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:	5/4/2010
2	PWSID #	90510
3	System	**PASSAMAQUODDY WATER DISTRICT**
4	Project Name	Main Replacement Project - **PROJECT # 2, ID # 2010-19**
5	Location	Franklin, Customs, Dawson, Pleasant, Lincoln
6	Engineering Consultant	A.E.Hodsdon
7	Existing Main size, age, and type	80% is 6" Cast Iron leaded joint unlined installed in early 1900's 20% is 2" galvanized iron installed early 1940's
8	Proposed New Water Main size and type	8" Ductile Iron cement lined
9	New Main Pipe Length	1,760
10	Estimated Project Cost	$ 409,122

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	70,180,000
W-12	17	Total Revenue Water	gallons per year	42,187,000
W-12	19	Total Non-Revenue Water	gallons per year	27,993,000
W-12	19	Percent Non-Revenue Water		40%
W-12	22	Utility Usage - treatment	gallons per year	4,000,000
W-12	23	Utility Usage - hydrant flushing	gallons per year	4,000,000
W-12	14	Utility Usage - bleeders	gallons per year	2,500,000
W-12	26	Utility Usage - all other (running customers & blow-offs)	gallons per year	2,755,000
W-12	30	Fire Protection	gallons per year	1,315,000
W-12	31	Main Breaks	gallons per year	40,000
W-12	35	Flushing Mains	gallons per year	10,000,000
W-12	36	Total Accounted for Non-Revenue Water	gallons per year	24,610,000
W-12	37	Total Unaccounted Non-Revenue Water	gallons per year	3,383,000
		Estimated Water Loss From ALL Breaks, Leaks, & Bleeders ***(lines 14, 26,31,35 and 37)***	**gallons per year**	18,678,000
		% of Water Loss of Total Production Water		27%
W-9	9	Total Transmission Mains	feet	41,989
W-9	23	Total Distribution Mains	feet	83,899
		Total Mains in Service	feet	125,888
			miles	24
		Estimated Distribution System Losses:		
		Loss Water per mile of pipe	gallons per mile per year	783,393
		Loss Water per foot of pipe per year	gallons per foot per year	148
		Loss water per foot of pipe per day	gallons per foot per day	0.41
		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	*78,339*
		51 to 75 year old pipe — *30% of Total Loss*	gallons per mile per year	*235,018*
		over 75 year old pipe — *60% of Total Loss*	gallons per mile per year	*470,036*
			All Loses:	783,393
		Age of Main to be replaced	years	100
		Length of Main to be Replaced	mile	0.33
		CALCULATED WATER LOSS - FOR PROPOSED PROJECT	**gallons per year**	**156,679**
W-2	29c	**Total PRODUCTION COST of Water**	**$/year**	**$ 418,645**
W-12	15	Total Production Water	1,000 gallons per year	70,180
		Production Cost of Water	**per 1,000 gallons**	**$ 5.97**
		PROJECTED ANNUAL VALUE of WATER LOSS	**per year**	**$ 935**

Annual Savings	$	935
PV Factor (uniform series present worth factor (1%, 75 years):	$	52.587
Present Value of Savings over Economic life of pipeline:	**$**	**49,150**
Project Cost	**$**	**409,122**
PV Percent of Project Cost:		12%
ESTIMATED % Green		**12%**
$ Amount Green	**$**	**49,150**

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 PASSAMAQUODDY WATER DISTRICT

Address 56 WATER STREET, EASTPORT, ME 04631

TO THE

PUBLIC UTILITIES COMMISSION

OF THE

STATE OF MAINE

FOR THE

YEAR ENDED DECEMBER 31, 2008

Signature of Person responsible for report

TITLE TREASURER

TELEPHONE 207-853-2924

E-MAIL nancypwd@myfairpoint.net

Utility Name: PASSAMAQUODDY WATER 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	179,651	161	
2	603	Salaries and Wages - Officers, Directors and Majority Stockholders	4,050		
3					
4	604	Employee Pensions and Benefits	101,258		
5	610	Purchased Water			
6	615	Purchased Power	18,230		
7	616	Fuel for Power Purchased			
8	618	Chemicals	29,810		
9	620	Materials and Supplies	43,118		
10	631	Contractual Services - Engineering			
11	632	Contractual Services - Accounting	4,900		
12	633	Contractual Services - Legal	694		
13	634	Contractual Services - Management Fees			
14	635	Contractual Services - Other	54,440		
15	641	Rental of Building/Real Property	5,730		
16	642	Rental of Equipment	1,287		
17	650	Transportation Expenses	11,107		
18	656	Insurance - Vehicle	2,368		
19	657	Insurance - General Liability	4,814		
20	658	Insurance - Workman's Compensation	4,667		
21	659	Insurance - Other	3,680		
22	660	Advertising Expense	180		
23	666	Regulatory Commission Expenses -			
24		Normalization of Rate Case Expense	2,200		
25	667	Regulatory Commission Expenses - Other			
26	670	Bad Debt Expense	(370)		
27	675	Miscellaneous Expenses	9,831		
28					
29		Total Water Utility Expenses	481,645	161	0

Utility Name: PASSAMAQUODDY WATER DISTRICT Year of Report: December 31, 2006

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									
2	Little River - Perry Maine	X	X	X		X			
3									
4									
5									
6									
7									
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							
3	DI	12	32,000	9,800	9,800		32,000
4	CI	10	5,500				5,500
5	CI	8	4,489		4,489		0
6	DI	8		4,489			4,489
7	Total Transmission		41,989	14,289	14,289	0	41,989
8	Distribution						
9	CI	10	12,140				12,140
10	CI	8	10,636		1,041		9,595
11	CI	6	18,730		60		18,670
12	CI	2.25	876				876
13	CI	4	12,215				12,215
14	DI	6	9,816	60			9,876
15	DI	4	175				175
16	GI	3	100				100
17	GI	1.25	250				250
18	COP	1	1,200				1,200
19	PVC	4	2,230				2,230
20	DI	12	600				600
21	DI	8	12,831	1,041			13,872
22	BP	4	2,100				2,100
23	Total Distribution		83,899	1,101	1,101	0	83,899

Utility Name: PASSAMAQUODDY WATER 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				7,970	
2	February				6,590	
3	March				6,190	
4	April				5,930	
5	May				5,120	
6	June				5,470	
7	July				6,880	
8	August				5,910	
9	September				5,330	
10	October				5,330	
11	November				4,390	
12	December				5,070	
13	Totals	0	0	0	70,180	0

14					THOUSAND GALLONS
15	Total PRODUCTION WATER				70,180
16					
17	Total REVENUE WATER (Page W-3, line 20, col. e) or				42,187
18					
19	Balance as NON-REVENUE WATER	State Percentage:	39.89%		27,993
20					
21	**Description and estimated consumption of Non-Revenue Water**				
22	Utility Usage-at source/treatment plants				4,000
23	Utility Usage-flushing hydrants	Number flushed:	118		4,000
24	Utility Usage-bleeders	Number in use:	3		2,500
25	Utility Usage-meter bench	Number meters tested:			
26	Utility Usage-other purposes (specify):		Water Running Customers		55
27			Blow offs		2,700
28					
29					
30	Fire Protection	Number of hydrant-using fires:	18	+ training	1,315
31	Main Breaks	Number of breaks:	1	Including a 12" main	40
32	Service Line losses before meters	Number of cases:			
33	Other Non-Revenue uses/losses (specify):	Standpipe OutFlow; Hydrant opended; flushing tanks, flushing hydrants			
34	Washing streets, dust control, flushing sewer-Eastport, Pleasant Point, Skating rink, emptying Pleasant Point tank				
35	Pressurizing new mains, Flushing new mains.				10,000
36	Total Accounted for Non-Revenue Water (Lines 22 through Lines 35)				24,610
37	Unaccounted for Water				3,383
38	Total Non-Revenue Water (Lines 36 plus Line 37)				27,993
39					

40	**System DEMAND Data**	Quantity (mgd)	Date
41	Average Daily Demand:	0.315	
42	Maximum Day Demand:	0.84	10/31/2008
43	Peak Hour Demand:		

2,755

Remarks: Note: Non-revenue water is water that was produced and used but did not produce water revenues; unaccounted for water is a subset of this.