DRAFT THIRD EXPLANATION OF SIGNIFICANT DIFFERENCES
OCCIDENTAL CHEMICAL SUPERFUND SITE
POTTSTOWN, PENNSYLVANIA

I. INTRODUCTION AND STATEMENT OF PURPOSE

Site Name:	Occidental Chemical Corporation Superfund Site ("Site") EPA ID Number: PAD980229298
Site Location:	Lower Pottsgrove Township, Montgomery County, Pennsylvania
Lead Agency:	U.S. Environmental Protection Agency, Region III
Support Agency:	Pennsylvania Department of Environmental Protection ("PADEP")

The United States Environmental Protection Agency ("EPA") is issuing this draft Explanation of Significant Difference ("ESD") to make three modifications to the 1993 Record of Decision ("ROD") for the Occidental Chemical Corporation Superfund Site in Lower Pottsgrove, Montgomery County, Pennsylvania ("Site").

First, EPA is clarifying the description of the Site and the institutional controls that are still required for the Site. Institutional controls are administrative or legal controls that minimize the potential for human exposure to contamination by limiting land or resource use. Examples of institutional controls include easements, use restrictions on real property, and prohibitions on the use of groundwater or other resources. In Pennsylvania, institutional controls are now often implemented by a recorded environmental covenant. As explained more fully below, the institutional controls still required by EPA at the Site, as delineated in Figure 1, are a restriction of the Site to industrial use only and a prohibition on the use of groundwater for drinking purposes.

The second modification to be made by this ESD is a change to the groundwater "performance standards" required for the Site's clean-up. "Performance standards" are clean-up levels selected by EPA for a site's clean-up. As discussed more fully below, EPA is changing the performance standards required for the groundwater clean-up at the Site to the "maximum contaminant levels" ("MCLs") for the contaminants of concern ("COCs") identified in the ROD. MCLs are the maximum permissible levels of a contaminant in public water supplies under the federal Safe Drinking Water Act and under Pennsylvania law. The performance standards originally selected by EPA for the Site were MCLs *or* "background concentrations" of COCs, whichever was lower. In addition to selecting MCLs as the new performance standards for the Site, EPA will also require that a risk evaluation be performed once the new performance standards have been met.

EPA's third modification adds tetrachloroethene ("PCE") and cis-1,2-dichloroethene ("cis-1,2 DCE") as additional COCs to the groundwater-monitoring program at the Site. Neither PCE nor cis-1,2 DCE were among the COCs originally identified in the ROD. However, routine investigations at the Site over time have revealed the presence of both contaminants in groundwater at levels higher than their respective MCLs. As discussed below, EPA believes it would be protective of human health and the environment to include PCE and cis-1,2 DCE as Site COCs.

EPA is issuing this ESD in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9617(c), and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 C.F.R. § 300.435(c)(2)(i). EPA has determined that the proposed changes to the remedial action are "significant," as defined by Section 300.435(c)(2)(i) of the NCP, and do not fundamentally alter the remedial action selected in the ROD with respect to scope, performance, or cost. This ESD will initially be issued as a draft to give the public an opportunity to comment.

Pursuant to Section 117(d) of CERCLA, 42 U.S.C. § 9617(d), and Section 300.435(c) of the NCP, 40 C.F.R. § 300.435(c), EPA will publish a public notification in *The Pottstown Mercury* announcing the issuance of this draft ESD. EPA will also provide the public with an opportunity to comment on this draft ESD. The opportunity to comment will end thirty (30) days following publication of the notice in *The Pottstown Mercury*. EPA encourages the public to review and comment on this draft ESD. Interested parties may submit their comments to:

Tim Gallagher (3HS21)
Remedial Project Manager
U.S. Environmental Protection Agency – Region III
1650 Arch Street
Philadelphia, PA 19103
gallagher.tim@epa.gov

Before implementing the revised remedial action described in the draft ESD, EPA will consider all written and oral comments from the public. As a result of any such comments, EPA, in consultation with PADEP, may modify or withdraw this draft ESD prior to final issuance if public comment warrants such an action, or if new information is presented as a result of such comments.

This draft ESD is supported by an Administrative Record. The documents that form the basis for EPA's issuance of this draft ESD, as well as the draft ESD itself, have been incorporated into an Administrative Record in accordance with Section 300.835(a)(2) of the NCP, 40 C.F.R. § 300.835(a)(2). The Administrative Record is available for review during business hours at the information repository in the offices of EPA Region III at 1650 Arch Street, Philadelphia, PA, and at an information repository at the Pottstown Public Library, 500 East

High Street, Pottstown, PA, (610) 970-6551. The Administrative Record may also be found on the internet at http://loggerhead.epa.gov/arweb/public/advanced_search.jsp.

II. SUMMARY OF THE SITE HISTORY, CONDITIONS AND REMEDIATION

The Site is the location of a former manufacturing facility at which Firestone Tire & Rubber Company produced tires and the plastic, polyvinyl chloride ("PVC"). During Firestone's ownership of the Site, hazardous substances, including, among others, trichloroethylene ("TCE"), were disposed of there. Occidental Chemical Corporation acquired the Site in 1980 and manufactured PVC there until 2005. Glenn Springs Holdings, Inc., a corporate affiliate of Occidental Chemical, currently manages the Site.

For a more complete summary of the Site's history and conditions, the reader should review Sections II and V of the ROD. The ROD can be found in the Administrative Record, which may be reviewed at the public repositories mentioned above, and on the internet at http://www.epa.gov/reg3hwmd/super/sites/PAD980229298/index.htm

EPA selected a remedial action for the Site in a 1993 ROD, which required clean-ups of three distinct areas of the Site: a contaminated groundwater plume, four unlined earthen (or "seepage") lagoons containing PVC waste, and contaminated sediments in an on-Site drainage swale and sediment basin. The specific objectives for the remedial action selected in the ROD are:

- To restore groundwater in the bedrock aquifer to Federal and State applicable or relevant and appropriate requirements ("ARARs"), including drinking-water standards, and to a level that is protective of human health and the environment;

- To protect non-implicated groundwater and surface water for current and future use; and

- To prevent migration of chemicals from the earthen lagoons to groundwater or to surface water and to prevent direct contact with lagoon material.

The ROD has since been modified by two ESDs. On June 29, 1995, EPA issued a First ESD changing the method selected in the ROD for disposal of certain material generated in the implementation of the remedy for OU-2. The Second ESD, signed on April 9, 2008, included three significant changes to the 1993 ROD. The first change modified the remedial action for OU-2 by selecting a remedial alternative of excavation and off-Site disposal of all PVC waste materials contained in the four earthen lagoons. The second change modified the clean-up levels for the OU-2 soils; and the third change eliminated the required institutional control for OU-2 because all PVC waste and soils not meeting the performance standards selected in the Second ESD were disposed of off-Site.

In 1994, EPA issued an administrative order to Occidental Chemical and Bridgestone/Firestone, Inc. (f/k/a Firestone Tire & Rubber Company), requiring them to implement the remedial action. Occidental Chemical has been performing the remedial action in

compliance with the order, initiating construction of the groundwater remedy in 1998 and completing construction of the lagoon remedy in 2008. Occidental Chemical is currently operating and maintaining the groundwater remediation system at the Site.

For a complete summary of the implementation of the remedial action at the Site, the reader should review EPA's September 2008 Preliminary Close-Out Report, which may be found at the web-page maintained for the Site at http://www.epa.gov/reg3hwmd/super/sites/PAD980229298/index.htm

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES

The purpose of this ESD is three-fold: (1) to clarify the description of the Site and the institutional controls required by EPA at the Site; (2) to change the groundwater performance standards from the background levels for each COC to the MCLs and to require a cumulative risk evaluation once the MCLs have been met; and (3) to add PCE and cis-1,2 DCE to the list of COCs in the groundwater.

A. Institutional Controls

Institutional controls are administrative or legal controls that minimize the potential for human exposure to contamination by limiting land or resource use. They are generally used in conjunction with engineering measures such as groundwater remediation. Examples of institutional controls include easements, use restrictions on real property, and prohibitions on the use of groundwater or other resources. In Pennsylvania, institutional controls are now often implemented by the recording of an environmental covenant by the owner of an affected property in accordance with the Commonwealth of Pennsylvania's Uniform Environmental Covenants Act, 27 Pa. C.S. §§ 6501-6517.

In the 1993 ROD, EPA required two institutional controls. First, groundwater use at the Site for drinking purposes was prohibited. Second, the Site's future use was limited to "industrial use only." To date, these institutional controls have been implemented by a deed notice filed by Occidental Chemical.

An important purpose of this draft ESD is to clarify what portions of the Occidental property in Lower Pottsgrove are properly understood as the Site and subject to these two institutional controls.

1. Description of the Site

The National Priorities List ("NPL") does not describe releases in precise geographical terms. The purpose of the NPL is merely to identify the releases that are priorities for further evaluation. *See* 42 U.S.C. § 9605(a)(8)(B). When a site is listed on the NPL, it is necessary to define the release or releases encompassed within the listing. The approach generally used is to delineate a geographical area (usually the area within the installation or plant boundaries) and define the site by reference to that area. But the "site" is neither equal to nor confined by the

boundaries of any specific property that may give the site its name. The precise nature and extent of a site are typically not known at the time of listing. The National Contingency Plan ("NCP") provides that "the nature and extent of the threat presented by a release" will be determined by a remedial investigation and feasibility study ("RI/FS") as more information is developed on contamination at a site. *See* 40 C.F.R. § 300.68(d).[1]

Thus, when EPA listed the Occidental Chemical Corporation Site on the NPL in 1989, the Agency did not intend to suggest that the entire 250-acre property owned by Occidental Chemical would be subject to a remedial action. Rather, in its final listing of the Site on the NPL, EPA identified the releases of several volatile organic compounds ("VOCs") in the groundwater as the primary concern at the Site. The listing specifically stated that TCE, trans-1-2-dichloroethene ("trans-1,2 DCE"), and vinyl chloride had been detected in on-Site "process water" wells and in samples collected from the four unlined seepage lagoons. Later, as a result of the RI performed by Occidental at the Site, EPA also added releases of styrene and ethylbenzene as groundwater COCs. The release of a sixth compound, cis-1,2-dichloroethene ("cis-1,2 DCE), was added to the COC list after the laboratory analytical method for this compound was standardized. However, the addition of cis-1,2 DCE to the COC list was never recorded in a formal decision document.

The ROD describes the Site geographically by reference to the property owned by Occidental Chemical ("It consists of approximately 250 acres . . . ."), as well as by reference to the area within that property where disposal is believed to have occurred ("… The Site consists of a closed seventeen-acre solid waste landfill, a seven-acre active industrial waste landfill, four inactive unlined earthen lagoons, two active lined lagoons, and the TCE handling area").[2]

The ROD's broad geographical descriptions of the Site might lead to the conclusion that portions of Occidental Chemical's property, not affected by the releases listed on the NPL, are subject to an institutional control limiting their use to industrial purposes. EPA hereby clarifies that the Site, as listed on the NPL, consists of the "disposal area" and the contaminated groundwater plume described in the NPL listing.

2. Clarification of Institutional Controls Required at the Site

EPA has determined that, with respect to Superfund, only the portion of the Occidental Chemical property in Lower Pottsgrove, PA, which comprises the Site shall be limited to the "industrial use only" restriction.

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[1] *See* "Clarification of NPL Policy," EPA memorandum dated August 3, 1995.

[2] Early Site investigations by Firestone and Occidental Chemical showed that the highest concentrations of TCE in groundwater were in the vicinity of the former "TCE handling area," which was where TCE was unloaded at the site from railroad tank cars into a holding tank. During the unloading process, there was occasional spillage that caused releases of TCE into soils. In 1984, Occidental Chemical removed 898 tons of contaminated soils from the "TCE handling area." According to the ROD, this removal reduced the releases of TCE from the soil to the groundwater.

Also, EPA will continue to require a prohibition on the use of groundwater at the Site for drinking purposes until all performance standards have been met and a risk assessment establishes that no unacceptable risk to human health is presented by the groundwater at the Site.

a. Clarification of Institutional Control for Groundwater

In the ROD, EPA selected the following institutional control for operable unit one ("OU-1"), the contaminated groundwater plume:

> *Institutional Controls, in the form of deed restrictions, will be placed on the deeds to the properties that comprise the on-Site groundwater where contaminants remain above Performance Standard levels. The Institutional Controls are needed to prevent the use of on-site groundwater for a drinking water source.*

To illustrate the portion of the Occidental property where this institutional control applies, EPA has attached Figure 1, which presents a depiction of the Site's contaminated groundwater plumes. The two plumes were delineated with the Golden Surfer® contour program that uses a linear kriging algorithm where instances of "non-detects" are assigned a concentration of ½ the detection limit for the COC. The plume contours drawn represent the average 2011 concentrations of the Site COCs. The large plume is a composite of the plumes generated by mapping the MCL exceedances of all the individual COCs. The smaller plume, in the "RW-04" area, represents PCE only, as no other groundwater COC has been detected in this area above its MCL. Both plumes are contained within the bold, green-lined shape shown on Figure 1 and described in the legend as the "Revised NPL Site (Groundwater)".

The institutional control prohibiting the use of groundwater for drinking purposes applies to the portions of the property that are delineated by the shaded yellow area on Figure 1, which approximates the boundary of contaminated groundwater above MCLs and which is contained within this bold, green-lined shape. The reader should refer to Figure 1's legend for additional clarification.

b. Clarification of Institutional Control for "Industrial Use Only"

In the ROD, EPA also selected an institutional control requiring that the Site be limited to industrial use only:

> *Additional deed restrictions will be implemented to limit the use of the Site to industrial use only. In addition, continued monitoring of specified wells and periodic reevaluation of remedial technologies for groundwater restoration are also required.*

EPA removed this requirement for operable unit two ("OU-2"), the earthen lagoons, in the Second ESD (2008), in which EPA stated:

> *Since all material from OU-2 which exceeds the cleanup standards will be removed and disposed off-Site, no institutional controls will be required for OU-2.*

Completion of the work described in the 2008 ESD for OU-2 is documented in the September 29, 2008 Preliminary Closeout Report.

The institutional control limiting the use of the Site to industrial purposes applies to the portions of the property that are delineated by the bold, green-lined shape on Figure 1 (with the exception of that area addressed by the 2008 ESD and represented on Figure 1 as the blue-hatched area because all PVC waste and soils not meeting performance standards selected in the Second ESD were disposed of off-Site). The reader should refer to Figure 1's legend for additional clarification.

c. Implementation of Institutional Controls at the Site

The institutional controls for the Site are currently being implemented by a deed notice for the Occidental Chemical property. As discussed above, the Site is a part, but not the whole, of the entire Occidental Chemical property in Lower Pottsgrove, PA (Please refer to the Figure 1 legend: the entire Occidental property is described as "Occidental Chemical" and is outlined in bold red). Consistent with the practices of the time, Occidental Chemical recorded its deed notice with the Recorder of Deeds for Montgomery County, Pennsylvania in 1994. Since then, however, the Commonwealth of Pennsylvania has enacted a Uniform Environmental Covenants Act, 27 Pa. C.S. §§ 6501-6517, which may provide a clearer means of ensuring that the use restrictions required at the Site run with the property. EPA and Occidental Chemical have recently discussed further implementation of the institutional controls by recording an environmental covenant for the Site under the Commonwealth's Uniform Environmental Covenants Act, and a draft environmental covenant submitted by Occidental Chemical is under review by EPA.

B. Change in Groundwater Performance Standards

This ESD formally establishes the MCLs for each COC as the groundwater performance standards at the Site. "Performance standards" are clean-up levels selected by EPA for a site's clean-up. This ESD also adds the requirement of a cumulative-risk evaluation once MCLs have been met.

At the time EPA issued its ROD in 1993, the Agency selected as the performance standards for the COCs the MCLs *or* the "background" concentrations of the COCs, whichever was lower. The MCLs are the federal standards for public drinking water supplies under the Safe Drinking Water Act, 42 U.S.C. §§ 300f-300j-26. At the time the ROD was issued, "background" was the Pennsylvania standard under 25 Pa. Code §§ 264.90-264.100. Subsequent to EPA's issuance of the ROD, the Commonwealth of Pennsylvania passed the Land Recycling and Remediation Standards Act, 35 PA. Con. Stat. § 6026.303, commonly referred to as "Act 2," which, among other things, changed the Pennsylvania groundwater cleanup standard. After consultation with PADEP, EPA has decided to modify the performance standards required at the Site in light of this change in Pennsylvania's requirements.

This ESD also establishes the additional requirement that, after the MCLs are achieved for twelve (12) consecutive quarters, as required by the ROD, the cumulative risk presented by all remaining Site-related compounds in the groundwater must be at or below EPA's level of unacceptable risk of 1E-04 (1 in 10,000) cancer risk level; and the non-cancer hazard index ("H.I."), which is the sum of the chemical-specific, target-organ-specific, hazard quotients for these compounds, must be equal to or less than 1.

C. Addition of Tetrachloroethene ("PCE") and cis-1,2-Dichloroethene ("cis-1,2 DCE") as Contaminants of Concern in Groundwater

EPA is formally adding PCE and cis-1,2 DCE as COCs for groundwater at the Site. Routine groundwater sampling has demonstrated the presence of both contaminants above their MCLs of 5 parts per billion ("ppb") and 7 ppb, respectively in Site groundwater. PCE and 1,2 DCE are hazardous substances, as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14). PCE and DCE are also listed as hazardous substances at 40 C.F.R. Part 302; *see* Section 102(a) of CERCLA, 42 U.S.C. § 9602(a). The existing groundwater treatment system has proven capable of treating and removing both of these contaminants.

D. Summary of Proposed Modifications to the Remedial Action

EPA has determined that it is appropriate to issue an ESD to modify the groundwater remedy set forth in the 1993 ROD. In accordance with this ESD, the groundwater remedy is modified as follows:

The original text of Section IX.A.1.b of the 1993 ROD states:

> a) The well system for extracting groundwater shall be operated until the performance standard for each contaminant of concern is met and maintained throughout the entire area of the plume of contamination for a period of twelve consecutive quarters. The plume is defined as the groundwater which contains contaminants of concern above their background concentrations. The performance standard for each contaminant of concern in the groundwater shall be the MCL for that contaminant (the federal ARAR for public drinking water supplies under the Safe Drinking Water Act) or the background concentration of that contaminant (the Pennsylvania ARAR under 25 Pa. Code §§264.90-264.100), whichever is lower. The background concentration for each contaminant of concern shall be determined by EPA in consultation with PADER during the Remedial Design in accordance with the procedures for groundwater monitoring outlined in 25 Pa. Code §264.97. Determination of background concentrations shall not delay implementation of the remedy. In the event that a contaminant of concern is not detected in samples taken for the determination of background concentrations, the method detection limits of drinking water analytical methods with respect to that contaminant of concern shall constitute the "background" concentration of the contaminant.

The MCLs for all of the contaminants of concern are set forth at 40 C.F.R. § 141.61 (July 1, 1992 ed. including amendments set forth therein). The MCLs, the detection limits and the appropriate analytical methods for testing for the contaminants of concern are listed in Table 18.

Table 18

Contaminant	MCL (ug/l)	Detection Limit (ug/l)	Method
Vinyl chloride	2	0.18	601
Ethylbenzene	700	0.06	524.2
Styrene	100	0.04	524.2
1, 2-Dichloroethene	100	0.06	524.2
Trichloroethene	5	0.12	601

In accordance with this ESD, Section IX.A.1.b of the ROD shall be replaced with the following:

The well system for extracting groundwater shall be operated until the performance standard for each contaminant of concern is met and maintained throughout the entire area of the plume of contamination for a period of twelve (12) consecutive quarters and until an acceptable risk level, as determined by a risk assessment, has also been met. The plume is defined as the groundwater which contains contaminants of concern above their respective MCLs. The performance standard for each contaminant of concern in the groundwater shall be the MCL for that contaminant (the federal ARAR for public drinking water supplies under the Safe Drinking Water Act, 42 U.S.C. §§ 300f-300j-26).

The MCLs for all of the contaminants of concern are set forth at 40 C.F.R. § 141.61 (July 30, 1992 ed. including amendments set forth therein). The contaminants of concern, along with their associated MCLs, are listed in the new Table 18.

In addition, the cumulative risk presented by all remaining Site-related compounds in the groundwater once they have reached MCL levels must be at or below the 1E-04 cancer risk level; and the non-cancer H.I., which is the sum of the chemical-specific, target-organ-specific hazard quotients for these compounds, must be equal to or less than 1.

New Table 18

Contaminant	MCL (ug/l)
Vinyl chloride	2
Ethylbenzene	700
Styrene	100
1,2-Dichloroethene	100
Trichloroethene	5
cis-1,2-Dichloroethene	7
Tetrachloroethene	5

E. Scope, Performance, and Cost

The changes documented in this ESD will not fundamentally change the scope, performance, or cost of the remedial action. The clarification of the institutional controls will help to ensure their accurate implementation and will facilitate appropriate re-use of the Site and the Occidental Chemical property. The changes to the groundwater performance standards, along with the requirement of a risk assessment and the addition of PCE and cis-1,2 DCE to the groundwater monitoring program, will ensure protectiveness at the completion of the remedial action.

The main objective of the remedial action is the restoration and protection of the Site groundwater. The remedial action sought to achieve this objective by containing, extracting, and treating groundwater, and by preventing the migration of hazardous substances from the earthen lagoon by means of excavation and off-Site disposal of all PVC waste and contaminated soils found in the earthen lagoons. This Third ESD does not alter the scope of the remedial action and does not interfere with the performance or the expected duration of the remedial action.

IV. COMMUNITY INVOLVEMENT

In accordance with Section 117(d) of CERCLA, 42 U.S.C. § 9617(d), and Section 300.435 of the NCP, 40 C.F.R. § 300.435, EPA will publish a notice of availability of this draft ESD in the *Pottstown Mercury.* EPA will provide the public with an opportunity to comment on this draft ESD. The opportunity to comment will end thirty (30) days following publication of the notice in *The Pottstown Mercury* newspaper announcing the issuance of this draft ESD. Interested parties should submit their comments to:

Tim Gallagher (3HS21)
Remedial Project Manager
U.S. Environmental Protection Agency – Region III
1650 Arch Street
Philadelphia, PA 19103
gallagher.tim@epa.gov

This draft ESD is supported by and will be incorporated into an Administrative Record. The Administrative Record includes all documents that form the basis for EPA's proposed decision as described in this draft ESD and will include any comments EPA receives from the public on this document. The Administrative Record is available for public review at the following locations:

EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029
(215) 814-3157
or
Pottstown Library
500 High Street
Pottstown, PA 19464
(610) 970-6551
or
on the Internet at
http://loggerhead.epa.gov/arweb/public/advanced_search.jsp.

V. SUPPORT AGENCY REVIEW

In accordance with 40 C.F.R. § 300.435(c)(2), EPA has notified PADEP of the modifications to the Site remedial action described in this draft ESD. PADEP supports the proposal set forth herein subject to consideration of comments received during the public comment period.

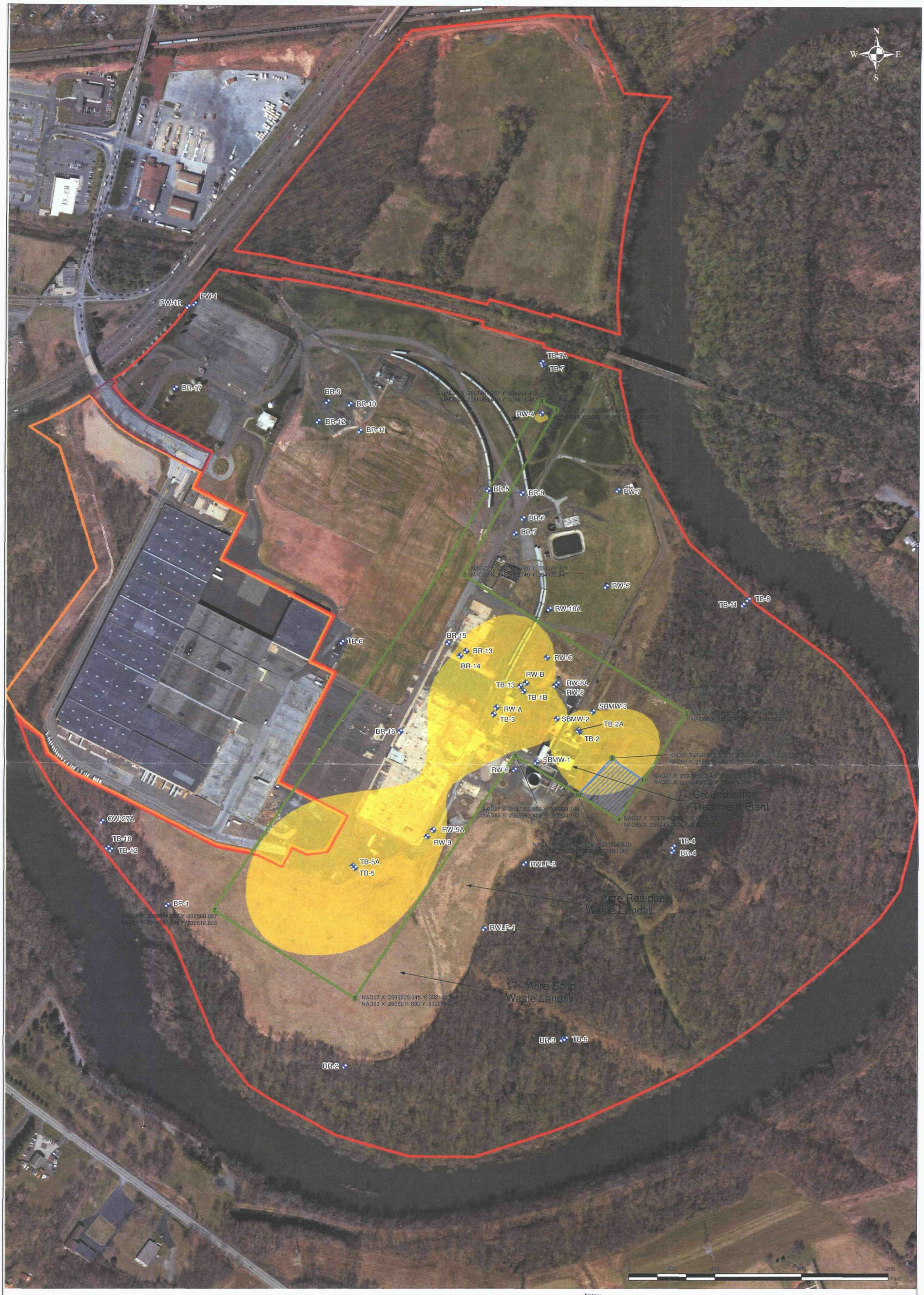
VI. AFFIRMATION OF STATUTORY DETERMINATIONS

Considering the changes proposed by this draft ESD, EPA believes that the remedial action will remain protective of human health and the environment, will comply with all Federal and State requirements that are applicable or relevant and appropriate, and will be cost-effective.

_____ _____

Ronald J. Borsellino, Director
Hazardous Site Cleanup Division

Date



Legend

- Vertices
- Bedrock Monitoring Well
- Revised NPL Site (Groundwater)
- 2008 ESD Area
- COC Plume Geometry (2011)

Property Boundaries

- Adjacent Property
- Township ROW
- Occidental Chemical

Vertex	NAD27 Coordinates		NAD83 Coordinates	
	X	Y	X	Y
1	2,597,549.149	334,891.759	2,566,135.956	334,935.778
2	2,597,126.020	334,128.825	2,565,712.749	334,172.841
3	2,598,154.945	333,488.130	2,566,741.646	333,532.207
4	2,597,844.385	332,991.157	2,566,431.036	333,035.230
5	2,597,366.809	333,290.148	2,565,953.472	333,334.193
6	2,596,625.345	332,162.253	2,565,211.890	332,206.289
7	2,595,974.987	332,568.027	2,564,561.549	332,612.024
8	2,597,481.201	334,934.472	2,566,068.010	334,978.487
9	2,597,813.308	333,280.417	2,566,399.982	333,324.483
10	2,597,657.171	333,106.839	2,566,243.826	333,150.901
11	2,597,959.064	333,175.319	2,566,545.733	333,219.394

Notes:

1. The 2011 results from all bedrock wells were included in the analysis.
2. The concentrations for each well and each parameter were averaged prior to contouring.
3. Non-detect results were assigned a value of ½ the reporting detection limit.
4. Contouring was completed using Golden Graphics Surfer v.10. with the following conditions:
   a. The data were log transformed before contouring.
   b. A grid spacing of 50 feet was used.
   c. At well clusters, the maximum concentration was used for plume interpolation. Well clusters are defined as wells within 50 feet of one another [within the x or y direction].
   d. The data were contoured by kriging with the default linear variogram and an anisotropy of 1.2 at 35 degrees north of east.
5. Each site compound of concern [cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, ethylbenzene, styrene, tetrachloroethylene, trichloroethylene, and vinyl chloride] was contoured separately following the process described in Note 4. The plume, as illustrated, is a composite of the individual plumes where one or more of the COCs exceeds its MCL.
6. The hatched area was cleaned up to Residential Standards as per the 2008 ESD and is not subject to any institutional controls.
7. Bing Maps Aerial basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online © 2010 Microsoft Corporation and its data suppliers.

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Project
OCCIDENTAL CHEMICAL POTTSTOWN FACILITY
POTTSTOWN
MONTGOMERY COUNTY PENNSYLVANIA

Drawing Title
REVISED SITE DELINEATION
(Based on 2011 Groundwater Concentrations)

Project No.	2631813
Date	07/12/2011
Scale	1" = 200'
Drn. By	ACJ
Last Revised	5/31/2012

Drawing No. **1**