Storm Drain Master Plan, IFFP, IFFA & Rate Study

Summary and Key Findings

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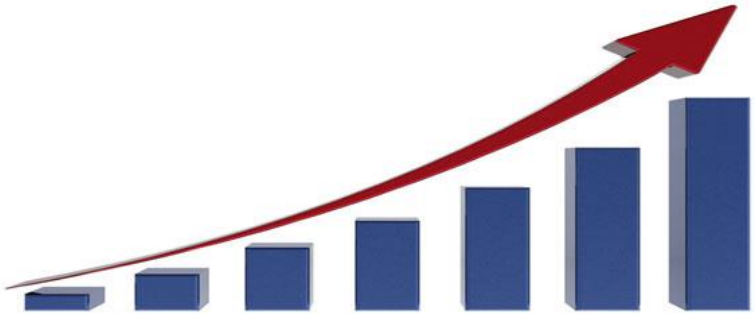
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Why a Storm Drain Master Plan?

- Major Rainfall Events are Unknown, yet Inevitable
- Plan needs to be in place to minimize flooding/damages
- The Master Plan must:
  - Identify existing deficiencies
  - Account for future deficiencies due to growth
  - Project Impact Fees and Rates to fund projects that mitigate existing and future deficiencies



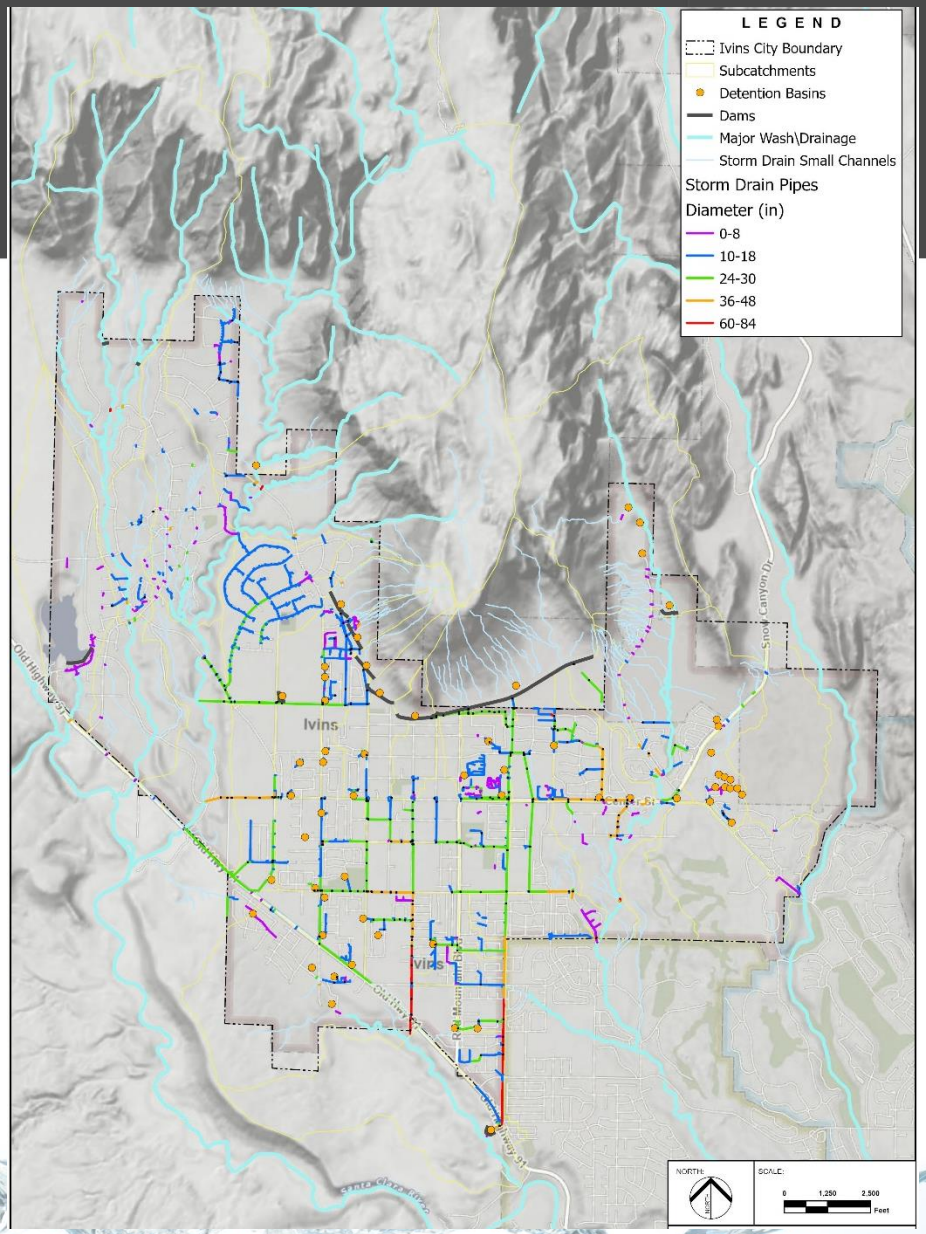


Presentation Outline

- Summarize Master Plan analysis
- Review Proposed Projects
- Summarize Recommended Impact Fees
- Summarize Recommended Rates

Existing Facilities

- 39+ miles of storm drain pipe
- 10+ miles of open channels
- 300+ manholes
- 1,400+ inlets
- 50+ detention basins
- 400 East Flood Street

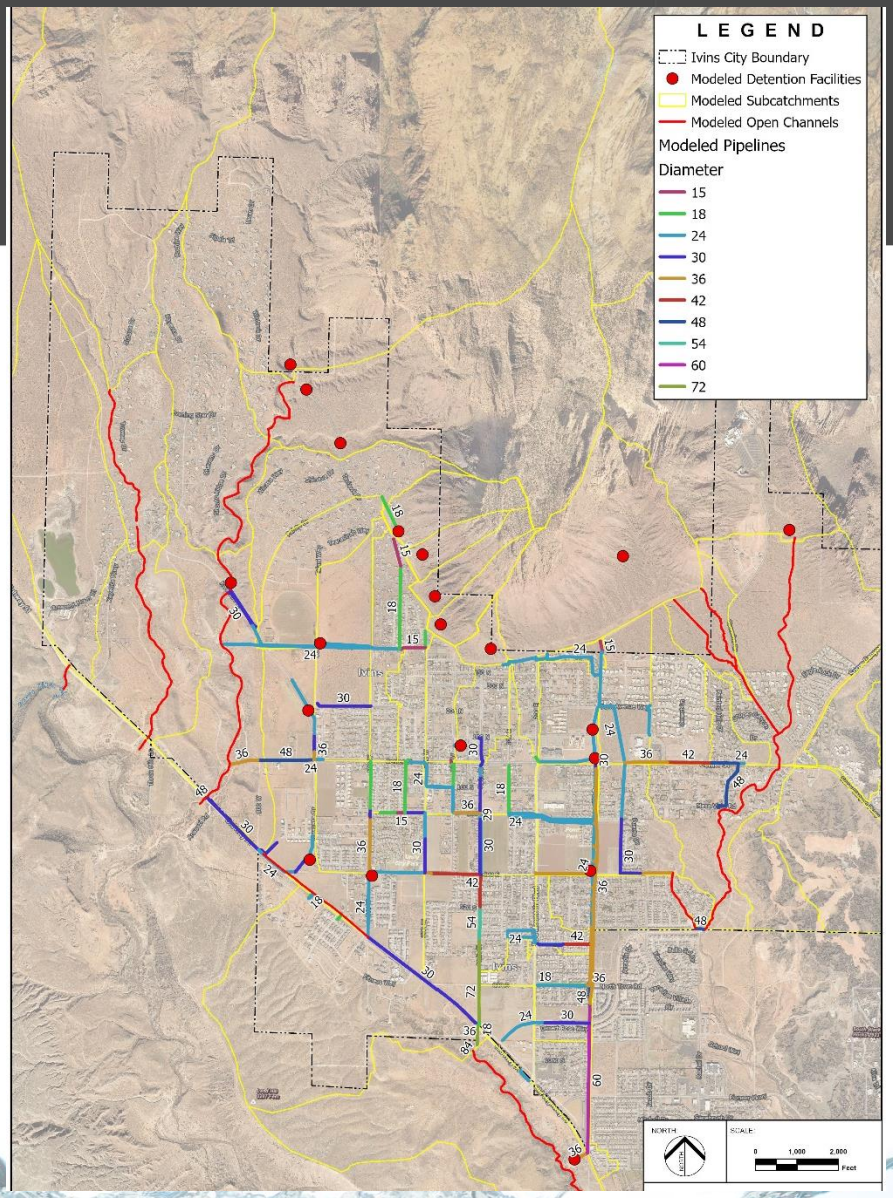


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Hydraulic Model

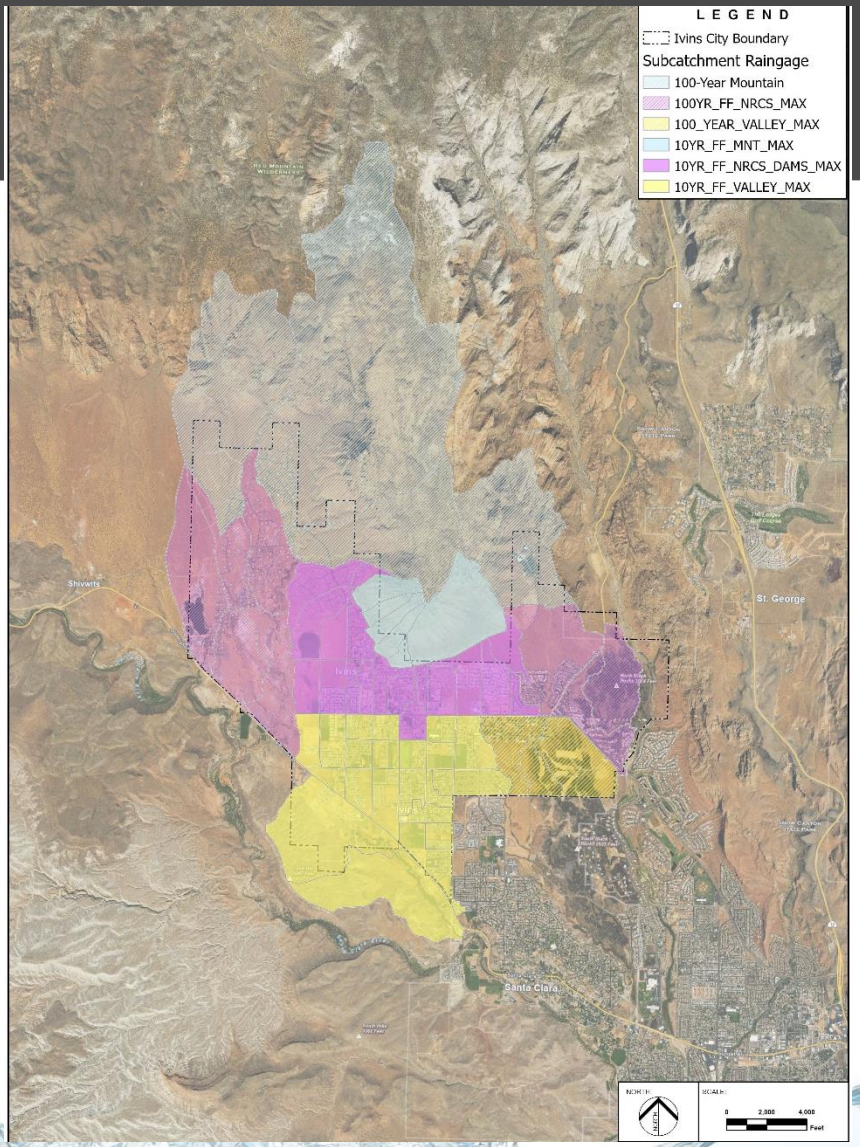
- Major storm drain trunklines
- Regional detention basins
- Natural drainage channels/washes



Rainfall Depths

- Storm Duration: 3 Hours
- Storm Distribution: Modified Farmer and Fletcher
- Recurrence Interval:
  - City Drainage: 10-Year Storm
  - Mountain Drainage: 100-Year Storm
- Storm Depth (Upper Bound from NOAA Atlas 14)‡:

Mountain Area	100-Year	2.41 inches
Central Area	100-Year	2.19 inches
Central Area	10-Year	1.30 inches
Valley Area	10-Year	1.25 inches



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Impervious Area

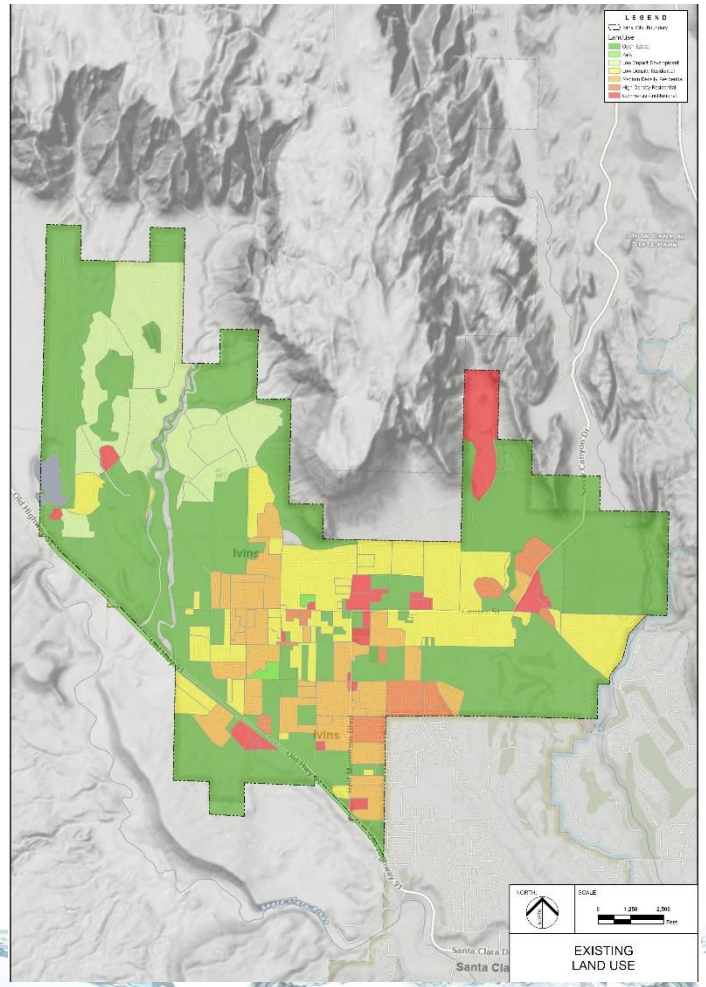
- Runoff increases when impervious area increases
- Impervious area increases as land use changes due to growth
- Different land use types have different amounts of imperviousness

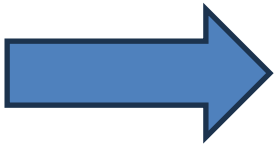
Average Imperviousness Based on Land Use

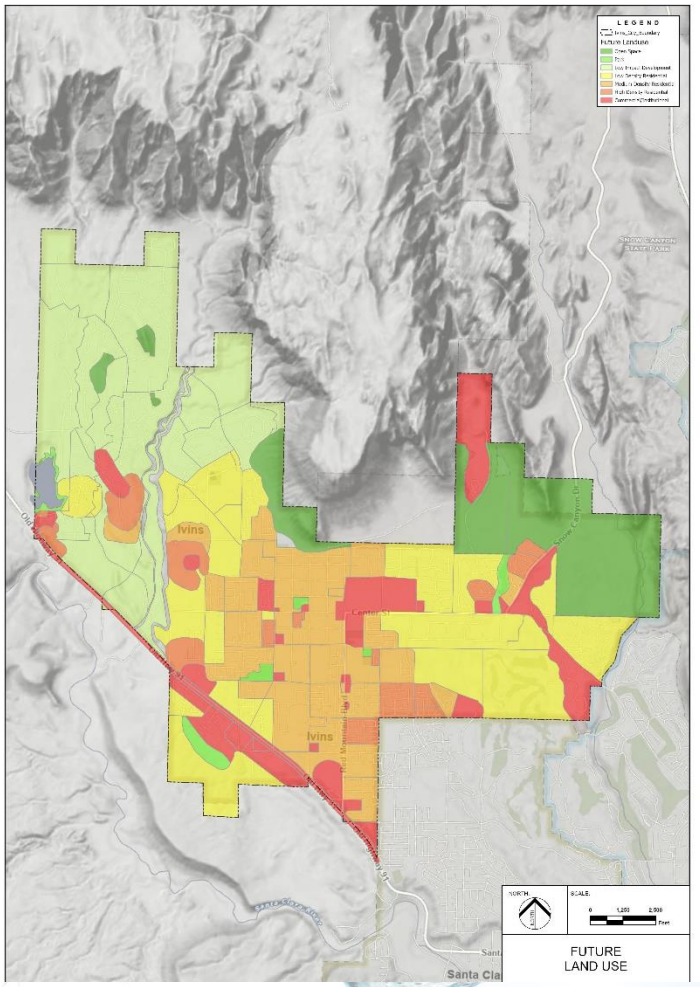
General Plan Land Use Type	Directly Connected Imperviousness (Percent)
Open Space	0
Low Impact Development*	7-15
Low Density Residential (LDR)	18-25
Tuacahn Resort	20
Park	25
Medium Density Residential (MDR)	30-35
School	40
High Density Residential (HDR)	40-55
RMU - Village	55
Commercial/Light Manufacturing	70
Church	75
RMU-Town Center	85
Commercial	85
Commercial Neighborhood	85
Commercial Resort	85

* Note areas of Low Impact Development (LID) with a directly connected impervious area of 7 percent incorporated the use of cisterns, reducing the direct runoff to the system.

Impervious Area Growth





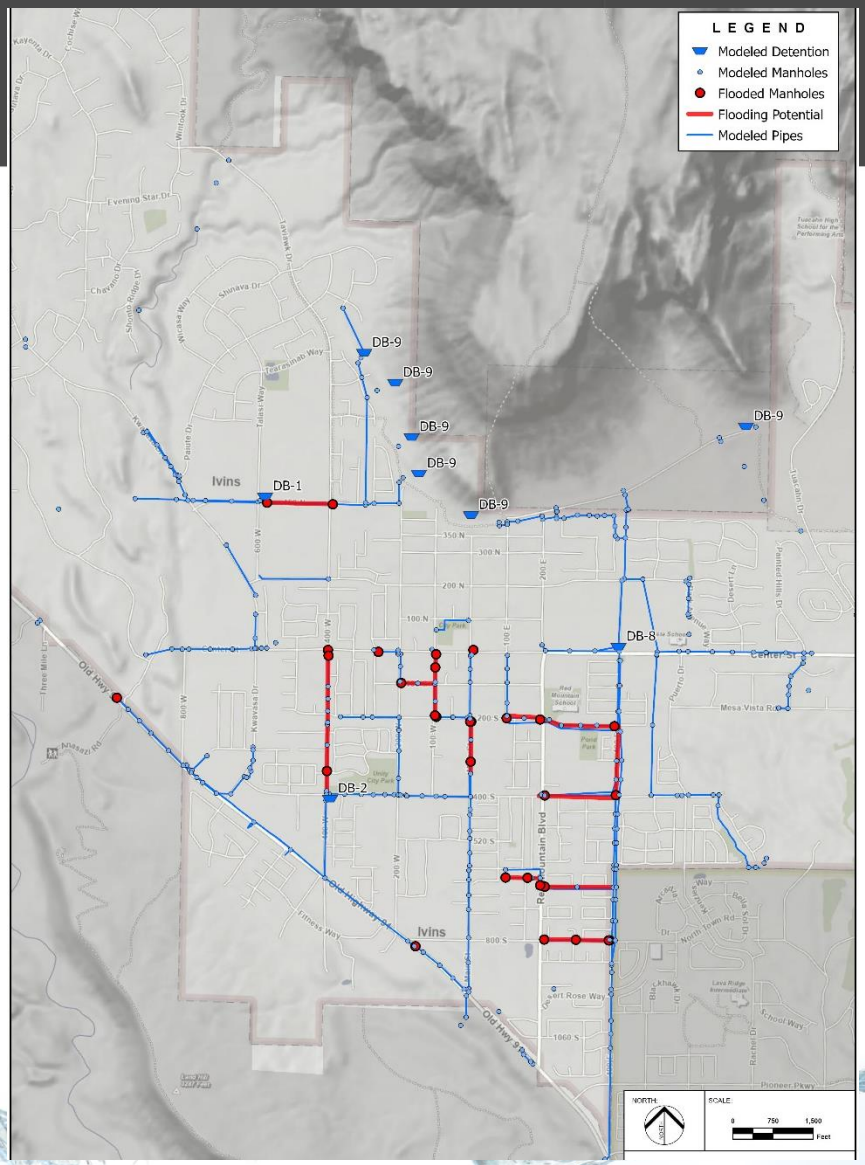


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Existing Deficiencies

- Existing facilities modeled
- Impervious area based on existing conditions

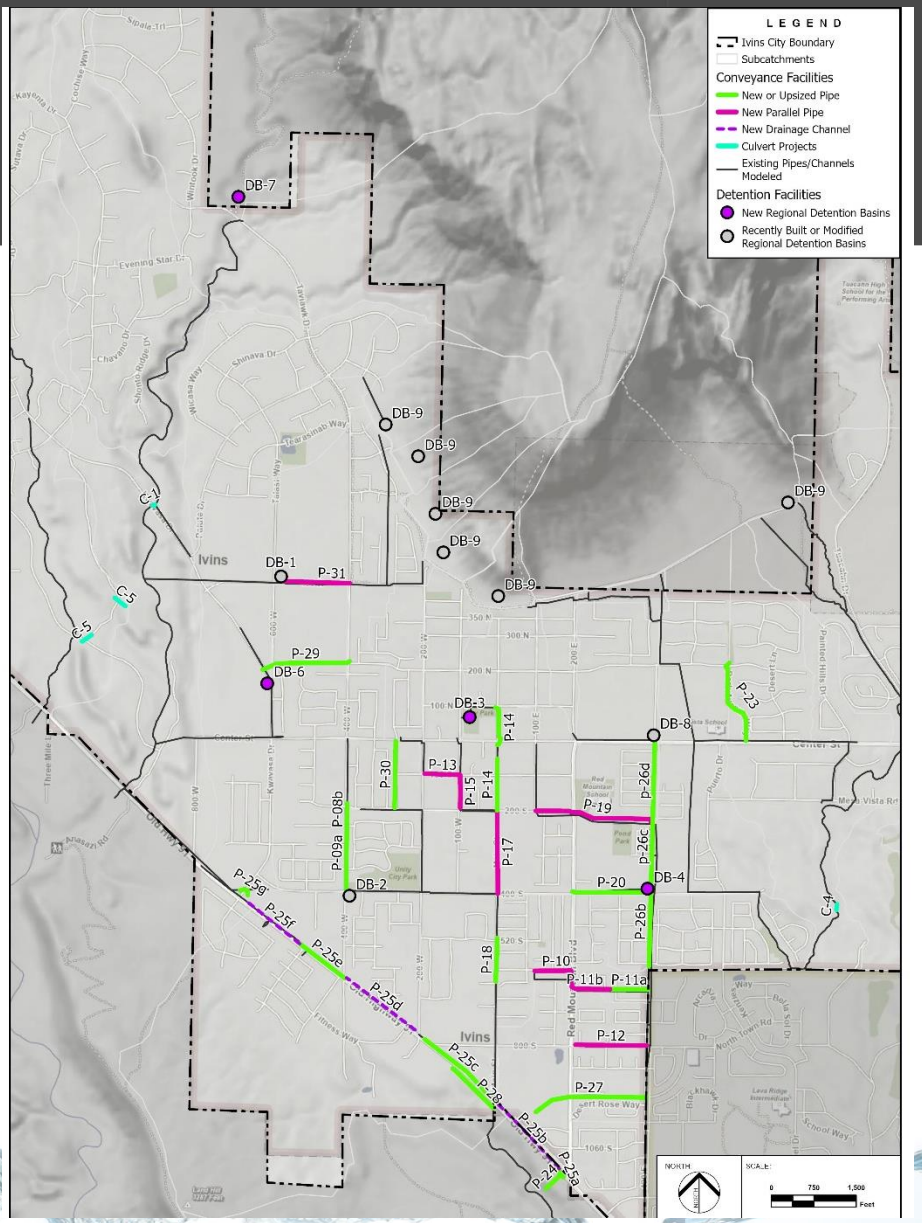


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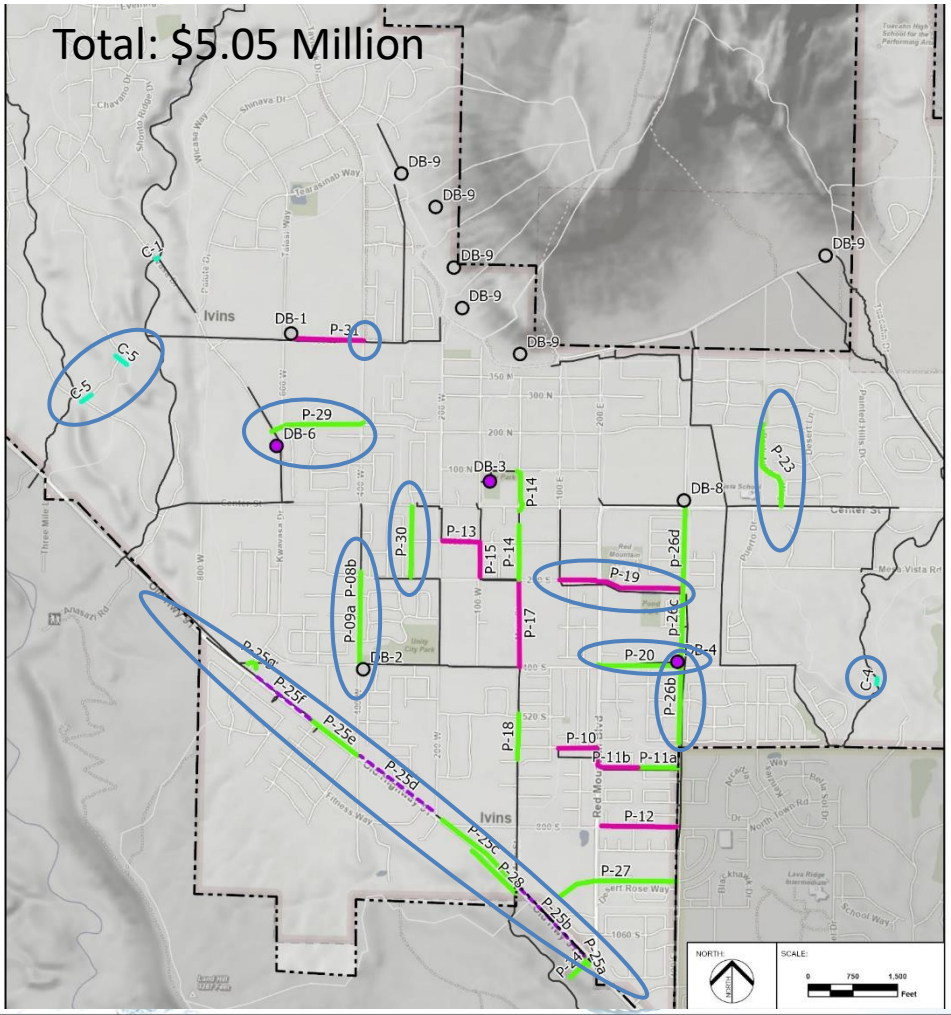
Proposed Projects

- Addresses existing deficiencies
- Addresses future deficiencies due to growth



Proposed Projects Priority 1

Project ID	Project Location	Priority 1 (immediate) Estimated Cost	Description
P-08b	400 W & 200 S	$64,808	Replace existing 18" with 30" pipe
P-09a	400 W & 400 S	$452,238	Replace existing 18"-24" with 36" pipe
P-19	250 E & 200 S	$593,046	Future parallel 24" pipe
P-20	250 E & 400 S	$472,655	Replace deteriorated 24" pipe with new 36" pipe
P-23	Park Avenue Way	$436,881	New 24" pipe to help control debris flows
P-24	Hwy 91 & Red Mtn. Blvd.	$70,000	New 24" pipe to discharge to wash
P-25a	Hwy 91 (400 W to 550 W)	$70,700	New 24" pipe
P-25c	Hwy 91 (200 W to Main St.)	$318,150	New 30" to 36" pipes (built with Hwy 91 road project)
P-25e	Hwy 91 (500 W to 400 W.)	$247,450	New 30" to 36" pipes (built with Hwy 91 road project)
P-25g	Hwy 91 (Kwavasa Dr.)	$70,700	New 18" pipe for collection near Kwavasa Dr.
P-26b*	400 East (400 S to 580 S)	$609,403	Replace existing 24" pipe with new 42" pipe and concrete waterway
P-28	RV Park @ Hwy 91	$70,000	Future 18" pipe
P-29	200 North	$318,698	Future 30" pipe
P-30	265 West Dirt Road	$190,115	Future 18" pipe
P-31a	450 North Inlets	$50,000	Catch basins to increase inlet capacity to 450 North pipeline
DB-4	400 E & 400 S	$445,000	New 3.4 AF Detention Facility
DB-6	600 W & 200 N	$272,000	New 1.8 Detention Facility
C-4	Remove SITLA Culverts	$100,000	Remove existing culverts to restore natural wash channel capacity
C-5	Kayenta Box Culverts	$200,000	Two new box culverts to be installed when new road is built

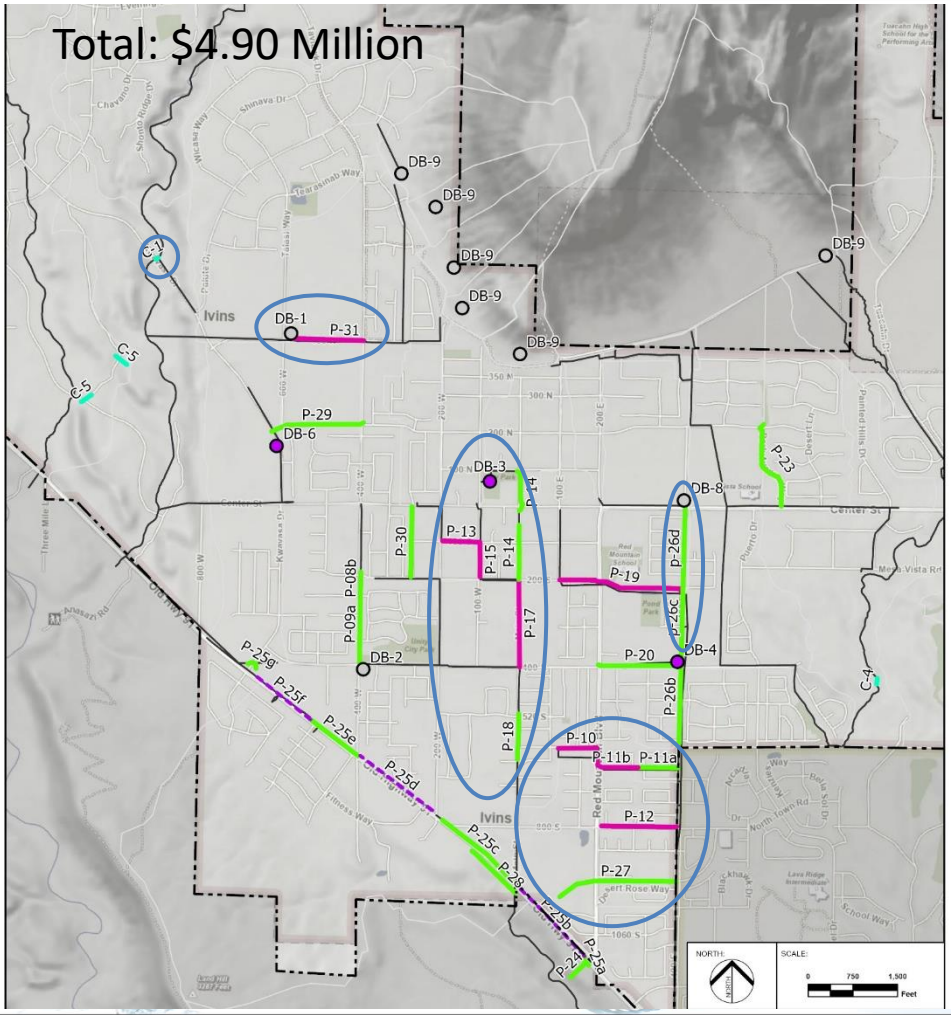


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Proposed Projects Priority 2

Project ID	Project Location	Priority 2 (future) Estimated Cost	Description
P-10	160 E & 625 S	$280,488	Future parallel 24" pipe
P-11a	285 E & 650 S	$262,704	Replace 24" pipe in poor condition with 42" pipe
P-11b	285 E & 650 S	$168,355	Future parallel 30" pipe
P-12	320 E & 800 S	$331,798	Future parallel 24" pipe
P-13	150 W & 100 S	$174,487	Future parallel 24" pipe
P-14	100 N & Main Str.	$498,193	Replace existing 18"-24" with 30" pipe
P-15	100 W & 150 S	$160,941	Future parallel 24" pipe
P-17	350 S & Main Str.	$449,502	Future parallel 36" pipe
P-18	490 S & Main Str.	$372,882	Replace 42” with 54” pipe
P-26c*	400 East (200 S to 400 S)	$367,722	Replace existing 24" pipe with new 42" pipe and concrete waterway
P-26d*	400 East (Center St to 200 S)	$518,416	Replace existing 24" pipe with new 36" pipe and concrete waterway
P-27	Western Corridor	$561,660	Future 30" pipe
P-31	450 North Pipeline	$216,496	Future parallel 24" pipe
DB-3	City Park Baseball Field	$275,000	New 4.2 AF Detention Facility. Install inlets in 100 West to convey flows to detention facility
DB-7	Taviawk Dr.	$85,000	Construct Emergency Spillway at existing road crossing
C-1*	Kwavasa Dr. Culvert	$175,000	New parallel 54” culvert

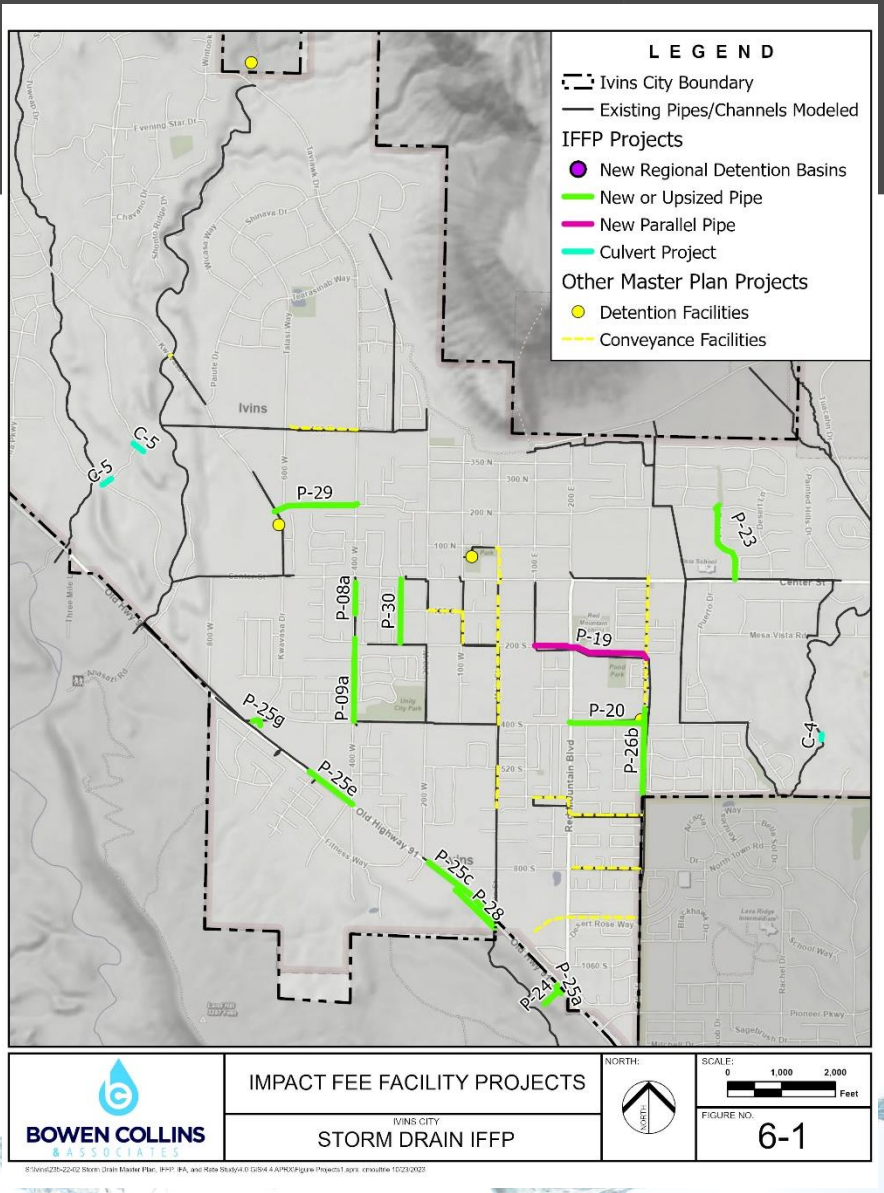


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Impact Fee Facility Plan

- Priority 1 Projects (within the next 10 years)
- Recommended Impact Fees based on projected growth and portion of projects that service growth



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Impact Fee Analysis

- Existing Impact Fees

Zoning Type	Lot Size	Percent Impervious	Impact Fee/1000 SF	Impact Fee
Low Impact Development	43,560	7%	$239.94	$731.63
Low Density Residential	22,000	25%	$239.94	$1,319.67
Medium Density Residential	13,000	30%	$239.94	$935.77
High Density Residential	6,500	50%	$239.94	$779.81
Apartments	43560	85%	$239.94	$203.95
Commercial	43560	85%	$239.94	$203.95
Office	43560	70%	$239.94	$167.96

- Recommended Impact Fees

Zoning Type	Average Lot Size	Percent Impervious	Impact Fee/1000 SF	Recommended Impact Fee
Low Impact Development (LID)*	43,560	7%	$301.76	$920.13/unit
Low Density Residential	22,000	25%	$301.76	$1659.69/unit
Medium Density Residential	13,000	35%	$301.76	$1373.02/unit
High Density Residential	6,500	50%	$301.76	$980.73/unit
Apartments	-	55%	$301.76	$165.97/1000 SF total lot size
Commercial	-	85%	$301.76	$256.5/1000 SF total lot size
Church	-	60%	$301.76	$181.06/1000 SF total lot size
Office	-	70%	$301.76	$211.23/1000 SF total lot size

Projected Impact Fees

Table 5-5
Recommended Impact Fee – Single Family Residential
($/unit)

Zoning Type	FY24	FY25	FY26	FY27	FY28	FY29
Low Impact Development (LID)*	$920.13	$943.09	$964.35	$984.08	$1,002.42	$1,019.49
Low Density Residential	$1,659.69	$1,701.11	$1,739.46	$1,775.03	$1,808.11	$1,838.91
Medium Density Residential	$1,373.02	$1,407.28	$1,439.00	$1,468.44	$1,495.80	$1,521.28
High Density Residential	$980.73	$1,005.20	$1,027.86	$1,048.88	$1,068.43	$1,086.63

*To qualify as LID development, a property may have no more than 15 percent impervious and must have sufficient detention/retention to reduce the effective impervious area to no greater than 7 percent.

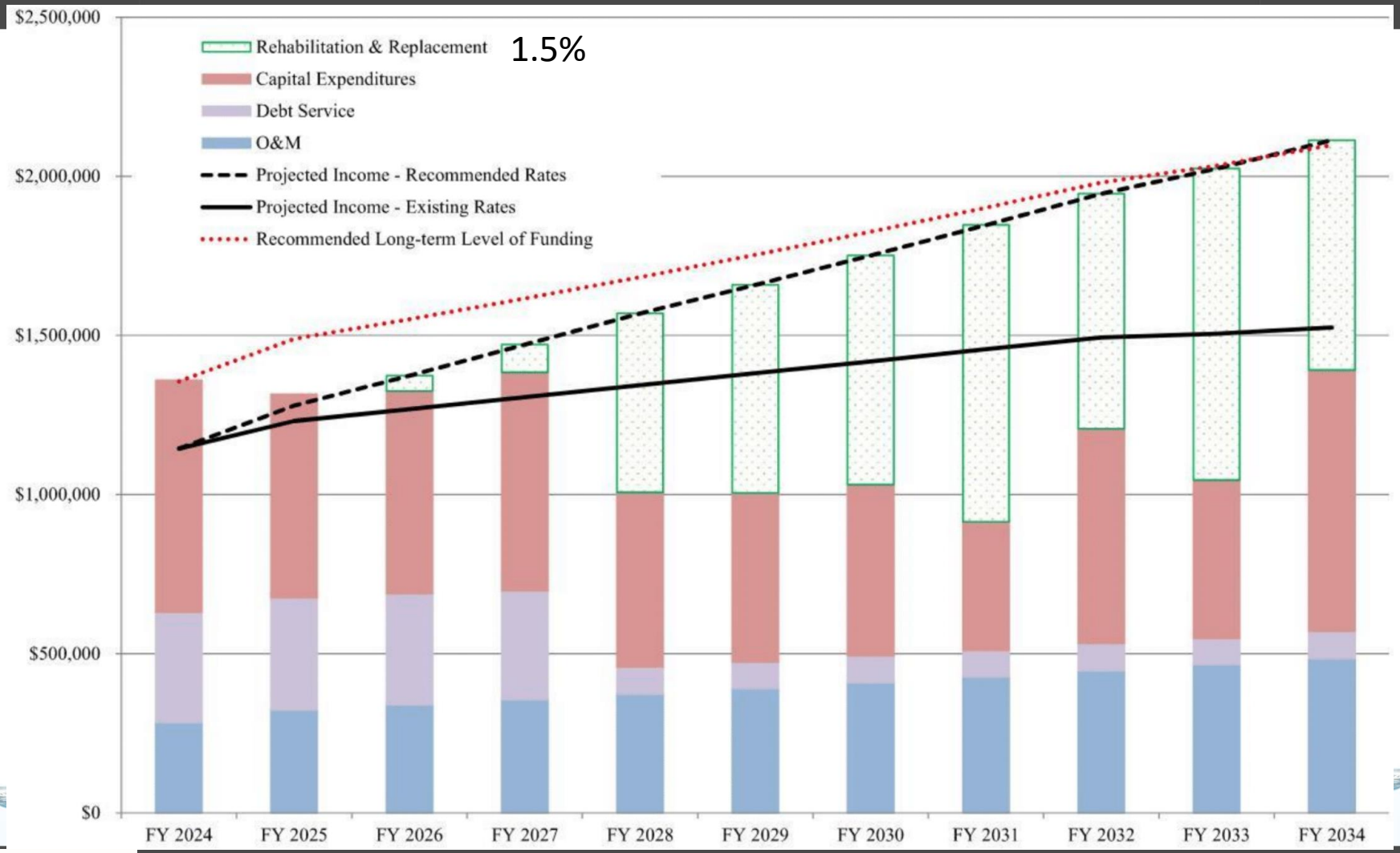
Table 5-6
Recommended Impact Fee – Other Zoning Types
($/1000 Impervious SF)

Zoning Type	FY24	FY25	FY26	FY27	FY28	FY29
Non-Residential	$301.76	$309.29	$316.26	$322.73	$328.75	$334.35

Rate Analysis Summary

- Storm drain user rates updated based on projected revenue requirements
- Impact fee revenue based on recommended fees and projected growth
- Revenue Requirements include:
  - Capital Expenditures
  - Debt Service
  - Operations and Maintenance
  - Rehabilitation and Replacement

10-Year Revenue and Expenditures



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Projected User Rates

	Existing Rates	Recommended Future Rates				
	FY24	FY25	FY26	FY27	FY28	FY29
Residential ($/Account)	$14.05	$14.75	$15.50	$16.25	$16.95	$17.50
Non-Residential ($/1000 Impervious SF)	$2.87	$3.01	$3.17	$3.32	$3.46	$3.57

Questions?



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