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Mr. Shadab Ahmad, Section Chief
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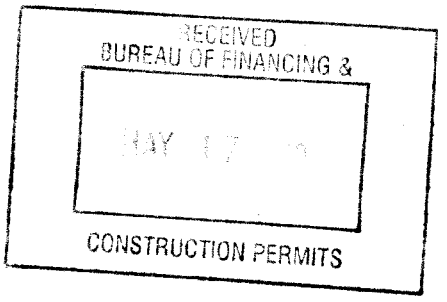

Re: NJDEP Project No. S340384-08
NJDEP Priority List No. 181 (FY2010)
Justification for "Green Project Reserve"
MSA Construction Contract Nos. 220, 230 and 240

Dear Shadab,

In accordance with your request, we have made a specific study of the above-referenced construction contracts to determine what "Positive Impacts" the implementation of these contracts will have in terms of Energy, Efficiency and Savings. The following findings are presented:

CONTRACT NO. 220 - UPGRADE OF EXISTING REGIONAL PUMPING STATIONS NOS. 2, 3, AND 4

For Contract 220, a review of the published data for the Variable Frequency Drive now in use, a steadily increasing rated efficiency has been found. From an efficiency of 88 percent when these units were originally installed in the late 1980s, Variable Frequency Drive Units with an efficiency of greater than 96% are now available. Based on replacing these Variable Frequency Drives at this time with units that now average 96%, the increase of 8% in efficiency, indicates that this is a worthwhile Green Power Energy saving achievement. There will be eight (8) proposed motors operating at 25HP each at existing MSA Regional Pumping Stations Nos. 2, 3, and 4. The total rated amperes at full load amount to 272 amperes for the eight (8) motors.

Not all motors operate at the same time, and all of them are not operating at full speed at all times. Averaging peak and low flow conditions into a 70% continuous operational load, the average VFD load in amperes for the three (3) Regional Pumping Stations will be 272 amperes x 0.7 or 190.4 amperes continuous. Electrical power is billed in kilowatt hours plus a monthly maximum demand charge. The energy saving that would accrue by virtue

of replacement of the existing VFDs with the newest technology would be:

(190.4 amperes x 3 x 480/1.73)(0.08) = 12.68 kW

At today's power costs, this would save 12.68 kW x $8.13 per month or $103.08 in demand charge, and (12.68kW x 24 x 30)(0.11/kWh) - $1004 kWh monthly cost. Thus the yearly total of reduced energy costs would be ($103.08 + $1004)(12) or $13,284.96 yearly. Over the expected useful life of the proposed Variable Frequency Drives of 20 years, the savings would amount to $13,284.96 annually x 20 years, or $265,699. This savings meets Part B, Sect. II,4, as an Energy Efficiency Improvement in accordance with the Green Project Reserve Guidance for Determining Project Eligibility.

Equating the above to electrical energy savings results in the following:

a) 9130 kW per month
b) 109,560 kW per year
c) 2,191,200 kW over 20 years

The estimated construction cost for Contract No. 220 - Upgrade of Existing Regional Pumping Stations Nos. 2, 3, and 4 is $365,000. The "Green" portion of this contract is 70% or $255,500.

CONTRACT NO. 230 - UPGRADE AND REPLACE PUMPING STATION NO. 6

For Contract 230, the pump motor efficiency for each of the two (2) pump motors (constant speed) have increased from 84% in the 1990s to 92% premium efficiency type at present. I have confirmed these values with manufacturer's representatives. Pump motor efficiencies for the existing pump station approximated 85%. Pump motor efficiencies for this project is 92%. Therefore, the increase of 7% (92% - 85%) presently available indicates that this is a worthwhile Green Power energy savings achievement. There will be two (2) proposed pump motors operating at 14.1 HP each at proposed Pumping Station No. 6. The total rated amperes at full load amount to 70.8 amperes for the two (2) pump motors, or 35.4 amperes per pump motor.

Averaging peak and low flow conditions into a 60% operational load, the average pump motor load will be 35.4 amperes x 0.6 x 1 pump motor or 21.2 amperes continuous. Electrical power is billed in kilowatt hours plus a monthly maximum demand charge. The energy savings that would accrue by virtue of replacement of the existing pump motors with premium efficiency motors would be:

(21.2 AMPERES X 3 X 240/1.73)(0.07) = 0.62 kW

At present power costs, this would save 0.62kW x 8.13 per month, or $5.04 in demand charge, and 0.62 kW x 24 x 30)($0.11/kWH) = $49.10 in monthly costs. Thus the yearly total of reduced energy costs would be ($5.04 + $49.10)(12) or $649.68 yearly. Over the expected useful life of the proposed pump motors of 20 years, the savings would amount to $649.68 annually x 20 years or $12,993.60. This savings meets Part B, Sect. II, 4, as an Energy Efficiency Improvement under the Green Project Reserve Guidance for Determining Project Eligibility.

Equating the above to electrical energy savings results in the following:

a) 446 kW per month
b) 5352 kW per year
c) 107,040 kW over 20 years

The estimated construction cost for Contract No. 230 - Upgrade and Replace Pumping Station No. 6 is $445,000. The "Green" portion of this contract is 50% or $222,500.

CONTRACT NO. 240 - CLEAN, CCTV INSPECTION AND MANHOLE REHABILITATION OF INTERCEPTORS

Contract No. 240 consists of cleaning and television inspection of sewer interceptor piping and rehabilitating sewer manholes in the Borough of Netcong and Stanhope and the Township of Roxbury within the Musconetcong Sewerage Authority (MSA). The breakdown of interceptor lengths and manholes to be inspected and rehabilitation are as follows:

a) 17,000 l.f. of 36-inch and 42-inch diameter RCP Interceptor including 82 manholes within the Boroughs of Netcong and Stanhope and a portion of Roxbury Township.

b) 14,000 l.f. of 24-inch and 27-inch diameter PVC Interceptor including 75 manholes in Roxbury Township.

The annual Musconetcong Sewerage Authority operations and maintenance budget for calendar year 2010 is $3,277,500. By successfully rehabilitating the applicable quantity of 157 sewer manholes, the sewer flow could conservatively be reduced by 10%. Based on as average flow of 2,755,000 gpd calculated over a 3-month period between January

2010 and March 2010, the sewage flow would be reduced by 275,500 gpd. A reduction in sewage flow by this amount would reduce the annual operations and maintenance budget from $3,277,500 to $2,949,750 or $327,750. This savings would proportionally be credited to the member municipalities through lower flows during the year.

Rehabilitation of the applicable existing manholes are considered Infiltration/Inflow (I/I) correction projects that save energy by reducing pumping and treatment costs, and are therefore eligible for the 2010 Clean Water State Revolving Fund capitalization grants. These grants shall be used by the State for projects to address green infrastructure, water or energy efficiency improvements or other environmentally innovative activities. The above savings meets Part A, Sect. 11, 3 as an Energy Efficiency Improvement in accordance with the Green Project Reserve Guidance for Determining Project Eligibility.

The estimated construction cost for Contract No. 240 - Clean, CCTV Inspection and Manhole Rehabilitation of Interceptors is $155,000. The "Green" portion of the Contract is considered to be 30%, or $46,500.

We trust you will find the above information sufficient to classify these three (3) construction contracts as "Green Projects".

Should you have any questions, regarding this submission, please call me.

Very truly yours,

LEE T. PURCELL ASSOCIATES

Leo T. Purcell, Jr., P.E., D.E.E.
Principal

LTPjr/as
c: Musconetcong Sewerage Authority
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