



TECHNICAL MEMORANDUM

Date: October 31, 2022
To: Akin Okupe, EPASD General Manager
From: Jeffrey C. Bensch, P.E.
Cc:



**RE: CCTV Survey Results Evaluation and Pipeline Replacement Priorities
Areas 1, 3, and 4**

Sierra West Consultants, Inc. (Sierra West) is pleased to provide this evaluation of the closed-circuit television (CCTV) surveys of the wastewater collection system for East Palo Alto Sanitary District (EPASD). The surveys were conducted to clean, inspect and assess sewer pipelines throughout EPASD’s service area. The service area was divided into four areas for organizational and contracting purposes (Figure 1). Over 500 pipelines were inspected in Areas 1, 3, and 4 by National Plant Services, Inc. (NPS), and a video recording with a summary report were made for each pipeline. Surveys for Area 2 and the trunk line were recently contracted and should begin in November 2022.

This technical memorandum evaluates the CCTV survey results for Areas 1, 3, and 4. The results are used to develop a priority list of pipelines to be replaced. This evaluation considers three alternative approaches to developing a priority list for future improvements:

1. Structural Upgrades
2. Structural plus Capacity Upgrades
3. High Priority Upgrades

The evaluation considers the degree of structural deficiencies based on the CCTV results. Pipeline capacity upgrades are based on the projected pipeline diameters to achieve the desired flow capacity. The high priority upgrades consider the most necessary improvements to be addressed under a limited budget. Opinions of probable cost for potential pipeline replacement programs are also presented.

Evaluation of CCTV Survey Results

The following CCTV surveys were completed:

Area	Pipeline Segments	Linear Feet Surveyed
1	182	39,337
3	158	36,832
4	213	41,420
Total	553	117,589

Details of the surveys in each area are provided in Attachments 1, 2, and 3. NPS evaluated each pipeline with respect to its structural integrity and operations and maintenance (O&M) functionality. These evaluations were made in accordance with National Association of Sewer Service Companies (NASSCO) and their Pipeline Assessment and Certification Program (PACP). NPS used PACP’s Quick Rating approach by assigning a 4-digit code for a Structural grade and an O&M grade.

Each digit of the code represents the following:

- The first digit is recorded as 0 through 5 to represent the degree of severity of the encountered problem. 0 is no problem and 5 is the most severe.
- The second digit is how many times a problem of this severity was encountered in the pipeline segment. This ranges from 1 to 9, and then letters are used when there are more than nine problem locations. A represents 10 to 14 defects; B is 15 to 19; C is 20 to 24, etc.
- The third digit represents the second worst level of severity encountered.
- The fourth digit represents how many times the second severity of problem occurred.

Each of the four-digit codes is used to calculate a single score by multiplying the degree of severity by the number of occurrences, and then adding the two products. For instance, a Structural rating of 5432 would equal 26 ($5*4 + 3*2$).

The Structural rating addresses items that require pipeline repair to resolve, such as a cracked or broken pipe. The O&M rating addresses items that can be resolved by improved maintenance, such as a root ball or debris. The Structural and O&M calculated scores are shown on the spreadsheets, although only the Structural scores are used to evaluate pipeline repair or replacement needs.

Priority of Pipelines to be Replaced

Structural Upgrades

This replacement evaluation considers the Structural score augmented with an assessment of notable defects and sagging pipelines. The Structural ratings are developed by the CCTV inspection software and sometimes miss the significance of certain items, such as a collapsed pipe. As such, notable defects observed in the video recordings were incorporated into the assessment. Sagging pipelines were also given a score where the settlement was considered excessive. Consideration of the notable defects and sagging adding a substantial number of pipelines to be upgraded compared to only considering the software generated ratings.

The Structural, Notable Defects, and Sagging scores are added to create the Total Score for each pipeline segment. The Total Scores are ranked from highest to lowest to generate a priority list of pipelines to replace (Table 1). Pipelines with a score greater than 25 from each Area were selected as the group with significant structural defects needing replacement. A geographic information system (GIS) was used to generate Figure 2 showing the pipelines that need to be replaced to resolve structural defects in Areas 1, 3, and 4.

The pipeline segments needing structural upgrades may also be undersized and in need of increased capacity. Nonetheless, the pipelines considered under this alternative have substantial structural deficiencies that need to be addressed.

The priority list was sorted by pipeline diameter in Table 2 to evaluate probable costs. The Engineer's Opinion of Probable Cost for the project (Table 3) was developed using bid results from recent EPASD projects as a basis for unit price estimates. Published industry cost data and engineering judgement were also used where recent bid prices were incomplete.

As shown, approximately 76,00 linear feet of pipeline throughout Areas 1, 3, and 4 have a Total Score greater than 25. The opinion of probable construction cost is approximately \$40.5M, with a total project cost opinion of \$53.0M.

Structural and Capacity Upgrades

This evaluation considers the existing hydraulic capacity of each pipeline, along with the structural integrity. As such, this represents a maximum level of wastewater collection system improvements.

The *Addendum to the March 2015 East Palo Alto Sanitary District Master Plan Update* (Master Plan Update, Freyer & Laureta, April 28, 2021) was used to assess the hydraulic capacity and a score was applied to pipelines identified as under capacity in the Master Plan (Attachment 4 - Table 16 and Figure 10 from the Master Plan). For pipelines designated as undersized, a score was calculated as five times the diameter of the proposed pipeline upgrade.

The Structural, Notable Defects, and Sagging scores, and the Capacity score, are added to create the Total Score for each pipeline segment. The Total Scores are ranked from highest to lowest to generate a priority list of pipelines to replace. Pipelines with a Total Score greater than 25 were selected as pipelines for replacement (Table 4). The GIS was used to generate Figure 3 showing the pipelines that need to be replaced to resolve structural defects and capacity inadequacies in Areas 1, 3, and 4.

Capacity upgrades are considered independent of whether the pipeline has structural deficiencies. In many cases, pipeline segments may be structurally sound and included in this priority list only because they are undersized as defined in the Master Plan Update.

The priority list was sorted by pipeline diameter in Table 5 to evaluate probable costs. The Engineer's Opinion of Probable Cost for the project (Table 6) was developed using bid results from recent EPASD projects as a basis for unit price estimates. Published industry cost data and engineering judgement were also used where recent bid prices were incomplete.

As shown, approximately 90,000 linear feet of pipelines throughout Areas 1, 3, and 4 have a Total Score greater than 25. The opinion of probable construction cost is approximately \$49.5M, with a total project cost opinion of \$64.7M.

High Priority Upgrades

This evaluation considers the hydraulic capacity along with the structural integrity to develop a priority list under a funding limit of approximately \$20M.

This evaluation is weighted to include large diameter pipelines with flow capacity upgrades that are critical to the overall performance of the wastewater collection system. It is also balanced with replacing significantly deteriorated pipelines in need of substantial structural repairs. Considering limited funding, a higher score threshold was used to select the highest priority pipeline segments.

Pipeline segments with a Total Score greater than 75 were selected as the group of pipelines to be replaced (Table 7). A geographic information system (GIS) was used to generate Figure 4 showing the pipelines that need to be replaced.

The priority list was sorted by pipeline diameter in Table 8 to evaluate probable costs. The Engineer's Opinion of Probable Cost for the project (Table 9) was prepared using bid results from recent EPASD projects as a basis for unit price estimates. Published industry cost data and engineering judgement were also used where recent bid prices were incomplete.

As shown, 25,500 linear feet of pipeline throughout Areas 1, 3, and 4 have a Total Score greater than 75. The opinion of probable construction cost is approximately \$16.0M, while the opinion of total project cost is \$20.9M.

Summary

The following table summarizes the opinions of costs presented above:

Program Alternative	Linear Feet	Opinion of Probable Cost (millions)
Structural Upgrades ¹	76,000	\$53.0
Includes Capacity Upgrades ²	13,000	\$9.1
Structural + Capacity Upgrades	90,000	\$64.7
Includes Capacity Upgrades	25,000	\$22.0
Includes Capacity Only Upgrades ³	13,000	\$12.9
High Priority Program ⁴	25,500	\$20.9
Includes Capacity Upgrades	17,500	\$14.3
Includes Capacity Only Upgrades	4,900	\$4.9

1. Structural Upgrades = Replacement of Pipelines with Substantial Structural Defects (may include Capacity Upgrades)
2. Capacity Upgrades = Replacement of Pipelines with Larger Capacity Pipelines per the Master Plan Update (independent of Structural condition)
3. Capacity Only Upgrades = Replacement of Pipelines that are Structurally Sound with Larger Capacity Pipelines per the Master Plan Update
4. High Priority Program = \$20M project to address High Priority pipelines considering both Structural and Capacity Upgrades

The Total Scores, GIS figures, and the opinion of probable costs can be used together to evaluate other project alternatives in terms of adding or eliminating pipelines to work within available resources. Further evaluations and secondary priority listings may be useful in developing or updating EPASD's current Capital Improvement Plan (CIP).

Tables

Table 1	Priority List of Pipelines for Structural Upgrades
Table 2	Priority List Sorted by Diameter, Pipelines for Structural Upgrades
Table 3	Opinion of Probable Construction Cost – Structural Upgrades
Table 4	Priority List of Pipelines for Structural and Capacity Upgrades
Table 5	Priority List Sorted by Diameter, Structural and Capacity Upgrades
Table 6	Opinion of Probable Construction Cost – Structural and Capacity Upgrades
Table 7	Priority List of High Priority Pipelines to be Replaced
Table 8	Priority List of High Priority Pipelines, Sorted by Diameter
Table 9	Opinion of Probable Construction Cost – High Priority Upgrades

Figures

Figure 1	CCTV Survey Areas
Figure 2	Structural Upgrades, Areas 1, 3, 4
Figure 3	Structural + Capacity Upgrades, Areas 1, 3, 4
Figure 4	High Priority Upgrades, Areas 1, 3, 4

Attachments

Attachment 1	Area 1 CCTV Survey Results and Evaluation
Attachment 2	Area 3 CCTV Survey Results and Evaluation
Attachment 3	Area 4 CCTV Survey Results and Evaluation
Attachment 4	Table 16 and Figure 10 from Master Plan Addendum

Tables

Table 1
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
Priority List of Pipelines for Structural Upgrades - Areas 1, 3, 4

Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Notes	Structural Total Score	Score for Master Plan Capacity (* Zero*Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
O	West Bayshore Road	O4 - O3		8	VCP	277	85% sag, 10% grease build up	86	0	0	25	111
J	Pulgas Avenue	J7 - J6		8	VCP	441	Pipe is broken at 124ft and 197ft	73	0	10	25	108
A	Demeter Street	A13 - A12		8	Unknown	412	Broken pipe at 129 ft and 139 ft with sags.	70	0	20	15	105
J	Garden Street	J9 - J9A		8	VCP	365	Pipe is broken at 8ft, 32ft, 81ft, 223ft & 318ft.	51	0	30	20	101
A	Pulgas Avenue	A18 - A16		8	VCP	442	Broken pipe at 44ft.	70	0	10	20	100
H	Runnymede Street	H35 - H34	10	12	VCP	322	Pipeline has a lot of sagging. The high water level	62	0	8	30	100
K	Larkspur Drive	K19 - K18		8	CP	272	Pipe is broken and soil is visible at 144ft, and	58	0	30	10	98
A	Gonzaga Street	A3 - A2		8	VCP	287	Broken pipe at 53, 141, 157, and 159 ft. Also, an	46	0	30	20	96
A	Bay Road	A2 - A5	15	16	Unknown	244	Sagging pipe 75%	70	0	0	25	95
J	Garden Street	J10 - J9		8	VCP	300	Pipe is broken at 228ft and 293ft	70	0	10	15	95
K	Larkspur Drive	K18 - K17		8	CP	269	SMW spots on the line.	80	0	15		95
A	Illinois Street	A6 - A5		8	VCP	287	Broken pipe at 15 and 75ft. Also, an offset joint at	49	0	30	15	94
K	Daisy Lane	K21 - K3		8	CP	246	Pipe has few locations with chunks of pipe missing	53	0	30	10	93
A	Illinois Street	A7 - A6		8	VCP	306	Broken pipe at 82 and 230 ft.	46	0	30	15	91
C	Menalto Avenue	C4 - C3	8	12	PE	436	This is the second inspection after heavy cleaning.	66	0	10	15	91
H	Clarke Avenue	H14 - H13	12	14	VCP	446	Broken at 425.5ft, 429ft with multiple cracks	66	0	0	25	91
K	Wisteria Drive	K13 - K12		8	VCP	362	Pipe is broken at 9ft and 91ft.	56	0	20	15	91
A	Bay Road	A5 - A8	18	20	PE	124	Sagging pipe 50%-100%	80	0	0	10	90
C	Elliot Drive	C41 - C40		8	VCP	191	substantial breakage throughout their entire	70	0	20		90
C	Elliot Drive	C42 - C41		8	VCP	300	substantial breakage throughout their entire	70	0	20		90
F	Weeks Street	F23 - F8		8	VCP	327	This pipeline was F9A-F8	70	0	0	20	90
C	Elliot Drive	C40 - C36		8	VCP	257	MSA/Root tap barrel. Reverse inspection	67	0	20		87
A	Tara Street	A27 - A26		8	VCP	311	Broken pipe and soil is visible at 254.10 ft at 11	35	0	30	20	85
C	Hwy 101	C21 - C19		8	VCP	284	MSA/Collapsed pipe. Reverse inspection	55	0	30		85
H	Clarke Avenue	H12 - H11	12	14	VCP	333	Broken at 111ft, 231ft, 331.9ft	70	0	0	15	85
L	Wisteria Drive	L29 - L28		8	VCP	366	Pipe is broken at 348ft, and soil is visible	35	0	30	20	85
D	Hwy 101	D10 - D3	10	12	Not Known	489	MSA/80% grease in line. No heavy cleaning	54	0	20	10	84
K	Larkspur Drive	K16 - K4		8	CP	274	SMW spots on the line	53	0	15	15	83
O	Woodland Avenue	O23 - O22		8	VCP	470	MSA/TBI. Reverse Inspection complete. Pipe had	62	0	20		82
A	Bay Road	A10 - A15	18	20	ACP	299	Surface Damage Roughness Increased	61	0	0	20	81
H	Clarke Avenue	H64 - H71	12	14	VCP	99	H60-H3. Line has about 30%-40% grease that is	42	0	24	15	81
I	Beech Street	I20 - I9		8	VCP	278	Pipe has MSA at 267 due to hard	40	0	20	20	80
D	Donohoe Street	D9 - D8		8	VCP	496	Broken at 21ft, multiple cracks	70	0	8		78
D	Donohoe Street	D8 - D7		8	VCP	158	broken pipe at 100.08 ft from upstream	37	0	30	10	77
A	Demeter Street	A12 - A11		8	VCP	485	Sagging pipeline 55%	55	0	0	20	75
A	Bay Road	A15 - A16	18	20	ACP	435	Surface damage roughness. Sagging 75%	50	0	0	25	75
D	West Bayshore Road	D7 - D6		8	VCP	398	5% grease build up and 90% sag	60	0	0	15	75
F	Weeks Street	F11 - F10		8	VCP	420	Broken at 176ft, 242ft	70	0	0	5	75
F	Weeks Street	F12 - F11		8	VCP	355	Broken at 414ft, multiple fractures and cracks	70	0	0	5	75
F	Weeks Street	F19 - F20		8	VCP	216	MH was F19 - F21	70	0	0	5	75
I	Pulgas Avenue	I15 - I14	15	16	PVC	386	Sagging pipe 85%	50	0	0	25	75
J	Garden Street	J8 - J6		8	VCP	442	Broken at 33ft, 81.4ft, 164ft, 223ft, 286ft, 318ft	70	0	0	5	75
C	Menalto Avenue	C43 - C8		8	VCP	101	Proteus. MSA/TBI. Heavy cleaning was performed.	58	0	16		74
G	Runnymede Street	G7 - G6		8	PVC	295	-	48	0	0	25	73
C	Menalto Avenue	C6 - C5	8	12	PE	87	Pipeline has lots of debris	42	0	20	10	72
K	Camellia Drive	K35 - K34		8	VCP	280	Broken pipe at 9ft.	42	0	10	20	72
C	Ralmar Avenue	C15 - C14		8	VCP	565	MSA/JAM. Camera is unable to get past this point.	50	0	20		70
C	Oak Court	C47 - C46		8	VCP	309	This is the second inspection after heavy cleaning	70	0	0		70
D	West Bayshore Road	D51 - D7		8	VCP	458	MSA/JOL. Camera cannot move any further.	45	0	20	5	70
F	Pulgas Avenue	F14 - F8		8	PVC	463	Sagging pipe up to 75%	50	0	0	20	70
O	Woodland Avenue	O20 - O19		8		116	After removing roots and debris from the exit of	50	0	20		70
H	Donohoe Street	H21A - H55		8	VCP	157	H21A - H21. Broken at 61ft, 101ft	48	0	0	20	68
K	Camellia Drive	K36 - K35		8	VCP	282	Broken pipe at 264ft.	38	0	20	10	68
C	O'Connor Street	C35 - C7		8	Unknown	403	Proteus. This is the second inspection. First	50	0	12	5	67
F	Weeks Street	F8 - F8A		8	VCP	281	New Line segment	46	0	0	20	66
O	Woodland Avenue	O21 - O19		8	VCP	394	MSA/Reverse Inspection performed.	46	0	20		66
M/I	Pulgas Avenue	I43 - I15		12	PVC	60	I15A - I15. Sagging pipe 90%	35	0	0	30	65
K	Azalia Drive	K9 - K8		8	VCP	356	Pipe is broken at 158ft, 183ft, 296ft. At 104ft a	25	0	40		65
H	Clarke Avenue	H13 - H12	12	14	VCP	108	Broken at 18ft with 55% sagging pipe	54	0	0	10	64
H	Clarke Avenue	H24 - H20		8	VCP	333	MSA/Broken pipe. The USMH is a cleanout so no	14	0	30	20	64
K	Wisteria Drive	K11 - K5		8	VCP	370	MSA/Joint offset. Reverse inspection performed	34	0	20	10	64
C	Hwy 101	C20 - C19		8	VCP	199	Broken at 5.1 ft, surface damage at 30 ft	42	0	20		62
D	Green Street	D68 - D67		8	VCP	139	Surface Damage at 59ft, pipeline has multiple	50	0	12		62
I	Myrtle Street	I23 - I28		8	VCP	166	Broken at 59ft. This pipe line was I23 - I23A	32	0	30		62
L	Gaillardia Way	L11 - L10		8	VCP	360	Pipe is broken at 240ft and soil is visible	22	0	30	10	62
O/N	Highway 101	O3 - N8		12	Unknown	205	O3 was surcharged.	44	0	8	10	62
A	Bay Road	A1 - A2	15	16	Unknown	80	MH A1 does not exist. Inspection started from B2-	50	0	10	0	60
A	Bay Road	B2 - A2	15	16	PE	181	A1 is buried, operator surveyed B2-A2 for total of	50	0	0	10	60
D	West Bayshore Road	D21 - D19	10	12	HDPE	391	Heavy Cleaning/high flow. Night work. HDPE. This	40	0	20		60
G	Runnymede Street	G4 - G3		8	PVC	213	-	50	0	0	10	60
H	Runnymede Street	H34 - H17	10	12	VCP	269	Submerged pipe with a line down alignment.	34	0	16	10	60
J	Garden Street	J5C - T21		8	PVC	62	New Line Segment. Sagging pipe 75%	40	0	0	20	60
K	Daisy Lane	K22 - K21		8	CP	256	Surface Damage Missing Wall along the pipeline	60	0	0		60
K	Camellia Drive	K33 - K32		8	VCP	131	Sagging pipe 75%	40	0	0	20	60
K/L	Larkspur Drive	L21 - K28	14	16	PVC	68	Sagging pipe 75%	40	0	0	20	60
L	Wisteria Drive	L26 - L25		8	VCP	216	Pipe has a lot of sagging, and an offset joint	16	0	24	20	60
L	Jasmine Way	L43 - L44		8	PVC	334	Joint Separated Large at 331.7ft	60	0	0		60
O	Cooley Avenue	O51A - O13		8	VCP	236	5% grease build up, 60% sag	50	0	0	10	60
C	Menalto Avenue	C2 - C1	10	12	Unknown	204	MSA/Grease. Heavy grease blockage at 136.9	38	0	16	5	59

Table 1
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Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Notes	Structural Total Score	Score for Master Plan Capacity (+ Zero*Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
C	Green Street	C23 - C3		8	VCP	400	Pipe has grease and is under water for about 360'	34	0	20	5	59
G	Runnymede Street	G14 - G17		8	VCP	151	Pipe is broken at 17ft.	14	0	20	25	59
O	West Bayshore Road	O5 - O4		8	Unknown	399	Noteable sagging	44	0	0	15	59
C	Oak Court	C44 - C10		8	VCP	155	MSA/LR. Camera cannot move past bend.	42	0	16		58
C	Oak Court	C46 - C45		8	VCP	256	Broken at 153ft with multiple cracks	58	0	0		58
D	O'Connor Street	D26 - D25		8	VCP	157	broken pipe due to tree roots between 23-26 ft.	38	0	20		58
D	East Bayshore Road	D65 - D64		8	VCP	448	Pipe is damaged. MSA/Crawler cannot move any	38	0	20		58
D	Oakwood Dive	D71 - D52		8	VCP	130	Proteus. This is the second inspection. First	46	0	12		58
C	Menalto Avenue	C7 - C6	8	12	PE	448	Pipeline has lots of debris	20	0	12	25	57
O	Capitol Avenue	O16 - O15		8	VCP	235	Broken at 131.9 ft	42	0	15		57
C/D	Donohoe Street	C26 - D9		8	VCP	436	This is the second inspection after heavy cleaning	36	0	20		56
D	French Court	D40 - D37		8	VCP	194	This is the second inspection after using a root	25	0	30		55
F	Weeks Street	F20 - F17		8	VCP	253	MH was F20 - F21	55	0	0		55
G	Runnymede Street	G6 - G4		8	PVC	388	-	50	0	0	5	55
K	Larkspur Drive	K17 - K16		8	CP	267	Surface Damage Missing Wall along the pipeline	55	0	0		55
C	Poplar Avenue	C13 - C12		8	Unknown	481	MSA/Lined pipe. Camera could not move any	34	0	20		54
C	Menalto Avenue	C2A - C2	8	12	VCP	28	New line segment - Broken at 19.9 ft	34	0	20		54
D	O'Connor Street	D29 - D28		8	VCP	465	Clogged, extensive cleaning required	46	0	8		54
D	Oak Court	D37 - D36		8	VCP	368	MSA/Reverse inspection complete	54	0	0		54
D	East O'Keefe Street	D43 - D41		8	VCP	517	MSA/Broken. Reverse inspection complete. broken	46	0	8		54
D	Woodland Avenue	D56 - D35		8	VCP	286	Offset joint 4' from MH	42	0	12		54
G	Buchanon Court	G10 - G9		8	CP	271	Pipe is broken and soil is visible at 10 ft and 221 ft	24	0	30		54
H	Donohoe Street	H21 - H56		8	VCP	151	H22 - H55. Broken at 14ft and 110ft	54	0	0		54
O	Woodland Avenue	O29 - O30		8	VCP	220	Surcharged MH with substantial crud on water	42	0	12		54
C	Oak Court	C45 - C44		8	VCP	166	Broken pipe at 6ft, 41ft, 24ft	43	0	10		53
O	Woodland Avenue	O22 - O21		8	VCP	348	broken at 81.02 ft, 311 ft, and 320 ft.	33	0	20		53
D	O'Connor Street	D25 - D24	8	12	VCP	301	large offset between joints and unable to video it	36	0	16		52
G	Mandela Court	G15 - G14		8	PVC	215	-	42	0	0	10	52
I	Myrtle Street	I21 - I13	8	12	VCP	600	As I24 should be between them as shown in the	47	0	0	5	52
D	East O'Keefe Street	D47 - D22		8	VCP	299	Grease build up at 269 ft	41	0	5	5	51
O	Woodland Avenue	O28 - O26		8	VCP	434	MSA/Reverse inspection complete. Proteous.	41	0	10		51
A	Demeter Street	A14 - A13		8	Unknown	288	-	50	0	0		50
A	Pulgas Avenue	A20 - A19		8	VCP	340	Broken pipe at 225ft, and separated joints at 281ft.	20	0	30		50
C	Addison Avenue	C18 - C17		8	VCP	370	MSA/Proteus could not crawl any farther due to	34	0	16		50
D	Manhattan Avenue	D19 - D10	10	12	PVC	48	Line is sagging. Camera was under water for most	30	0	0	20	50
D	O'Connor Street	D41 - D24		8	VCP	191	Broken at 51 ft and 122 ft	50	0	0		50
D	Addison Avenue	D55 - D54		8	VCP	252	MSA/Reverse inspection complete. broken at	34	0	16		50
F	Weeks Street	F10 - F9		8	VCP	463	Broken at 32.2ft & 247ft & 297ft & 314ft	45	0	0	5	50
F	Clarke Avenue	F15 - F11		8	VCP	301	Multiple cracks along the pipe	50	0	0		50
H	Donohoe Street	H23 - H22		8	VCP	405	H23 - H56. Broken at 133.9ft, 316.9ft	50	0	0		50
K/L	Gardenia Way	K31 - L1		8	PVC	148	-	30	0	0	20	50
L	Verbina Drive	L17 - L16		8	VCP	236	-	50	0	0		50
L	Daphine Way	L35 - L34		8	VCP	250	-	50	0	0		50
L	Azalia Drive	L47 - L4		8	VCP	88	Heavy grease was found on a sewer line cleaning	20	0	30		50
O	Clarke Avenue	O26 - O25		8	VCP	333	Broken at 125ft	50	0	0		50
O	Newell Road	O35 - O34		8	ACP	316	-	50	0	0		50
O	Scofield Street	O52 - O51		8	VCP	213	-	50	0	0		50
O	Woodland Avenue	O55 - O54		8	VCP	399	MSA/Reverse Inspection Complete.	42	0	8		50
M/I	Pulgas Avenue	M2 - I43		12	PVC	42	M2 - I15A. Sagging pipeline 100%	25	0	0	25	50
A	Bay Road	A16 - A21	18	20	ACP	296	-	44	0	0	5	49
G	Buchanon Court	G9 - G6		8	CP	291	Pipe is broken and soil is visible at 84 ft	14	0	30	5	49
J	Garden Street	J9A - J8		8	VCP	35	Pipe is broken at 115ft, 176ft, and 359ft.	19	0	30		49
O	West Bayshore Road	O59 - O7		8	VCP	182	Soil is visible at 167ft, 50% sag	9	0	30	10	49
D	Euclid Avenue	D23 - D22	10	12	PE	73	Pipeline had heavy grease	30	0	8	10	48
D	Green Street	D69 - D67		8	VCP	259	MSA/TBI. No reverse inspection performed	40	0	8		48
F	Weeks Street	F9 - F23		8	VCP	111	This pipeline was F9-F9A	43	0	0	5	48
O	Newell Road	O31 - O30		8	VCP	90	Visible soil	18	0	30		48
O	Woodland Avenue	O33 - O32		8	VCP	263	Visible soil	26	0	12	10	48
C	Palmar Avenue	C25 - C23		8	VCP	303	Medium Joint Offset	42	0	0	5	47
D	Glen Way	D67 - D63		8	VCP	294	Pipe broken at 231.1 ft	17	0	30		47
O	Cooley Avenue	O58 - O57		8	VCP	403	MSA/Tap break in intruding. No reverse inspection	17	0	30		47
C	Addison Avenue	C17 - C16		8	VCP	333	There's a JAM 3' from the DSMH. Camera is unable	38	0	8		46
C	Hwy 101	C19 - C2		8	VCP	264	MSA/OBM. Reverse inspection performed. Pipeline	26	0	20		46
G	Pulgas Avenue	G13 - G3		8	PVC	453	Proteous	46	0	0		46
I	Beech Street	I7 - I6	20	22	CP	259	Surface damage roughness. Sagging 75%	26	0	0	20	46
K/L	Azalia Drive	L10 - K27		8	VCP	275	Broken connection of lateral at 28ft.	11	0	20	15	46
O	Cooley Avenue	O57 - O51		8	VCP	365	Cracks and surface damage along the pipe	46	0	0		46
C/D	O'Connor Street	D29 - C37		8	Unknown	130	Proteus	27	0	8	10	45
D	Oak Court	D36 - D35		8	VCP	251	MSA/Broken. Reverse inspection attempted.	29	0	16		45
D	East O'Keefe Street	D48 - D47		8	VCP	401	5% Grease build up at 335ft	28	0	12	5	45
C	East Bayshore	C14 - C12		8	PVC	282	-	44	0	0		44
C	Woodland Avenue	C51 - C50		8	Unknown	556	Proteous. MSA/Reverse inspection complete. Pipe	32	0	12		44
D	East Bayshore Road	D64 - D63		8	VCP	471	MSA/Reverse inspection complete	19	0	20	5	44
G	Veronica Court	G18 - G17		8	PVC	291	-	39	0	0	5	44
I	Terra Villa Avenue	I17 - I7		8	VCP	526	Broken at 520ft	34	0	0	10	44
L	Azalia Drive	L10 - L9		8	VCP	180	-	44	0	0		44
A	Pulgas Avenue	A17 - A31		8	VCP	241	This pipe line was A17 - A17A	43	0	0		43
A	Bay Road	A9 - A10	18	20	ACP	181	Broken at 172ft	28	0	0	15	43
D	West Bayshore Road	D53 - D52		8	VCP	248	Joint Separated Medium	38	0	0	5	43

Table 1
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
Priority List of Pipelines for Structural Upgrades - Areas 1, 3, 4

Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Notes	Structural Total Score	Score for Master Plan Capacity (+ Zero*Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
K	Azalia Drive	K7 - K6		8	VCP	362	-	23	0	0	20	43
O	Mission Drive	O41 - O40		8	Unknown	45	Proteous. seemed to be different material	27	0	16		43
O	Scofield Street	O54 - O52		8	VCP	380	Pipe is broken at 26.08 feet.	13	0	30		43
D	O'Connor Street	D27 - D26		8	VCP	392	Clogged, extensive cleaning required	34	0	8		42
F	Weeks Street	F7 - T25		8	VCP	477	Multiple cracks along the pipe	32	0	0	10	42
H	Runnymede Street	H17 - H76	12	14	VCP	397	H17 - H16. Broken pipe at 43.2ft, 144.9ft, 150ft	17	0	20	5	42
H	Donohoe Street	H56 - H21A		8	VCP	157	H55 - H21A. Broken at 1.5ft	42	0	0		42
I	Brentwood Court	I18 - I8		8	PVC	237	-	32	0	0	10	42
K	Hibiscus Court	K24 - K21		8	CP	149	Surface Damage Missing Wall	42	0	0		42
L	Abelia Way	L58 - L57		8	VCP	295	Broken at 13ft, 50ft, 87ft, 236ft	22	0	20		42
C	Woodland Avenue	C49 - C48		8	Unknown	248	Proteous	29	0	12		41
C	Woodland Avenue	C50 - C49		8	Unknown	361	Proteous	29	0	12		41
D	O'Connor Street	D28 - D27		8	VCP	81	Clogged, extensive cleaning required	28	0	8	5	41
H	Cooley Avenue	H32 - H17		8	VCP	550	Broken Soil Visible at 111ft. Broken at 213.8ft,	41	0	0		41
O	West Bayshore Road	O9 - O8	8	12	VCP	140	15% grease buildup at 96ft	36	0	0	5	41
C	East Bayshore	C16 - C14		8	PVC	273		40	0	0		40
G	Runnymede Street	G8 - G7		8	PVC	327		35	0	0	5	40
O	Newell Road	O34 - O10		8	ACP	268		40	0	0		40
A	Pulgas Avenue	A31 - A16		8	PVC	177	This pipe line was A17A - A16	34	0	0	5	39
C	Woodland Avenue	C48 - C11	8	12	Unknown	179	MSA/ Reverse Inspection complete	23	0	16		39
C	Menalto Avenue	C5 - C4	8	12	Unknown	328	Pipeline has lots of debris	29	0	10		39
D	Donohoe Street	D3 - D3A	16	18	VCP	11	Surface Damage Roughness Increased	34	0	0	5	39
D	Oak Court	D38 - D37		8	VCP	238	MSA/Broken. No reverse inspection can be	9	0	30		39
D	Oak Court	D39 - D37		8	Unknown	84	New line segment. Proteus was used to inspect this	9	0	30		39
G	Buchanan Court	G11 - G10		8	CP	266	Pipe is broken at 33 ft and 256 ft.	19	0	20		39
L	Verbina Drive	L13 - L9		8	VCP	311	Broken at 60.2ft	24	0	15		39
L	Verbina Drive	L16 - L15		8	VCP	311	Broken at 169ft	24	0	15		39
L	Gardenia Way	L2 - L1	12	14	PVC	179	Joint Separated Large at 104.9ft, infiltration from	24	0	15		39
L	Aster Way	L31 - L30		8	VCP	179	Pipe is broken at 59ft, and soil is visible	9	0	30		39
O	Woodland Avenue	O32 - O31		8	VCP	258	Broken at 3.2 ft and 226 ft	9	0	30		39
C	Menalto Avenue	C10 - C8	8	12	PE	387	Modified line segment. Could not find C9	23	0	10	5	38
D	Woodland Avenue	D35 - D34	8	12	VCP	178	Fracture Multiple at 73ft	38	0	0		38
H	University Avenue	H37A - H36		8	VCP	149	New Line Segment. Broken 144.3ft, 145ft	38	0	0		38
H	Sacramento Street	H41 - H40		8	VCP	150	Broken at 38ft, 42ft	38	0	0		38
H	Weeks Street	H42 - H37		8	VCP	388	Broken at 304ft	38	0	0		38
H	Donohoe Street	H55 - H54		8	PVC	144	H21 - H54. Broken at 51ft	38	0	0		38
K	Sage Street	K20 - K19		8	CP	135	Surface Damage Missing Wall at 96.4ft	8	0	30		38
L	Camellia Drive	L20 - L16		8	VCP	101	Broken at 6.6ft	38	0	0		38
L	Daphne Way	L37 - L36		8	VCP	312	Hole at 252ft, 93.5ft	38	0	0		38
L	Camellia Drive	L54 - L53		8	VCP	369	Pipe is broken and soil is visible at 3.02ft.	8	0	30		38
M	O'Connor Street	M43 - M42		8	VCP	104	Broken at 109ft	38	0	0		38
N/K	O'Connor Street	N1 - K6		12	PE	253		38	0	0		38
O	Circle Drive	O53 - O52		8	VCP	188	Broken at 204ft	38	0	0		38
O	Woodland Avenue	O56 - O55		8	VCP	377	-	38	0	0		38
H/E	Euclid Avenue	H38 - E42		8	VCP	519	Broken pipe Soil Visible at 146ft, 197ft	17	0	20		37
K	Camellia Drive	K34 - K33		8	VCP	278	-	32	0	0	5	37
C	Menalto Avenue	C8 - C7	8	12	PE	401	broken pipe located 100.08 ft from upstream	20	0	16		36
G	Runnymede Street	G19 - T23		8	VCP	263	This pipeline was G2A-T23	36	0	0		36
H	Schembri Lane	H29 - H12		8	VCP	551	Broken pipe at 257ft, 349ft	16	0	20		36
L	Daphne Court	L62 - L34		8	VCP	147		36	0	0		36
H	Runnymede Street	H57 - H16	12	14	VCP	48	H16A - H16B. Broken at 20.9ft	20	0	15		35
I	Pulgas Avenue	I13 - I12	15	16	PVC	320	-	30	0	0	5	35
I	Beech Street	I3 - T19	24	26	PVC	188	Reported 24" dia; Actual 18"	30	0	0	5	35
L	Camellia Drive	L46 - L45		8	VCP	136	Broken pipe Soil Visible at 135.9ft	35	0	0		35
L	Daphne Way	L36 - L35		8	VCP	278	Hole at 38.4ft	24	0	10		34
D	Donohoe Street	D2 - D1	18	20	VCP	53		34	0	0		34
D	Donohoe Street	D3A - D2	16	18	VCP	355	Broken at 4.2ft	34	0	0		34
D	Donohoe Street	D4 - D3	10	12	VCP	296	Fracture Multiple at 131ft	34	0	0		34
D	O'Connor Street	D42 - D41		8	VCP	100	Crack Multiple at 7.6ft & 69.2ft	34	0	0		34
D	East O'Keefe Street	D44 - D43		8	VCP	113	Broken at 72.2ft	34	0	0		34
D	East O'Keefe Street	D50 - D49		8	VCP	422	Broken at 418.9 ft	34	0	0		34
D	West Bayshore Road	D54 - D53		8	VCP	75	-	34	0	0		34
D	Hwy 101	D6 - D5		8	Unknown	246	Joint Offset Large at 112ft	34	0	0		34
H	Clarke Avenue	H11 - H64	12	14	VCP	198	H11 - H60. Broken at 73.2ft	34	0	0		34
H	Runnymede Street	H38 - H47		8	VCP	205	Broken at 80.3ft	34	0	0		34
H	Weeks Street	H43 - H42		8	VCP	346	Broken at 4.7ft, 303.7ft	34	0	0		34
H	Runnymede Street	H47 - H35		8	VCP	192	Fracture at 8.6 with cracks along the pipeline	29	0	0	5	34
H	Runnymede Street	H76 - H57	12	14	VCP	73	H16 - H16A. Broken at 63.2ft	19	0	15		34
L	Verbina Drive	L19 - L18		8	VCP	333	Broken at 330ft	34	0	0		34
L	Wisteria Drive	L28 - L27		8	VCP	363	Hole at 310.2ft	34	0	0		34
L	Daphne Way	L37 - L38		8	VCP	212	Proteous. Hole at 140.7ft	24	0	10		34
M	O'Connor Street	M42 - M13	12	14	VCP	111	Surface Damage and cracks	34	0	0		34
A	Pulgas Avenue	A19 - A18		8	VCP	214	Fracture multiple along the pipeline	33	0	0		33
H	Donohoe Street	H22 - H21		8	VCP	216	H56 - H22. Broken pipe at 3.9ft, 137.4ft	13	0	20		33
C	O'Connor Street	C37 - C36		8	Unknown	153	Proteus. This is the second inspection because of	15	0	12	5	32
H	Schembri Lane	H30 - H46		8	VCP	135		32	0	0		32
L	Camellia Drive	L53 - L52	6	8	VCP	218	MSA/Reverse Inspection Complete	32	0	0		32
L	Camellia Court	L56 - L54		8	VCP	327		32	0	0		32
H	Clarke Avenue	H31 - H14		8	VCP	404	MSA/JOL. No reverse inspection performed	15	0	16		31

Table 1
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
Priority List of Pipelines for Structural Upgrades - Areas 1, 3, 4

Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Notes	Structual Total Score	Score for Master Plan Capacity (+ Zero*Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
K	Daisy Lane	K23 - K22		8	Unknown	100	Material change at 23ft and needs a mini camera	23	0	8		31
K	Azalia Drive	K26 - K6		8	VCP	294	Pipe is broken at 286ft	11	0	20		31
A	Bay Road	A22 - A29	18	18	ACP	369	Reported 18" dia; Actual 15"	30	0	0		30
A	Tara Street	A24 - A23		8	VCP	240	Broken pipe at 228 ft.	10	0	20		30
C	Green Street	C24 - C23		8	VCP	151	MSA/JOM. No reverse inspection performed	10	0	20		30
C	East O'Keefe Street	C30 - C27		8	VCP	163		30	0	0		30
C	East O'Keefe Street	C32 - C30		8	VCP	147		30	0			30
C	East O'Keefe Street	C34 - C32		8	VCP	82	-	30	0	0		30
C	O'Connor Street	C36 - C35		8	Unknown	92	Proteus. This is the second inspection. First	18	0	12		30
F	Weeks Street	F17 - F22		8	VCP	56	This pipe line was F17 - F17A	30	0	0		30
L	Gaillardia Way	L12 - L11		8	VCP	82		30	0	0		30
L	Gardenia Way	L3 - L2	12	14	PVC	83		30	0	0		30
G	Ruth Ct	G12 - G4		8	PVC	273	Broken at 47ft, 170ft	29	0	0		29
H	University Avenue	H37 - H37A		8	VCP	221	New Line Segment. Broken at 162ft	9	0	20		29
H	Sacramento Street	H40 - H36		8	VCP	496	MSA/JOL. Reverse inspection performed.	29	0	0		29
H	Donohoe Street	H54 - H20		8	VCP	153	Fracture at 14.7ft	19	0	10		29
H	Green Street	H75 - H6	18	20	PE	259	H7C - H6	29	0	0		29
L	Wisteria Drive	L22 - L3		8	VCP	366	Broken at 48.6ft	14	0	15		29
L	Abelia Way	L59 - L58		8	VCP	250	Broken at 220ft, 245ft	9	0	20		29
O	West Bayshore Road	O10 - O9		8	VCP	157		29	0	0		29
D	Euclid Avenue	D24 - D23	10	12	PE	350	Pipeline had heavy grease	20	0	8		28
F	Paul Robeson Court	F18 - F17		8	PVC	198	-	23	0	0	5	28
H	University Avenue	H36 - H35	10	12	VCP	474		23	0	0	5	28
L	Aster Way	L33 - L32		8	VCP	91	Hole at 10.2ft	13	0	15		28
L	Jasmine Way	L40 - L42		8	VCP	346	Broken pipe soil visible at 184ft	8	0	20		28
L	Camellia Drive	L45 - L25		8	VCP	202		23	0	0	5	28
M	O'Connor Street	M13 - M12	12	14	VCP	276	Broken at 193	13	0	15		28
O	Woodland Avenue	O29 - O28		8	VCP	143	Surcharged MH with substantial crud on water	16	0	12		28
O	Mission Drive	O50 - O49		8	VCP	172	Joint Offset Large at 170 ft	28	0	0		28
D	Manhattan Avenue	D76 - D19		12	PVC	99	-	27	0	0		27
H	Camphor Way	H45 - H9		8	PVC	222	Broken at 103ft, 106ft, 167ft	27	0	0		27
L	Daphne Way	L34 - L26		8	VCP	287	Hole at 263.3ft	7	0	15	5	27
L	Gardenia Court	L61 - L5		8	VCP	152	Broken at 98.8	7	0	20		27
M	Clarke Avenue	M14A - M5		8	VCP	75	New Line Segment. Broken at 70.2ft	7	0	20		27
D	Euclid Avenue	D22 - D21	10	12	HDPE	149	Grease/surcharged. Requires heavy cleaning.	0	0	26		26
F	Weeks Street	F22 - F12		8	VCP	54	This pipe line was F17A - F12	26	0	0		26
H	Schembri Lane	H46 - H52		8	VCP	361	Broken at 344.2ft	11	0	15		26
I	Myrtle Street	I28 - I21		8	VCP	315	This pipe line was I23A - I21	26	0	0		26
J	Garden Street	J6 - J5		8	VCP	558	Crack at 404ft	11	0	0	15	26
L	Verbina Drive	L14 - L13		8	VCP	302		26	0	0		26
L	Verbina Drive	L15 - L14		8	VCP	310		26	0	0		26
L	Jasmine Way	L44 - L45		8	PVC	238		26	0	0		26
O	West Bayshore Road	O8 - O59		8	VCP	103	-	26	0	0		26
C	O'Connor Street	C39 - C37		8	VCP	164	Proteus. This is the second inspection. First	9	0	16		25
I	Pulgas Avenue	I16 - I6		8	PVC	493	-	20	0	0	5	25
I	Brentwood Court	I19 - I18		8	PVC	239	-	20	0	0	5	25
K	Camellia Drive	K30 - K31		8	PVC	108	-	20	0	0	5	25
L	Verbina Drive	L18 - L17		8	VCP	331	Broken at 135ft	10	0	15		25
L	Daphne Way	L39 - L40		8	VCP	346	Broken at 296.7ft	10	0	15		25
O	Mission Drive	O46 - O45		8	VCP	213	broken at 3.7ft, joint separated medium along the pipe	25	0	0		25
O	Cooley Avenue	O51 - O51A		8	VCP	234	10% grease build up	20	0	0	5	25

Table 2
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
Priority List Sorted by Diameter, Pipelines for Structural Upgrades - Areas 1, 3, 4

Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Structural Total Score	Score for Master Plan Capacity (+ Zero*Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
I	Beech Street	I3 - T19	24	26	PVC	188	30	0	0	5	35
I	Beech Street	I7 - I6	20	22	CP	259	26	0	0	20	46
A	Bay Road	A5 - A8	18	20	PE	124	80	0	0	10	90
A	Bay Road	A10 - A15	18	20	ACP	299	61	0	0	20	81
A	Bay Road	A15 - A16	18	20	ACP	435	50	0	0	25	75
A	Bay Road	A16 - A21	18	20	ACP	296	44	0	0	5	49
A	Bay Road	A9 - A10	18	20	ACP	181	28	0	0	15	43
D	Donohoe Street	D2 - D1	18	20	VCP	53	34	0	0		34
H	Green Street	H75 - H6	18	20	PE	259	29	0	0		29
D	Donohoe Street	D3 - D3A	16	18	VCP	11	34	0	0	5	39
D	Donohoe Street	D3A - D2	16	18	VCP	355	34	0	0		34
A	Bay Road	A22 - A29	18	18	ACP	369	30	0	0		30
A	Bay Road	A2 - A5	15	16	Unknown	244	70	0	0	25	95
I	Pulgas Avenue	I15 - I14	15	16	PVC	386	50	0	0	25	75
A	Bay Road	A1 - A2	15	16	Unknown	80	50	0	10	0	60
A	Bay Road	B2 - A2	15	16	PE	181	50	0	0	10	60
K/L	Larkspur Drive	L21 - K28	14	16	PVC	68	40	0	0	20	60
I	Pulgas Avenue	I13 - I12	15	16	PVC	320	30	0	0	5	35
H	Clarke Avenue	H14 - H13	12	14	VCP	446	66	0	0	25	91
H	Clarke Avenue	H12 - H11	12	14	VCP	333	70	0	0	15	85
H	Clarke Avenue	H64 - H71	12	14	VCP	99	42	0	24	15	81
H	Clarke Avenue	H13 - H12	12	14	VCP	108	54	0	0	10	64
H	Runnymede Street	H17 - H76	12	14	VCP	397	17	0	20	5	42
L	Gardenia Way	L2 - L1	12	14	PVC	179	24	0	15		39
H	Runnymede Street	H57 - H16	12	14	VCP	48	20	0	15		35
H	Clarke Avenue	H11 - H64	12	14	VCP	198	34	0	0		34
H	Runnymede Street	H76 - H57	12	14	VCP	73	19	0	15		34
M	O'Connor Street	M42 - M13	12	14	VCP	111	34	0	0		34
L	Gardenia Way	L3 - L2	12	14	PVC	83	30	0	0		30
M	O'Connor Street	M13 - M12	12	14	VCP	276	13	0	15		28
H	Runnymede Street	H35 - H34	10	12	VCP	322	62	0	8	30	100
D	Hwy 101	D10 - D3	10	12	Not Known	489	54	0	20	10	84
M/I	Pulgas Avenue	I43 - I15		12	PVC	60	35	0	0	30	65
O/N	Highway 101	O3 - N8		12	Unknown	205	44	0	8	10	62
D	West Bayshore Road	D21 - D19	10	12	HDPE	391	40	0	20		60
H	Runnymede Street	H34 - H17	10	12	VCP	269	34	0	16	10	60
C	Menalto Avenue	C2 - C1	10	12	Unknown	204	38	0	16	5	59
D	Manhattan Avenue	D19 - D10	10	12	PVC	48	30	0	0	20	50
M/I	Pulgas Avenue	M2 - I43		12	PVC	42	25	0	0	25	50
D	Euclid Avenue	D23 - D22	10	12	PE	73	30	0	8	10	48
D	Donohoe Street	D4 - D3	10	12	VCP	296	34	0	0		34
D	Euclid Avenue	D24 - D23	10	12	PE	350	20	0	8		28
H	University Avenue	H36 - H35	10	12	VCP	474	23	0	0	5	28
D	Manhattan Avenue	D76 - D19		12	PVC	99	27	0	0		27
D	Euclid Avenue	D22 - D21	10	12	HDPE	149	0	0	26		26
C	Menalto Avenue	C4 - C3	8	10	PE	436	66	0	10	15	91
C	Menalto Avenue	C6 - C5	8	10	PE	87	42	0	20	10	72
C	Menalto Avenue	C7 - C6	8	10	PE	448	20	0	12	25	57
C	Menalto Avenue	C2A - C2	8	10	VCP	28	34	0	20		54
D	O'Connor Street	D25 - D24	8	10	VCP	301	36	0	16		52
I	Myrtle Street	I21 - I13	8	10	VCP	600	47	0	0	5	52
O	West Bayshore Road	O9 - O8	8	10	VCP	140	36	0	0	5	41
C	Woodland Avenue	C48 - C11	8	10	Unknown	179	23	0	16		39
C	Menalto Avenue	C5 - C4	8	10	Unknown	328	29	0	10		39
C	Menalto Avenue	C10 - C8	8	10	PE	387	23	0	10	5	38
D	Woodland Avenue	D35 - D34	8	10	VCP	178	38	0	0		38
C	Menalto Avenue	C8 - C7	8	10	PE	401	20	0	16		36
O	West Bayshore Road	O4 - O3		8	VCP	277	86	0	0	25	111

Table 2
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
Priority List Sorted by Diameter, Pipelines for Structural Upgrades - Areas 1, 3, 4

Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Structural Total Score	Score for Master Plan Capacity (+ Zero*Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
J	Pulgas Avenue	J7 - J6		8	VCP	441	73	0	10	25	108
A	Demeter Street	A13 - A12		8	Unknown	412	70	0	20	15	105
J	Garden Street	J9 - J9A		8	VCP	365	51	0	30	20	101
A	Pulgas Avenue	A18 - A16		8	VCP	442	70	0	10	20	100
K	Larkspur Drive	K19 - K18		8	CP	272	58	0	30	10	98
A	Gonzaga Street	A3 - A2		8	VCP	287	46	0	30	20	96
J	Garden Street	J10 - J9		8	VCP	300	70	0	10	15	95
K	Larkspur Drive	K18 - K17		8	CP	269	80	0	15		95
A	Illinois Street	A6 - A5		8	VCP	287	49	0	30	15	94
K	Daisy Lane	K21 - K3		8	CP	246	53	0	30	10	93
A	Illinois Street	A7 - A6		8	VCP	306	46	0	30	15	91
K	Wisteria Drive	K13 - K12		8	VCP	362	56	0	20	15	91
C	Elliot Drive	C41 - C40		8	VCP	191	70	0	20		90
C	Elliot Drive	C42 - C41		8	VCP	300	70	0	20		90
F	Weeks Street	F23 - F8		8	VCP	327	70	0	0	20	90
C	Elliot Drive	C40 - C36		8	VCP	257	67	0	20		87
A	Tara Street	A27 - A26		8	VCP	311	35	0	30	20	85
C	Hwy 101	C21 - C19		8	VCP	284	55	0	30		85
L	Wisteria Drive	L29 - L28		8	VCP	366	35	0	30	20	85
K	Larkspur Drive	K16 - K4		8	CP	274	53	0	15	15	83
O	Woodland Avenue	O23 - O22		8	VCP	470	62	0	20		82
I	Beech Street	I20 - I9		8	VCP	278	40	0	20	20	80
D	Donohoe Street	D9 - D8		8	VCP	496	70	0	8		78
D	Donohoe Street	D8 - D7		8	VCP	158	37	0	30	10	77
A	Demeter Street	A12 - A11		8	VCP	485	55	0	0	20	75
D	West Bayshore Road	D7 - D6		8	VCP	398	60	0	0	15	75
F	Weeks Street	F11 - F10		8	VCP	420	70	0	0	5	75
F	Weeks Street	F12 - F11		8	VCP	355	70	0	0	5	75
F	Weeks Street	F19 - F20		8	VCP	216	70	0	0	5	75
J	Garden Street	J8 - J6		8	VCP	442	70	0	0	5	75
C	Menalto Avenue	C43 - C8		8	VCP	101	58	0	16		74
G	Runnymede Street	G7 - G6		8	PVC	295	48	0	0	25	73
K	Camellia Drive	K35 - K34		8	VCP	280	42	0	10	20	72
C	Ralmar Avenue	C15 - C14		8	VCP	565	50	0	20		70
C	Oak Court	C47 - C46		8	VCP	309	70	0	0		70
D	West Bayshore Road	D51 - D7		8	VCP	458	45	0	20	5	70
F	Pulgas Avenue	F14 - F8		8	PVC	463	50	0	0	20	70
O	Woodland Avenue	O20 - O19		8	VCP	116	50	0	20		70
H	Donohoe Street	H21A - H55		8	VCP	157	48	0	0	20	68
K	Camellia Drive	K36 - K35		8	VCP	282	38	0	20	10	68
C	O'Connor Street	C35 - C7		8	Unknown	403	50	0	12	5	67
F	Weeks Street	F8 - F8A		8	VCP	281	46	0	0	20	66
O	Woodland Avenue	O21 - O19		8	VCP	394	46	0	20		66
K	Azalia Drive	K9 - K8		8	VCP	356	25	0	40		65
H	Clarke Avenue	H24 - H20		8	VCP	333	14	0	30	20	64
K	Wisteria Drive	K11 - K5		8	VCP	370	34	0	20	10	64
C	Hwy 101	C20 - C19		8	VCP	199	42	0	20		62
D	Green Street	D68 - D67		8	VCP	139	50	0	12		62
I	Myrtle Street	I23 - I28		8	VCP	166	32	0	30		62
L	Gaillardia Way	L11 - L10		8	VCP	360	22	0	30	10	62
G	Runnymede Street	G4 - G3		8	PVC	213	50	0	0	10	60
J	Garden Street	J5C - T21		8	PVC	62	40	0	0	20	60
K	Daisy Lane	K22 - K21		8	CP	256	60	0	0		60
K	Camellia Drive	K33 - K32		8	VCP	131	40	0	0	20	60
L	Wisteria Drive	L26 - L25		8	VCP	216	16	0	24	20	60
L	Jasmine Way	L43 - L44		8	PVC	334	60	0	0		60
O	Cooley Avenue	O51A - O13		8	VCP	236	50	0	0	10	60
C	Green Street	C23 - C3		8	VCP	400	34	0	20	5	59

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Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Structural Total Score	Score for Master Plan Capacity (+ Zero*Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
G	Runnymede Street	G14 - G17		8	VCP	151	14	0	20	25	59
O	West Bayshore Road	O5 - O4		8	Unknown	399	44	0	0	15	59
C	Oak Court	C44 - C10		8	VCP	155	42	0	16		58
C	Oak Court	C46 - C45		8	VCP	256	58	0	0		58
D	O'Connor Street	D26 - D25		8	VCP	157	38	0	20		58
D	East Bayshore Road	D65 - D64		8	VCP	448	38	0	20		58
D	Oakwood Dive	D71 - D52		8	VCP	130	46	0	12		58
O	Capitol Avenue	O16 - O15		8	VCP	235	42	0	15		57
C/D	Donohoe Street	C26 - D9		8	VCP	436	36	0	20		56
D	French Court	D40 - D37		8	VCP	194	25	0	30		55
F	Weeks Street	F20 - F17		8	VCP	253	55	0	0		55
G	Runnymede Street	G6 - G4		8	PVC	388	50	0	0	5	55
K	Larkspur Drive	K17 - K16		8	CP	267	55	0	0		55
C	Poplar Avenue	C13 - C12		8	Unknown	481	34	0	20		54
D	O'Connor Street	D29 - D28		8	VCP	465	46	0	8		54
D	Oak Court	D37 - D36		8	VCP	368	54	0	0		54
D	East O'Keefe Street	D43 - D41		8	VCP	517	46	0	8		54
D	Woodland Avenue	D56 - D35		8	VCP	286	42	0	12		54
G	Buchanan Court	G10 - G9		8	CP	271	24	0	30		54
H	Donohoe Street	H21 - H56		8	VCP	151	54	0	0		54
O	Woodland Avenue	O29 - O30		8	VCP	220	42	0	12		54
C	Oak Court	C45 - C44		8	VCP	166	43	0	10		53
O	Woodland Avenue	O22 - O21		8	VCP	348	33	0	20		53
G	Mandela Court	G15 - G14		8	PVC	215	42	0	0	10	52
D	East O'Keefe Street	D47 - D22		8	VCP	299	41	0	5	5	51
O	Woodland Avenue	O28 - O26		8	VCP	434	41	0	10		51
A	Demeter Street	A14 - A13		8	Unknown	288	50	0	0		50
A	Pulgas Avenue	A20 - A19		8	VCP	340	20	0	30		50
C	Addison Avenue	C18 - C17		8	VCP	370	34	0	16		50
D	O'Connor Street	D41 - D24		8	VCP	191	50	0	0		50
D	Addison Avenue	D55 - D54		8	VCP	252	34	0	16		50
F	Weeks Street	F10 - F9		8	VCP	463	45	0	0	5	50
F	Clarke Avenue	F15 - F11		8	VCP	301	50	0	0		50
H	Donohoe Street	H23 - H22		8	VCP	405	50	0	0		50
K/L	Gardenia Way	K31 - L1		8	PVC	148	30	0	0	20	50
L	Verbina Drive	L17 - L16		8	VCP	236	50	0	0		50
L	Daphine Way	L35 - L34		8	VCP	250	50	0	0		50
L	Azalia Drive	L47 - L4		8	VCP	88	20	0	30		50
O	Clarke Avenue	O26 - O25		8	VCP	333	50	0	0		50
O	Newell Road	O35 - O34		8	ACP	316	50	0	0		50
O	Scotfield Street	O52 - O51		8	VCP	213	50	0	0		50
O	Woodland Avenue	O55 - O54		8	VCP	399	42	0	8		50
G	Buchanan Court	G9 - G6		8	CP	291	14	0	30	5	49
J	Garden Street	J9A - J8		8	VCP	35	19	0	30		49
O	West Bayshore Road	O59 - O7		8	VCP	182	9	0	30	10	49
D	Green Street	D69 - D67		8	VCP	259	40	0	8		48
F	Weeks Street	F9 - F23		8	VCP	111	43	0	0	5	48
O	Newell Road	O31 - O30		8	VCP	90	18	0	30		48
O	Woodland Avenue	O33 - O32		8	VCP	263	26	0	12	10	48
C	Palmar Avenue	C25 - C23		8	VCP	303	42	0	0	5	47
D	Glen Way	D67 - D63		8	VCP	294	17	0	30		47
O	Cooley Avenue	O58 - O57		8	VCP	403	17	0	30		47
C	Addison Avenue	C17 - C16		8	VCP	333	38	0	8		46
C	Hwy 101	C19 - C2		8	VCP	264	26	0	20		46
G	Pulgas Avenue	G13 - G3		8	PVC	453	46	0	0		46
K/L	Azalia Drive	L10 - K27		8	VCP	275	11	0	20	15	46
O	Cooley Avenue	O57 - O51		8	VCP	365	46	0	0		46
C/D	O'Connor Street	D29 - C37		8	Unknown	130	27	0	8	10	45

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D	Oak Court	D36 - D35		8	VCP	251	29	0	16		45
D	East O'Keefe Street	D48 - D47		8	VCP	401	28	0	12	5	45
C	East Bayshore	C14 - C12		8	PVC	282	44	0	0		44
C	Woodland Avenue	C51 - C50		8	Unknown	556	32	0	12		44
D	East Bayshore Road	D64 - D63		8	VCP	471	19	0	20	5	44
G	Veronica Court	G18 - G17		8	PVC	291	39	0	0	5	44
I	Terra Villa Avenue	I17 - I7		8	VCP	526	34	0	0	10	44
L	Azalia Drive	L10 - L9		8	VCP	180	44	0	0		44
A	Pulgas Avenue	A17 - A31		8	VCP	241	43	0	0		43
D	West Bayshore Road	D53 - D52		8	VCP	248	38	0	0	5	43
K	Azalia Drive	K7 - K6		8	VCP	362	23	0	0	20	43
O	Mission Drive	O41 - O40		8	Unknown	45	27	0	16		43
O	Scofield Street	O54 - O52		8	VCP	380	13	0	30		43
D	O'Connor Street	D27 - D26		8	VCP	392	34	0	8		42
F	Weeks Street	F7 - T25		8	VCP	477	32	0	0	10	42
H	Donohoe Street	H56 - H21A		8	VCP	157	42	0	0		42
I	Brentwood Court	I18 - I8		8	PVC	237	32	0	0	10	42
K	Hibiscus Court	K24 - K21		8	CP	149	42	0	0		42
L	Abelia Way	L58 - L57		8	VCP	295	22	0	20		42
C	Woodland Avenue	C49 - C48		8	Unknown	248	29	0	12		41
C	Woodland Avenue	C50 - C49		8	Unknown	361	29	0	12		41
D	O'Connor Street	D28 - D27		8	VCP	81	28	0	8	5	41
H	Cooley Avenue	H32 - H17		8	VCP	550	41	0	0		41
C	East Bayshore	C16 - C14		8	PVC	273	40	0	0		40
G	Runnymede Street	G8 - G7		8	PVC	327	35	0	0	5	40
O	Newell Road	O34 - O10		8	ACP	268	40	0	0		40
A	Pulgas Avenue	A31 - A16		8	PVC	177	34	0	0	5	39
D	Oak Court	D38 - D37		8	VCP	238	9	0	30		39
D	Oak Court	D39 - D37		8	Unknown	84	9	0	30		39
G	Buchanan Court	G11 - G10		8	CP	266	19	0	20		39
L	Verbina Drive	L13 - L9		8	VCP	311	24	0	15		39
L	Verbina Drive	L16 - L15		8	VCP	311	24	0	15		39
L	Aster Way	L31 - L30		8	VCP	179	9	0	30		39
O	Woodland Avenue	O32 - O31		8	VCP	258	9	0	30		39
H	University Avenue	H37A - H36		8	VCP	149	38	0	0		38
H	Sacramento Street	H41 - H40		8	VCP	150	38	0	0		38
H	Weeks Street	H42 - H37		8	VCP	388	38	0	0		38
H	Donohoe Street	H55 - H54		8	PVC	144	38	0	0		38
K	Sage Street	K20 - K19		8	CP	135	8	0	30		38
L	Camellia Drive	L20 - L16		8	VCP	101	38	0	0		38
L	Daphne Way	L37 - L36		8	VCP	312	38	0	0		38
L	Camellia Drive	L54 - L53		8	VCP	369	8	0	30		38
M	O'Connor Street	M43 - M42		8	VCP	104	38	0	0		38
O	Circle Drive	O53 - O52		8	VCP	188	38	0	0		38
O	Woodland Avenue	O56 - O55		8	VCP	377	38	0	0		38
H/E	Euclid Avenue	H38 - E42		8	VCP	519	17	0	20		37
K	Camellia Drive	K34 - K33		8	VCP	278	32	0	0	5	37
G	Runnymede Street	G19 - T23		8	VCP	263	36	0	0		36
H	Schembri Lane	H29 - H12		8	VCP	551	16	0	20		36
L	Daphne Court	L62 - L34		8	VCP	147	36	0	0		36
L	Camellia Drive	L46 - L45		8	VCP	136	35	0	0		35
L	Daphne Way	L36 - L35		8	VCP	278	24	0	10		34
D	O'Connor Street	D42 - D41		8	VCP	100	34	0	0		34
D	East O'Keefe Street	D44 - D43		8	VCP	113	34	0	0		34
D	East O'Keefe Street	D50 - D49		8	VCP	422	34	0	0		34
D	West Bayshore Road	D54 - D53		8	VCP	75	34	0	0		34
D	Hwy 101	D6 - D5		8	Unknown	246	34	0	0		34
H	Runnymede Street	H38 - H47		8	VCP	205	34	0	0		34

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H	Weeks Street	H43 - H42		8	VCP	346	34	0	0		34
H	Runnymede Street	H47 - H35		8	VCP	192	29	0	0	5	34
L	Verbina Drive	L19 - L18		8	VCP	333	34	0	0		34
L	Wisteria Drive	L28 - L27		8	VCP	363	34	0	0		34
L	Daphine Way	L37 - L38		8	VCP	212	24	0	10		34
A	Pulgas Avenue	A19 - A18		8	VCP	214	33	0	0		33
H	Donohoe Street	H22 - H21		8	VCP	216	13	0	20		33
C	O'Connor Street	C37 - C36		8	Unknown	153	15	0	12	5	32
H	Schembri Lane	H30 - H46		8	VCP	135	32	0	0		32
L	Camellia Drive	L53 - L52	6	8	VCP	218	32	0	0		32
L	Camellia Court	L56 - L54		8	VCP	327	32	0	0		32
H	Clarke Avenue	H31 - H14		8	VCP	404	15	0	16		31
K	Daisy Lane	K23 - K22		8	Unknown	100	23	0	8		31
K	Azalia Drive	K26 - K6		8	VCP	294	11	0	20		31
A	Tara Street	A24 - A23		8	VCP	240	10	0	20		30
C	Green Street	C24 - C23		8	VCP	151	10	0	20		30
C	East O'Keefe Street	C30 - C27		8	VCP	163	30	0	0		30
C	East O'Keefe Street	C32 - C30		8	VCP	147	30	0	0		30
C	East O'Keefe Street	C34 - C32		8	VCP	82	30	0	0		30
C	O'Connor Street	C36 - C35		8	Unknown	92	18	0	12		30
F	Weeks Street	F17 - F22		8	VCP	56	30	0	0		30
L	Gaillardia Way	L12 - L11		8	VCP	93	30	0	0		30
G	Ruth Ct	G12 - G4		8	PVC	273	29	0	0		29
H	University Avenue	H37 - H37A		8	VCP	221	9	0	20		29
H	Sacramento Street	H40 - H36		8	VCP	496	29	0	0		29
H	Donohoe Street	H54 - H20		8	VCP	153	19	0	10		29
L	Wisteria Drive	L22 - L3		8	VCP	366	14	0	15		29
L	Abelia Way	L59 - L58		8	VCP	250	9	0	20		29
O	West Bayshore Road	O10 - O9		8	VCP	157	29	0	0		29
F	Paul Robeson Court	F18 - F17		8	PVC	198	23	0	0	5	28
L	Aster Way	L33 - L32		8	VCP	91	13	0	15		28
L	Jasmine Way	L40 - L42		8	VCP	346	8	0	20		28
L	Camellia Drive	L45 - L25		8	VCP	202	23	0	0	5	28
O	Woodland Avenue	O29 - O28		8	VCP	143	16	0	12		28
O	Mission Drive	O50 - O49		8	VCP	172	28	0	0		28
H	Camphor Way	H45 - H9		8	PVC	222	27	0	0		27
L	Daphine Way	L34 - L26		8	VCP	287	7	0	15	5	27
L	Gardenia Court	L61 - L5		8	VCP	152	7	0	20		27
M	Clarke Avenue	M14A - M5		8	VCP	75	7	0	20		27
F	Weeks Street	F22 - F12		8	VCP	54	26	0	0		26
H	Schembri Lane	H46 - H52		8	VCP	361	11	0	15		26
I	Myrtle Street	I28 - I21		8	VCP	315	26	0	0		26
J	Garden Street	J6 - J5		8	VCP	558	11	0	0	15	26
L	Verbina Drive	L14 - L13		8	VCP	302	26	0	0		26
L	Verbina Drive	L15 - L14		8	VCP	310	26	0	0		26
L	Jasmine Way	L44 - L45		8	PVC	238	26	0	0		26
O	West Bayshore Road	O8 - O59		8	VCP	103	26	0	0		26
C	O'Connor Street	C39 - C37		8	VCP	164	9	0	16		25
I	Pulgas Avenue	I16 - I6		8	PVC	493	20	0	0	5	25
I	Brentwood Court	I19 - I18		8	PVC	239	20	0	0	5	25
K	Camellia Drive	K30 - K31		8	PVC	108	20	0	0	5	25
L	Verbina Drive	L18 - L17		8	VCP	331	10	0	15		25
L	Daphine Way	L39 - L40		8	VCP	346	10	0	15		25
O	Mission Drive	O46 - O45		8	VCP	213	25	0	0		25
O	Cooley Avenue	O51 - O51A		8	VCP	234	20	0	0	5	25

Table 3
East Palo Alto Sanitary District
Areas 1, 3, and 4 Proposed Pipeline Replacements
Opinion of Probable Construction Cost - Structural Upgrades

ITEM NO.	ITEM	EST. QUANTITY	UNIT OF MEASURE	UNIT PRICE	TOTAL
1	Mobilization	1	LS	\$1,928,000	\$1,928,000
2	Traffic Control	1	LS	\$814,000	\$814,000
3	Project Signage	1	LS	\$2,000	\$2,000
4	City Permits	1	LS	\$3,000	\$3,000
5	Construction Staking	1	LS	\$133,000	\$133,000
6	Maintain Access for Services and Residents	1	LS	\$30,000	\$30,000
7	Safety, Sheeting, Shoring, and Bracing	1	LS	\$20,000	\$20,000
8	Dust Control	1	LS	\$20,000	\$20,000
9	Bypassing	287	EA	\$2,000	\$574,000
10	8-inch PVC	62,825	LF	\$375	\$23,559,390
11	10-inch PVC	3,513	LF	\$410	\$1,440,195
12	12-inch PVC	3,471	LF	\$435	\$1,509,885
13	14/15-inch PVE or HDPE	2,352	LF	\$500	\$1,175,880
14	16/18-inch PVC	2,014	LF	\$525	\$1,057,306
15	20/21-inch PVC	1,648	LF	\$600	\$988,628
16	22/24-inch PVC or HDPE	259	LF	\$720	\$186,458
17	26/27-inch PVE or HDPE	188	LF	\$795	\$149,746
18	Drain Rock	2,000	TONS	\$50	\$100,000
19	Utility Crossings	1,500	EA	\$250	\$375,000
20	Reconnect Laterals	800	EA	\$850	\$680,000
21	Dewatering	1	LS	\$8,500	\$8,500
22	CCTV Inspections	76,269	LF	\$2.00	\$152,539
23	Cold-Patch Asphalt for Temporary Surfacing	60	TON	\$500	\$30,000
24	Asphalt Repaving	305,078	SF	\$5	\$1,525,389
25	Slurry Seal	2,593,161	SF	\$0.70	\$1,815,212
26	Striping and Pavement Markings	2,593,161	SF	\$0.85	\$2,204,187
Subtotal - Opinion of Probable Construction Costs					\$40,482,315
27	Contingency	%	20%	\$40,482,315	\$8,096,463
Engineering and Administrative					Opinion of Construction Subtotal
					\$48,578,778
	Design	%	2%		\$971,576
	Environmental/Permitting	%	2%		\$971,576
	Construction Management	%	3%		\$1,457,363
	Administration	%	2%		\$971,576
OPINION OF TOTAL PROBABLE PROJECT COST:					\$52,950,868

Table 4
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
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Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Notes	Structural Total Score	Score for Master Plan Capacity (+ 5" Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
A	Bay Road	A5 - A8	18	20	PE	124	Sagging pipe 50%-100%	80	90	0	10	180
A	Bay Road	A10 - A15	18	20	ACP	299	Surface Damage Roughness Increased	61	90	0	20	171
A	Bay Road	A2 - A5	15	18	Unknown	244	Sagging pipe 75%	70	75	0	25	170
A	Bay Road	A15 - A16	18	20	ACP	435	Surface damage roughness. Sagging 75%	50	90	0	25	165
I	Beech Street	I3 - T19	24	26	PVC	188	Upgrade to 24" per MP	30	120	0	5	155
H	Clarke Avenue	H14 - H13	12	14	VCP	446	Broken at 425.5ft, 429ft with multiple cracks	66	60	0	25	151
H	Runnymede Street	H35 - H34	10	12	VCP	322	Pipeline has a lot of sagging. The high water level	62	50	8	30	150
I	Pulgas Avenue	I15 - I14	15	18	PVC	386	Sagging pipe 85%	50	75	0	25	150
I	Beech Street	I7 - I6	20	22	CP	259	Surface damage roughness. Sagging 75%	26	100	0	20	146
H	Clarke Avenue	H12 - H11	12	14	VCP	333	Broken at 111ft, 231ft, 331.9ft	70	60	0	15	145
H	Clarke Avenue	H64 - H71	12	14	VCP	99	H60-H3. Line has about 30%-40% grease that is	42	60	24	15	141
A / T	Bay Trail	A29 - T29	24	26	ACP	345	-	20	120	0	-	140
A	Bay Road	A16 - A21	18	20	ACP	296	-	44	90	0	5	139
A	Bay Road	A1 - A2	15	18	Unknown	80	MH A1 does not exist. Inspection started from B2-	50	75	10	0	135
A	Bay Road	B2 - A2	15	18	PE	181	A1 is buried, operator surveyed B2-A2 for total of	50	75	0	10	135
D	Hwy 101	D10 - D3	10	12	Not Known	489	MSA/80% grease in line. No heavy cleaning	54	50	20	10	134
A	Bay Road	A9 - A10	18	20	ACP	181	Broken at 172ft	28	90	0	15	133
C	Menaltoa Avenue	C4 - C3	8	12	PE	436	This is the second inspection after heavy cleaning.	66	40	10	15	131
K/L	Larkspur Drive	L21 - K28	14	16	PVC	68	Sagging pipe 75%	40	70	0	20	130
D	Donohoe Street	D2 - D1	18	20	VCP	53	-	34	90	0	-	124
H	Clarke Avenue	H13 - H12	12	14	VCP	108	Broken at 18ft with 55% sagging pipe	54	60	0	10	124
I	Beech Street	I31 - I4	24	26	PVC	300	This pipe line was ISA-14	0	120	0	-	120
I	Beech Street	I4 - I3	24	26	PVC	243	-	0	120	0	-	120
I	Beech Street	I5 - I31	24	26	PVC	154	This pipe line was IS-15A	0	120	0	-	120
I	Beech Street	I6 - I5	24	26	PVC	411	-	0	120	0	-	120
D	Donohoe Street	D3 - D3A	16	18	VCP	11	Surface Damage Roughness Increased	34	80	0	5	119
H	Green Street	H75 - H6	18	20	PE	259	H7C - H6	29	90	0	-	119
I	Beech Street	I9 - I8	20	22	CP	155	-	18	100	0	-	118
D	Donohoe Street	D3A - D2	16	18	VCP	355	Broken at 4.2ft	34	80	0	-	114
C	Menaltoa Avenue	C6 - C5	8	12	PE	87	Pipeline has lots of debris	42	40	20	10	112
O	West Bayshore Road	O4 - O3	8	8	VCP	277	85% sag, 10% grease build up	86	0	0	25	111
D	West Bayshore Road	D21 - D19	10	12	HDPE	391	Heavy Cleaning/high flow. Night work. HDPE. This	40	50	20	-	110
H	Runnymede Street	H34 - H17	10	12	VCP	269	Submerged pipe with a line down alignment.	34	50	16	10	110
H	Green Street	H7 - H75	18	20	PE	91	H7B - H7C	20	90	0	-	110
H	Green Street	H73 - H74	18	20	PE	104	H8 - H7	20	90	0	-	110
H	Green Street	H74 - H8	18	20	PE	112	H7 - H7A	20	90	0	-	110
H	Green Street	H8 - H7	18	20	PE	235	H7A - H7B	20	90	0	-	110
I	Beech Street	I11 - I10	18	20	CP	380	-	20	90	0	-	110
I	Pulgas Avenue	I13 - I12	15	18	PVC	320	-	30	75	0	5	110
C	Menaltoa Avenue	C2 - C1	10	12	Unknown	204	MSA/Grease. Heavy grease blockage at 136.9	38	50	16	5	109
J	Pulgas Avenue	J7 - J6	8	8	VCP	441	Pipe is broken at 124ft and 197ft	73	0	10	25	108
A	Demeter Street	A13 - A12	8	8	Unknown	412	Broken pipe at 129 ft and 139 ft with sags.	70	0	20	15	105
H	Runnymede Street	H17 - H76	12	14	VCP	397	H17 - H16. Broken pipe at 43.2ft, 144.9ft, 150ft	17	60	20	5	102
J	Garden Street	J9 - J9A	8	8	VCP	365	Pipe is broken at 8ft, 32ft, 81ft, 223ft & 318ft.	51	0	30	20	101
A	Pulgas Avenue	A18 - A16	8	8	VCP	442	Broken pipe at 44ft.	70	0	10	20	100
D	Manhattan Avenue	D19 - D10	10	12	PVC	48	Line is sagging. Camera was under water for most	30	50	0	20	100
H/E	Green Street	E1 - H9	16	18	PE	270	-	20	80	0	-	100
H	Green Street	H9 - H73	16	18	PE	246	H9 - H8	20	80	0	-	100
I	Beech Street	I10 - I9	18	20	CP	221	-	10	90	0	-	100
I	Beech Street	I8 - I7	20	22	CP	238	-	0	100	0	-	100
L	Gardenia Way	L2 - L1	12	14	PVC	179	Joint Separated Large at 104.9ft, infiltration from	24	60	15	-	99
D	Euclid Avenue	D23 - D22	10	12	PE	73	Pipeline had heavy grease	30	50	8	10	98
K	Larkspur Drive	K19 - K18	8	8	CP	272	Pipe is broken and soil is visible at 144ft, and	58	0	30	10	98
C	Menaltoa Avenue	C7 - C6	8	12	PE	448	Pipeline has lots of debris	20	40	12	25	97
A	Gonzaga Street	A3 - A2	8	8	VCP	287	Broken pipe at 53, 141, 157, and 159 ft. Also, an	46	0	30	20	96
H	Runnymede Street	H57 - H16	12	14	VCP	48	H16A - H16B. Broken at 20.9ft	20	60	15	-	95
J	Garden Street	J10 - J9	8	8	VCP	300	Pipe is broken at 228ft and 293ft	70	0	10	15	95
K	Larkspur Drive	K18 - K17	8	8	CP	269	SMW spots on the line.	80	0	15	-	95
A	Illinois Street	A6 - A5	8	8	VCP	287	Broken pipe at 15 and 75ft. Also, an offset joint at	49	0	30	15	94
C	Menaltoa Avenue	C2A - C2	8	12	VCP	28	New line segment - Broken at 19.9 ft	34	40	20	-	94
H	Clarke Avenue	H11 - H64	12	14	VCP	198	H11 - H60. Broken at 73.2ft	34	60	0	-	94
H	Runnymede Street	H76 - H57	12	14	VCP	73	H16 - H16A. Broken at 63.2ft	19	60	15	-	94
M	O'Connor Street	M42 - M13	12	14	VCP	110	Surface Damage and cracks	34	60	0	-	94
K	Daisy Lane	K21 - K3	8	8	CP	246	Pipe has few locations with chunks of pipe missing	53	0	30	10	93
A	Bay Road	A23 - A22	18	20	ACP	14	-	2	90	0	-	92
D	O'Connor Street	D25 - D24	8	12	VCP	301	large offset between joints and unable to video it	36	40	16	-	92
I	Myrtle Street	I21 - I13	8	12	VCP	600	As I24 should be between them as shown in the	47	40	0	5	92
A	Illinois Street	A7 - A6	8	8	VCP	306	Broken pipe at 82 and 230 ft.	46	0	30	15	91

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K	Wisteria Drive	K13 - K12		8	VCP	362	Pipe is broken at 9ft and 91ft.	56	0	20	15	91
A	Bay Road	A21 - A23	18	20	ACP	168	New Line Segment. MH Name changed from A22	0	90	0		90
A	Bay Road	A21 - A23	18	20		155	A21 does not connect to A23 but it connects to	0	90	0		90
A	Bay Road	A8 - A9	18	20	PVC	61		0	90	0		90
C	Elliot Drive	C41 - C40		8	VCP	191	substantial breakage throughout their entire	70	0	20		90
C	Elliot Drive	C42 - C41		8	VCP	300	substantial breakage throughout their entire	70	0	20		90
F	Weeks Street	F23 - F8		8	VCP	327	This pipeline was F9A-F8	70	0	0	20	90
H/I	Beech Street	H2 - I11	18	20		37	Paved over	0	90	0		90
H	Beech Street	H3 - H2	18	20		31	Paved over	0	90	0		90
H	Clarke Avenue	H4 - H3	18	20		7	Paved over	0	90	0		90
H	Clarke Avenue	H5 - H4	18	20		259	Paved over	0	90	0		90
H	Green Street	H6 - H5	18	20		9	Paved over	0	90	0		90
L	Gardenia Way	L3 - L2	12	14	PVC	78		30	60	0		90
M	O'Connor Street	M13 - M12	12	14	VCP	276	Broken at 193	13	60	15		88
C	Elliot Drive	C40 - C36		8	VCP	257	MSA/Root tap barrel. Reverse inspection	67	0	20		87
A	Tara Street	A27 - A26		8	VCP	311	Broken pipe and soil is visible at 254.10 ft at 11	35	0	30	20	85
C	Hwy 101	C21 - C19		8	VCP	284	MSA/Collapsed pipe. Reverse inspection	55	0	30		85
L	Wisteria Drive	L29 - L28		8	VCP	366	Pipe is broken at 348ft, and soil is visible	35	0	30	20	85
D	Donohoe Street	D4 - D3	10	12	VCP	296	Fracture Multiple at 131ft	34	50	0		84
K	Larkspur Drive	K16 - K4		8	CP	274	SMW spots on the line	53	0	15	15	83
O	Woodland Avenue	O23 - O22		8	VCP	470	MSA/TBI. Reverse Inspection complete. Pipe had	62	0	20		82
O	West Bayshore Road	O9 - O8	8	12	VCP	140	15% grease buildup at 96ft	36	40	0	5	81
I	Beech Street	I20 - I9		8	VCP	278	Pipe has MSA at 267 due to hard	40	0	20	20	80
C	Woodland Avenue	C48 - C11	8	12	Unknown	179	MSA/ Reverse Inspection complete	23	40	16		79
C	Menalto Avenue	C5 - C4	8	12	Unknown	328	Pipeline has lots of debris	29	40	10		79
C	Menalto Avenue	C10 - C8	8	12	PE	387	Modified line segment. Could not find C9	23	40	10	5	78
D	Euclid Avenue	D24 - D23	10	12	PE	350	Pipeline had heavy grease	20	50	8		78
D	Woodland Avenue	D35 - D34	8	12	VCP	178	Fracture Multiple at 73ft	38	40	0		78
D	Donohoe Street	D9 - D8		8	VCP	496	Broken at 21ft, multiple cracks	70	0	8		78
H	Runnymede Street	H15 - H62	12	14	Other	201	H15 - H58	18	60	0		78
H	University Avenue	H36 - H35	10	12	VCP	474		23	50	0	5	78
D	Donohoe Street	D8 - D7		8	VCP	158	broken pipe at 100.08 ft from upstream	37	0	30	10	77
C	Menalto Avenue	C8 - C7	8	12	PE	401	broken pipe located 100.08 ft from upstream	20	40	16		76
D	Euclid Avenue	D22 - D21	10	12	HDPE	149	Grease/surcharged. Requires heavy cleaning.	0	50	26		76
A	Demeter Street	A12 - A11		8	VCP	485	Sagging pipeline 55%	55	0	0	20	75
D	West Bayshore Road	D7 - D6		8	VCP	398	5% grease build up and 90% sag	60	0	0	15	75
F	Weeks Street	F11 - F10		8	VCP	420	Broken at 176ft, 242ft	70	0	0	5	75
F	Weeks Street	F12 - F11		8	VCP	533	Broken at 414ft, multiple fractures and cracks	70	0	0	5	75
F	Weeks Street	F19 - F20		8	VCP	216	MH was F19 - F21	70	0	0	5	75
I	Pulgas Avenue	I12 - I6	15	18	PVC	338	-	0	75	0		75
I	Pulgas Avenue	I14 - I13	15	18	PVC	444	-	0	75	0		75
J	Garden Street	J8 - J6		8	VCP	442	Broken at 33ft, 81.4ft, 164ft, 223ft, 286ft, 318ft	70	0	0	5	75
K	Larkspur Drive	K28 - K4	15	18	PVC	242	-	0	75	0		75
L	Larkspur Drive	L1 - L21	14	16	PVC	223	-	0	70	0	5	75
C	Menalto Avenue	C43 - C8		8	VCP	101	Proteus. MSA/TBI. Heavy cleaning was performed.	58	0	16		74
M	East Bayshore Road	M41 - M42	12	14	PVC	104		14	60	0		74
D	Euclid Avenue	D33 - D24	10	12	PE	450	-	23	50	0		73
G	Runnymede Street	G7 - G6		8	PVC	295	-	48	0	0	25	73
K	Camellia Drive	K35 - K34		8	VCP	280	Broken pipe at 9ft.	42	0	10	20	72
C	Ralmar Avenue	C15 - C14		8	VCP	565	MSA/JAM. Camera is unable to get past this point.	50	0	20		70
C	Oak Court	C47 - C46		8	VCP	309	This is the second inspection after heavy cleaning	70	0	0		70
D	West Bayshore Road	D51 - D7		8	VCP	458	MSA/JOL. Camera cannot move any further.	45	0	20	5	70
F	Pulgas Avenue	F14 - F8		8	PVC	463	Sagging pipe up to 75%	50	0	0	20	70
L	Wisteria Drive	L25 - L24	10	12	PVC	342		20	50	0		70
L	Azalia Drive	L49 - L48	10	12	VCP	233		20	50	0		70
O	Woodland Avenue	O20 - O19		8		116	After removing roots and debris from the exit of	50	0	20		70
H	Runnymede Street	H62 - H14	12	12	Other	230	H58 -H14	9	60	0		69
M	O'Connor Street	M12 - M15	12	12	VCP	337		9	60	0		69
H	Donohoe Street	H21A - H55		8	VCP	157	H21A - H21. Broken at 61ft, 101ft	48	0	0	20	68
K	Camellia Drive	K36 - K35		8	VCP	282	Broken pipe at 264ft.	38	0	20	10	68
C	O'Connor Street	C35 - C7		8	Unknown	403	Proteus. This is the second inspection. First	50	0	12	5	67
F	Weeks Street	F8 - F8A		8	VCP	281	New Line segment	46	0	0	20	66
O	Woodland Avenue	O21 - O19		8	VCP	394	MSA/Reverse Inspection performed.	46	0	20		66
M/I	Pulgas Avenue	I43 - I15		12	PVC	60	I15A - I15. Sagging pipe 90%	35	0	0	30	65
K	Azalia Drive	K9 - K8		12	VCP	356	Pipe is broken at 158ft, 183ft, 296ft. At 104ft a	25	0	40		65
H	Runnymede Street	H16 - H60	12	14	PVC	346	H16B - H16C	4	60	0		64
H	Clarke Avenue	H24 - H20		8	VCP	333	MSA/Broken pipe. The USMH is a cleanout so no	14	0	30	20	64
K	Wisteria Drive	K11 - K5		8	VCP	370	MSA/Joint offset. Reverse inspection performed	34	0	20	10	64

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C	Hwy 101	C20 - C19		8	VCP	199	Broken at 5.1 ft, surface damage at 30 ft	42	0	20		62
D	Green Street	D68 - D67		8	VCP	139	Surface Damage at 94ft, pipeline has multiple	50	0	12		62
I	Myrtle Street	I23 - I28		8	VCP	166	Broken at 59ft. This pipe line was I23 - I23A	32	0	30		62
L	Gaillardia Way	L11 - L10		8	VCP	360	Pipe is broken at 240ft and soil is visible	22	0	30	10	62
L	Camellia Drive	L53 - L52	6	8	VCP	218	MSA/Reverse Inspection Complete	32	30	0		62
O/N	Highway 101	O3 - N8		12	Unknown	205	O3 was surcharged.	44	0	8	10	62
C	East Bayshore	C12 - C1	8	12	PVC	265		20	40			60
G	Runnymede Street	G4 - G3		8	PVC	213		50	0	0	10	60
H	Runnymede Street	H60 - H15	12	14	PVC	107	H16C - H15	0	60	0		60
J	Garden Street	J5C - T21		8	PVC	62	New Line Segment. Sagging pipe 75%	40	0	0	20	60
K	Daisy Lane	K22 - K21		8	CP	256	Surface Damage Missing Wall along the pipeline	60	0	0		60
K	Camellia Drive	K33 - K32		8	VCP	131	Sagging pipe 75%	40	0	0	20	60
L	Wisteria Drive	L26 - L25		8	VCP	216	Pipe has a lot of sagging, and an offset joint	16	0	24	20	60
L	Jasmine Way	L43 - L44		8	PVC	334	Joint Separated Large at 331.7ft	60	0	0		60
M	O'Connor Street	M15 - M5	12	14	VCP	264		0	60	0		60
M	East Bayshore Road	M38 - M39	12	14	PVC	158		0	60	0		60
M	East Bayshore Road	M39 - M40	12	14	PVC	158		0	60	0		60
M	East Bayshore Road	M40 - M41	12	14	PVC	263		0	60	0		60
O	Cooley Avenue	O51A - O13		8	VCP	236	5% grease build up, 60% sag	50	0	0	10	60
C	Green Street	C23 - C3		8	VCP	400	Pipe has grease and is under water for about 360'	34	0	20	5	59
G	Runnymede Street	G14 - G17		8	VCP	151	Pipe is broken at 17ft.	14	0	20	25	59
O	West Bayshore Road	O5 - O4		8	Unknown	399	Noteable sagging	44	0	0	15	59
C	Oak Court	C44 - C10		8	VCP	155	MSA/LR. Camera cannot move past bend.	42	0	16		58
C	Oak Court	C46 - C45		8	VCP	256	Broken at 153ft with multiple cracks	58	0	0		58
D	O'Connor Street	D26 - D25		8	VCP	157	broken pipe due to tree roots between 23-26 ft.	38	0	20		58
D	East Bayshore Road	D5 - D4	10	12	Unknown	94		8	50	0		58
D	East Bayshore Road	D65 - D64		8	VCP	448	Pipe is damaged. MSA/Crawler cannot move any	38	0	20		58
D	Oakwood Dive	D71 - D52		8	VCP	130	Proteus. This is the second inspection. First	46	0	12		58
O	Capitol Avenue	O16 - O15		8	VCP	235	Broken at 131.9 ft	42	0	15		57
C/D	Donohoe Street	C26 - D9		8	VCP	436	This is the second inspection after heavy cleaning	36	0	20		56
D	French Court	D40 - D37		8	VCP	204	This is the second inspection after using a root	25	0	30		55
F	Weeks Street	F20 - F17		8	VCP	252	MH was F20 - F21	55	0	0		55
G	Runnymede Street	G6 - G4		8	PVC	388		50	0	0	5	55
K	Larkspur Drive	K17 - K16		8	CP	267	Surface Damage Missing Wall along the pipeline	55	0	0		55
C	Poplar Avenue	C13 - C12		8	Unknown	481	MSA/Lined pipe. Camera could not move any	34	0	20		54
D	O'Connor Street	D29 - D28		8	VCP	465	Clogged, extensive cleaning required	46	0	8		54
D	Oak Court	D37 - D36		8	VCP	368	MSA/Reverse inspection complete	54	0	0		54
D	East O'Keefe Street	D43 - D41		8	VCP	517	MSA/Broken. Reverse inspection complete. broken	46	0	8		54
D	Woodland Avenue	D56 - D35		8	VCP	286	Offset joint 4' from MH	42	0	12		54
G	Buchanan Court	G10 - G9		8	CP	271	Pipe is broken and soil is visible at 10 ft and 221 ft	24	0	30		54
H	Donohoe Street	H21 - H56		8	VCP	151	H22 - H55. Broken at 14ft and 110ft	54	0	0		54
O	Woodland Avenue	O29 - O30		8	VCP	220	Surcharged MH with substantial crud on water	42	0	12		54
C	Oak Court	C45 - C44		8	VCP	166	Broken pipe at 6ft, 41ft, 24ft	43	0	10		53
O	Woodland Avenue	O22 - O21		8	VCP	348	broken at 81.02 ft, 311 ft, and 320 ft.	33	0	20		53
G	Mandela Court	G15 - G14		8	PVC	215		42	0	0	10	52
L	Azalia Drive	L50 - L49	10	12	VCP	224		2	50	0		52
D	East O'Keefe Street	D47 - D22		8	VCP	299	Grease build up at 269 ft	41	0	5	5	51
O	Woodland Avenue	O28 - O26		8	VCP	434	MSA/Reverse inspection complete. Proteus.	41	0	10		51
A	Demeter Street	A14 - A13		8	Unknown	288		50	0	0		50
A	Pulgas Avenue	A20 - A19		8	VCP	340	Broken pipe at 225ft, and separated joints at	20	0	30		50
C	Addison Avenue	C18 - C17		8	VCP	370	MSA/Proteus could not crawl any farther due to	34	0	16		50
D	O'Connor Street	D41 - D24		8	VCP	191	Broken at 51 ft and 122 ft	50	0	0		50
D	Addison Avenue	D55 - D54		8	VCP	252	MSA/Reverse inspection complete. broken at	34	0	16		50
F	Weeks Street	F10 - F9		8	VCP	463	Broken at 32.2ft & 247ft & 297ft & 314ft	45	0	0	5	50
F	Clarke Avenue	F15 - F11		8	VCP	301	Multiple cracks along the pipe	50	0	0		50
H	Donohoe Street	H23 - H22		8	VCP	405	H23 - H56. Broken at 133.9ft, 316.9ft	50	0	0		50
K/L	Gardenia Way	K31 - L1		8	PVC	148		30	0	0	20	50
L	Verbina Drive	L17 - L16		8	VCP	236		50	0	0		50
L	Wisteria Drive	L23 - L3	10	12	PVC	351		0	50	0		50
L	Wisteria Drive	L24 - L23	10	12	PVC	386		0	50	0		50
L	Daphine Way	L35 - L34		8	VCP	250		50	0	0		50
L	Azalia Drive	L47 - L4		8	VCP	88	Heavy grease was found on a sewer line cleaning	20	0	30		50
O	Clarke Avenue	O26 - O25		8	VCP	333	Broken at 125ft	50	0	0		50
O	Newell Road	O35 - O34		8	ACP	316		50	0	0		50
O	Scofield Street	O52 - O51		8	VCP	213		50	0	0		50
O	Woodland Avenue	O55 - O54		8	VCP	399	MSA/Reverse Inspection Complete.	42	0	8		50
M/I	Pulgas Avenue	M2 - I43		12	PVC	42	M2 - I15A. Sagging pipeline 100%	25	0	0	25	50
G	Buchanan Court	G9 - G6		8	CP	291	Pipe is broken and soil is visible at 84 ft	14	0	30	5	49

Table 4
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
Priority List of Pipelines for Structural and Capacity Upgrades - Areas 1, 3, 4

Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Notes	Structural Total Score	Score for Master Plan Capacity (+ 5 *Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
J	Garden Street	J9A - J8		8	VCP	35	Pipe is broken at 115ft, 176ft, and 359ft.	19	0	30		49
O	West Bayshore Road	O59 - O7		8	VCP	182	Soil is visible at 167ft, 50% sag	9	0	30	10	49
D	Green Street	D69 - D67		8	VCP	259	MSA/TBI. No reverse inspection performed	40	0	8		48
F	Weeks Street	F9 - F23		8	VCP	111	This pipeline was F9-F9A	43	0	0	5	48
O	Newell Road	O31 - O30		8	VCP	45	Visible soil	18	0	30		48
O	Woodland Avenue	O33 - O32		8	VCP	263	Visible soil	26	0	12	10	48
C	Palmar Avenue	C25 - C23		8	VCP	303	Medium Joint Offset	42	0	0	5	47
D	Glen Way	D67 - D63		8	VCP	294	Pipe broken at 231.1 ft	17	0	30		47
O	Cooley Avenue	O58 - O57		8	VCP	403	MSA/Tap break in intruding. No reverse	17	0	30		47
C	Addison Avenue	C17 - C16		8	VCP	333	There's a JAM 3' from the DSMH. Camera is	38	0	8		46
C	Hwy 101	C19 - C2		8	VCP	264	MSA/OBM. Reverse Inspection performed.	26	0	20		46
C	Menalto Avenue	C3 - C2A	8	12	PVC	370	New line segment	6	40	0		46
G	Pulgas Avenue	G13 - G3		8	PVC	453	Proteous	46	0	0		46
K/L	Azalia Drive	L10 - K27		8	VCP	275	Broken connection of lateral at 28ft.	11	0	20	15	46
L	Camellia Drive	L52 - L50	8	12	VCP	224		6	40	0		46
O	Cooley Avenue	O57 - O51		8	VCP	365	Cracks and surface damage along the pipe	46	0	0		46
C/D	O'Connor Street	D29 - C37		8	Unknown	130	Proteus	27	0	8	10	45
D	Oak Court	D36 - D35		8	VCP	251	MSA/Broken. Reverse inspection attempted.	29	0	16		45
D	East O'Keefe Street	D48 - D47		8	VCP	401	5% Grease build up at 335ft	28	0	12	5	45
C	East Bayshore	C14 - C12		8	PVC	282		44	0	0		44
C	Woodland Avenue	C51 - C50		8	Unknown	556	Proteous. MSA/Reverse inspection complete. Pipe	32	0	12		44
D	East Bayshore Road	D64 - D63		8	VCP	471	MSA/Reverse inspection complete	19	0	20	5	44
G	Veronica Court	G18 - G17		8	PVC	291	-	39	0	0	5	44
I	Terra Villa Avenue	I17 - I7		8	VCP	526	Broken at 520ft	34	0	0	10	44
L	Azalia Drive	L10 - L9		8	VCP	180		44	0	0		44
O	West Bayshore Road	O7 - O6	8	12	Unknown	427	-	4	40	0		44
A	Pulgas Avenue	A17 - A31		8	VCP	242	This pipe line was A17 - A17A	43	0	0		43
D	West Bayshore Road	D53 - D52		8	VCP	248	Joint Separated Medium	38	0	0	5	43
K	Azalia Drive	K7 - K6		8	VCP	362	-	23	0	0	20	43
O	Mission Drive	O41 - O40		8	Unknown	45	Proteous. seemed to be different material	27	0	16		43
O	Scofield Street	O54 - O52		8	VCP	380	Pipe is broken at 26.08 feet.	13	0	30		43
D	O'Connor Street	D27 - D26		8	VCP	392	Clogged, extensive cleaning required	34	0	8		42
F	Weeks Street	F7 - T25		8	VCP	477	Multiple cracks along the pipe	32	0	0	10	42
H	Donohoe Street	H56 - H21A		8	VCP	157	H55 - H21A. Broken at 1.5ft	42	0	0		42
I	Brentwood Court	I18 - I8		8	PVC	237	-	32	0	0	10	42
K	Hibiscus Court	K24 - K21		8	CP	149	Surface Damage Missing Wall	42	0	0		42
L	Abelia Way	L58 - L57		8	VCP	295	Broken at 13ft, 50ft, 87ft, 236ft	22	0	20		42
L	Gardenia Way	L7 - L6	6	8	VCP	261		12	30	0		42
L	Azalia Drive	L9 - L4	6	8	VCP	162		12	30	0		42
C	Woodland Avenue	C49 - C48		8	Unknown	248	Proteous	29	0	12		41
C	Woodland Avenue	C50 - C49		8	Unknown	361	Proteous	29	0	12		41
D	O'Connor Street	D28 - D27		8	VCP	81	Clogged, extensive cleaning required	28	0	8	5	41
H	Cooley Avenue	H32 - H17		8	VCP	550	Broken Soil Visible at 111ft. Broken at 213.8ft,	41	0	0		41
C	East Bayshore	C16 - C14		8	PVC	273		40	0	0		40
C	Menalto Avenue	C3 - C2	8	12		398	Line has an uncharted manhole, See C2A	0	40	0		40
D	Euclid Avenue	D34 - D33	8	12	PE	293		0	40	0		40
D	Oakwood Dive	D66 - D65	8	12	Unknown	413		0	40	0		40
G	Runnymede Street	G8 - G7		8	PVC	327	-	35	0	0	5	40
O	Newell Road	O34 - O10		8	ACP	268		40	0	0		40
A	Pulgas Avenue	A31 - A16		8	PVC	177	This pipe line was A17A - A16	34	0	0	5	39
D	Oak Court	D38 - D37		8	VCP	238	MSA/Broken. No reverse inspection can be	9	0	30		39
D	Oak Court	D39 - D37		8	Unknown	84	New line segment. Proteus was used to inspect	9	0	30		39
G	Buchanan Court	G11 - G10		8	CP	266	Pipe is broken at 33 ft and 256 ft.	19	0	20		39
L	Verbina Drive	L13 - L9		8	VCP	311	Broken at 60.2ft	24	0	15		39
L	Verbina Drive	L16 - L15		8	VCP	311	Broken at 169ft	24	0	15		39
L	Aster Way	L31 - L30		8	VCP	179	Pipe is broken at 59ft, and soil is visible	9	0	30		39
O	Woodland Avenue	O32 - O31		8	VCP	258	Broken at 3.2 ft and 226 ft	9	0	30		39
H	University Avenue	H37A - H36		8	VCP	149	New Line Segment. Broken 144.3ft, 145ft	38	0	0		38
H	Sacramento Street	H41 - H40		8	VCP	150	Broken at 38ft, 42ft	38	0	0		38
H	Weeks Street	H42 - H37		8	VCP	388	Broken at 304ft	38	0	0		38
H	Donohoe Street	H55 - H54		8	PVC	144	H21 - H54. Broken at 51ft	38	0	0		38
K	Sage Street	K20 - K19		8	CP	135	Surface Damage Missing Wall at 96.4ft	8	0	30		38
L	Camellia Drive	L20 - L16		8	VCP	101	Broken at 6.6ft	38	0	0		38
L	Daphne Way	L37 - L36		8	VCP	312	Hole at 252ft, 93.5ft	38	0	0		38
L	Camellia Drive	L54 - L53		8	VCP	369	Pipe is broken and soil is visible at 3.02ft.	8	0	30		38
M	O'Connor Street	M43 - M42		8	VCP	104	Broken at 109ft	38	0	0		38
O	Circle Drive	O53 - O52		8	VCP	222	Broken at 204ft	38	0	0		38
O	Woodland Avenue	O56 - O55		8	VCP	377	-	38	0	0		38

Table 4
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Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Notes	Structural Total Score	Score for Master Plan Capacity (+ 5 "Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
H/E	Euclid Avenue	H38 - E42		8	VCP	519	Broken pipe Soil Visible at 146ft, 197ft	17	0	20		37
K	Camellia Drive	K34 - K33		8	VCP	278	-	32	0	0	5	37
G	Runnymede Street	G19 -T23		8	VCP	263	This pipeline was G2A-T23	36	0	0		36
H	Schembri Lane	H29 - H12		8	VCP	551	Broken pipe at 257ft, 349ft	16	0	20		36
L	Daphine Court	L62 - L34		8	VCP	147		36	0	0		36
L	Camellia Drive	L46 - L45		8	VCP	136	Broken pipe Soil Visible at 135.9ft	35	0	0		35
D	O'Connor Street	D42 - D41		8	VCP	100	Crack Multiple at 7.6ft & 69.2ft	34	0	0		34
D	East O'Keefe Street	D44 - D43		8	VCP	75	Broken at 72.2ft	34	0	0		34
D	East O'Keefe Street	D50 - D49		8	VCP	422	Broken at 418.9 ft	34	0	0		34
D	West Bayshore Road	D54 - D53		8	VCP	75	-	34	0	0		34
D	Hwy 101	D6 - D5		8	Unknown	246	Joint Offset Large at 112ft	34	0	0		34
H	Runnymede Street	H38 - H47		8	VCP	205	Broken at 80.3ft	34	0	0		34
H	Weeks Street	H43 - H42		8	VCP	346	Broken at 4.7ft, 303.7ft	34	0	0		34
H	Runnymede Street	H47 - H35		8	VCP	192	Fracture at 8.6 with cracks along the pipeline	29	0	0	5	34
K	Lotus Way / Camellia Drive	K37 - K32		8	VCP	350	Joint Offset Large at 342.9ft	24	0	10		34
L	Verbina Drive	L19 - L18		8	VCP	333	Broken at 330ft	34	0	0		34
L	Wisteria Drive	L28 - L27		8	VCP	363	Hole at 310.2ft	34	0	0		34
L	Daphine Way	L36 - L35		8	VCP	278	Hole at 38.4ft	24	0	10		34
L	Daphine Way	L37 - L38		8	VCP	212	Proteous. Hole at 140.7ft	24	0	10		34
A	Pulgas Avenue	A19 - A18		8	VCP	214	Fracture multiple along the pipeline	33	0	0		33
A	Gonzaga Street	A4 - A3		8	VCP	312	Broken at 205.9ft, multiple fractures	18	0	15		33
H	Donohoe Street	H22 - H21		8	VCP	216	H56 - H22. Broken pipe at 3.9ft, 137.4ft	13	0	20		33
C	O'Connor Street	C37 - C36		8	Unknown	153	Proteus. This is the second inspection. First	15	0	12	5	32
H	Schembri Lane	H30 - H46		8	VCP	135		32	0	0		32
L	Camellia Court	L56 - L54		8	VCP	327		32	0	0		32
H	Clarke Avenue	H31 - H14		8	VCP	404	MSA/JOL. No reverse inspection performed	15	0	16		31
K	Daisy Lane	K23 - K22		8	Unknown	100	Material change at 23ft and needs a mini camera	23	0	8		31
K	Azalia Drive	K26 - K6		8	VCP	294	Pipe is broken at 286ft	11	0	20		31
A	Bay Road	A22 - A29		15	ACP	369	-	30	0	0		30
A	Tara Street	A24 - A23		8	VCP	240	Broken pipe at 228 ft.	10	0	20		30
C	Green Street	C24 - C23		8	VCP	151	MSA/JOL. No reverse inspection performed	10	0	20		30
C	East O'Keefe Street	C30 - C27		8	VCP	163		30	0	0		30
C	East O'Keefe Street	C32 - C30		8	VCP	147		30	0	0		30
C	East O'Keefe Street	C34 - C32		8	VCP	82	-	30	0	0		30
C	O'Connor Street	C36 - C35		8	Unknown	92	Proteus. This is the second inspection. First	18	0	12		30
F	Weeks Street	F17 - F22		8	VCP	56	This pipe line was F17 - F17A	30	0	0		30
L	Gaillardia Way	L12 - L11		8	VCP	93		30	0	0		30
G	Ruth Ct	G12 - G4		8	PVC	273	Broken at 47ft, 170ft	29	0	0		29
H	University Avenue	H37 - H37A		8	VCP	221	New Line Segment. Broken at 162ft	9	0	20		29
H	Sacramento Street	H40 - H36		8	VCP	496	MSA/JOL. Reverse Inspection performed.	29	0	0		29
H	Donohoe Street	H54 - H20		8	VCP	153	Fracture at 14.7ft	19	0	10		29
L	Wisteria Drive	L22 - L3		8	VCP	366	Broken at 48.6ft	14	0	15		29
L	Abelia Way	L59 - L58		8	VCP	250	Broken at 220ft, 245ft	9	0	20		29
O	West Bayshore Road	O10 - O9		8	VCP	157		29	0	0		29
F	Paul Robeson Court	F18 - F17		8	PVC	198	-	23	0	0	5	28
L	Aster Way	L33 - L32		8	VCP	91	Hole at 10.2ft	13	0	15		28
L	Jasmine Way	L40 - L42		8	VCP	346	Broken pipe soil visible at 184ft	8	0	20		28
L	Camellia Drive	L45 - L25		8	VCP	202		23	0	0	5	28
O	Woodland Avenue	O29 - O28		8	VCP	143	Surcharged MH with substantial crud on water	16	0	12		28
O	Mission Drive	O50 - O49		8	VCP	172	Joint Offset Large at 170 ft	28	0	0		28
D	Manhattan Avenue	D76 - D19		12	PVC	55	-	27	0	0		27
H	Camphor Way	H45 - H9		8	PVC	222	Broken at 103ft, 106ft, 167ft	27	0	0		27
L	Daphine Way	L34 - L26		8	VCP	287	Hole at 263.3ft	7	0	15	5	27
L	Gardenia Court	L61 - L5		8	VCP	152	Broken at 98.8	7	0	20		27
M	Clarke Avenue	M14A - M5		8	VCP	75	New Line Segment. Broken at 70.2ft	7	0	20		27
D	East O'Keefe Street	D49 - D48		8	VCP	400	Broken at 264 ft, 90% blockage by a root ball at	11	0	15		26
F	Weeks Street	F22 - F12		8	VCP	54	This pipe line was F17A - F12	26	0	0		26
H	Schembri Lane	H46 - H52		8	VCP	361	Broken at 344.2ft	11	0	15		26
I	Myrtle Street	I28 - I21		8	VCP	315	This pipe line was I23A - I21	26	0	0		26
J	Garden Street	J6 - J5		8	VCP	558	Crack at 404ft	11	0	0	15	26
L	Verbina Drive	L14 - L13		8	VCP	302		26	0	0		26
L	Verbina Drive	L15 - L14		8	VCP	310		26	0	0		26
L	Jasmine Way	L44 - L45		8	PVC	238		26	0	0		26
O	Woodland Avenue	O19 - O17		8	VCP	86	Broken at 83 ft	16	0	10		26
O	Mission Drive	O48 - O47		8	VCP	122	Surface Damage at 119ft	14	0	12		26
O	West Bayshore Road	O8 - O59		8	VCP	103	-	26	0	0		26
C	O'Connor Street	C39 - C37		8	VCP	164	Proteus. This is the second inspection. First	9	0	16		25
I	Pulgas Avenue	I16 - I6		8	PVC	493	-	20	0	0	5	25

Table 4
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CCTV Survey Results Evaluation
Priority List of Pipelines for Structural and Capacity Upgrades - Areas 1, 3, 4

Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Notes	Structual Total Score	Score for Master Plan Capacity (+ 5 *Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
I	Brentwood Court	I19 - I18		8	PVC	239	-	20	0	0	5	25
K	Camellia Drive	K30 - K31		8	PVC	108	-	20	0	0	5	25
L	Verbina Drive	L18 - L17		8	VCP	331	Broken at 135ft	10	0	15		25
L	Daphine Way	L39 - L40		8	VCP	346	Broken at 296.7ft	10	0	15		25
O	Mission Drive	O46 - O45		8	VCP	213	Broken at 3.7ft, Joint Separated Medium along the	25	0	0		25
O	Cooley Avenue	O51 - O51A		8	VCP	234	10% grease build up	20	0	0	5	25

Table 5
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
Priority List Sorted by Diameter, Pipelines for Structural and Capacity Upgrades - Areas 1, 3, 4

Area	Location/ Street Name	PSR	Diameter	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Structural Total Score	Score for Master Plan Capacity (+ Zero*Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
A / T	Bay Trail	A29 - T29	18	24	26	ACP	345	20	120	0		140
I	Beech Street	I3 - T19	18	24	26	PVC	188	30	120	0	5	155
I	Beech Street	I31 - I4	18	24	26	PVC	300	0	120	0		120
I	Beech Street	I4 - I3	18	24	26	PVC	243	0	120	0		120
I	Beech Street	I5 - I31	18	24	26	PVC	154	0	120	0		120
I	Beech Street	I6 - I5	18	24	26	PVC	411	0	120	0		120
I	Beech Street	I7 - I6	15	20	22	CP	259	26	100	0	20	146
I	Beech Street	I8 - I7	15	20	22	CP	238	0	100	0		100
I	Beech Street	I9 - I8	15	20	22	CP	155	18	100	0		118
A	Bay Road	A10 - A15	15	18	20	ACP	299	61	90	0	20	171
A	Bay Road	A15 - A16	15	18	20	ACP	435	50	90	0	25	165
A	Bay Road	A16 - A21	15	18	20	ACP	296	44	90	0	5	139
A	Bay Road	A21 - A23	15	18	20	ACP	168	0	90	0		90
A	Bay Road	A21 - A23		18	20		155	0	90	0		90
A	Bay Road	A23 - A22	8	18	20	ACP	14	2	90	0		92
A	Bay Road	A5 - A8	12	18	20	PE	124	80	90	0	10	180
A	Bay Road	A8 - A9	12	18	20	PVC	61	0	90	0		90
A	Bay Road	A9 - A10	15	18	20	ACP	181	28	90	0	15	133
D	Donohoe Street	D2 - D1	10	18	20	VCP	53	34	90	0		124
H/I	Beech Street	H2 - I11	15	18	20		37	0	90	0		90
H	Beech Street	H3 - H2	15	18	20		31	0	90	0		90
H	Clarke Avenue	H4 - H3	15	18	20		7	0	90	0		90
H	Clarke Avenue	H5 - H4	15	18	20		259	0	90	0		90
H	Green Street	H6 - H5	12	18	20		9	0	90	0		90
H	Green Street	H7 - H75	12	18	20	PE	91	20	90	0		110
H	Green Street	H73 - H74	12	18	20	PE	104	20	90	0		110
H	Green Street	H74 - H8	12	18	20	PE	112	20	90	0		110
H	Green Street	H75 - H6	12	18	20	PE	259	29	90	0		119
H	Green Street	H8 - H7	12	18	20	PE	235	20	90	0		110
I	Beech Street	I10 - I9	15	18	20	CP	221	10	90	0		100
I	Beech Street	I11 - I10	15	18	20	CP	380	20	90	0		110
A	Bay Road	A1 - A2	12	15	18	Unknown	80	50	75	10	0	135
A	Bay Road	A2 - A5	12	15	18	Unknown	244	70	75	0	25	170
A	Bay Road	B2 - A2	12	15	18	PE	181	50	75	0	10	135
D	Donohoe Street	D3 - D3A	10	16	18	VCP	11	34	80	0	5	119
D	Donohoe Street	D3A - D2	10	16	18	VCP	355	34	80	0		114
H/E	Green Street	E1 - H9	12	16	18	PE	270	20	80	0		100
H	Green Street	H9 - H73	12	16	18	PE	246	20	80	0		100
I	Pulgas Avenue	I12 - I6	12	15	18	PVC	338	0	75	0		75
I	Pulgas Avenue	I13 - I12	12	15	18	PVC	320	30	75	0	5	110
I	Pulgas Avenue	I14 - I13	12	15	18	PVC	444	0	75	0		75
I	Pulgas Avenue	I15 - I14	12	15	18	PVC	386	50	75	0	25	150
K	Larkspur Drive	K28 - K4	10	15	18	PVC	242	0	75	0		75
L	Larkspur Drive	L1 - L21	12	14	16	PVC	223	0	70	0	5	75
K/L	Larkspur Drive	L21 - K28	10	14	16	PVC	68	40	70	0	20	130
A	Bay Road	A22 - A29	15		15	ACP	369	30	0	0		30
H	Clarke Avenue	H11 - H64	8	12	14	VCP	198	34	60	0		94
H	Clarke Avenue	H12 - H11	8	12	14	VCP	333	70	60	0	15	145
H	Clarke Avenue	H13 - H12	8	12	14	VCP	108	54	60	0	10	124
H	Clarke Avenue	H14 - H13	8	12	14	VCP	446	66	60	0	25	151
H	Runnymede Street	H15 - H62	8	12	14	Other	201	18	60	0		78
H	Runnymede Street	H16 - H60	8	12	14	PVC	346	4	60	0		64
H	Runnymede Street	H17 - H76	8	12	14	VCP	397	17	60	20	5	102
H	Runnymede Street	H57 - H16	8	12	14	VCP	48	20	60	15		95
H	Runnymede Street	H60 - H15	8	12	14	PVC	107	0	60	0		60
H	Clarke Avenue	H64 - H71	8	12	14	VCP	99	42	60	24	15	141
H	Runnymede Street	H76 - H57	8	12	14	VCP	73	19	60	15		94
L	Gardenia Way	L2 - L1	12	12	14	PVC	179	24	60	15		99
L	Gardenia Way	L3 - L2	12	12	14	PVC	78	30	60	0		90
M	O'Connor Street	M13 - M12	8	12	14	VCP	276	13	60	15		88
M	O'Connor Street	M15 - M5	8	12	14	VCP	264	0	60	0		60
M	East Bayshore Road	M38 - M39	6	12	14	PVC	158	0	60	0		60

Table 5
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
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Area	Location/ Street Name	PSR	Diameter	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Structural Total Score	Score for Master Plan Capacity (+ Zero*Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
M	East Bayshore Road	M39 - M40	6	12	14	PVC	158	0	60	0		60
M	East Bayshore Road	M40 - M41	6	12	14	PVC	263	0	60	0		60
M	East Bayshore Road	M41 - M42	6	12	14	PVC	104	14	60	0		74
M	O'Connor Street	M42 - M13	6	12	14	VCP	110	34	60	0		94
C	Menalto Avenue	C2 - C1	8	10	12	Unknown	204	38	50	16	5	109
D	Hwy 101	D10 - D3	10	10	12	Not Known	489	54	50	20	10	134
D	Manhattan Avenue	D19 - D10	10	10	12	PVC	48	30	50	0	20	100
D	West Bayshore Road	D21 - D19	8	10	12	HDPE	391	40	50	20		110
D	Euclid Avenue	D22 - D21	8	10	12	HDPE	149	0	50	26		76
D	Euclid Avenue	D23 - D22	8	10	12	PE	73	30	50	8	10	98
D	Euclid Avenue	D24 - D23	8	10	12	PE	350	20	50	8		78
D	Euclid Avenue	D33 - D24	8	10	12	PE	450	23	50	0		73
D	Donohoe Street	D4 - D3	8	10	12	VCP	296	34	50	0		84
D	East Bayshore Road	D5 - D4	8	10	12	Unknown	94	8	50	0		58
H	Runnymede Street	H34 - H17	6	10	12	VCP	269	34	50	16	10	110
H	Runnymede Street	H35 - H34	6	10	12	VCP	322	62	50	8	30	150
H	University Avenue	H36 - H35	6	10	12	VCP	474	23	50	0	5	78
H	Runnymede Street	H62 - H14	8	12	12	Other	230	9	60	0		69
M/I	Pulgas Avenue	I43 - I15	12		12	PVC	60	35	0	0	30	65
L	Wisteria Drive	L23 - L3	8	10	12	PVC	351	0	50	0		50
L	Wisteria Drive	L24 - L23	8	10	12	PVC	386	0	50	0		50
L	Wisteria Drive	L25 - L24	8	10	12	PVC	342	20	50	0		70
L	Azalia Drive	L49 - L48	8	10	12	VCP	233	20	50	0		70
L	Azalia Drive	L50 - L49	8	10	12	VCP	224	2	50	0		52
M	O'Connor Street	M12 - M15	8	12	12	VCP	337	9	60	0		69
M/I	Pulgas Avenue	M2 - I43	12		12	PVC	42	25	0	0	25	50
C	Menalto Avenue	C10 - C8	6	8	10	PE	387	23	40	10	5	78
C	East Bayshore	C12 - C1	6	8	10	PVC	265	20	40			60
C	Menalto Avenue	C2A - C2	6	8	10	VCP	28	34	40	20		94
C	Menalto Avenue	C3 - C2		8	10		398	0	40	0		40
C	Menalto Avenue	C3 - C2A	6	8	10	PVC	370	6	40	0		46
C	Menalto Avenue	C4 - C3	6	8	10	PE	436	66	40	10	15	131
C	Woodland Avenue	C48 - C11	6	8	10	Unknown	179	23	40	16		79
C	Menalto Avenue	C5 - C4	6	8	10	Unknown	328	29	40	10		79
C	Menalto Avenue	C6 - C5	6	8	10	PE	87	42	40	20	10	112
C	Menalto Avenue	C7 - C6	6	8	10	PE	448	20	40	12	25	97
C	Menalto Avenue	C8 - C7	6	8	10	PE	401	20	40	16		76
D	O'Connor Street	D25 - D24	6	8	10	VCP	301	36	40	16		92
D	Euclid Avenue	D34 - D33	8	8	10	PE	293	0	40	0		40
D	Woodland Avenue	D35 - D34	6	8	10	VCP	178	38	40	0		78
D	Oakwood Dive	D66 - D65	8	8	10	Unknown	413	0	40	0		40
D	Manhattan Avenue	D76 - D19	10		10	PVC	55	27	0	0		27
I	Myrtle Street	I21 - I13	6	8	10	VCP	600	47	40	0	5	92
L	Camellia Drive	L52 - L50	6	8	10	VCP	224	6	40	0		46
O/N	Highway 101	O3 - N8	10		10	Unknown	205	44	0	8	10	62
O	West Bayshore Road	O7 - O6	8	8	10	Unknown	427	4	40	0		44
O	West Bayshore Road	O9 - O8	8	8	10	VCP	140	36	40	0	5	81
A	Demeter Street	A12 - A11	6		8	VCP	485	55	0	0	20	75
A	Demeter Street	A13 - A12	6		8	Unknown	412	70	0	20	15	105
A	Demeter Street	A14 - A13	6		8	Unknown	288	50	0	0		50
A	Pulgas Avenue	A17 - A31	6		8	VCP	242	43	0	0		43
A	Pulgas Avenue	A18 - A16	6		8	VCP	442	70	0	10	20	100
A	Pulgas Avenue	A19 - A18	6		8	VCP	214	33	0	0		33
A	Pulgas Avenue	A20 - A19	6		8	VCP	340	20	0	30		50
A	Tara Street	A24 - A23	6		8	VCP	240	10	0	20		30
A	Tara Street	A27 - A26	6		8	VCP	311	35	0	30	20	85
A	Gonzaga Street	A3 - A2	6		8	VCP	287	46	0	30	20	96
A	Pulgas Avenue	A31 - A16	6		8	PVC	177	34	0	0	5	39
A	Gonzaga Street	A4 - A3	6		8	VCP	312	18	0	15		33
A	Illinois Street	A6 - A5	6		8	VCP	287	49	0	30	15	94
A	Illinois Street	A7 - A6	6		8	VCP	306	46	0	30	15	91
C	Poplar Avenue	C13 - C12	6		8	Unknown	481	34	0	20		54

Table 5
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Area	Location/ Street Name	PSR	Diameter	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Structural Total Score	Score for Master Plan Capacity (+ Zero*Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
C	East Bayshore	C14 - C12	6		8	PVC	282	44	0	0		44
C	Ralmar Avenue	C15 - C14	6		8	VCP	565	50	0	20		70
C	East Bayshore	C16 - C14	6		8	PVC	273	40	0	0		40
C	Addison Avenue	C17 - C16	6		8	VCP	333	38	0	8		46
C	Addison Avenue	C18 - C17	6		8	VCP	370	34	0	16		50
C	Hwy 101	C19 - C2	6		8	VCP	264	26	0	20		46
C	Hwy 101	C20 - C19	6		8	VCP	199	42	0	20		62
C	Hwy 101	C21 - C19	6		8	VCP	284	55	0	30		85
C	Green Street	C23 - C3	6		8	VCP	400	34	0	20	5	59
C	Green Street	C24 - C23	6		8	VCP	151	10	0	20		30
C	Palmar Avenue	C25 - C23	6		8	VCP	303	42	0	0	5	47
C/D	Donohoe Street	C26 - D9	6		8	VCP	436	36	0	20		56
C	East O'Keefe Street	C30 - C27	6		8	VCP	163	30	0	0		30
C	East O'Keefe Street	C32 - C30	6		8	VCP	147	30	0			30
C	East O'Keefe Street	C34 - C32	6		8	VCP	82	30	0	0		30
C	O'Connor Street	C35 - C7	6		8	Unknown	403	50	0	12	5	67
C	O'Connor Street	C36 - C35	6		8	Unknown	92	18	0	12		30
C	O'Connor Street	C37 - C36	6		8	Unknown	153	15	0	12	5	32
C	O'Connor Street	C39 - C37	6		8	VCP	164	9	0	16		25
C	Elliot Drive	C40 - C36	6		8	VCP	257	67	0	20		87
C	Elliot Drive	C41 - C40	6		8	VCP	191	70	0	20		90
C	Elliot Drive	C42 - C41	6		8	VCP	300	70	0	20		90
C	Menalto Avenue	C43 - C8	6		8	VCP	101	58	0	16		74
C	Oak Court	C44 - C10	6		8	VCP	155	42	0	16		58
C	Oak Court	C45 - C44	6		8	VCP	166	43	0	10		53
C	Oak Court	C46 - C45	6		8	VCP	256	58	0	0		58
C	Oak Court	C47 - C46	6		8	VCP	309	70	0	0		70
C	Woodland Avenue	C49 - C48	6		8	Unknown	248	29	0	12		41
C	Woodland Avenue	C50 - C49	6		8	Unknown	361	29	0	12		41
C	Woodland Avenue	C51 - C50	6		8	Unknown	556	32	0	12		44
D	O'Connor Street	D26 - D25	6		8	VCP	157	38	0	20		58
D	O'Connor Street	D27 - D26	6		8	VCP	392	34	0	8		42
D	O'Connor Street	D28 - D27	6		8	VCP	81	28	0	8	5	41
C/D	O'Connor Street	D29 - C37	6		8	Unknown	130	27	0	8	10	45
D	O'Connor Street	D29 - D28	6		8	VCP	465	46	0	8		54
D	Oak Court	D36 - D35	6		8	VCP	251	29	0	16		45
D	Oak Court	D37 - D36	6		8	VCP	368	54	0	0		54
D	Oak Court	D38 - D37	6		8	VCP	238	9	0	30		39
D	Oak Court	D39 - D37	6		8	Unknown	84	9	0	30		39
D	French Court	D40 - D37	6		8	VCP	204	25	0	30		55
D	O'Connor Street	D41 - D24	6		8	VCP	191	50	0	0		50
D	O'Connor Street	D42 - D41	6		8	VCP	100	34	0	0		34
D	East O'Keefe Street	D43 - D41	6		8	VCP	517	46	0	8		54
D	East O'Keefe Street	D44 - D43	6		8	VCP	75	34	0	0		34
D	East O'Keefe Street	D47 - D22	8		8	VCP	299	41	0	5	5	51
D	East O'Keefe Street	D48 - D47	6		8	VCP	401	28	0	12	5	45
D	East O'Keefe Street	D49 - D48	6		8	VCP	400	11	0	15		26
D	East O'Keefe Street	D50 - D49	6		8	VCP	422	34	0	0		34
D	West Bayshore Road	D51 - D7	6		8	VCP	458	45	0	20	5	70
D	West Bayshore Road	D53 - D52	6		8	VCP	248	38	0	0	5	43
D	West Bayshore Road	D54 - D53	6		8	VCP	75	34	0	0		34
D	Addison Avenue	D55 - D54	6		8	VCP	252	34	0	16		50
D	Woodland Avenue	D56 - D35	6		8	VCP	286	42	0	12		54
D	Hwy 101	D6 - D5	8		8	Unknown	246	34	0	0		34
D	East Bayshore Road	D64 - D63	6		8	VCP	471	19	0	20	5	44
D	East Bayshore Road	D65 - D64	6		8	VCP	448	38	0	20		58
D	Glen Way	D67 - D63	6		8	VCP	294	17	0	30		47
D	Green Street	D68 - D67	6		8	VCP	139	50	0	12		62
D	Green Street	D69 - D67	6		8	VCP	259	40	0	8		48
D	West Bayshore Road	D7 - D6	6		8	VCP	398	60	0	0	15	75
D	Oakwood Dive	D71 - D52	6		8	VCP	130	46	0	12		58
D	Donohoe Street	D8 - D7	6		8	VCP	158	37	0	30	10	77

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D	Donohoe Street	D9 - D8	6		8	VCP	496	70	0	8		78
F	Weeks Street	F10 - F9	6		8	VCP	463	45	0	0	5	50
F	Weeks Street	F11 - F10	6		8	VCP	420	70	0	0	5	75
F	Weeks Street	F12 - F11	6		8	VCP	533	70	0	0	5	75
F	Pulgas Avenue	F14 - F8	6		8	PVC	463	50	0	0	20	70
F	Clarke Avenue	F15 - F11	6		8	VCP	301	50	0	0		50
F	Weeks Street	F17 - F22	6		8	VCP	56	30	0	0		30
F	Paul Robeson Court	F18 - F17	6		8	PVC	198	23	0	0	5	28
F	Weeks Street	F19 - F20	6		8	VCP	216	70	0	0	5	75
F	Weeks Street	F20 - F17	6		8	VCP	252	55	0	0		55
F	Weeks Street	F22 - F12	6		8	VCP	54	26	0	0		26
F	Weeks Street	F23 - F8	6		8	VCP	327	70	0	0	20	90
F	Weeks Street	F7 - T25	6		8	VCP	477	32	0	0	10	42
F	Weeks Street	F8 - F8A	6		8	VCP	281	46	0	0	20	66
F	Weeks Street	F9 - F23	6		8	VCP	111	43	0	0	5	48
G	Buchanon Court	G10 - G9	6		8	CP	271	24	0	30		54
G	Buchanon Court	G11 - G10	6		8	CP	266	19	0	20		39
G	Ruth Ct	G12 - G4	6		8	PVC	273	29	0	0		29
G	Pulgas Avenue	G13 - G3	6		8	PVC	453	46	0	0		46
G	Runnymede Street	G14 - G17	6		8	VCP	151	14	0	20	25	59
G	Mandela Court	G15 - G14	8		8	PVC	215	42	0	0	10	52
G	Veronica Court	G18 - G17	6		8	PVC	291	39	0	0	5	44
G	Runnymede Street	G19 - T23	6		8	VCP	263	36	0	0		36
G	Runnymede Street	G4 - G3	6		8	PVC	213	50	0	0	10	60
G	Runnymede Street	G6 - G4	6		8	PVC	388	50	0	0	5	55
G	Runnymede Street	G7 - G6	6		8	PVC	295	48	0	0	25	73
G	Runnymede Street	G8 - G7	6		8	PVC	327	35	0	0	5	40
G	Buchanon Court	G9 - G6	6		8	CP	291	14	0	30	5	49
H	Donohoe Street	H21 - H56	6		8	VCP	151	54	0	0		54
H	Donohoe Street	H21A - H55	6		8	VCP	157	48	0	0	20	68
H	Donohoe Street	H22 - H21	6		8	VCP	216	13	0	20		33
H	Donohoe Street	H23 - H22	6		8	VCP	405	50	0	0		50
H	Clarke Avenue	H24 - H20	6		8	VCP	333	14	0	30	20	64
H	Schembri Lane	H29 - H12	6		8	VCP	551	16	0	20		36
H	Schembri Lane	H30 - H46	6		8	VCP	135	32	0	0		32
H	Clarke Avenue	H31 - H14	6		8	VCP	404	15	0	16		31
H	Cooley Avenue	H32 - H17	6		8	VCP	550	41	0	0		41
H	University Avenue	H37 - H37A	6		8	VCP	221	9	0	20		29
H	University Avenue	H37A - H36	6		8	VCP	149	38	0	0		38
H/E	Euclid Avenue	H38 - E42	6		8	VCP	519	17	0	20		37
H	Runnymede Street	H38 - H47	6		8	VCP	205	34	0	0		34
H	Sacramento Street	H40 - H36	6		8	VCP	496	29	0	0		29
H	Sacramento Street	H41 - H40	6		8	VCP	150	38	0	0		38
H	Weeks Street	H42 - H37	6		8	VCP	388	38	0	0		38
H	Weeks Street	H43 - H42	6		8	VCP	346	34	0	0		34
H	Camphor Way	H45 - H9	6		8	PVC	222	27	0	0		27
H	Schembri Lane	H46 - H52	6		8	VCP	361	11	0	15		26
H	Runnymede Street	H47 - H35	6		8	VCP	192	29	0	0	5	34
H	Donohoe Street	H54 - H20	6		8	VCP	153	19	0	10		29
H	Donohoe Street	H55 - H54	6		8	PVC	144	38	0	0		38
H	Donohoe Street	H56 - H21A	6		8	VCP	157	42	0	0		42
I	Pulgas Avenue	I16 - I6	8		8	PVC	493	20	0	0	5	25
I	Terra Villa Avenue	I17 - I7	6		8	VCP	526	34	0	0	10	44
I	Brentwood Court	I18 - I8	6		8	PVC	237	32	0	0	10	42
I	Brentwood Court	I19 - I18	6		8	PVC	239	20	0	0	5	25
I	Beech Street	I20 - I9	6		8	VCP	278	40	0	20	20	80
I	Myrtle Street	I23 - I28	6		8	VCP	166	32	0	30		62
I	Myrtle Street	I28 - I21	6		8	VCP	315	26	0	0		26
J	Garden Street	J10 - J9	6		8	VCP	300	70	0	10	15	95
J	Garden Street	J5C - T21	8		8	PVC	62	40	0	0	20	60
J	Garden Street	J6 - J5	6		8	VCP	558	11	0	0	15	26
J	Pulgas Avenue	J7 - J6	6		8	VCP	441	73	0	10	25	108

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J	Garden Street	J8 - J6	6		8	VCP	442	70	0	0	5	75
J	Garden Street	J9 - J9A	6		8	VCP	365	51	0	30	20	101
J	Garden Street	J9A - J8	6		8	VCP	35	19	0	30		49
K	Wisteria Drive	K11 - K5	6		8	VCP	370	34	0	20	10	64
K	Wisteria Drive	K13 - K12	6		8	VCP	362	56	0	20	15	91
K	Larkspur Drive	K16 - K4	6		8	CP	274	53	0	15	15	83
K	Larkspur Drive	K17 - K16	6		8	CP	267	55	0	0		55
K	Larkspur Drive	K18 - K17	6		8	CP	269	80	0	15		95
K	Larkspur Drive	K19 - K18	6		8	CP	272	58	0	30	10	98
K	Sage Street	K20 - K19	6		8	CP	135	8	0	30		38
K	Daisy Lane	K21 - K3	6		8	CP	246	53	0	30	10	93
K	Daisy Lane	K22 - K21	6		8	CP	256	60	0	0		60
K	Daisy Lane	K23 - K22	6		8	Unknown	100	23	0	8		31
K	Hibiscus Court	K24 - K21	6		8	CP	149	42	0	0		42
K	Azalia Drive	K26 - K6	6		8	VCP	294	11	0	20		31
K	Camellia Drive	K30 - K31	8		8	PVC	108	20	0	0	5	25
K/L	Gardenia Way	K31 - L1	8		8	PVC	148	30	0	0	20	50
K	Camellia Drive	K33 - K32	6		8	VCP	131	40	0	0	20	60
K	Camellia Drive	K34 - K33	6		8	VCP	278	32	0	0	5	37
K	Camellia Drive	K35 - K34	6		8	VCP	280	42	0	10	20	72
K	Camellia Drive	K36 - K35	6		8	VCP	282	38	0	20	10	68
K	Lotus Way / Camellia Drive	K37 - K32	6		8	VCP	350	24	0	10		34
K	Azalia Drive	K7 - K6	8		8	VCP	362	23	0	0	20	43
K	Azalia Drive	K9 - K8	8		8	VCP	356	25	0	40		65
K/L	Azalia Drive	L10 - K27	6		8	VCP	275	11	0	20	15	46
L	Azalia Drive	L10 - L9	6		8	VCP	180	44	0	0		44
L	Gaillardia Way	L11 - L10	6		8	VCP	360	22	0	30	10	62
L	Gaillardia Way	L12 - L11	6		8	VCP	93	30	0	0		30
L	Verbina Drive	L13 - L9	6		8	VCP	311	24	0	15		39
L	Verbina Drive	L14 - L13	6		8	VCP	302	26	0	0		26
L	Verbina Drive	L15 - L14	6		8	VCP	310	26	0	0		26
L	Verbina Drive	L16 - L15	6		8	VCP	311	24	0	15		39
L	Verbina Drive	L17 - L16	6		8	VCP	236	50	0	0		50
L	Verbina Drive	L18 - L17	6		8	VCP	331	10	0	15		25
L	Verbina Drive	L19 - L18	6		8	VCP	333	34	0	0		34
L	Camellia Drive	L20 - L16	6		8	VCP	101	38	0	0		38
L	Wisteria Drive	L22 - L3	6		8	VCP	366	14	0	15		29
L	Wisteria Drive	L26 - L25	8		8	VCP	216	16	0	24	20	60
L	Wisteria Drive	L28 - L27	6		8	VCP	363	34	0	0		34
L	Wisteria Drive	L29 - L28	6		8	VCP	366	35	0	30	20	85
L	Aster Way	L31 - L30	6		8	VCP	179	9	0	30		39
L	Aster Way	L33 - L32	6		8	VCP	91	13	0	15		28
L	Daphne Way	L34 - L26	6		8	VCP	287	7	0	15	5	27
L	Daphne Way	L35 - L34	6		8	VCP	250	50	0	0		50
L	Daphne Way	L36 - L35	6		8	VCP	278	24	0	10		34
L	Daphne Way	L37 - L36	6		8	VCP	312	38	0	0		38
L	Daphne Way	L37 - L38	6		8	VCP	212	24	0	10		34
L	Daphne Way	L39 - L40	6		8	VCP	346	10	0	15		25
L	Jasmine Way	L40 - L42	8		8	VCP	346	8	0	20		28
L	Jasmine Way	L43 - L44	8		8	PVC	334	60	0	0		60
L	Jasmine Way	L44 - L45	8		8	PVC	238	26	0	0		26
L	Camellia Drive	L45 - L25	8		8	VCP	202	23	0	0	5	28
L	Camellia Drive	L46 - L45	6		8	VCP	136	35	0	0		35
L	Azalia Drive	L47 - L4	8		8	VCP	88	20	0	30		50
L	Camellia Drive	L53 - L52	6	6	8	VCP	218	32	30	0		62
L	Camellia Drive	L54 - L53	6		8	VCP	369	8	0	30		38
L	Camellia Court	L56 - L54	6		8	VCP	327	32	0	0		32
L	Abelia Way	L58 - L57	6		8	VCP	295	22	0	20		42
L	Abelia Way	L59 - L58	6		8	VCP	250	9	0	20		29
L	Gardenia Court	L61 - L5	6		8	VCP	152	7	0	20		27
L	Daphne Court	L62 - L34	6		8	VCP	147	36	0	0		36
L	Gardenia Way	L7 - L6	6	6	8	VCP	261	12	30	0		42

Table 5
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
Priority List Sorted by Diameter, Pipelines for Structural and Capacity Upgrades - Areas 1, 3, 4

Area	Location/ Street Name	PSR	Diameter	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Structural Total Score	Score for Master Plan Capacity (+ Zero*Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
L	Azalia Drive	L9 - L4	6	6	8	VCP	162	12	30	0		42
M	Clarke Avenue	M14A-M5	6		8	VCP	75	7	0	20		27
M	O'Connor Street	M43 - M42	6		8	VCP	104	38	0	0		38
O	West Bayshore Road	O10 - O9	8		8	VCP	157	29	0	0		29
O	Capitol Avenue	O16 - O15	6		8	VCP	235	42	0	15		57
O	Woodland Avenue	O19 - O17	6		8	VCP	86	16	0	10		26
O	Woodland Avenue	O20 - O19	6		8		116	50	0	20		70
O	Woodland Avenue	O21 - O19	6		8	VCP	394	46	0	20		66
O	Woodland Avenue	O22 - O21	6		8	VCP	348	33	0	20		53
O	Woodland Avenue	O23 - O22	6		8	VCP	470	62	0	20		82
O	Clarke Avenue	O26 - O25	6		8	VCP	333	50	0	0		50
O	Woodland Avenue	O28 - O26	6		8	VCP	434	41	0	10		51
O	Woodland Avenue	O29 - O28	6		8	VCP	143	16	0	12		28
O	Woodland Avenue	O29 - O30	6		8	VCP	220	42	0	12		54
O	Newell Road	O31 - O30	6		8	VCP	45	18	0	30		48
O	Woodland Avenue	O32 - O31	6		8	VCP	258	9	0	30		39
O	Woodland Avenue	O33 - O32	6		8	VCP	263	26	0	12	10	48
O	Newell Road	O34 - O10	6		8	ACP	268	40	0	0		40
O	Newell Road	O35 - O34	6		8	ACP	316	50	0	0		50
O	West Bayshore Road	O4 - O3	8		8	VCP	277	86	0	0	25	111
O	Mission Drive	O41 - O40	6		8	Unknown	45	27	0	16		43
O	Mission Drive	O46 - O45	6		8	VCP	213	25	0	0		25
O	Mission Drive	O48 - O47	6		8	VCP	122	14	0	12		26
O	West Bayshore Road	O5 - O4	8		8	Unknown	399	44	0	0	15	59
O	Mission Drive	O50 - O49	6		8	VCP	172	28	0	0		28
O	Cooley Avenue	O51 - O51A	6		8	VCP	234	20	0	0	5	25
O	Cooley Avenue	O51A - O13	6		8	VCP	236	50	0	0	10	60
O	Scofield Street	O52 - O51	6		8	VCP	213	50	0	0		50
O	Circle Drive	O53 - O52	6		8	VCP	222	38	0	0		38
O	Scofield Street	O54 - O52	6		8	VCP	380	13	0	30		43
O	Woodland Avenue	O55 - O54	6		8	VCP	399	42	0	8		50
O	Woodland Avenue	O56 - O55	6		8	VCP	377	38	0	0		38
O	Cooley Avenue	O57 - O51	6		8	VCP	365	46	0	0		46
O	Cooley Avenue	O58 - O57	6		8	VCP	403	17	0	30		47
O	West Bayshore Road	O59 - O7	8		8	VCP	182	9	0	30	10	49
O	West Bayshore Road	O8 - O59	8		8	VCP	103	26	0	0		26

Table 6
East Palo Alto Sanitary District
Areas 1, 3, and 4 Proposed Pipeline Replacements
Opinion of Probable Construction Cost - Structural and Capacity Upgrades

ITEM NO.	ITEM	EST. QUANTITY	UNIT OF MEASURE	UNIT PRICE	TOTAL
1	Mobilization	1	LS	\$2,356,000	\$2,356,000
2	Traffic Control	1	LS	\$962,000	\$962,000
3	Project Signage	1	LS	\$2,000	\$2,000
4	City Permits	1	LS	\$3,000	\$3,000
5	Construction Staking	1	LS	\$158,000	\$158,000
6	Maintain Access for Services and Residents	1	LS	\$30,000	\$30,000
7	Safety, Sheeting, Shoring, and Bracing	1	LS	\$20,000	\$20,000
8	Dust Control	1	LS	\$20,000	\$20,000
9	Bypassing	346	EA	\$2,000	\$692,000
10	8-inch PVC	64,657	LF	\$375	\$24,246,395
11	10-inch PVC	6,163	LF	\$410	\$2,526,769
12	12-inch PVC	5,814	LF	\$435	\$2,529,090
13	14/15-inch PVE or HDPE	4,315	LF	\$500	\$2,157,673
14	16/18-inch PVC	3,408	LF	\$525	\$1,789,076
15	20/21-inch PVC	3,532	LF	\$600	\$2,119,187
16	22/24-inch PVC or HDPE	652	LF	\$720	\$469,275
17	26/27-inch PVE or HDPE	1,641	LF	\$795	\$1,304,692
18	Drain Rock	2,000	TONS	\$50	\$100,000
19	Utility Crossings	1,800	EA	\$250	\$450,000
20	Reconnect Laterals	900	EA	\$850	\$765,000
21	Dewatering	1	LS	\$8,500	\$8,500
22	CCTV Inspections	90,182	LF	\$2.00	\$180,364
23	Cold-Patch Asphalt for Temporary Surfacing	60	TON	\$500	\$30,000
24	Asphalt Repaving	360,728	SF	\$5	\$1,803,638
25	Slurry Seal	3,066,184	SF	\$0.70	\$2,146,329
26	Striping and Pavement Markings	3,066,184	SF	\$0.85	\$2,606,256
Subtotal - Opinion of Probable Construction Costs					\$49,475,243
27	Contingency	%	20%	\$49,475,243	\$9,895,049
Engineering and Administrative					Opinion of Construction Subtotal
					\$59,370,291
	Design	%	2%		\$1,187,406
	Environmental/Permitting	%	2%		\$1,187,406
	Construction Management	%	3%		\$1,781,109
	Administration	%	2%		\$1,187,406
OPINION OF TOTAL PROBABLE PROJECT COST:					\$64,713,617

Table 7
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
Priority List of High Priority Pipelines to be Replaced - Areas 1, 3, 4

Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Notes	Structural Total Score	Score for Master Plan Capacity (+ 5"Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
A	Bay Road	A5 - A8	18	20	PE	124	Sagging pipe 50%-100%	80	90	0	10	180
A	Bay Road	A10 - A15	18	20	ACP	299	Surface Damage Roughness Increased	61	90	0	20	171
A	Bay Road	A2 - A5	15	18	Unknown	244	Sagging pipe 75%	70	75	0	25	170
A	Bay Road	A15 - A16	18	20	ACP	435	Surface damage roughness. Sagging 75%	50	90	0	25	165
I	Beech Street	I3 - I19	24	26	PVC	188	Upgrade to 24" per MP	30	120	0	5	155
H	Clarke Avenue	H14 - H13	12	14	VCP	446	Broken at 425.5ft, 429ft with multiple cracks	66	60	0	25	151
I	Pulgas Avenue	I15 - I14	15	18	PVC	386	Sagging pipe 85%	50	75	0	25	150
H	Runnymede Street	H35 - H34	10	12	VCP	322	Pipeline has a lot of sagging. The high water	62	50	8	30	150
I	Beech Street	I7 - I6	20	22	CP	259	Surface damage roughness. Sagging 75%	26	100	0	20	146
H	Clarke Avenue	H12 - H11	12	14	VCP	333	Broken at 111ft, 231ft, 331.9ft	70	60	0	15	145
H	Clarke Avenue	H64 - H71	12	14	VCP	99	H60-H3. Line has about 30%-40% grease that is	42	60	24	15	141
A / T	Bay Trail	A29 - T29	24	26	ACP	345	-	20	120	0	-	140
A	Bay Road	A16 - A21	18	20	ACP	296	-	44	90	0	5	139
A	Bay Road	A1 - A2	15	18	Unknown	80	MH A1 does not exist. Inspection started from	50	75	10	0	135
A	Bay Road	B2 - A2	15	18	PE	181	A1 is buried, operator surveyed B2-A2 for total	50	75	0	10	135
D	Hwy 101	D10 - D3	10	12	Unknown	489	MSA/80% grease in line. No heavy cleaning	54	50	20	10	134
A	Bay Road	A9 - A10	18	20	ACP	181	Broken at 172ft	28	90	0	15	133
C	Menalto Avenue	C4 - C3	8	12	PE	436	This is the second inspection after heavy	66	40	10	15	131
K/L	Larkspur Drive	L21 - K28	14	16	PVC	68	Sagging pipe 75%	40	70	0	20	130
D	Donohoe Street	D2 - D1	18	20	VCP	53	-	34	90	0	-	124
H	Clarke Avenue	H13 - H12	12	14	VCP	108	Broken at 18ft with 55% sagging pipe	54	60	0	10	124
I	Beech Street	I31 - I4	24	26	PVC	300	This pipe line was 15A-14	0	120	0	-	120
I	Beech Street	I4 - I3	24	26	PVC	243	-	0	120	0	-	120
I	Beech Street	I5 - I31	24	26	PVC	155	This pipe line was 15-15A	0	120	0	-	120
I	Beech Street	I6 - I5	24	26	PVC	411	-	0	120	0	-	120
H	Green Street	H75 - H6	18	20	PE	259	H7C - H6	29	90	0	-	119
D	Donohoe Street	D3 - D3A	16	18	VCP	11	Surface Damage Roughness Increased	34	80	0	5	119
I	Beech Street	I9 - I8	20	22	CP	155	-	18	100	0	-	118
D	Donohoe Street	D3A - D2	16	18	VCP	355	Broken at 4.2ft	34	80	0	-	114
C	Menalto Avenue	C6 - C5	8	12	PE	87	Pipeline has lots of debris	42	40	20	10	112
O	West Bayshore Road	O4 - O3	8	8	VCP	277	85% sag, 10% grease build up	86	0	0	25	111
I	Beech Street	I11 - I10	18	20	CP	380	-	20	90	0	-	110
H	Green Street	H7 - H75	18	20	PE	91	H7B - H7C	20	90	0	-	110
H	Green Street	H73 - H74	18	20	PE	233	H8 - H7	20	90	0	-	110
H	Green Street	H74 - H8	18	20	PE	112	H7 - H7A	20	90	0	-	110
H	Green Street	H8 - H7	18	20	PE	235	H7A - H7B	20	90	0	-	110
I	Pulgas Avenue	I13 - I12	15	18	PVC	320	-	30	75	0	5	110
D	West Bayshore Road	D21 - D19	10	12	HDPE	391	Heavy Cleaning/high flow. Night work. HDPE.	40	50	20	-	110
H	Runnymede Street	H34 - H17	10	12	VCP	269	Submerged pipe with a line down alignment.	34	50	16	10	110
C	Menalto Avenue	C2 - C1	10	12	Unknown	204	MSA/Grease. Heavy grease blockage at 136.9	38	50	16	5	109
J	Pulgas Avenue	J7 - J6	8	8	VCP	441	Pipe is broken at 124ft and 197ft	73	0	10	25	108
A	Demeter Street	A13 - A12	8	8	Unknown	412	Broken pipe at 129 ft and 139 ft with sags.	70	0	20	15	105
H	Runnymede Street	H17 - H76	12	14	VCP	397	H17 - H16. Broken pipe at 43.2ft, 144.9ft, 150ft	17	60	20	5	102
J	Garden Street	J9 - J9A	8	8	VCP	365	Pipe is broken at 8ft, 32ft, 81ft, 223ft & 318ft.	51	0	30	20	101
I	Beech Street	I8 - I7	20	22	CP	238	-	0	100	0	-	100
I	Beech Street	I10 - I9	18	20	CP	221	-	10	90	0	-	100
H/E	Green Street	E1 - H9	16	18	PE	270	-	20	80	0	-	100
H	Green Street	H9 - H73	16	18	PE	246	H9 - H8	20	80	0	-	100
D	Manhattan Avenue	D19 - D10	10	12	PVC	48	Line is sagging. Camera was under water for	30	50	0	20	100
A	Pulgas Avenue	A18 - A16	12	8	VCP	442	Broken pipe at 44ft.	70	0	10	20	100
L	Gardenia Way	L2 - L1	12	14	PVC	179	Joint Separated Large at 104.9ft, infiltration	24	60	15	-	99
D	Euclid Avenue	D23 - D22	10	12	PE	73	Pipeline had heavy grease	30	50	8	10	98
K	Larkspur Drive	K19 - K18	8	8	CP	272	Pipe is broken and soil is visible at 144ft, and	58	0	30	10	98
C	Menalto Avenue	C7 - C6	8	12	PE	448	Pipeline has lots of debris	20	40	12	25	97
A	Gonzaga Street	A3 - A2	8	8	VCP	287	Broken pipe at 53, 141, 157, and 159 ft. Also,	46	0	30	20	96
H	Runnymede Street	H57 - H16	12	14	VCP	48	H16A - H16B. Broken at 20.9ft	20	60	15	-	95
K	Larkspur Drive	K18 - K17	8	8	CP	269	SMW spots on the line.	80	0	15	-	95
J	Garden Street	J10 - J9	8	8	VCP	300	Pipe is broken at 228ft and 293ft	70	0	10	15	95
H	Clarke Avenue	H11 - H64	12	14	VCP	198	H11 - H60. Broken at 73.2ft	34	60	0	-	94
M	O'Connor Street	M42 - M13	12	14	VCP	37	Surface Damage and cracks	34	60	0	-	94
H	Runnymede Street	H76 - H57	12	14	VCP	73	H16 - H16A. Broken at 63.2ft	19	60	15	-	94
C	Menalto Avenue	C2A - C2	8	12	VCP	28	New line segment - Broken at 19.9 ft	34	40	20	-	94
A	Illinois Street	A6 - A5	8	8	VCP	287	Broken pipe at 15 and 75ft. Also, an offset	49	0	30	15	94
K	Daisy Lane	K21 - K3	8	8	CP	246	Pipe has few locations with chunks of pipe	53	0	30	10	93
A	Bay Road	A23 - A22	18	20	ACP	14	-	2	90	0	-	92
I	Myrtle Street	I21 - I13	8	12	VCP	600	As I24 should be between them as shown in	47	40	0	5	92
D	O'Connor Street	D25 - D24	8	12	VCP	301	large offset between joints and unable to	36	40	16	-	92
K	Wisteria Drive	K13 - K12	8	8	VCP	362	Pipe is broken at 9ft and 91ft.	56	0	20	15	91
A	Illinois Street	A7 - A6	8	8	VCP	306	Broken pipe at 82 and 230 ft.	46	0	30	15	91
A	Bay Road	A21 - A23	18	20	ACP	155	New Line Segment. MH Name changed from	0	90	0	-	90
A	Bay Road	A21 - A23	18	20	ACP	155	A21 does not connect to A23 but it connects	0	90	0	-	90
A	Bay Road	A8 - A9	18	20	PVC	61	-	0	90	0	-	90
H/I	Beech Street	H2 - I11	18	20	-	37	Paved over	0	90	0	-	90
H	Beech Street	H3 - H2	18	20	-	31	Paved over	0	90	0	-	90
H	Clarke Avenue	H4 - H3	18	20	-	7	Paved over	0	90	0	-	90
H	Clarke Avenue	H5 - H4	18	20	-	259	Paved over	0	90	0	-	90
H	Green Street	H6 - H5	18	20	-	9	Paved over	0	90	0	-	90
L	Gardenia Way	L3 - L2	12	14	PVC	83	-	30	60	0	-	90
C	Elliot Drive	C42 - C41	8	8	VCP	300	substantial breakage throughout their entire	70	0	20	-	90
C	Elliot Drive	C41 - C40	8	8	VCP	191	substantial breakage throughout their entire	70	0	20	-	90
F	Weeks Street	F23 - F8	8	8	VCP	327	This pipeline was F9A-F8	70	0	0	20	90
M	O'Connor Street	M13 - M12	12	14	VCP	276	Broken at 193	13	60	15	-	88

Table 7
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
Priority List of High Priority Pipelines to be Replaced - Areas 1, 3, 4

Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Notes	Structural Total Score	Score for Master Plan Capacity (+ 5" Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
C	Elliot Drive	C40 - C36		8	VCP	257	MSA/Root tap barrel. Reverse inspection	67	0	20		87
C	Hwy 101	C21 - C19		8	VCP	284	MSA/Collapsed pipe. Reverse inspection	55	0	30		85
A	Tara Street	A27 - A26		8	VCP	311	Broken pipe and soil is visible at 254.10 ft at 11	35	0	30	20	85
L	Wisteria Drive	L29 - L28		8	VCP	366	Pipe is broken at 348ft, and soil is visible	35	0	30	20	85
D	Donohoe Street	D4 - D3	10	12	VCP	296	Fracture Multiple at 131ft	34	50	0		84
K	Larkspur Drive	K16 - K4		8	CP	274	SMW spots on the line	53	0	15	15	83
O	Woodland Avenue	O23 - O22		8	VCP	470	MSA/TBI. Reverse Inspection complete. Pipe	62	0	20		82
O	West Bayshore Road	O9 - O8	8	12	VCP	140	15% grease buildup at 96ft	36	40	0	5	81
D	Donohoe Street	D3 - D2	16	18	Unknown	363	Line has an unchartered manhole, See D3 -	0	80	0		80
I	Beech Street	I20 - I9		8	VCP	278	Pipe has MSA at 267 due to hard	40	0	20	20	80
C	Menalto Avenue	C5 - C4	8	12	Unknown	328	Pipeline has lots of debris	29	40	10		79
C	Woodland Avenue	C48 - C11	8	12	Unknown	179	MSA/ Reverse Inspection complete	23	40	16		79
H	Runnymede Street	H15 - H62	12	14	Other	201	H15 - H58	18	60	0		78
D	Woodland Avenue	D35 - D34	8	12	VCP	178	Fracture Multiple at 73ft	38	40	0		78
H	University Avenue	H36 - H35	10	12	VCP	474		23	50	0	5	78
C	Menalto Avenue	C10 - C8	8	12	PE	387	Modified line segment. Could not find C9	23	40	10	5	78
D	Euclid Avenue	D24 - D23	10	12	PE	350	Pipeline had heavy grease	20	50	8		78
D	Donohoe Street	D9 - D8		8	VCP	496	Broken at 21ft, multiple cracks	70	0	8		78
D	Donohoe Street	D8 - D7		8	VCP	158	broken pipe at 100.08 ft from upstream	37	0	30	10	77
C	Menalto Avenue	C8 - C7	8	12	PE	401	broken pipe located 100.08 ft from upstream	20	40	16		76
D	Euclid Avenue	D22 - D21	10	12	HDPE	149	Grease/surcharged. Requires heavy cleaning.	0	50	26		76

Table 8
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
Priority List of High Priority Pipelines, Sorted by Diameter - Areas 1, 3, 4

Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Structural Total Score	Score for Master Plan Capacity (+ 5*Pipe Dia)	Score for Notable Defects	Sag>40%	Total Score
I	Beech Street	I3 - T19	24	26	PVC	188	30	120	0	5	155
A / T	Bay Trail	A29 - T29	24	26	ACP	345	20	120	0		140
I	Beech Street	I31 - I4	24	26	PVC	300	0	120	0		120
I	Beech Street	I4 - I3	24	26	PVC	243	0	120	0		120
I	Beech Street	I5 - I31	24	26	PVC	155	0	120	0		120
I	Beech Street	I6 - I5	24	26	PVC	411	0	120	0		120
I	Beech Street	I7 - I6	20	22	CP	259	26	100	0	20	146
I	Beech Street	I9 - I8	20	22	CP	155	18	100	0		118
I	Beech Street	I8 - I7	20	22	CP	238	0	100	0		100
A	Bay Road	A5 - A8	18	20	PE	124	80	90	0	10	180
A	Bay Road	A10 - A15	18	20	ACP	299	61	90	0	20	171
A	Bay Road	A15 - A16	18	20	ACP	435	50	90	0	25	165
A	Bay Road	A16 - A21	18	20	ACP	296	44	90	0	5	139
A	Bay Road	A9 - A10	18	20	ACP	181	28	90	0	15	133
D	Donohoe Street	D2 - D1	18	20	VCP	53	34	90	0		124
H	Green Street	H75 - H6	18	20	PE	259	29	90	0		119
I	Beech Street	I11 - I10	18	20	CP	380	20	90	0		110
H	Green Street	H7 - H75	18	20	PE	91	20	90	0		110
H	Green Street	H73 - H74	18	20	PE	233	20	90	0		110
H	Green Street	H74 - H8	18	20	PE	112	20	90	0		110
H	Green Street	H8 - H7	18	20	PE	235	20	90	0		110
I	Beech Street	I10 - I9	18	20	CP	221	10	90	0		100
A	Bay Road	A23 - A22	18	20	ACP	14	2	90	0		92
A	Bay Road	A21 - A23	18	20	ACP	155	0	90	0		90
A	Bay Road	A21 - A23	18	20	ACP	155	0	90	0		90
A	Bay Road	A8 - A9	18	20	PVC	61	0	90	0		90
H/I	Beech Street	H2 - I11	18	20		37	0	90	0		90
H	Beech Street	H3 - H2	18	20		31	0	90	0		90
H	Clarke Avenue	H4 - H3	18	20		7	0	90	0		90
H	Clarke Avenue	H5 - H4	18	20		259	0	90	0		90
H	Green Street	H6 - H5	18	20		9	0	90	0		90
A	Bay Road	A2 - A5	15	18	Unknown	244	70	75	0	25	170
I	Pulgas Avenue	I15 - I14	15	18	PVC	386	50	75	0	25	150
A	Bay Road	A1 - A2	15	18	Unknown	80	50	75	10	0	135
A	Bay Road	B2 - A2	15	18	PE	181	50	75	0	10	135
D	Donohoe Street	D3 - D3A	16	18	VCP	11	34	80	0	5	119
D	Donohoe Street	D3A - D2	16	18	VCP	355	34	80	0		114
I	Pulgas Avenue	I13 - I12	15	18	PVC	320	30	75	0	5	110
H/E	Green Street	E1 - H9	16	18	PE	270	20	80	0		100
H	Green Street	H9 - H73	16	18	PE	246	20	80	0		100
D	Donohoe Street	D3 - D2	16	18	Unknown	363	0	80	0		80
K/L	Larkspur Drive	L21 - K28	14	16	PVC	68	40	70	0	20	130
H	Clarke Avenue	H14 - H13	12	14	VCP	446	66	60	0	25	151
H	Clarke Avenue	H12 - H11	12	14	VCP	333	70	60	0	15	145
H	Clarke Avenue	H64 - H71	12	14	VCP	99	42	60	24	15	141
H	Clarke Avenue	H13 - H12	12	14	VCP	108	54	60	0	10	124
H	Runnymede Street	H17 - H76	12	14	VCP	397	17	60	20	5	102
L	Gardenia Way	L2 - L1	12	14	PVC	179	24	60	15		99
H	Runnymede Street	H57 - H16	12	14	VCP	48	20	60	15		95
H	Clarke Avenue	H11 - H64	12	14	VCP	198	34	60	0		94
M	O'Connor Street	M42 - M13	12	14	VCP	37	34	60	0		94
H	Runnymede Street	H76 - H57	12	14	VCP	73	19	60	15		94
L	Gardenia Way	L3 - L2	12	14	PVC	83	30	60	0		90
M	O'Connor Street	M13 - M12	12	14	VCP	276	13	60	15		88
H	Runnymede Street	H15 - H62	12	14	Other	201	18	60	0		78
H	Runnymede Street	H35 - H34	10	12	VCP	322	62	50	8	30	150
D	Hwy 101	D10 - D3	10	12	Unknown	489	54	50	20	10	134
D	West Bayshore Road	D21 - D19	10	12	HDPE	391	40	50	20		110
H	Runnymede Street	H34 - H17	10	12	VCP	269	34	50	16	10	110

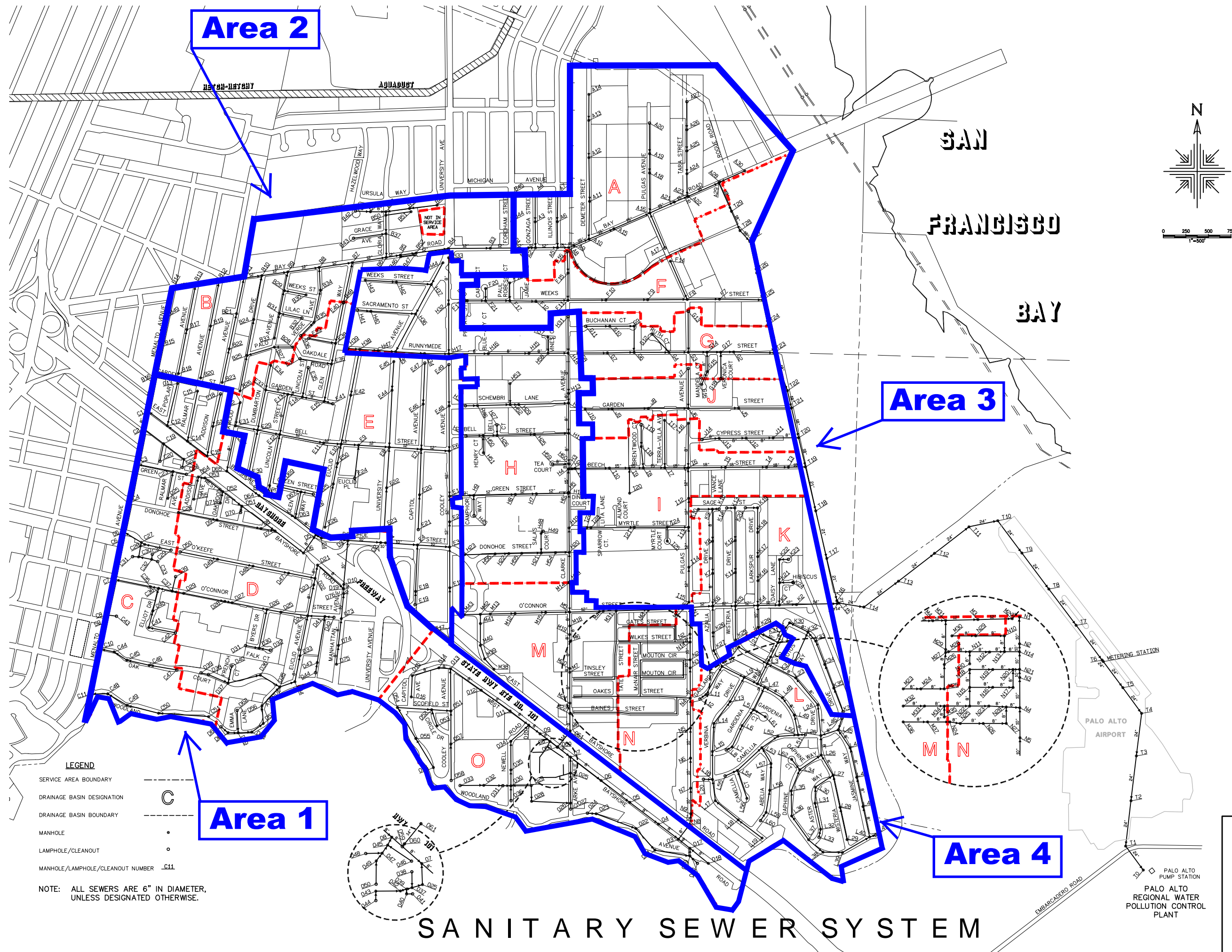
Table 8
East Palo Alto Sanitation District
CCTV Survey Results Evaluation
Priority List of High Priority Pipelines, Sorted by Diameter - Areas 1, 3, 4

Area	Location/ Street Name	PSR	Master Plan Proposed Diameter	Recommended Design Diameter	Pipe Material	Pipe Length (ft)	Structural Total Score	Score for Master Plan Capacity (+ 5*Pipe Dia)	Score for Notable Defects	Sag>40%	Total Score
C	Menalto Avenue	C2 - C1	10	12	Unknown	204	38	50	16	5	109
D	Manhattan Avenue	D19 - D10	10	12	PVC	48	30	50	0	20	100
D	Euclid Avenue	D23 - D22	10	12	PE	73	30	50	8	10	98
D	Donohoe Street	D4 - D3	10	12	VCP	296	34	50	0		84
H	University Avenue	H36 - H35	10	12	VCP	474	23	50	0	5	78
D	Euclid Avenue	D24 - D23	10	12	PE	350	20	50	8		78
D	Euclid Avenue	D22 - D21	10	12	HDPE	149	0	50	26		76
C	Menalto Avenue	C4 - C3	8	10	PE	436	66	40	10	15	131
C	Menalto Avenue	C6 - C5	8	10	PE	87	42	40	20	10	112
C	Menalto Avenue	C7 - C6	8	10	PE	448	20	40	12	25	97
C	Menalto Avenue	C2A - C2	8	10	VCP	28	34	40	20		94
I	Myrtle Street	I21 - I13	8	10	VCP	600	47	40	0	5	92
D	O'Connor Street	D25 - D24	8	10	VCP	301	36	40	16		92
O	West Bayshore Road	O9 - O8	8	10	VCP	140	36	40	0	5	81
C	Menalto Avenue	C5 - C4	8	10	Unknown	328	29	40	10		79
C	Woodland Avenue	C48 - C11	8	10	Unknown	179	23	40	16		79
D	Woodland Avenue	D35 - D34	8	10	VCP	178	38	40	0		78
C	Menalto Avenue	C10 - C8	8	10	PE	387	23	40	10	5	78
C	Menalto Avenue	C8 - C7	8	10	PE	401	20	40	16		76
O	West Bayshore Road	O4 - O3		8	VCP	277	86	0	0	25	111
J	Pulgas Avenue	J7 - J6		8	VCP	441	73	0	10	25	108
A	Demeter Street	A13 - A12		8	Unknown	412	70	0	20	15	105
J	Garden Street	J9 - J9A		8	VCP	365	51	0	30	20	101
A	Pulgas Avenue	A18 - A16		8	VCP	442	70	0	10	20	100
K	Larkspur Drive	K19 - K18		8	CP	272	58	0	30	10	98
A	Gonzaga Street	A3 - A2		8	VCP	287	46	0	30	20	96
K	Larkspur Drive	K18 - K17		8	CP	269	80	0	15		95
J	Garden Street	J10 - J9		8	VCP	300	70	0	10	15	95
A	Illinois Street	A6 - A5		8	VCP	287	49	0	30	15	94
K	Daisy Lane	K21 - K3		8	CP	246	53	0	30	10	93
K	Wisteria Drive	K13 - K12		8	VCP	362	56	0	20	15	91
A	Illinois Street	A7 - A6		8	VCP	306	46	0	30	15	91
C	Elliot Drive	C42 - C41		8	VCP	300	70	0	20		90
C	Elliot Drive	C41 - C40		8	VCP	191	70	0	20		90
F	Weeks Street	F23 - F8		8	VCP	327	70	0	0	20	90
C	Elliot Drive	C40 - C36		8	VCP	257	67	0	20		87
C	Hwy 101	C21 - C19		8	VCP	284	55	0	30		85
A	Tara Street	A27 - A26		8	VCP	311	35	0	30	20	85
L	Wisteria Drive	L29 - L28		8	VCP	366	35	0	30	20	85
K	Larkspur Drive	K16 - K4		8	CP	274	53	0	15	15	83
O	Woodland Avenue	O23 - O22		8	VCP	470	62	0	20		82
I	Beech Street	I20 - I9		8	VCP	278	40	0	20	20	80
D	Donohoe Street	D9 - D8		8	VCP	496	70	0	8		78
D	Donohoe Street	D8 - D7		8	VCP	158	37	0	30	10	77

Table 9
East Palo Alto Sanitary District
Areas 1, 3, and 4 Proposed Pipeline Replacements
Opinion of Probable Construction Cost - High Priority Upgrades

ITEM NO.	ITEM	EST. QUANTITY	UNIT OF MEASURE	UNIT PRICE	TOTAL
1	Mobilization	1	LS	\$762,000	\$762,000
2	Traffic Control	1	LS	\$272,000	\$272,000
3	Project Signage	1	LS	\$2,000	\$2,000
4	City Permits	1	LS	\$3,000	\$3,000
5	Construction Staking	1	LS	\$45,000	\$45,000
6	Maintain Access for Services and Residents	1	LS	\$30,000	\$30,000
7	Safety, Sheeting, Shoring, and Bracing	1	LS	\$20,000	\$20,000
8	Dust Control	1	LS	\$20,000	\$20,000
9	Bypassing	103	EA	\$2,000	\$206,000
10	8-inch PVC	7,978	LF	\$375	\$2,991,622
11	10-inch PVC	3,513	LF	\$410	\$1,440,195
12	12-inch PVC	3,065	LF	\$435	\$1,333,275
13	14/15-inch PVE or HDPE	2,479	LF	\$500	\$1,239,380
14	16/18-inch PVC	2,524	LF	\$525	\$1,324,985
15	20/21-inch PVC	3,648	LF	\$600	\$2,188,848
16	22/24-inch PVC or HDPE	652	LF	\$720	\$469,275
17	26/27-inch PVE or HDPE	1,642	LF	\$795	\$1,305,487
18	Drain Rock	1,000	TONS	\$50	\$50,000
19	Utility Crossings	510	EA	\$250	\$127,500
20	Reconnect Laterals	285	EA	\$850	\$242,250
21	Dewatering	1	LS	\$8,500	\$8,500
22	CCTV Inspections	25,500	LF	\$2.00	\$51,000
23	Cold-Patch Asphalt for Temporary Surfacing	30	TON	\$500	\$15,000
24	Asphalt Repaving	101,999	SF	\$5	\$509,997
25	Slurry Seal	866,995	SF	\$0.70	\$606,896
26	Striping and Pavement Markings	866,995	SF	\$0.85	\$736,945
Subtotal - Opinion of Probable Construction Costs					\$16,001,155
27	Contingency	%	20%	\$16,001,155	\$3,200,231
Engineering and Administrative					Opinion of Construction Subtotal
					\$19,201,386
	Design	%	2%		\$384,028
	Environmental/Permitting	%	2%		\$384,028
	Construction Management	%	3%		\$576,042
	Administration	%	2%		\$384,028
OPINION OF TOTAL PROBABLE PROJECT COST:					\$20,929,511

Figures

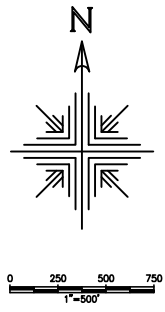


Area 2

Area 3

Area 1

Area 4



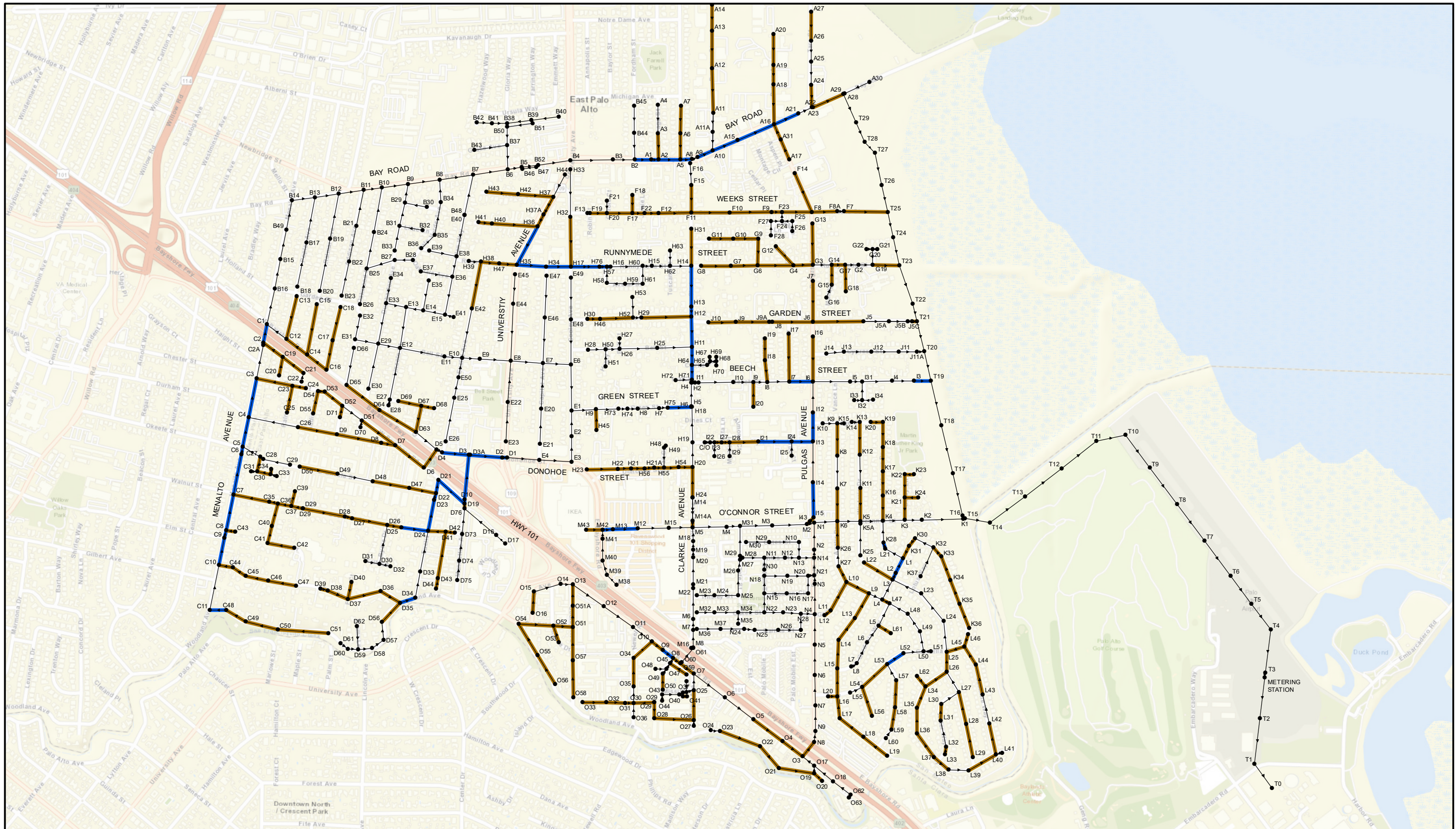
- LEGEND**
- SERVICE AREA BOUNDARY
 - DRAINAGE BASIN DESIGNATION
 - DRAINAGE BASIN BOUNDARY
 - MANHOLE
 - LAMPHOLE/CLEANOUT
 - MANHOLE/LAMPHOLE/CLEANOUT NUMBER

NOTE: ALL SEWERS ARE 6" IN DIAMETER, UNLESS DESIGNATED OTHERWISE.

**Figure 1
CCTV Survey Areas**

Kennedy/Jenks Consultants
 EAST PALO ALTO SANITARY DISTRICT
 EAST PALO ALTO, CA
**COLLECTION SYSTEM
 DRAINAGE BASINS**

SANITARY SEWER SYSTEM



LEGEND

- SEWER MANHOLE
- SEWER PIPELINE

PIPELINE UPGRADES

- STRUCTURAL ONLY
- STRUCTURAL, INCLUDES CAPACITY UPGRADE

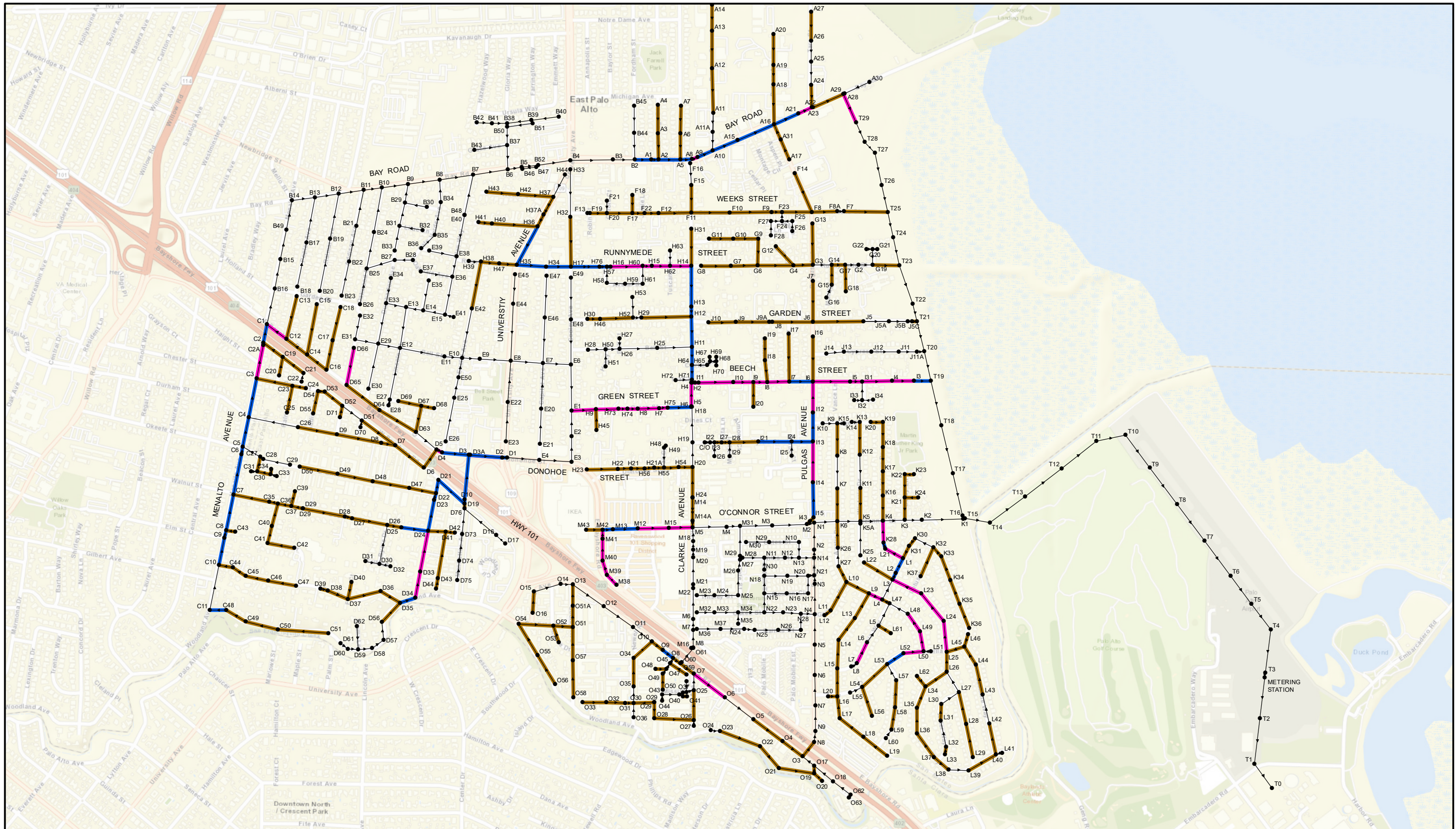


EAST PALO ALTO SANITARY DISTRICT

**STRUCTURAL UPGRADES
AREAS 1, 3, 4**

FIGURE

2



LEGEND

- SEWER MANHOLE
- SEWER PIPELINE

PIPELINE UPGRADES

- STRUCTURAL ONLY
- STRUCTURAL, INCLUDES CAPACITY UPGRADE
- CAPACITY ONLY

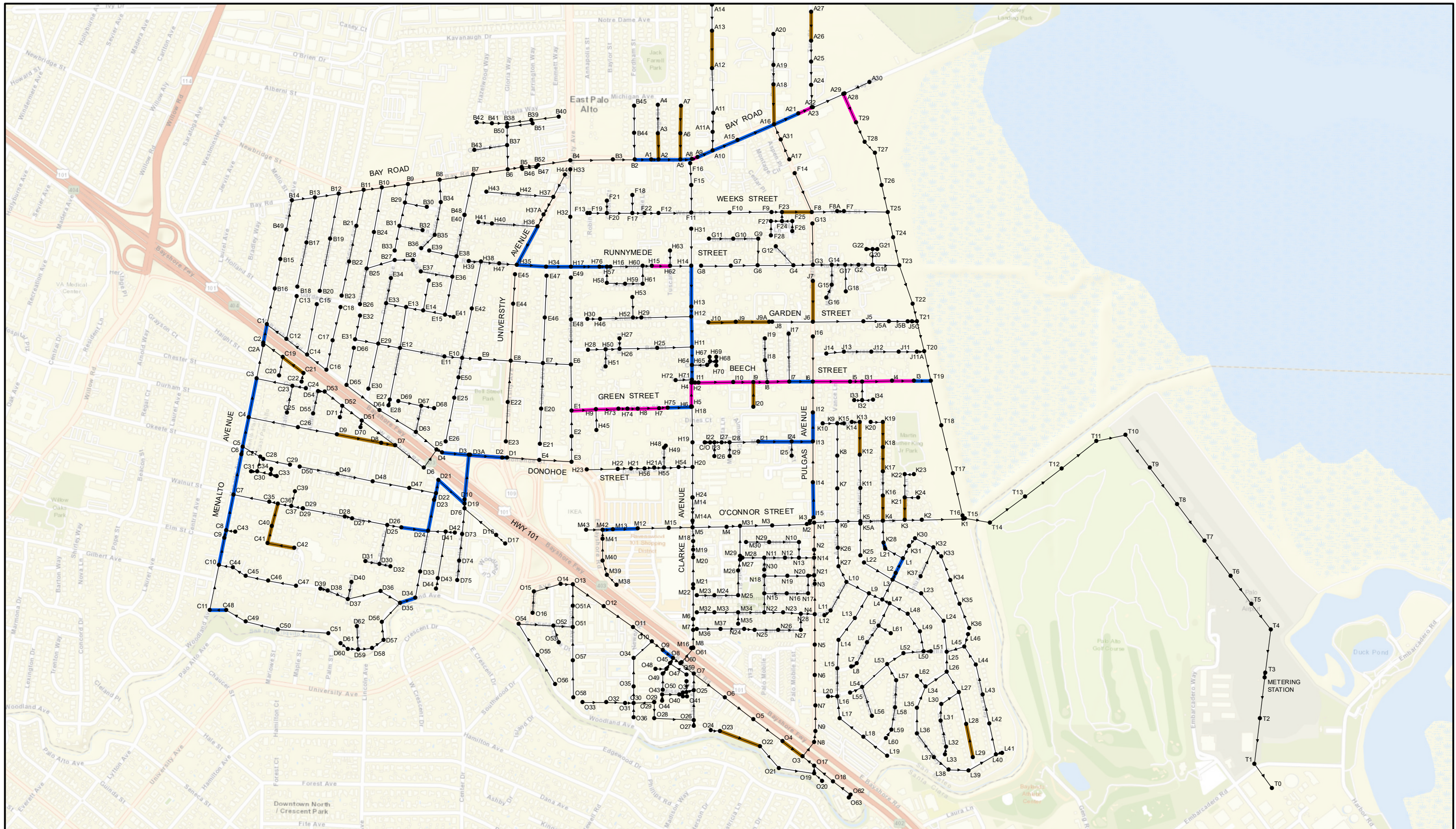


EAST PALO ALTO SANITARY DISTRICT

**STRUCTURAL + CAPACITY UPGRADES
AREAS 1, 3, 4**

FIGURE

3



LEGEND

- SEWER MANHOLE
- SEWER PIPELINE

PIPELINE UPGRADES

- STRUCTURAL ONLY
- STRUCTURAL, INCLUDES CAPACITY UPGRADE
- CAPACITY ONLY



EAST PALO ALTO SANITARY DISTRICT

**HIGH PRIORITY UPGRADES
AREAS 1, 3, 4**

FIGURE

4



Attachment 1

Area 1 CCTV Survey Results and Evaluation



Attachment 2

Area 3 CCTV Survey Results and Evaluation

**East Palo Alto Sanitary District
Area 2 CCTV Survey Results and Evaluation**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	Date Inspected	Area	Location/ Street Name	PSR	Upstream MH #	Downstream MH #	Reported Pipe Dia (in)	Actual Diameter	Master Plan Proposed Diameter	Pipe Material	Pipe Length (ft)	Length Surveyed	Notes	Structural Grade	Structural Score	O&M Grade	O&M Score	Overall Pipe Index	Structural Total scoring	Score for Master Plan Capacity (+ 5 *Pipe Dia)	Score for Notable Defects	Sag >40%	Total Score
128	7/12/2022	F	Weeks Street	F8A - F7	F8A	F7	6	6		VCP	75	75.45	New Line Segment	2600	12	3121	5	2	12	0	0	0	12
129	7/6/2022	A	Tara Street	A26 - A25	A26	A25	6	6		VCP	234	234.86	-	3124	11	0000	0	2	11	0	0		11
130	7/26/2022	K	Sage Street	K15 - K9	K15	K9	6	6		VCP	74	73.84	-	2500	10	1200	2	1	10	0	0		10
131	7/21/2022	G	Runnymede Street	G2 - G19	G2	G19	6	6		VCP	154	176.35	This pipeline was G2-G2A	5141	9	312A	23	2	9	0	0		9
132	7/25/2022	I	Myrtle Street	C/O - I22	C/O	I22	6	6		VCP	61	60.72	New Line Segment - uncharted clean out	3221	8	0000	0	2	8	0	0		8
133	7/22/2022	J	Garden Street	J5 - J5A	J5	J5A	6	8		PVC	275	274.64	New Line Segment	2400	8	0000	0	2	8	0	0		8
134	7/25/2022	I	Myrtle Street	I22 - I23	I22	I23	6	6		VCP	44	44.99	-	3122	7	0000	0	2	7	0	0		7
135	7/22/2022	J	Garden Street	J5A - J5B	J5A	J5B	6	8		PVC	212	212.42	New Line Segment	2200	4	0000	0	2	4	0	0		4
136	7/11/2022	F	Weeks Street	F13 - F19	F13	F19	6	6		VCP	24	23.75	-	2100	2	0000	0	2	2	0	0		2
137	7/21/2022	G	Mandela Court	G16 - G15	G16	G15	8	8		PVC	154	154.00	-	2100	2	0000	0	2	2	0	0		2
138	N/A	A	Demeter Street	A11 - A10	A11	A10	6				418		Line has an uncharted manhole.						0	0	0		0
139	N/A	A	Bay Road	A17 - A16	A17	A16	6				423		Line has an uncharted manhole						0	0	0		0
140	8/3/2022	A	Bay Road	A28 - A29	A28	A29	6	6		ACP	15	15.13	-	0000	0	4121	6	3	0	0	0		0
141	7/11/2022	F	Carole Court	F21 - F20	F20	F21	6	6		PVC	281	134.96	MH was F20 - F21	0000	0	0000	0	0	0	0	0		0
142	N/A	F	Weeks Street	F8 - F7	F8	F7	6				357		Line has an uncharted manhole.						0	0	0		0
143	N/A	I	Myrtle Street	I21 - I24	I21	I24	6				364		MH I24 does not exist. Inspection ended at I13.						0	0	0		0
144	N/A	I	Myrtle Street	I24 - I13	I24	I13	6				237		MH I24 does not exist. Inspection started from I21,						0	0	0		0
145	N/A	I	Myrtle Court	I25 - I24	I25	I24	6				154		Line does not exist. 7.25						0	0	0		0
146	7/29/2022	I	Sparrow Ct	I26 - I23	I26	I23	6	6		PVC	166	163.00	This pipe line was I23 - I23C. New Line Segment.	0000	0	0000	0	0	0	0	0		0
147	7/28/2022	I	Myrtle Pl	I29 - I28	I29	I28	6	6		PVC	166	174.24	New Line Segment. This pipe line was I23B - I23A	0000	0	0000	0	0	0	0	0		0
148	N/A	I	Beech Street	I5 - I4	I5	I4	18				135		Line has an uncharted manhole.						0	0	0		0
149	N/A	J	Cypress Street	J11 - T20	J11	T20	8				282		Line has an uncharted manhole.						0	0	0		0
150	7/22/2022	J	Cypress Street	J14 - J13	J14	J13	8	8		PVC	190	186.87	-	0000	0	0000	0	0	0	0	0		0
151	N/A	J	Garden Street	J5 - T21	J5	T21	6				585		Line has uncharted manholes						0	0	0		0
152	7/22/2022	J	Garden Street	J5B - J5C	J5B	J5C	6	8		PVC	41	41.18	New Line Segment	0000	0	0000	0	0	0	0	0		0
153	N/A	J	Garden Street	J9 - J8	J9	J8	6				401		Line has an uncharted manhole						0	0	0		0
154	N/A	K	O'Connor Street	K2 - K1	K2	K1	14		15		451		Light Tree Project. Cleaned twice via EPASD, and						0	75	30	25	0
155	7/28/2022	K	Wisteria Drive	K25 - K5A	K25	K5A	6	6		PVC	376	350.39	New Line Segment	0000	0	0000	0	0	0	0	0		0
156	7/28/2022	K	O'Connor Street	K3 - K2	K3	K2	12	12	15	PE	190	188.57	Light Tree Project	3D25	40	2800	20	2	40	75	0	10	0
157	7/28/2022	K	O'Connor Street	K4 - K3	K4	K3	12	12	15	PE	238	236.66	Light Tree Project Grease deposits 5%. Sagging	463E	54	2700	14	3	54	75	0	10	0
158	7/28/2022	K	O'Connor Street	K5 - K4	K5	K4	12	12		PE	248	248.99	Light Tree Project	3E29	48	2800	20	2	48	0	0	15	0
159	7/28/2022	K	O'Connor Street	K6 - K5	K6	K5	12	12		PE	251	250.99	Light Tree Project	3B2C	50	2100	2	2	50	0	0		0



Attachment 3

Area 4 CCTV Survey Results and Evaluation

**East Palo Alto Sanitary District
Area 4 CCTV Survey Results and Evaluation**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	Date Inspected	Area	Location/ Street Name	PSR	Upstream MH #	Downstream MH #	Reported Diameter	Actual Diameter	Master Plan Proposed	Pipe Material	Pipe Length (ft)	Length Surveyed	Notes	Structural Grade	Structural Score	O&M Grade	O&M Score	Overall Pipe Index	Structural Score	Score for Master Plan Capacity (+ 5 * Pipe Dia)	Score for Notable Defects	Sag > 40%	Total Score
167	N/A	H	Donohoe Street	H55 - H21	H55	H21	6				157		Line has an unchartered manhole						0	0	0		0
168	N/A	H	Green Street	H7 - H6	H7	H6	12				90		Line has unchartered manholes.						0	0	0		0
169	N/A	H	Tea Court	H72 - H71	H72	H71	12				238		H59 - H60. Paved over						0	0	0		0
170	7/26/2022	L	Camellia Drive	L51 - L50	L51	L50	6	6		VCP	80	76.17		0000	0	2300	6	2	0	0	0		0
171	N/A	M	Clarke Avenue	M14 - M5	M14	M5	6				328		Line has unchartered manholes.						0	0	0		0
172	N/A	M/I	O'Connor Street	M2 - I15	M2	I15	12				20		Repeat naming. Already inspected						0	0	0		0
173	N/A	M/I	Pulgas Avenue	M2 - I15	M2	I15	12				20		Line has unchartered manholes.						0	0	0		0
174	8/10/2022	M	Clarke Avenue	M20 - M19	M20	M19	8	12		VCP	341	80.47	M6 - M19	0000	0	0000	0	0	0	0	0		0
175	7/21/2022	M	Tinsley Street	M23 - M24	M23	M24	8	8		PVC	195	191.54		0000	0	0000	0	0	0	0	0		0
176	7/21/2022	M	Tinsley Street	M24 - M25	M24	M25	8	8		PVC	260	258.01		0000	0	0000	0	0	0	0	0		0
177	7/21/2022	M	Tate Street	M25 - M26	M25	M26	8	8		PVC	270	267.41		0000	0	0000	0	0	0	0	0		0
178	7/21/2022	M	Tate Street	M26 - M27	M26	M27	8	8		PVC	125	131.46		0000	0	0000	0	0	0	0	0		0
179	N/A	M	Wilkes Street	M27 - M28	M27	M28	8				35		This line has does not exist.						0	0	0		0
180	7/22/2022	M/N	Wilkes Street	M28 - N11	M28	N11	8	8		PVC	236	206.73		0000	0	0000	0	0	0	0	0		0
181	7/21/2022	M	Oakes Street	M32 - M33	M32	M33	8	8		PVC	195	221.13		0000	0	0000	0	0	0	0	0		0
182	7/21/2022	M	Oakes Street	M33 - M34	M33	M34	8	8		PVC	288	226.03		0000	0	0000	0	0	0	0	0		0
183	7/21/2022	M/N	Oakes Street	M34 - N22	M34	N22	8	8		PVC	253	267.01		0000	0	0000	0	0	0	0	0		0
184	7/21/2022	M	Tate Street	M35 - M34	M35	M34	8	8		PVC	124	119.16		0000	0	0000	0	0	0	0	0		0
185	7/21/2022	M	Baines Street	M36 - M37	M36	M37	8	8		PVC	257	242.02		0000	0	0000	0	0	0	0	0		0
186	7/21/2022	M/N	Baines Street	M37 - N24	M37	N24	8	8		PVC	259	247.02		0000	0	0000	0	0	0	0	0		0
187	7/29/2022	M	O'Connor Street	M4 - M31	M4	M31	12	12	0	PVC	143	144.05		0000	0	2700	14	2	0	0	0		0
188	8/10/2022	M	Clarke Avenue	M6 - M22	M6	M22	8	12		VCP	43	109.16	M22 - M21	0000	0	0000	0	0	0	0	0		0
189	N/A	M	Clarke Avenue	M8 - M22	M8	M22	8				192		Line has an unchartered manhole						0	0	0		0
190	8/10/2022	M	Clarke Avenue	M8 - M7	M8	M7	8	12		VCP	137	137.35	M8A - M22	0000	0	0000	0	0	0	0	0		0
191	8/10/2022	N/K	O'Connor Street	N1 - K6	N1	K6	12	12		PE	253	254.52	Light Tree Project	362D	38	4132	10	2	38	0	0		0
192	7/22/2022	N	Gates Street	N10 - N13	N10	N13	8	8		PVC	176	174.94		0000	0	0000	0	0	0	0	0		0
193	7/22/2022	N	Wilkes Street	N11 - N12	N11	N12	8	8		PVC	227	228.42		0000	0	2100	2	2	0	0	0		0
194	7/22/2022	N	Wilkes Street	N12 - N13	N12	N13	8	8		PVC	158	160.25		0000	0	0000	0	0	0	0	0		0
195	8/8/2022	N	Pulgas Avenue	N14 - N2	N14	N2	10	10	10	PE	88	85.87	Light Tree Project	2A00	20	2400	8	2	20	50	0		0
196	7/22/2022	N	McNair Street	N15 - N18	N15	N18	8	8		PVC	190	195.14		0000	0	0000	0	0	0	0	0		0
197	7/22/2022	N	Mouton Circle	N16 - N17	N16	N17	8	8		PVC	228	216.93		0000	0	0000	0	0	0	0	0		0
198	7/22/2022	N	Mouton Circle	N17 - N20	N17	N20	8	8		PVC	197	195.44		0000	0	0000	0	0	0	0	0		0
199	7/22/2022	N	Mouton Circle	N18 - N19	N18	N19	8	8		PVC	256	253.62		0000	0	0000	0	0	0	0	0		0
200	7/22/2022	N	Mouton Circle	N19 - N20	N19	N20	8	8		PVC	224	222.53		0000	0	0000	0	0	0	0	0		0
201	8/8/2022	N	Pulgas Avenue	N2 - N1	N2	N1	10	10	10	PE	296	297.5	Light Tree Project	2D00	20	2B00	20	2	20	50	0		0
202	8/8/2022	N	Pulgas Avenue	N21 - N14	N21	N14	10	12	10	PE	196	198.73	Light Tree Project	2A00	20	2A00	20	2	20	50	0		0
203	7/21/2022	N	Oakes Street	N22 - N23	N22	N23	8	8		PVC	212	211.53		0000	0	0000	0	0	0	0	0		0
204	7/21/2022	N	Oakes Street	N23 - N28	N23	N28	8	8		PVC	193	179.04		0000	0	0000	0	0	0	0	0		0
205	7/21/2022	N	Baines Street	N24 - N25	N24	N25	8	8		PVC	116	117.96		0000	0	0000	0	0	0	0	0		0
206	7/21/2022	N	Baines Street	N25 - N26	N25	N26	8	8		PVC	262	249.92		0000	0	0000	0	0	0	0	0		0
207	7/21/2022	N	Baines Street	N26 - N27	N26	N27	8	8		PVC	248	251.42		0000	0	0000	0	0	0	0	0		0
208	7/21/2022	N	Baines Street	N27 - N28	N27	N28	8	8		PVC	183	181.14		0000	0	0000	0	0	0	0	0		0
209	8/5/2022	N	Oakes Street	N28 - N4	N28	N4	8	8		PVC	150	150.05	Light Tree Project	2B00	20	0000	0	2	20	0	0		0
210	7/22/2022	N	Gates Street	N29 - N10	N29	N10	8	8		PVC	326	314.2		0000	0	0000	0	0	0	0	0		0
211	8/8/2022	N	Pulgas Avenue	N3 - N21	N3	N21	10	12	10	PE	89	88.17	Light Tree Project	2200	4	2300	6	2	4	50	0		0
212	7/22/2022	N	McNair Street	N30 - N11	N30	N11	8	8		PVC	134	130.86		0000	0	0000	0	0	0	0	0		0
213	8/8/2022	N	Pulgas Avenue	N4 - N3	N4	N3	10	12		PE	335	336.39	Light Tree Project	2500	10	2800	16	2	10	0	0		0



Attachment 4

Table 16 and Figure 10 from Master Plan Addendum

Table 16
Proposed Capital Improvement Program
EPASD Master Plan Update
East Palo Alto, California

Manhole (1)	Length (Feet) --	Existing Diameter (Inches) (2)	PDWF Predicted d/D (3)	PWWF Predicted d/D (3)	Proposed Diameter (Inches) (2)	PDWF Proposed d/D (4)	PWWF Proposed d/D (4)
I24-I13	237	6	0.48	1	6	0.44	0.72
L25-L24	342	8	0.69	1	10	0.43	0.53
L24-L23	386	8	0.54	0.72	10	0.36	0.43
L23-L3	351	8	0.69	1	10	0.43	0.53
L3-L2	83	10	1	1	12	0.58	0.54
L2-L1	179	10	0.77	0.72	12	0.48	0.46
L1-L21	223	10	1	1	14	0.55	0.5
L21-K28	68	10	1	1	14	0.6	0.55
K28-K4	242	10	1	1	15	0.64	0.58
K4-K3	238	12	1	1	15	0.51	0.45
K3-K2	190	12	1	1	15	0.58	0.5
K2-K1	451	14	0.74	0.74	15	0.54	0.48
N3-N21 (6)	89	10	0.7	0.58	10	0.6	0.38
N21-N14 (6)	196	10	0.74	0.6	10	0.624	0.38
N14-N2 (6)	88	10	0.77	0.6	10	0.624	0.4
N2-N1 (6)	296	10	0.72	0.58	10	0.6	0.38
O9-O8 (6)	140	6	0.72	0.68	6	0.6	0.56
O7-O6 (6)	427	8	0.81	0.66	8	0.66	0.57
L53-L52 (6)	218	6	0.8	0.52	6	0.64	0.48
L52-L50	224	6	1	0.76	8	0.57	0.42
L50-L49	224	8	0.57	0.76	10	0.36	0.26
L49-L48	233	8	1	0.6	10	0.5	0.38
L7-L6 (6)	261	6	0.72	0.4	6	0.6	0.32
L9-L4 (6)	162	6	0.72	0.8	6	0.6	0.64
M38-M39	158	8	0.84	1	12	0.36	0.36
M39-M43	241	8	0.84	1	12	0.36	0.36
M43-M42	104	8	1	1	12	0.44	0.46
M42-M41	37	8	1	0.6	12	0.28	0.28
M41-M13	111	8	0.84	1	12	0.36	0.36
M13-M12	276	8	0.84	1	12	0.36	0.36
M12-M40	337	8	0.84	1	12	0.36	0.36
M40-M5	263	8	0.84	1	12	0.36	0.36
M5-M4	373	8	1	1	12	0.52	0.54
M4-M31	143	8	1	1	12	0.48	0.48
M31-M3	357	10	1	1	12	0.54	0.56
M3-M2	380	10	1	1	12	0.58	0.58
I43-I15	62	12	0.44	0.44	15	0.29	0.29
I15-I14	386	12	1	1	15	0.62	0.64
I14-I13	444	12	1	1	15	0.48	0.48
I13-I12	320	12	1	1	15	0.48	0.51
I12-I6	339	12	1	1	15	0.46	0.51
I6-I5	411	18	1	1	24	0.52	0.69
I5-I31	135	18	1	1	24	0.53	0.69

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Proposed Capital Improvement Program
EPASD Master Plan Update
East Palo Alto, California

Manhole (1)	Length (Feet) --	Existing Diameter (Inches) (2)	PDWF Predicted d/D (3)	PWWF Predicted d/D (3)	Proposed Diameter (Inches) (2)	PDWF Proposed d/D (4)	PWWF Proposed d/D (4)
I31-I4	321	18	1	1	24	0.53	0.69
I4-I3	243	18	1	1	24	0.52	0.69
H36-H35	474	6	1	1	10	0.34	0.55
H35-H34	322	6	0.44	1	10	0.22	0.34
H34-H17	269	6	0.52	1	10	0.24	0.41
H17-H57	397	8	0.75	1	12	0.34	0.66
H57-H16	40	8	0.36	0.69	12	0.18	0.66
H16-H60	351	8	0.48	1	12	0.24	0.32
H60-H15	99	8	0.45	1	12	0.22	0.42
H15-H62	201	8	0.36	0.75	12	0.18	0.34
H62-H14	233	8	0.36	0.75	12	0.18	0.34
H14-H13	446	8	0.45	1	12	0.24	0.44
H13-H12	108	8	0.42	1	12	0.22	0.42
H12-H11	333	8	0.48	1	12	0.24	0.46
H11-H64	198	8	0.48	1	12	0.24	0.48
H64-H71	161	8	0.57	1	12	0.28	0.48
H71-H3	35	8	0.51	1	12	0.26	0.56
C12-C1	265	6	0.72	1	8	0.39	0.6
C48-C11	179	6	0.56	6	6	0.48	0.8
C9-C8	84	6	0.52	1	6	0.44	0.72
C8-C7	401	6	0.56	1	6	0.48	0.8
C7-C6	448	6	0.52	1	6	0.44	0.72
C6-C5	87	6	0.52	1	6	0.44	0.72
C5-C4	328	6	0.56	1	8	0.33	0.51
C4-C3	436	6	0.56	1	8	0.33	0.48
C3-C2	398	6	0.56	1	8	0.33	0.51
C2-C1	204	6	1	1	8	0.48	0.78
C1-B16 (5)	402	8	0.51	1	8	0.45	0.69
B16-B15 (5)	327	8	0.54	1	8	0.48	0.75
B15-B49 (5)	331	8	0.54	1	8	0.48	0.75
B49-B14 (5)	328	8	0.54	1	8	0.45	0.72
B7-B6	380	12	1	1	15	0.46	0.46
B6-B5	158	12	0.38	0.52	15	0.24	0.24
B5-B52	176	12	0.6	1	15	0.37	0.37
B52-B4	360	12	0.52	0.8	15	0.32	0.32
B4-B3	465	12	0.68	1	15	0.42	0.42
B3-B2	239	12	1	1	15	0.5	0.5
B2-A1	181	12	0.62	1	15	0.38	0.38
A1-A2	80	12	0.82	1	15	0.46	0.46
A2-A5	244	12	1	1	15	0.46	0.46
A5-A8	124	15	1	1	18	0.49	0.67
A8-A9	61	15	0.37	0.48	18	0.25	0.32
A9-A10	181	15	1	1	18	0.53	0.73

Table 16
Proposed Capital Improvement Program
EPASD Master Plan Update
East Palo Alto, California

Manhole (1)	Length (Feet) --	Existing Diameter (Inches) (2)	PDWF Predicted d/D (3)	PWWF Predicted d/D (3)	Proposed Diameter (Inches) (2)	PDWF Proposed d/D (4)	PWWF Proposed d/D (4)
A10-A15	299	15	0.51	0.7	18	0.35	0.44
A15-A16	435	15	1	1	18	0.52	0.7
A16-A21	296	15	0.67	1	18	0.43	0.56
A21-A23	155	15	0.5	0.67	18	0.33	0.43
A23-A22	14	15	0.32	0.42	18	0.23	0.28
D66-D65 (6)	413	6	0.72	0.68	6	0.6	0.6
D25-D24	301	6	0.36	1	8	0.21	0.45
D35-D34	178	6	1	1	8	0.54	0.78
D34-D33	293	6	0.56	0.76	8	0.3	0.42
D33-D24	450	6	0.72	1	10	0.39	0.51
D24-D23	350	8	0.57	1	10	0.38	0.55
D23-D22	73	8	0.66	1	10	0.38	0.58
D22-D21	149	8	0.78	1	10	0.48	0.67
D21-D19	391	8	0.72	1	10	0.46	0.62
D19-D10	48	8	0.45	0.6	10	0.31	0.38
D10-D3	489	8	1	1	10	0.5	0.67
D5-D4	70	8	0.84	1	10	0.46	0.58
D4-D3	296	8	0.84	1	10	0.46	0.58
D3-D2	363	12	1	1	15	0.51	0.69
D2-D1	53	12	1	1	16	0.6	1
D1-E4	354	12	0.82	1	16	0.42	0.54
E4-E3	357	12	0.7	1	16	0.38	0.48
E3-E2	280	12	1	1	16	0.45	0.59
E2-E1	283	12	0.82	1	16	0.42	0.54
E1-H9	270	12	1	1	16	0.56	0.8
H9-H73	246	12	1	1	16	0.51	0.7
H73-H74	101	12	1	1	18	0.48	0.64
H74-H8	113	12	1	1	18	0.43	0.57
H8-H7	233	12	1	1	18	0.51	0.69
H7-H75	90	12	1	1	18	0.44	0.59
H75-H6	260	12	1	1	18	0.44	0.59
H6-H5	9	12	1	1	18	0.36	0.47
H5-H4	260	15	1	1	18	0.57	0.79
H4-H3	7	15	0.82	1	18	0.51	0.67
H3-H2	31	15	0.77	1	18	0.49	0.71
H2-I11	37	15	0.43	0.61	18	0.31	0.41
I11-I10	380	15	0.78	1	18	0.51	0.72
I10-I9	221	15	0.69	1	18	0.45	0.64
I9-I8	155	15	1	1	20	0.53	0.77
I8-I7	238	15	1	1	20	0.36	0.48
I7-I6	259	15	0.67	1	20	0.38	0.52
E8-E7	355	8	1	1	12	0.38	0.52
E7-E6	311	8	1	1	12	0.36	0.48

Table 16
Proposed Capital Improvement Program
 EPASD Master Plan Update
 East Palo Alto, California

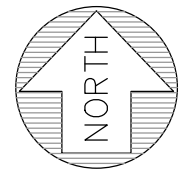
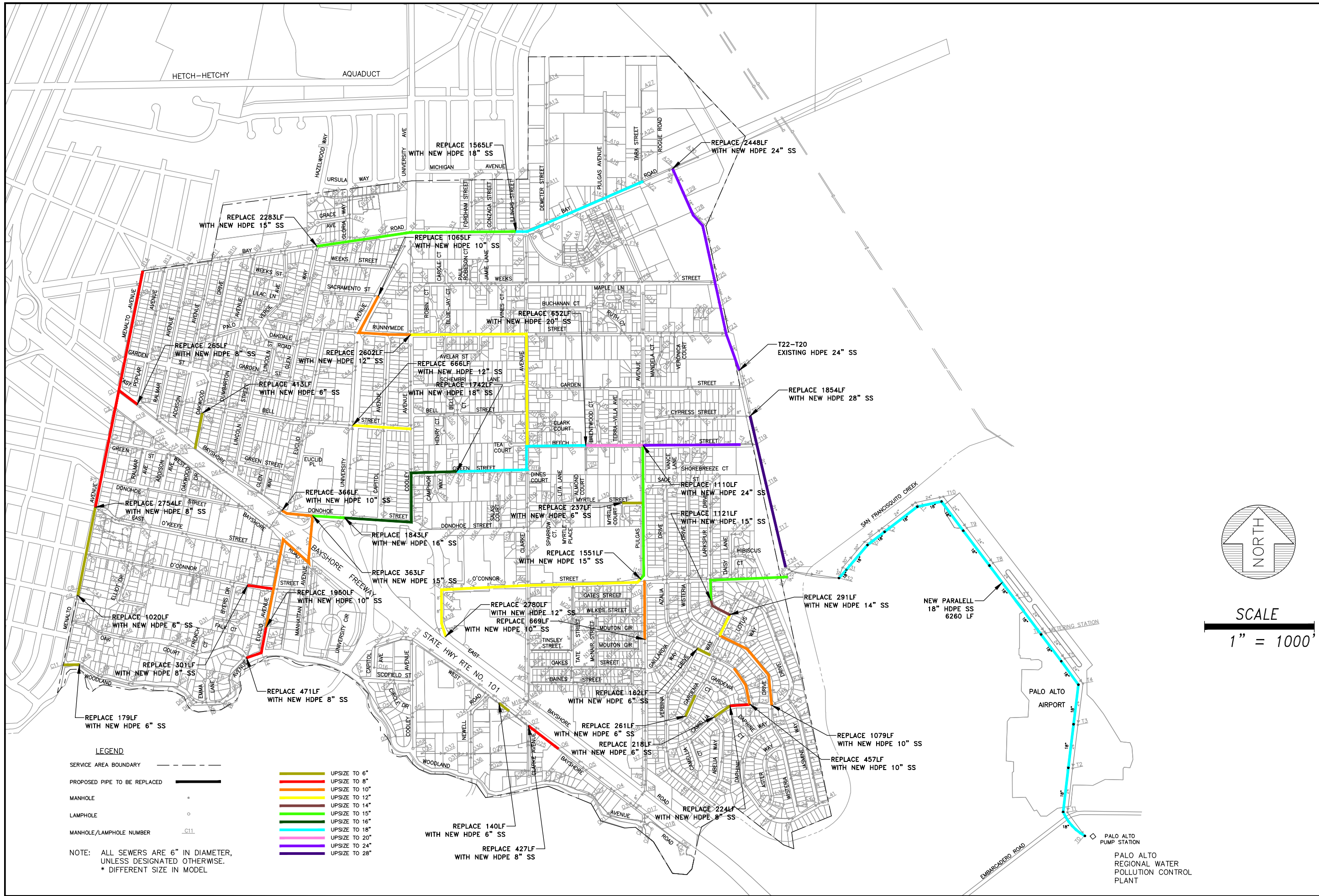
Manhole (1)	Length (Feet) --	Existing Diameter (Inches) (2)	PDWF Predicted d/D (3)	PWWF Predicted d/D (3)	Proposed Diameter (Inches) (2)	PDWF Proposed d/D (4)	PWWF Proposed d/D (4)
A29-T29	345	18	0.39	0.51	24	0.26	0.33
T29-T28	234	18	0.37	0.48	24	0.25	0.32
T28-T27	162	18	0.77	1	24	0.47	0.62
T27-T26	356	18	0.49	0.65	24	0.32	0.42
T26-T25	306	18	0.45	0.6	24	0.3	0.38
T25-T24	282	18	1	1	24	0.53	0.73
T24-T23	317	18	0.47	0.63	24	0.31	0.4
T23-T22	446	18	0.52	0.72	24	0.34	0.44
T20-T19	332	18	0.37	0.49	28	0.21	0.27
T19-T18	500	21	0.78	1	28	0.47	0.62
T18-T17	540	21	0.78	1	28	0.46	0.61
T17-T16	482	21	1	1	28	0.49	0.64
T12-T1	6260	(6)	(6)	(6)	18	1	1

Notes

- (1) Manhole used to find Q and Depth over Diameter value.
- (2) Pipe Diameter directly downstream of Manhole.
- (3) Calculated by dividing the depth of flow by pipe diameter.
This value is evaluated directly downstream of specified manhole under the existing PWWF condition including proposed injections.
- (4) Calculated by dividing the depth of flow by pipe diameter.
This value is evaluated directly downstream of specified manhole under the existing PWWF condition including proposed injections and pipe size upgrades.
- (5) d/D improves with same size HDPE upgrade.
- (6) The new 18-inch diameter pipeline is the wet weather parallel pipeline.

Abbreviations

d/D: Depth over Diameter



SCALE
1" = 1000'

LEGEND

- SERVICE AREA BOUNDARY
- PROPOSED PIPE TO BE REPLACED
- MANHOLE
- LAMPHOLE
- MANHOLE/LAMPHOLE NUMBER

- UPSIZE TO 6"
- UPSIZE TO 8"
- UPSIZE TO 10"
- UPSIZE TO 12"
- UPSIZE TO 14"
- UPSIZE TO 15"
- UPSIZE TO 16"
- UPSIZE TO 18"
- UPSIZE TO 20"
- UPSIZE TO 24"
- UPSIZE TO 28"

NOTE: ALL SEWERS ARE 6" IN DIAMETER, UNLESS DESIGNATED OTHERWISE.
* DIFFERENT SIZE IN MODEL

COMBINED IMPROVEMENTS NO SURCHARGE UNDER PROPOSED CONDITIONS
EPASD MASTER PLAN UPDATE
EAST PALO ALTO, CA

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS
144 North San Mateo Drive • San Mateo, CA 94401
(650)344-9901 • www.freyerlaureta.com

DATE:	4/28/2021
SCALE:	1" = 1000'
DESIGNED:	RAM
DRAWN:	RAM
CHECKED:	JF
PROJ. ENGR:	JJT

FIGURE	10
JOB NO.	2052

PALO ALTO REGIONAL WATER POLLUTION CONTROL PLANT