BISHOP LOSS OF CONTAINMENT

GALETON, CO

CONFIRMATION WIPE SAMPLING AND ANALYSIS PLAN

Version 1.0

Prepared For:

ECMC Form 27 Submittal

Prepared By:

CTEH, LLC

5120 Northshore Drive

Little Rock, AR 72118

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MANAGEMENT OF CHANGE

Change 001			
Description of Change (include sections & page numbers):			
	Name/Role	Signature	Date Signed
Prepared By:			
Approved By:			

Change 002			
Description of Change (include sections & page numbers):			
	Name/Role	Signature	Date Signed
Prepared By:			
Approved By:			

Change 003			
Description of Change (include sections & page numbers):			
	Name/Role	Signature	Date Signed
Prepared By:			
Approved By:			

1.0 INTRODUCTION AND PURPOSE

This Confirmation Wipe Sampling and Analysis Plan (CWSAP) was prepared on behalf of Noble Energy Inc. in support of the Bishop Loss of Containment Incident that occurred on April 6, 2025. A map of the site location is provided in **Appendix A**.

The incident involved the sudden and accidental release of pressurized sub-surface fluids, including, but not limited to, water, oil and a brine solution, which under the authority of the Colorado Energy & Carbon Management Commission (ECMC), is considered exploration and production (E&P) waste. These fluids were aerosolized and potentially distributed downwind across the adjoining agricultural landscape and potentially impacting various structures, including residences, secondary structures for agricultural purposes, street signs, roadways and other objects in the path of this aerosolized release.

To address visibly impacted structures, contractors developed and enacted the *Offsite Structure Cleaning Plan*. The objective of the proposed CWSAP is to sample representative surface locations to confirm that the agreed-upon cleaning processes, as described in the *Offsite Structure Cleaning Plan*, removed E&P-regulated waste from surface structures previously impacted in this event.

2.0 HEALTH AND SAFETY

CTEH sampling personnel will review and adhere to the site-specific Health and Safety Plan (HASP) and PPE plan developed by CTEH. Sampling activities will only be completed in a safe manner and under safe conditions as dictated by the HASP, the task- specific job hazard analysis (JHA), and the PPE plan.

3.0 STUDY OBJECTIVES AND LIMITATIONS

CTEH personnel will employ systematic sample collection methods, as stated in detail in **Section 5.0**, in an attempt to determine "presence/absence" of E&P Waste. However, significant limitations accompany the ECMC-required confirmation wipe samples. For example, there are not standardized methods for wipe sampling for the analytes in ECMC Table 915-1 on outdoor surfaces, and results can vary based on the sampling protocol and analytical techniques employed. In addition, wipe sampling has general limitations, including, but not limited to, the relative inefficiency of extraction of the analytes of interest from the wipes, differences in surface textures and porosity, and the widespread presence of diffuse anthropogenic sources[1] of the E&P analytes that will confound meaningful interpretation.

[1] ***diffuse anthropogenic contamination***—*the presence of target analytes that results from broad-scale activities that cannot be discriminated as readily as single, site-specific discharges or releases. The most obvious of these activities is agriculture, but urban land runoff, forestry, the urine of mammals, wastewater treatment plant effluent discharges, and atmospheric deposition can also be important general sources.*

And finally, it should be noted the CWSAP will be heavily dependent on gaining relevant landowner access.

4.0 BACKGROUND SURFACE SELECTION AND CHARACTERIZATION

A representative and sufficiently robust data set with enough samples to statistically represent diffuse natural and anthropogenic background concentrations of analytes that could also be E&P-related components has to be developed as a first step, to provide any meaningful use for the data. The details of the planned background surface wipe locations are in **Appendix B**.

Noble will make every effort to secure landowner permission to sample in background locations, targeting a reference area of potential impact, but near similar land uses (e.g., farming and normal E&P operating facilities), to represent with confidence that "background" has been characterized. Public access areas (roadways and ditches) could be sampled as a last resort, but access agreements may still be required, and locations known to be near vehicular traffic or rail lines are anticipated to be higher in some of the E&P-related analytes due to exhaust deposition. Similarly, samples near creosote-treated power poles, creosoted railroad ties, or creosote-treated fence posts are also expected to give elevated readings, since creosote's composition may cause interference with ECMC Table 915-1 analyte list. Hence, some field observations and discretion with respect to precise locations of the background samples will be needed. For further details, see **Appendix B**.

5.0 SURFACE WIPE SAMPLING METHODOLOGY AND ANALYSIS

All field activities and observations will be documented in field notebooks, CTEH field forms, or electronic handheld devices. Information to be recorded will include:

- Detailed (GPS-tagged) location description and photographs of each 100 cm^2 sample location
- Descriptive text of the type of structure and the apparent composition of the 100 cm^2 surface being sampled (e.g. siding, windows, metal, vinyl)
- For the confirmation samples, information on any solutions used by the cleaning contractor will be important, as each structure had a unique cleaning approach: it is anticipated that the composition of cleaning materials could deposit trace residue that could interfere with data interpretation. For example, the mild detergent product(s) approved for cleaning have compositions that could be detected in the analysis and cause a false positive, indicating a "detection" but is related to cleaning product residue and not the presence of E&P waste.

5.1 SURFACE WIPE SAMPLES

In addition to the background locations specified in **Appendix B**, surface wipe samples will be collected from representative surfaces of structures potentially impacted by this event in alignment with the study

objectives established in **Section 3.0**. All wipe sampling activities will be documented in field notebooks, in CTEH field forms, or electronically using handheld devices.

5.1.1 Methodology and Analysis

This section specifies how to sample and preserve wipes for analysis at the laboratory. The factors to consider in wipe sampling are the wipe material, the solvent, the sampling area, and the use of blanks.

The solvent (e.g. methanol for the target organics) applied to the wipe material will depend on the target analytes being investigated and the associated method specifications. Wipe samples will be analyzed by a certified laboratory for the following (extrapolated from the soil analytes required in Table 915-1[2]): total petroleum hydrocarbons (TPH), separated by carbon chain length; specific volatile organic compounds in Table 915-1 (BTEX and trimethylbenzenes) and the Table 915-1 semi-volatile organic compounds (SVOCs). All samples collected will be analyzed by a certified laboratory using approved ECMC laboratory analysis methods. A summary of the methods that will be used to analyze samples, along with the laboratory to which each sample will be submitted, is provided in **Table 1** below, consistent with information found in Table 915-1. No estimated concentrations below the laboratory's definitive quantitation limit (e.g., J-flagged values) will need to be reported.

Table 1. Summary of Wipe Sample Laboratory Methods and Analysis

Analyte	Media Type	Laboratory Method	Sample Area Size	Laboratory
TPH-TVPH (Gasoline Range Organics, C6-C10)	Wipe Sample (methanol)	EPA 8015B M*	100 cm^2	Enthalpy Laboratory
TPH-TEPH (Diesel Range Organics, C10-C28)				
TPH-ORO (Oil Range Organics, C28- C44)				
Benzene	Wipe Sample (methanol)	EPA 8260B	100 cm^2	
Toluene				
Ethylbenzene				
M,p-Xylenes				
1,2,4-Trimethylbenzene				
1,3,5-Trimethylbenzene				

[2] Consistent with ECMC request, the analytical data from the source sample collected April 8, 2025 was evaluated for Table 915-1 metals content: data show nondetect (for arsenic, cadmium, total chromium, copper, lead, mercury, nickel, silver, selenium and zinc) for all of the Table 915-1 analytes, and hence, metals are not proposed for inclusion in the wipe sampling.

Acenaphthene	Wipe Sample (methanol)	EPA 8270C SIM	100 cm^2	
Anthracene				
Benzo(a)anthracene				
Benzo(b)fluoranthene				
Benzo(k)fluoranthene				
Benzo(a)pyrene				
Chrysene				
Dibenzo(a,h)anthracene				
Fluoranthene				
Fluorene				
Indeno(1,2,3-cd)pyrene				
1-Methylnaphthalene				
2-Methylnaphthalene				
Naphthalene				
Pyrene				
Notes: *Table 915-1 indicates TPH in two fractions (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons) but the three-fraction results from Method 8015D will provide more detailed data.				

5.1.2 Location and Frequency

Samples will be collected immediately (i.e., within minutes) following the completion of cleaning from surfaces of "representative structures" which were cleaned in accordance with the *Offsite Structure Cleaning Plan*. "Representativeness" will be determined in the field based on professional judgment. For example, if three or more structures are on a property, and each was equally likely to experience a similar level of impact from the event, CTEH personnel will collect a single confirmation wipe sample from one of these surfaces to represent the property.

To distinguish between pre-incident conditions (background) and impact from this incident, a well-defined background sampling strategy consisting of sampling from surfaces with no potential for impact from the incident (i.e., "background" samples) has been established. These samples would ideally be collected upwind of the incident site or outside the potential impact zone to establish the range of potential background concentrations against which confirmation wipe samples will be screened. For more information, see **Section 4.0** and **Appendix B**. CTEH Field Sampling Leads will select representative sample locations in the field, document locations and rationale accordingly, and collect samples in accordance with **Section 6.0** of this plan.

6.0 SAMPLE HANDLING PROCEDURES

CTEH personnel will conduct wipe sampling according to the following procedure:

1. Don a clean pair of gloves and prepare the wipe by moistening it with the supplied reagent, if applicable. In some cases, this should be achieved by placing the wipe over the mouth of the glass container containing the dampening solution and inverting the container to moisten the wipe. Excessive dampening may cause tearing of the wipe during the sampling process.
2. Using the damp wipe, thoroughly rub the entire selected area (100 cm^2) using the wipe template in as many "S"-like motions as needed to completely cover the area. Fold the wipe and repeat 1-2 more times, keeping the dirty side in each time and paying attention to not cross the outer border of the template.
3. Place the wipe into the supplied container. Label the container with the appropriate sample information as outlined in **Section 7.0**.
4. The laboratory recommends that a blank wipe be taken as appropriate (See **Section 8.1** for more details). A blank provides a data point that may indicate if contamination occurred during the sampling process. To prepare a blank wipe, don a clean pair of gloves and moisten the wipe with the supplied reagent as indicated above. Hold the wipe for 10-20 seconds (do not touch any surfaces). Place the wipe into its own container and label it as blank, also including the appropriate sample information as outlined in **Section 7.0**.
5. Use each wipe only once and select a different area for each wipe sample. Do not rub the same area multiple times. Gloves should be worn at all times. Don a clean pair of gloves before handling different samples and before proceeding to the next sampling location.

7.0 SAMPLE LABELING

Sample containers will be clearly labeled with the following information:

1. Unique sample identification;
2. Sampler name or initials;
3. Date sample collected; and
4. Time sample collected.

The unique sample identification used will include the following: sample type, two-digit day, two-digit month, two-letter matrix prefix, two-digit numerical designation, and QA sample designation, as appropriate. The sample type will be Q for a field wipe sample, FR for a field blank, and R for a template blank.

8.0 QUALITY ASSURANCE

The goal of the field QA program is to document that samples are collected without accidental cross- or systematic contamination. To provide QA for the proposed sampling event, the following sampling and analysis procedures will be performed.

9.0 FIELD BLANKS

Field blank samples refer to the blank wipe procedure described above. At least one field blank will be prepared and submitted for each method performed. Field blanks will be prepared by collecting a blank wipe sample as described in Section 6.1 and submitting the sample to the laboratory for analysis consistent with the proscribed method.

9.1 TEMPLATE BLANKS

CTEH personnel will sample the 100 cm^2 wipe template that is used for the wipe sampling prior to conducting wipe sampling (template blank). This will verify that no contamination is present on the wipe templates. These template blanks will be prepared and submitted to the laboratory for analysis consistent with the prescribed method.

9.2 EFFICACY TRIAL

As part of the background sampling effort (**Section 4.0**), a cleaning efficacy trial will be conducted on a background surface utilizing the cleaning agent(s) likely to be used in the field to determine the levels of interference, if any, the cleaning agents themselves may have on the wipe sampling methods and analysis'. If any analytes are reported above the Method Detection Limits (MDLs) confirmation samples that were not present in pre-cleaning samples, those observations will be recorded, and different cleaning agents may be selected.

10.0 DATA VALIDATION

Results from the analytical laboratory data received will be validated for generally known data quality issues (e.g., interference and other limitations of the method) and then, for valid results of analytes that are E&P-related and linked to the Bishop incident, compared against appropriate background concentrations collected outside of the release area to confirm whether cleaning measures were adequate for tested representative structures.

Validation of the data generated by the laboratory performing the analyses will include at a minimum sample holding times, accuracy, precision, contamination of field-generated or laboratory method blanks, and surrogate compound recovery. Accuracy will be determined by evaluating laboratory control sample

(LCS) and matrix spike (MS) recovery. Precision will be determined by evaluating laboratory and field duplicate samples. Level II data validation will be performed on 100% of submitted samples.

11.0 WASTE DISPOSAL

The method for storage and disposal of derived waste materials will comply with applicable local, state, and federal regulations in a manner consistent with the Waste Management Plan developed for this event.

12.0 DATA PROCESSING AND PRESENTATION

There are no established comparison levels for this E&P waste "presence/absence" confirmation wipe sampling. Because the data are not being collected for public health protection purposes due to a similar lack of comparative levels and high likelihood of interference or background sources unrelated to the incident, the routine process for data reporting to ECMC will be followed per ECMC guidance. Laboratory results will be reported in milligrams (mg) per 100 square centimeters of surface and will be provided in the same units. Sample results may be compared to background (reference) data set to ascertain whether there is a difference from the relative range of observed results that is expected in the rural surrounding reference area outside observed impacted areas from the release. However, it should be noted that both site specific and background samples may be significantly influenced by sources other than the incident including, but not limited to, other substance contained in and around the area or other operations near the sample locations. This is consistent with ASTM E1903-19, which includes a stated objective of assessing whether there has been a release of hazardous substances, per Definition 3.1.15:[3]

[3] American Society for Testing and Materials (ASTM) International Standard E1903-19 (2019). Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process. E1903 Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process

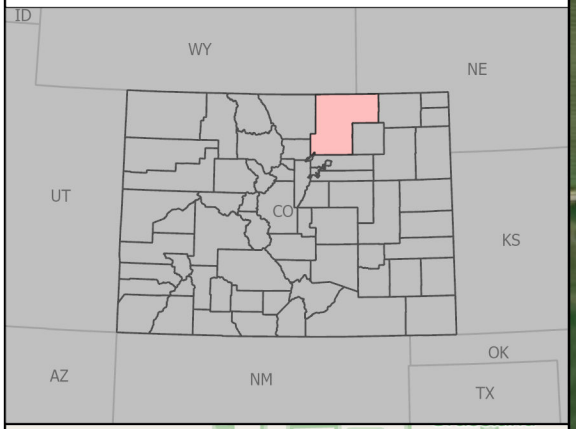
Appendix A

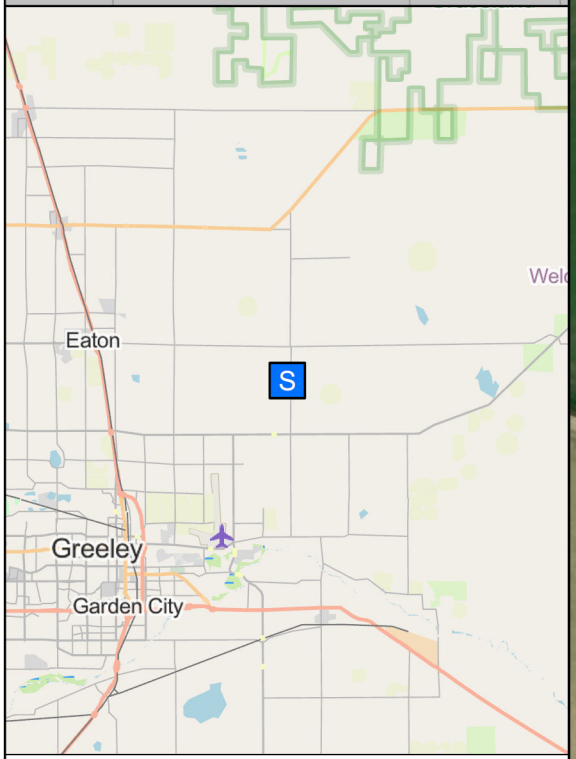
Site Map

CTEH®

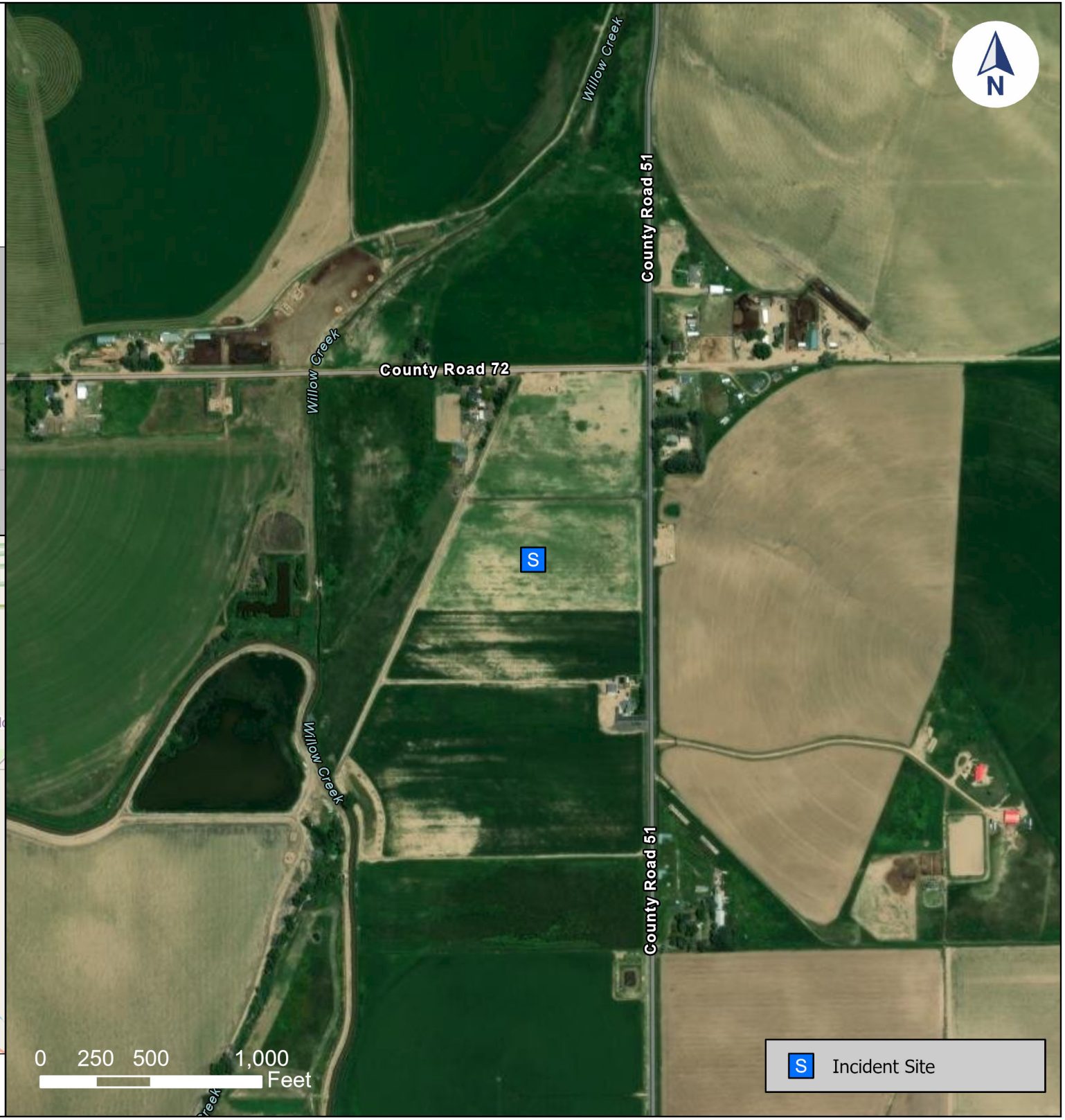
Bishop Loss of Containment

Incident Location
Galeton, CO | Weld County
PROJ-054017





Updated At: 4/8/2025 7:01 AM
Projection: WGS 1984 UTM Zone 13N



Appendix B

Background Sample Strategy & Locations

Background Sample Strategy and Location

Consistent with relevant environmental guidance on how to accurately capture anthropogenic background (e.g., EPA 2018[4] and other guidelines), candidate background locations will be those areas likely to be affected by the same anthropogenic sources. For the Bishop Loss of Containment Event, this means candidate background locations will be rural areas where people live and gather while also near E&P operational areas. To scope the background data set, additional considerations were:

- Are the data adequate for statistical methods (i.e., can the data distribution be determined)?
- Are the data from appropriate locations (i.e., uninfluenced by the Bishop site release, sufficiently similar to site conditions, upgradient or upwind, or sufficiently distant, spatially unbiased, etc.)?

To enable a data-driven comparison to the range of background, appropriate relevant programs such as ProUCL[5] can be used (enabling a variety of graphical distribution displays and statistical tests). Because the exact distributions and nature of the wipe data are unknown, details of the statistical tests are not included here but will follow the recommendations in the *ProUCL User's Guide*.[6]

Strategy

Based on the above, it is anticipated that a minimum of 24 wipes will be taken at locations representative of background surfaces. A detection above the laboratory minimum detectable limit will indicate the presence of that compound in background or ECMC-required confirmation wipe samples. Due to the limitations in sampling a representative dataset of all compounds on background surfaces in the area and the ability to capture the true average, the distribution of each concentration, outliers, number of non-detected values and other factors will be considered and an acceptable cut point will be determined (e.g. the 95th percentile) using ProUCL. If a confirmation wipe sample falls within the determined cut point of background concentrations, then that sample will be determined as similar to background and therefore considered "not present". If the confirmation wipe sample falls above the determined cut point by 0.1 percent, then that compound will be considered "present". Non-detect values will be evaluated for the most appropriate method either substitution with ½ the MDL or applying the non-parametric Kaplan-Meier method. The method will be determined after a descriptive and visual evaluation of the non-detected values and distribution of concentrations.

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[4] EPA. 2018. *Frequently Asked Questions About the Development and Use of Background Concentrations at Superfund Sites: Part One, General Concepts OLEM Directive 9200.2-141 A*. Available from: https://semspub.epa.gov/work/HQ/100001657.pdf.

[5] USEPA. (2022) *ProUCL: Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations.* Version 5.2. https://www.epa.gov/land-research/proucl-software, ProUCL Software | US EPA is an Excel-based publicly available software specifically designed to allow comparison of environmental sampling data with background data sets. A factsheet is available at ProUCL Statistical Support Software for Site Investigation and Evaluation.

[6] The ProUCL User's Guide for Version 5.2.0 is available at Document Display | NEPIS | US EPA

Locations

A map of initially identified candidate background locations is provided below in **Figure 1**. It should be noted that these locations may vary based on access to sufficient surface space, activities in the area on the day of sampling, and other factors that could unintentionally bias sample results / prevent access. Any significant changes in background sampling locations will be documented as appropriate.