Draft Quality Assurance Project Plan (QAPP)

Simplot Grower Solutions Facility
South 300 1st Street

Sunnyside, Washington
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Draft Quality Assurance Project Plan

for Simplot Grower Solutions Sunnyside Facility

The *Quality Assurance Project Plan* for the Simplot Grower Solutions Sunnyside, Washington, facility provides direction for sampling procedures and analytical analysis to support a remedial investigation and feasibility study (RI/FS). Preparation of these plans incorporates contributions and feedback from project managers and technical staff from Simplot, HDR Engineering, Inc., Washington State Department of Ecology (Ecology), and Eurofins Test America. This signature page indicates agreement on the plan content among those individuals assigned to implement the study, conduct the field sampling, and perform the analytical analyses.

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Acronyms

Acronym	Definition
AO	Agreed order
CLARC	Cleanup Levels and Risk Calculations
COC form	chain-of-custody form
COPC	chemical of potential concern
DCAP	draft cleanup action plans
DQO	data quality objectives
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
FS	Feasibility study
HDR	HDR Engineering, Inc.
HSA	Hollow stem auger
HSP	health and safety plan
LCS	laboratory control sample
MS	matrix spike
MSD	matrix spike duplicate
QA/QC	quality assurance/quality control
QAPP	quality assurance project plan
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
RI Work Plan	Remedial Investigation Work Plan
RPD	relative percent difference
SAP	Sampling and analysis plan
SD	standard deviation
Simplot	J.R. Simplot Company
Simplot Soilbuilders	former name of Simplot Grower Solutions
SOP	standard operating procedure
VI	vapor intrusion
VOC	Volatile-organic compound
WAC	Washington Administrative Code

Introduction

J.R. Simplot Company (Simplot), owner of the Simplot Grower Solutions facility at South 300 1st Street, Sunnyside, Washington, contracted HDR Engineering, Inc. (HDR) to develop this quality assurance project plan (QAPP). Simplot entered into an Agreed Order (AO) (No. DE 16446, effective date June 26, 2019) with the Washington State Department of Ecology (Ecology) to complete a remedial investigation/feasibility study (RI/FS), and to prepare a draft cleanup action plan (DCAP) for the Simplot Grower Solutions (formerly named Simplot Soilbuilders) Sunnyside site.

Ecology considers Simplot a potentially liable person (PLP) because of the discovery of nitrates and ammonia found in groundwater adjacent to the site in 2007 as well as several volatile organic compounds (VOCs), metals, herbicides, and petroleum-related compounds.

This QAPP is meant to complement the RI Work Plan (HDR 2019a), *Sampling and Analysis Plan for Phase 1 RI Activities* (HDR 2019b), and Sampling and Analysis Plan for Phase 2.5 RI Activities (HDR 2021). The objective of the RI/FS is to meet AO requirements by completing an RI/FS as described in the Model Toxics Control Act (MTCA) Cleanup Regulation (Washington Administrative Code [WAC] 173-340). The RI is designed to characterize site conditions in order to complete a FS and select a cleanup action as described in WAC 173-340-360 through 173-340-390, because of the presence/discovery of several chemicals of potential concern (COPC) in groundwater and soils at the Simplot facility.

1 Project Management

1.1 Distribution List

This QAPP will be distributed to the following organizations. The roles, responsibilities, key personnel, and contact information of each organization are detailed in Section 1.2.

- J.R. Simplot Company
- HDR Engineering, Inc.
- Eurofins TestAmerica
- Ecology

1.2 Project Organization

This QAPP presents the quality assurance/quality control (QA/QC) requirements for the work described in the associated RI Work Plan (HDR 2019a) and SAPs (HDR 2019b, HDR 2021). The plan is applicable to the QA/QC aspects of field sampling and laboratory chemical analysis and outlines the specifics of the field sampling program.

HDR has prepared this QAPP in accordance with U.S. Environmental Protection Agency (EPA) guidance (EPA 2002) and Ecology guidance and is responsible for maintaining it. Field teams are responsible for collecting all proposed field samples, including the QC samples, and shipping and transferring custody of the samples to the laboratory (Test America). Test America is responsible for QA/QC within their laboratory operations. HDR is responsible for laboratory coordination. Key personnel and their roles are described in **Table 1** (Appendix A).

1.3 Project Background and Objectives

Simplot Grower Solutions at Sunnyside, Washington, is an agricultural distribution facility that was started at the current location in the early- to mid-1960s. Simplot Grower Solutions is a retail outlet for agri-chemicals (fertilizers, pesticides, soil amendments) and offers customized fertilizer blending, application services, and consulting.

The site is in Yakima County, Washington, and is comprised of three parcels:

- Address: 300 S 1st St. Sunnyside, WA 98944.
- Owner: J.R. Simplot Company.
- Parcel Numbers: 22102523445 (0.93 acres), 2210252344 (1.07 acres), 22102523445 (0.66 acres).
- Total Acreage: 2.67.
- Property Type: Commercial.
- Zoning: M1 (light industrial).

1.4 Project Task Description and Schedule

The project plan for the RI/FS study consists of the RI Work Plan (HDR 2019a), a SAP Phase 2.5 (HDR 2021), a QAPP (herein), and a health and safety plan (HSP). These documents will be revised as needed as RI activities will be conducted in phases. This QAPP has been revised (Revision 1) to include Phase 2.5 activities and will continue to be updated as needed. Subsequent phases will be based on the results of Phased activities. These phases will likely include additional direct push groundwater and soil sampling on site and off site, as well as additional groundwater monitoring well installations and soil gas sampling. Sampling drains and stormwater systems may also occur depending upon findings in subsequent phases.

A generalized schedule of the tasks associated with each sampling event is provided in **Table 2** (Appendix A).

1.5 Quality Objectives and Criteria

The broad quality objective is to collect data of known and sufficient quality to support RI activities in quantifying the nature and extent of contamination and to support remedial action, if warranted. A principle objective is to establish and maintain an acceptable level of quality for activities associated with environmental sampling. Such activities include monitoring well installation, soil sample collection, groundwater sample collection, sample shipping and handling, laboratory analysis, data management, data analysis, and reporting. The QC requirements set forth in this QAPP support the project objectives by identifying the correct type, quantity, and quality of data needed, and by establishing appropriate processes and procedures to support the collection and management of this data. Specific quality objectives are described below as data and measurement quality objectives.

1.5.1 Data Quality Objectives

Data quality objectives (DQOs) refer to quality objectives at the level of the decision. They specify how good a decision must be, but do not directly set criteria for the quality of the data or express data quality characteristics. HDR developed the project DQOs according to EPA guidance on systematic project planning (2006); this planning process is documented in Appendix B.

The principle DQO of direct push groundwater sampling and monitoring existing groundwater monitoring wells is to characterize existing groundwater beneath the site and also to assess potential source areas on site.

1.5.2 Measurement Quality Objectives

Measurement quality objectives specify criteria that data must meet in order to support the program data quality objectives. The measurement quality objectives describe the expected performance or acceptance criteria for individual data quality indicators, such as precision, bias, lower reporting limit, and completeness. Therefore, the measurement quality objectives serve two critical functions. First, they provide the basis for determining the procedures that should be used for sampling and analysis because they specify the level of quality that generated data must achieve. Second, they establish benchmarks against which collected data are compared to determine whether the data are of sufficient quality to be used in the program.

1.5.2.1 PRECISION

Precision is the degree of agreement between replicate analyses of a sample under identical conditions. It is a measure of the random error associated with the analysis, usually expressed as relative percent difference (RPD). Precision will be determined on both field data and laboratory analysis by analyzing field duplicates, laboratory replicates, and matrix spike duplicates (MSD). Calculation of RPD between these paired measurements will evaluate precision. Duplicate laboratory sample error values include laboratory and field variability. In general, higher errors are expected for point source effluent and storm event samples. The data quality indicators for precision in field measurements are shown in **Table 3** (Appendix A)**.** The indicators for laboratory parameters were developed in consultation with the contracted laboratory are presented in Appendix C.

1.5.2.2 ACCURACY AND BIAS

Accuracy is the measure of the difference between an analytical result and the true value, usually expressed as a percentage. The accuracy of a result is affected by both systematic errors (bias) and random errors (imprecision). Bias is a systematic error in one direction. Accuracy and bias will be assessed using laboratory blanks, matrix spikes (MS), and laboratory control samples (LCS). Prior to use, instruments will be calibrated per the manufacturer's instructions. Laboratory standards for accuracy are presented in Appendix C.

1.5.2.3 REPRESENTATIVENESS

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at the sampling point, or an environmental condition. Samples for analysis will consistently be collected from pre-determined sampling sites following pre-determined sampling methods. In general, sampling (well) locations were selected to give a view of groundwater flow direction and to identify areas of potential contamination.

Standard operating procedures (SOPs) for sample collection are assigned (included in the Phase 2.5 SAP, HDR 2021) to minimize variations, potential contamination, and other types of degradation in the chemical and physical composition of the water. Field staff will follow SOPs for collecting representative samples. Laboratory representativeness is achieved by proper preservation and storage of samples along with appropriate sub-sampling and preparation for analysis.

1.5.2.4 COMPLETENESS

Completeness is defined as the total number of samples analyzed for which acceptable analytical data are generated, compared to the total number of samples collected. Sampling at existing, active wells with known position coordinates in favorable conditions and at the appropriate time points, along with adherence to standardized sampling and testing protocols set out by the QAPP will aid in providing a complete data set. The goal for completeness is 90 percent.

1.5.2.5 COMPARABILITY

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. This goal is achieved through using standardized techniques to collect and analyze representative samples, along with using standardized data validation and reporting procedures. All data should be reported and calculated in units consistent with SOPs to enable comparison.

1.5.2.6 SENSITIVITY

Sensitivity is the ability of the method or instrument to detect the target analytes at the level of interest. Data will be compared to Washington's Cleanup Levels and Risk Calculation (CLARC) screening levels as shown in Appendix C, and the laboratory's method reporting limits (MRLs) will be equal to or less than these limits where possible.

1.6 Special Training and Certifications

The contracted laboratory maintains the appropriate certifications and participates in periodic auditing programs that establish its level of performance.

1.7 Documentation and Records

HDR will maintain program quality records in their Boise, Idaho office. These records will be maintained in electronic format and will include the following:

- QAPP, including any approved modifications, updates, and addendums.
- Project work plans, including any approved modifications, updates and addendums.
- Field documentation.
- Chain-of-custody records.
- Laboratory documentation.
- Data validation and usability reports.
- Project database.
- Final project reports/deliverables.

Electronic documents are maintained on a secure HDR server with a routine backup schedule. Simplot and Ecology will be provided copies of final documents listed above.

2 Data Generation and Acquisition

This section of the QAPP outlines specific QA/QC procedures related to generating, compiling, reporting, and archiving data. The consistent use of SOPs in these areas is critical to the overall project objective to generate data of known and acceptable quality.

2.1 Sampling Process Design (Phase 2.5 Activities)

The sampling process design was developed in conjunction with the DQO planning process (Appendix B). Briefly, soil samples will be collected during downgradient monitoring well installation, groundwater samples will be collected two-times form newly installed wells, Soil gas screening samples will be collected on-site at direct push system (e.g., GeoProbe^{TM}) locations and air samples may be collected on a one-time basis off-site using a direct push system (e.g., GeoProbe^{TM}). In addition, shallow soil samples will be collected on-site for phytoremediation options and static water level measurements will be taken at all monitoring wells well during each groundwater sampling event. Field and analytical data will undergo data review, verification, and validation procedures to establish their usability for supporting project objectives. Sampling plan components are described in greater detail below.

2.2 Sampling Locations and Frequency

The following Phase 2.5 monitoring well installation and testing activities will be conducted downgradient of the facility near wells MW-6 and MW-7.

- Two (2) new downgradient monitoring wells will be installed to a depth of 30-40 feet below ground surface to serve as “deep” wells to evaluate vertical gradients and groundwater quality.
- Both wells will be constructed using a hollow-stem auger (HSA) rig with 2-inch ID Schedule 40 PVC well riser, well screen, with flush-mount road boxes.
- A Washington-licensed surveyor will survey the monitoring wells to the top of the PVC well casing and to the ground surface at the base of the protective well casing. These measurements will be used determine the groundwater elevation and flow direction.
- Soil samples will be collected at 5-foot intervals during drilling and screened using an organic vapor monitor equipped with a photo-ionization detector (PID) with readings recorded in the boring logs.
- Two samples per boring are proposed, one in the vadose zone just above the water table and another in the vadose zone biased by PID/visual indications. It is assumed that, at minimum, two samples per boring, for a total of 4 soil samples (plus 1 blind duplicate) will be collected for analytical testing following the sampling protocol defined by the Source Removal, Drain Evaluation, Monitoring Well Construction, and Sampling Work Plan (HDR 2012). Soil samples will be sent to Eurofins TestAmerica, Spokane, Washington for the analyses listed in **Table 5** (Appendix A).
- The following samples will be collected for quality assurance/quality control (QA/QC) purposes:
    - A trip blank will accompany sample bottles and be run for methods requiring trip blank analysis.
    - One blind duplicate soil sample will be collected from a monitoring well installation boring.
- In total, 4 soil samples, 1 blind duplicate soil sample, and one trip blank per sample shipment will be collected during the monitoring well installation activity.

Both new groundwater monitoring wells will be sampled twice: (1) immediately after well development, and (2) 30 days later. In addition, a synoptic round of groundwater level measurements will be collected from all monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-5R, MW-6, MW-6D, MW-7, and MW-7D) during the groundwater sampling activities in order to evaluate groundwater flow direction.

The RI Work Plan lists the groundwater COPCs based on exceedance of the most restrictive Washington Cleanup Levels and Risk Calculation (CLARC) values. Phase 2.5 groundwater sampling activity will include the analyses listed in **Table 6** (Appendix A) for both groundwater sampling events.

The following will be collected for QA/QC purposes:

- A trip blank will accompany sample bottles and be run for methods requiring trip blank analysis.
- One blind duplicate groundwater sample will be collected during each sampling event.
- One rinsate blank will be created by pouring distilled water through the decontaminated monitoring well sampling equipment and collecting the water as a sample for analysis for each sampling event

Groundwater samples will be sent to Eurofins TestAmerica, Spokane, Washington. In all, the following samples will be analyzed for the parameters listed in **Table 4**:

- 4 monitoring well groundwater samples (2 per event)
- 2 blind duplicate samples (1 per event)
- 2 rinsate blanks samples (1 per event)one trip blank per sample shipment

The following Phase 2.5 onsite soil vapor screening investigation activities will be conducted at on-site locations to evaluate the presence or absence of soil contamination “hot spots”.

- Direct-push sampling with a GeoProbe^{TM} will be conducted to visually log soils and gather soil vapor readings using a PID at 50 onsite locations on a grid with approximately 50-foot centers, to a depth intersecting groundwater (assuming approximately12 feet).
- PID grab readings (non-headspace) will be collected from the exposed continuous soil cores to quickly identify potential zones of contamination.
- Up to three (3) soil samples from depths exhibiting signs of soil contamination (e.g., staining, discoloration, high PID grab reading) will be obtained in Ziploc baggies and field-screened for headspace using a PID. If there is no evidence of soil contamination, a soil sample will be analyzed for headspace every 4 feet to the groundwater depth (assuming approximately 12 feet).
- The PID headspace readings at each depth interval will be recorded on a boring log for each soil boring.

Direct push soil gas samples may also be collected for laboratory analysis. The concentration of constituents in groundwater will be compared to the VOC screening values. If one or more constituents in groundwater exceeds the screening values a Tier I soil vapor intrusion assessment will be conducted adjacent to residences and businesses located downgradient of the site.

If required, the following Phase 2.5 Tier I soil vapor intrusion investigation activities would be conducted off-site as follows:

- Up to 10 offsite locations adjacent to residences and businesses located between 2nd Street and 3rd Street will be selected and access will be obtained prior to conducting exterior deep soil gas sampling in accordance with the Guidance for Evaluating Soil Vapor Intrusion in Washington State (Publication No. 09-09-047).
- Exterior deep soil gas samples will be collected from immediately above the water table (estimated depth of 12 feet) at all 10 selected locations using direct-push sampling techniques and temporary soil vapor probes. This sample depth is expected to assess "worst case" concentrations of COPC in soil gas.
- Soil gas samples will be collected over a 20-minute time period in a certified 6-liter steel SUMMA canister that has been evacuated to a vacuum of approximately -30 inches mercury.
- Soil gas samples will be submitted to Eurofins Air Toxics LLC, Folsom, California and analyzed for volatile organics by USEPA Method TO-15.
- Analytical results will be compared to Ecology's Deep Soil Gas screening values as updated in 2015.

If required, all ten (10)- exterior deep soil gas samples collected during the Tier 1 Soil Vapor Intrusion Investigation will be analyzed for VOCs by EPA Method TO-15 (**Table 7**, Appendix A). The following samples will also be collected and analyzed for QA/QC purposes:

- A blind duplicate soil gas sample will be collected from one of the 10 soil gas sample locations.
- An ambient air blank sample will be collected at a frequency of one per day of sampling and be collected simultaneously with soil gas sampling.

In all, 13 samples are proposed as follows:

- 10 soil gas samples.
- 3 QA/QC samples including one blind duplicate soil gas and two ambient air blank samples.

To determine the soil suitability for potential future onsite phytoremediation options, grab soil samples will be collected from onsite locations around the site perimeter.

Grab soil samples from depths of 6 to 12 inches, 12 to 18 inches, and 18 to 24 inches will be collected from five (5) onsite locations around the site perimeter. A total of 15 samples will be collected with either hand augers or Geoprobe™ (to be conducted during on-site soil vapor headspace screening investigation). Grab soil samples will also be screened using a PID with readings recorded in the boring logs. All fifteen (15) soil samples collected for the soil suitability testing will be analyzed for the parameters listed in **Table 8** (Appendix A).

No QA/QC samples will be collected during the soil suitability testing activity.

2.3 Sampling Methods

Data will be collected in accordance with the requirements of this QAPP and the SAP. SOPs are documented in the SAP. Phase 2.5 sampling activities focus on monitoring well sampling and direct push sampling (hydraulic GeoProbe^{TM} type rig that pushes continuous probe into the ground and allows for soil, soil vapor, and groundwater sampling). For this phase, soil samples will be collected during well installation, two rounds of groundwater samples will be collected from new monitoring wells and soil gas screening and samples for analysis will be collected with a direct push rig. Additional phases of investigation are anticipated, and activities could include direct push sampling for soils and groundwater, installing additional groundwater monitoring wells, and additional sampling of groundwater monitoring wells. This Phase 2.5 QAPP includes the following activities:

- Soil sampling during the installation of monitoring wells
- Groundwater sampling of new "deep" downgradient wells
- Soil vapor headspace screening at 50 onsite locations on a grid with approximately 50-foot centers.
- GeoProbe^{TM} (direct push) for soil vapor intrusion off-site Tier I soil vapor intrusion assessment
- Shallow on-site soil sampling for phytoremediation options

2.3.1 Split Spoon/Core Barrel Sampling

The SOPs for Hollow Stem Auger Drilling (SOP-1) and Soil Boring and Subsurface Sample Collection (SOP-2) are in the SAP. These SOPs covers soil sampling with a hollow stem auger and GeoProbe^{TM} rig, (or equivalent direct-push technology). Standard chain-of-custody procedures will be followed from the time samples are collected until the samples arrive at the laboratory (see SAP SOP-3 Chain of Custody in SAP). Soil cuttings from the macro core or split-spoon sampler will be screened in the field using a PID. Information on screening soil cuttings and taking headspace readings using a PID is included in SOP-2. Standard chain-of-custody procedures will be followed from the time laboratory samples are collected until the samples arrive at the laboratory (see SOP-3, PROJECT CUSTODY DOCUMENTATION). Samples will be immediately labeled and placed in a clean ice chest and chilled until delivery to the laboratory.

Table 4 (Appendix A) summarizes Phase 2.5 field QA/QC samples including QA/QC samples to be collected during the monitoring well installation soil sampling. **Table 5** (Appendix A) summarizes the analyses for monitoring well boring soil samples including methods, preservatives and holding times.

2.3.2 Groundwater Monitoring Well Sampling

Two rounds of groundwater samples will be collected from the two newly installed deep downgradient monitoring wells as part of Phase 2.5 activities. SAP SOP-5 Sampling Monitoring Wells, included in the SAP, describes groundwater monitoring well sampling activities. Standard chain-of-custody procedures will be followed from the time samples are collected until the samples arrive at the laboratory (see SAP SOP-3 Chain of Custody in SAP). Samples will be immediately labeled and placed in a clean ice chest and chilled until delivery to the laboratory.

Table 4 (Appendix A) summarizes Phase 2.5 field QA/QC samples including QA/QC field samples to be collected during the groundwater monitoring well sampling. **Table 6** (Appendix A) summarizes the analyses for monitoring well groundwater samples including methods, preservatives and holding times.

2.3.3 Direct Push Soil Vapor Intrusion Sampling

Soil gas samples using temporary direct push soil gas monitoring probes and SUMMA canisters will be collected during the Phase 2.5 activities, and if required, at 10 downgradient locations. If one or more constituents in groundwater samples from existing monitoring wells exceeds the VOCs screening values, a Tier I soil vapor intrusion investigation will be conducted adjacent to residences and businesses located downgradient of the site (between 2nd Street and 3rd Street). Up to ten (10) soil vapor samples would be collected in accordance with SAP SOP-6 Soil Vapor Screening and Sampling. Standard chain-of-custody procedures will be followed from the time samples are collected until the samples arrive at the laboratory (see SAP SOP-3 Chain of Custody in SAP). Samples will be immediately labeled and kept out of direct sunlight until delivery to the laboratory.

Table 4 (Appendix A) summarizes Phase 2.5 field QA/QC samples including QA/QC field samples to be collected during the vapor intrusion sampling. **Table 7** (Appendix A) summarizes the analyses for vapor intrusion samples including methods, preservatives and holding times.

2.3.4 On-Site Soil Suitability Testing

Composite soil samples will be collected from onsite locations around the site perimeter of the site to determine the soil suitability for potential future onsite phytoremediation options. Fifteen (15) shallow soil samples for compositing will be collected from 5 sampling locations in accordance with the SAP and SAP SOP-7 Surface Soil Sampling. Standard chain-of-custody procedures will be followed from the time samples are collected until the samples arrive at the laboratory (see SAP SOP-3 Chain of Custody in SAP). Samples will be immediately labeled and kept out of direct sunlight until delivery to the laboratory. No QA/QC samples will be collected during the Phase 2.5 soil suitability testing event.

Table 4 (Appendix A) summarizes Phase 2.5 field QA/QC samples including QA/QC field samples to be collected during the vapor intrusion sampling. **Table 8** (Appendix A) summarizes the analyses for shallow soil suitability treatment testing samples including analytical parameters and methods.

2.4 Analytical Methods

Laboratories will document the condition in which samples are received. Conditions include the following:

- Cooler temperature.
- Condition of sample bottles.
- Completeness of chain-of-custody documentation.
- Record of custody seal presence.

Laboratory analytical methods, reporting limits (RL), method detection limits (MDL), LCS, MS recovery ranges, MSD RPDs, surrogates spike ranges, and comparison to CLARC values are provided in Appendix C. These procedures are standard methods for the analysis of water sample and detect analytes at the level necessary to compare to regulatory criteria (Appendix C).

2.5 Quality Control

QC samples will be collected and analyzed as part of the data validation process to evaluate compliance with the measurement quality objectives. These samples provide a means to evaluate the performance of field and laboratory SOPs by measuring the effect of inherent variability.

2.5.1 Field and Field QC Samples

A sample identification summary for Phase 2.5 laboratory analytical samples can be found on **Table 9** (Appendix A). During each Phase 2.5 sampling task, QA/QC samples will be in accordance with the type and frequency summarized in **Table 4**. These field replicates are collected and labeled according to the sampling SOPs (see SAP) and provide a means to evaluate field and sampling error.

2.5.2 Laboratory QC Samples

An MS is prepared by the laboratory (for the samples explicitly collected for this purpose by field staff) by adding a solution of analytes with known concentrations to a field sample. The MS/MSD samples are used to determine the accuracy of analysis for a given matrix. The contract laboratory will split field samples (producing a laboratory duplicate) to determine laboratory precision. The difference between total variability and laboratory variability provides an estimate of the field variability. The laboratory will also run deionized water through the entire sample preparation and analysis procedure; therefore, this method blank is used to assess laboratory practices. Finally, the laboratory will run one LCS, a sample of known concentration, to evaluate laboratory processes. These QC samples comprise the standard EPA QA/QC protocol consisting of a laboratory blank, one laboratory duplicate, one LCS, and one MS for each applicable analysis. However, the laboratory is ultimately responsible for determining the proper type and frequency of QA/QC samples for its analyses. The contract laboratory will inform the project manager or principal investigator as soon as possible if any sample is lost, damaged, has a lost tag, or gives an unusual result. Appendix C summarizes the laboratory established limits for these QC criteria.

2.6 Instrument and Equipment Testing, Inspection, Maintenance, and Calibration

Field managers are responsible for field equipment maintenance decisions. As appropriate, field meters (e.g., pH and conductivity) will be calibrated against known standards prior to each day's field activities. Calibration events will be documented in field notebooks and/or field forms. Additional accuracy checks will be conducted as determined appropriate by field managers; for example, checks may occur when measurements are outside of expected ranges (refer to **Table 3** in Appendix A) or when measurements are not stabilizing. Equipment will be inspected in full prior to leaving for the field to help prevent in-field equipment problems.

The contracted laboratory is responsible for laboratory equipment maintenance and calibration decisions and documentation. Should an equipment maintenance event or failure affect the analytical schedule, the laboratory will be responsible for notifying HDR of the delay.

2.7 Inspection/Acceptance of Supplies and Consumables

HDR's field manager is responsible for obtaining and maintaining supplies and consumables for each sampling event. **Table 10** (Appendix A) shows vendors that provide the most commonly used supplies. The contracting laboratory is responsible for inspecting and checking supplies and consumables (sample reference materials and reagents) associated with the analytical procedures. This includes any standards needed for laboratory QC (described in Section 2.5.2).

2.7.1 Existing Water Quality Data

Soil and groundwater monitoring and source removal have occurred at the site. Refer to the RI Work Plan for details (HDR 2019a).

2.8 Data Management

HDR will maintain the following program data in their Boise, Idaho office:

- QAPP
- Work plans
- Addendums
- Field notes
- Chain-of-custody records
- Laboratory documentation
- Data validation records
- Summary reports
- Deliverables

Hardcopies of field notes, chain-of-custody forms (COC forms), and laboratory reports will be filed and maintained for the duration of the project. Likewise, electronic documents, such as laboratory reports, will be filed in the project directory. The project directory is hosted on a secure server with regular on-site and off-site backup procedures.

2.8.1 Data Collected in the Field

Field staff will record site information in a field notebook and/or field form at the time of sample collection. This information will include documentation of the sample method (i.e., intermediate equipment used or individual sample containers) and observations of conditions that could affect the quality of the samples (e.g., clarity, weather). Field staff will use standardized field forms to record field parameter measurements (i.e., conductivity, pH, temperature). Notes and data will be recorded in indelible ink, weather permitting; in adverse weather conditions (i.e., very cold or very wet), pencil may be used. Any written mistakes will be crossed out once (not erased) and initialed, and the correct information will be written in. Field notebook and datasheet entries will include the following information at minimum:

- Project name.
- Monitoring well/sample location.
- Initials of sampling personnel.
- Date and time of sample collection.
- Samples collected.
- Field measurements and observations.

Field staff will fill out a COC form at the conclusion of the sampling day. A sample COC form and SOP are included in the SAP. The COC form will include the following information at minimum:

- Project name.
- Monitoring well/sample name.
- Initials of sampling personnel.
- Date and time of sample collection.
- Samples collected.

Data recorded in field notebooks, field forms, and on COC forms will be backed up at the end of each field day (i.e., by scanning or photocopying). Field data will be archived in original form upon return to the office.

2.8.2 Laboratory Data

Laboratory data will be delivered in an electronic format (called the electronic data deliverable in this QAPP) to minimize the chances of transcription error. The laboratory will provide an EPA Level 2 data validation package. This is the most detailed data package available, and includes the following information:

- Case narrative.
- Field and laboratory sample identification.
- Sample collection, receipt, preparation and analysis date/time.
- Sample conditions upon receipt and chain-of-custody.
- Preparation and analysis methods and batch number/identification.
- Sample result, method detection limits and reporting limits.
- Laboratory data qualifiers and data qualifier definitions.
- Dilution factors and sample volumes.
- QC data, acceptance criteria, and frequency for the following QC samples:
  - Field and laboratory MS/MSD.
  - Laboratory duplicates.
  - Laboratory method and instrument blanks.
  - Laboratory calibration check standards.

Both the electronic data deliverable and validation package associated with each sampling event will be archived in original form on the project directory. The laboratory sample data will then be uploaded to the project database. QC results will also be uploaded to the database and will be used to evaluate the accuracy of the data and to determine whether the measurement quality objectives were met.

2.8.3 Database Development

HDR will develop an Excel database to efficiently store groundwater and soil quality data. The database stores sampling site information, static water level and water level elevation information, analytical laboratory results and qualifiers, quality control sample results, regulatory limits, and other associated data.

Prior to incorporation in the database, all data will be subject to review as described in this QAPP to verify accuracy and completeness.

3 Assessment and Oversight

3.1 Assessments and Reports to Management

Field and laboratory systems and performances will be reviewed regularly for quality control. HDR will perform internal reviews, as appropriate. Review procedures will be consistent with those described by EPA guidance (2000).

HDR's internal reviews of field activities verify that the procedures established by this QAPP are being followed. Internal field reviews may include evaluating field and instrument records, sample collection and handling, and documentation procedures. The findings of internal reviews will be shared with the field team to facilitate corrective actions being taken (if needed).

If HDR suspects any issues affecting the quality of the laboratory analytical data, HDR will request a QA/QC report from the laboratory as conducted by laboratory personnel in accordance their QA manual regarding laboratory performance. The request will include documentation of the laboratory's review of sample receiving and handling, chain-of-custody procedures, sample preparation and analysis, and instrument operating records.

3.2 Corrective Actions

Corrective actions refer to the process of implementing measures to counter QC problems identified through the assessments outlined above. Corrective actions may occur during field or laboratory activities or during data validation and assessment. If QC results indicate problems with data, the prescribed procedures will be followed to resolve the problems. Corrective steps may include the following:

- Modifying sampling or measurement procedures.
- Re-calibrating instruments.
- Re-analyzing samples (within holding time requirements).
- Modifying analytical procedures.
- Re-collecting samples (if time and resources allow).

If none of these measures can be taken within practical time and budget constraints, then the data will be qualified appropriately in the analysis and report. Even if qualified data are eventually unacceptable for use in the project (i.e., rejected), these data are archived throughout the project life. No data are discarded.

Corrective actions or other modifications to the QAPP will be tracked and produced quarterly. Modifications constitute minor changes made in the implementation of the QAPP according to staff discretion. For example, a site that was not visited or sampled during a sampling event due to lack of water or unsafe field conditions would constitute a modification. Corrective actions and modifications taken will be documented when implemented and produced quarterly.

4 Data Review, Verification, and Validation

Data review, verification, and validation procedures are established to confirm that the data obtained are complete, accurate and of appropriate quality. These steps are critical to verifying the ability of the collected data to meet project objectives. Data review, verification, and validation will be completed for data produced by the quarterly groundwater sampling events.

4.1 Data Review, Verification, and Validation

4.1.1 Data Review

Data review refers to the process of examining data for correct and complete recording, transmission and processing (EPA 2002). Both field and laboratory data undergo review processes.

Raw field data are entered directly into field notebooks/and or sample forms at the time of the site visit. The field crew will check their field notebooks for missing or improbable measurements before leaving each site. In addition, spot checks for transcription errors will occur as data are recorded in the field. Following field activities, recorded field data are archived in original form and entered into the project database. One hundred percent of the field data entry will be checked against the original sample forms for errors and omissions. Missing or unusual data will be brought to the attention of the field manager for consultation and resolution.

Internal laboratory data review procedures will be according to laboratory SOPs. Upon receipt of lab results by HDR, results will be checked for missing and improbable data. A standard case narrative of laboratory QA/QC results will be sent to the project manager for each set of samples.

4.1.2 Data Verification and Validation

Data verification refers to the process of evaluating a data set for completeness – that data requested from the laboratory has been received and complies with specified requirements. Data validation describes an analyte and sample specific process of evaluating that a data set meets method, procedure and contract requirements. Procedural criteria are documented throughout this QAPP.

Generally, verification and validation procedures are conducted together by the QA/QC manager according to established procedures. Data compliance with acceptance criteria established by this QAPP is determined through the process of data verification and validation. Data beyond acceptance criterion will be evaluated and qualified appropriately, using data validation guidance. The data qualification flags used in this project are shown in **Table 11** (Appendix A). Once verification and validation are complete, the appropriate data qualification flags are attached to the corresponding data in the “validated” version of the electronic data deliverable. This electronic data deliverable is uploaded to the project database, and the validation flags follow the corresponding data throughout the life of the project. Although data may be rejected for use, no data are deleted in this process. Problems identified through this process will be addressed according to the corrective actions outlined in Section 3.2. The results of the data validation process for each sampling event are presented in a data validation report.

4.2 Reconciliation with User Requirements (Data Usability)

The data usability assessment takes the results of data review, verification, and validation processes and determines whether the qualified data meet the overall project data quality objectives. In the usability assessment, data and measurement quality objectives are verified for meeting the standards set forth in this QAPP. A sample usability assessment is given in Appendix D. A data summary and data usability assessment will be produced following receipt of analytical data for the outlined activities described in the SAP.

Additionally, the project objectives will be reviewed annually to identify any changes. The QAPP will accordingly be reviewed and updated annually, subject to approval, to reflect any changes and to maintain alignment of data collection and QA/QC procedures to the overall project goals.

5 References

EPA [United States Environmental Protection Agency]

2000 Guidance on Technical Audits and Related Assessments for Environmental Data Operations. EPA QA/G-7. USEPA Office of Environmental Information, Washington, DC. http://www.epa.gov/quality/qa_docs.html. Accessed March 2012.

2002 Guidance for Quality Assurance Project Plans. EPA QA/G-5. USEPA Office of Environmental Information, Washington, DC. http://www.epa.gov/quality/qa_docs.html. Accessed March 2012.

2006 Guidance on Systematic Planning Using the Data Quality Objectives Process. EPA QA/G-4. USEPA Office of Environmental Information, Washington, DC. http://www.epa.gov/QUALITY/qs-docs/g4-final.pdf. Accessed July 2018.

HDR Engineering, Inc.

2021. Sampling and Analysis Plan for Phase 2.5 RI Activities (SAP). Simplot Grower Solutions

2019a. Remedial Investigation Work Plan (RI Work Plan). Simplot Grower Solutions.

2019b. Sampling and Analysis Plan for Phase 1 RI Activities (SAP). Simplot Grower Solutions.

USGS [United States Geological Survey]

ND National Field Manual for the Collection of Water-Quality Data. U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chaps. A1-A9. Available online at http://pubs.water.usgs.gov/twri9A.

2006 Collection of Water Samples (ver. 2.0): U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A4. Available online at http://pubs.water.usgs.gov/twri9A.

A

Tables

Table 1. Key Personnel and Roles

Personnel	Contact Information	Responsibilities
J.R. Simplot Company	P.O. Box 27 Boise, Idaho 83707	
Molly Dimick	Molly. Dimick@simplot.com (208) 235-5682	Project Lead, responsible for overall project
HDR Engineering, Inc.	412 E. Parkcenter Blvd., Suite 100 Boise, ID 83706-6659	
Stacey Lamer, Project Manager	Stacey.Lamer@hdrinc.com 208-387-7034	Responsible for development and execution of overall project scope, oversight, deliverables and schedule.
Corrie Hugaboom, Health and Safety Officer	Corrie.Hugaboom@hdrinc.com 208-387-7003	Responsible for health and safety oversight, quality assurance/quality control (QA/QC)
Adam Kessler, Professional Geologist	Adam.Kessler@hdrinc.com (763) 278-590	Responsible for overseeing and reviewing monitoring well construction plan, well construction, and well construction report.
Brittany Duarte, Field and Data Manager	Brittany Duartemailto:@hdrinc.com 512-912-5169 (office) 603-508-1409 (cell)	Responsible for logging soil cuttings, overseeing drilling and installation of monitoring wells, design of monitoring wells, groundwater sampling, data management and analysis, and reporting.
Environmental West	1015 N. Yardley St. Spokane, WA 99212	
Josh Burrows President	joshb@environmentalwest.com 800-635-4762	Responsible for GeoProbe^{TM} rig
Eurofins Test America	5755 8^{th} Street East Tacoma, WA 98424	
Tracy Dutton Client Relations	tracy.dutton@testamericainc.com 480-338-0216	Responsible for executing and reporting laboratory work and associated QA/QC protocols.
Kuo Testing Labs	119 E. Main Street Othello, WA 99344	
Patrick Freeze *Technical Specialist* *Research and Development Chemist* Lab EH&S Manager	Patrick.freeze@kuotestinglabs.com 509-488-0112	Responsible for executing and reporting laboratory work and associated QA/QC protocols.

Table 2. Generalized Schedule of Activities Associated with Phase 2.5 Sampling Events

Activities	Time Period
Submittal of Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) to Ecology	June 10, 2021
Ecology Review	30 days
Finalize SAP and QAPP	10 days
Initiate Field Work	5 days
Draft Summary Report of Phase 2.5 Activities to Ecology	30 days following receipt of laboratory reports

Table 3. Data Quality Indicators/Measurement Quality Objectives

Parameter	Units	EPA Method	Description	Accuracy (deviation from true value)	Precision (%SD; except pH)	Standard for Measurement Stabilization[1]
Temperature	°C	170.1	Thermistor	0.2	10	0.1 units
Specific Conductivity	µS/cm	120.1	Conductivity Meter	5	10	3%
pH	units	150.1	Electrometric	0.1	0.1 units	0.1 units

[1]A field measurement is considered stabilized when readings vary by no more than the standard given here.

°C = degrees Celsius; µS/cm = microSiemens per centimeter

Table 4. QA/QC Field Samples for Phase 2.5 Sampling

QA/QC Type	Number of Samples	Description
Monitoring Well Boring Soil Samples		
Duplicate Soil	1	Duplicate is collected using the same sampling technique as the original sample for soil.
Trip Blank (method specific)	1	Soil sample taken from the lab to the sampling site and then transported back to the laboratory without having been exposed to sampling procedures (bottles stay sealed the entire time).
Monitoring Well Groundwater Samples		
Duplicate Groundwater	1 per event	Duplicate is collected using the same sampling technique as the original sample for groundwater.
Equipment Rinsate Blank	1 per event	Equipment rinsate blank taken from sampling equipment after decontamination.
Trip Blank (method specific)	1 per cooler	Water sample taken from the lab to the sampling site and then transported back to the laboratory without having been exposed to sampling procedures (bottles stay sealed the entire time).
Tier I Soil Vapor Intrusion Samples		
Duplicate Soil Vapor	1	Duplicate is collected using the same sampling technique as the original sample for both soils and groundwater.
Ambient Air	2	Ambient Air blank will be collected at the frequency of one per day of sampling and be collected simultaneously with soil vapor sampling.

No QA/QC samples will be collected during the soil suitability testing event.

Table 5. Analyses for Monitoring Well Boring Soil Samples[1]

Analytical Parameter	Method	Preservative	Holding Times
Volatile Organic Compounds (VOCs) (full list)	EPA 8260D	Methanol and 4°C	48 hours
Ethylene Dibromide (EDB)	EPA 8011	4°C	14 days
Chlorinated Herbicides (full list)	EPA 8151A	4°C	14 days
Resource and Recovery Act (RCRA) Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver).	EPA 6020B, EPA 7471A	4°C	28 days
Nitrate+Nitrite, as N	EPA 353.2	4°C	28 days
Ammonia-N	EPA 350.1	4°C	28 days
Northwest Gasoline Range Organics (GRO)	NWTPH-Gx	Methanol and 4°C	14 days
Northwest Diesel Range Organics (DRO)	NWTPH-Dx	4°C	14 days

[1]See RI-Work Plan and supplements for analysis selection for each sample.
EPA=U.S. Environmental Protection Agency

Table 6. Analyses for Groundwater Samples[1]

Analytical Parameter	Method	Preservative	Holding Times
Volatile Organic Compounds (VOCs) (full list)	EPA 8260D	HCl and 4°C	14 days
Ethylene Dibromide (EDB)	EPA 8011	4°C	14 days
Chlorinated Herbicides (full list)	EPA 8151A	4°C	7 days
Resource and Recovery Act (RCRA) Metals, Dissolved (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). Field filtered.	EPA 6020B, EPA 7470A	HNO_3	28 days
Nitrate+Nitrite, as N	EPA 353.2	H_2SO_4 and 4°C	28 days
Ammonia-N	EPA 350.1	H_2SO_4 and 4°C	28 days
Northwest Gasoline Range Organics (GRO)	NWTPH-Gx	HCl and 4°C	14 days
Northwest Diesel Range Organics (DRO)	NWTPH-Dx	HCl and 4°C	14 days

[1]See RI-Work Plan and supplements for analysis selection for each sample.
EPA=U.S. Environmental Protection Agency; HCl=hydrochloric acid; HNO_3=nitric acid; H_2SO_4=sulfuric acid

Table 7. Analyses for Vapor Intrusion Soil Gas Samples

Analytical Parameter[2]	Method	Preservative	Holding Times
Volatile Organic Compounds (VOCs) (low level)	EPA TO-15	Keep out of sunlight	30 days

Table 8. Analyses for Shallow Soil Suitability Treatment Testing Samples

Analytical Parameter	Method	Preservative	Holding Times[1]
pH	Complete Analysis (E1)	None	None
Soluble Salts	Complete Analysis (E1)	None	None
% Organic Matter	Complete Analysis (E1)	None	None
Nitrate	Complete Analysis (E1)	None	None[2]
Ammonium	Complete Analysis (E1)	None	None[3]
Phosphorous	Complete Analysis (E1)	None	None
Potassium	Complete Analysis (E1)	None	None
Sulfur	Complete Analysis (E1)	None	None
Calcium	Complete Analysis (E1)	None	None
Magnesium	Complete Analysis (E1)	None	None
Sodium	Complete Analysis (E1)	None	None
Zinc	Complete Analysis (E1)	None	None
Copper	Complete Analysis (E1)	None	None
Manganese	Complete Analysis (E1)	None	None
Iron	Complete Analysis (E1)	None	None
Boron	Complete Analysis (E1)	None	None
Electric Conductivity	Complete Analysis (E1)	None	None
% Lime	CCE (S19)	None	None
Sodium Absorption Ratio	SAR (S21)	None	None
Carbonates	Bicarbonate (S20)	None	None
Chloride	Chlorides (S6)	None	None

[1] No lab-specified holding times, but for best results samples should be sent to lab within one to two days of sampling event, three days at most.

Table 9. Phase 2.5 Sampling Locations and Rationale

Identification	Monitoring Wells	Monitoring Well Depth (ft bgs)	# Laboratory Samples
MW-6D	Off-site adjacent to MW-6 on 3rd Street to serve as a "deep" well to evaluate vertical gradient and downgradient nature and extent of groundwater quality	30-40	2 (1 per event)
MW-7D	Off-site adjacent to MW-7 on 3rd Street to serve as a "deep" well to evaluate vertical gradient and downgradient nature and extent of groundwater quality	30-40	2 (1 per event)
Identification	**Monitoring Well Soil Borings**	**Sample Depth (ft bgs)**	**# Laboratory Samples**
BH2.5-6D	Co-located with MW-6D for one sample in the vadose zone just above the water table and another in the vadose zone biased by PID/visual indications	12[1], <12[2]	2
BH2.5-7D	Co-located with MW-7D for one sample in the vadose zone just above the water table and another in the vadose zone biased by PID/visual indications	12[1], <12[2]	2
Identification	**On-Site Soil Vapor Headspace Screening**	**Sample Depth (ft bgs)**	**# Screening Samples**
SVH2.5-01 through SVH2.5-50	On-site grid of 50 locations with approximately 50-foot centers and soil vapor headspace screening samples collected from up to three (3) depths biased by PID grab readings and visual indications, or every four (4) feet to groundwater if no contamination is observed.	three depths (variable)	150
Identification	**Tier 1 Off-Site Soil Vapor Sampling (If required)**	**Sample Depth (ft bgs)**	**# Laboratory Samples**
VI2.5-01	Off-site downgradient adjacent to residences and businesses between 2nd Street and 3rd Street; probe location to be determined based on prior findings and access	12[1]	1
VI2.5-02	Off-site downgradient adjacent to residences and businesses between 2nd Street and 3rd Street; probe location to be determined based on prior findings and access	12[1]	1
VI2.5-03	Off-site downgradient adjacent to residences and businesses between 2nd Street and 3rd Street; probe location to be determined based on prior findings and access	12[1]	1
VI2.5-04	Off-site downgradient adjacent to residences and businesses between 2nd Street and 3rd Street; probe location to be determined based on prior findings and access	12[1]	1
VI2.5-05	Off-site downgradient adjacent to residences and businesses between 2nd Street and 3rd Street; probe location to be determined based on prior findings and access	12[1]	1
VI2.5-06	Off-site downgradient adjacent to residences and businesses between 2nd Street and 3rd Street; probe location to be determined based on prior findings and access	12[1]	1
VI2.5-07	Off-site downgradient adjacent to residences and businesses between 2nd Street and 3rd Street; probe location to be determined based on prior findings and access	12[1]	1
VI2.5-08	Off-site downgradient adjacent to residences and businesses between 2nd Street and 3rd Street; probe location to be determined based on prior findings and access	12[1]	1
VI2.5-09	Off-site downgradient adjacent to residences and businesses between 2nd Street and 3rd Street; probe location to be determined based on prior findings and access	12[1]	1

Table 9. Phase 2.5 Sampling Locations and Rationale

VI2.5-10	Off-site downgradient adjacent to residences and businesses between 2nd Street and 3rd Street; probe location to be determined based on prior findings and access	12[1]	1
Identification	**On-Site Soil Suitability Testing**	**Grab Sample Depth (inches bgs)**	**# Laboratory Samples**
SST2.5-01	On-site along the perimeter adjacent to the intersection of 1st Street and the railroad to determine the phytoremediation conditions at the northern side of the site	6-12, 12-18, 18-24	3
SST2.5-02	On-site along the perimeter adjacent to 1st Street midway between MW-1 and MW-2 to determine the phytoremediation conditions along the western side of the site	6-12, 12-18, 18-24	3
SST2.5-03	On-site along the perimeter adjacent to the intersection of 1st Street and Zillah Ave between MW-2 and MW-3 to determine the phytoremediation conditions along the south and western side of the site	6-12, 12-18, 18-24	3
SST2.5-04	On-site along the perimeter adjacent to the intersection of Zillah Ave and 2nd Street between MW-2 and MW-3 to determine the phytoremediation conditions along the south and eastern side of the site	6-12, 12-18, 18-24	3
SST2.5-05	On-site along the perimeter adjacent to the intersection of 2nd Street and the railroad to determine the phytoremediation conditions at the north and eastern side of the site	6-12, 12-18, 18-24	3

[1] Sample depth is estimated and will be determined in the field based on the depth of the vadose zone

[2] Sample depth will be selected in the field and biased by to PID/visual indications ft bgs = feet below ground surface

Table 10. Consumable Supplies and Vendors

Consumable	Product Description	Item Number	Vendor
pH standards (4.0, 7.0, 10.0)	KTO: pH Buffer Solution Kit, 4 liters each	2507200	Hach Company 1-800-227-4224
Conductivity standard	Conductivity standard, 1.412 mS/cm, 1 liter	013620HY	Hach Company 1-800-227-4224
Silicone for Hydrolab O-rings	Silicone compound, net weight ¼ oz, 2 packets	000298HY	Hach Company 1-800-227-4224
DO membranes	DO standard membrane	002589HY	Hach Company 1-800-227-4224
pH junction	Teflon pH junction	003883HY	Hach Company 1-800-227-4224
DO electrolyte	Electrolyte, DO, 59 mL	000537HY	Hach Company 1-800-227-4224
pH electrolyte	pH reference electrode saturated KCl and AgCl, 100 mL	005308HY	Hach Company 1-800-227-4224
Hydrolab rubber replacement cap	Hydrolab rubber replacement cap	000465	Hach Company 1-800-227-4224
0.45 µm filters	GWE high capacity filters, 50 per pack	ET-GF-50	Enviro-Tech Services Company 1-800-468-8921
Silicone tubing	3/16 x 3/8 inch silicone tubing size 15…T16, sold by the foot	RYN-0575-054	Enviro-Tech Services Company 1-800-468-8921
Polyethylene tubing	0.17 x ¼ inch polyethylene tubing…T5, sold by the foot	RYN-0525-016	Enviro-Tech Services Company 1-800-468-8921
Blue sharpies	Sharpie permanent ultra-fine point markers, blue, 12 per pack	451880	Office Depot www.officedepot.com
Rite-in-the-Rain copier paper	Rite in the Rain All Weather Copier Paper, 8 ½ x 11, 200 sheets per pack	3XFR7	Grainger www.grainger.com
Strapping tape	Cantech 0179 48 mm x 55 mm, 24 rolls per case	Cantech 0179 48 mm x 55 mm	Keystone Tape & Supply of Texas, Inc. 817-439-8898
2-gallon zip lock bags	13” x 15” heavy weight 2-gallon zip lock freezer bags, 100 per pack	130F41315 100	The WEBstaurant Store http://www.webstaurantstore.com/

mS/cm = microSiemens per centimeter; oz = ounce; mL = milliliter; µm = micrometer

Table 11. Data Qualification Flags

Data Qualification Flag	Definition
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting the quality control criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

B

Data Quality Objectives Process

Data Quality Objectives
for Simplot Sunnyside Grower Solutions Facility

The following data quality objectives (DQOs) have been developed for the site investigation of the Simplot Grower Solutions facility at South 300 1st Street, Sunnyside, Washington. These DQOs are part of the ongoing systematic project planning process, and have been developed in accordance with guidance by the U.S. Environmental Protection Agency (EPA 2006). The numbered and bold headings follow the same outline and text as the steps presented in the EPA guidance document. This layout is intended to provide a clear connection between the EPA's planning framework and the project quality assurance project plan (QAPP).

1. State the Problem

a) Concisely describe the problem.
b) Identify lead and members of planning team.
c) Develop a conceptual model of the problem.
d) Determine resources.

1.1 Concisely describe the problem

J.R. Simplot (Simplot) entered into an Agreed Order (AO) (No. DE 16446, effective date June 26, 2019) with the Washington State Department of Ecology (Ecology) to complete a remedial investigation/feasibility study (RI/FS), and to prepare a draft cleanup action plan (DCAP) for the Simplot Grower Solutions (formerly named Simplot Soilbuilders) Sunnyside site. The objective of the RI/FS is to meet the requirements of the AO in accordance with the Model Toxics Control Act (MTCA) Cleanup Regulation (Washington Administrative Code [WAC] 173-340). The RI is designed to characterize site conditions in order to complete a FS and select a cleanup action as described in WAC 173-340-360 through 173-340-390.

The goal of the RI is to characterize the nature and extent of contaminants at the site. This data is used to support feasibility studies for remediation and also to support risk assessment.

1.2 Identify lead and members of planning team

The planning team includes Simplot and environmental consultant, HDR Engineering, Inc. (HDR project manager and technical personnel).

1.3 Develop a conceptual model of the problem

1.3.1 Type and Source of Contaminants

The *Remedial Investigation Work Plan* (RI Work Plan; HDR 2019a) prepared for Phase I activities lists the groundwater chemicals of potential concern (COPCs) based on exceedance of the most restrictive Washington Cleanup Levels and Risk Calculation (CLARC) values. The Phase 2.5 analysis will include the following analyses in groundwater samples:

- VOCs by EPA Method 8260C
- Dissolved Metals (As, Ba, Cd, Cr, Pb, Se, Ag) by EPA Method 6020A
- Chloride by method 300.0

- Sulfate by method 300.0
- Ammonia as N by method 350.1
- Nitrate Nitrite as N by method 353.2

The COPC are believed to be associated with on-site storage and distribution of fertilizers and related agri-chemicals.

1.3.2 Transport and/or Migration Pathways

Transport and/or migration pathways define those mechanisms by which humans are exposed to a chemical released from a site. A pathway is comprised of four elements:

- A source and mechanism for release of a chemical into the environment.
- A transport medium (e.g., groundwater and soil).
- A point of potential human contact (exposure point).
- A human exposure route (ingestion, inhalation, dermal contact).

A primary source of COPCs was the rinsate area, where Simplot conducted a source removal in 2012. Other potential sources may remain and will be further investigated as part of the RI/FS. The rinsate area was identified as potential primary source (release) area and soils have been excavated from this area. In addition, Simplot replaced its fertilizer tank storage area (aboveground storage tanks and secondary containment system) in 2011.

1.4 Determine Resources

The resources available are those necessary to complete the project objectives. The resources include personnel, existing infrastructure at the project site, equipment, and budget. They are not initially limited by arbitrary limits, except in the sense that resources are not infinite and should be used judiciously and productively to satisfy the data requirements identified through this data quality objective process.

2. Identify the Goal of the Study

a) Identify principal study question(s).
b) Consider alternative outcomes or actions that can occur upon answering the questions.
c) For decision problems, develop decision statement(s), and organize multiple decisions.
d) For estimation problems, state what needs to be estimated and key assumptions.

2.1 Identify principle study question(s)

Data generated by this study need to support an assessment of the nature and extent of COPC in soils and groundwater, support a risk-based evaluation using CLARC, and to determine if remedial action is warranted.

The principle purpose of the Phase 2.5 site investigation is to characterize deep groundwater downgradient of the site and soil vapor intrusion conditions on and off dite to supplement previous sampling events. The guiding study questions are as follows:

- What is current deep groundwater quality status downgradient of the site and how does this compare to previous sampling activities? Compare direct push data as well as groundwater monitoring data.

- Do any of the water quality data exceed COPC?
- In compiling all available groundwater data, are there areas at the site with high levels of COPC that may suggest a potential source area?
- Do the concentrations of VOC constituents detected in groundwater exceed the vapor intrusion screen values present in the guidance documents?
- Is a Tier I soil vapor intrusion investigation required?
- Does any of the soil gas data exceed guidance for Vapor intrusion?

2.2 Consider alternative outcomes or actions that can occur upon answering the questions

The primary goal of the Phase 2.5 study is to assess deep off-site groundwater quality and vapor intrusion conditions . The sampling results and comparison to CLARC values will either indicate a need for further sampling, which may include additional direct push sampling, additional monitoring wells, vapor intrusion monitoring or a need for remediation activities. Although this data may eventually be used to make decisions, it is not appropriate at this time to further consider alternative outcomes or actions related to future decisions.

2.3 For decision problems, develop decision statement(s), organize multiple decisions

The primary goal of the study is to determine deep off-site groundwater quality and vapor intrusion conditions. Although this data may eventually be used to make decisions, it is not appropriate at this time to development decision statements related to future decisions.

2.4 For estimation problems, state what needs to be estimated and key assumptions

The following groundwater quality data needs are anticipated in support of the Phase 2.5 investigation:

- Estimation of groundwater flow direction (this has been done previously but will be updated with a round of groundwater monitoring well sampling).
- Estimation of existing background groundwater quality.
- Estimation of potential source areas.

3. Identify Information Inputs

a) Identify types and sources of information needed to resolve decisions or produce estimates.

b) Identify the basis of information that will guide or support choices to be made in the later steps of the data quality objectives (DQO) process.

c) Select appropriate sampling and analysis methods for generating the information.

3.1 Identify types and sources of information needed to resolve decisions or produce estimates

The following information inputs are needed to characterize existing water quality at the project site. Inputs are broken down according to specific program needs.

To determine appropriate locations to characterize groundwater and soil gas quality for the project site:

- Existing records on the location of past monitoring and sampling, and current data needs.
- Determine groundwater flow direction to determine proper downgradient monitoring points.

Deep off-site groundwater samples would be one-time from two new deep off-site monitoring wells. Vapor intrusion samples may be collected one time from 10 off-site vapor intrusion probe locations. The groundwater quality and vapor intrusion parameters to be used are listed in the *Sampling and Analysis Plan* (SAP; HDR 2019b) and also in **Tables 6** and **7** (in Appendix A).

3.2 Identify the basis of information that will guide or support choices to be made in the later steps of the DQO process

The project will develop and adhere to this QAPP, RI Work Plan, and the SAPs. These documents will establish sound and defensible procedures for sampling and analysis, and sound and defensible data quality indicators. These documents will establish the benchmarks against which collected data are compared to determine whether these data are of appropriate quality to support groundwater quality investigations.

3.3 Select appropriate sampling and analysis methods for generating the information

Sampling procedures established by the QAPP will be developed based on established water quality sampling protocols and site-specific considerations (i.e., traffic, winter sampling, site operations). Standard, accepted analytical procedures (i.e., EPA methods) will be used to determine constituent concentrations. Methods that produce data with method reporting limits lower than applicable regulatory criteria will be used whenever necessary and possible.

4. Define the Boundaries of the Study

a) Define the target population of interest and its relevant spatial boundaries.
b) Define what constitutes a sampling unit.
c) Specify temporal boundaries and other practical constraints associated with sample/data collection.
d) Specify the smallest unit on which decisions or estimates will be made.

4.1 Define the target population of interest and its relevant spatial boundaries

For Phase 2.5 RI activities, the target population is off-site downgradient deep groundwater, on and off -site soil gas and on-site and off-site soil. Soil sample locations will be located at and near the facility.

4.2 Define what constitutes a sampling unit

Water, soil, or soil gas samples collected from each probe or auger location or monitoring well constitute a sampling unit.

4.3 Specify temporal boundaries and other practical constraints associated with sample/data collection

Temporal boundaries: As part of the phase 2.5 RI, groundwater samples will be collected twice from off-site deep monitoring wells. Monitoring well soil borings, on-site soil vapor headspace screening samples, Tier 1 off-site soil vapor sampling (if required), and onsite-soil suitability testing for phytoremediation analysis will be collected once. Vapor intrusion samples may also be collected once if necessary.

4.4 Specify the smallest unit on which decisions or estimates will be made

The approach of this project and associated work plan and SAP is to collect soil, groundwater and vapor intrusion samples in order to determine deep off-site downgradient groundwater quality, soil vapor, and to supplement this information with past sampling activities. Therefore, the smallest possible unit of decision making would be based on all sampling events conducted at and near the facility.

5. Develop the Analytic Approach

a) Specify appropriate population parameters for making decisions or estimates.
b) For estimation problems, specify the estimator and the estimation procedure.

5.1 Specify appropriate population parameters for making decisions or estimates

The target population is groundwater. This can be broken into upgradient, mid-gradient, and downgradient from the facility (gradient and flow direction have been defined by facility groundwater monitoring wells).

5.2 For estimation problems, specify the estimator and the estimation procedure

Statistical analysis for RI data, will be limited to maximum and average values. As further samples are collected, statistical analysis, such as trend analysis and establishment of background concentrations, will be performed on the data and the QAPP will be updated.

6. Specify Performance or Acceptance Criteria

Summary statistics will include the maximum value and average value. Additional monitoring is anticipated, and statistical analysis may be performed during RI activities. An analysis of the relative percent difference of the duplicate sample with its parent sample will be conducted in order to determine if the data is acceptable, or if it needs to be flagged.

7. Develop the Detailed Plan for Obtaining Data

Detailed information for the sampling and analyses of soil, groundwater and vapor intrusion are provided in the work plan and SAP. Components in the QAPP, revised for Phase 2.5 RI activities include the following:

- Screening split spoon or macrocore soils using a PID during hollow stem auger (HSA) drilling and soil sampling from offsite soil borings,
- Off-site monitoring well installation and development,
- Groundwater level elevations will be measured at each of the monitoring wells at the time of sample collection,
- Groundwater sampling from new offsite monitoring wells,
- Screening soil gas using a PID during direct push probing onsite,
- Sampling soil gas using SUMMA canisters during direct push probing offsite (If conducted based on the Tier I Soil Vapor Intrusion Assessment)
- Screening and shallow composite soil sampling onsite collected with hand augers or macro cores with a hydraulic GeoProbe™ type rig
- Quality assurance and quality control measures will be developed, documented, and implemented through the creation of and adherence to a quality assurance project plan and work plan.
- The QAPP and SAP will be evaluated annually to determine whether program objectives are being met and amended as necessary to attain project objectives.
- Data collection will continue as needed to allow for adequate characterization.

References

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2006 Guidance on Systematic Planning Using the Data Quality Objectives Process. EPA QA/G-4. USEPA Office of Environmental Information, Washington, DC. https://www.epa.gov/sites/production/files/documents/guidance_systematic_planning_dqo_process.pdf. Accessed August 6, 2018

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Laboratory Methods and QA/QC Criteria

Limits for Project: 58014427 - Simplot - Sunnyside, WA

Analysis Group	Method Description	Method Code	Prep Method	Analyte Description	CAS Number	RL	MDL	Units	LCS - Low	LCS - High	LCS - RPD %	MS - Low	MS - High	MS - RPD %	Surrogate Low	Surrogate High
Groundwater	Volatile Organic Compounds (GC/MS)	8260C_LL	5030B	1,1,1,2-Tetrachloroethane	630-20-6	0.300	0.0270	ug/L	79	127	20	79	127	20		
				1,1,1-Trichloroethane	71-55-6	0.200	0.0250	ug/L	74	128	14	74	128	14		
				1,1,2,2-Tetrachloroethane	79-34-5	0.200	0.0560	ug/L	69	139	22	69	139	22		
				1,1,2-Trichloroethane	79-00-5	0.200	0.0700	ug/L	80	127	19	80	127	19		
				1,1-Dichloroethane	75-34-3	0.200	0.0250	ug/L	74	135	20	74	135	20		
				1,1-Dichloroethene	75-35-4	0.200	0.102	ug/L	71	126	17	71	126	17		
				1,1-Dichloropropene	563-58-6	0.200	0.0360	ug/L	72	132	13	72	132	13		
				1,2,3-Trichlorobenzene	87-61-6	0.500	0.149	ug/L	75	137	20	75	137	20		
				1,2,3-Trichloropropane	96-18-4	0.200	0.0500	ug/L	80	127	20	80	127	20		
				1,2,4-Trichlorobenzene	120-82-1	0.300	0.0720	ug/L	79	130	20	79	130	20		
				1,2,4-Trimethylbenzene	95-63-6	0.300	0.0720	ug/L	78	136	20	78	136	20		
				1,2-Dibromo-3-Chloropropane	96-12-8	2.00	0.440	ug/L	69	130	26	69	130	26		
				1,2-Dichlorobenzene	95-50-1	0.300	0.0500	ug/L	80	129	14	80	129	14		
				1,2-Dichloroethane	107-06-2	0.200	0.0430	ug/L	74	130	15	74	130	15		
				1,2-Dichloropropane	78-87-5	0.200	0.0600	ug/L	80	130	14	80	130	14		
				1,3,5-Trimethylbenzene	108-67-8	0.500	0.152	ug/L	80	139	20	80	139	20		
				1,3-Dichlorobenzene	541-73-1	0.300	0.0500	ug/L	80	130	12	80	130	12		
				1,3-Dichloropropane	142-28-9	0.200	0.0560	ug/L	80	130	19	80	130	19		
				1,4-Dichlorobenzene	106-46-7	0.300	0.0500	ug/L	80	129	11	80	129	11		
				2,2-Dichloropropane	594-20-7	0.500	0.0600	ug/L	58	150	28	58	150	28		
				2-Chlorotoluene	95-49-8	0.500	0.116	ug/L	80	136	20	80	136	20		
				4-Chlorotoluene	106-43-4	0.300	0.0500	ug/L	80	130	20	80	130	20		
				4-Isopropyltoluene	99-87-6	0.300	0.0500	ug/L	78	132	14	78	132	14		
				Benzene	71-43-2	0.200	0.0300	ug/L	73	133	20	73	133	20		
				Bromobenzene	108-86-1	0.200	0.0350	ug/L	80	130	20	80	130	20		
				Bromoform	75-25-2	0.500	0.157	ug/L	69	137	20	69	137	20		
				Bromomethane	74-83-9	0.500	0.160	ug/L	68	120	18	68	120	18		
				Carbon tetrachloride	56-23-5	0.200	0.0250	ug/L	71	132	15	71	132	15		
				Chlorobenzene	108-90-7	0.200	0.0250	ug/L	80	123	12	80	123	12		
				Chlorobromomethane	74-97-5	0.200	0.0250	ug/L	79	131	20	79	131	20		
				Chlorodibromomethane	124-48-1	0.200	0.0550	ug/L	76	131	20	76	131	20		
				Chloroethane	75-00-3	0.500	0.0960	ug/L	49	135	27	49	135	27		
				Chloroform	67-66-3	0.200	0.0300	ug/L	80	130	20	80	130	20		
				Chloromethane	74-87-3	0.500	0.154	ug/L	32	143	23	32	143	23		
				cis-1,2-Dichloroethene	156-59-2	0.200	0.0550	ug/L	72	130	20	72	130	20		
				cis-1,3-Dichloropropene	10061-01-5	0.200	0.0900	ug/L	66	141	22	66	141	22		
				Dibromomethane	74-95-3	0.200	0.0620	ug/L	65	141	20	65	141	20		
				Dichlorobromomethane	75-27-4	0.200	0.0600	ug/L	74	131	20	74	131	20		
				Dichlorodifluoromethane	75-71-8	0.400	0.128	ug/L	20	137	22	20	137	22		
				Ethylbenzene	100-41-4	0.200	0.0300	ug/L	80	130	20	80	130	20		
				Hexachlorobutadiene	87-68-3	0.500	0.154	ug/L	72	138	20	72	138	20		
				Isopropylbenzene	98-82-8	1.00	0.187	ug/L	75	137	20	75	137	20		
				Methyl tert-butyl ether	1634-04-4	0.300	0.0700	ug/L	60	150	25	60	150	25		
				Methylene Chloride	75-09-2	5.00	0.741	ug/L	75	134	18	75	134	18		
				m-Xylene & p-Xylene	179601-23-1	0.500	0.115	ug/L	78	130	20	78	130	20		
				Naphthalene	91-20-3	1.00	0.221	ug/L	64	132	20	64	132	20		
				n-Butylbenzene	104-51-8	0.500	0.0800	ug/L	73	135	18	73	135	18		
				N-Propylbenzene	103-65-1	0.300	0.0910	ug/L	77	142	20	77	142	20		
				o-Xylene	95-47-6	0.500	0.147	ug/L	80	139	20	80	139	20		
				sec-Butylbenzene	135-98-8	1.00	0.168	ug/L	78	140	20	78	140	20		
				Styrene	100-42-5	0.500	0.192	ug/L	74	136	20	74	136	20		
				tert-Butylbenzene	98-06-6	0.500	0.100	ug/L	77	140	20	77	140	20		
				Tetrachloroethene	127-18-4	0.500	0.0840	ug/L	75	131	20	75	131	20		
				Toluene	108-88-3	0.200	0.0500	ug/L	80	126	20	80	126	20		

Limits for Project: 58014427 - Simplot - Sunnyside, WA

Analysis Group	Method Description	Method Code	Prep Method	Analyte Description	CAS Number	RL	MDL	Units	LCS - Low	LCS - High	LCS - RPD %	MS - Low	MS - High	MS - RPD %	Surrogate Low	Surrogate High
				trans-1,2-Dichloroethene	156-60-5	0.200	0.0890	ug/L	63	133	17	63	133	17		
				trans-1,3-Dichloropropene	10061-02-6	0.200	0.0920	ug/L	71	128	21	71	128	21		
				Trichloroethene	79-01-6	0.200	0.0660	ug/L	72	136	14	72	136	14		
				Trichlorofluoromethane	75-69-4	0.500	0.107	ug/L	60	132	20	60	132	20		
				Vinyl chloride	75-01-4	0.0200	0.0130	ug/L	52	128	21	52	128	21		
				1,2-Dichloroethane-d4 (Surr)	17060-07-0	15.0	0.500	ug/L							80	120
				4-Bromofluorobenzene (Surr)	460-00-4	15.0	3.60	ug/L							80	120
				Dibromofluoromethane (Surr)	1868-53-7	15.0	0.500	ug/L							80	120
				Toluene-d8 (Surr)	2037-26-5	15.0	0.500	ug/L							80	120
				Trifluorotoluene (Surr)	98-08-8	1.50	0.430	ug/L							80	120
Groundwater	EDB, DBCP, and 1,2,3-TCP (GC)	8011	8011_Prep	Ethylene Dibromide	106-93-4	0.0100	0.00200	ug/L	60	140	20	60	140	20		
				1,2-Dibromopropane	78-75-1	0.0300	0.0110	ug/L							60	140
Groundwater	Metals (ICP/MS)	6020A	3005A/FIELD_FLTR	Arsenic	7440-38-2	0.00500	0.00102	mg/L	80	120	20	80	120	20		
				Barium	7440-39-3	0.00600	0.00106	mg/L	80	120	20	80	120	20		
				Cadmium	7440-43-9	0.00200	0.000500	mg/L	80	120	20	80	120	20		
				Chromium	7440-47-3	0.00200	0.000865	mg/L	80	120	20	80	120	20		
				Lead	7439-92-1	0.00400	0.000995	mg/L	80	120	20	80	120	20		
				Selenium	7782-49-2	0.0400	0.0103	mg/L	80	120	20	80	120	20		
				Silver	7440-22-4	0.00200	0.000275	mg/L	80	120	20	80	120	20		
Groundwater	Mercury (CVAA)	7470A	7470A_Prep/FIELD_	Mercury	7439-97-6	0.000300	0.000150	mg/L	80	120	20	80	120	20		
Groundwater	Nitrogen, Nitrate-Nitrite	353.2	353.2_Prep	Nitrate Nitrite as N	STL00217	0.150	0.0600	mg/L	90	110	20	90	110	20		
Groundwater	Nitrogen, Ammonia	350.1	Distill_Ammonia	Ammonia as N	7664-41-7	0.500	0.264	mg/L	90	110	20	90	110	20		
Groundwater	Northwest - Volatile Petroleum Products (GC	NWTPH_Gx	5030B	Gasoline	STL00228	0.250	0.100	mg/L	79	120	10	79	120	10		
				4-Bromofluorobenzene (Surr)	460-00-4	0.0500	0.00100	mg/L							50	150
				Trifluorotoluene (Surr)	98-08-8	0.0900	0.0330	mg/L							50	150
Groundwater	Northwest - Semi-Volatile Petroleum Products	NWTPH_Dx	3510C_LVI_14d	#2 Diesel (C10-C24)	STL00163	0.110	0.0650	mg/L	50	120	26	50	120	26		
				Motor Oil (>C24-C36)	STL00299	0.350	0.0960	mg/L	64	120	24	64	120	24		
				o-Terphenyl	84-15-1	0.00800	0.00200	mg/L							50	150
Groundwater	Herbicides (GC)	8151A	8151A_AP	2,4,5-T	93-76-5	1.00	0.455	ug/L	42	121	30	42	121	30		
				2,4-D	94-75-7	4.00	0.526	ug/L	41	124	30	41	124	30		
				2,4-DB	94-82-6	4.00	0.747	ug/L	35	117	30	35	117	30		
				Dalapon	75-99-0	2.00	0.910	ug/L	24	124	30	24	124	30		
				Dicamba	1918-00-9	2.00	0.435	ug/L	44	114	30	44	114	30		
				Dichlorprop	120-36-5	4.00	0.650	ug/L	46	117	30	46	117	30		
				Dinoseb	88-85-7	1.00	0.450	ug/L	11	110	30	11	110	30		
				MCPA	94-74-6	400	47.5	ug/L	37	106	30	37	106	30		
				MCPP	93-65-2	400	33.0	ug/L	33	131	30	33	131	30		
				Picloram	1918-02-1	0.500	0.240	ug/L	39	109	30	39	109	30		
				Silvex (2,4,5-TP)	93-72-1	1.00	0.170	ug/L	48	123	30	48	123	30		
				2,4-Dichlorophenylacetic acid	19719-28-9	0.500	0.140	ug/L							39	135

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Analysis Group	Method Description	Method Code	Prep Method	Analyte Description	CAS Number	RL	MDL	Units	GW CLARC	GW CLARC Method
Groundwater	Volatile Organic Compounds (GC/MS)	8260C_LL	5030B	1,1,1,2-Tetrachloroethane	630-20-6	0.300	0.0270	ug/L	1.7	Method B Cancer
				1,1,1-Trichloroethane	71-55-6	0.200	0.0250	ug/L	200	Method A, MCLG, FedMCL, WaMCL
				1,1,2,2-Tetrachloroethane	79-34-5	0.200	0.0560	ug/L	0.22	Method B Cancer
				1,1,2-Trichloroethane	79-00-5	0.200	0.0700	ug/L	0.77	Method B Cancer
				1,1-Dichloroethane	75-34-3	0.200	0.0250	ug/L	7.7	Method B Cancer
				1,1-Dichloroethene	75-35-4	0.200	0.102	ug/L	7	MCLG, FedMCL, WaMCL
				1,1-Dichloropropene	563-58-6	0.200	0.0360	ug/L		
				1,2,3-Trichlorobenzene	87-61-6	0.500	0.149	ug/L		
				1,2,3-Trichloropropane	96-18-4	0.200	0.0500	ug/L	0.0015	Method B Cancer
				1,2,4-Trichlorobenzene	120-82-1	0.300	0.0720	ug/L	1.5	Method B Cancer
				1,2,4-Trimethylbenzene	95-63-6	0.300	0.0720	ug/L	80	Method B Non cancer
				1,2-Dibromo-3-Chloropropane	96-12-8	2.00	0.440	ug/L	0.055	Method B Cancer
				1,2-Dichlorobenzene	95-50-1	0.300	0.0500	ug/L	600	MCLG, FedMCL, WaMCL
				1,2-Dichloroethane	107-06-2	0.200	0.0430	ug/L	0.48	Method B Cancer
				1,2-Dichloropropane	78-87-5	0.200	0.0600	ug/L	1.2	Method B Cancer
				1,3,5-Trimethylbenzene	108-67-8	0.500	0.152	ug/L	80	Method B Non cancer
				1,3-Dichlorobenzene	541-73-1	0.300	0.0500	ug/L		
				1,3-Dichloropropane	142-28-9	0.200	0.0560	ug/L		
				1,4-Dichlorobenzene	106-46-7	0.300	0.0500	ug/L	8.1	Method B Cancer
				2,2-Dichloropropane	594-20-7	0.500	0.0600	ug/L		
				2-Chlorotoluene	95-49-8	0.500	0.116	ug/L	160	Method B Non cancer
				4-Chlorotoluene	106-43-4	0.300	0.0500	ug/L		
				4-Isopropyltoluene	99-87-6	0.300	0.0500	ug/L		
				Benzene	71-43-2	0.200	0.0300	ug/L	0.8	Method B Cancer
				Bromobenzene	108-86-1	0.200	0.0350	ug/L	64	Method B Non cancer
				Bromoform	75-25-2	0.500	0.157	ug/L	5.5	Method B Cancer
				Bromomethane	74-83-9	0.500	0.160	ug/L	11	Method B Non cancer
				Carbon tetrachloride	56-23-5	0.200	0.0250	ug/L	0.63	Method B Cancer
				Chlorobenzene	108-90-7	0.200	0.0250	ug/L	100	MCLG, FedMCL, WaMCL
				Chlorobromomethane	74-97-5	0.200	0.0250	ug/L		
				Chlorodibromomethane	124-48-1	0.200	0.0550	ug/L	0.52	Method B Cancer
				Chloroethane	75-00-3	0.500	0.0960	ug/L		
				Chloroform	67-66-3	0.200	0.0300	ug/L	1.4	Method B Cancer
				Chloromethane	74-87-3	0.500	0.154	ug/L		
				cis-1,2-Dichloroethene	156-59-2	0.200	0.0550	ug/L	16	Method B Non cancer
				cis-1,3-Dichloropropene	10061-01-5	0.200	0.0900	ug/L		
				Dibromomethane	74-95-3	0.200	0.0620	ug/L	80	Method B Non cancer
				Dichlorobromomethane	75-27-4	0.200	0.0600	ug/L	0.71	Method B Cancer
				Dichlorodifluoromethane	75-71-8	0.400	0.128	ug/L	1600	Method B Non cancer
				Ethylbenzene	100-41-4	0.200	0.0300	ug/L	700	Method A, MCLG, FedMCL, WaMCL
				Hexachlorobutadiene	87-68-3	0.500	0.154	ug/L	0.56	Method B Cancer
				Isopropylbenzene	98-82-8	1.00	0.187	ug/L	800	Method B Non cancer
				Methyl tert-butyl ether	1634-04-4	0.300	0.0700	ug/L	20	Method A
				Methylene Chloride	75-09-2	5.00	0.741	ug/L	5	Method A, FedMCL, WaMCL
				m-Xylene & p-Xylene	179601-23-1	0.500	0.115	ug/L		
				Naphthalene	91-20-3	1.00	0.221	ug/L	160	Method A, Method B Non cancer
				n-Butylbenzene	104-51-8	0.500	0.0800	ug/L	400	Method B Non cancer
				N-Propylbenzene	103-65-1	0.300	0.0910	ug/L	800	Method B Non cancer
				o-Xylene	95-47-6	0.500	0.147	ug/L	1600	Method B Non cancer
				sec-Butylbenzene	135-98-8	1.00	0.168	ug/L	800	Method B Non cancer
				Styrene	100-42-5	0.500	0.192	ug/L	100	MCLG, FedMCL, WaMCL
				tert-Butylbenzene	98-06-6	0.500	0.100	ug/L	800	Method B Non cancer
				Tetrachloroethene	127-18-4	0.500	0.0840	ug/L	5	Method A, FedMCL, WaMCL
				Toluene	108-88-3	0.200	0.0500	ug/L	640	Method B Non cancer
				trans-1,2-Dichloroethene	156-60-5	0.200	0.0890	ug/L	100	MCLG, FedMCL, WaMCL
				trans-1,3-Dichloropropene	10061-02-6	0.200	0.0920	ug/L		
				Trichloroethene	79-01-6	0.200	0.0660	ug/L	0.54	Method B Cancer
				Trichlorofluoromethane	75-69-4	0.500	0.107	ug/L	2400	Method B Non cancer
				Vinyl chloride	75-01-4	0.0200	0.0130	ug/L	0.029	Method B Cancer
Groundwater	EDB, DBCP, and 1,2,3-TCP (GC)	8011	8011_Prep	Ethylene Dibromide	106-93-4	0.0100	0.00200	ug/L	0.01	Method A
Groundwater	Metals (ICP/MS)	6020A	3005A/FIELD_FLTRD	Arsenic	7440-38-2	0.00500	0.00102	mg/L	0.058	Method B Cancer
				Barium	7440-39-3	0.00600	0.00106	mg/L	2000	MCLG, FedMCL, WaMCL
				Cadmium	7440-43-9	0.00200	0.000500	mg/L	5	Method A, MCLG, FedMCL, WaMCL
				Chromium	7440-47-3	0.00200	0.000865	mg/L	50	Method A
				Lead	7439-92-1	0.00400	0.000995	mg/L	15	Method A, FedMCL, WaMCL
				Selenium	7782-49-2	0.0400	0.0103	mg/L	50	MCLG, FedMCL, WaMCL
				Silver	7440-22-4	0.00200	0.000275	mg/L	80	Method B Non cancer
Groundwater	Mercury (CVAA)	7470A	7470A_Prep/FIELD_FLTRD	Mercury	7439-97-6	0.000300	0.000150	mg/L	2	Method A, MCLG, FedMCL, WaMCL
Groundwater	Nitrogen, Nitrate-Nitrite	353.2	353.2_Prep	Nitrate Nitrite as N	STL00217	0.150	0.0600	mg/L		
Groundwater	Nitrogen, Ammonia	350.1	Distill_Ammonia	Ammonia as N	7664-41-7	0.500	0.264	mg/L		
Groundwater	Northwest - Volatile Petroleum Products (GC)	NWTPH_Gx	5030B	Gasoline	STL00228	0.250	0.100	mg/L		
Groundwater	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH_Dx	3510C_LVI_14d	#2 Diesel (C10-C24)	STL00163	0.110	0.0650	mg/L		
				Motor Oil (>C24-C36)	STL00299	0.350	0.0960	mg/L		
Groundwater	Herbicides (GC)	8151A	8151A_AP	2,4,5-T	93-76-5	1.00	0.455	ug/L	160	Method B Non cancer
				2,4-D	94-75-7	4.00	0.526	ug/L	70	MCLG, FedMCL, WaMCL
				2,4-DB	94-82-6	4.00	0.747	ug/L	130	Method B Non cancer
				Dalapon	75-99-0	2.00	0.910	ug/L	200	MCLG, FedMCL, WaMCL
				Dicamba	1918-00-9	2.00	0.435	ug/L	480	Method B Non cancer
				Dichlorprop	120-36-5	4.00	0.650	ug/L		
				Dinoseb	88-85-7	1.00	0.450	ug/L	7	MCLG, FedMCL, WaMCL
				MCPA	94-74-6	400	47.5	ug/L	8	Method B Non cancer
				MCPP	93-65-2	400	33.0	ug/L	16	Method B Non cancer
				Picloram	1918-02-1	0.500	0.240	ug/L	500	MCLG, FedMCL, WaMCL
				Silvex (2,4,5-TP)	93-72-1	1.00	0.170	ug/L	50	MCLG, FedMCL, WaMCL

Limits for Project: 58014378 - ETA Limits - NW

Analysis Group	Method Description	Method Code	Prep Method	Analyte Description	CAS Number	RL	MDL	Units	Soil mg/Kg CLARC	Soil ug/Kg CLARC	Soil Method
Soil - HDR MTCA (Simplot)	Volatile Organic Compounds by GC/MS	8260C	5035A_FW	1,1,1,2-Tetrachloroethane	630-20-6	3.00	0.590	ug/Kg	38	38,000.000	Method B Cancer
				1,1,1-Trichloroethane	71-55-6	2.00	0.300	ug/Kg	0.084	84.000	Protective of Groundwater Saturated
				1,1,2,2-Tetrachloroethane	79-34-5	4.00	0.900	ug/Kg	0.00008	0.080	Protective of Groundwater Saturated
				1,1,2-Trichloroethane	79-00-5	2.00	0.250	ug/Kg	0.0018	1.800	Protective of Groundwater Saturated
				1,1-Dichloroethane	75-34-3	1.00	0.190	ug/Kg	0.0026	2.600	Protective of Groundwater Saturated
				1,1-Dichloroethene	75-35-4	5.00	1.10	ug/Kg	0.0025	2.500	Protective of Groundwater Saturated
				1,1-Dichloropropene	563-58-6	2.00	0.300	ug/Kg			
				1,2,3-Trichlorobenzene	87-61-6	3.00	0.600	ug/Kg			
				1,2,3-Trichloropropane	96-18-4	5.00	1.00	ug/Kg	0.033	33.000	Method B Cancer
				1,2,4-Trichlorobenzene	120-82-1	2.00	0.420	ug/Kg	0.029	29.000	Protective of Groundwater Saturated
				1,2,4-Trimethylbenzene	95-63-6	5.00	1.20	ug/Kg	800	800,000.000	Method B Non cancer
				1,2-Dibromo-3-Chloropropane	96-12-8	10.0	1.60	ug/Kg	1.3	1,300.000	Method B Cancer
				1,2-Dibromoethane	106-93-4	1.00	0.200	ug/Kg	0.005	5.000	Method A, Method A Industrial Properties
				1,2-Dichlorobenzene	95-50-1	10.0	1.30	ug/Kg	0.4	400.000	Protective of Groundwater Saturated
				1,2-Dichloroethane	107-06-2	1.00	0.200	ug/Kg	0.0016	1.600	Protective of Groundwater Saturated
				1,2-Dichloropropane	78-87-5	2.00	0.400	ug/Kg	0.0017	1.700	Protective of Groundwater Saturated
				1,3,5-Trimethylbenzene	108-67-8	5.00	0.810	ug/Kg	800	800,000.000	Method B Non cancer
				1,3-Dichlorobenzene	541-73-1	5.00	1.10	ug/Kg			
				1,3-Dichloropropane	142-28-9	2.00	0.230	ug/Kg			
				1,4-Dichlorobenzene	106-46-7	5.00	0.980	ug/Kg	0.068	68.000	Protective of Groundwater Saturated
				2,2-Dichloropropane	594-20-7	5.00	0.900	ug/Kg			
				2-Chlorotoluene	95-49-8	5.00	0.930	ug/Kg	1600	1,600,000.000	Method B Non cancer
				4-Chlorotoluene	106-43-4	5.00	1.00	ug/Kg			
				4-Isopropyltoluene	99-87-6	2.00	0.400	ug/Kg			
				Benzene	71-43-2	2.00	0.390	ug/Kg	0.0017	1.700	Protective of Groundwater Saturated
				Bromobenzene	108-86-1	10.0	1.00	ug/Kg	0.033	33.000	Protective of Groundwater Saturated
				Bromochloromethane	74-97-5	2.00	0.250	ug/Kg			
				Bromodichloromethane	75-27-4	1.00	0.180	ug/Kg	0.0024	2.400	Protective of Groundwater Saturated
				Bromoform	75-25-2	5.00	0.840	ug/Kg	0.023	23.000	Protective of Groundwater Saturated
				Bromomethane	74-83-9	1.00	0.210	ug/Kg	0.0033	3.300	Protective of Groundwater Saturated
				Carbon tetrachloride	56-23-5	2.00	0.300	ug/Kg	0.0022	2.200	Protective of Groundwater Saturated
				Chlorobenzene	108-90-7	2.00	0.250	ug/Kg	0.051	51.000	Protective of Groundwater Saturated
				Chloroethane	75-00-3	10.0	1.60	ug/Kg			
				Chloroform	67-66-3	2.00	0.300	ug/Kg	0.0048	4.800	Protective of Groundwater Saturated
				Chloromethane	74-87-3	5.00	0.930	ug/Kg			
				cis-1,2-Dichloroethene	156-59-2	3.00	0.600	ug/Kg	0.0052	5.200	Protective of Groundwater Saturated
				cis-1,3-Dichloropropene	10061-01-5	1.00	0.200	ug/Kg			
				Dibromochloromethane	124-48-1	1.50	0.270	ug/Kg	0.0018	1.800	Protective of Groundwater Saturated
				Dibromomethane	74-95-3	1.00	0.170	ug/Kg	800	800,000.000	Method B Non cancer
				Dichlorodifluoromethane	75-71-8	2.00	0.490	ug/Kg	16000	16,000,000.000	Method B Non cancer
				Ethylbenzene	100-41-4	2.00	0.410	ug/Kg	0.34	340.000	Protective of Groundwater Saturated
				Hexachlorobutadiene	87-68-3	3.00	0.600	ug/Kg	0.03	30.000	Protective of Groundwater Saturated
				Isopropylbenzene	98-82-8	2.00	0.460	ug/Kg	8000	8,000,000.000	Method B Non cancer
				Methyl tert-butyl ether	1634-04-4	2.00	0.300	ug/Kg	0.0072	7.200	Protective of Groundwater Saturated
				Methylene Chloride	75-09-2	40.0	9.90	ug/Kg	0.0015	1.500	Protective of Groundwater Saturated
				m-Xylene & p-Xylene	179601-23-1	10.0	1.70	ug/Kg			
				Naphthalene	91-20-3	10.0	1.80	ug/Kg	0.24	240.000	Protective of Groundwater Saturated
				n-Butylbenzene	104-51-8	3.00	0.630	ug/Kg	4000	4,000,000.000	Method B Non cancer
				N-Propylbenzene	103-65-1	5.00	0.760	ug/Kg	8000	8,000,000.000	Method B Non cancer
				o-Xylene	95-47-6	5.00	0.920	ug/Kg	0.84	840.000	Protective of Groundwater Saturated
				sec-Butylbenzene	135-98-8	3.00	0.670	ug/Kg	8000	8,000,000.000	Method B Non cancer
				Styrene	100-42-5	3.00	0.740	ug/Kg	0.12	120.000	Protective of Groundwater Saturated
				t-Butylbenzene	98-06-6	3.00	0.660	ug/Kg	8000	8,000,000.000	Method B Non cancer
				Tetrachloroethene	127-18-4	2.00	0.400	ug/Kg	0.0028	2.800	Protective of Groundwater Saturated
				Toluene	108-88-3	10.0	1.30	ug/Kg	0.27	270.000	Protective of Groundwater Saturated
				trans-1,2-Dichloroethene	156-60-5	2.00	0.400	ug/Kg	0.032	32.000	Protective of Groundwater Saturated
				trans-1,3-Dichloropropene	10061-02-6	10.0	1.40	ug/Kg			
				Trichloroethene	79-01-6	2.00	0.300	ug/Kg	0.0015	1.500	Protective of Groundwater Saturated
				Trichlorofluoromethane	75-69-4	2.00	0.300	ug/Kg	24000	24,000,000.000	Method B Non cancer
				Vinyl chloride	75-01-4	2.00	0.300	ug/Kg	0.000089	0.089	Protective of Groundwater Saturated
Soil - HDR MTCA (Simplot)	Northwest - Volatile Petroleum Products (GC)	NWTPH_Gx	5035A_FM	Gasoline	STL00228	5.00	2.30	mg/Kg			
Soil - HDR MTCA (Simplot)	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH_Dx	3546	#2 Diesel (C10-C24)	STL00163	50.0	12.3	mg/Kg			
				Motor Oil (>C24-C36)	STL00299	50.0	17.5	mg/Kg			
Soil - HDR MTCA (Simplot)	Metals (ICP)	6010D	3050B	Arsenic	7440-38-2	3.00	0.248	mg/Kg	0.15		Protective of Groundwater Saturated
				Barium	7440-39-3	0.500	0.0790	mg/Kg	83		Protective of Groundwater Saturated
				Cadmium	7440-43-9	1.00	0.0490	mg/Kg			
				Chromium	7440-47-3	1.30	0.216	mg/Kg			
				Lead	7439-92-1	1.50	0.222	mg/Kg	150		Protective of Groundwater Saturated
				Selenium	7782-49-2	5.00	0.396	mg/Kg	0.26		Protective of Groundwater Saturated
				Silver	7440-22-4	2.50	0.560	mg/Kg	0.69		Protective of Groundwater Saturated
Soil - HDR MTCA (Simplot)	Mercury (CVAA)	7471A	7471A_Prep	Mercury	7439-97-6	0.0300	0.00900	mg/Kg	0.1		Protective of Groundwater Saturated
Soil - HDR MTCA (Simplot)	Herbicides (GC/MS)	8151A_MS	8151A_SP	2,4,5-T	93-76-5	90.0	38.2	ug/Kg	800		Method B Non cancer
				2,4-D	94-75-7	90.0	39.3	ug/Kg	800		Method B Non cancer
				2,4-DB	94-82-6	90.0	21.3	ug/Kg	640		Method B Non cancer
				Dalapon	75-99-0	160	51.7	ug/Kg	2400		Method B Non cancer
				Dicamba	1918-00-9	90.0	20.6	ug/Kg	2400		Method B Non cancer
				Dichlorprop	120-36-5	90.0	20.6	ug/Kg			
				Dinoseb	88-85-7	160	53.2	ug/Kg	80		Method B Non cancer
				MCPA	94-74-6	90.0	20.6	ug/Kg	40		Method B Non cancer
				Mecoprop	93-65-2	90.0	20.6	ug/Kg	80		Method B Non cancer
				Pentachlorophenol	87-86-5	160	44.5	ug/Kg	0.00088		Protective of Groundwater Saturated
				Silvex (2,4,5-TP)	93-72-1	90.0	22.1	ug/Kg	640		Method B Non cancer

D

Data Usability Assessment

Data Usability Assessment

Name of Data Set:
Prepared By:
Date:

Data or Measurement Quality Objective	Yes	No	Comments
Planning documents available?			
Project objectives identified?			
Sample design described?			
QA/QC procedures defined?			
Field documents available for review?			
Sample site locations/description provided?			
Sample types and numbers defined?			
Field SOPs defined?			
Field calibrations recorded?			
QC samples documented?			
COC record documents?			
Complete data packages available?			
Specified methods used and detection limits met?			
Accuracy of data appropriate?			
Precision of data appropriate?			
Representativeness of data appropriate?			
Completeness of data appropriate?			
Comparability of data appropriate?			
Sensitivity of methods appropriate?			
Do the data satisfy the project goals and meet the quality objectives?			