

Capital Efficiency Plans™

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TATA & HOWARD

INCORPORATED

Water Infrastructure Gap Analysis

Findings

- Infrastructure systems aging and in need of repair
- Current spending level inadequate (capital and O&M)
- Funding shortfall - \$500B (est.) by 2020
- Innovative management practices required
- Increased investment required
- 3% increase in investment

2002 Environmental Protection Agency Study

What is Asset Management?

Systematic integration of sustainable management techniques into way of thinking with primary focus on long term life cycle of asset and its sustained performance

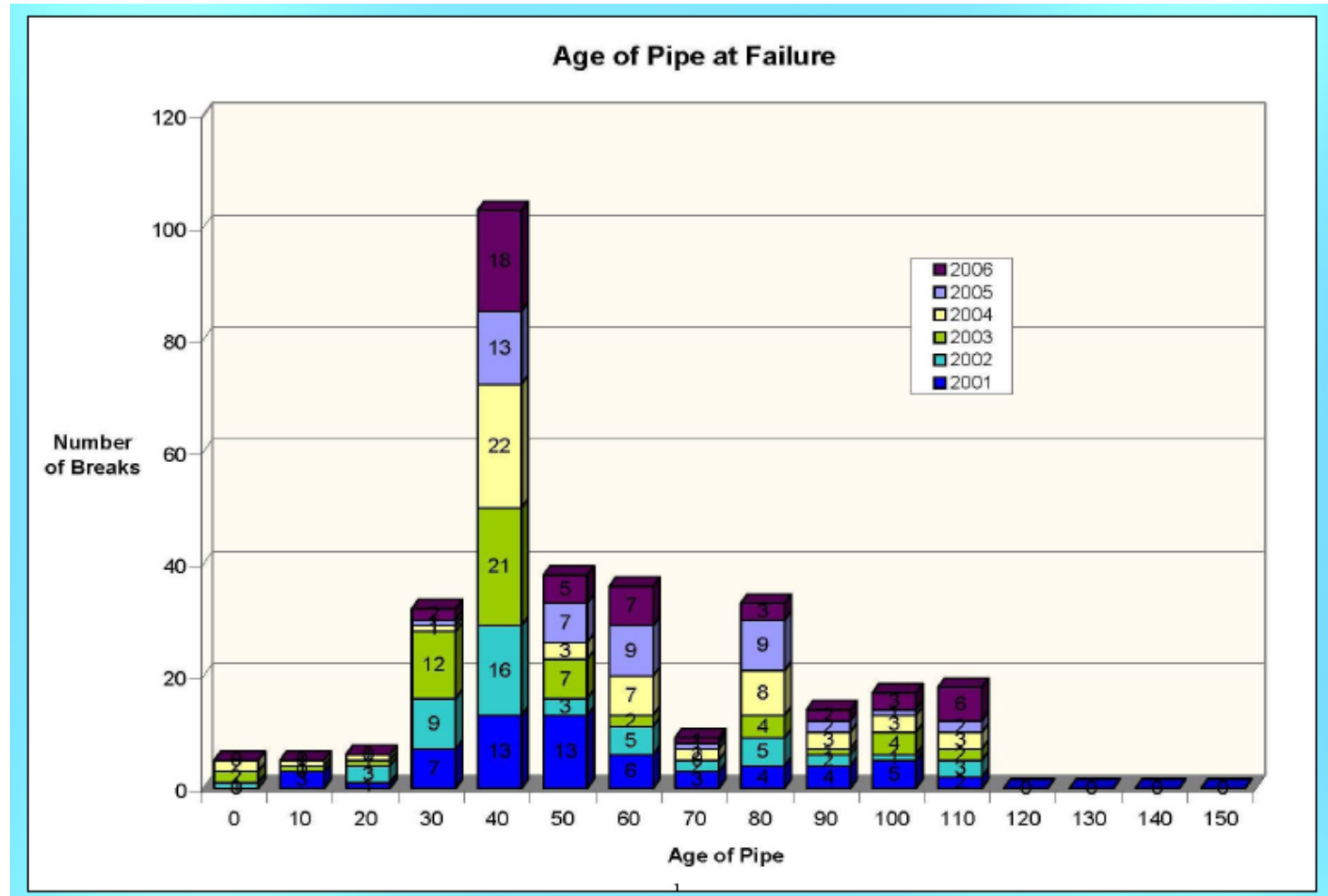
Source: US EPA Advanced Asset Management Training Workshop

Why is Asset Management important?

- Aging infrastructure
- Cost
- Reliability of service
- Regulatory requirements
- Funding considerations



Asset Management - It's Not Necessarily the Oldest Pipe



Advantages of Asset Management Plans

- Improvements
 - growth,
 - age,
 - regulatory requirements
- Better value per dollar spending
- Confidence with decision making
- Up front costs result in long term savings

Results:

- Right improvements
- Right investment
- Right time
- Right reasons

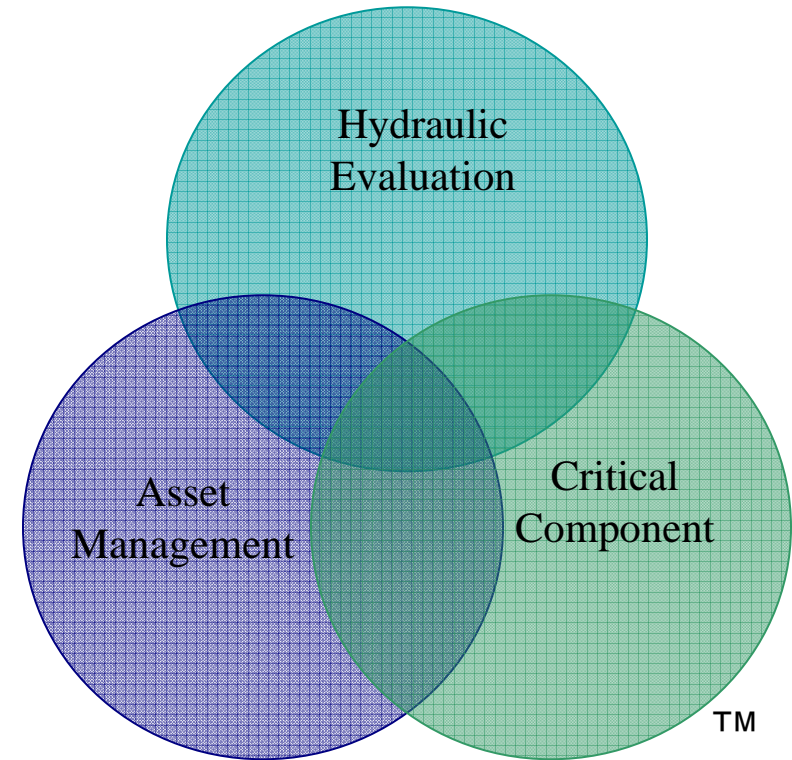
Simple Approach to Asset Management



- Inventory assets
- Evaluate asset condition
- Establish level of desired service
- Assess consequences service disruption
- Determine criticality
- Optimize costs (O&M and Capital)
- Replacement versus rehabilitation
- Strategize funding
- Develop plan

T&H Approach - Capital Efficiency Plans™

- Evaluate necessary hydraulic improvements
- Identify critical system components
- Asset management
- The Three Circle Approach



Implementation

- Address most urgent or critical system needs
- Budget annually for repair or replacements costs
- Grants and loan considerations
- Cost sharing/partnering with:
 - Roadway projects
 - Other utility projects
 - Development

WICA Criteria Tables

Main Break History	
3 or more per 1,000 feet	3
2 per 1,000 feet	2
1 per 1,000 feet	1
No history of breaks	0

Pipe Age/Useful Life	
Failing (greater than 70)	3
Poor (51 to 70)	2
Fair (26 to 50)	1
Good (0 to 25)	0

Material Integrity	
Very low (greater than 60)	3
Low (41-60)	2
Medium (21-40)	1
High (1 to 20)	0

Critical	
System component	3
Medical facility	2
Other critical facility	1
Not critical	0

Water Quality	
Water age concern	3
Identified water quality concern	2
Reported water quality concern	1
No water quality concern	0

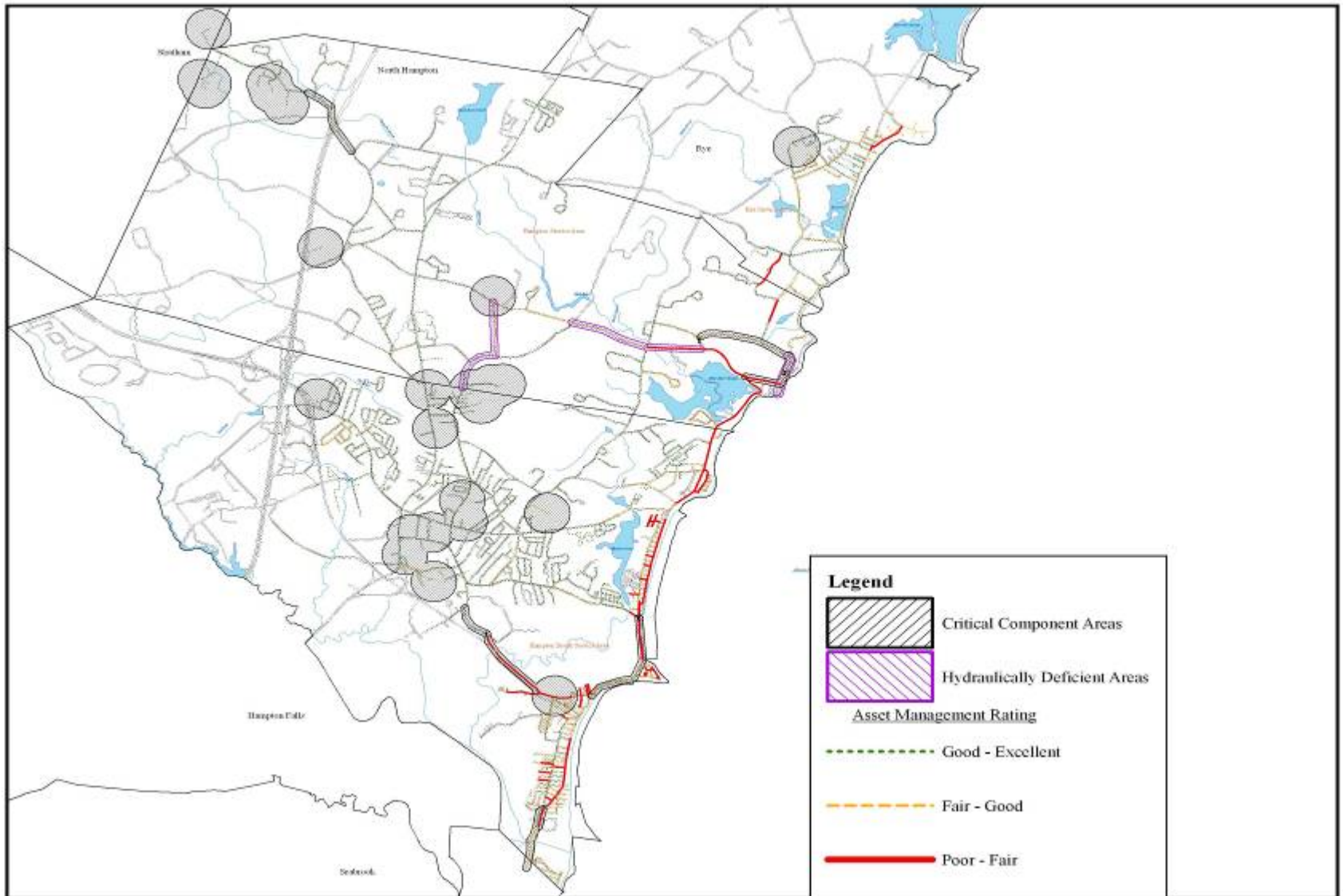
Hydraulic Capacity	
Required flow > 2,500	3
Required flow 1,000 - 2,500 gpm	2
Required flow < 1,000	1
No hydraulic deficiency	0

Scheduled Road Work	
Within the next year	3
Next 2-3 Years	2
Next 3-5 Years	1
No scheduled road work	0

WICA Rating

Number	ID	Label	<u>Break History</u>	<u>Useful Life</u>	<u>Material Integrity</u>	<u>Critical Component</u>	<u>Water Quality</u>	<u>Hydraulic Improvement</u>	<u>Schedule Road Work</u>	<u>Other Factor</u>	<u>Total</u>
1	679	P-4	0	1	0	0	0	0	0	0	1
2	682	P-5	0	1	0	3	0	0	0	0	4
3	680	P-6	0	1	0	3	0	0	0	0	4
4	681	P-7	0	1	0	3	0	0	0	0	4
5	683	P-10	0	2	2	0	0	0	0	0	4
6	1017	P-11	0	2	2	0	0	0	0	0	4
7	685	P-12	1	2	2	0	0	0	0	0	5
8	684	P-13	0	2	2	0	0	0	0	0	4
9	686	P-14	2	2	2	0	0	0	0	0	6
10	687	P-15	0	2	2	0	0	0	0	0	4
11	688	P-17	0	2	2	0	0	0	0	0	4
12	689	P-18	0	2	2	0	0	0	0	0	4
13	694	P-20	0	1	0	0	0	0	0	0	1
14	691	P-23	0	2	2	0	0	1	0	0	5
15	690	P-24	0	3	2	0	0	0	0	0	5
16	692	P-26	0	1	0	0	0	0	0	0	1
17	693	P-27	0	1	0	0	0	0	0	0	1
18	702	P-28	0	3	2	0	0	0	0	0	5
19	704	P-31	0	2	2	0	1	0	0	0	5
20	706	P-32	0	2	1	0	0	0	0	0	3
21	933	P-34	0	2	1	0	1	0	0	0	4
22	707	P-35	0	2	1	0	0	0	0	0	3

GIS



Value of Asset Management and Planning

- Most efficient use of limited funds
- Provides basis for outside contributions
- Increased customer satisfaction
- Reduced O&M costs
- Increases potential for grants and loans
- WICA
- GIS integration/capabilities



References and Resources

- US EPA Advanced Asset Management Training Workshop Presentation
- US EPA Emergency Management Systems and Asset Management – Tools to Reduce Costs, Manage Risks and Improve Performance
- US EPA Clean and Drinking Water Infrastructure Gap Analysis
- US EPA Asset Management: A Handbook for Small Water Systems
- US EPA Sustaining Our Nation's Water Infrastructure

www.epa.gov/owm/assetmanage/index.htm

www.epa.gov/waterinfrastructure.htm

Questions or Comments

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