SECTION 11

CAPITAL IMPROVEMENT PROGRAM

11-1 Introduction

The Capital Improvement Program (CIP) consists of projects that will enhance the system to meet the established criteria, properly maintain the system's assets, and replace the facilities that have reached the end of their useful lives. The goal of the CIP is to provide the City with a long-range planning tool that will allow construction of the recommended projects in an orderly manner to improve the existing system and provide for future growth. In order to accomplish this goal, it is necessary to determine the estimated cost of the needed water system improvements identified in this report, establish a basis and prioritize each of the projects.

The recommended CIP is shown in Table 11-1. Project locations are shown on Figure 11-1. Some project details are shown on Figure 11-2 through Figure 11-6.

11-2 Cost Estimates

Cost estimates have been prepared for each recommended project, based upon information from recent similar projects. The pipeline replacement costs are based upon $15 per diameter inch per foot for the OMC and $12 per diameter inch per foot for the NMC. The City of Ontario's Old Model Colony is largely developed, and future pipelines will be constructed along alignments with many existing utilities. Therefore, the costs of constructing new or replacement facilities will be generally higher in this area than one that is undeveloped. New well costs include providing permanent back-up power. Construction costs can be expected to fluctuate as changes occur in the economy. These costs should therefore be reevaluated and updated annually based upon Engineering News Record (ENR) Index for the Los Angeles area (ENRLA), with the base ENRLA Index of 10,285 for April 2012.

It should be noted that some of the improvements recommended herein are conceptual in nature based on existing planning information available. Therefore, they should not be considered as absolute for final design. Further analysis and refinement will be necessary prior to commencing work on the final plans, specifications and estimates package for each project. Detailed preliminary design studies should be prepared to select the final design projects.

The cost estimates that follow were generated by estimating the quantities of required items for each improvement, and applying typical unit prices to obtain the total estimated construction costs. Contingencies are estimated at 10 percent of the construction cost. Engineering and administration costs are estimated at 15 percent of the construction plus contingency costs. The resultant sum is the total estimated project cost. The resultant sum is the total estimated project cost. Cost estimates for each recommended project are shown in Table 11-1.

Projects are identified in Table 11-1 as a part of the OMC or the NMC (column "OMC/NMC") and as needed due to existing conditions or ultimate conditions (column "Ex/Ult"). All fire flow deficiencies found in the OMC are assigned to the existing OMC cost. Fire flow deficiencies were all found under existing conditions, but projects were developed so that the fire flows could be met under ultimate conditions as well. A summary of the total costs are as follows:

Existing OMC cost: $ 157,788,220

Ultimate OMC cost: $ 35,077,180

Ultimate NMC cost: $ 153,097,660

Total CIP cost: $ 345,963,060 (not including annual OMC improvement project costs)

Annual OMC improvement project cost: $675,000

11-3 Project Priorities

The primary consideration in establishing project priorities for the capital improvement program list must always be given to the health, safety and welfare of the public and the customers. In general, the projects necessary to improve the existing system are scheduled earlier in the order of supply, pumping and storage. Fire protection rates as a high priority, but is usually dependent on the supply and storage, as well as the distribution system.

Supply improvements rate in the order of benefit to the overall system, and reliability during emergencies such as multiple sources.

Pumping improvements rate in the order of ability to augment fire flows, capacity to maintain adequate storage levels in the reservoirs, and redundancy of power and pumps to provide adequate service during emergencies.

Storage improvements rank in the order of fire protection, operational capability to meet average and peak flows, and emergencies.

With these guidelines, the projects recommended in this report and their estimated costs were examined and sorted. Each project is shown with its total estimated project cost. The City should review this schedule and adjust it annually to respond to changed conditions and to take advantage of concurrent construction such as street paving projects or adjacent infrastructure work.

Projects in New Model Colony or related to service to New Model Colony will be dependent upon the progression of development, which is relatively unknown at this time. Therefore, the New Model Colony projects are not prioritized in Table 11-1.

Table 11-1
Capital Improvement Program

Row No.	WMP Project No.	City's CIP Project No.	OMC/ NMC	Ex/ Ult	Facility Type	Ex Pipe Size (in)	Description	Size/ Number	Unit	Unit Cost ($)	Unit	Construction Cost ($)	Contingency ($)	Engineering & Admin. ($)	Construction Mgmt. ($)	Total Cost ($)
Old Model Colony Improvement Projects																
1	O-1	WAXXXX	OMC	Ex	Other		1348 Zone Reservoirs Structural Retrofits	3	Reservoir	5,000,000	$/project	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	5,000,000
2	O-2	WA0901	OMC	Ex	Other		Reservoir 1010-1A Piping Seismic Retrofits	1	Reservoir	102,000	$/project	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	102,000
3	S-1	WA9910	OMC	Ex	Supply		CIP Well #43 in the 1212 Zone Equipping of Well drilled in 2008	1	Well	1,600,000	$/Well	1,600,000	160,000	35,000	150,000	1,945,000
4	S-2		OMC	Ex	Supply		CIP Well #42 in the 1212 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
5	S-3		OMC	Ex	Supply		Treatment for OMC Wells			Lump Sum		8,890,000	889,000	977,900	488,950	11,245,850
6	S-4						Skipped									
7	S-5						Skipped									
8	S-6						Skipped									
9	S-7		OMC	Ex	Supply		Well #11 Abandon due to continuing sanding problem (1074 Zone)	1	Well	100,000	$/Well	100,000	10,000	11,000	5,500	126,500
10	R-1		OMC	Ex	Reliability		Backup Power for Well 39 (500 KW) - 1010 Zone	500	KW	500,000	$/Well	500,000	50,000	55,000	27,500	632,500
11	ST-1		OMC	Ex	Storage		Replace Roof on Reservoir 1212-3	73,100	sq ft	10	$/sq ft	731,000	73,100	80,410	40,205	924,715
12	ST-2		OMC	Ex	Storage		Booster Pump Station from 1010 Zone to 1074 Zone - Location to be determined	300	HP	5,000	$/HP	1,500,000	150,000	165,000	82,500	1,897,500
13	O-3	WA0301	OMC	Ex	Other		Airport Metering and Backflow Prevention - Planning	8	meters	120,000	$/study	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	120,000
14	O-4	WA0301	OMC	Ex	Other		Airport Metering and Backflow Prevention - Construction	8	meters	300,000	$/project	300,000	30,000	33,000	16,500	379,500
15	R-2		OMC	Ex	Reliability		Portable Generator Connection and Manual Transfer Switch	2	Well	250,000	$/Well	500,000	50,000	55,000	27,500	632,500
16	R-3		OMC	Ex	Reliability		Portable Generators-750 KW	2	EA	500,000	$/Genset	1,000,000	100,000	110,000	55,000	1,265,000
17	S-8		OMC	Ex	Supply		Abandon Existing OMC Well #9	1	Well	100,000	$/Well	100,000	10,000	11,000	5,500	126,500
18	S-9		OMC	Ex	Supply		Abandon Existing OMC Well #15	1	Well	100,000	$/Well	100,000	10,000	11,000	5,500	126,500
19	S-10		OMC	Ex	Supply		Abandon Existing OMC Well #16	1	Well	100,000	$/Well	100,000	10,000	11,000	5,500	126,500
20	S-11						Skipped									
21	S-12		OMC	Ex	Supply		Abandon John Galvin Facility	1	LS	400,000	LS	400,000	40,000	44,000	22,000	506,000
22	P-1		OMC	Ex	Pressure		20-inch pipeline in Campus Ave from Eighth St to Fourth St (1212 Zone)	5,400	ft	300	$/ft	1,620,000	162,000	178,200	89,100	2,049,300
23	P-2		OMC	Ex	Pressure		30-inch pipeline in Eighth St from Reservoir 1212-1A and 1212-1B to San Antonio Ave (1212 Zone)	1,500	ft	450	$/ft	675,000	67,500	74,250	37,125	853,875
24	P-3		OMC	Ex	Pressure		30-inch pipeline in San Antonio Ave from Eighth St to Fourth St (1212 Zone)	5,300	ft	450	$/ft	2,385,000	238,500	262,350	131,175	3,017,025
25	P-4		OMC	Ex	Pressure		18-inch pipeline in Fourth St from Elderberry Ave to San Antonio Ave (1212 Zone)	4,300	ft	270	$/ft	1,161,000	116,100	127,710	63,855	1,468,665
26	P-5		OMC	Ex	Pressure		18-inch pipeline in Fourth St from San Antonio Ave to Vine Ave (1212 Zone)	1,450	ft	270	$/ft	391,500	39,150	43,065	21,533	495,248
27	P-6		OMC	Ex	Pressure		18-inch pipeline in Vine Ave from Fouth St to J St (1212 Zone)	700	ft	270	$/ft	189,000	18,900	20,790	10,395	239,085
28	P-7		OMC	Ex	Pressure		18-inch pipeline in J St from Vine Ave to Euclid Ave (1212 Zone)	1,600	ft	270	$/ft	432,000	43,200	47,520	23,760	546,480
29	P-8		OMC	Ex	Pressure		24-inch pipeline in J St east side of Euclid Ave (1212 Zone)	110	ft	360	$/ft	39,600	3,960	4,356	2,178	50,094
30	P-9		OMC	Ult	Pressure		PRS 21 at Euclid Ave and Phillips St (from 1212 Zone to 1074 Zone)	4 and 8	inch	250,000	$/station	250,000	25,000	27,500	13,750	316,250
31	P-10		OMC	Ult	Pressure		PRS 22 at Vineyard Ave and Mission Blvd (from 1212 Zone to 1074 Zone)	4 and 8	inch	250,000	$/station	250,000	25,000	27,500	13,750	316,250
32	P-11		OMC	Ult	Pressure		12-inch pipeline in Grove Ave from Philips St to Francis St (1074 Zone)	4,400	ft	180	$/ft	792,000	79,200	87,120	43,560	1,001,880
33	P-12		OMC	Ult	Pressure		12-inch pipeline in Euclid Ave from PRS 2 at SR-60 to Walnut St (1010 Zone)	1,750	ft	180	$/ft	315,000	31,500	34,650	17,325	398,475
34	P-13		OMC	Ult	Pressure		16-inch pipeline in Grove Ave from PRS 3 at SR-60 to Walnut St (1010 Zone)	1,800	ft	240	$/ft	432,000	43,200	47,520	23,760	546,480
35	P-14		OMC	Ult	Pressure		PRS 23 at SR-60 and Campus Ave (from 1074 Zone to 1010 Zone)	4 and 8	inch	250,000	$/station	250,000	25,000	27,500	13,750	316,250
36	P-15		OMC	Ult	Pressure		6-inch pipeline in Banyan St, west of Parco Ave (1010 Zone)	30	ft	30,000	$/project	30,000	3,000	3,300	1,650	37,950
37	P-16		OMC	Ult	Pressure		10-inch pipeline in Walnut St, west of Parco Ave (1010 Zone)	10	ft	30,000	$/project	30,000	3,000	3,300	1,650	37,950
38	P-17		OMC	Ult	Pressure		6-inch pipeline in Maidstone St, west of Parco Ave (1010 Zone)	30	ft	30,000	$/project	30,000	3,000	3,300	1,650	37,950
39	P-18		OMC	Ult	Pressure		8-inch pipeline in St. Andrews St, west of Parco Ave (1010 Zone)	10	ft	30,000	$/project	30,000	3,000	3,300	1,650	37,950
40	ST-3		OMC	Ult	Storage		Reservoir 1212-4A	8.0	MG	1.20	$/gallon	9,600,000	960,000	1,056,000	528,000	12,144,000
41	ST-4		OMC	Ult	Storage		Reservoir 1212-4B	8.0	MG	1.20	$/gallon	9,600,000	960,000	1,056,000	528,000	12,144,000
42	ST-5		OMC	Ult	Storage		30-inch transmission line from Reservoir 1212-4A and 1212-4B	13,600	ft	450	$/ft	6,120,000	612,000	673,200	336,600	7,741,800
43	ST-6		OMC	Ex	Storage		Abandon Reservoir 1212-3 (condition/age)	10.0	MG	30	$/CY	1,485,000	148,500	163,350	81,675	1,878,525
44	R-11		OMC	Ex	Reliability		Future Emergency Connection (MVWD-1)	1	Connection	250,000	$/connection	250,000	25,000	27,500	13,750	316,250
45	R-12		OMC	Ex	Reliability		Future Emergency Connection (Chino-2)	1	Connection	250,000	$/connection	250,000	25,000	27,500	13,750	316,250
46	R-13		OMC	Ex	Reliability		Future Emergency Connection (FWC-1)	1	Connection	250,000	$/connection	250,000	25,000	27,500	13,750	316,250
47	R-14		OMC	Ex	Reliability		Future Emergency Connection (Upland-2)	1	Connection	250,000	$/connection	250,000	25,000	27,500	13,750	316,250
											Subtotal	**55,728,100**	**5,572,810**	**5,989,091**	**3,127,046**	**75,639,047**

Table 11-1 (Continued)
Capital Improvement Program

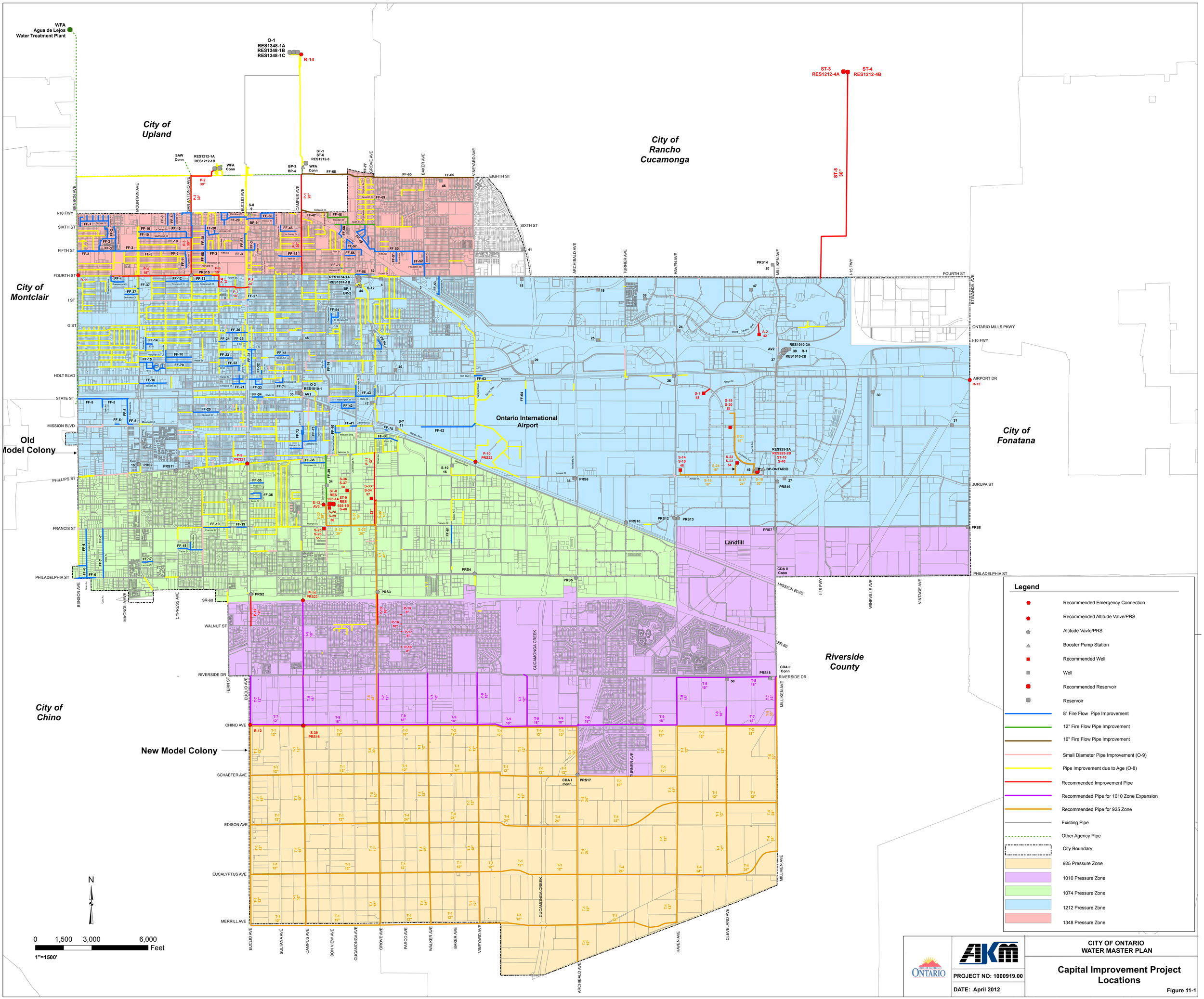
Row No.	WMP Project No.	City's CIP Project No.	OMC/ NMC		Facility Type	Ex Pipe Size (in)	Description	Size/ Number	Unit	Unit Cost ($)	Unit	Construction Cost ($)	Contingency ($)	Engineering & Admin. ($)	Construction Mgmt. ($)	Total Cost ($)
Old Model Colony Annual Improvement Projects																
48	ST-7	WA0206	OMC	Ex	Storage		Reservoir recoating/repainting/repair			150,000	$/year	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	150,000
49	O-5	WA0205	OMC	Ex	Other		Facility Security Improvements			200,000	$/year	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	200,000
50	O-6	WA0605	OMC	Ex	Other		New Meter Installations			75,000	$/year	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	75,000
51	O-7	WA0602	OMC	Ex	Other		Water Meter Replacements			250,000	$/year	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	250,000
											Subtotal					**675,000**
Old Model Colony Old and Small Pipe Replacement Projects																
52	O-8		OMC	Ex	Condition/Age	8" & Less	Improvements Due to Pipe Age (pipes constructed in or before 1960)- Replace with 8"	357,343	ft	120	$/ft	42,881,161	4,288,116	4,716,928	2,358,464	54,244,669
53	O-8		OMC	Ex	Condition/Age	10" & 12"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 12"	43,580	ft	180	$/ft	7,844,368	784,437	862,880	431,440	9,923,125
54	O-8		OMC	Ex	Condition/Age	14" & 16"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 16"	13,588	ft	240	$/ft	3,261,204	326,120	358,732	179,366	4,125,424
55	O-8		OMC	Ex	Condition/Age	16" to 18"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 18"	38,380	ft	270	$/ft	10,362,720	1,036,272	1,139,899	569,950	13,108,840
56	O-8		OMC	Ex	Condition/Age	18" to 20"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 20"	4,582	ft	300	$/ft	1,374,520	137,452	151,197	75,599	1,738,768
57	O-8		OMC	Ex	Condition/Age	20" to 24"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 24"	5,569	ft	360	$/ft	2,005,002	200,500	220,550	110,275	2,536,328
58	O-8		OMC	Ex	Condition/Age	24" to 36"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 36"	616	ft	540	$/ft	332,640	33,264	36,590	18,295	420,789
59	O-9		OMC	Ex	Size	4" & Less	Replace Small Diameter Pipes with 8-inch Pipe (pipes 4-inch and smaller)	49,631	ft	120	$/ft	5,955,720	595,572	655,129	327,565	7,533,986
											Subtotal	**74,017,336**	**7,401,734**	**8,141,907**	**4,070,953**	**93,631,930**
New Model Colony Improvement Projects																
60	ST-8		NMC	Ult	Storage		Reservoir 925-1A	9.0	MG	1.20	$/gallon	10,800,000	1,080,000	1,188,000	594,000	13,662,000
61	ST-9		NMC	Ult	Storage		Reservoir 925-1B	9.0	MG	1.20	$/gallon	10,800,000	1,080,000	1,188,000	594,000	13,662,000
62	ST-10		NMC	Ult	Storage		Reservoir 925-2B	6.0	MG	1.20	$/gallon	7,200,000	720,000	792,000	396,000	9,108,000
63	S-13		NMC	Ult	Supply		Altitude Valve from 1074 Zone to 925 Zone at Reservoir 925-1A and 925-1B	12	inch	250,000	$/valve	250,000	25,000	27,500	13,750	316,250
64	S-14		NMC	Ult	Supply		Land Acquisition for Well #48 in 925 Zone	1	Well	0	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	0
65	S-15		NMC	Ult	Supply		NMC Well #48 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
66	S-16		NMC	Ult	Supply		18-inch well collecting line for Well 48 and 54 to Reservoir 925-2A	3,000	ft	216	$/ft	648,000	64,800	71,280	35,640	819,720
67	S-17		NMC	Ult	Supply		24-inch well collecting line for Well 48 and 54 to Reservoir 925-2A	900	ft	288	$/ft	259,200	25,920	28,512	14,256	327,888
68	S-18		NMC	Ult	Supply		30-inch well collecting line for Well 48 to Reservoir 925-2A	400	ft	360	$/ft	144,000	14,400	15,840	7,920	182,160
69	S-19		NMC	Ult	Supply		Land Acquisition for Well #51 in 925 Zone	1	Well	0	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	0
70	S-20		NMC	Ult	Supply		NMC Well #51 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
71	S-21		NMC	Ult	Supply		18-inch well collecting line for Well 51 to Reservoir 925-2A	4,000	ft	216	$/ft	864,000	86,400	95,040	47,520	1,092,960
72	S-22		NMC	Ult	Supply		Land Acquisition for Well #54 in 925 Zone	1	Well	0	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	0
73	S-23		NMC	Ult	Supply		NMC Well #54 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
74	S-24		NMC	Ult	Supply		18-inch well collecting line for Well 54 to Reservoir 925-2A	500	ft	216	$/ft	108,000	10,800	11,880	5,940	136,620
75	S-25		NMC	Ult	Supply		Land Acquisition for Well #55 in 925 Zone	1	Well	300,000	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	300,000
76	S-26		NMC	Ult	Supply		NMC Well #55 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
77	S-27						Skipped									
78	S-28		NMC	Ult	Supply		Land Acquisition for Well #56 in 925 Zone	1	Well	300,000	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	300,000
79	S-29		NMC	Ult	Supply		NMC Well #56 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
80	S-30		NMC	Ult	Supply		30-inch line from Well 56 to intersection of Bonview Ave and Francis St	1,400	ft	480	$/ft	672,000	67,200	73,920	36,960	850,080
81	S-31						Skipped									
82	S-32		NMC	Ult	Supply		30-inch line in Francis St from Bonview Ave to Grove Ave	2,700	ft	360	$/ft	972,000	97,200	106,920	53,460	1,229,580
83	S-33		NMC	Ult	Supply		Land Acquisition for Well #57 in 925 Zone	1	Well	300,000	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	300,000
84	S-34		NMC	Ult	Supply		NMC Well #57 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
85	S-35		NMC	Ult	Supply		18-inch well collecting line from Well 57 to intersection of Francis St and Grove Ave	1,500	ft	216	$/ft	324,000	32,400	35,640	17,820	409,860
86	S-36		NMC	Ult	Supply		Land Acquisition for Well #58 in 925 Zone	1	Well	300,000	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	300,000
87	S-37		NMC	Ult	Supply		NMC Well #58 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
88	S-38		NMC	Ult	Supply		18-inch well collecting line from Well 58 to intersection of Francis St and Cucamonga Ave	2,000	ft	216	$/ft	432,000	43,200	47,520	23,760	546,480
89	S-39		NMC	Ult	Supply		PRS 16 at Campus Ave and Chino Ave (from 1010 Zone to 925 Zone)	8 and 12	inch	250,000	$/station	250,000	25,000	27,500	13,750	316,250
90	S-40		NMC	Ult	Supply		Treatment at Bon View and Jurupa Reservoir Sites	1	Site	10,000,000	$/well	10,000,000	1,000,000	1,100,000	550,000	12,650,000
91	T-1		NMC	Ult	Transmission		12-inch distribution lines (925 Zone)	173,150	ft	144	$/ft	24,933,600	2,493,360	2,742,696	1,371,348	31,541,004
92	T-2		NMC	Ult	Transmission		18-inch distribution lines (925 Zone), Chino Ave	5,300	ft	216	$/ft	1,144,800	114,480	125,928	62,964	1,448,172
93	T-3		NMC	Ult	Transmission		18-inch distribution lines (925 Zone), Chino Ave	6,600	ft	216	$/ft	1,425,600	142,560	156,816	78,408	1,803,384

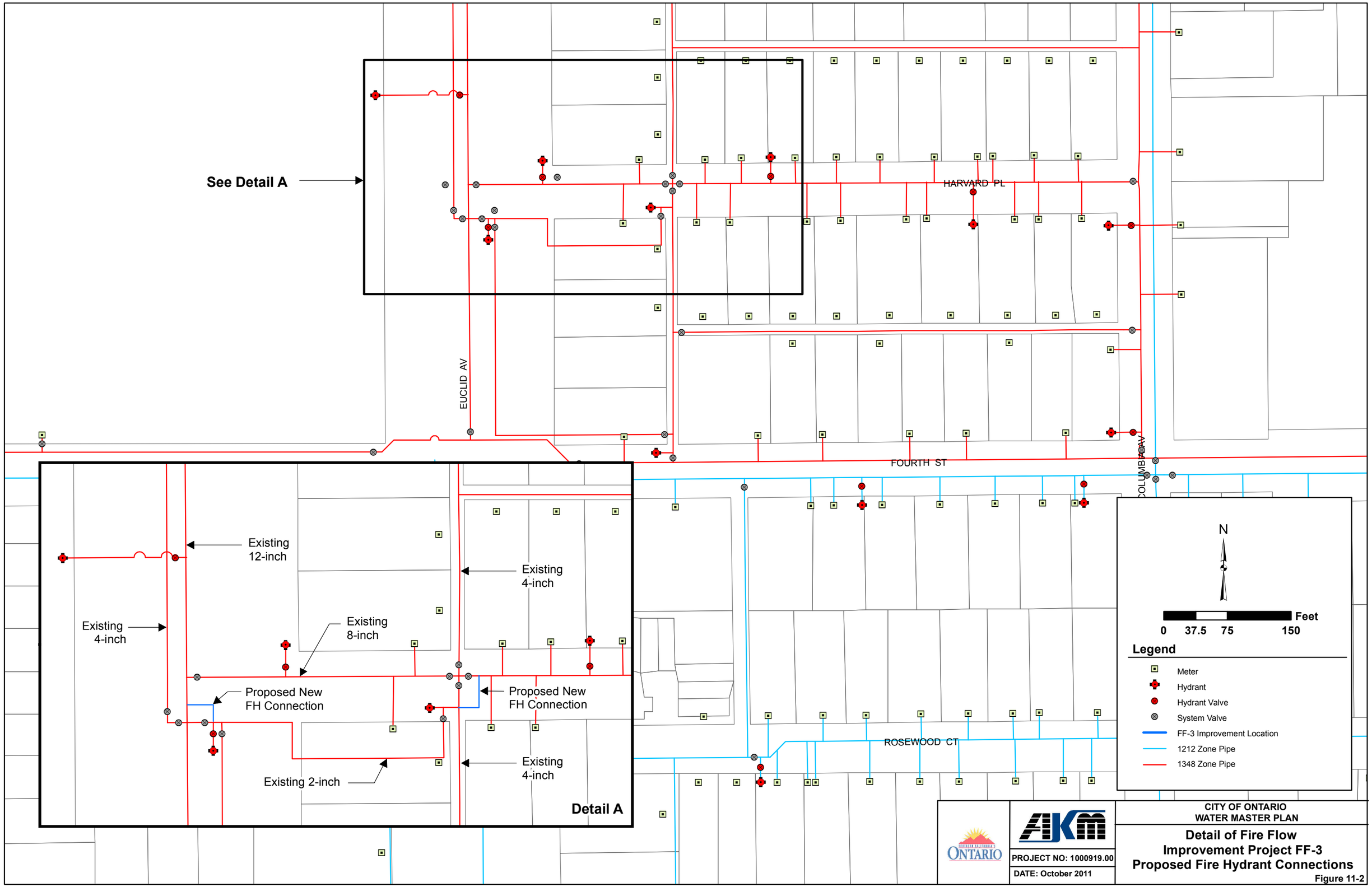
Table 11-1 (Continued)
Capital Improvement Program

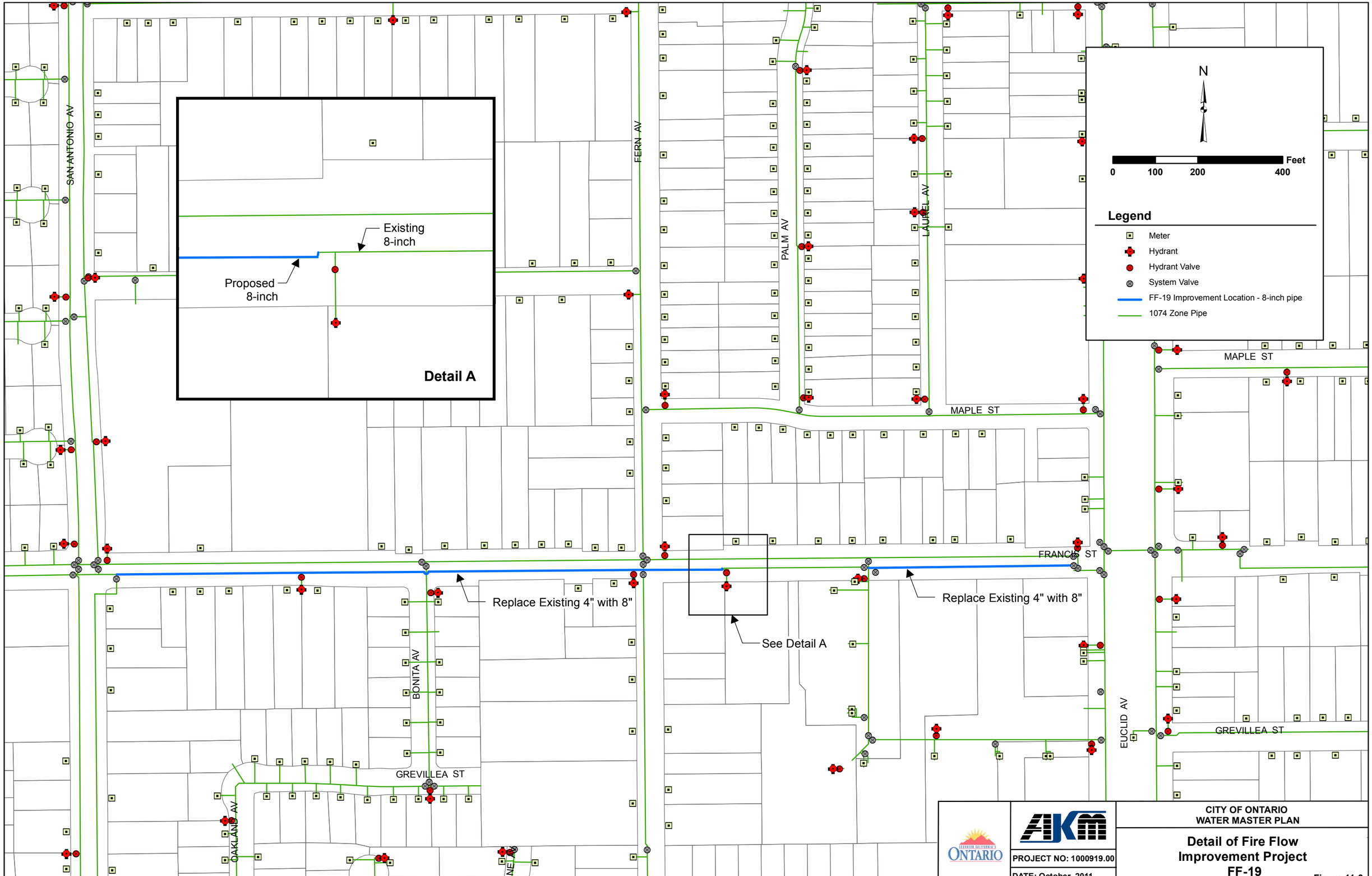
Row No.	WMP Project No.	City's CIP Project No.	OMC/ NMC		Facility Type	Ex Pipe Size (in)	Description	Size/ Number	Unit	Unit Cost ($)	Unit	Construction Cost ($)	Contingency ($)	Engineering & Admin. ($)	Construction Mgmt. ($)	Total Cost ($)
New Model Colony Improvement Projects continued																
94	T-4		NMC	Ult	Transmission		24-inch distribution lines (925 Zone), Milliken Ave, Eucalyptus Ave, Archibald Ave, Edison Ave	29,200	ft	288	$/ft	8,409,600	840,960	925,056	462,528	10,638,144
95	T-5		NMC	Ult	Transmission		30-inch distribution lines (925 Zone), Grove Ave, Milliken Ave	11,900	ft	360	$/ft	4,284,000	428,400	471,240	235,620	5,419,260
96	T-6		NMC	Ult	Transmission		42-inch distribution lines (925 Zone), Grove Ave btw Reservoir 925-1A and Chino Ave	10,700	ft	504	$/ft	5,392,800	539,280	593,208	296,604	6,821,892
97	T-7		NMC	Ult	Transmission		12-inch distribution lines (1010 Zone)	20,900	ft	144	$/ft	3,009,600	300,960	331,056	165,528	3,807,144
98	T-8		NMC	Ult	Transmission		18-inch distribution lines (1010 Zone), Cleveland Ave north of Chino Ave.	950	ft	216	$/ft	205,200	20,520	22,572	11,286	259,578
99	T-9		NMC	Ult	Transmission		18-inch distribution lines (1010 Zone), Chino Ave,Riverside Dr, Campus Ave	36,800	ft	216	$/ft	7,948,800	794,880	874,368	437,184	10,055,232
												120,077,200	**12,007,720**	**13,208,492**	**6,604,246**	**153,097,658**
Old Model Colony Fire Flow Improvement Projects																
100	FF-1	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Deodar St, Fuchsia Ct, Oaks Ct, Iris Ct, Jasmine Ct, Fuchsia Ave, Helen Ct, Gardenia Ct	3,852	ft	120	$/ft	462,240	46,224	50,846	25,423	584,734
101	FF-2	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Elderberry Ave, Gardenia Ave, Alley between Sixth St and Fifth St, Alley between Helen Ave and Elderberry Ave, Alley between Gardenia Ave and Elderberry Ave	3,614	ft	120	$/ft	433,680	43,368	47,705	23,852	548,605
102	FF-3	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Fifth St, Helen Ave, College Wy. Two new connections are recommended; 1 - Euclid Ave and Harvard St connect the fire hydrant to 12-inch pipe in Euclid Ave, 2 - Harvard St and Alley east of Euclid Ave connect the fire hydrant to 8-inch pipe in Harvard St	10,770	ft	120	$/ft	1,292,400	129,240	142,164	71,082	1,634,886
103	FF-4	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Rosewood Ct, Elderberry Ave	964	ft	120	$/ft	115,680	11,568	12,725	6,362	146,335
104	FF-5	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - State St, Oaks Ave, Mission Blvd, Magnolia Ave	5,018	ft	120	$/ft	602,160	60,216	66,238	33,119	761,732
105	FF-6	1074	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Helen Ave, Benson Ave, Philadelphia St	4,090	ft	120	$/ft	490,800	49,080	53,988	26,994	620,862
106	FF-7	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Oaks Ave	2,621	ft	120	$/ft	314,520	31,452	34,597	17,299	397,868
107	FF-8	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Boulder Ave, Granite Ave	1,281	ft	120	$/ft	153,720	15,372	16,909	8,455	194,456
108	FF-9	1348	OMC	Ex	Fire Flow	4	8-inch distribution line - San Antonio Ave, Cypress Ave	1,232	ft	120	$/ft	147,840	14,784	16,262	8,131	187,018
109	FF-10	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - La Deney Dr, Cypress Dr, Hawthorne St, San Antonio Ave	6,379	ft	120	$/ft	765,480	76,548	84,203	42,101	968,332
110	FF-11	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Cypress Dr	925	ft	120	$/ft	111,000	11,100	12,210	6,105	140,415
111	FF-12	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Rosewood St, Rosewood Ct	1,194	ft	120	$/ft	143,280	14,328	15,761	7,880	181,249
112	FF-13	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - Fourth St, Rosewood Dr	1,821	ft	120	$/ft	218,520	21,852	24,037	12,019	276,428
113	FF-14	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Palmetto Ave	1,041	ft	120	$/ft	124,920	12,492	13,741	6,871	158,024
114	FF-15	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Pinyon Dr, Pinyon Ct, Vesta St, Alpine Ct, Cone Flower Dr	2,972	ft	120	$/ft	356,640	35,664	39,230	19,615	451,150
115	FF-16	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Brooks St, Mountain Ave	1,423	ft	120	$/ft	170,760	17,076	18,784	9,392	216,011
116	FF-17	1074	OMC	Ex	Fire Flow	6	8-inch distribution line - Ladora Ct	565	ft	120	$/ft	67,800	6,780	7,458	3,729	85,767
117	FF-18	1074	OMC	Ex	Fire Flow	6	8-inch distribution line - Redwood Ave, Cedar St	1,688	ft	120	$/ft	202,560	20,256	22,282	11,141	256,238
118	FF-19	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Francis St. New connection is recommended between proposed 8-inch and existing 8-inch pipe lines in Francis St east of Fern St.	1,927	ft	120	$/ft	231,240	23,124	25,436	12,718	292,519
119	FF-20	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Sunkist St	1,383	ft	120	$/ft	165,960	16,596	18,256	9,128	209,939
120	FF-21	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Laurel Ave, Transit St, Emporia St	1,678	ft	120	$/ft	201,360	20,136	22,150	11,075	254,720
121	FF-22	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line - B St, Laurel Ave	1,382	ft	120	$/ft	165,840	16,584	18,242	9,121	209,788
122	FF-23	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Alley between Vine Ave and Fern Ave, and between Fern Ave and Palm Ave	714	ft	120	$/ft	85,680	8,568	9,425	4,712	108,385
123	FF-24	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - E St, Fern Ave	535	ft	120	$/ft	64,200	6,420	7,062	3,531	81,213
124	FF-25	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line - E St	784	ft	120	$/ft	94,080	9,408	10,349	5,174	119,011
125	FF-26	1212	OMC	Ex	Fire Flow	4	8-inch distribution line -F St	1,114	ft	120	$/ft	133,680	13,368	14,705	7,352	169,105
126	FF-27	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Alley between Granada St and Plaza Serena St	83	ft	120	$/ft	30,000	3,000	3,300	1,650	37,950
127	FF-28	1348	OMC	Ex	Fire Flow	2&4&6	8-inch distribution line - Alley between San Antonio Ave and Vine Ave, Armsley Sq, Bonita Ct	2,461	ft	120	$/ft	295,320	29,532	32,485	16,243	373,580
128	FF-29	1348	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Kenmore Ct, Caroline Ct, Kenmore Ave	2,699	ft	120	$/ft	323,880	32,388	35,627	17,813	409,708
129	FF-30	1348	OMC	Ex	Fire Flow	2&4	8-inch distribution line - Alvarado St, Deodar St, Sultana Ave, Columbia Ave. Pipe in Columbia Ave must connect to pipe in Deodora St at the intersection of Deodar St and Columbia Ave.	3,144	ft	120	$/ft	377,280	37,728	41,501	20,750	477,259
130	FF-31	1212	OMC	Ex	Fire Flow	2&4&6	8-inch distribution line - D St and Alleys between Euclid Ave and Lemon Ave	1,734	ft	120	$/ft	208,080	20,808	22,889	11,444	263,221
131	FF-32	1212	OMC	Ex	Fire Flow	-	8-inch distribution line - Plum Ave	180	ft	120	$/ft	21,600	2,160	2,376	1,188	27,324

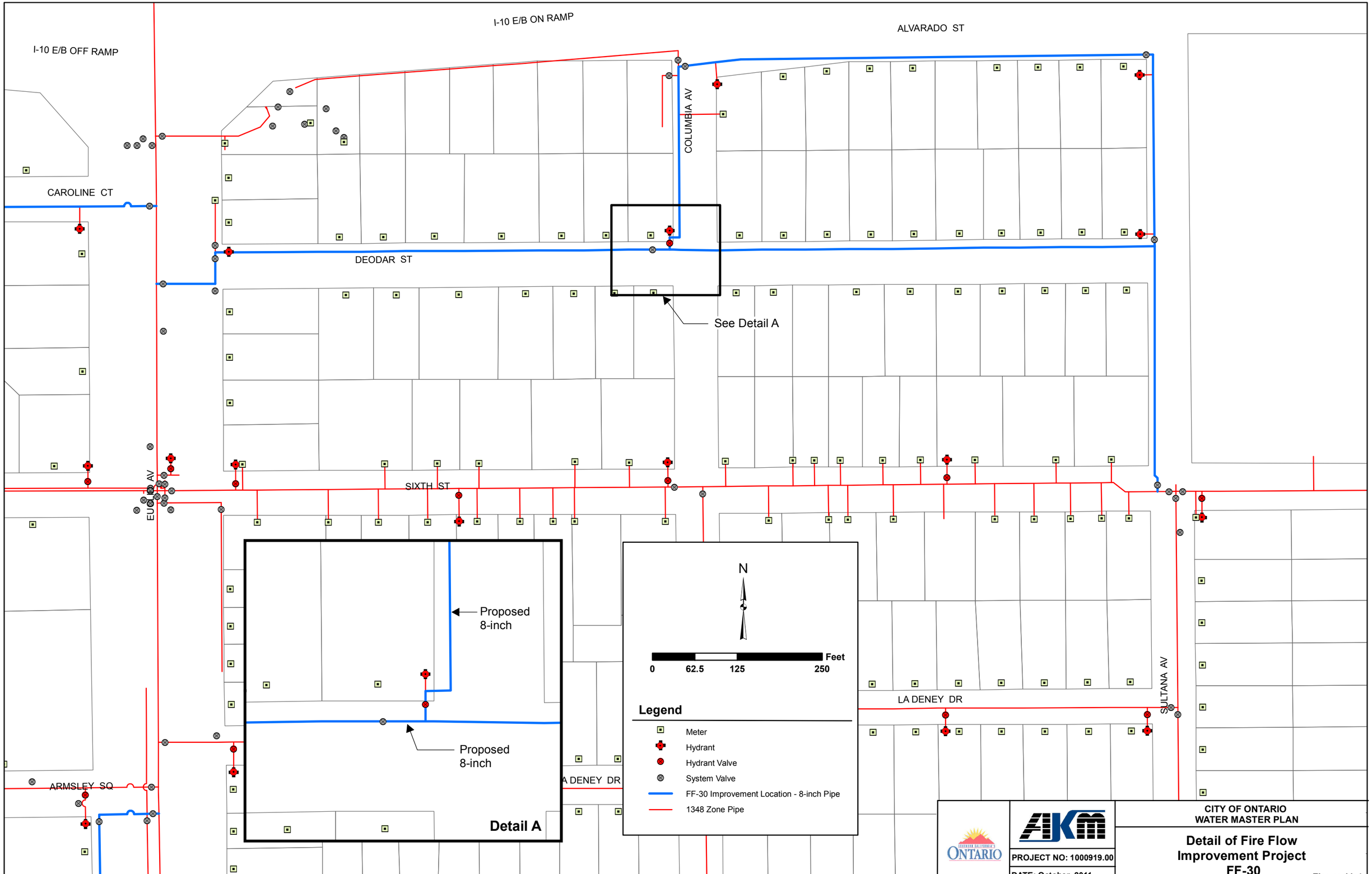
Table 11-1 (Continued)
Capital Improvement Program

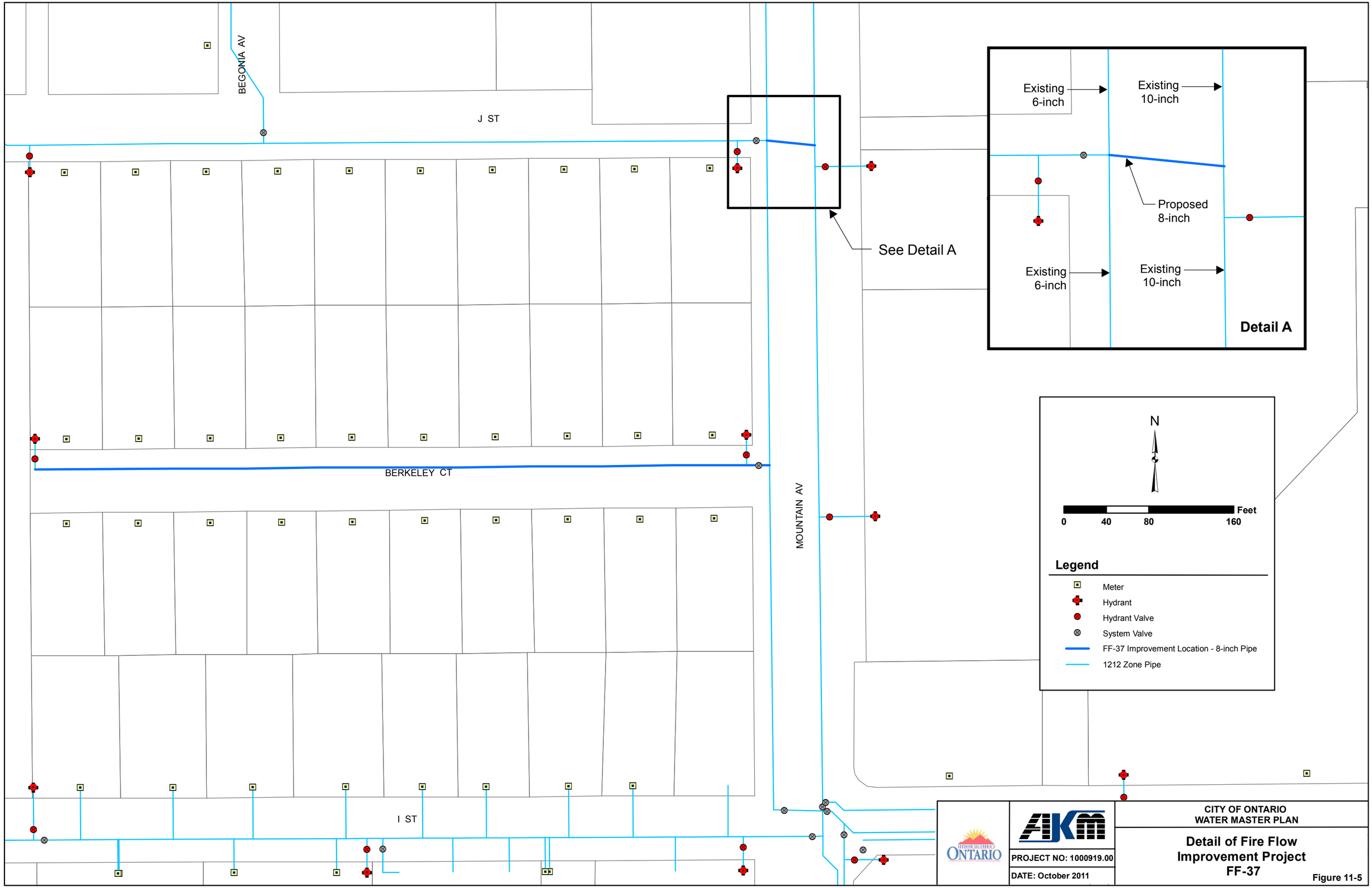
Row No.	WMP Project No.	Zone	OMC/ NMC		Facility Type	Ex Pipe Size (in)	Description	Size/ Number	Unit	Unit Cost ($)	Unit	Construction Cost ($)	Contingency ($)	Engineering & Admin. ($)	Construction Mgmt. ($)	Total Cost ($)
Old Model Colony Fire Flow Improvement Projects (continued)																
132	FF-33	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Emporia St, Transit St, Lemon Ave	1,301	ft	120	$/ft	156,120	15,612	17,173	8,587	197,492
133	FF-34	1212	OMC	Ex	Fire Flow	3&4	8-inch distribution line - State St	561	ft	120	$/ft	67,320	6,732	7,405	3,703	85,160
134	FF-35	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Budd St	721	ft	120	$/ft	86,520	8,652	9,517	4,759	109,448
135	FF-36	1074	OMC	Ex	Fire Flow	2&6	8-inch distribution line - Deanza Dr	1,447	ft	120	$/ft	173,640	17,364	19,100	9,550	219,655
136	FF-37	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Berkeley Ct. Connect existing 6-inch and 10-inch pipe lines at the intersection of Mountain Ave and J St.	737	ft	120	$/ft	88,440	8,844	9,728	4,864	111,877
137	FF-38	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Woodlawn St	1,342	ft	120	$/ft	161,040	16,104	17,714	8,857	203,716
138	FF-39	1074	OMC	Ex	Fire Flow	6	12-inchdistribution line - Bon View Ave	2,495	ft	360	$/ft	898,200	89,820	98,802	49,401	1,136,223
139	FF-40	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Greenwood Ave and Mission Blvd	640	ft	120	$/ft	76,800	7,680	8,448	4,224	97,152
140	FF-41	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line -California St, Cucamonga St	356	ft	120	$/ft	42,720	4,272	4,699	2,350	54,041
141	FF-42	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Washington St, Jefferson Ave	2,359	ft	120	$/ft	283,080	28,308	31,139	15,569	358,096
142	FF-43	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - State St, Cucamonga Ave, Grove Ave. Connect existing 12-inch pipe line to proposed 8-inch pipeline.	2,066	ft	120	$/ft	247,920	24,792	27,271	13,636	313,619
143	FF-44	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Lynn Haven St	721	ft	120	$/ft	86,520	8,652	9,517	4,759	109,448
144	FF-45	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Yale St	1,203	ft	120	$/ft	144,360	14,436	15,880	7,940	182,615
145	FF-46	1348	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Pleasant Ave, La Deney Dr	1,132	ft	120	$/ft	135,840	13,584	14,942	7,471	171,838
146	FF-47	1348	OMC	Ex	Fire Flow	6	16-inch distribution line - Richland St	1,431	ft	240	$/ft	343,440	34,344	37,778	18,889	434,452
147	FF-48	1348	OMC	Ex	Fire Flow	6&8	12-inch distribution line - Sixth St, Deodar St, Eleventh Ave, Grove Ave	3,900	ft	180	$/ft	702,000	70,200	77,220	38,610	888,030
148	FF-49	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Virginia Ave, Fifth St, La Deney Ct, Parkside Ave	3,531	ft	120	$/ft	423,720	42,372	46,609	23,305	536,006
149	FF-50	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Fifth St, Grove Ave	1,798	ft	120	$/ft	215,760	21,576	23,734	11,867	272,936
150	FF-51	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - El Dorado Ave	542	ft	120	$/ft	65,040	6,504	7,154	3,577	82,276
151	FF-52	1348	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Fifth St, Baker Ave, Princeton St	3,568	ft	120	$/ft	428,160	42,816	47,098	23,549	541,622
152	FF-53	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Mariposa Ave, Granada St	1,102	ft	120	$/ft	132,240	13,224	14,546	7,273	167,284
153	FF-54	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Greenwood Ave, El Morado Ct, Florence Ct	1,187	ft	120	$/ft	142,440	14,244	15,668	7,834	180,187
154	FF-55	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Fourth St	820	ft	120	$/ft	98,400	9,840	10,824	5,412	124,476
155	FF-56	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Yale St	554	ft	120	$/ft	66,480	6,648	7,313	3,656	84,097
156	FF-57	1348	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Fifth St, Holmes Ct, La Paloma Ct, I-10 Fwy E.B.	2,630	ft	120	$/ft	315,600	31,560	34,716	17,358	399,234
157	FF-58	1348	OMC	Ex	Fire Flow	4	8-inch distribution line - Easement south of Sixth St to Council Ave	791	ft	120	$/ft	94,920	9,492	10,441	5,221	120,074
158	FF-59	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - D St	927	ft	120	$/ft	111,240	11,124	12,236	6,118	140,719
159	FF-60	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Kern St	1,237	ft	120	$/ft	148,440	14,844	16,328	8,164	187,777
160	FF-61	1074	OMC	Ex	Fire Flow	6	8-inch distribution line - Baker Ave	922	ft	120	$/ft	110,640	11,064	12,170	6,085	139,960
161	FF-62	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Easement between Vineyard Ave and Grove Ave and south of Airport Dr	2,945	ft	120	$/ft	353,400	35,340	38,874	19,437	447,051
162	FF-63	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Easement between Airport Dr and Holt Blvd and East of Vineyard Ave	498	ft	120	$/ft	59,760	5,976	6,574	3,287	75,596
163	FF-64	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Easement at south of Airport Dr and east of Moore Wy	763	ft	120	$/ft	91,560	9,156	10,072	5,036	115,823
164	FF-65	1348	OMC	Ex	Fire Flow	8&10	16-inch distribution line - Eight St, Grove Ave	9,171	ft	240	$/ft	2,201,040	220,104	242,114	121,057	2,784,316
165	FF-66						Skipped						0	0	0	0
166	FF-67	1348	OMC	Ex	Fire Flow	2&4	8-inch distribution line - Euclid Ave, Armsley St	1,330	ft	120	$/ft	159,600	15,960	17,556	8,778	201,894
167	FF-68	1348	OMC	Ex	Fire Flow	4	8-inch distribution line - Easement east of San Antonio and west of Euclid Ave between Fifth St and Princeton St	668	ft	120	$/ft	80,160	8,016	8,818	4,409	101,402
168	FF-69	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Seventh St	10	ft	120	$/ft	30,000	3,000	3,300	1,650	37,950
169	FF-70	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Boulder Ave, Vesta St, Hollowell St	3,351	ft	120	$/ft	402,120	40,212	44,233	22,117	508,682
170	FF-71	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Empora St, Pleasant Ave	641	ft	120	$/ft	76,920	7,692	8,461	4,231	97,304
171	FF-72	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - California Ct, Mission Blvd, Campus Ave, Campus St	1,138	ft	120	$/ft	136,560	13,656	15,022	7,511	172,748
172	FF-73	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - Raltson St, Maitland St, Campus Ave, Taylor Ave	2,558	ft	120	$/ft	306,960	30,696	33,766	16,883	388,304
173	FF-74	1212	OMC	Ex	Fire Flow	4	8-inch distribution line -Nocta St, Allyin Ave, Willow St	370	ft	120	$/ft	44,400	4,440	4,884	2,442	56,166
174	FF-75	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Ontario Blvd	103	ft	120	$/ft	30,000	3,000	3,300	1,650	37,950
175	FF-76	1348	OMC	Ex	Fire Flow	4	8-inch distribution line - Harvard St	24	ft	120	$/ft	30,000	3,000	3,300	1,650	37,950
176	FF-77	1348	OMC	Ex	Fire Flow	6	12-inch distribution line - Eighth St at Virginia Ave	50	ft	180	$/ft	30,000	3,000	3,300	1,650	37,950
							Subtotal	**136,909**			**Subtotal**	**18,651,720**	**1,865,172**	**2,051,689**	**1,025,845**	**23,594,426**
							Grand Total (excluding annual OMC improvement project costs)					**268,474,356**	**26,847,436**	**29,391,179**	**14,828,090**	**345,963,060**

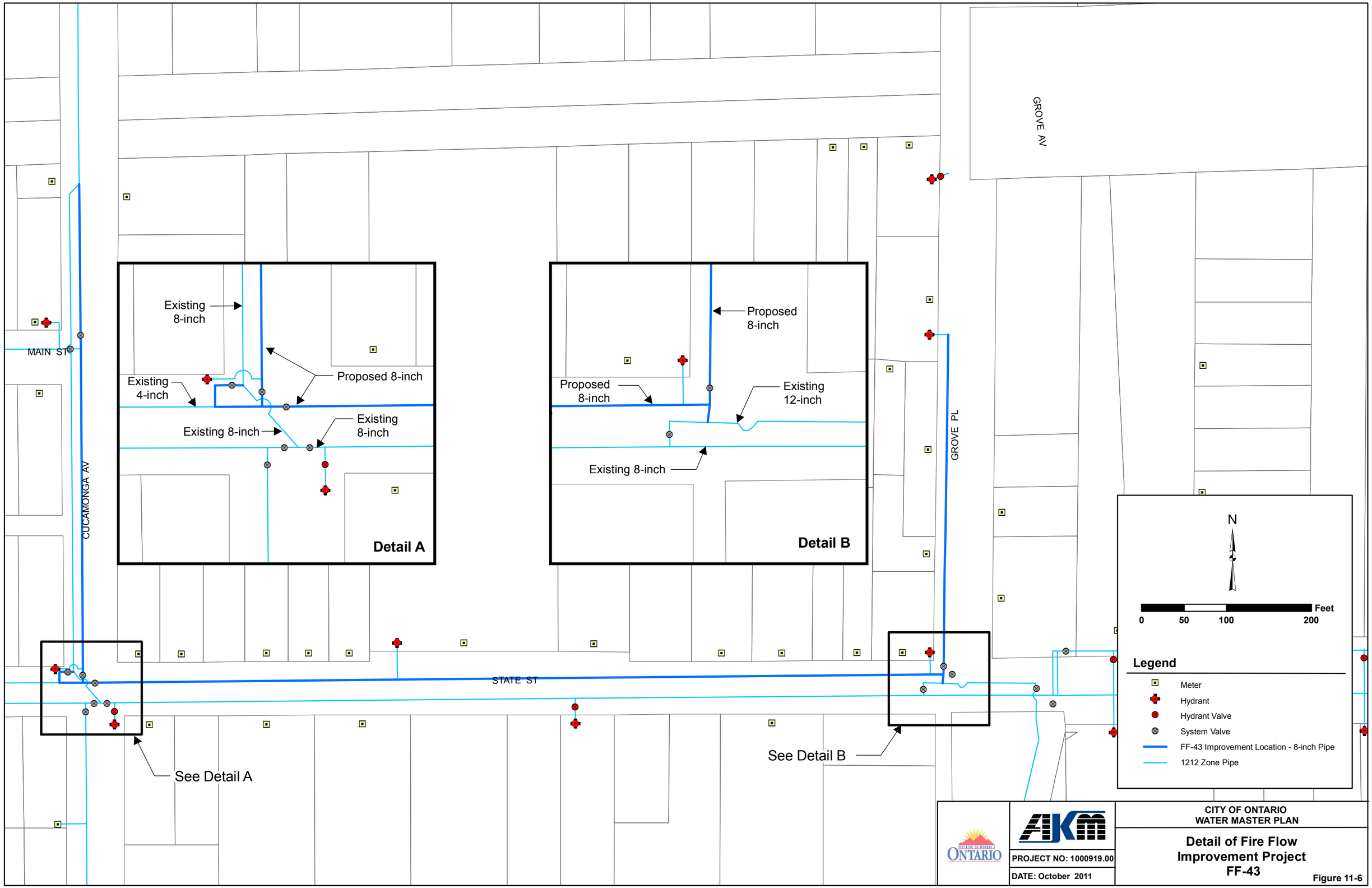

City of Upland
City of Rancho Cucamonga
City of Montclair
City of Fontana
Old Model Colony
Ontario International Airport
Landfill
Riverside County
City of Chino
New Model Colony
WFA
Agua de Lejos
Water Treatment Plant
O-1
RES1348-1A
RES1348-1B
RES1348-1C
R-14
ST-3
RES1212-4A
ST-4
RES1212-4B
ST-5
30"
SAW Conn
RES1212-1A
RES1212-1B
WFA Conn
ST-1
ST-6
RES1212-3
BP-3
BP-4
BENSON AVE
MOUNTAIN AVE
SAN ANTONIO AVE
EUCLID AVE
CAMPUS AVE
GROVE AVE
BAKER AVE
VINEYARD AVE
ARCHIBALD AVE
TURNER AVE
HAVEN AVE
MILLIKEN AVE
I-15 FWY
ETIWANDA AVE
I-10 FWY
SIXTH ST
FIFTH ST
FOURTH ST
I ST
G ST
HOLT BLVD
STATE ST
MISSION BLVD
PHILLIPS ST
FRANCIS ST
PHILADELPHIA ST
SR-60
WALNUT ST
RIVERSIDE DR
CHINO AVE
SCHAEFER AVE
EDISON AVE
EUCALYPTUS AVE
MERRILL AVE
ONTARIO MILLS PKWY
AIRPORT DR
JURUPA ST
CUCAMONGA CREEK
SULTANA AVE
BON VIEW AVE
CUCAMONGA AVE
PARCO AVE
WALKER AVE
CLEVELAND AVE
WINEVILLE AVE
VINTAGE AVE
MAGNOLIA AVE
CYPRESS AVE
FERN ST
CDA II Conn
CDA I Conn
BP-ONTARIO
RES1010-2A
RES1010-2B
RES925-2A
RES925-2B
ST-10
S-40
RES1074-1A
RES1074-1B
O-2
RES1010-1
AV1
AV2
AV3
PRS21
PRS22
PRS23
PRS16
PRS17
PRS18
PRS19
PRS8
PRS7
PRS6
PRS5
PRS4
PRS3
PRS2
PRS10
PRS12
PRS13
PRS14
PRS15
PRS9
PRS11
0 1,500 3,000 6,000 Feet
1"=1500'
N
Legend
Recommended Emergency Connection
Recommended Altitude Valve/PRS
Altitude Vavle/PRS
Booster Pump Station
Recommended Well
Well
Recommended Reservoir
Reservoir
8" Fire Flow Pipe Improvement
12" Fire Flow Pipe Improvement
16" Fire Flow Pipe Improvement
Small Diameter Pipe Improvement (O-9)
Pipe Improvement due to Age (O-8)
Recommended Improvement Pipe
Recommended Pipe for 1010 Zone Expansion
Recommended Pipe for 925 Zone
Existing Pipe
Other Agency Pipe
City Boundary
925 Pressure Zone
1010 Pressure Zone
1074 Pressure Zone
1212 Pressure Zone
1348 Pressure Zone
ONTARIO
AKM
PROJECT NO: 1000919.00
DATE: April 2012
CITY OF ONTARIO
WATER MASTER PLAN
Capital Improvement Project Locations
Figure 11-1


See Detail A
HARVARD PL
EUCLID AV
FOURTH ST
COLUMBIA AV
ROSEWOOD CT
Existing 12-inch
Existing 4-inch
Existing 8-inch
Existing 4-inch
Proposed New FH Connection
Proposed New FH Connection
Existing 2-inch
Existing 4-inch
Detail A
N
Feet
0 37.5 75 150
Legend
Meter
Hydrant
Hydrant Valve
System Valve
FF-3 Improvement Location
1212 Zone Pipe
1348 Zone Pipe
ONTARIO
AKM
PROJECT NO: 1000919.00
DATE: October 2011
CITY OF ONTARIO
WATER MASTER PLAN
Detail of Fire Flow
Improvement Project FF-3
Proposed Fire Hydrant Connections
Figure 11-2


N
Feet
0
100
200
400
Legend
Meter
Hydrant
Hydrant Valve
System Valve
FF-19 Improvement Location - 8-inch pipe
1074 Zone Pipe
SAN ANTONIO AV
FERN AV
PALM AV
LAUREL AV
MAPLE ST
FRANCIS ST
GREVILLEA ST
BONITA AV
OAKLAND AV
VINE AV
EUCLID AV
Existing
8-inch
Proposed
8-inch
Detail A
Replace Existing 4" with 8"
Replace Existing 4" with 8"
See Detail A
ONTARIO
PROJECT NO: 1000919.00
DATE: October 2011
CITY OF ONTARIO
WATER MASTER PLAN
Detail of Fire Flow
Improvement Project
FF-19
Figure 11-3


I-10 E/B ON RAMP
ALVARADO ST
I-10 E/B OFF RAMP
COLUMBIA AV
CAROLINE CT
DEODAR ST
See Detail A
SIXTH ST
EUCLID AV
Proposed 8-inch
Proposed 8-inch
Detail A
N
Feet
0
62.5
125
250
Legend
Meter
Hydrant
Hydrant Valve
System Valve
FF-30 Improvement Location - 8-inch Pipe
1348 Zone Pipe
LA DENEY DR
SULTANA AV
ARMSLEY SQ
A DENEY DR
ONTARIO
AKM
PROJECT NO: 1000919.00
DATE: October 2011
CITY OF ONTARIO
WATER MASTER PLAN
Detail of Fire Flow
Improvement Project
FF-30
Figure 11-4


BEGONIA AV
J ST
BERKELEY CT
MOUNTAIN AV
I ST
See Detail A
Existing 6-inch
Existing 10-inch
Proposed 8-inch
Existing 6-inch
Existing 10-inch
Detail A
N
Feet
0
40
80
160
Legend
Meter
Hydrant
Hydrant Valve
System Valve
FF-37 Improvement Location - 8-inch Pipe
1212 Zone Pipe
ONTARIO
AKM
PROJECT NO: 1000919.00
DATE: October 2011
CITY OF ONTARIO
WATER MASTER PLAN
Detail of Fire Flow
Improvement Project
FF-37
Figure 11-5


GROVE AV
MAIN ST
CUCAMONGA AV
GROVE PL
STATE ST
Existing 8-inch
Existing 4-inch
Proposed 8-inch
Existing 8-inch
Existing 8-inch
Detail A
Proposed 8-inch
Proposed 8-inch
Existing 12-inch
Existing 8-inch
Detail B
See Detail A
See Detail B
N
0
50
100
200
Feet
Legend
Meter
Hydrant
Hydrant Valve
System Valve
FF-43 Improvement Location - 8-inch Pipe
1212 Zone Pipe
ONTARIO
AKM
PROJECT NO: 1000919.00
DATE: October 2011
CITY OF ONTARIO
WATER MASTER PLAN
Detail of Fire Flow
Improvement Project
FF-43
Figure 11-6