

City of Chula Vista

Asset Management Program Technical Advisory Committee

February 26, 2015



“above, below, and all around you”



Agenda

- ◆ Asset Management Goals and Objectives
- ◆ Asset Management Methodology
- ◆ Criticality/Risk Assessment Methodology
- ◆ Life Cycle Cost Methodology
- ◆ Asset Management Systems:
 - Drainage Management System
 - Building Management System
 - Fleet Management System
- ◆ AMP Tool Demonstration



Asset Management

Delivering an established

level of service

while managing individual assets to

minimize the life cycle cost

with an acceptable

level of risk

Optimized Sustainable Stewardship

Effective Asset Management



Goal of Asset Management

Customer
Expectations

Cost
of Service

Level
of Service

Risk



Asset Management Program Objectives

- **Catching Up \$**
- **Keeping Up \$**
- **Moving Forward \$**



Asset Management Program (AMP)



Building Management System	BMS
Drainage Management System	DMS
Fleet Management System	FMS
General Government Management System	GGMS
Open Space Management System	OSMS
Parks Management System	PMS
Roadway Management System	RMS
Urban Forestry Management System	UFMS
Wastewater Management System	WMS

9 Asset Management Systems for 100 years of investments

Asset Management Methodology



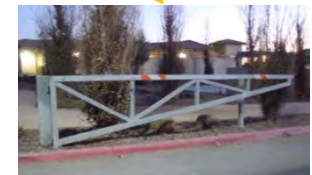
Data Collection Activities



Condition Assessment



Asset Mapping



Documenting What is Managed (Asset Register)

Location	Site/Location	Notes	Asset ID	Size	Size Unit	Size 2	Size 2 Unit	Quantity	Material	Asset Class	Type	Installation Year	Age	Life	Condition (1 to 5)	CoF	Pop (%)	Condition Comments	Replacement Cost
Knots Lane	Wet / Dry Well	Wet Well	SLS16005	449.6	CY			1	Reinforced	Well	Wet	1999	14	75	2	5	8.06%		\$ 314,589
Knots Lane	Wet / Dry Well	Dry Well	SLS16006	1220	CY			1	Reinforced	Well	Dry	1999	14	75	2	5	8.06%		\$ 954,156
Knots Lane	Wet / Dry Well	Stairway	SLS16007					5	Galvanized	Stairway		1999	14	40	2	2	20.71%		\$ 21,000
Knots Lane	Wet / Dry Well	Stairway Handrail	SLS16008	64	LF			1	Galvanized	Handrail	Aluminium	1999	14	40	2	3	20.71%		\$ 13,440
Knots Lane	Wet / Dry Well	Single Leaf Alum. Access Hatch	SLS16009	32	SF			1	Galvanized	Hatch		1999	14	40	2	2	20.71%		\$ 5,000
Knots Lane	Wet / Dry Well	Alum. Pump Removal Hatch	SLS16010	27	SF			1	Galvanized	Hatch		1999	14	40	2	3	20.71%		\$ 5,000
Knots Lane	Wet / Dry Well	Manhole Cover and Frame #1	SLS16011	3	Diam			1	Cast Iron	Manhole Cover		1999	14	75	2	1	8.06%		\$ 1,400
Knots Lane	Wet / Dry Well	Manhole Cover and Frame #2	SLS16012	3	Diam			1	Cast Iron	Manhole Cover		1999	14	75	2	1	8.06%		\$ 1,400
Knots Lane	Wet / Dry Well	Handrail (Pump Removal Hatch)	SLS16013	19	LF			1	Galvanized	Handrail	Aluminium	1999	14	40	2	3	20.71%		\$ 3,980
Knots Lane	Wet / Dry Well	Supply Fan	SLS16014					1		HVAC		1999	14	20	2	2	58.57%		\$ 4,200
Knots Lane	Wet / Dry Well	Exhaust Fan	SLS16015					1		HVAC		1999	14	20	2	2	58.57%		\$ 4,200
Knots Lane	Wet / Dry Well	Pump #1	SLS16016	7.5	HP	355	gpm	1		W/V-Pump-S		1999	14	1	5	5	100.00%	Needs to be replaced.	\$ 42,000
Knots Lane	Wet / Dry Well	Inflow Plug Valve with Handwheel Operator	SLS16017	6	Inches			1	Steel	W/V-Valve-L	Plug	1999	14	40	2	5	20.71%		\$ 21,000
Knots Lane	Wet / Dry Well	Outflow Check Valve, Spring Loaded #1	SLS16018	4	Inches			1	Steel	W/V-Valve-S	Check	1999	14	20	2	4	50.00%		\$ 2,100
Knots Lane	Wet / Dry Well	Outflow Plug Valve with Handwheel	SLS16019	4	Inches			1	Steel	W/V-Valve-S	Plug	1999	14	30	2	4	31.89%		\$ 6,160
Knots Lane	Wet / Dry Well	Pump #2	SLS16020	7.5	HP	355	gpm	1		W/V-Pump-S		1999	14	1	5	5	100.00%	Needs to be replaced.	\$ 42,000
Knots Lane	Wet / Dry Well	Inflow Plug Valve with Handwheel Operator	SLS16021	6	Inches			1	Steel	W/V-Valve-L	Plug	1999	14	40	2	5	20.71%		\$ 21,000
Knots Lane	Wet / Dry Well	Outflow Check Valve, Spring Loaded #2	SLS16022	4	Inches			1	Steel	W/V-Valve-S	Check	1999	14	20	2	4	31.89%		\$ 2,100
Knots Lane	Wet / Dry Well	Outflow Plug Valve with Handwheel	SLS16023	4	Inches			1	Steel	W/V-Valve-S	Plug	1999	14	30	2	4	31.89%		\$ 6,160
Knots Lane	Generator & Control	Generator & Control Room Building	SLS16024	190	SF			1	CMU	Non-office		1999	14	60	2	4	11.27%		\$ 23,750
Knots Lane	Generator & Control	Flow Meter	SLS16025	6	Inches			1		Flow Meter		2012	0	25	3	2	50.00%		\$ 15,000
Knots Lane	Generator & Control	Bubbler Control System	SLS16026					1		Electric Panel		1999	14	20	2	5	58.57%		\$ 10,000
Knots Lane	Generator & Control	Security System	SLS16027					1		Electric Panel		1999	14	20	2	5	58.57%		\$ 10,000
Knots Lane	Generator & Control	Telemetry	SLS16028					1		SCADA		1999	14	1	2	3	100.00%		\$ 140,000
Knots Lane	Generator & Control	Switchboard "SE"	SLS16029					1		Electric Panel		1999	14	20	2	5	58.57%		\$ 10,000
Knots Lane	Generator & Control	Transfer Switch (ATS)	SLS16030					1		Electric Panel		1999	14	20	2	5	58.57%		\$ 10,000
Knots Lane	Generator & Control	Main Control Panel (MCP)	SLS16031					1		Electric Panel		1999	14	20	2	5	58.57%		\$ 10,000
Knots Lane	Generator & Control	Generator	SLS16032					1		Generator		1999	14	20	2	5	31.69%		\$ 84,000
Knots Lane	Generator & Control	Generator Diesel Tank	SLS16033	137	Gal			1		Tank	Diesel	1999	14	20	2	2	31.69%		\$ 14,000
Knots Lane	Generator & Control	MCC	SLS16034	208	V			1		MCC		1999	14	20	2	5	58.57%		\$ 210,000
N. Batiquitos	Site	Paving		5050	SF			1	Asphalt	Pavement-AC		1998	15	50	2	1	16.43%		\$ 352,500
N. Batiquitos	Site	Outdoor Lighting #1 (South East)						1		Lighting		1998	15	30	2	1	35.36%		\$ 4,900
N. Batiquitos	Site	Outdoor Lighting #2 (North East)						1		Lighting		1998	15	30	2	1	35.36%		\$ 4,900
N. Batiquitos	Site	Outdoor Lighting #3 (South West)						1		Lighting		1998	15	30	2	1	35.36%		\$ 4,900
N. Batiquitos	Site	Outdoor Lighting #4 (North West)						1		Lighting		1998	15	30	2	1	35.36%		\$ 4,900

Asset Valuation

Building Management System



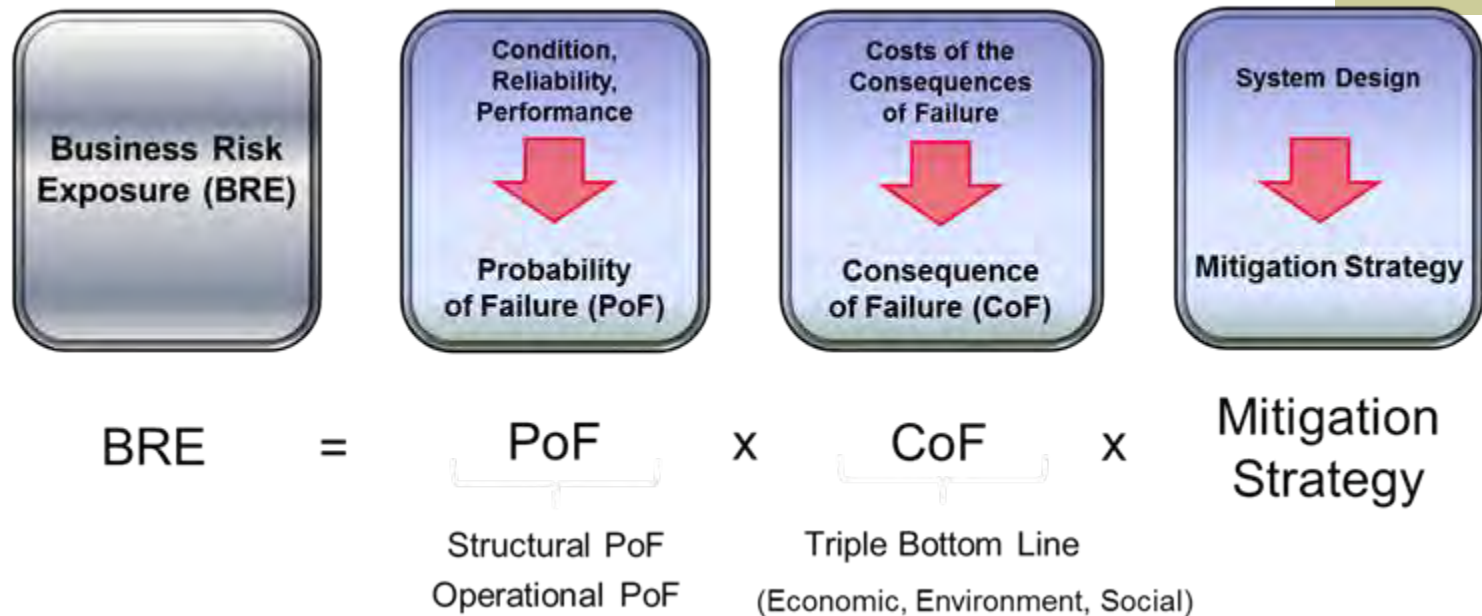
Boys and Girls Club, \$3,944,795	Chula Vista Woman's Club, \$530,130	Civic Center Library, \$8,465,353	Heritage Park Recreation Center, \$1,021,971	Lauderbach Recreation Center, \$1,199,185
Loma Verde Recreation Center, \$5,486,758	Monteville Recreation Center, \$3,587,642	Norman Park Senior Center, \$3,337,311	Parkway Community Recreation Center, \$5,226,132	
Salt Creek Park Recreation Center, \$2,179,195	South Chula Vista Library, \$6,159,706	Veteran Park Recreation Center, \$2,575,852	YMCA, \$1,342,040	

Asset Criticality

Criticality Methodology

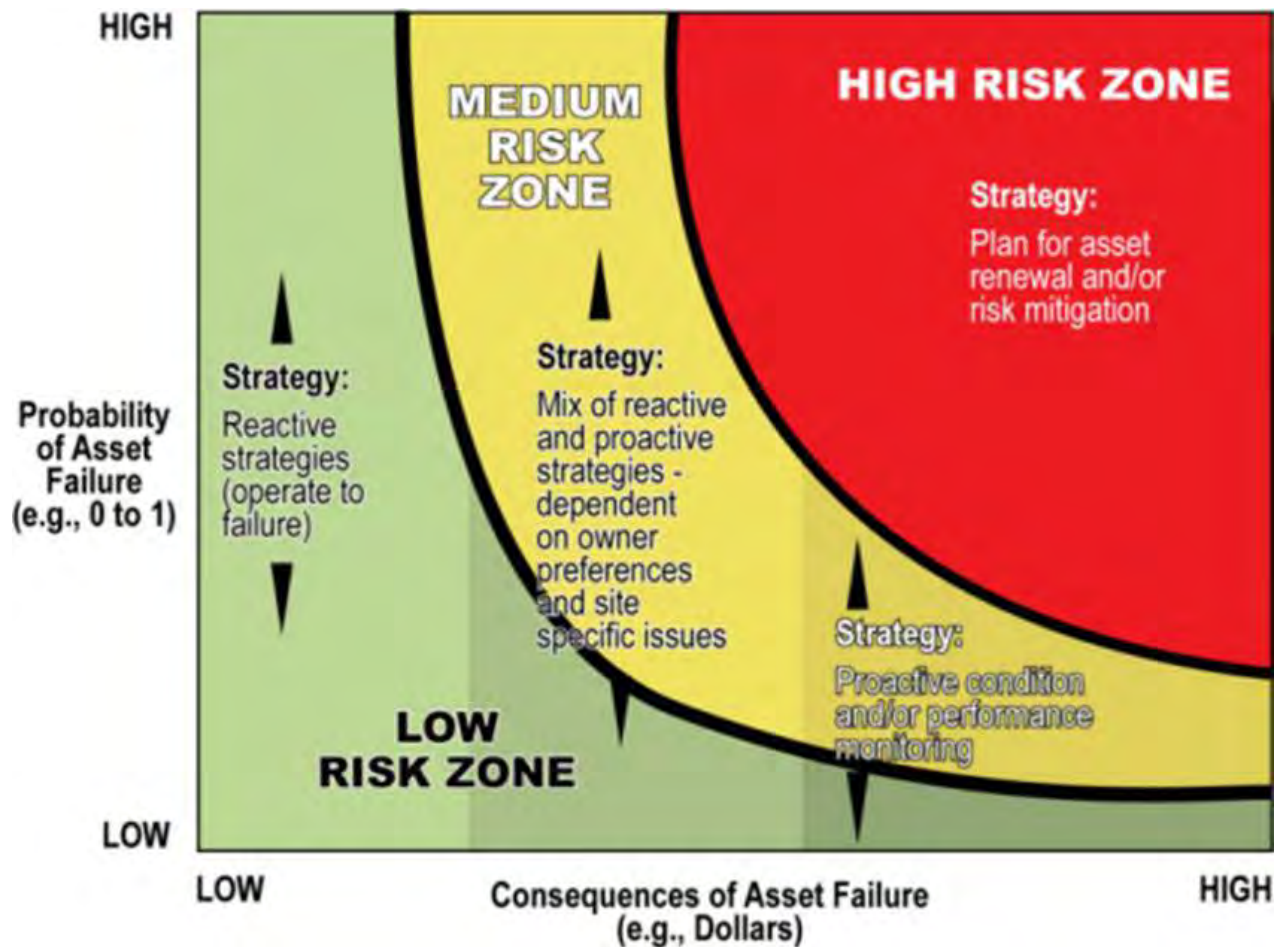
- By asset type and location
 - Type
 - Usage
 - Location
- By asset class
 - Example:
 - ◆ Playground
 - ◆ Sports courts

Risk

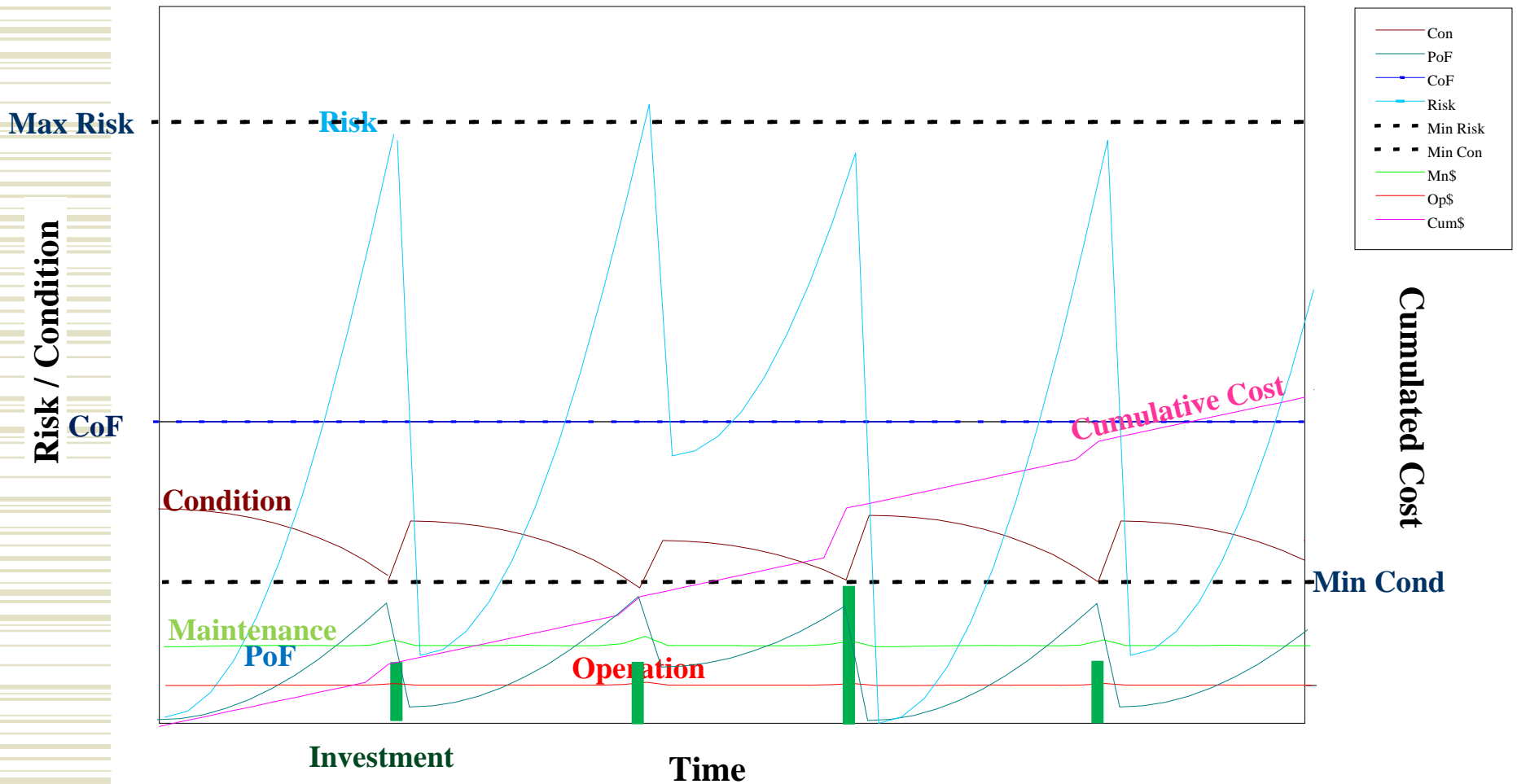


- ◆ Where PoF is driven by failure modes
 - Physical Mortality (age)
 - Capacity
 - Levels of Service
 - Financial Efficiency (life cycle cost)

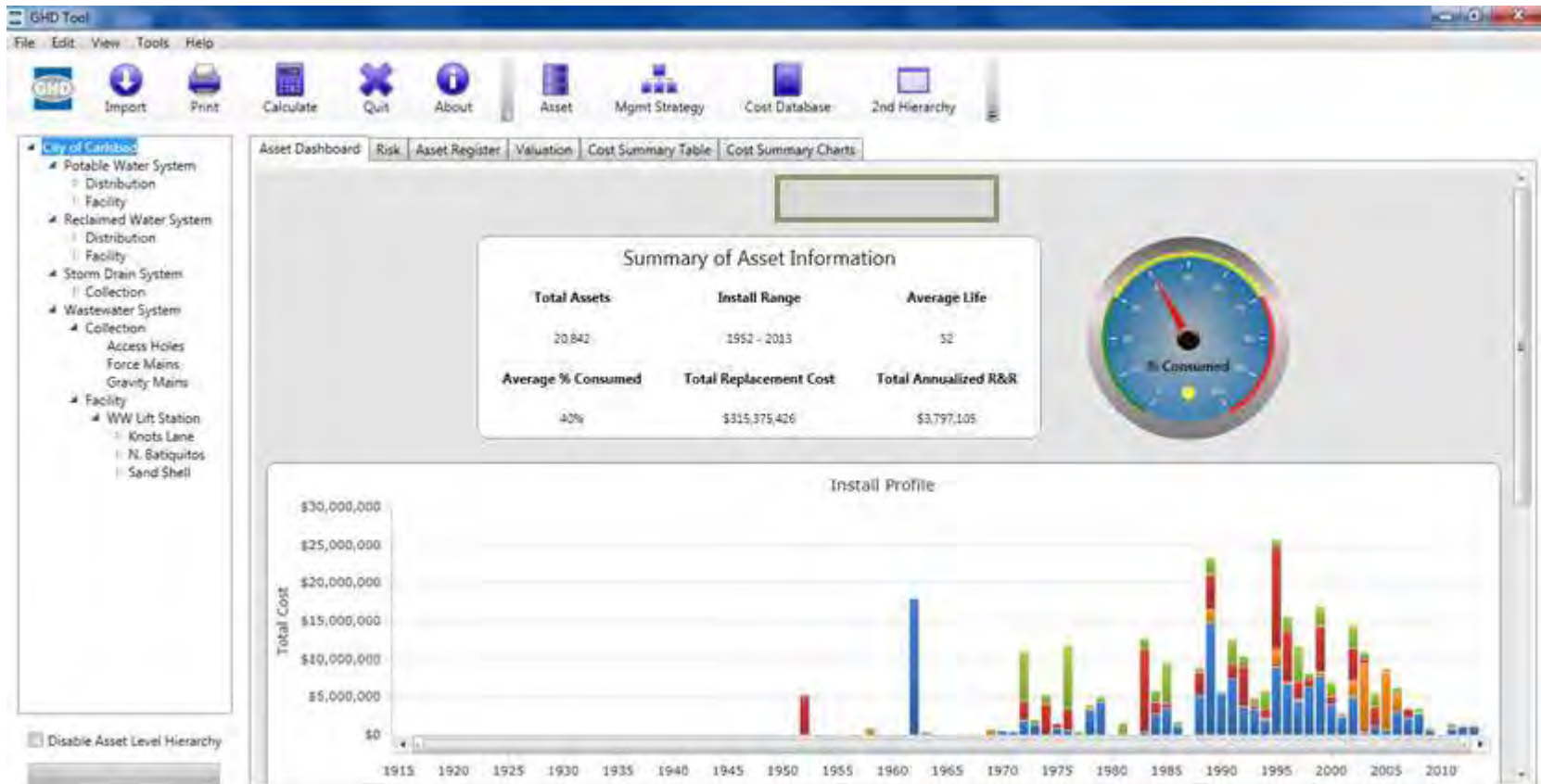
Management Strategy (Risk-Based)



Asset Life Cycle Investment Logic

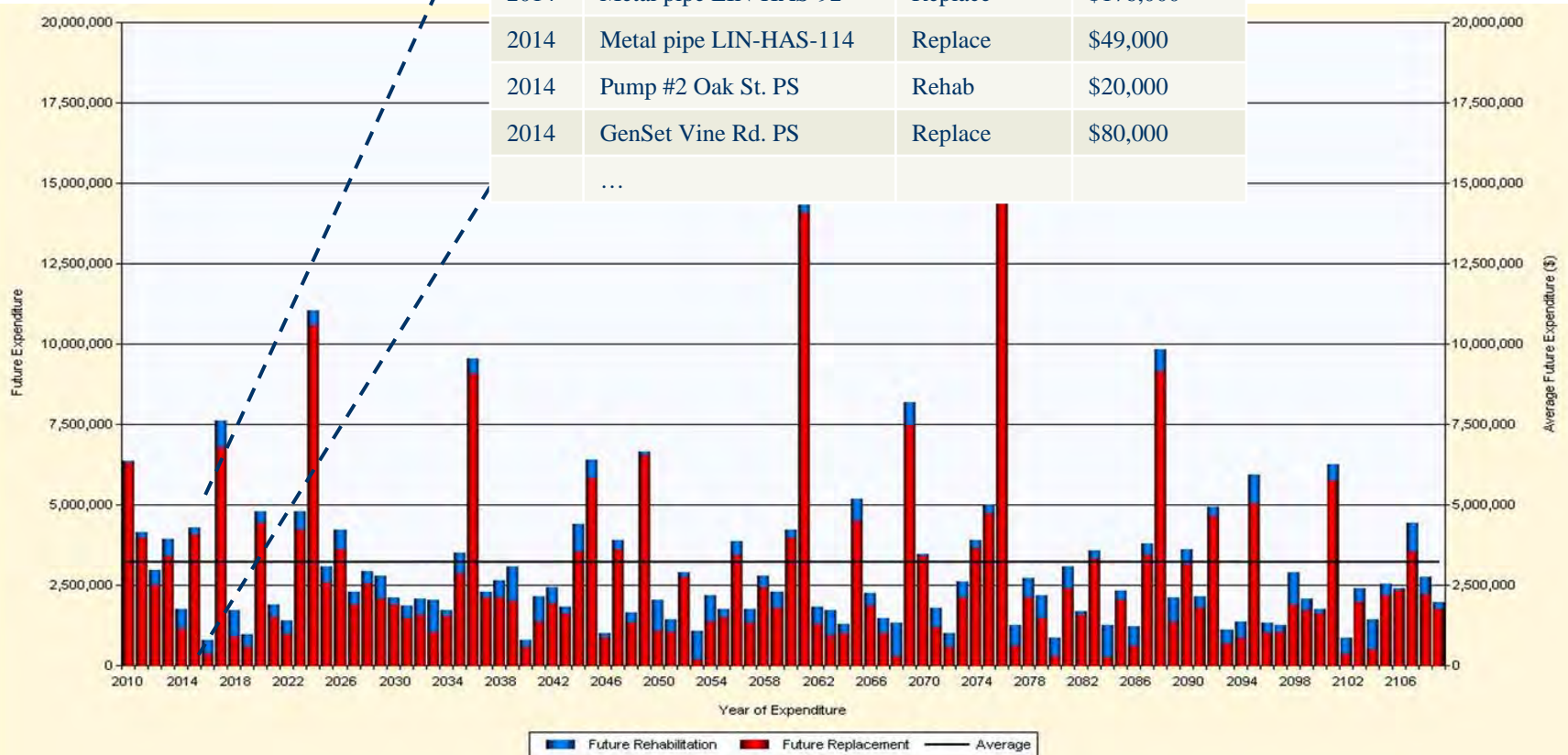


Asset Management Tool



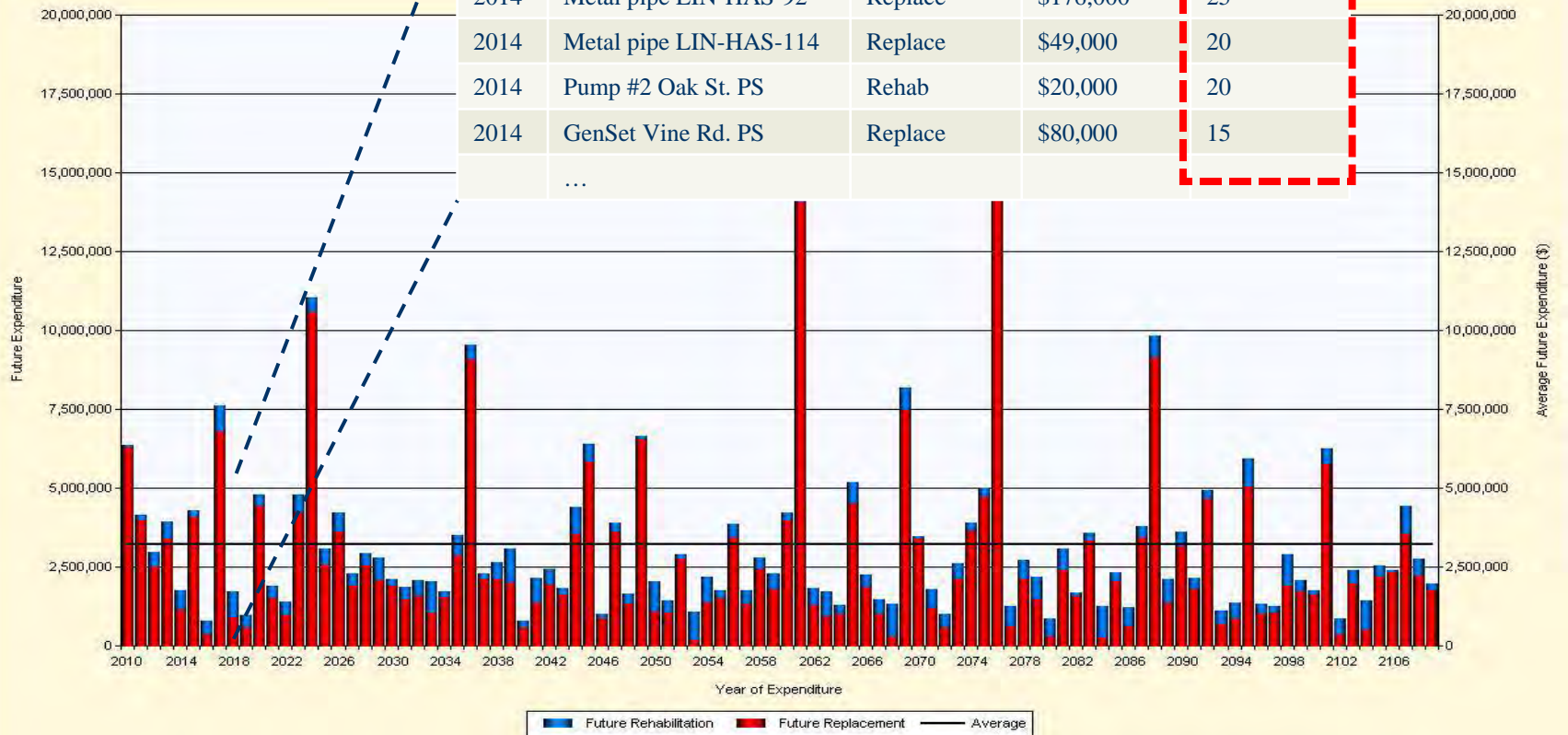
Understanding the Need (Year By Year, Asset By Asset)

Year	Asset Name	Action Type	Action Cost
2014	Metal pipe LIN-HAS-78	Replace	\$340,000
2014	Metal pipe LIN-HAS-92	Replace	\$176,000
2014	Metal pipe LIN-HAS-114	Replace	\$49,000
2014	Pump #2 Oak St. PS	Rehab	\$20,000
2014	GenSet Vine Rd. PS	Replace	\$80,000
	...		



Risk-Based Prioritization

Year	Asset Name	Action Type	Action Cost	Risk Score
2014	Metal pipe LIN-HAS-78	Replace	\$340,000	25
2014	Metal pipe LIN-HAS-92	Replace	\$176,000	25
2014	Metal pipe LIN-HAS-114	Replace	\$49,000	20
2014	Pump #2 Oak St. PS	Rehab	\$20,000	20
2014	GenSet Vine Rd. PS	Replace	\$80,000	15
...				





DRAINAGE

Drainage Story

- ◆ 10 years ago: CMP were CCTVed
 - Either replaced or relined CMP based on the condition
- ◆ Current Situation:

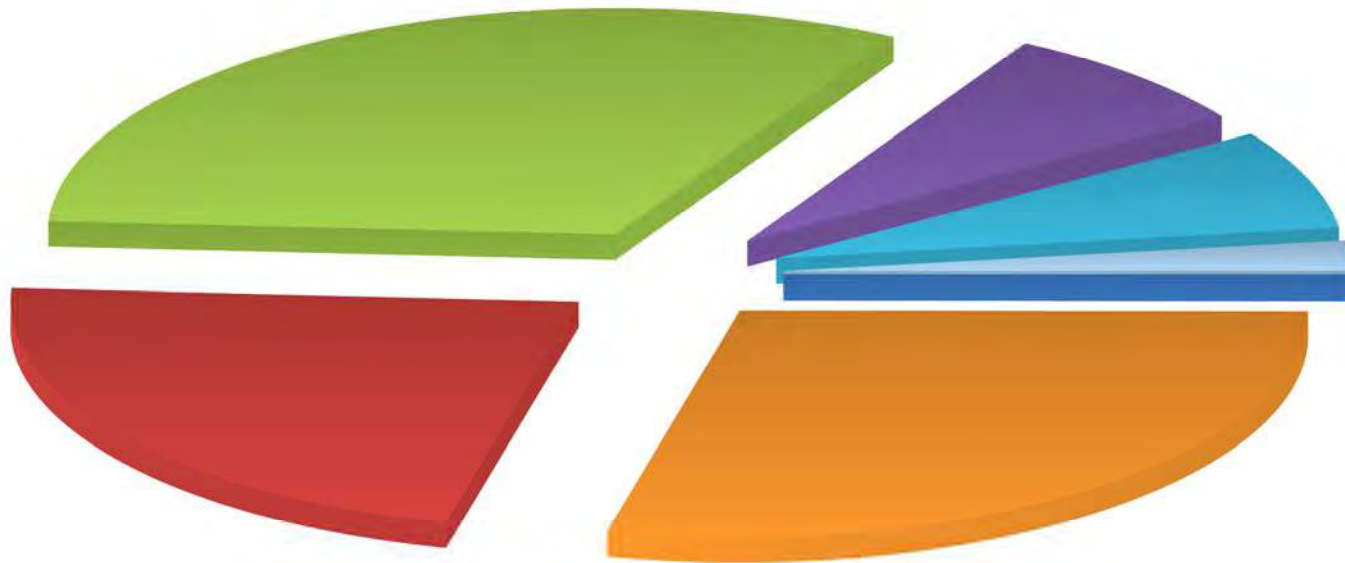


- ◆ Future: Need to identify and perform condition assessment on all the assets

Drainage Asset Valuation

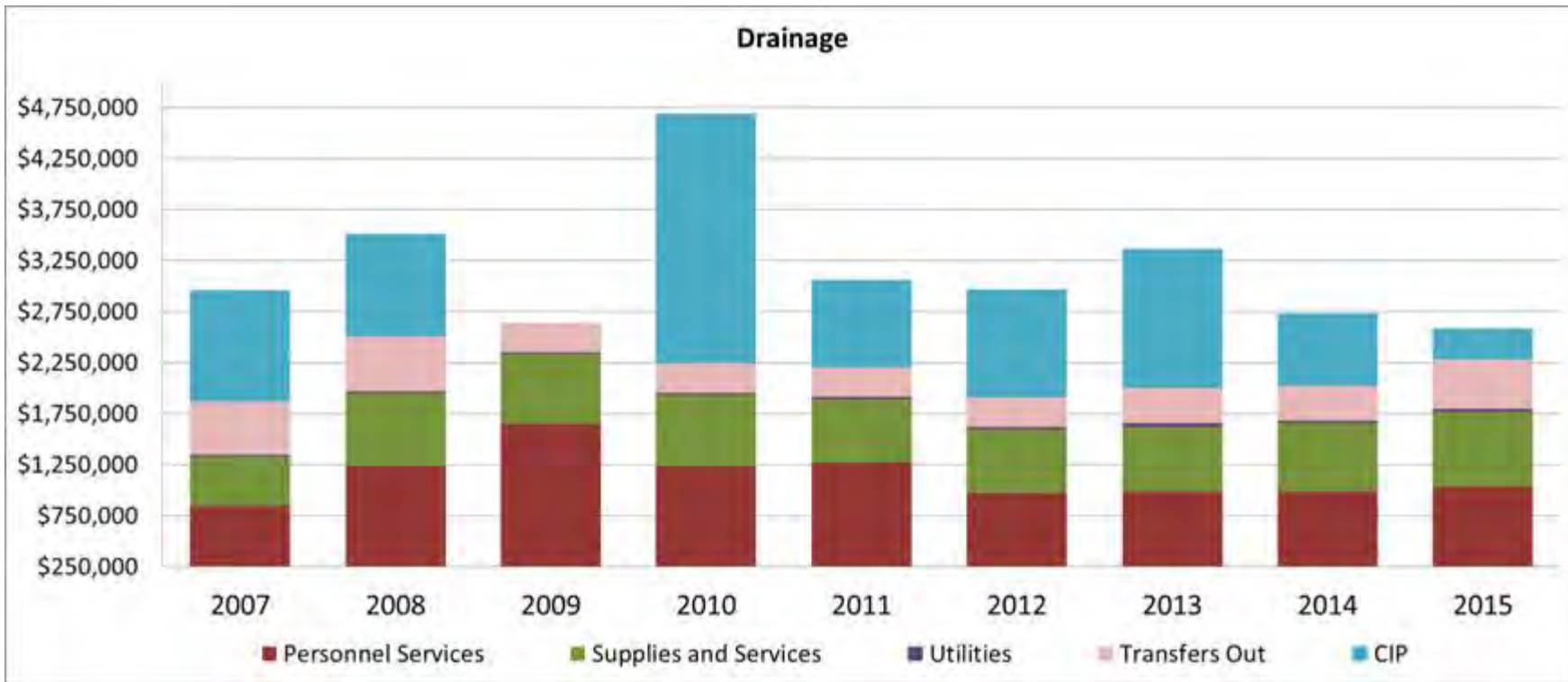
Total: \$467M

Drainage Management System



● Annual Inspection, \$130,000 ● Channel, \$134,028,415 ● Box Culvert, \$103,669,000 ● Pipe, \$150,415,800 ● Junction, \$35,510,000 ● Detention Basin, \$33,137,832 ● Dam, \$10,000,000

Drainage Budget Summary



Drainage Summary

Asset Class	Asset Type	Length (ft)	Length (mi)
Brow Ditch	Bioswale	334	0.1
	Concrete	160,481	30.4
	Natural	18,362	3.5
Channel	Concrete	48,672	9.2
	EC/Riprap	21,681	4.1
	Natural	46,046	8.7
River		10,071	1.9
Stream		98,521	18.7
Box Culvert	CMP	16,304	3.1
	DBC	8,735	1.7
	RCP	2,127	0.4
	SBC	9,046	1.7
	Other	5,256	1.0
Pipe	ACP	39,862	7.5
	CIPCP	12,951	2.5
	CIPP	6,710	1.3
	CMP	60,881	11.5
	CMPL	4,686	0.9
	RCP	931,786	176.5
	PVC	31,139	5.9
	HDPE	2,120	0.4
	Other	4,276	0.8

Asset Class	Asset Type	Count
Junction	Catch Basin	921
	Cleanout Access Cover	3,571
	Dissipater	147
	Drop Inlet	3,906
	Filtered Drop Inlet	348
	Headwall Inlet	226
	Headwall Outlet	289
	Inlet	126
	Junction	494
	Other	194
	Outfall	148
	Outlet	183

Street Weighting

Street Class	CoF Score
Freeway	5
Expressway	5
Freeway Ramp	5
Trolley	5
Railroad	5
Six Lane Prime Arterial	5
Six Lane Major Arterial	5
Four Lane Major Arterial	5
Class I Collector	4
Class II Collector	4
Class III Collector	4
Residential	3
Private/Un-Paved Street	1
Condo Street	1
Mobile Home Street	1
Alley	1
Proposed/Abandoned	1
Constructed/Not Approved	1
Service/Dirt	1

Zoning Weighting

Zoning Name	CoF Score
Industrial (Limited Industrial)	5
Industrial (General Industrial)	5
Commercial (Commercial Retail)	5
Mixed Use (Mixed Use Commercial)	5
Mixed Use (Transit Focus Area)	5
Commercial (Commercial Visitor)	5
Commercial (Professional & Office)	5
Mixed Use (Mixed Use Residential)	4
Residential (High)	3
Residential (Medium)	3
Residential (Medium - High)	3
Residential (Urban Core)	3
Residential (Low - Medium)	2
Residential (Low Density)	2
Park / Open Space (Open Space Preserve)	1
Park / Open Space (Parks & Recreation)	1
Park / Open Space (Open Space)	1
Park / Open Space (Public & Quasi Public)	1

Facility Weighting

Facility Name	CoF Score
Police Station	5
Fire Station	5
Hospital	5
Trolley Station	5
College / University	5
Education Facility	5
Elementary School	5
High School	5
Middle School	5
Regional Shopping Center	4
Community Recreation Center	4
Community Shopping Center	4
Neighborhood Retail Center	4
Strip Retail Center	4
Post Office	4

Facility Name	CoF Score
Federal Government	3
State Government	3
Local Government	3
County Government	3
Athletic Training	2
Sports	2
Museum	2
County Library	2
City Library	2
Church	2
Golf Course	2
Marina	1
Fraternity	1

Weighting Calculation

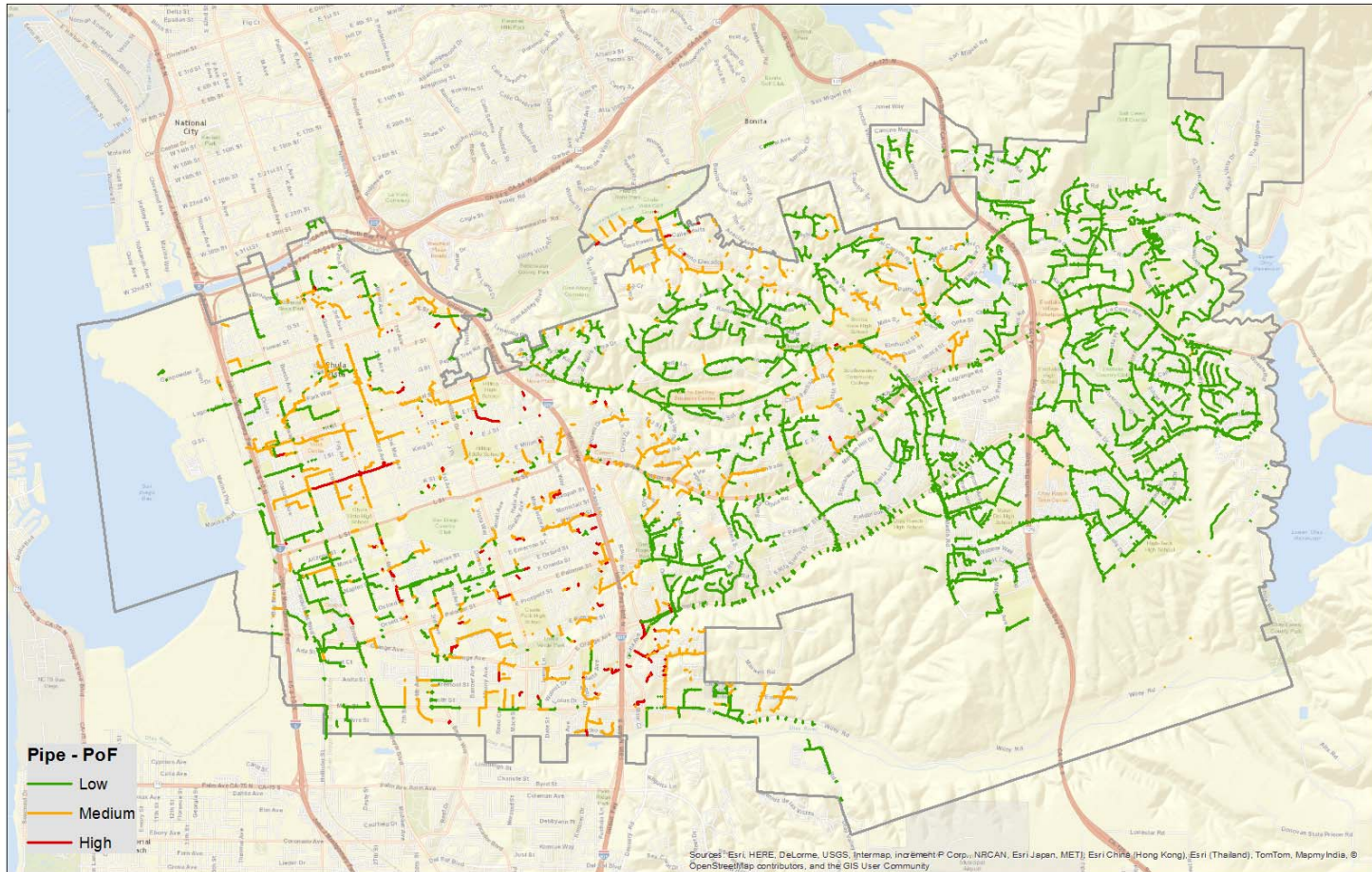
CoF	CoF Score
Street	30%
Zoning	20%
Size/Class	20%
Facility	15%
River/Wetland	5%
MSCP Preserve	5%
FEMA Flood Plain	5%

Weighting Calculation

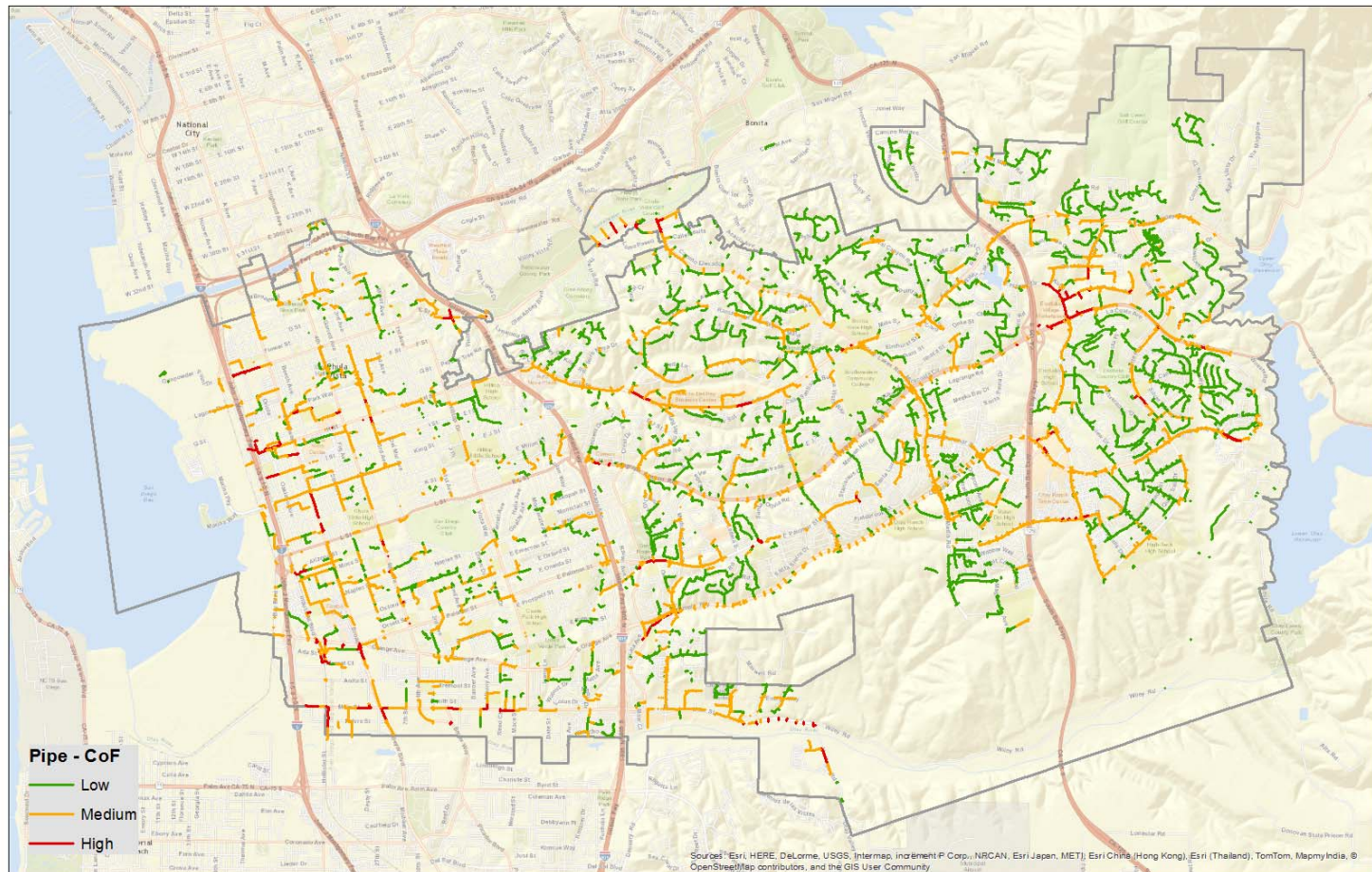
Asset Class	Criticality Rating
Channel	5
Dam	5
Junction	5
Catch Basin	5
Vortech	5
CDS	5
Detention Basin	5
Box Culvert	4
Inlet	4
Riser	3
Brow Ditch	2
Outlet	2
Modular Wetland	1
Filtrerra (media & material)	1
Filtered Drop Inlet (sock)	1
Plate	1

	Asset Class	Criticality Rating
Pipe	72 in or greater	5
	18 in or greater	4
	8 in or greater	3
	8 in or less	2

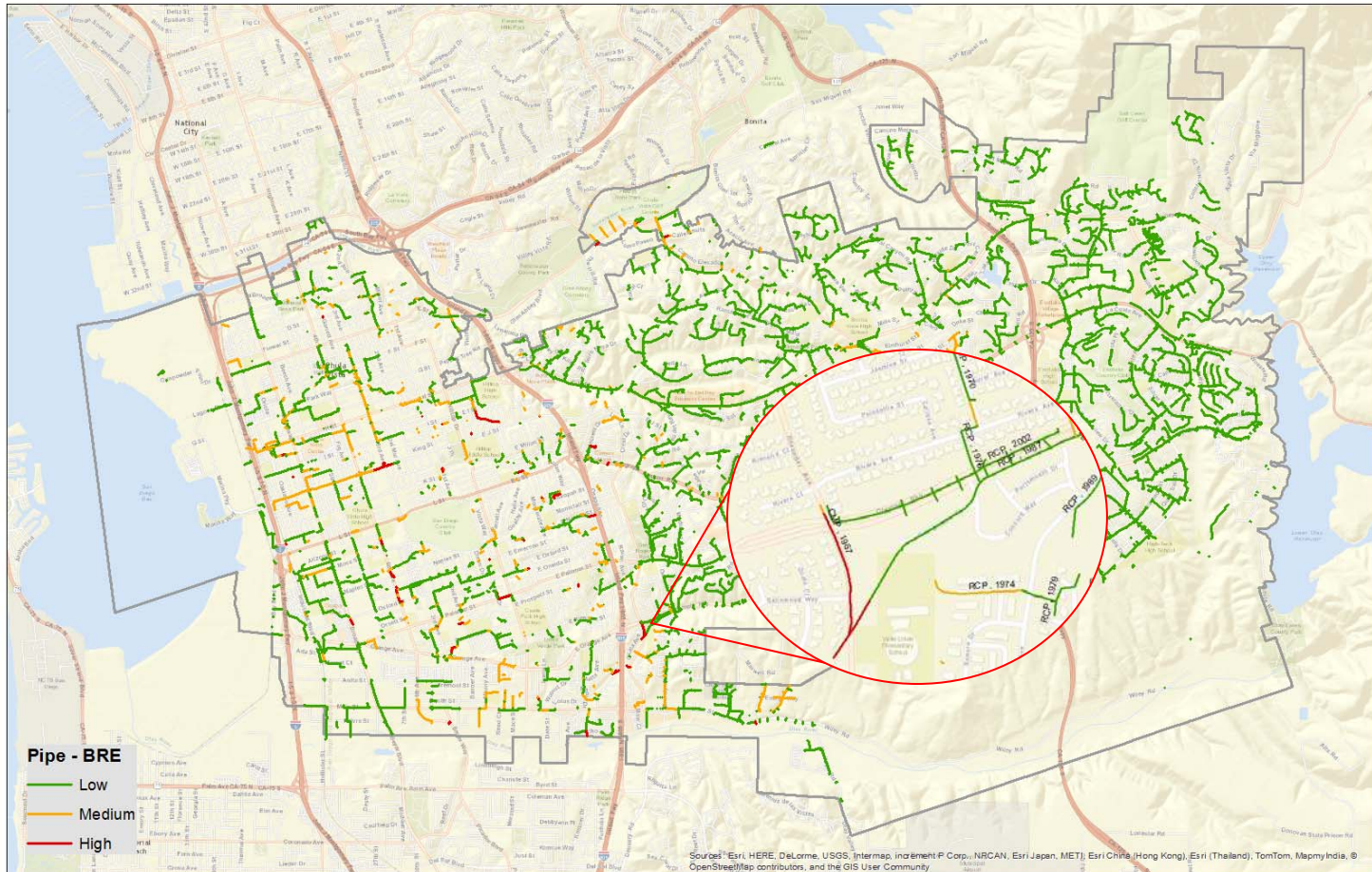
Probability of Failure



Consequence of Failure

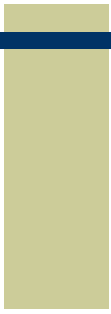
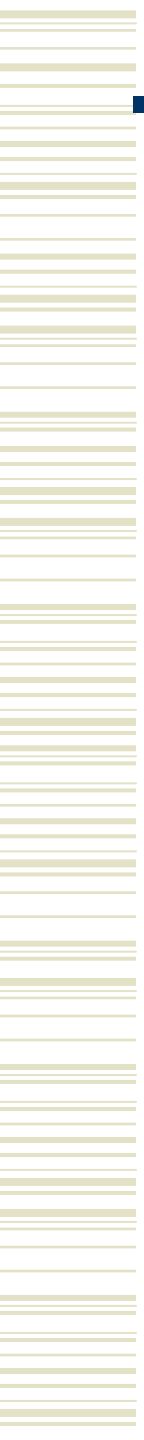


Risk



Catch Up

- ◆ \$ 11.5M total
 - Includes:
 - CMP pipes installed prior to 1980s
 - Bank stabilization of channels (Telegraph Canyon)
 - Concrete channels with major cracks or root problems



BUILDING

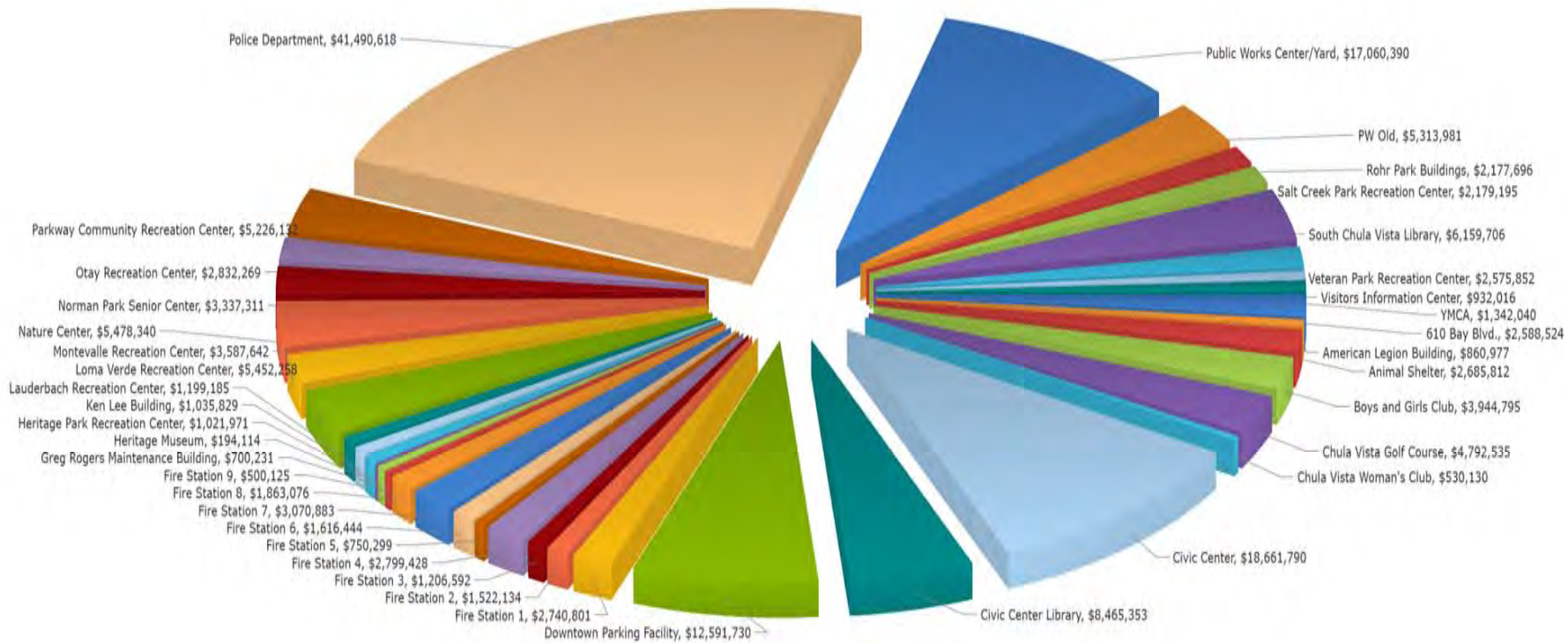
Building Inventory

- ◆ 86 Buildings (~1,000,000 SqFt)

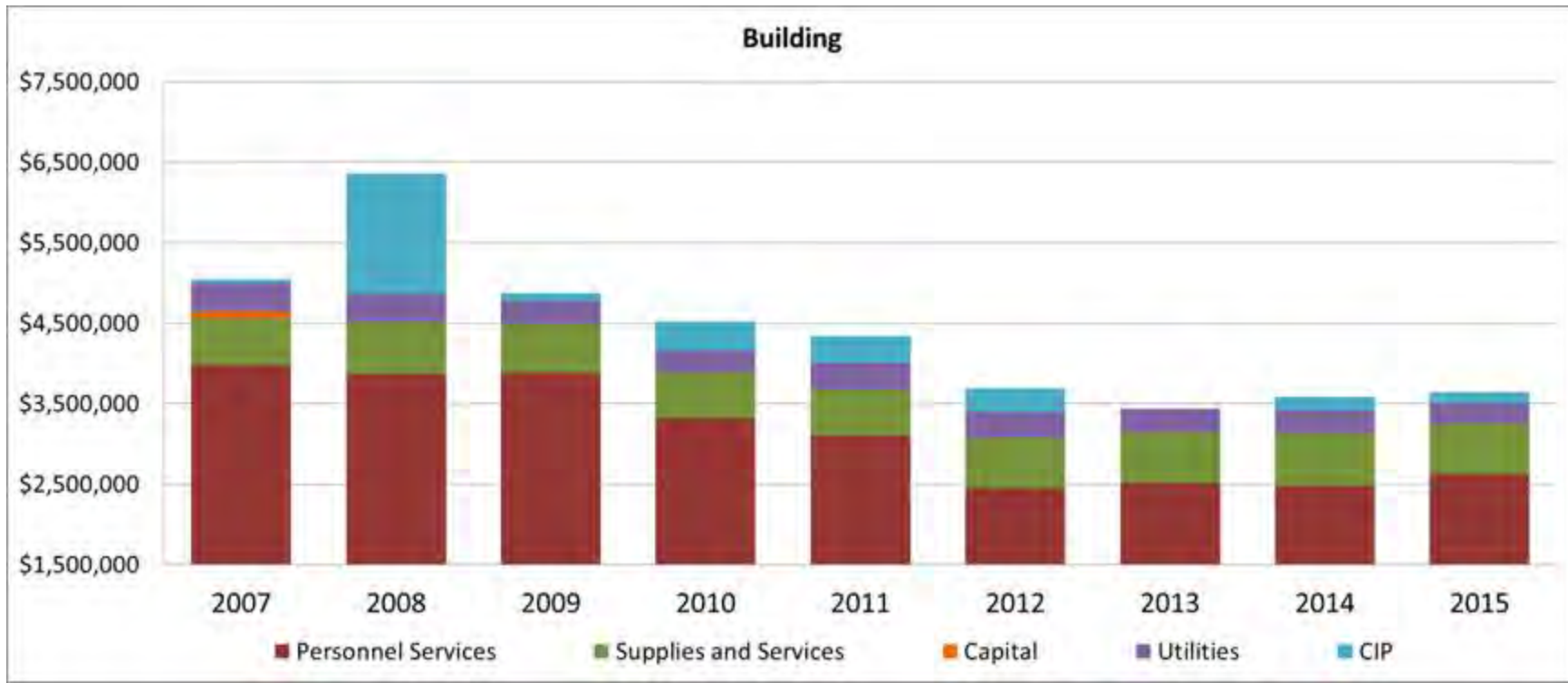


Building Asset Valuation

Total: \$181M



Building Budget Summary



Criticality by Facility

Site Name	Criticality
Animal Shelter	High
Civic Center	High
Civic Center Library	High
Fire Station 1	High
Fire Station 2	High
Fire Station 3	High
Fire Station 4	High
Fire Station 5	High
Fire Station 6	High
Fire Station 7	High
Fire Station 8	High
Fire Station 9	High
Loma Verde Rec Center	High
Norman Park Center	High
Otay Rec Center	High
Parkway	High
Police Department	High
Public Works Center	High
Salt Creek Park Rec Center	High

Criticality by Asset

Sample:

Asset Class	CoF Rating
Communication Servers	5
Security System	5
Play Structure	5
Fire Suppression System	5
Exterior Doors	5
Exterior Wall	5
Roofing	5
HVAC System	4
Flooring	4
Gate	3
Interior Doors	3
Ceilings	3
Interior Lightings	2
Drinking Fountains	2
Signage	1
Interior Windows	1

Useful Life Adjustment

Building Name	Usage	Environmental/Location
American Legion Building-American Legion Building	Normal	Normal
Animal Shelter-Animal Shelter	High	Normal
Animal Shelter-Animal Shelter Storage	Low	Normal
Boys and Girls Club-Building	High	Normal
Boys and Girls Club-Len Moore Skate Park	High	Normal
Chula Vista Golf Course-Chula Vista Golf Course Club House	High	Normal
Chula Vista Golf Course-Chula Vista Golf Course Maintenance	High	Normal
Chula Vista Golf Course-Chula Vista Golf Course Restaurant	Low	Normal
Chula Vista Golf Course-Pump House Building	Low	Normal
Chula Vista Woman's Club-Building	High	Normal
Civic Center Library-Building	Very High	Normal
Civic Center-Civic Center Bldg 100	High	Normal
Fire Station 1-Building	Very High	Normal
Fire Station 2-Butler Building	High	Normal
Fire Station 2-Fire Station 2	High	Normal
Fire Station 3-Fire Station 3	High	Normal
Fire Station 4-Fire Department Training Tower	High	Normal
Fire Station 4-Fire Station 4	Very High	Normal
Fire Station 4-Fire Station 4 Classroom	Very High	Normal
Fire Station 5-Fire Station 5	Very High	Normal
Fire Station 6-Fire Station 6	High	Normal
Fire Station 7-Fire Station 7	High	Normal
Fire Station 8-Fire Station 8	Low	Normal
Fire Station 9-Fire Station 9	High	Normal

Useful Life Adjustment (Continued)

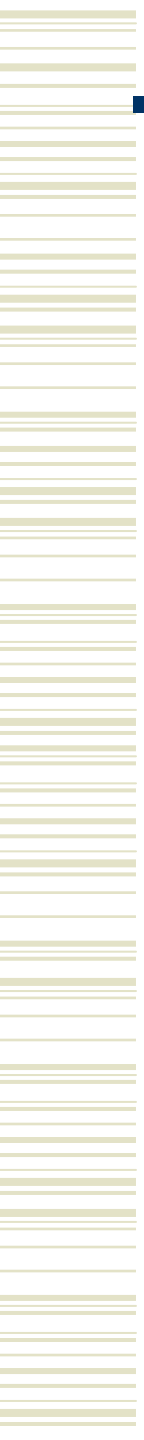
Building Name	Usage	Environmental/Location
Greg Rogers Maintenance Building-Greg Rogers Maintenance Building	Low	Normal
Heritage Museum-Heritage Museum	Low	Normal
Heritage Park Recreation Center-Building	High	Normal
Ken Lee Building-Ken Lee Building	Normal	Normal
Lauderbach Recreation Center-Building	Normal	Normal
Loma Verde Recreation Center-Community Center Building	High	Normal
Loma Verde Recreation Center-Pool Building	High	Normal
Monteville Recreation Center-Building	High	Normal
Nature Center-Nature Bird Infirmary	Normal	High
Nature Center-Nature Center	High	High
Nature Center-Nature Center Greenhouse	Normal	High
Nature Center-Nature Center Shark Tank	High	High
Nature Center-Nature Center Shark Tank Machinery	Very High	High
Nature Center-Nature Center Storage and Observation Deck	High	High
Nature Center-Observation Shelter	Normal	High
Nature Center-Water Filtering Building	High	High
Norman Park Senior Center-Fitness Center Building	High	Normal
Norman Park Senior Center-Main Building	Very High	Normal
Otay Recreation Center-Otay Recreation Center	High	Normal
Otay Recreation Center-Otay Recreation Center 2	Normal	Normal
Parkway Community Recreation Center-Community Center Building	High	Normal
Parkway Community Recreation Center-Gymnasium	High	Normal
Parkway Community Recreation Center-Pool Area	High	High
Parkway Community Recreation Center-Pool Building	Very High	Normal
Police Department-Police Department	Very High	Normal
Police Department-Police Department Parking Structure	Normal	Normal

Catch Up

◆ \$ 21M total

■ Includes:

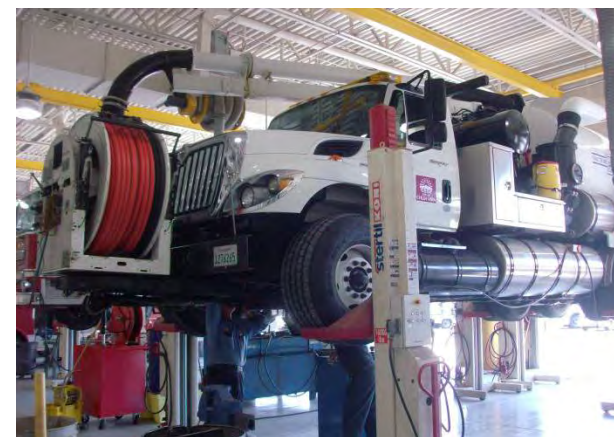
- Police Department
(e.g., HVAC system, Building Automation System (BAS), Air Handler)
- Civic Center Library
(e.g., flooring, restroom facilities)
- Fire Station 1:
(e.g., HVAC system, roofing, exterior doors and windows)
- Loma Verde Recreation Center
(e.g., pool area, HVAC system, roofing)
- Parkway Recreation Center
(e.g., pool area, HVAC system, roofing)



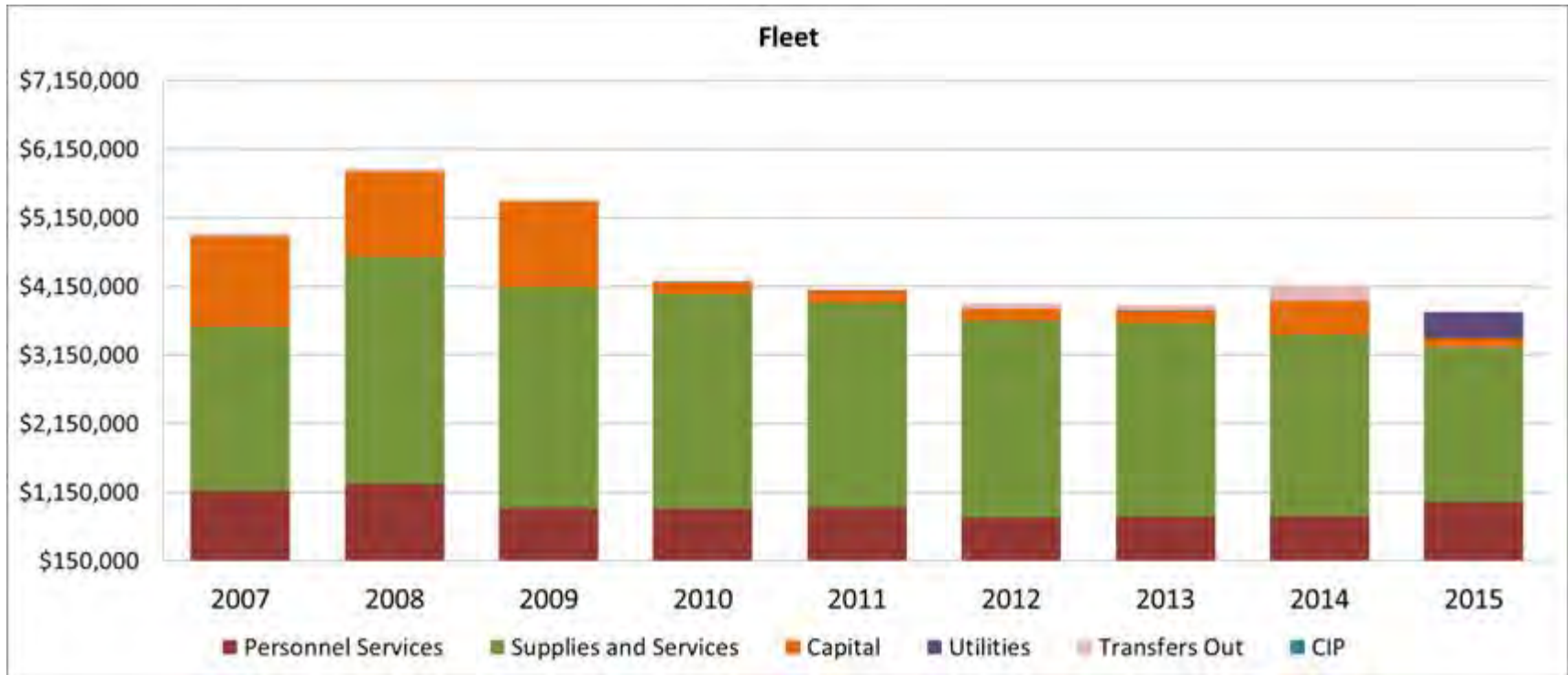
FLEET

Fleet Inventory

- Police Dept. – 195 vehicles
- Fire Dept. – 49 vehicles
- Other Depts. – 316 vehicles



Fleet Budget Summary



Types of Vehicles

Type of Vehicle	Number of Vehicles	Criticality
Passenger Cars	57	Low
Light Trucks (1 ton or less)	190	Low
Heavy Trucks (over 1 ton)	61	Medium
Police Cars	79	High
Police Motorcycles	12	High
Fire Pumper Trucks	13	High
Fire Snorkel/Ladder Trucks	3	High
Fire Brush Trucks	2	High
Other (e.g., Small Mobile equipment, off-road and towed equipment)	143	Low

Preventative Vehicle Maintenance

	PM'S COMPLETED	PM'S COMPLETED ON SCHEDULE (%) ⁽¹⁾
2014-15, YTD	396	74.4% ⁽²⁾
2013-14	805	65% ⁽²⁾
2012-13	742	52%
2011-12	765	57%
2010-11	712	42%
2009-10	738	59%
2008-09	942	52%

(1) Goal is 70% (85% prior to FY07-08)

(2) Increase due to addition of one mechanic in May 2014

Cost Mitigation Strategies

- Decommission Under-Utilized Equipment
- Replace Vehicles at the Ideal Economic Point
- Defer Maintenance

Vehicle Replacement

FISCAL YEAR	NON-SAFETY VEHICLES ^{(1) (2)}	PATROL CARS ⁽²⁾
2014-15	0 of 0	13 of 13
2013-14	8 of 8 ⁽³⁾	0 of 0 ⁽⁴⁾
2012-13	5 of 5 ⁽³⁾	7 of 7 ⁽⁴⁾
2011-12	0 of 24 ⁽³⁾	0 of 6 ⁽⁴⁾
2010-11	0 of 19 ⁽³⁾	10 of 10 ⁽⁴⁾
2009-10	0 of 12 ⁽³⁾	14 of 19 ⁽⁴⁾
2008-09	0 of 10 ⁽³⁾	10 of 19 ⁽⁴⁾

(1) Excludes Sewer funded vehicles.

(2) No. of vehicles scheduled to be replaced.

(3) Reflects extended replacement intervals.

(4) Replaced at 100,000 miles vs. 80,000 miles.

Catch Up

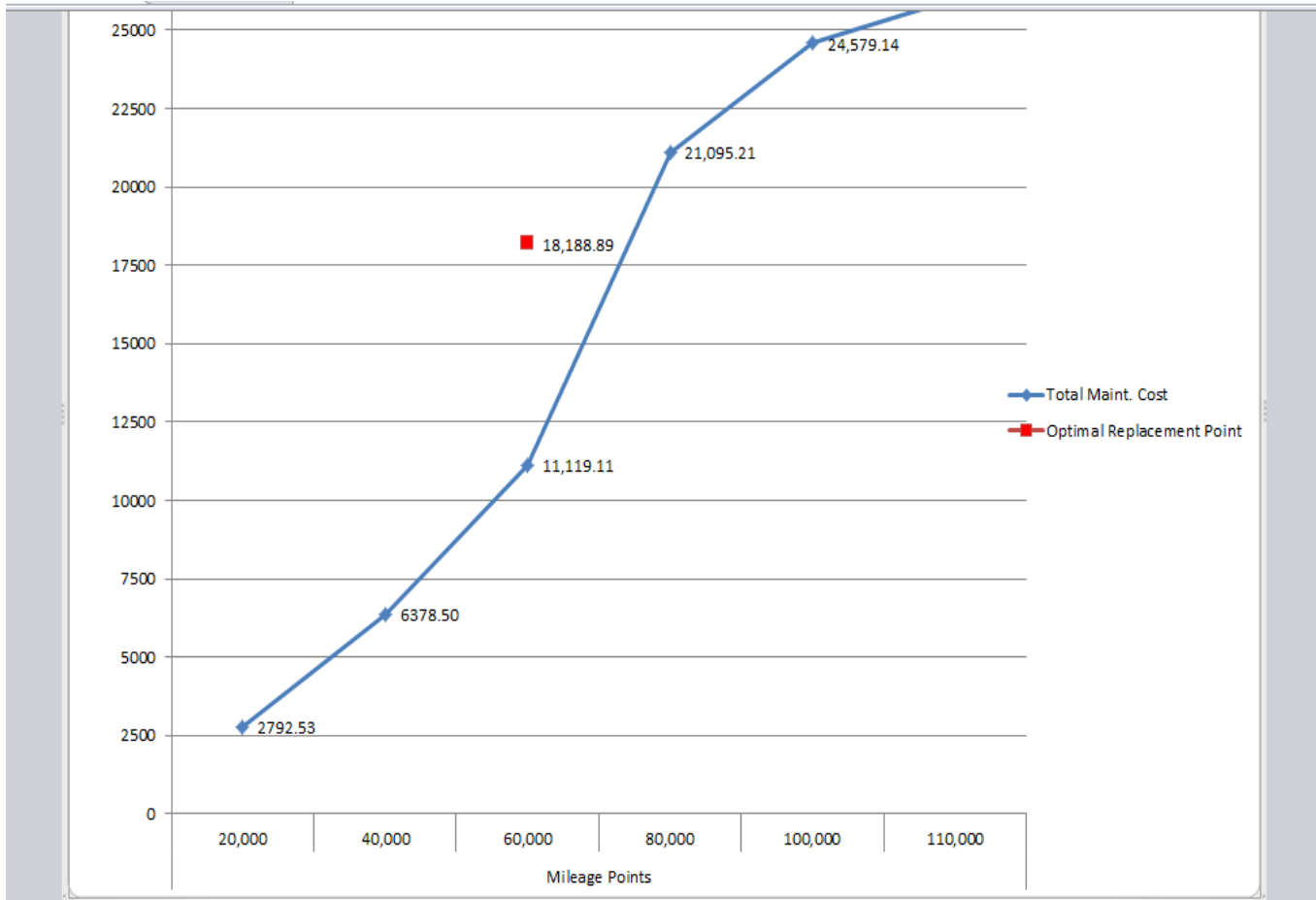
◆ \$2.3 M

Department	# of Vehicles	Replacement Amount
Animal Care Services	2	\$150,000
Community Patrol	17	\$1,054,000
Traffic Enforcement	1	\$34,000
Fire Administration	2	\$120,000
Fire Suppression	2	\$120,000
Public Works	9	\$747,000
Emergency Vehicle Purchases		\$70,000
TOTAL		\$2,295,000

Lost Resale Value

- ◆ Average resale value of police patrol sedans:
 - 2008 → \$2,450/vehicle
 - 2014 → \$960/vehicle

Lost Cost Avoidance



Condition Assessment

Date: 07/07/2003 Cost: 17083.02 Maint \$ LTD: 10279.21 Inflation Rate: 03000 Salvage Rate: 00000
 Fund: Major Grouping: Highest Meter: 5.0 Maintenance: 6.0 Age: 5.0

Expected Life In Meters

Type	Fuel?	Date	Time	Actual	Acquire	BeginFY
M	X	06/02/2003	18:02:34	82973	10	80008

Salvage Value: 0.00
 Recovery Collected: 28601.31
 Recovery Balance: -4369.94
 Life Expectancy Months: 96
 Current Life In Months: 140
 Total Points: 15.0
 Condition Factor: 0.00

	Remaining Life	Replacement	Replacement	Monthly Recovery
Original:	-44	07/07/2011	21710.27	226.15
Adjusted:	0	02/18/2015	24231.37	173.08

Vehicle Replacement

