Asset Management & Inter-governmental Cooperation in Pennsylvania

PA Lake Erie Environmental Forum

3/27/2018

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Lycoming County, PA

Population ~116,000 (Erie - ~280,000)
Land area – 1,228 sq mile (Erie – 799)
Population per sq mile - 94.5 (Erie – 351.1)
# of Municipalities – 52 (Erie – 38)
Medium Household Income – $48,731 (Erie - $47,094)
Total Employment – 46,211 (Erie – 114,164)

US Census Bureau data
General Information

- Formed in April 1989
  - By the Lycoming County Commissioners
- Independent Operating Authority
  - NO GENERAL REVENUE TAX DOLLARS – User Fees/Billed Services
- 9 Member Board
  - Appointed by Lycoming County Commissioners
  - Serving 5 year terms
- To serve partners throughout Lycoming County
  - Focused on Solutions – not politics

Avoid small town politics – regulatory/compliance driven – big picture – critical infrastructure – community needs
“undertake projects that are normal and incidental to the planning, creation, operation, maintenance or financing including but not limited to water supplies, water supply works, water distribution systems, sewer systems, sewage collection systems and sewage treatment plants including facilities for treating industrial waste.”

• Idea - created from one need
  – County providing.....
  • LEADERSHIP & DIRECTION!
Beginning with the Montoursville Regional Sewer System 1998 – 1st operating system
Serving Communities - without a municipal boundary

“not the least expensive”
OWNED SYSTEMS

- **SEWER**
  - **LCWSA Developed**
    - Montoursville Regional – 1.5 MGD
    - Armstrong - 33,000 gpd
  - **Acquired System**
    - Village Water – single well - private
    - Local Limestone Authority – filtration/surface & well system

Contracted Services

- **Operation & Maintenance**
  - 2 Sewer Systems

- **Stormwater management & assistance**
  - 2 Boroughs (MS4)

- **Customer Billing and Delinquent Collections**
  - 2 Boroughs (Sewer)

- **Admin/Technical Support**
  - 1 Sewage Planning, Design, Funding
    - New sewer system
### Customers

- Montoursville Regional Sewer - **3,300**
  - 5 municipalities/County
- Regional Water – **576**
  - 2 water systems – 3 municipalities
- Armstrong Twp Sewer - **53**
- Beaver Lake Sewer – **96**
- Mifflin Manor Sewer - **34**
- Limestone Twp Water - **272**
- 4 Contracted Communities
  - South Williamsport – **3,000**
  - Duboistown - **554**
  - Muncy Creek Township Authority
  - Franklin Twp

### Employees

- LCWSA - **22** employees
- Non-Union

- Overall
  - Management – 6
  - Management PT – 1
  - Hourly – 16

- Management – Senior
  - Executive Director
  - Finance Director
  - Compliance Manager
  - Engineering Services Manager (PT)
Financial

- LCWSA PPE – $50.3M
- LCWSA Combined Debt - $36.0M

Combined Net Position $17.2M

Annual Budget – ’18 $4.8M
RESOURCE
Why a resource is needed?

• More Regulations!!!
• Technical & Complex
  – *It’s Confusing*
  – Municipal officials
  – Public Works
  – Administrators

• **Owe it to our community**
  – Affordability
  – Sustainability
  – Asset Management
  – Water Quality & Quantity
  – Competitive for Business
  – Responsive to Economic Development
• “undertake projects that are normal and incidental to the planning, creation, operation, maintenance or financing including but not limited to water supplies, water supply works, water distribution systems, sewer systems, sewage collection systems and sewage treatment plants including facilities for treating industrial waste.”

• Stormwater planning, management, and implementation.

  – WHY DID WE DO THAT!??!!

  • Based on a need
What is needed in Lycoming County?

How can we help?
“LCWSA offers innovative regional and shared services to achieve compliance with water, stormwater, and wastewater regulations by providing practical, sustainable, cost effective solutions through education, operation, maintenance, technical support, and management services. LCWSA provides an array of services – offering a variety of alternatives - in response to requests for assistance.”
• It’s Technical & Complex
• It’s a “Business”
  – Planning & Managing
  – Business Strategy
  – Risk Management
  – Money Management
• It’s Expensive!
  – Cost Saving
  – Resource Sharing
  – Regional Solutions
COUNTY COMPREHENSIVE PLANNING

Our Partnerships today and future

LCWSA STRATEGIC PLANNING

- Clean Water Infrastructure
- Economic Development
- Job Retention
- Cost of Living/Affordability
- Public Health and Safety
Stakeholders – Partners

Who are they?

LEADERS – WHERE WILL WE FIND THEM?

Why should they care?
Not enough Money $$$
....nor People.
Infrastructure is failing
....or is needed.
(industry crisis)

- ASSET MANAGEMENT
  - Equipment, Facilities
  - Funding & Money
  - People
  - Time
Joint Action Plan for Clean Water Infrastructure and Services in the Great Lakes Region

Cites the lack of:

- FINANCIAL RESOURCES
- LONG TERM PLANNING STRATEGIES
- POLITICAL WILL
Modern conveniences
Aging Infrastructure – Rising Costs

- What is underground... has largely been ignored
- And we take it all for granted!
- Placing value on our service

No quick fix!

Oroville Dam February 22, 2017

GOALS AND OBJECTIVES

Strategic Plan

- Develop cost effective solutions
  - Long Term Planning
- Prepare and plan for the future
  - Sustainability and accountability
- BUILDING...
  - PARTNERSHIPS.....and INFRASTRUCTURE

- Honor communities’ character, desires, requests
  - Every community’s needs are different
Water

- lack of expertise to choose, operate, and maintain systems;
- lack of financial resources; aging infrastructure;
- limited options for residual disposal;
- limited managerial support to comply with regulatory requirements;
- state primacy agencies with limited resources to support the large number of small systems

Wastewater

- economic/financial limitations,
- inability to sustain community-wide systems, inability to attract and maintain system operators,
- lack of managerial training and consistency,
- extreme topography and weather conditions, and
- geographic isolation/remoteness
SOLUTION BEGINS WITH ASSET MANAGEMENT

Not by ignoring the problem
Regional Authority – Shared Resources – Credibility

“not the least expensive”

LIMESTONE WATER
Limestone Township

- Oval Oriole Water Association – **1950’s**
  - Compliance issues - mid 1980’s
  - Water Filtration Requirements 1990’s
  - Formed Authority

- Limestone Township Municipal Water Authority
  - Community members assigned to Board
  - Built filtration system
  - Nigart Run Surface Water
    - 100,000 gpd
    - Two wells - supplemental
      » 50 gpm & 20 gpm
  - Storage Tank
    - 132,000 gallon storage

- Ok – at first
  - Long term - problems
• **LCWSA** - Initially requested by **Township Supervisors**
  – Failing equipment, unreliable service
    • Volunteers – decision making
    • Regulatory issues
    • Water losses – significant
    • No Water at customer taps!

  – 272 customers
    • Primarily Residential - few agricultural
    • Daily water demands 2013
      – 180,000 gallons per day (750 gpd per customer) – WATER LOSS
• **MANAGEMENT & REGULATORY COMPLIANCE**
  
  — Lack of Understanding
    • Ignorance?
    • Defiance?
  
  — Violations
    • DEP- operations
  
  — Allocations
    • Exceeded DEP permit
    • SRBC not involved

• **Customer Service — suffers**

• **Rates Increase begin — without control/plans**
• 2012 - LCWSA O&M – (limited scope)
  – O&M – filter plant operations only/DEP reporting
    • Addressed equipment – recording – daily ops
  – Also providing **guidance & education**
  – **Financial & project planning**
• Distribution System/Customer Billing
  • Limestone Authority members
• 2013 - Full Management/O&M
  – **Distribution – LEAK REPAIRS** – primary focus
    • Cut down on response time – emergencies – costs
LCWSA Limestone Water System
Formerly Limestone Township Municipal Water Authority system
January 2010 thru March 2014 - 30 Day Average Flow (gallons per day)

- 50,000 gpd
- 238 customers
- 210 gpd vs. 750 gpd

5 Service Line Connections Repaired
Estimated at 80 GPM
• **2013 - Full Management/O&M**
  – Distribution – LEAK REPAIRS – primary focus
    • Cut down on response time – emergencies – costs
  – **Customer Billing/Accounts Receivable**
  – **Financing and Accounts Payable**
  – **Full Management**
    • Reporting to Township and Limestone Authority
  – **Capital planning**
    • Funding
    • Projects – compliance driven

• **TOWNSHIP WAS INSISTING ON TRANSFER**
• **TOWNSHIP WAS INSISTING ON TRANSFER**

• 2013 – Planning, O&M, Mgmt....

• Capital – ~$300,000 (partnership with Twp, County – Act 13)
  – Loan $250,000 – *Rates increased under local authority*
    • Customer Meter Replacement program
    • Filtration plant equipment (turbidimeters, valves, chem feed, SCADA, etc.)
    • System Flow Meters

  – Leak Detection - priority
  – >100,000 gpd – Regulatory (SRBC) implications
    • *Regulatory Avoidance – where appropriate!*

  – Communication – Documentation
TRUST, TRANSPARENCY, & COMMUNICATION
• LCWSA Owner – January 1, 2014

• Since then – No Rate Increases by LCWSA
• **Leak Detection continues to be a struggle**
  – (It is limestone township – water “disappears”)
  – Constant
  – Necessary
  – Controls costs
    • Revenue
      *versus*
    • Water produced

• Important Metric for LCWSA
LCWSA Limestone Water System
January 2010 thru January 2018 - 30 Day Average Flow (gallons per day)
Limestone Comparison
Produced Water vs Metered Customer

EXAMPLE
Avoiding lost revenue
QUARTERLY HOUSEHOLD BILL - Typical 5/8" meter, Usage 12,000/Qtr

- City of Lock Haven Water Department
- Williamsport Municipal Water Authority
- Jersey Shore Area Joint Water Authority
- Montoursville Borough
- Hughesville Borough Water Authority
- Montgomery Borough/Clinton Twp
- Muncy Borough Water Authority
- LCWSA Regional Water
- Limestone Water
- Collomsville Water Association

Larger customer bases
Older established systems
Investments in infrastructure
Larger systems will eventually have larger projects and high costs. Rates will increase here too.
• Partnership – LCWSA, Township, Local Authority
  – Regulatory Understanding
  – Cooperation Regulatory Agencies

• Saved significant costs
  – Avoiding fines/violations/regulatory implications
  – Proactive – NOT Reactive

• Holding user rates (2014-2018)

• Planning/Management of System
  – Seeking funding for Distribution System work
    • In meantime, repairs/replacement
  – Long term planning
    • Avoid the same situation again!
Asset Management Basics

• The Fundamentals of Asset Management
  (EPA, January 2016)

Changing utility business environment

- Demand to do more with existing resources
- Need to make every dollar work
  – to better use capital and operating budgets
- Move from *reactive* to *proactive* work environment

The Fundamentals of Asset Management
(EPA, January 2016)
Life Cycle Business Process

The Fundamentals of Asset Management
(EPA, January 2016)

Core Process

- Broken down in
  - Renew to Dispose
    - Plan

We keep operating and expensively maintaining outdated, outlived equipment.
Transition from building and operating to managing assets

- Extending asset life
- Optimizing maintenance and renewal
- Developing accurate long-term funding strategies
- Sustain long term performance

The Fundamentals of Asset Management
(EPA, January 2016)
Five Core Questions

• **What is the current state of my assets?**
  – What do I own? & Where is it?
  – What condition is it in? What is its performance?
  – What is its remaining useful life?
  – What is its remaining economic value?

• **What is my required level of service (LOS)?**
  – What is the demand for my services by my stakeholders?
  – What do regulators require? What is my actual performance?

• **Which assets are critical to sustained performance?**
  – How does it fail? How can it fail?
  – What is the likelihood of failure? What does it cost to repair?
  – What are the consequences of failure?

• **What are my best O&M and CIP investment strategies?**
  – What alternative management options exist?
  – Which are the most feasible for my organization?

• **What is my best long-term funding strategy?**
Initial Assessment

don’t make it too hard

• Review and Assess system
  – What do you know?
  – Operators
  – Problem areas
  – Audit (Depreciation/Assets)
    • Facilities
    • Miles/type of pipe
    • Year of installation

• Facilities

• Regulatory considerations

• Identify needs
  – Projects – General Scope – Cost
  – Funding

• Educate stakeholders
  – Costs
  – Communication is essential
Renewed appreciation
Clean Water Infrastructure

• EDUCATION & COMMUNICATION
  – *Worth the investment of our time!*
• Affordability
  – *Subjective in our society*
Political Will & the 5 stages of grief
# Rate Comparison – Quarterly Bill

## Typical Household with 12,000 gal/quarter (if applicable)

<table>
<thead>
<tr>
<th><strong>ERIE</strong></th>
<th><strong>LCWSA</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Water &amp; Sewer</td>
<td>Montoursville Reg Sewer System</td>
</tr>
<tr>
<td>$138.34 Quarterly</td>
<td>– $65 per EDU/month</td>
</tr>
<tr>
<td>Water only</td>
<td>– With Borough Water - $273.00/Qtr</td>
</tr>
<tr>
<td>$80.38 Quarterly</td>
<td>– With LCWSA Water - $369.00/Qtr</td>
</tr>
<tr>
<td>Sewer only</td>
<td>LCWSA Regional Water</td>
</tr>
<tr>
<td>$57.96 Quarterly</td>
<td>– Water Only - $174.00/Qtr</td>
</tr>
<tr>
<td>WILLIAMSPORT (Lycoming)</td>
<td>Armstrong Sewer</td>
</tr>
<tr>
<td>Water &amp; Sewer</td>
<td>– $65 per EDU - $195/Qtr (no water)</td>
</tr>
<tr>
<td>$223.40 Quarterly</td>
<td>Mifflin Manor Sewer</td>
</tr>
<tr>
<td>Water Only</td>
<td>– $120 per EDU/month - $360/Qtr (no water)</td>
</tr>
<tr>
<td>$77.20 Quarterly</td>
<td>– With JSAJWA Water - $445.33/Qtr</td>
</tr>
<tr>
<td></td>
<td>Beaver Lake Sewer - no public water</td>
</tr>
<tr>
<td></td>
<td>– $161 per EDU/month - $483/Qtr (no water)</td>
</tr>
<tr>
<td></td>
<td>Limestone Water – no public sewer</td>
</tr>
<tr>
<td></td>
<td>– WATER ONLY/No Sewer - $194.00/Qtr</td>
</tr>
</tbody>
</table>
Mission

“undertake projects that are normal and incidental to the planning, creation, or financing including but not limited to water supplies, water supply systems, sewer systems, sewage collection systems, and sewage treatment plants including facilities for treating industrial waste."

And including Stormwater planning, management, and implementation.

1989

2015
Who we are!

LCWSA

Environmental Compliance

Implement Solutions

Support Partners

Operations & Maintenance

Technical Support

Education & Outreach

Management

Financial & Long Range Planning
Consider the future.....
Christine Weigle, Executive Director
Lycoming County Water and Sewer Authority
380 Old Cement Road
P.O. Box 186
Montoursville, PA 17754
(570) 546-8005
website: lcwsa.net

Serving 10 sewer and water systems and 2 stormwater systems in 12 municipalities throughout Lycoming County and reaching over 8,500 individual customers in varying capacities.
“I believe it is really important to add as one of LC’s most important success stories the County formation / support of the LC Water and Sewer Authority. In 1988-89 when we as LCPC Staff proposed that concept County Commissioners Henry Frey (Rep) and Paul Bloom (Dem) readily agreed. Note this was NONPARTISAN.”
Regional Authority – Shared Resources – Credibility

“not the least expensive”
LIMESTONE WATER
PLANT PROCESS PIPING
AFTER PAINTING AND LABELING
AFTER COLOR CODING
UPGRADED ANALYZERS

OLD HACH EQUIPMENT

NEW HACH EQUIPMENT
SCADA SETPOINT SCREEN

WATER SOURCE SELECT

FLOW
LOW FLOW ALARM
ALARM DELAY TIME
TOTAL FLOW
RESERVOIR
LOW FLOW ALARM
ALARM DELAY TIME
TOTAL FLOW

STAGE 1
TURBIDITY
STAGE HIGH TURBIDITY ALARM
TANK 1
TANK 2
TANK 3
TANK HIGH TURBIDITY ALARM

STAGE 2
TURBIDITY
STAGE HIGH TURBIDITY ALARM
TANK 4
TANK 5
TANK 6
TANK HIGH TURBIDITY ALARM

RINSE WATER
STAGE RINSE TIME BEFORE WATER TO FINISHED WATER STORAGE TANK
TIME IN MINUTES
FLOW
LOW FLOW ALARM
LOW FLOW ALARM DELAY TIME (SEC)
TOTAL FLOW

BACKWASH CONTROL:
MUST BE IN MANUAL MODE TO BACKWASH
AUTO MODE
MANUAL MODE

ADJUST BW
STAGE 1 BW
STAGE 2 BW
STAGE M2 BW

MINIMUM BACKWASH FLOW TO RUN HYDRO-FLOC PUMPS
LOW FLOW ALARM
FLOW
LOW FLOW ALARM
LOW FLOW ALARM DELAY TIME (SEC)
TOTAL FLOW

RECYCLE WATER
TANK LEVEL (FT)
HI LEVEL ALARM
LOW FLOW ALARM
PUMP OFF
PUMP ON
ALARM DELAY TIME (SEC)
TOTAL FLOW

FILTERED WATER
CHLORINE
HIGH CHLORINE ALARM
LOW CHLORINE ALARM

RAW WATER
FLOW
LOW FLOW ALARM
PUMP OFF
PUMP ON
PH LEVEL
LOW PH ALARM
HIGH PH ALARM

FINISHED WATER
TANK LEVEL (FT)
HI LEVEL ALARM
LOW FLOW ALARM
PUMP OFF
PUMP ON
ALARM DELAY TIME (SEC)
TOTAL FLOW
CHLORINE
HIGH CHLORINE ALARM
LOW CHLORINE ALARM

SET

MANUAL VALVE
MAIN
ALARMS
Limestone - LAB / OFFICE

RE-PURPOSED LAB CASEWORK
FROM MRSS LABORATORY RENOVATIONS
Regional Authority – Shared Resources – Credibility

“not the least expensive”
Beaver Lake Sewer Then & Now....
Beaver Lake Sewer System 2007
Treatment Plant Replacement
Other treatment improvements
Grinder Pump Pump Replacements
~Debt ~$350,000
Beaver Lake FEMA Control Building Project

Original Building

Replaced Building
Beaver Lake FEMA Control Building Project

Original Control/Mechanical

Relocated Controls/Mechanical Upgrades
Beaver Lake FEMA Control Building Project

Original Blowers/Interior Air piping

Relocated Blowers/ Upgraded Interior Air Piping
Controls Upgrade
Improved control and efficiencies
### BEAVER LAKE

#### Status

| Daily High | 7.13 | Yesterday High | 7.11 |
| Daily Low | 6.94 | Yesterday Low | 6.86 |
| Daily High DO | 2.85 | Yesterday High DO | 2.88 |
| Daily Low DO | 0.16 | Yesterday Low DO | 0.16 |

#### Set Points

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Transfer Start Level (ft)</td>
<td>9.50</td>
</tr>
<tr>
<td>Transfer Stop Level (ft)</td>
<td>9.00</td>
</tr>
<tr>
<td>Blowers On React Cycle Time (Min)</td>
<td>180.00</td>
</tr>
<tr>
<td>Blowers Off Cycle Time (Min)</td>
<td>30.00</td>
</tr>
<tr>
<td>D.O. High Limit (mg/l)</td>
<td>2.80</td>
</tr>
<tr>
<td>D.O. Setpoint (mg/l)</td>
<td>2.40</td>
</tr>
<tr>
<td>D.O. Low Limit (mg/l)</td>
<td>2.00</td>
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<tr>
<td>D.O. On Delay (Min)</td>
<td>0.50</td>
</tr>
<tr>
<td>D.O. Off Delay (Min)</td>
<td>0.50</td>
</tr>
<tr>
<td>Return Delay (Min)</td>
<td>15.00</td>
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<tr>
<td>Return Time (Min)</td>
<td>10.00</td>
</tr>
<tr>
<td>Sludge Holding Air On Time</td>
<td>240.00</td>
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<tr>
<td>Sludge Holding Air Off Time</td>
<td>10.00</td>
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#### Alarm Set Points

<table>
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<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Aeration Tank High Level (ft)</td>
<td>10.50</td>
</tr>
<tr>
<td>Aeration Tank High PH</td>
<td>7.80</td>
</tr>
<tr>
<td>Aeration Tank Low PH</td>
<td>6.50</td>
</tr>
<tr>
<td>Lab Low Temp</td>
<td>40.00</td>
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<tr>
<td>Lab High Temp</td>
<td>100.00</td>
</tr>
<tr>
<td>Process Building Low Temp</td>
<td>40.00</td>
</tr>
<tr>
<td>Process Building High Temp</td>
<td>100.00</td>
</tr>
<tr>
<td>Blower Room Low Temp</td>
<td>40.00</td>
</tr>
<tr>
<td>Blower Room High Temp</td>
<td>100.00</td>
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</table>

#### Totals

<table>
<thead>
<tr>
<th>Total</th>
<th>Value</th>
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<tbody>
<tr>
<td>Effluent Daily Flow Total</td>
<td>2348.7</td>
</tr>
<tr>
<td>Effluent Yesterday Flow Total</td>
<td>7952.9</td>
</tr>
<tr>
<td>Daily Rain Total</td>
<td>0.00</td>
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<tr>
<td>Yesterday Rain Total</td>
<td>0.13</td>
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#### Temperatures

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Value</th>
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<tbody>
<tr>
<td>Lab Temperature (°F)</td>
<td>77.1</td>
</tr>
<tr>
<td>Blower Room Temperature (°F)</td>
<td>78.1</td>
</tr>
<tr>
<td>Process Building Temperature (°F)</td>
<td>73.4</td>
</tr>
<tr>
<td>Outside Temperature (°F)</td>
<td>70.5</td>
</tr>
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</table>

#### Level Sensor Setup

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Sensor 1</td>
<td>9.00</td>
</tr>
<tr>
<td>Sensor 2</td>
<td>9.01</td>
</tr>
</tbody>
</table>

D.O. sensor bypass mode will bypass the aeration tank blowers if D.O. control blowers will run for the whole react cycle at the blowers low speed.

D.O. sensor failure will switch to bypass automatic.
Beaver Lake Sewer System
2007

THEN
Sanitary Sewer System significantly improved
Beaver Lake Sewer System

Rate History 2007 – 2018

Monthly for Structure (EDU)

- $35 2nd Qtr 2007
- $97 3/4th Qtr 2007
- $133 2011
- $131 2012
- $161 2018

Monthly for Structure
Beaver Lake SEWER
Partner – Communication - Collaboration

- Affordability
  - Livable community
- Property Value
- Cost of living

Who?
- LCWSA
- Township
- Wilderness Club
- County/County Planning
- Real Estate Agents

• Easy to forget now that rate is so high...
Realistic debt and capital set aside for a reasonable rate.