S MH is a CO. Surface Damage = SAVZ	Spot repair 1.2' to 8.5'	82,413
G-28	A315-015	1			Y	19TH ST	5/29/09	22025-22026	22-025	22-026	D/S	6	VCP	200	227	2	15			2			1				1										21	33	1.6					4	31							5	2	1		1												44	63	1.4												1			Severe	28	x	227 JOL (D/SH) & BPVV. Close to end MH. MSA 227' (JOL)	Spot repair	82,742
G-29	A315-019	8	A315-021	2		17TH ST	6/4/09	22011-22012	22-011	22-012	D/S	6	VCP	112	77	1	2	1				1				2	1										8	23	2.9													1																1	3	3.0												2			Severe	29		74.3' MSA (JOL (D/SH) & BPSV)'. Close to end MH. MSA 74.3' (3' from D/S MH) JOL	Spot repair	40,824
G-30	G312-003 Ph 2	1			Y	MANHATTAN AVE	7/9/09	14052-14053	14-052	14-053	D/S	8	VCP	223	224											1	2	1									4	14	3.5		19																											19	38	2.0															Severe	30		36.6' (JOL D/SL). 38.4' (JOL D/SH).	Spot repair	108,621
G-31	G312-006 Ph 2	9			Y	4TH ST	7/14/09	10135-10136	10-135	10-136	U/S	6	VCP	130	3							1					1										2	10	5.0				1		1																							2	3	1.5												1			Severe	31	x	3' JOL (D/SH). 3.3' BPSV. MSA (JOL). U/S MH is a C/O	Spot repair	47,385
G-32	G312-071	1			Y	39TH ST	2/10/09	23004-23005	23-004	23-005	D/S	8	VCP	281	287	1		1		1			1			1	1										6	20	3.3					1	19		1	1		1	1					1												25	35	1.4															Severe	32		284.4' JOL (D/SH) & BPVV. Same M313-002 #7 (deleted).	Spot repair	139,482
G-33	G312-053	6	G312-053	11	Y	32ND ST	1/8/09	19031-19053	19-031	19-053	D/S	6	VCP	127	139		1	5					1			3	1										11	35	3.2		1				1																							2	3	1.5							3					2			Severe	33		17.3' Small BPVV & 134.2' JOL (D/SH). 134.8' MSA (JOL).	Spot repair 17.3' BPVV & 134.2' JOL	50,775
G-34	G312-011 Ph 2	7			Y	1ST ST	7/21/09	12025-12026	12-025	12-026	D/S	8	VCP	100	107			5		1	4	1					1		1								13	45	3.5					2	10									1														13	15	1.2			1												Severe	34		98.7' JOL (D/SL). 102.1' JSL. 77.3' BPSV.	Spot repair	51,953
G-35	G312-054	3			Y	ALMA AVE	1/9/09	20019-20021	20-019	20-021	U/S	6	VCP	182	195			4			2					9	1										16	52	3.3	10				3	6	1																						20	30	1.5															Severe	35		95.7' JOL (D/SH).	Spot repair	70,932
G-36	G312-042	2			Y	INGLESIDE DR	12/18/08	10129-10132	10-129	10-132	U/S	6	VCP	255	257			5			1					10	1									9	26	72	2.8						29	1			9							1												40	52	1.3															Severe	36		125.3' JOL (D/SH).	Spot repair 125.3' JOL	93,786
G-37	G312-042	4			Y	7TH ST	12/18/08	10121-10122	10-121	10-122	U/S	6	VCP	337	336	2		2		1						11	1										17	50	2.9					3	35	1				1		3				7												50	78	1.6												1			Severe	37		336.1' JOL (D/SH). Close to end MH	Spot repair	122,508
G-38	G312-028	4			Y	VISTA DR	11/26/08	10143-10146	10-143	10-146	U/S	6	VCP	233	60											7	1										8	26	3.3						10																							10	10	1.0												1			Severe	38	x	57' JOL (D/SH). 59.5' MSA (JOL). U/S MH is a C/O	57' Spot repair JOL (D/SH)	84,808
G-39	G312-011	11			Y	8TH ST	11/3/08	04054-04056	04-054	04-056	D/S	8	VCP	252	264											2	1						1				4	13	3.3					1																								1	1	1.0															Severe	39		233.6' JOL(D/SH). SAVZ	Spot repair 233.6 JOL (D/SH)	128,498
G-40	G312-008 Ph 2	11	G312-012 Ph 2	4	Y	1ST ST	7/16/09	10056-14100	10-056	14-100	D/S	6	VCP	20	8						1						1										2	9	4.5						1								1															2	4	2.0							1					2			Severe	40		4' MSA (Camera doesn't fit) & 16' (4' From D/S MH) JOL (D/SH). No inspection 4' to 16'. Pipe ID was 10056-10058A.	Spot repair	7,290
G-41	G312-027	11			Y	BOUNDARY PL	11/25/08	10013-10014	10-013	10-014	D/S	8	VCP	274	278											1	1										2	8	4.0	2					7																							9	11	1.2															Severe	41		103.9' JOL (D/SH).	Spot repair 103.9' JOL (D/SH)	134,962
G-42	A315-013	3			Y	MARINE AVE	5/27/09	21024-21025	21-024	21-025	U/S	6	VCP	270	3												1										1	5	5.0																													0	0	0.0												1			Severe	42	x	2.5' JOL (D/SH). MSA (JOL). 336.1' MSA (JOL). U/S MH is a possible C/O.	Spot repair	98,415
G-43	G312-012 Ph 2	3			Y	1ST ST	7/22/09	14100-10058	14-100	10-058	D/S	15	VCP	50	35												1										1	5	5.0	2																												2	4	2.0					1										Severe	43		32.9' JOL (D/SH). Pipe ID was 10058A-10058.	Spot repair	31,985
G-44	G312-007 Ph 2	1	G312-007 Ph 2	2	Y	VALLEY DR	7/15/09	10118-10119	10-118	10-119	D/S	6	VCP	280	192			15			1		2				1										19	64	3.4					1	31	1																						33	33	1.0												2			Severe	44		187.7' MSA (JOL D/SL). 275.9' (4.1' from U/S MH) BPSV. 168.6' BPVV. No inspection 187.7' to 275.9'	Spot repair	102,060
G-45	G312-005	7			Y	FAYMONT AVE	10/24/08	02001-02002	02-001	02-002	D/S	8	VCP	265	273							1				1	1										3	13	4.3					3	44									1														48	50	1.0															Severe	45		244.4' JOL (D/SL). 270.3' BPVV (End of the sewer line).	Spot repair 244.4' JOL (D/SL)	132,484
G-46	G312-053	2	G312-053	3	Y	MANHATTAN AVE	1/8/09	18039-18040	18-039	18-040	D/S	6	VCP	239	190	1		8		1						3	1										14	42	3.0	14			1	1	19	1				1			5			1												43	72	1.7												2			Severe	46		187.4' MSA (JOL) & 236.04' (Camera does not fit). 186.7' JOL (D/SH). 187.4' MSA (JOL). No Inspection 187.4' to 236.04'. Same inspection M311-001 # 11 (deleted).	186.7' Spot repair to JOL (D/SH)	87,130
G-47	G312-019 -1	1			Y	FRANCISCO ST	8/5/09	10045-10046	10-045	10-046	D/S	8	VCP	164	165	4	4	2			2			1		2	1							1		2	19	47	2.5						11	1			1	2						2												17	26	1.5				1											Severe	47		Same G312-008 Ph 2 # 6 & 7 (deleted). 124.2' HSV & 154.5 JOL (D/SL). RP=RPP. MSA 30.5' (134.1' from D/S MH) RBL.	Replace pipe 122' to 127' & Spot repair 154.5'	80,141
G-48	G312-001	7			Y	HERRIN ST	10/20/08	01076-01080	01-076	01-080	D/S	8	VCP	338	347	2	3							1		1	1										8	20	2.5	92				1																								93	185	2.0															Severe	48		241.1' JOL (D/SL). 274.4' HSV.	Spot repair 241.1' JOL (D/SL) & 274.4' HSV	168,399
G-49	G312-051	2	G312-053	1	Y	HIGHLAND AVE	1/6/09	19015-19017	19-015	19-017	D/S	6	VCP	241	74			4					1			2	1										8	28	3.5					1	6											1												8	11	1.4												2			Severe	49		2.5' MSA (Camera does not fit) & 169.48' MSA (71.3 ' from U/S MH) JOL. 70.8' from U/S MH JOL (D/SL) & BPVV. No Inspection 2.5' to 169.48'	70.8' from U/S MH Spot repair to JOL & BPVV	87,764
G-50	G312-039	5			Y	MARINE AVE	12/15/08	15054-15055	15-054	15-055	D/S	8	VCP	302	307	1							1				1										3	12	4.0					1								2																3	7	2.3	1														Severe	50		20.3' JOL (D/SL) & 239.6' BPVV.	Spot repair 20.3' to JOL & 239.6' BPVV	149,105

Table 10-2
Gravity Sewer Rehabilitation and Replacment Projects

General Information																Structural Defect Coding																								Operational and Maintenance																															Construction Features																			
Project No.	DVD No.	Inspection No.	Reversal DVD No.	Reversal Inspec. No.	DVD Watched? (Y)	Location	CCTV Date	Pipe ID	Manhole		Direction of Camera	Pipe				Crack			Fracture			Broken		Hole		Joint				Deformed		Collapsed Pipe	Surface Damage	Point Repair	Lining Failure	Sags	Total Structural Defects	Total Structural Defect Scor	Structural Defect Index	Deposits			Roots (R)																Infiltration				Obstacles			Vermin		Total O&M Defects	Total O&M Defect Score	O&M Defect Index	Tap (Lateral)			Line						Intruding Seal Material		Miscellaneous			Priority	Condition Ranking	No Reverse Set-up Completed	Comments	Minimum Recommendations	Project Replacement Cost ($)
						Street Name			Start	End		Size (in)	Mat	Atlas Length (ft)	CCTV Length (ft)	C			F			B		H		J				D		X	S	RP						D			Fine (F)				Tap (T)				Medium				Ball (B)				I				OB			V					T			L						IS		M								
																L	C	M	L	C	M	SV	VV	SV	VV	O		S		V	H	P								AGS	AE	Other	B	L	J	C	B	L	J	C	B	L	J	C	B	L	J	C	G	D	R	W	Other			C	R				FD	BI	BD	D	L	U	R	RD	LD	GT	Z	SA	CU	MC						
																									|M|L|M|L|																																				|C|Z|%|																										
														PACP Grade		2	1	3	3	2	4	5	5	5	5	3	5	1	2	5	5	5	2	1		2				2	2	2	2	1	1	1	3	2	2	2	4	3	3	3	5	4	4	4	5	3	4	2	4	4		1	1																						
G-51	G312-036	2			Y	NO STREET NAME	12/10/08	15023-15024	15-023	15-024	D/S	8	VCP	198	202			1	4	3	3		3			2										35	51	124	2.4						2																								2	2	1.0				1									22		Severe	51		71.5', 77' & 106.7' BPVV). Sags. 139.1' to 199.7 MCU. Could not see any defect.	Should Replace all line or Spot repair69' to 84' & 104' to 107' for BPVV & Fractures	98,123
G-52	G312-047	6			Y	ROSECRANS AVE	12/29/08	18023-18024	18-023	18-024	U/S	6	VCP	163	181		1	1					1				1										4	14	3.5						1																								1	1	1.0					1		1	1				1			Severe	52	x	180.7' JOL (D/SL) & BPVV. MSA 180.7' (JOL). MH 18-023 is a C/O	Spot repair 178' to 181' to BPVV & JOL	66,084
G-53	G312-056	5			Y	29TH ST	1/13/09	20005-20006	20-005	20-006	D/S	6	VCP	293	292			17		1	1					10	2						4				35	105	3.0					5	42							2	1																50	56	1.1														Severe	53		37.4'JOL (D/SL) & 100.4' JOL (D/SL). SAVZ	Spot repair 37.4' & 100.4' to JOL	106,361
G-54	G312-008 Ph 2	4			Y	HOMER ST	7/16/09	10048-10049	10-048	10-049	D/S	8	VCP	250	206		1	1		1			1				1										5	16	3.2						10				1																				11	12	1.1				1								1			Severe	54	x	151.7' BPVV. 205.8' JOL (D/SL). 206.9' MSA (LD). D/S MH is a Buried MH	Spot repair	121,500
G-55	G312-003 Ph 2	6			Y	THE STRAND	7/9/09	14068-14069	14-068	14-069	D/S	8	VCP	207	211	4	2	5						1		2	1										15	41	2.7					2	28	1						1																32	34	1.1	2	1					1								Severe	55		6.5' HSV. 209.2' JOL (D/SL).	Spot repair for HSV, Spot repair for JOL (D/SL)	102,643
G-56	A315-022	11	A315-022	1	Y	11TH PL	6/29/09	11049-11050	11-049	11-050	D/S	6	VCP	250	105		3			1							2										6	15	2.5						7												1												8	11	1.4												2			Severe	56		56.3' MSA JOL D/SL & 200.9' (Reversal 46.5') JOL D/SL. No Reversal video between 56.3' to 200.9'.	Spot repair	91,125
G-57	G312-001- Ph 2	4			Y	14TH ST	6/10/09	11024-11025	11-024	11-025	D/S	8	VCP	305	307			2			1	2				4	1										10	37	3.7	6					11	1						1				1												20	31	1.6														Severe	57		4' Small BPVV. 159.8' JOL (D/SL) & 306.2' BPVV (Channel of D/S MH).	Spot repair 4' Small BPVV, Spot repair Jol & BPVV 306.2'	149,056
G-58	A315-011	7	A315-011	9	Y	27TH ST	5/22/09	20048-20049	20-048	20-049	D/S	6	VCP	125	29								1				1						1				3	12	4.0																														0	0	0.0				1								2			Severe	58		25.7' JOL (DS/L) & BPVV. MSA 25.7' JOL & 121.5 (Due to angle of the pipe/incline). No inspection 25.7' to 121.5'	Spot repair	45,563
G-59	G312-003 Ph 3	1			Y	31ST PL	8/12/09	17071-17072	17-071	17-072	D/S	8	VCP	350	364	1		1	1				1			1	1										6	21	3.5					6	58	2						4	2	3		6		1										82	121	1.5	1												1		Severe	59		144.3' JOL (D/SL) & 322.3' BPVV.	Spot repair. Root Treat & Cut	176,710
G-60	G312-002 Ph 3	7			Y	29TH ST	8/11/09	17012-17013	17-012	17-013	D/S	8	VCP	200	153								1			2	1						1			24	29	66	2.3	1			1	1	13																							16	18	1.1														Severe	60		5' BPVV. 83.5' JOL (D/SL). S= SAMZ	Spot repair.	74,115
G-61	G312-017 -1	1			Y	3RD ST	8/3/09	10138-10139	10-138	10-139	U/S	6	VCP	400	382	1	1	13		1			1			33	1						17				68	187	2.8					3	53							2	1			2												61	73	1.2							1							1	Severe	61		211 JOL (D/SL) & 189' Small BPVV. S=SSSZ	Spot repair	139,385
G-62	G312-002 Ph 3	6			Y	29TH ST	8/11/09	17011-17012	17-011	17-012	D/S	8	VCP	358	360	4									1	1	1							3			10	24	2.4				1	2	9							4				2												18	33	1.8	1														Severe	62		301.8' JOL (D/SL). 356.7' HVV (End of the Pipe Line). Also three Repair Patch in poor condition (164.2',167.2' & 168.5'). RP=RPP.	Spot repair JOL & HVV. Should Replace pipe 163' to 169' for Repair Patches	174,863
G-63	G312-049	1			Y	33RD ST	12/31/08	18001-18002	18-001	18-002	U/S	6	VCP	408	357			8		2						29	2						27				68	179	2.6	3				6	18				2	2		3	2			2												38	61	1.6														Severe	63		78.3' & 79.9' JOL (D/SL). SAVZ	Spot repair 78' to 80' to JOL.	148,785
G-64	A315-001	13	A315-004	9	Y	PARKVIEW AVE	5/6/09	25027-25028	25-027	25-028	D/S	8	VCP	237	241	2	4	2	1	1		1	2			1										5	19	47	2.5		17																												17	34	2.0				1								2	5		Severe	64		143.4' to 153.1' BPVV. 201.3' BPSV. 203' MSA (BPVV). 133' to 163.8 continuous cracks, fractures & BPVV.	133' to 164' Reline Pipe & 201.3' Spot repair	117,029
G-65	A315-012	13	A315-013	2		28TH ST	5/26/09	19039-19045	19-039	19-045	D/S	6	VCP	130	109		2					1					1										4	12	3.0				1	1	10																							12	13	1.1												2			Severe	65		105.9 BPSV (Missing Pipe). 127' JOL (DS/L). MSA 105.9' (BPSV). There is no inspection 105.9' to 127'	Spot repair	47,385
G-66	G312-061	4			Y	MARINE AVE	1/23/09	21016-21017	21-016	21-017	D/S	6	VCP	250	256		6	6		2	4		1			9	1		1								30	83	2.8						14				4					1															19	25	1.3					1										Severe	66		12.8' JOL (D/SL). 161.6' JSL. 235.4' BPVV.	Spot repair for JOL, JSL & BPVV	93,348
G-67	G312-019 -1	3			Y	5TH ST	8/5/09	10131-10132	10-131	10-132	U/S	6	VCP	258	255		2	3		2	1					9	1						2	2			22	57	2.6					1	15	2						1				3												22	33	1.5														Severe	67		39.3' JOL (D/SL). Same G312-042 #1 (deleted). S=SSSZ. RP=RPR	Spot repair	93,093
G-68	G312-031	6	G312-031	7	Y	MANHATTAN BEACH BLVD	12/3/08	11046-11047	11-046	11-047	D/S	6	VCP	278	305	1		11		2						7	1						13				35	91	2.6						20				1	1						1												23	28	1.2												2			Severe	68		272' JOL (D/SL). SAVZ. MSA 272' (33' from D/S MH) JOL	Spot repair 272 to 274' to JOL (D/SL)	111,173
G-69	R311-002	10	R311-002	11	Y	31ST ST	12/30/08	19001-19002	19-001	19-002	D/S	6	VCP	284	319	1	1	9			1					6	1										19	57	3.0					3	42	3								1		6												55	75	1.4		1										2			Severe	69		8.1' JOL (D/SL). MSA 262.3' (56.8' from D/S MH) TBI	Spot repair 8.1' to JOL	116,312
G-70	G312-006 Ph 2	8	G312-006 Ph 2	4	Y	4TH ST	7/14/09	10136-10137	10-136	10-137	D/S	8	VCP	250	254		1	11			1					5	1										19	58	3.1		8			2	26	4										2												42	56	1.3							2					2			Severe	70		226.3' JOL (D/SL). MSA 237' (17.1' from D/S MH) LR. Inspection complete	Spot repair	123,493
G-71	G312-001- Ph 2	7			Y	ARDMORE AVE	6/10/09	11018-11021	11-018	11-021	D/S	8	VCP	310	306	1		15	1		2					2	1										22	69	3.1		5			3	20									1		2												31	44	1.4														Severe	71		5' JOL (D/SL).	Spot repair	148,910
G-72	G312-003 Ph 2	10				11TH ST	7/9/09	14055-14056	14-055	14-056	U/S	6	VCP	131	97	4		2			1					8	1										16	47	2.9																														0	0	0.0												1			Severe	72	x	35.7' JOM (D/SL). U/S MH is a C/O. 96.6' MSA (Camera flips over at JOM)	Spot repair	47,750
G-73	G312-035	13			Y	10TH ST	12/9/08	11130-11131	11-130	11-131	U/S	6	VCP	139	143	1		3								5	1						8				18	47	2.6					1	3																							4	4	1.0														Severe	73		112.2' JOL (D/SL). SAVZ	Spot repair 112.2' to JOL (D/SL)	52,051
G-74	G312-004	10			Y	18TH ST	10/23/08	01221-01222	01-221	01-222	U/S	8	VCP	278	282	3	1	7		1						2	1										15	41	2.7		4			4	2																		4						14	22	1.6														Severe	74		194.7' JOL (D/SH).	Spot repair 194.7' to JOL (D/SL)	136,955
G-75	G312-006 Ph 2	10			Y	3RD ST	7/14/09	10140-10141	10-140	10-141	U/S	6	VCP	250	111			2		1						4	1										8	25	3.1					2	11	1						2																	16	20	1.3												1			Severe	75	x	111.1' MSA (JOM).29.2' JOL (D/SL). U/S MH is a C/O	Spot repair	91,125
G-76	G312-004	1			Y	9TH ST	10/23/08	01161-01162	01-161	01-162	D/S	8	VCP	342	346		2			1						3	1						1				8	20	2.5					5	6			2								1												14	19	1.4				1											Severe	76		95.3' JOL (D/SL). SAVZ	Spot repair 95.3' JOL (D/SL) & Line Down	168,253
G-77	G312-002 Ph 2	5			Y	HIGHLAND AVE	7/8/09	14048-14050	14-048	14-050	D/S	12	VCP	245	242											3	1	1									5	15	3.0		2																												2	4	2.0														Severe	77		207.8' JOL (D/SL).	Spot repair	176,637
G-78	G312-001 Ph 3	1			Y	LAUREL AVE	8/10/09	08069-08070	08-069	08-070	D/S	8	VCP	230	230	2	1									1	1										5	13	2.6					3	27											2												32	38	1.2														Severe	78		83.1' JOL (D/SL).	Spot repair	111,537
G-79	G312-003 Ph 2	7			Y	THE STRAND	7/9/09	14069-14072	14-069	14-072	D/S	8	VCP	32	31	1		4								4	1									4	14	39	2.8						2																							2	2	1.0					1										Severe	79		16.5' JOL (D/SL).	Spot repair	15,017
G-80	G312-045	3			Y	30TH ST	12/23/08	17016-17017	17-016	17-017	U/S	8	VCP	347	359	1				1						2	1										5	15	3.0						2	1						4																	7	15	2.1														Severe	80		320.3' JOL (D/SL) .	Spot repair 318' to 320.3' to JOL	174,523
G-81	G312-066	3			Y	SAUSALITO CIR	2/3/09	24093-24094	24-093	24-094	D/S	8	VCP	135	144											2	1										3	11	3.7		8																												8	16	2.0														Severe	81		51.2' JOL (D/SL).	Spot repair	70,178

Table 10-2
Gravity Sewer Rehabilitation and Replacment Projects

General Information																Structural Defect Coding																								Operational and Maintenance																															Construction Features																			
Project No.	DVD No.	Inspection No.	Reversal DVD No.	Reversal Inspec. No.	DVD Watched? (Y)	Location	CCTV Date	Pipe ID	Manhole		Direction of Camera	Pipe				Crack			Fracture			Broken		Hole		Joint				Deformed		Collapsed Pipe	Surface Damage	Point Repair	Lining Failure	Sags	Total Structural Defects	Total Structural Defect Scor	Structural Defect Index	Deposits			Roots (R)																Infiltration				Obstacles			Vermin		Total O&M Defects	Total O&M Defect Score	O&M Defect Index	Tap (Lateral)			Line						Intruding Seal Material		Miscellaneous			Priority	Condition Ranking	No Reverse Set-up Completed	Comments	Minimum Recommendations	Project Replacement Cost ($)
						Street Name			Start	End		Size (in)	Mat	Atlas Length (ft)	CCTV Length (ft)	C			F			B		H		J				D		X	S	RP						D			Fine (F)				Tap (T)				Medium				Ball (B)				I				OB			V					T			L						IS		M								
																L	C	M	L	C	M	SV	VV	SV	VV	O		S		V	H	P								AGS	AE	Other	B	L	J	C	B	L	J	C	B	L	J	C	B	L	J	C	G	D	R	W	Other			C	R				FD	BI	BD	D	L	U	R	RD	LD	GT	Z	SA	CU	MC						
																										M	L	M	L																																			C	Z	%																									
															PACP Grade	2	1	3	3	2	4	5	5	5	5	3	5	1	2	5	5	5	2	1		2				2	2	2	2	1	1	1	3	2	2	2	4	3	3	3	5	4	4	4	5	3	4	2	4	4		1	1																								
G-82	G312-070	3			Y	33RD PL	2/9/09	17065-17066	17-065	17-066	D/S	8	VCP	161	167											2	1										3	11	3.7						5				1			1				1												8	14	1.8															Severe	82		164.9' JOL (D/SL).	Spot repair	81,113
G-83	A315-012	11			Y	27TH ST	5/26/09	19037-19037A	19-037	19-037A	D/S	6	VCP	120	125		1	1								1	1										4	12	3.0						9																							9	9	1.0				1								1			Severe	83	x	124.7' JOL(D/SL). MSA 124.' (JOL).	Spot repair	45,453
G-84	G312-022	4			Y	SEPULVEDA BLVD	11/18/08	08001-08002	08-001	08-002	D/S	8	VCP	142	112					1						1	1										3	10	3.3	8				1	1																						10	18	1.8															Severe	84		7' JOL (D/SL). Pipe ID was 08001-08001A.	Spot repair 7' JOL (D/SL)	54,626
G-85	G312-010	2			Y	LONGFELLOW DR	10/31/08	04025-04026	04-025	04-026	D/S	8	VCP	210	212											1	1						1				3	10	3.3					2	23																						25	25	1.0															Severe	85		121.5' JOL (D/SL). SAVZ	Spot repair 121.5' to JOL (D/SL)	103,032
G-86	G312-028	2			Y	6TH ST	11/26/08	10073-10075	10-073	10-075	D/S	8	VCP	225	230	1										1	1										3	10	3.3					1	1																				4		6	6	1.0															Severe	86		34.1' JOL (D/SL).	Spot repair34' to 36' to JOL	111,537
G-87	G312-055	7	G312-055	8	Y	25TH ST	1/12/09	20054-20063	20-054	20-063	D/S	6	VCP	133	67			1									1										2	8	4.0						16																						16	16	1.0												2			Severe	87		64.1' JOL (D/SL). 64.5' MSA (JOL). 130.85' (2' from U/S MH) MSA (Camera does not fit). No inspection 64.5' to 130.85'	Spot repair	48,424
G-88	G312-024	12			Y	29TH ST	11/20/08	08061-08062	08-061	08-062	D/S	8	VCP	235	241			1									1										2	8	4.0						4											1											5	8	1.6				1			1	1							Severe	88		238.2' JOL (D/SL). Close to End MH.	Spot repair 238.2' JOL (D/SL)	117,223
G-89	G312-013	10			Y	SHORES PARKING LOT	11/5/08	05009-05010	05-009	05-010	D/S	8	VCP	300	316					1	1						1										3	11	3.7						56	1																					57	57	1.0															Severe	89		5' JOL (D/SL).	Spot repair 5' JOL (D/SL)	153,673
G-90	A315-021	3			Y	13TH PL	6/9/09	14025-14026	14-025	14-026	U/S	6	VCP	168	79		2										1										3	7	2.3						2											1											3	6	2.0												1			Severe	90	x	78.8' MSA (JOL D/SL). U/S MH is a possible C/O	Spot repair	61,236
G-91	A315-013	9	A315-013	10	Y	23RD ST	5/27/09	15071-15072	15-071	15-072	D/S	8	VCP	270	253												1										1	5	5.0					3	46								2			5											56	75	1.3												2			Severe	91		167.5' (JOL D/SL). 167.5' (85.8' from D/S MH) JOL.	Spot repair	131,220
G-92	G312-039	4			Y	MARINE AVE	12/15/08	15053-15054	15-053	15-054	D/S	8	VCP	314	316												1										1	5	5.0					1	1	2																					4	4	1.0	1														Severe	92		60.7' JOL (D/SL).	Spot repair 60.7' to JOL	153,333
G-93	G312-033	7			Y	2ND ST	12/5/08	12015-12016	12-015	12-016	U/S	8	VCP	61	94												1										1	5	5.0					1																							1	1	1.0							1	1							Severe	93		17' JOL (D/SL).	Spot repair 17' JOL (D/SL)	45,490
G-94	A315-016	12			Y	19TH ST	6/1/09	22028-22055	22-028	22-055	D/S	6	VCP	143	4												1										1	5	5.0																														0	0	0.0												1			Severe	94	x	3.5' MSA (JOL).	Spot repair	52,124
G-95	G312-009 Ph 2	4			Y	1ST ST	7/17/09	10148-14100	10-148	14-100	D/S	6	VCP	20	8												1										1	5	5.0																														0	0	0.0				1								1			Severe	95	x	2' JOL (D/SL). 7.5' MSA (LD). Pipe ID was 10148-10058B.	Spot repair	7,290
G-96	A315-024	8			Y	36TH ST	7/15/09	19046-19048	19-046	19-048	U/S	6	VCP	285	140	2	6	1		1				1		1											12	23	1.9		7																												7	14	2.0												1			Severe	96	x	140.1' MSA (BPSV). Following two pipes segments seem to have a JOL. MH 19-046 is possible CO	After 140.1' , Replace or Spot repair 2 or 3 pipes	103,883
G-97	A315-012	12			Y	28TH ST	5/26/09	19038-19039	19-038	19-039	U/S	6	VCP	175	3							1															1	5	5.0																														0	0	0.0												1			Severe	97	x	2.5' BPSV (Missing Pipe). 2.5' MSA (BP SV). U/S MH is a CO	Spot repair	63,788
G-98	A315-018	3			Y	13TH ST	6/3/09	14013-14016	14-013	14-016	D/S	8	VCP	296	300		1	62		1						2											66	195	3.0				2		43									2			1	1											49	61	1.2															Severe	98		Continuous Cracks (Multiple). 278' to 284' possible abandoned MH (MH14-035). Bottom part is in poor condition.	Reline or Replace pipe 278' to 284'	145,606
G-99	G312-056	9			Y	VISTA DR	1/13/09	20009-20012	20-009	20-012	D/S	8	VCP	130	129		1	2		2	1	2	1														9	30	3.3	3					6				1																				10	14	1.4															Severe	99		2' BPVV. 121.5' & 122.5' BPSV.	Spot repair 2' to 4' BPVV & 119' to 128' BPSV and Fractures	62,840
G-100	G312-004	7			Y	AVIATION BLVD	10/23/08	01187-01189	01-187	01-189	D/S	8	VCP	340	343		1				2	2				1								1			7	23	3.3																														0	0	0.0		1													Severe	100		223.8' & 226.8 ' (two sides) BPSV. Pipe ID was 01187-01089.	220' to 229' Fractures Multiple & Broken Pipes. Spot repair 220' to 229'	166,601
G-101	G312-072	7			Y	20TH ST	2/11/09	22029-22030	22-029	22-030	U/S	6	VCP	161	3								1										1				2	7	3.5																														0	0	0.0													1		Severe	101	x	2.5' BPSV (Missing Pipe). 2.5' MSA (BPSV). U/S MH is a CO. Surface Damage = SAMZ	Replace pipe or Spot repair	58,612
G-102	G312-067	5			Y	19TH ST	2/4/09	22023-22024	22-023	22-024	U/S	6	VCP	330	4							1															1	5	5.0												1												2	15				3	12	4.0												1			Severe	102	x	4.2' BPSV. 4.2' MSA (OBM). OBM & OBN. U/S MH is a CO.	Spot repair 2 to 4.2'	120,278
G-103	G312-037	7			Y	16TH PL	12/11/08	14003-14004	14-003	14-004	U/S	6	VCP	105	68			6	2	2	1			1		4											16	49	3.1						4								4																8	16	2.0		1										1			Severe	103	x	26.9' HSV. Large Fractures. 68' MSA (Roots). U/S MH Possible C/O.	Spot repair 21' to 27' for HSV & fractures	38,269
G-104	G312-005	4			Y	19TH ST	10/24/08	01224-01225	01-224	01-225	U/S	8	VCP	278	285	1	2	3		2	4		2														14	43	3.1				1	2	2											1											6	10	1.7	3														Severe	104		17.4' & 144.1' BPVV with continuous fractures.	Spot repair or Replace pipe 13' to 19' & 140' to 146'	138,413
G-105	G312-052	5			Y	38TH PL	1/7/09	18050-18051	18-050	18-051	U/S	6	VCP	140	6								2														2	10	5.0																														0	0	0.0												1			Severe	105	x	6' MSA (BPVV). 4' to 6' BPVV (Missing Pipe). U/S MH is a possible C/O	Spot repair 2' to 6' to BPVV	51,132
G-106	G312-057	7			Y	MANHATTAN AVE	1/14/09	20044-20046	20-044	20-046	D/S	6	VCP	245	256		2	10			4					4				1							21	65	3.1					1	3																						4	4	1.0															Severe	106		157.9' Vertical Deformed Pipe.	Spot repair 157.9' to vertical deformed pipe	93,421
G-107	G312-051	3			Y	33RD ST	1/6/09	19016-19017	19-016	19-017	U/S	6	VCP	219	4						2		2														4	18	4.5																														0	0	0.0												1			Severe	107	x	4' MSA (BPVV). U/S MH is Poinsettia Pump Station.	Spot repair 0' to 6' BPVV	79,785
G-108	G312-054	1			Y	ALMA AVE	1/9/09	20018-20021	20-018	20-021	U/S	6	VCP	408	407	1		6			4		2	1		13											27	90	3.3		1			4	62				2				3			2											74	89	1.2											1				Severe	108		97' & 110.1' BPVV. 186.1' HSV. U/S MH is a possible C/O.	Spot repair 97' & 110.1' to BPVV , 186.1' HSV	148,169
G-109	A315-001	4			Y	MAGNOLIA WAY	5/6/09	25015-25016	25-015	25-016	U/S	8	VCP	303	303									1													1	5	5.0		26																				1								27	56	2.1															Severe	109		103.1' HSV & Infiltration Runner at the same point.. ISZ=ISSRH	Spot repair	147,258
G-110	A315-005	8	A315-005	9	Y	ROSECRANS PL	5/12/09	18048-18049	18-048	18-049	D/S	6	VCP	200	16			1				1															2	8	4.0						1																						1	1	1.0												2			Severe	110	x	15.8' BPSV (Missing Pipe). 15.8' MSA (BPSV). There is no inspection 15.8' to 200' (Due to angle of mouth of the pipe).	Spot repair	72,900
G-111	G312-005 Ph 2	1			Y	VALLEY DR	7/13/09	10115-10116	10-115	10-116	U/S	6	VCP	275	347	1	1	8						1		6											17	50	2.9		8			2	28	2																					40	48	1.2														1	Severe	111		103.7' HSV (Missing Pipe).	Spot repair	126,627
G-112	G312-054	4			Y	25TH ST	1/9/09	20021-20022	20-021	20-022	D/S	6	VCP	109	51			4			1		1														6	21	3.5						7								2																9	13	1.4															Severe	112		34.7 BPVV (Missing Pipe).	Spot repair 34' to 38' for BPVV & Fracture	18,480

Table 10-2
Gravity Sewer Rehabilitation and Replacment Projects

General Information

Project No.	DVD No.	Inspection No.	Reversal DVD No.	Reversal Inspec. No.	DVD Watched? (Y)	Location Street Name	CCTV Date	Pipe ID	Manhole Start	Manhole End	Direction of Camera	Pipe Size (in)	Mat	Atlas Length (ft)	CCTV Length (ft)
G-113	G312-055	5			Y	24TH ST	1/12/09	20059-20061	20-059	20-061	D/S	6	VCP	297	301
G-114	G312-040	8			Y	THE STRAND	12/16/08	11132-11133	11-132	11-133	D/S	8	VCP	251	256
G-115	A315-001	10			Y	MAGNOLIA WAY	5/6/09	25024-25025	25-024	25-025	D/S	8	VCP	97	95
G-116	G312-010 Ph 2	4	G312-010 Ph 2	5	Y	EASEMENT	7/20/09	10052-10053	10-052	10-053	D/S	6	VCP	350	19
G-117	Various 2 (G312-015)	9			Y	27TH ST	7/30/09	19037A-19044	19-037A	19-044	U/S	6	VCP	20	15
G-118	A315-019	9			Y	17TH ST	6/4/09	22013-22050	22-013	22-050	D/S	6	VCP	146	114
G-119	A315-021	4			Y	OCEAN DR	6/9/09	14026-14027	14-026	14-027	D/S	8	VCP	149	107
G-120	G312-061	6			Y	THE STRAND	1/23/09	21023-21026	21-023	21-026	D/S	6	VCP	66	66
G-121	G312-002	3			Y	1ST ST	10/21/08	01060-01061	01-060	01-061	D/S	8	VCP	346	353
G-122	A315-012	10			Y	27TH ST	5/26/09	19036-19037	19-036	19-037	U/S	6	VCP	175	42
G-123	A315-016	6			Y	15TH ST	6/1/09	14034-14062	14-034	14-062	D/S	6	VCP	132	116
G-124	G312-005 Ph 2	3			Y	VALLEY DR	7/13/09	10117-10118	10-117	10-118	D/S	6	VCP	350	318
G-125	G312-008 Ph 2	9			Y	1ST ST	7/16/09	10054-10055	10-054	10-055	D/S	6	VCP	200	192
G-126	A315-024	11			Y	12TH ST	7/15/09	11033-11034	11-033	11-034	U/S	6	VCP	247	222
G-127	A315-005	16	A315-005	17	Y	ROSECRANS	5/12/09	18025-18027	18-025	18-027	U/S	6	VCP	150	122
G-128	A315-007	5			Y	33RD ST	5/18/09	19032-19033	19-032	19-033	U/S	6	VCP	110	3
G-129	G312-005 Ph 2	2			Y	VALLEY DR	7/13/09	10116-10117	10-116	10-117	D/S	6	VCP	345	368
G-130	A315-001	3			Y	MAGNOLIA WAY	5/6/09	25018-25019	25-018	25-019	D/S	8	VCP	155	157
G-131	G312-004 Ph 3	2			Y	BELL AVE	8/13/09	17013-17018	17-013	17-018	D/S	10	VCP	300	276
G-132	G312-008	12	G312-008	13	Y	21ST ST	10/29/08	03059-03060	03-059	03-060	D/S	8	VCP	188	198
G-133	G312-071	4			Y	18TH ST	2/10/09	22015-22016	22-015	22-016	U/S	6	VCP	84	135
G-134	G312-050	5			Y	31ST ST	1/5/09	19005-19007	19-005	19-007	D/S	6	VCP	284	291
G-135	G312-057	4			Y	30TH ST	1/14/09	20041-20042	20-041	20-042	U/S	6	VCP	252	51
G-136	G312-002	8			Y	2ND ST	10/21/08	01083-01085	01-083	01-085	D/S	8	VCP	350	355
G-137	G312-040	3			Y	27TH ST	12/16/08	16015-16016	16-015	16-016	D/S	8	VCP	350	359
G-138	G312-031	11	G312-031	12	Y	3RD ST	12/3/08	12012-12013	12-012	12-013	U/S	6	VCP	122	122
G-139	G312-057	3	G312-057	2	Y	ALMA AVE	1/14/09	20013-20016	20-013	20-016	U/S	6	VCP	177	182
G-140	A315-007	8			Y	THE STRAND	5/18/09	19047-19048	19-047	19-048	U/S	8	VCP	200	206
G-141	A315-002	2			Y	HOMER ST	5/7/09	23027-23028	23-027	23-028	D/S	8	VCP	350	357
G-142	G312-037	10			Y	14TH ST	12/11/08	14041-14064	14-041	14-064	D/S	6	VCP	116	116
G-143	G312-030	2			Y	HIGHLAND AVE	12/2/08	12007-12008	12-007	12-008	D/S	8	VCP	236	268
G-144	G312-010	13			Y	3RD ST	10/31/08	04008-04011	04-008	04-011	D/S	8	VCP	332	350
G-145	G312-012	6			Y	TENNYSON ST	11/4/08	05020-05021	05-020	05-021	D/S	8	VCP	300	306
G-146	G312-058	6			Y	23RD ST	1/15/09	21008-21018	21-008	21-018	D/S	6	VCP	222	230
G-147	G312-059	3	G312-059	4	Y	21ST PL	1/16/09	22042-22043	22-042	22-043	D/S	6	VCP	253	261
G-148	G312-059	1			Y	21ST PL	1/16/09	22040-22041	22-040	22-041	U/S	6	VCP	253	257
G-149	G312-004 Ph 2	5			Y	19TH ST	7/10/09	14001-14002	14-001	14-002	D/S	8	VCP	250	237
G-150	G312-010 Ph 2	1			Y	10TH ST	7/20/09	11083-11084	11-083	11-084	D/S	6	VCP	100	128

Structural Defect Coding

Project No.	Crack C L	Crack C C	Crack C M	Fracture F L	Fracture F C	Fracture F M	Broken B SV	Broken B VV	Hole H SV	Hole H VV	Joint J O M	Joint J O L	Joint J S M	Joint J S L	Deformed D V	Deformed D H	Collapsed Pipe X P	Surface Damage S	Point Repair RP	Lining Failure	Sags	Total Structural Defects	Total Structural Defect Scor	Structural Defect Index
PACP Grade	2	1	3	3	2	4	5	5	5	5	3	5	1	2	5	5	5	2	1		2			
G-113		4	23		2	3		2			13											47	138	2.9
G-114					2	1		1			1			1								6	18	3.0
G-115		1			1		1														2	5	12	2.4
G-116							1							1								2	7	3.5
G-117						1					1	1										3	12	4.0
G-118					1			1														2	7	3.5
G-119	2	6	2						1													11	21	1.9
G-120								1			1											2	8	4.0
G-121					1			1			2											4	13	3.3
G-122			1	1						1	1											4	14	3.5
G-123		3	2		2	1		1														9	22	2.4
G-124		1	7		2	1		1														12	35	2.9
G-125			6		2		1				3											12	36	3.0
G-126	1	2	1						1													5	12	2.4
G-127	1	1	3	1			1											1				8	22	2.8
G-128		1						1														2	6	3.0
G-129	2	6	16		1	1			1													27	69	2.6
G-130	1	1					1	1													2	6	17	2.8
G-131	1		11		2			1			2											17	50	2.9
G-132			4					1														5	17	3.4
G-133	1		2			2		1			10											16	51	3.2
G-134	5	3	16		1	2		1			5							11				44	113	2.6
G-135			3					1			3											7	23	3.3
G-136	2	9	13	1	3	4		3			4							1			7	47	120	2.6
G-137	1				1		1				2											5	15	3.0
G-138	1		5					1			4							9				20	52	2.6
G-139	1	3	5	1	1			2			7							1				21	58	2.8
G-140	3	1				1	1															6	16	2.7
G-141					1			1														2	7	3.5
G-142			4		1			1		1	3											10	33	3.3
G-143			15		2	1		1			9										5	33	95	2.9
G-144	2	2	1				1		1		2										3	12	31	2.6
G-145								1										2			32	35	73	2.1
G-146	2		10		1	2		1			1											17	52	3.1
G-147		2	6			1		1			5											15	44	2.9
G-148	1	2	8							1	8											20	57	2.9
G-149	2		6			1		1														10	31	3.1
G-150		2	5			3		1			1											12	37	3.1

Operational and Maintenance

Project No.	Deposits D AGS	Deposits D AE	Deposits D Other	Roots (R) Fine (F) B	Fine (F) L	Fine (F) J	Fine (F) C	Tap (T) B	Tap (T) L	Tap (T) J	Tap (T) C	Medium B	Medium L	Medium J	Medium C	Ball (B) B	Ball (B) L	Ball (B) J	Ball (B) C	Infiltration I G	Infiltration I D	Infiltration I R	Infiltration I W	Obstacles OB Other C	Obstacles OB Other Z	Obstacles OB Other %	Vermin V C	Vermin V R	Total O&M Defects	Total O&M Defect Score	O&M Defect Index
PACP Grade	2	2	2	2	1	1	1	3	2	2	2	4	3	3	3	5	4	4	4	5	3	4	2	4	4		1	1			
G-113						12								4	1														17	27	1.6
G-114	4	1				1																							6	11	1.8
G-115		12																									2		14	26	1.9
G-116						2																							2	2	1.0
G-117						1																							1	1	1.0
G-118					1	7								1															9	11	1.2
G-119						1																							1	1	1.0
G-120																													0	0	0.0
G-121					3								1																4	6	1.5
G-122						2								1															3	5	1.7
G-123					2	4																							6	6	1.0
G-124					1	34	1							1															37	39	1.1
G-125					1	24							3																28	34	1.2
G-126	3			1	1	7						1	2																15	26	1.7
G-127				1		1																							2	3	1.5
G-128																													0	0	0.0
G-129					1	32							3																36	42	1.2
G-130		29				1																							30	59	2.0
G-131					1	32								2															35	39	1.1
G-132					1	9							2																12	16	1.3
G-133					1	16		1							1		1												20	27	1.4
G-134						6	1						1	3															11	19	1.7
G-135						10				1							2												13	20	1.5
G-136	115	30																											145	290	2.0
G-137					6	38							4																48	56	1.2
G-138	3					4																							7	10	1.4
G-139						5																							5	5	1.0
G-140					1	12	2						2				1												18	25	1.4
G-141					1	2							1		1														5	9	1.8
G-142						9																							9	9	1.0
G-143	10					39									1		2		1										53	74	1.4
G-144					2	40							1	1			4												48	64	1.3
G-145	47																												47	94	2.0
G-146					2	13									1		1												17	22	1.3
G-147	2					7									1														10	14	1.4
G-148	1				1	5								1			1												9	15	1.7
G-149																													0	0	0.0
G-150						14								1															15	17	1.1

Construction Features

Project No.	Tap (Lateral) T FD	Tap (Lateral) T BI	Tap (Lateral) T BD	Line L D	Line L L	Line L U	Line L R	Line L RD	Line L LD	Intruding Seal Material IS GT	Intruding Seal Material IS Z	Miscellaneous M SA	Miscellaneous M CU	Miscellaneous M MC	Priority	Condition Ranking	No Reverse Set-up Completed	Comments	Minimum Recommendations	Project Replacement Cost ($)
G-113															Severe	113		70.1' & 76.6' BPVV.	Spot repair 70' to 78' for BPVV & Fractures	109,642
G-114	1										1				Severe	114		74.8' Small BPVV. 253.7' Joint Separated Large. ISSR	Spot repair 74.8' BPVV & 253.7' JSL	124,319
G-115															Severe	115		39' BPSV. ISZ=ISSRH	Spot repair	46,170
G-116												2			Severe	116		5' MSA (Camera doesn't fit due to channel at U/S MH). 336' JSL & BPSV. No Inspection 5' to 336'	Spot repair	127,575
G-117					1		1					1			Severe	117		13.6' JOL (D/SL). Severe De	Spot Repair	5,285
G-118															Major	118		4' BPVV.	Spot repair	41,553
G-119															Major	119		17.9' HSV.	Spot repair	51,856
G-120				1											Major	120		63.2' BPVV.	Spot repair	24,130
G-121	1														Major	121		348.9' BPSV & FC.	Replace pipe 347' to 350' BPVV	171,461
G-122												1			Major	122	x	7' Small HVV. 42.4' MSA (RMJ). U/S MH is a possible C/O	Spot repair	63,788
G-123															Major	123		3' BPVV.	Spot repair	42,391
G-124															Major	124		171.8' BPVV.	Spot repair 169.6' to 173.7'	115,911
G-125				1											Major	125		27' BPSV.	Spot repair	70,020
G-126															Major	126		153.1' HSV.	Spot repair	81,065
G-127												2			Major	127		6.5' BPSV . MSA 6.5' ' (BPSV). Close to End MH	Spot repair	54,675
G-128												1			Major	128	x	2.5' BPVV. MSA 2.5' (BPVV). U/S MH is a possible C/O	Spot repair	40,095
G-129		1													Major	129		305.1' HSV.	Spot repair	133,954
G-130				1	1		1	1		1					Major	130		65.4' BPSV. 106.8' BPVV.	Spot repair	76,108
G-131															Major	131		264.3' BPVV.	Spot repair 264' to 267'	167,792
G-132		1										2			Major	132		111.7' to 113.4' BPVV. MSA 113.4' (84.9' from D/S MH) BPVV.	Spot repair 110' to 113' to BPVV	96,374
G-133															Major	133		103.2' BPVV.	Spot repair 100' to 103.2'	49,135
G-134		1													Major	134		215.6' BPVV. SAVZ	215.6' Spot repair to BP VV	106,179
G-135												1			Major	135	x	3.5' BPVV. 51.1' MSA (RTJ). U/S MH is CO.	Spot repair 3.5' to BP VV	91,807
G-136													2		Major	136		90' & 92.8' Continuous BPVV. 199.9' Small BPVV. SAVZ	90' to 93' Replace pipe for BPVV.199.9' Spot repair for Small BPVV	172,287
G-137															Major	137		23.3' BPVV.	Spot repair 23.3' to BPSV	174,474
G-138												2			Major	138		3' BPVV. SAVZ. MSA 97.5' (24" from U/S MH) JOM.	Spot repair 2' to 3' for BPVV	44,287
G-139		1										2			Major	139		8.3' & 90' Small BPVV. 179.5' MSA (Camera does not fit). SCP (lateral)	Spot repair 8.9' & 90' to BP VV	66,339
G-140															Major	140		2' BPSV.	Spot repair	100,067
G-141															Major	141		352.9' BPVV .	Spot repair	173,453
G-142															Major	142		102.1' HVV. 103.4' BPVV.	Spot repair 103' to 106' for HVV & BPVV	42,100
G-143															Major	143		261.6' BPVV. MH12-009 corrected to MH12-008	Spot repair 261' to 264' BPVV. Root Treat & Cut	130,345
G-144															Major	144		89.2' BPVV, 348.1' HVV, (End of the sewer line).	Spot repair 89.2' BPVV & Spot repair 348.1' HVV	169,906
G-145															Major	145		196.8' BPVV. Also invert of the Start & End MH has severe Surface Damage. SAMZ	Spot repair 196.8' BPVV, Spot repair to Surface Damage	148,619
G-146		1													Major	146		160.5' BPVV.	Spot repair 160' to 162'	83,944
G-147		1										2			Major	147		2' BPVV. 243.2' MSA (Large Lateral)	Spot repair	95,244
G-148		1										1			Major	148	x	48.8' HVV. 257.1 MSA (JOM). U/S MH is a possible C/O.	Spot repair	93,713
G-149															Major	149		236.8' BPVV .	Spot repair	115,085
G-150				1											Major	150		62.7' BPVV.	Spot repair	46,729

Table 10-2
Gravity Sewer Rehabilitation and Replacment Projects

General Information

Project No.	DVD No.	Inspection No.	Reversal DVD No.	Reversal Inspec. No.	DVD Watched? (Y)	Location Street Name	CCTV Date	Pipe ID	Manhole Start	Manhole End	Direction of Camera	Pipe Size (in)	Pipe Mat	Pipe Atlas Length (ft)	Pipe CCTV Length (ft)
														PACP Grade	
G-151	G312-001-Ph 2	3			Y	14TH ST	6/10/09	11023-11024	11-023	11-024	D/S	8	VCP	330	336
G-152	G312-001-Ph 2	1			Y	15TH ST	6/10/09	11019-11020	11-019	11-020	D/S	8	VCP	255	260
G-153	Various 1 (G312-015)	7	Various 1 (G312-015)	6	Y	THE STRAND	7/30/09	12037-12038	12-037	12-038	D/S	8	VCP	235	259
G-154	G312-007 Ph 3	4			Y	BELL AVE	8/18/09	17032-80133	17-032	17-033	D/S	8	VCP	150	95
G-155	G312-005 Ph 3	2			Y	36TH PL	8/14/09	17028-17029	17-028	17-029	D/S	8	VCP	235	243
G-156	G312-003	1			Y	NELSON AVE	10/22/08	01025-01026	01-025	01-026	D/S	8	VCP	350	357
G-157	G312-005	3			Y	18TH ST	10/24/08	01222-01223	01-222	01-223	D/S	8	VCP	278	284
G-158	G312-030	5			Y	1ST ST	12/2/08	12010-12023	12-010	12-023	D/S	6	VCP	259	263
														Total ft	31,032
														Total miles	5.9

Structural Defect Coding

Project No.	Crack C L	Crack C C	Crack C M	Fracture F L	Fracture F C	Fracture F M	Broken B SV	Broken B VV	Hole H SV	Hole H VV	Joint J O M	Joint J O L	Joint J S M	Joint J S L	Deformed D V	Deformed D H	Collapsed Pipe X P	Surface Damage S	Point Repair RP	Lining Failure	Sags	Total Structural Defects	Total Structural Defect Scor	Structural Defect Index
PACP Grade	2	1	3	3	2	4	5	5	5	5	3	5	1	2	5	5	5	2	1		2			
G-151		1	2					1			3											7	21	3.0
G-152	1						1				3											5	16	3.2
G-153	2	3	11		1	1	1														2	21	55	2.6
G-154								1			1											2	8	4.0
G-155			1					1														2	8	4.0
G-156									1	1	3											5	19	3.8
G-157			48		2						3							1				54	159	2.9
G-158	2		57			1					2							33				95	251	2.6

Operational and Maintenance

Project No.	Deposits D AGS	Deposits D AE	Deposits D Other	Roots (R) Fine (F) B	Fine (F) L	Fine (F) J	Fine (F) C	Tap (T) B	Tap (T) L	Tap (T) J	Tap (T) C	Medium B	Medium L	Medium J	Medium C	Ball (B) B	Ball (B) L	Ball (B) J	Ball (B) C	Infiltration I G	Infiltration I D	Infiltration I R	Infiltration I W	Obstacles OB Other C	Obstacles OB Other Z	Obstacles OB Other %	Vermin V C	Vermin V R	Total O&M Defects	Total O&M Defect Score	O&M Defect Index
PACP Grade	2	2	2	2	1	1	1	3	2	2	2	4	3	3	3	5	4	4	4	5	3	4	2	4	4		1	1			
G-151					1	16	3										1												21	24	1.1
G-152					2	3	2							1	1		2												11	21	1.9
G-153			2																										2	4	2.0
G-154						3																							3	3	1.0
G-155					3	4								1			2												10	18	1.8
G-156					5	4							5																14	24	1.7
G-157	25	52											1										51						129	259	2.0
G-158	2				1	15			1				1				1												21	29	1.4

Construction Features

Project No.	Tap (Lateral) T FD	Tap (Lateral) T BI	Tap (Lateral) T BD	Line L D	Line L L	Line L U	Line L R	Line L RD	Line L LD	Intruding Seal Material IS GT	Intruding Seal Material IS Z	Miscellaneous M SA	Miscellaneous M CU	Miscellaneous M MC	Priority	Condition Ranking	No Reverse Set-up Completed	Comments	Minimum Recommendations	Project Replacement Cost ($)
G-151															Major	151		335.6' BPVV (Channel of D/S MH).	Spot repair 335.6'	163,247
G-152															Major	152		257.7' BPSV.	Spot repair 257.7'	126,263
G-153		1	1									2			Major	153		63.1' BPSV. Major Defect. D/	Spot Repair	125,631
G-154															Major	154		0' BPVV (Beginning of the sewer line).	Spot repair	46,170
G-155															Major	155		243.2' BPVV (End of the sewer line)	Spot repair	118,292
G-156		1													Major	156		248.6' HSV & 354.1' HVV (End of the sewer line).	Spot repair 248.6' HSV & 354.1' HVV	173,308
G-157															Major	157		Most joints have DAE, IW & CM. SAVZ.	Reline	137,975
G-158											1				Major	158		Continuous Crack Multiple & Surface Damage. SAVZ. ISSRH	Reline	95,718
																			Total	15,329,403

Table 10-3
Manhole Rehabilitation and Replacement Projects

Project No.	Inspection Phase	Session ID	Street	Manhole	Inspection Date	Surface Condition	Manhole Cover	Frame	Cone	Barrel / Wall	Rungs	Bench	Channel	Debris	Grease	Vermin	Odor	Priority Score	Condition Ranking	Comment	Recommendation	Project Cost ($)
M-1	1	25	HIghland Ave	19-015	1/12/09	Pavement - Concrete Collar	Good	Good	Failing	Failing	Good	Good	Good	No	No	No	No	24	1	Fractures in cone and barrel. Fracture seen in street pavement surrounding manhole cover.	Replace	30,000
M-2	1	28	1st St	01-080	11/21/08	Pavement - Concrete Collar	Good	Good	Poor	Poor	Failing	Poor	Poor	No	No	0	No	22	2	Missing mortar. Corrosion at bench and channel.	Line manhole	10,000
M-3	1	74	Duncan Ave	10-039	12/19/08	Pavement - Concrete Collar	Good	Good	Good	Good	Failing	Poor	Poor	No	No	No	No	18	3	Corrosion at bench and channel.	Line manhole	10,000
M-4	1	90	Gates Ave	01-072	11/20/08	Pavement - Concrete Collar	Good	Good	Poor	Fair	Poor	Poor	Poor	No	Yes	0	Yes	15	4	Corrosion at bench and channel.	Line manhole	10,000
M-5	1	51	Curtis Ave	05-052	12/2/08	Pavement - Concrete Collar	Broken	Good	Good	Good	Poor	Poor	Poor	No	No	No	No	14	5	Broken manhole cover. Corrosion at bench and channel.	Replace manhole cover and line	13,500
M-6	1	36	2nd St	01-086	11/24/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Poor	Poor	Yes	No	0	No	11	6	Corrosion at bench and channel.	Line manhole	10,000
M-7	1	109	18th St	06-244	12/5/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Poor	Poor	No	No	No	No	10	7	Corrosion at bench and channel.	Line manhole	10,000
M-8	1	23	8th St	04-054	12/1/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Poor	Poor	No	No	No	No	10	8	Corrosion at bench and channel.	Line manhole	10,000
M-9	1	50	Meadows Ave	05-023	12/2/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Poor	Poor	No	No	No	No	10	9	Corrosion at bench and channel. Not a smooth transition.	Line manhole	10,000
M-10	1	130	14th St	06-191	12/8/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Poor	Poor	No	No	No	No	10	10	Corrosion at bench and channel.	Line manhole	10,000
M-11	1	291	Cedar Way	25-012	1/22/09	Pavement - Concrete Collar	Good	Good	Poor	Poor	Poor	Good	Good	No	No	No	No	10	11	Corrosion and cracking in cone and wall	Line manhole	10,000
M-12	1	293	Village Dr	25-025	1/22/09	Pavement - Concrete Collar	Good	Good	Poor	Poor	Poor	Good	Good	No	No	No	No	10	12	Corrosion in cone and barrel.	Line manhole	10,000
M-13	1	53	Rowell Ave	05-055	12/2/08	Pavement - Concrete Collar	Broken	Good	Good	Good	Fair	Good	Good	No	No	No	No	9	13	Broken manhole cover.	Replace manhole cover	3,500
M-14	1	47	Tennyson St	05-020	12/2/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Fair	Poor	No	No	No	No	9	14	Corrosion at channel.	Line manhole	10,000
M-15	1	60	Voorhees Ave	05-005	12/2/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Fair	Poor	No	No	No	No	9	15	Corrosion at channel.	Line manhole	10,000
M-16	1	181	Flournoy Rd	17-057	1/8/09	Pavement - Concrete Collar	Good	Good	Good	Good	Fair	Poor	Poor	No	No	No	No	9	16	Corrosion at bench and channel.	Line manhole	10,000
M-17	1	46	11th St	09-028	12/18/08	Pavement - Concrete Collar	Good	Good	Good	Good	Good	Poor	Poor	No	No	Yes	No	9	17	Corrosion at bench and channel.	Line manhole	10,000
M-18	2	235	The Strand	12-030A	7/20/09	Pavement - Concrete Collar	Good	Good	Good	Poor	Poor	Good	Fair	No	No	No	No	9	18	Missing mortar.	Repair mortar	6,000
M-19	1	80	14th St	06-050	12/4/08	Pavement - Concrete Collar	Good	Good	Good	Good	Good	Poor	Poor	No	No	No	No	8	19	Corrosion at bench and channel.	Line manhole	10,000
M-20	1	131	14th St	06-077	12/8/08	Pavement - Concrete Collar	Good	Good	Good	Good	Good	Poor	Poor	No	No	No	No	8	20	Corrosion at bench and channel.	Line manhole	10,000
M-21	1	178	31st St	17-053	1/8/09	Pavement - Concrete Collar	Good	Good	Good	Good	Good	Poor	Poor	No	No	No	No	8	21	Corrosion at channel.	Line manhole	10,000
M-22	1	99	Manhattan Ave	11-116A	12/22/08	Pavement - Concrete Collar	Good	Good	Poor	Good	Poor	Good	Good	No	No	No	No	8	22	Cracks in cone.	Line manhole	10,000
M-23	3	25	35th Pl	17-049	8/11/09	Pavement - Concrete Collar	Good	Good	Good	Good	Fair	Fair	Poor	No	No	0	No	8	23	Corrosion at bench and channel.	Line manhole	10,000
M-24	1	284	The Strand	14-064	1/21/09	Pavement - Concrete Collar	Cracked	Good	Good	Good	N/A	Good	Good	No	No	No	No	7	24	Cracked manhole cover.	Replace manhole cover	3,500
M-25	1	119	19th St	06-030	12/5/08	Pavement - Concrete Collar	Good	Good	Good	Good	Good	Fair	Poor	No	No	No	No	7	25	Corrosion at channel.	Line manhole	10,000
M-26	1	205	Blanche Rd	17-040	1/9/09	Pavement - Concrete Collar	Good	Good	Good	Good	Fair	Good	Poor	No	No	No	No	7	26	Corrosion at channel.	Line manhole	10,000
M-27	1	26	1st St	01-061	11/21/08	Pavement - Concrete Collar	Good	Good	Good	Good	Fair	Good	Poor	No	No	0	No	7	27	Corrosion at channel.	Line manhole	10,000
M-28	1	143	Marine Ave	15-053	1/7/09	Pavement - Concrete Collar	Good	Good	Poor	Good	Fair	Good	Good	No	No	No	No	7	28	Missing mortar and possibly bricks.	Repair mortar	6,000
M-29	1	87	Highview Ave	11-040	12/22/08	Pavement - Concrete Collar	Good	Good	Good	Good	Poor	Good	Good	Yes	No	No	No	7	29	Cracks in cone.	Line manhole	10,000
M-30	2	191	1st St	12-026	7/16/09	Pavement - Concrete Collar	Good	Good	Good	Good	Good	Poor	Fair	No	No	No	No	7	30	Corrosion at bench and channel.	Line manhole	10,000
M-31	2	278	3rd St	10-139	7/22/09	Pavement - Concrete Collar	Cracked	Good	Good	Good	Good	Good	Good	No	No	No	No	7	31	Cracked manhole cover.	Replace manhole cover	3,500
M-32	1	100	Manhattan Ave	11-117	12/22/08	Pavement - Concrete Collar	Good	Good	Poor	Good	Good	Good	Good	No	No	No	No	6	32	Cracks in cone.	Line manhole	10,000
																					Total	**316,000**

Table 10-4
Pump Station and Force Main Improvement Projects

Project No.	Project Description	Date of Construction for Existing Facility	Justification	Recommended Facilities				Unit Cost ($)	Construction Cost ($)	Eng. & Admin. Cost ($)	Total Project Cost ($)
				Firm Capacity (gpm)	Volume (gal)	Pipe Size (in)	Pipe Length (ft)				
P-1	Replace Poinsettia PS	1949	Condition / Criteria	150					2,000,000	700,000	2,700,000
	Replace Poinsettia PS Forcemain	1949	Age / Condition			4	163	300	49,000	18,000	67,000
P-2	Replace Pier PS Forcemain	1935	Age / Condition			4	900	400	360,000	126,000	486,000
P-3	Upgrade Pacific PS	1953	Criteria	400					400,000	140,000	540,000
	Replace Pacific PS Forcemain	1953	Age / Condition			6	1,225	240	294,000	102,900	396,900
P-4	Upgrade Voorhees PS	1953	Criteria	350					400,000	140,000	540,000
	Replace Voorhees PS Forcemain	1953	Age / Condition			6	930	240	223,200	78,120	301,320
P-5	Upgrade Meadows PS	1953	Criteria	310					400,000	140,000	540,000
	Replace Meadows PS Forcemain	1953	Age / Condition			6	730	240	175,200	61,320	236,520
P-6	Upgrade Bell Pump Station	1938	Criteria	300					400,000	140,000	540,000
	Replace Bell PS Forcemain	1938	Age / Condition			6	900	240	216,000	75,600	291,600
P-7	Replace Palm PS Forcemain		Age / Condition			4	775	240	186,000	65,100	251,100
P-8	Construct Emergency Storage for Pacific PS	-	Criteria		12,000			70	840,000	294,000	1,134,000
P-9	Construct Emergency Storage for Voorhees PS	-	Criteria		10,500			70	735,000	257,250	992,250
P-10	Construct Emergency Storage for Meadows PS	-	Criteria		9,300			70	651,000	227,850	878,850
P-11	Construct Emergency Storage for Bell PS	-	Criteria		8,400			70	588,000	205,800	793,800
P-12	Construct Emergency Storage for Palm PS	-	Criteria		4,800			70	336,000	117,600	453,600
								Total	**8,253,400**	**2,889,540**	**11,142,940**

Table 10-5
Wastewater Capital Improvement Program

				Recommended Facilities							
CIP No.	**Project Description**	**Date of Construction for Existing Facility**	**Justification**	**Firm Capacity (gpm)**	**Volume (gal)**	**Pipe Size (in)**	**Pipe Length (ft)**	**Unit Cost ($)**	**Construction Cost ($)**	**Eng. & Admin. Cost ($)**	**Total Project Cost ($)**
1	Replace Poinsettia PS	1949	Condition / Criteria	150					2,000,000	700,000	2,700,000
	Replace Poinsettia PS Forcemain	1949	Age / Condition			4	163	300	49,000	18,000	67,000
2	Replace Pier PS Forcemain	1935	Age / Condition			4	900	400	360,000	126,000	486,000
3	Upgrade Pacific PS	1953	Criteria	400					400,000	140,000	540,000
	Replace Pacific PS Forcemain	1953	Age / Condition			6	1,225	240	294,000	102,900	396,900
4	Upgrade Voorhees PS	1953	Criteria	350					400,000	140,000	540,000
	Replace Voorhees PS Forcemain	1953	Age / Condition			6	930	240	223,200	78,120	301,320
5	Upgrade Meadows PS	1953	Criteria	310					400,000	140,000	540,000
	Replace Meadows PS Forcemain	1953	Age / Condition			6	730	240	175,200	61,320	236,520
6	Upgrade Bell Pump Station	1938	Criteria	300					400,000	140,000	540,000
	Replace Bell PS Forcemain	1938	Age / Condition			6	900	240	216,000	75,600	291,600
7	Replace Palm PS Forcemain		Age / Condition			4	775	240	186,000	65,100	251,100
8	Construct Emergency Storage for Pacific PS	-	Criteria		12,000			70	840,000	294,000	1,134,000
9	Construct Emergency Storage for Voorhees PS	-	Criteria		10,500			70	735,000	257,250	992,250
10	Construct Emergency Storage for Meadows PS	-	Criteria		9,300			70	651,000	227,850	878,850
11	Construct Emergency Storage for Bell PS	-	Criteria		8,400			70	588,000	205,800	793,800
12	Construct Emergency Storage for Palm PS	-	Criteria		4,800			70	336,000	117,600	453,600
*13	Gravity Sewer Rehabilitation and Replacement	Varies	Condition								28,930,000
*14	Manhole Rehabilitation and Replacement	Varies	Condition								596,000
**15	Collection System Capacity Deficiencies	Varies	Criteria			12 & 15	1,725				1,373,700
								Total	**8,253,400**	**2,889,540**	**42,042,640**

Notes: * *Total project cost includes a projection for the remainder of the system to be CCTV inspected*

*** *Flow monitoring and verification of d/D ratios is recommended prior to project implementation*