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ENVIRONMENTAL • GEOTECHNICAL
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CLOSURE PLAN

IPL PETERSBURG GENERATING STATION
TYPE III RESTRICTED WASTE LANDFILL

INDIANAPOLIS POWER & LIGHT COMPANY
PETERSBURG GENERATING STATION
6925 NORTH STATE ROAD 57
PETERSBURG, INDIANA 47567

ATC PROJECT NO. 170LF00274

OCTOBER 7. 2016

PREPARED FOR:

INDIANAPOLIS POWER & LIGHT COMPANY
6925 NORTH STATE ROAD 57
PETERSBURG, INDIANA 47567-0436

ATTENTION: MR. ERWIN A. LEIDOLF, SENIOR SCIENTIST

October 7, 2016

Mr. Erwin A. Leidolf
Senior Scientist
Indianapolis Power & Light Company
Petersburg Generating Station
6925 North State Road 57
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Re: CCR Closure Plan
IPL Petersburg Generating Station
Type III Restricted Waste Landfill
Petersburg, Indiana
ATC Project No. 170LF00274

Dear Mr. Leidolf:

ATC is pleased to present the following CCR Closure Plan for the IPL Petersburg Generating Station Type III Restricted Waste Landfill. Contained herein is a copy of the report which summarizes the compliance of the landfill closure plan with requirements of 40 C.F.R. Part 257, Subpart D.

A summary of the landfill final cover system, engineering design measures, narrative of closure activities, an approximate timeline for closure, and engineering certification are included with this report.

We appreciate the opportunity to assist you with this project. If you have any questions concerning information contained in this report, please do not hesitate to call either of the undersigned at 317.849.4990.

Sincerely,

ATC Group Services LLC

Charles Dewes

Charles P. Dewes, E.I.
Project Engineer

David Stelzer

David Stelzer, Ph.D., P.E.
Senior Project Engineer

Donald L. Bryenton

Donald Bryenton, P.E.
Principal Engineer

CCR CLOSURE PLAN

INDIANAPOLIS POWER & LIGHT COMPANY
PETERSBURG GENERATING STATION
TYPE III RESTRICTED WASTE LANDFILL

OCTOBER 7, 2016

PREPARED FOR:
INDIANAPOLIS POWER & LIGHT COMPANY

PREPARED BY:
ATC GROUP SERVICES LLC

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1 INTRODUCTION

Under 40 C.F.R. § 257.102(b), the owner or operator of a CCR unit must prepare a written closure plan that describes the steps necessary to close the CCR unit consistent with recognized and generally accepted good engineering practices at any point during the active life of the CCR unit. The Closure Plan outlined below is provided to meet this requirement.

1.1 PURPOSE

The Closure Plan for IPL Petersburg Type III Restricted Waste Landfill is intended to satisfy requirements set forth by the CCR Rule. In accordance with 40 C.F.R. § 257.102(d)(1), the landfill will be closed in a manner that will:

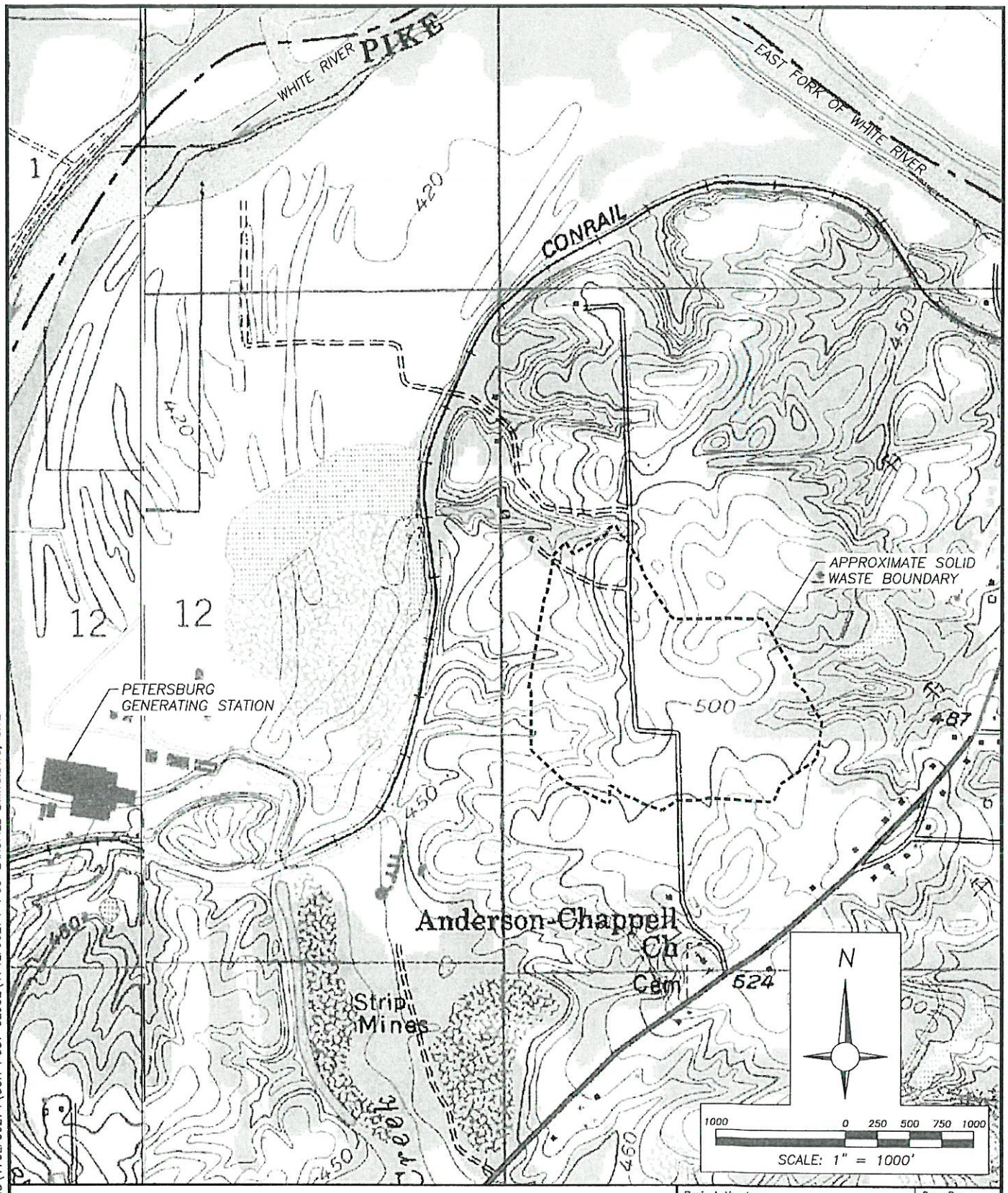
(i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquid into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere;
(ii) Preclude the probability of future impoundment of water, sediment, or slurry;
(iii) Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period;
(iv) Minimize the need for further maintenance of the CCR unit; and
(v) Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.

1.2 FACILITY & SITE DESCRIPTIONS

The IPL Petersburg Generating Station Type III Restricted Waste (RWS) Landfill (See Figure 1) is located about four (4) miles north of the City of Petersburg in Pike County, Indiana west of State Road 57. The Landfill encompasses an area of approximately 123.7 net acres inside the Solid Waste Boundary. A 33.8 acre portion of the landfill has already received closure certification from the Indiana Department of Environmental Management (IDEM). The Petersburg Type III RWS Landfill operates under IDEM Permit Number 63-2.

1.3 LANDFILL NAME

The CCR unit name is IPL Petersburg Generating Station Type III Restricted Waste (RWS) Landfill.



VICINITY MAP

IPL PETERSBURG GENERATING STATION
TYPE III RESTRICTED WASTE LANDFILL
PETERSBURG, INDIANA

Project Number: 170LF00274		Drn. By: WS
Drawing File: SEE LOWER LEFT		Ckd. By: CD
Date: 9/16	Scale: AS SHOWN	App'd By:
ATC		Figure: 1

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2 PLANNED CLOSURE ACTIVITIES

The CCR unit will be closed in accordance with 40 C.F.R. § 257.102(d). In general, the perimeter slopes of the landfill will be graded with 3H:1V slopes while the top of the landfill will have a typical slope of 2 percent. After grading work is complete, CCR material will be covered with materials specified in the Final Cover System. Proposed closure activities are summarized below:

- Survey and final grading
- Cover Placement
- Drainage Structure Installation
- Seeding
- Certification of Closure

Upon final closure of the landfill a closure certification will be prepare a notification of closure in accordance with 40 C.F.R. § 257.102(h).

3 DESCRIPTION OF FINAL COVER SYSTEM

Closure of the CCR Unit will be accomplished by leaving CCR in place. The final cover system will meet the following performance standards of 40 C.F.R. § 257.102(d)(3)(i):

(A) The permeability of the final cover system must be less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than 1 x 10^-5 cm/sec, whichever is less.
(B) The infiltration of liquids through the closed CCR unit must be minimized by the use of an infiltration layer that contains a minimum of 18 inches of earthen material.
(C) The erosion of the final cover system must be minimized by the use of an erosion layer that contains a minimum of six inches of earthen material that is capable of sustaining native plant growth.
(D) The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.

The IDEM approved final cover system for this landfill does not specify a maximum hydraulic conductivity for the compacted soil layer. However, as noted above, §257.102 (d)(3)(i)(A) requires the permeability of the final cover be less than or equal to the bottom liner system. The IDEM permit conditions for this facility require a base liner with a permeability equal to or less than $1x10^{-7}$ cm/sec. Therefore, in accordance with the requirements of §257.102 (d)(3)(i), a minimum of 18 inches of the compacted soil layer of the final cover will be constructed with a permeability equal to or less than $1x10^{-7}$ cm/sec. As allowed in §257.102 (d)(3)(ii) and if approved by IDEM, the landfill could select an alternative final cover system. This determination will be made at the time the facility commences closure.

Construction quality assurance measures will be completed to ensure measures are taken to ensure that the final cover soil installation is constructed as designed. At the time final closure is completed, a Qualified Professional Engineer will certify that the final cover system meets the requirements of §257.102 (d)(3).

4 ESTIMATED MAXIMUM INVENTORY OF CCR

According to the latest Permit Renewal for the Petersburg Landfill, 16,300,000 cubic yards is the total fill volume of the entire landfill permitted air space. This is the estimated maximum inventory of CCR ever on-site over the active life of the CCR unit.

5 ESTIMATED SURFACE AREA OF FINAL COVER

Approximately 33.8 acres of the 123.7 acre area inside the permitted solid waste boundary have been certified closed by IDEM. Therefore the largest remaining final cover area will not exceed 89.9 acres.

6 SCHEDULE FOR CLOSURE ACTIVITIES

The estimated schedule for completing all activities necessary to satisfy the closure criteria in § 257.102 is outlined in the table below:

Activity	Estimated Timeframe
Surveying and Final Grading	Month 1
Cover Placement	Month 2 thru 4
Drainage Structure Installation	Month 5
Seeding	Month 6
Certification of Closure	Month 7

Final closure is expected to commence no later than 30 days after the date on which the Petersburg Landfill either:

(i) Receives the known final receipt of waste, either CCR or any non-CCR waste stream; or
(ii) Removes the known final volume of CCR from the CCR unit for the purpose of beneficial use.

7 COMPLETION OF CLOSURE ACTIVITIES

Completion of closure is expected to take place within 6 months after the start of closure, barring any necessary and allowed extensions under 40 C.F.R. § 257.102 (f)(2)(i).

Upon completion, the owner or operator of the Petersburg CCR Landfill unit will obtain a certification from a qualified professional engineer verifying that closure has been completed in accordance with the closure plan and the requirements of 40 C.F.R. § 257.102.

8 AMENDMENTS TO CLOSURE PLAN

In accordance with 40 C.F.R § 257.102(b)(3), the owner or operator may amend the initial or any subsequent written closure plan developed pursuant to 40 C.F.R. § 257.102(b)(1) at any time.

The owner or operator will amend the written closure plan whenever:

(A) There is a change in the operation of the CCR unit that would substantially affect the written closure plan in effect; or

(B) Before or after closure activities have commenced, unanticipated events necessitate a revision of the written closure plan.

9 CERTIFICATIONS

I, Donald L. Bryenton, being a registered Professional Engineer in the State of Indiana, do hereby certify to the best of my knowledge, information and belief, that the information contained in this written Closure Plan was developed in general accordance with the requirements of 40 C.F.R. § 257.102(b) and has been prepared in accordance with recognized and generally accepted good engineering practices.

AUTHORIZED REPRESENTATIVE:

Donald L. Bryenton

DATE:

10/7/16

ADDRESS:

ATC Group Services LLC
7988 Centerpoint Drive, Suite 100
Indianapolis, Indiana 46256

DONALD LEE BRYENTON
REGISTERED
№ 17077
STATE OF
INDIANA
PROFESSIONAL ENGINEER

ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING

POST-CLOSURE PLAN

IPL PETERSBURG GENERATING STATION
TYPE III RESTRICTED WASTE LANDFILL

INDIANAPOLIS POWER & LIGHT COMPANY
PETERSBURG GENERATING STATION
6925 NORTH STATE ROAD 57
PETERSBURG, INDIANA 47567

ATC PROJECT NO. 170LF00274

OCTOBER 7, 2016

PREPARED FOR:

INDIANAPOLIS POWER & LIGHT COMPANY
6925 NORTH STATE ROAD 57
PETERSBURG, INDIANA 47567-0436

ATTENTION: MR. ERWIN A. LEIDOLF, SENIOR SCIENTIST

October 7, 2016

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Mr. Erwin A. Leidolf
Senior Scientist
Indianapolis Power & Light Company
Petersburg Generating Station
6925 North State Road 57
Petersburg, IN 47567-0436

Re: CCR Post-Closure Plan
IPL Petersburg Generating Station
Type III Restricted Waste Landfill
Petersburg, Indiana
ATC Project No. 170LF00274

Dear Mr. Leidolf:

ATC is pleased to present the following CCR Post-Closure Plan for the IPL Petersburg Generating Station Type III Restricted Waste Landfill. Contained herein is a copy of the report which summarizes the compliance of the landfill post-closure plan with requirements of 40 C.F.R. Part 257, Subpart D.

A summary of the maintenance activities for the landfill final cover system, groundwater monitoring, narrative of post-closure activities, and engineering certification are included with this report.

We appreciate the opportunity to assist you with this project. If you have any questions concerning information contained in this report, please do not hesitate to call either of the undersigned at 317.849.4990.

Sincerely,

ATC Group Services LLC

Charles Dewes

Charles P. Dewes, E.I.
Project Engineer

David Stelzer

David Stelzer, Ph.D., P.E.
Senior Project Engineer

Donald L. Bryenton

Donald Bryenton, P.E.
Principal Engineer

CCR POST-CLOSURE PLAN

INDIANAPOLIS POWER & LIGHT COMPANY
PETERSBURG GENERATING STATION
TYPE III RESTRICTED WASTE LANDFILL

OCTOBER 7, 2016

PREPARED FOR:
INDIANAPOLIS POWER & LIGHT COMPANY

PREPARED BY:
ATC GROUP SERVICES LLC

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7 CERTIFICATION **4**

1 INTRODUCTION

Under 40 C.F.R. § 257.104(d), the owner or operator of a CCR unit must prepare a written post-closure plan that describes the steps necessary to care for, inspect, monitor and maintain the CCR unit during the post-closure time period consistent with recognized and generally accepted good engineering practices. The Post-Closure Plan outlined below is provided to meet this requirement.

1.1 PURPOSE

The Post-Closure Plan for the IPL Petersburg Type III Restricted Waste Landfill is intended to satisfy requirements set forth by the CCR Rule. In accordance with 40 C.F.R. § 257.104, the landfill will be cared for, inspected, monitored, and maintained during the 30-year post-closure care period. The Post-Closure Plan will include protection measures to preserve the integrity of the final cover, sampling of monitoring wells and reporting, inspections, and as-needed repairs of drainage infrastructure, roads, and other landfill features.

1.2 FACILITY & SITE DESCRIPTIONS

The IPL Petersburg Generating Station Type III Restricted Waste (RWS) Landfill is located about four (4) miles north of the City of Petersburg in Pike County, Indiana west of State Road 57 (Figure 1). The Landfill encompasses an area of approximately 123.7 acres inside the Solid Waste Boundary. The Petersburg Type III RWS Landfill operates under Indiana Department of Environmental Management (IDEM) Permit Number 63-2.

1.2.1 LANDFILL NAME

The CCR unit name is IPL Petersburg Generating Station Type III Restricted Waste (RWS) Landfill.

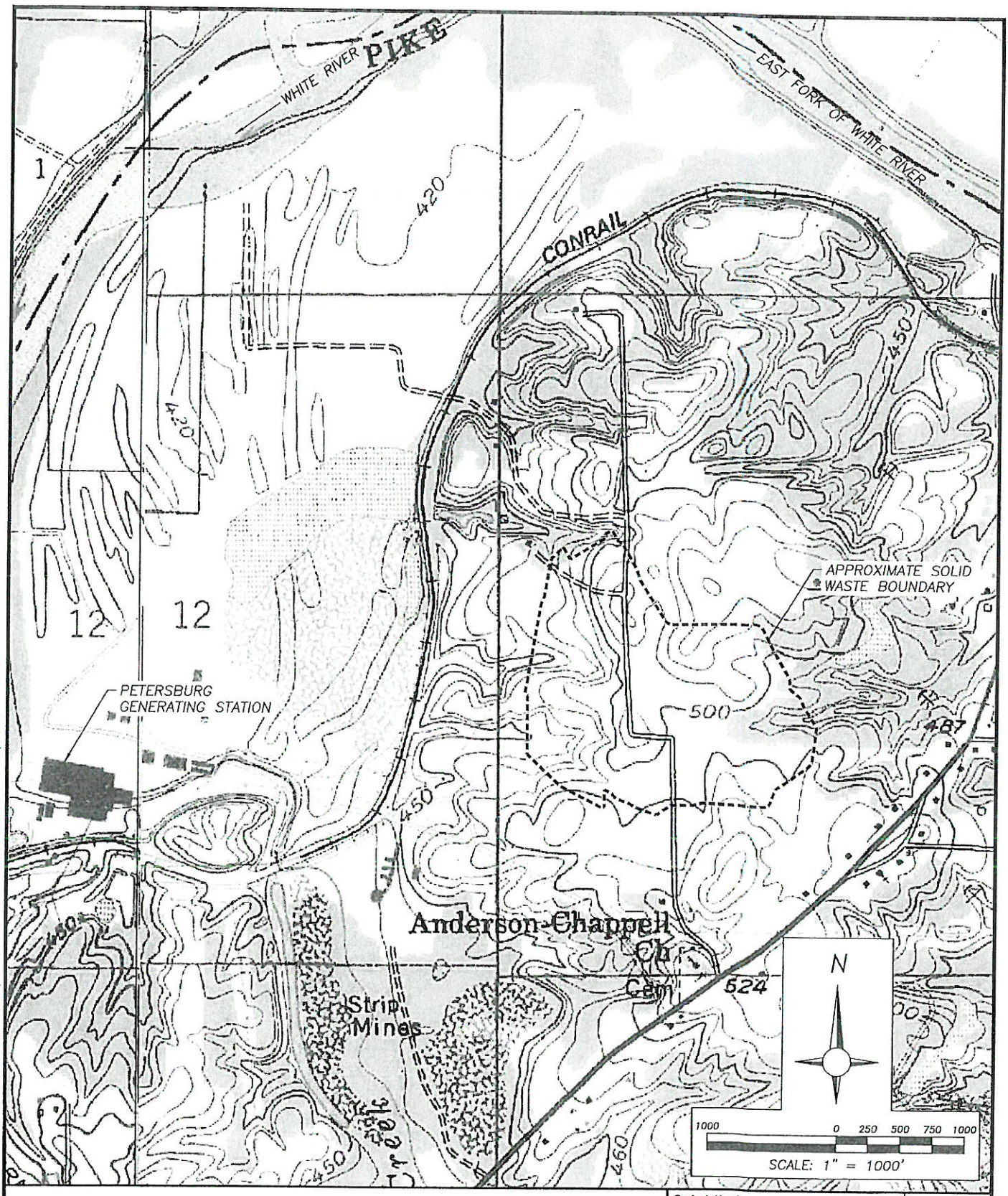
2 MONITORING AND MAINTENANCE ACTIVITIES

In accordance with 40 C.F.R. § 257.104(b), the following post-closure activities will be performed at IPL's Petersburg Generating Station Type III RWS Landfill:

(1) Maintaining the integrity and effectiveness of the final cover system, including making repairs to the final cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover;

(2) If the CCR unit is subject to the design criteria under §257.70, maintaining the integrity and effectiveness of the leachate collection and removal system and operating the leachate collection and removal system in accordance with the requirements of §257.70; and

(3) Maintaining the groundwater monitoring system and monitoring the groundwater in accordance with the requirements of §257.90 through §257.98.



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VICINITY MAP

IPL PETERSBURG GENERATING STATION
TYPE III RESTRICTED WASTE LANDFILL
PETERSBURG, INDIANA

Project Number: 170LF00274		Drn. By: WS
Drawing File: SEE LOWER LEFT		Ckd. By: CD
Date: 9/16	Scale: AS SHOWN	App'd By:
ATC		Figure: 1

Activity	Minimum Frequency per Year
Monitoring Well Sampling	Twice
Mowing of Final Cover Vegetation	Once
Final Cover Inspection	Twice
Erosion Control Repairs	As Needed
Drainage Repairs	As Needed
Access Road Repairs	As Needed

Groundwater Monitoring will be conducted bi-annually in accordance with 40 C.F.R. § 257.90 through § 257.98. The groundwater monitoring wells and associated equipment will be repaired as needed.

No leachate collection system exists for IPL's Petersburg Generating Station Type III RWS Landfill, therefore leachate maintenance activities are not applicable.

3 CONTACT INFORMATION FOR POST-CLOSURE CARE

The below information is the contact information available for the post-closure care period:

Facility Name Petersburg Generating Station Solid Waste Landfill

Permit No.: 63-2

Contact: Mr. Jeff Harter, Environmental Leader

Address: Indianapolis Power and Light Company
6925 North State Road 57
Petersburg, Indiana 47567

Telephone: 812-601-7224

E-mail Address: jeff.harter@aes.com

4 PROPERTY USE DURING POST-CLOSURE CARE

Use of IPL's Petersburg Generating Station Type III RWS Landfill closure area during the post-closure care period will be restricted to monitoring and maintenance activities only. Access to the landfill will be restricted to key IPL personnel and contractors on an as-needed basis for completion of inspections, monitoring, and maintenance procedures. Post-Closure activities will not disturb the integrity of the final cover, liner, or any other components of the containment system, or the function of the monitoring systems unless necessary to comply with the requirements of 40 C.F.R. Part 257.

The Landfill is not individually fenced however the landfill boundary is contained on IPL property which will be adequately fenced and secured to prevent outsider access.

5 COMPLETION OF POST-CLOSURE CARE

No later than 60 days following the completion of the post-closure care period, IPL will prepare a notification verifying that post-closure care has been completed. The notification will include certification by a qualified professional engineer verifying that post-closure care has been completed in accordance with the post-closure plan and the requirements of 40 C.F.R. § 257.104

6 AMENDMENTS TO POST-CLOSURE PLAN

In accordance with 40 C.F.R. § 257.104(d)(3), IPL may amend the Post-Closure Plan at any time as needed depending on changes in regulations, plant operations, labor, materials, expenses, or other unforeseen factors. IPL will amend the written closure plan whenever the following conditions exist:

(A) There is a change in the operation of the CCR unit that would substantially affect the written post-closure plan in effect; or

(B) After post-closure activities have commenced, unanticipated events necessitate a revision of the written post-closure plan.

7 CERTIFICATION

I, Donald L. Bryenton, being a registered Professional Engineer in the State of Indiana, do hereby certify to the best of my knowledge, information and belief, that the information contained in this written Post-Closure Plan was developed in general accordance with the requirements of 40 C.F.R. § 257.104(d) and has been prepared in accordance with recognized and generally accepted good engineering practices.

AUTHORIZED REPRESENTATIVE:

Donald L. Bryenton

DATE:

10/7/16

ADDRESS:

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Indianapolis, Indiana 46256

DONALD LEE BRYENTON
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