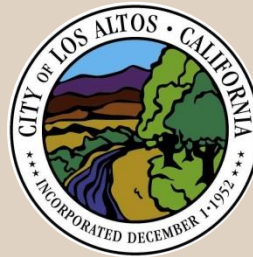


Los Altos

Stormwater Master Plan Review



Schaaf & Wheeler
Consulting Civil Engineers

Council Directions

- Confirm capital project prioritization criteria and project list
- Provide directions on funding options

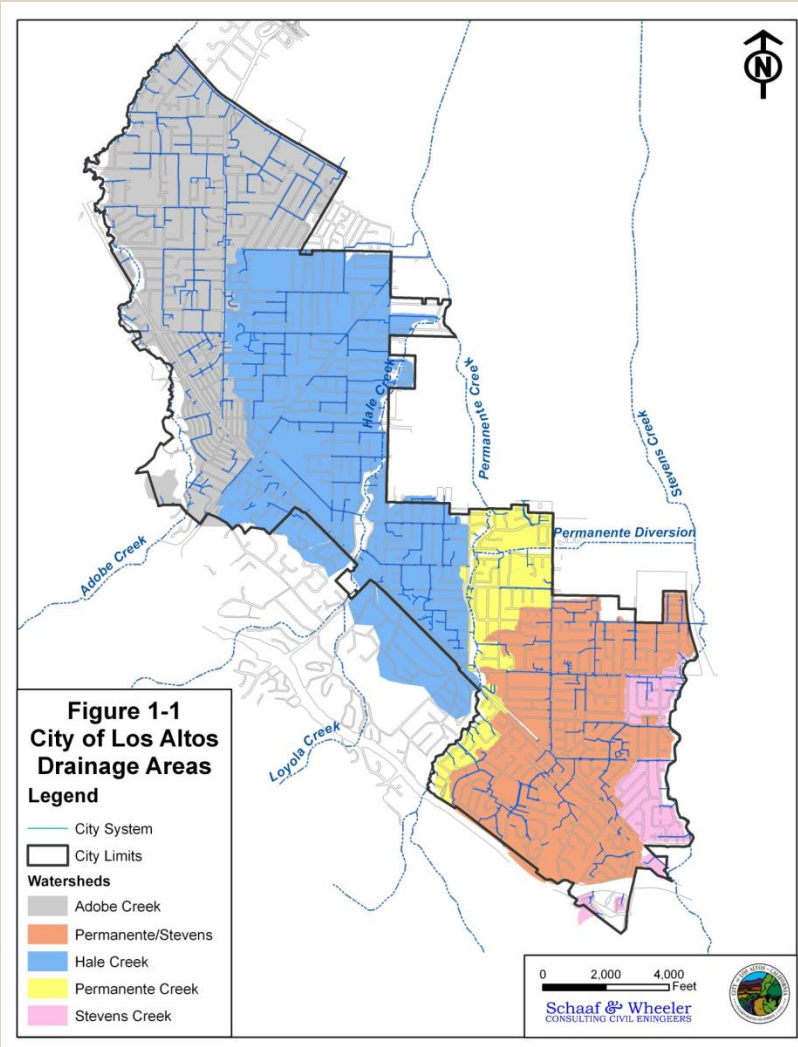


Background

- Planning document
 - Compliance of regulatory requirements
 - Maintaining existing system
 - Identifying future upgrades and expansions
- Initiated in 2009
- 2 study sessions with Council (1/2014 & 11/2014)



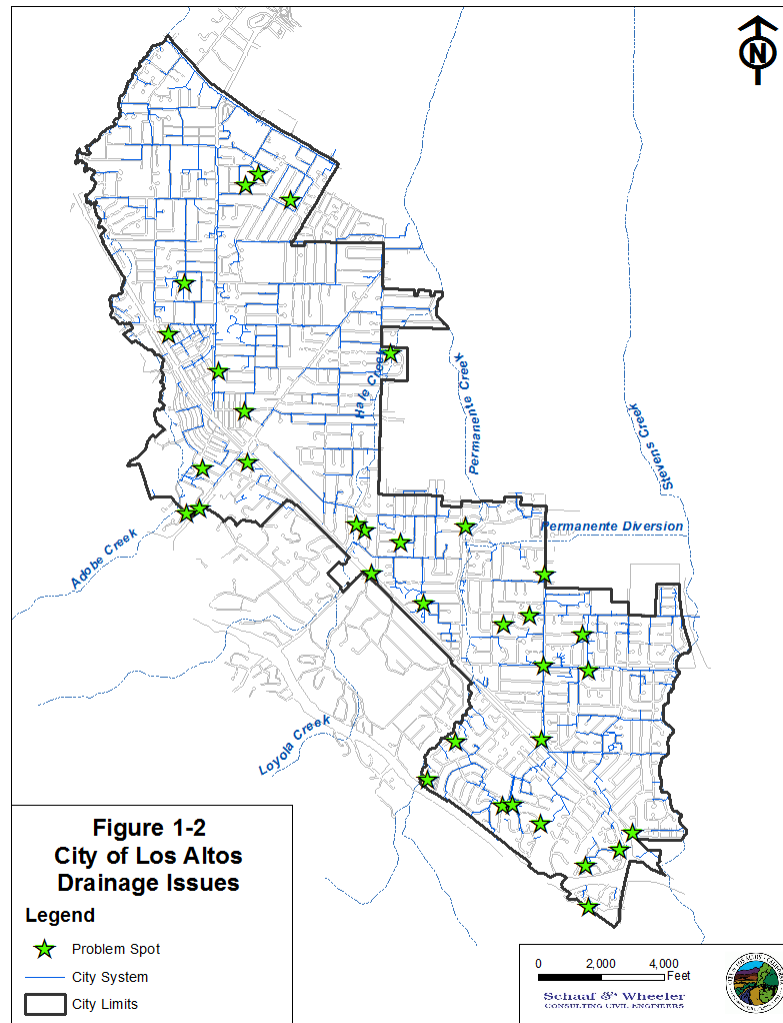
Stormwater System Overview



- Creeks
 - Adobe
 - Hale
 - Permanente
 - Stevens
- Urban System
 - Curb and gutters
 - Drainage swales
 - Inlets
 - Underground pipes
 - Outfalls

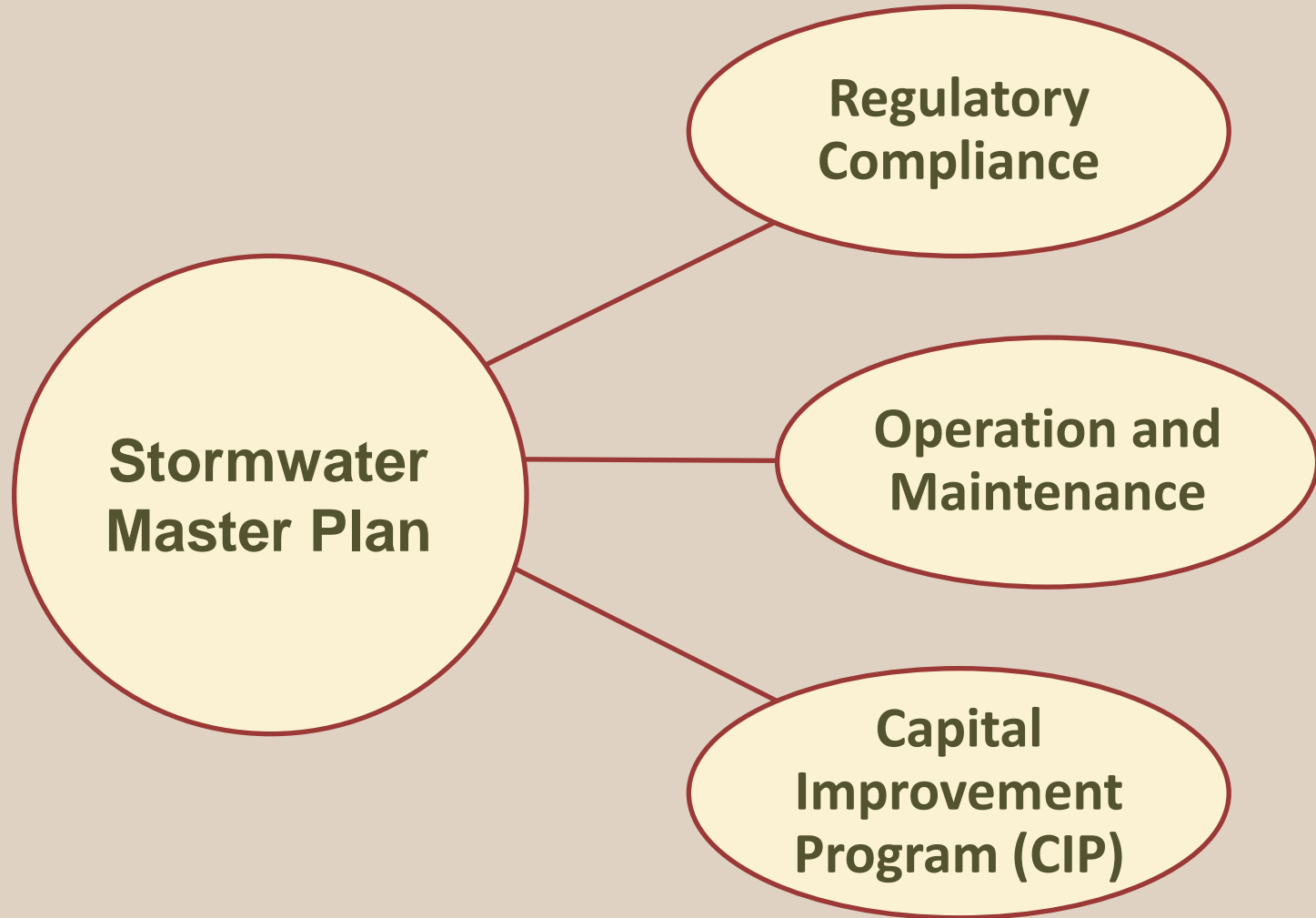


System Issues



- ❖ Creek Capacity Issues
- ❖ Blocked Inlets
- ❖ Streets Without Inlets or pipe systems
- ❖ Ineffective Drywells
- ❖ Undersized Pipes
- ❖ Ponding (Bird Baths)
- ❖ Debris and Sediment

Key Program Elements



Regulatory Compliance

- National Pollutant Discharge Elimination System (NPDES) Permit
- Municipal Regional Permit (MRP)
 - Existing permit expired
 - New permit (MRP 2.0) became effective on 1/1/16
 - 5-year term
- Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP)
 - Partnership of 15 agencies
 - Take on certain permit requirements on behalf of partner agencies



Regulatory Compliance

- Require significant City resources, actual annual expenditures include:
 - SCVURPPP payment (~ \$75,000)
 - Permit and miscellaneous fees (~ \$25,000)
 - Staffing costs (Maintenance & Engineering - \$370,000)



Operation and Maintenance

Routine system maintenance

- Minimal surface flow-line maintenance
- Clean 1,350 drain inlets
- Hot Spots maintenance
- Creek outfall maintenance
- Full trash capture device maintenance



Storm event response

- Additional personnel assigned as needed

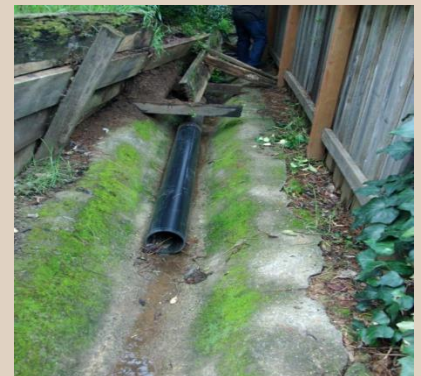


Capital Improvement Program



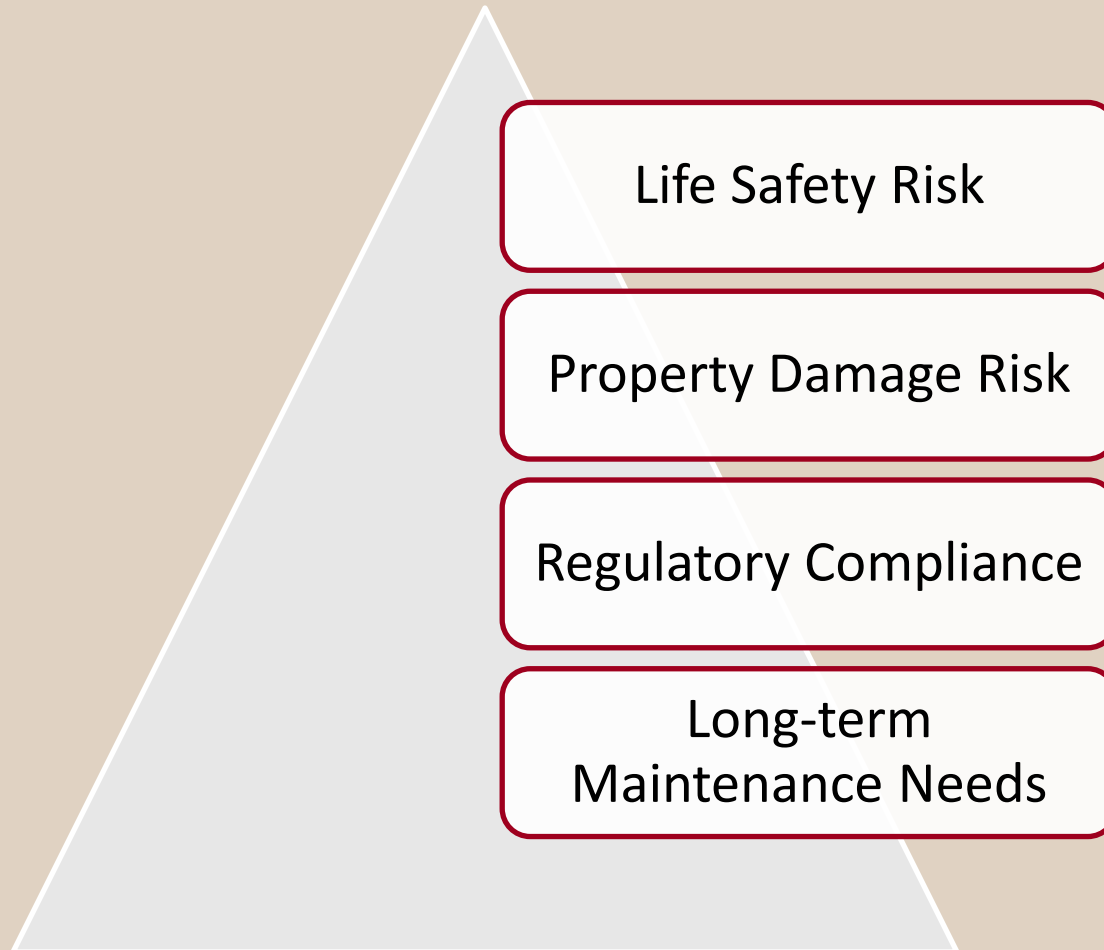
Five categories:

- Capacity Improvements
- System Extensions
- Drywell (French Drain) Improvements
- Problem Area Improvements
- Regulatory Compliance Improvements

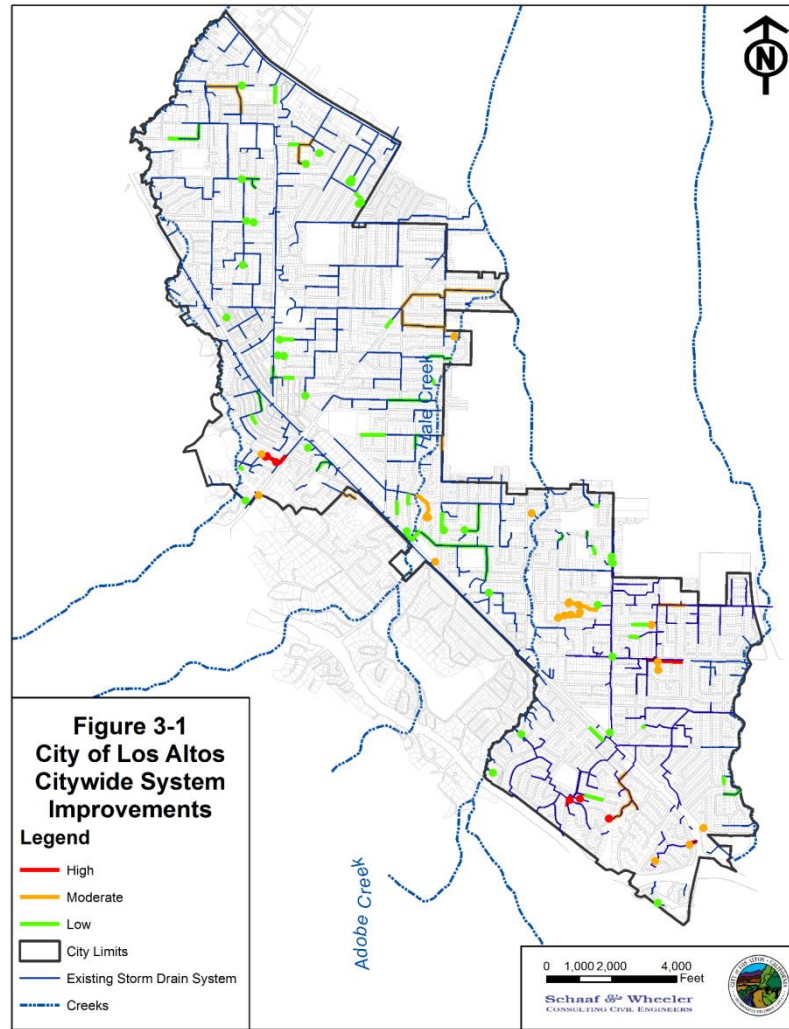


Capital Improvement Program

Four prioritization criteria:



Capital Improvement Program



Three priority levels:

- **High Priority** – significant & recurring problems, life or property at risk, regulatory mandate (\$3.8 M)
- **Moderate Priority** – less significant flood risks during more extreme storm events (\$11 M)
- **Low Priority** – nuisance issues (\$13.7 M)




Funding Strategies

- Stormwater Program has historically been supported by General Fund
- Current operating budget (\$212,440) is insufficient to meet permit and routine maintenance requirements
- Current CIP budget (\$100,000) does not allow significant progress on capital improvements



Funding Strategies

-  Potential options for program funding levels:
 1. Continue current approach
 2. Maintain current funding levels, but shift allocation of resources
 3. Increase the resources allocated to stormwater-related activities

Option	Current funding	Proposed funding	Increase	Shortfall
1	\$212,444 – operations	\$212,444 – operations	\$0	\$257,566
	\$100,000 – CIP	\$100,000 – CIP	\$0	\$200,000
2	\$212,444 – operations	\$212,444 – operations	\$0	\$257,566
	\$100,000 – CIP	\$100,000 – CIP	\$0	\$200,000
3	\$212,444 – operations	\$470,000 – operations	\$257,556	\$0
	\$100,000 – CIP	\$300,000 – CIP	\$200,000	\$0



Funding Strategies

- Consider dedicated funding sources:
 - Property related fee – a majority vote of the property owners
 - Special tax – 2/3 of registered voters



Funding Strategies

- Other potential funding sources to supplement the program:
 - Development Impact Fee – one-time fee on new development that creates new, unmitigated impermeable surface
 - Regulatory Fees – recover City's costs to provide oversight
 - Benefit-Assessment District – Allocate project costs to parcels within the district in direct proportion to the benefits received, subject to Prop 218 and has been narrowly limited by courts



Funding Strategies

- Three financing alternatives:
 - Complete high-priority projects in five years and fund the costs over 20 years.
 - Complete high-priority projects in five years, medium-priority projects over the following 15 years and fund all costs over 30 years.
 - Complete high-priority projects in five years, medium-priority projects over the following 15 years, low-priority projects over the following ten years and fund all costs over 30 years.



Funding Strategies

❖ Funding Strategy Options:

- Dedicated revenue source for the entire Stormwater Program
- Hybrid approach: General Fund for O&M and regulatory compliance and a dedicated revenue source for CIP
- City has flexibility of structuring the program based on the desired level of capital improvements



Council Directions

- Confirm capital project prioritization criteria and project list
- Provide directions on funding options



Los Altos

Stormwater Master Plan Overview



Schaaf & Wheeler
Consulting Civil Engineers

Table 5-7 2015/16 Stormwater Annual Workload

Table 5-7: 2015/16 Stormwater Annual Workload

Task	Engineering Work Hours	Maintenance Worker Hours	Contracted Services/ Fees
General Requirements	717	315	\$92,712
C.2 Municipal Operations	0	407	\$7,500
C.3 New Development	88	40	
C.4 Industrial and Commercial Site Controls	44	0	-
C.5 Illicit Discharge Detection and Elimination	24	728	-
C.6 Construction Site Control	106	4	-
C.7 Public Information and Outreach	48	0	-
C.8 Water Quality Monitoring	24	0	-
C.9 Pesticide Toxicity Controls	8	31	-
C.10 Trash Load Reduction	60	107	-
C.11 Mercury Controls	8	0	-
C.12 PCBs Controls	12	0	-
C.13 Copper Controls	12	0	-
C.14 Not Applicable	0	0	-
C.15 Exempted and Conditionally Exempted Discharges	16	0	-
TOTAL HOURS:	1,167	1,632	-
TOTAL COST:	\$200,000	\$170,000	\$100,000



Figure 6-6 Estimated Annual Charges

Figure 6-6: Estimated Annual Charges to Property Owners

Timeframe	Annual Cost Per Equivalent Unit and Annual % Change ¹						Add'l. NPDES Cost per EDU ²
	Alternative #1		Alternative #2		Alternative #3		
	Annual Cost	% Change	Annual Cost	% Change	Annual Cost	% Change	
Year 1	\$22.93	--	\$22.93	--	\$22.93	--	\$38.49
Year 2	\$22.93	0%	\$26.14	14%	\$26.14	14%	\$39.65
Year 3	\$22.93	0%	\$29.80	14%	\$29.80	14%	\$40.84
Year 4	\$22.93	0%	\$33.98	14%	\$33.98	14%	\$42.06
Year 5	\$22.93	0%	\$38.73	14%	\$38.73	14%	\$43.32
Year 6	\$22.93	0%	\$44.54	15%	\$44.16	14%	\$44.62
Year 7	\$22.93	0%	\$51.22	15%	\$50.78	15%	\$45.96
Year 8	\$22.93	0%	\$58.91	15%	\$58.40	15%	\$47.34
Year 9	\$22.93	0%	\$67.74	15%	\$67.15	15%	\$48.76
Year 10	\$22.93	0%	\$75.20	11%	\$75.21	12%	\$50.22
Year 11	\$22.93	0%	\$83.47	11%	\$84.24	12%	\$51.73
Year 12	\$22.93	0%	\$92.65	11%	\$94.35	12%	\$53.28
Year 13	\$22.93	0%	\$102.84	11%	\$105.67	12%	\$54.88
Year 14	\$22.93	0%	\$114.15	11%	\$117.29	11%	\$56.53
Year 15	\$22.93	0%	\$126.71	11%	\$130.19	11%	\$58.22
Year 16	\$22.93	0%	\$140.65	11%	\$144.52	11%	\$59.97
Year 17	\$22.93	0%	\$156.12	11%	\$160.41	11%	\$61.77
Year 18	\$22.93	0%	\$173.29	11%	\$178.06	11%	\$63.62
Year 19	\$22.93	0%	\$173.29	0%	\$197.64	11%	\$65.53
Year 20	\$22.93	0%	\$173.29	0%	\$227.29	15%	\$67.50
Year 21	\$3.90	-83%	\$95.31	-45%	\$261.38	15%	\$69.52
Year 22	\$3.90	0%	\$95.31	0%	\$300.59	15%	\$71.61
Year 23	\$3.90	0%	\$95.31	0%	\$330.65	10%	\$73.76
Year 24	\$3.90	0%	\$95.31	0%	\$343.88	4%	\$75.97
Year 25	\$3.90	0%	\$95.31	0%	\$357.63	4%	\$78.25
Year 26	\$3.90	0%	\$61.95	-35%	\$357.63	0%	\$80.60
Year 27	\$3.90	0%	\$61.95	0%	\$357.63	0%	\$83.01
Year 28	\$3.90	0%	\$61.95	0%	\$357.63	0%	\$85.50
Year 29	\$3.90	0%	\$61.95	0%	\$357.63	0%	\$88.07
Year 30	\$3.90	0%	\$61.95	0%	\$357.63	0%	\$90.71

1. Annual cost per equivalent unit is the total revenue required divided by the number of equivalent dwelling units in the City of Los Altos, of 12,210.

2. NPDES year 1 cost of \$470,000 with a 3% annual inflation factor. This cost per EDU would be in addition to the annual costs; each alternative.



Drainage System Information and Design

The watermark for drainage solutions.®



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French Drains
Piping
Drainage Appurtenances
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Geologic Database
ADEQ Drywell Registration

Recharge Systems
Municipal/Private Recharge Wells
Injection Wells & Galleries

Environmental Applications
Pattern Drilling/Soil Remediation
Drainage Rehabilitation
Drywell Abandonments
OSHA HAZMAT-Certified

Drainage Renovation
Problem Assessment
Site Redesign/Modification
System Retrofit

Drainage Maintenance
Preventive Maintenance
Service Contracts
Drywell Cleaning

TORRENT RESOURCES INCORPORATED

1509 East Elwood Street
Phoenix Arizona 85040-1391
phone 602-268-0785
fax 602-268-0820

Nevada
702-366-1234

AZ Lic. ROC070465 A,
ROC047067 B-4; ADWR 363

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phone 661-947-9836

CA Lic. RB6759 A, C-42

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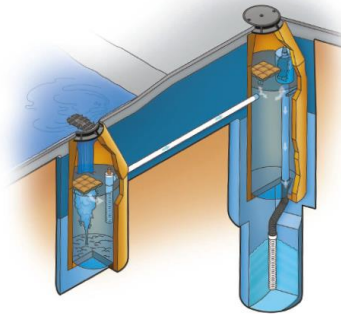
An evolution of McGuckin Drilling

MaxWell® Plus

DRAINAGE SYSTEM
Product Information and Design Features



The **MaxWell® Plus**, as manufactured and installed exclusively by Torrent Resources Incorporated, is the industry standard for draining large paved surfaces, nuisance water and other demanding applications. This patented system incorporates state-of-the-art pre-treatment technology.



In the **MaxWell® Plus**, preliminary treatment is provided through collection and separation in deep large-volume settling chambers. The standard MaxWell Plus System has over 2,500 gallons of capacity to contain sediment and debris carried by incoming water. Floating trash, paper, pavement oil, etc. are effectively stopped by the **PureFlo®** Debris Shields in each chamber. These shielding devices are equipped with an effective screen to filter suspended material and are vented to prevent siphoning of floating surface debris as the system drains.

EFFECTIVE PROCESSING

Incoming water from the surface grates inlets or connecting pipes is received in the Primary Settling Chamber where silt and other heavy particles settle to the bottom. A PureFlo Debris Shield ensures containment by trapping floating debris and pavement oil. The pre-treated flow is then regulated to a design rate of up to 0.25cfs and directed to a Secondary Settling Chamber. The settling and containment process is repeated, thereby effectively achieving controlled, uniform treatment. The system is drained as water rises under the PureFlo Debris Shield and spills into the top of the overflow pipe. The drainage assembly returns the cleaned water into the surrounding soil through the **FloFast®** Drainage Screen.

ABSORBENT TECHNOLOGY

Both MaxWell Plus settling chambers are equipped with absorbent sponges to provide prompt removal of pavement oils. These floating pillow-like devices are 100% water repellent and literally wick petrochemical compounds from the water. Each sponge has a capacity of up to 128 ounces to accommodate effective, long-term treatment. The absorbent is completely inert and will safely remove runoff constituents down to rainbow sheens that are typically no more than one molecule thick.

SECURITY FEATURES

MaxWell Plus Systems include bolted, theft-deterrent, cast iron gratings and covers as standard security features. Special Inset castings which are resistant to loosening from accidental impact are available for use in landscaped applications. Machined mating surfaces and "Storm Water Only" wording are standard.

THE MAXWELL FIVE-YEAR WARRANTY

Innovative engineering, quality materials and exacting construction are standard with every MaxWell System designed, manufactured and installed by Torrent Resources Incorporated. The MaxWell Drainage Systems Warranty is the best in the industry and guarantees against failures due to workmanship or materials for a period of five years from date of completion.

THE ULTIMATE IN DESIGN

Since 1974, nearly 65,000 MaxWell® Systems have proven their value as a cost-effective solution in a wide variety of drainage applications. They are accepted by state and municipal agencies and are a standard detail in numerous drainage manuals. Many municipalities have recognized the inherent benefits of the MaxWell Plus and now require it for drainage of all paved surfaces.

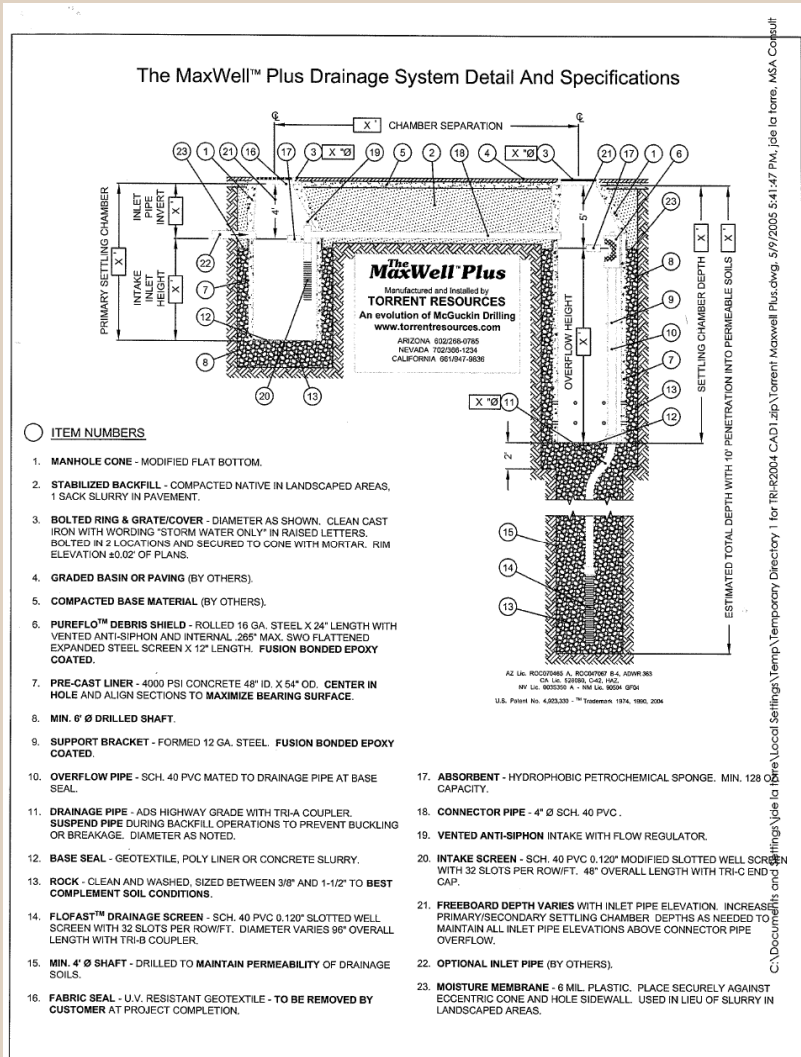
SUPERIOR PRE-TREATMENT

Industry research, together with Torrent Resources' own experience, have shown that initial storm drainage flows have the greatest impact on system performance. This "first flush" occurs during the first few minutes of runoff, and carries the majority of sediment and debris. Larger paved surfaces or connecting pipes from catch basins, underground storage, etc. can also generate high peak flows which may strain system function. In addition, nuisance water flows require controlled processing separate from normal storm runoff demands.

Manufactured and Installed Exclusively by Torrent Resources Incorporated
Please see reverse side for additional information
U.S. Patent No. 4,923,330



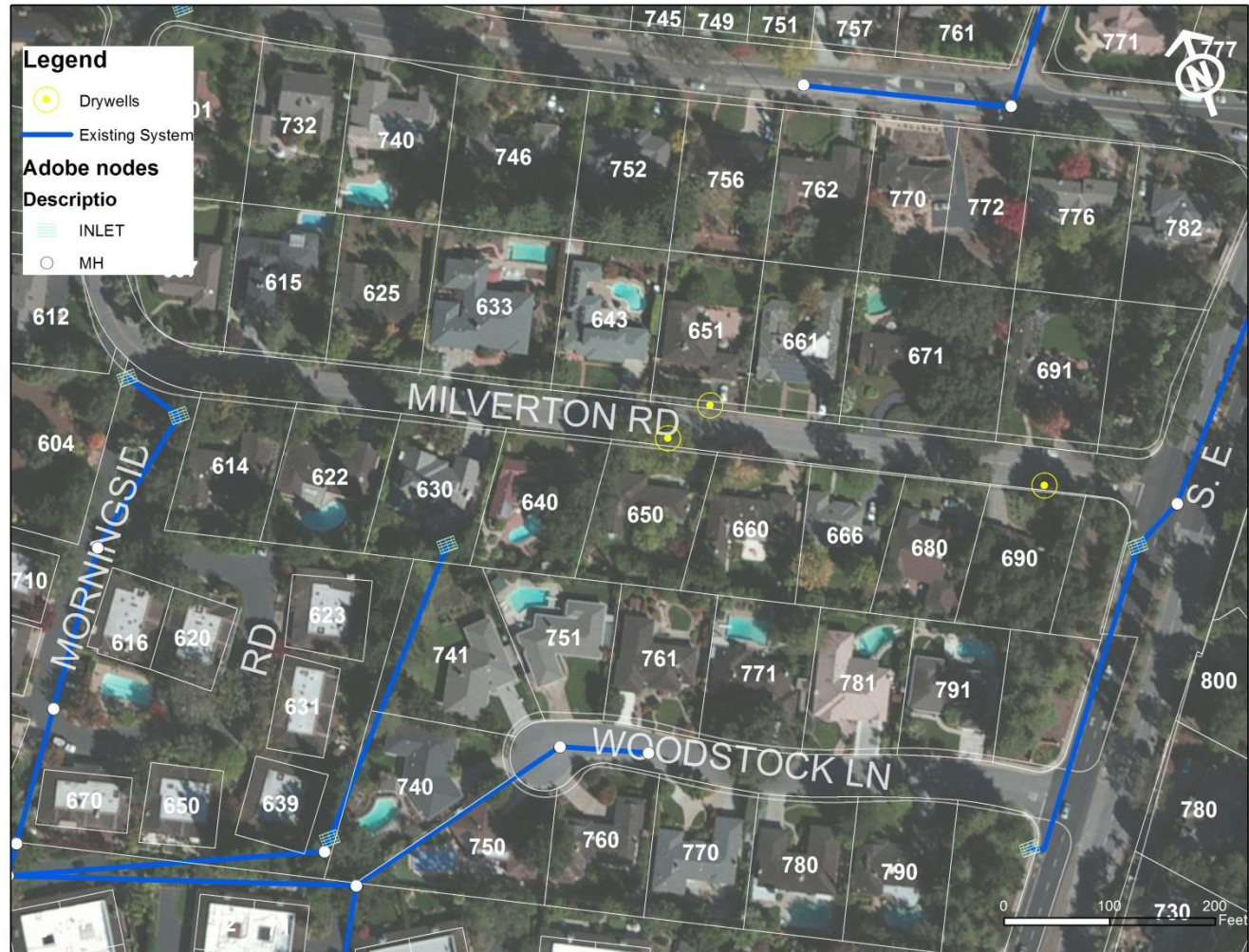
Drainage System and Specifications



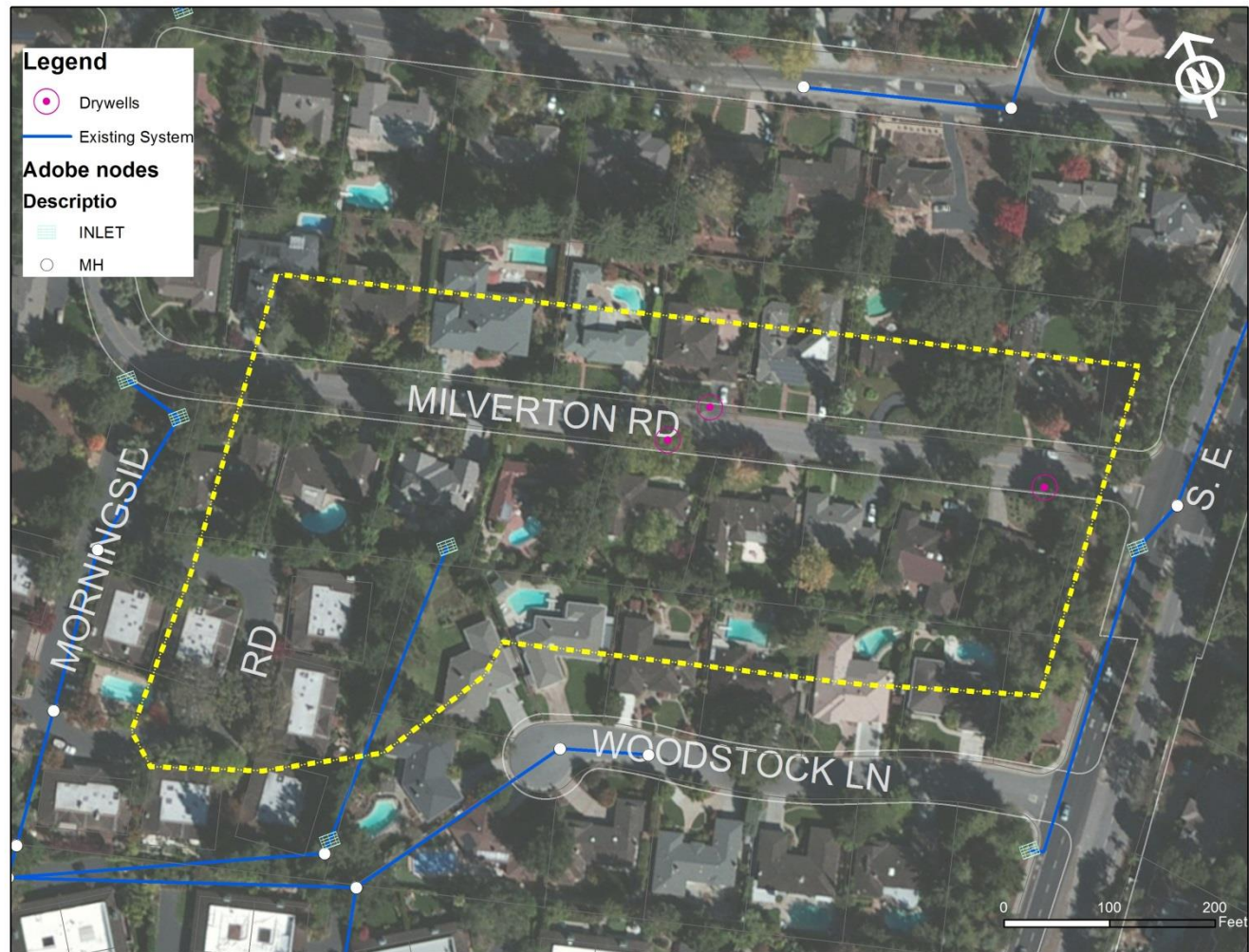
FEMA Floodplains Map



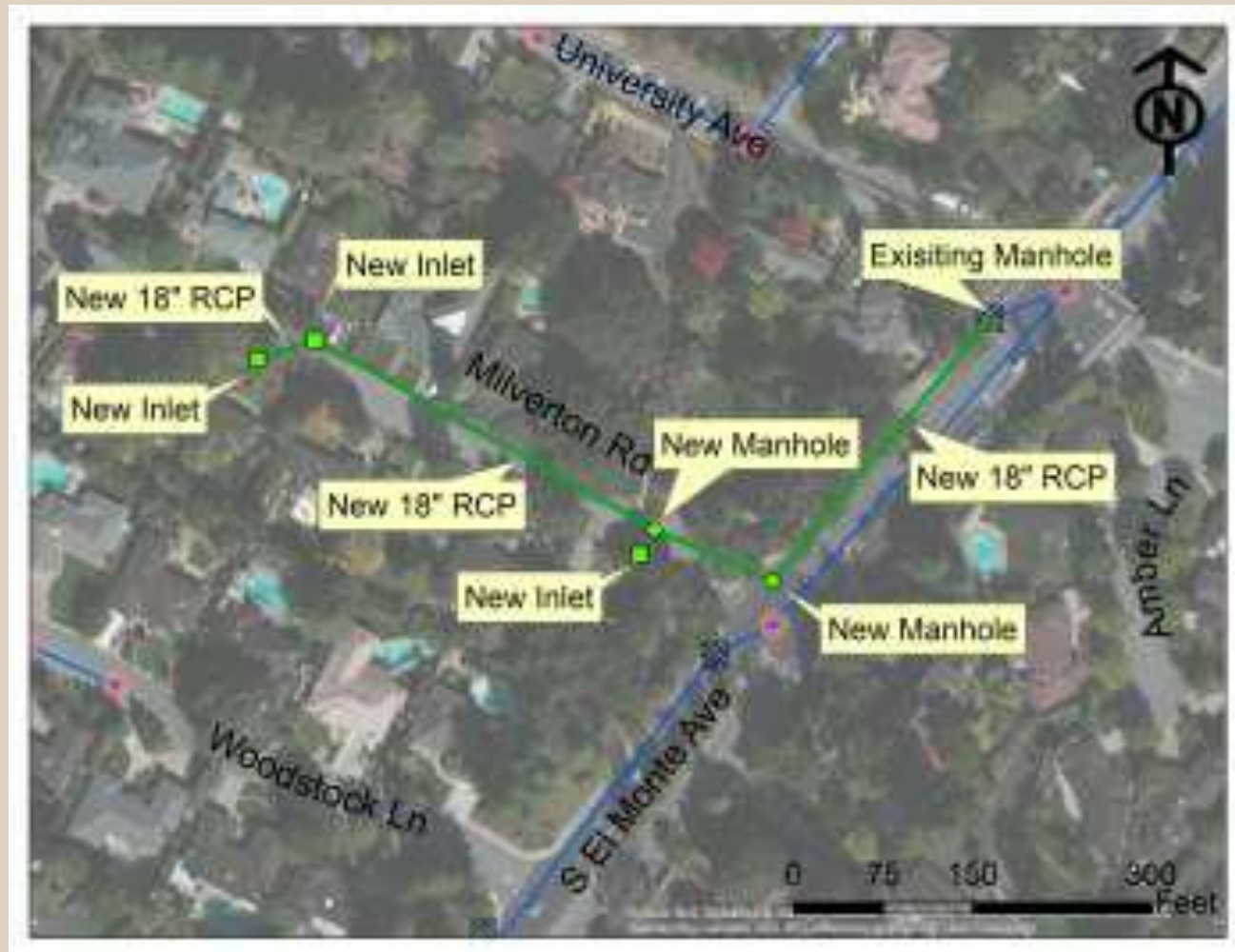
Milverton Road Existing System



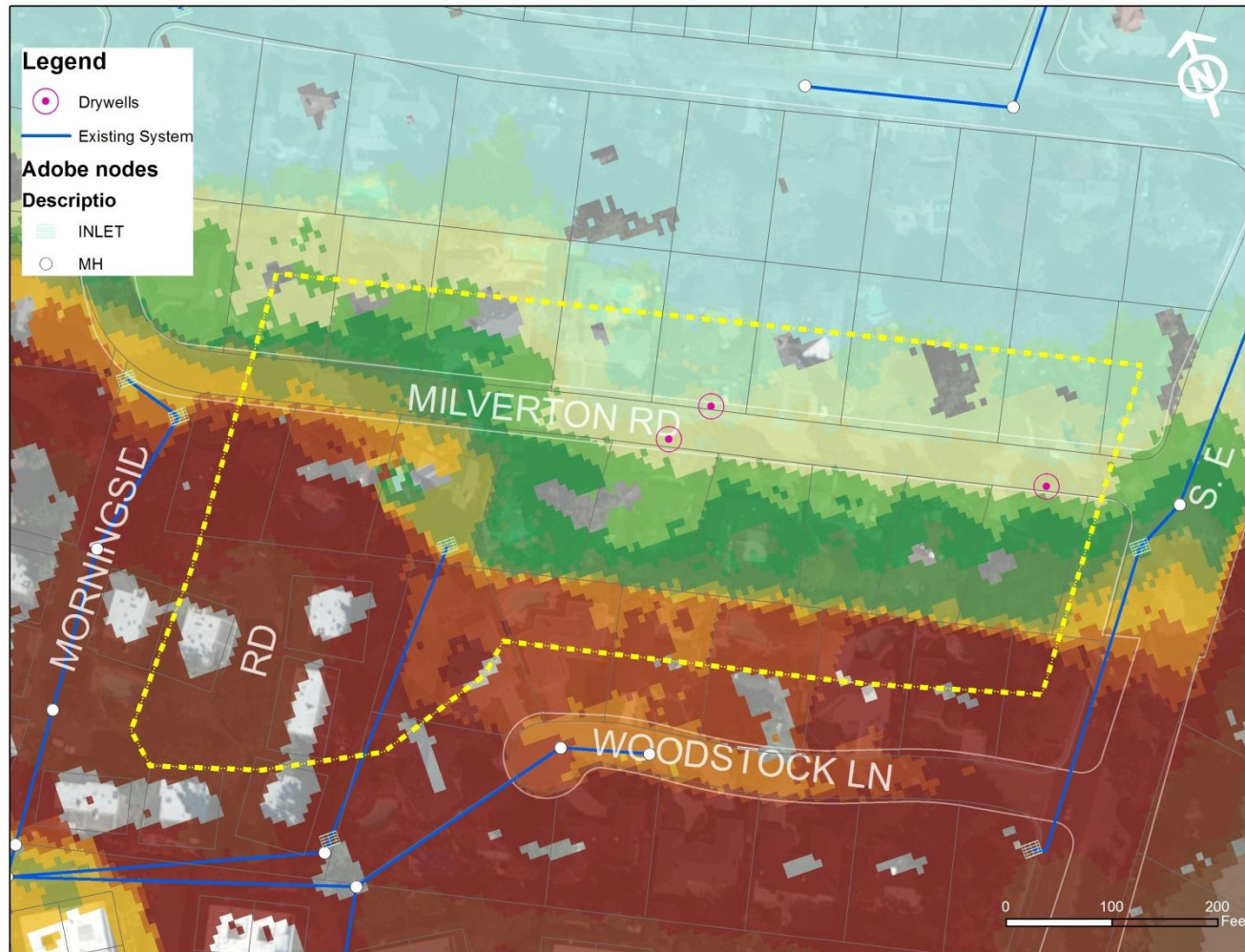
Milverton Road Existing System



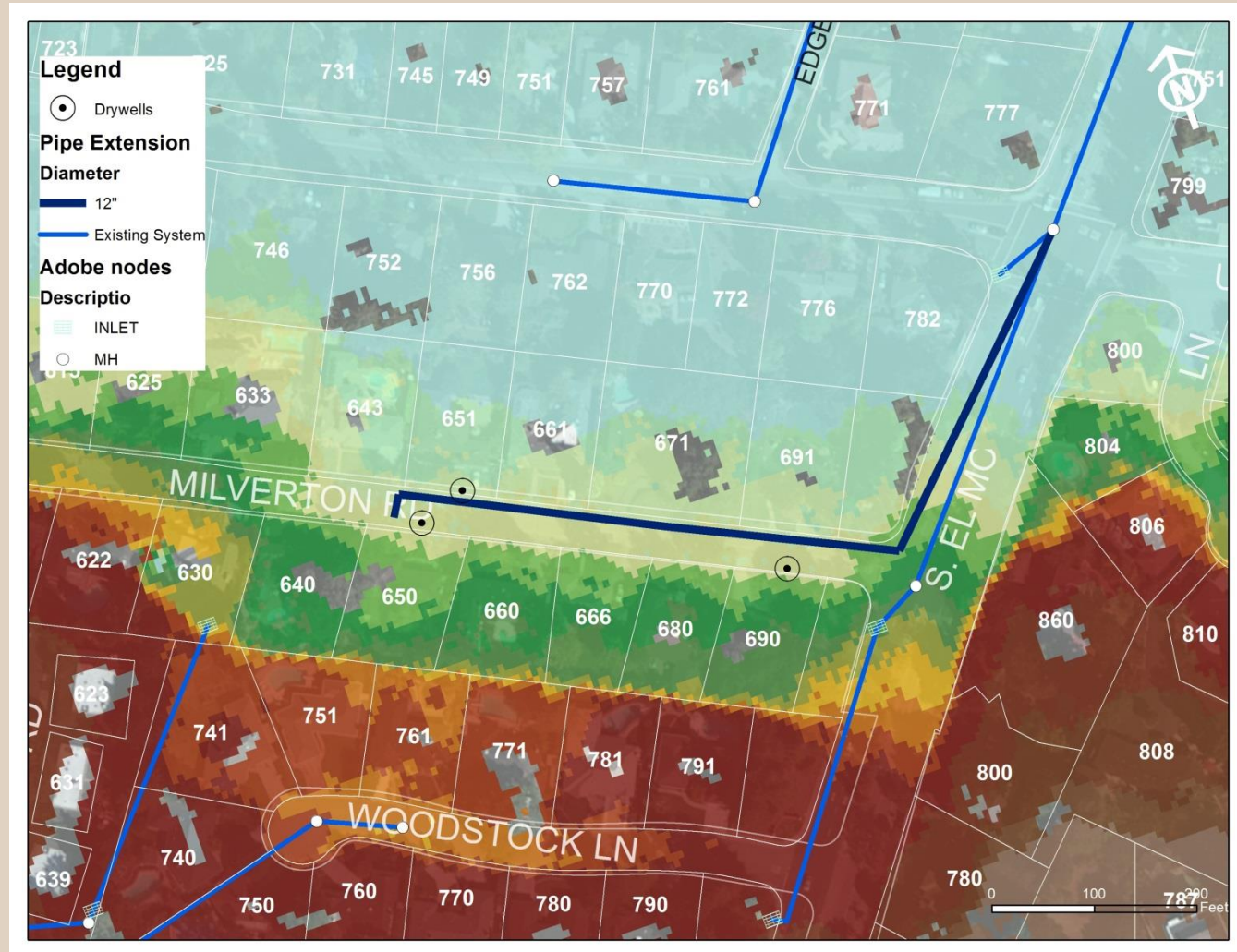
Milverton Road Improvement



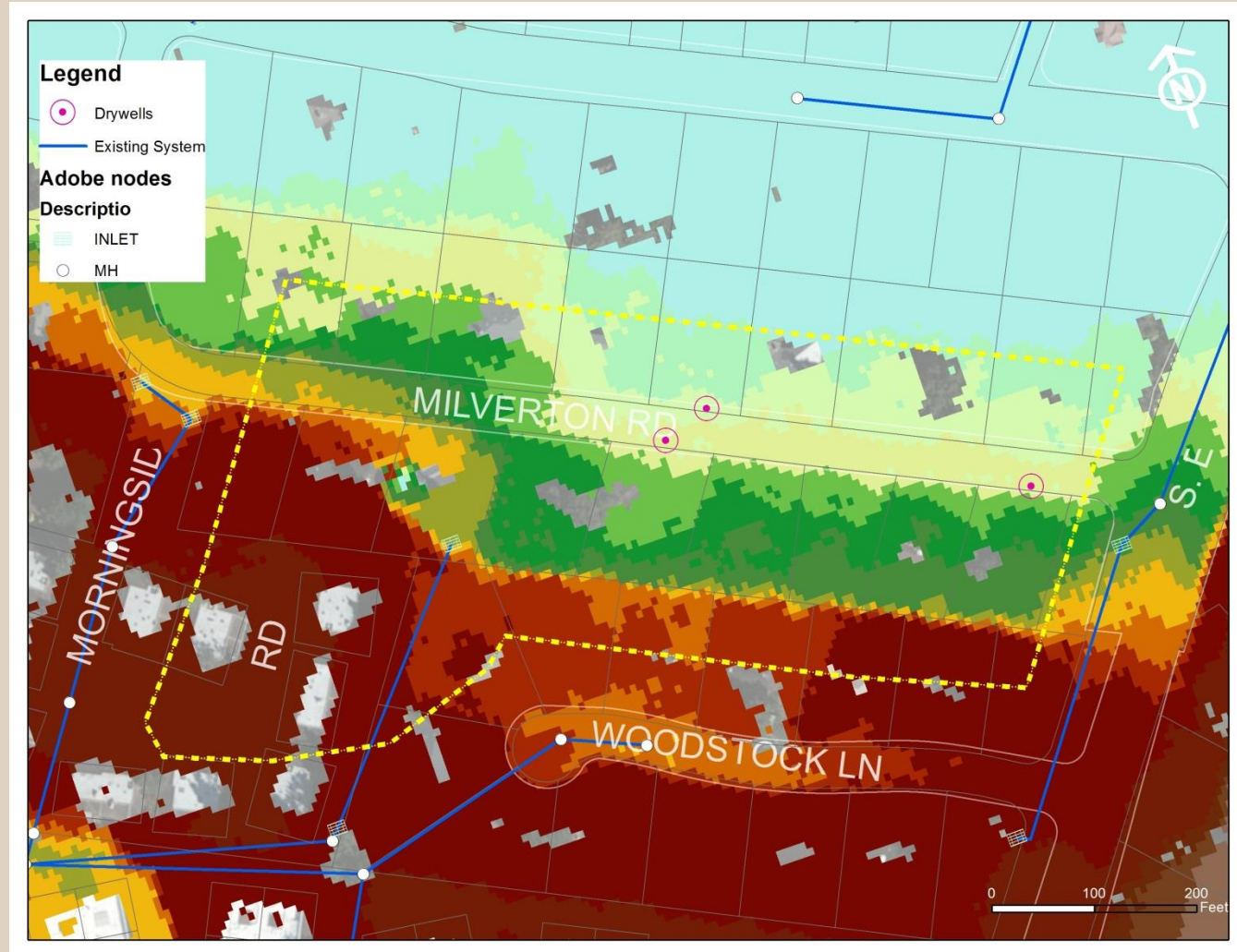
Milverton Road Existing System



Milverton Road Pipe Extension



Milverton Road Existing System



Milverton Road Topography

