

**CLECO POWER LLC  
BRAME ENERGY CENTER**

**BOTTOM ASH POND AND  
FLY ASH POND  
LENA, LA**

**2017 Annual Groundwater Monitoring Report  
for the Coal Combustion Residuals Rule**

**January 2018**



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## 1.0 INTRODUCTION

Cleco Power LLC (Cleco) hereby presents the 2017 Annual Groundwater Monitoring report for the Bottom Ash and Fly Ash Ponds at the Brame Energy Center (BEC) located in Lena, Louisiana (Figure 1). This report summarizes groundwater sampling and analysis activities completed in accordance with applicable portions of the U.S. Environmental Protection Agency (EPA) Coal Combustion Residuals (CCR) Rule.

## 2.0 FACILITY INFORMATION

Cleco owns and operates the BEC located at 275 Rodemacher Road, Lena, Louisiana 71447. The Bottom Ash and Fly Ash Ponds in service at the plant have been permitted to operate by the Louisiana Department of Environmental Quality (LDEQ) Waste Permits Division. The materials handled by these facilities are non-hazardous, on-site-generated materials only.

As required by the CCR Rule part §257.90, BEC has a groundwater monitoring well system to evaluate the groundwater quality conditions near the Bottom Ash and Fly Ash Ponds. The monitoring system consists of recently installed monitoring wells, in addition to monitoring wells installed previously to conduct groundwater monitoring required by BEC's LDEQ approved solid waste permits. A total of nine monitoring wells have been installed per applicable portions of §257.91. Locations of the monitoring wells can be found on Figure 2, and a table of monitoring well construction details can be found in Table 1.

## 3.0 FIELD ACTIVITIES

Groundwater sampling events were conducted by Cleco approved contract personnel between April 2016 and August 2017, in accordance with applicable portions of §257.93.

Prior to purging and sampling activities, the depth-to-water below the top of each well casing was measured and recorded prior to purging each well during each sampling event. Water levels were measured to the nearest 0.01 foot from the top of casing using an electronic water level indicator. Total depth of each well was also measured to confirm that the screened interval was open to groundwater flow. Water level measurements were recorded in groundwater sampling forms. The water level measurements were subtracted from the top of casing elevations to obtain the groundwater elevations.

Groundwater purging and sampling activities were conducted using electric submersible pumps. These activities were conducted in accordance with applicable portions of Sections 6.1, 6.2, 6.3 and 8.1.4 of the *Standard Guide for Sampling Groundwater Monitoring Wells* (ASTM International, Publication D4448). Non-dedicated sampling equipment which came into contact with groundwater samples was decontaminated prior to sampling each well to reduce the potential for cross-contamination. Groundwater samples were collected by filling the sample containers directly from the disposable tubing connected to the pump or from a disposable bailer. Care was taken to minimize agitation of the samples. Samples were placed in laboratory-provided plastic containers with appropriate preservatives, per Section 9 of ASTM D4448. Samples were properly preserved on ice in the field and shipped to Pace Analytical Services, LLC of St. Rose, Louisiana, for analysis of the CCR groundwater monitoring parameters by the following methods: chloride, fluoride and sulfate by 300.0; total dissolved solids by 2540C; metals by 6020, mercury by 7470, radium 226 by 903.1, and radium 228 by 904. Full chain-of-custody protocols were observed during sample collection, transportation, and analysis. Sample shipment/transport procedures were conducted per Sections 9.9 through 9.11 of ASTM D4448.

#### 4.0 GROUNDWATER FLOW EVALUATION

Horizontal groundwater flow was evaluated in the uppermost aquifer by construction of potentiometric surface maps (Figures 3 through 12) from data measured in monitoring wells at BEC. An evaluation of groundwater flow indicates that horizontal groundwater flow at BEC is consistently towards local surface water bodies with flow towards Lake Rodemacher in the power station portion of the property and towards Bayou Jean de Jean in the area of the Bottom Ash Pond, Fly Ash Pond, and Ash Management Area. Based on USGS topographic quadrangles of Lake Rodemacher area, the spillway elevation of Lake Rodemacher is 100 feet NGVD. Groundwater elevations determined in monitoring wells near the lake are generally higher than this maximum lake elevation, supporting groundwater flow towards the lake.

Groundwater flow rate was evaluated using the groundwater flow equation,  $v = [k (dh/dl)] / n_e$ . For this equation,  $v$  is groundwater flow velocity in ft/day,  $k$  is hydraulic conductivity in ft/day,  $dh/dl$  is hydraulic gradient in ft/ft, and  $n_e$  is effective porosity (unitless).

Hydraulic conductivity ( $k$ ) value ranging from 10 to 100 ft/day was assumed (Heath, 1989) based on the silty sand and fine- to coarse-grained sand observed in soil cuttings from soil borings completed at the site. Hydraulic gradient ( $dh/dl$ ) value estimates from potentiometric surface maps representing each sampling event for the Ash Ponds areas are summarized below. An effective porosity ( $n_e$ ) of 0.2 was assumed based on the soil types of the uppermost aquifer (Fetter, 2001). Using these values, the groundwater flow rate ( $v$ ) is estimated to range from 0.0001 to 1.5 feet/day as listed below.

Date	Hydraulic Gradient (feet/feet)	Estimated Groundwater Flow Velocity (feet/day)
April 2016	0.00002 to 0.002	0.0001 to 1
July 2016	0.002	0.1 to 1
October 2016	0.001 to 0.002	0.05 to 1
December 2016	0.001 to 0.003	0.05 to 1.5
January 2017	0.00002 to 0.003	0.001 to 1.5
February 2017	0.001 to 0.002	0.05 to 1
May 2017	0.0006 to 0.002	0.03 to 1
June 2017	0.0006 to 0.002	0.03 to 1
August 2017	0.0003 to 0.002	0.015 to 1

It is important to note that this is an advective rate and does not take into account potential hydrogeological heterogeneities such as adsorption, biodegradation, dispersion, or other retarding factors in the groundwater flow in this zone. Additionally, variations in the advective flow may occur due to potential lateral geological heterogeneities.

#### 5.0 ANALYTICAL RESULTS

Groundwater samples collected at BEC were analyzed for the CCR Rule detection monitoring parameters pH, boron, calcium, chloride, fluoride, sulfate, and total dissolved solids (TDS) using appropriate EPA approved analytical methods. Results show frequent detections of all parameters in both up- and downgradient monitoring wells at BEC. Analytical results summary tables are provided in Tables 2 through 11.

## 6.0 STATISTICAL EVALUATION

Statistical evaluations of groundwater data have been performed per applicable portions of §257.93.f. The goal of the statistical evaluation is to determine if there is statistically significant evidence to show that facility operations may have adversely affected groundwater quality. Statistical evaluations are conducted to determine if there are any statistically significant increases (SSIs) between groundwater quality upgradient and groundwater quality downgradient of the Bottom Ash and Fly Ash Ponds.

Statistical evaluations at BEC were performed using interwell prediction limits for pH. The interwell prediction limits were performed using the Sanitas v9<sup>®</sup> software package. Prediction limits were constructed from the upgradient well data and based on the distribution of that data for each parameter. If the assumption of normality was not rejected for the upgradient data set, then a parametric prediction limit was calculated. If the assumption of normality was rejected for the upgradient data set, then a non-parametric prediction limit was calculated, in which case, the prediction limit was based on the highest value in the upgradient data set. The most recent result for each downgradient well for each parameter was compared to the applicable prediction limit.

Results of the interwell prediction limits for the August 2017 sampling event at BEC indicated that no SSIs were generated for pH.

Due to statistically significant variation found in upgradient monitoring well data, all detection monitoring parameters except pH were statistically evaluated using intrawell prediction limits. Intrawell tests are within well comparisons. In the case of limit-based tests, historical data from within a given monitoring well for a given parameter are used to construct a limit. Compliance points are compared to the limit to determine whether a change is occurring on a per-well/per-parameter basis. If the assumption of normality was not rejected for the background data set, then a parametric prediction limit was calculated. If the assumption of normality was rejected for the background data set, then a non-parametric prediction limit was calculated, in which case, the prediction limit was based on the highest value in the background data set.

Intrawell limit-based tests are recommended when there is evidence of spatial variation in groundwater quality, particularly among upgradient monitoring wells, as it is inappropriate to pool those data across monitoring wells for the purpose of creating interwell limits for comparison with compliance monitoring well data. Intrawell tests may be used at both new and existing facilities. Data used in the intrawell limit-based tests were screened for outliers, which, if found, were removed from the background data set prior to constructing limits for each well/parameter pair.

Verification resampling for SSIs will only be conducted for SSIs generated in downgradient wells via intrawell methodology. Intrawell statistics have been performed on all wells; however, since the goal of the statistical evaluation is to determine if there is statistically significant evidence to show that facility operations may have adversely affected groundwater quality downgradient of the facilities, only downgradient wells will be subject to verification resampling.

Intrawell statistical analysis of the August 2017 data showed that SSIs were generated for fluoride in upgradient wells D-3 and L-2. As stated above, verification resampling will not be conducted for intrawell SSIs generated in upgradient wells. Given the increasing concentrations of fluoride observed in upgradient locations, these conditions will be monitored in downgradient locations in future reports. No SSIs were generated in downgradient wells via intrawell statistical analysis.

**7.0 CONCLUSIONS AND RECOMMENDATIONS**

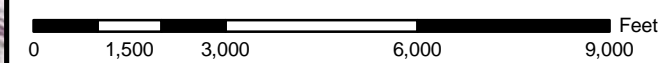
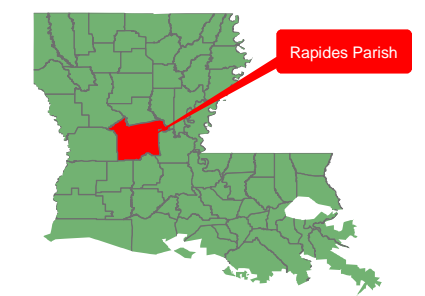
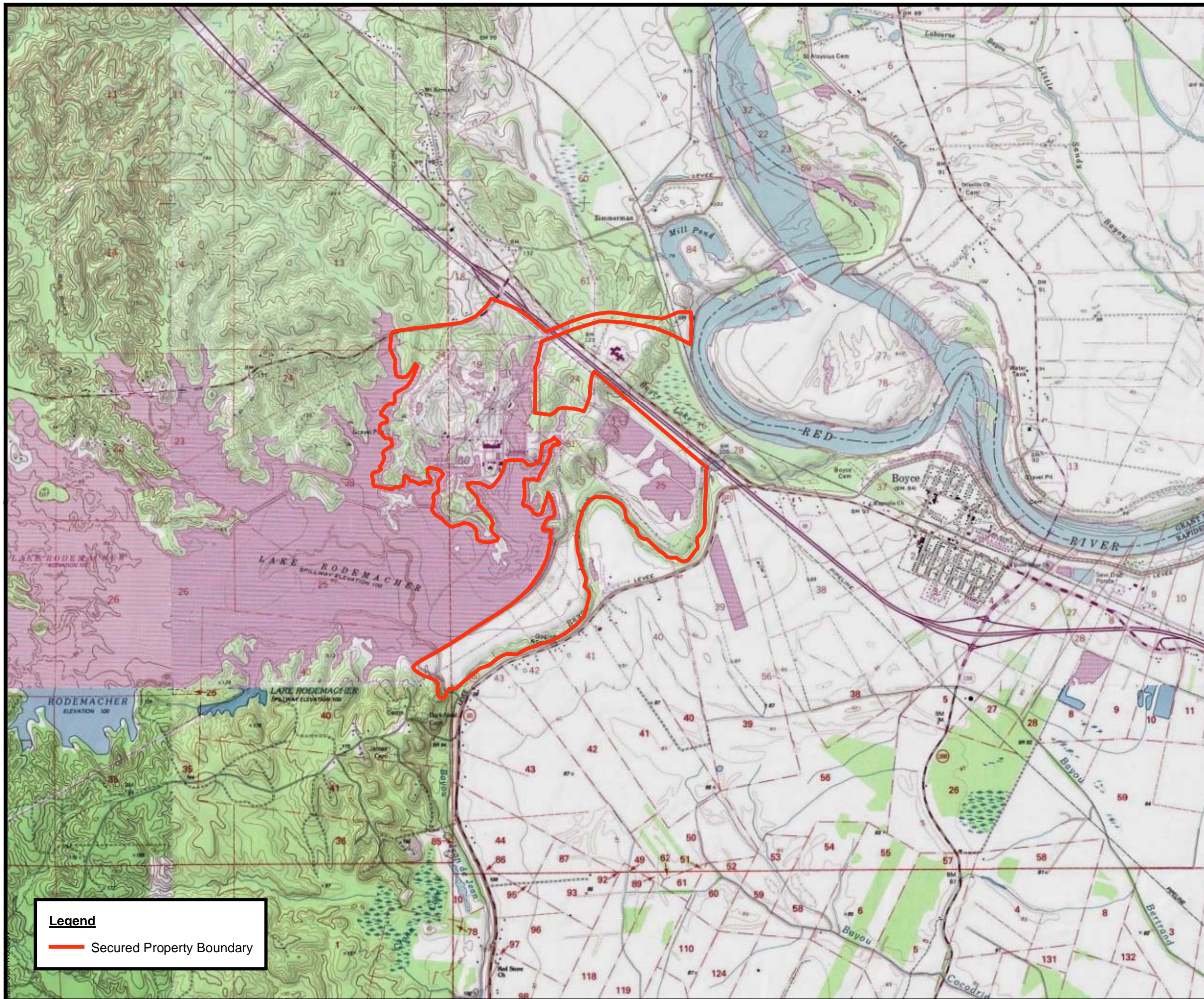
- Cleco BEC has a monitoring well system to monitor groundwater quality at the Bottom Ash and Fly Ash Ponds per applicable portions of §257.91. The network consists of five upgradient and four downgradient monitoring wells.
- Cleco conducted sufficient detection monitoring sampling events, per applicable portions of §257.93 and §257.94.
- Potentiometric surface evaluation at BEC indicates consistent groundwater flow towards local surface water bodies.
- Statistical evaluations of data conducted per applicable portions of §257.93 indicate that no SSIs have been generated in downgradient wells.
- Semi-annual detection monitoring sampling events are tentatively scheduled for April and October of 2018. Data generated during these sampling events will be included in the next annual report.

**8.0 CERTIFICATION**

I hereby certify this annual groundwater monitoring report for Cleco Power LLC. I am a duly licensed Professional Engineer under the laws of the State of Louisiana.



<hr/>	<hr/>
<b>Signature</b>	<b>27124</b>
<hr/>	<hr/>
<i>Bradley E. Bates</i>	<i>Professional Engineer</i>
<b>Name</b>	<b>Title</b>
<hr/>	<hr/>
<i>Eagle Environmental Services, Inc.</i>	<i>1/10/18</i>
<b>Company</b>	<b>Date</b>



**Reference**  
 U.S.G.S. TOPOGRAPHIC MAPS "LENA, LOUISIANA", "BOYCE, LOUISIANA",  
 "JERICO, LOUISIANA", AND "GARDNER, LOUISIANA."

**Legend**  
 — Secured Property Boundary

**CLECO Power LLC**  
 Brame Energy Center

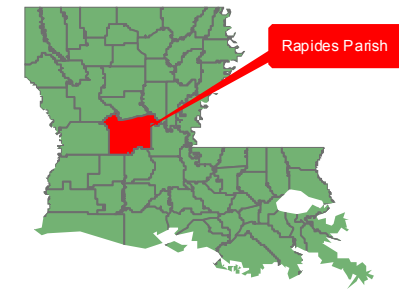
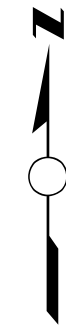
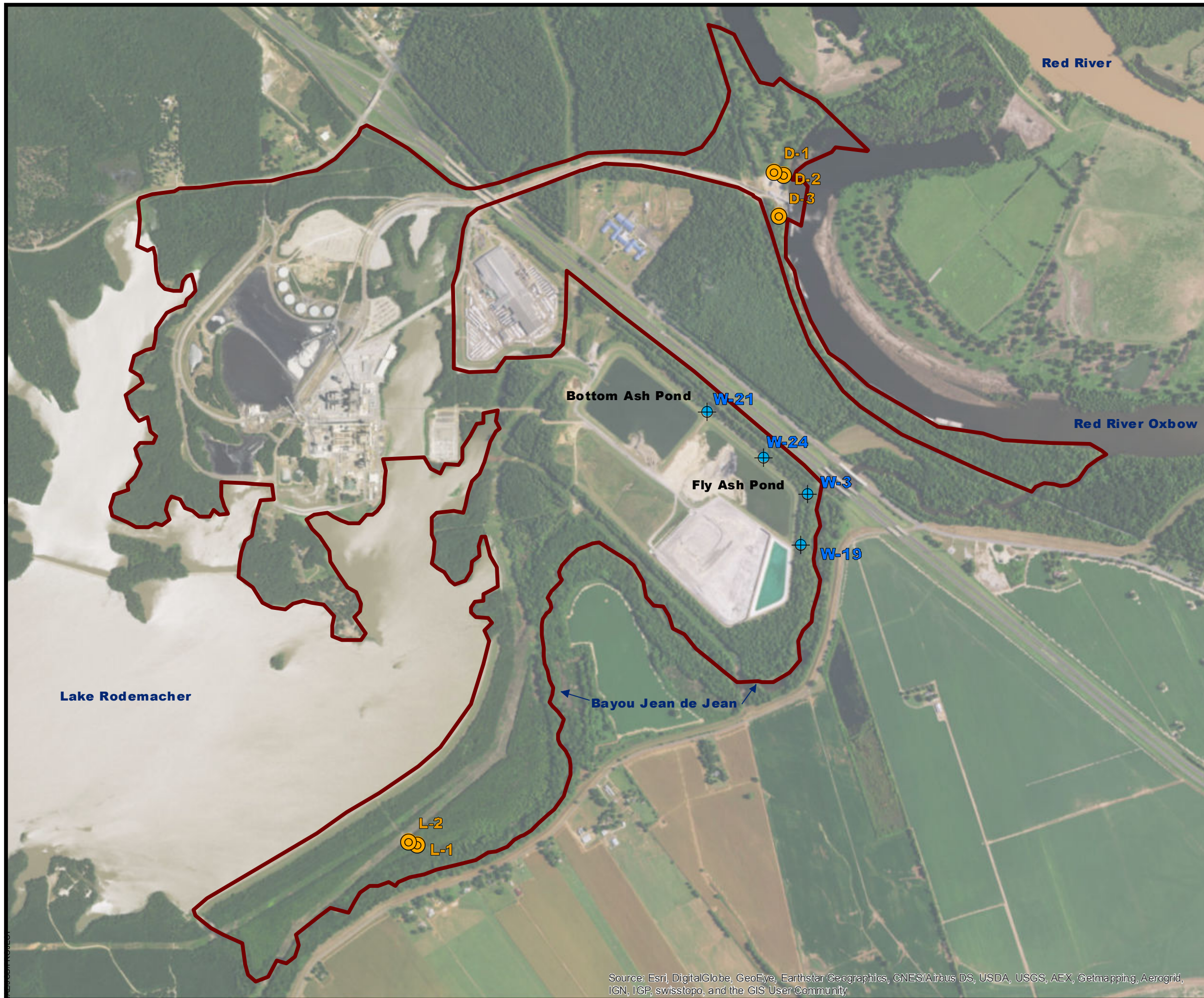
**Site Location Map**

Rapides Parish, Louisiana






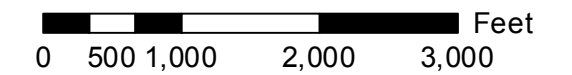
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Checked:	JM
Approved:	RS
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Dwg. No.:	01-10-0071-A003

**Figure 1**



**Legend**

-  CCR Rule Compliance Wells
-  CCR Rule Background Wells
-  Secured Property Boundary



**CLECO Power LLC**  
Brame Energy Center

**CCR Rule  
Monitoring Well Location Map**  
Rapides Parish, Louisiana

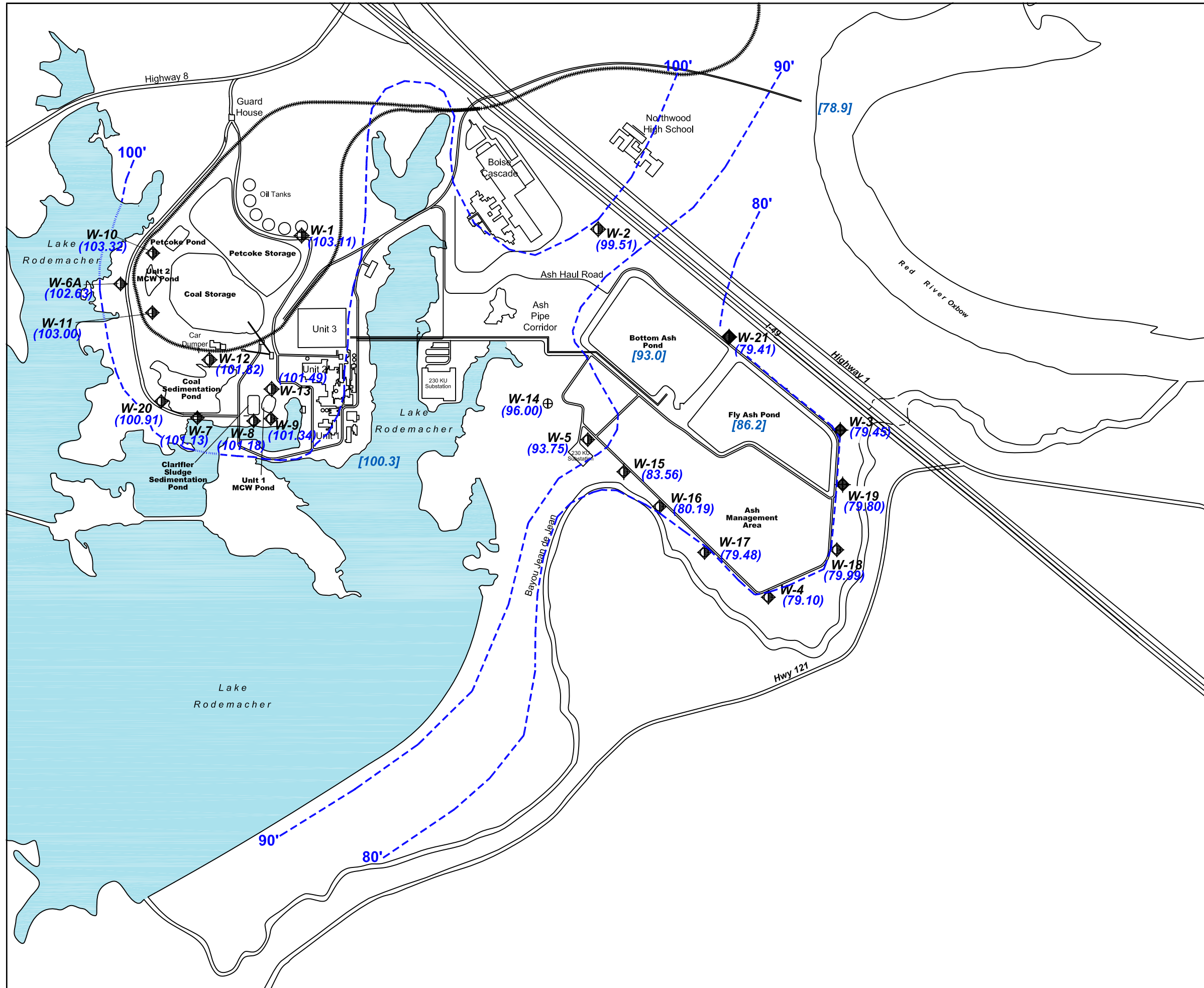


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Approved:	JM
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**Figure 2**

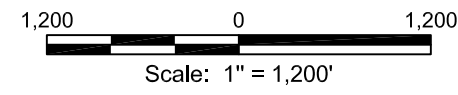
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community





**Legend**

- +++++ Railroad Tracks
- ◆ CCR Compliance Well Location
- ◊ Non-CCR Piezometer Location
- (79.10) Potentiometric Surface Elevation, Ft. NGVD
- 70'— Potentiometric Surface Elevation Contour, Ft. NGVD
- - - - - Inferred Potentiometric Surface Contour, Ft. NGVD
- [93.0] Surface Water Elevation ft. NGVD

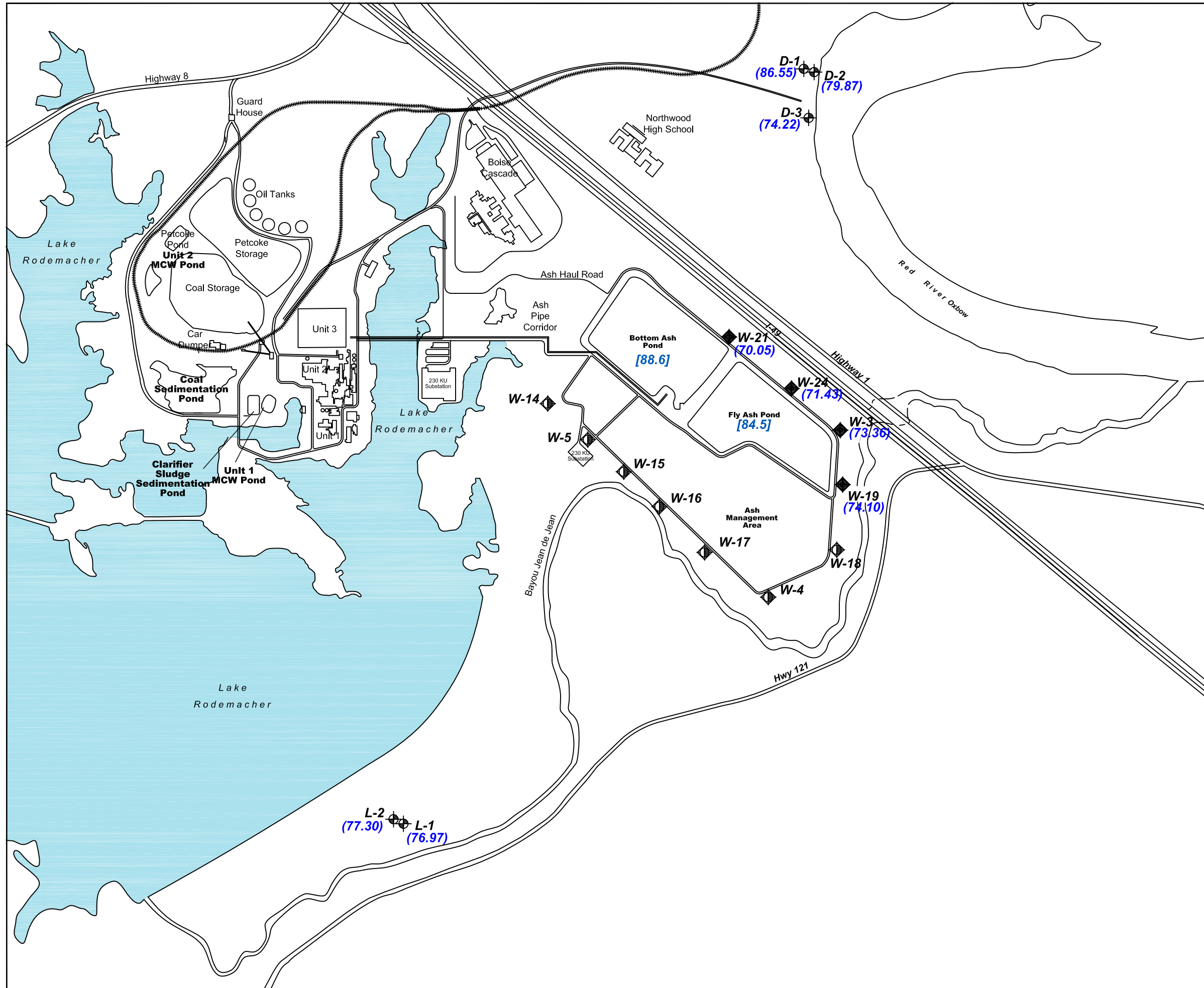


Brame Energy Center  
**Cleco Brame**  
**Potentiometric Surface Contour Map**  
**April 2016**  
 Rapides Parish, Louisiana



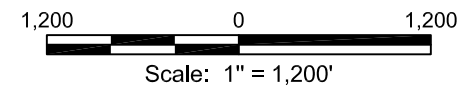
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Approved:	JM
Date:	2/22/17
Dwg. No.:	01-17-0169-A001

**Figure 3**



**Legend**

- ===== Railroad Tracks
- ⊕ CCR Background Well Location
- ◆ CCR Compliance Well Location
- ◊ Non-CCR Piezometer Location
- (74.10) Potentiometric Surface Elevation, Ft. NGVD
- [88.6] Surface Water Elevation, Ft. NGVD

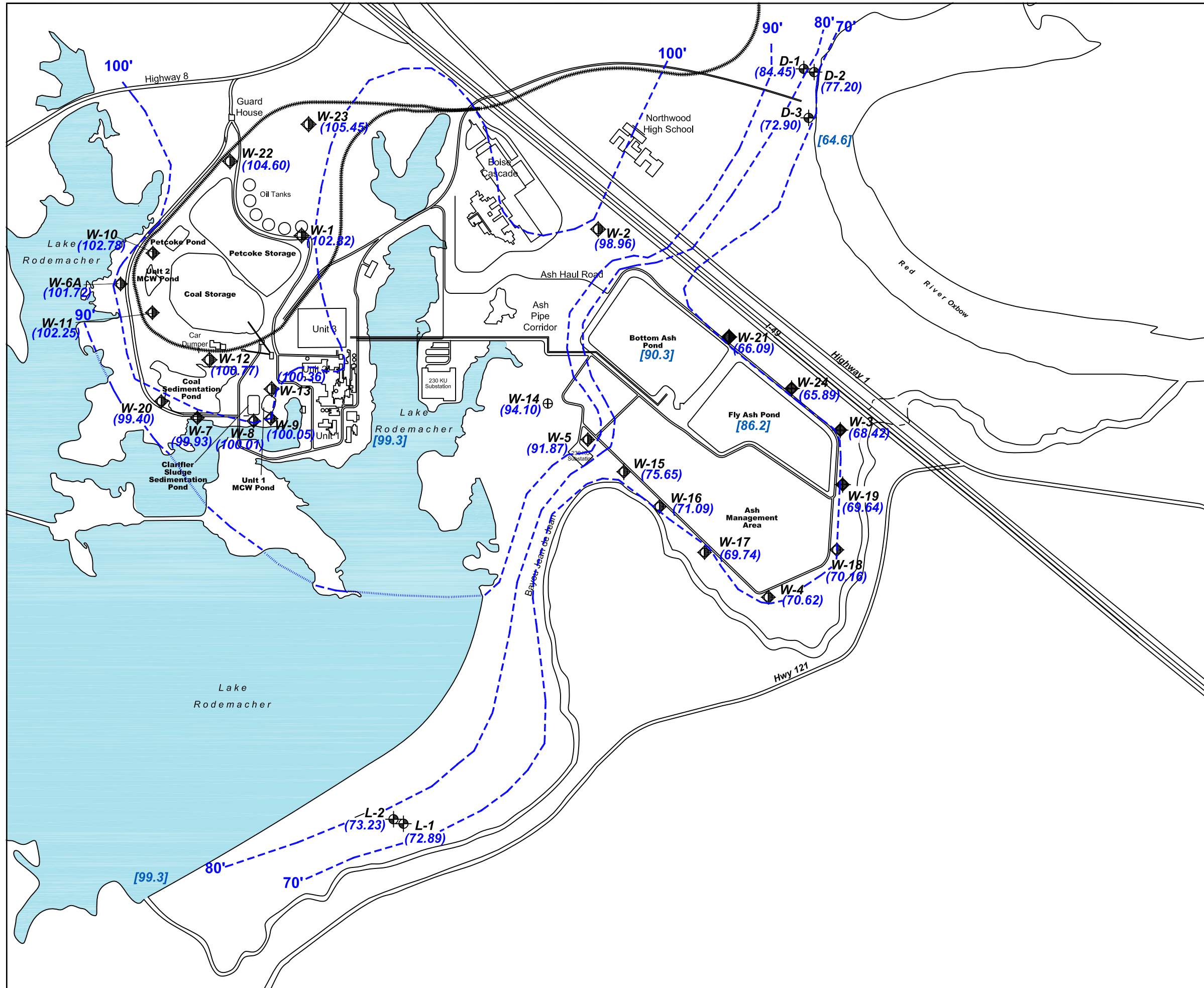


Brame Energy Center  
**CCR Rule Wells**  
**Potentiometric Surface Contour Map**  
**July 2016**  
 Rapides Parish, Louisiana



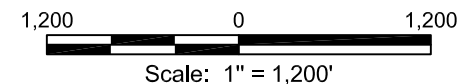
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Approved:	RS
Date:	2/22/17
Dwg. No.:	01-17-0169-A002

**Figure 4**



### Legend

- +++++ Railroad Tracks
- CCR Background Well Location
- CCR Compliance Well Location
- Non-CCR Piezometer Location
- (70.62)** Potentiometric Surface Elevation, Ft. NGVD
- 70'** Potentiometric Surface Elevation Contour, Ft. NGVD
- - - - -** Inferred Potentiometric Surface Contour, Ft. NGVD
- [90.3]** Surface Water Elevation, ft. NGVD

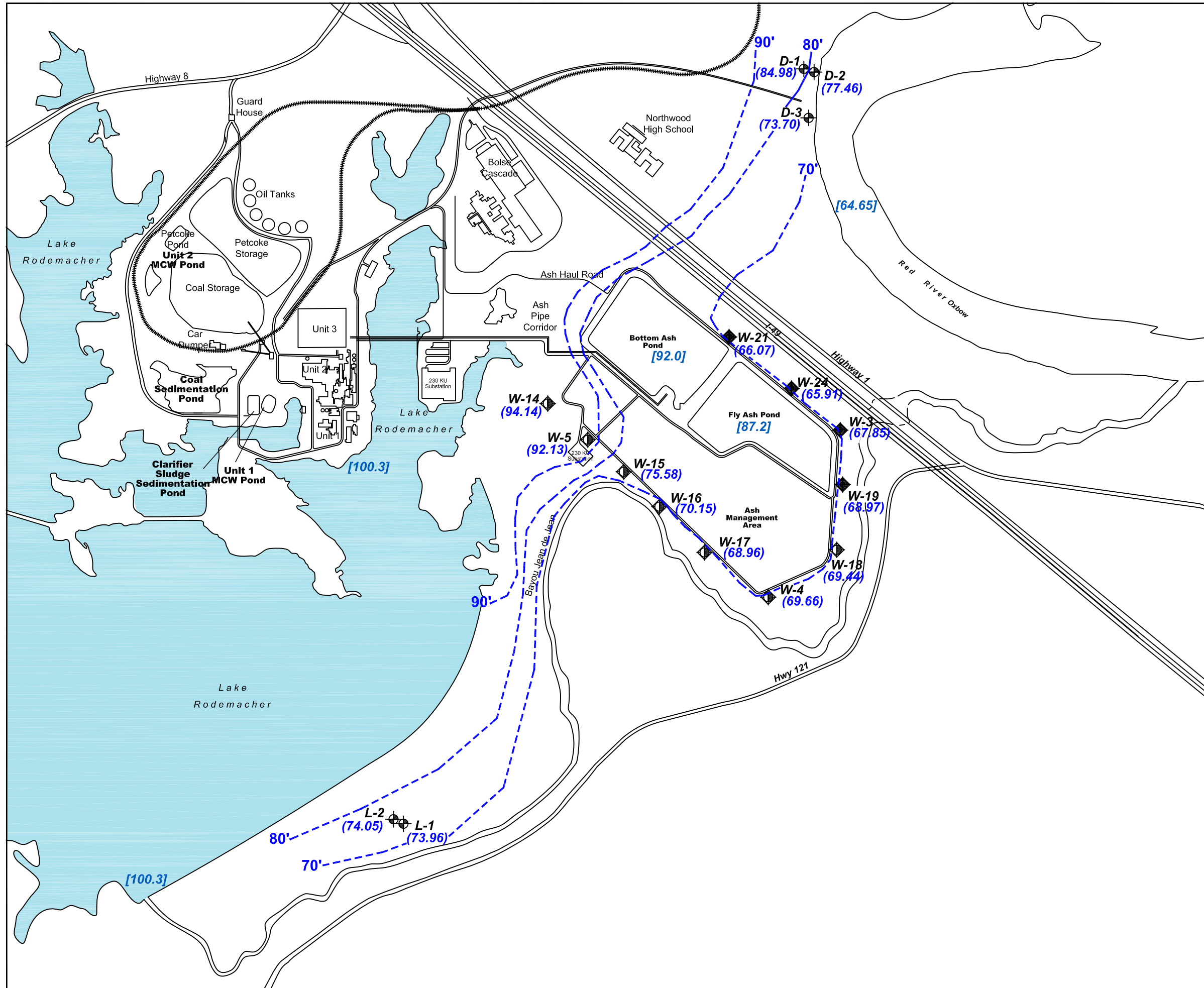


Brame Energy Center  
**Cleco Brame**  
**Potentiometric Surface Contour Map**  
**October 2016**  
 Rapides Parish, Louisiana



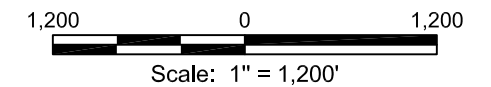
Drawn:	JP
Checked:	RB
Approved:	JM
Date:	2/22/17
Dwg. No.:	01-17-0169-A003

**Figure 5**



### Legend

- ⋯⋯⋯⋯⋯⋯ Railroad Tracks
- ⊕ CCR Background Well Location
- ◆ CCR Compliance Well Location
- ◊ Non-CCR Piezometer Location
- (68.97) Potentiometric Surface Elevation, Ft. NGVD
- 70'— Potentiometric Surface Elevation Contour, Ft. NGVD
- - - - - Inferred Potentiometric Surface Contour, Ft. NGVD
- [92.0] Surface Water Elevation ft. NGVD



Brame Energy Center

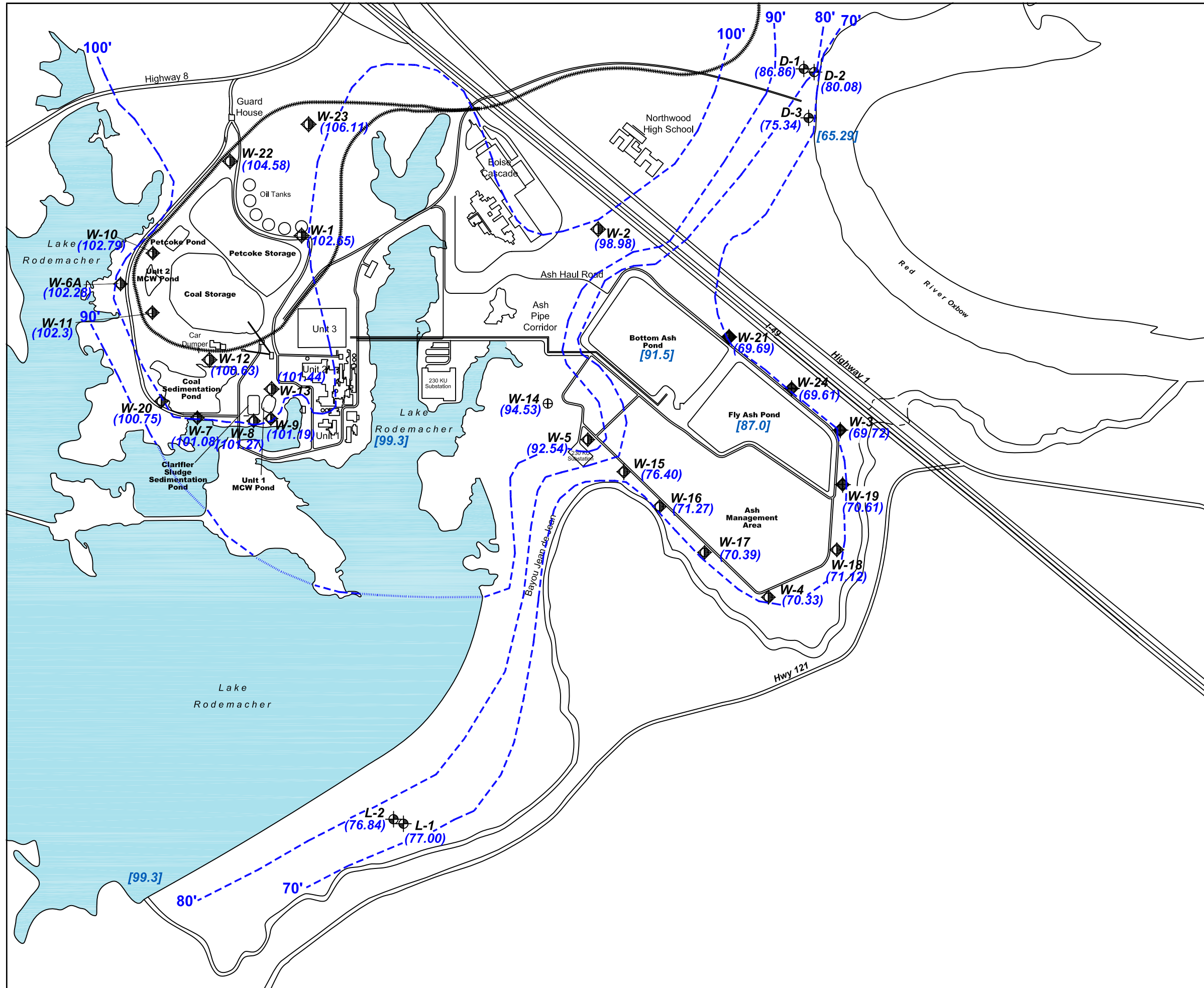
### CCR Rule Wells Potentiometric Surface Contour Map December 2016

Rapides Parish, Louisiana



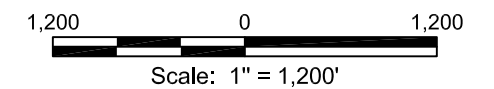
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Checked:	RB
Approved:	JM
Date:	3/1/17
Dwg. No.:	01-17-0169-A004

Figure 6



### Legend

- +++++ Railroad Tracks
- CCR Background Well Location
- CCR Compliance Well Location
- Non-CCR Piezometer Location
- (70.33)** Potentiometric Surface Elevation, Ft. NGVD
- 70'** Potentiometric Surface Elevation Contour, Ft. NGVD
- - - - -** Inferred Potentiometric Surface Contour, Ft. NGVD
- [91.5]** Surface Water Elevation ft. NGVD



Brame Energy Center

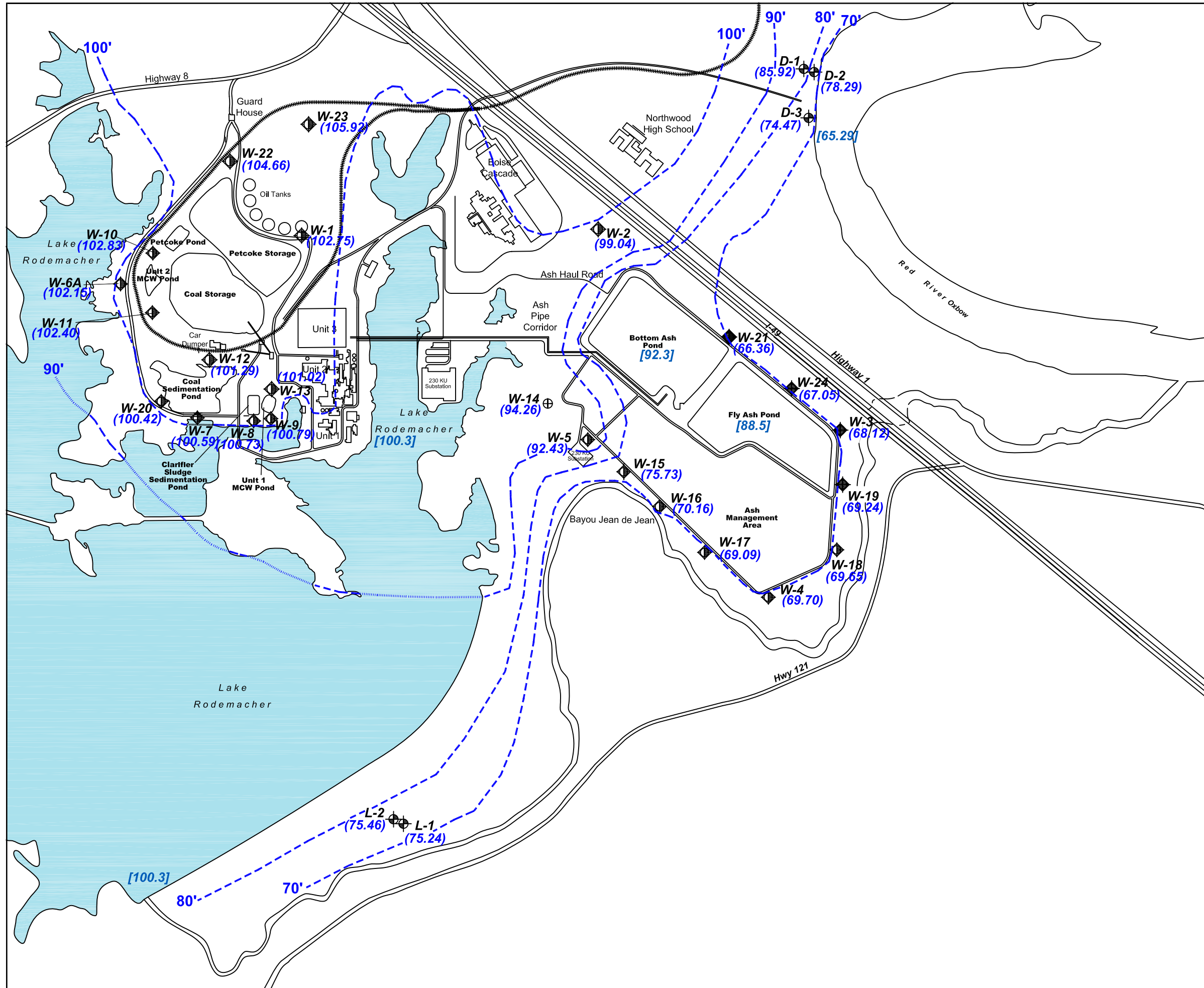
## Cleco Brame Potentiometric Surface Contour Map January 2017

Rapides Parish, Louisiana



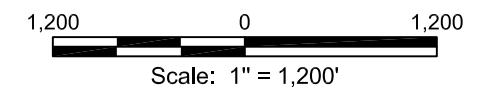
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Checked:	RB
Approved:	JM
Date:	2/22/17
Dwg. No.:	01-17-0169-A005

**Figure 7**



### Legend

- +++++ Railroad Tracks
- CCR Background Well Location
- CCR Compliance Well Location
- Non-CCR Piezometer Location
- (69.24)** Potentiometric Surface Elevation, Ft. NGVD
- 70'** Potentiometric Surface Elevation Contour, Ft. NGVD
- - - - -** Inferred Potentiometric Surface Contour, Ft. NGVD
- [65.29]** Surface Water Elevation ft. NGVD



Brame Energy Center

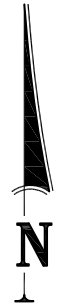
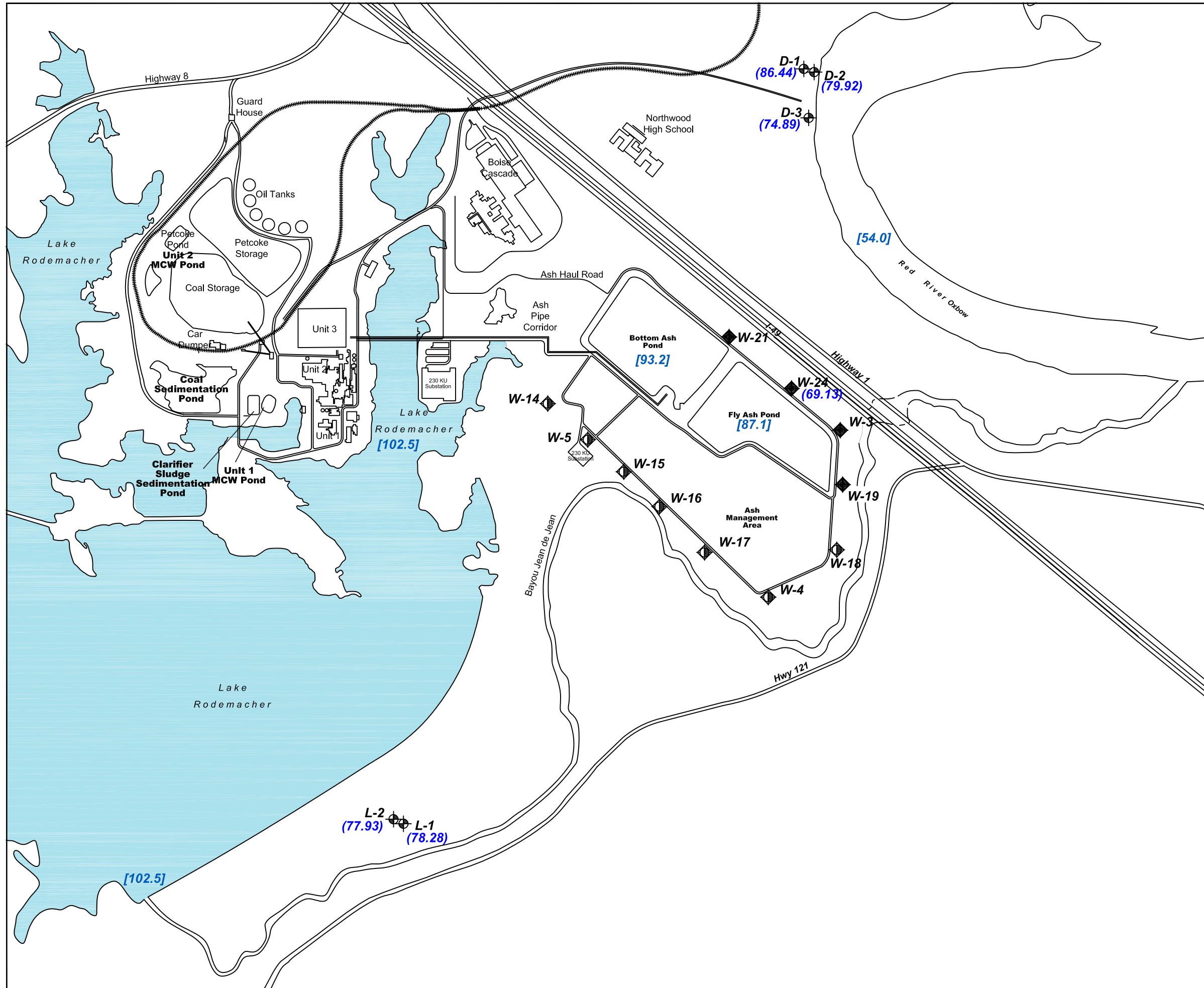
## Cleco Brame Potentiometric Surface Contour Map February 2017

Rapides Parish, Louisiana



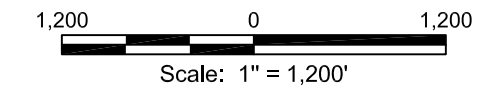
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Approved:	JM
Date:	3/23/17
Dwg. No.:	01-17-0169-A006

**Figure 8**



**Legend**

- ===== Railroad Tracks
- ⊕ CCR Background Well Location
- ◆ CCR Compliance Well Location
- ◊ Non-CCR Piezometer Location
- (69.13) Potentiometric Surface Elevation, Ft. NGVD
- [87.1] Surface Water Elevation, Ft. NGVD

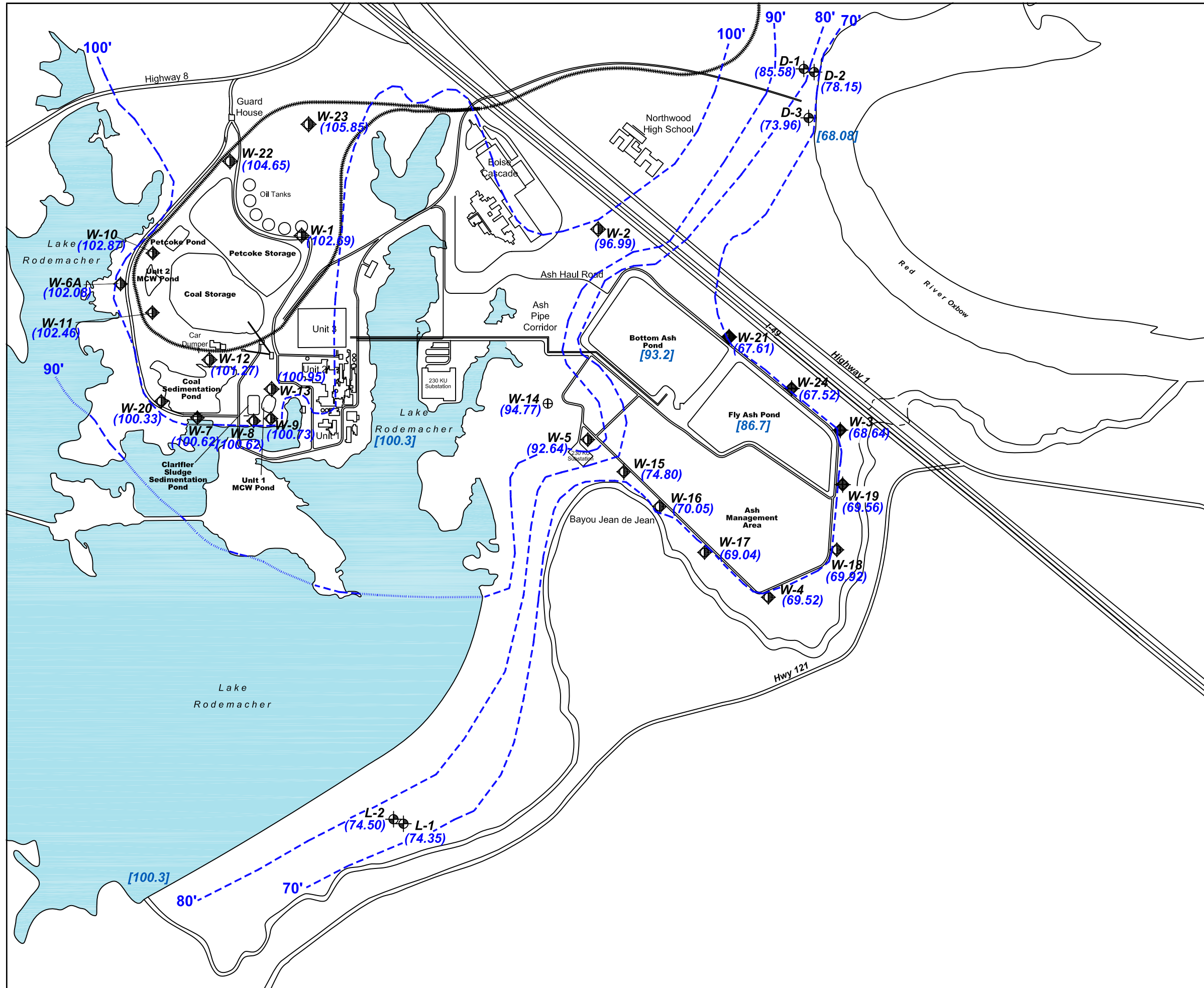


Brame Energy Center  
**CCR Rule Wells  
 Potentiometric Surface Contour Map**  
 April 2017  
 Rapides Parish, Louisiana



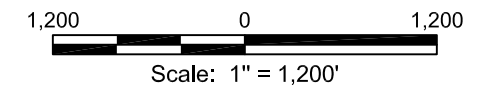
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Checked:	JM
Approved:	RS
Date:	5/9/17
Dwg. No.:	01-17-0169-A007

**Figure 9**



### Legend

- +++++ Railroad Tracks
- CCR Background Well Location
- CCR Compliance Well Location
- Non-CCR Piezometer Location
- (69.52) Potentiometric Surface Elevation, Ft. NGVD
- 70'— Potentiometric Surface Elevation Contour, Ft. NGVD
- - - - - Inferred Potentiometric Surface Contour, Ft. NGVD
- [68.08] Surface Water Elevation ft. NGVD



Brame Energy Center

## Cleco Brame Potentiometric Surface Contour Map May 2017

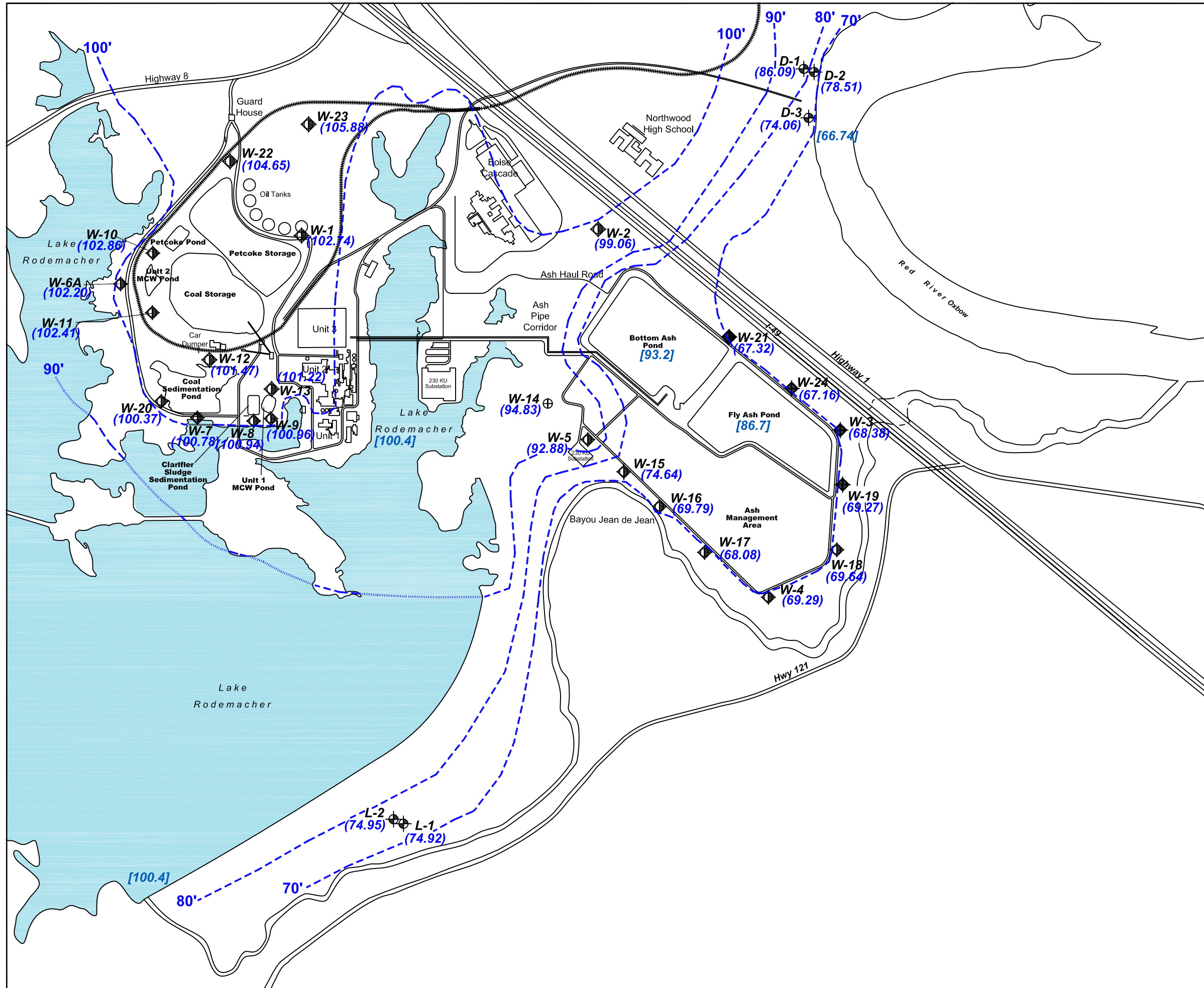
Rapides Parish, Louisiana



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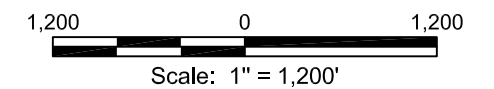
**Figure 10**





### Legend

- +++++ Railroad Tracks
- CCR Background Well Location
- CCR Compliance Well Location
- Non-CCR Piezometer Location
- (69.27) Potentiometric Surface Elevation, Ft. NGVD
- 70'— Potentiometric Surface Elevation Contour, Ft. NGVD
- - - - - Inferred Potentiometric Surface Contour, Ft. NGVD
- [66.74] Surface Water Elevation ft. NGVD



Brame Energy Center

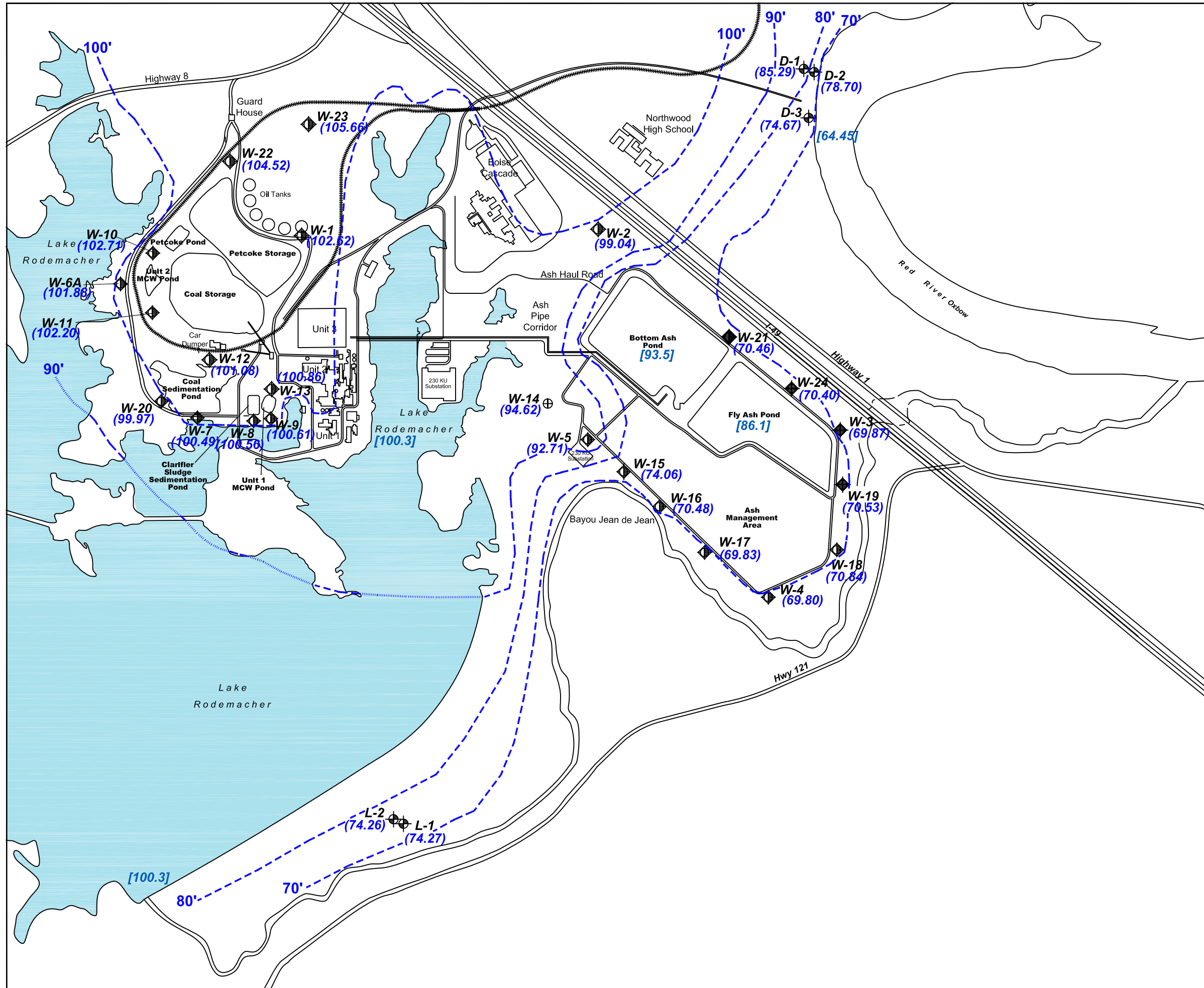
## Cleco Brame Potentiometric Surface Contour Map June 2017

Rapides Parish, Louisiana



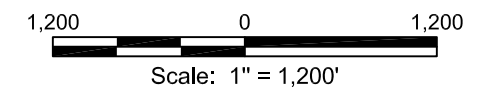
Drawn:	JP
Checked:	RS
Approved:	JM
Date:	7/5/17
Dwg. No.:	01-17-0169-A009

**Figure 11**



### Legend

- +++++ Railroad Tracks
- CCR Background Well Location
- CCR Compliance Well Location
- Non-CCR Piezometer Location
- (70.46) Potentiometric Surface Elevation, Ft. NGVD
- 70'— Potentiometric Surface Elevation Contour, Ft. NGVD
- - - - - Inferred Potentiometric Surface Contour, Ft. NGVD
- [64.45] Surface Water Elevation ft. NGVD



Brame Energy Center

## Cleco Brame Potentiometric Surface Contour Map August 2017

Rapides Parish, Louisiana



Drawn:	JP
Checked:	RS
Approved:	JM
Date:	8/30/17
Dwg. No.:	01-17-0169-A010

**Figure 12**



Table 1  
Monitoring Well Information

Cleco Brame Energy Center  
Bottom Ash and Fly Ash Ponds

Well Number	D-1	D-2	D-3	L-1	L-2
Background (B) or Compliance (C)	B	B	B	B	B
Latitude (dd°mm'ss")	31°24'23.84"	31°24'23.41"	31°24'17.52"	31°22'47.68"	31°22'48.17"
Longitude (dd°mm'ss")	92°41'53.62"	92°41'52.12"	92°41'52.95"	92°42'53.61"	92°42'55.01"
Casing Elevation (ft NGVD)	99.38	99.36	97.37	86.15	86.68
Concrete Pad Elevation (ft NGVD)	96.59	97.10	94.50	83.05	83.73
Well Depth (ft bgs)	40	46	35.5	36	40
Screen Length (ft)	10	10	10	10	10
Top of Screen (ft NGVD)	67.2	61.7	69.3	58.8	54.6
Bottom of Screen (ft NGVD)	57.2	51.7	59.3	48.8	44.6
Screen Slot Size (inches)	0.010	0.010	0.010	0.010	0.010
Casing Diameter (inches) & Material	2" PVC	2" PVC	2" PVC	2" PVC	2" PVC

Well Number	W-3	W-19	W-21	W-24
Background (B) or Compliance (C)	C	C	C	C
Latitude (dd°mm'ss")	31°23'37.79"	31°23'30.48"	31°23'49.57"	31°23'43.05"
Longitude (dd°mm'ss")	92°41'48.33"	92°41'50.26"	92°42'05.00"	92°41'55.61"
Casing Elevation (ft NGVD)	92.07	94.99	87.86	83.71
Concrete Pad Elevation (ft NGVD)	88.87	92.47	85.23	81.03
Well Depth (ft bgs)	77	55	54.5	55
Screen Length (ft)	10	10	10	10
Top of Screen (ft NGVD)	25.7	48.0	41.2	38.4
Bottom of Screen (ft NGVD)	15.7	38.0	31.2	28.4
Screen Slot Size (inches)	0.010	0.010	0.010	0.010
Casing Diameter (inches) & Material	2" PVC	2" PVC	2" PVC	2" PVC

Notes:

bgs = below ground surface

PVC = polyvinyl chloride



Table 2  
April 2016 Analytical Data Summary

Cleco Brame Energy Center  
Bottom Ash and Fly Ash Ponds

Parameter/Well/ Date	MCL	W-3	W-19	W-21
		4/29/16	4/29/16	4/29/16
<i>Detection Monitoring Parameters</i>				
Boron (mg/l)	NA	0.075	0.18	0.063
Calcium (mg/l)	NA	25	126	22.8
Chloride (mg/l)	NA	45	43.8	8.7
Fluoride (mg/l)	4	<0.5	<0.5	<0.5
pH (S.U.)	NA	7.01	7.07	7
Sulfate (mg/l)	NA	9.6	14.5	32.9
TDS (mg/l)	NA	245	695	215
<i>Assessment Monitoring Parameters</i>				
Antimony (mg/l)	0.006	0.0026	0.0044	<0.001
Arsenic (mg/l)	0.01	0.0034	0.022	0.0031
Barium (mg/l)	2	0.23	0.66	0.094
Beryllium (mg/l)	0.004	<0.001	<0.001	<0.001
Cadmium (mg/l)	0.005	<0.001	<0.001	<0.001
Chromium (mg/l)	0.1	0.0017	0.0013	<0.001
Cobalt (mg/l)	NA	<0.001	<0.001	<0.001
Lead (mg/l)	0.015	0.0021	0.0026	0.0011
Lithium (mg/l)	NA	0.0056	0.008	0.0037
Mercury (mg/l)	0.002	<0.0002	<0.0002	<0.0002
Molybdenum (mg/l)	NA	<0.003	<0.003	<0.003
Selenium (mg/l)	0.05	<0.001	<0.001	<0.001
Thallium (mg/l)	0.002	<0.0005	<0.0005	<0.0005
Radium-226 (pCi/l)	5	0.719	0.177	0.217
Radium-228 (pCi/l)	5	0.785	0.74	0.434

Notes:

mg/l = milligrams per liter

S.U. = standard units

pCi/l = picocuries per liter



Table 3  
July 2016 Analytical Data Summary

Cleco Brame Energy Center  
Bottom Ash and Fly Ash Ponds

Parameter/Well/ Date	MCL	D-1 (BG)	D-2 (BG)	D-3 (BG)	L-1 (BG)	L-2 (BG)	W-3	W-19	W-21	W-24
		7/6/16	7/6/16	7/6/16	7/6/16	7/6/16	7/6/16	7/6/16	7/6/16	7/6/16
<b>Detection Monitoring Parameters</b>										
Boron (mg/l)	NA	0.12	0.14	0.28	0.12	0.087	0.14	0.19	0.093	0.21
Calcium (mg/l)	NA	16.8	99.3	95.2	120	80.4	54.1	122	37.2	111
Chloride (mg/l)	NA	20.2	12.4	13.3	10.7	6.7	109	48	13	120
Fluoride (mg/l)	4	0.28	0.63	0.52	0.25	0.4	0.2	0.31	0.19	0.5
pH (S.U.)	NA	8.33	7.92	7.92	8.04	8.07	7.44	7.45	7.82	7.91
Sulfate (mg/l)	NA	11.9	71.9	46	21.5	25.4	3.9	2.3	49.4	3.3
TDS (mg/l)	NA	260	585	705	425	355	565	695	435	880
<b>Assessment Monitoring Parameters</b>										
Antimony (mg/l)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0014	<0.001
Arsenic (mg/l)	0.01	0.0031	0.009	0.0022	0.0025	0.029	0.001	0.0045	0.0045	0.0049
Barium (mg/l)	2	0.15	0.25	0.21	0.4	0.2	0.38	0.45	0.13	0.56
Beryllium (mg/l)	0.004	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Cadmium (mg/l)	0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Chromium (mg/l)	0.1	0.0025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0037	<0.001
Cobalt (mg/l)	NA	0.0057	0.0025	0.0021	0.0021	<0.001	<0.001	<0.001	0.0014	0.0012
Lead (mg/l)	0.015	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
Lithium (mg/l)	NA	0.012	0.016	0.023	0.013	0.0049	0.012	0.0082	0.007	0.0087
Mercury (mg/l)	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (mg/l)	NA	0.0081	0.0045	0.0045	0.0039	0.0034	<0.003	<0.003	<0.003	0.01
Selenium (mg/l)	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Thallium (mg/l)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Radium-226 (pCi/l)	5	0.258	-0.351	0.132	0.166	0.283	0.554	0.218	0.506	0.998
Radium-228 (pCi/l)	5	0.758	0.977	1.36	0.62	1.16	0.812	0.662	0.404	1.28

Notes:

mg/l = milligrams per liter

S.U. = standard units

pCi/l = picocuries per liter



Table 4  
October 2016 Analytical Data Summary

Cleco Brame Energy Center  
Bottom Ash and Fly Ash Ponds

Parameter/Well/ Date	MCL	D-1 (BG)	D-2 (BG)	D-3 (BG)	L-1 (BG)	L-2 (BG)	W-3	W-19	W-21	W-24
		10/27/16	10/27/16	10/27/16	10/25/16	10/25/16	10/25/16	10/25/16	10/25/16	10/25/16
<b>Detection Monitoring Parameters</b>										
Boron (mg/l)	NA	0.057	0.13	0.27	0.11	0.085	0.16	0.18	0.24	0.14
Calcium (mg/l)	NA	8.6	92.2	87.6	107	65.7	62	96.4	81.8	13.7
Chloride (mg/l)	NA	13.9	8.8	11.5	9.4	5.9	178	53.6	43	65.9
Fluoride (mg/l)	4	<0.5	<0.5	0.52	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
pH (S.U.)	NA	6.7	7.4	7.1	7	7.2	6.9	7.1	6.9	7.3
Sulfate (mg/l)	NA	11.6	73.7	45.5	15.4	30.3	<1.0	<1.0	177	1.8
TDS (mg/l)	NA	150	600	745	475	370	700	640	920	440
<b>Assessment Monitoring Parameters</b>										
Antimony (mg/l)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0021	0.0014
Arsenic (mg/l)	0.01	0.0021	0.012	0.0047	0.0053	0.052	0.0026	0.0016	0.0067	0.0026
Barium (mg/l)	2	0.12	0.29	0.27	0.43	0.15	0.52	0.42	0.14	0.061
Beryllium (mg/l)	0.004	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Cadmium (mg/l)	0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Chromium (mg/l)	0.1	<0.001	<0.001	0.011	<0.001	0.0011	<0.001	<0.001	<0.001	0.0013
Cobalt (mg/l)	NA	0.0077	0.0021	0.0074	0.0016	<0.001	<0.001	<0.001	0.0015	<0.001
Lead (mg/l)	0.015	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
Lithium (mg/l)	NA	0.0079	0.015	0.038	0.011	0.0061	0.014	0.0084	0.013	0.022
Mercury (mg/l)	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (mg/l)	NA	0.0031	<0.003	0.0031	0.0037	0.01	<0.003	<0.003	<0.003	0.056
Selenium (mg/l)	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Thallium (mg/l)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Radium-226 (pCi/l)	5	0.592	0.188	0.291	0.3	0.314	0.428	0.235	0	0.2
Radium-228 (pCi/l)	5	1.05	1.25	0.176	0.971	0.211	0.784	0.96	1.44	0.422

**Notes:**

mg/l = milligrams per liter

S.U. = standard units

pCi/l = picocuries per liter



Table 5  
December 2016 Analytical Data Summary

Cleco Brame Energy Center  
Bottom Ash and Fly Ash Ponds

Parameter/Well/ Date	MCL	D-1 (BG)	D-2 (BG)	D-3 (BG)	L-1 (BG)	L-2 (BG)	W-3	W-19	W-21	W-24
		12/20/16	12/20/16	12/20/16	12/19/16	12/19/16	12/19/16	12/19/16	12/19/16	12/19/16
<b>Detection Monitoring Parameters</b>										
Boron (mg/l)	NA	0.053	0.12	0.3	0.12	0.1	0.16	0.18	0.35	0.19
Calcium (mg/l)	NA	5.9	91.8	90.3	119	79.2	64.4	111	121	127
Chloride (mg/l)	NA	13.5	9.5	13.1	8.6	6.1	174	59.4	52.9	156
Fluoride (mg/l)	4	0.13	0.42	0.48	0.15	0.44	<0.50	0.26	0.68	0.46
pH (S.U.)	NA	6.8	7.04	7.25	7.44	7.46	6.74	7	7	6.9
Sulfate (mg/l)	NA	10.4	75.2	49.2	9	29.4	<1	<1	163	1.8
TDS (mg/l)	NA	145	715	805	360	400	695	705	1230	1100
<b>Assessment Monitoring Parameters</b>										
Antimony (mg/l)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001
Arsenic (mg/l)	0.01	<0.001	0.011	0.0069	0.0067	0.047	0.0028	0.0058	0.015	0.027
Barium (mg/l)	2	0.15	0.4	0.2	0.57	0.34	0.57	0.65	0.13	1.4
Beryllium (mg/l)	0.004	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	0.0046
Cadmium (mg/l)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (mg/l)	0.1	<0.001	0.0076	0.0048	0.0073	0.015	<0.001	0.008	<0.001	0.058
Cobalt (mg/l)	NA	0.0069	0.0073	0.0035	0.0049	0.01	<0.001	0.0036	0.0017	0.021
Lead (mg/l)	0.015	<0.001	0.0056	0.003	0.0053	0.013	<0.001	0.0096	<0.001	0.081
Lithium (mg/l)	NA	0.0082	0.015	0.025	0.022	0.025	0.014	0.014	0.017	0.056
Mercury (mg/l)	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (mg/l)	NA	<0.003	<0.003	0.0031	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Selenium (mg/l)	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0015
Thallium (mg/l)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Radium-226 (pCi/l)	5	0.0769	0.637	0.482	-0.073	0.365	0.159	1.12	0.75	3.28
Radium-228 (pCi/l)	5	0.823	1.39	0.605	0.997	1.08	0.645	0.427	0.43	3.56

**Notes:**

mg/l = milligrams per liter

S.U. = standard units

pCi/l = picocuries per liter



Table 6  
January 2017 Analytical Data Summary

Cleco Brame Energy Center  
Bottom Ash and Fly Ash Ponds

Parameter/Well/ Date	MCL	D-1 (BG)	D-2 (BG)	D-3 (BG)	L-1 (BG)	L-2 (BG)	W-3	W-19	W-21	W-24
		1/25/17	1/25/17	1/25/17	1/24/17	1/24/17	1/24/17	1/24/17	1/24/17	1/24/17
<b>Detection Monitoring Parameters</b>										
Boron (mg/l)	NA	0.053	0.11	0.29	0.11	0.11	0.17	0.19	0.36	0.2
Calcium (mg/l)	NA	6.6	95.3	86.2	109	82.7	64.5	103	112	107
Chloride (mg/l)	NA	13.5	8.1	11.8	8.3	5.9	151	54.2	52.2	131
Fluoride (mg/l)	4	<0.1	0.48	0.52	0.27	0.53	0.35	0.31	0.67	1.4
pH (s.u.)	NA	7.05	7.08	7.35	7.18	7.19	6.64	7	7.07	6.97
Sulfate (mg/l)	NA	9.8	86.4	48.3	7.9	28.9	<1	<1	168	1.1
TDS (mg/l)	NA	165	595	805	500	445	710	675	1,220	1,060
<b>Assessment Monitoring Parameters</b>										
Antimony (mg/l)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic (mg/l)	0.01	0.0023	0.014	0.005	0.0079	0.051	0.0033	0.0025	0.016	0.011
Barium (mg/l)	2	0.13	0.34	0.2	0.51	0.39	0.61	0.46	0.14	0.87
Beryllium (mg/l)	0.004	<0.001	<0.001	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	<0.001
Cadmium (mg/l)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (mg/l)	0.1	<0.001	0.0023	0.0083	<0.001	0.016	<0.001	0.0026	<0.001	0.0083
Cobalt (mg/l)	NA	0.0042	0.0034	0.004	0.0015	0.0092	<0.001	<0.001	0.0017	0.0038
Lead (mg/l)	0.015	<0.001	<0.001	0.0037	<0.001	0.013	<0.001	<0.001	<0.001	0.0085
Lithium (mg/l)	NA	0.0072	0.012	0.029	0.012	0.028	0.014	0.0071	0.018	0.014
Mercury (mg/l)	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (mg/l)	NA	<0.003	<0.003	0.0035	0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Selenium (mg/l)	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Thallium (mg/l)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Radium-226 (pCi/l)	5	0.256	0.27	0.6	0	0.777	0.583	0.382	0.571	0.926
Radium-228 (pCi/l)	5	0.668	0.504	2.31	2.36	3.24	2.23	0.396	0.239	2.94

Notes:

mg/l = milligrams per liter

S.U. = standard units

pCi/l = picocuries per liter





Table 7  
February 2017 Analytical Data Summary

Cleco Brame Energy Center  
Bottom Ash and Fly Ash Ponds

Parameter/Well/ Date	MCL	D-1 (BG)	D-2 (BG)	D-3 (BG)	L-1 (BG)	L-2 (BG)	W-3	W-19	W-21	W-24
		2/17/17	2/17/17	2/17/17	2/16/17	2/16/17	2/16/17	2/16/17	2/16/17	2/16/17
<b>Detection Monitoring Parameters</b>										
Boron (mg/l)	NA	0.052	0.12	0.3	0.12	0.093	0.18	0.19	0.38	0.18
Calcium (mg/l)	NA	6.2	103	91.2	150	126	66.6	102	146	158
Chloride (mg/l)	NA	13.3	8.6	11.4	7.7	6.3	149	54.4	51.2	139
Fluoride (mg/l)	4	<0.10	0.43	0.48	0.21	0.37	0.25	0.28	0.61	0.45
pH (s.u.)	NA	6.68	7	7.33	7.15	7.18	6.72	7	7.1	7.08
Sulfate (mg/l)	NA	9.8	80.7	47.2	9.3	35.9	<1	<1	162	6.3
TDS (mg/l)	NA	130	530	665	500	490	700	620	1,240	1,040
<b>Assessment Monitoring Parameters</b>										
Antimony (mg/l)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic (mg/l)	0.01	<0.001	0.013	0.0033	0.0073	0.036	0.0033	0.0021	0.015	0.036
Barium (mg/l)	2	0.12	0.34	0.19	0.63	0.33	0.59	0.44	0.13	2.7
Beryllium (mg/l)	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.012
Cadmium (mg/l)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (mg/l)	0.1	<0.001	0.0013	0.0082	0.011	0.0092	<0.001	<0.001	<0.001	0.09
Cobalt (mg/l)	NA	0.0046	0.0033	0.0044	0.008	0.0074	<0.001	<0.001	0.0017	0.045
Lead (mg/l)	0.015	<0.001	<0.001	0.0049	0.0089	0.0081	<0.001	<0.001	<0.001	0.16
Lithium (mg/l)	NA	0.0077	0.0098	0.032	0.028	0.019	0.014	0.0068	0.018	0.086
Mercury (mg/l)	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002
Molybdenum (mg/l)	NA	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Selenium (mg/l)	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0025
Thallium (mg/l)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00058
Radium-226 (pCi/l)	5	0.611	0.759	-0.511	1.21	0.346	0.733	0.347	4	-0.212
Radium-228 (pCi/l)	5	-0.14	0.907	1.59	0.832	1.04	0.765	0.644	0.391	6.65

**Notes:**

mg/l = milligrams per liter

S.U. = standard units

pCi/l = picocuries per liter



Table 8  
April 2017 Analytical Data Summary

Cleco Brame Energy Center  
Bottom Ash and Fly Ash Ponds

Parameter/Well/ Date	MCL	D-1 (BG)	D-2 (BG)	D-3 (BG)	L-1 (BG)	L-2 (BG)	W-24
		4/6/17	4/6/17	4/6/17	4/6/17	4/6/17	4/6/17
<b>Detection Monitoring Parameters</b>							
Boron (mg/l)	NA	0.051	0.12	0.31	0.12	0.098	0.2
Calcium (mg/l)	NA	5.8	111	88.2	121	83.3	129
Chloride (mg/l)	NA	13	6.6	12.7	6.9	5.9	155
Fluoride (mg/l)	4	<0.1	0.52	0.46	0.2	0.45	0.54
pH (S.U.)	NA	5.48	6.08	5.76	6.4	6.37	6.01
Sulfate (mg/l)	NA	10.7	102	53.8	10.6	33.3	1.2
TDS (mg/l)	NA	80	645	740	510	405	610
<b>Assessment Monitoring Parameters</b>							
Antimony (mg/l)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic (mg/l)	0.01	<0.001	0.014	0.0081	0.01	0.062	0.019
Barium (mg/l)	2	0.12	0.32	0.19	0.56	0.23	1.5
Beryllium (mg/l)	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	0.0042
Cadmium (mg/l)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (mg/l)	0.1	<0.001	<0.001	0.006	0.0083	0.0034	0.057
Cobalt (mg/l)	NA	0.0051	0.0022	0.0039	0.0052	0.002	0.019
Lead (mg/l)	0.015	<0.001	<0.001	0.0052	0.0049	0.0023	0.073
Lithium (mg/l)	NA	0.0082	0.014	0.026	0.021	0.0087	0.052
Mercury (mg/l)	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (mg/l)	NA	<0.003	<0.003	<0.003	0.0042	0.0034	<0.003
Selenium (mg/l)	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	0.0025
Thallium (mg/l)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Radium-226 (pCi/l)	5	0.342	0.678	0.533	0.572	0.775	2.44
Radium-228 (pCi/l)	5	0.199	0.684	0.314	0.974	0.482	2.86

**Notes:**

mg/l = milligrams per liter

S.U. = standard units

pCi/l = picocuries per liter



Table 9  
May 2017 Analytical Data Summary

Cleco Brame Energy Center  
Bottom Ash and Fly Ash Ponds

Parameter/Well/ Date	MCL	D-1 (BG)	D-2 (BG)	D-3 (BG)	L-1 (BG)	L-2 (BG)	W-3	W-19	W-21	W-24
		5/31/17	5/31/17	5/31/17	5/30/17	5/30/17	5/31/17	5/31/17	5/31/17	5/31/17
<b>Detection Monitoring Parameters</b>										
Boron (mg/l)	NA	0.043	1.1	0.029	0.11	0.11	0.15	0.17	0.37	0.17
Calcium (mg/l)	NA	5.2	101	79.6	103	72.7	66.3	91.5	111	125
Chloride (mg/l)	NA	13.1	8.1	11.3	8.7	5.8	195	56.2	54.8	166
Fluoride (mg/l)	4	0.93	0.43	0.53	0.29	0.52	0.33	0.32	0.79	0.47
pH (S.U.)	NA	6.33	6.74	6.8	5.87	6.22	6.52	6.62	6.86	6.67
Sulfate (mg/l)	NA	10.3	97.8	46.6	15.6	30.8	<1	<1	171	<1
TDS (mg/l)	NA	125	595	780	445	380	715	600	1,200	1,220
<b>Assessment Monitoring Parameters</b>										
Antimony (mg/l)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic (mg/l)	0.01	0.0012	0.011	0.0025	0.0067	0.045	0.0018	0.0015	0.014	0.0093
Barium (mg/l)	2	0.096	0.28	0.18	0.44	0.39	0.53	0.4	0.15	0.97
Beryllium (mg/l)	0.004	<0.001	<0.001	<0.001	<0.001	0.0017	<0.001	<0.001	<0.001	<0.001
Cadmium (mg/l)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (mg/l)	0.1	0.0015	<0.001	0.0091	0.0026	0.021	<0.001	<0.001	<0.001	0.0092
Cobalt (mg/l)	NA	0.0044	0.0017	0.0052	0.002	0.014	<0.001	<0.001	0.0018	0.0035
Lead (mg/l)	0.015	<0.001	0.0016	0.0058	0.0016	0.018	<0.001	<0.001	<0.001	0.0084
Lithium (mg/l)	NA	0.0089	0.015	0.036	0.014	0.039	0.016	0.0081	0.019	0.019
Mercury (mg/l)	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (mg/l)	NA	<0.003	<0.003	<0.003	0.005	<0.003	<0.003	<0.003	<0.003	0.0068
Selenium (mg/l)	0.05	<0.001	<0.001	<0.001	<0.001	0.0017	<0.001	<0.001	<0.001	<0.001
Thallium (mg/l)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Radium-226 (pCi/l)	5	0.0793	0.495	0.876	0.693	1.61	1.06	0.683	0.727	0.835
Radium-228 (pCi/l)	5	0.6	0.584	1.29	0.86	1.44	0.376	0.726	0.892	1.99

**Notes:**

mg/l = milligrams per liter

S.U. = standard units

pCi/l = picocuries per liter



Table 10  
June 2017 Analytical Data Summary

Cleco Brame Energy Center  
Bottom Ash and Fly Ash Ponds

Parameter/Well/ Date	MCL	D-1 (BG)	D-2 (BG)	D-3 (BG)	L-1 (BG)	L-2 (BG)	W-3	W-19	W-21	W-24
		6/28/17	6/28/17	6/28/17	6/27/17	6/27/17	6/28/17	6/27/17	6/28/17	6/27/17
<b>Detection Monitoring Parameters</b>										
Boron (mg/l)	NA	0.048	0.5	0.47	0.12	0.12	0.18	0.19	0.47	0.19
Calcium (mg/l)	NA	5.2	102	92.2	117	80.8	64.9	99.2	125	137
Chloride (mg/l)	NA	12.9	8.3	10.5	7	5.3	159	55.9	52.4	175
Fluoride (mg/l)	4	0.84	0.47	0.53	0.29	0.51	0.29	0.28	0.83	0.5
pH (S.U.)	NA	6.99	7.18	7.39	7.07	7.22	6.79	7.01	7.15	7.2
Sulfate (mg/l)	NA	10.5	80.5	46	5.5	29	<1	<1	167	<1
TDS (mg/l)	NA	125	585	805	535	375	675	620	1,280	1,360
<b>Assessment Monitoring Parameters</b>										
Antimony (mg/l)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic (mg/l)	0.01	<0.001	0.013	0.0029	0.0081	0.041	0.0029	0.0024	0.015	0.017
Barium (mg/l)	2	0.13	0.37	0.2	0.58	0.57	0.6	0.46	0.13	1.3
Beryllium (mg/l)	0.004	<0.001	<0.001	<0.001	<0.001	0.0025	<0.001	<0.001	<0.001	0.0013
Cadmium (mg/l)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (mg/l)	0.1	0.0016	0.0019	0.0081	0.011	0.032	<0.001	<0.001	<0.001	0.019
Cobalt (mg/l)	NA	0.004	0.0024	0.0044	0.0063	0.026	<0.001	<0.001	0.0017	0.0081
Lead (mg/l)	0.015	<0.001	<0.001	0.0054	0.0068	0.033	<0.001	<0.001	<0.001	0.023
Lithium (mg/l)	NA	0.0087	0.01	0.035	0.025	0.058	0.015	0.007	0.018	0.025
Mercury (mg/l)	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (mg/l)	NA	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Selenium (mg/l)	0.05	<0.001	<0.001	<0.001	<0.001	0.0027	<0.001	<0.001	<0.001	0.0014
Thallium (mg/l)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Radium-226 (pCi/l)	5	0.602	0.444	1.93	0.152	0.396	0.0622	0.777	0.37	1.47
Radium-228 (pCi/l)	5	0.962	1.19	1.88	1.13	2.95	1.57	1.05	0.892	1.78

**Notes:**

mg/l = milligrams per liter

S.U. = standard units

pCi/l = picocuries per liter



Table 11  
August 2017 Analytical Data Summary

Cleco Brame Energy Center  
Bottom Ash and Fly Ash Ponds

Parameter/Well/ Date	MCL	D-1 (BG)	D-2 (BG)	D-3 (BG)	L-1 (BG)	L-2 (BG)	W-3	W-19	W-21	W-24
		8/23/17	8/23/17	8/23/17	8/23/17	8/23/17	8/23/17	8/23/17	8/23/17	8/23/17
<b>Detection Monitoring Parameters</b>										
Boron (mg/l)	NA	0.046	0.11	0.27	0.11	0.095	0.17	0.18	0.35	0.19
Calcium (mg/l)	NA	6	106	88.3	115	66.4	64	96.7	113	115
Chloride (mg/l)	NA	13.6	7.6	10.9	7	5.2	156	60.7	54.5	130
Fluoride (mg/l)	4	<0.2	0.61	0.68	0.32	0.64	0.37	0.37	0.63	0.51
pH (S.U.)	NA	6.4	7.15	7.28	7.25	7.28	6.77	7.07	7.11	7.06
Sulfate (mg/l)	NA	11.1	95.3	49.1	5.7	27.9	1.2	<1	166	<1
TDS (mg/l)	NA	145	615	745	495	395	690	640	1,190	1,080
<b>Assessment Monitoring Parameters</b>										
Antimony (mg/l)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic (mg/l)	0.01	<0.001	0.009	0.0016	0.0074	0.057	0.0025	0.0013	0.01	0.0064
Barium (mg/l)	2	0.097	0.36	0.13	0.45	0.16	0.53	0.42	0.14	0.79
Beryllium (mg/l)	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium (mg/l)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (mg/l)	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (mg/l)	NA	0.0049	0.0019	<0.001	0.0012	<0.001	<0.001	<0.001	0.0024	<0.001
Lead (mg/l)	0.015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium (mg/l)	NA	0.0075	0.013	0.025	0.01	0.0051	0.014	0.0078	0.017	0.0083
Mercury (mg/l)	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum (mg/l)	NA	<0.003	<0.003	0.0039	<0.003	0.0044	<0.003	<0.003	<0.003	0.0036
Selenium (mg/l)	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Thallium (mg/l)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Radium-226 (pCi/l)	5	0.175	0.344	0.0679	0.159	0.182	0.53	0.571	0.317	0.886
Radium-228 (pCi/l)	5	0.559	0.695	0.627	0.565	0.747	1.65	0.502	0.285	0.905

**Notes:**

mg/l = milligrams per liter

S.U. = standard units

pCi/l = picocuries per liter