

Pennichuck Water Works, Inc.  
 PWW-MVD Emergency Contract  
 DW 21-134  
 Reconciliation of Final expenses  
 1/30/2023

PWW Core Plant Finished Water Pumpage -	6,704,830,000 MG	between Oct 1, 2021 and Dec 31, 2022
	8,963,676 CCF	between Oct 1, 2021 and Dec 31, 2022
MVD Purchased Water -	409,325 CCF	between Oct 1, 2021 and Dec 31, 2022
Percentage of PWW water used by MVD -	4.57%	during the emergency contract period

**Total Variable Expenses during Contract period -**

Total Actual Electric Expense -	\$ 1,347,696.58	
Total Actual Chemical Expense -	\$ 2,406,970.41	
Total Actual Cost of Carbon -	\$ 1,845,738.00	Based on 18 month life of carbon
Total Actual Variable Expenses -	\$ 5,600,404.99	between Oct 1, 2021 and Dec 31, 2022
MVD's share of actual Variable Expenses -	\$ 255,741.69	between Oct 1, 2021 and Dec 31, 2022
MVD's Total Volumetric Payment -	\$ 274,247.75	between Oct 1, 2021 and Dec 31, 2023
PWW owes MVD -	\$ 18,506.06	

Pennichuck Water Works, Inc  
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 Projected WTP Variable Production Expenses  
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	21-Oct	21-Nov	21-Dec	Jan. 2022
Actual WTP finished water production per month in millions of gallons -	383.99	346.81	358.57	374.06
Actual 2022 Electric Costs per million gallons -	\$ 170.21	\$ 160.54	\$ 275.57	\$ 155.28
Actual 2022 Chemical Costs (including residuals disposal) per million gallons -	\$ 295.10	\$ 321.89	\$ 306.34	\$ 304.71
Total Variable Costs (not including Merrimack River station electricity) per MG -	\$ 465.31	\$ 482.43	\$ 581.91	\$ 459.99
Merrimack River Electric cost/mg of finished water -	\$ 36	\$ 25	\$ 43	\$ 62
Total Variable Costs w/ Merrimack River per MG before GAC consideration -	\$ 501	\$ 507	\$ 625	\$ 522
Variable Cost/CCF w/ Merrimack River before GAC consideration -	\$ 0.37	\$ 0.38	\$ 0.47	\$ 0.39

**GAC Analysis**

	2016
qty. of media in each filter in Cubic feet -	2,460
qty of media in all 12 filters -	29,520
Life span of filter media in months -	18
Replacement cost per pound of virgin GAC -	\$ 2.46
average unit weight of dry GAC in pounds/cubic foot -	30.5
Cost per cu/ft virgin GAC -	\$ 75.03
Cost/filter bed with virgin GAC -	\$ 184,574
Cost for 12 filters virgin GAC -	\$ 2,214,886

**Variable Costs of Production:**

<b>Feb. 22</b>	<b>22-Mar</b>	<b>22-Apr</b>	<b>22-May</b>	<b>22-Jun</b>	<b>22-Jul</b>	<b>22-Aug</b>	<b>22-Sep</b>	<b>22-Oct</b>
324.88	354.80	369.98	517.97	618.03	709.75	692.62	535.20	432.57
\$ 144.35	\$ 132.40	\$ 151.15	\$ 150.97	\$ 143.08	\$ 150.93	\$ 130.11	\$ 140.95	\$ 130.60
\$ 304.89	\$ 405.80	\$ 311.64	\$ 368.61	\$ 386.11	\$ 385.25	\$ 373.21	\$ 392.08	\$ 359.81
\$ 449.24	\$ 538.21	\$ 462.79	\$ 519.57	\$ 529.18	\$ 536.18	\$ 503.32	\$ 533.04	\$ 490.41
\$ 13	\$ 52	\$ 51	\$ 50	\$ 60	\$ 53	\$ 57	\$ 68	\$ 83
\$ 462	\$ 590	\$ 514	\$ 570	\$ 589	\$ 589	\$ 561	\$ 601	\$ 574
\$ 0.35	\$ 0.44	\$ 0.38	\$ 0.43	\$ 0.44	\$ 0.44	\$ 0.42	\$ 0.45	\$ 0.43

<b>22-Nov</b>	<b>22-Dec</b>	<b>Totals</b>
340.51	345.09	6704.83
\$ 134.97	\$ 141.04	
\$ 381.42	\$ 414.45	
<u>\$ 516.39</u>	<u>\$ 555.49</u>	
\$ 86	\$ 48	
\$ 602	\$ 604	
\$ 0.45	\$ 0.45	

Pennichuck Water Works, Inc  
 DW21-134  
 Projected Electrical Production Expenses  
 Attachment DOE 2-1  
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2021

	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Feb</b>
Actual Gallons Pumped in millions of gallons -	383.99	346.81	358.57	374.06	324.88
Actual KWH consumed per month @ WTP -	474,547	440,160	462,512	392,017	333,559
actual KW Demand (peak value per month) -	787			759	609
<b>Actual Total Electric cost/month</b>	<b>\$ 65,359.04</b>	<b>\$ 55,675.22</b>	<b>\$ 98,810.30</b>	<b>\$ 58,083.91</b>	<b>\$ 46,897.35</b>
<b>Electric cost/MG</b>	<b>\$ 170.21</b>	<b>\$ 160.54</b>	<b>\$ 275.57</b>	<b>\$ 155.28</b>	<b>\$ 144.35</b>
<b>Merrimack River Pumps station:</b>				<b>Jan</b>	<b>Feb</b>
Actual Merrimack River Electrical Delivery	\$ 9,884.50	\$ 8,379.39	\$ 11,600.97	\$ 11,794.72	\$ 7,408.78
Supply	\$ 13,816.60	\$ 8,645.78	\$ 15,317.80	\$ 23,135.65	\$ 4,293.52
<b>Estimated Merrimack River 2022 Electric cost/mg -</b>	<b>\$ 35.98</b>	<b>\$ 24.93</b>	<b>\$ 42.72</b>	<b>\$ 61.85</b>	<b>\$ 13.22</b>

2022

<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>
354.80	369.98	517.97	618.03	709.75	692.62	535.20	432.57	340.51
336,997	393,737	543,322	627,572	802,948	679,153	557,077	412,650	323,242
505	750	1083	1153	1176	1188	1061	807	688
<b>\$ 46,977.13</b>	<b>\$ 55,922.59</b>	<b>\$ 78,196.42</b>	<b>\$ 88,425.61</b>	<b>\$ 107,124.02</b>	<b>\$ 90,114.26</b>	<b>\$ 75,438.43</b>	<b>\$ 56,491.95</b>	<b>\$ 45,958.52</b>
<b>\$ 132.40</b>	<b>\$ 151.15</b>	<b>\$ 150.97</b>	<b>\$ 143.08</b>	<b>\$ 150.93</b>	<b>\$ 130.11</b>	<b>\$ 140.95</b>	<b>\$ 130.60</b>	<b>\$ 134.97</b>

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<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>
\$ 9,448.58	\$ 9,403.18	\$ 15,552.16	\$ 17,618.64	\$ 17,828.25	\$ 16,495.34	\$ 15,241.56	\$ 15,431.84	\$ 14,219.40
\$ 18,472.96	\$ 18,978.08	\$ 26,013.68	\$ 36,982.00	\$ 37,451.04	\$ 39,724.08	\$ 36,512.96	\$ 35,971.76	\$ 29,116.60
<b>\$ 52.07</b>	<b>\$ 51.29</b>	<b>\$ 50.22</b>	<b>\$ 59.84</b>	<b>\$ 52.77</b>	<b>\$ 57.35</b>	<b>\$ 68.22</b>	<b>\$ 83.16</b>	<b>\$ 85.51</b>

<u>Dec</u>	<u>Total</u>
345.09	<b>5,615</b>
350,752	<b>5,753,026</b>
519	
<b>\$ 48,670.12</b>	<b>\$ 798,300.31</b>
<b>\$ 141.04</b>	<b>\$ 154.14</b>
Rate per KWH -	\$ 0.1388

<u>Dec</u>	
\$ 8,059.65	188,366.96
\$ 16,596.80	361,029.31
<b>\$ 48.09</b>	<b>\$ 52.48</b>

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 Projected Chemical Production Expenses  
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	<b>Chemical Quantities (lbs)</b>						
	21-Oct	21-Nov	21-Dec	January	February	March	April
Actual WTP Pumpage in millions of gallons	383.99	346.81	358.57	374.1	324.9	354.8	370.0
Actual Variable chemical costs:							
CHLORINE: TREATMENT PLANT	\$ 3,822.16	\$ 3,615.97	\$ 4,622.66	\$ 4,743.81	\$ 3,713.55	\$ 5,096.68	\$ 4,354.88
FERRIC CHLORIDE	\$ 38,757.02	\$ 34,921.19	\$ 36,044.63	\$ 42,725.76	\$ 37,866.53	\$ 48,195.30	\$ 38,587.02
TKPP DRY	\$ 2,363.80	\$ 2,111.26	\$ 2,239.22	\$ 2,239.22	\$ 1,727.40	\$ 2,175.24	\$ 4,405.01
SODIUM HYDROXIDE	\$ 24,055.16	\$ 20,938.33	\$ 20,930.67	\$ 23,587.60	\$ 21,715.90	\$ 50,818.92	\$ 29,683.38
CORROSION INHIBITOR	\$ 4,879.86	\$ 4,024.83	\$ 4,476.98	\$ 4,840.18	\$ 4,254.61	\$ 4,721.58	\$ 4,321.32
POLYMERS	\$ 1,476.75	\$ 1,181.40	\$ 1,279.85	\$ 1,582.82	\$ 989.26	\$ 1,187.11	\$ 1,187.11
MAINT PROC EQ: TP SLUDGE REMOV	\$ 37,959.82	\$ 44,841.95	\$ 40,251.48	\$ 34,261.55	\$ 28,784.41	\$ 31,784.15	\$ 32,761.55
Total monthly variable chemical cost:	<u>\$ 113,314.57</u>	<u>\$ 111,634.93</u>	<u>\$ 109,845.49</u>	<u>\$ 113,980.94</u>	<u>\$ 99,051.66</u>	<u>\$ 143,978.98</u>	<u>\$ 115,300.27</u>
Actual total Chemical cost/MG	\$ 295.10	\$ 321.89	\$ 306.34	\$ 304.71	\$ 304.89	\$ 405.80	\$ 311.64



May	June	July	August	September	October	November	December	
518.0	618.0	709.8	692.6	535.2	432.6	340.5	345.1	6705

\$ 7,394.93	\$ 9,935.89	\$ 11,793.01	\$ 12,845.45	\$ 8,252.05	\$ 6,692.02	\$ 6,935.46	\$ 8,205.20	\$ 102,023.72
\$ 64,297.08	\$ 77,569.88	\$ 86,570.34	\$ 85,609.54	\$ 58,982.31	\$ 50,305.53	\$ 38,584.10	\$ 41,784.66	\$ 780,800.89
\$ 6,118.07	\$ 7,464.05	\$ 9,084.06	\$ 8,950.47	\$ 6,679.46	\$ 5,480.16	\$ 4,521.13	\$ 4,932.14	\$ 70,490.69
\$ 60,781.07	\$ 77,699.21	\$ 93,250.21	\$ 78,324.12	\$ 53,990.41	\$ 43,176.99	\$ 37,429.65	\$ 37,559.62	\$ 673,941.24
\$ 5,396.10	\$ 11,552.34	\$ 9,980.21	\$ 13,152.54	\$ 9,180.11	\$ 7,118.18	\$ 5,950.48	\$ 7,774.01	\$ 101,623.33
\$ 1,582.82	\$ 2,077.45	\$ 1,780.67	\$ 2,671.00	\$ 1,932.82	\$ 1,478.04	\$ 1,364.34	\$ 1,250.65	\$ 23,022.09
\$ 45,357.40	\$ 52,326.24	\$ 60,970.82	\$ 56,940.84	\$ 70,826.14	\$ 41,393.81	\$ 35,090.92	\$ 41,517.37	\$ 655,068.45
<u>\$ 190,927.47</u>	<u>\$ 238,625.06</u>	<u>\$ 273,429.32</u>	<u>\$ 258,493.96</u>	<u>\$ 209,843.30</u>	<u>\$ 155,644.73</u>	<u>\$ 129,876.08</u>	<u>\$ 143,023.65</u>	<u>\$ 2,406,970.41</u>
\$ 368.61	\$ 386.11	\$ 385.25	\$ 373.21	\$ 392.08	\$ 359.81	\$ 381.42	\$ 414.45	<b>\$ 358.99</b>
							average:	\$ 354.09