



Structural Stability Assessment Lawrence Energy Center

Inactive Units - Ash Pond Area 2, Ash Pond Area 3,
and Ash Pond 4

Prepared for:

Westar Energy

Lawrence Energy Center

Lawrence, Kansas

Prepared by:

APTIM Environmental & Infrastructure, Inc.

April 2018



TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
2.0 AREA 2, AREA 3, AND AREA 4 PONDS OVERVIEW.....	2
2.1 EXISTING CONDITIONS AND OPERATIONS	3
2.2 CURRENT DIMENSIONS AND CAPACITIES	3
2.3 INSTRUMENTATION	3
2.4 2017 ANNUAL INSPECTION CONCLUSIONS AND RECOMMENDATIONS.....	3
3.0 PERIODIC STRUCTURAL STABILITY ASSESSMENT (§257.73(D)).....	5
3.1 FOUNDATION AND ABUTMENT STABILITY (§257.73(D)(1)(I))	5
3.2 SLOPE PROTECTION (§257.73(D)(1)(II)).....	5
3.3 DIKES COMPACTION (§257.73(D)(1)(III))	5
3.4 VEGETATION HEIGHT (§257.73(D)(1)(IV)).....	6
3.5 SPILLWAY COVER AND CAPACITY (§257.73(D)(1)(V)(A) AND §257.73(D)(1)(V)(B))...6	
3.6 HYDRAULIC STRUCTURES (§257.73(D)(1)(VI)).....	6
3.7 DOWNSTREAM SLOPE INUNDATION (§257.73(D)(1)(VII))	6
4.0 DEFICIENCIES AND RECOMMENDATIONS (§257.73(D)(2))	8
5.0 RECORDS RETENTION AND MAINTENANCE	9
5.1 INCORPORATION OF ASSESSMENT INTO OPERATING RECORD (§257.73(F)(1) & (G))	9
5.2 NOTIFICATION REQUIREMENTS (§257.73(G)).....	9
5.3 PERIODIC ASSESSMENT FREQUENCY (§257.73(F)(3))	9
6.0 PROFESSIONAL ENGINEER CERTIFICATION (§257.73(D)(3)).....	10

LIST OF FIGURES

FIGURES

Figure 1 - Inactive Units – Ash Pond Area 2, Ash Pond Area 3, Ash Pond 4,
Site Location Plan

Figure 2 - Inactive Units – Ash Pond Area 2, Ash Pond Area 3, Ash Pond 4,
Site Topography Prior to Closure

Figure 3 - Inactive Units – Ash Pond Area 2, Ash Pond Area 3, Ash Pond 4,
Photo Log

APPENDICES

Appendix A - 2017 Photo Log

Plan Review/Amendment Log §257.73(d)

Date of Review	Reviewer Name	Sections Amended and Reason	Version



CCR Regulatory Requirements

USEPA CCR Rule Criteria 40 CFR §257.73	Jeffrey Energy Center (JEC) Structural Stability Assessment – Inactive Bottom Ash Pond
<p>§257.73(d)(1)(i) stipulates:</p> <p><i>(d) Periodic structural stability assessments. (1) The owner or operator of the CCR unit must conduct initial and periodic structural stability assessments and document whether the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering practices for the maximum volume of CCR and CCR wastewater which can be impounded therein. The assessment must, at a minimum, document whether the CCR unit has been designed, constructed, operated, and maintained with:</i></p> <p><i>(i) Stable foundations and abutments;</i></p>	Section 3.1
<p>§257.73(d)(1)(ii) stipulates:</p> <p><i>(ii) Adequate slope protection to protect against surface erosion, wave action, and adverse effects of sudden drawdown;</i></p>	Section 3.2
<p>§257.73(d)(1)(iii) stipulates:</p> <p><i>(iii) Dikes mechanically compacted to a density sufficient to withstand the range of loading conditions in the CCR unit;</i></p>	Section 3.3
<p>§257.73(d)(1)(iv) stipulates:</p> <p><i>(iv) Vegetated slopes of dikes and surrounding areas not to exceed a height of six inches above the slope of the dike, except for slopes which have an alternate form or forms of slope protection;</i></p>	Section 3.4

USEPA CCR Rule Criteria 40 CFR §257.73	Jeffrey Energy Center (JEC) Structural Stability Assessment – Inactive Bottom Ash Pond
<p>§257.73(d)(1)(v)(A) stipulates:</p> <p><i>(v) A single spillway or a combination of spillways configured as specified in paragraph (d)(1)(v)(A) of this section. The combined capacity of all spillways must be designed, constructed, operated, and maintained to adequately manage flow during and following the peak discharge from the event specified in paragraph (d)(1)(v)(B) of this section.</i></p> <p><i>(A) All spillways must be either: (1) Of non-erodible construction and designed to carry sustained flows; or</i></p> <p><i>(2) Earth- or grass-lined and designed to carry short-term, infrequent flows at non-erosive velocities where sustained flows are not expected.</i></p>	<p>Section 3.5</p>
<p>§257.73(d)(1)(v)(B) stipulates:</p> <p><i>(B) The combined capacity of all spillways must be adequately manage flow during and following the peak discharge from a:</i></p> <p><i>(1) probably maximum flood (PMF) for a high hazard potential CCR surface impoundment; or</i></p> <p><i>(2) 1000-year flood for a significant hazard potential CCR surface impoundment; or</i></p> <p><i>(3) 100-year flood for a low hazard potential CCR surface impoundment.</i></p>	<p>Section 3.6</p>

USEPA CCR Rule Criteria 40 CFR §257.73	Jeffrey Energy Center (JEC) Structural Stability Assessment – Inactive Bottom Ash Pond
<p>§257.73(d)(1)(vi) stipulates:</p> <p><i>(vi) Hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit that maintain structural integrity and are free of significant deterioration, deformation, distortion, bedding deficiencies, sedimentation, and debris which may negatively affect the operation of the hydraulic structure; and</i></p>	<p>Section 3.7</p>
<p>§257.73(d)(1)(vii) stipulates:</p> <p><i>(vii) For CCR units with downstream slopes which can be inundated by the pool of an adjacent water body, such as a river, stream or lake, downstream slopes that maintain structural stability during low pool of the adjacent water body or sudden drawdown of the adjacent water body.</i></p>	<p>Section 3.8</p>
<p>§257.73(d)(2) stipulates:</p> <p><i>(2) The periodic assessment described in paragraph (d)(1) of this section must identify an structural stability deficiencies associated with the CCR unit in addition to recommending corrective measures. If a deficiency or a release is identified during the periodic assessment, the owner or operator unit must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.</i></p>	<p>Section 4.0</p>
<p>§257.73(d)(3) stipulates:</p> <p><i>(3) The owner or operator of the CCR unit must obtain a certification from a qualified professional engineer stating that the initial assessment and each subsequent periodic assessment was conducted in accordance with the requirements of this section.</i></p>	<p>Section 6.0</p>

USEPA CCR Rule Criteria 40 CFR §257.73	Jeffrey Energy Center (JEC) Structural Stability Assessment – Inactive Bottom Ash Pond
<p>§257.73(f)(1) stipulates:</p> <p><i>(f) Timeframes for periodic assessments –</i></p> <p><i>(1) Initial Assessments. Except as provided by paragraph (f)(2) of this section, the owner or operator of the CCR unit must complete the initial assessments required by paragraphs (a)(2), (d), and (e) of this section no later than October 17, 2016*. The owner or operator has completed an initial assessment when the owner or operator has placed the assessment required by paragraphs (a)(2), (d), and (e) of this section in the facility's operating record as required by §257.105(f)(5), (10), (12).</i></p> <p>*However due to the Bottom Ash Pond meets the requirements of §257.100(e)(1) and therefore the timeframe in §257.100(e)(3)(v) is applied, which states:</p> <p><i>(v) No later than April 17, 2018, complete the initial hazard potential classification, structural stability, and safety factor assessments as set forth by §257.73(a)(2), (b), (d), (e), and (f).</i></p>	<p>Section 5.1</p>

USEPA CCR Rule Criteria 40 CFR §257.73	Jeffrey Energy Center (JEC) Structural Stability Assessment – Inactive Bottom Ash Pond
<p>§257.73(f)(2) stipulates:</p> <p><i>(2) Use of a previously completed assessment(s) in lieu of the initial assessment(s). The owner or operator of the CCR unit may elect to use a previously completed assessment to serve as the initial assessment required by paragraphs (a)(2), (d), and (e) of this section provided that the previously completed assessments(s):</i></p> <p><i>(i) Was completed no earlier than 42 months prior to October 17, 2016; and</i></p> <p><i>(ii) Meets the applicable requirements of paragraphs (a)(2), (d) and (e) of this section.</i></p>	<p>Not Applicable.</p>

USEPA CCR Rule Criteria 40 CFR §257.73	Jeffrey Energy Center (JEC) Structural Stability Assessment – Inactive Bottom Ash Pond
<p>§257.73(f)(3) stipulates:</p> <p><i>(3) Frequency for conducting periodic assessments. The owner or operator of the CCR unit must conduct and complete the assessments required by paragraphs (a)(2), (d), (e) of this section every five years. The date of completing the initial assessment is the basis for establishing the deadline to complete the first subsequent assessment. If the owner or operator elects to use a previously completed assessment(s) in lieu of the initial assessment as provided by paragraph (f)(2) of this section, the date of the report for the previously completed assessment is the basis for establishing the deadline to complete the first subsequent assessment. The owner or operator may complete any required assessment prior to the deadline provided the owner or operator places the completed assessment(s) into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing subsequent assessments is based on the date of completing the previous assessment. For purposes of this paragraph (f)(3), the owner or operator has completed an assessment when the relevant assessment(s) required by paragraphs (a)(2), (d), and (e) of this section has been placed in the facility's operating record as required by §257.105(f)(5), (10), and (12).</i></p>	<p>Section 5.3</p>
<p>§257.73 (g) stipulates:</p> <p><i>(g) The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in §257.105(f), the notification requirements specified in §257.106(f), and the internet requirements specified in §257.107(f).</i></p>	<p>Section 5.1 and 5.2</p>



1.0 INTRODUCTION

APTIM Environmental and Infrastructure, Inc. (APTIM, f/k/a CB&I Environmental & Infrastructure Inc., CB&I) has prepared this Structural Stability Assessment (Assessment) at the request of Westar Energy (Westar) for the inactive Ash Pond Area 2 (Area 2 Ponds), Ash Pond Area 3 (Area 3 Ponds), and the Scrubber Supply Pond (Area 4 Pond) located at Lawrence Energy Center (LEC) in Lawrence, Kansas.

The Area 2, 3, and 4 Ponds have been deemed to be regulated, inactive CCR units by the United States Environmental Protection Agency (USEPA), through the Disposal of Coal Combustion Residuals from Electric Utilities Final Rule (CCR Rule) 40 CFR §257 and §261. On July 26, 2016 the USEPA extended the CCR Rule requirements for certain inactive CCR surface impoundments. Westar is currently in the process of conducting closure by removal of CCR (per §257.100(b)) within the inactive Area 2, 3, and 4 Ponds to prepare for construction of a Kansas National Pollutant Discharge Elimination System (NPDES) regulated pond system. All facility water containing CCR material is managed in settling tanks. CCR material from the Area 2, 3, and 4 Ponds is being disposed of in Industrial Landfill No. 847. Westar intends to complete closure of the Area 2, 3, and 4 Ponds in 2018.

In support of compliance with the CCR Rule, APTIM has conducted an on-site inspection of the Pond and reviewed the relevant portions of the facility's operating record and permit application in relation to this Assessment. This Assessment evaluates whether the design, construction, operation, and maintenance of the Pond is consistent with generally accepted good engineering practices and meets the requirements set forth within 40 CFR §257.73(d).

2.0 AREA 2, AREA 3, AND AREA 4 PONDS OVERVIEW

Westar owns and operates a series of clarifying ponds for process water at LEC in Douglas County, Kansas. LEC is located approximately 3 miles northwest of Lawrence, Kansas, is bounded by the Kansas River and resides in Sections 13 and 14, Township 12 South, Range 19 East. The locations of the Area 2, Area 3, and Area 4 Ponds are depicted in **Figure 1**.

The ponds are separated into three “areas”, termed Areas 2, 3, and 4, as noted below:

□ Area 2 Ponds

- Pond 501 (CCR removed and operating)
- Pond 502 (CCR removed and operating)
- Pond 503 (CCR removed and operating)
- Clear Pond (a.k.a. West Pond, CCR removed and operating)
- Laydown Area (in the process of being dewatered, CCR removed, and incorporated into the Storm Water Settling Pond)
- Storm Water Settling Pond (in the process of being dewatered and CCR removed)

□ Area 3 Ponds

- Pond 401 (CCR removed and operating)
- Pond 402 (CCR removed and incorporated into Pond 404)
- Pond 403 (CCR removed and incorporated into Pond 404)
- Pond 404 (CCR removed and operating)

- **Area 4 Pond** – Scrubber Supply Pond (certified CCR removed in May 2017 and removed from service)

The Area 2, 3, and 4 Ponds are regulated impoundments under the CCR Rule and stopped receiving CCR prior to October 2015. Historically the Area 2, 3, and 4 Ponds received CCR material from the plant. The CCR material was deposited in the Area 2, 3, and 4 Ponds while overflow water was discharged to the Kansas River via Outfall 001BV, in line with Kansas NPDES Permit No. I-KS-31-PO09. As each pond was progressively filled, the ponds were dewatered and the CCR material was excavated and placed in Industrial Landfill No. 847. CCR material was distributed to different ponds within each area depending on the availability of capacity.

A perimeter impoundment dike was constructed to surround the LEC ponds and ties into the natural grades near the southern portion of the Area 2 Pond and the eastern portion of the Area 4 Pond. The crest of the perimeter dike is at approximately 839 feet Mean Sea Level (ft MSL) with side slopes at 3H:1V, providing a maximum height of 15 feet located in the northwest section. The crest width is approximately 30 feet. The perimeter dike was originally constructed of silty clay, which was obtained by excavation of existing grades in the area.

Currently a reconfiguration of the Area 2, 3, and 4 Ponds is being undertaken. With the Area 4 Pond closed, plant process water flows from the Area 2 Ponds (with the exception of Ponds 502 and 503) to the Area 3 Ponds prior to discharge to the Kansas River through Outfall 001BV. Site topography prior to closure of the Area 2, 3, and 4 Ponds is depicted in **Figure 2**.

2.1 Existing Conditions and Operations

The original design of the LEC ponds included four areas through which stormwater and contact water moved before being discharged to the Kansas River. Following the adoption and establishment of the CCR Rule, the LEC ponds have been renamed and reconfigured. Currently closure by removal of CCR at the LEC ponds is ongoing and is anticipated to be completed in 2018, in accordance with §257.102(c). Most of the configurations and flow patterns of the Area 2, Area 3, and Area 4 Ponds will be maintained. The Laydown Area will be reconfigured into the northern portion of the Storm Water Settling Pond. Pond 402 and Pond 403 will be reconfigured into the eastern portion of Pond 404. Closure consists of the removal of CCR material and existing clay liner, with the installation of an 18-in. clay liner, rip-rap, and aggregate base at the top of each berm. Contact water and process water is currently managed within the LEC Pond network, allowing for proper management of water during the ongoing construction process. As each pond is progressively dewatered, CCR material will be excavated and placed in the Industrial Landfill No. 847.

Following the completion of the closure activities, stormwater will continue to be directed to the Storm Water Settling Pond where it is discharged to Baldwin Creek. Contact water and process water will be directed to Pond 501, 502, and 503. From Pond 502, contact water and process water is discharged to the West Pond (Clear Pond), then Pond 404 and 401. From Pond 401, water is discharged through conveyance pipes to the Kansas River through Outfall 001BV or recycled into the plant.

2.2 Current Dimensions and Capacities

The Area 2, 3, and 4 Ponds incorporate a total area of approximately 47.4 acres with a storage capacity of approximately 683.5 acre-ft. The maximum and minimum depths of impounded water varied depending on plant operations, stormwater conditions and the closure schedule. Historically, CCR material has been distributed to different cells within each area depending on the availability of space. This made the amount of CCR material in each pond vary from minimal to almost at capacity. Due to current closure construction operations there is no CCR material volume within the Area 4 Pond and portions of the Area 2 and 3 Ponds. All ponds are being constructed during closure to have 3H:1V sideslopes.

2.3 Instrumentation

There are no instrumentation devices associated with the hydraulic structures, impoundment embankments, perimeter dike, or slope performance has been installed at or near the Area 2, 3, and 4 Ponds.

2.4 2017 Annual Inspection Conclusions and Recommendations

Based on a review of the 2017 Annual Inspection Report, it was determined that the Area 2, 3, and 4 Ponds were in good working order. At the time of inspection, there were no signs of distress or malfunction that would indicate actual or potential structural weakness. It was noted that woody vegetation had been removed from the perimeter impoundment dike as previously recommended, allowing for a full visual examination. No erosion or sloughing was observed along the perimeter dike.

During the inspection it was noted that Westar started the process of conducting closure and removal of CCR within the inactive Area 2, 3, and 4 Ponds to prepare for construction of an NPDES regulated pond system. The Area 4 Pond and Ponds 502 and 503 (in the Area 2

Ponds) were dewatered and under construction at the time of annual inspection. Therefore, the hydraulic structures and stormwater conveyance systems at the Area 4 Pond and Ponds 502 and 503 were not in operation. The Area 2 and 3 Ponds were inactive. Plant process water flowed through the West, 404 and 401 Pond prior to discharge. It was determined that later in 2017, as construction proceeded, the plant would process water through the concrete ponds, 501, 502, 503 and 401 prior to discharge.

3.0 PERIODIC STRUCTURAL STABILITY ASSESSMENT (§257.73(d))

The available information for the Area 2, 3, and 4 Ponds was provided to and reviewed by APTIM for this Assessment:

- Annual Inspection Report Lawrence Energy Center Inactive Units – Ash Pond Area 2, Ash Pond Area 3, Ash Pond 4, CB&I, June 2017.
- Coal Combustion Waste Impoundment Round 7 – Dike Assessment Report, Dewberry & Davis, LLC, March 2011.
- LEC Survey, Professional Engineering Consultants (PEC), June 2016.
- NPDES Permit No. I-KS-31-PO09

Based on the available information and the site visit conducted May 15, 2017 by Richard Southorn, a professional engineer with APTIM, the following Assessment has been conducted to determine whether the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering practices in accordance with 40 CFR §257.73(d).

3.1 Foundation and Abutment Stability (§257.73(d)(1)(i))

Eight borings (LEC-1 through LEC-8) were drilled along the perimeter impoundment dike crest in October 2009 as part of the stability evaluation completed by Golder Associates in December 2009. The borings ranged from 13 feet to 24 feet below the ground surface. The borings show the perimeter dike consists of an asphalt and bottom ash road base underlain by clay and silty clay layers. Groundwater was not encountered in any of the borings.

The perimeter dike is has no abutments and is a continuous feature that ties into natural grades. Based on the results of analyses conducted by Golder Associates, boring logs, lab results, and the observations obtained during the 2017 site visit, it was determined that the perimeter dike is constructed of the same materials that underlay it. These materials include silty clays. Therefore, it is APTIM's professional opinion that the perimeter dike is located on a stable foundation. A Safety Factor Assessment, which is required under 40 CFR §257.73(e), was not completed as part of this Assessment and will be completed under a separate cover.

3.2 Slope Protection (§257.73(d)(1)(ii))

The Area 2, 3, and 4 Ponds are currently undergoing closure and are being repurposed. All pond side slopes will be lined with rip-rap for slope protection of the clay liner, with the exception of portions of the Clear Pond and Pond 404 which will remain vegetated. The rip-rap will extend from the top of the slope for a minimum of ten feet.

3.3 Dikes Compaction (§257.73(d)(1)(iii))

Based on borings obtained in 2009, it can be determined the perimeter dike is primarily constructed of silty clay. The silty clay was obtained from the excavation of the Area 2, 3, and 4 Ponds during the initial pond construction. It has been noted in a previous site investigation conducted by Golder Associates that the perimeter dike crest appears to be

“well-compacted”. There are no drawings or documents available for review for the original design/construction of the perimeter dike.

The borings logs completed in 2009 along the crest of the perimeter dike typically note that the perimeter dike is comprised of a very stiff or stiff clay or silty clay. Additionally, no seepage through the perimeter dike has been noted to date.

3.4 Vegetation Height (§257.73(d)(1)(iv))

The vegetation along the side slopes of the perimeter dike and Area 2, 3, and 4 Ponds from the site visit conducted May 15, 2017 can be seen in the photographs in **Appendix A**. The photographs depict the vegetation prior to the closure of the impoundments (with the exception of Pond 401). Vegetation on the perimeter dike appears to be well-established and maintained grasses and shrubbery. Minor vegetation, including grasses, can be seen on the side slopes of the ponds. It should be noted that Pond 401, which has undergone closure by removal of CCR, was being used as an NPDES regulated pond at the time. It included rip-rap along the side slopes and did not have vegetation.

The Area 2, 3, and 4 Ponds are currently undergoing closure and are being repurposed. All pond side slopes will be lined with rip-rap, with the exception of portions of the Clear Pond and Pond 404 which will remain vegetated. It will be ensured that the vegetation meets the requirements of §257.73(d)(1)(iv).

3.5 Spillway Cover and Capacity (§257.73(d)(1)(v)(A) and §257.73(d)(1)(v)(B))

A spillway structure is being constructed during the pond closure and reconfiguration to the west of the Laydown Area (soon to be part of the Storm Water Settling Pond) and through the perimeter dike pond reconfiguration. It will incorporate an 18-inch clay liner and be paved. Two 30-inch HDPE pipes will run under the spillway.

It should be noted that APTIM has modeled and calculated the capacity for the inflow systems for the 100-year, 24-hour flood event. This can be found in the Inflow Design Flood Control System Plan which was submitted prior to April 17, 2018 and complies with 40 CFR §257.82.

3.6 Hydraulic Structures (§257.73(d)(1)(vi))

Hydraulic structures in the Area 2, 3, and 4 Ponds includes piping connecting ponds, an existing oil and water separator which will be removed and a new one installed in an adjacent location, an overflow structure in pond 401 which discharges water to the NPDES discharge location, and a spillway which will be installed during closure construction. No deficiencies that would affect the structural integrity of the perimeter dike were noted, including sedimentation/debris, distortion, or seepage near the spillway.

No deficiencies that would affect the structural integrity of the in-place hydraulic structures, including sedimentation/debris, distortion, or seepage, were noted during the 2017 site inspection.

3.7 Downstream Slope Inundation (§257.73(d)(1)(vii))

For CCR units with downstream slopes which can be inundated by the pool of an adjacent water body (i.e. Baldwin Creek) it is required that the slopes maintain structural integrity in events of drawdown of the adjacent water body. A Factor of Safety Assessment was

submitted under a separate cover and analyzes if the stability of the downstream slope of the perimeter dike has an adequate factor of safety under extreme water conditions including low and high water levels, as well as sudden drawdown conditions.

4.0 DEFICIENCIES AND RECOMMENDATIONS (§257.73(d)(2))

There are no records or known instances of structural instability associated with the Area 2, 3, and 4 Ponds. Based on this information and the information summarized in Section 3.0 of this Assessment, APTIM recommends the following be completed:

- Continue to perform typical maintenance activities on the Area 2, 3, and 4 Ponds and perimeter dike; and
- Continue to monitor and maintain erosion controls.

5.0 RECORDS RETENTION AND MAINTENANCE

5.1 Incorporation of Assessment into Operating Record (§257.73(f)(1) & (g))

§257.105(f)(1) and (g) of 40 CFR Part 257 provides record keeping requirements to ensure that the Assessment must be placed in the Facility's Operating Record. Specifically, §257.105(f) stipulates:

§257.105(f) stipulates: "(f) Design Criteria. The owner or operator of a CCR unit subject to this subpart must place the following information, as it becomes available, in the facility's operating record: (5) The initial and periodic hazard potential classification assessments as required by §§257.73(a)(2) and 257.74(a)(2)."

This Assessment will be placed within the Facility Operating Record upon Westar's review and approval.

5.2 Notification Requirements (§257.73(g))

§257.106(f) of 40 CFR Part 257 provides guidelines for the notification of the availability of the Assessment. Specifically, §257.106(f) stipulates:

§257.106(f) stipulates: "(f) Design criteria. The owner or operator of a CCR unit subject to this subpart must notify the State Director and/or appropriate Tribal authority when information has been placed in the operating record and on the owner or operator's publicly accessible internet site. The owner or operator must: (4) Provide notification of the availability of the initial and periodic hazard potential classification assessments specified under §257.05(f)(5)"

The State Director and appropriate Tribal Authority will be notified upon placement of this Assessment in the Facility Operating Record.

§257.107(f) of 40 CFR Part 257 provides publicly accessible Internet site requirements to ensure that the Assessment is accessible through the Westar webpage. Specifically, §257.107(f) stipulates:

§257.107(f) stipulates: "(f) Design criteria. The owner or operator of a CCR unit subject to this subpart must place the following information on the owner or operator's CCR Web site: (4) The initial and periodic hazard potential classification assessments specified under §257.105(f)(5)."

This Assessment will be uploaded to Westar's CCR compliance reporting website upon Westar's review and approval.

5.3 Periodic Assessment Frequency (§257.73(f)(3))

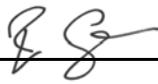
A periodic Assessment will be conducted every five years in accordance with 40 CFR 257.73(f)(3). The deadline for completing the periodic Assessment is based on the date of the previously completed assessment. Each periodic Assessment will be placed in the Facility's Operating Record as required by §257.105(f)(5).

6.0 PROFESSIONAL ENGINEER CERTIFICATION (§257.73(d)(3))

The undersigned registered professional engineer is familiar with the requirements of the CCR Rule and has visited and examined LEC or has supervised examination of LEC by appropriately qualified personnel. The undersigned registered professional engineer attests that this Assessment has been prepared in accordance with good engineering practice, including consideration of applicable industry standards and meets the requirements of §257.73(d). This certification was prepared as required by §257.73(d)(3).

Name of Professional Engineer: Richard Southorn

Company: APTIM

Signature: 

Date: 04/16/18

PE Registration State: Kansas

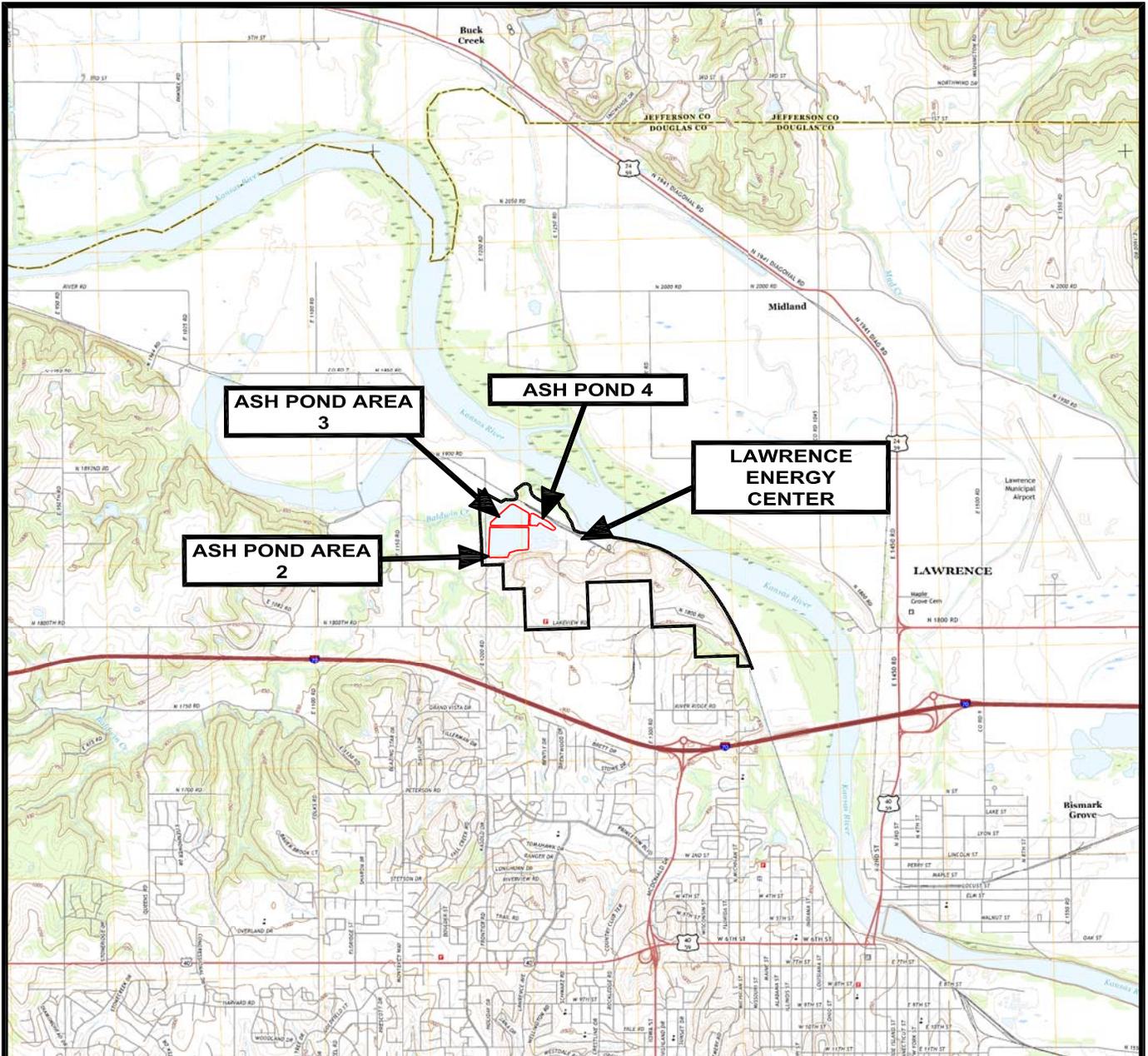
PE Registration Number: PE25201

Professional Engineer Seal:



FIGURES

- Figure 1 - Inactive Units – Ash Pond Area 2, Ash Pond Area 3, Ash Pond 4, Site Location Plan
- Figure 2 - Inactive Units – Ash Pond Area 2, Ash Pond Area 3, Ash Pond 4, Site Topography Prior to Closure
- Figure 3 - Inactive Units – Ash Pond Area 2, Ash Pond Area 3, Ash Pond 4, Photo Log



LEGEND

- LAWRENCE ENERGY CENTER FACILITY BOUNDARY
- CCR UNIT BOUNDARY

NOTES

1. AERIAL TOPO OBTAINED FROM USGS 7.5-MINUTE SERIES, LAWRENCE EAST, LAWRENCE WEST, MIDLAND AND WILLIAMSTOWN QUADRANGLE, KANSAS, 2014.
2. ALL BOUNDARIES ARE APPROXIMATE.



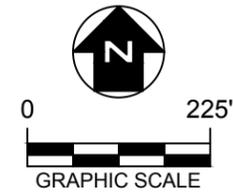
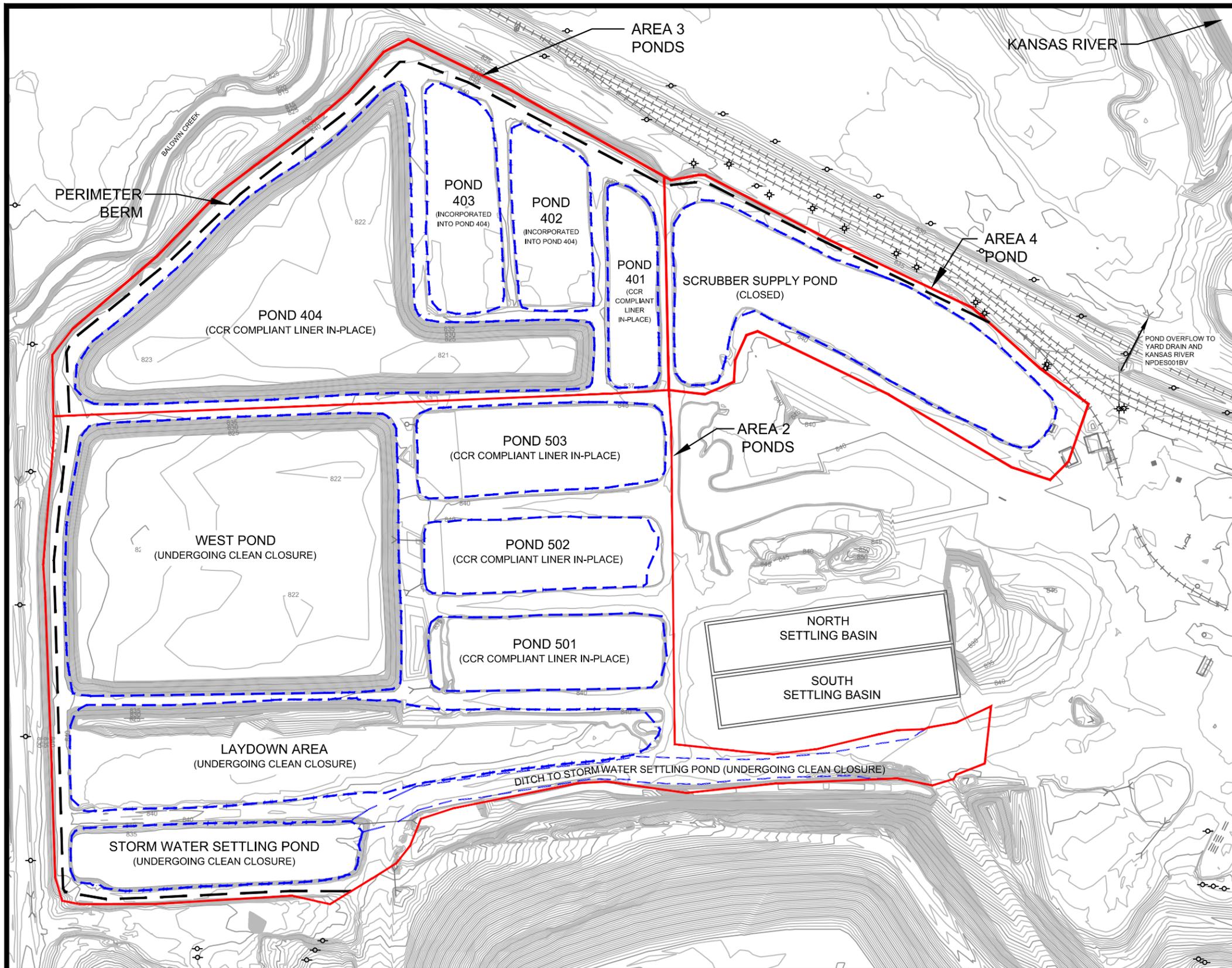
APTIM Environmental & Infrastructure, Inc.

APTIM Environmental & Infrastructure, Inc. has prepared this document for a specific project or purpose. All information contained within this document is copyrighted and remains intellectual property of APTIM Environmental & Infrastructure, Inc. This document may not be used or copied, in part or in whole, for any reason without expressed written consent by APTIM Environmental & Infrastructure, Inc.

**LAWRENCE ENERGY CENTER
1250 N. 1800 RD., LAWRENCE, KS.**

**FIGURE 1
INACTIVE UNITS - ASH POND AREA 2, ASH POND AREA 3, ASH POND AREA 4
SITE LOCATION PLAN**

APPROVED BY: RDS	PROJ. NO.: 631232565	DATE: APRIL 2018
------------------	----------------------	------------------



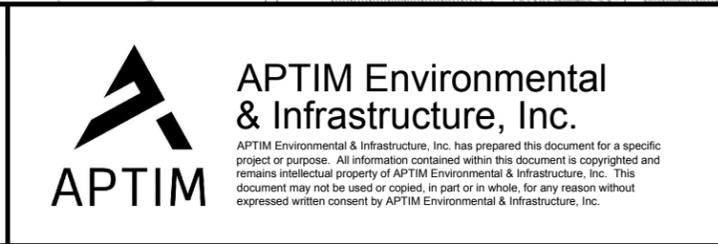
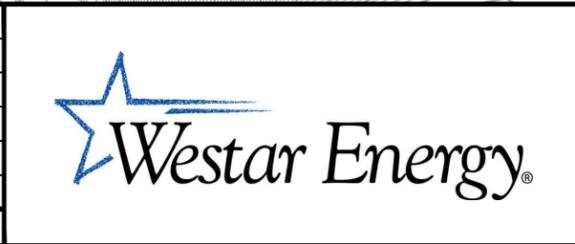
LEGEND

- APPROXIMATE POND AREA BOUNDARY
- - - APPROXIMATE POND BOUNDARY
- - - APPROXIMATE PERIMETER DIKE LOCATION

NOTES

1. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY PEC IN JUNE 2016.
2. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
3. ALL BOUNDARIES AND FEATURE LOCATIONS ARE APPROXIMATE.

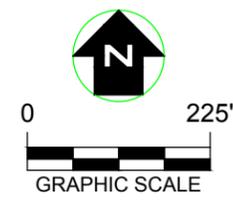
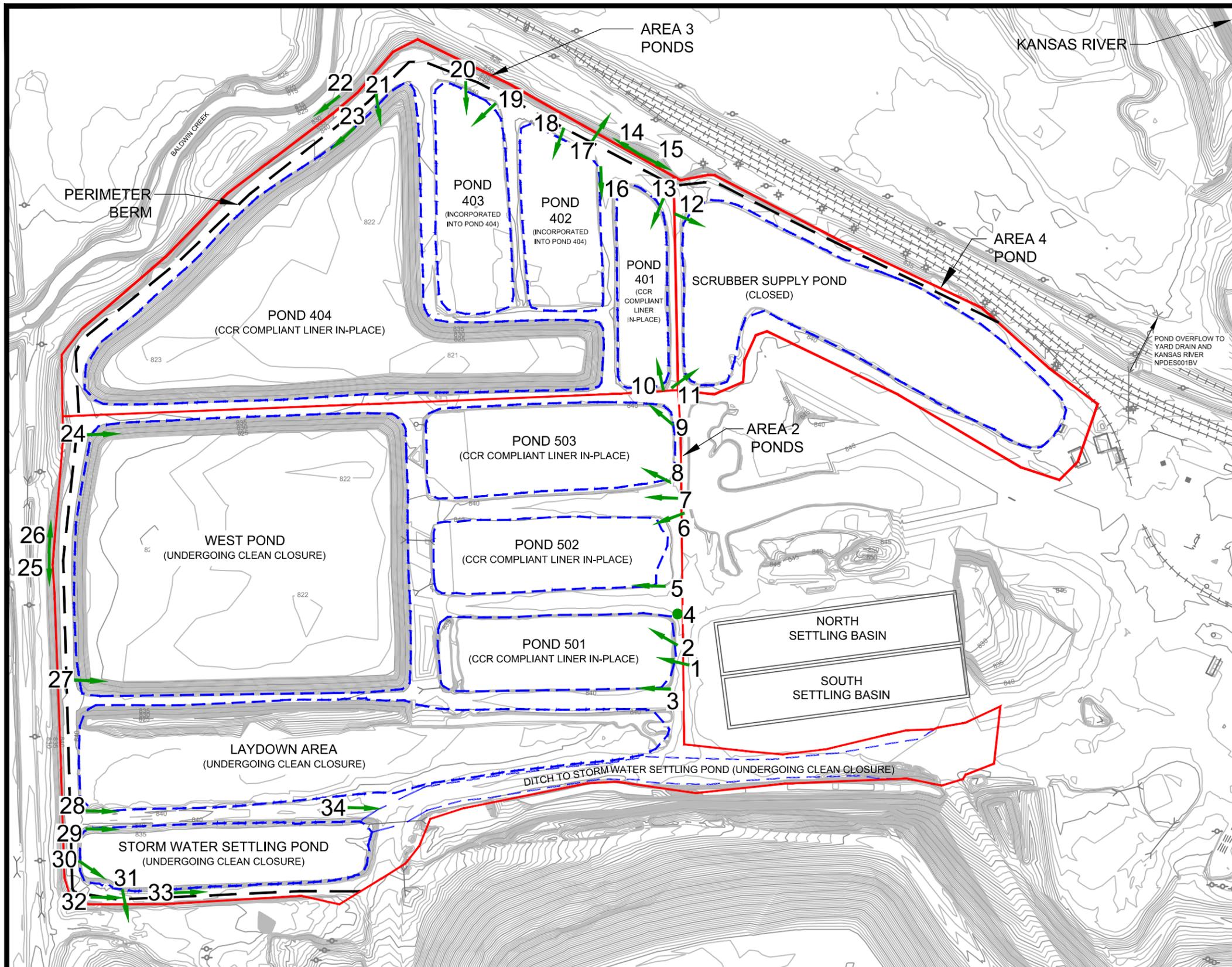
REV. NO.	DATE	DESCRIPTION



**LAWRENCE ENERGY CENTER
1250 N 1800 RD. LAWRENCE, KANSAS**

**FIGURE 2
INACTIVE UNITS - ASH POND AREA 2, ASH POND AREA 3, ASH POND 4
SITE TOPOGRAPHY PRIOR TO CLOSURE**

DRAWN BY:	ORC	APPROVED BY:	RDS	PROJ. NO.:	631232565	DATE:	APRIL 2018
-----------	-----	--------------	-----	------------	-----------	-------	------------



LEGEND

- APPROXIMATE AREA BOUNDARY
- - - - - APPROXIMATE POND BOUNDARY
- - - - - APPROXIMATE PERIMETER DIKE LOCATION

NOTES

1. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY PEC IN JUNE 2016.
2. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.

REV. NO.	DATE	DESCRIPTION




APTIM Environmental & Infrastructure, Inc.
APTIM Environmental & Infrastructure, Inc. has prepared this document for a specific project or purpose. All information contained within this document is copyrighted and remains intellectual property of APTIM Environmental & Infrastructure, Inc. This document may not be used or copied, in part or in whole, for any reason without expressed written consent by APTIM Environmental & Infrastructure, Inc.

**LAWRENCE ENERGY CENTER
1250 N 1800 RD. LAWRENCE, KANSAS**

**FIGURE 3
INACTIVE UNITS - ASH POND AREA 2, ASH POND AREA 3, ASH POND 4
PHOTO LOG**

DRAWN BY:	ORC	APPROVED BY:	RDS	PROJ. NO.:	631232565	DATE:	APRIL 2018
-----------	-----	--------------	-----	------------	-----------	-------	------------

APPENDICES

APPENDIX A

2017 Photo Log

<p>Photograph No. 1</p> <p>Date: May 15, 2017</p> <p>Direction: Northwest</p>	
<p>Description: Observing Pond 501. Some vegetation is present on the side slopes. Site road is in good condition.</p>	

<p>Photograph No. 2</p> <p>Date: May 15, 2017</p> <p>Direction: Northwest</p>	
<p>Description: Observing Pond 501. Erosion is present within pond, but does not impact stability of impoundment.</p>	

Photograph No. 3

Date:
May 15, 2017

Direction:
West

Description:
Pond 501 interior side slopes contain some vegetation. Erosion is present, but does not affect stability of regulated impoundment.



Photograph No. 4

Date:
May 15, 2017

Direction:
South of the Pond 501

Description:
Manhole inlet where process water enters impounded pond network.



<p>Photograph No. 5</p> <p>Date: May 15, 2017</p> <p>Direction: West</p>	
<p>Description: Clean closure activities ongoing in Pond 502. Side slopes appear stable. Site road is in good condition.</p>	

<p>Photograph No. 6</p> <p>Date: May 15, 2017</p> <p>Direction: Southwest</p>	
<p>Description: Clean closure activities ongoing in Pond 502. Site roads surrounding Pond 502 are in stable condition.</p>	

<p>Photograph No. 7</p> <p>Date: May 15, 2017</p> <p>Direction: Northwest</p>	
<p>Description: Pond 503 has been dewatered and will be undergoing clean closure in the future. Knife-gate inlet structure shown.</p>	

<p>Photograph No. 8</p> <p>Date: May 15, 2017</p> <p>Direction: Northwest</p>	
<p>Description: Dewatered Pond 503. Will begin process of closure in near future.</p>	

<p>Photograph No. 9</p> <p>Date: May 15, 2017</p> <p>Direction: Northwest</p>	
<p>Description: Culvert connection Pond 503 and Pond 401 that is no longer in use due to closure of Pond 503. Site roads are in stable condition.</p>	

<p>Photograph No. 10</p> <p>Date: May 15, 2017</p> <p>Direction: Northwest</p>	
<p>Description: Observing Pond 401. Side slopes are stabilized with rip-rap. Piping connecting Pond 401 to Pond 503 is shown. Pond 401 underwent clean closure and construction for receipt of process water.</p>	

<p>Photograph No. 11</p> <p>Date: May 15, 2017</p> <p>Direction: Northeast</p>	
<p>Description: Closed Scrubber Supply Pond (Area 4 Pond). Appropriate vegetative growth present.</p>	

<p>Photograph No. 12</p> <p>Date: May 15, 2017</p> <p>Direction: Southeast</p>	
<p>Description: Former Scrubber Supply Pond (Area 4 Pond) that was cleaned, filled with soil fill, and vegetated.</p>	

<p>Photograph No. 13</p> <p>Date: May 15, 2017</p> <p>Direction: Southwest</p>	
<p>Description: Pond 401 outlet structure. Rip-rap stabilized side slopes present. Pond 401 underwent clean closure and construction for receipt of process water.</p>	

<p>Photograph No. 14</p> <p>Date: May 15, 2017</p> <p>Direction: Northwest</p>	
<p>Description: Impoundment outer northern side slope (north of Pond 401). Very good condition - significant vegetative growth present. No erosion present.</p>	

<p>Photograph No. 15</p> <p>Date: May 15, 2017</p> <p>Direction: Southeast</p>	
<p>Description: Impoundment outer northern side slope (north of Pond 401). Very good condition - significant vegetative growth present. No erosion present.</p>	

<p>Photograph No. 16</p> <p>Date: May 15, 2017</p> <p>Direction: South</p>	
<p>Description: Berm separating Pond 401 (left) and 402 (right). Mild vegetation present on side slopes of both Ponds. Site road is in stable condition.</p>	

<p>Photograph No. 17</p> <p>Date: May 15, 2017</p> <p>Direction: Northeast</p>	
<p>Description: Stormwater ditch at bottom of impoundment on northern slope a rock check dam as shown. Appropriate vegetative growth and no erosion present. Good condition.</p>	

<p>Photograph No. 18</p> <p>Date: May 15, 2017</p> <p>Direction: Southwest</p>	
<p>Description: Pond 402 inlet. Mild to moderate vegetation present on side slopes. Moderate erosion within pond, but does not impact stability of impoundment.</p>	

<p>Photograph No. 19</p> <p>Date: May 15, 2017</p> <p>Direction: Southwest</p>	
<p>Description: Pond 402 outlet structure between Pond 402 (left) and Pond 403 (right). Site road is in stable condition.</p>	

<p>Photograph No. 20</p> <p>Date: May 15, 2017</p> <p>Direction: South</p>	
<p>Description: Pond 403 inlet. Moderate erosion and mud cracking within pond, but does not impact stability of impoundment.</p>	

<p>Photograph No. 21</p> <p>Date: May 15, 2017</p> <p>Direction: Southeast</p>	
<p>Description: Pond 404 inlet. Healthy vegetation present on the side slopes.</p>	

<p>Photograph No. 22</p> <p>Date: May 15, 2017</p> <p>Direction: Southwest</p>	
<p>Description: Outer slope of impoundment (near Pond 404). Well vegetated, no erosion. Good condition.</p>	

Photograph No. 23

Date:
May 15, 2017

Direction:
Southwest

Description:
Pond 404 side slope and outfall. Rip-rap and mild to moderate vegetation present on side slopes. No significant erosion present.



Photograph No. 24

Date:
May 15, 2017

Direction:
East

Description:
West Pond outlet to Pond 404. Rip-rap and mild vegetation present on side slopes. No observed erosion.



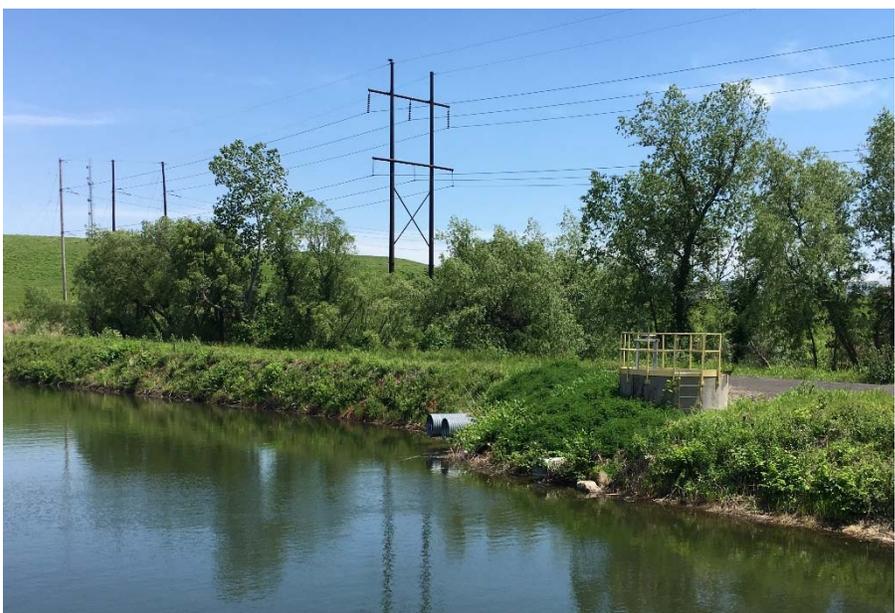
<p>Photograph No. 25</p> <p>Date: May 15, 2017</p> <p>Direction: South</p>	
<p>Description: Outer slope of impoundment (near West Pond). Good condition, well vegetated, no erosion observed.</p>	

<p>Photograph No. 26</p> <p>Date: May 15, 2017</p> <p>Direction: North</p>	
<p>Description: Outer slope of impoundment (near West Pond). Moderate to significant vegetation present. No significant erosion present.</p>	

<p>Photograph No. 27</p> <p>Date: May 15, 2017</p> <p>Direction: East</p>	
<p>Description: Berm separating the West Pond and Laydown Area. West Pond slope is stabilized with rip-rap. Vegetation present.</p>	

<p>Photograph No. 28</p> <p>Date: May 15, 2017</p> <p>Direction: East</p>	
<p>Description: Berm separating the Laydown Area and the Storm Water Settling Pond. Mild erosion present on side slope of Laydown Area, which does not impact stability of impoundment.</p>	

<p>Photograph No. 29</p> <p>Date: May 15, 2017</p> <p>Direction: East</p>	
<p>Description: Berm separating the Laydown Area and the Storm Water Settling Pond.</p>	

<p>Photograph No. 30</p> <p>Date: May 15, 2017</p> <p>Direction: Southeast</p>	
<p>Description: Outfall of Storm Water Settling Pond. Mild to moderate vegetation present. No significant erosion present.</p>	

<p>Photograph No. 31</p> <p>Date: May 15, 2017</p> <p>Direction: Southeast</p>	
<p>Description: Outfall 007A on south side of Storm Water Settling Pond. Healthy vegetation present near outfall.</p>	

<p>Photograph No. 32</p> <p>Date: May 15, 2017</p> <p>Direction: East</p>	
<p>Description: Outfall 007A on south side of Storm Water Settling Pond. Moderate to significant vegetation present near outfall. Outfall is well maintained.</p>	

Photograph No. 33

Date:
May 15, 2017

Direction:
East

Description:
Perimeter dike on south side of Storm Water Settling Pond is in stable condition. Mild to moderate vegetation present on side slope of Pond.



Photograph No. 34

Date:
May 15, 2017

Direction:
East

Description:
Recently regraded stormwater ditch. Good condition.

