Asset Management 101: Where do you start?

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What's the worst that could happen?

You know you need an asset management system. Everyone keeps telling you so….

- Better cared for systems
- Fewer unplanned service disruptions
- Confidence about what you own.
- Extend the life of assets
- More effective and better scheduled maintenance
- Better budget estimates (capital and operations)
- Save money

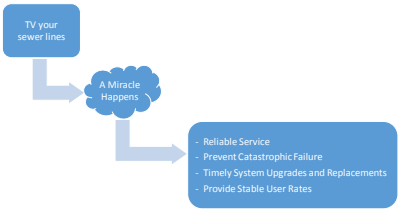
But you haven't started Asset Management yet…

- "Now is not the right time"
- "I don't know enough about it"
- "We don't have enough staff"
- "You need really expensive software for that"
- "I need to hire someone with expertise"

Stop making excuses and get started.

- Nobody else is going to do it for you.
- You know more than you think you do.
- Asset Management is easier than it looks.
- You will see benefits almost immediately.

How do you do Asset Management?



Start Small, But Start Now.

- You don't need a perfect system to see the benefits.
- Some Asset Management is better than no Asset Management.
- Start somewhere.
  - It's OK to start small
- You will learn as you go.

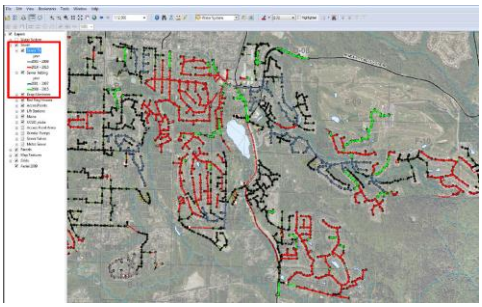
- Kaizen (continuous improvement) Philosophy
  - Start somewhere
  - Make it a little better
  - Repeat.

WARNING: You will never be finished

- Everyone who starts this says "Our Asset Management program is OK, but we really need to:
  - To transfer our condition data into a GIS layer
  - To adopt a more evidence based maintenance schedule.
  - Build up our reserve funds
  - Switch our condition assessments

Isn't it exciting to be living in the future?

- The internet, GIS, and mobile networks have revolutionized Asset Management.
- Computerized Maintenance Management Software (CMMS)
- Web interfaces
- Field use of mobile devices
- Integrated GIS data layers



Isn't there an app for that?

- Software can help schedule preventative maintenance
- Software can help locate (map) your assets
- Software can store condition rating data
- Software can retrieve the info easily.

Problems with Software

- Acceptance by Staff
- How "Tech Savy" is your staff?
- Data/Server/Software incompatibilities
- Updates / Bug fixes
- Ability to grow with you / Ability to customize
- Too many bells and whistles? / Not enough features?

Software is expensive

- Purchase $$
- Setup $$
- Training $$
- Annual Fees $$
- Hiring internal IT staff.

Does software do what you need it to do?

- I don't know.
- I don't even know what you need the software to do.
- Figure out what you need the software to do before you spend $$

Don't Start with software. Start building your program.

"A software package cannot solve a business process problem"

Use simple resources you already have

- Excel spreadsheet
- Digital photo's
- Inexpensive GPS device
- A smart phone
- Google Maps
- Google Earth aerial photos

Asset Management should be simple

- What do you own?
- What kind of shape is it in?
- What are you going to do when it breaks?

Asset Management should be simple

- an inventory of critical assets;
- an evaluation of the condition and performance of inventoried assets or asset groupings;
- a plan for maintaining, repairing, and, as necessary, replacing the critical assets and a plan for funding such activities;

Asset Inventory

How can you track what you own?

- "Wait, I own a sewer system?"
- "My senior operator knows where everything is buried."
- "As Built" drawings.
- Comprehensive map books.
- Computerized maps
- Integrated, remotely accessible GIS maps linked to condition data, maintenance records, and our work order system.

What is an asset?

- Every stick of pipe as an individual asset?
- All the new PVC in the upper pressure zone?

- Every valve individually?
- All the anaerobic digester plug valves?
- All the valves at the WWTP?

Starting from ZERO.

- Start with assets you can see
- Add in new projects as they are built
- Add underground assets whenever you have to dig.
- Start with only one asset class to learn and experiment.
- There is no "right way" to divide up your system into assets
- What you group and how you track your assets is an individual choice.
- Start off with manageable chunks.

Example: Wastewater Asset Classes

- Lift Stations/Force Mains
- Manholes and sewer pipes
- Headworks
- Aeration
- WAS/RAS pumps
- Biosolids
- Disinfection
- Power/electrical
- Operations/Lab

You know more than you think you do

- Preventative Maintenance schedules
- Historical repair records
- Operator experience and knowledge
- "As built" Drawings
- Physically walk the system
- Find those "lost" manholes.

Condition Assessment

How do you rate the condition of your assets?

- What Assets?
- Age
- Observation
- Operational Assessments
- Non-destructive forensic testing
- Destructive forensic testing.

Tools for Condition Assessment

- Visual Inspection
- Age
- Pipe Material
- Motor run time
- Failure Rates
- Maintenance History
  - Planned Maintenance
  - Unplanned Maintenance
- Televising Sewers
- Leak testing
- Pipe Wall Thickness
- Paint Thickness
- Oil consumption
- Oil contamination
- Thermal Imaging
- Laser/Sonar Testing
- Vibration monitoring

Starting from ZERO

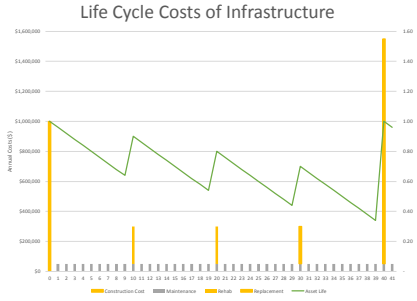
- What data do you need? (It depends on what you are trying to do)
  - Collect data that supports your goals.
  - Don't collect worthless data.
- Prioritize maintenance work?
- Current asset valuation?
- Optimize energy efficiency?
- Assign remaining useful life?

Focus on the Goal: Remaining Useful Life

- Tables full of "expected useful life"
- Ultimately you need to assign a remaining useful life to assets.
- Collect data that lets you make better estimates about useful life.

Asset life depends on site conditions, how well it was installed, and how well it is maintained.

Life Cycle Costs of Infrastructure



What is "end of life"

- When it breaks?
- When duct tape and bailing wire won't hold it together anymore?
- When the cost of ongoing maintenance exceeds the cost of replacement?
- When growth in the system exceeds the asset's capacity?

A "simple example" When do you replace a light bulb?

- Wait for it to burn out. Replace it with the spare you have in storage.
- What if maintaining spares is difficult? (expensive, long life, many kinds of bulbs, or lots of bulbs)
- What if it starts flickering? (it still "works", but is annoying.)
- What if treatment depends on it? (UV bulb minimum output)

Level of Service is a local decision.

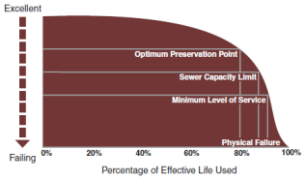
Plan For Replacement

What is your plan for replacement?

- Panic
- Responsive Maintenance (fix or replace assets as they fail)
- Preventative Maintenance.
- Predictive Maintenance (risk/consequences of failure)
- Proactive rehabilitation and replacement. (based on best professional judgment)
- Proactive rehabilitation and replacement (Using an evidence based system)

What about maintenance?

- Maintenance is cheaper than rehabilitation
- Rehabilitation is cheaper than replacement.



Long term planning (the 100 year CIP)

- Show All capital needs into far future
- Replacement and Rehabilitations of existing systems are put into concrete terms
- Decision makers are not allowed to conveniently "forget" about future needs
- Recognize that you can't do everything, but is a tool to really show the effects of delaying work.
- Tool for managing debt or and rate increases

A version of a 75 year CIP

How do you budget for the unexpected?

- Establish and maintain Reserves
- Establish reserve targets appropriate for your utility
- Reserves are savings (cash) set aside for anticipated expenses
- Reserves act like an insurance policy protecting against a specific risk.

Examples of Reserve Accounts

- Operating reserves (protect against fluctuations in revenue and expenses)
  - 30-45 days of normal operating expenses
  - 60-90 days for water systems
- Emergency Reserve (protect against unpredictable asset failure)
  - 1-2% of the total value of assets
- Short lived asset reserve (protect against bad "useful life" estimates)
  - 100% of 5-year SLA asset replacement costs
- Capital cost overrun reserve (protect against bid overruns)
  - 10% of total CIP
- Capital reserve (protect against borrowing costs)
  - Cost of capital improvement plan

GOAL: Maintain reserves at or above target levels

When do you decide to implement a project?

- Operational issues
- Cost of ongoing preventative maintenance
- The real cost of the improvements
- Coordination with other work
- Coordination with other financial commitments
- Consider a true choice between replacing, repair and wait, and a larger overall project.

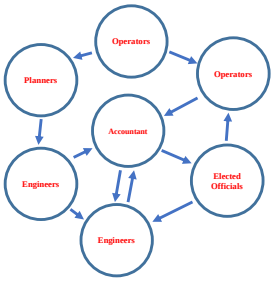
A Culture of Asset Management

What is your Utility's "job #1"?

- Deliver clean water / accept and safely dispose of sewage?
- Fix water leaks
- Manage finances to keep user rates as low?
- Manage a portfolio of millions of dollars of investments (assets)?

Asset management is a team sport

- Asset management is your utilities biggest single job.
- Everyone in your organization does asset management
- Asset Management is bigger than any one role in the system.



Asset Management takes a cultural shift

- It takes a new way of thinking about the role of the utility
- New way of communicating
- New understanding about their jobs from everyone there.
- This cultural change is a huge barrier

Tips to overcome cultural inertia

- Make condition rating easy for operators
- Appoint/nominate/draft an “AM lead”
- Give real involvement in project planning (finance, engineering, operations, IT)
- Create a process for ideas to improve AM process
- Cross training and cross silo communication.

Name an “Asset Management Lead”

- The “champion” for AM in your organization.
- Identify this person, add this to their job description.
- Give them time, authority, and resources to do the job.

A successful asset management program convinces elected officials

- Evidence based justification for why projects are necessary
- And why they should invest money
- Why the projects will save money.

Kaizen Revisited

- consistently review your program
- What's working?
- What is not working?
- What could you do better?
- Set annual goals, reporting, or check ins.

"Society grows strong when old men plant trees in whose shade they will never sit in."
– Greek proverb.

Commit to doing something with your asset management system over the next year.

- Find all your water valves
- Prioritize sewer cleaning schedule
- Do TV inspections of your sewer system
- Establish or update your reserve accounts
- Set up GIS mapping
- Investigate CMMS software

Additional information

- David.Dunn@ecy.wa.gov 360/407-6503
- Ecology funding program site: http://www.ecy.wa.gov/programs/wq/funding/funding.html
- Grant and Loan listserv: http://www.ecy.wa.gov/maillist.html

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