December 4, 2020

Ms. Kenzie Billings
Air Toxics Project Manager
Oregon Department of Environmental Quality
700 NE Multnomah Street, Suite 600
Portland, Oregon 97232

Re: Baghouse 26 Dust Sampling and Analysis Plan
Columbia Steel Casting Co., Inc., Portland, Oregon

Dear Ms. Billings,

On behalf of Columbia Steel Casting Co., Inc. (Columbia Steel), SLR International Corporation has prepared a Sampling and Analysis Plan for the testing of dust material collected from Baghouse 26 at the Columbia Steel facility located at 10425 North Bloss Avenue in Portland, Oregon. The work is being completed as required by the Oregon Department of Environmental Quality (DEQ) approval letter on November 23, 2020 to remove Baghouse 26 from the upcoming Cleaner Air Oregon source testing, as well as to develop site-specific emission factors for toxic air contaminants.

Sincerely,

SLR International Corporation

SDKronholm

Sarah D. Kronholm, P.E.
Principal Engineer

cc Martha Cox, Columbia Steel Casting Co., Inc.
Dave Faust, Columbia Steel Casting Co., Inc.
Bruce Schacht, Columbia Steel Casting Co., Inc.
Brien Flanagan, Schwabe Williamson and Wyatt

Enc Baghouse 26 Dust Sampling and Analysis Plan

COLUMBIA STEEL CASTING CO., INC.

Baghouse 26 Dust Sampling and Analysis Plan

December 2020

Baghouse 26 Dust Sampling and Analysis Plan

Prepared for:
Columbia Steel Casting Co., Inc.
10425 North Bloss Avenue
Portland, Oregon

This document has been prepared by SLR International Corporation (SLR). The material and data in this report were prepared under the supervision and direction of the undersigned.

Mel Bocianowski
Senior Geologist

Sarah Kronholm, P.E.
Principal Engineer

CONTENTS

TABLES

1. INTRODUCTION

SLR International Corporation (SLR) has prepared this Sampling and Analysis Plan (Plan) for baghouse dust collected from Baghouse 26 at the Columbia Steel Casting Co., Inc. (Columbia Steel) facility located at 10425 North Bloss Avenue in Portland, Oregon (Site).

As part of compliance with Cleaner Air Oregon, Columbia Steel submitted a request to the Oregon Department of Environmental Quality (DEQ) on September 9, 2020 to remove Baghouse 26 from the Source Test Protocol (Protocol). DEQ approved the request on November 23, 2020 with the requirement to submit a sampling plan for the Baghouse 26 dust.

This Plan contains information and procedures for the field sampling and analysis for Baghouse 26, including a Quality Assurance Project Plan (QAPP), and has been developed in general accordance with United States Environmental Protection Agency (USEPA) guidance documents for environmental sampling, as applicable.

1.1 PROJECT PURPOSE

The purpose of the sampling activities described in this Plan is to collect representative samples of the dust material collected by Baghouse 26 and perform laboratory metals analysis as an alternative to the continuous sampling presented in the Protocol. Columbia Steel requested to remove Baghouse 26 from the Protocol for the following reasons:

- The Toxic Emissions Units (TEUs) controlled by Baghouse 26 would only be operating for 80 minutes during a 12-hour source test run; and
- Continuous sampling of Baghouse 26 across a 12-hour source test run would not provide meaningful emission rate data for the purpose of completing a Cleaner Air Oregon Toxic Air Contaminant (TAC) Emissions Inventory.

Based on this request, DEQ agreed that analytical of the baghouse dust material will result in representative air emission estimates for Baghouse 26.

1.2 SAMPLING AND ANALYSIS PLAN ORGANIZATION

The Plan is organized in three sections. A brief description of each section is presented below.

- Section 1 — Introduction; contains background information and an overview of the Plan.
- Section 2 — Sampling Methods; presents the proposed sampling program including selection of sample locations and field sample collection procedures.
- Section 3 — QAPP; includes a QAPP that identifies the procedures to document the results of the investigation to provide a clear, concise, and complete plan for the environmental data operation and its quality objectives.

2. SAMPLING METHODS

This section presents the proposed sampling program including selection of sample locations and field sample collection procedures.

2.1 BAGHOUSE 26 DUST MATERIAL DESCRIPTION

Baghouse 26 is a Torit 144FTP pulse jet baghouse, which collects emissions from two Rotoblast shot blasting stations located in the southwest portion of the main foundry building (Building 11). The shot blasting is a dry abrasive process using steel metal shot. The equipment is an episodic source typically operated for seven hours per week with approximately four minutes per cycle. Each cycle includes two minutes of shot blasting and two minutes of dust collection from the chambers. Dust (fines) from the baghouse is routed into 55-gallon drums and accumulated onsite for proper disposal.

Prior to sampling, it will be confirmed that operation during the previous period was typical for the facility regarding processes, products, and raw materials.

2.2 SAMPLE LOCATIONS, TYPES, AND FREQUENCY

Material collected by Baghouse 26 will be sampled from 55-gallon drums. Subsamples will be collected from multiple drums and composited as one sample. Due to the uniformity of the process and the consistency of the baghouse dust being generated, temporal variability of the material across multiple batches is considered to be minor. Therefore, grab samples will be collected from randomly selected drums at the time of the sampling event. Drums will be numbered, and a random number generator will be used to determine the drums to be sampled. The number of drums that will material will be collected from as part of one composite sample will be determined by the total number of drums containing material collected from Baghouse 26 present at the time of the sampling event and based on the sample size equation presented in Table 1. For example, considering a population size of 15 drums and using a confidence level of 95% and a confidence interval of 30%, six of the 15 drums would be sampled to generate a mean concentration that is representative of the material collected from Baghouse 26.

Based on the limited process fluctuations associated with the material, little to no spatial variability is expected in a single drum; therefore, sample material will be collected from the approximate center of the material stored in the drum from approximately 4 to 10 inches below the surface.

Columbia Steel is proposing this as a one-time sampling event in 2021, with an annual sampling event (per similar procedures as described in this Sampling Plan) proposed for subsequent years.

2.3 SAMPLE ANALYSES AND METHODS

Baghouse 26 materials will be analyzed for the following analytes, using the corresponding laboratory methods:

- Total metals (arsenic, total chromium, lead, manganese, and nickel) per EPA Method 6020
- Hexavalent chromium per EPA Method 7196A

The sample will be submitted to APEX Laboratories in Tigard, Oregon for laboratory analysis. Laboratory methods, sample containers, preservatives, and holding times are summarized in Table 2.

2.4 SAMPLE DESIGNATION

Subsamples collected from the Baghouse 26 dust material collected for the composite sample will be designated in the field notes by the numbering system used for the random number generator process.

Quality assurance and quality control (QA/QC) samples will be designated with unique sample names per Section 2.10.

2.5 SAMPLING PROCEDURES

A summary of the sampling procedures for the material collected from Baghouse 26 is listed below.

- Drums will be numbered, and a random number generator will be used to determine the drums selected for subsampling, per the rate described in Section 2.2.
- Drums will be opened, and the observed amount of material and basic description of the stored material will be noted.
- A disposable spoon or decontaminated stainless-steel spoon will be used to scrape the immediate surface material (to approximately 4 inches) from the approximate center of the drum(s). The material from approximately 4 to 10 inches will be transferred directly to a decontaminated clean stainless-steel bowl. Material will be thoroughly mixed.
- The material will be transferred from the stainless-steel bowl to a laboratory-provided container and will be filled as full as possible to minimize headspace.
- The sample will be labeled, placed on ice in a cooler, and handled as described in Section 2.7.
- Sampling equipment and reusable materials that will contact the sample will be decontaminated on site in accordance with procedures identified in Section 2.8. The field sampler will use clean nitrile, neoprene, or vinyl gloves for handling each sample.
- Residual soil and disposable sampling equipment will be handled per Section 2.9.

2.6 SAMPLING PROCEDURE ALTERATIONS

Any deviations from the general sampling procedures presented here will be brought to the attention of the Project Manager and documented in the field notes.

2.7 SAMPLE LABELING, SHIPPING, AND CHAIN-OF-CUSTODY

2.7.1 SAMPLE LABELING

Sample container labels will be completed before or immediately after sample collection with the sample designations described in Sections 2.4 of this Plan. Container labels will also include the following information:

- Project name
- Sample number
- Name/Initials of collector
- Date and time of collection

2.7.2 SAMPLE SHIPPING

Samples will be transported in a sealed, iced cooler. In each cooler, glass jars will be separated by a shock-absorbing and absorbent material to prevent breakage and leakage. Ice, sealed in separate plastic bags, will be placed into each cooler with the samples. All sample coolers will be accompanied by a Chain-of-Custody (COC) Form. Sample coolers will be transported or picked up by laboratory courier directly to the laboratory.

2.7.3 CHAIN-OF-CUSTODY

Once a sample is collected, it will remain in the custody of the sampler or other SLR/Columbia Steel personnel until transferred to the laboratory. Upon transfer of sample containers to subsequent custodians, a COC will be signed by each person transferring custody of the sample container. Upon receipt of samples at the laboratory, the condition of the samples will be recorded by the receiver. COC records will be included in the analytical report prepared by the laboratory.

2.8 DECONTAMINATION PROCEDURES

Non-disposable sampling equipment that comes into contact with the sampling media will be decontaminated prior to each use according to the following procedure:

- Tap water rinse;
- Scrubbing equipment thoroughly with water and a non-phosphatic detergent (i.e., Liquinox, Alconox, or similar);
- Tap water rinse;
- Isopropanol rinse; and
- Triple rinsing with deionized or distilled water.

2.9 RESIDUALS MANAGEMENT

Investigation derived waste (IDW), including excess material sample volume and wastewater generated by the cleaning of the non-disposable sampling equipment and personal protective equipment used during sampling (i.e. sample gloves), will be collected and properly disposed by Columbia Steel.

2.10 FIELD QUALITY ASSURANCE

Field quality assurance will be maintained through compliance with the Sampling Plan and documentation of Sampling Plan alterations. If problems arise during field sampling, details will be documented in field notes.

2.10.1 FIELD DUPLICATE

A field duplicate sample will be collected. The field duplicate will be labeled with the sample name and "-Dup" extension. Differences between each set of sample results will be considered as part of the overall analysis and quality assurance evaluation rather than on the merits of this result alone. Consideration will be given to both field and laboratory precision with respect to the field duplicate. Field duplicate quality assurance will be evaluated by the Project Manager and QA staff. Steps taken based on field duplicate data will include an evaluation of data variability, sampling technique, and laboratory analytical methods and results. It should be noted that duplicates for soil/solids samples are considered for informational purposes only, as soil/solids concentrations of constituents can vary widely.

3. QUALITY ASSURANCE PROJECT PLAN

3.1 PURPOSE

The purpose of this QAPP is to identify the QA/QC protocols to achieve the project-specific data quality objectives for the required sample collection and analysis related to Baghouse 26 dust.

3.2 PROJECT ORGANIZATION

Primary responsibility for project quality rests with SLR project manager and Columbia Steel representative. The PM/Columbia Steel will review all project deliverables before submittal to DEQ or other appropriate regulatory agencies. Where quality assurance problems or deficiencies are observed, the PM will identify the appropriate corrective action to be initiated.

3.3 DATA QUALITY OBJECTIVES

This section presents the data quality objectives (DQOs) for the sampling project. The sampling program is being initiated to perform characterization sampling sufficient to develop a site-specific emission factor to calculate TAC emission rates for Baghouse 26. The sampling locations and selected analyses have been selected to meet the DQOs.

3.4 QUANTITATIVE OBJECTIVES: ACCURACY, PRECISION, AND COMPLETENESS

3.4.1 ACCURACY

Accuracy quantifies the extent to which a measurement agrees with a known reference or true value. It is determined in the analytical laboratory by 'spiking' samples with a known concentration of analyte and comparing the measured concentration with the spiked value. Accuracy is expressed as a percentage, known as the recovery (R) of the measured concentration (C_m) less the sample or "background" concentration (C_b) to the spike concentration (C_s):

$$R = \frac{(C_m - C_b)}{C_s} x100$$

Accuracy can be measured on both an individual sample basis with the use of surrogate spikes (organic analyses only) and for each group of samples analyzed together as a 'batch.'

For the batch QC, one or more of the following types of spiked samples are used to assess the accuracy of the method for the batch:

- Matrix or Sample Spike (MS): One sample in the batch is spiked and analyzed to determine R (usually analyzed with a matrix or sample spike duplicate; see Precision)

- Blank Spike (BS): A laboratory-prepared blank sample is spiked and analyzed to determine R (usually analyzed with a blank spike duplicate; see Precision)
- Laboratory Control Sample (LCS): A laboratory-prepared blank sample is spiked and analyzed to determine R (usually not analyzed with a duplicate)

Accuracy goals (acceptance limits for R) are established by the analytical laboratory for each method and detailed in the analytical reports. Accuracy goals vary by MS, BS, and LCS, and they are updated annually. Out-of-range recoveries are summarized by the laboratory in a case narrative for the analytical report. This information is used for data validation as described in Section 3.8.

3.4.2 PRECISION

Precision (reproducibility) is estimated by comparing the analytical results of duplicate samples. Precision is determined at both the field and laboratory levels. Precision is also measured as an internal laboratory batch QC check for all analytical methods. Laboratory MS and/or BS analyses are analyzed in the duplicate. The analytical results are compared and reported by the laboratory as the relative percent difference (RPD):

$$RPD = \frac{2|C_1 - C_2|}{C_1 + C_2} x100$$

where C_1 and C_2 are the concentrations in the duplicate samples.

In addition to the MS and BS, the laboratory may split an environmental sample from a single container to create a laboratory duplicate. A blind field duplicate sample will be collected per Section 2.10.1.

Precision goals (upper limits for the RPD) are established by the analytical laboratory for each method and detailed in analytical reports. Precision goals vary by MS, BS, and laboratory duplicates, and they are updated annually. Out-of-range precisions are summarized by the laboratory in a case narrative for the analytical report. This information is used for data validation as described in Section 3.8.

Precision values for the field duplicate will be calculated upon receipt of the analytical data. The precision goals established by the laboratory for the BS will be adopted for the field duplicates. Precision will only be calculated for analytes at or above concentrations ten times the reporting limit. Out-of-range precision values for field duplicates will be used for data validation as described in Section 3.8.

3.4.3 COMPLETENESS

Completeness (C) is the percentage of measurements planned (N_p) that are actually obtained and validated (N_v):

$$C = \frac{N_v}{N_p} x100$$

Each of the QC sample types described in the Plan is used in the data validation process; consequently, each plays a role in assessing completeness. Completeness provides a final, overall measure of data quality for each sampling event.

The goal is to achieve 100% data completeness. Where data are not complete, professional judgment will be used to either qualify the data or reject the data. Actions and remedies such as re-sampling or re-analysis may be necessary, depending on the required data quality.

3.5 QUALITATIVE OBJECTIVES: REPRESENTATIVENESS AND COMPARABILITY

3.5.1 REPRESENTATIVENESS

An important goal of the sampling events is to collect data that are representative of conditions at the site. Since the true conditions, i.e., chemical concentrations, are not known in an absolute sense, they cannot be compared to the measured values in a quantitative fashion. Instead, quality control samples and other procedures are used to qualitatively assess data representativeness.

Field procedures such as equipment decontamination before sampling and adherence to established practices for sample collection (described in Section 2), help ensure that the data collected represent conditions at the site and are not compromised by sampling methods or cross-contamination.

Additional procedures used to qualitatively assess data representativeness are presented in Section 3.6 and Section 3.7.

3.5.2 COMPARABILITY

Comparability describes the extent to which valid comparisons between measurements taken at different locations and different times can be made. Like representativeness, comparability can only be ensured in a qualitative fashion. Consistency in sampling methods, measurement devices, calibration practices, and reporting limits and units will help to ensure comparability. Deviations from protocols will be noted in field records and used for data validation as described in Section 3.8 of this QAPP.

3.6 FIELD DATA QUALITY ASSURANCE OBJECTIVES

This QAPP also presents the field data quality assurance objectives for the sampling project. The field data quality assurance objectives include field measurements and observations, chain-of-custody procedures, and sample handling procedures.

3.6.1 FIELD MEASUREMENT AND OBSERVATION

Field measurements and observations will be recorded in the project log notes or on designated field data sheets. Sufficient information will be recorded so that all field activities can be reconstructed without reliance on memory. Entries will be legibly recorded directly in waterproof ink and will be signed/initialed and dated by the person conducting the work at the end of each field day. If changes are made, the changes will not obscure the previous entry, and the changes will be initialed and dated. At a minimum, the following data will be recorded:

- Location of activity
- Description of sampling reference point(s)
- Date and time of any activity
- Sample number and volume or number of containers along with preservatives (if necessary)
- Field measurements made
- Relevant comments regarding field activities
- Initials of responsible personnel
- Any deviations from the original sampling plan and reasons for those deviations
- Pictures of the waste and site conditions

3.6.2 CHAIN-OF-CUSTODY PROCEDURES

The management of samples collected in the field will follow specific procedures to maintain sample integrity. To maintain sample integrity, the samples will be handled by as few people as possible, and the sample collector will be responsible for the care and custody of the samples. Sample possession will be tracked from collection to analysis. Each time the samples are transferred between parties, both the sender and receiver will sign and date the chain-of-custody form and specify what samples have been transferred, with the exception of commercial shipping activities (i.e. FedEx). When a sample shipment is sent to the laboratory, the original form will be placed with the samples and transmitted to the laboratory. A copy of the form will be retained in the project files. A chain-of-custody record will be completed for each batch of samples hand delivered or shipped to the laboratory.

The following information will be included on the chain-of-custody form:

- Sample number
- Sampler signature
- Sample collection date and time
- Site Name
- Sample type
- Inclusive dates of possession
- Signature of sender and receiver

In addition to the chain-of-custody form, other components of sample tracking will include the sample labels and seals, field logs, sample shipment receipt, and laboratory logbook.

3.6.3 SAMPLE HANDLING PROCEDURES

Sampling plan design, sampling techniques, sampling location, and sample handling protocols are included in Section 2. This information will assist field staff to collect samples representative of site conditions within the limitations of the collection technologies.

3.7 QUALITY CONTROL

Quality control checks consist of measurements and tests performed in the field and laboratory. The analytical methods that will be performed as a part of this project have routine quality control checks to evaluate the precision and accuracy and to determine whether the data are within the quality control limits.

3.7.1 FIELD QUALITY CONTROL METHODS

3.7.1.1 Field Duplicate

A field duplicate sample will be collected for the sampling event to assess for variability taking into account sampling technique and possible sample heterogeneity. The field duplicate will be collected, labeled, and analyzed per Section 2.10.1.

3.7.1.2 Equipment Rinsate Blank

An equipment rinsate blank will be collected for the sampling event to assess for variability taking into account non-disposable sampling equipment decontamination procedures. The equipment rinsate blank will be collected, labelled, and analyzed per Section 2.10.2.

3.7.2 LABORATORY QUALITY CONTROL METHODS

Specific procedures and frequencies for laboratory quality control are detailed by the analytical method in the laboratory's Quality Assurance Manual. A general description of the types of laboratory quality control samples is as follows.

3.7.2.1 Method Blanks

A minimum of one laboratory method blank will be analyzed per twenty samples or one per batch (whichever is greater) to assess possible laboratory contamination. Method blanks will contain all reagents and undergo all procedural steps used for analysis.

3.7.2.2 Control Samples

A minimum of one laboratory control sample per twenty samples or one per batch (whichever is greater) will be analyzed to verify the precision of the laboratory equipment. The control sample will be at a concentration within the calibration range but at a different concentration than the standards used to establish the calibration curve.

3.7.2.3 Matrix Spike

A minimum of one laboratory matrix spike sample will be analyzed per twenty samples or one per batch (whichever is greater) to monitor recoveries and assure that extraction and concentration levels are acceptable for quality assurance and quality control review.

3.8 DATA VALIDATION AND USABILITY

This section of the QAPP addresses the final project QA to determine if the data collected during site sampling activities conform to the specified criteria discussed in this plan and estimate the effects of any deviations.

3.8.1 DATA VALIDATION GUIDANCE

Field and laboratory data will be evaluated with respect to the DQOs discussed in Section 3.0 of this Plan and based on the United States Environmental Protection Agency (EPA)'s *National Functional Guidelines for Inorganic Superfund Methods Data Review* (EPA, 2017). In accordance with these guidance documents, the process presented below will identify data determined to be inaccurate, imprecise, unrepresentative, or incomparable. Completeness will be calculated for each analyte as the last step in the process. A summary of the data validation process is included on Table 3.

3.8.2 LABORATORY EVALUATION

Each laboratory data package will be checked to ensure that the samples arrived at the laboratory intact and cold (temperature blank measure of ≤6°C), properly preserved, and in proper condition. For each analyte, the sample collection dates and times will be compared to the dates of analysis to ensure that required hold times were not exceeded. Any non-conformances will be discussed with the laboratory to determine the effects on the validity of the analytical results. This discussion will be used to determine, on a case-by-case basis, if the data are unrepresentative and should be invalidated.

Second, each laboratory report will be reviewed for non-conformances in internal laboratory QC samples – positive detects in method blanks, surrogate or spiked sample recoveries that are out of the accepted accuracy range, and relative percent differences between spiked sample duplicates that may indicate an unacceptable method precision. Usually, any non-conformances will be noted in the laboratory report case narrative along with an assessment, based on internal laboratory procedures, of whether the batch data are acceptable. Data deemed acceptable by the laboratory will also be accepted by SLR/Columbia Steel.

3.8.3 COMPLETENESS

Completeness will be calculated for each analyte as outlined in Section 3.4.3 to provide a final, overall measure of data quality for the project. A completeness goal of 100 percent is established.

3.9 DATA MANAGEMENT

This section addresses issues related to data sources, data processing, and data evaluation. Raw data generated in the field or received from analytical laboratories will be validated, entered into a computerized database, and verified for consistency and correctness.

3.9.1 FIELD DATA MANAGEMENT

Accurate documentation of field activities (e.g., field parameters measurements, field notes) will be maintained using field logbooks and field data forms. Entries will be made in sufficient detail to provide an accurate record of field activities without reliance on memory.

Field log entries will be dated and include a chronological description of task activities, names of individuals present, names of visitors, weather conditions, etc. All entries will be legibly entered in ink and initialed at the end of each field day.

3.9.2 ANALYTICAL DATA MANAGEMENT

Following QA/QC, all analytical data will be entered into a computerized database (i.e. MS Excel). The data may require some manipulation, such as common unit conversions and extraction from support information. To accomplish these manipulations, data reduction and tabulation techniques will be applied to the data and documented.

Project data backups will be made concurrently with internal network server backup activities. Access to the database will be limited to the project manager and authorized project personnel.

3.9.3 SAMPLE MANAGEMENT

The sample management system forms the foundation of all other analytical data collection, verification, and QA/QC tasks. Analytical data will be considered valid when the proper steps have been carried out with respect to sample management. These include:

- Sample properly documented in daily field log
- Chain-of-custody requirements met
- Sample-related documents filed
- Use of unique sample identification numbers

Data that do not pass the QA/QC process either will be assigned data qualifiers to restrict or modify usage or will be rejected for use. Modifications to the use of data will be documented in data validation reports.

3.10 DATA REPORTING REQUIREMENTS

Quality assured data will be used to calculate the TAC emission factors for Baghouse 26 as described in Section 5.

4. REFERENCES

Creative Research Systems. 2016. Web Reference: www.surveysystem.com/sample-size-formula.htm

United States Environmental Protection Agency (USEPA). 2017. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. January.

USEPA. 2002. Guidance for Quality Assurance Project Plans. EPA QA/G-5. EPA/240/R.02/009. December

USEPA. 2002. RCRA Waste Sampling Draft Technical Guidance – Planning, Implementation, and Assessment. Office of Solid Waste. EPA 530-D-02-002. August.

USEPA. 1992. Guidance for Data Useability in Risk Assessment (Part A). Publication 9285.7-09A. April

USEPA. 1986. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (SW-846).

TABLES

Table 1
Sample Size Equations
Baghouse 26 Dust Sampling And Analysis Plan
Columbia Steel Casting Co., Inc.

Equation to Determine Sample Size

$$ss = Z^2(p)(1-p)/c^2$$

ss = sample size
Z = Z value (e.g. 1.96 for 95% confidence level)
p = percentage picking a choice, expressed as decimal (0.5 used for sample size needed)
c = confidence interval, expressed as decimal

Correction for Finite Population

$$ss = ss/(1 + \left(ss - \frac{1}{pop}\right))$$

ss = sample size (from above equation)
pop = population (i.e. number of drums)

Equations from Creative Research Systems survey software: www.surveysystem.com/sample-size-formula.htm

Table 2
Sample Bottles, Methods, Preservatives, and Holding Times
Baghouse 26 Dust Sampling and Analysis Plan
Columbia Steel Casting Co., Inc.

SAMPLE MATRIX	ANALYTICAL METHOD*	SAMPLE CONTAINER / PRESERVATIVE	HOLDING TIME
Baghouse Dust	Total Metals (6020)	(1): 8-oz. glass jar with Teflon lined cap / Unpreserved	6 Months
Baghouse Dust	Hexavalent Chromium (7196A)	(1): 8-oz. glass jar with Teflon lined cap / Unpreserved	30 Days

*- USEPA or SW-846 Analytical Methods
Hold times listed above represent the minimum allotted time between sampling and lab extraction, prep, or analysis.
All samples should be kept cold at 6 degrees C.
Same sample jar can be used for all listed analyses.

Table 3
Data Validation Acceptance Criteria and Guidelines for Data Validation Activities
Baghouse 26 Dust Sampling and Analysis Plan
Columbia Steel Casting Co., Inc.

Data Validation Parameter	Evaluation Procedure	Acceptance Criteria	Guidelines for Corrective Action
Holding Time	Compare date of sample collection on Chain-of-Custody with date of analysis on laboratory reports.	Each sample should meet holding times. Holding times are presented in Table 1.	Analytical results flagged as estimated concentrations (J) or as estimated quantitation limits (UJ). A slight exceedance may not be qualified at the discretion of the data validator.
Field and Method Blanks	Compare results of field and method blanks for the presence of field or laboratory contamination.	Contaminants are not present in the blanks.	Flag values as estimated (J) if less than 10X for method specific laboratory contaminants and 5X for other contaminants. Request that laboratory review data. Carefully consider type of blank, compounds present, and origin of contaminants. Modify sampling procedures or laboratory SOPs.
Practical Quantitation Limits	Compare the analytical results for each parameter with the method sensitivity for each parameter.	Positive results are above the lowest practical quantitation limit. If dilution is required as a result of matrix interference, the practical quantitation limits will be adjusted by the laboratory and the lowest practical quantitation limits may not be achievable.	Concentrations reported below the practical quantitation limit will be flagged as estimated (J). Review sensitivity data and discuss specific results with testing laboratory in a qualitative manner to determine if reanalysis or modification of procedures should be performed to meet desired objectives.
Matrix Spike/Matrix Spike Duplicate	Compare the spike recoveries and RPDs to laboratory-generated QC limits.	Spike recoveries and RPDs within laboratory-generated QC limits.	Refer to LCS for data acceptability when the MS/MSD fails. Data are not qualified based on MS/MSD results alone. Verify that the associated LCS is within QC limits.

Table 3
Data Validation Acceptance Criteria and Guidelines for Data Validation Activities
Baghouse 26 Dust Sampling and Analysis Plan
Columbia Steel Casting Co., Inc.

Data Validation Parameter	Evaluation Procedure	Acceptance Criteria	Guidelines for Corrective Action
Surrogates	Compare surrogate recoveries to laboratory-generated QC limits.	Surrogate recoveries within QC limits.	Samples with surrogate recoveries below QC limits will be flagged as estimated (J) for detected results and (UJ) for non-detects. Samples with surrogate recoveries above QC limits will be flagged as estimated (J) for detected results. Non-detects will not be qualified. In all cases, qualification of the data is at the discretion of the data validator, i.e., where dilutions are involved, the validator may determine that data qualifications are not necessary.
Laboratory Control Sample	Compare the LCS recovery to QC limits specified by the method.	LCS recovery within laboratory-generated limits.	Review data and discuss with laboratory. Reanalysis may be necessary. Data qualifications may be necessary at the discretion of the data validator.
Initial Calibration	For organic analysis, check % RSD is within method limits.	Organics - % RSD is less 30 for calibration check compounds and less than 15 for other analytes.	Laboratory should recalibrate instrument. Samples run on ICAL which is out of QC limits are qualified as estimated (J) for detected results and (UJ) for non-detects.
Continuing Calibration Verification	For organic analysis, compare the % D between ICAL and CCAL to the method limits.	Organics - % D is less than 20% for calibration check compounds.	Calibration standard should be reinjected. A new calibration curve should be run if reinjection fails. Analyses associated with the CCAL will be qualified as estimated (J) for detected results and (UJ) for non-detects.

Table 3
Data Validation Acceptance Criteria and Guidelines for Data Validation Activities
Baghouse 26 Dust Sampling and Analysis Plan
Columbia Steel Casting Co., Inc.

Data Validation Parameter	Evaluation Procedure	Acceptance Criteria	Guidelines for Corrective Action
General Quality of Data	Qualitatively evaluate the performance of the laboratory based on completeness evaluation, the quality of data generated, and other intangible factors. Summarize qualitative evaluation in writing. Calculate completeness of data using equation on Table 4 of the QAPP.	Completeness of data should range between 90 and 100 percent complete.	Review completeness data and discuss results with testing laboratory in a qualitative manner to determine if reanalysis or modification of procedures should be performed to meet desired objectives.

Note: Specific determinations of data validity should be based on review of the data and circumstances associated with the samples tested and guidance regarding data validation.

Data Validation Qualifiers

- U - The analyte was analyzed for, but not detected above the reported sample quantitation limit.
- J - The analyte was positively identified; the associated numerical value is an estimated quantity.
- N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a 'tentative identification.'
- NJ - The analysis indicates the presence of an analyte that has been 'tentatively identified' and the associated numerical value is an estimated quantity.
- UJ - The analyte was not detected above the reported sample quantitation limit. The associated quantitation limit is estimated.
- R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.