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Executive Director

March 10, 2008

Luly Massaro, Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, Rhode Island 02888

Subject: Division Data Request Set IV – Docket No. 3905

Dear Ms. Massaro:

Attached please find an original and nine (9) copies of the response to the above data requests sent by the Division on February 19, 2008.

Sincerely,

Karen L. Giebink
Director of Administration & Finance

Enclosures

Cc: Service List

DIV IV-1 With regard to the response to DIV 1-34, please state whether NBC has prepared any updates or revisions to its projected utility requirements for the Tunnel Pump Station. If yes, please provide.

Response: NBC has not made any revisions to the projected utility requirements for the Tunnel Pump Station.

Prepared by: WEE

DIV IV-2 State whether NBC has requested and received any analysis of potential electric costs for the Tunnel Pump Station from National Grid. If yes, please provide.

Response: National Grid has informed NBC staff that NBC will be charged the G-32 rate for the Tunnel Pump station.

Prepared by: WEE

DIV IV-3 Please provide an analysis showing the projected utility requirements and costs for the Tunnel Pump Station under the minimum estimate shown in the response to DIV 1-34.

Response: A summary of the minimum utility requirements is below. See the attached Tunnel Pump Station Energy Consumption and Cost Estimate for the detailed analysis of the projection.

Minimum Utility Requirements for the Tunnel Pump Station

Electricity

	KWH	Customer Charge	Supply Charge	Supply Cost	Capacity Charge	Capacity Cost	Average Delivery / KWH	Demand Cost	Total Cost Before Tax	Gross Earnings Tax (.041666)	Total Cost
Proj. Normal Full Year	2,482,892	2,837	0.07195	178,644	0.010950	27,188	0.02744	68,142	276,811	11,534	288,345
FY 2009 Nine Months (10/08 - 6/09)	1,862,169	2,128	0.07195	133,983	0.010950	20,391	0.02744	51,107	207,609	8,650	216,259

Prepared by: JP

Fields Point Tunnel Pump Station
Energy Consumption and Cost Estimate

Load	Size	Power Requirement (kW)	Minimum Estimate: Estimated Annual Usage (Hours)	Minimum Estimate: Estimated Duty during Operating Hours	Minimum Estimate: Annual Energy Requirement (kWh)	Minimum Estimate: Percent of Total Energy Requirement	Maximum Estimate: Estimated Annual Usage (Hours)	Maximum Estimate: Estimated Duty during Operating Hours (%)	Maximum Estimate: Annual Energy Requirement (kWh)	Maximum Estimate: Percent of Total Energy Requirement	Use/Purpose	Assumptions/Comments
Tunnel Pump Station												
CSO Pumps (per pump)	400 Hp	309	2,810	100%	868,660	**35.0%**	4,214	100%	1,302,989	**39.4%**	Pump sewage to screening facility	8 installed operating in 4 pairs with capacity of ~12.5 MGD per pair. Assume 915 MG per year pumped at average rate of 25MGD > ~878 hours x pump pairs +/-20%. At operating point of 12.5 MGD, 272 ft TDH, rated power is 373 Hp per pump. (Modified from D
Sump Pump (per pump)	60 Hp	31.8	17,520	20%	111,530	**4.5%**	17,520	30%	167,295	**5.1%**	To pump water out of the tunnel pump station	4 installed operating in 2 pairs rated at 500 gpm at 330 ft of head. Based on estimated 120~150 gpm imfiltration assume 20~30% duty for one pair. Rated power from submittal is 38.4 Hp at operating point.
Dehumidifier System	2 x 70 Tons	-	-	-	921,371	**37.1%**	-	-	921,371	**27.9%**	To dehumidify the tunnel pump station air	See supplier estimate for detailed energy consumption breakdown on following worksheet. Electric and gas estimates are doubled here to include both units. A 30% reduction is applied to account for heat recovery.
Electric Unit Heaters (total)	130 kW	130	2,920	10%	37,960	**1.5%**	2,920	30%	113,880	**3.4%**	To compensate for heat loss to the ground, and emergency back-up heat on loss of dehumidification	Assumes 10% to 20% duty year-round to maintain 60 degrees.
MAU-102	3 Hp	2.5	8,760	100%	21,783	0.9%	8,760	100%	21,783	0.7%	To ventilate safe rooms	Continuous operation.
Lights	15.35 kW	15.35	8,760	1%	1,345	0.1%	8,760	10%	13,447	0.4%	To light the tunnel pump station	Most lights are on occupancy sensors. Assumes 1% to 10% for maintenance and inspection.
4 Flowmeters (total)	.096 kVA	0.096	8,760	100%	841	0.0%	8,760	100%	841	0.0%	To measure the flow from the pumping units	Continuous operation.
Elevator Pit Sump Pump	3 Hp	2.2	8,760	1%	193	0.0%	8,760	100%	19,272	0.6%	To pump water out of the elevator pit	Assumes continuous operation 1% or 100% duty.
Bridge Crane & Hoists (total)	70 Hp	50	10	5%	25	0.0%	80	50%	2,000	0.1%	Maintenance use to remove pumps & valves	Min of 10 hours at 5%; max of 80 hours at 50%.
		Subtotals			**1,963,707**	**79.1%**			**2,562,878**	**77.5%**		
Stairwell to Pump Station												
62 #2 fixtures w/emer battery	5580 W	5.58	8,760	100%	48,881	**2.0%**	8,760	100%	48,881	**1.5%**	To light the stair well	Continuous operation. Standard for stairwell design for egress. Could be reduced by turning off lights while not occupied.
FPTPS Building												
Electric Unit Heaters (total)	37.5 kW	37.5	2,920	60%	65,700	**2.6%**	2,920	80%	87,600	**2.6%**	To heat the FPTPS Building	Heating loads assume 60% to 80% duty for 4 months annually.
Water Heater EWH-102	25 kW	25	8,760	10%	21,900	0.9%	8,760	30%	65,700	**2.0%**	Heat water for toilets in FPTPS Building	Assumes 10% to 30% duty year-round.
120 volt electric heat (total)	25 kW	25	2,920	60%	43,800	**1.8%**	2,920	80%	58,400	**1.8%**	To heat various rooms in the FPTPS Building	Heating loads assume 60% to 80% duty for 4 months annually.
MAU-101	1 Hp	0.83	8,760	100%	7,261	0.3%	8,760	100%	7,261	0.2%	To ventilate FPTPS Building	Continuous operation.
CU-101	11 ton	17.93	3,650	25%	16,361	0.7%	3,650	25%	16,361	0.5%	To cool the FPTPS Building	Assumes 25% duty for 5 months annually.
AHU-101	2 Hp	1.5	8,760	25%	3,285	0.1%	8,760	25%	3,285	0.1%	To ventilate FPTPS Building	Year-round operation at 25% duty.
Duct Fans (continuous)	2.5 Hp	2.1	8,760	100%	18,396	0.7%	8,760	100%	18,396	0.6%	Exhaust for the FPTPS Building	Continuous operation.
Duct Fans (intermittent)	11.25 Hp	9.3	8,760	25%	20,367	0.8%	8,760	25%	20,367	0.6%	Exhaust for the FPTPS Building	Year-round operation at 25% duty.

Fields Point Tunnel Pump Station
Energy Consumption and Cost Estimate

			Minimum Estimate				Maximum Estimate					
Load	Size	Power Requirement (kW)	Estimated Annual Usage (Hours)	Estimated Duty during Operating Hours	Annual Energy Requirement (kWh)	Percent of Total Energy Requirement	Estimated Annual Usage (Hours)	Estimated Duty during Operating Hours (%)	Annual Energy Requirement (kWh)	Percent of Total Energy Requirement	Use/Purpose	Assumptions/Comments
DCU, CP1, CP2, etc.	1 kW	1	8,760	100%	8,760	0.4%	8,760	100%	8,760	0.3%	Control & SCADA	Continuous operation.
Security Panels	1 kW	1	8,760	100%	8,760	0.4%	8,760	100%	8,760	0.3%	Security use	Continuous operation.
14 CCTV Cameras	560 W	0.65	8,760	100%	5,694	0.2%	8,760	100%	5,694	0.2%	Security use	Continuous operation.
Fuel Tank Heater	5 kW	5	2,920	60%	8,760	0.4%	2,920	80%	11,680	0.4%	To keep the generator fuel from getting too thick to pump.	Heating loads assume 60% to 80% duty for 4 months annually.
Lights	7 kW	7	702	50%	2,458	0.1%	2,920	100%	20,440	0.6%	To light the FPTPS Building	Most lights are on occupancy sensors. Minimum estimate assumes 50% duty while pumps are on. Maximum assumes 100% for 8 hrs per day.
Outdoor Lights	750 W	0.75	4,380	100%	3,285	0.1%	4,380	100%	3,285	0.1%	To light the FPTPS site	Photo-sensor operated. 12 hr/day.
Elevator	40 Hp	30	8,760	1%	2,628	0.1%	8,760	10%	26,280	0.8%	Used to enter and exit tunnel pump station	Year-round operation at 1% to 10% duty.
Seal Water System	2 Hp	1.5	702	100%	1,054	0.0%	1,054	100%	1,580	0.0%	Clean water to sewage pump seals	Operates whiles CSO pumps are running.
Air compressor (2 x 7.5 Hp)	15 Hp	11	8,760	1%	964	0.0%	8,760	50%	48,180	**1.5%**	Air to operate valves and other uses	
Electric entry Gates (total)	3 Hp	2.2	8,760	2%	385	0.0%	8,760	50%	9,636	0.3%	Security gates into the FPTPS Building area	
Sump Pump (valve room)	1 Hp	0.75	8,760	1%	66	0.0%	8,760	5%	329	0.0%	Pump water from the valve room sump	Assumes 1% to 5% duty.
Hoists (total)	20 Hp	15	10	5%	8	0.0%	80	50%	600	0.0%	Maintenance use to remove pumps & valves	
Plug Valves (total)	1.33 Hp	1	1	100%	1	0.0%	10	100%	10	0.0%	Valves on sewage lines to screenings building	
		Subtotals			**239,892**	**9.7%**			**422,604**	**12.8%**		
Shaft S1 Facility												
Lights	1050 W	1.05	4,380	100%	4,599	0.2%	4,380	100%	4,599	0.1%	To light Shaft S1 for safety and security.	Photo-sensor operated. 12 hr/day.
Crane	30 Hp	22	144	100%	3,168	0.1%	144	100%	3,168	0.1%	To remove screenings from Shaft S1	Assume 24 cleanings per year @ 6 hours each.
Snow melt building lights	210 W	0.21	7	100%	1	0.0%	122	100%	26	0.0%	To light the Snow melt building	Assumes 1/2 hr per week during winter to 1 hour daily during winter.
		Subtotals			**7,768**	0.3%			**7,793**	0.2%		
Screening Facility												
Outdoor lights	8 kW	8.25	4,380	100%	36,135	**1.5%**	4,380	100%	36,135	**1.1%**	To light the screenings area outdoors	Photo-sensor operated. 12 hr/day.
Electric Heat (total)	17.6 kW	17.6	2,920	60%	30,835	**1.2%**	2,920	80%	41,114	**1.2%**	To heat the screening facility building	Heating loads assume 60% to 80% duty for 4 months annually.
Grinder/Compactor	13 Hp	9	702	20%	1,264	0.1%	1,054	80%	7,586	0.2%	To grind and compact the screenings	Assumes CSO pump hours with 20% to 80% duty.
MAU-301	10 Hp	8.3	8,760	100%	72,611	**2.9%**	8,760	100%	72,611	**2.2%**	To ventilate the screening facility building	Continuous operation.
UF-301	10 Hp	8.3	8,760	100%	72,611	**2.9%**	8,760	100%	72,611	**2.2%**	To ventilate the screening facility building	Continuous operation.
PF-301	1/4 Hp	0.2	8,760	35%	635	0.0%	8,760	35%	635	0.0%	To ventilate the screening facility building	Intermittently operates at 35% duty.
6 CCTV Cameras	240 W	0.24	8,760	100%	2,102	0.1%	8,760	100%	2,102	0.1%	Security use	Continuous operation.
Security Panels	0.5 kW	0.5	8,760	100%	4,380	0.2%	8,760	100%	4,380	0.1%	Security use	Continuous operation.
Bar screens	5 Hp	3.7	702	20%	520	0.0%	1,054	80%	3,119	0.1%	To screen the sewage	2 installed. Assumes one operating and one standby at 20% to 80% duty.
Lights	4.3 kW	4.3	702	50%	1,510	0.1%	5,840	100%	25,112	0.8%	To light the screenings facility building	Most lights are on occupancy sensors. Minimum estimate assumes 50% duty while pumps are on. Maximum assumes 100% for 16 hrs per day.
Slide gates (total)	2 Hp	1.5	1	100%	2	0.0%	2	100%	3	0.0%	To control the flow of sewage to screens	Assumes 1 to 2 hours operation per year.
Winch	10 Hp	7.5	5	100%	38	0.0%	10	100%	75	0.0%	To move the screenings container in and out	Assumes 5 to 10 hours operation per year.

Fields Point Tunnel Pump Station
Energy Consumption and Cost Estimate

Load	Size	Power Requirement (kW)	Minimum Estimate: Estimated Annual Usage (Hours)	Minimum Estimate: Estimated Duty during Operating Hours	Minimum Estimate: Annual Energy Requirement (kWh)	Minimum Estimate: Percent of Total Energy Requirement	Maximum Estimate: Estimated Annual Usage (Hours)	Maximum Estimate: Estimated Duty during Operating Hours (%)	Maximum Estimate: Annual Energy Requirement (kWh)	Maximum Estimate: Percent of Total Energy Requirement	Use/Purpose	Assumptions/Comments
*Note: Screenings transportation and disposal costs are not included in this estimate.												
		Subtotals			**222,643**	**9.0%**			**265,482**	**8.0%**		

Minimum Power Estimate (kWh)= 2,482,892 **Maximum Power Estimate (kWh)= 3,307,638**

Total Electric Cost = $288,345 **Total Electric Cost = $383,143**

*Electric rate and additional provider charges will depend on utility contract.

Minimum Electricity Rate per kWh* = $0.1161 **Maximum Electricity Rate per kWh* = $0.1158**

	Natural Gas Use (Therms)	
FPTPS Building		
Gas Heating	14,392	See heating estimate.
Desiccant Reactivation and Post Heat	47,461	See supplier estimate. A 30% reduction is applied to account for heat recovery.
Shaft S1 Facility		
Snow Melt System	500	Assumes ~40 hours of operation annually.
Screening Facility		
Gas Heating	16,184	To heat MAU-301 for 2890 hours/year. See heating estimate.
Natural Gas Rate per Therm* = $1.9921 **Total**	**78,537**	*Natural Gas rate and additional provider charges will depend on utility contract.

Total Natural Gas Cost = $156,457

DIV IV-4 With regard to the response to DIV 2-6, please explain why electricity costs for the Tunnel Pump Station were not calculated based on National Grid's tariffed rates rather than on the average cost per kWh at NBC's 2 Ernest Street location.

Response: We would love to be able to use the rates as set forth in the tariffs but it isn't as straightforward as one would hope. NBC has provided the Division with copies of its electric bills that show the complexity of the billing structure. For example, the bills include charges based upon demand which is determined by a mystery formula. The bills also contain high voltage meter discounts, transmission adjustments etc. An average was used because a portion of the existing G-32 service is going to be metered by the new service (see following paragraph) and therefore use of an average rate seems logical.

Historically, the 2 Ernest Street location has metered both the Field's Point Wastewater Treatment Facility located at 2 Ernest Street as well as the Ernest Street Pump Station located at 37 Ernest Street. The new meter installed at the Field's Point Tunnel Pump Station location will now meter the Ernest Street Pump Station location and the Field's Point Tunnel Pump Station together and the Field's Point Wastewater Treatment Facility will be billed separately.

Prepared by: WEE

DIV IV-5 Please identify the estimated minimum and maximum kW demands for the Tunnel Pump Station.

Response: The following table, prepared by NBC engineering staff, shows projected peak demand in KW for the Field's Point Tunnel Pump Station service, which includes both the Ernest Street Pump Station and the Field's Point Tunnel Pump Station, under different operating scenarios. The NBC must meet with the RIDEM and obtain the approval for the mode of operation that will ensure compliance with the RIPDES permit. Based upon the analysis it is projected that the peak demand will be below 3,000 KW for the service.

Fields Point Tunnel Pump Station
Pumpout Scenarios in Conjunction with Ernest Street Pump Station
Energy Consumption in KW (Demand)

	Operating Scenario			
	Case 1 ESPS @ 200 MGD no tunnel pumpout wet weather flow	Case 2 ESPS @ 20 MGD FPTPS @ 37.5 MGD secondary treatment	Case 3 ESPS @ 40 MGD FPTPS @ 25 MGD secondary treatment	Case 4 ESPS @ 60 MGD FPTPS @ 12.5 MGD secondary treatment
Unit				
ESPS Total Usage	1600	240	354	502
FPTPS Pumps	0	1854	1236	618
FPTPS Sump Pumps	60	60	60	60
FPTPS Dehumidifier	104	104	104	104
FPTPS Electric Unit Heaters	130	130	130	130
FPTPS Misc.	50	50	50	50
FPTPS Support Bldg	100	100	100	100
FPTPS Screening Bldg.	50	50	50	50
Total Demand in KW	2094	2588	2084	1614

Notes: 1) The winter condition was used for the FPTPS, as the heating load is greater than the additional summer dehumidification load.
2) The energy usage will be monitored by SCADA and an alarm given if usage is over 2600 KW.

Prepared by: WEE

DIV IV-6 Regarding employee health insurance, please identify what the effect on rate year health insurance co-payments would be of eliminating the 7.5% of –the- premium cap for non-union employees.

Response: NBC calculated the rate year co-pay in this Docket using a summary level method. NBC estimates that the elimination of the non-union cap would result in additional co-payments of $50,000.

Prepared by: WEE