



Water Infrastructure Investment

Gro-WA Work Component G



Introduction

Planning for water infrastructure included **assessment of drinking water systems** serving the most populated centers of the GROWashington-Aroostook region and creation of an **on-line resource manual for landowners and municipal officials in decentralized wastewater systems** (<http://gro-wa.org/wastewater-resource-manual>).

One of the biggest challenges facing towns in Maine is how to grow successfully without constructing new public waterlines and centralized sewer systems. New techniques and pre-treatment options, multiple-user alternatives to individual onsite septic systems, and advances in the science and art of septic system design have resulted in significant changes to state-mandated rules for subsurface wastewater disposal. The on-line Wastewater Resource Manual provides information, case studies and resources on:

- Benefits of decentralized systems (<http://gro-wa.org/benefits-of-decentralized-systems>)
- Improvements in technology (<http://gro-wa.org/lot-size-site-evaluation-technology-improvements>)
- Technologies and performance (<http://gro-wa.org/technologies-and-performance>)
- Precautions on small lots (<http://gro-wa.org/precautions-on-small-lots>)
- Management (<http://gro-wa.org/management>)
- Case Studies (<http://gro-wa.org/case-studies>)
- Land Use Planning and Resource Protection (<http://gro-wa.org/land-use-planning-and-resource-protection>)
- Costs (<http://gro-wa.org/costs>)
- Background science and literature (<http://gro-wa.org/background-science-and-literature>)

To assess drinking water systems in the GROWashington-Aroostook region we had enormous assistance from RCAP Solutions who developed a **first-of-its-kind-in-rural-Maine** look at our largest community drinking water systems. Water system assessment included 23 water systems; fifteen (15) systems in Aroostook County and eight (8) systems in Washington County. They were chosen because they have the capacity to service new economic development and there was a complete data set provided by the Maine Public Utilities Commission (MEPUC).

GROWashington-Aroostook completed:

- A [Water System Assessment](#) for the largest drinking water systems in both counties
- [Specific Water Systems Analysis](#)
- [On-going Training and Assistance](#) to water system operators & managers
- [Future Training and Assistance](#) to water system operators & managers

These compiled data represent a water utility snapshot of the year 2011. The data reveals the status of the existing service area. If economic development exists outside the current service area, many cost variables would require analysis of the particular impact to the utility. The MEPUC Extension Rule (407_c65) states that only those benefiting from a particular line extension will share the cost of the line extension.

Water systems were chosen for analysis if they had:

- a. the capacity to service new economic development, and



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- b. a complete data set describing them (especially [data from the Maine Public Utilities Commission](#) and sanitary surveys from the Maine Drinking Water Program).

Findings

RCAP Solutions created [a matrix of the drinking water systems data to determine the utilities' ability to cope with development opportunities using 15 benchmarks of capacity](#). A higher benchmark score reflects better utility capacity with a maximum total points of 77.

There are four benchmark groupings in the matrix - **Demographics, Technical, Managerial and Financial** - that allow analysis of water utility sustainability. Each benchmark also points to areas where technical assistance is needed.

Demographic Benchmarks

- **% of users as a % of town population** - describes service area size and system development
- **median household income and # of low to moderate income households** - tells us about the income capacity of users to shoulder improvements

Technical Benchmarks

- **Source Protection** - tells us about growth capacity given protection of the source
- **Unaccounted for Water and Asbestos Pipe** - informs pipe replacement needs

Managerial Benchmarks

- **Plant Capacity vs. Average Daily Demand** - tells us that growth is limited without plant improvements
- **Excess Source Capacity over Plant Design** - tells us the ability of the source to meet growth opportunities

Financial Benchmarks

- **Users Related to Median Household Income** - informs eligibility for grants and possibly neglect to true system operating costs
- **% of Assets Depreciated** - customary accountant's way of revealing equipment age
- **Ratio of Long Term Debt to Connections** - describes the debt burden on customers
- **Operating Cost per Person** - tells us about operating efficiency (may reflect aging)
- **Financial Ratios** - speaks to the ability of the system to manage revenue and expenses
- **Last Loan Date** - describes the system's ability to stay current with replacement and improvements

The [water systems assessment](#) included the desktop data crunching provided in the matrix of drinking water systems data as well as outreach to water system managers. [RCAP Solutions](#) emailed or faxed [an introductory letter](#) (from WCCOG Executive Director [Judy East](#) and NMDC Senior Planner [Jay Kamm](#)) to each water system containing the respective system's information asking for comments. Further, RCAP Solutions phoned five of nine short-listed systems for direct contact. From discussions and feedback, the [matrix of water systems data](#) is correct.



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Analysis and Basic Conclusions

Each utility is different with respect to demographics and the capacity of source, treatment, storage, fire protection, distribution, management and finances.

Higher benchmark score reflects better utility capacity with a maximum total point of 77. Summary scores for each benchmark category (shown at right; [click here or on image for PDF of chart](#)) for the water districts are expressed as percentages of the maximum possible points.

Where a score is less than 60% of the maximum possible points it is highlighted in red. Red highlighted scores point to areas where the water system could use investment and/or technical assistance to make improvements.

		Percentage of the Maximum Points (77)				
	Utility	Demographic	Technical	Management	Financial	Total
Aroostook County Water Systems	Caribou Utilities District	79%	73%	70%	70%	68%
	Ashland Water and Sewer District	79%	93%	80%	39%	60%
	Island Falls Water Department	64%	47%	60%	73%	60%
	Eagle Lake Water & Sewer District	64%	93%	60%	48%	58%
	Madawaska Water District	79%	47%	40%	67%	57%
	ST. Francis Water District	43%	60%	40%	73%	56%
	Grand Isle Water System	64%	93%	70%	33%	53%
	Mars Hill and Blaine Water Company	57%	40%	50%	58%	49%
	Fort Fairfield Utility District	64%	53%	50%	45%	48%
	Presque Water District	79%	33%	30%	55%	48%
	Limestone Water & Sewer District	71%	60%	70%	30%	47%
	Fort Kent Water & Wastewater Department	64%	53%	20%	48%	45%
	Van Buren Water District	57%	60%	50%	39%	45%
	Washburn Water & Sewer District	71%	7%	10%	58%	40%
Houlton Water Company	64%	13%	20%	52%	39%	
Washington County Water Systems	Baileyville Utilities District	93%	93%	10%	52%	58%
	Passamaquoddy Water District	57%	73%	50%	61%	57%
	Calais Water Department	57%	67%	0%	64%	51%
	Lubec Water Department	57%	60%	50%	48%	49%
	Machias Water Company	50%	73%	30%	48%	48%
	Danforth Water District	36%	40%	50%	61%	47%
	Quantabacook Water District	36%	33%	40%	55%	42%
Milbridge Water District	36%	60%	20%	42%	39%	

While the analysis looks at development capacity for the system, we recognize that preference for site location of economic development will be dependent upon specific developer requirements.

Specific water system assessments are summarized here (<http://www.gro-wa.org/specific-water-systems-analysis>) for the following Water Utilities:

Aroostook County	Washington County
Caribou Utility District	Baileyville Utilities District
Ashland Water and Sewer District	Calais Water District
Island Falls Water Department	Passamaquoddy Water District
Eagle Lake Water and Sewer District	Machias Water District
Madawaska Water District	Lubec Water District



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Suggested Actions/Implementation already occurring

The water systems analyzed according to the [Development Capacity Analysis benchmarks](#) serve the largest communities in the two-county region. The users of all systems studied comprise 30% of the population of Washington County and 42% of the population of Aroostook County. The water systems assessment gives a snapshot of how these water systems are doing according to 2011 data and 2013 follow up with managers.

The GROWashington-Aroostook web site is structured to provide Water Utility managers with access to assistance that is available now and going forward.

Water Systems – Assistance Happening Now (<http://www.gro-wa.org/water-systems-assistance-happening-now>) provides Utility Managers with notice of current and pending training opportunities and schedules.

Water Systems – Assistance Going Forward (<http://www.gro-wa.org/water-systems-assistance-going-forward>) provides Utility Managers with information about:

Technical Assistance on:

- Preventative maintenance budgets to enhance the Operations & Maintenance budget. Associated with this budget is creation of a reserve account for such tasks.
- Generation of a complete asset list including a replacement/repair cost schedule. Associated with this is creation of a critical asset subset. We suggest using the import spreadsheet template from the [Environmental Protection Agency Check Up Program for Small Systems \(EPA/CUPSS\) software](#) for standardization of data and output. This will facilitate better regional analysis.

Outreach & Communications with Decision-Makers in & beyond the Water System

Water systems operate in communities and in context. The actions and decisions of Board members, neighbors and other municipal officials affect water systems in many ways. The following measures can help:

- **Presentations** to board, trustees or elected councils of Repair and Replacement cost schedules and how reserve accounts might be implemented including a brief analysis of user rate impacts.
- **Source protection best management practices** that identify the need to consider [decentralized wastewater management planning](#) in areas where geographic or water quality issues exist and there is no municipal system present. This would insure water quality is protected as the cost of contamination and clean up would deter economic development activities.
- **Community outreach trainings** addressing decentralized wastewater treatment (septic /cesspool / leach field). See also [Decentralized Wastewater Systems - A Resource Manual for Municipal Officials and Developers](#) on the GROWashington-Aroostook web site.

Follow up Analysis for Individual Systems

When systems have unaccounted for water greater than 12%, this may indicate aging pipe that requires a leak detection program. It may also reflect that the meters should be calibrated. The latter should be performed prior to any leak detection.

Grades assigned in the [matrix of the drinking water systems data](#) for each system follow the benchmark tab; there were no weighting factors in the analysis presented. However, because



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certain factors may be considered more important, further analysis could weight the following "Grade Columns" by a factor of 2

- Plant Capacity: reward for oversized plant meaning more capacity for growth
- Unaccounted for water: reward for low water loss in system
- Water Users as a Percentage of Town Population: reward for servicing more of the town
- No Asbestos or Transite Pipe: reward for no old pipe so that replacement costs are relatively lower
- Rate/Median Household Income: reward for higher rates which will better qualify system for improvement grants from Rural Development/State Revolving Fund

Additional resource needs (<http://www.gro-wa.org/resource-needs>)

As with most infrastructure in the region the overarching needs include time, incentives and improved funder support.

Time

To arrive at system cost improvements required to meet a growth opportunity, the location, type, size and demand of the new development must be known. The [Water Systems Analysis provided here](#) allows comparison of capacity between systems and indicates areas of strength and weakness.

The ideal is to have Geographic Information System (GIS) mapping, an asset management plan (AMP) and/or primacy needs assessments for all utilities in the region. An AMP along with a preventative maintenance budget takes about 18-24 months to develop. Only the superintendent/operators know the equipment details to complete the required conditioning attributes of the AMP. This timeframe is impacted by the daily operation and maintenance tasks along with schedule construction during the spring, summer and fall. Also, approval from the board/council is required for the superintendent to commit work hours.

Although the superintendents may complete and present an AMP to their board/council, the incentives for the "purse-string holders" are reluctant to raise rates to accommodate such medium- to long-term planning.

Incentives

A regulatory requirement for utilities to have an up-to-date complete critical equipment repair/replacement cost schedule (or AMP) would support utility motivation. Additional incentives to having an AMP may include:

- increase funding to have technical assistance for AMP creation,
- an increase in grant component and/or
- decrease in loan interest and/or
- increase in loan term.

Money

All funding agencies (listed below) should collectively improve and support creation and use of asset management plans for funding qualification. All funding applications for system improvements should include and be supported by asset management plan priority lists.

Community Development Block Grant (CDBG) – Public Infrastructure Grant Program:

The Public Infrastructure Grant Program (PI) provides funds for communities to address local issues, which are part of a community development strategy leading to future public and private investments. The Eligible activities include construction, acquisition, reconstruction, installation,



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rehabilitation, site clearance, historic preservation, and relocation assistance associated with public projects and infrastructure in support of new affordable housing construction. Program activities are grouped as follows: Water system installation/improvements, Sewer system installation/improvements, Water/sewer system hookups, and Storm drainage, and Other Utility infrastructure –**Maximum grant award: \$1,000,000.** For more information, www.meocd.org

USDA Rural Development – Water and Waste Disposal Direct Loans and Grants

The Water and Waste Disposal Direct Loans and Grants Program provides funding to towns with a population not in excess of 10,000 for the purpose of developing water and waste disposal systems. The funds are available to public bodies, non-profit corporations and Indian tribes.

Funds can be used for construction, land acquisition, legal fees, engineering fees, capitalized interest, equipment, initial operation and maintenance costs, project contingencies, and any other cost that is determined by the Rural Development to be necessary for the completion of the project. For more information, www.rurdev.usda.gov/RD_Grants

Maine Drinking Water Program. The Maine Drinking Water Program offers a variety of low interest loans to community or non-profit organizations, non-community public water systems for infrastructure improvements.

- Very Small System Compliance Loan Fund provides 100% principal forgiveness loans for water treatment improvements required to achieve compliance with Safe Drinking Water Act standards.
- Capacity Development Grants of up to 50% of the project costs up to a maximum reimbursement of \$10,000 is available for community and non-profit, non-community public water systems to help with the preparation of documents that will assist them in the maintenance or enhancement of water quality by identifying possible improvements in systems, technical, financial and managerial operations.
- System Consolidation Grants are available for systems with a technical, managerial, or financial capacity issue that will be addressed by the consolidation with a more viable public water system. Grants may not exceed \$100,000.
- Source Water Protection Grant Program provides \$5,000 in grant funds to public water systems with surface water sources. Projects must clearly reduce the likelihood of contamination occurring in the source water protection area by existing and future activities.
- Wellhead Protection Grant Program provides up to \$5,000 in grant funds for projects that clearly reduce the likelihood of contamination occurring in the wellhead protection area by existing and future activities. For more information on the Drinking Water Programs, www.maine.gov/dhhs/mecdc/environmental-health/water