

**DOE/LX/07-0359&D1  
Secondary Document**

**Postconstruction Report for the  
Northwest Plume Optimization at the  
Paducah Gaseous Diffusion Plant, Paducah, Kentucky**



**CLEARED FOR PUBLIC RELEASE**

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U.S. DEPARTMENT OF ENERGY  
Office of Environmental Management

Prepared by  
LATA ENVIRONMENTAL SERVICES OF KENTUCKY, LLC  
managing the  
Environmental Remediation Activities at the  
Paducah Gaseous Diffusion Plant  
under contract DE-AC30-10CC40020

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# CONTENTS

ACRONYMS.....	iii
1. GENERAL INTRODUCTION.....	1
2. BRIEF DESCRIPTION OF HOW OUTSTANDING ITEMS NOTED IN THE PREFINAL INSPECTION WERE RESOLVED .....	1
3. EXPLANATIONS OF MODIFICATIONS TO THE ORIGINAL REMEDIATION DESIGN AND REMEDIAL ACTION WORK PLANS .....	2
4. AS BUILT DRAWINGS .....	2
5. SYNOPSIS OF THE CONSTRUCTION WORK AND CERTIFICATION THAT THE CONSTRUCTION WORK HAS BEEN COMPLETED .....	2
6. SUMMARY OF PROJECT COST .....	4
APPENDIX: AS BUILT DRAWINGS .....	A-1

## ACRONYMS

DOE	U.S. Department of Energy
EW	extraction well
gpm	gallons per minute
HDPE	high density polyethylene
IRA	Interim Remedial Action
NWP	Northwest Plume
MS	monitoring station

## **1. GENERAL INTRODUCTION**

The Northwest Plume (NWP) Interim Remedial Action (IRA) Optimization Project was implemented to increase volatile organic chemical mass removal and enhance capture in the vicinity of the current south well field of the NWP Groundwater System. The project included the installation of two new extraction wells (EWs) (EW232 and EW233). The wells were installed in the vicinity of the current south well field and are operated at approximately 110 gal per minute (gpm) each, for a total of 220 gpm (the design capacity of the C-612 Treatment Facility). High density polyethylene (HDPE) double-wall piping will transfer extracted groundwater to the C-612 Treatment Facility for treatment. The north EWs (EW228 and EW229) have been shut down and taken out-of-service. The south wells (EW230 and EW231) have been taken off-line, but remain in stand-by mode. Project mobilization began on March 18, 2010. Demobilization was completed on August 27, 2010.

## **2. BRIEF DESCRIPTION OF HOW OUTSTANDING ITEMS NOTED IN THE PREFINAL INSPECTION WERE RESOLVED**

A site walk down was performed to identify a list of items that needed to be completed prior to project turnover to operational personnel. The items were documented and checked off once completed. The list is provided below. The project team also created an operational readiness checklist identifying major components to complete prior to turnover to operations. The checklist was signed off on by the Contractor Site Operations Manager as well as the Contractor Environmental Remediation Project Manager. The readiness checklist can be found below in Section 5.

### **Northwest Plume Optimization List of Outstanding Items**

- Install pipe supports in well vaults—Completed August 23, 2010
- Install/calibrate Ashcroft pressure transmitter in east vault—Completed August 24, 2010
- Install pressure relief valve at ditch crossing—Completed August 25, 2010
- Install sample port components in east vault—Completed August 23, 2010
- Install well vault lid for east vault—Completed August 23, 2010
- Install pipe labels at the ditch crossing and inside well vaults—Completed September 9, 2010

Note: Pipe labels were on back order at the time of project turnover to operations. This was noted in the operations readiness checklist during project turnover. Pipe labels were installed by operations personnel upon arrival.

### **Northwest Plume Optimization List of Add On Items**

- Install steps in well vaults (2 ea)—Completed August 27, 2010
- Install bollards (8 ea)—Completed August 27, 2010

### **3. EXPLANATIONS OF MODIFICATIONS TO THE ORIGINAL REMEDIATION DESIGN AND REMEDIAL ACTION WORK PLANS**

The *Remedial Action Work Plan for the Northwest Plume Interim Remedial Action Optimization at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX-107-0339&DI, provides detail for piping and monitoring station (MS) installation. These two items were modified from the original design. The changes were documented through a field change, and as built drawings were revised to reflect the changes. The changes are described below. The as built drawings are included in the appendix.

The HDPE double-wall piping and conduit containing communication cables were rerouted at the C-616 effluent ditch. Existing pipe supports were in place from the original construction of the C-612 Treatment Facility. These supports were used instead of constructing new supports.

The original design specified installing five new MSs with leak detectors; however, the redirection of the underground piping across the existing supports alleviated the need for MS-1. MS-5 also was not installed because the HDPE piping was installed at an elevation allowing it to drain into MS-4 and the EW233 well vault. This eliminated the need for MS-5. All MSs and well vaults are equipped with leak detection devices.

### **4. AS BUILT DRAWINGS**

A set of redlined drawings was kept during the course of construction for the purpose of documenting changes in the field. This information is valuable for maintenance of the system as well as for locating underground utilities. As built drawings were produced as a result of the redlined drawings generated during construction. The as built drawings are located in the appendix.

### **5. SYNOPSIS OF THE CONSTRUCTION WORK AND CERTIFICATION THAT THE CONSTRUCTION WORK HAS BEEN COMPLETED**

The NWP IRA Optimization Project was implemented to increase volatile organic chemical mass removal and enhance capture in the vicinity of the current south well field of the NWP Groundwater System. The project included the installation of two new EWs (EW232 and EW233). Also included were installation of double-walled HDPE piping and three MSs; construction of an overhead feeder to provide electrical power to the new EWs, construction of underground communication lines, and instrumentation and control modifications. The wells were installed in the vicinity of the current south well field and are operated at approximately 110 gpm each, for a total of 220 gpm (the design capacity of the C-612 Treatment Facility). HDPE double-wall piping will transfer extracted groundwater to the C-612 Treatment Facility for treatment. The north EWs (EW228 and EW229) have been shut down and taken out-of-service. The south wells (EW230 and EW231) have been taken off-line, but remain in stand-by mode.

The Contractor NWP Operations Manager was closely involved with the NWP IRA Project during the construction and operational testing phases. To ensure a seamless transition from project construction to continuous operation and certification that the construction work had been completed, a determination of readiness was established and concurrence obtained from the Contractor Project and Operations organizations. The following readiness checklist with the required signatures serves as documentation that construction was complete, readiness was achieved and that both parties concurred that operations could commence. The original signed document is maintained in the project file located at C-612-T-02.

### **Northwest Plume Optimization Readiness Checklist**

#### **I. Plans and Procedures**

- *Health and Safety Plan for Plume Operations, PRS/PROJ/0067*
- *Paducah Plumes Operations Waste Management Plan, Paducah Gaseous Diffusion Plant, Paducah Kentucky, PRS-ENM-0012*
- *Paducah Plume Operations, Maintenance, Calibration and Testing Plan, PRS-ENM-0001*
- *Paducah Plumes Operation Quality Assurance Plan, PRS/06-004*
- *Data Management Implementation Plan for Paducah Plume Operations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, PRS/06-003*

#### **II. Configuration Control Documents**

- As built drawings (poststart action)
- Equipment listing (names and identification numbers) for all pumps, valves, sample ports, flow meters, pressure gages, leak detection devices, etc.
- Copy of all manufacturer specification sheets for each major piece of equipment
- Copy of all installation and operating instructions for each major piece of equipment
- Copy of all manufacturers' recommended calibration and maintenance requirements for each major piece of equipment
- Postconstruction report (poststart action)

#### **III. System Tags and Pipe Labeling**

- Installation of equipment and valve tags
- Installation of pipe labeling

#### **IV. Acceptance and Functional Testing Results**

- Copy of the signed-off acceptance calibration/test reports
- Copy of the signed-off interlock test reports

## V. Training Completion

- Required reading completion by Contractor NWP Operations personnel

## VI. U.S. Department of Energy Informal Notification of Readiness

- Tour for U.S. Department of Energy Project Manager and Facility Representative

## VII. Declaration of Readiness

The Contractor Site Operations Manager and the Contractor Environmental Remediation Project Manager attested that the NWP IRA was ready for operation and maintenance by the Contractor NWP Operations personnel on August 27, 2010.

# **6. SUMMARY OF PROJECT COST**

The estimated actual cost for the project was \$2,586,000.<sup>1</sup>

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<sup>1</sup> The accounting of expenditures is based on an estimate governed by figures known at the time the report was written.



**APPENDIX**  
**AS BUILT DRAWINGS**

**APPENDIX**

**AS BUILT DRAWINGS (on CD)**