DW-SRF 2010 Project

Proposal for Green Project Reserve Methodology using format from EPA's • June 22, 2009 guidance for GPR business cases

ESTIMATE OF VALUE OF WATER LOSS WORKSHEET

1	Date:	4-May-10
2	PWSID #	91300
3	System	**PORTLAND WATER DISTRICT**
4	Project Name	Main Replacement Project
5	Location	Portland
6	Engineering Consultant	Portland - Project G
7	Existing Main size, age, and type	2" Galvanized Iron pipe
8	Proposed New Water Main size and type	8" Ductile Iron cement lined pipe
9	New Main Pipe Length	720
10	Estimated Project Cost	$ 149,900

Note: Data from Utilities Annual Report (2008) to Maine Public Utilities Commission

Page	Line	Description	Units	2008
W-12	15	Total Production Water	gallons per year	7,961,955,000
W-12	17	Total Revenue Water	gallons per year	6,442,186,000
W-12	19	Total Non-Revenue Water	gallons per year	1,519,769,000
W-12	19	Percent Non-Revenue Water		19%
W-12	22	Utility Usage - treatment	gallons per year	-
W-12	23	Utility Usage - hydrant flushing	gallons per year	6,334,000
W-12	14	Utility Usage - bleeders	gallons per year	24,428,000
W-12	26	Utility Usage - all other (running customers & blow-offs)	gallons per year	32,634,000
W-12	30	Fire Protection	gallons per year	61,434,000
W-12	31	Main Breaks	gallons per year	556,343,000
W-12	35	Flushing Mains	gallons per year	1,141,000
W-12	36	Total Accounted for Non-Revenue Water	gallons per year	682,314,000
W-12	37	Total Unaccounted Non-Revenue Water	gallons per year	837,455,000
		Estimated Water Loss From ALL Breaks, Leaks, & Bleeders ***(PUC Accounts total of lines 14, 26,31,35 and 37)***	**gallons per year**	1,452,001,000
		% of Water Loss of Total Production Water ***(PUC Lines 14,26,31,35,37 divided by Line 15)***		18%
W-9	9	Total Transmission Mains	feet	213,837
W-9	23	Total Distribution Mains	feet	5,015,413
		Total Mains in Service	feet	5,229,250
			miles	990
		Estimated Distribution System Losses:		
		Loss Water per mile of pipe	gallons per mile per year	1,466,093
		Loss Water per foot of pipe per year	gallons per foot per year	278
		Loss water per foot of pipe per day	gallons per foot per day	0.76
		Water loss will vary with age of water main - assume Straight line projection as follows:		
		0 to 25 year old pipe — *0 % of Total Loss*	gallons per mile per year	-
		26 to 50 year old pipe — *10% of Total Loss*	gallons per mile per year	*146,609*
		51 to 75 year old pipe — *30% of Total Loss*	gallons per mile per year	*439,828*
		over 75 year old pipe — *60% of Total Loss*	gallons per mile per year	*879,656*
			All Loses:	1,466,093
		Age of Main to be replaced	years	100
		Length of Main to be Replaced	mile	0.14
		CALCULATED WATER LOSS - FOR PROPOSED PROJECT	**gallons per year**	**119,953**
W-2	29c	**Total PRODUCTION COST of Water**	**$/year**	**$ 13,293,922**
W-12	15	Total Production Water	1,000 gallons per year	7,961,955
		Production Cost of Water	**per 1,000 gallons**	**$ 1.67**
		PROJECTED ANNUAL VALUE of WATER LOSS	**per year**	**$ 200**

Annual Savings	$	200
PV Factor (uniform series present worth factor (1%, 75 years):	$	52.587
Present Value of Savings over Economic life of pipeline:	**$**	**10,532**
Project Cost	**$**	**149,900**
PV Percent of Project Cost:		7.0%
ESTIMATED % Green		**7.0%**
$ Amount Green	**$**	**10,532**

Maine Center for Disease Control and Prevention
An Office of the Department of Health and Human Services
John E. Baldacci, Governor Brenda M. Harvey, Commissioner

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State of Maine Drinking Water Program
GREEN PROJECT RESERVE
BUSINESS CASE for a
WATER MAIN REPLACEMENT

ESTIMATE OF VALUE OF WATER LOSS
April 13, 2010

The Fiscal Year (FY) 2010 Appropriation Law (P.L. 111-88) included additional requirements affecting the Drinking Water State Revolving Fund (SRF) program. EPA has developed *Draft Procedures for Implementing Certain Provisions of EPA's Fiscal Year 2010 Appropriation Affecting the Clean Water and Drinking Water State Revolving Fund Programs* dated March 3, 2010. Public Law 111-88 included the language "Provided, that for fiscal year 2010, to the extent there are sufficient eligible project applications, not less than 20% of the funds made available under this title to each State for the Clean Water and Drinking Water State Revolving funds and not less than 20% of the funds made available under this title to each State for Drinking Water State Revolving Fund capitalization grants shall be used by the State for projects to address green infrastructure, water or energy efficiency improvements, or other environmentally innovative activities."

One of the project area identified in the EPA Green Project Guidance Documents is identified as Water Efficiency Improvements "*distribution pipe replacement or rehabilitation to reduce water loss and prevent water main breaks*". A Business Case Analysis if required for a water main replacement project to be approved as providing "Water Efficiency Improvements".

The purpose of this document is to provide public water utilities regulated by the Maine Public Utilities Commission (MPUC) with a standard procedure for calculating an estimate of the value of the water losses saved in conjunction with a water main replacement project. This method does not preclude a utility from providing an alternative calculation methodology based on project specific information. Such alternative documentation shall be reviewed and may be approved by the MDWP.

The Maine Public Utilities Commission (MPUC) requires all Maine water utilities file an Annual Report with the Commission. The Annual Report is the source of much information useful for preparing an estimate of value of water loss for a Business Case analysis of Green Project Reserve.

The attached methodology utilizes specific data from a utility's Annual Report to the MPUC. Page W-12 provides a detailed analysis of utilities water production and consumption information. Specific details include Production Water (line 15), Revenue Water (Line 17), as well as estimated water losses from bleeders, blow-offs, main breaks, service leaks, and main flushing.

Page W-9 of the PUC Annual Report provides information on total transmission and distribution mains in service as well as annual additions and deletions.

With information on Page W-12, one can calculate total water losses from all breaks, leaks, and bleeders. From Page W-9, one can identify the total length of mains in service. With these two pieces of information, one can calculate the estimated water loss in gallons per foot of pipe per day.

Knowing that older water mains and services will typically be the source of more leaks, or water losses, a ratio to distribute water losses by the age of mains. Pipes 0 to 25 years old are not expected to leak therefore no water loss is attributed to pipes less than 25 years old. Pipes 26 to 50 years old will account for 10% of all water losses. Pipes 51 to 75 years old will account for 30% of water losses and pipes older than 75 years will represent 60% of all pipeline water losses.

Using the average water loss per foot and the specific pipeline proposed for replacement, one can allocate water losses associated with the proposed project.

Using the water production cost information found on Page W-2, one can calculate the Annual Projected Value of Water Loss associated with the proposed project.

The MPUC allows depreciation of water distribution mains over a 75 year period. Using the MPUC time period (which should be the absolute minimum that a new water main will remain in service, or economic life) a Present Value (PV) calculation can be made of the an Annuity (Annual Value) of Water Loss using a 1% value of money over 75 years.
MPUC defines "Service Life" as the average length of time a unit of equipment will remain in service taking into account factors such as the effect of normal wear and tear, economic and technological obsolescence and public requirements.

The resulting PV can be compared with the Project Cost Estimate to determine the % of project expense attributed to the value of reduced water loss.

ANNUAL REPORT

For Water Utilities

OF

Name	Caribou Utilities District
Address	PO Box 879 Caribou, Maine 04736

TO THE

PUBLIC UTILITIES COMMISSION

OF THE

STATE OF MAINE

FOR THE

YEAR ENDED DECEMBER 31, 2008

Signature of Person responsible for report: Kendall Roy

TITLE: President

TELEPHONE:

E_MAIL:

Utility Name: Caribou Utilities District | Year of Report: December 31, 2008

				WATER UTILITY PLANT ACCOUNTS	
Line Number	ACCT. NO. (a)	ACCOUNT NAME (b)	CURRENT YEAR (c)	.1 Source of Supply & Pumping Expenses-Operations (d)	.2 Source of Supply & Pumping Expenses-Maintenance (e)
1	601	Salaries and Wages - Employees	251,509	35,996	
2	603	Salaries and Wages - Officers, Directors and Majority Stockholder			
3					
4	604	Employee Pensions and Benefits	78,024		
5	610	Purchased Water			
6	615	Purchased Power	59,248	52,659	
7	616	Fuel for Power Purchased			
8	618	Chemicals	12,166		
9	620	Materials and Supplies	68,043	6,372	
10	631	Contractual Services - Engineering			
11	632	Contractual Services - Accounting	5,013		
12	633	Contractual Services - Legal	221		
13	634	Contractual Services - Management Fees			
14	635	Contractual Services - Other			
15	641	Rental of Building/Real Property	17,120		
16	642	Rental of Equipment			
17	650	Transportation Expenses	16,826		
18	656	Insurance - Vehicle			
19	657	Insurance - General Liability	9,536		
20	658	Insurance - Workman's Compensation	7,297		
21	659	Insurance - Other			
22	660	Advertising Expense			
23	666	Regulatory Commission Expenses -			
24		Normalization of Rate Case Expense			
25	667	Regulatory Commission Expenses - Other			
26	670	Bad Debt Expense	11		
27	675	Miscellaneous Expenses	3,815		
28					
29		Total Water Utility Expenses	528,829	95,027	0

Utility Name: Caribou Utilities District | Year of Report: December 31, 2008

WATER TREATMENT

FOR EACH SUPPLY, CHECK AND/OR SPECIFY THE TYPE OF TREATMENT USED

Line Number	Name of Source	Chlorination	Fluoridation	Flocculation/Coagulation	Sedimentation	Filtration	Iron/Manganese Removal	Lead/Copper	Other Treatment (specify)
1	Doak Well	X	X						Post chlorination with
2	Theriault Well	X	X						15% Sodium Hypchlorite for
3									disinfection; Flouride for
4									dental health; Polyphosphate
5									for corrosion control.
6									
7									New wells on line July, 2006
8									
9									
10									
11									
12									

FEET OF TRANSMISSION AND DISTRIBUTION MAINS

Explain any important items included in column (f)

Line Number	Kind of Pipe (Galvanized, Cast Iron, Ductile, etc) (a)	Diameter in inches (b)	In Use First of Year (c)	Added During Year (d)	Retirements during Yr (e)	Adjustments Dr. (or Cr.) during Yr (f)	In Use End of Year (g)
1	Transmission						
2	Cast Iron	18	18				18
3		12	8,042				8,042
4		8	1,796				1,796
5	Total Transmission		9,856	0	0	0	9,856
6	Distribution	12	4,166				4,166
7		10	2,830				2,830
8	Cast Iron	8	34,027				34,027
9	Cast Iron	6	68,849				68,849
10	Cast Iron	2.25	6,806				6,806
11	Cast Iron	2	814				814
12	Galv. Iron	2	258				258
13	Copper	1	1,761				1,761
14	Ductile Iron	12	16,168				16,168
15	Ductile Iron	10	1,873				1,873
16	Ductile Iron	8	8,814	240			9,054
17	Ductile Iron	6	6,466				6,466
18	Ductile Iron	4	706				706
19	PVC	10	1,293				1,293
20	PVC	8	1,040				1,040
21	PVC	6	4,376				4,376
22	PE	2	0	750			750
23	Total Distribution		160,247	990	0	0	161,237
	Miles of pipe =		30.76912879				30.95662879

Utility Name: Caribou Utilities District | Year of Report: December 31, 2008

WATER PRODUCTION AND CONSUMPTION

1. Show quantities of water produced and purchased and the quantities delivered to consumers and lost or unaccounted for during the year. Where estimates are used, the basis thereof should be set forth in a footnote.

Line Number	Month	Thousand Gallons Delivered to Mains				
		Purchased	Groundwater		Surface Water	
			By Pumping	By Gravity	By Pumping	By Gravity
	(a)	(b)	(c)	(d)	(e)	(f)
1	January		15,162			
2	February		13,784			
3	March		15,128			
4	April		15,180			
5	May		13,867			
6	June		14,017			
7	July		15,941			
8	August		15,895			
9	September		15,048			
10	October		14,401			
11	November		14,265			
12	December		16,184			
13	Totals	0	178,872	0	0	0

14				THOUSAND GALLONS
15	Total PRODUCTION WATER			178,872
16				
17	Total REVENUE WATER (Page W-3, line 20, col. e) or	0		109800
18				
19	Balance as NON-REVENUE WATER	State Percentage:	38.62%	69072
20				
21	**Description and estimated consumption of Non-Revenue Water**			
22	Utility Usage-at source/treatment plants			1818
23	Utility Usage-flushing hydrants	Number flushed:	146	4370
24	Utility Usage-bleeders	Number in use:		
25	Utility Usage-meter bench	Number meters tested:		
26	Utility Usage-other purposes (specify):		Drain, paint, fill, SMLS tank	1170
27	Municipal pool, ice rink			1555
28	Running water customers (winter)	10		1687
29				
30	Fire Protection	Number of hydrant-using fires:	2	1325
31	Main Breaks	Number of breaks:	20	8575
32	Service Line losses before meters	Number of cases:	3	545
33	Other Non-Revenue uses/losses (specify):		National Guard	420
34	Street Flushing			6530
35	Sewer Flushing			4630
36	Total Accounted for Non-Revenue Water (Lines 22 through Lines 35)			32625
37	Unaccounted for Water			36447
38	Total Non-Revenue Water (Lines 36 plus Line 37)			69072
39				

40	**System DEMAND Data**	Quantity (mgd)	Date
41	Average Daily Demand:	0.424	
42	Maximum Day Demand:	0.62	1/26/2008
43	Peak Hour Demand:	650 GPM	

Remarks