

OHIO ENVIRONMENTAL PROTECTION AGENCY  
DRINKING WATER STATE REVOLVING FUND (DWSRF)  
AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (ARRA)  
GREEN PROJECT INFORMATION

**FFY 2009 ARRA GREEN PROJECT INFORMATION FORM**

The Federal American Recovery and Reinvestment Act of 2009 (ARRA) requires a minimum amount of funding be used toward Green Infrastructure, Energy Efficiency, Water Efficiency, or other Environmentally Innovative activity. To ensure that this requirement is met, Ohio EPA is requiring ARRA recipients to provide additional information about potential green components of their project(s).

In many instances, a Business Case is required for justification to consider an item or activity "green". The US Environmental Protection Agency (EPA) has provided guidance for help in evaluating the green elements of a project. Please complete this cover sheet and appropriate page(s), as noted below for each project that will incorporate a "green" component(s). More guidance is provided on the back of each form.

PWS Name: City of Zanesville PWSID: 6002712

Project Name: New WTP PPL #: 78  
(as assigned by OEPA-- refer to project list on web)

Total Estimated Project Cost: \$16,101,750 Total Est. Green Amount: \$5,880,508

*ARRA maximum \$4,500,000.00*

Type of "Green" Element(s) included in this project. For each box that is checked the corresponding page of this form must be completed and submitted with this cover page. Attach additional pages as necessary:

- Green Infrastructure** (porous pavement, bioretention, trees, green roofs, and other practices that mimic natural hydrology and reduce effective imperviousness)
- Energy Efficiency** (energy audit, water pump system improvements or replacements, variable frequency drives, SCADA, on-site clean power, solids treatment or handling, replacement or rehabilitation of distribution lines)
- Water Efficiency** (water meter installation or replacement, leak detection equipment, water line replacement, water audit, water efficient fixtures)
- Other Environmentally Innovative Activity**

Completed by:

Name: Sarah Wallace  
(please print)

Title: Environmental Engineer

Signature: *Sarah Wallace*

Date: October 15, 2009

For OEPA use only:	
Project #: <u>FS390904-01</u>	DWSRF #: <u>PPL # 78</u>



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**Energy Efficiency** (energy audit, leak detection equipment, water pump system improvements or replacements, variable frequency drives, on-site clean power for treatment systems, replacement or rehabilitation of distribution lines)

PWS Name: City of Zanesville PWSID: 6002712

Project Name: New WTP PPL #: 78

Total Est. Project Cost: \$16,101,750 Total Est. Green Reserve Amount: \$675,508

**Project Summary:**

This project entails the construction of a new 10 MGD groundwater iron and manganese removal water treatment plant to replace the existing antiquated facility. The new plant will obtain water from the existing wells and will include the addition of a wet well, new low service pumps, new filters, new high service pumps and new chemical feed facilities in a new energy efficient building.

**Pump Facilities**

Age of existing pumps or pumping facilities?	1986
Existing pump/motor efficiency rating, if known?	60% for both low & high
New pump/motor efficiency rating.	78.9% low, 76% high
Estimated Annual Electrical Savings	1,469,000 kW
Estimated Annual Costs Savings	\$73,453

**Business Case Narrative: (Calculate Energy Efficiency Improvements and costs savings)**

Pump Efficiencies

The existing WTP had two high service and two low service pumps. Operators controlled the duplex pumping system by throttling manual valves while running the pumps at 100%. The new WTP will have three high service and three low service pumps. All new pumps are provided with premium efficiency motors and variable frequency drives. Plant operators will be able to operate the high service and low service pumps at peak efficiency with minimum energy usage due to the variable frequency drives and new SCADA system.

The calculations attached<sup>1</sup> show that the City will save approximately \$73,450 per year in electrical costs by operating the new pumps. Over the 20 year life of the project, this equates to almost \$1.5 million in electricity therefore the \$675,508 provided by the contractor<sup>2</sup> for purchase and installation of the pumps and VFD systems is all considered green.

<sup>1</sup> Calculation Worksheet

<sup>2</sup> Kokosing Submitted Spreadsheet



10/15/09

# ZANESVILLE WTP

## PUMPS

EXISTING

Assume \$0.05/kw

LOW SERVICE

w/ 1 pump running

5200 gpm @ 230' TDH → 60% efficient  
due to age (1986)

Run 24 hrs/day

504 whp → \$451/day  
\$164,681/yr

HIGH SERVICE

3850 gpm @ 130' TDH → 60% efficient  
due to age (1986)

Runs 24 hrs/day

211 whp → \$189/day  
\$68,944/yr

NEW

LOW SERVICE

3500 gpm @ 284' TDH → 78.9% efficient

Assume 24 hr/day operation

318.4 whp → \$285/day  
\$104,037/yr

HIGH SERVICE

2570 gpm @ 201' TDH → 76% efficient

171.8 whp → \$154/day  
\$56,135/yr

\$73,453 savings per year



Item	Option A		Option B		Option C		Notes
	Unit Price						
Furnish & Install High Service Pumps	\$ 179,749	\$ 179,749	\$ 179,749	\$ 179,749	\$ 179,749	\$ 179,749	
Furnish & Install Low Service Pumps	\$ 255,759	\$ 255,759	\$ 255,759	\$ 255,759	\$ 255,759	\$ 255,759	
VFD Drives	\$ 240,000	\$ 240,000	\$ 240,000	\$ 240,000	\$ 240,000	\$ 240,000	*** Estimated, we only have the value of the MCC complete***
Insulation	\$ 168,856	\$ 168,856	\$ 168,856	\$ 168,856	\$ 168,856	\$ 168,856	Includes all insulation in walls & roofing
Windows	\$ 247,442	\$ 247,442	\$ 247,442	\$ 247,442	\$ 247,442	\$ 247,442	
Doors	\$ 211,322	\$ 211,322	\$ 211,322	\$ 211,322	\$ 211,322	\$ 211,322	All exterior doors except overheads
Glazing	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Included in unit price for windows
HVAC System	\$ 55,120	\$ 55,120	\$ 55,120	\$ 55,120	\$ 55,120	\$ 55,120	Includes insulation, I&C components & high efficiency equipment
Fume Hood	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	
Clearstory Lighting	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Included in unit price for windows
Translucent Wall Panels	\$ 62,400	\$ 62,400	\$ 62,400	\$ 62,400	\$ 62,400	\$ 62,400	
Skylights	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	
SCADA System	\$ 194,438	\$ 266,146	\$ 266,146	\$ 266,146	\$ 275,600	\$ 275,600	See below
<b>TOTAL</b>	<b>\$ 1,644,206</b>	<b>\$ 1,715,914</b>	<b>\$ 1,715,914</b>	<b>\$ 1,715,914</b>	<b>\$ 1,725,368</b>	<b>\$ 1,725,368</b>	

Option A Includes: SCADA workstations, I/O panels w/ OIT's, Fiber Optic & CAT 6 wiring  
Option B Includes: SCADA workstations, I/O panels w/ OIT's, Fiber Optic & CAT 6 wiring, & Instruments  
Option C Includes: SCADA workstations, I/O panels w/ OIT's, Fiber Optic & CAT 6 wiring, Instruments, & Fill Stations