DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: **World Resources Company**
Facility Address: **170 Walnut Lane, Pottsville, Pennsylvania 17901**
Facility EPA ID #: **PAD981038227**

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units [SWMU], Regulated Units [RU], and Areas of Concern [AOC]), been **considered** in this EI determination?

[X] If yes – check here and continue with #2 below.

[ ] If no – re-evaluate existing data, or

[ ] If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

____ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

X If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):
The World Resources Company facility (WRC or facility), a recycler of metal bearing sludges generated primarily by the metal finishing and electroplating industries, is located in Pottsville, Norwegian Township, Schuylkill County, Pennsylvania. The approximately 9-acre site is situated on two parcels of land among mixed commercial and undeveloped wooded property along Walnut Lane. The facility consists of several buildings (processing [containment building or process facility], laboratory, offices, storage, and supply), parking areas, and a truck turning area. The facility processing building, also known as the containment building, is approximately 28,000 square feet and houses the production/process areas and associated equipment that include a wastewater treatment system. The on-site laboratory, located adjacent to the north side of the containment building, performs analysis of waste material prior to receipt of the materials. The administrative and office buildings are located adjacent to the northeast corner of the processing building and contain a reception area, administrative offices, and conference rooms. The storage building is located on the east side of the parking area. The supply building is located adjacent to the southeast corner of the processing building and contains uniforms and general supplies.

The truck parking area extends outside of the bermed receiving area. The bermed parking and receiving areas are washed down with water periodically during the day and the wash water is sent through the on-site wastewater treatment system for process before being delivered to the Minersville Sewage Treatment Plant (MSTP). Other than the buildings and parking lot, the majority of the property is unused land that is forested or covered by grass. The facility is situated on the northeast quadrant of the property and is bordered by Walnut Lane to the north. There are five existing monitoring wells located onsite (four shallow and one deep).

Surrounding land uses include mixed commercial and residential neighborhoods and undeveloped land. Two commercial buildings are located east and northeast of the facility. The building to the east-northeast is occupied by MBC contract manufacturing/warehousing. The building to the northeast is occupied by the Republican Herald newspaper operations. Residential areas are located further east (across Township Highway 626A) and southeast of the facility. Residential areas are also located to the north, northwest, and southwest beyond the undeveloped forested land. Commercial/industrial properties and a coal refuse reprocessing facility are located approximately three quarters of a mile southwest of the facility in the town of Mar Lin.

Operations
Laboratory - The on-site laboratory performs analysis of waste material prior to receipt of the materials. If the waste materials can be accepted, then a trial shipment is delivered to the facility. The laboratory manager inspects each shipment for conformance with the waste analysis plan (WAP). Any waste materials that deviate from the WAP are not accepted and are sent directly back to the generator. Liquids generated in the laboratory during sample preparation and analyses are discarded via the sinks. The sinks drain to a 30 gallon sump and then to the on-site wastewater treatment

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

system.

Fumes generated in the laboratory hoods are sent through either the wet scrubber or the activated carbon scrubber and then to the atmosphere under the State Only Operating Permit (SOOP). The on-site laboratory analyzes the quarterly groundwater samples they collect voluntarily from existing onsite monitoring wells. They also analyzed random soil samples collected at the facility.

Waste Receiving - The waste receiving area consists of a container unloading area and three receiving, inspection and sampling receptacles (RISRs). A tire wash station is also located in the receiving area within the bermed asphalt truck parking area. It consists of rows of six-inch high concrete berms covered by steel grates. The rows are sloped toward a catch basin that drains to a concrete sump. The water captured in the sump is pumped back to the on-site wastewater treatment system via an underground pipeline which is triple cased and situated inside of a liner.

The facility primarily processes solid materials, received either in bulk or in drums/totes. When received in bulk, the solid materials are stored in the RISRs which consist of a sealed concrete floor divided into two separate bins. The solid materials are typically 30% solids. When the recycling process is complete, the materials are 60% to 70% solids. The recycled material is sold and shipped to smelters to be used as a substitute for virgin ore in the smelting process. The facility uses five flat bed trailers to move recycled products to the rail station.

When the facility receives dry solids that are too dusty (low moisture materials generally received in drums or totes), they are placed in the compounding unit and mixed with mineral oil and/or other compatible materials with higher moisture content prior to sending the material through the recycling process. The materials are then sent through the compounding process, which is generally a cyclonic action. An operator selects a final particle size, and the large-sized initial materials are whittled down and dewatered until the final particle size is reached. The final product is then deposited directly from the compounding machine into cubic yard polyethylene totes and moved to the final shipment area. The liquids removed from the materials during the process are sent to the on-site wastewater treatment system for treatment.

The facility also recycles non-hazardous wastes that are metallurgically compatible with its production process. Occasionally, the facility receives liquids from cleanout of plating baths. The liquids are unloaded and sent through the on-site wastewater treatment system. The remaining solids are put through the recycling process.

One of the facility's permitted dust collectors is located in the receiving area. The air is passed through a high-efficiency particulate air (HEPA) filter and then the particulates removed by the filter are sent through the recycling process.

Production/Process Area (Containment Building) - The production areas and equipment comprise a product loading area, a waste receiving area, a wastewater treatment system, one compounding unit, two thermal concentration units, four process water tanks, and three product storage areas. The production areas and equipment are completely enclosed within a structure designed so that operations and control of material are completely shielded from wind and weather.

The outputs from WRC include metal concentrate product and process wastewater. The metal concentrate product contains the recyclable material/solids present in the incoming materials, including flux reagents utilized in the smelting process and high concentrations of gold, silver, palladium, copper, nickel, tin, and other elements. WRC's concentrate product is an internationally traded commercial product purchased by foreign and domestic primary metal producers.

The on-site wastewater treatment system consists of two 5,000-gallon leach tanks, four 5,000-gallon precipitation tanks, two filter presses, and a polishing filter. The process water is sent to the leach tanks, then through the first filter press, to the four precipitation tanks, through the second filter press, and finally through the polishing filter. The treated water is held in a 5,000- gallon holding tank prior to disposal. The wastewater is analyzed by the on-site laboratory throughout the process and after it is passed through the polishing filter (at which point the particles are approximately 2 microns in size), prior to discharging to a tanker truck for disposal at MSTP. Two tanker trucks are stored on-site to transfer process wastewater to MSTP. The on-site wastewater treatment system is situated within a bermed area that consists of an epoxy sealed concrete floor and an 8-inch high concrete berm which are lined with XR-5 geomembrane. A separate tank is used to contain the laboratory sink water. There are also three tanks that contain scrubber makeup and return water, and two transfer tanks. A 12,000-gallon tank is used for excess process water storage. The headspace in the precipitation

reactors is vented to a second permitted scrubber system that includes two packed tower scrubbers. The second horizontal unit was recently added. Two larger tanks collect rainwater from the roof and the collection areas outside (pumped from the truck containment areas). The water is then sent through the on-site wastewater treatment system.

The facility sanitary sewage discharges to a septic system/sand mound located in the northern corner of the property.

Based on the June 2011 site visit observations and interviews with facility personnel, no floor drains are located within the facility. The concrete floor of the containment building is sealed and a portion of it is lined.

Permits
In 1983, WRC began operations at the facility after encountering opposition by both local residents and Norwegian Township supervisors. These local concerns were reviewed by the Pennsylvania Department of Environmental Protection (PADEP), but ultimately PADEP granted WRC permission to operate. However, WRC, PADEP, and the United States Environmental Protection agency (USEPA) continued discussions/disputes over the operating status of the facility with respect to WRC's requirement to submit a Part A Hazardous Waste Permit Application. The facility was not issued a hazardous waste identification (ID) number, nor did it have interim status or permit facility status, because it was considered a hazardous waste recycling facility. During the first several years of operation, WRC operated under Pennsylvania ID No. PAR000540004, but in January 1983, WRC was issued USEPA ID No. PAD981038227. Currently, the permit allows for the production of non-ferrous and precious metal concentrate products from the recycling of residual and hazardous electroplating wastewater treatment sludges F006 and F019 residuals and solutions, D002, D004-D010, F007-F009.

One existing waste storage area was identified on the February 12, 1993 Part A Hazardous Waste Permit Application (i.e., Waste Storage Pile 1/Product Receiving Area located inside the northwest corner of the building). However, following WRC's submittal Part B of the Hazardous Waste Permit Application and comments from PADEP, WRC indicated that the following waste management units were applicable to the facility: material receiving (1, 2, and 3), concentration, reactor tanks, filter pressing, blending/compounding, shredding/grinding, and product loading. These waste management units are all located within the containment building. WRC considers the containment building to be one continuous hazardous waste management unit (HWMU) consisting of multiple waste management processes.

There have been no reported spills or releases to the ground surface except for an incident in which a minimal amount of F006 waste was tracked off the facility's lined receiving receptacle by the tires of a delivery transport vehicle. The facility promptly removed the contaminated material, collected samples, and paved the area and installed a tire wash station to prevent future incidents. No other investigations or remedial actions have been recorded. However, local residents have periodically filed complaints with PADEP over malodors allegedly originating from the WRC facility. PADEP continues to follow-up on these complaints and to monitor both the waste recycling and air emissions activities from the facility.

WRC maintains SOOP 54-00062 for air emissions from the metal concentration process.

Ownership
The property was initially owned by the Greater Pottsville Industrial Development Corporation. According to historical aerial photographs, the property was used as farmland prior to 1972. In 1974, the property was developed by the Oliver Organization, which constructed a steel warehouse with adjoining offices. The facility was subsequently operated by Argo, which performed steel fabrication. In 1980, Argo ceased operation and all equipment was removed.

WRC leased the property in 1982 and began constructing a recycling facility, which began operations in late 1983.

Waste Types and Quantities
According to the December 23, 1982 Notification of Hazardous Waste Activity, the facility handled the following hazardous wastes:

F006 - Wastewater treatment sludges from electroplating operations
F007 - Spent cyanide plating bath solutions from electroplating operations
F008 - Plating bath residues from the bottom of plating bath from electroplating operations using cyanides

F009 - Spent stripping and cleaning bath solutions from electroplating operations using cyanides

On February 12, 1993, WRC submitted a Part A Hazardous Waste Permit Application. The application indicated that up to 34,000 tons of F006 waste were stored at the facility. To meet the customers contractual specifications, WRC utilizes hydrometallurgical processing (which includes leaching and precipitation), thermal concentration/evaporation at low temperatures (300 to 500 degrees Fahrenheit [F]), and blending and compounding.

According to information provided in the April 16, 2001 WAP prepared by WRC for the USEPA, the hazardous wastes received at the facility for recycling were classified by the following waste codes:

F006 - Wastewater treatment sludges from electroplating operations
F007 - Spent cyanide plating bath solutions from electroplating operations
F008 - Plating bath residues from the bottom of plating bath from electroplating operations using cyanides
F009 - Spent stripping and cleaning bath solutions from electroplating operations using cyanides
F019 - Wastewater treatment sludges from the chemical conversion coating of aluminum
D006 - Cadmium toxicity characteristic hazardous waste
D007 - Chromium toxicity characteristic hazardous waste
D008 - Lead toxicity characteristic hazardous waste
D009 - Mercury toxicity characteristic hazardous waste
D010 - Selenium toxicity characteristic hazardous waste
D011 - Silver toxicity characteristic hazardous waste

The 2001 WAP also reported that approximately 434 tons and 40,000 gallons of waste were stored throughout the containment building.

On October 27, 2009, PADEP approved the application for a Class II modification of the October 1, 2001 treatment, storage, and disposal facility (TSDF) permit No. PAD981038227. The modification stated that in addition to the hazardous wastes listed in the 2001 TSDF permit, the facility would accept corrosivity characteristic hazardous waste (USEPA Hazardous Waste Code D002).

On November 4, 2010, WRC submitted a TSDF Operating Permit Renewal Application to PADEP for the renewal of Permit No. PAD981038227. The March 21, 2012 issued permit allows for the continued production of non-ferrous and precious metal concentrate products from the recycling of residual and hazardous electroplating wastewater treatment sludges F006 and F019 residuals and solutions, D002, D004-D010, F007-F009.

Available records indicate that WRC receives hazardous waste material (primarily F006) from both foreign and domestic firms. Numerous available documents indicate that WRC had been providing PADEP with notices of when they had been receiving shipments originating from a foreign entity, as per conditions set forth under their current permit.

Residual waste in the form of polyethylene plastic truck liners, intermediate bulk containers (IBC) and polyethylene liners for the IBCs are disposed of in accordance with Pennsylvania regulations and/or are sent off site for recycling.

Process Wastewater
WRC's process wastewater has been delisted in accordance with a delisting agreement with PADEP dated February 1, 1984. The water is delivered via tanker truck to the MSTP. Shipments are monitored by WRC and MSTP to insure compliance with the delisting requirements and other criteria required by MSTP. WRC has maintained a contract for discharge of treated process wastewater with MSTP from 1984 to present.

On March 13, 1998, PADEP issued a co-product determination concurrence letter for the outgoing metal concentrates produced by the facility. The co-product concurrence required that the material must be transferred in good faith as a commodity in trade for use on a regular basis or to be used by the manufacturer or producer on a regular basis.

On May 1, 1999, PADEP promulgated new hazardous waste regulations and deleted from the definition section the term "co-product". Under the new regulations, PADEP provided for a co-product transition process where a company producing material as co-product shall submit by May 1, 2001, a formal notification to exempt the material as solid

waste. On May 11, 1999, the facility submitted to PADEP its formal notification of exemption for the outgoing metal concentrates.

On December 17, 2001, the facility submitted a request to PADEP for a variance from classification as a solid waste for the outgoing metal concentrates as materials that have been reclaimed but must be reclaimed further before recovery is completed. This variance request was submitted to PADEP as a condition of the Hazardous Waste Storage and Processing Permit.

On February 6, 2002, PADEP granted a variance to the facility stating that the outgoing metal concentrates produced by the facility, meeting the standards specified under the prior co-product determination concurrence, are determined not to be a solid waste.

Air
The facility currently operates under a SOOP for various emission units associated with the metal concentration process (e.g., evaporation/thermal concentration). WRC's process incorporates hydrometallurgical and pyrometallurgical processes. All hydrometallurgical process tanks were maintained under a slight negative pressure and vented through a packed tower scrubber under PADEP Air Quality Permit No. 54-00062. The steam exhaust output from the two thermal concentration units (pyrometallurgical process) exits through a Heil/Xerxes venturi particulate scrubber and two packed tower scrubbers operating under PADEP Air Quality Permit No. 54-00062.

The following table details the permits, issue dates, renewal information, and applicable inspections for the various plan approvals and operating permits issued at the facility throughout its operating history:

Plan Approval/ Operating Permit No.	Applicable Units	Issued	Modifications/Extensions
Plan Approvals			
54-313-57A	Metals Concentration Process/ Packed Tower	July 10, 1997	Modification: March 20, 1998 Extension: June 22, 1998
54-339-016	Two Hydrometallurgical precipitate concentrators		Modification: February 2, 1990
54-339-16A	No. 2 fuel oil fired thermal concentrators and evaporators	Applied on April 3, 1993	Modification: July 2, 1993
54-339-16B	Three Thermal Concentrators	July 10, 1997	
54-339-16C			Extension: August 13, 2002

Operating Permits	Applicable Units	Issued	Modifications/Extensions
54-313-057	Metals Concentration Process/ Packed Tower Cleaning Device	Issued: May 16, 1986 Renewed: July 9, 1988 June 25, 1991 June 23, 1992 June 23, 1993 July 1, 1993	
54-313-57A	Metals Extraction Process/ Packed Tower Scrubber Solution Change May 12, 1997	May 21, 1999	
54-339-016	Two Hydrometallurgical precipitate concentrators	Issued: December 20, 1989 Renewed: July 9, 1990 June 25, 1991 June 25, 1992 July 1, 1993	Modification: May 12, 1997
54-339-16A	Three No. 2 fuel oil fired thermal concentrators and evaporators	April 21, 1994	Request to modify: August 9, 2001
54-339-16B	Three Thermal Concentrators Venturi Jet Packed Tower Scrubbers	May 21, 1999	
54-339-16C	Metals reclamation Process/APV Concentrator	Issued: November 21, 2002 Renewed:	
State Only Operating Permit (SOOP) 54-00062	• Hydrometallurgical Extraction Process • Thermal Concentrating Unit 2 • APV Fluid Bed Processor • Hydrometallurgical wet Scrubber • Venturi 1 and 2 • Dual Pact Tower 1 • Hydrometallurgical Stack • Thermal Concentrator Stack	Issued: September 29, 2005 Renewed: September 13, 2011	Replaces 54-313-57A and 54-339-16C Expired: September 30, 2010 (Renewal Application submitted on 2/9/2010) Approval granted on September 13, 2011.

NPDES
No National Pollutant Discharge Elimination System (NPDES) or storm water permits are associated with WRC. WRC's April 3, 2000 response to PADEP comments of WRC's Hazardous Waste Recycling Permit Application stated the following, "Based on the activities conducted at WRC facilities, neither Pennsylvania nor Federal Regulations specify the requirement for a NPDES or Storm Water permit". Wastewater at the facility is shipped to MSTP for final treatment.

SWMUs
After some debate between PADEP and WRC, the facility's containment building was considered to be a HWMU

containing several waste recycling process areas.

As part of WRC's submittal Part B of the Hazardous Waste Permit Application discussed earlier, PADEP had returned comments in a letter (dated December 6, 1999) regarding the units used to manage the waste during the recycling process. Those comments indicated the following units were applicable to the facility:

Industrial Unit	Industrial System	Type of Activity
Leach and Precipitation Reactors	Hydrometallurgical	Treatment Tanks
Thermal Concentration	Pyrometallurgical	Physical Treatment
Mixing	Compounding/Blending	Physical Treatment
Filter Presses	Filtering/Dewatering	Physical Treatment
RISRs 1,2 and 3	Unloading	RISR within containment building
Containment Building	Containment	Containment Building

As specified by PADEP, WRC has delineated and described the aspects of the treatment method WRC employs. The table below is one similar to that provided above by PADEP, and was configured to show that the HWMU is a containment building and that this unit has various process aspects. These aspects are listed with their analogous function and activity. As the regulations do not further breakdown a unit as to the method employed, the Code T94 properly identifies the WRC HWMU.

Treatment (HWMU)	Process (Code T94)	Recycling Activity
Containment Building	Containment Building/Recycling	Containment Building
Material Receiving 1,2,3	Unloading	Inspection/Sampling
Concentration	Dehydration Process	Physical Treatment
Reactor Tanks	Hydrometallurgical	Treatment in Tanks
Filter Pressing	Filtering/Dewatering	Physical Treatment
Blending/Compounding	Product Formulating	Physical Treatment
Shredding/Grinding	Resizing	Physical Treatment
Product Loading	Loading	Product Shipment

There are three RISRs, six hydrometallurgical process tanks, two filter presses, four process water tanks, one shredding unit, one compounding unit, and two concentrating units.

On January 16, 2004, the permit was modified to add the shredder/grinder unit to the process.

Storage Tanks
On April 24, 1984, PADEP notified Norwegian Township that WRC requested permission to install processing tanks at the facility and asked the Township to respond if it had any concerns. On June 25, 1984, PADEP notified the Township that WRC was approved to install the processing tanks. Interim proof of tank registration was sent to WRC on December 4, 1990.

On August 7, 1995, WRC provided the required 30 day notice to PADEP to remove one 10,000-gallon steel, underground storage tank (UST) that was used for storage of No. 2 fuel oil (heating oil). The tank was located near the loading docks located west of the process building. Per the Tanks Registration form, the UST was removed on September 22, 1995. The UST closure report, dated October 2, 1995, indicated that the UST was in extremely good condition with no rust or pitting. The soil removed from the excavation was stockpiled and field screened for petroleum. Four confirmatory samples were collected and analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX). The analytical results indicated that xylenes were detected at a concentration of 0.012 milligram per kilogram (mg/kg) in a soil sample collected from the bottom of the tank excavation. This concentration is well below the PADEP Land Recycling Program (Act 2) used aquifer, non-residential soil to groundwater medium-specific concentration (MSC) for total xylenes (990 mg/kg). The other soil samples were reportedly non-detect for BTEX and thus the excavation was backfilled with the stockpiled soil.

In a telephone conversation with PADEP on February 5, 1996, WRC discussed installing a 2,000-gallon diesel fuel aboveground storage tank (AST). The new AST was installed between the process building (east side) and the southern office on October 20, 1993 and was used to store No. 2 fuel oil. The tank had a double-walled steel construction; piping was bare steel and copper. The AST was equipped with spill prevention and overfill prevention. On February 9, 1996, PADEP acknowledged receipt of the Tanks Registration form of the 2,000-gallon fuel oil tank from WRC. This tank was removed on November 22, 2002 and replaced with a 300-gallon, double-walled, fuel AST. The 300-gallon AST is in a sealed concrete spill-containment area located adjacent a loading dock located west of the process building.

The registered tanks identified at the facility are as follows:

ABOVEGROUND TANKS					
Tank ID	**Installed**	**Size (gallons)**	**Contents**	**Current Status**	**Secondary Containment**
001B	November 2002	300	No. 2 fuel oil	Active	yes
001A	October 20, 1993	2,000	No. 2 fuel oil	Removed November 22, 2002	yes
UNDERGROUND TANKS					
Tank ID	**Installed**	**Size (gallons)**	**Contents**	**Current Status**	**Secondary Containment**
001	April 1, 1986	10,000	No. 2 fuel oil	Removed September 22, 1995	unknown

AOCs
Based on the records reviewed, interviews, and site visit observations, no AOCs were identified at the facility. All facility processes are contained within the containment building which has a bermed, sealed, and lined concrete floor. No releases have reportedly occurred at the facility.

Investigations and Remedial Actions

Phase I Environmental Site Assessment (ESA), 1988
According to the May 10, 2001 PPC Plan, a Phase I ESA was conducted on the property in 1988 by Versar, Inc. (Versar) prior to WRC's purchase of the property. The findings and conclusions of the ESA were not provided by WRC for this EI due to legal reasons. However the report states that five monitoring wells (four shallow and one deep) were installed in March 1988. Although not required by regulation, these five monitoring wells are used for continued routine groundwater monitoring conducted by WRC. Groundwater is sampled for purgeable organics, potential metal contaminants, and USEPA groundwater quality parameters. Boring logs (completed by Versar) indicated the borings were advanced to depths ranging from 38 to 52 feet. Logs indicated a reddish brown, light brown weathered shale was present through the upper four feet; layers of light brown, orange and tan very fine grained shale to siltstone, silty loam, highly weathered shale, and poorly cemented sandstone were encountered to the end of the borings. Evidence of moisture and little water were detected at a depths ranging from 6 to 50 feet. Monitoring wells were constructed of 4-inch diameter polyvinyl chloride (PVC) screen (ranging in length from 15 to 25 feet) and casing.

Mobile Analytical Services Sampling and Analyses, 1995 - 2000
PADEP, in conjunction with the Mobile Analytical Services of the Bureau of Laboratories performed on-site chemical analysis of metals in samples of the facility's incoming recyclable materials and outgoing concentrate products. On-board instrumentation screened for the following metals: arsenic, antimony, barium, beryllium, cadmium, chromium, copper, nickel, lead, selenium, and zinc. The analyses performed for metals in the samples were total metals and Toxicity Characteristic Leaching Procedure (TCLP). The aforementioned sampling events were conducted by the Mobile Analytical Unit on July 17 and 18, 1995; June 12, 1996; September 9, 1997; August 18 and 19, 1999 and July 10 and 11, 2000.

Wastewater Sampling, 1997 and 2000
Available records indicated that WRC and PADEP conducted split sampling of wastewater in September 1997 and July 2000.

F006 Cleanup, 1998
A May 1, 1998 inspection and associated August 21, 1998 notice of violation (NOV) reported that a minimal amount of recyclable F006 material (below the reportable quantity) was tracked off the facility's lined receiving receptacle by the tires of a delivery transport vehicle. As a result, WRC removed the top 2 to 3 inches of gravel from the area and placed it within the containment area for decontamination. Samples were collected both prior to and after removal of the gravel under the observation of PADEP personnel and were analyzed for TCLP and total metals by both PADEP and an independent laboratory. TCLP and total metal concentrations were not reported above regulatory limits. A penalty was not assessed and no further action was taken by PADEP. To prevent future tracking of waste material, WRC installed a bermed tire wash station and paved the facility truck entrance driveway with asphalt. The April 27, 1999 inspection observed the use of a newly installed tire wash and expanded truck unloading area, which is currently in use.

Groundwater Sampling and Analyses, 2010
During the June 2011 site visit, the facility provided the May 24, 2010 and November 28, 2010 groundwater sampling results of monitoring wells W-1, W-2D, W2S (dry), W-3, and W-4. Groundwater samples were analyzed for total and dissolved metals and other inorganics. No results were reported greater than the non-use aquifers, non-residential MSCs for the two sampling events. For the May 24, 2010 sampling event, the monitoring well groundwater results also were compared to the results for a sample of the City of Pottsville potable water supply.

No other known releases have occurred at the facility resulting in investigations or remedial actions.

Groundwater: The Llewellyn Formation, which comprises the bedrock at the facility, is not a reliable source of water. Local well drillers cite the groundwater quality as poor due to impacts from past and current mining activities in the area and water yields from wells are only sufficient for low volume users.

Information obtained from the Pennsylvania Department of Conservation and Natural Resources (DCNR) Groundwater Information System (PaGWIS) accessed on August 30, 2011 indicates that two groundwater wells are located within a 0.5 mile radius of the facility. One domestic open hole well, reported to be 325 feet in depth and drilled in 1965, is located approximately 0.3 miles north of the facility. A closed-loop geothermal well, reported to be 300 feet deep and drilled in 2008, is located approximately 0.42 miles north of the facility. The production well maintained by the facility was not listed in the PaGWIS database. No other potable wells have been identified near the facility.

The City of Pottsville, including residential, commercial, industrial and municipal users, receives drinking water from the Schuylkill County Municipal Authority (SCMA). SCMA provides service to approximately 34,000 customers in the City of Pottsville, surrounding communities and the facility. The City of Pottsville is provided water by two of SCMA's three water filtration plants. The Broad Mountain facility draws water from the Wolf Creek, Eisenhuth, Pine Run, and Kauffman reservoirs, while the Indian Run facility utilizes the Indian Run reservoir. All of these reservoirs are located south of City of Pottsville.

There have been no known or reported releases of chemicals to groundwater and no reported remedial actions for groundwater conducted at the facility.

Potable water at the facility is provided by SCMA and the surrounding residences are connected to the public water supply.

The facility maintains one production well; however, the groundwater at the facility is not used for human consumption. This production well was installed in March 1974, is steel cased, 300 feet deep, and has a pump set at 200 feet below ground surface (bgs). It is used solely by the laboratory for use in the deionized (DI) columns, thus exposure to groundwater from the production well is limited to laboratory workers. Water from this well is reportedly monitored on a monthly basis for several heavy metals, none of which have been detected. All other water used on-site is via the public water supplier.

The facility also has five relatively shallow (less than 50 feet deep) monitoring wells on-site which they voluntary sample quarterly.

During the June 2011 site visit, the facility provided the May 24, 2010 and November 28, 2010 groundwater sampling results of monitoring wells W-1, W-2D, W2S (dry), W-3, and W-4. According to the November 28, 2010 summary table, static groundwater levels ranged from 27 feet bgs (PAF-W4) to 43 feet bgs (PAF-W3) during the November 2010 sampling event. The November 28, 2010 monitoring well water levels indicate groundwater is flowing toward the west. Groundwater samples were analyzed for total and dissolved metals and other inorganics. No results were reported greater than the non-use aquifers, non-residential MSCs (used for comparison by the facility) for the two sampling events. For the EI report, the results were compared to the PADEP MSCs updated on January 8, 2011. Arsenic-total (0.017 parts per million [ppm]) was detected in W-1 above the used aquifers, total dissolved solids (TDS) less than/equal to 2,500 ppm MSCs (0.01 ppm for residential and non-residential) in November 2010. Arsenic-dissolved for the sample (0.002 ppm) was below the MSCs. Arsenic was below the detection limit of 0.001 ppm in the monitoring wells and the City of Pottsville potable water in May 2010. Lead-total (0.013 ppm) was detected in W-4 above the used aquifer, TDS less than/equal 2,500 ppm MSCs (0.005 ppm for residential and non-residential) during May 2010. Lead-total (0.005 ppm) was detected in W-2D and W-4 in November 2010. Lead-total (0.023 ppm) was detected in W-3in November 2010. Lead-dissolved was below the detection limit of 0.001 ppm for these wells. Manganese (0.448 and 0.407) was detected above the used aquifer, TDS less than/equal 2,500 ppm MSCs (0.3 ppm for residential and non-residential) in W-4 for both total and dissolved constituents, respectively, in May 2010. Manganese was not analyzed in November 2010. Mercury was not detected during the two sampling events; however, the reporting limit of 0.0034 ppm is above the used aquifer, TDS less than/equal 2,500 ppm residential and non-residential MSCs of 0.002 ppm. Nitrate (25.6 ppm and 22.4 ppm) was detected in W-4 above the used aquifer, TDS less than/equal 2,500 ppm residential and non-residential MSCs (10 ppm) during the two sampling events, respectively.

Although several metals (arsenic, lead and manganese) were detected above the used aquifers MSCs in the total phase in the shallow groundwater, only manganese at W-4 was detected above the MSC in the dissolved phase. Nitrate was detected above the MSC only at W-4. As the shallow water is sampled and analyzed by the facility, exposure to groundwater water is limited to laboratory workers.

It is unknown if groundwater quality is the result of facility operations, or more likely due to the geology of the area and/or past uses of the property (e.g., farmland). As there have been no known releases to groundwater at the facility and the neighboring residences are connected to the public water supply, it is concluded that no exposure pathway controls are relevant for the groundwater exposure pathway.

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

_____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

X YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the **World Resources Company** facility, EPA ID # **PAD981038227**, located at **170 Walnut Lane, Pottsville, Pennsylvania 17901**. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater". This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

____ IN - More information is needed to make a determination.

Completed by (signature) _____ Date _____

(print) _____

(title) _____

Supervisor (signature) _____ Date _____

(print) _____

(title) _____

(EPA Region or State) _____

Locations where References may be found:

USEPA Region III
Waste and Chemical Mgmt. Division
1650 Arch Street
Philadelphia, PA 19103

PADEP
North East Regional Office
2 Public Square
Wilkes-Barre, PA 18701

Contact telephone and e-mail numbers

(name) _____
(phone#) _____
(e-mail) _____

Facility Name: **World Resources Company**
EPA ID# **PAD981038227**
City/State **Pottsville, Pennsylvania 17901**

MIGRATION OF CONTAMINATED GROUNDWATER UNDER CONTROL (CA 750)