ASSET MANAGEMENT FOR A SMALL COMMUNITY WWTP

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Doug Sweeris, Allegan Water / Wastewater Plant Utility Facilities Director
ASSET MANAGEMENT FOR A SMALL COMMUNITY WWTP

- City of Allegan
- Tasks
- Asset Inventory
- Condition Assessment
- Maintenance Plan (CUPSS)
- Asset Management Program
- Steps Yet to be Taken
ASSET MANAGEMENT FOR A SMALL COMMUNITY WWTP

- Asset Management Program (AMP) –
  - Addresses the day-to-day operations, annual repairs, and replacement of equipment.
  - Funding could come from replacement/repair funds and include equipment, building, and lift station maintenance budgets.
  - Should be in annual budget, and covered by revenue.
ASSET MANAGEMENT FOR A SMALL COMMUNITY WWTP

- Capital Improvement Program (CIP) –
  - Large projects with advance planning.
  - Equipment replacement due to up sizing, energy efficiency, and capacity requirements.
  - Funding options include loan, bond, and rate adjustment.
CITY OF ALLEGAN
CITY OF ALLEGAN

- Founded: 1835
- Population: 4,998
  (2010 Census)
- Size: 4.3 sq. mi
CITY OF ALLEGAN

- 1,874 sewer customers, including 2 industrial permitted customers
- Septage – 22 haulers from 5 counties

Plant Data
- Avg. Influent – 0.86 MGD
- BOD – 4940 lb/day
- TSS – 3766 lb/day

Industrial flow
- 0.20 MGD (24% of influent)
- 3740 lb/day (76% of total)
- 239 lb/day (7% of total)
CITY OF ALLEGAN

- Wastewater Treatment Plant
  - 1974 Construction of Treatment Facility
  
  - 1991-1992 Upgrades
    - Underground sludge storage / equalization basin
    - New chlorine and dechlorination
CITY OF ALLEGAN

- Wastewater Treatment Plant (cont.)
  - 1995 Upgrades
    - Added treatment basin 3
  - 2009 - 2013 Upgrades
    - Replaced 90% of mechanical equipment
    - UV and Septage
CITY OF ALLEGAN

- Pump Stations
  - 9 canned pit stations built in the 1970s
  - 5 submersible stations built 1995 to 2011
    - Latest is Eastern Ave, serving industrial customer
So why should we care about Asset Management?
ASSET MANAGEMENT

- Ensure long-term sustainability of a utility.
- Integrate maintenance needs with funding strategies.
- Provide direction and assistance in decision-making.
ASSET MANAGEMENT

- SAW Grant
  - 3 year program.
  - Need funding plan within 2.5 years addressing 10% of budget gap.
  - Need 5 year plan to close the funding gap.
ASSET MANAGEMENT

- NPDES Permit requirements in future.

- Apply info to Allegan Water Treatment Facility
  - Capital Improvement Program by 1-1-2016.
TASKS

- Provide an inventory and condition assessment of assets for the City’s sanitary sewerage and treatment system.

- Implement an updated maintenance program.

- Develop an Asset Management Program to meet future needs of the system and the City.
ASSET INVENTORY

- **Data Needs** – What is required?
  - For the plant
  - For the MDEQ
  - For the software

- **Data Collection** – Where do we get it?
  - Plant schematic, physical access
  - O&M Manuals
  - Staff knowledge
<table>
<thead>
<tr>
<th>Asset Name</th>
<th>Location</th>
<th>DEQ Asset Type</th>
<th>Mate-Asset Category</th>
<th>Other Asset Type</th>
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<th>Asset 5 Latitud Longtis Not</th>
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<tr>
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</tbody>
</table>
Different tabs

- “Asset Inventory” used for data entry.
- “HRC – Cost Analysis” used for HRC specific needs.
- “CUPSS” used for required fields to upload.
- “Drop down inputs” used to limit some of the data entered.
- “Pump Station Steel Thickness” was additional info not in the analysis, but useful to have.
ASSET INVENTORY
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### ASSET INVENTORY

- **Asset name** – unique with description
- **Asset type** – also include location, and connected asset
- **Asset ID** – from schematic

<table>
<thead>
<tr>
<th>Asset Name</th>
<th>Asset Type</th>
<th>Other Asset Type</th>
<th>Asset ID</th>
<th>Asset ID</th>
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<td>Raw Sewage Pump 1 - RSP1</td>
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</table>
CONDITION ASSESSMENT

- Condition Assessment (1-5)

- MDEQ Rating System
  - Probability of Failure (1-5) * Consequence of Failure (1-5)
    = Criticality Factor

- Visual Inspection / Staff Knowledge
CONDITION ASSESSMENT

- Concrete tanks assessed by Structural Engineer.
- Canned pit pump stations – Steel thickness measured.
  - Compare to values in O&M Manuals.

<table>
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<tr>
<th>Mill District</th>
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<th>Walls</th>
<th>PG</th>
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<tbody>
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<td></td>
<td>Ceiling</td>
<td>Walls</td>
<td>Walls near floor</td>
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<tr>
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<td>0.367</td>
<td>0.269</td>
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<td>0.368</td>
<td>0.266</td>
<td>0.271</td>
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</tbody>
</table>
Pump Station Worksheet

Name: 
Location: 
Date: 

Pump Station Type:  ☐ Canned pit  ☐ Submersible

Manufacturer: ___________________________ Year: ___________________________

If canned pit, then enter steel thickness:

Ceiling: ___________________________ ___________________________ ___________________________

Walls: ___________________________ ___________________________ ___________________________

Wall near floor: ___________________________ ___________________________ ___________________________

Floor: ___________________________ ___________________________ ___________________________

<table>
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<tr>
<th></th>
<th>Pump No. 1</th>
<th>Pump No. 2</th>
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<tbody>
<tr>
<td>Plug Valve entry</td>
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<tr>
<td>Pump Manufacturer</td>
<td></td>
<td></td>
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<tr>
<td>Check Valve</td>
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<tr>
<td>Plug Valve exit</td>
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</tr>
</tbody>
</table>

Control Panel in station: ____________________________________________

Control Panel at surface: ____________________________________________

Comments: _________________________________________________________  _________________________________________________________  _________________________________________________________
CONDITION ASSESSMENT

- Estimate spending over next 20 years
  - Original cost, 2015 cost  (ENR cost index)
  - Estimated useful life
  - Rehab/replace cost
  - Routine maintenance cost
CONDITION ASSESSMENT

- Set aside budget for equipment replacement.
- Set aside budget for equipment maintenance.
MAINTENANCE PLAN

- Simple software that would track maintenance requirements.
- Maintain asset list, and print task orders.
- Easy to use, with support avenues available.
- Financially reasonable.
MAINTENANCE PLAN

EPA’s Check Up Program for Small Systems

CUPSS
CUPSS
CUPSS
# Work Order

<table>
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<tr>
<th>Staff Assigned</th>
<th>Task Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gullapalli, Prasad</td>
<td>Change Oil</td>
</tr>
</tbody>
</table>

**Task Type**
- [ ] Monitoring
- [ ] Routine Maintenance
- [x] Repair
- [ ] Rehabilitation
- [ ] Replacement
- [ ] Other
- [ ] Yes
- [ ] No

**Is this task planned?**
- [ ] Yes
- [ ] No

**For Asset Related Tasks**
- **Asset Name**: 
- **Condition**: [ ] Excellent [ ] Good [ ] Fair (Average) [ ] Poor [ ] Very Poor
- **Is the asset maintained according to manufacturer’s recommendation?**
  - [ ] Yes
  - [ ] No

**For Monitoring Tasks**
- **Chemicals**
  - **Amount**:  
  - **Units**:  
  - **Date**:  
  - **Time**:

**Schedule**
- **Start Date**: 01/23/2016
- **Completed Date**:  
- **Time**:  
- **Staff Completed**:  
- **Frequency**
  - [ ] Daily
  - [ ] Weekly
  - [ ] Monthly
  - [ ] Annually
  - **Length (days)**:  
- **Recurrence End Date**
  - **Day (Day of month)**:  
  - **Week of month**:
  - **Month (Day of month)**:
  - **Year (Month)**:  
  - **Days**:  

**Optional Parts Information**
- **Manufacturer / Supplier**:  
- **Part Name**:  
- **Part Number**:  
- **Part Cost**: $  
- **Labor Maintenance Cost**: $
CUPSS

- Easy data import from MS Excel using template.
- Ability to add/update maintenance tasks.
- Print work orders for staff.
- Track maintenance staff, time, cost, and materials.

FREE !!
ASSET MANAGEMENT PROGRAM

- Asset Inventory – Data for all valued assets.
- Condition Assessment – Estimated maintenance and replacement costs of assets.
- Maintenance Plan – Software, data entry, and support as needed.
- Capital Improvement Plan (CIP) – Studies and budgets for potential future projects.
REQUIREMENTS OF A GOOD AMP

- Operations and Maintenance Staff involvement is necessary at all stages.
- Clear description and understanding of what is required:
  - MDEQ requirements.
  - Budget planning.
- Appropriate funding for necessary maintenance.
- Follow up that the AMP is being used and updated.
CHALLENGES

- Past projects were for both repair and expansion.
  - Lack of savings. Rates were set to cover expenditures.

- Future projects require planning.

- Acceptance and approval from City Council and the Public.
STEPS YET TO BE TAKEN

- Work with Financial Advisor and Engineer to:
  - Plan for capital projects.
  - Affect of Asset Management Program on rates.
  - Affect of Capital Improvement Program on rates.
  - Potential sources of revenue and/or funding.
STEPS YET TO BE TAKEN

Sound familiar?

- “We can’t raise rates now.”
- “We need how much now?!”
- “We can put that repair/replacement off for a few years.”
- “Why is our system in such disrepair?”
- “We need to save how much?!”
STEPS YET TO BE TAKEN

- City Council Involvement
- Public Involvement
- Education Services
ACKNOWLEDGMENTS

MWEA
City of Allegan
Tod Heckman, Allegan WWTP
Bryan Swenson, HRC
Trevor Wagenmaker, HRC
Questions?

THANK YOU

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