

**JAMES RIVER POWER STATION  
UTILITY WASTE LANDFILL**

**Run-On & Run-Off Control System Plan  
In Accordance with 40 CFR Part 257.81**

**City Utilities of Springfield  
301 E. Central  
P. O. Box 551  
Springfield, MO 65801**

**September 2021**

**This is a modified and updated version of the original September 16, 2016 Plan  
prepared for City Utilities of Springfield, Missouri by Jacobs Engineering**

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**James River Power Station Utility Waste Landfill  
Run-On & Run-Off Control System Plan**

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Revision Page on Original Plan

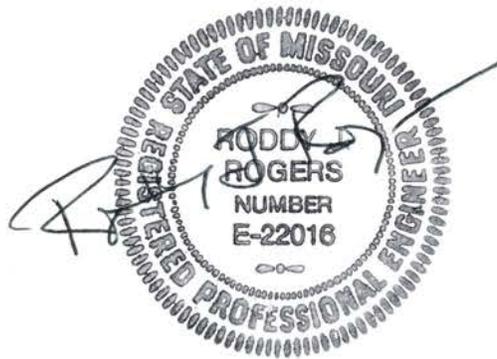
Rev.	Date	Reason for Revision	Originator	Checker	Lead Engineer	Project Engineer
A	8/19/16	Issued for Review	FMP	WP	FMP	FMP
0	9/12/16	Final Issue	FMP	WP	FMP	FMP
1	9/16/16	Revised Final Issue	FMP	WP	FMP	FMP

Current Plan was updated by Roddy Rogers, PE, City Utilities, by editing the original plan prepared by Franklin Parton, P.E., Jacobs Engineering. Both parties are aware of this update.

James River Power Station Utility Waste Landfill  
Run-On & Run-Off Control System Plan

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I, Roddy Rogers, P.E., a qualified engineer licensed in the State of Missouri, do hereby certify that to the best of my knowledge this document meets the criteria established by 40 CFR Section 257.81-Run on and Run-off Controls for CCR landfills, dated April 17, 2015, and amended July 30, 2018. This certification is based on information, drawings, data, reports, calculations, visual observations, and other documents developed by City Utilities or their consultants and reviewed by me.



9/1/21

## **Run-On & Run-Off Control System Plan**

### **1. Introduction**

As an existing facility, the James River Power Station (JRPS) was required to prepare an initial Run-On and Run-Off Control System Plan for the CCR Landfill by October 17, 2016 under 40 CFR 257.81 (c)(3)(i). It is required to be updated every five (5) years. This document is simply a modified version of the original September 9, 2016 plan generated by Jacobs Engineering to best serve as an update.

The (JRPS) site is owned and operated by City Utilities of Springfield, Missouri, and is located south of the city along the James River. The plant consisted of five dual-fueled, coal fired (coal or natural gas) boilers. In 2015 City Utilities decided to operate the units solely on natural gas. Additionally, as of December 2020, all affected former coal fired units are officially retired. Prior to 2016, when the facility burned coal as its primary fuel, bottom ash was sluiced to two 19-acre temporary holding pond cells. The ash was stored in the pond cells until an appreciable volume was reached. The ash was then excavated, dewatered, and the materials placed within the on-site permitted landfill (see Figure 1 for general locations). The pond cells were excavated one final time and the landfill was temporarily covered. The pond (cells) were operated as an inactive coal combustion residual (“CCR”) surface impoundment as defined under the Federal CCR Rule. City Utilities clean closed the western cell of the impoundment on February 23, 2017, and the eastern cell on June 20, 2017 by removal of the CCR, including liner materials, and decontamination of the CCR unit pursuant to the requirements of 40 CFR Part 257.102(c). A total of nearly 614,000 cubic yards of CCR were removed from these cells and placed in the (now temporarily closed) JRPS landfill. In 2017, nearly 21,000 additional cubic yards of CCR were trucked from the John Twitty Energy Center (JTEC) Unit 2 ash silo to the JRPS landfill.

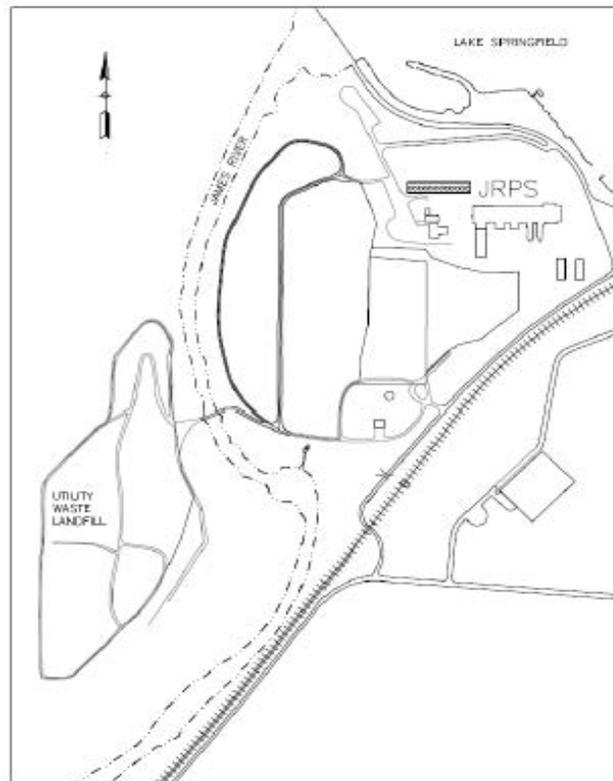


Figure 1

The landfill (17-acre footprint) was originally permitted in 1985 by the Missouri Department of Natural Resources (MDNR) under permit number 707704. In 1993, MDNR issued Permit Number 707705 (replacing 707704) for a 26-acre expansion of the original landfill. A report titled "Engineering Report for Utility Waste Landfill Addition, James River Power Station" prepared by Saul A. Nuccitelli, Inc., provides all detailed run-on and run-off control design calculations (May 1992).

The following is a general sequence of construction for the western expansion area. A perimeter clay berm was constructed around the landfill to provide a bowl for ash to be placed. The clay berm was constructed to an elevation of 1136 feet. A leachate/stormwater collection manhole and pond were also constructed within the bowl. Water collected in the manhole was pumped into one of the ash pond cells and was then discharged through permitted NPDES outfall #004 (Permit #MO-0001961). The perimeter berm also served to protect the landfill in its initial stage of construction from flood waters. The ash was then placed within the bowl with a minimum slope of 1% toward the manhole/pond. As the landfill was expanded vertically the bowl shape was maintained by constructing starter berms around the perimeter. The starter berms were constructed from ash with a 24-inch clay and 4-inch topsoil cover over the ash. The manhole elevation was then raised to maintain the stormflow detention. This method of construction finalized the side slopes of the landfill as it was expanded vertically while maintaining drainage control of contact water by use of the on-site pond and manhole.

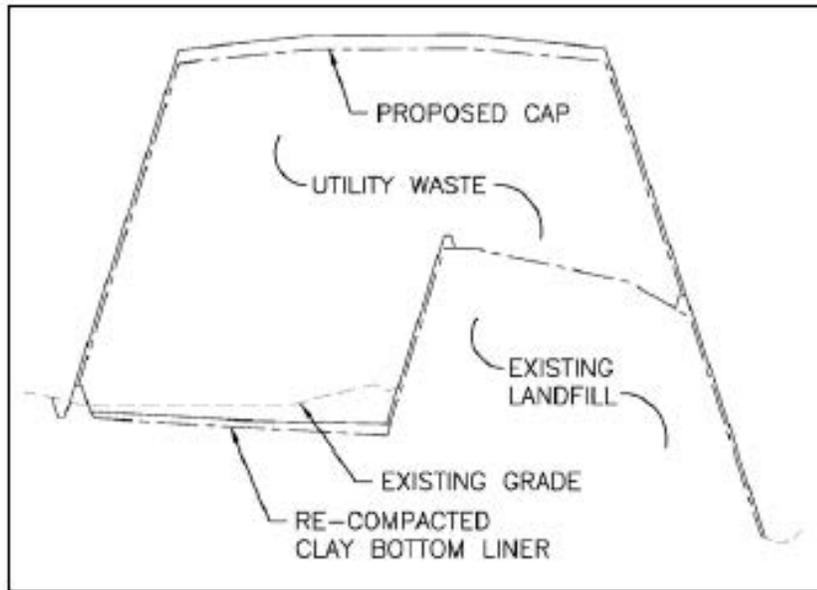


Figure 2

In accordance with the requirement of 40 CFR 257.102(c)(2)(ii), City Utilities (CU) provided documentation demonstrating that there is reasonable likelihood that the James River Power Station (JRPS) Utility Water Landfill (UWL) will resume receiving coal combustion residuals (CCR) in the foreseeable future. As such, a two-year extension in initiating closure was justified. The initial demonstration was placed in the JRPS CCR operating record (circa June 3, 2019). A subsequent demonstration was completed and placed in the JRPS CCR Operating record on June 16, 2021 as required by the regulation.

The JRPS landfill last received CCR on or about June 22, 2017. As reported to Missouri Department of Natural Resources (MDNR) in January 2018, the UWL is now temporarily closed with approximately 274,000 cubic yards of permitted storage capacity remaining. This estimate is based on a December 2017 topographic survey and volume estimate conducted by Anderson Engineering, Inc. In accordance with MDNR regulations, a 12-inch thick vegetated temporary cover consisting of 8 inches of compacted clay and 4 inches of topsoil was placed on the landfill.

Future utilization of the UWL is also addressed in the CCR Closure and Post-Closure Plan dated October 11, 2016 and posted on City Utilities' website. Currently the UWL is temporarily closed with no defined time frame for permanent closure. However, it is reasonable and prudent to anticipate a future need for the remaining capacity. It is anticipated that ash will be mined from the John Twitty Energy Center (JTEC) UWL and placed in the JRPS UWL to utilize the remaining capacity. This project will be planned within City Utilities budgetary and operational availability and constraints.

## 2. Regulatory Requirements

### 2.1 Design Criteria

The design criteria for the CCR landfill requires a run-on control system to prevent flow onto the active portion of the CCR unit during the peak discharge from a 24-hour, 25-year storm, 40 CFR 257.81(a)(1).

The design criteria also requires a run-off control system from the active portion of the CCR unit to collect and control at least the water volume resulting from a 24-hour, 25-year storm, 40 CFR 257.81(a)(2).

## **2.2 Run-Off Compliance with CFR 257.3-3**

As described, the active portion of the CCR landfill facility was designed such that contact water was collected in a pond with a collection manhole. The contact water was then pumped to the temporary ash holding pond cells before being discharged through NPDES Outfall #004. This system complied with 40 CFR 257.3-3.

Following clean closure (closure by removal) of the existing ash holding ponds, collection of the leachate was pumped directly to the on-site sewer manhole. The system received city approvals for the design and build out of the new collection system and the new system complies with the provisions of 40 CFR 257.3-3. The leachate collection system design was approved by the City of Springfield December 21, 2016. This included acceptance of the leachate to the city sanitary sewer through City Outfall 002 (City Wastewater Contribution Permit #029).

## **3. Run-On & Run-Off Control System Plan**

### **3.1 Landfill Run-On Control**

The Utility Waste Landfill was designed and constructed as an above grade landfill. The clay berm constructed around a portion of the landfill was built to an elevation of 1136 feet. The landfill is permitted and sited adjacent to the James River. A HEC-2 analysis was performed (Saul A. Nuccitelli, Inc., 1992) for the James River to determine the 25-year and 100-year flood elevations. The 25-year flood elevation is 1134 feet and the 100-year flood elevation is 1135.5 feet. The berm elevation was set 2 feet higher than the 25-year flood elevation and 0.5 feet higher than the 100-year flood elevation. The topography of the surrounding area is such that only one side of the surrounding area can contribute run-on. A large swale/ ditch has been constructed on this side of the landfill to route water around the landfill. This ditch was sized to carry the run-on from a 25-year storm (Saul A. Nuccitelli, Inc., May 1992). These calculations were reviewed and confirmed to be applicable in the first (original) run on run off plan. Since vegetative cover has increased on top of the same topography, less run off would result and the ditch size remains the same. Therefore, the ditch size is still considered adequate. See Appendix A for a layout of the landfill and ditch system.

### **3.2 Landfill Run-Off Control**

As designed, a stormwater detention pond was maintained on the top of the landfill to collect contact water. This pond was designed to hold the 100-year storm run-off. All contact water flowed to this detention pond. As the landfill was expanded vertically the pond was maintained and the collection manhole was extended upward (Saul A. Nuccitelli, Inc., May 1992). Following placement of CCR from closure of the surface impoundments, an interim cover was placed on the landfill. The interim cover changed the landfill top surface topography from a bowl to a crowned landfill. Once covered with soil, contact water with CCR was eliminated resulting in no CCR contacted runoff from the top of the landfill.

#### 4. Amendment to the Plan

It is understood that the Run-On and Run-Off Control System Plan may be amended at any time provided that the revised plan is placed in the facility's operating record as required by 40 CFR 257.105(g)(3) and that an amendment must be made whenever there is a change in conditions that would substantially affect the current plan. The only change has been that described in the previous section with respect to temporary closure of the top surface. Drawings of the run on run off plan and of the final proposed contours are included in Appendix A. Any technical amendments to this plan will be certified by a qualified professional engineer.

#### 5. Inspection Plan

Inspections of the CCR landfill are required under 40 CFR 257.84. These inspections include the run-on and run-off control features of the facility. A summary of the prescribed inspections include:

- **Weekly Inspection Reports:** A qualified person inspects for any appearance of actual or potential structural weaknesses and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR landfill.
- **Annual Inspection:** A qualified professional engineer makes an annual inspection of the CCR landfill to ensure the design, construction, operation and maintenance of the CCR landfill is consistent with recognized and generally accepted good engineering standards.

#### 6. Prescribed Frequency of Revisions

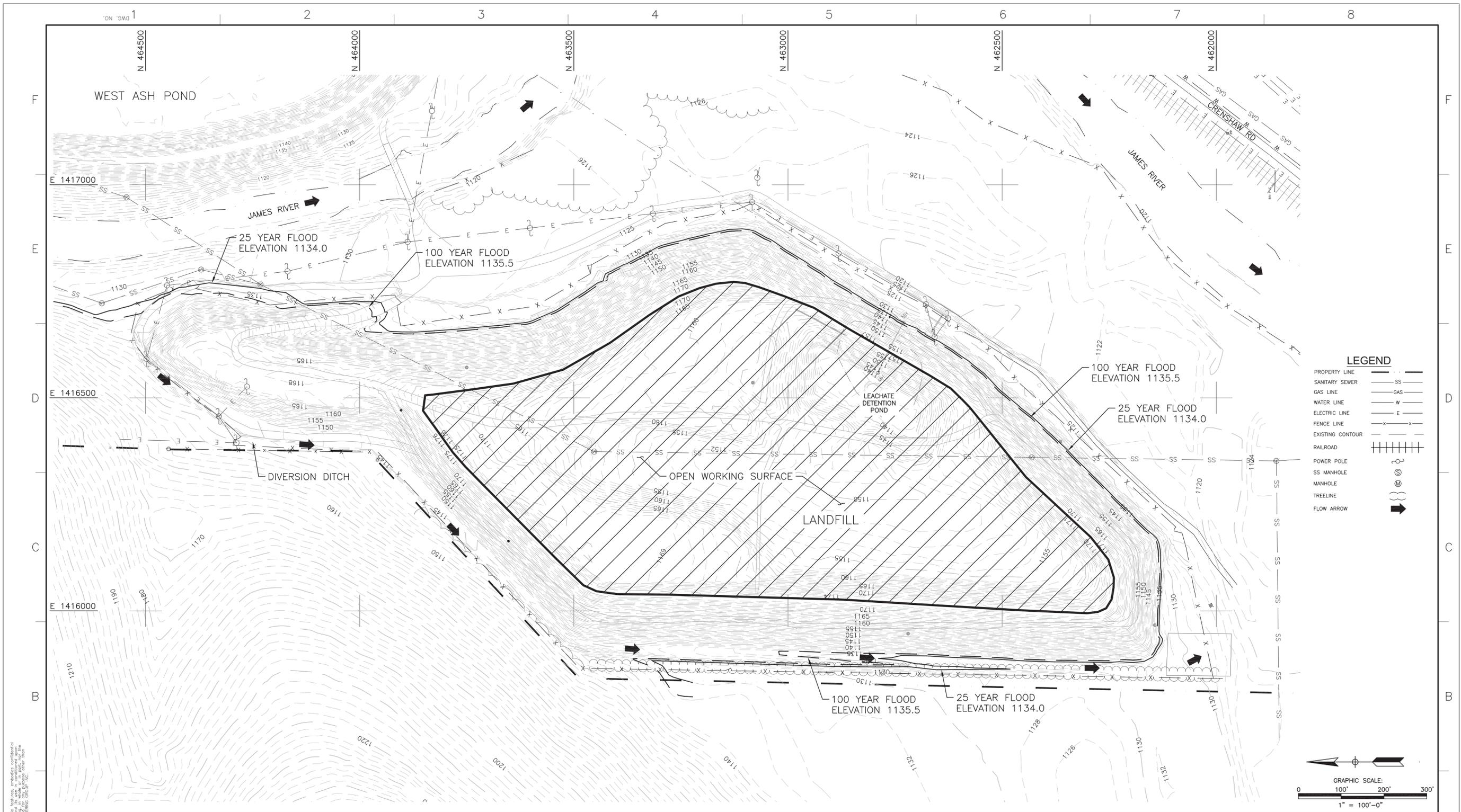
At a minimum, this Run-On and Run-Off Control System Plan will be updated every five years. The deadline for completion is five years from the date the initial plan is placed in the facility's operating record.

#### 7. Record Keeping Plan

This Run-On and Run-Off Control System Plan must comply with the recordkeeping, notification and website requirements described in 40 CFR 257.105(g)(3),(8) and (9), 40 CFR 257.106(g)(3) and (7) and 257.107(g)(3) and (7).

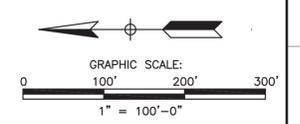
**APPENDIX A**

**JRPS CCR Landfill Run-On and Run-Off Control Systems Site Plan**



**LEGEND**

PROPERTY LINE	---
SANITARY SEWER	SS
GAS LINE	---
WATER LINE	W
ELECTRIC LINE	E
FENCE LINE	x-x
EXISTING CONTOUR	---
RAILROAD	
POWER POLE	⊕
SS MANHOLE	⊙
MANHOLE	⊙
TREELINE	⊖
FLOW ARROW	➔



This drawing, including any alterations or amendments, represents the final design of the project. It is the property of Jacobs Engineering Group, Inc. and is not to be used for any other project without the written consent of Jacobs Engineering Group, Inc.

REV.	DESCRIPTION	BY	CKD.	APP.	DATE	REF. DWG. NO.	DESCRIPTION	RPE
A	ISSUED FOR	JGA						



SIGNATURE	DATE	PROJECT NO.	35DK8201
DRAWN BY: J. ASHWORTH		CAD FILE:	JRPS-01.DWG
DESIGN BY: F.M. PARTON JR			
CHECK BY:			
APPROVED:			

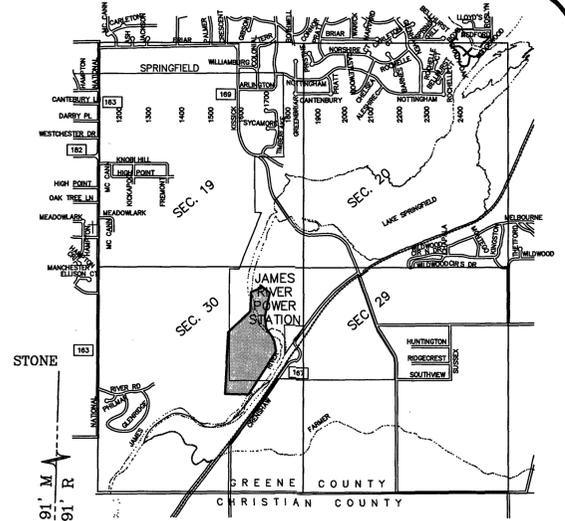
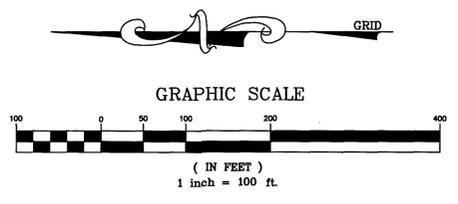


**JRPS CCR LANDFILL  
RUN-ON AND RUN-OFF  
CONTROL SYSTEMS**

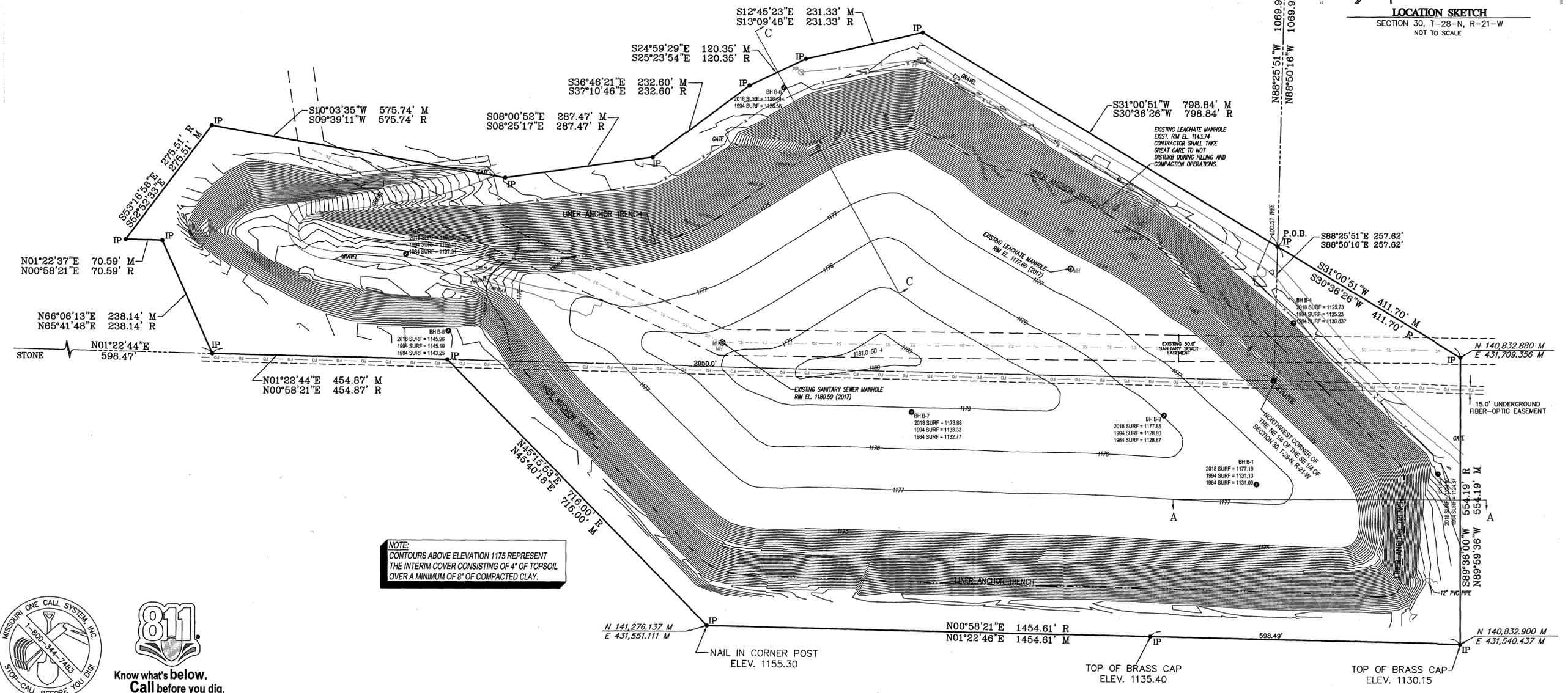
SCALE:	1"=100'	DWG. NO.:	JRPS-01	REV.:	A
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**LEGEND**

● CP CONTROL POINT	— PROPERTY LINE
● IP EXISTING IRON PIN	— SS SANITARY SEWER
○ IP SET IRON PIN	— SW STORM SEWER
▲ RWM RIGHT-OF-WAY MARKER	— FO TELEPHONE LINE
⊗ PWA POWER POLE W/ GUY	— UT UNDERGROUND TELEPHONE
⊙ MH MANHOLE	— G GAS LINE
⊙ SCO SEWER CLEANOUT	— W WATER LINE
⊙ GM GAS METER	— E ELECTRIC LINE
⊙ LP LIGHT POLE	— UE UNDERGROUND ELECTRIC
▲ SIGN	— X FENCE LINE
⊙ WM WATER METER	— RETAINING WALL
⊙ WV WATER VALVE	— LINE LABELS
⊙ GV GAS VALVE	— MEASURED 100' M
⊙ FH FIRE HYDRANT	— RECORD 100' R
▲ TR TELEPHONE RISER	— TREELINE
⊙ BP BUMPER POST	— BUSH
⊙ GI GRATE INLET	— ER ELECTRICAL RISER
▲ STONE	— TS TRAFFIC SIGNAL BOX
▲ CONCRETE MONUMENT	— MB MAIL BOX



**LOCATION SKETCH**  
SECTION 30, T-28-N, R-21-W  
NOT TO SCALE



**NOTE:**  
CONTOURS ABOVE ELEVATION 1175 REPRESENT THE INTERIM COVER CONSISTING OF 4" OF TOPSOIL OVER A MINIMUM OF 8" OF COMPACTED CLAY.

**BENCHMARK**  
ELEVATIONS BASED ON MONUMENT CP 3, OF THE JRPC CONTROL NETWORK WITH AN ELEVATION OF 1144.72. VERTICAL DATUM BASED ON NAVD 88.



**DRAWING INFO.**

NO.	REVISIONS	DESCRIPTION	BY	DATE	FIELD BY:	BH
1	INITIAL ISSUE		BGK	09-17-18	BAC/BGK	BH
					CHECK BY:	BGK
					DATE:	09-17-18
					FIELD BOOK:	CU 15-01
					JOB NUMBER:	18SP40030

CITY UTILITIES OF SPRINGFIELD  
JRPS ASH LANDFILL SLOPE STABILITY ANALYSIS

JRPS ASH LANDFILL  
2017 FINISHED GRADE

JAMES RIVER POWER STATION  
SPRINGFIELD, MISSOURI

DRAWING NO.  
WB III-237

SHEET NUMBER  
1 OF 4