Updated Statistical Method Certification [40 CFR §257.93(f)(6)]
Possum Point Power Station – Pond E
Dumfries, Virginia
April 17, 2019 (Updated August 2, 2019)

EPA's "*Disposal of Coal Combustion Residuals from Electric Utilities*" Final Rule, 40 CFR §257.93(f)(6), requires the owner or operator of a Coal Combustion Residuals (CCR) unit to obtain a certification from a qualified professional engineer stating that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR management area. The certification must include a narrative description of the statistical method selected to evaluate the groundwater monitoring data.

The following provides a description of the updated statistical methods selected to evaluate the groundwater monitoring data at Virginia Electric and Power Company's Possum Power Station Pond E.

Statistical Methods

The selected statistical methods for evaluating the groundwater monitoring data for the Possum Point Power Station (Pond E) were developed in accordance with 40 CFR §257.93(f) using methodologies presented in *Statistical Analysis of Groundwater Data at RCRA Facilities, Unified Guidance*, March 2009, EPA 530/R-09-007 (Unified Guidance). The background concentrations for Ash Pond E were revised in July 2019 after including supplemental data collected at background well ED-26 collected during the July 2017 and August 2017 background sampling events. The statistical methods selected for each constituent are presented in the table below.

Statistical Methods Selected for Possum Point Power Station (Pond E)	
Parameter/Constituent	**Statistical Method**
Antimony	Non-Parametric Tolerance Limit
Arsenic	Non-Parametric Tolerance Limit
Barium	Non-Parametric Tolerance Limit
Beryllium	Non-Parametric Tolerance Limit
Boron	Non-Parametric Tolerance Limit
Cadmium	Non-Parametric Tolerance Limit (DQR)
Calcium	Non-Parametric Tolerance Limit

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Statistical Methods Selected for Possum Point Power Station (Pond E)	
Chloride	Non-Parametric Tolerance Limit
Chromium	Non-Parametric Tolerance Limit
Cobalt	Non-Parametric Tolerance Limit
Fluoride	Non-Parametric Tolerance Limit
Lead	Non-Parametric Tolerance Limit
Lithium	Non-Parametric Tolerance Limit
Mercury	Non-Parametric Tolerance Limit (DQR)
Molybdenum	Non-Parametric Tolerance Limit (DQR)
pH	Non-Parametric Tolerance Limit
Radium	Non-Parametric Tolerance Limit
Selenium	Non-Parametric Tolerance Limit
Sulfate	Parametric Upper Tolerance Limit
Thallium	Non-Parametric Tolerance Limit (DQR)
Total Dissolved Solids	Non-Parametric Tolerance Limit

DQR – Double Quantification Rule

As presented, the statistical test methods used for the initial evaluation of groundwater monitoring data at the Possum Point Power Station (Pond E) are based on the tolerance limit methods. Interwell statistical methods are proposed – meaning that data from downgradient wells will be compared to upgradient background groundwater quality. Using this approach, background data from the network of upgradient wells is used to calculate an upper Prediction Limit or an upper Tolerance Limit (TL) for each parameter/constituent. The background data set for each constituent/parameter was first tested for the presence of outliers. Extreme values identified during outlier testing were removed from the dataset. The background datasets for each constituent/parameter were then tested for normality. The selected statistical method for each constituent/parameter is based on the results of normality testing. For constituent/parameter datasets that exhibited a normal or log-normal distribution, parametric statistical procedures have been selected. For constituent/parameter datasets that exhibited a non-normal distribution, non-parametric statistical procedures have been selected. Constituent/parameter datasets with 100 percent non-detects will use the Double Quantification Rule in accordance with the Unified Guidance. A confirmed compliance well exceedance is

determined if any compliance well with 100 percent non-detect data exhibits quantified measurements (*i.e.,* at or above the reporting limit) in two consecutive sample events.

Further details regarding the statistical methods used to evaluate the groundwater monitoring data are presented in the Unified Guidance and the groundwater monitoring plan prepared for the unit.

CERTIFICATION

I hereby certify that the selected statistical methods are appropriate for evaluating the groundwater monitoring data for the CCR management area in accordance with the requirements of 40 CFR §257.93.

As used herein, the word "certify" shall mean an expression of the Engineer's professional opinion to the best of his or her information, knowledge, and belief, and does not constitute a warranty or guarantee by the Engineer.

GOLDER ASSOCIATES INC.

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