AS06-02

STATE OF ILLINOIS)
)
COUNTY OF COOK)

PROOF OF SERVICE

I, the undersigned, on oath state that I have served the attached RCRA DELISTING ADJUSTED STANDARD PURSUANT TO 35 Illinois Administrative Code 720.122 upon the person(s) to whom it is directed, by placing a copy in an envelope addressed to:

Dorothy Gunn, Clerk
Pollution Control Board
100 West Randolph Street
Suite 11-500
Chicago, Illinois 60601
(CERTIFIED MAIL)

William Ingersoll
Illinois Environmental Protection Agency
Division of Legal Counsel
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276
(CERTIFIED MAIL)

U.S. EPA
Permits and State Programs Division
Office of Solid Waste and
Emergency Response
Washington, D.C. 20460
(CERTIFIED MAIL)

U.S. EPA, Region V
Waste, Pesticide, and Toxics Division
77 West Jackson Street
Chicago, IL 60604
(CERTIFIED MAIL)

Stanley Yonkauski, Jr.
Illinois Dept. of Natural Resources
524 South Second Street
4th Floor
Springfield, IL 62701-1787
(CERTIFIED MAIL)

and mailing it from Chicago, Illinois on 1/17/06, with sufficient postage affixed.

SUBSCRIBED AND SWORN TO BEFORE ME
this 17th day of JANUARY, 2006

OFFICIAL SEAL
DENISE BOKER
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:06/09/08

Notary Public

PETITION

RCRA DELISTING ADJUSTED STANDARD PETITION FOR BP PRODUCTS NORTH AMERICA INC., FORMER WOOD RIVER REFINERY IN MADISON COUNTY, ILLINOIS

Greg Jevyak
Environmental Business Manager
Atlantic Richfield Company
A BP Affiliated Company
301 Evans Avenue
Wood River, Illinois 62095

Ronald J. Ganim
BP America Inc.
Mail Code 4 West
4101 Winfield Road
Warrenville, Illinois 60555

January 18, 2006

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January 18, 2006

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PETITION OF BP Products North America Inc.	)	
FOR AN ADJUSTED STANDARD	)	**RCRA Delisting Adjusted Standard**
PURSUANT TO 35 Ill. Adm. Code 720.122	)	
	)	

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BP Products North America Inc. ("BP"), formerly known as Amoco Oil Company*, submits this petition to the Illinois Pollution Control Board (IPCB) for an adjusted standard pursuant to 35 Illinois Administrative Code 720.122. The petition requests delisting via an adjusted standard for leachate from the Pond 1 Landfill at the Riverfront Property, former Amoco Wood River refinery, in Madison County, Illinois.

The material for which delisting is sought is leachate generated from the Pond 1 Landfill. The Pond 1 Landfill contains sludge and associated soil and debris, now solidified, from the facility's former wastewater treatment plant surface impoundments at the closed refinery. The only hazardous waste in the surface impoundments was dissolved air flotation (DAF) float. DAF from petroleum refining is a listed hazardous waste under federal and Illinois regulations (35 IAC 721.132), hazardous waste number K048, because of the customary presence of hexavalent chromium and lead. Because of the discharge of a listed hazardous waste into the impoundments, all sludges and underlying impacted soils in the impoundments were classified as hazardous waste according to the "mixture rule" in 35 IAC 721.103a(2)(D). Therefore, the waste residuals in the Pond 1 Landfill, specifically the landfill leachate, carry the K048 hazardous waste code (per 35 IAC 721.103e[1]).

BP previously sought to delist the waste contained in the Pond 1 Landfill. The Board denied that petition because it concluded that sampling of the in situ waste was insufficient (see Appendix A IPCB Adjusted Standard [AS 96-6] dated October 2, 1997). This new petition is distinguishable from the earlier one in that it only seeks to delist the hazardous waste leachate after it is generated from the Pond 1 Landfill. This petition in no way seeks to alter the status of the Pond 1 Landfill as a RCRA facility or the associated corrective action requirements.

BP is pursuing this delisting petition in order to reduce the costs and risks associated with the management of the "hazardous waste" leachate from the Pond 1 Landfill. BP currently transports the leachate by truck to the City of Wood River Wastewater Treatment Facility (WWTF). Leachate generated from the Pond 1 landfill is not a listed hazardous waste when removed and handled in accordance with the exclusion at 35 Ill. adm. Code 721.104 (a)(1)(b). If delisted and thus non-hazardous, the leachate could be discharged into BP's East Surge Pond and transferred along with stormwater through a series of existing stormwater retention basins (via pumps and gravity flow) to the WWTF (along with other discharged waste streams) at essentially no cost, while eliminating the risk inherent in transporting the waste via trucks.

Illinois is an authorized State to carry out the Resource Conservation & Recovery Act (RCRA), and its petition mechanism for waste delisting provides under 35 IAC 720.122 and 35 IAC 104 Subpart D for the demonstration that a specific waste stream from a particular generating facility should not be regulated as listed hazardous waste. To be successful in delisting a site-specific waste stream, 35 IAC 720.122 requires the petitioner to demonstrate that the waste stream does not meet any of the listing criteria, does not exhibit any of the hazardous waste characteristics, and does not contain any other toxics in excess of health-based levels. The IPCB may grant the adjusted standard consistent with federal law if the requirements of 35 IAC 720.122 are demonstrated. This document provides the justification necessary for an adjusted standard demonstration, consistent with *EPA RCRA Delisting Program Guidance Manual for the Petitioner* (U.S. EPA, 2000), as referenced in 35 IAC 720.111.

* Amoco Corporation and BP p.l.c. merged in 1998. Today, the corporate parent is BP p.l.c.

The purpose of the petition is to exempt (delist) from regulation as "listed hazardous waste" leachate generated from the Pond 1 Landfill at the Riverfront Property at the former Amoco Wood River Refinery in Madison County, Illinois. Under 35 Illinois Administrative Code (IAC) 720.122, IEPA provides a petition mechanism to allow for the demonstration that a specific waste stream from a particular generating facility should not be regulated as hazardous waste. This petition presents information in support of delisting of the generated leachate.

1.1 FACILITY DESCRIPTION

The former Amoco Wood River Refinery is located in Madison County, Illinois. The Wood River Refinery began oil-refining operations in 1908 as Standard Oil Company, later Amoco Oil Company and ceased operations in 1981. Currently, a BP marketing terminal occupies a portion of the former Main Plant site. BP's Wood River Riverfront Property is located about 1,000 feet to the west of the former plant. The Riverfront Property is bordered on the west by the Mississippi River, on the east by the Wood River Levee District (WRLD) levee, on the south by property owned by ConocoPhillips (formerly owned by Shell Oil Company), and on the north by the former channel of Wood River. The waste management area of the Riverfront Property, of which the Pond 1 Landfill is a part, covers approximately 40 acres and is located on the east side of the Riverfront Property. Figure 1-1 is a site location map.

In 1957, Ponds 1 through 5 and the inlet channel were created at the Riverfront Property by the U.S. Army Corps of Engineers as borrow sources for the adjacent Wood River Levee District levee. Use of the ponds as surface impoundments for wastewater treatment began in 1958. In 1958, Pond 1A was constructed for use as an oil skimmer. In 1977, Amoco started operation of an advanced design wastewater treatment plant containing a dissolved air flotation (DAF) unit. Ponds 1, 1A, 2, 3, and 4, were used in sequence for wastewater treatment from this time until petroleum-refining operations ceased in 1981.

A temporary surge basin (TSB), located north and west of the former Pond 1, was built in 1983 after refinery operations had ceased. The TSB was used to hold storm water and process wastewater streams as part of a National Pollution Discharge Elimination System (NPDES)-permitted wastewater treatment system while closure activities took place in the other ponds.

Ponds 1 through 5 contained hazardous waste (K048). In 1983, BP commenced closure of the Ponds. A permitted non-hazardous waste management unit or landfill ("PNWL") was constructed on the area formerly occupied by Pond 5. The PNWL contains sludges from Ponds 1 through 4 that were solidified through a "Chemfix™" process. The sludges solidified by the Chemfix™ process were delisted by the U.S. EPA and the Illinois Pollution Control Board in 1985.

By 1985, the PNWL had been filled to its design capacity. In 1991, BP began construction of an approved RCRA landfill, the Pond 1 Landfill, for placement of the remaining sludges. Sludges and the soil liner from Ponds 1 through 4 and the TSB were solidified and placed into the Pond 1 Landfill. A 100-year flood protection dike was concurrently constructed around the PNWL, Pond 1 Landfill, and Ponds 2, 3, and 4.

Ponds 2, 3 and 4 have been consolidated into one large impoundment (the East Surge Pond). The sludges have been removed, as discussed above, and the consolidated impoundment lined with one foot of compacted clay. The East Surge Pond is operating under the delay of closure

regulations in accordance with the Adjusted Standard issued by the Illinois Pollution Control Board (AS-91-4, 3/11/92) (see Appendix B Adjusted Standard AS 91-4 dated March 11, 1992). The East Surge Pond currently receives non-hazardous wastewater from the City of Wood River Publicly Owned Treatment Works (Wastewater Treatment Facility [WWTF]) and from the BP facilities in the main plant area.

1.2 SITE SETTING

The former Amoco Wood River Refinery and Riverfront Property are located in Wood River, Madison County, Illinois, adjacent to the Mississippi River. The Riverfront Property is located in an area of the Mississippi River floodplain valley called the American Bottoms. Unconsolidated sediments in the American Bottoms are designated as "valley fill" and include recent alluvial and glacial material. Two water tables have been encountered at the Riverfront Property above the bedrock. A discontinuous, shallow, perched water table is found in the floodplain deposits. The shallow water table fluctuates with the level of the water in the Ponds and the basins of the Riverfront Property. This indicates that the shallow water table is hydraulically connected to the Ponds and basins. The uppermost aquifer is the American Bottoms aquifer, the regional water table, and extends from the water table to the bedrock surface.

In compliance with 35 IAC 720.120, 35 IAC 720.122, 35 IAC 101.302, 35 IAC 104 Subpart D, and the relevant federal delisting petition guidance (U.S. EPA, 2000), the following administrative information is presented.

2.1 NAME OF PETITIONER

a.	Name of firm:	BP Products North America, Inc. Former Amoco Wood River Refinery
b.	Mailing Address:	301 Evans Avenue Wood River, Illinois 62095

2.2 NAMES OF PERSONNEL TO BE CONTACTED FOR ADDITIONAL INFORMATION PERTAINING TO THIS PETITION

Name:	Gregory S. Jevyak
Title:	Environmental Business Manager
Address:	Atlantic Richfield Company, A BP Affiliated Company 301 Evans Avenue Wood River, Illinois 62095
Telephone:	(618) 254-9866

Name:	Ronald J. Ganim
Title:	Senior Attorney
Address:	BP America Inc. Mail Code 4 West 4101 Winfield Road Warrenville, Illinois 60555
Telephone:	(630) 821-2263

2.3 FACILITY RESPONSIBLE FOR GENERATING PETITIONED WASTE

a.	Name of Firm:	BP Products North America, Inc. Former Amoco Wood River Refinery
b.	Location of Facility:	301 Evans Avenue Wood River, Illinois 62095
c.	USEPA ID Number:	ILD 980 503 106
d.	IEPA ID Number:	1191155009 -- Madison County Permit #145

2.4 LOCATION OF PETITIONED WASTE

The petitioned waste leachate is generated from the Pond 1 Landfill at the BP facility described in Section 2.3. Figure 1-1 presents a location map for the Pond 1 Landfill. Figure 2-1 presents the location of the regulated waste management area, which includes the Pond 1 Landfill, on BP's Riverfront Property.

2.5 DESCRIPTION OF THE PROPOSED DELISTING ACTION

BP is petitioning the Illinois Pollution Control Board to delist leachate generated from the Pond 1 Landfill. This delisting will be valid when the leachate from the Pond 1 Landfill is discharged to the East Surge Pond and transferred to the WWTF. The leachate is generated from the Pond 1 Landfill, which contains stabilized sludges generated from the former operation of surface impoundments and a wastewater treatment plant, and is listed as a K048 waste (dissolved air flotation [DAF] float from the petroleum refinery industry), pursuant to the mixture rule.

2.6 STATEMENT OF INTEREST IN THE PROPOSED ACTION

BP is pursuing this delisting petition in order to reduce the costs and potential risks of spills/releases associated with the management of the leachate from the Pond 1 Landfill. BP currently transports the leachate by truck to the WWTF for treatment at a cost of $0.13 per gallon. In 2003, BP spent approximately $14,000 to haul the leachate from the Pond 1 Landfill for discharge at the WWTF. If delisted and determined to be non-hazardous, the leachate could be discharged into BP's East Surge Pond and transferred along with a much larger volume of stormwater through a series of existing stormwater retention basins (via pumps and gravity flow) to the WWTF at essentially no cost.

2.7 STATEMENT OF THE NEED AND JUSTIFICATION FOR THE PROPOSED ACTION

BP believes that the leachate is not hazardous and would not present a hazard to human health and the environment if the leachate were to be discharged to the surface impoundments as proposed in Section 5.4.2. Continuing to manage the leachate as a hazardous waste presents an unnecessary cost and potential risk of spills and releases during truck loading, transport and unloading.

2.8 AFFIDAVIT OF MATERIAL FACTS - CERTIFICATION STATEMENT

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this demonstration and all attached documents, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signed by Authorized Representative:

1-17-06

Greg Jevyak
Environmental Business Manager
Atlantic Richfield Company
A BP Affiliated Company

Date

SUBSCRIBED AND SWORN TO BEFORE ME
this 17th day of JANUARY, 2006

OFFICIAL SEAL
DENISE BOKER
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:06/09/06

Notary Public

35 IAC Part 720 Subpart C (Rulemaking Petitions and other Procedures), Section 120.122 lists the requirements to delist a waste from a particular generating facility. The petitioner must demonstrate that the waste does not meet any of the criteria under which the waste was listed as a hazardous waste. The following list identifies the requirements under 35 IAC 720.122 (i)(1) to (12) for preparation of a delisting petition, and references the section within this petition in which the requirement is addressed:

- 122(i)(1) The name and address of the laboratory facility performing the sampling tests. *See Section 6.3.2.*
- 122(i)(2) The names and qualifications of the persons sampling and testing the waste. *See Sections 6.2.5 and 6.3.2 and Appendices C and D.*
- 122(i)(3) The dates of sampling and testing. *See Section 6.2.1 for sampling dates and Appendix E for testing dates.*
- 122(i)(4) The location of the generating facility. *See Section 2.1.*
- 122(i)(5) Description of the manufacturing processes or other operations and feed materials producing the waste and an assessment of whether such processes, operations or feed materials can or might produce a waste that is not covered by the demonstrations. *See Sections 5.1 and 5.2.*
- 122(i)(6) Description of the waste and an estimate of the average and maximum monthly and annual quantities of waste covered by the demonstration. *See Sections 5.1, 3.2.5 and 3.3.*
- 122(i)(7) Pertinent data on and discussion of the factors delineated in the respective criterion for listing a hazardous waste, where the demonstration is based on the factors in 35 IAC 721.111(a)(3). *See Sections 5.1, 5.2, and 7.0.*
- 122(i)(8) Description of the methodologies and equipment used to obtain the representative samples. *See Sections 6.2.3 and 6.2.4 and Appendix F.*
- 122(i)(9) Description of the sample handling and preparation techniques, including techniques used for extraction, containerization and preservation of the samples. *See Sections 6.2.4 and 6.3 and Appendix F.*
- 122(i)(10) Description of the test performed (including results). *See Section 6.3.*
- 122(i)(11) The names and model numbers of the instruments used in performing the tests. *See Appendix D.*
- 122(i)(12) The certification as prescribed by this section signed by the generator or the generator's authorized representative. *See Section 2.8.*

This petition is submitted for an adjusted standard pursuant to 35 IAC 720.122. Additionally, 35 IAC Section 104 Subpart D applies to any party seeking an adjusted standard pursuant to Section 28.1 of the Environmental Protection Act. A party may initiate an adjusted standard proceeding by filing a petition that meets the requirements of Section 104.406 of Subpart D. Demonstration that these requirements are met is provided below.

4.1 STANDARD FROM WHICH ADJUSTMENT IS SOUGHT (35 IAC 104.406(a))

This petition seeks to exclude from regulation as a listed hazardous waste under 35 IAC 721.132 leachate generated from the Pond 1 Landfill at the Riverfront Property of the former Amoco Wood River Refinery. This exclusion would be applicable at the point where the leachate from the Pond 1 Landfill is generated (i.e., where it exits the leachate collection system) and discharged to the East Surge Pond (as illustrated in Figure 4-1). It would then be transferred to the WWTF along with stormwater from the East Surge Pond via a series of stormwater retention basins.

The Pond 1 Landfill contains solidified sludge and associated soil and debris from the former wastewater treatment plant surface impoundments. The only hazardous waste in the surface impoundments was DAF float. DAF from petroleum refining is a listed hazardous waste under federal and Illinois regulations (35 IAC 721.132), hazardous waste number K048, because of customary presence of hexavalent chromium and lead. All sludges and underlying impacted soils in the impoundments were classified as hazardous waste according to the "mixture rule" in 35 IAC 721.103a(2)(D), because of the discharge of a listed hazardous waste into the impoundments. Therefore, the waste residuals (Pond 1 Landfill leachate) carry the K048 hazardous waste code (per 35 IAC 721.103e[1]).

4.2 REGULATION OF GENERAL APPLICABILITY (35 IAC 104.406(b))

In order to implement the requirements of RCRA 42 U.S.C. Section 6901 et. seq., Section 721.132 of 35 IAC was adopted as an identical in substance rule to 40 CFR Section 261.32.

4.3 LEVEL OF JUSTIFICATION FOR ADJUSTED STANDARD (35 IAC 104.406(c))

35 IAC 721.132 (Subpart D) does not specify a level of justification. According to the general requirements of 35 IAC 720.122 (a), any person seeking to exclude a waste from 35 IAC 721 Subpart D must demonstrate that the waste does not meet any of the criteria under which the waste was listed as a hazardous or acutely hazardous waste, and does not contain additional constituents or factors that could cause the waste to be classified as a hazardous waste. This demonstration must be made by reliance on, and in a manner consistent with, *EPA RCRA Delisting Program Guidance Manual for the Petitioner* (U.S. EPA 2000), incorporated in 35 IAC 720.111. 35 IAC 720.122(d) specifically applies to the subject waste because the waste is listed as code "T" in 35 IAC 721 Subpart D. According to this subsection, a petitioner must demonstrate that the waste:

A) Does not contain the constituent or constituents that caused the waste to be listed, or,

B) If containing one or more of the hazardous constituents that caused the waste to be listed, does not meet the criterion of 35 IAC 721.111(a)(3) when considering the factors used in 35 IAC 721.111(a)(3)(A) through (K) under which the waste was listed as hazardous.

Further, the petitioner must demonstrate that the waste does not exhibit any hazardous waste characteristics. Sections 6 and 7 of this petition present the technical support for this justification.

4.4 DESCRIPTION OF THE NATURE OF THE PETITIONER'S ACTIVITY (35 IAC 104.406(d))

This information, required as part of the adjusted standard petition, is discussed in depth in Section 5. Section 5 presents the following information: Description of waste and basis for waste listing (Section 5.1); History of waste generation (Section 5.2); Waste volume (Section 5.3); and Waste management activities (Section 5.4).

4.5 EFFORTS NECESSARY TO COMPLY WITH REGULATION OF GENERAL APPLICABILITY (AND ALTERNATIVE) (35 IAC 104.406(e))

BP is currently managing the leachate as hazardous waste in compliance with applicable regulations. The leachate is currently collected and transferred via trucks to a wet-well in a domestic sewage system sewer upstream of the WWTF. The average volume of leachate generated annually was 102,300 gallons between 1994 and 2003.

If delisted, the non-hazardous leachate could be discharged into BP's East Surge Pond and transferred along with stormwater from that pond through a series of existing stormwater retention basins (via pumps and gravity flow) to the WWTF.

A compliance alternative would be to discharge the leachate through a pipe meeting RCRA standards (including secondary containment, inspection, and maintenance) under the highway separating the BP Riverfront Property from the WWTF.

Costs are presented below for the following alternatives: (a) compliance with regulation of general applicability, (b) compliance with an alternative (i.e., discharge of leachate through a RCRA pipe), and (c) compliance with the adjusted standard (i.e., managing the leachate as a delisted and non-hazardous waste):

(a) costs that are currently being incurred under compliance with the regulation of general applicability include transportation and discharge fees for the leachate of approximately $14,000 per year on average. Additionally, there is a large potential cost of clean up if there were an accident during truck transport resulting in the spill of leachate.

(b) the cost for construction of a leachate transfer pipe (under Route 3) is estimated to be $500,000. RCRA inspection and maintenance costs would be additional. This alternative would eliminate the leachate transport costs identified in (a) above.

(c) if the leachate were managed as a delisted and non-hazardous waste and discharged to the WWTF via the existing network of surface impoundments, BP would eliminate the

transportation and discharge fees and the risk of potential spills or releases during transport.

Delisting of the leachate from the Pond 1 Landfill is sought because handling and disposal of leachate as a listed hazardous waste imposes an unnecessary burden and cost on the petitioner and carries the risk of a transportation accident. The recommended alternative (alternative [c]) provides the best management practice for this waste stream with no adverse environmental impacts. The proposed action does not modify the existing permit conditions or associated corrective actions at the Pond 1 RCRA facility.

4.6 NARRATIVE DESCRIPTION OF THE PROPOSED ADJUSTED STANDARD (35 IAC 104.406(f))

BP requests that the leachate from the Pond 1 Landfill be exempt from classification as a listed hazardous waste. BP requests the Board make the following determination:

> *Leachate generated from the Pond 1 Landfill at BP's former Wood River Refinery, Wood River, Illinois is not a listed hazardous waste. This delisting does not modify the facility's RCRA Permit conditions, including corrective action requirements.*

The costs to comply with the proposed standard are estimated as follows:

- Install a pipe to discharge the leachate directly to the East Surge Pond - $25,000; and,
- Annual cost for maintenance of the leachate pump - $2,000.

4.7 IMPACT OF REQUEST FOR ADJUSTED STANDARD ON THE ENVIRONMENT (35 IAC 104.406(g))

As described in detail in other portions of this petition for an adjusted standard, the potential impact upon the environment of meeting the adjusted standard rather than the regulation of general applicability is not significant. The leachate is contained in an engineered landfill, with multiple natural and engineered liner systems, a leachate collection system, and an engineered and maintained cap. These systems effectively preclude releases to the environment.

The only change in leachate management as a result of the adjusted standard will be that the leachate would be pumped along with stormwater form the East Surge Pond to the WWTF rather than transported by truck. Analytical results indicate that the concentrations of constituents in the leachate are below regulatory and health-based levels (see Sections 6 and 7). The resulting constituent concentrations in the East Surge Pond would be insignificant. Furthermore, the daily production of leachate from the Pond 1 Landfill is less than 0.00036% of the capacity of the East Surge Pond [1]

In addition, the proposed leachate management method would eliminate the need for unnecessary truck traffic across Highway 3, reducing the potential for spills and releases in the

[1] This calculation is based on data collected over a 10-year period from 1994 – 2003 of leachate from the Pond 1 Landfill (an average of 102,300 gallons/ year) and the normal available East Surge Pond capacity of 80 million gallons.

area. The adjusted standard would not affect other routine corrective action activities at the Pond 1 Landfill such as the groundwater monitoring, the operation of the leachate collection and detection system, or the post-closure monitoring. Granting of the adjusted standard will allow more cost-effective and safe handling and disposal of the leachate.

4.8 JUSTIFICATION FOR THE PROPOSED ADJUSTED STANDARD (35 IAC 104.406(h))

Sections 6 and 7 of this petition present the technical justification for the proposed adjusted standard, which demonstrates that the leachate meets the delisting criteria as specified in *EPA RCRA Delisting Program Guidance Manual for the Petitioner* (U.S. EPA, 2000).

4.9 STATEMENT OF IPCB ACTION WITH REGARD TO FEDERAL LAW (35 IAC 104.406(i))

In the Matter of: RCRA Delisting, R90-17, February 28, 1991, the IPCB indicated that the rules it adopted were in substance identical to the federal RCRA rules. Thus, compliance with the IPCB Rules is compliance with federal law. BP does not believe that there are any federal procedural requirements applicable to the Board's decision that are not required by 35 IAC 104, Subpart D.

4.10 WAIVER OF HEARING (35 IAC 104.406(j))

Pursuant to 35 IAC Section 104.406(j), BP hereby waives a hearing on this petition for an adjusted standard if no adverse citizen responses are received within 30 days from the date of public notice of the petition in a local newspaper.

4.11 SUPPORTING DOCUMENTS OR LEGAL AUTHORITIES

BP believes this document, *Petition to Delist the Pond 1 Landfill Leachate at BP's Former Wood River Refinery in Madison County, Illinois*, meets the regulatory requirements of 35 IAC 120.22, 35 IAC 104.400 Subpart D, and *EPA RCRA Delisting Program Guidance Manual for the Petitioner* (U.S. EPA, 2000).

This section presents a description of the subject waste; a discussion of the basis for listing the Pond 1 Landfill leachate as a hazardous waste; a history of the leachate production; the volume of leachate produced; and the past, current, and proposed leachate management methods.

5.1 DESCRIPTION OF WASTE AND BASIS FOR WASTE LISTING

The material for which delisting is sought is leachate generated from the Pond 1 Landfill. The Pond 1 Landfill contains solidified sludge and associated soil and debris from the former wastewater treatment plant surface impoundments.

The only hazardous waste stream in the surface impoundments was DAF float. DAF from petroleum refining is a listed hazardous waste under federal and Illinois regulations (35 IAC 721.132, Subpart D) waste number K048, because of the customary presence of hexavalent chromium and lead. Because of the discharge of a listed hazardous waste into the impoundments, all sludge residuals and underlying impacted soils in the impoundments were classified as hazardous waste according to the "mixture rule" in 35 IAC 721.103a(2)(D). Therefore, the solidified waste in the Pond 1 Landfill and its leachate (per 35 IAC 721.103e[1]) carries the K048 hazardous waste code.

5.2 HISTORY OF WASTE GENERATION

5.2.1 Source of Waste Placed in the Pond 1 Landfill

Ponds 1, 2, 3, and 4 were operated in sequence for equalization and storage of oily wastewater prior to treatment at the wastewater treatment plant. The waste streams to these impoundments included facility surface water runoff and process wastewater from the refinery. For these reasons, constituents contained in the wastewater sludges are representative of those constituents associated with petroleum processing.

Prior to construction of a wastewater treatment plant in 1977, treatment occurred in the Ponds by operation of floating aerators in Ponds 2 and 3. In 1977, BP started operation of an advanced design wastewater treatment plant, including a DAF unit. Effluent from the DAF unit was discharged into Pond 1A for storage and oil reclamation. The DAF float would occasionally overflow Pond 1A and enter Ponds 1 and 2.

A Temporary Surge Basin (TSB) was located north and west of Pond 1. The TSB was built in 1983, after refinery operations had ceased, and was used to hold storm water and process wastewater streams as part of an NPDES-permitted wastewater treatment system while closure activities took place in the other ponds.

Sludges and associated material that were formerly contained in Ponds 1 through 4 and the TSB were solidified and placed in the Pond 1 Landfill. Approximately 78,720 cubic yards of the solidified material was placed in the Pond 1 Landfill.

The waste in the landfill was generated in the past during the active phase of refinery operations (1958 - 1981). The Wood River refinery is no longer an active refining facility, so no additional waste is being generated.

5.2.2 Characteristics of Waste in the Pond 1 Landfill

The following chemical data are available for the sludge that was eventually solidified and placed in the Pond 1 Landfill:

- Total analysis of bulk samples from pre-solidified sludges and underlying soils from Ponds 1, 2, 3, 4; and
- EP Toxicity protocol leachate from pre-solidified sludges from the TSB.

Each data set is discussed briefly below.

In October 1988, samples of sludges and underlying soils from Ponds 1, 2, 3, and 4 were collected and analyzed (bulk samples) for principal hazardous constituents (PHC). These constituents included benzene, ethylbenzene, toluene, xylenes, 18 polycyclic aromatic hydrocarbons (PAHs), bis(2-ethylhexyl)phthalate, and 7 metals (as well as some other general parameters, such as oil and grease). The results of the sampling and a discussion of data quality were presented in a report by Woodward-Clyde Consultants (now URS) in 1988 (WCC 1988). The maximum concentration of each chemical detected in soil and sludge from each pond is summarized in Table 5-1. With the exception of three PAHs, all chemicals were detected.

In June 1990, sludges from the TSB were sampled and analyzed for the hazardous waste characteristics listed in 40 CFR 261 by the EP extraction procedure. The results of this testing indicated that the TSB sludges were non-hazardous. Table 5-2 presents the results of the EP protocol analyses.

5.2.3 Stockpiling and Stabilization of the Waste Prior to Placement in the Pond 1 Landfill

Prior to the solidification, sludges from Ponds 1, 1A, 2, 3, 4 and the TSB were removed from their respective ponds and stockpiled in Pond 2 in accordance with an approved amended closure plan. The stockpiling allowed for the construction of the Pond 1 Landfill and the East Surge Basin.

Some sludges from Ponds 1, 2, 3, and 4 were previously solidified through the Chemfix™ process that uses Portland cement. Most of the sludges placed in the Pond 1 Landfill were solidified with cement and lime kiln dust. The solidified material was deposited in the Pond 1 Landfill between November 9, 1992 and January 31, 1994. The solidified material was placed in the landfill in discrete "curing" cells, progressing in a circular fashion around the landfill. Once a particular cell was cured and verified, an additional "layer" of solidified material was placed on top.

5.2.4 Engineering Features of the Pond 1 Landfill

The Pond 1 Landfill is an engineered hazardous waste landfill that complies with the requirements contained in 35 IAC 724.400. The landfill covers approximately 4.1 acres with a design holding capacity of approximately 100,000 cubic yards. The landfill is lined by an engineered liner system consisting of ten layers, including several layers of natural soil/clay, multiple geotextile fabrics or membranes, and a sand and gravel leachate detection and collection layer. In addition, the landfill has containment dikes, a multimedia cap, run-on/run-off controls on the cap, and a vegetative layer to stabilize the cap. The landfill is completely surrounded by a

6-foot security fence with a padlocked gate. The landfill is protected from a 100-year flood event by a flood protection dike. The design criteria for the landfill were described in "Engineering Report, Pond 1 Landfill, Riverfront Property, Wood River (Former) Refinery" (WCC 1991). A permit application to construct the Pond 1 Landfill was submitted to the IEPA on March 22, 1991. IEPA approved construction of the landfill on July 19, 1991, and construction of the liner was completed by October 24, 1992; the cap construction was completed in September 1994. Final seeding of the cover was completed on June 15, 1995.

5.2.5 Characteristics of the Pond 1 Landfill Leachate

The leachate from the Pond 1 Landfill was sampled previously for the 1997 delisting petition.[2] A detailed discussion of the additional sampling activities completed in 1998 is presented in Section 6. The results of the 1997 testing indicated that leachate contained the following organic compounds:

- benzene;
- carbon disulfide;
- methyl ethyl ketone;
- toluene;
- xylenes;
- bis(2-ethylhexyl)phthalate;
- 2,4-dimethylphenol; and
- phenol.

The testing also indicated that the leachate contains the following metals:

- arsenic;
- barium;
- nickel; and
- selenium.

A comparison to "benchmark" values (i.e., delisting levels) indicated that the leachate from the landfill was suitable for delisting. Table 5-3 presents a comparison of the analytical results for the detected constituents in the leachate with the benchmark values. It should be emphasized that these 1997 data are not to be used as the primary data supporting this petition, but rather as supplementary data.

5.2.6 Groundwater Monitoring in the Vicinity of the Pond 1 Landfill

Groundwater monitoring information is included in the petition per *EPA RCRA Delisting Program Guidance Manual for the Petitioner* (U.S. EPA, 2000). The Groundwater Monitoring system required by the Part B Permit consists of 23 Compliance Monitoring wells that are sampled annually, and 19 Corrective Action Monitoring Wells that are sampled semi-annually. Locations of the groundwater monitoring wells in the vicinity of the Pond 1 Landfill are

[2] Three waste samples and three in-situ leachate samples were collected from the Pond 1 Landfill for the 1997 delisting petition. These samples were analyzed for 54 constituents of concern (constituents common to petroleum refining processing) plus lead, chromium, vinyl chloride, carbon tetrachloride, and 1,2,4-trimethylbenzene.

illustrated in Figure 5-1. Additional components of the site Groundwater Monitoring Program include the Cone of Depression (COD) wells that control groundwater flow in the uppermost aquifer, and a Groundwater Management Zone (GMZ) approved by Illinois EPA in April 2002. Regional, local and unit-specific geology and hydrogeology are described in Appendix G.

Field and laboratory Quality Assurance/Quality Control (QA/QC) procedures are provided in the sampling plan from *RCRA Part B Post-Closure Permit Application for the North Cell of Spray Pond #1 and the South Flare Pit* (Jacobs Engineering Group Inc., 1992), and in the Sampling and Analysis Plans prepared on a quarterly basis by URS in advance of groundwater monitoring activities (most recently in July 2005). The quarterly documents, which are supplied to the laboratory, the URS field crew, and URS program managers, include up-to-date methodology and analysis requirements.

The 1992 sampling plan includes detailed discussion on the following topics:

- Sampling Frequency
- Potentiometric Surface Measurements and Product Thickness Measurements
- Equipment and Materials
- Well Evacuation
- Sample Collection
- Field Analysis
- Field Log Book
- Sample Containers, Preservation and Holding Times
- Packaging, Shipping, and Handling Procedures
- Sample Labels
- Sample Number Format
- Chain of Custody Record
- Field QA/QC Procedures
- Laboratory QA/QC Procedures
- Disposition of Site Generated Wastes

Groundwater monitoring data from the last four monitoring events for three Corrective Action Program wells (G119, G66D, and G103) in the vicinity of the Pond 1 Landfill are included in Table 5-4. The data provided are for parameters on the Part B Permit-required parameters list for the Groundwater Monitoring Program wells that were also detected in the Pond 1 leachate samples.

Groundwater flow direction in the vicinity of the Pond 1 Landfill is to the east-southeast toward the COD wells at the Main Plant. The data from downgradient groundwater monitoring wells G119 and G66D were compared to data from well G103, which is representative of upgradient

groundwater quality, to identify potential impacts to the groundwater from the Pond 1 Landfill leachate. As indicated in Table 5-4, concentrations of the listed constituents were either not detected in the downgradient wells, or were detected at lower concentrations than those at G103. Boring logs and construction diagrams for the wells are provided in Appendix H.

Although some of the same organic and inorganic constituents were detected at G119 and G66B as in the leachate samples, none were detected at concentrations exceeding the Tiered Approach to Corrective Action Objectives (35 IAC 742, or TACO) Class I Groundwater Remediation Objectives (ROs).

In conclusion, the Pond 1 Landfill does not appear to be impacting the groundwater.

5.3 WASTE VOLUME

A total of 61,330 cubic yards of sludge were solidified with 8,186 cubic yards of reagent for a total volume of approximately 69,520 cubic yards. This material and an additional 9,200 cubic yards of clayey material that did not require solidification have been placed in the Pond 1 Landfill. Therefore, the total volume of material contained in the Pond 1 Landfill is 78,720 cubic yards. This volume estimate was obtained from surveyed volumes recorded in the daily logs maintained during the solidification and placement process.

The Pond 1 Landfill has generated an average of 102,300 gallons per year of leachate from 1994 through 2003. The leachate is removed from the landfill on an as-needed basis. The leachate is pumped from the leachate collection system located at the south-center edge of the landfill to a 6,000-gallon tanker truck. The tanker truck then delivers the leachate to the WWTF.

5.4 WASTE MANAGEMENT ACTIVITIES

5.4.1 Current Waste Management Methods

Thirty-year post-closure activities began after the Pond 1 Landfill was certified as closed in 1995. The post-closure plan for the Pond 1 Landfill has the following principal components:

- Groundwater monitoring plan;
- Leachate collection and detection; and
- Pond 1 Landfill post-closure maintenance.

These components are discussed below. The activities being performed are described in more detail in three documents previously submitted to the IEPA:

- "RCRA Part B Permit for the East Surge Pond Located at Amoco's Wood River Riverfront Property" (Mittelhauser/WCC 1992a) (Volume I of III);
- "Post Closure Plan for the Pond 1 Landfill" (Mittelhauser/WCC 1992b) (Volume II of III); and
- "Groundwater Monitoring Plan for Amoco's Wood River Riverfront Property" (Mittelhauser/WCC 1992c) (Volume III of III).

5.4.1.1 Groundwater Monitoring Plan

The groundwater monitoring plan (GWMP) for the Riverfront Property is part of the approved Amended Closure Plan for the Riverfront Property. The GWMP is intended to provide information for assessment of groundwater quality during the corrective action program for the waste management area (the Pond 1 Landfill and the East Surge Basin). The GWMP will also be used to demonstrate the effectiveness of groundwater control through the BP Interim Corrective Action Program. The groundwater monitoring network includes 45 wells completed in the uppermost aquifer: base monitoring wells (sampled semi-annually to annually) and assessment wells (sampled on an "as needed" basis for various purposes).

5.4.1.2 Leachate Detection and Collection

The Pond 1 Landfill has several liner systems and a leachate detection and collection system, preventing the release of chemicals from the Pond 1 Landfill to groundwater.

Leachate from the Pond 1 Landfill that accumulates in collection sumps located beneath the landfill is periodically removed via vacuum truck for treatment at the WWTF, which is located at the following address:

559 State Aid Road
Wood River, Illinois 62095

BP was granted authorization from the IEPA to discharge the leachate to a municipal sewer upstream of the WWTF. See Appendix I Application for Waste Stream Authorization.

5.4.1.3 Pond 1 Landfill Post-Closure Maintenance

The post-closure inspection and maintenance activities for the Pond 1 Landfill include the following components:

- Weekly inspection (minimum) of security control devices (two padlocked, 6-foot cyclone security fences: one surrounding the Riverfront Property area and the other surrounding the Pond 1 Landfill);
- Inspection of Flood Protection Dike prior to any peak flow period (river crest);
- Inspection of the Pond 1 Landfill cover for erosion damage after each 24-hour/25-year storm;
- Inspection of the Pond 1 Perimeter Landfill Dike for erosion damage after each 24-hour/25-year storm;
- Inspection of the Flood Protection Dike for erosion damage after each 24-hour/25-year storm;
- Inspection of the Pond 1 Landfill cover's surface run-on and run-off control and cover drainage layer for erosion or settlement, after each 24-hour/25-year storm;
- Quarterly inspection of the Pond 1 Landfill cover for settlement, subsidence or displacement;
- Quarterly inspection of the leachate collection, removal and leak detection systems for leaks and proper functioning of the sumps;

- Quarterly inspection of the monitoring wells for damage to lock cap or cover; and
- Quarterly inspection of the cap's vegetative cover for areas of unexplained stress.

Written records of any problems or potential problems noted during the inspections are forwarded to the post-closure maintenance supervisor, who is responsible for initiating a follow-up response, verifying the problem, arranging to solve the problem, and supervising the support and maintenance personnel to implement the needed repairs.

5.4.2 Proposed Waste Management Method

The proposed waste management method for the leachate from the Pond 1 Landfill is to pump the leachate via existing stormwater retention basins to the WWTF. Specifically, the Pond 1 Landfill leachate will be pumped to the East Surge Pond, which is located immediately south of the Pond 1 Landfill. From the East Surge Pond, the leachate, along with any water (i.e., stormwater and sanitary wastewater) that is contained in the East Surge Pond, will be pumped to Pond 2A. From Pond 2A, water will flow by gravity through Pond 3A and then the Temporary Surge Basin (TSB) to Forebay, the influent sump to the WWTF.

Thus, the only change in management of the leachate will be that the leachate would be pumped/gravity fed to the WWTF rather than transported by truck. There will be no changes to the groundwater monitoring plan, the leachate collection and detection system, or the Pond 1 Landfill post-closure maintenance program as a result of delisting.

Though not anticipated, it is possible that the stabilization process employed could potentially lose its effectiveness over time. Therefore, the leachate would be sampled annually while the landfill is generating leachate. The samples will be analyzed for hexavalent chromium (SW-846 Method 7196A) and total lead (SW-846 Method 6010B). In addition, total chromium will be analyzed per SW-846 Method 6010B to give indications on the maximum hexavalent chromium concentration in the leachate. (Total chromium is reported by the analytical laboratory as the combined concentrations of trivalent and hexavalent chromium.) These parameters will be analyzed for trends after 10 years by the Mann-Kendall Test or comparable method.

On May 20, 1998, URS submitted a draft Sampling and Analysis Plan (SAP) to IEPA for review. This SAP was designed to characterize the leachate from the Pond 1 Landfill for the purpose of delisting the leachate. On July 2, 1998, IEPA responded with comments on the draft SAP. URS responded to IEPA's comments in a letter dated July 20, 1998. Mark Crites of the IEPA Permit Section verbally approved URS' comments in a telephone call on July 7, 1998. The finalized SAP was utilized to implement the leachate characterization program.

This section presents a description of the objectives, strategy, and methodology used in sampling and analyzing the leachate.

6.1 OBJECTIVE OF WASTE SAMPLING AND ANALYSIS

The objective of this sampling effort was to obtain valid information that could be used as the primary data to characterize the chemical and physical nature of the leachate from the Pond 1 Landfill for the purpose of delisting.

Specific sampling and analysis objectives were:

- to comply with the regulatory requirement for representativeness found in 35 IAC 720.122(h) (i.e., characterizing temporal variability in the leachate); and
- to meet the data quality objectives (i.e., accuracy and precision) defined in SW-846.

6.2 STRATEGY OF WASTE SAMPLING

This section describes the sampling strategy that was used to meet the objectives specified in Section 6.1. A copy of the sampling plan is included as Appendix F.

6.2.1 Sample Representativeness

Potential temporal variability was addressed by collecting samples over a six-month leachate generation period (i.e., April 1998 to October 1998). Since access to the leachate in the Pond 1 Landfill is available only when the leachate is being pumped, sampling was done during the scheduled leachate discharge events that occur on an as-needed basis. Samples were collected during three different leachate discharge events in 1998 (August 7 through 12, September 9 through 11, and October 14 through 16). The samples collected in August represented leachate that had accumulated since April 1998 (i.e., the leachate collection system was pumped dry on April 13, 1998 and was not pumped again until August 7, 1998 when URS initiated this leachate sampling program).

Temporal variability was further addressed by collecting samples on different days during a single leachate discharge event. For this sampling program, three 6,000-gallon vacuum trucks were filled over the course of at least three days during each leachate discharge event. One grab sample was collected each day for a total of three grab samples per leachate discharge event (or one grab sample per 6,000 gallons of leachate pumped).

6.2.2 Sample Number

Sample number adequacy was considered in the sampling design. Chapter 35 Section 720.122(h) of the Illinois Administrative Code requires at least four demonstration samples for delisting. To be conservative, URS collected three samples during three different leachate discharge events (i.e., nine investigative samples of leachate were collected). In addition to the nine investigative samples, quality control samples (duplicates, matrix spike/matrix spike duplicates [MS/MSD], and trip blanks) were collected.

6.2.3 Sample Location

Leachate samples were collected from a sampling valve at the outlet of the leachate collection system. The collection system consists of a 100-foot-long, 2-inch PVC pipe that extends from the south edge of the landfill to the center of the landfill. The collection pipe, which has a submersible pump at its base, is sloped at a 30-degree angle. Samples were collected from the sampling valve while leachate was being pumped to vacuum trucks.

6.2.4 Sample Collection Methodology

The following is a summary of the sampling methodology:

- Three grab samples were collected during three different discharge events (a total of nine grab samples).
- During a single leachate discharge event, one grab sample was collected for every 6,000 gallons of leachate that are pumped from the landfill until three samples were collected.
- In addition to the nine investigative samples, the following quality control samples were collected:
    - ⇒ One field duplicate per sampling round (i.e., leachate discharge event);
    - ⇒ One matrix spike and one matrix spike duplicate per sampling round (i.e., leachate discharge event); and
    - ⇒ One trip blank per sampling round (i.e., leachate discharge event) with each cooler containing aqueous samples for volatile organic compound (VOC) analyses.

  Table 6-1 presents a summary of the sampling and analysis effort including sample container, preservation, and holding time information for the various parameters analyzed.

- The grab samples were collected from a sampling valve at the outlet of the leachate sump. Each sample was collected at least 30 minutes after pumping had been initiated to ensure that the discharge line had been flushed with leachate.
- Sampling was conducted by personnel experienced in sample collection.
- Volatile sample containers were filled and sealed immediately after sampling without headspace or bubbles.
- Sample containers were closed and sealed immediately after sampling.

- Sample containers were laboratory supplied.
- Sample containers were labeled with date, sample time, location, and analytical testing procedures.
- Chain-of-custody forms were completed in the field and submitted along with the samples.

Samples were stored on ice in coolers and delivered to the analytical laboratory.

6.2.5 Sampling Team

Sampling was conducted by URS personnel experienced in sample collection. Resumes of individuals involved in the collection of samples and review of data are contained in Appendix C.

6.3 CHEMICAL ANALYSIS OF THE WASTE

6.3.1 Analytical Parameters

The samples were analyzed for the parameters listed in Table 6-2. This list of parameters was compiled from the following three sources:

- The characteristics of a hazardous waste as defined in 35 IAC 721 Subpart C;
- A list of 54 compounds identified as constituents of concern for petroleum processes in *EPA RCRA Delisting Program Guidance Manual for the Petitioner* (USEPA 2000); and
- Ten additional compounds identified by BP as potentially being present in BP's wastewater and, as a result, potentially accumulating in the waste that was placed in the Pond 1 Landfill.

In addition, 1,2,4-trimethylbenzene was added to the list because it was analyzed as part of the 1997 delisting petition for the Pond 1 Landfill waste.

6.3.2 Analytical Laboratory

Samples were shipped to American Technical and Analytical Services, Inc. (ATAS), 875 Fee Fee Road, Maryland Heights, Missouri, 63043. Appendix D presents information on the personnel involved in the chemical analysis or responsible for data reduction, validation and lab quality control, as well as information on the equipment used in the analyses.

6.3.3 Analytical Methodology

Analyses were performed using SW-846 methodologies (i.e., Method 8240 for volatiles, Method 8250 for semi-volatiles, Method 6010 for metals, and other relevant SW-846 methods). Table 6-2 identifies the specific analytical methods used in this investigation.

6.3.4 Reporting of Analytical Results

Appendix E contains copies of the original laboratory sheets reporting the results of the chemical analyses. The laboratory sheets contain the following information required for this petition:

- Sample identification number;
- Laboratory identification number;
- Sample type (i.e., either site sample or QC sample);
- Analysis performed (method reference);
- Date submitted, date analyzed, and date prepared/extracted (where applicable);
- Analytical parameters;
- Analysis results and units;
- Reporting limits (practical quantitation limits plus any dilution);
- The basis for each analysis (either "as is" sample or leachate); and
- Quantitation limits.

The results of the analysis of the leachate are presented on Table 6-3.

6.3.5 Quality Assurance and Quality Control

Various quality control samples were applied in the analysis, including method blanks, matrix spikes, matrix spike duplicates, and surrogate spikes. The analytical results for each QC sample are contained in Appendix E. The laboratory sheets contain the following information:

- Detected concentrations in the method blanks;
- Name of chemical added to matrix spikes and/or matrix spike duplicates;
- Amount of chemical added to the spiked samples;
- Chemical concentration in the spiked samples;
- Chemical concentration in the unspiked sample;
- Calculated percent recovery;
- Acceptance criterion for recovery; and
- Relative percent difference (RPD) and acceptance criterion.

6.3.6 Data Validation

The data received from the laboratory were externally reviewed by a qualified chemist. A memorandum summarizing the data review is contained in Appendix J. The conclusion of the data review was that the quality control was acceptable with two exceptions: 1) some zinc results were qualified because zinc was detected in the laboratory blank and 2) one iron result was qualified because iron was detected in the method blank.

7.1 PRESENTATION OF RESULTS

Table 6-3 presents the results of chemical analysis of the nine leachate samples and three duplicate samples. The following constituents were detected in at least one of the twelve samples:

- Seven volatile organic compounds (VOCs) (acetone, benzene, carbon disulfide, methyl ethyl ketone, toluene, 1,2,4-trimethylbenzene, and xylene);
- Four semivolatile organic compounds (2,4-dimethylphenol, 2-methylphenol [o- and p-cresol], bis(2-ethylhexyl)phthalate, and phenol);
- Three pesticides (endrin, lindane, and heptachlor) and one herbicide (silvex);
- Ten metals (aluminum, arsenic, barium, chromium, iron, lead, manganese, nickel, silver, and zinc); and

Other inorganics that were detected include ammonia, fluoride and sulfide. The pH of the leachate ranged from 7.3 to 8.1. The ignitability tests indicated that all twelve leachate samples had flashpoints greater than 200 degrees F.

7.2 IDENTIFICATION OF COMPARISON BENCHMARKS

The potential hazards of the petitioned waste leachate were evaluated for delisting purposes. The evaluation consisted of two steps: 1) determine if the petitioned leachate is a hazardous waste pursuant to 40 CFR 261.24; and 2) determine if the petitioned leachate is eligible for delisting.

The first step was performed by comparing the leachate concentrations with the toxicity characteristic (TC) regulatory levels. If the results concluded that the petitioned leachate does not exhibit any of the characteristics of toxicity for hazardous waste, the petitioned leachate could be managed as a non-hazardous waste.

The eligibility of the petitioned leachate for delisting was then determined by comparing the leachate concentration with a "delisting level". The delisting level represents a maximum allowable concentration of the constituent in the leachate. A delisting level for a specific constituent is estimated from the acceptable exposure level to a potential human receptor considering migration through the subsurface environment.

Delisting levels were estimated using toxicity reference levels, combined with dilution/ attenuation factors derived from the application of a subsurface fate and transport model, e.g., EPA's Composite Model for Landfills (EPACML). The dilution/attenuation factor derivation assumes a reasonable worst-case management scenario.

If all leachate concentrations are below the respective delisting levels, the petitioned material is suitable for delisting.

The identification of the two comparison benchmarks is described below.

7.2.1 Toxicity Characteristic Regulatory Levels

The first benchmark, considered generic, is the regulatory limit for the Toxicity Characteristic, as presented in 35 IAC 721.124 or Table 1 of 40 CFR 261.24. These values are based on a chemical's *Safe Drinking Water Act* maximum contaminant level (MCL) value, multiplied by a generic dilution/attenuation factor of 100. These values represent concentrations above which a substance is defined as a hazardous waste by the Toxicity Characteristic. These values are shown in Table 7-1.

7.2.2 Delisting Levels

The second benchmark, the delisting criterion, is a Health-based Level (HBL) increased by a site-specific dilution/attenuation factor. The HBL may be the chemical's MCL value, or may be a calculated, non-regulatory, health-based value. A calculated HBL is a concentration associated with an acceptable cancer risk ($1x10^{-6}$) or non-carcinogenic health hazard (hazard index = 1), based on consumption of the leachate by a 70 kg adult at a rate of 2 liters per day for 70 years. It should be noted that the HBLs are highly conservative screening values that do not take into consideration analytical detection limits.

Most HBLs reported in Table 7-1 are obtained from the "*Docket Report on Health-Based Levels and Solubilities Used in the Evaluation of Delisting Petitions, Submitted Under 40 CFR §260.20 and §260.22*" (U.S.EPA 1994). For those chemicals not listed in this report, the HBLs were calculated based on an acceptable cancer risk ($1x10^{-6}$) for carcinogens or a target health hazard of 1 for noncarcinogens, using the equations provided in the referenced document. The calculations are provided in Table 7-2 for carcinogens and noncarcinogens.

It should be noted that the reported HBL for inorganic ammonia of 30 mg/L is a drinking water health advisory given by U.S. EPA. This value is based on a chronic exposure. An HBL has not been established for 2-methylnaphthalene since no toxicity information is available for this chemical.

The dilution/attenuation factor, as defined by U.S.EPA, is the contaminant concentration in leachate leaving a disposal unit divided by the concentration in a receptor well predicted by the EPACML. It represents the reduction in contaminant concentration resulting from subsurface processes such as adsorption, three-dimensional dispersion, and dilution from groundwater recharge.

The dilution/attenuation factor is derived under a generic worst-case scenario. Site-specific physical factors (e.g., site hydrogeology) are not considered in the EPA's model because a delisted waste is no longer under hazardous waste controls and the Agency is unable to predict or does not control how a waste will be managed after delisting. Therefore, the site-specific conditions may not be applicable under the scenarios after delisting.

The EPA considers two disposal scenarios for waste delisting: landfill and surface impoundments. The surface impoundment scenario generally results in a lower dilution/attenuation factor compared to the landfill scenario due to the higher leachate flux at surface impoundments. The proposed disposal method for BP's Pond 1 Landfill Leachate is placement of the leachate in a surface impoundment (see Section 5.4.2 for a description of the proposed management method). Therefore, a surface impoundment disposal scenario is an appropriate approach for determining the dilution/attenuation factors for the purpose of this delisting petition.

The dilution/attenuation factor determination is based on the maximum waste volume. Under the surface impoundment scenario, the maximum annual generation rate of liquid waste is used in the model. For the investigated landfill, 288,000 gallons (1,429 cubic yards) of leachate were generated in 1997. This rate is considered higher than that of a typical year (the average annual leachate generation rate between 1994 and 2003 was about 102,300 gallons) and is therefore used to approximately represent the maximum annual waste generation rate. This rate corresponds to a dilution/attenuation factor of 93 as given in the document entitled "Hazardous Waste Management System; Proposed Use of EPA's Composite Model for Landfills (EPAMCL) and Proposed Exclusion" (U.S. EPA 1991) and demonstrated in Figure 7-1 (56 FR 33000, July 18, 1991).

7.3 COMPARISON OF RESULTS WITH BENCHMARKS

Comparisons of leachate concentrations with TC regulatory levels and delisting levels are presented in Table 6-3. None of the TC constituent concentrations detected in the leachate exceed the TC regulatory level. Therefore, the petitioned leachate is a non-hazardous waste.

The comparison of leachate concentrations with the delisting levels indicated that no constituents were detected in the investigative and duplicate leachate samples at levels above the delisting levels.

There are eight constituents that were not detected in any of the leachate samples, however their detection limits were above the delisting levels. Those chemicals are: 7,12-dimethylbenz(a)anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, pentachlorophenol, and ethylene dibromide. The calculated health-based levels for these chemicals are considerably lower, which results in delisting levels at or below the required quantitation limits established by U.S. EPA. For these compounds, delisting levels calculated for those chemicals cannot be detected by routine laboratory analysis. The method detection limits were, therefore, used as the delisting criteria for those chemicals.

The delisting criteria could not be estimated for 2-methylnaphthalene due to the unavailability of the toxicity information. 2-Methylnaphthalene was not detected in any leachate samples. Therefore, it is unlikely that any concern would exist for 2-methylnaphthalene contamination.

These analytical results indicate that concentrations of chemicals in leachate are below regulatory and health-based levels. Therefore, this material is suitable for delisting and can be managed as a non-hazardous waste and discharged to a surface impoundment leading to the WWTF via a series of stormwater retention basins, as proposed.

7.4 SUPPLEMENTARY ANALYTICAL DATA

Additional post-1998 leachate analytical data is provided in this discussion to augment the 1998 data. One sample of the Pond 1 Landfill leachate was collected as part of a Compliance Sampling Inspection by Illinois EPA in April 2003. One additional sample was collected by BP in August 2005. The results from these samples were used to confirm that the chemistry of the leachate remains similar to that sampled in 1998.

Comparison of the 2003 and 2005 results with those from the 1998 samples indicates that the chemistry of the leachate remains similar to that sampled in 1998 (see Table 6-3 for results). The

detected VOCs, pesticides, and herbicides in the 1998 and 2003 samples were non-detect in the 2005 samples or detected at lower concentrations than the 1998 or 2003 samples. The SVOCs detected in the 1998 and 2003 samples were non-detect in the 2005 samples with the exception of pentachlorophenol. Pentachlorophenol was detected below the laboratory reporting limit and the concentration was below the regulatory delisting level. The metals were reported at similar or lower concentrations for all elements with the exception of antimony, copper, and vanadium, which were detected in the 2005 samples and not in the 1998 or 2003 samples. The concentrations were below the regulatory delisting level. Additionally, the inorganic parameters showed comparable results between the 1998, 2003, and 2005 samples.

URS QA/QC procedures and data validation procedures for the 2005 analytical results followed the SAP. STL completed the 2005 analyses. STL's qualifications are provided in Appendix D.

Based on these results, it is evident that the leachate chemistry has not changed since 1998, and that all delisting criteria continue to be met. Therefore, the leachate generated from the Pond 1 Landfill is eligible for delisting under 35 IAC 720.122.

This is a petition to the IPCB to exempt (delist) from regulation as "listed hazardous waste" leachate generated from the Pond 1 Landfill at the Riverfront Property at the former Amoco Wood River Refinery in Madison County, Illinois. Under 35 IAC 720.122, IEPA provides a petition mechanism to allow for the demonstration that a specific waste stream from a particular generating facility should not be regulated as hazardous waste. This petition has presented information in support of delisting of the leachate.

The Pond 1 Landfill contains sludges that were originally deposited in four RCRA interim status surface impoundments that operated in sequence for equalization and storage of wastewater prior to treatment at the former BP wastewater treatment plant. Waste streams to the surface impoundments included surface water runoff and process wastewater from the refinery. The refinery process wastewater contained DAF float, a listed hazardous waste under Illinois and federal regulations (K048) for hexavalent chromium and lead. Because of the presence of a listed hazardous waste in the waste stream, all contents of the ponds were classified as hazardous waste according to the "mixture rule" in 35 IAC 721.103(a)(2)(D).

The sludges were removed from the surface impoundments in which they were originally deposited. They have been solidified using a cement/lime kiln dust reagent and re-deposited in the Pond 1 Landfill under an IEPA approved closure plan. The Pond 1 Landfill is an engineered landfill with multiple natural and engineered liner systems, a leachate detection and collection system, a flood protection dike, and an engineered cap with run-on/run-off controls and a vegetative cover. A comprehensive post-closure maintenance program has been developed to ensure that the leachate collected will be properly managed and that the landfill remains in good operating and functional condition. This leachate is the subject of this delisting petition.

Nine samples of the leachate were obtained from the Pond 1 Landfill leachate collection system in 1998. These samples were in addition to the three leachate samples from 1997. Additional sample results collected in 2003 by the IEPA and in 2005 by BP, were used as supplementary data. The samples were analyzed for the characteristics of hazardous waste and for constituents that potentially could be present in the Pond 1 Landfill based on a review of past plant operations (i.e., metals, VOCs, SVOCs, pesticides, and herbicides).

Concentrations of all detected chemicals in the samples were below Toxicity Characteristic regulatory levels and health-based levels modified by a site-specific dilution/attenuation. Concentrations of total cyanide and sulfide were below that requiring testing for reactivity. Samples were found not to demonstrate the characteristics of ignitability or corrosivity.

Based on the results of the sampling, all delisting criteria have been met. The leachate generated from the Pond 1 Landfill is eligible for delisting under 35 IAC 720.122 in accordance with U.S. EPA's guidance entitled *EPA RCRA Delisting Program Guidance Manual for the Petitioner* (U.S. EPA 2000). It is requested that the IPCB grant the delisting status for the Pond 1 Landfill generated leachate according to the proposed management method that is judged to be more environmentally sound and less burdensome than the current method.

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