CI# 33942

U & U Coon Pond Pipeline Replacement

REDACTED

April 30, 2010

NOVA SCOTIA POWER
An Emera Company

NOVA SCOTIA POWER
An Emera Company

UARB APPROVAL SHEET

Project Title: **U&U Coon Pond Pipeline Replacement**

CI Number: 33942

- [ ] Capital Project Authorization
- [x] ATO
- [ ] Final Cost

Head Office Use:

Project Number: H555

Date : March 26, 2010

Location:

Division:

YEAR	Budget Estimate	Project Estimate
2008	452,091	0
2009	177,846	10,638
2010	0	2,064,910
Total	$629,937	$2,075,549

Schedule

Estimated Start Date	2008-10
Estimated In-Service Date	2010-07
Estimated Close Date	2010-07

COMMENTS

Submitted on behalf of NOVA SCOTIA POWER INCORPORATED

M Savory April 28/2010

Authorized Signatory
Mark Savory
VP Technical and Construction

DATE

Approved on behalf of NOVA SCOTIA UTILITY AND REVIEW BOARD

DATE

CI Number :	33942-H555	- U&U Coon Pond Pipeline Replacement	Project Number	H555
Parent CI Number :		-		
Cost Centre :	440	- 440-St.Margaret's Hydro System	Budget Version -	2010 02/10 Forecast

	Forecast
Start :	10/01/2008
Operational :	07/30/2010
Final Cost :	07/31/2010
2008	$0.00
2009	$10,638.34
2010	$2,064,910.24
Total :	$2,075,548.58
Original Cost :	$0.00

This project consists of replacing the existing woodstave pipeline with High Density Polyethylene (HDPE) along the existing alignment.

CI Number	: 33942-H555	- U&U Coon Pond Pipeline Replacement		**Project Number**	H555
Parent CI Number	:	-		**Approved Date**	2/6/2009
Cost Centre	: 440	- 440-St.Margaret's Hydro System		**Budget Version**	2010 02/10 Forecast

Capital Item Accounts

Acct	Actv	Account	Activity	Forecast Amount	Amount	Variance
094	005	094 - Interest Capitalized	005 Indirect Costs	32,487	0	32,487
095	005	095-Hydro Regular Labour AO	005 Indirect Costs	1,683	0	1,683
095	005	095-Thermal & Hydro Contracts AO	005 Indirect Costs	72,371	0	72,371
001	007	001 - HYDRO Regular Labour	007 - HGP - Environmental	215	0	215
001	007	001 - Regular Labour (No AO)	007 - HGP - Environmental	85	0	85
013	007	013 - POWER PRODUCTION Contracts	007 - HGP - Environmental	200	0	200
012	028	012 - Materials	028 - HGP - Dams & Spillways	[redacted]	0	[redacted]
013	028	013 - POWER PRODUCTION Contracts	028 - HGP - Dams & Spillways	[redacted]	0	[redacted]
001	085	001 - HYDRO Regular Labour	085 Design	8,359	0	8,359
011	085	011 - Travel Expense	085 Design	200	0	200
028	085	028 - Consulting	085 Design	1,000	0	1,000
028	087	028 - Consulting	087 Field Super.& Ops.	52,255	0	52,255
			Total Cost:	2,075,549	0	2,075,549
			Original Cost:			

CI Number : 33942-H555 - U&U Coon Pond Pipeline Replacement

Project Number H555

Parent CI Number : -

Approved Date 2/6/2009

Cost Centre : 440 - 440-St.Margaret's Hydro System

Capital Item Justification

Justification Criteria : HYDRO

Sub-Criteria : Equipment Replacement

Name of Report :

Document Location :

Person Responsible :

Why do this project?

A blowout occurred in the woodstave pipe, and the pipe cannot be watered up until this blowout is repaired and the integrity of the rest of the woodstave pipe improved.

Why do this project now?

The pipeline is a necessary component of the Coon Pond Development and is required for generation. The average annual generation is 3720 MWh

Why do this project this way?

Four options were considered for the refurbishment of the woodstave pipeline:

A. Replacement of the entire pipeline with HDPE pipe
B. Replacement of all the bands, followed by replacement of pipe in 2015
C. Phased replacement of the bands using a band replacement program followed by replacement of pipe in 2015
D. Replacement of half the pipe with HDPE pipe, and replacement of the bands in the remaining pipe (with complete replacement of this section in 2015)

Based on the economic analysis completed for the original capital item submission, Option B (band replacement) was the most cost effective option, Option A (replacement of the entire pipeline with HDPE pipe) was the second most cost effective option.

Therefore, Option B (band replacement) was the recommended option for the original project submission.

Revised Capital Item Submission ATO:

Upon further detailed engineering, it was determined that the pipe bands had to be placed closer together, and the diameter of the steel used in some of the bands had to be increased. Based on this information, the band replacement option was re-estimated and the cost of this option was more than the original estimate.
The pipe replacement option was also re-estimated, using unit prices from a similar project carried out in 2009, CI 33942- Paradise Pipeline Replacement. These revised estimates were used to complete a revised economic analysis for all options.

Replacing the woodstave pipe with HDPE pipe was the most cost effective option.

CI Number :	33942-H555	- U&U Coon Pond Pipeline Replacement	**Project Number**	H555
Parent CI Number :		-	**Approved Date**	2/6/2009
Cost Centre :	440	- 440-St.Margaret's Hydro System		

Reason for Variance / Over Expenditure / Final Costing

14240779

Over Expenditure Variance Explanation:

Upon further detailed engineering, it was determined that the pipe bands had to be placed closer together than they presently were, and the diameter of the steel used in some of the bands had to be increased. Based on this information, the band replacement option was re-estimated and the cost of this option was more than the original estimate. The pipe replacement option was also re estimated, using unit prices from a similar project carried out in 2009, CI 33942 -Paradise Pipeline Replacement.

The economic analysis was completed for all options, based on these revised estimates. The revised economic analysis is enclosed.

Replacing the woodstave pipe with HDPE pipe was the most economic option.

Coon Pond Pipeline Replacement
Reference Notes

Budget Year	2010
Division	Power Production
Department	Hydro

Date	March 10th
CI number	33942

Note 1	Materials	As per the attached quote from [redacted] limited a total of [redacted] has been allotted for Materials.
Note 2	Contracts	Please reference the attached quotation from [redacted] which includes [redacted] of [redacted] for power production contracts. The remaining [redacted] in the estimate for power production contracts includes [redacted] to cover the cost of potential variances in earthwork and excavation to complete the installation. This estimate is based on NSPI experience on similar projects. There is also [redacted] included in the estimate for Power Production contract for site drainage, and a contingency of [redacted] to cover potential cost of unforeseen work that may arise over the course of construction. The estimates for site drainage and contract contingency are based on NSPI experience on similar projects.

U&U Coon Pond Pipeline Replacement

33942-H555 30-Apr-10

Account		Original Revision	Current Revision	Variance
001 - Hydro Reg. Labour		3,000	8,574	5,574
001 - Regular Labour (No AO)		-	85	85
011 - Travel Expense		75	200	125
012 - Materials		375,000	[redacted]	[redacted]
013 - Power Prod Contracts		200,000	[redacted]	[redacted]
028 - Consulting		33,000	53,255	20,255
094 - AFUDC		8,971	32,487	23,516
095 - Admin Overheads		9,890	74,054	64,164
Totals		**629,936**	**2,075,549**	**1,445,613**

Please see following page for variance explanations

U&U Coon Pond Pipeline Replacement ATO
33942-H555

Total Variance : $1,445,613

001 Labour – An increase of $5,574 is due to increased engineering carried out by NSPI labour.

011 Travel Expense – An increase of $125 is due to the increased construction period.

012 Materials – An increase of [redacted] is due to replacing the woodstave pipe with new HDPE pipe rather than replacing the bands on the existing woodstave pipe.

013 Contracts (Dams & Spillways) – An increase of [redacted] is due to replacing the woodstave pipe with new HDPE pipe, rather than replacing the bands on the existing woodstave pipe.

013 Contracts (Environmental): An increase of $200 is due to additional costs for testing excavated soil.

028 Consulting (Design) – A decrease of $(14,745) is due to more engineering/supervision being carried out by NSPI labour.

028 Consulting (Field Supervision) – An increase of $35,000 is due to the longer construction period and more construction supervision being carried out by a NSPI Field Supervisor.

AFUDC (Interest) – An increase of $23,516 is due to the longer construction period and the increased project spend.

Administrative Overheads – An increase of $64,164 is due to the increase in contract spend.

CONTRACT STANDARD

FORM OF TENDER - Labour & Material

FROM: [redacted]

TO: NOVA SCOTIA POWER INCORPORATED (the "Company")

FOR: Tender # 37030
Coon Pond Pipeline Replacement

The undersigned Bidder hereby confirms that it has examined the Tender Package, which may include the Instructions to Bidders, Form of Agreement, Conditions (General and Special Provisions), Specifications, Drawings/Maps, Form of Tender and Schedules to the Form of Tender, and understands their stipulations, requirements and provisions. The Bidder hereby offers to furnish all labour, supervision, materials, tools, construction plant and other facilities (excepting only those items specifically stated in the Tender Package as being supplied by the Company) on the terms and conditions described in the Tender Package. Upon issuance of a Purchase Order by the Company or upon issuance of such other form of notice of selection of the Bidder as the Company may provide, the Bidder agrees to perform all work necessary or proper for or incidental to Works, complete in every respect, in strict conformity with the terms and conditions of the Tender Package.

The undersigned Bidder has carefully examined the Site of the work described in the Tender Package and has become familiar with local conditions and the character and extent of the work.

The undersigned Bidder agrees that the following Schedules are attached to and form part of this Tender:

☑ Schedule "A"	Tender Information	☑ Schedule "H"	Insurance Coverage
☑ Schedule "B"	Timings	☐ Schedule "I"	Technical Information
☑ Schedule "C"	Quantities and Prices	☐ Schedule "J"	Spare Parts
☑ Schedule "D"	Equipment Rental Rates	☐ Schedule "K"	Specification Deviation
☑ Schedule "E"	Work Experience	☐ Schedule "L"	Selection Criteria
☑ Schedule "F"	Evaluation of Contractor's Safety Record	☑ Schedule "M"	Contacts
☑ Schedule "G"	Safety and Environmental Meetings		

The total amount of this Tender calculated according to the Schedule of Quantities and Prices, exclusive of Harmonized Sales Tax ("HST") and/or Goods and Services Tax ("GST") is:

[redacted] xx/ Canadian Dollars
[redacted])

The undersigned Bidder understands that:

a. The bid security accompanying this Tender will be forfeited to the Company if the Bidder neglects or refuses to enter into a contract when called upon to do so, or fails or neglects to furnish the required performance and/or payment security.

b. Unless otherwise specified, Tender must remain valid for a period of sixty (60) days from the Tender Closing date.

c. Tender may not be considered unless signed by authorized signing personnel.

d. Upon acceptance of this Tender, undersigned Bidder agrees to be bound by the terms and conditions contained in the Tender Package which includes the Instructions to Bidders, General Conditions, Special Provisions, Specifications, Drawings/Maps, Form of Tender and Schedules.

The undersigned Bidder agrees that:

a. If this Tender is accepted, and if requested, it will, within fourteen (14) days of the written acceptance, execute the Contract and furnish at the Bidder's expense, performance and/or payment security acceptable to the Company in an amount of [redacted] of the Contract Price to ensure the due and faithful fulfillment of the Contract. Cost of performance security will be required prior to the award of the Contract.

b. If this Tender is accepted, it will perform Force Account Work upon the written request of the Engineer in accordance with the Conditions of Contract.

c. Until such time as the Contract is executed, the Tender Package and the notification of acceptance of Tender by the Company to the successful Bidder shall constitute a binding Contract.

d. If this Tender is accepted, the Bidder will provide the Company with proof of insurance coverage within fourteen (14) days of acceptance.

All correspondence relative to this Tender is to be addressed to the undersigned Bidder at the following address:
5 LAURA COURT, FALL RIVER, N.S. B2T 1H7

Accompanying this Tender is bid security:

In the form of a BID BOND
Issued by AVIVA INSURANCE COMPANY OF CANADA
In the amount of $ 10 % OF BID
Dated the 18TH day of FEBRUARY A.D., 2010
Having a Serial No.: 69-7307-0001-10

SIGNED, SEALED AND DELIVERED) [redacted]
- in the presence of -)
[redacted]) Per: [redacted]
) Title [redacted]
Witness)
) Per:
) Title:

This 18TH day of FEBRUARY, A.D., 2010 at FALL RIVER.

Item No	Sub Item No	Description	Approx Quantities	Unit	Unit Price	Total Price
1		Environment	1	Lump Sum	[redacted]	[redacted]
2		Clearing	1	Lump Sum	[redacted]	[redacted]
3		Common Excavation	10000	Cubic Yards	[redacted]	[redacted]
4		Common Disposal	500	Cubic Yards	[redacted]	[redacted]
5		Previous Fill	7500	Cubic Yards	[redacted]	[redacted]
6		Common Backfill	16000	Cubic Yards	[redacted]	[redacted]
7		Filterfabric	15000	Square Yards	[redacted]	[redacted]
8		Pipe	1	Lump Sum	[redacted]	[redacted]
9		Removal	1	Lump Sum	[redacted]	[redacted]

NOVA SCOTIA POWER
An Emera Company

Project Title
Summary of Alternatives

Budget Year :	2010	Date :	27-Apr-10
Division :	Power Production	CI Number:	33942
Department :	Hydro	Project No. :	
Originator :			

	Alternative	After Tax WACC	PV of EVA / NPV	Rank	IRR	Disc Pay
A	Pipe replacement Vs. Do nothing	6.55%	605,634	1	9.68%	19.4 years
B	Band and Pipe Replacement Vs. Do nothing	6.55%	-24,258	3	6.41%	0.0 years
C	Band/Pipe Replacement program Vs. Do Nothing	6.55%	-166,353	4	5.77%	0.0 years
D	Band 1/2 and Replace Pipe Vs. Do Nothing	6.55%	123,059	2	7.18%	24.7 years

Recommendation :

Based on the economic analysis of all four original options, it is recommended that Option A, Pipe replacement be implimented based on a NPV of $605,634 and an IRR of 9.68%.

Notes/Comments :

Pipe replacement Vs. Do nothing

This option includes an estimated capital cost of $2,075,548 in 2010 to replace 100% of the existing pipe. In addition to the pipe replacement in 2010, an estimated capital cost of $2M is included in 2012 for dam restructuring; as well as a capital investments of $500K for generator rewinds in 2014 and 2015. An operating budget of $50K per year in 2010 escalating at 2% per year thereafter is used in the analysis. Justification for this project is based on the avoided replacement energy costs associated with a de-rating of 3,720 MWh/year for 25 years

Band and Pipe Replacement Vs. Do nothing

This option includes an estimated capital cost of $822,120 for replacement of all bands in 2010, $2M in 2012 for dam restructuring, a capital investment of $500K for generator rotor rewinds in 2014 and 2015 and $2.9M in 2016 for complete replacement of the existing pipe with new HDPE pipe. Avoided replacement energy costs are based on a de-rating of 3,720 MWh/year for 25 years.

Band/Pipe Replacement program Vs. Do Nothing

This option includes short-term band repairs on approximately 30% of the existing pipe in 2010, followed by staged replacement of 60% of the existing pipe between 2011 and 2013. The estimated capital cost of band replacements in 2010 is $274,050. A staged band replacement program is included between 2011 and 2013 to repair and replace the bands on the sections of pipe that have not already been replaced. The estimated capital cost for band replacements is $186,500, $190,000 and $193,875 in 2011, 2012 and 2013 respectively. The estimated annual cost for pipe replacement in 2011 through to 2013 is $532,764 in 2011, $532,764 in 2012 and $543,419 in 2013. The remaining 40% of the existing pipe would be replaced in 2016 at an estimated capital cost of $1M.

In addition to these capital costs, $2.08M is included in 2012 for dam restructuring, as well as a capital investment of approximately $500K for generator rewinds in 2014 and 2015. Avoided replacement energy costs are based on a de-rating of 3,720 MWh/year for 25 years.

Band 1/2 and Replace Pipe Vs. Do Nothing

This option includes short-term band repairs on approximately 30% of the existing pipe and replacement of 50% of the existing pipe in 2010. The estimated capital cost of band replacements in 2010 is $274,050. The estimate capital cost for replacing 50% of the existing pipe in 2010 is $1,280,200. The remaining 50% of the existing pipe would be replaced in 2016 at an estimated capital cost of $1,442,000.

In addition to these capital costs, $2.1M is included in 2012 for dam restructuring, as well as a capital investment of $500K for generator rewinds in 2014 and 2015. Avoided replacement energy costs are based on a de-rating of 3,720 MWh/year for 25 years.

Project Title

Pipe replacement Vs. Do nothing

Year	Total Revenue	Operating Costs	Capital	CCA	UCC	CFBT	Applicable Taxes	CFAT	Discount Factor	PV of CF	CNPV
2010	139,686.0	2,950,000.0	(2,075,548.0)	62,266.4	2,013,281.6	1,014,138.0	(1,030,983.6)	(16,845.6)	1.000	(16,845.6)	(16,845.6)
2011	305,412.0	(51,000.0)	-	120,796.9	1,892,484.7	254,412.0	(44,383.0)	210,029.0	0.939	197,117.8	180,272.2
2012	311,520.2	(52,020.0)	(2,080,800.0)	175,973.1	3,797,311.6	(1,821,299.8)	(26,548.5)	(1,847,848.2)	0.881	(1,627,643.9)	(1,447,371.7)
2013	317,750.6	(53,060.4)	-	227,838.7	3,569,472.9	264,690.2	(11,424.0)	253,266.3	0.827	209,371.2	(1,238,000.5)
2014	324,105.7	(54,121.6)	(541,216.1)	235,817.0	3,874,872.0	(271,232.0)	(11,260.2)	(282,492.2)	0.776	(219,175.8)	(1,457,176.3)
2015	330,587.8	(55,204.0)	(552,040.4)	264,965.3	4,161,947.1	(276,656.7)	(3,229.7)	(279,886.4)	0.728	(203,804.8)	(1,660,981.1)
2016	337,199.5	(56,308.1)	-	269,876.0	3,892,071.0	280,891.4	(3,414.8)	277,476.6	0.683	189,629.4	(1,471,351.7)
2017	343,943.5	(57,434.3)	-	252,070.7	3,640,000.3	286,509.2	(10,675.9)	275,833.3	0.641	176,918.2	(1,294,433.5)
2018	350,822.4	(58,583.0)	-	235,462.8	3,404,537.5	292,239.4	(17,600.8)	274,638.7	0.602	165,323.3	(1,129,110.2)
2019	357,838.8	(59,754.6)	-	219,970.0	3,184,567.5	298,084.2	(24,215.4)	273,868.8	0.565	154,725.3	(974,384.9)
2020	364,995.6	(60,949.7)	-	205,516.0	2,979,051.6	304,045.9	(30,544.3)	273,501.6	0.530	145,019.2	(829,365.7)
2021	372,295.5	(62,168.7)	-	192,029.7	2,787,021.9	310,126.8	(36,610.1)	273,516.7	0.498	136,111.8	(693,253.9)
2022	379,741.4	(63,412.1)	-	179,445.0	2,607,576.9	316,329.3	(42,434.2)	273,895.2	0.467	127,921.3	(565,332.6)
2023	387,336.3	(64,680.3)	-	167,700.4	2,439,876.6	322,655.9	(48,036.2)	274,619.7	0.438	120,375.1	(444,957.5)
2024	395,083.0	(65,973.9)	-	156,738.7	2,283,137.9	329,109.1	(53,434.8)	275,674.2	0.411	113,409.1	(331,548.4)
2025	402,984.6	(67,293.4)	-	146,506.7	2,136,631.2	335,691.2	(58,647.2)	277,044.0	0.386	106,966.3	(224,582.1)
2026	411,044.3	(68,639.3)	-	136,954.8	1,999,676.4	342,405.1	(63,689.6)	278,715.5	0.362	100,996.4	(123,585.7)
2027	419,265.2	(70,012.1)	-	128,037.0	1,871,639.4	349,253.2	(68,577.0)	280,676.1	0.340	95,454.6	(28,131.1)
2028	427,650.5	(71,412.3)	-	119,710.2	1,751,929.2	356,238.2	(73,323.7)	282,914.5	0.319	90,301.1	62,170.0
2029	436,203.5	(72,840.6)	-	111,934.7	1,639,994.5	363,363.0	(77,942.8)	285,420.2	0.300	85,500.6	147,670.6
2030	444,927.6	(74,297.4)	-	104,673.1	1,535,321.5	370,630.2	(82,446.7)	288,183.5	0.281	81,021.5	228,692.0
2031	453,826.2	(75,783.3)	-	97,890.8	1,437,430.6	378,042.8	(86,847.1)	291,195.7	0.264	76,835.6	305,527.6
2032	462,902.7	(77,299.0)	-	91,555.6	1,345,875.0	385,603.7	(91,154.9)	294,448.8	0.248	72,917.8	378,445.5
2033	472,160.7	(78,845.0)	-	85,637.5	1,260,237.5	393,315.8	(95,380.3)	297,935.5	0.232	69,245.7	447,691.2
2034	481,604.0	(80,421.9)	-	80,108.5	1,180,129.0	401,182.1	(99,532.8)	301,649.3	0.218	65,799.0	513,490.2
2035	491,236.0	(82,030.3)	-	74,942.4	1,105,186.6	409,205.7	(103,621.6)	305,584.1	0.205	62,559.7	576,049.9
2036	-	-	-	70,115.1	1,035,071.5	-	21,735.7	21,735.7	0.192	4,176.2	580,226.1
2037	-	-	-	65,603.9	969,467.6	-	20,337.2	20,337.2	0.180	3,667.3	583,893.4
2038	-	-	-	61,387.7	908,079.9	-	19,030.2	19,030.2	0.169	3,220.7	587,114.1
2039	-	-	-	57,446.9	850,633.1	-	17,808.5	17,808.5	0.159	2,828.6	589,942.7
2040	-	-	-	53,763.1	796,870.0	-	16,666.6	16,666.6	0.149	2,484.5	592,427.2
2041	-	-	-	50,319.3	746,550.7	-	15,599.0	15,599.0	0.140	2,182.4	594,609.7
2042	-	-	-	47,099.6	699,451.1	-	14,600.9	14,600.9	0.131	1,917.2	596,526.9
2043	-	-	-	44,089.1	655,362.1	-	13,667.6	13,667.6	0.123	1,684.3	598,211.2
2044	-	-	-	41,274.0	614,088.1	-	12,794.9	12,794.9	0.116	1,479.9	599,691.0
2045	-	-	-	38,641.3	575,446.8	-	11,978.8	11,978.8	0.109	1,300.3	600,991.3
2046	-	-	-	36,179.2	539,267.6	-	11,215.5	11,215.5	0.102	1,142.6	602,134.0
2047	-	-	-	33,876.2	505,391.3	-	10,501.6	10,501.6	0.096	1,004.1	603,138.1
2048	-	-	-	31,722.0	473,669.3	-	9,833.8	9,833.8	0.090	882.5	604,020.5
2049	-	-	-	29,706.8	443,962.4	-	9,209.1	9,209.1	0.084	775.6	604,796.1
2050	-	-	-	27,821.5	416,140.9	-	10,605.6	10,605.6	0.079	838.3	605,634.4
Total	9,922,123.9	1,316,454.7	(5,249,604.5)	4,833,463.5	74,020,714.2	5,988,974.1	(2,080,374.1)	3,908,600.1	[illegible]15.1	605,634.4	(2,147,046.7)

Project Title
Band and Pipe Replacement Vs. Do nothing

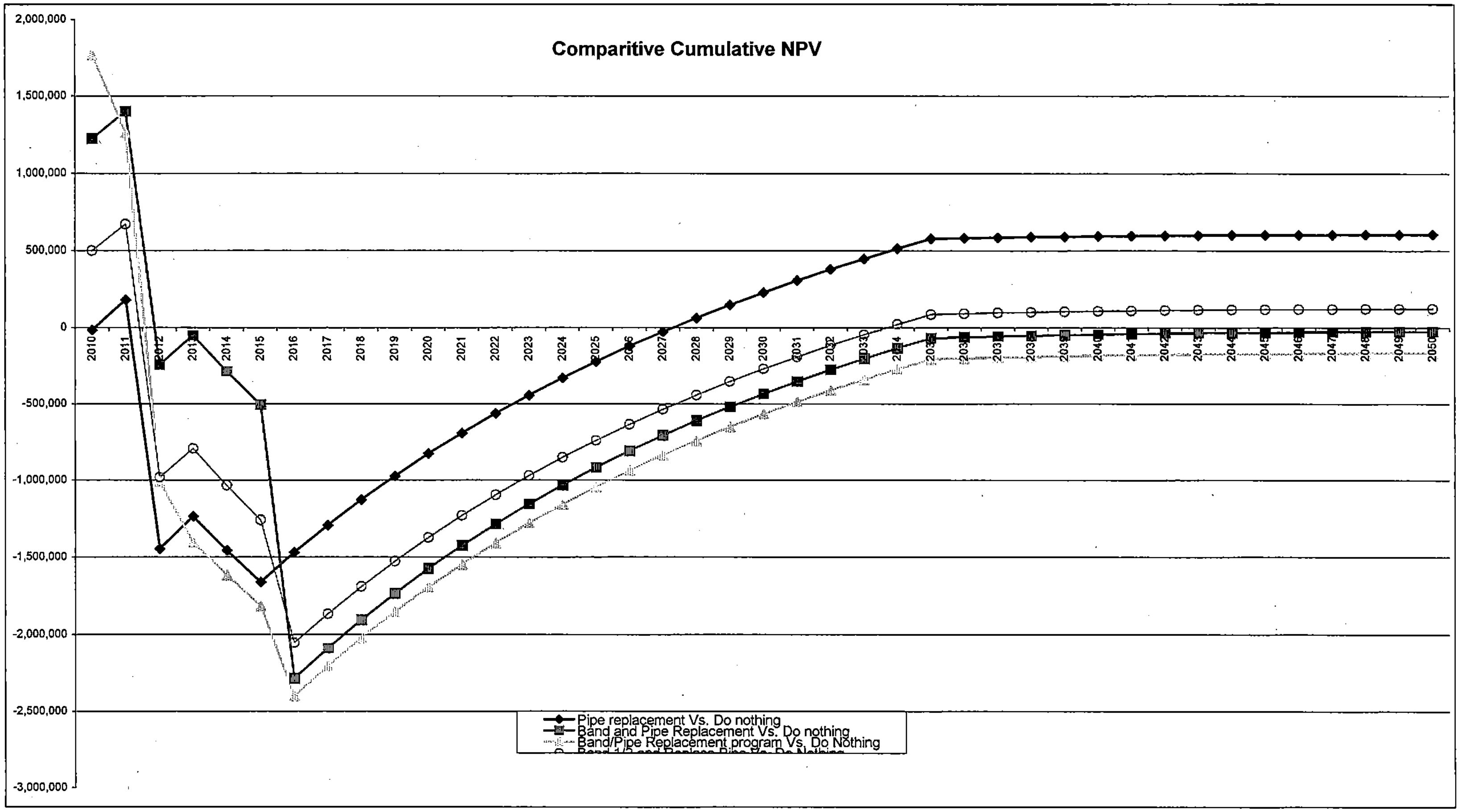
Year	Total Revenue	Operating Costs	Capital	CCA	UCC	CFBT	Applicable Taxes	CFAT	Discount Factor	PV of CF	CNPV
2010	139,686.0	2,950,000.0	(822,120.0)	24,663.6	797,456.4	2,267,566.0	(1,042,765.5)	1,224,800.5	1.000	1,224,800.5	1,224,800.5
2011	305,412.0	(51,000.0)	-	47,847.4	749,609.0	254,412.0	(67,513.0)	186,899.0	0.939	175,409.7	1,400,210.2
2012	311,520.2	(52,020.0)	(2,080,800.0)	107,400.5	2,723,008.5	(1,821,299.8)	(47,620.6)	(1,868,920.4)	0.881	(1,646,204.9)	(245,994.8)
2013	317,750.6	(53,060.4)	-	163,380.5	2,559,628.0	264,690.2	(31,406.0)	233,284.2	0.827	192,852.4	(53,142.4)
2014	324,105.7	(54,121.6)	(541,216.1)	169,814.2	2,931,029.9	(271,232.0)	(31,558.3)	(302,790.3)	0.776	(234,924.4)	(288,066.8)
2015	330,587.8	(55,204.0)	(552,040.4)	192,423.0	3,290,647.3	(276,656.7)	(25,717.8)	(302,374.5)	0.728	(220,180.0)	(508,246.8)
2016	337,199.5	(56,308.1)	(2,883,407.1)	283,941.1	5,890,113.3	(2,602,515.7)	945.4	(2,601,570.3)	0.683	(1,777,930.8)	(2,286,177.5)
2017	343,943.5	(57,434.3)	-	353,406.8	5,536,706.5	286,509.2	20,738.2	307,247.5	0.641	197,067.1	(2,089,110.4)
2018	350,822.4	(58,583.0)	-	332,202.4	5,204,504.2	292,239.4	12,388.5	304,627.9	0.602	183,375.8	(1,905,734.6)
2019	357,838.8	(59,754.6)	-	312,270.2	4,892,233.9	298,084.2	4,397.7	302,481.9	0.565	170,890.6	(1,734,844.0)
2020	364,995.6	(60,949.7)	-	293,534.0	4,598,699.9	304,045.9	(3,258.7)	300,787.2	0.530	159,486.8	(1,575,357.1)
2021	372,295.5	(62,168.7)	-	275,922.0	4,322,777.9	310,126.8	(10,603.5)	299,523.3	0.498	149,053.7	(1,426,303.5)
2022	379,741.4	(63,412.1)	-	259,366.7	4,063,411.2	316,329.3	(17,658.4)	298,670.9	0.467	139,492.7	(1,286,810.8)
2023	387,336.3	(64,680.3)	-	243,804.7	3,819,606.5	322,655.9	(24,443.9)	298,212.0	0.438	130,716.5	(1,156,094.3)
2024	395,083.0	(65,973.9)	-	229,176.4	3,590,430.1	329,109.1	(30,979.1)	298,129.9	0.411	122,647.1	(1,033,447.2)
2025	402,984.6	(67,293.4)	-	215,425.8	3,375,004.3	335,691.2	(37,282.3)	298,409.0	0.386	115,215.3	(918,232.0)
2026	411,044.3	(68,639.3)	-	202,500.3	3,172,504.1	342,405.1	(43,370.5)	299,034.6	0.362	108,359.3	(809,872.7)
2027	419,265.2	(70,012.1)	-	190,350.2	2,982,153.8	349,253.2	(49,259.9)	299,993.3	0.340	102,024.1	(707,848.6)
2028	427,650.5	(71,412.3)	-	178,929.2	2,803,224.6	356,238.2	(54,965.8)	301,272.4	0.319	96,160.6	(611,688.0)
2029	436,203.5	(72,840.6)	-	168,193.5	2,635,031.1	363,363.0	(60,502.5)	302,860.4	0.300	90,725.0	(520,963.0)
2030	444,927.6	(74,297.4)	-	158,101.9	2,476,929.3	370,630.2	(65,883.8)	304,746.4	0.281	85,678.0	(435,284.9)
2031	453,826.2	(75,783.3)	-	148,615.8	2,328,313.5	378,042.8	(71,122.4)	306,920.4	0.264	80,984.8	(354,300.2)
2032	462,902.7	(77,299.0)	-	139,698.8	2,188,614.7	385,603.7	(76,230.5)	309,373.2	0.248	76,613.7	(277,686.4)
2033	472,160.7	(78,845.0)	-	131,316.9	2,057,297.8	393,315.8	(81,219.7)	312,096.1	0.232	72,536.9	(205,149.5)
2034	481,604.0	(80,421.9)	-	123,437.9	1,933,859.9	401,182.1	(86,100.7)	315,081.4	0.218	68,729.0	(136,420.6)
2035	491,236.0	(82,030.3)	-	116,031.6	1,817,828.3	409,205.7	(90,884.0)	318,321.8	0.205	65,167.3	(71,253.2)
2036	-	-	-	109,069.7	1,708,758.6	-	33,811.6	33,811.6	0.192	6,496.4	(64,756.8)
2037	-	-	-	102,525.5	1,606,233.1	-	31,782.9	31,782.9	0.180	5,731.3	(59,025.5)
2038	-	-	-	96,374.0	1,509,859.1	-	29,875.9	29,875.9	0.169	5,056.2	(53,969.3)
2039	-	-	-	90,591.5	1,419,267.6	-	28,083.4	28,083.4	0.159	4,460.7	(49,508.7)
2040	-	-	-	85,156.1	1,334,111.5	-	26,398.4	26,398.4	0.149	3,935.3	(45,573.4)
2041	-	-	-	80,046.7	1,254,064.8	-	24,814.5	24,814.5	0.140	3,471.7	(42,101.6)
2042	-	-	-	75,243.9	1,178,821.0	-	23,325.6	23,325.6	0.131	3,062.8	(39,038.8)
2043	-	-	-	70,729.3	1,108,091.7	-	21,926.1	21,926.1	0.123	2,702.1	(36,336.7)
2044	-	-	-	66,485.5	1,041,606.2	-	20,610.5	20,610.5	0.116	2,383.8	(33,952.9)
2045	-	-	-	62,496.4	979,109.8	-	19,373.9	19,373.9	0.109	2,103.0	(31,849.9)
2046	-	-	-	58,746.6	920,363.2	-	18,211.4	18,211.4	0.102	1,855.3	(29,994.6)
2047	-	-	-	55,221.8	865,141.4	-	17,118.8	17,118.8	0.096	1,636.8	(28,357.8)
2048	-	-	-	51,908.5	813,233.0	-	16,091.6	16,091.6	0.090	1,444.0	(26,913.8)
2049	-	-	-	48,794.0	764,439.0	-	15,126.1	15,126.1	0.084	1,273.9	(25,639.9)
2050	-	-	-	45,866.3	718,572.6	-	17,484.2	17,484.2	0.079	1,382.0	(24,257.9)
Total	9,922,123.9	1,316,454.7	(6,879,583.6)	6,161,011.0	99,962,296.8	4,358,995.0	(1,667,842.1)	2,691,152.9	15.1	(24,257.9)	(18,604,296.1)

Project Title
Band/Pipe Replacement program Vs. Do Nothing

Year	Total Revenue	Operating Costs	Capital	CCA	UCC	CFBT	Applicable Taxes	CFAT	Discount Factor	PV of CF	CNPV
2010	139,686.0	2,950,000.0	(274,046.0)	8,221.4	265,824.6	2,815,640.0	(1,047,917.3)	1,767,722.7	1.000	1,767,722.7	1,767,722.7
2011	305,412.0	(51,000.0)	(719,111.4)	37,522.8	947,413.2	(464,699.4)	(70,968.6)	(535,668.0)	0.939	(502,738.6)	1,264,984.1
2012	311,520.2	(52,020.0)	(2,803,638.0)	140,953.9	3,610,097.2	(2,544,137.8)	(37,372.1)	(2,581,509.9)	0.881	(2,273,876.5)	(1,008,892.4)
2013	317,750.6	(53,060.4)	(737,294.0)	238,724.7	4,108,666.6	(472,603.8)	(8,049.3)	(480,653.1)	0.827	(397,348.3)	(1,406,240.7)
2014	324,105.7	(54,121.6)	(541,216.1)	268,168.6	4,381,714.0	(271,232.0)	(1,318.6)	(272,550.7)	0.776	(211,462.5)	(1,617,703.2)
2015	330,587.8	(55,204.0)	(552,040.4)	295,375.8	4,638,378.6	(276,656.7)	6,197.5	(270,459.1)	0.728	(196,940.2)	(1,814,643.4)
2016	337,199.5	(56,308.1)	(1,153,363.0)	333,062.8	5,458,678.8	(872,471.6)	16,173.1	(856,298.5)	0.683	(585,200.2)	(2,399,843.6)
2017	343,943.5	(57,434.3)	-	346,067.2	5,112,611.6	286,509.2	18,463.0	304,972.2	0.641	195,607.8	(2,204,235.8)
2018	350,822.4	(58,583.0)	-	323,819.5	4,788,792.1	292,239.4	9,789.8	302,029.2	0.602	181,811.5	(2,022,424.3)
2019	357,838.8	(59,754.6)	-	303,025.3	4,485,766.9	298,084.2	1,531.7	299,615.9	0.565	169,271.5	(1,853,152.9)
2020	364,995.6	(60,949.7)	-	283,587.9	4,202,178.9	304,045.9	(6,342.0)	297,703.9	0.530	157,852.0	(1,695,300.9)
2021	372,295.5	(62,168.7)	-	265,417.3	3,936,761.6	310,126.8	(13,859.9)	296,266.9	0.498	147,433.1	(1,547,867.7)
2022	379,741.4	(63,412.1)	-	248,429.3	3,688,332.3	316,329.3	(21,049.0)	295,280.3	0.467	137,909.2	(1,409,958.6)
2023	387,336.3	(64,680.3)	-	232,545.7	3,455,786.6	322,655.9	(27,934.2)	294,721.8	0.438	129,186.5	(1,280,772.0)
2024	395,083.0	(65,973.9)	-	217,693.3	3,238,093.3	329,109.1	(34,538.9)	294,570.2	0.411	121,182.6	(1,159,589.4)
2025	402,984.6	(67,293.4)	-	203,804.0	3,034,289.3	335,691.2	(40,885.0)	294,806.2	0.386	113,824.2	(1,045,765.2)
2026	411,044.3	(68,639.3)	-	190,814.3	2,843,475.0	342,405.1	(46,993.1)	295,411.9	0.362	107,046.6	(938,718.6)
2027	419,265.2	(70,012.1)	-	178,664.9	2,664,810.1	349,253.2	(52,882.4)	296,370.8	0.340	100,792.1	(837,926.5)
2028	427,650.5	(71,412.3)	-	167,300.5	2,497,509.7	356,238.2	(58,570.7)	297,667.5	0.319	95,010.0	(742,916.5)
2029	436,203.5	(72,840.6)	-	156,669.5	2,340,840.2	363,363.0	(64,075.0)	299,288.0	0.300	89,654.8	(653,261.6)
2030	444,927.6	(74,297.4)	-	146,723.8	2,194,116.4	370,630.2	(69,411.0)	301,219.3	0.281	84,686.4	(568,575.2)
2031	453,826.2	(75,783.3)	-	137,418.5	2,056,697.8	378,042.8	(74,593.5)	303,449.3	0.264	80,068.9	(488,506.4)
2032	462,902.7	(77,299.0)	-	128,711.7	1,927,986.2	385,603.7	(79,636.5)	305,967.2	0.248	75,770.3	(412,736.1)
2033	472,160.7	(78,845.0)	-	120,564.2	1,807,422.0	393,315.8	(84,553.0)	308,762.8	0.232	71,762.2	(340,974.0)
2034	481,604.0	(80,421.9)	-	112,939.5	1,694,482.4	401,182.1	(89,355.2)	311,826.9	0.218	68,019.1	(272,954.9)
2035	491,236.0	(82,030.3)	-	105,803.6	1,588,678.8	409,205.7	(94,054.7)	315,151.1	0.205	64,518.2	(208,436.7)
2036	-	-	-	99,124.6	1,489,554.2	-	30,728.6	30,728.6	0.192	5,904.1	(202,532.6)
2037	-	-	-	92,872.8	1,396,681.3	-	28,790.6	28,790.6	0.180	5,191.7	(197,340.9)
2038	-	-	-	87,020.5	1,309,660.8	-	26,976.4	26,976.4	0.169	4,565.5	(192,775.4)
2039	-	-	-	81,541.7	1,228,119.1	-	25,277.9	25,277.9	0.159	4,015.1	(188,760.3)
2040	-	-	-	76,412.2	1,151,706.9	-	23,687.8	23,687.8	0.149	3,531.2	(185,229.2)
2041	-	-	-	71,609.5	1,080,097.4	-	22,198.9	22,198.9	0.140	3,105.8	(182,123.3)
2042	-	-	-	67,112.4	1,012,985.0	-	20,804.8	20,804.8	0.131	2,731.8	(179,391.5)
2043	-	-	-	62,901.1	950,083.9	-	19,499.3	19,499.3	0.123	2,403.0	(176,988.5)
2044	-	-	-	58,957.3	891,126.6	-	18,276.8	18,276.8	0.116	2,113.9	(174,874.6)
2045	-	-	-	55,263.7	835,863.0	-	17,131.7	17,131.7	0.109	1,859.6	(173,015.0)
2046	-	-	-	51,804.2	784,058.8	-	16,059.3	16,059.3	0.102	1,636.1	(171,378.9)
2047	-	-	-	48,563.7	735,495.1	-	15,054.8	15,054.8	0.096	1,439.4	(169,939.5)
2048	-	-	-	45,528.3	689,966.8	-	14,113.8	14,113.8	0.090	1,266.5	(168,672.9)
2049	-	-	-	42,684.7	647,282.1	-	13,232.3	13,232.3	0.084	1,114.4	(167,558.5)
2050	-	-	-	40,020.7	607,261.5	-	15,255.9	15,255.9	0.079	1,205.9	(166,352.6)
Total	9,922,123.9	1,316,454.7	(6,780,708.8)	6,173,447.4	95,779,346.7	4,457,869.8	(1,665,116.0)	2,792,753.8	15.1	(166,352.6)	(27,595,623.5)

Project Title
Band 1/2 and Replace Pipe Vs. Do Nothing

Year	Total Revenue	Operating Costs	Capital	CCA	UCC	CFBT	Applicable Taxes	CFAT	Discount Factor	PV of CF	CNPV
2010	139,686.0	2,950,000.0	(1,554,238.0)	46,627.1	1,507,610.9	1,535,448.0	(1,035,883.8)	499,564.2	1.000	499,564.2	499,564.2
2011	305,412.0	(78,405.0)	-	90,456.7	1,417,154.2	227,007.0	(45,096.3)	181,910.7	0.939	170,728.0	670,292.2
2012	311,520.2	(79,425.0)	(2,080,800.0)	147,453.3	3,350,501.0	(1,848,704.8)	(26,817.0)	(1,875,521.7)	0.881	(1,652,019.6)	(981,727.4)
2013	317,750.6	(80,465.4)	-	201,030.1	3,149,470.9	237,285.2	(11,239.1)	226,046.1	0.827	186,868.8	(794,858.6)
2014	324,105.7	(81,526.6)	(541,216.1)	205,204.7	3,485,482.2	(298,637.0)	(12,187.3)	(310,824.3)	0.776	(241,157.7)	(1,036,016.3)
2015	330,587.8	(82,609.0)	(552,040.4)	231,210.6	3,806,312.1	(304,061.7)	(5,198.1)	(309,259.8)	0.728	(225,193.7)	(1,261,210.0)
2016	337,199.5	(56,308.1)	(1,441,704.0)	282,229.0	4,965,787.1	(1,160,812.6)	414.7	(1,160,397.9)	0.683	(793,023.8)	(2,054,233.8)
2017	343,943.5	(57,434.3)	-	307,698.5	4,658,088.6	286,509.2	6,568.7	293,077.9	0.641	187,978.8	(1,866,255.0)
2018	350,822.4	(58,583.0)	-	288,456.5	4,369,632.1	292,239.4	(1,172.7)	291,066.7	0.602	175,212.4	(1,691,042.6)
2019	357,838.8	(59,754.6)	-	270,431.4	4,099,200.8	298,084.2	(8,572.4)	289,511.8	0.565	163,563.1	(1,527,479.5)
2020	364,995.6	(60,949.7)	-	253,545.2	3,845,655.5	304,045.9	(15,655.2)	288,390.7	0.530	152,913.8	(1,374,565.7)
2021	372,295.5	(62,168.7)	-	237,725.1	3,607,930.5	310,126.8	(22,444.5)	287,682.3	0.498	143,161.1	(1,231,404.6)
2022	379,741.4	(63,412.1)	-	222,902.7	3,385,027.8	316,329.3	(28,962.3)	287,367.1	0.467	134,213.3	(1,097,191.3)
2023	387,336.3	(64,680.3)	-	209,014.4	3,176,013.4	322,655.9	(35,228.9)	287,427.1	0.438	125,989.0	(971,202.3)
2024	395,083.0	(65,973.9)	-	196,000.5	2,980,012.9	329,109.1	(41,263.6)	287,845.4	0.411	118,416.2	(852,786.1)
2025	402,984.6	(67,293.4)	-	183,805.3	2,796,207.6	335,691.2	(47,084.6)	288,606.6	0.386	111,430.6	(741,355.5)
2026	411,044.3	(68,639.3)	-	172,376.6	2,623,831.0	342,405.1	(52,708.8)	289,696.2	0.362	104,975.4	(636,380.1)
2027	419,265.2	(70,012.1)	-	161,665.7	2,462,165.3	349,253.2	(58,152.1)	291,101.0	0.340	99,000.0	(537,380.1)
2028	427,650.5	(71,412.3)	-	151,626.9	2,310,538.4	356,238.2	(63,429.5)	292,808.7	0.319	93,459.1	(443,921.0)
2029	436,203.5	(72,840.6)	-	142,217.5	2,168,320.9	363,363.0	(68,555.1)	294,807.9	0.300	88,312.8	(355,608.2)
2030	444,927.6	(74,297.4)	-	133,397.6	2,034,923.3	370,630.2	(73,542.1)	297,088.1	0.281	83,525.0	(272,083.3)
2031	453,826.2	(75,783.3)	-	125,129.9	1,909,793.4	378,042.8	(78,403.0)	299,639.8	0.264	79,063.7	(193,019.6)
2032	462,902.7	(77,299.0)	-	117,379.4	1,792,414.0	385,603.7	(83,149.5)	302,454.2	0.248	74,900.3	(118,119.3)
2033	472,160.7	(78,845.0)	-	110,113.3	1,682,300.8	393,315.8	(87,792.8)	305,523.0	0.232	71,009.2	(47,110.1)
2034	481,604.0	(80,421.9)	-	103,301.0	1,578,999.8	401,182.1	(92,343.1)	308,839.0	0.218	67,367.3	20,257.2
2035	491,236.0	(82,030.3)	-	96,913.9	1,482,085.9	409,205.7	(96,810.5)	312,395.3	0.205	63,954.1	84,211.2
2036	-	-	-	90,925.1	1,391,160.7	-	28,186.8	28,186.8	0.192	5,415.7	89,627.0
2037	-	-	-	85,309.6	1,305,851.1	-	26,446.0	26,446.0	0.180	4,768.9	94,395.8
2038	-	-	-	80,043.9	1,225,807.2	-	24,813.6	24,813.6	0.169	4,199.5	98,595.3
2039	-	-	-	75,105.8	1,150,701.4	-	23,282.8	23,282.8	0.159	3,698.2	102,293.4
2040	-	-	-	70,474.9	1,080,226.6	-	21,847.2	21,847.2	0.149	3,256.8	105,550.3
2041	-	-	-	66,131.8	1,014,094.8	-	20,500.8	20,500.8	0.140	2,868.2	108,418.5
2042	-	-	-	62,058.4	952,036.4	-	19,238.1	19,238.1	0.131	2,526.1	110,944.6
2043	-	-	-	58,237.9	893,798.5	-	18,053.7	18,053.7	0.123	2,224.9	113,169.5
2044	-	-	-	54,654.3	839,144.2	-	16,942.8	16,942.8	0.116	1,959.6	115,129.1
2045	-	-	-	51,293.0	787,851.2	-	15,900.8	15,900.8	0.109	1,726.0	116,855.1
2046	-	-	-	48,139.8	739,711.4	-	14,923.4	14,923.4	0.102	1,520.3	118,375.4
2047	-	-	-	45,182.0	694,529.4	-	14,006.4	14,006.4	0.096	1,339.2	119,714.7
2048	-	-	-	42,407.1	652,122.3	-	13,146.2	13,146.2	0.090	1,179.7	120,894.3
2049	-	-	-	39,803.8	612,318.5	-	12,339.2	12,339.2	0.084	1,039.2	121,933.6
2050	-	-	-	37,361.5	574,957.0	-	14,242.2	14,242.2	0.079	1,125.7	123,059.3
Total	9,922,123.9	1,179,429.7	(6,169,998.5)	5,595,041.5	88,559,771.2	4,931,555.1	(1,800,839.1)	3,130,716.1	15.1	123,059.3	(17,151,669.8)


Comparitive Cumulative NPV
2,000,000
1,500,000
1,000,000
500,000
0
-500,000
-1,000,000
-1,500,000
-2,000,000
-2,500,000
-3,000,000
2010
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2014
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2017
2018
2019
2020
2021
2022
2023
2024
2025
2027
2028
2029
2030
2031
2050
Pipe replacement Vs. Do nothing
Band and Pipe Replacement Vs. Do nothing
Band/Pipe Replacement program Vs. Do Nothing

Nova Scotia Utility and Review Board

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February 5, 2009

By Fax: 428-6542 and Courier

Mr. Bob Boutilier, P. Eng.
Director, Regulatory Affairs
Nova Scotia Power Inc.
14th Floor, Barrington Tower
PO Box 910, Scotia Square
Halifax, NS B3J 2W5

Dear Mr. Boutilier:

NSPI Request for Approval of U&U Work Order - CI# 33942 - Coon Pond Pipeline Replacement - P-508

The Board has reviewed NSPI's letter dated November 25, 2008, requesting Board approval of the following U&U Work Order:

CI# 33942	**Coon Pond Pipeline replacement**	**$629,936**

The Board has considered NSPI's request in this matter along with NSPI's Responses to Information Requests issued to NSPI on January 13 and February 02, 2009, and responded to on January 27 and February 03, 2009, respectively.

The Board understands that the repairs to the damaged Coon Pond to Mill Lake Pipeline are required, so that it can be re-watered, permitting the Mill Lake Plant Generating Station to return to operation again. The Board also understands that a complete replacement of this section of the pipeline is planned for 2014.

This is to advise that the Board approves the above-noted request.

Yours very truly,

Peter W. Gurnham, Q.C.
Chair

Enclosure

c.c. Eric Ferguson, Senior Manager, Policy and Operational Projects — By fax: 428-6542

Document: 154340

NOVA SCOTIA POWER
An Emera Company

UARB APPROVAL SHEET

Project Title: **U&U Coon Pond Pipeline Replacement**

CI Number: 33942

- [x] Capital Project Authorization
- [ ] ATO
- [ ] Final Cost

Head Office Use:

Project Number: H 555

Date: November 14th, 2008

Location:			Division:	
Expenditure Profile			**Schedule**	
YEAR	Budget Estimate	Project Estimate		
2008		452,091	Estimated Start Date	2008-10
2009		177,846	Estimated In-Service Date	2009-02
			Estimated Close Date	2009-02
Total	$0	$629,936		

COMMENTS

This item is submitted pursuant to section 35A (3)

RECEIVED
NOV 25 2008
Nova Scotia Utility and Review Board

Submitted on behalf of NOVA SCOTIA POWER INCORPORATED		Approved on behalf of NOVA SCOTIA UTILITY AND REVIEW BOARD	
	Nov. 24, 2008		Feb 5/09
Authorized Signatory Rick Janega Executive VP & COO	DATE	Peter W. Gurnham, Q.C. Chair	DATE

CI Number :	33942	- U&U Coon Pond Pipeline Replacement	Project Number
Parent CI Number :		-	
Cost Centre :	440	- 440-St.Margaret's Hydro System	Budget Version - 2008 11/01 Forecast

	Forecast
Start :	10/24/2008
Operational :	02/01/2009
Final Cost :	02/01/2009
2008	$452,090.57
2009	$177,845.88
Total :	$629,936.45
Original Cost :	$91,970.65

This project includes replacement of the bands, repairs to a section of pipe where a blow out occurred, and de-ovalizing a section of the pipe on the existing woodstave pipeline on the Coon Pond pipeline on the St. Margaret's Bay Hydro Development.

CI Number : 33942 - U&U Coon Pond Pipeline Replacement

Project Number H555

Parent CI Number : -

Approved Date

Cost Centre : 440 - 440-St.Margaret's Hydro System

Budget Version 2008 11/01 Forecast

Capital Item Accounts

Acct	Actv	Account	Activity	Forecast Amount	Amount	Variance
094	✓	094 - Interest Capitalized		8,971	0	8,971
095	005 ✓	095-Hydro Regular Labour AO	005 Indirect Costs	690	0	690
095	005 ✓	095-Thermal & Hydro Contracts AO	005 Indirect Costs	9,200	0	9,200
012	028 ✓	012 - Materials	028 - HGP - Dams & Spillways	375,000	0	375,000
013	028 ✓	013 - POWER PRODUCTION Contracts	028 - HGP - Dams & Spillways	200,000	0	200,000
001	085 ✓	001 - HYDRO Regular Labour	085 Design	3,000	0	3,000
011	085 ✓	011 - Travel Expense	085 Design	75	0	75
028	085 ✓	028 - Consulting	085 Design	18,000	0	18,000
028	087 ✓	028 - Consulting	087 Field Super.& Ops.	15,000	0	15,000
			Total Cost:	629,936	0	629,936
			Original Cost:	91,971		

CI Number : 33942	- U&U Coon Pond Pipeline Replacement	**Project Number**	
Parent CI Number :	-	**Approved Date**	
Cost Centre : 440	- 440-St.Margaret's Hydro System		

Capital Item Justification

Justification Criteria : HYDRO
Sub-Criteria : Equipment Replacement
Name of Report :
Document Location :
Person Responsible :

Why do this project?

A blowout occurred in the woodstave pipe, and the pipe cannot be watered up until this blowout is repaired and the integrity of the rest of the woodstave pipe improved. At our request following the most recent blow-out, Canbar (the recognized industry leader in wood stave pipelines) inspected the pipe. In their report they stated that "The staves appear to be generally in fair condition." and "In general, this penstock is in fair-poor condition. It should provide several more years service without serious problems so long as the band system is fully rehabilitated to bring the pipe back into a safe operating condition."

Why do this project now?

The pipeline is a necessary component of the Coon Pond Development and is required for generation. The average annual generation is 3720 MWh.

Why do this project this way?

Four options were considered for the refurbishment of the woodstave pipeline:
A - Replacement of the entire pipeline with HDPE pipe
B - Replacement of all the bands in 2008
C - Replacement of the bands using a band replacement program
D - Replacement of half the pipe with HDPE pipe, and replacement of the bands in the remaining pipe in 2008

Option B is recommended as the most economic of these four alternatives.