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AMENDMENT NO. 1
TO THE RECORD OF DECISION
AT THE
BALLY GROUND WATER CONTAMINATION SUPERFUND SITE
(July 2007)

BALLY, BERKS COUNTY, PENNSYLVANIA

BALLY GROUND WATER CONTAMINATION SUPERFUND SITE

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AMENDMENT No. 1 TO THE RECORD OF DECISION

BALLY GROUND WATER CONTAMINATION SUPERFUND SITE

I. INTRODUCTION

Site Name: Bally Ground Water Contamination Superfund Site

Site Location: Bally, Berks County, Pennsylvania

Lead Agency: U.S. Environmental Protection Agency, Region III ("EPA" or "the Agency")

Support Agency: Pennsylvania Department of Environmental Protection (PADEP)

Statement of Purpose

A Record of Decision (ROD) for the Bally Ground Water Contamination Superfund Site (Site) was issued on June 30, 1989. The primary components of the 1989 ROD were:

1. Properly closing certain private wells, and restricting well use/construction within the Borough of Bally.
2. Performing ground water and surface water monitoring for Site-related contaminants.
3. Pumping Municipal Well Number Three (MW#3) and treating the water for Site-related contaminants. Treated water from MW#3 would be discharged to an unnamed tributary of the West Branch of the Perkiomen Creek or supplied to the Bally public water system for potable use.
4. Performing necessary studies to determine if additional ground water extraction wells and treatment systems were necessary.

This Amendment No. 1 to the 1989 ROD (Amendment) is being issued by the EPA to address the 1,4-dioxane concentrations that were identified in the Borough of Bally's public water system in February 2003. EPA was able to identify 1,4-dioxane in 2003, because laboratory detection capability has improved substantially since the Site was initially investigated in the late 1980s. Although the 1,4-dioxane concentrations identified in the Bally public water system were determined by EPA not to pose a short-term threat to human health, the presence of 1,4-dioxane was considered to represent a long-term threat to human health because of 1,4-dioxane's designation by EPA as a probable human carcinogen. To address this threat to human health, EPA has determined that the installation of a new municipal supply well is the most appropriate remedial action alternative (as discussed below). EPA has determined that it is necessary to amend the 1989 ROD, because the remedy selected in the 1989 ROD is not considered to be fully

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protective of human health due to the presence of 1,4-dioxane in the Bally public water system.

This Amendment modifies the remedy selected in the 1989 ROD by requiring that a new municipal supply well be constructed in an area not contaminated by the Site. The new municipal supply well will be constructed according to accepted industry standards, and will provide an adequate quantity of water to the Borough of Bally. Water from the new municipal supply well shall meet applicable Safe Drinking Water Act requirements. The new municipal supply well will be tested for contamination according to a sampling plan/schedule established by the EPA and PADEP. A pipeline will be constructed to transport water from the new municipal supply well to the Bally public water system.

This Amendment to the 1989 ROD is issued in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act, as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA), 42 U.S.C. § 9617(c), and 40 C.F.R. § 300.435(c)(2)(ii)(A)-(H). This Amendment has been prepared to document the nature of the change made to the selected remedy identified in the 1989 ROD; to summarize the information that led to the making of the change; and to affirm that the revised remedy complies with the statutory requirements of Section 121 of CERCLA, 42 U.S.C. § 9621. This Amendment fundamentally alters the remedy selected in the 1989 ROD with respect to scope, performance, and cost.

EPA is the lead agency for this Site, and the Pennsylvania Department of Environmental Protection (PADEP) is the support agency. In its March 14, 2007 letter, the Commonwealth of Pennsylvania expressed its concurrence with EPA's choice of remedy selected in this Amendment.

This Amendment is incorporated into the Administrative Record for the Site. The Administrative Record File is available at the following locations:

EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029
(215) 814-3157

Or, on the internet at www.epa.gov/arweb.

II. SITE DESCRIPTION, HISTORY, CONTAMINATION, AND SELECTED 1989 ROD REMEDY

A. Site Description and Location

The Site is located in the Borough of Bally, Berks County, Pennsylvania. The Site consists of a former manufacturing facility, previously identified as the Bally Engineered Structures (BES)

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facility, located to the south of North Fourth Street, and a plume of ground water contamination that originated from the manufacturing facility. Contaminants in ground water at the Site consist of chlorinated volatile organic compounds (VOCs), including trichloroethylene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), and 1,1-dichloroethene (1,1-DCE). The contaminant 1,4-dioxane was also identified in the ground water contamination plume in 2003 (this is explained further below).

The former BES facility, including three main buildings, several small outbuildings, and parking areas, continues to be used by various tenants for light industrial, commercial, and shipping and receiving activities.

Land use in the vicinity of the Site is primarily residential, with commercial and industrial properties present, as well as parks, recreation fields and local government facilities. The Borough of Bally covers 330 acres and has a population of approximately 1,062 people.

A Site location map is included as Figure 1.

The Site is underlain by a single, thick, unconfined (or locally semi-confined) aquifer that occurs within the limestone fanglomerate and overlying residuum. Transmission of ground water is principally controlled by secondary porosity caused by fractures, joints, and solutioning activity. The aquifer underlying the Site is currently used as a drinking water source for residents in the Borough of Bally and adjoining Washington Township. The drinking water supply for the Borough of Bally and a portion of Washington Township is currently a municipal supply well located inside the Borough limits, and identified as MW#3. MW#3 is the current water source for the Bally public water system. MW#3 has been contaminated by the Site-related ground water contamination plume, and is also used to contain the ground water contamination plume by pumping. An air-stripper treatment system is currently operated at MW#3 to remove VOCs from the well water before the water is delivered to residents. The Site-related contaminant "1,4-dioxane," which was identified in the Bally public water system during February 2003, is not sufficiently volatile to be removed by the air-stripper, and therefore is still present in the water supply. All other Site-related contaminants are removed from the water prior to its delivery to residents. Nearby residents of Washington Township which are not served by the Bally public water system use private wells. These homes have not been impacted by the ground water contamination plume. The direction of ground water flow in the bedrock aquifer is generally to the east.

B. Site History

The former BES facility is the source of ground water contamination at the Site. The facility operated as a manufacturer of various insulated cases and other products from the 1930s to approximately 1995. Potential sources of VOC contamination at the facility included two former storage tank systems, and former lagoon areas. No active source of contamination was identified at the former BES facility during the performance of the Remedial Investigation (1986, 1989),

and it was concluded in the 1989 ROD that the ground water contamination is the result of historical releases at the facility.

The ground water contamination plume consists of ground water exhibiting Site-related contaminant concentrations (including TCE, 1,1,1-TCA, and 1,1-DCE) in excess of the ground water performance standards listed in the 1989 ROD. These performance standards were based on the levels set forth in a PADEP Municipal Water Supply Permit and Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs), and are included as follows:

TABLE 1
GROUND WATER PERFORMANCE STANDARDS

Contaminant	**Performance Standard (parts per billion)**
trichloroethylene	5 (MCL)
1,1,1-trichloroethane	200 (MCL)
tetrachloroethylene	5 (MCL)
1,1-dichloroethene	7 (MCL)
1,1-dichloroethane	Not specified
methylene chloride	5 (MCL)
1,2-dichloroethane	Not specified (however, MCL is currently 5)

The most contaminated portion of the ground water contamination plume lies between the former BES facility and MW#3. The remainder of the plume extends to the southeast, generally following topography and a stream valley formed by unnamed tributaries of the West Branch of the Perkiomen Creek.

A map depicting the location of the former BES facility and the extent of the ground water contamination plume, based on recent ground water monitoring data for the Site, is included in Figure 1.

Between 1982 and 1989, Site-related contaminants were identified in each of Bally's two municipal wells. These wells are identified as Municipal Well Number One (MW#1), and MW#3.

On June 30, 1989, EPA issued the ROD, which documented the selected remedy for the Site. The remedy was comprised of the following components:

1. Properly closing certain private wells, and restricting well use/construction within the Borough of Bally.

2. Performing ground water and surface water monitoring for Site-related contaminants.
3. Pumping MW#3 and treating the water for Site-related contaminants. Treated water from MW#3 would be discharged to an unnamed tributary of the West Branch of the Perkiomen Creek or supplied to the Bally public water system for potable use.
4. Performing necessary studies to determine if additional ground water extraction wells and treatment systems were necessary.

The remedy selected in the 1989 ROD incorporated the use of MW#3 as the extraction well for the cleanup of the ground water contamination plume, and also continuing as the public water source for Bally. The Site Potentially Responsible Parties (PRP) have implemented the remedy selected in the 1989 ROD, in accordance with a Consent Decree (Civil Action 91CV3043, entered with the Court July 18, 1991). Between 1987 and 1989 (prior to the issuance of the 1989 ROD) the PRP arranged for a two stage air-stripper water treatment system (air-stripper) to be constructed at MW#3. After issuance of the ROD on June 30, 1989, MW#3 was pumped continuously to establish hydraulic control of the plume, and water from MW#3 was treated by the air-stripper to remove VOC contamination and provided to Bally as potable water, or discharged to the unnamed tributary of the West Branch of the Perkiomen Creek. Between approximately 1989 and 2003, the remedy at the Site consisted of operation and maintenance of the air-stripper at MW#3, and ground water monitoring. In 2003, the PRP, under EPA oversight, identified 1,4-dioxane in the ground water contamination plume, and in the Bally public water system. EPA requested that the PRP evaluate the Site for the presence of 1,4-dioxane because of an Agency effort to evaluate sites which exhibit 1,1,1-trichloroethane contamination (a Bally Site contaminant) for previously unidentified 1,4-dioxane contamination. Although the 1,4-dioxane concentrations identified in the Bally public water system were not considered to pose an imminent threat to human health, the Site PRP agreed to provide bottled water to residents who wished to limit their exposure to 1,4-dioxane.

1,4-Dioxane Background

On February 5, 2003, at the request of EPA, water samples were collected by the PRP from the air-stripper treatment system associated with MW#3. Samples of air-stripper influent (pre-treatment) and effluent (post-treatment) were collected on February 5, 2003 by Bally maintenance personnel. The samples were analyzed using EPA Method 624 for the contaminant 1,4-dioxane. The 1,4-dioxane concentrations identified were non-detect (with a quantitation limit of 40 parts per billion (ppb)) for the influent, and 53.7 parts ppb for the effluent. The results were considered inconclusive because 1,4-dioxane was detected in the air-stripper effluent, but not in the air-stripper influent. EPA and the PRP agreed to collect another effluent sample on February 12, 2003, which was analyzed for 1,4-dioxane using EPA Method 624. The concentration detected in the effluent sample was 60.5 parts per billion.

Upon receipt of these results, EPA and the PRP more thoroughly evaluated 1,4-dioxane concentrations in the Bally public water system. On February 20, 2003, the PRP sampled the Bally water system at five locations: 1) untreated ground water directly from MW#3; 2) after the first air-stripping tower (50% treatment); 3) after the second air-stripping tower (100%

treatment); 4) after chlorination; and 5) at the first available tap on the Bally water system. The samples were analyzed for 1,4-dioxane using EPA Method 8270C. The analytical results from the February 20, 2003 sampling event are included as follows:

TABLE 2 1,4-DIOXANE RESULTS (2/20/03)	
Sample Location (Sample ID)	**1,4-dioxane concentration (parts per billion)**
System Influent (Bally 1)	38
50% Treatment (Bally 2)	35
100% Treatment (Bally 3)	40
Post-chlorination (Bally 4)	36
Post-chlorination duplicate (Bally Dup 1)	36
First potable tap on the system (Bally 5)	29
First potable tap on the system duplicate (Bally Dup 2)	35

To verify the above-listed analytical results, an EPA contractor performed additional sampling at the Site. On February 25, 2003, the EPA contractor visited the Site and performed sampling activities similar to those described above. The samples collected by the EPA contractor were delivered to the EPA laboratory in Ft. Meade, MD and analyzed for 1,4-dioxane using EPA Method SW846 9260 with Selective Ion Monitoring. The analytical results from the February 25, 2003 sampling event are included as follows:

TABLE 3 1,4-DIOXANE RESULTS (2/25/03)	
Sample Location (Sample ID)	**1,4-dioxane concentration (parts per billion)**
System Influent (MW3A)	49.3
50% Treatment (MW3B)	52.2
100% Treatment (MW3C)	38.7
Post-chlorination (MW3D)	50.5
Post-chlorination duplicate (MW3E)	50.6

Since 1,4-dioxane was identified in the Bally public water system, samples of water have been collected from MW#3 and the associated air-stripper initially on a weekly basis, and later on a monthly basis. The 1,4-dioxane concentrations identified between 2003 and 2007 are similar to the concentrations identified above (minimum concentration was 24 parts per billion; maximum concentration was 77 parts per billion).

Since March 2003, the PRP for the Site has provided bottled drinking water to residents who wished to limit their exposure to 1,4-dioxane. On September 30, 2003, EPA and the PRP entered into an Administrative Order on Consent (AOC). The AOC required the PRP to, among other things, prepare a Focused Feasibility Study to address 1,4-dioxane in the Bally public water system, and continue providing bottled water to residents.

III. REASONS FOR ISSUING AMENDMENT NO. 1

This Amendment is being issued by EPA to establish operable units at the Site, and to select a response action for the Bally public water system (described below as operable unit two).

Establishment of Operable Units

The 1989 ROD documented the selected remedy for the Site, which included containment/treatment of the ground water contamination plume by the long-term pumping and treating of ground water from MW#3.

Based on EPA's current knowledge of the Site, it is appropriate to divide the Site into three separate, though related, Operable Units (OUs) to implement response actions at the Site. The Site is being divided into OUs as follows:

OU1 – Plume of Ground Water Contamination: As stated above, the ground water contamination plume consists of ground water exhibiting Site-related contaminant concentrations (including TCE, 1,1,1-TCA, and 1,1-DCE) in excess of the ground water performance standards listed in the 1989 ROD. This Amendment modifies the remedy for OU1 by requiring that the Site ground water monitoring program be updated, and that a Contingency Plan be prepared. These modifications to the OU1 remedy are described in Section IV., below. MW#3 will continue to be pumped to contain the existing ground water contamination plume, but will be disconnected from the Bally public water system. Pumping of MW#3 will continue so that hydraulic control of the ground water contamination plume can be maintained and remediation of the plume will continue. Water from MW#3 will be discharged to surface water and will be required to meet National Pollutant Discharge Elimination System (NPDES) requirements. The discharge location for MW#3 is not being selected as part of this Amendment. Discharge locations are being evaluated by EPA and will be documented in an appropriate EPA decision document.

OU2 - Bally public water system: The Bally public water system (OU2) provides potable water to the Borough of Bally, and certain portions of Washington Township. As indicated above, the Bally public water system exhibits concentrations of Site-related 1,4-dioxane. This Amendment selects a remedy to address the 1,4-dioxane present in the Bally public water system. The remedy for OU2 is the installation of a new municipal supply well in an area uncontaminated by the Site. The remedy for OU2 is described in Section IV., below.

OU3 – Vapor Intrusion: EPA is currently evaluating the potential for vapor intrusion at the Site. Vapor intrusion can occur when chemicals present in contaminated soil or ground water vaporize and move upwards, potentially entering buildings, such as homes or businesses. When vapor intrusion does occur, it can pose a health concern. EPA has evaluated vapor intrusion at homes located near the former BES facility, and at the former BES facility. Based on testing results to date, additional testing/corrective action is not necessary for the homes, however, additional testing/corrective action may be necessary for the facility. EPA intends to issue a future decision document to address OU3 separately.

Summary of Site Risks associated with 1,4-dioxane in the Bally public water system

As discussed above, the reason for this Amendment is the discovery of a previously unidentified contaminant, "1,4-dioxane," at the Site. 1,4-dioxane is a solvent stabilizer often associated with 1,1,1-trichloroethane (another Site-related contaminant). 1,4-dioxane is classified by EPA as a Probable Human Carcinogen.

In evaluating the need to take additional remedial action at the Bally Site, EPA has evaluated the protectiveness of the ground water performance standards included in the 1989 ROD. The performance standards for ground water (which did not include 1,4-dioxane) are included in Table 1. When these performance standards are achieved, and water is consumed by a person exhibiting contaminant concentrations at these levels, the lifetime excess cancer risk posed by the VOCs listed in Table 1 is estimated to be 1 in 10,000. The National Contingency Plan (NCP) indicates that acceptable exposure levels for known or suspected carcinogens generally represent a lifetime excess cancer risk of between 1 in 10,000 and 1 in 1,000,000. Therefore, the performance standards listed above are protective of human health as they represent a cumulative life time excess cancer risk at the upper end of the generally acceptable risk range. A "lifetime excess cancer risk" represents the risk that an individual may develop cancer because of exposure to Site-related contaminants, and is considered to be in addition to cancer risk that the entire population faces because of factors not related to the Site (genetics, lifestyle choices, such as smoking, etc). Although concentrations vary with time, the concentrations of 1,4-dioxane present in the Bally public water system are approximately 60 parts per billion, and represent an additional lifetime excess cancer risk of 1 in 100,000. Because the performance standards for the Site represent an excess life time cancer risk at the upper end of the acceptable cancer risk range (at 1 in 10,000), and because the presence of 1,4-dioxane represents an additional level of carcinogenic risk which may result in the cumulative risk exceeding the acceptable risk range, EPA considers it necessary to implement a remedial action at the Bally Site, to address the

presence of 1,4-dioxane currently present in the Bally public water system.

It should be noted that ground water contamination was first identified in MW#3 during October 1982. MW#3 was disconnected from the Bally public water system in December 1982. The air-stripper water treatment system was constructed at MW#3 in 1988/1989. MW#3 was reconnected to the Bally public water system in 1989. Between 1982 and 1989, the Bally public water system received water from MW#1 and from springs. Between 1982 and 1989, MW#1 also became contaminated with Site-related VOCs. It is expected that users of the Bally public water system were exposed to VOCs at concentrations above the ground water performance standards listed above prior to 1982, and at some time interval between 1982 and 1989. The historical exposures that may have theoretically increased cancer risk are another reason why EPA seeks to minimize the 1,4-dioxane risks to this population.

It should be noted that the remedy for OU2 described below in this Amendment includes the construction of a new municipal supply well outside of the area of ground water contamination associated with the Site. The construction of this new municipal supply well will provide potable water to the Bally public water system which does not exhibit Site contamination. Therefore, implementation of the OU2 remedy will eliminate exposure of water system users to Site-related ground water contamination and the resultant excess cancer risks.

EPA issued a Proposed Remedial Action Plan (PRAP), dated March 2007, which proposed the construction of a new municipal supply well to address the 1,4-dioxane in the Bally public water system. The PRAP was released for public comment as part of the Administrative Record file on March 13, 2007.

IV. DESCRIPTION OF THE OPERABLE UNIT TWO REMEDY AND MODIFICATION OF THE OPERABLE UNIT ONE REMEDY

Following review and consideration of the information in the Administrative Record File, the requirements of CERCLA, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and public comment, EPA has selected the following remedial response action to be implemented at the Site. The response action will be incorporated as Amendment No. 1 to the 1989 ROD, and addresses OU1 and OU2.

A. General Description of the Selected OU2 Remedy and modification of the Operable Unit One Remedy

The primary components of the Remedy selected in this Amendment are:

- Install a new municipal supply well, and a pipeline to transport water from the new municipal supply well to the Bally public water system.
- Update the ground water monitoring program for the Site, to include monitoring of the extent of the Site ground water contamination plume.

- Prepare a Contingency Plan for the Site, to establish what corrective actions will be implemented if operation of the new municipal supply well causes the Site ground water contamination plume to migrate toward the new well, or operation of the new municipal supply well adversely impacts nearby private wells.

1. New Municipal Supply Well

A new municipal supply well will be constructed in an uncontaminated area according to accepted industry standards, and will provide an adequate quantity of water to the Borough of Bally. Water from the new well shall meet applicable Safe Drinking Water Act requirements. The new well will be tested for contamination according to a sampling plan/schedule established by the EPA and PADEP. A pipeline will be constructed in accordance with industry accepted standards to transport water from the new municipal supply well to the Bally public water system.

When the new municipal supply well and water pipeline are complete and operational, MW#3 will be disconnected from the Bally public water system.

MW#3 will continue to be pumped to contain the existing ground water contamination plume, but will be disconnected from the Bally public water system. Pumping of MW#3 will continue so that hydraulic control of the ground water contamination plume can be maintained. Water from MW#3 will be discharged to surface water and will be required to meet National Pollutant Discharge Elimination System (NPDES) requirements. The discharge location for MW#3 is not being selected as part of this Amendment. Discharge locations are being evaluated by EPA and will be documented in an appropriate EPA decision document.

2. Ground Water Monitoring Program and Contingency Plan

This Amendment requires that the OU1 (Bally ground water contamination plume) remedy be modified as follows:

The existing ground water monitoring program will be revised to accomplish three objectives: 1) evaluate the progress and effectiveness of the cleanup of the ground water contamination plume, 2) confirm that the ground water contamination plume is not migrating toward the new well, and 3) determine if operation of the new municipal supply well adversely impacts nearby private wells.

In addition, a Contingency Plan will be developed to identify what corrective actions will be implemented in the event that the ground water contamination plume is confirmed to be migrating toward the new well.

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Remedial Action Objectives (RAOs)

The RAOs identified in the 1989 ROD were:

1. Prevention of ingestion of contaminated ground water - Prevent current and future ingestion of ground water containing unacceptable levels of volatile organic compounds.
2. Aquifer restoration - Restore the aquifer within a reasonable time frame to a condition such that levels of the VOC contaminants of concern are below remediation levels consistent with its use as a class II aquifer.

The remedy described in the 1989 ROD called for MW#3 to remain as the Borough's water supply well, however, this location has been determined to not be an acceptable location for a municipal supply well without additional treatment for 1,4-dioxane.

The objective for the remedial action outlined in this Amendment is to reduce 1,4-dioxane concentrations in the Bally public water system to acceptable levels. This objective is consistent with the first RAO included in the 1989 ROD: Prevention of ingestion of contaminated ground water.

The remedy selected in this Amendment, and previous remedial actions at the Site will continue to be evaluated during each Five-Year Review.

In addition, this Amendment includes performance standards for the remedy selected in this Amendment. Each of the components of the remedy and its performance standards are described in detail below. Monitoring of each performance standard shall be conducted as set forth below.

B. Performance Standards

1. New Municipal Supply Well

A new municipal supply well will be constructed in an uncontaminated area according to accepted industry standards, and operated in accordance with applicable requirements. The remedial action selected in this ROD Amendment does not address hazardous substances present at the Site. Rather, implementation of this remedial action includes the provision of an alternative water supply for the Bally public water system.

The following performance standards apply to the new municipal supply well:

a. Federal, State and local requirements pertaining to the construction and operation of a new municipal supply well shall be complied with.
b. The new municipal supply well shall provide an adequate quantity of water to the Borough of Bally public water system, which is not less than 300 gallons per

minute.

c. Water from the new municipal supply well shall meet applicable Safe Drinking Water Act requirements, including Safe Drinking Water Act Maximum Contaminant Levels.

d. The new well will be monitored according to a sampling plan/schedule approved by the EPA, in consultation with PADEP.

e. 25 Pa. Code, Chapter 109.603(b)(1), requires that a water supplier own or substantially control through a deed restriction or other methods acceptable to the Department, the Zone I wellhead protection area in order to prohibit activities within Zone I that may have a potential adverse impact on source quality or quantity. The correct calculation of the Zone I wellhead protection area, and the control of that area via a deed restriction, or some other acceptable institutional control is a performance standard for this remedial action.

f. As necessary during the implementation of the remedial action, sediment and erosion controls and temporary covers will be installed to protect exposed soil from the effects of weather consistent with PADEP's Bureau of Soil and Water Conservation Erosion and Sediment Pollution Control Manual.

2. Ground Water Monitoring Program and Contingency Plan

Ground water monitoring program

The existing ground water monitoring program will be revised to accomplish three objectives: 1) evaluate the progress and effectiveness of the cleanup of the ground water contamination plume, 2) confirm that the ground water contamination plume is not migrating toward the new well, and 3) determine if operation of the new municipal supply well adversely impacts nearby private wells. The revised ground water monitoring program will include what monitoring wells will be sampled, a ground water sampling schedule, and ground water sample analyses. The installation of additional monitoring wells may be required. The ground water monitoring program will evaluate the impact of the long-term operation of the new municipal supply well on nearby private wells.

Contingency Plan

In addition, a Contingency Plan will be developed to identify what corrective actions will be implemented in the event that the ground water contamination plume is confirmed to be migrating toward the new well. The Contingency Plan will include a basic decision framework regarding when corrective actions should be taken in the event that the Site ground water contamination plume is determined to be migrating toward the new municipal supply well, and specific corrective actions that can be implemented to disallow the ground water contamination plume from impacting the new municipal supply well. The Contingency Plan will include what corrective actions will be implemented if the long-term operation of the new municipal supply adversely impacts nearby private wells such that water quality/yield from the private wells is impaired.

The update to the ground water monitoring program and the contingency plan will be prepared during the remedial design phase, and will be subject to EPA review and approval.

C. Estimated Cost

The total estimated present worth cost for the OU2 Remedy is $2,833,267.

D. Explanation of ARARs

Section 121(d) of CERCLA requires that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law. These standards are collectively referred to as Applicable or Relevant and Appropriate Requirements (ARARs), and they must be met unless such ARARs are waived under CERCLA § 121(d)(4).

"Applicable" requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. "Relevant and appropriate" requirements are those requirements that, while not legally "applicable," address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the particular site. Only those State standards that are promulgated, are identified by the State in a timely manner, and are more stringent than federal requirements may be applicable or relevant and appropriate. ARARs may relate to the substances addressed by the remedial action (chemical-specific), to the location of the site (location-specific), or the manner in which the remedial action is implemented (action-specific).

In addition to applicable or relevant and appropriate requirements, the lead agency may, as appropriate, identify other advisories, criteria, or guidance to be considered for a particular remedial action. The "to be considered" (TBC) category consists of advisories, criteria, or guidance that were developed by EPA, other federal agencies, or states that may be useful in developing CERCLA remedies.

The identification of ARARs in this Amendment supplements the discussion of ARARs developed in the Focused Feasibility Study (FFS) and the 1989 ROD. The ARARs identified in this Amendment relate only to the response actions addressed in this document. ARARs relating to response actions selected in the 1989 ROD but not affected by this Amendment are not discussed. Reference should be made to the discussion of Site ARARs in the 1989 ROD for a complete discussion of all chemical-, location- and action-specific ARARs for the Site.

The following discussion identifies the ARARs and TBCs identified by EPA (after submission to the Commonwealth of Pennsylvania for review and comment) relating to the remedy identified

herein. On-Site actions (i.e., within the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action) need comply only with the substantive aspects of ARARs, not with the corresponding administrative requirements (e.g., consultation, issuance of permits, documentation, record keeping, and enforcement).

The remedial action selected in this ROD Amendment does not directly address hazardous substances present at the Site. Rather, implementation of the remedial action includes the provision of an alternative water supply for the Bally public water system. Because the remedial action does not directly address Site hazardous substances, EPA expects that State and local requirements pertaining to the construction and operation of a new municipal supply well will apply to this remedial action, and will be complied with as a matter of State law.

ARARs

1. Executive Order No. 11988 and 40 CFR Part 6, Appendix A (regarding avoidance, minimization, and mitigation of impacts on floodplains)
2. Executive Order No. 11990 and 40 CFR Part 6, Appendix A (regarding avoidance, minimization, and mitigation of wetlands)
3. 25 Pa. Code, Chapter 105. This Chapter sets forth provision for the regulation and supervision of dams, reservoirs, water obstructions, and encroachments in waters of the Commonwealth of Pennsylvania, including wetlands.

F. Five-year Reviews

Five-year reviews will be conducted pursuant to Section 121(c) of CERCLA , 42 U.S.C. § 9621 (c) and as provided in OSWER Directive 9355.7-02, *Structure and Components of Five-Year Reviews,* May 23, 1991, and OSWER Directive 9355.702A, *Supplemental Five-Year Review* Guidance, July 26, 1994, to assure that the remedy continues to protect human health and the environment.

The first Five-Year Review of the Site was issued on June 8, 2000; the second Five-Year Review was issued on June 9, 2005. The next five-year review is scheduled to be completed no later than June 9, 2010.

V. EVALUATION OF ALTERNATIVES

As discussed in the Proposed Plan (dated March 2007), EPA evaluated the two alternatives, presented in a Focused Feasibility Study (prepared by the PRP), to address 1,4-dioxane in the Bally public water system. The two alternatives were, "Installation of a New Municipal Supply Well", and "Additional Treatment of Current Municipal Supply Well." The FFS raised two concerns with the additional treatment alternative: 1) based on the results of the FFS, the

consistent reduction of 1,4-dioxane to a Site-specific health-based level (3 parts per billion was evaluated as the target level during the FFS) may not be feasible, and 2) bench-scale testing of treatment technologies, performed during the FFS, revealed the creation of potentially harmful treatment byproducts, specifically bromate and formaldehyde. The concerns, raised in the FFS, were reflected in EPA's evaluation of the two alternatives, presented in the Proposed Plan. Given these concerns, and other factors, including cost, EPA proposed that the "Installation of a New Municipal Supply Well" alternative was superior to the "Additional Treatment of Current Municipal Supply Well" alternative, and proposed the new well alternative as EPA's preferred alternative in the Proposed Plan. A full discussion of the comparison of alternatives in accordance with the NCP, and the rationale for EPA's selection of the "Installation of a New Municipal Supply Well" alternative (the selected OU2 remedy in this Amendment), is included in the Proposed Plan.

The following table compares the remedy described in the 1989 ROD and the remedy described in this Amendment:

1989 ROD remedy	**Amendment remedy**
Properly closing certain private wells, and restricting well use/construction within the Borough of Bally.	No change - the closure of private wells and establishment of institutional controls at the Site is complete.
Performing ground water and surface water monitoring for Site-related contaminants.	The ground water monitoring program will be updated as part of the OU2 remedy, as described in Section IV (above). Additional surface water sampling was performed pursuant to the 1989 ROD remedy, and is not required by the OU2 remedy.
Pumping MW#3 and treating the water for Site-related contaminants. Treated water from MW#3 would be discharged to an unnamed tributary of the West Branch of the Perkiomen Creek or to the Bally public water system for potable use.	This is the major difference between the 1989 ROD remedy and the OU2 remedy, described in this Amendment. The OU2 remedy requires that a new municipal well be constructed that has not been contaminated by the Site. The new municipal supply well will provide the Bally public water system with potable water. MW#3 will continue to be pumped to maintain hydraulic control of the ground water contamination plume. Water pumped from MW#3 will continue to be discharged to surface water. This discharge will be subject to NPDES requirements.

Performing necessary studies to determine if additional ground water extraction wells and treatment systems were necessary.	No change - this requirement of the 1989 ROD remedy has been implemented.

The remedy in the 1989 ROD, and the selected OU2 remedy described in this Amendment have been evaluated according to the nine criteria in the NCP, 40 C.F.R. 300.430(e)(9), as set forth in "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (EPA, October 1988), and "*A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*" (EPA 540-R-98-031, July 1999). These nine criteria can be further categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria, as follows:

Threshold Criteria
- Overall protection of human health and the environment
- Compliance with applicable or relevant and appropriate requirements (ARARs)

Primary Balancing Criteria
- Long-term effectiveness
- Reduction of toxicity, mobility, or volume through treatment
- Short-term effectiveness
- Implementability
- Cost

Modifying Criteria
- State Acceptance
- Community Acceptance

These evaluation criteria relate directly to requirements in Section 121 of CERCLA, 42 U.S.C. § 9621. Threshold criteria must be satisfied in order for a remedy to be eligible for selection. Primary balancing criteria are used to weigh major trade-offs between alternatives. Acceptance by the State and Community are modifying criteria formally considered after public comment is received on the Proposed Plan. A discussion of each criterion relative to both the 1989 ROD remedy and the OU2 remedy selected in this Amendment is presented below.

A. Overall Protection of Human Health and the Environment

CERCLA requires that the selected remedial action be protective of human health and the environment. An alternative is protective if current and potential future risks associated with each exposure pathway at a Site are reduced to acceptable levels. An exposure pathway refers to the way in which a person or other living organism can come into contact with contaminants.

Based on the information presented in this Amendment, the 1989 ROD remedy is not considered to be fully protective of human health, because 1,4-dioxane in the Bally public water system is

not reduced to acceptable levels by the existing air-stripper water treatment system present at MW#3.

After implementation of the OU2 remedy, exposure of residents to 1,4-dioxane via the Bally public water system will be eliminated, because the Bally public water system will receive water from a municipal supply well not contaminated by the Site-related ground water contamination plume.

It should be noted that as part of the Focused Feasibility Study (FFS), extensive aquifer testing was performed at a preferred new municipal supply well location north of Bally. The results of the aquifer testing strongly indicated that long-term operation of a new municipal supply well at that location would not result in migration of the ground water contamination plume towards the new well. In addition, if such plume migration was confirmed to be occurring by ground water monitoring, it appears that sufficient time would exist to implement corrective actions.

The OU2 remedy requires that the ground water monitoring program be updated to confirm that operation of the new municipal supply well is not drawing the ground water contamination plume toward the new well. In addition, a contingency plan will be established to determine what corrective actions would be appropriate in the event that the ground water monitoring program did confirm that such plume migration was occurring.

B. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

The following discussion identifies the ARARs and TBCs identified by EPA (after submission to the Commonwealth of Pennsylvania for review and comment) relating to the remedy identified herein. On-Site actions (i.e., within the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action) need comply only with the substantive aspects of ARARs, not with the corresponding administrative requirements (e.g., consultation, issuance of permits, documentation, record keeping, and enforcement).

The remedial action selected in this ROD Amendment does not directly address hazardous substances present at the Site. Rather, implementation of the remedial action includes the provision of an alternative water supply for the Bally public water system. Because the remedial action does not directly address Site hazardous substances, EPA expects that State and local requirements pertaining to the construction and operation of a new municipal supply well will apply to this remedial action, and will be complied with as a matter of State law.

<u>ARARs</u>

1. Executive Order No. 11988 and 40 CFR Part 6, Appendix A (regarding avoidance, minimization, and mitigation of impacts on floodplains)

2. Executive Order No. 11990 and 40 CFR Part 6, Appendix A (regarding avoidance, minimization, and mitigation of wetlands)
3. 25 Pa. Code, Chapter 105. This Chapter sets forth provision for the regulation and supervision of dams, reservoirs, water obstructions, and encroachments in waters of the Commonwealth of Pennsylvania, including wetlands.

C. Long-term Effectiveness and Permanence

The long-term effectiveness criterion evaluates the long-term protection of human health and the environment over time, once the remedial action goals have been achieved. It focuses on the magnitude of residual risk and the adequacy and reliability of controls of the alternatives.

The 1989 ROD remedy and the OU2 remedy described in this Amendment require that MW#3 be pumped continuously in order to maintain hydraulic control of the ground water contamination plume. By maintaining hydraulic control of the plume, long-term protection of private wells located outside of Bally (and outside of the service area of the Bally public water system) is achieved.

However, the 1989 ROD remedy has been determined to not demonstrate long-term effectiveness in terms of preventing the ingestion of contaminated ground water by users of the Bally public water system.

The OU2 remedy will require long-term monitoring to confirm that the remedial action is protective of human health. The OU2 remedy will require the modification and implementation of the ground water monitoring program and the development of a contingency plan (discussed in Section IV., above).

It should be noted that as part of the Focused Feasibility Study (FFS), extensive aquifer testing was performed at a preferred new municipal supply well location north of Bally. The results of the aquifer testing strongly indicated that long-term operation of a new municipal supply well at that location would not result in migration of the ground water contamination plume towards the new well. In addition, if such plume migration was confirmed to be occurring by ground water monitoring, it appears that sufficient time would exist to implement corrective actions. Therefore, upon implementation, the OU2 remedy will be superior to the 1989 ROD remedy in terms of long-term effectiveness and permanence, regarding a potable water supply for Bally public water system consumers.

D. Reduction of Toxicity, Mobility, or Volume Through Treatment

This criterion evaluates the performance of the alternatives to reduce the toxicity, mobility, and volume of waste by assessing the degree of irreversibility and the types and quantity of residuals remaining.

The OU2 remedy will reduce 1,4-dioxane concentrations in the Bally public water system by the installation of a new municipal supply well and extracting water from a portion of the local aquifer which is uncontaminated by the Bally Superfund Site. However, treatment of 1,4-dioxane is not an element of the OU2 remedy, because 1,4-dioxane will not be present in the new municipal supply well.

E. Short-term Effectiveness

Short-term effectiveness evaluates the alternatives against the period of time needed to achieve protection of human health and the environment and any adverse impacts that may be posed during the construction and implementation period, until clean-up goals are achieved.

The 1989 ROD remedy has already been implemented by the responsible parties.

It is not expected that the remedial action outlined in the OU2 remedy would require protection of the community or workers beyond that which is normally required during construction projects. The OU2 remedy will require the construction of a new municipal supply well and a pipeline to convey water from the new municipal supply well to the Bally public water system. As part of implementation of the OU2 remedy, there is the potential to impact wetlands during construction activities. However, construction activities will be performed pursuant to appropriate requirements to mitigate impacts to wetlands. It is expected that the implementation of the OU2 remedy will take approximately one-year (including well construction, well house construction, pipeline construction, etc).

F. Implementability

The implementability evaluation criterion consists of several sub-components, including those which evaluate the compatibility of remedial measures with site conditions, availability of materials and services, ability to undertake further remedial actions if necessary, and regulatory considerations.

The 1989 ROD remedy has already been implemented by the responsible parties.

Implementation of the OU2 remedy involves the construction of a new municipal supply well, and a pipeline to convey water from the new municipal supply well to the Bally public water system. Therefore, the OU2 remedy is expected to use standard industry construction techniques and standards to achieve implementation of the remedy. A preferred well location has been identified and it is expected that the OU2 remedy can be implemented with relative ease. It is expected that a revised ground water monitoring program will allow for sufficient plume monitoring. In addition, if plume migration is determined to be occurring, it is expected that effective corrective actions can be established as part of a contingency plan. In addition, it is expected that local vendors are available who can provide the construction services necessary to implement the OU2 remedy.

G. Cost

The cost evaluation criterion considers the estimated cost for the capital and O&M of remedial alternatives on a present worth basis. The total present worth is based on an O&M time period of 30 years for the constructed elements of the alternative (new well, water conveyance pipeline) and environmental monitoring.

The estimated costs to implement the OU2 remedy are listed as follows:

Capital Cost:	$1,750,001
Annual Operation and Maintenance (O&M) Costs:	$ 58,000
Total O&M Costs:	$1,740,000
Total Present Worth Cost:	$2,833,267

The total estimated present worth cost for the Alternative Remedy is approximately $2,833,267.

H. State Acceptance

EPA is the lead agency for this Site, and the Pennsylvania Department of Environmental Protection (PADEP) is the support agency. In its March 14, 2007 letter, the Commonwealth of Pennsylvania expressed its concurrence with EPA's choice of remedy selected in the Amendment.

I. Community Acceptance

A public meeting to discuss the details of the Proposed Remedial Action Plan was held on March 22, 2007, in Bally Pennsylvania. Comments received orally at the public meeting and in writing during the public comment period are referenced in the Responsiveness Summary attached to this Amendment. The public comment period began on March 13, 2007, and closed on April 11, 2007. The comments generated during the public comment period indicated that the local community of Bally and Washington Township do not object to the selected OU2 remedy.

VI. SUPPORT AGENCY COMMENTS

All of the above changes to the remedy have been coordinated with representatives of PADEP pursuant to 40 C.F.R. § 300.435(c)(2).

VII. AFFIRMATION OF THE STATUTORY DETERMINATIONS

EPA has determined that the revised remedy complies with the statutory requirements of Section 121 of CERCLA , 42. U.S.C. § 9621. Considering the new information that has been developed, EPA believes that the OU2 remedy is protective of human health and the environment, complies

with Federal and State requirements that are applicable or relevant and appropriate to this Remedial Action, and is cost-effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this Site.

VIII. PUBLIC PARTICIPATION

A thirty day public comment period began on March 13, 2007. A public meeting was held on March 22, 2007, at the Bally Firehouse in Bally, Pennsylvania. The Administrative Record for this decision includes the 1989 ROD and all documents that formed the basis for EPA's selection of the cleanup remedy in the 1989 ROD. A Proposed Plan regarding the OU2 remedy and other related documents and the information upon which the Proposed Plan is based have been included in the Administrative Record file for this Site. The Administrative Record is available for public review at the locations listed below:

U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103-2029
(215) 814-3157

Or, on the internet at www.epa.gov/arweb.

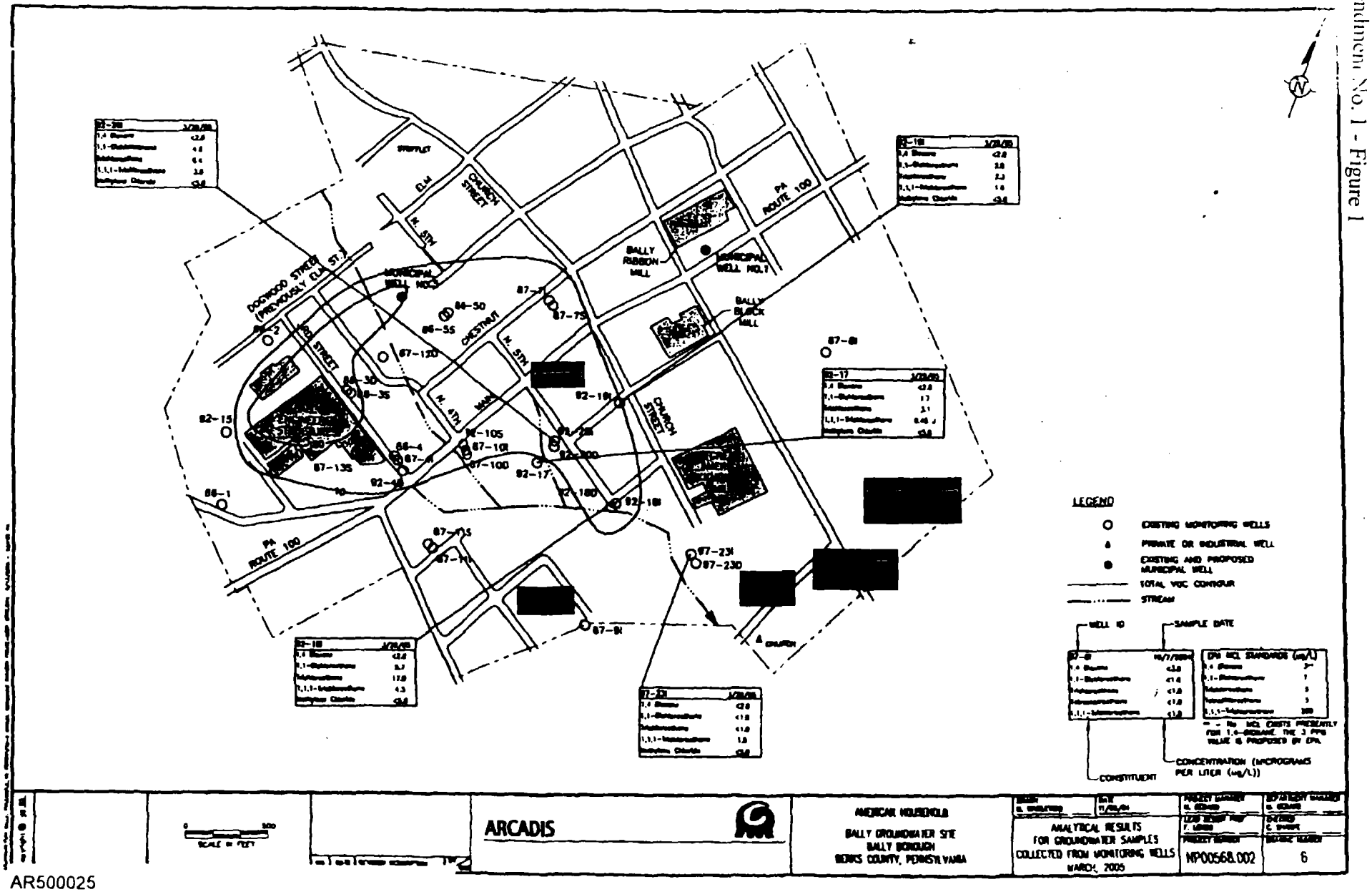
The notice of availability of these documents was published in the Morning Call and Pottstown Mercury.

8/1/07
Date

James J. Burke
James J. Burke, Director
Hazardous Site Cleanup Division
U.S. EPA Region III

Bally Ground Water Contamination Superfund Site
ROD Amendment

Figure 1.


DOGWOOD STREET (PREVIOUSLY ELM ST.)
ELM
CHURCH STREET
N. 5TH
PA ROUTE 100
BALLY RIBBON MILL
MUNICIPAL WELL NO.7
BALLY BLOCK MILL
MUNICIPAL WELL NO.5
CHESTNUT
N. 4TH
MAIN
CHURCH STREET
PA ROUTE 100
LEGEND
EXISTING MONITORING WELLS
PRIVATE OR INDUSTRIAL WELL
EXISTING AND PROPOSED MUNICIPAL WELL
TOTAL VOC CONTOUR
STREAM
WELL ID
SAMPLE DATE
CONCENTRATION (MICROGRAMS PER LITER (ug/L))
CONSTITUENT
ARCADIS
AMERICAN HOUSEHOLD
BALLY GROUNDWATER SITE
BALLY BOROUGH
BERKS COUNTY, PENNSYLVANIA
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES COLLECTED FROM MONITORING WELLS
MARCH, 2005
NP00568.002
6

AR500025

BALLY GROUND WATER SUPERFUND SITE
OPERABLE UNIT TWO (BALLY PUBLIC WATER SYSTEM)
RECORD OF DECISION AMENDMENT
Responsiveness Summary
JULY 2007

Section 1 - Stakeholder Issues and Lead Agency (EPA) Responses

1. **Overall stakeholder acceptance**. Overall, the comments received by EPA regarding the preferred remedy identified in the Proposed Plan indicated that the stakeholders (local community, Borough of Bally administration, Pennsylvania Department of Environmental Protection (PADEP), etc.) were supportive of the installation of a new municipal supply well to address the presence of 1,4-dioxane in the Bally public water system.

2. **Private well monitoring**. A comment was received on a note-card from a member of the public during the March 22, 2007 public meeting that requested on-going monitoring of a private well to confirm that hazardous substances from the Bally Ground Water Contamination Superfund Site (Site) are not present in the private well. This private well was sampled by the Site Potentially Responsible Parties (PRP) in 2003, subsequent to the discovery of 1,4-dioxane in the Bally public water system, and was determined not to be contaminated by the Site. The extent of the ground water contamination plume associated with the Site is currently monitored using a series of ground water monitoring wells that have been installed at the Site by the PRP, under EPA oversight. Based on EPA's review of the ground water monitoring data, the Site ground water contamination plume does not extend beyond the boundaries of the Borough of Bally, and the Bally public water system. Therefore, based on current knowledge, the Site ground water contamination plume is not present in areas served by private wells. Because the extent of the ground water contamination plume is verified periodically via ground water monitoring, EPA does not believe that on-going monitoring of private wells near the Site is necessary at this time. However, in the event future monitoring indicates changes in the plume's boundaries, EPA may require additional monitoring of residential wells near the Site.

3. **Cancer epidemiological study**. A comment was received from a Bally resident on a note-card during the March 22, 2007 public meeting that requested that an epidemiological study be prepared to compare the cancer rate of Bally residents to residents of other communities. When performed in Pennsylvania, such epidemiological studies are prepared by the Pennsylvania Department of Health (PADOH). Interested members of the public can contact the PADOH to request an epidemiological study. The contact at the PADOH is Dr. Gene Weinberg, PADOH, Director of the Division of Community Epidemiology (phone: (717) 346-3284). EPA has contacted Dr. Weinberg regarding the Site. Dr. Weinberg informed EPA that he has not received a request from the public to perform an epidemiological study.

Section 2 - Technical and Legal Issues

1. **Arcadis U.S., Inc. Arcadis U.S., Inc.** (Arcadis), a consultant for Sunbeam Products, Inc. (Sunbeam), provided comments to EPA by letter, dated April 11, 2007, regarding the Proposed Plan, on behalf of Sunbeam. Broadly, the Arcadis comment letter provides history regarding an Administrative Order on Consent (AOC) between EPA and Sunbeam, the preparation of a focused feasibility study workplan, and concerns regarding EPA's decision to select the installation of a new municipal supply well to address 1,4-dioxane in the Bally public water system in the Proposed Plan, and the discharge location of municipal well number three (MW#3) in a subsequent decision document, as appropriate. The final paragraph of Arcadis's comment letter is as follows:

"In summary, Sunbeam is very concerned about USEPA's decision to separate the selection of the discharge location from the remainder of the remedy selection. This decision is contrary to the requirements of the ROD issued in 1989, the AOC signed by Sunbeam in 2003, and it invalidates the remedy selection process inherent in the preparation of a Focused Feasibility Study."

EPA has carefully reviewed the Arcadis comment letter, and offers the following response.

The remedial action selected in the ROD Amendment is not contrary to the requirements of the 1989 ROD, in that it seeks to address the impact of Site-related ground water on the Bally public water supply.

The original ROD for the Site, issued in 1989, selected a remedy for the Site that was believed to be protective of human health and the environment. The ROD remedy was selected in accordance with the nine criteria for evaluation included in the National Contingency Plan (NCP, Section 300.400), based upon EPA's understanding of the Site in 1989. In 2003, EPA became aware of a previously unidentified hazardous substance (1,4-dioxane) in the Bally public water system. The remedy described in the ROD Amendment is based upon EPA's current understanding of the Site, and is not inconsistent with the ROD.

The selection of a remedial action to address the threat to human health posed by the presence of a Site-related hazardous substance (1,4-dioxane) in the Bally public water system is consistent with the AOC, and does not invalidate the remedy selection process, as described in the NCP.

As documented in the ROD Amendment, 1,4-dioxane, a Site-related hazardous substance, was identified in the Bally public water system in 2003. The hazardous substance 1,4-dioxane is classified by EPA as a probable human carcinogen. The Bally public water system serves greater than 1,000 residential customers, commercial and industrial facilities and two schools. On September 30, 2003, EPA and Sunbeam entered into an AOC. The AOC was developed to address the presence of 1,4-dioxane in the Bally public water system. The AOC required, among other things, that Sunbeam prepare a focused feasibility study (FFS). The AOC describes the

purpose of the FFS, as follows:

"The FFS shall be designed to identify comprehensive alternatives to reduce the 1,4-dioxane concentrations identified in the Bally Borough PWS ("public water system") to achieve one of the following alternatives: (i) 3.0 ppb ("parts per billion"), or (ii) if 3.0 ppb is not practicable and feasible and reasonably achievable on a consistent basis, some other concentration approved by EPA in consultation with the Commonwealth of Pennsylvania, taking into consideration, among other things, cost and limitations on treatment technology to consistently and effectively achieve this concentration as applied in the field at this Site."

The AOC also describes what options were to be evaluated to address 1,4-dioxane in the Bally public water system, as follows,

"The FFS shall include, at a minimum, a thorough explanation of the following options:

A. New Well Option
Installation and utilization of a new municipal well that meets the standards of federal and state SDWA ("Safe Drinking Water Act") and their implementing regulations to provide a source of drinking water for the Borough of Bally that does not exhibit 1,4-dioxane concentrations in excess of 3.0 ppb

B. Municipal Well Treatment Option
Treatment of 1,4-dioxane at Municipal Well #3 to achieve one of the following alternatives: (i) 3.0 ppb ("parts per billion"), or (ii) if 3.0 ppb is not practicable and feasible and reasonably achievable on a consistent basis, some other concentration approved by EPA in consultation with the Commonwealth of Pennsylvania, taking into consideration, among other things, cost and limitations on treatment technology to consistently and effectively achieve this concentration as applied in the field at this Site."

As indicated in the Proposed Plan, and ROD Amendment, EPA will select a discharge location for MW#3 in a subsequent EPA decision document, as appropriate.

2. **Berks County Environmental Advisory Council**. The Berks County Environmental Advisory Council (BCEAC) provided comments, by letter dated April 11, 2007, to EPA regarding the Proposed Plan. The BCEAC's comments, and EPA's response are included, as follows:

A. BCEAC comment: "After review of the Detailed Hydrogeologic Water Resources Investigation Report (Arcadis, March 2006) we have concerns about the discharge point of the pump test being placed between the pumping well and monitoring locations. Any recharge that may have occurred may have impacted the results that were observed in the monitoring points."

EPA response: This issue was carefully considered by EPA prior to the

initiation of the final aquifer pump test, which occurred from December 5, 2005 until December 13, 2005. The following steps were taken to prevent recharge in the vicinity of the ground water monitoring wells, piezometers, and surface water monitoring points used to evaluate the impact of the pumping well (PW-01) on the local hydrologic system (ground water, surface water):

* Pumped water was piped from the pumping well for approximately 300 feet to the south to a plastic lined discharge basin, used for sediment settling.

* From the plastic lined discharge basin, pumped water flowed via a plastic lined swale approximately 50 feet to the culvert which conveys surface water beneath Wheeler Lane to the stream which flows from approximately northwest to southeast on the west side of Wheeler Lane.

EPA believes that the pumped water from PW-01 was conveyed sufficiently far from the aquifer pump test site to prevent recharge of pumped water into the ground in such a way that would have interfered with the aquifer pump test monitoring and results. Two documents have been added to the Administrative Record to provide additional information to the public regarding the aquifer pump test: an Addendum to the Water Resources Investigation Report (dated April 30, 2007, prepared by Arcadis G&M, Inc., prepared on behalf of Sunbeam); and a drawing depicting the location of the above-mentioned piping, plastic lined discharge basin, and plastic lined swale.

B. BCEAC comment: "In addition, the discharge from the pumping well appears to have been discharged to the drainage channel located to the southeast of MW-1. This channel discharges to the stream that was being evaluated for draw down. The stream monitoring protocols and procedures are not sufficient in the text of the report to evaluate whether accurate assessment of the potential impacts to surface water were evaluated. It is difficult from the information provided to assess whether an inversion occurred since the flow was increased by the discharge of the pumping well. Typically the discharge from the pump test is piped or conveyed downgradient (i.e., downstream) of the stream monitoring points not included within the flow being evaluated. Further details regarding the stream monitoring are required to complete our review of this effort."

EPA response: Additional information has been added to the Administrative Record regarding the aquifer pump test, as described above. Although Figure 3 from the Detailed Hydrogeologic Water Resources Investigation Report (dated March 2006) does not exhibit sufficient detail to illustrate this point, the pumped water from PW-01 was discharged to a plastic lined settling basin to reduce the water velocity prior to entering the stream referenced in the BCEAC comment at a location downgradient from the monitoring points (PZ-04, and SW-04) used to evaluate the impact of pumping PW-01 on the stream which is located on the west side of Wheeler Lane.

C. BCEAC comment: "Wetland investigations conducted at the site were restricted to onsite wetlands. Areas surrounding the site may also have impacted the use of this public water supply. All areas within the anticipated cone of depression resulting from the use of

the well should have been considered during this study."

EPA response: EPA believes that the aquifer pump test methodology was sufficient to evaluate the potential impact of the pumping of the future new municipal well on nearby wetland areas.

D. BCEAC comment: "After discussion with Ms. Alysa Suero of the Delaware River Basin Commission (DRBC), we understand that no application or documents have been supplied by the PRP for this new supply well to be considered for use. The DRBC indicated it had received a copy of the Detailed Hydrogeologic Water Resources Investigation Report (Arcadis, March 2006) from the USEPA; however, no review of the study has been conducted since no application has been submitted to date. We feel the DRBC should be allowed to review and comment on the hydrogeologic study prior to acceptance of this well for use. Any comments or concerns the DRBC presents should be addressed as part of the official comments, even if they are received after the deadline date since the PRP has not submitted an application to date."

EPA response: The Proposed Plan was provided to the DRBC, and comments have been received from the DRBC (see below for DRBC comment, and EPA response). As discussed in Section IV.,B.,1. of the ROD Amendment, "*Federal, State and local requirements pertaining to the construction and operation of a new municipal supply well will be complied with.*" Therefore, applicable DRBC requirements will be complied with during the implementation of the remedial action described in the ROD Amendment.

E. BCEAC comment: "The new supply well is located in Washington Township. We understand that Washington Township currently has no wellhead protection ordinance in place. We feel that discussion with Washington Township should be encouraged to establish a wellhead protection ordinance to restrict development and/or use of the parcels adjacent to the municipal supply well to ensure long-term protection of the resource."

EPA response: Community water systems (including the Bally public water system) are required under 25 Pa. Code Chapter 109.603 to protect the Zone I Wellhead Protection Area of a new source (such as the new municipal supply well) by complete control over any activity that would pose a threat to the potability of the ground water source. Such control has been accomplished at the Site by the acquisition of 2.5 acres of land, within which the new municipal supply well will be located.

F. BCEAC comment: "We suggest continued sampling of the monitoring well placed to assess any potential impacts from the former quarry located north of the supply well. Even though initial results reveal no contaminants, additional sampling is warranted due to the lack of information existing regarding the types of debris and/or wastes that may have been discarded at this location."

EPA response: EPA agrees with the comment, and such monitoring will be included in the ground water monitoring program.

G. BCEAC comment: "We encourage contingency plans to be considered in the event the existing contaminant plume migrates toward the new supply well location. Increased

water use from the new supply well could draw contaminants toward the new supply well. Contingency plans should be in place to address this condition."

EPA response: EPA agrees with the comment. The preparation of a Contingency Plan is a requirement discussed in the ROD amendment.

H. BCEAC comment: "Access, right-of-way, and other related civil matters should be addressed with local citizens. Discussions regarding these matters have apparently been limited to individuals that have no authority to resolve disputes or concerns. In addition, the pump test revealed adverse impacts to surrounding homeowner wells. Resolution of these anticipated impacts should be conducted prior to further consideration for use of the well."

EPA response: Based on current knowledge, EPA agrees that access to private property will have to be obtained in order to implement the remedial action (installation of new municipal supply well) described in the ROD Amendment. There will be an enforceable document with the PRPs to implement the remedial action. A provision will be included in the enforceable document which will require the PRPs to utilize best efforts to negotiate access to the private property necessary to implement the remedial action. If this negotiation is not successful, EPA will evaluate what other legal options exist to gain access to private property necessary to implement the remedial action. In addition, Section IV.B., of the ROD Amendment addresses the requirement to evaluate the impact of the long-term operation of the new municipal supply well on nearby private wells, and a Contingency Plan that specifies what corrective actions will be taken in the event that a private well is adversely impacted by the new municipal supply well.

3. **Borough of Bally**. The Borough of Bally provided comments by letter (dated March 16, 2007) to EPA regarding the Proposed Plan. The Borough's comments, and EPA's responses are included, as follows:

A. Broadly, the Borough of Bally considered the No Action Alternative, and the Additional Treatment of Current Municipal Supply Well to be unacceptable. No EPA response to this comment is considered to be necessary, because the preferred alternative in the Proposed Plan was the Installation of a New Municipal Supply Well.

B. The Borough of Bally prefers the New Municipal Supply Well alternative, and provided additional comments regarding the New Municipal Supply Well alternative, as follows:

1) Bally's comment: "The quality of this water shall continue to be protected by the EPA and Pennsylvania Department of Environmental Protection. The PRP shall continue to be responsible for all costs to ensure this protection, and in the event of production of non-potable water, be required to provide a new source of water. This should be stated in the amended ROD."

EPA's response: As stated in the ROD Amendment, a monitoring well with a sampling schedule will be established for the new well under the oversight of the EPA and Pennsylvania Department of Environmental Protection. The monitoring plan will

require samples to evaluate the quality of the water from the new municipal supply well on an ongoing basis. With regard to the Bally Superfund Site, EPA does not expect (based on the aquifer pump test performed during the Focused Feasibility Study) the ground water contamination plume to migrate to and adversely impact the new municipal supply well. However, the ROD Amendment still requires that the Site ground water monitoring program be revised to allow for monitoring of the plume to confirm that the plume is not migrating toward the new well. In addition, the ROD Amendment requires that a Contingency Plan be established so that, in the event that the plume does appear to be migrating toward the new municipal supply well, appropriate corrective actions can be implemented to prevent the plume from adversely impacting the new well. In any case, if the new well is impacted by a pollution event which renders the water from the well non-potable, the source of that pollution, and the party responsible for that pollution, will have to be identified, and regulatory action taken to address the pollution event, as appropriate. EPA notes that, in accordance with the NCP, the Site will be deleted from the National Priorities List (NPL) when EPA determines (after consultation with the State of Pennsylvania), that no further Superfund response actions are appropriate at the Site.

2) Bally's comment: "The quantity of water from the new municipal well shall be permitted at no less than 300 gallons per minute and should be so stated in the amended ROD."

EPA's response: This performance standard (300 gpm) is included in Section IV. of the ROD Amendment.

3) Bally's comment: "The proposed alternate, i.e., the new municipal supply well, should be completed immediately. The amended ROD should include a compliance schedule to complete the construction of the new municipal well."

EPA's response: Based on the FFS, and as stated in the ROD Amendment, it is expected that the completion of the new municipal supply well will take approximately one year. A compliance schedule will be included in the enforceable document regarding completion of work required in the ROD Amendment.

4) Bally's comment: "Continued progress on construction of the proposed new municipal well should not be conditional on any other aspects of the Superfund Cleanup."

EPA's response: Implementation of the work required in the ROD Amendment is not contingent upon other aspects of the Site cleanup.

5) Bally's comment: "The Surface Water Infiltration Protocol (SWIP) testing shall be completed by the PRP with a PADEP determination of the "not under the influence of surface water."

EPA's response: The ROD Amendment states, "*Federal, State and local requirements pertaining to the construction and operation of a new municipal supply well will be complied with.*" Therefore, SWIP testing will be performed, as appropriate, in accordance with applicable State requirements.

6) Bally's comment: "Prior to VOC contamination of the aquifer, the Borough had redundant wells, MW#1 and MW#3.

* The proposed plan does not provide for redundancy.
* As a minimum, the PRP shall provide a permanent emergency power source (generator) to provide emergency service in case of power loss.
* A manual transfer switch with a generator to be brought in an emergency is not acceptable.
* The Borough will not accept dedication of the proposed new municipal well without the permanent emergency generator."

EPA's response: The purpose of the ROD Amendment is to implement a remedial action (in this case the installation of a new municipal well) to address the presence of a Site-related hazardous substance (1,4-dioxane) in the Bally public water supply. The need for an emergency power source will be evaluated during the Remedial Design of the remedial action described in the ROD Amendment (new municipal supply well, ground water monitoring program, contingency plan), in accordance with applicable requirements, as appropriate. The ROD Amendment states, "*Federal, State and local requirements pertaining to the construction and operation of a new municipal supply well will be complied with.*" If Federal, State, or local requirements necessitate an emergency generator, they will be complied with.

Bally's comment: "The contingency plan to determine corrective actions in the event of migration of the ground water contamination plume should be completed during the construction of the proposed new municipal well."

EPA's response: The contingency plan will be developed during the remedial design phase, and is expected to be prepared before the new municipal supply well is complete.

Bally's comment: "The PRP shall ensure that the proposed new well meets or exceeds all applicable Safe Drinking Water Act requirements."

EPA's response: The ROD Amendment requires that water from the new municipal supply well shall meet applicable Safe Drinking Water Act requirements, including Safe Drinking Water Action Maximum Contaminant Levels.

4. **Delaware River Basin Commission**. The Delaware River Basin Commission (DRBC) indicated, by email (dated March 20, 2007) that the construction of a new drinking water well requires the submission of an application to amend the existing Borough of Bally Docket (DRBC permit). As discussed in Section IV.,B.,1. of the ROD Amendment, "*Federal, State and local requirements pertaining to the construction and operation of a new municipal supply well will be complied with.*" Therefore, applicable DRBC requirements will be complied with during the implementation of the remedial design/remedial action described in the ROD Amendment.

5. **PADEP**. The PADEP provided a comment letter, dated March 14, 2007, to EPA, and indicated that a performance standard for 1,4-dioxane in the Bally public water system should be

calculated using an exposure parameter of 70 years, rather than an exposure parameter of 30 years (Superfund default exposure parameter). As discussed in Section IV.,B.,1. of the ROD Amendment, "*Federal, State and local requirements pertaining to the construction and operation of a new municipal supply well will be complied with.*" Therefore, applicable State requirements will be complied with during the implementation of the remedial action described in the ROD Amendment. An acceptable concentration for 1,4-dioxane in the Bally public water system will be calculated consistent with State requirements.

In addition, PADEP provided a comment regarding the time frame expected to be necessary to implement Alternative 3 from the Proposed Plan (Additional treatment of current municipal supply well). As this remedial alternative was not selected in the ROD Amendment, a response from EPA regarding this PADEP comment is not considered to be necessary.

For clarification in the public record, the PADEP incorrectly cited the one and 10-day health advisories for 1,4-dioxane. The correct health advisories are 4,000 parts per billion (one-day health advisory for a 10-kg child), and 400 parts per billion (ten-day health advisory for a 10-kg child).

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