CLECO

DOLET HILLS POWER STATION
MANSFIELD, LOUISIANA

ASH BASINS MONITORING WELL NETWORK CERTIFICATION

MONITORING WELL NETWORK

1.0 Introduction

The U.S. Environmental Protection Agency (EPA) published a final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA). The rule applies to the Cleco Power LLC Dolet Hills Power Station (DHPS). A site location map is provided in Figure 1. DHPS has two permitted impoundments that accept CCR: Ash Basin No. 1 and Ash Basin No. 2, as shown in Figure 2.

The CCR Rule, 40 CFR Subpart D-Standards for the Disposal of CCRs, Section §257.91 requires a groundwater monitoring system that consists of sufficient number of wells at appropriate locations and depths based on site-specific technical information, to yield groundwater samples from the uppermost aquifer that:

- Accurately represent the quality of both background groundwater, and groundwater passing the boundary of the CCR unit; and
- Monitor potential contaminant pathways.

The groundwater monitoring system for the DHPS Ash Basins meets those requirements, as described below.

2.0 Site Hydrogeology Summary

Geologic evaluation of the near-surface stratigraphy underlying DHPS indicates the presence of four distinct permeable zones. These are referred to as Zone 1, Zone 2, Zone 3, and Zone 4 corresponding with descending depth at the site. Borehole geophysical logging at the site revealed distinctive characteristics for these zones in the subsurface. Correlation of these zones to the regional stratigraphic descriptions (Murray, 1948) suggests that Zone 1 correlates with the Dolet Hills formation, and Zones 2, 3, and 4 correlate with sandy units of the Naborton formation. Evaluation of the geophysical logs indicated distinctive marker beds that included these permeable zones as well as the Chemard Lake lignite lentil, minor lignite beds, and the less permeable deposits of the underlying Porters Creek formation. The Chemard Lake lignite was not present in the area of the solid waste surface impoundments.

The Paleocene Dolet Hills formation consists of very fine- to fine-grained, gray, relatively clean, massive quartz sands (Snider, 1982 and Murray, 1948). Locally some sands are fine- to medium-grained and have some clay and silt lenses. The Dolet Hills formation contains sands that range from 120 to 160 feet in thickness (Snider, 1982). The Dolet Hills formation is transitional with the underlying Naborton formation.

The Paleocene Naborton formation underlies the Dolet Hills sands in the study area. The Naborton formation consists chiefly of gray and buff sandy, clayey lignitic silts containing some lignitic clay and lignite beds (Page and Preé, 1964). The formation contains large limonitic and calcareous concretions. The thickness ranges between 140 to 170 feet and the average thickness is about 160 feet (Snider, 1982).

Underlying the Naborton formation is the Porters Creek formation. The Paleocene Porters Creek formation consists of lignitic and limey shales and clays with occasional calcareous concretions. The formation averages in thickness from 500 to 600 feet. The contact with the overlying Naborton formation is transitional from silty clays into sands and silts and is usually chosen below the least dominantly sandy unit in drill cuttings and on geophysical logs (Murray, 1948).

Murray, G.E., 1948. Geology of DeSoto and Red River Parishes, Geological Bulletin No. 25, Louisiana Geological Survey, Baton Rouge, Louisiana.

Page, L.V. and H.L. Preé, Jr., 1964. Water Resources of DeSoto Parish Louisiana, Geological Survey Water-Supply Paper 1774, United States Geological Survey, United States Government Printing Office, Washington D.C.

Snider, J.L., 1982. Premining Hydrology of the Lignite Area in Southeastern DeSoto Parish, Louisiana, Water Resources Technical Report No. 29, United States Geological Survey, Louisiana Department of Transportation and Development, Baton Rouge, Louisiana.

3.0 Groundwater Monitoring System

Groundwater monitoring wells have been installed in the uppermost, laterally continuous water bearing zone present beneath the CCR impoundments at DHPS (Zone 4). It should be noted that Zones 1, 2, and 3 are not present in these areas and have been eroded away. The background monitoring well network has been installed upgradient of the Ash Basins. Monitoring well information is included in Table 1, and the monitoring well locations are provided in Figure 2.

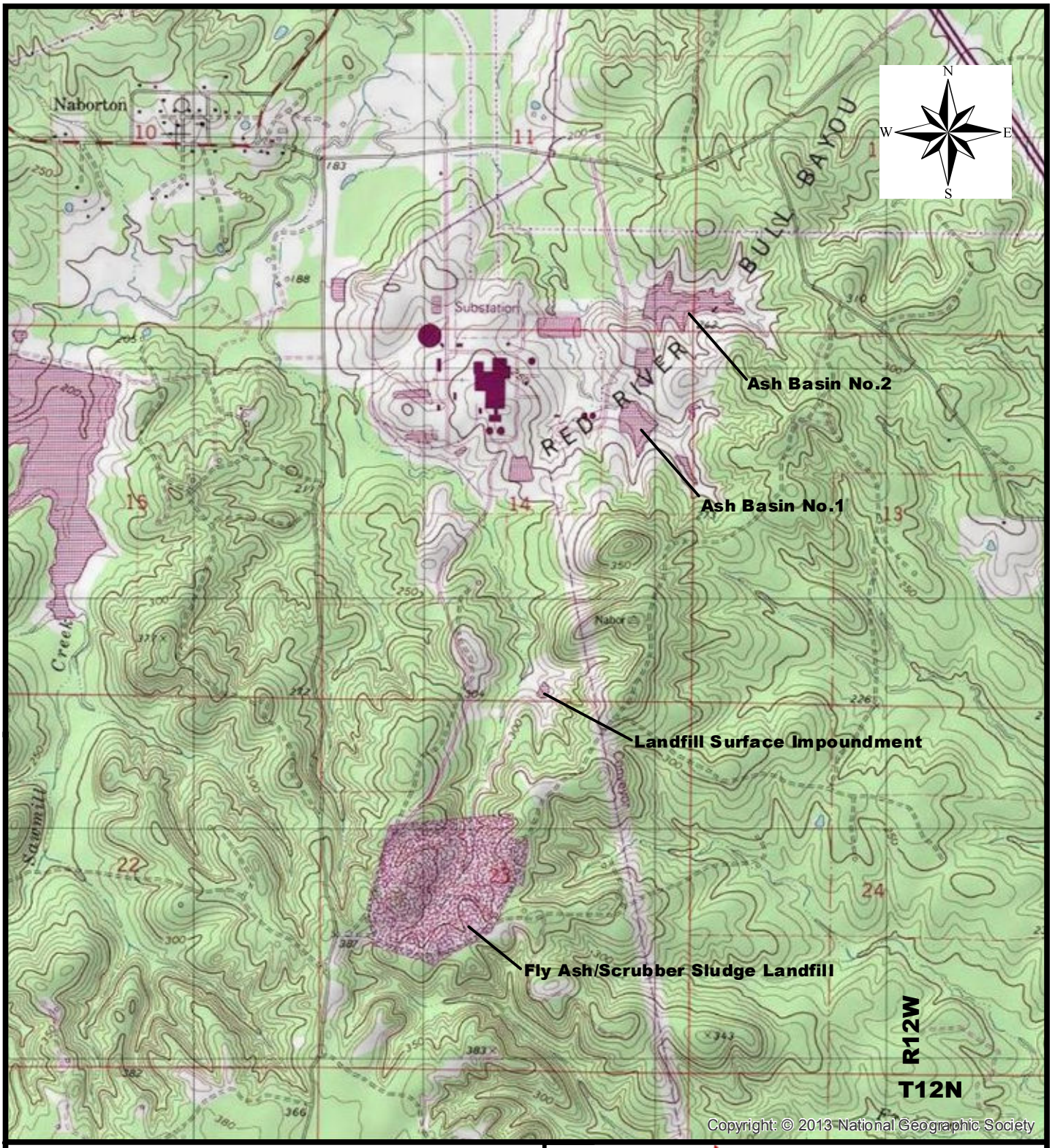
CERTIFICATION

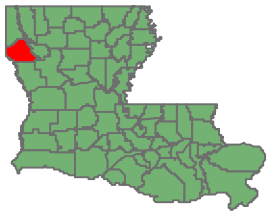
I hereby certify that the groundwater monitoring system described in this report for the Dolet Hills Power Station, owned and operated by Cleco Power, LLC, has been designed and constructed to meet the requirements of the Coal Combustion Residual Rule 40 CFR §257.91. I am a duly licensed Professional Engineer under the laws of the State of Louisiana.

_____, P.E.

Date: 3/7/17

Louisiana Registration No.: 27124





0 750 1,500 3,000 4,500 Feet

Note:

U.S.G.S. Quadrangle "Bayou Pierre Lake, LA" at scale 1:24,000

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Dolet Hills Power Station

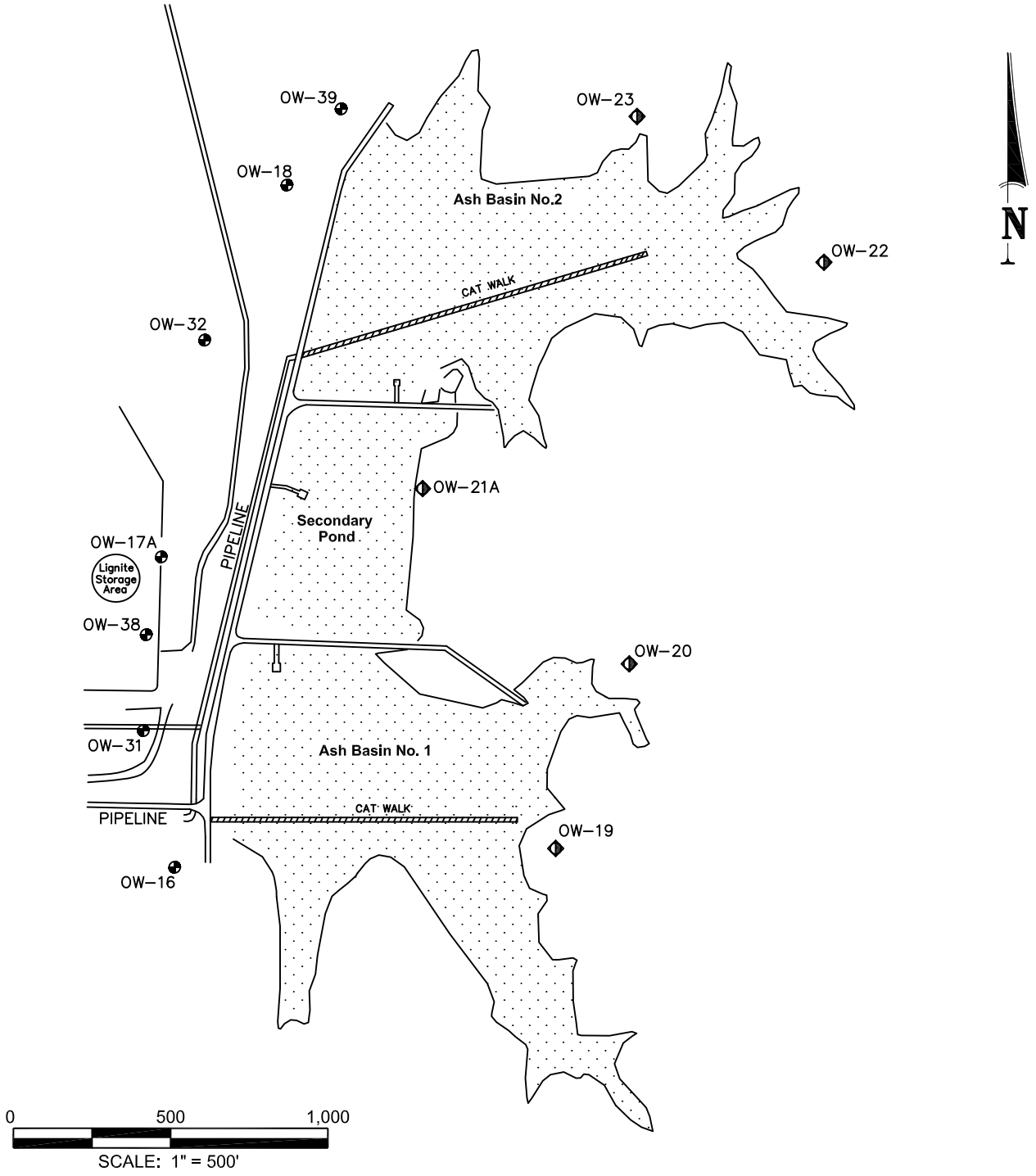
Site Location Map

DeSoto Parish, Louisiana

E·A·G·L·E ENVIRONMENTAL SERVICES, INC.

Drawn:	JP
Checked:	RS
Approved:	JM
Date:	3/23/17
Dwg. No.:	01-17-0168-C001

FIGURE 1



Legend

- OW–16 — Zone 4 Compliance Monitoring Well Location
- OW–23 — Zone 4 Background Monitoring Well Location
- Permitted Facility

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Dolet Hills Power Station

Zone 4 Monitoring Wells Location Map

DeSoto Parish, Louisiana

E·A·G·L·E ENVIRONMENTAL SERVICES, INC.

Drawn:	JP
Checked:	JM
Approved:	JM
Date:	10/4/16
Dwg. No.:	01-16-0159-A004

Figure 2

Table 1
Monitoring Well Information

Well Number	OW-16	OW-17A	OW-18	OW-19	OW-20	OW-21A
Up or Down Gradient	D	D	D	U	U	U
Latitude (dd°mm'ss")	32°03'26"	32°03'36"	32°03'47"	32°03'26"	32°01'52"	32°01'56"
Longitude (dd°mm'ss")	93°31'52"	93°31'53"	93°31'49"	93°31'52"	93°33'31"	93°33'41"
Casing Elevation (ft NGVD)	254.95	231.57	218.44	260.01	258.84	244.40
Well Depth (ft bgs)	41.95	45.32	31.51	34.12	31.8	31.9
Screen Length (ft)	10	10	10	10	10	10
Top of Screen (ft NGVD)	217.97	194.13	194.17	230.98	234.39	219.93
Bottom of Screen (ft NGVD)	207.97	184.13	184.17	220.98	224.39	209.93
Casing Diameter & Material	4" PVC	4" PVC	4" PVC	4" PVC	4" PVC	4" PVC

Well Number	OW-22	OW-23	OW-31	OW-32	OW-38	OW-39
Up or Down Gradient	U	U	D	D	D	D
Latitude (dd°mm'ss")	32°02'07"	32°02'10"	32°01'51"	32°02'05"	32°01'55"	32°02'10"
Longitude (dd°mm'ss")	93°33'22"	93°33'31"	93°33'51"	93°33'48"	93°33'50"	93°33'44"
Casing Elevation (ft NGVD)	256.98	255.55	221.71	237.65	221.60	228.96
Well Depth (ft bgs)	31.1	38.42	29.54	29.98	37.3	32.5
Screen Length (ft)	10	10	10	10	10	10
Top of Screen (ft NGVD)	234.19	224.57	199.11	214.7	192.36	203.69
Bottom of Screen (ft NGVD)	224.19	214.57	189.11	204.7	182.36	193.69
Casing Diameter & Material	4" PVC	4" PVC	2" PVC	2" PVC	2" PVC	2" PVC