UPPER COLUMBIA RIVER

FINAL
Data Summary Report for the Soil Amendment Technology Evaluation Study Phase II: Bench-Scale Treatability Testing

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ACRONYMS AND ABBREVIATIONS

ALS	ALS Environmental Kelso
Arcadis	Arcadis U.S., Inc.
CCT	Confederated Tribes of the Colville Reservation
COC	chain of custody
COVID-19	novel coronavirus identified in late 2019
DQO	data quality objective
DSR	data summary report
DU(s)	decision unit(s)
EPA	U.S. Environmental Protection Agency
ESI	Environmental Standards, Inc.
FSR	field summary report
IVBA	*in vitro* bioaccessibility
No.	number
OSU	The Ohio State University
QA/QC	quality assurance and quality control
Ramboll	Ramboll U.S. Consulting, Inc.
RI/FS	remedial investigation and feasibility study
RPD	relative percent difference
SATES	Soil Amendment Technology Evaluation Study
SVOC	semivolatile organic compound
SOP	standard operating procedure
SPLP	synthetic precipitation leaching procedure
t_0	baseline soil and amendment conditions (various sampling dates)
t_1	time point 1 (October 11, 2019)
t_2	time point 2 (January 11, 2020)
t_3	time point 3 (March 11, 2020)
TAI	Teck American Incorporated
TAL	target analyte list
UCR	Upper Columbia River
VOC	volatile organic compound
XRF	x-ray fluorescence

UNITS OF MEASURE

cm	centimeter(s)
ft	foot or feet
gal	gallon(s)
in.	inch(es)
L	Liter(s)
lb(s)	pound(s)
mm	millimeter(s)
mg/kg	milligram(s) per kilogram
μm	micrometer(s)

1 INTRODUCTION AND BACKGROUND

This data summary report (DSR) presents the results of the bench-scale treatability testing (Phase II) for the Upper Columbia River (UCR) Soil Amendment Technology Evaluation Study (SATES), being conducted at the UCR site (hereinafter, the Site[1]) in northeastern Washington state. Data collection and analyses for Phase II were conducted on behalf of Teck American Incorporated (TAI) in accordance with the following U.S. Environmental Protection Agency (EPA)-approved documents, which detail the scope of work, methods, procedures, and other requirements for SATES Phase II:

- *Final Work Plan for Soil Amendment Technology Evaluation Study (SATES), Phase II: Bench-Scale Treatability Testing* (hereinafter the Phase II Work Plan; Ramboll 2019b)
- *Work Plan for the Soil Amendment Technology Evaluation Study Phase II: Bench-Scale Treatability Study Soil Collection* (hereinafter the Soil Collection Work Plan; Ramboll 2018b)

This study is part of the ongoing UCR remedial investigation and feasibility study (RI/FS) TAI is conducting under EPA oversight, as required by the settlement agreement between TAI and EPA, dated June 2, 2006.

1.1 BACKGROUND

The background, purpose, and description of the SATES program are detailed in the Phase I and Phase II Work Plans (Ramboll U.S. Consulting, Inc. [Ramboll] 2017, 2019b). The SATES objective is to identify and field test a soil amendment technology or technologies that could appropriately and cost-effectively reduce the long-term potential for human exposure to lead in shallow soils in the UCR area (Buelow 2016). Reduction of the long-term potential for human exposure to lead in shallow soils may be accomplished by one or more of the following results:

- Reducing bioaccessibility of lead in soil by chemical sequestration;
- Reducing lead mobility and leachability in soil by increasing soil pH;
- Increasing vegetation cover in a manner that reduces the potential for direct human exposure and reduces erosion and transport of affected soil;
- Increasing the thickness of the humus barrier over the lead-bearing soil; and

[1] The Site as defined within the June 2, 2006, Settlement Agreement is the areal extent of hazardous substances contamination within the United States in or adjacent to the Upper Columbia River, including the Franklin D. Roosevelt Lake, from the U.S.-Canada border to the Grand Coulee Dam, and those areas in proximity to the contamination that are suitable and necessary for implementation of response actions.

- Improving soil structure in a manner that reduces the potential for erosion and transport of affected soils.

Although a primary focus is on reduction of lead exposure and bioavailability, the data collected from the study will also evaluate the effects of the amendments on co-located arsenic and on other metals in soil.

The SATES program was designed to be implemented in four phases, with the scope and design of each phase being dependent upon the outcomes of the preceding phases, as follows:

- Phase I – Test plot characterization and amendment alternatives screening
  - Phase IA – Test plot screening and selection (Part 1) and baseline soil characterization (Part 2)
  - Phase IB – Soil amendment technology screening and design
- Phase II – Bench-scale treatability studies
- Phase III – Test plot field implementation
- Phase IV – Test plot monitoring.

Candidate soil amendments were selected for the Phase II bench-scale treatability testing based on their chemical properties and the results of test plot soil characterization that was completed in Phase IA, as described in the Phase IB amendment screening and design memorandum dated January 11, 2018 (Ramboll 2018a).

The bench-scale experimental pot study was initiated on September 11, 2019 and continued for six months in accordance with the Phase II Work Plan (Ramboll 2019b). Soil samples were collected from the experimental test pots during the bench study to evaluate treatment effects over time. The first set of samples on the test pot soil were collected on October 11, 2019 (time point 1 = 1 month; t_1 samples); the second set of samples were collected on January 11, 2020 (time point 2 = 4 months; t_2 samples); and the third set of samples were collected on March 11, 2020 (time point 3 = 6 months; t_3 samples). Baseline soil samples, representing time zero (t_0), were collected in October 2019 from the soil that was supplied for the bench study and submitted to ALS for analysis with the first set of test pot samples. Due to the advent of the novel coronavirus identified in late 2019 (COVID-19), The Ohio State University (OSU) testing laboratories[2], where the experimental pot study was conducted, were temporarily shut down. The lab closure, followed by staffing limitations after the lab reopened to ensure lab personnel could remain physically distanced to reduce the risk of spreading the virus delayed analysis of a portion of the Phase II test pot soil

[2] Two laboratories at OSU were involved in analyzing the data; the Basta laboratory performed most of the tests, but a different OSU laboratory analyzed for total carbon and total nitrogen. Both OSU laboratories were affected by the university-wide closures for COVID-19.

samples. OSU provided the electronic data deliverable with all t_1, t_2, and t_3 laboratory results to TAI in March 2021, and data validation was completed in March 2021.

This DSR summarizes the Phase II study design, sample collection, test procedures (i.e., field, experimental pot set up, laboratory analytical procedures, and quality assurance and quality control [QA/QC]), and the analytical chemistry results. The results and preliminary analysis of Phase II t_1 and t_2 sample analyses informed the selection of amendments to apply to field test plots in Phase III.[3] Phase III involves the application of three different amendment technologies to the field test plots to evaluate their effectiveness for reducing the bioaccessibility of lead in Site soils. The amendment selection process, which included the elimination of ineffective or undesirable amendments, was conducted jointly by TAI, EPA, and other SATES participants, as discussed in Section 2.1.

The field treatability testing (SATES Phases III and IV) is taking place at specific locations (test plots) on three tribal allotments owned by members of the Confederated Tribes of the Colville Reservation (CCT). The test plot locations are in areas on the tribal allotments that were sampled during the 2014 residential soil sampling study (CH2M HILL 2016); the soil sampling areas on these allotments are referred to as decision units (DUs) that were defined and delineated for use in the residential soil sampling study (SRC 2014). The test plots are located on DUs 258, 401, and 441 (see Figure 1-1), and designated as 258-3, 401-1, 401-2, and 441-1 (Figures 1-2, 1-3, and 1-4). The test plot sampling and selection criteria are described in Section 4.3.1.1 of the Phase I Work Plan (Ramboll 2017), and the test plot characterization results are documented in the *Final Soil Amendment Technology Evaluation Phase IA Test Plot Selection and Characterization Data Summary Report* (Ramboll 2019a).

1.2 REPORT ORGANIZATION

This DSR is organized into the following sections:

- Section 1 — Introduction and Background
- Section 2 — Study Design
- Section 3 — Soil Collection and Handling
- Section 4 — Treatability Testing and Laboratory Analyses
- Section 5 — Results Summary.

[3] Bench-scale results from time t_3 were not available at the time the decision was made due to the temporary laboratory closure that started in late March 2020 in response to the COVID-19 pandemic.

Sections 3 and 4 include descriptions of the data collection and analysis methods, laboratory results for chemical and physical soil analyses, and data validation assessments for the data generated during Phase II. Appendices containing additional supporting information including field, laboratory, and data validation reports (Appendices A, B, and C, respectively) are provided electronically. Phase II data may be obtained from the UCR RI/FS project database, accessible to registered users at: http://teck-ucr.exponent.com.

2 STUDY DESIGN

2.1 PURPOSE OF THE STUDY

The objectives of the Phase II bench-scale treatability testing were to: 1) evaluate whether soil amendments showed potential to reduce the bioaccessibility of lead in Site soils; 2) evaluate the impact of amendments on key soil chemical and physical properties; and 3) develop data that could be used to reduce uncertainty about selection of amendment technologies for application to the field test plots in Phase III of the study. The results of testing completed through t_2, 4 months into the bench-scale testing period, were used to identify the soil amendment options that effectively meet the SATES data quality objectives (DQOs) and select which amendment technologies to carry forward for further evaluation in Phases III and IV – field-scale pilot testing.[4]

2.2 DATA QUALITY OBJECTIVES

The SATES DQOs are provided in Appendix A of the Phase I Work Plan (Ramboll 2017). The DQOs were developed by EPA (Buelow 2016) and have been used to guide development of work plans for each study phase, including the Phase II Work Plan (Ramboll 2019b).

2.3 SOIL COLLECTION

Test plots 258-3, 401-1, 401-2, and 441-1 were each considered for collection of soil to be used in the treatability testing laboratory experiment. Ultimately, test plot 401-2 was selected because it had the largest number of soil sample grid locations that met the following criteria:

- Soil lead concentrations > 800 milligrams per kilogram (mg/kg);
- Soil lead mineralogy representative of potential test plot treatment areas;
- Soil lead bioaccessibility greater than 60%; and
- Consistency of soil physiochemical characteristics (e.g., pH, organic carbon, grain size distribution) representative of Site soils.

[4] Three soil treatment amendments were recommended for field pilot testing following a series of webinars in which the available bench-scale test results and the 12 amendments being tested were discussed with the SATES team. In conjunction with the webinars, several study participants and their colleagues rated and ranked the amendment options to aid the process for selecting three amendments to test in the field. A working group of study participants then recommended three amendment alternatives for the field test: phosphate, phosphate combined with biochar, and compost (Mills 2020). Based on this recommendation, these three soil amendment technologies were selected for field testing (Ramboll 2020).

The soil collection locations at test plot 401-2 are shown in Figure 2-1. Additional details regarding soil collection for the bench-scale study are provided in the Phase II Soil Collection Work Plan (Ramboll 2018b) and the Phase II Soil Collection: Field Summary Report (hereinafter, the Soil Collection FSR) (Arcadis U.S., Inc. [Arcadis] 2020).

2.4 BENCH-SCALE TESTING DESIGN

Several different soil amendments were evaluated to identify the efficacy of each for potential use as a soil treatment technology using a bench-scale laboratory study, conducted by OSU. The experimental design for the laboratory study is illustrated in Figure 2-2. Twelve individual amendment materials and combined soil treatment amendments were evaluated in the Phase II treatability test:

- Soluble phosphate
- Biosolids
- Wood ash
- Biochar
- Compost
- Soluble phosphate and biosolids
- Soluble phosphate and biochar
- Soluble phosphate and compost
- Biosolids and wood ash
- Wood ash and biochar
- Wood ash and compost
- Biochar and compost.

Each amendment was tested using both low and high application rates and two application methods, surficial application of the amendments onto the soil in test pots and full incorporation (mixing) of the amendment into the soil. The application rates used were specific to each amendment, as summarized in Table 2-1. Surface application was done by placing the amendment material on top of the soil in the experimental test pots to approximate anticipated application conditions in the field. Incorporation was done by fully mixing the amendment into the soil in the test pots. The incorporation method allowed evaluation of the potential maximum effectiveness of the amendments in reducing lead bioaccessibility and improving soil characteristics (i.e., pH, available phosphorus, available and total nitrogen, total carbon, and organic carbon) as the amendments infiltrated the soil over time.

3 SOIL COLLECTION AND HANDLING

The Phase II testing was performed on Site soil collected from test plot 401-2. This section describes the field soil collection procedures and soil handling in the laboratory prior to initiation of the laboratory experiment and laboratory analyses.

3.1 FIELD METHODS

The field soil collection was conducted by Arcadis, on behalf of TAI. Methods used for soil collection were consistent with the Soil Collection Work Plan (Ramboll 2018b), except one deviation that is summarized below in Section 3.3. Soil collection activities are described below; more details can be found in the Soil Collection FSR (Arcadis 2020), provided in Appendix A to this DSR.

Soil collection was conducted under the purview of permits[5] obtained by TAI that authorized access to perform field work for SATES on the tribal allotments.

3.1.1 Soil Sample Collection

In accordance with the Soil Collection Work Plan (Ramboll 2018b), soil samples were collected on October 18, 2018 from test plot 401-2 to supply soils for use in the bench-scale treatability testing.

Soil samples were collected from the 4-ft-wide buffer area inside test plot 401-2. To verify that soil in predetermined sampling locations was above the threshold of 800 mg/kg lead specified in the Soil Collection Work Plan (Ramboll 2018b), an x-ray fluorescence (XRF) unit was used to screen soil for concentrations of lead *in situ* at the ground surface and at a depth of 1 in. below the soil surface.[6] Some of the sampling locations were shifted due to obstructions at the predetermined locations given in the work plan or because XRF indicated soil lead concentrations less than 800 mg/kg. At each sampling location, soil was collected from the 0 to 3 in. depth interval over a 2-ft by 2-ft area. The sampling locations, sampling procedures, and other documentation were recorded by field personnel in a field logbook, in photographs, and on sampling forms. Additional details are included in the Soil Collection FSR (Arcadis 2020; see Appendix A).

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[5] U. S. Bureau of Indian Affairs Limited Use Permit and a CCT Research Permit, both of which were approved in August 2017.

[6] The soil surface (0 in. depth) was defined as the mineral soil surface beneath vegetation, surface debris, and duff.

3.1.2 Sample Handling and Shipping

Soil collected from each sample location was placed into three separate 5-gal polyethylene buckets lined with two 3-mil food-grade plastic bags. A total of 48 buckets of soil were collected with approximately 2.5 gal of soil in each bucket. The soil was stored and packaged for shipping in accordance with the sample storage, packaging, and shipping procedures described in Standard Operating Procedure (SOP) 2 of Appendix B of the Soil Collection Work Plan (Ramboll 2018b), as documented in the Soil Collection FSR (Arcadis 2020). The buckets were delivered by the field sampling team to Anatek Labs in Spokane, Washington. Anatek Labs then shipped the buckets to OSU.

3.2 LABORATORY SOIL HANDLING AND HOMOGENIZATION

In the laboratory, soil in each bucket was screened for lead using an XRF unit to verify that once combined into a single composite sample, the soil for the bench testing would have sufficiently elevated lead concentrations necessary for the study. Soil in each bucket was homogenized by mixing in a 50-gal drum cement mixer, then the mixed soil was screened for total lead, as described in SOP-1 of the Phase II Work Plan (Ramboll 2019b). If the homogenized soil in a bucket had a lead concentration less than 800 mg/kg, that soil was not used in the composite soil sample for the laboratory bench tests. The XRF screening results can be found in Table 2-1 of the Phase II Work Plan (Ramboll 2019b); based on the screening results, soil in three buckets (bucket numbers 17, 33, and 41) was not used in the bench tests. To create the composite soil samples for the bench-scale treatability test, soil from the remaining 45 buckets was combined and homogenized in a approximately 200-gal cement mixer for 2 hours. To develop a sample grain size fraction < 2 mm in diameter, the composited soil was then sieved, consistent with SOP-2 (adapted from McClure [2001]; Appendix A in the Phase II Work Plan [Ramboll 2019b]).

The homogenized soil was tested for homogeneity using a one-way analysis of variance (ANOVA)[7] (see Section 2.2.2 in the Phase II Work Plan [Ramboll 2019b]). As the soil was found to be homogeneous, the 430 lbs of soil with grain sizes < 2 mm were stored in 4-L plastic and/or glass containers. Before use, the containers were inverted between 10 and 20 times to further ensure homogeneity.

[7] An ANOVA compares the means between groups and determines whether any of those means are statistically different from each other.

3.3 DEVIATIONS FROM PLANNED FIELD ACTIVITIES

As described in the Soil Collection FSR (Arcadis 2020; Appendix A), one deviation occurred during soil collection and handling that did not affect the data quality or usability. The chain-of-custody (COC) forms “were not signed when the samples were relinquished to the shipper [Anatek Labs] for transport to OSU.” However, the samples were signed upon receipt by staff at OSU and the samples arrived in good condition.

4 TREATABILITY TESTING AND LABORATORY ANALYSES

The bench-scale test had four time points, baseline (time point zero [t_0]), t_1 (1 month), t_2 (4 months), and t_3 (6 months). The methods used to set up the experimental test pots, and sampling and analysis procedures are summarized in this section. Data requirements for the Phase II bench-scale test are listed in Table 4-1.

4.1 LABORATORY METHODS

Sample preparation and analysis methods are summarized in Table 4-2 and discussed in the following sections. Method detection limits and method reporting limits are detailed in Table 4-3. OSU collected, processed, and analyzed the samples following the protocols and procedures specified in the Phase II Work Plan (Ramboll 2019b) and the applicable SOPs included in work plan Appendix B.

4.1.1 Chemical Analysis of Amendment Materials Used in the Study

Prior to setting up the experimental test pots, to confirm the quality and acceptability of the amendment materials selected for use in the bench study (i.e., biochar, compost, etc.), one sample of each material was analyzed by ALS for the following parameters:

- Total target analyte list (TAL) metals, by EPA Method 6010 (except mercury), and mercury by 7471B
- Volatile organic compounds (VOCs) by EPA Method 8260
- Semi-volatile organic compounds (SVOCs) by EPA Method 8270
- Total carbon and nitrogen by Nelson and Sommers (1996)
- Polychlorinated biphenyls by EPA Method 8082.

4.1.2 Analysis of Baseline Soil Properties

Four baseline (t_0) soil samples were collected from the homogenized soil used to set up the experimental test pots and analyzed for the following chemical parameters and physical properties (see Table 4-2):

- Total TAL metals, by EPA Method 6010 (except mercury), and mercury by 7471B
- Bioaccessible lead and arsenic by EPA Method 1340, with sample aliquots extracted at pH 1.5
- Bioaccessible lead and arsenic by EPA Method 1340, modified with sample aliquots extracted at pH 2.5

- Mehlich III extractable lead and phosphorus by the Mehlich (1984) method and EPA Method 6010
- Synthetic precipitation leaching procedure (SPLP) TAL metals and phosphorus, by EPA Method 6010 and EPA Method 1312 Western U.S. (pH 5.00) / EPA Method 6010
- pH by the Thomas (1996) method
- Total carbon and nitrogen by the Bremner and Mulvany (1982) and Nelson and Sommers (1996) methods
- Mineralizable nitrogen by the Waring and Bremner (1964) method
- Total organic carbon by the Heanes (1984) method
- Soil moisture
- Soil water holding capacity by the Cassel and Nielsen (1986) method
- Conductivity by method SM-2510B.

4.1.3 Bench-Scale Testing Layout

This section describes how the pots were set up, including details on how the treatment pots and control pots were established and the amendment application methods.

The fundamental experimental units (pots) for the bench-scale study were defined as individual pots of soil, containing equal amounts of the homogenized soil to which soil treatment amendments were applied, as required by the Phase II Work Plan (Ramboll 2019b). The study design included a set of control pots that were left untreated in order to compare the soil chemistry in the treated pots to the untreated pots and evaluate the effectiveness of the various treatments for reducing bioaccessible lead in the soil, among other treatment effects.

The pots were prepared using polyethylene plastic containers that measured 5½ in. high, with a top diameter of 4½ in., and a bottom diameter of 3½ in. The bottom of each container was perforated and lined with fine polyethylene mesh to allow drainage of excess water without soil or solid amendment loss during the study. An equal amount (400 g) of the homogenized soil was added to each container to establish the pots. Then the 12 different soil amendments selected for the study (see Section 2.4) were applied at the high and low application rates using both the surface and incorporated application methods, in accordance with the Phase II Work Plan (Ramboll 2019b). For each combination of amendment application rate and method, four pots were designated for sampling at each time point during the test and a fifth pot was established for measuring soil moisture, as depicted in Figure 2-2 and explained further in subsection 4.1.3.1.

A total of 437 pots were used, as follows:

- Surface application – 312 pots

- Incorporated application – 120 pots
- Control pot set – 5 pots

The application rates for each amendment used in the study are provided in Table 2-1. The surface and incorporated application methods are described below.

4.1.3.1 Surface Application Pots

For the evaluation of surface applications, the volumes of each amendment as specified in the Phase II Work Plan (Ramboll 2019b) were placed on a single layer of cheese cloth then applied to the surface of each pot at the corresponding high and low application rates (see Table 2-1), without mixing into the soil.

To maintain the integrity of the pot soil and prevent disturbance of the amendment-soil interface at the top of the pot, pots from which soil samples were collected at each time point were eliminated from further use in the study and discarded after sampling. Soil samples were collected at three sample time points (t_1, t_2, t_3), with four replicates (A through D) for each of the high and low amendment application rates, resulting in 24 pots evaluated for soil amendment effects in the set of surface application pots. Additionally, one pot each for the high and low amendment application rates was added to monitor soil moisture, increasing the number of pots to 26 per amendment for the study. Thus, for the 12 amendments that were tested, a total of 312 pots were developed for the surface application pot subset; 24 of which were designated for soil moisture monitoring through the course of the bench study.

4.1.3.2 Incorporated Application Pots

Incorporated amendments were prepared by thoroughly blending the volumes of each amendment that corresponded to the high and low application rates into the soil in each pot. Four pots were prepared for the high and low application rates for each amendment, plus one additional pot for soil moisture monitoring for each application rate.

Unlike the surface application pots, each sample set was collected from the same pot at each time point (t_1, t_2, and t_3) because any mixing that could occur during sample collection was not a concern. A total of 10 pots were prepared for each incorporated amendment. Thus, for the 12 amendments tested, a total of 120 pots were developed to test the effects of incorporating the amendments into the soil, with 24 of them designated for soil moisture monitoring.

4.1.3.3 Control Pot Setup

Four control pots were developed for comparison to the pots prepared with the soil treatment amendments, as described above, and one control pot was established for soil moisture monitoring. Thus, five pots were developed for the control pot subset as shown in Figure 2-2.

4.1.4 Duration and Setting

After the baseline soil and pre-test (pre-screening) amendment samples were collected and analyzed, the pots were set up for the study and the treatability test began on September 11, 2019. Testing continued for 6 months through March 11, 2020, as per the Phase II Work Plan (Ramboll 2019b).

All of the pots developed for bench testing were incubated in a greenhouse with controlled temperatures between 50 and 75 degrees Fahrenheit at ambient humidity for the test duration. Water was added to maintain soil moisture content at 90 percent of the soil water holding capacity. Pot moisture was evaluated regularly by weighing pots at least once a week. To ensure soil moisture content was maintained at the correct level, pot weight measurements were compared to the predicted pot weights calculated at 90 percent moisture content. Appropriate soil moisture conditions were defined as pot weight measurements within a relative percent difference (RPD) of 20 percent as compared to predicted pot weights at 90 percent water holding capacity.

During the bench-scale testing, soil samples were collected and analyzed from the treatment and control pots at time points t_1, t_2, and t_3 (1 month, 4 months, and 6 months, respectively, after test initiation) to monitor the effects of the different soil treatment amendment applications.

The 6-month testing duration was selected to provide sufficient time for reactions to occur within a reasonable timeframe for beneficial effect in the field. However, it was acknowledged during study planning that 6 months might not be sufficient to appropriately observe and quantify potential longer-term effects on soil conditions. Therefore, during the last month of planned bench-scale testing, data from the first two time points (t_1 and t_2) was reviewed by TAI and the SATES technical team. The group concluded that the experiment was progressing as expected and there was no clear reason to extend the study. Therefore, the experiment was terminated at 6 months as planned and t_3 samples were collected on March 11, 2020.

4.1.5 Deviations from Planned Laboratory Activities

4.1.5.1 Oxalate extraction

According to the Phase II Work Plan (Ramboll 2019b), oxalate extraction should have been tested for the amendments at the beginning of Phase II; however, this testing did not take place. The omission was discovered in October 2020. After a discussion with Dr. Nick Basta at OSU (Basta 2020, pers. comm.), it was determined that oxalate extraction testing was unnecessary in Phase II, and that its inclusion in the list of tests was likely a carryover from SATES Phase I.[8] In Phase I, the

[8] The oxalate extraction test was conducted in the Phase IB pre-screening analyses and the results are presented in Table 3-1b of the Phase II Work Plan (Ramboll 2019b).

oxalate extraction test was necessary to estimate the amount of iron in the amendments to determine if there was enough for the desired chemical reactions. Once the iron levels were confirmed and amendments were selected from those evaluated in the pre-screening analysis (Phase 1B; Ramboll 2018a), there was no need to rerun the tests. This deviation does not affect the quality or outcome of the study.

4.1.5.2 Temporary Laboratory Shutdown and Delayed Sample Anaylyses

According to the Phase II Work Plan, sampling was to be followed immediately by analyses with a goal of 30 days between sampling and submission of data for validation. This could not be accomplished after the t_3 samples were collected on March 11, 2020, with the onset of the COVID-19 pandemic soon after. In response to the pandemic, OSU administrators shut down all OSU laboratories in mid-March 2020, by which time the t_3 samples had been collected, dried, and stabilized. Analysis of these samples was put on hold during the shutdown and resumed in late summer 2020, after OSU allowed laboratories to reopen but with a limited number of staff working at any one time to ensure lab personnel could maintain physical separation while at work. This schedule deviation did not affect the data quality or outcome of the study.

The delayed completion of the t_3 sample analyses has resulted in a delay for selecting samples for the mineralogical analyses EPA plans to conduct as part of Phase II (see Table 4-2). For this part of the study, it is expected that EPA will select samples for the mineralogical analyses based upon the validated analytical results for baseline and progress samples collected for this study.[9] The results of mineralogical testing will be presented, when available, in an addendum to this DSR.

4.1.5.3 Resampling of Select Time Point 3 Samples

During OSU's analysis of t_3 data, three values were questioned when the percent *in vitro* bioaccessibility (IVBA) lead at pH 2.5 was calculated. OSU found that the values of percent IVBA lead in the control pots and in both the soluble phosphate- and biosolids-treated samples from the pots with the high rate, incorporated amendment applications showed a larger percent change between t_2 and t_3 than was expected. These t_3 samples were reanalyzed to check the accuracy of the results. In addition, reanalysis was conducted on amendments that were selected for Phase III field application, and on samples within the same laboratory quality control (QC) groups:

- IVBA lead at pH 2.5 in the control samples
- Total lead and total arsenic in the t_3 control samples

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[9] The Phase II Work Plan (Ramboll 2019a) states, "Samples to be evaluated for mineralogy will be selected at the discretion of the technical team based on the analytical results for the baseline samples and progress samples."

- Select samples from the following high-rate incorporated treatment pots:
  - Biochar and compost
  - Biosolids
  - Biosolid and wood ash
  - Compost
  - Soluble phosphate
  - Soluble phosphate and biochar
  - Soluble phosphate and biosolids
  - Soluble phosphate and compost
  - Wood Ash
- Select samples from the following low-rate incorporated treatment pots:
  - Biochar
  - Compost
  - Soluble phosphate and biosolids

Samples for reanalysis were collected from the same subsample used for the initial t_3 analyses. No additional sieving or resampling was done. The results for both sets of analyses are presented and discussed further in Section 5.2 of this DSR.

5 RESULTS SUMMARY

This section includes the data summary, QA/QC, and analytical results for all usable soil and amendment data. Results for usable laboratory analytical data are presented in Tables 5-1 through 5-7. These tables include data for amendment samples analyzed prior to setting up the experimental pots, baseline soil samples, and progress (t_1, t_2, and t_3) soil samples.

5.1 DATA SUMMARY AND QUALITY ASSESSMENT

This section presents an assessment of the quality and usability of the data collected as part of the Phase II bench-scale treatability testing. Sample identification numbers, the amendment media tested, amendment application methods used for each pot, amendment application rates, and the laboratory that conducted the analytical work are summarized in Table 5-1. Tables 5-2 through 5-7 present the amendment and soil analysis results with data qualifiers assigned by the third-party data validator during the data review and validation process. Full laboratory reports are provided in Appendix B.

5.1.1 Data Documentation

Procedures for laboratory documentation and records for Phase II work are described in Section 6.2 of the Phase I Work Plan (Ramboll 2017). Workbooks, bench sheets, instrument logbooks, and instrument printouts were used to trace the history of samples through the analytical process and to document important aspects of the work, including the associated quality control checks. Information regarding the sample, analytical procedures performed, and the analytical results were recorded by the analyst on laboratory forms or log files. All laboratory records will be retained as part of the permanent record for the project.

Laboratory reporting procedures are provided in Section 6.3 of the Phase I Work Plan. The laboratory prepared Level 2 data packages (modified reporting) for all samples, which were used for analyses performed following standard EPA-approved methods and QA/QC protocols. Required elements for the Level 2 data packages included:

- COC forms
- Case narrative
- Final parameter concentration for all samples
- Preparation or extraction and analysis dates and times
- Method blanks
- Surrogate recoveries

- Inductively coupled plasma/mass spectroscopy serial dilution percent difference
- Matrix spike and matrix spike duplicate recoveries and RPD
- Laboratory duplicate RPD
- Laboratory control sample recoveries.

Laboratory documentation was reviewed and no issues were found that could impact overall data quality.

5.1.2 Data Validation

Environmental Standards, Inc. (ESI) performed Stage 2 data validation for the Phase II data in accordance with the Phase II Work Plan (Ramboll 2019b). Data validation was performed as outlined in Section 18 of the Phase I Work Plan and the *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2017a); the *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA 2017b) (for review of the pre-screening analyses of the individual amendment materials that were analyzed for organic compounds); and the *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (USEPA 2009). The data validation reports are provided in Appendix C. Data were qualified based on established quality control criteria specified in the Phase II Work Plan (Ramboll 2019b). It is important to note that EPA's validation guidance documents were developed to address analyses performed in accordance with the EPA Contract Laboratory Program analytical methods and are not applicable to some of the analyses and analytical protocols performed for the Phase II bench test samples. ESI used professional judgement in its review of the analytical results and to determine compliance relative to the methods specified in the Phase II Work Plan (Ramboll 2019b).

The data validation process included checking the following information: COC forms, sample holding times, analyses performed, method detection and reporting limits, matrix spike and matrix spike duplicate analysis results, laboratory control sample analyses, calibration, method detection limits, instrument drift, linear range, matrix affects, and analytical results for field and laboratory duplicates and blanks.

5.1.3 Overall Data Quality Assessment

The purpose of the overall data quality assessment is to determine the quality and usability of the data. Data that do not conform are qualified as "R" when they are unusable (rejected), or "J" when they are usable but are estimated values; for example, when the concentration falls between the detection limit and the minimum calibration level. When data are qualified as "J," the identity of the analyte is certain, and the concentration has been estimated by the laboratory, typically because the concentration was too low to accurately measure. If the chemical tested was undetected, the data are qualified as "U," and the detection limit is reported as an estimated concentration. In this study, additional qualifiers were used to represent the reasons for qualification more accurately:

- J = Quantitation is approximate due to limitations identified during the QA review.
- J+ = Quantitation is approximate, but the result may be biased high.
- J- = Quantitation is approximate, but the result may be biased low.
- R = Unusable result; the analyte may or may not be present in this sample.
- U* = The analyte should be considered "not-detected" because it was detected in an associated blank at a similar level.
- U = The analyte was not detected at or above the associated detection limit.
- UJ = The analyte was not detected, and the detection limit may be higher due to a low bias identified during the QA review.

Data qualifiers assigned during the data review and validation process are included with the results presented in Tables 5-2 through 5-7. No issues were found that would impact overall data quality for the study, although some issues were identified for the pre-test screening analysis results for the Black Owl biochar and wood ash samples (Table 5-2), as follows:

- Several results for metals, VOCs, and SVOCs detected in the amendment samples were flagged as “estimated” because of the level of sample dilution required for the analyses.
- Several results for metals, VOCs, and SVOCs were flagged as “estimated” because the reported concentrations were less than the practical quantitation level for the method, but greater than the method detection limit.
- Most of the VOC and SVOC results for the Black Owl biochar and wood ash samples were rejected because of a number of accuracy and precision issues likely related to interference from the high organic content of these samples. Exceptions for VOCs are results for acetone (flagged as estimated [“J”] in both the biochar and wood ash samples), methylene chloride (flagged as estimated [“J”] in the biochar sample and non-detected [“U*”] in the wood ash sample), dichlorodifluoromethane (flagged as estimated [“J”] in the biochar sample), trichlorofluoromethane (flagged as estimated [“J”] in the biochar sample), which were flagged as estimated (“J”). Exceptions for SVOCs are bis(2-ethylhexyl)phthalate in the biochar sample and diethyl phthalate (flagged as non-detect [“U*”] in the biochar sample and estimated [“J”] in the wood ash sample).

ESI concluded that, overall, the data reviewed are usable with the qualifications discussed in each of the data validation reports (see Appendix C).

The VOC and SVOC results for the Black Owl biochar and wood ash amendment samples do not affect the bench-scale testing results or the evaluation of the efficacy of these materials toward reaching the overall study goals.

5.2 BENCH-SCALE TEST RESULTS

Results for all amendment and soil samples collected during the study are shown in Figures 5-1a through 5-35c. Table 5-1 summarizes the sample information, and Tables 5-2 through 5-6 present results for the chemical analyses performed on the pre-test amendment and baseline soil (t_0) samples, and the analysis results for the progress soil samples collected during the study at time points 1, 2, and 3.

As described in Section 4.1.5, Deviations from Planned Laboratory Activities, select soil samples from t_3 were reanalyzed for bioaccessible lead at pH 2.5 to confirm the results. All results from the first t_3 sample analyses and the reanalyzed samples are presented in Table 5-7. Statistical analysis of these results indicated that values for soluble phosphate and biosolids (high-rate, incorporated amendment applications for both) in the reanalyzed t_3 samples were significantly different when compared to the initial t_3 sample results; all other reanalyzed samples were not found to be significantly different.

The bioaccessible lead at pH 2.5 methodology is sensitive to pH drift (Basta 2021, pers. comm.). Therefore, it is hypothesized that pH drift caused the unexpected results in the first t_3 sample analyses. Hence, the values for the reanalyzed samples of soluble phosphate and biosolids are considered to be representative t_3 results for these two amendments in the high-rate, incorporated application test pots, and were therefore used to calculate the % IVBA lead at pH 2.5 results shown in Table 5-5. The first set of analytical results for the remaining t_3 experimental pot samples were used to calculate % IVBA lead at pH 2.5 values shown in Table 5-5.

When % IVBA lead at pH 2.5 was calculated for the control samples, the values were unexpectedly low both before and after the reanalysis of the t_3 samples for bioaccessible lead. Therefore, the t_3 control sample was analyzed for total lead and was lower in concentration than in the t_1 samples that had been used for the other % IVBA calculations (see Table 5-7). OSU also reanalyzed the control sample for total arsenic and it was lower in concentration than in the t_1 sample. When these total content data were reviewed against baseline data, the total lead values in baseline were intermediate between the t_1 and t_3 total lead values. The reason for the shifts in total lead and arsenic are unknown because there is no mechanistic reason for the total lead and arsenic to change over time with the addition of water. Bias due to analytical or sample analysis is unlikely because results were checked by comparing the percent bioaccessible results across time and no bias was found. It is not expected that this slight bias in the control t_3 total content impacts the overall results of the study and the ability to meet the main Phase II objective of demonstrating whether soil amendments show potential to reduce the bioaccessibility of lead in site soils . The t_3 total lead and total arsenic results were used to calculate the % IVBA values presented in Table 5-5 for t_3 control.

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FIGURES

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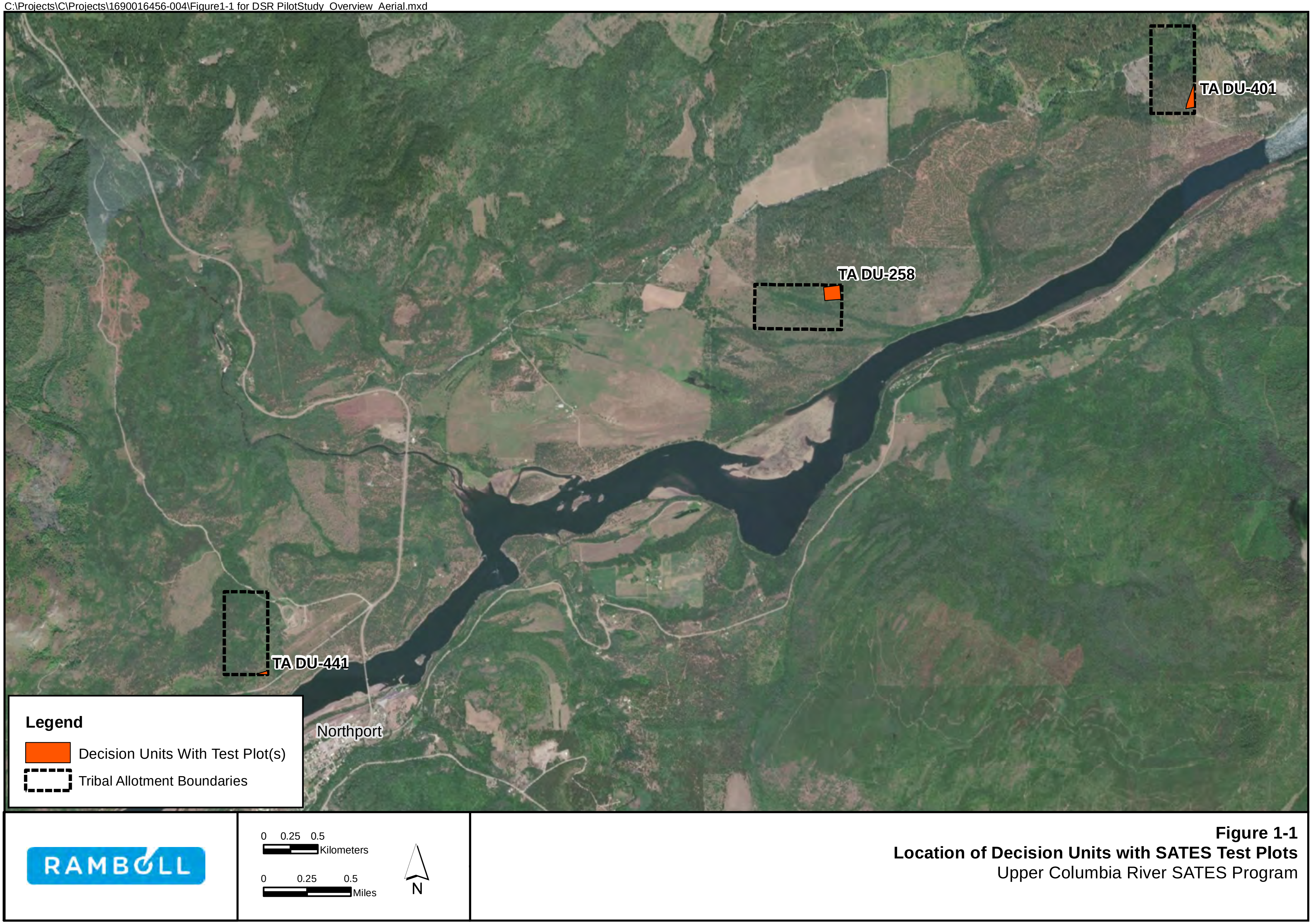

RAMBOLL

Figure 1-1
Location of Decision Units with SATES Test Plots
Upper Columbia River SATES Program

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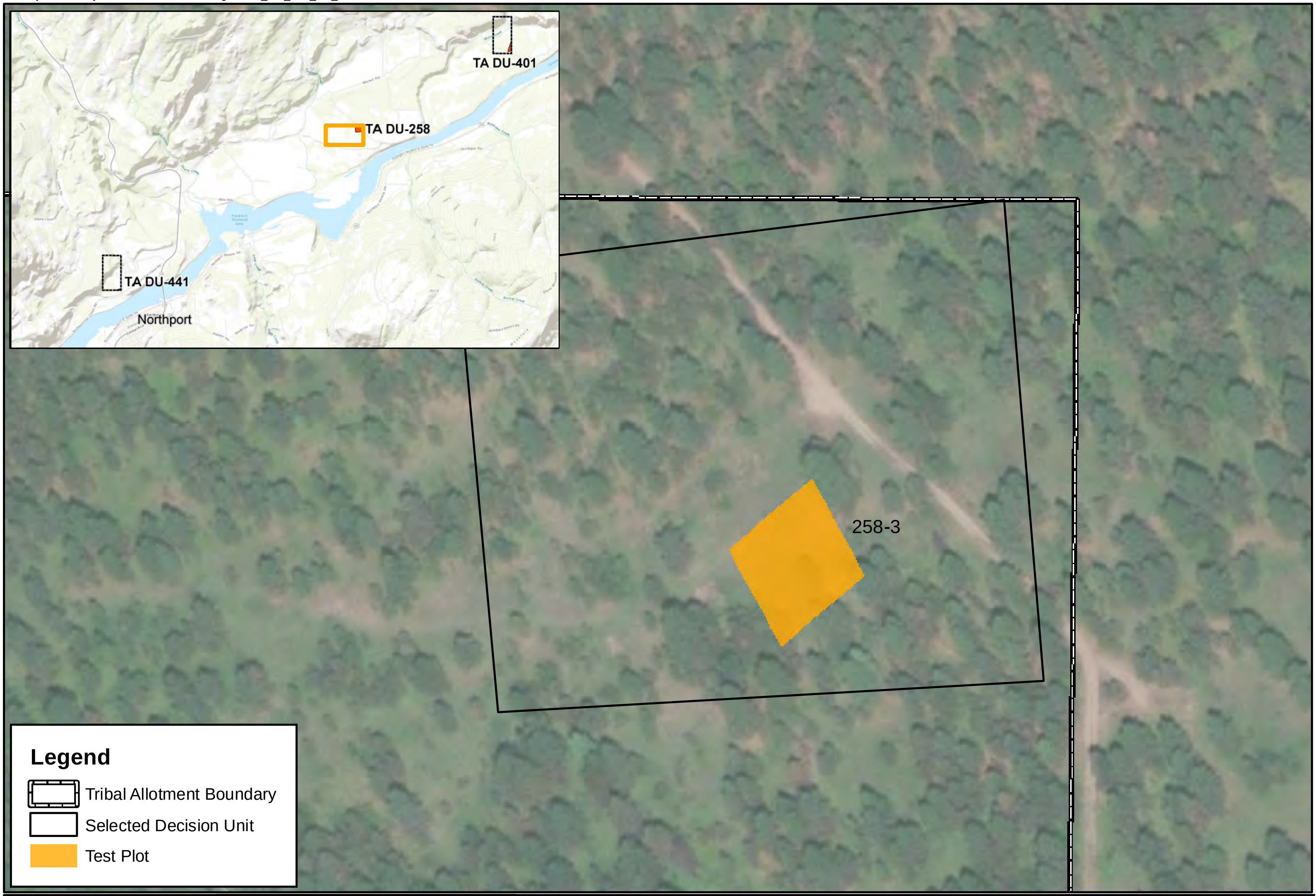

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0 50 100 200 Feet
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Figure 1-2
Test Plot Location - Decision Unit 258
Upper Columbia River SATES Program

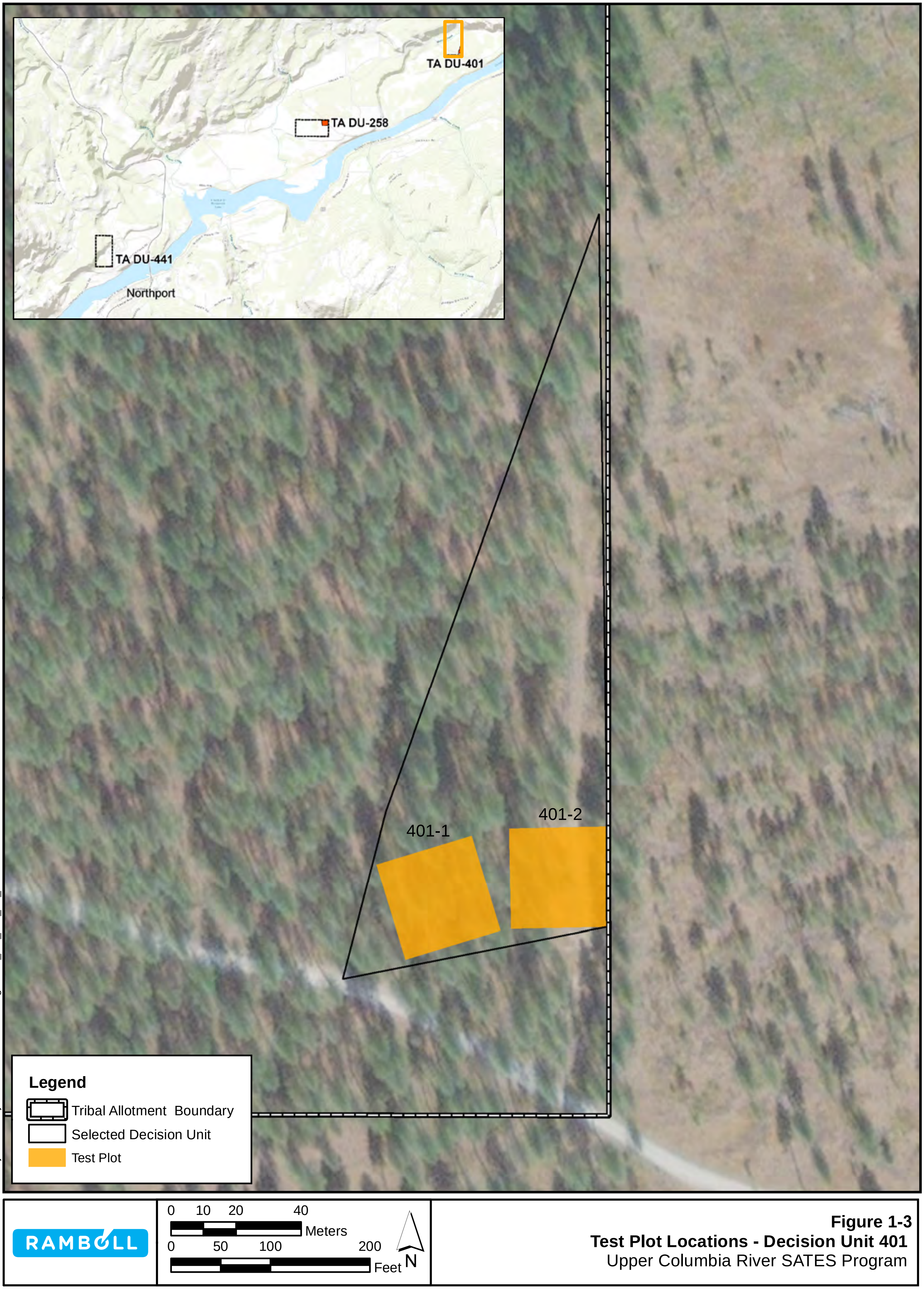

Figure 1-3
Test Plot Locations - Decision Unit 401
Upper Columbia River SATES Program

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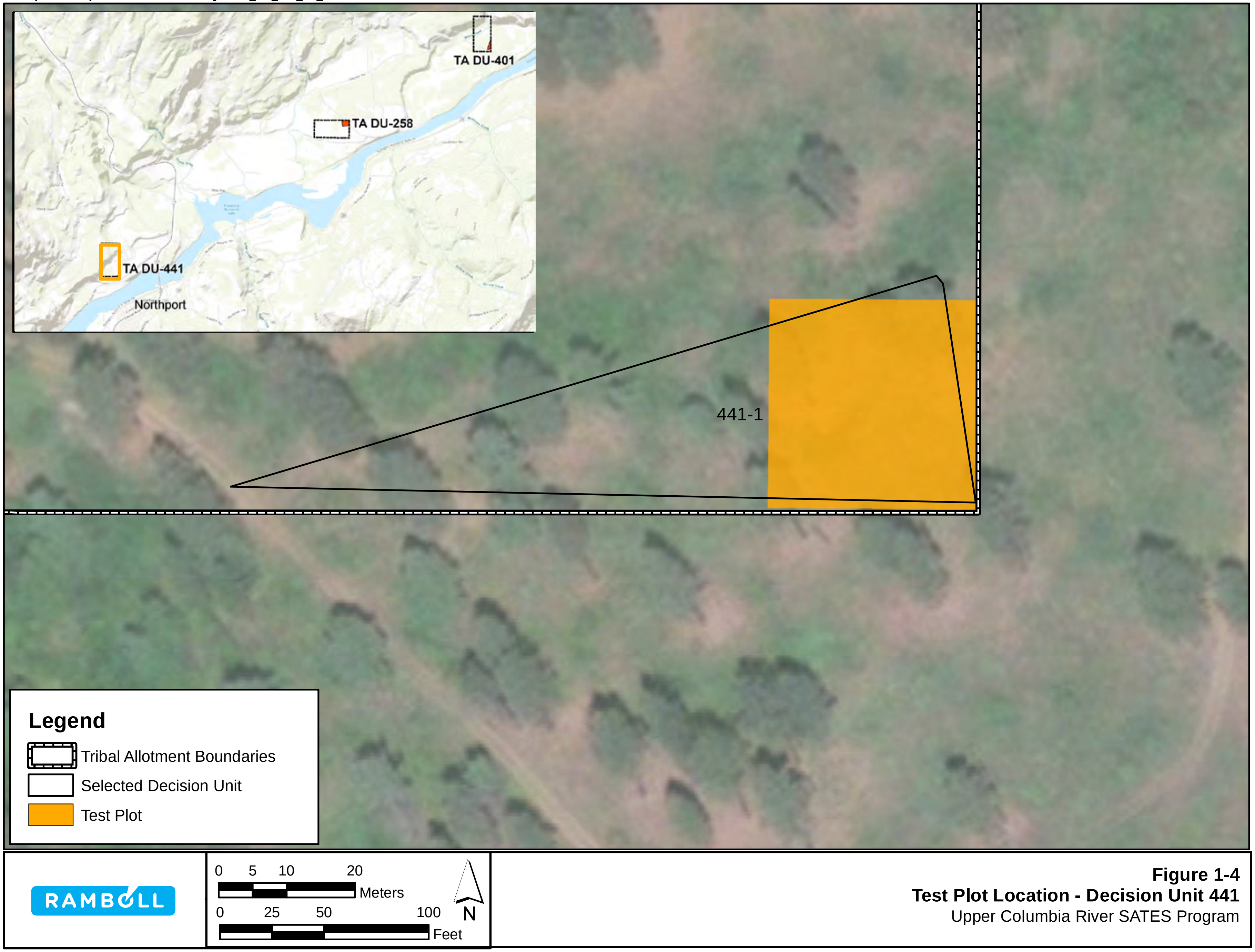

RAMBOLL

Figure 1-4
Test Plot Location - Decision Unit 441
Upper Columbia River SATES Program

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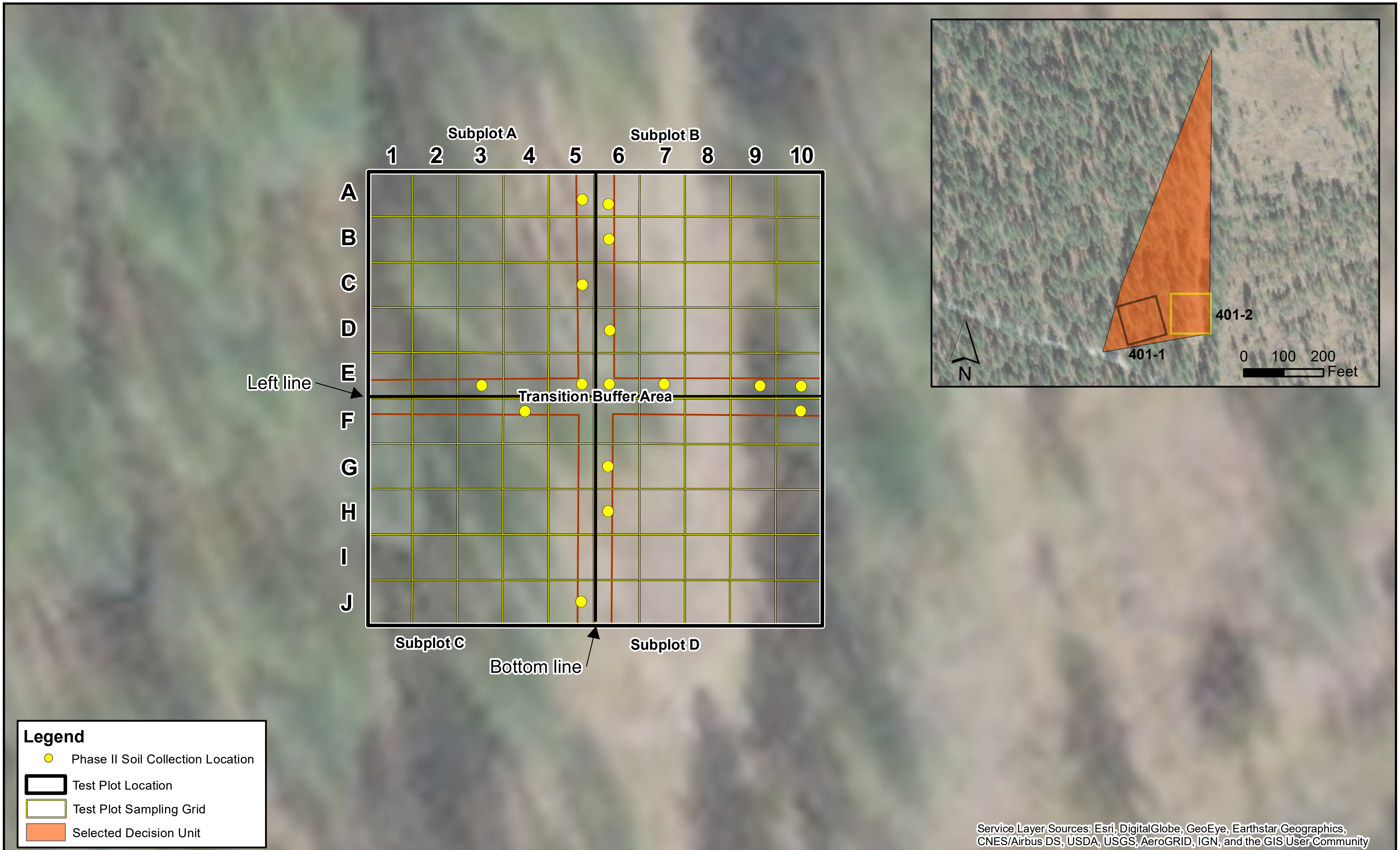

RAMBOLL

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Figure 2-1
Test Plot 401-2: Phase II Bench-Scale Treatability Testing
Soil Collection Locations
Upper Columbia River, WA

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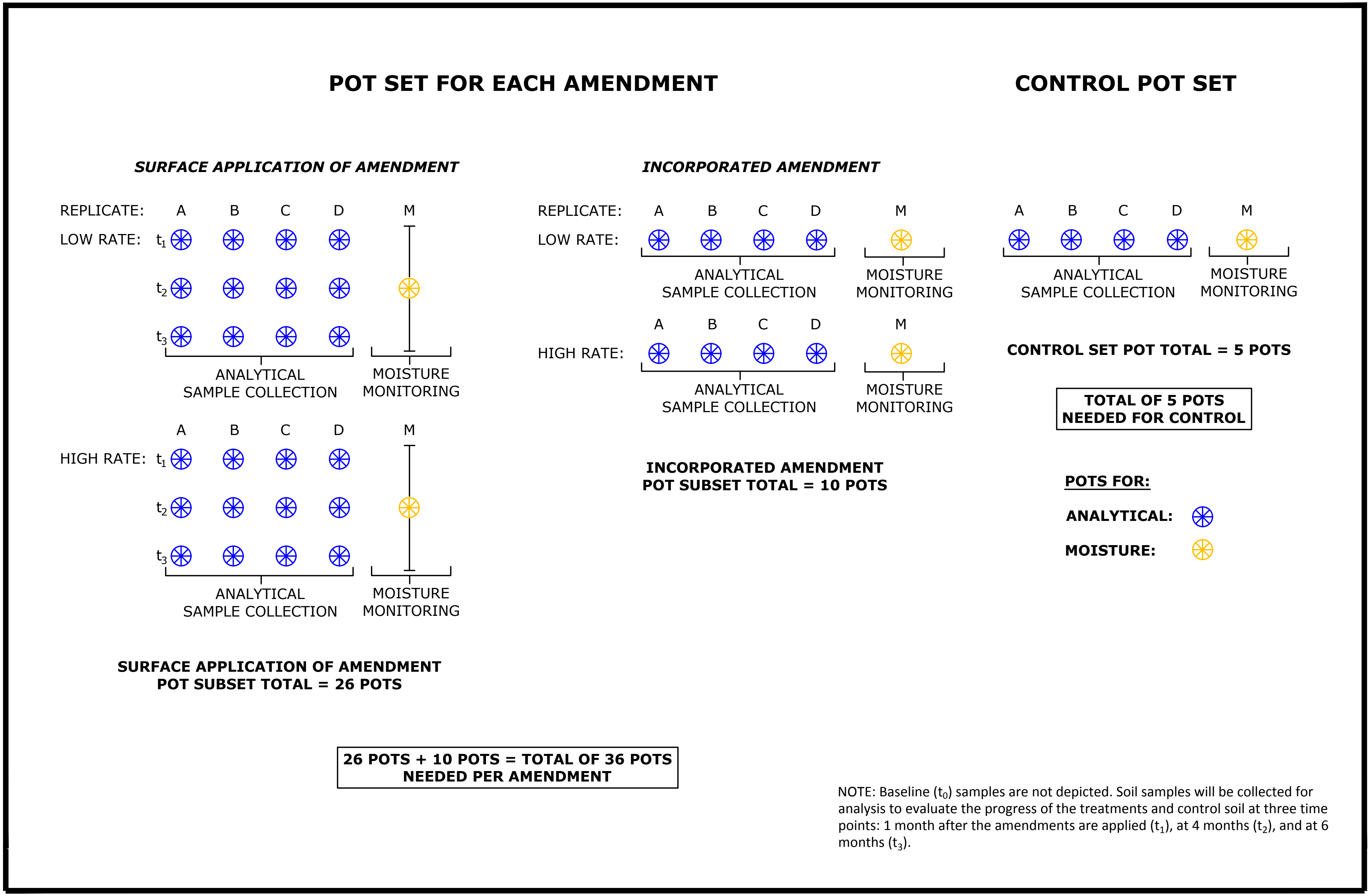

Figure 2-2: Test Pot Sets Established for Laboratory Soil Treatability Testing

DATE: 1/30/2019
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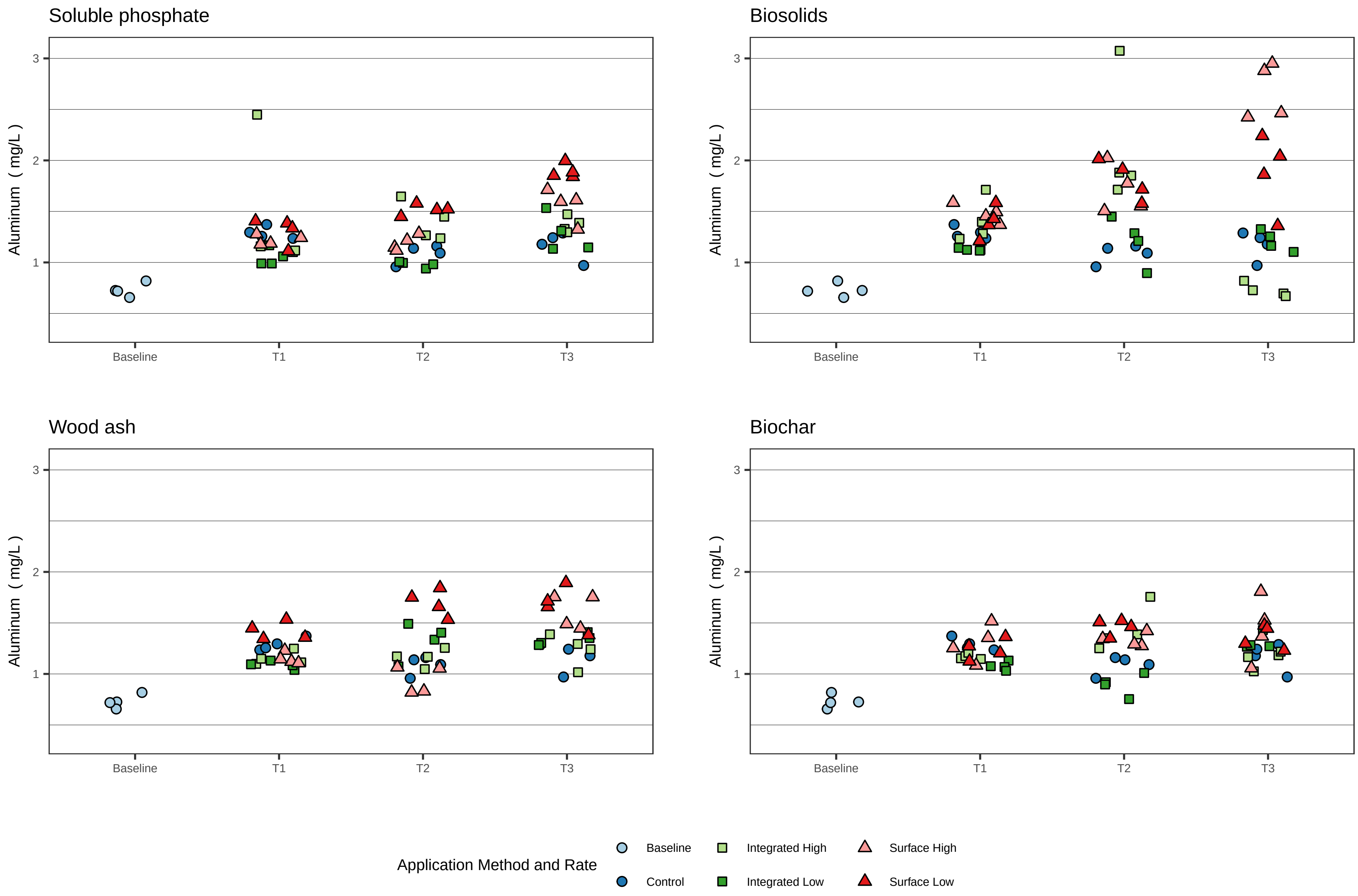

Figure 5−1a Aluminum in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

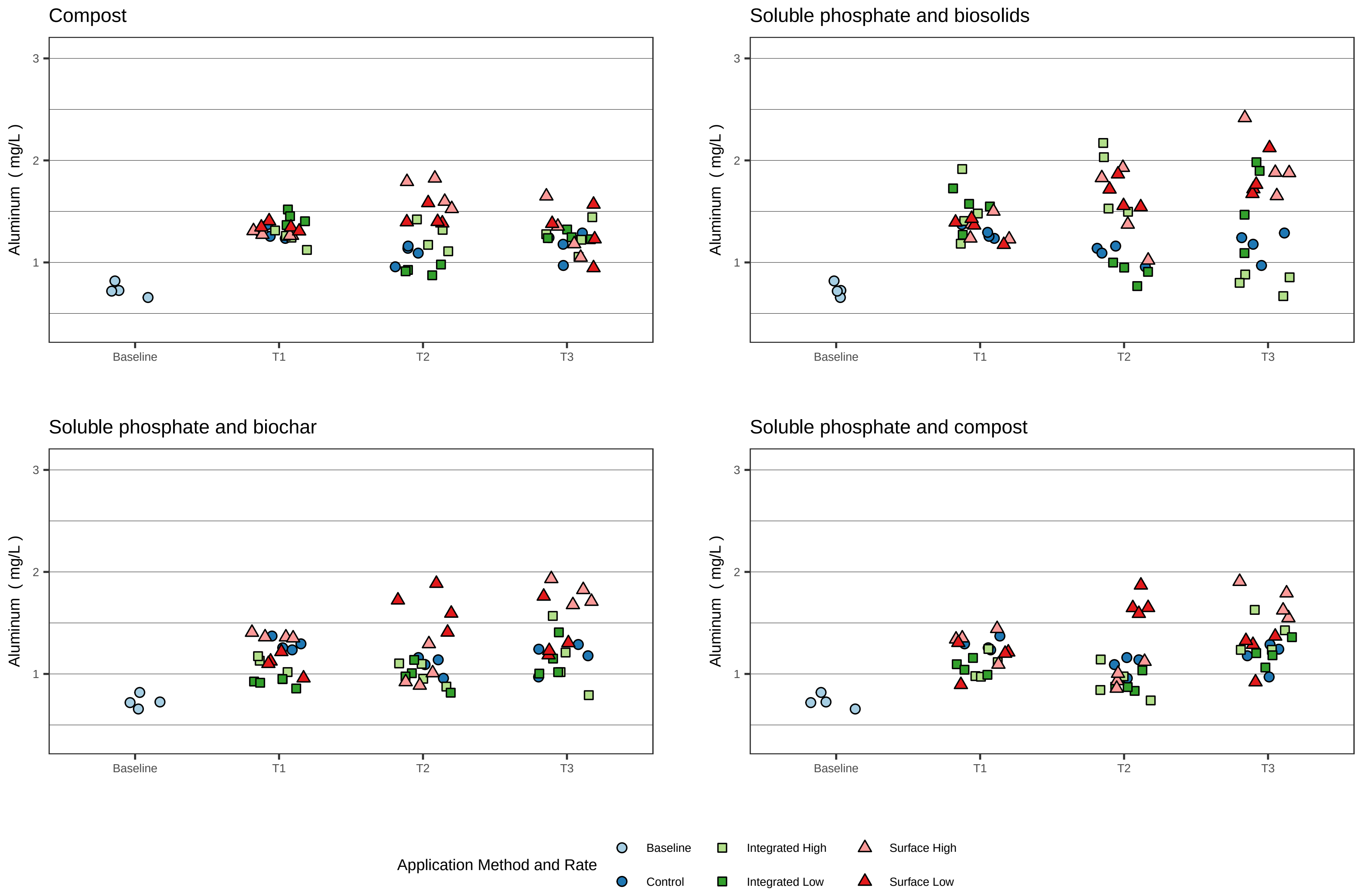

Figure 5–1b Aluminum in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

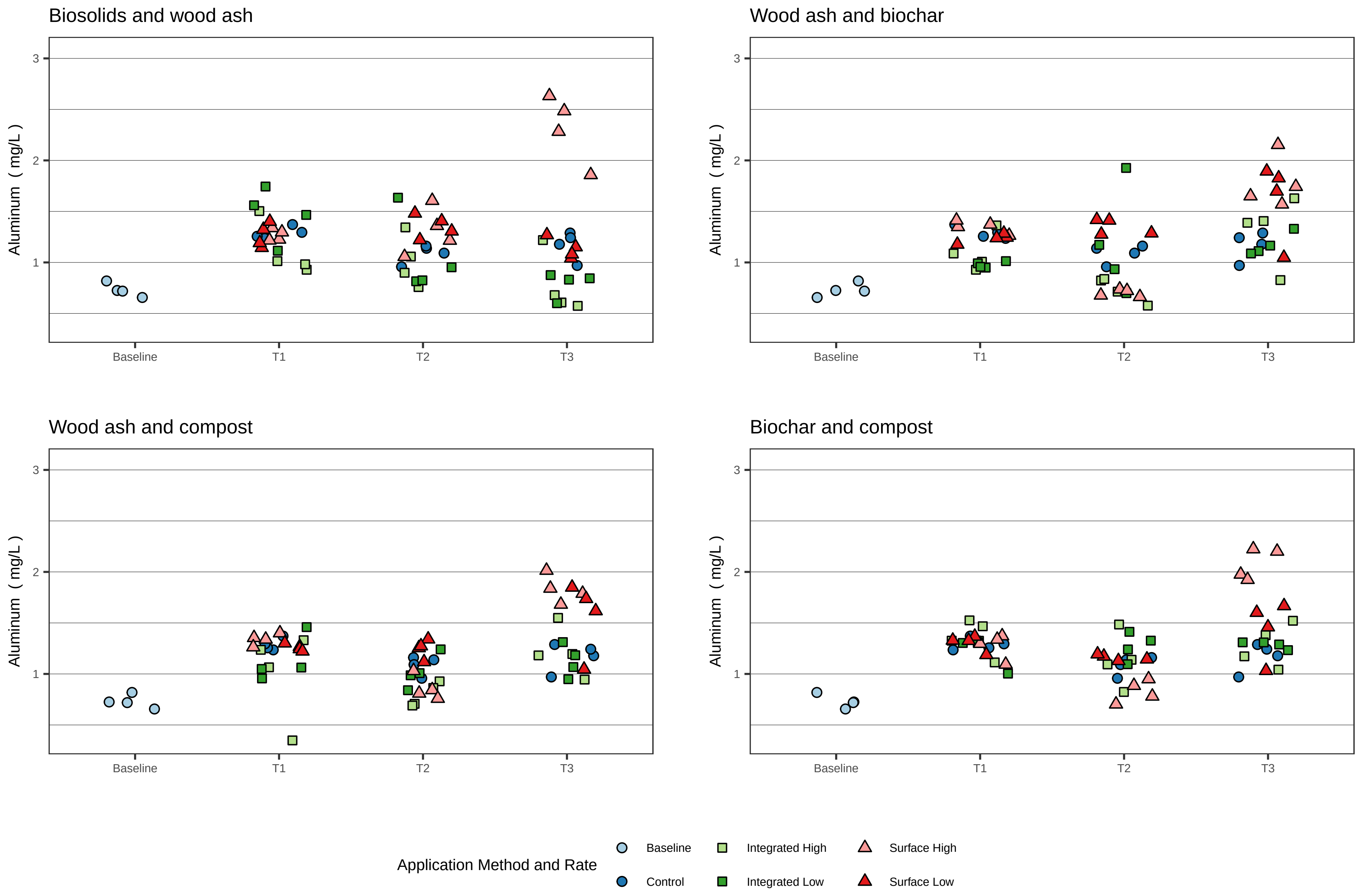

Figure 5−1c Aluminum in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

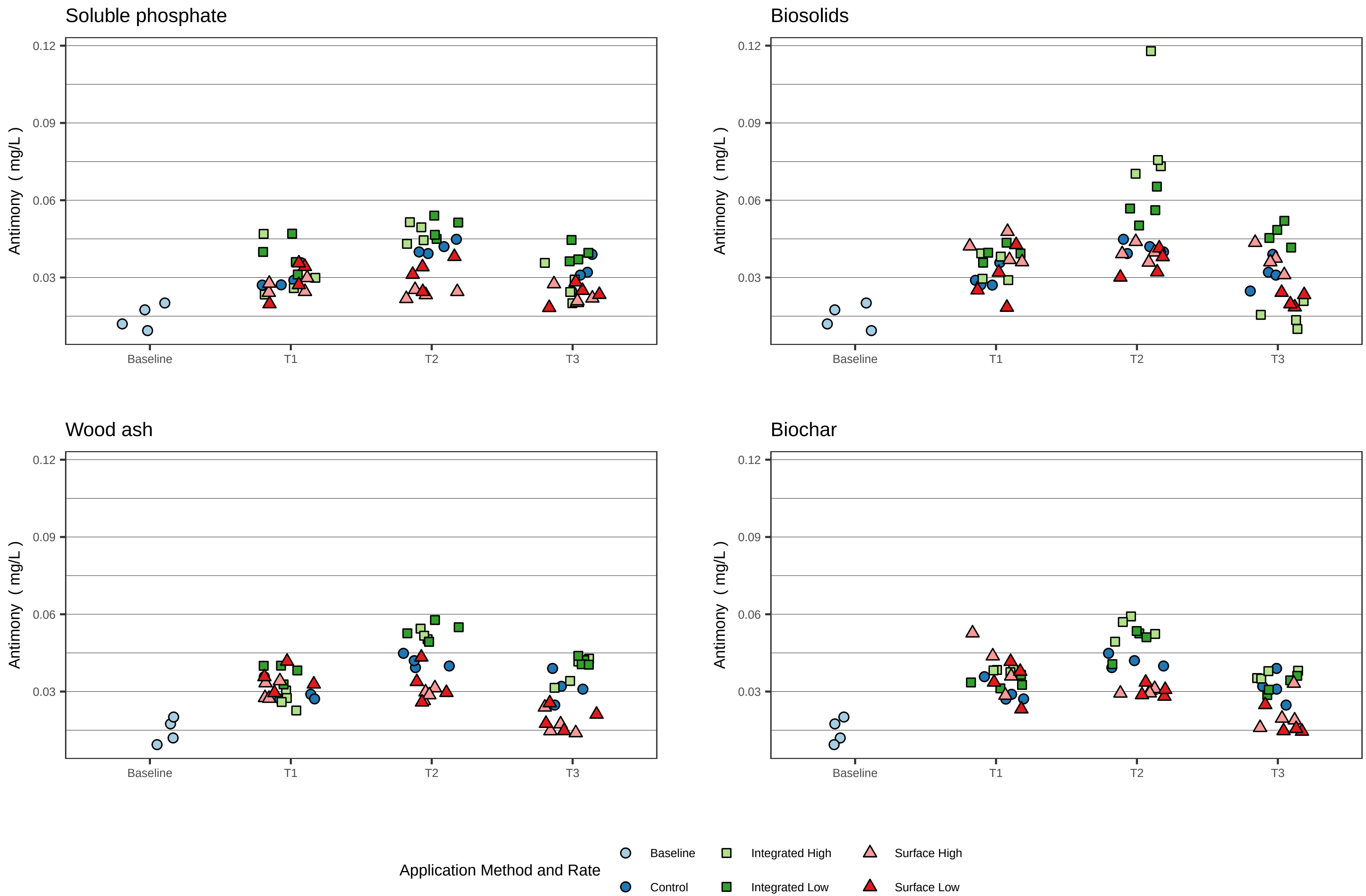

Figure 5−2a Antimony in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

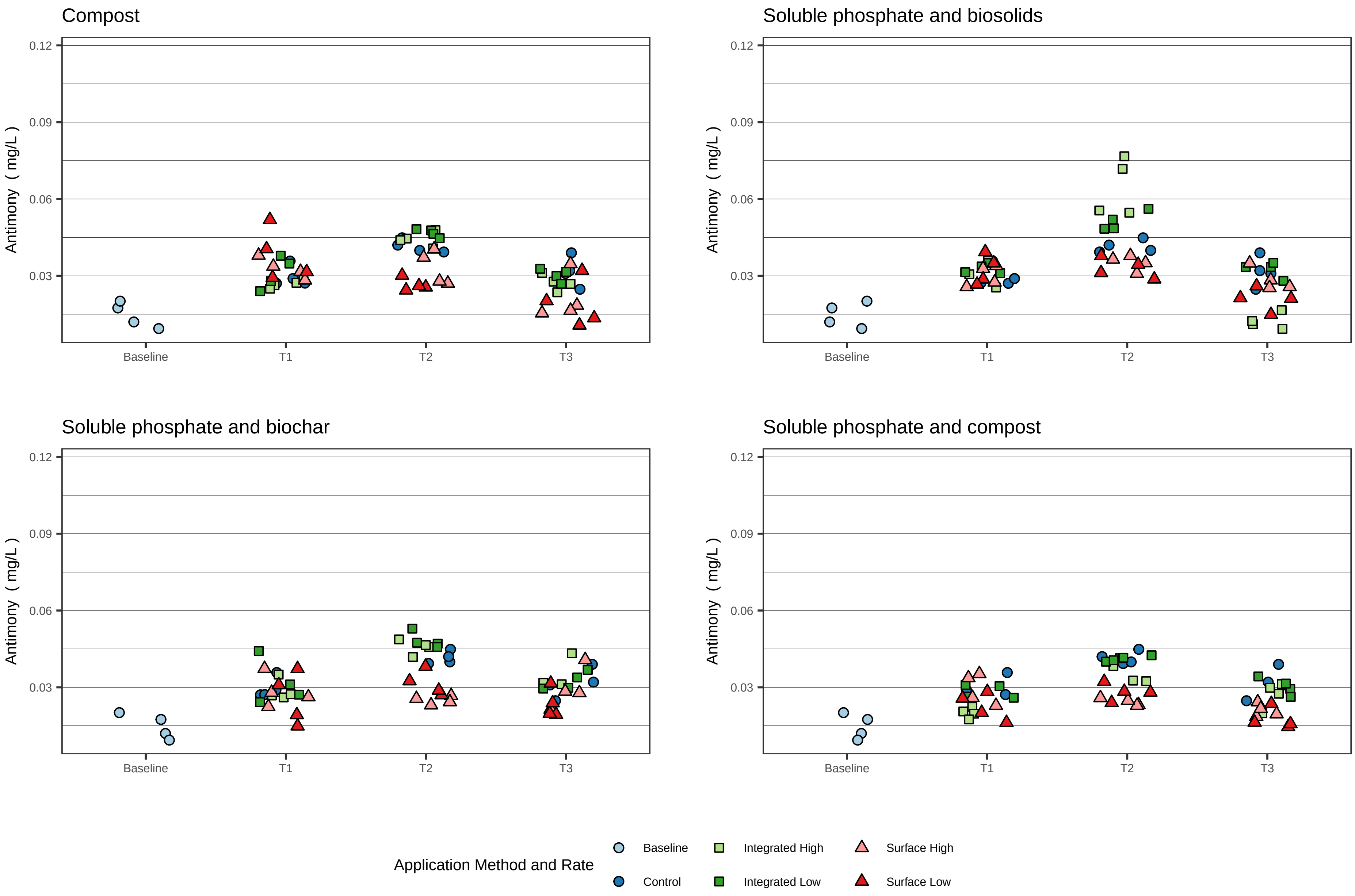

Figure 5−2b Antimony in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

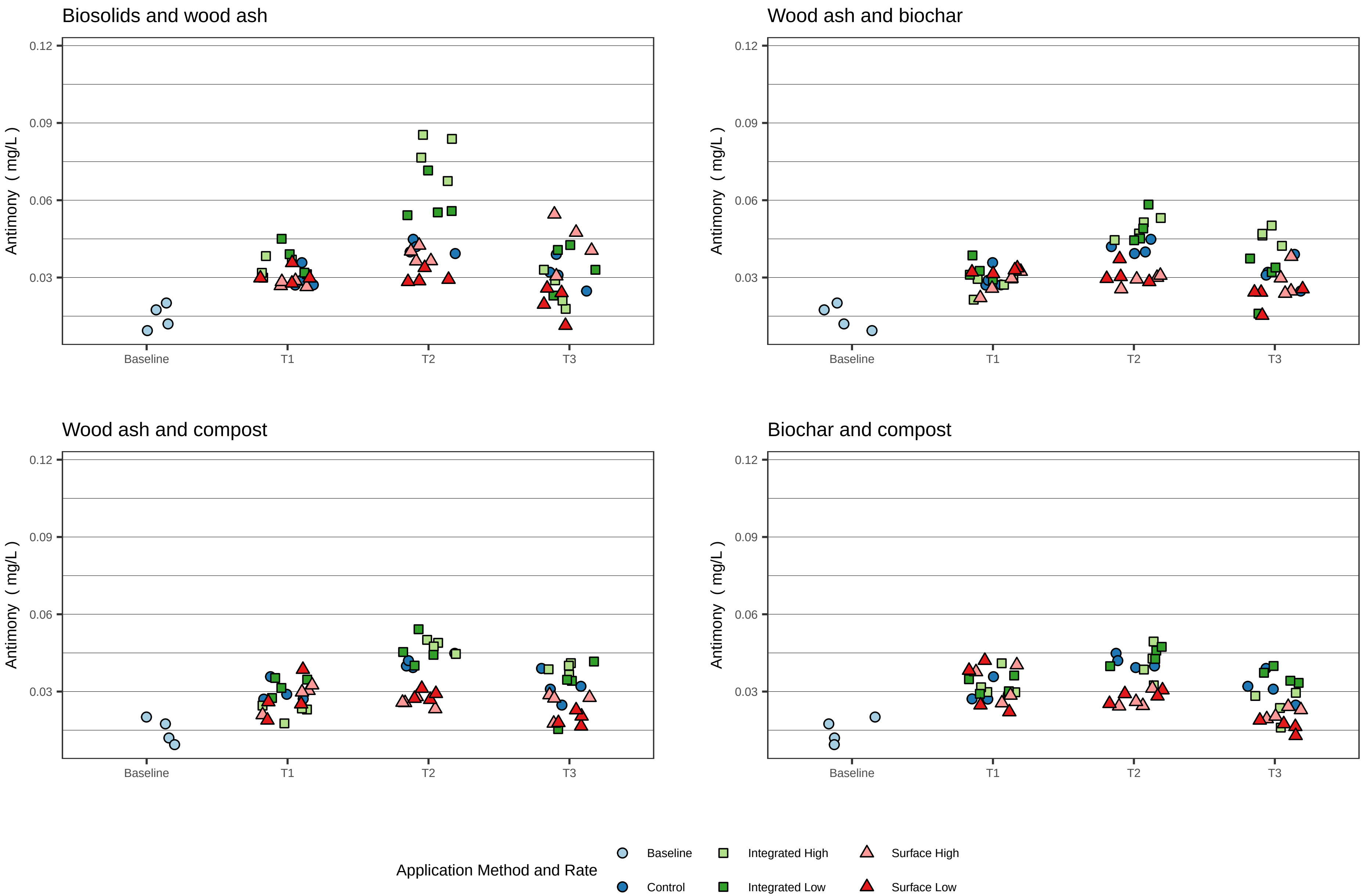

Figure 5−2c Antimony in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

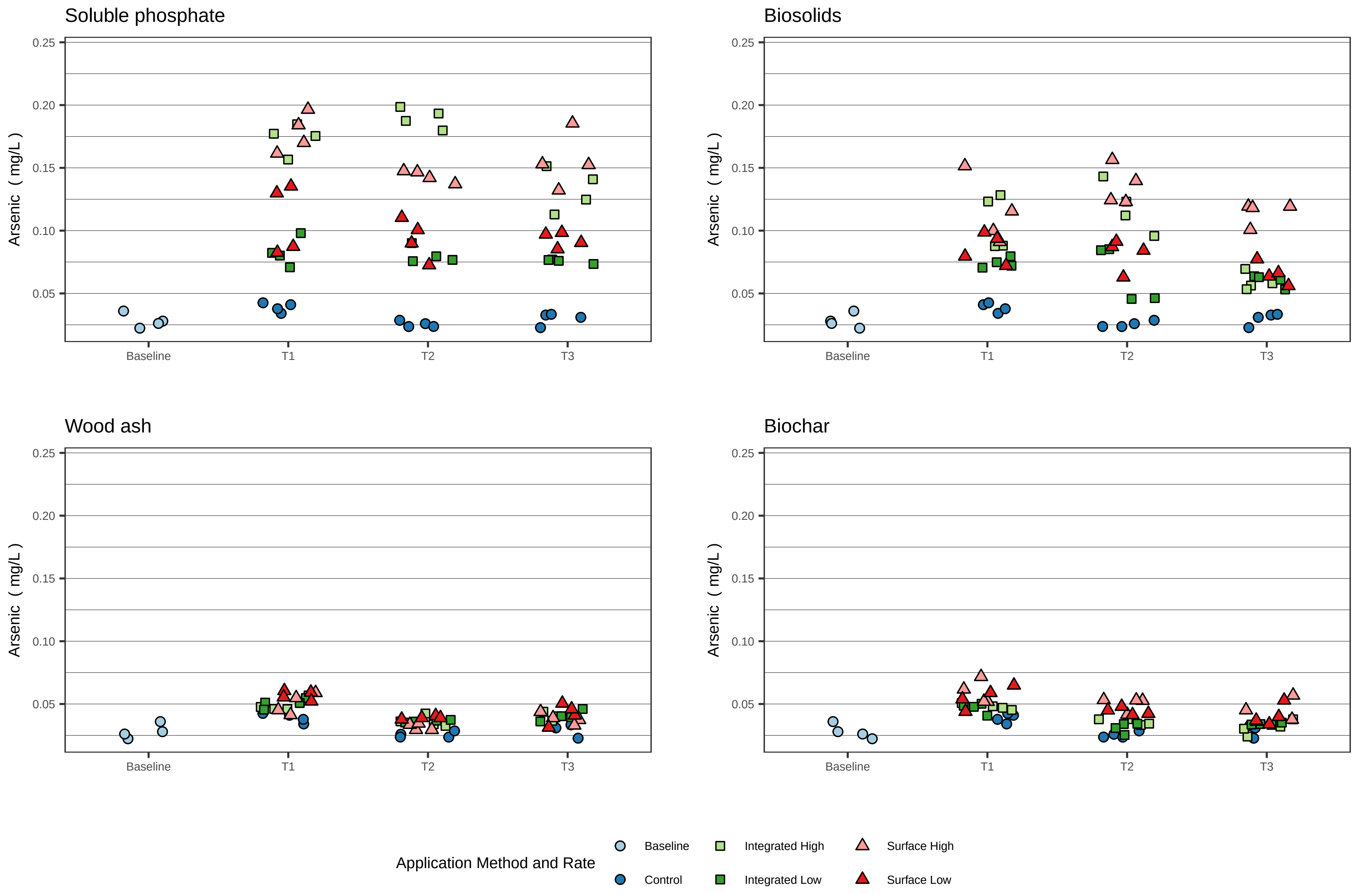

Figure 5‑3a Arsenic in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

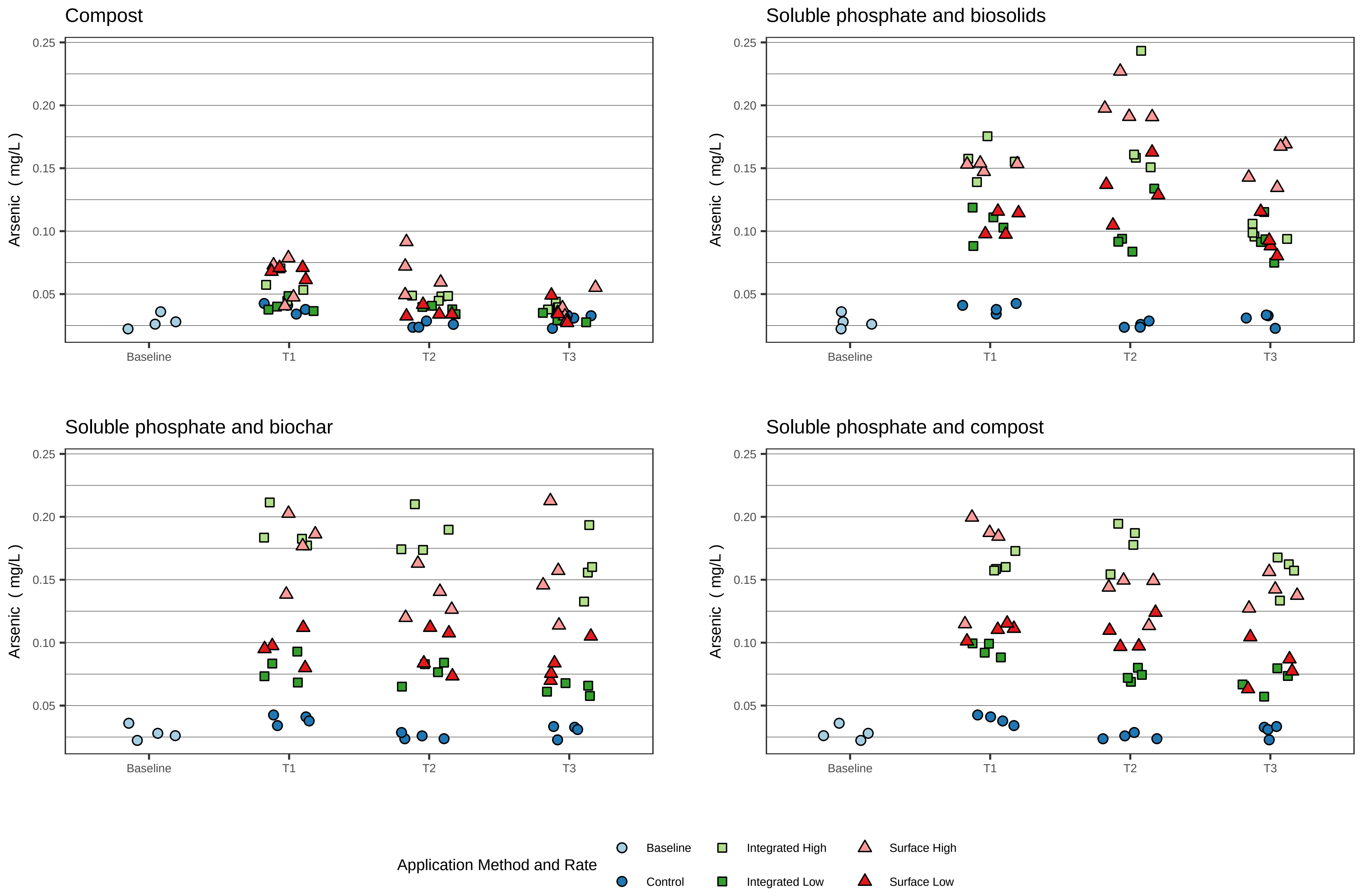

Figure 5−3b Arsenic in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

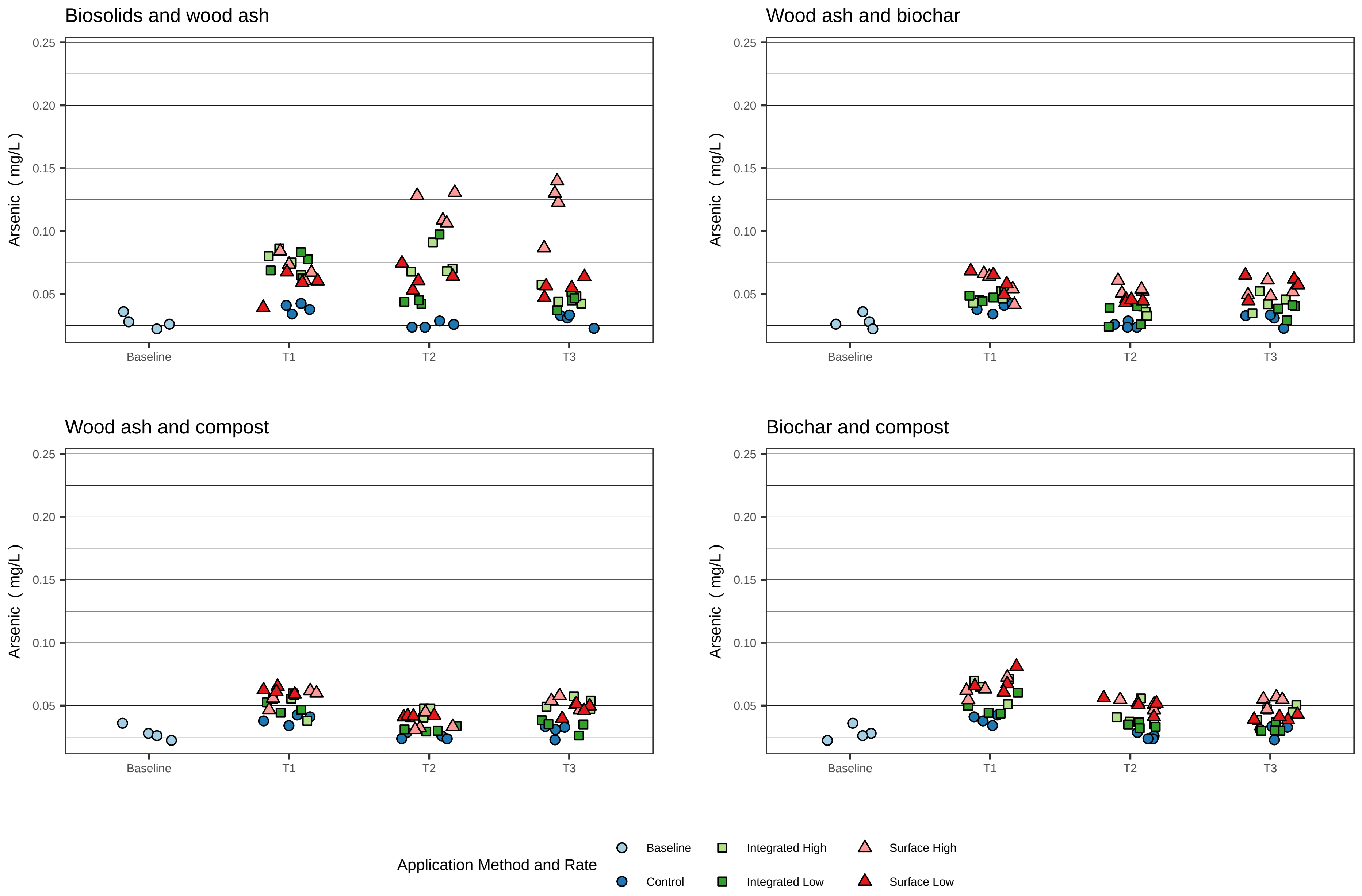

Figure 5−3c Arsenic in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

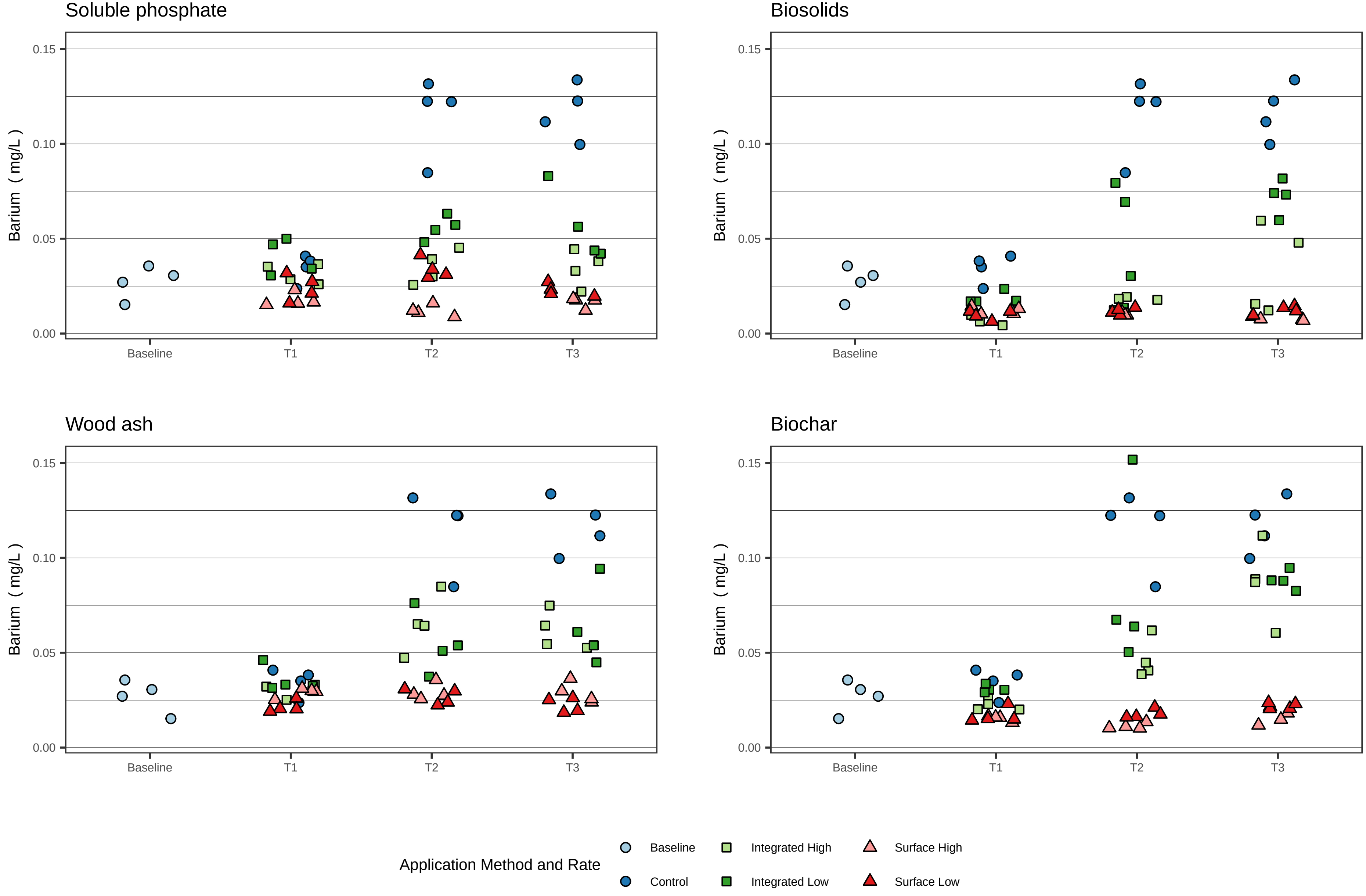

Figure 5−4a Barium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

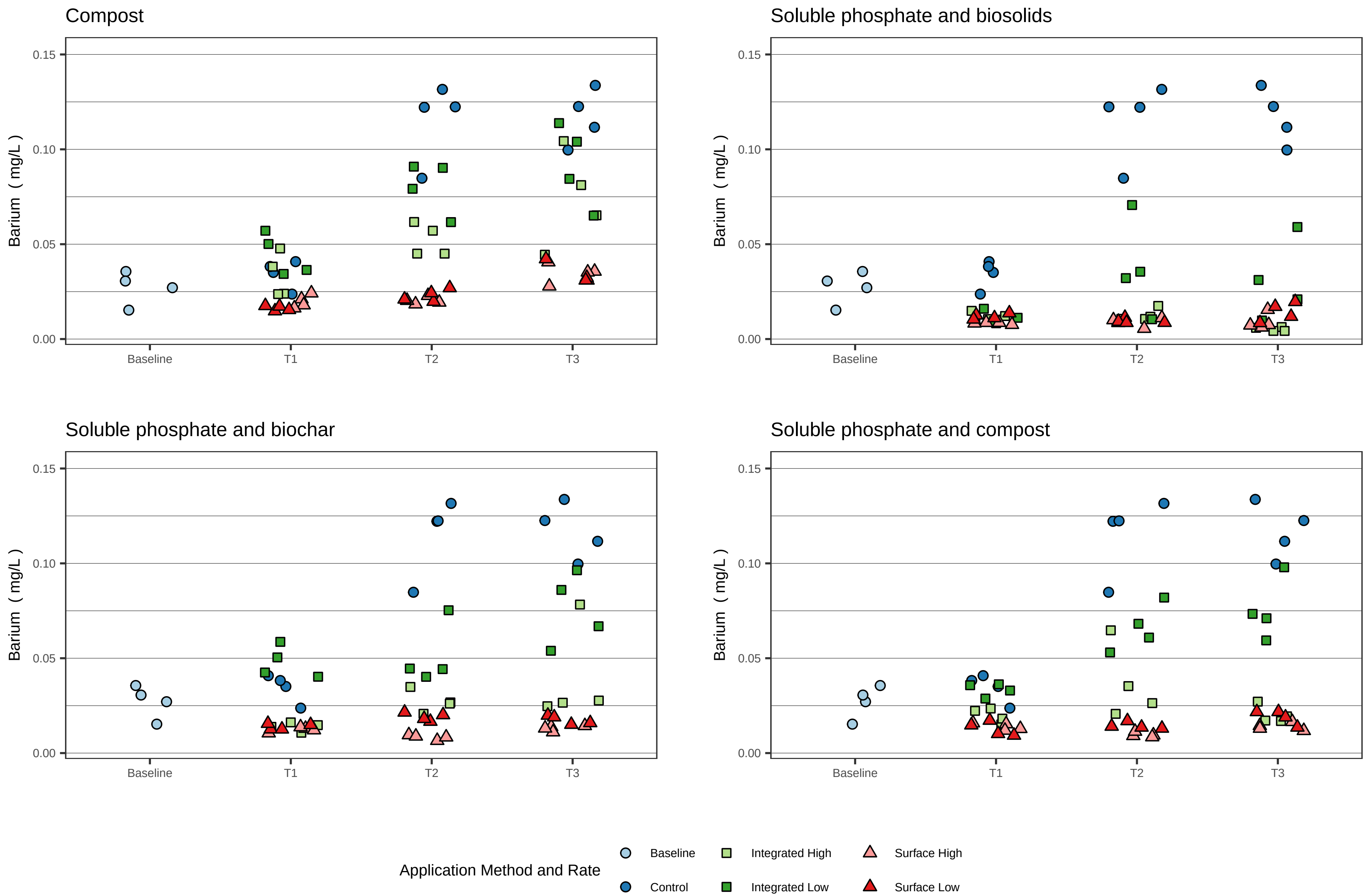

Figure 5−4b Barium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

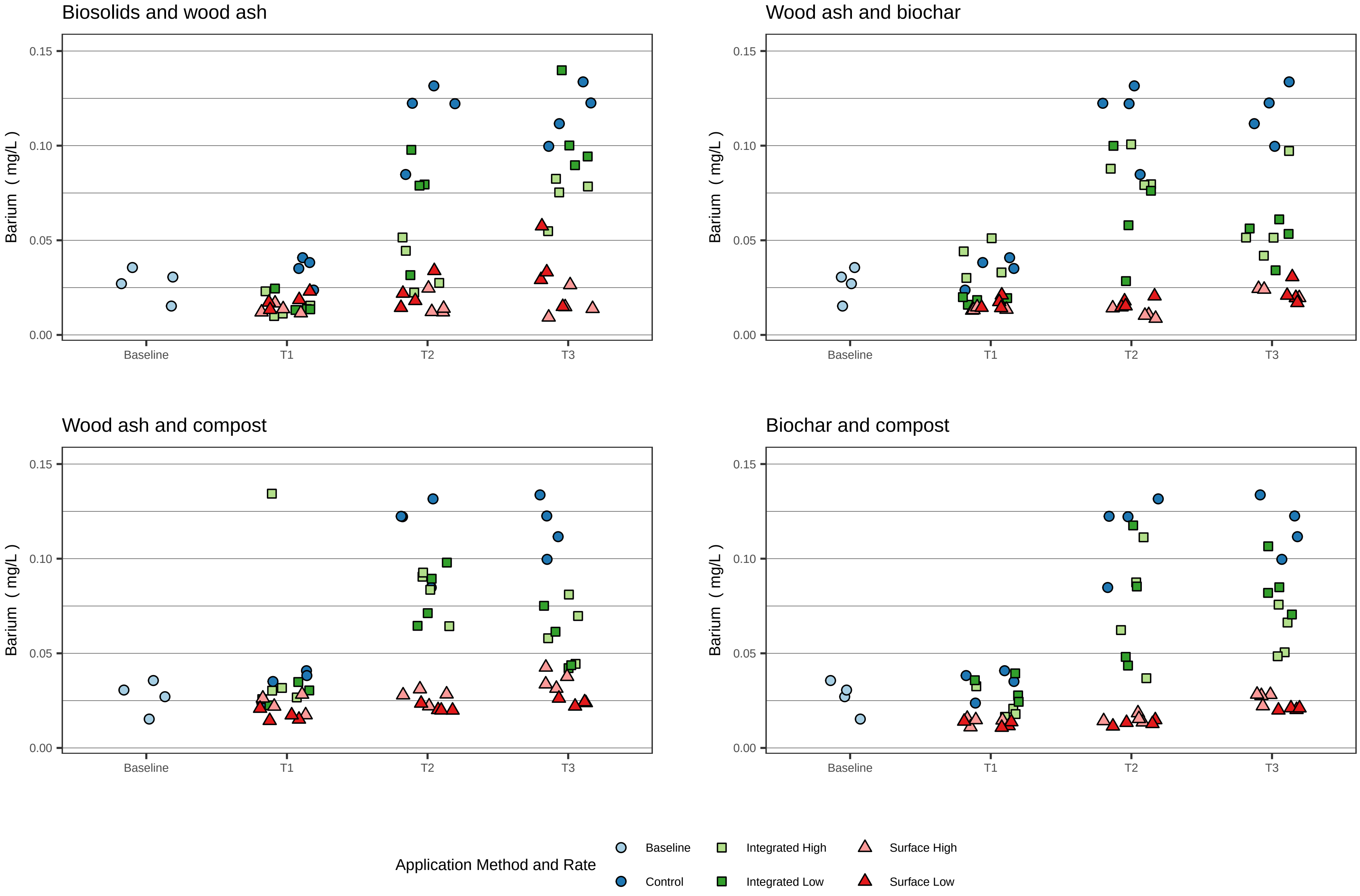

Figure 5−4c Barium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

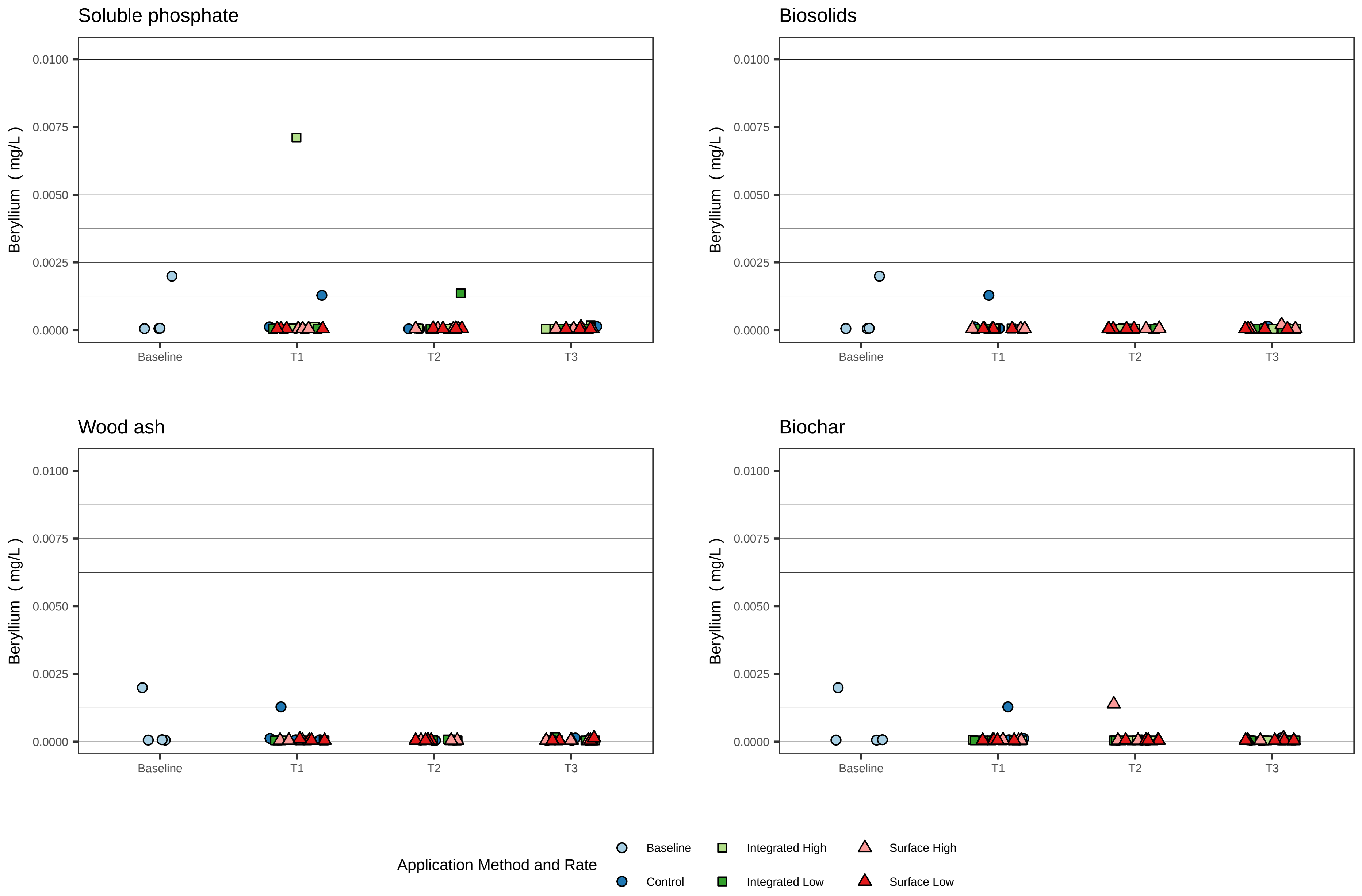

Figure 5−5a Beryllium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

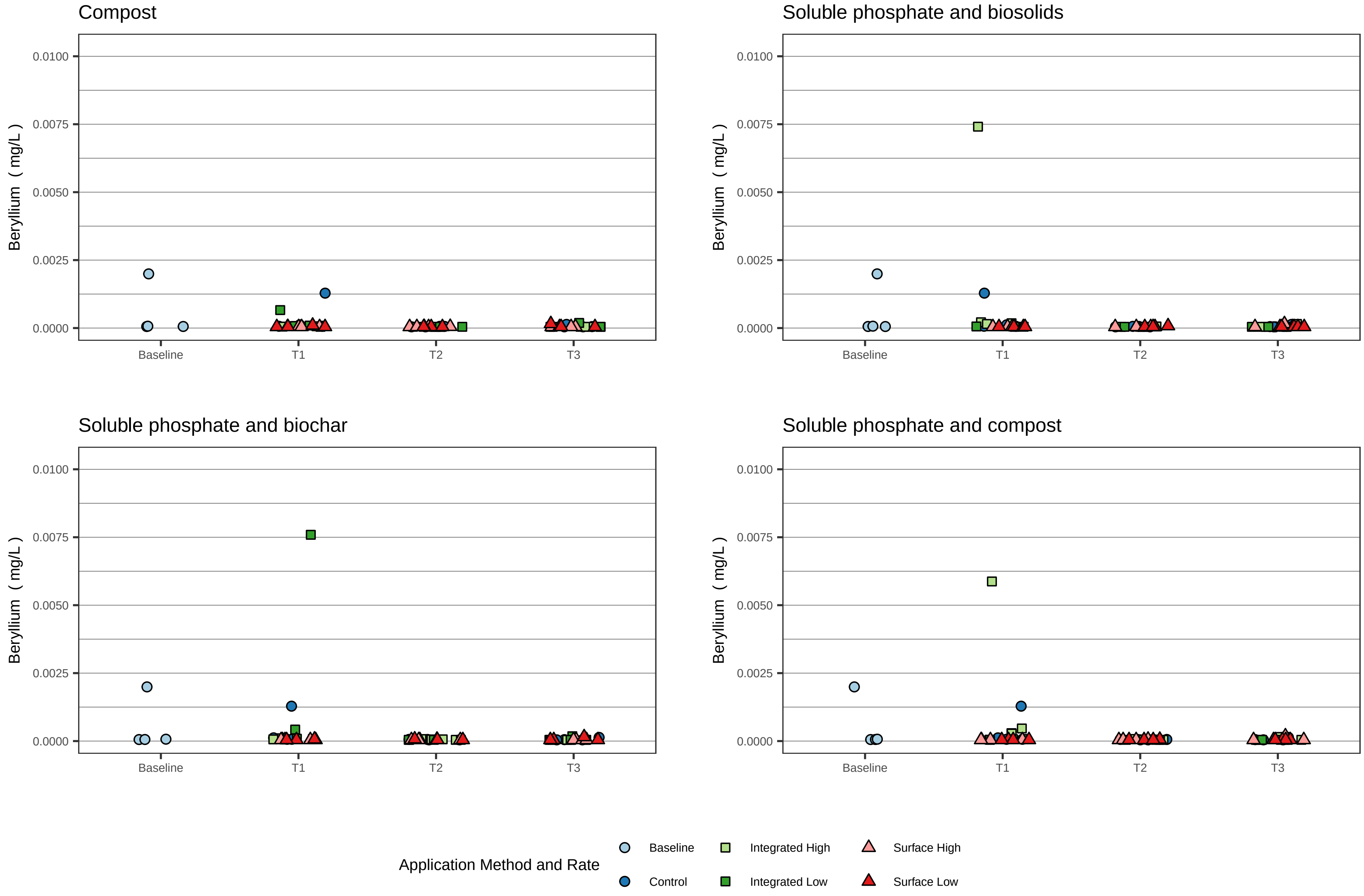

Figure 5−5b Beryllium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

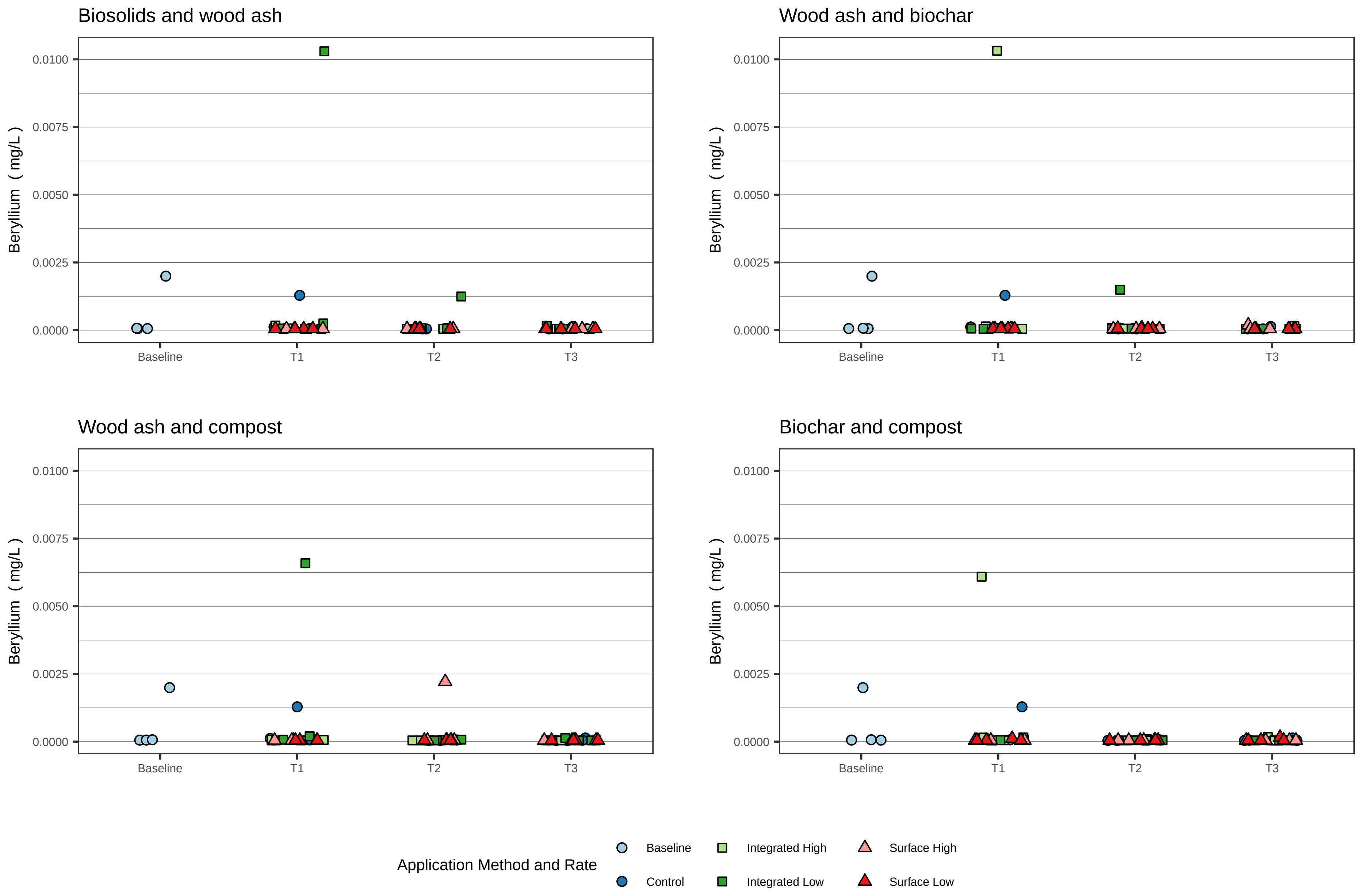

Figure 5–5c Beryllium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

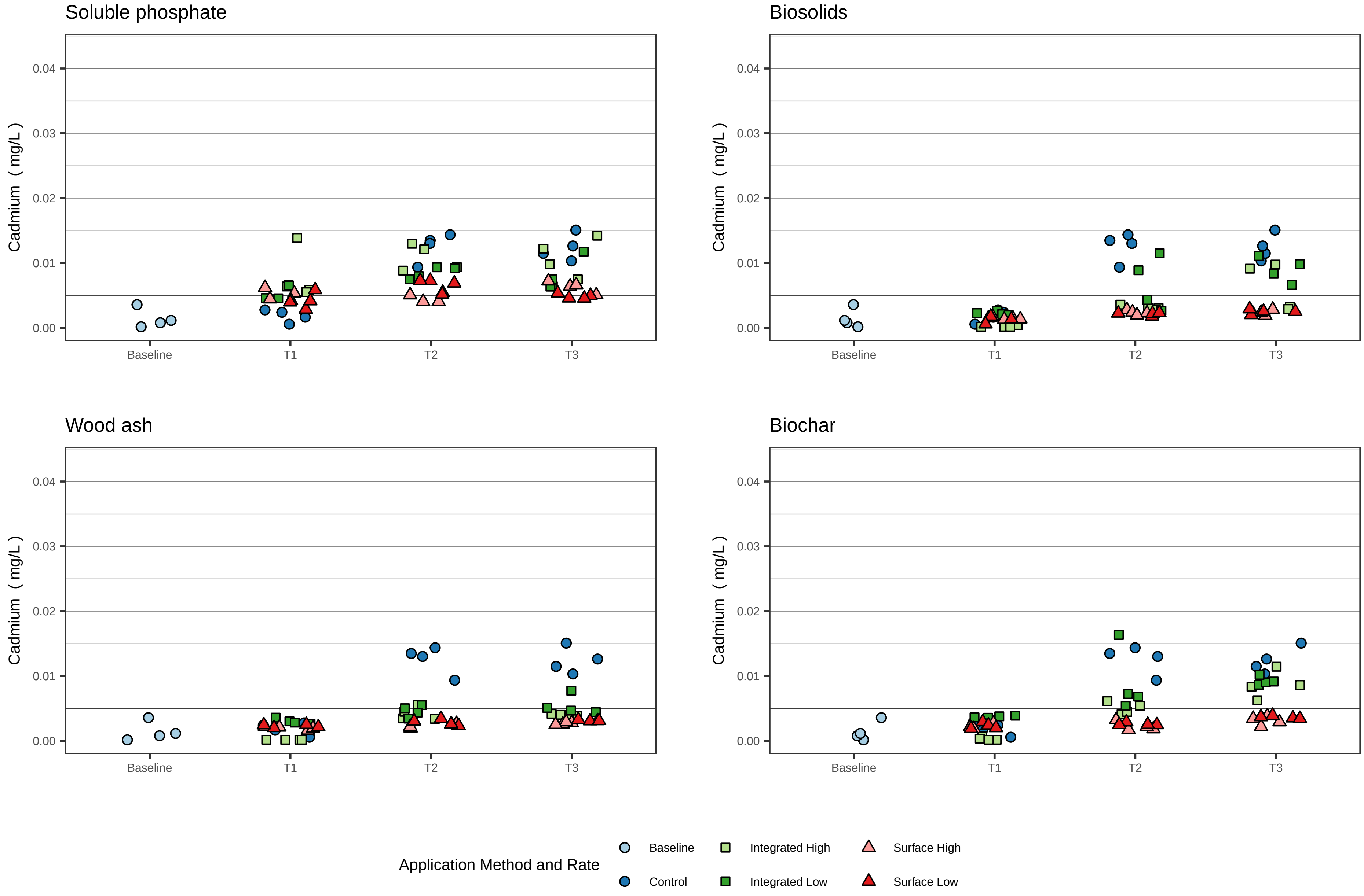

Figure 5−6a Cadmium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

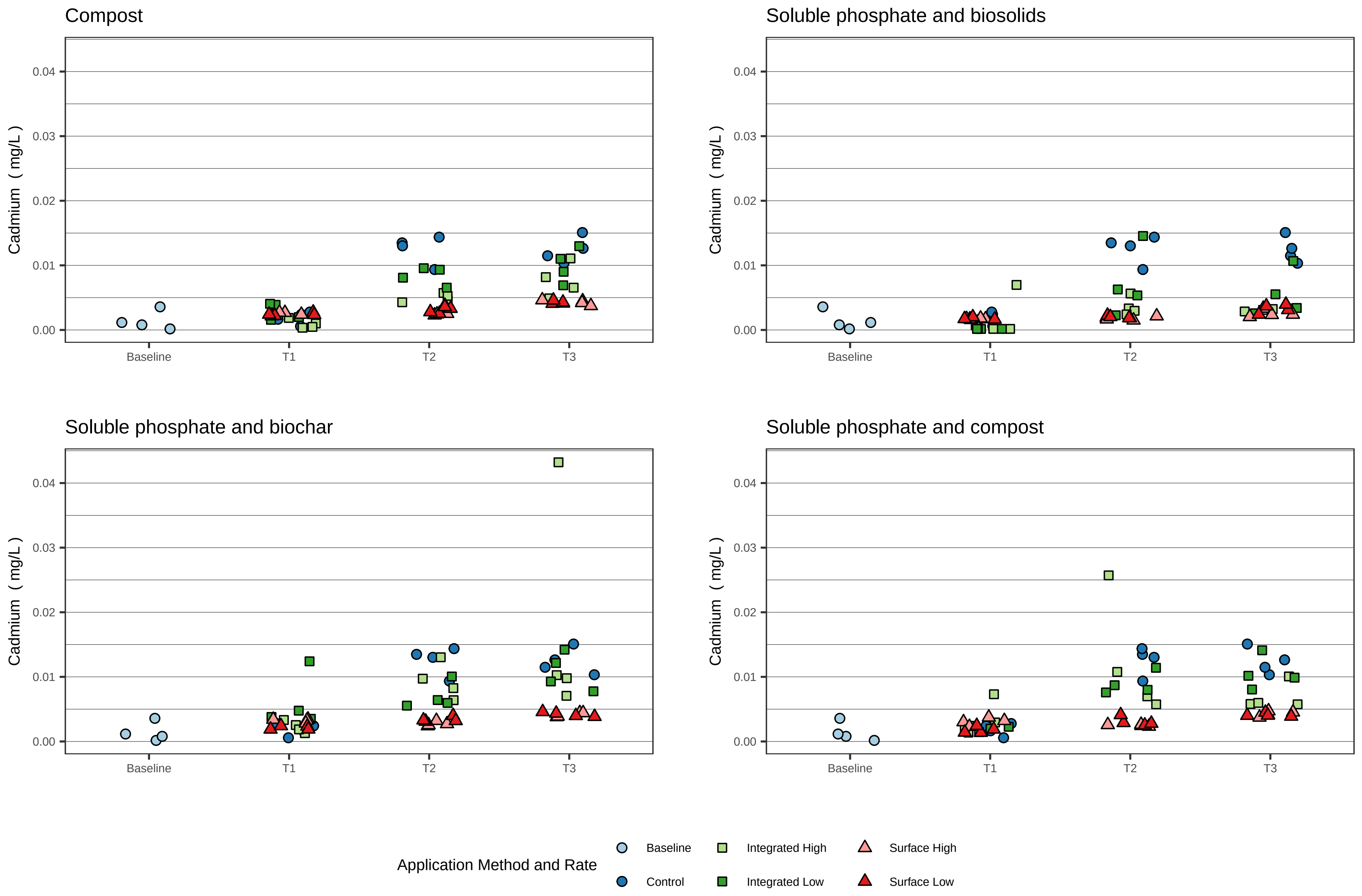

Figure 5−6b Cadmium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

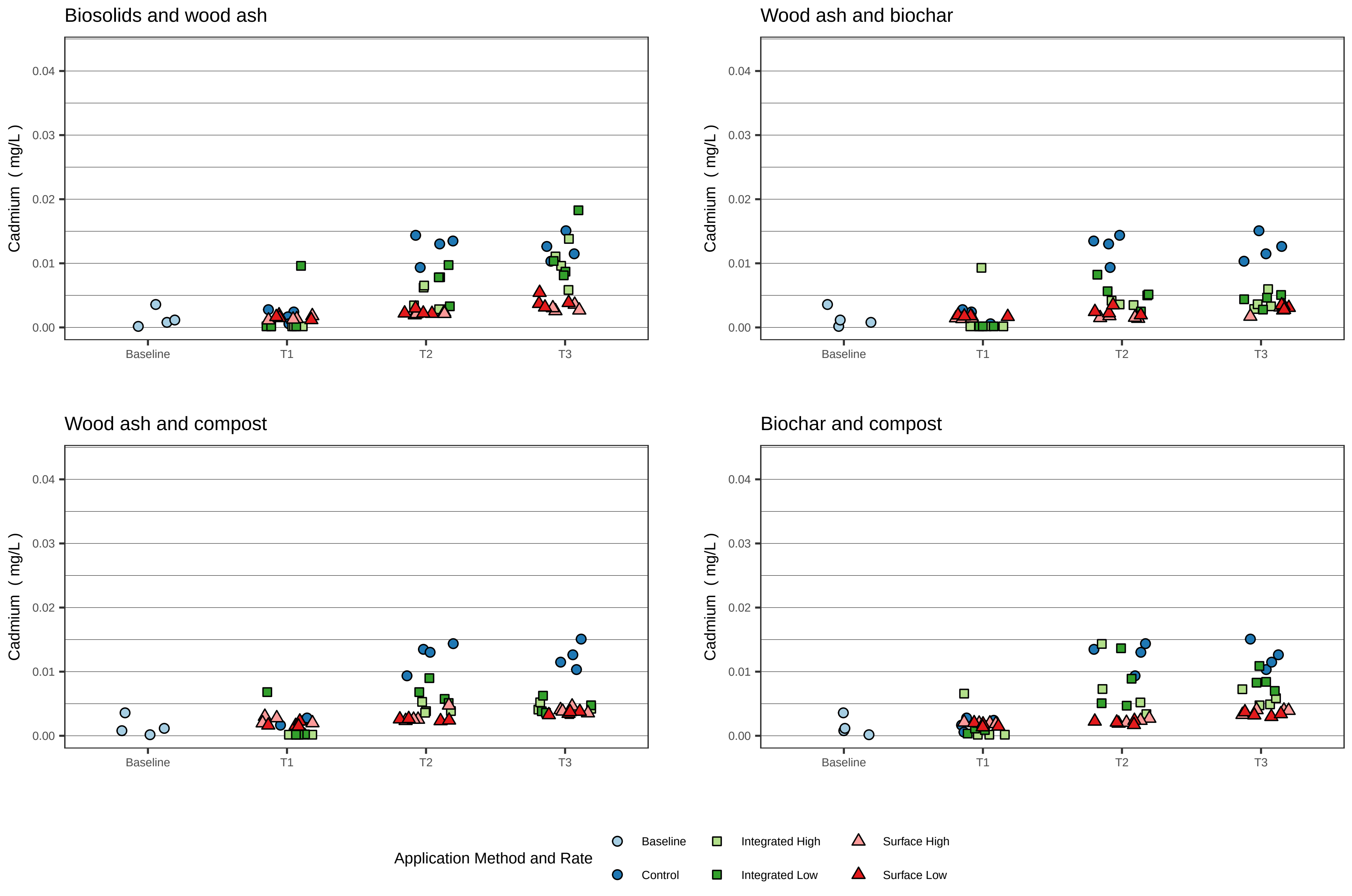

Figure 5−6c Cadmium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

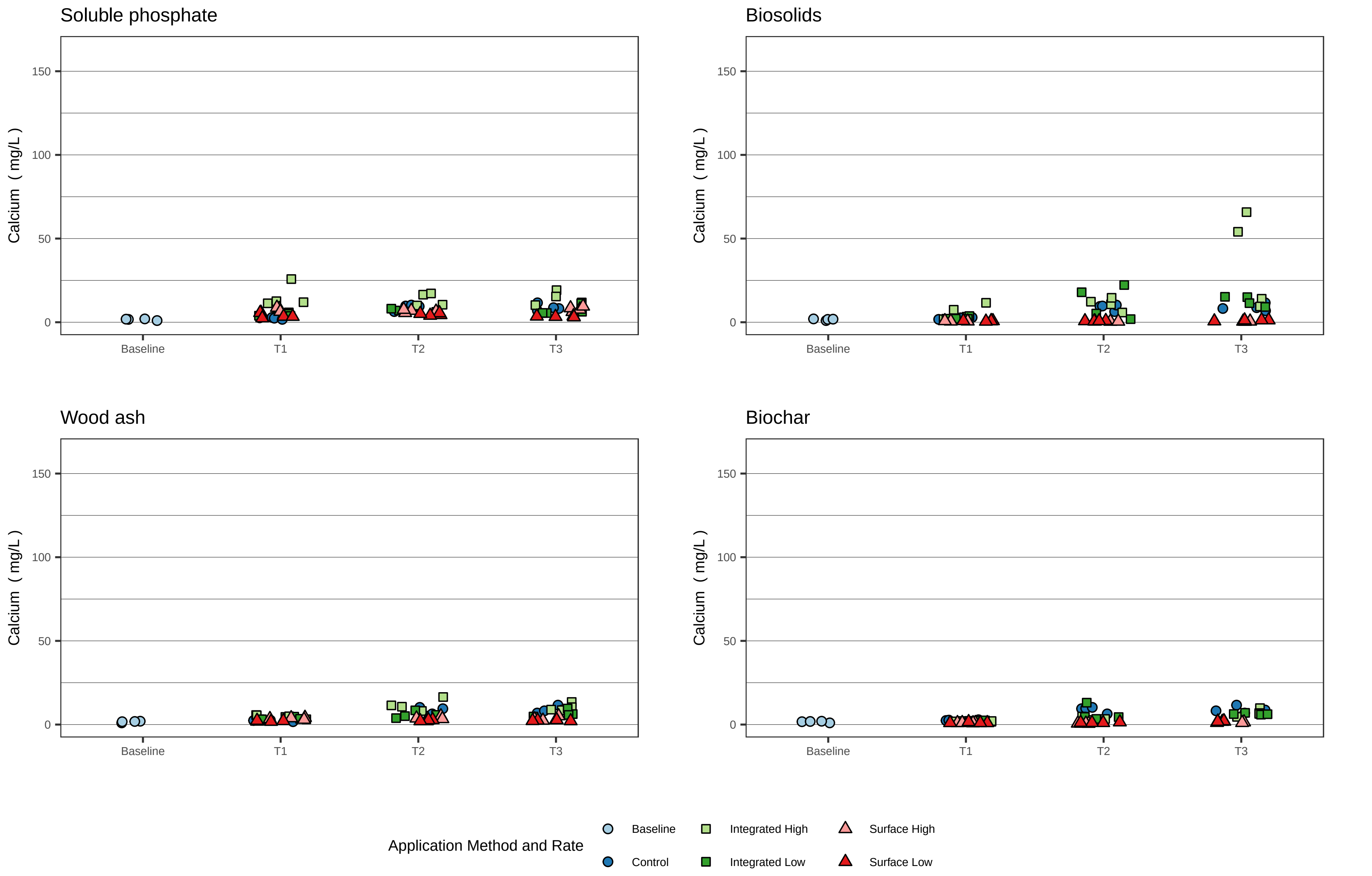

Figure 5−7a Calcium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

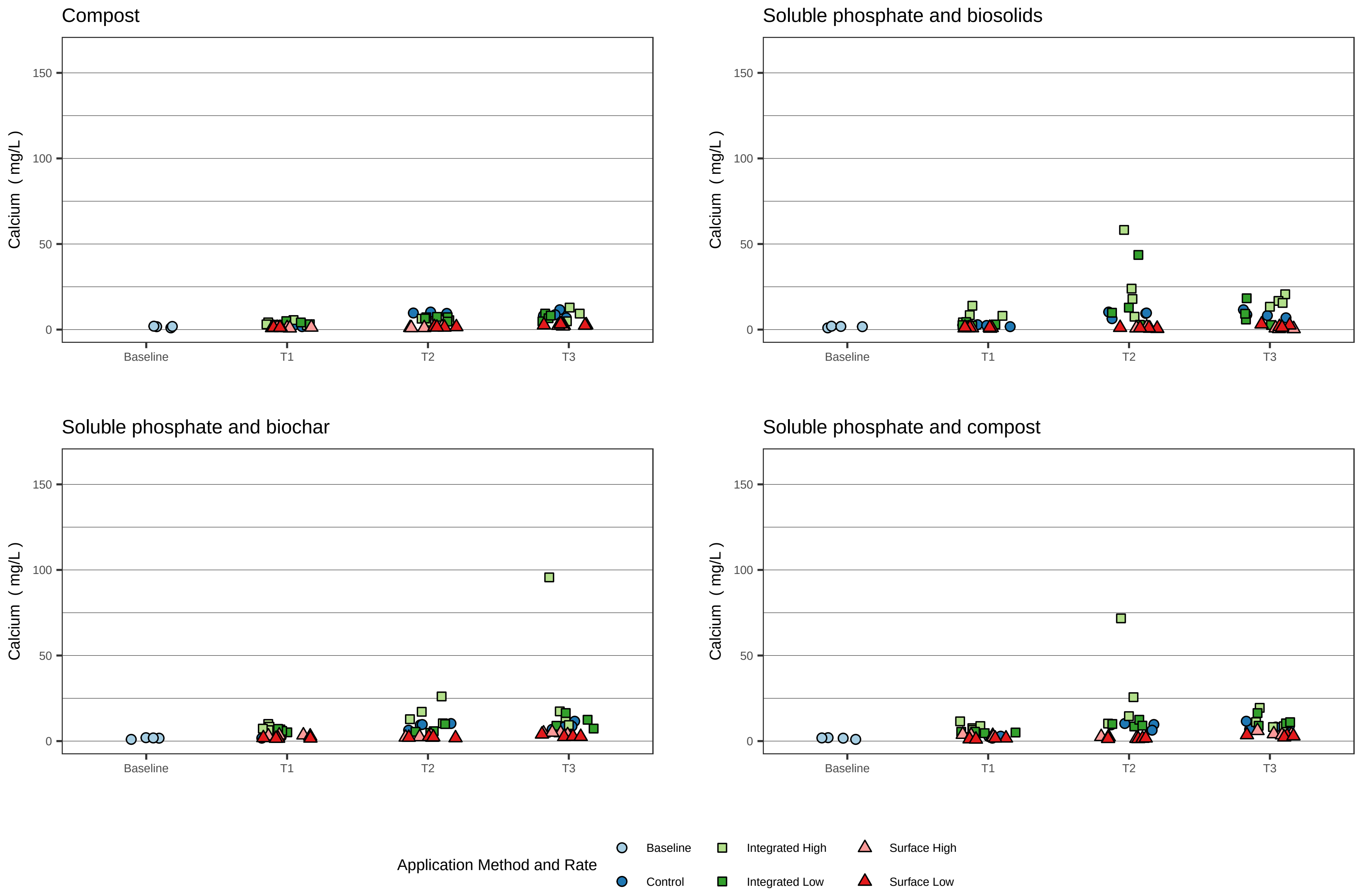

Figure 5−7b Calcium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

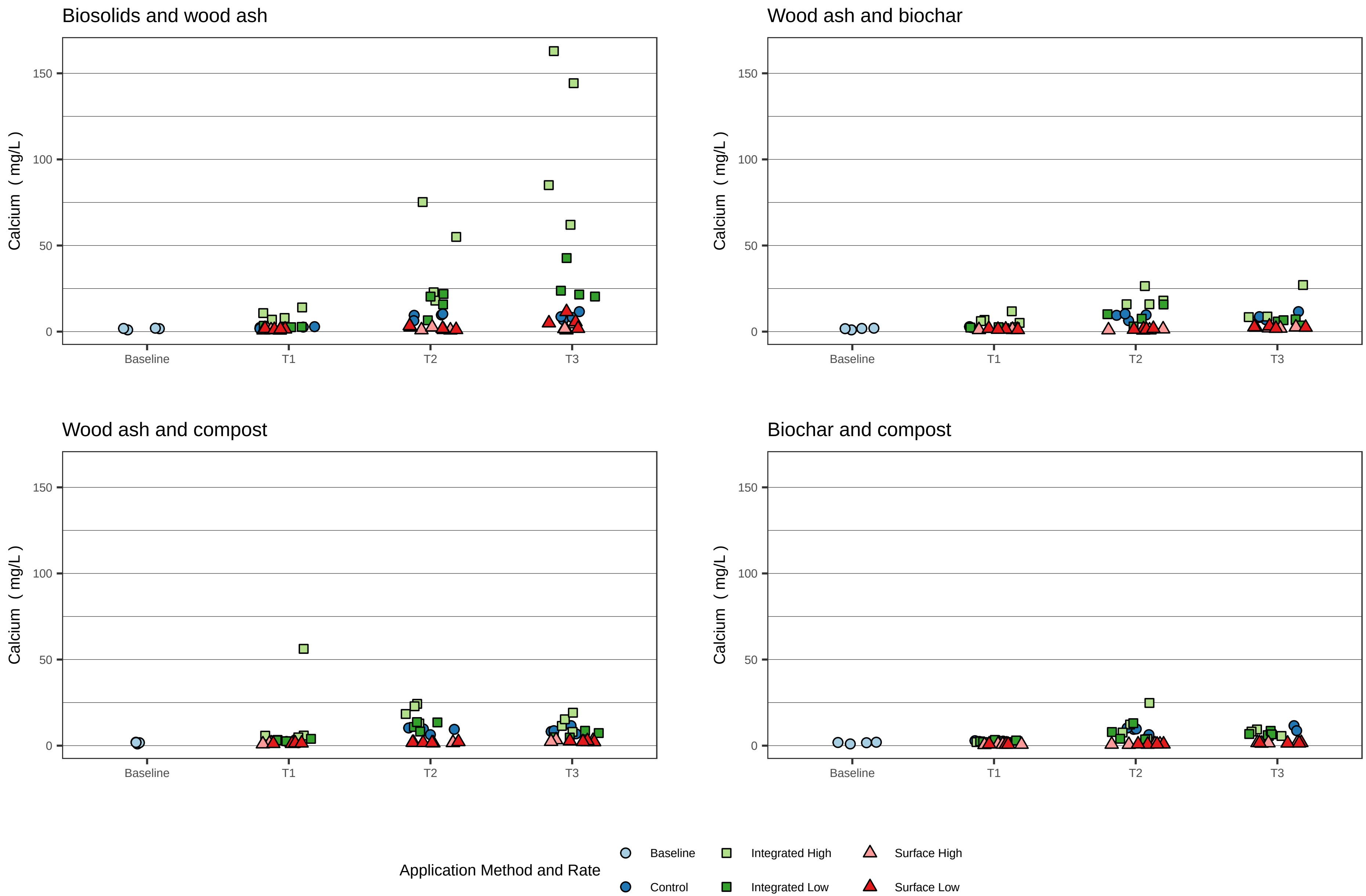

Figure 5−7c Calcium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

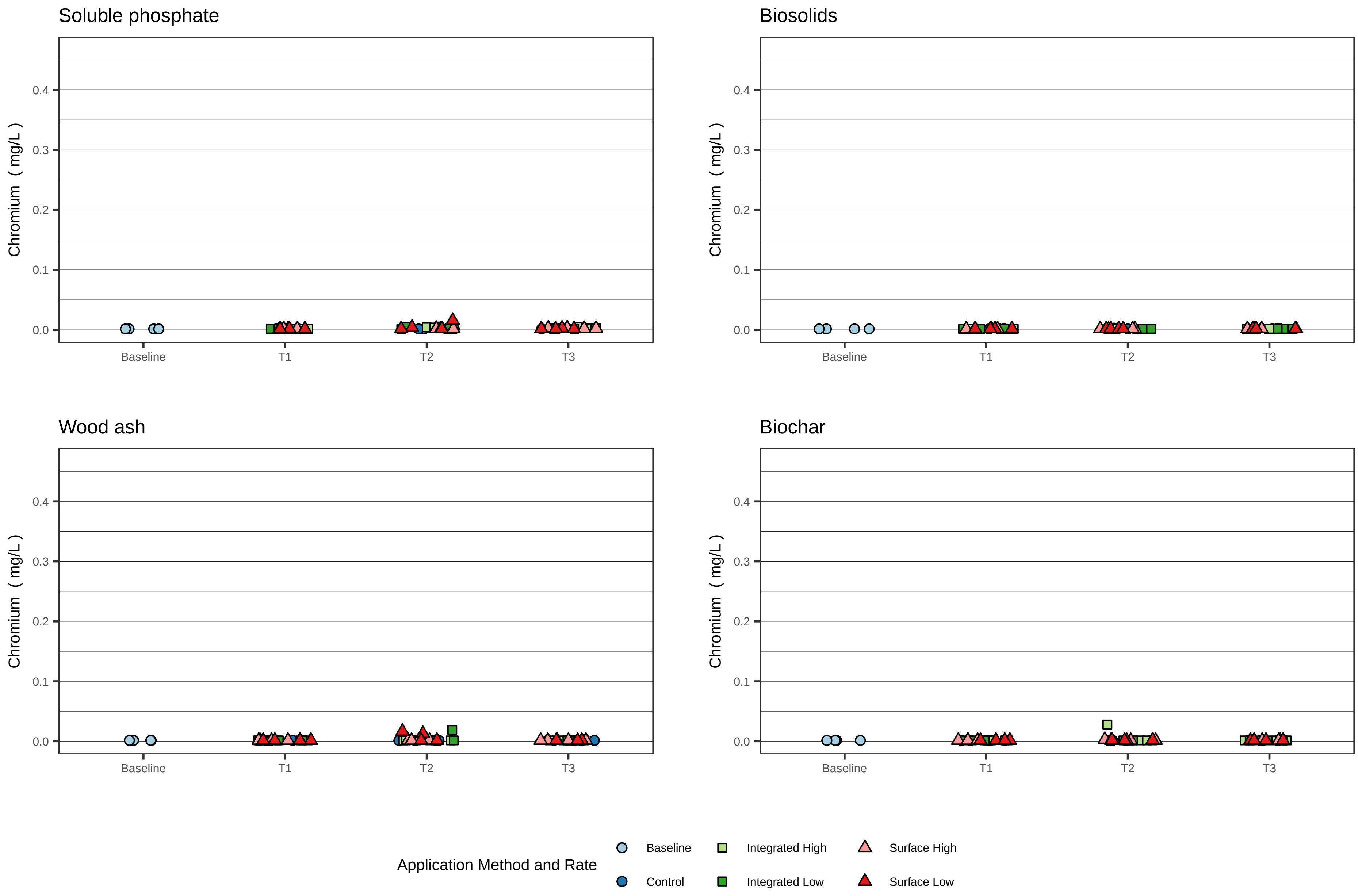

Figure 5−8a Chromium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

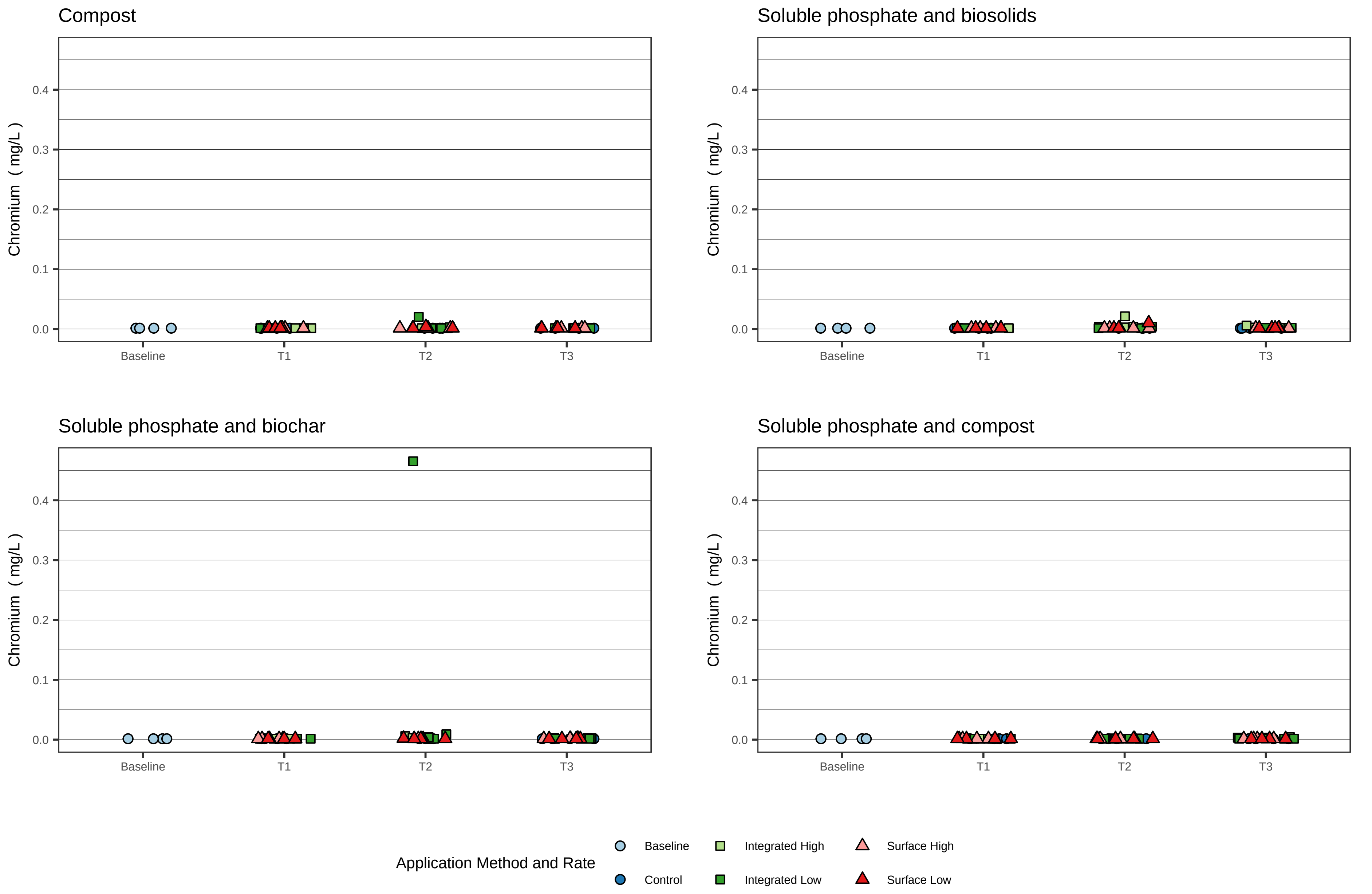

Figure 5−8b Chromium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

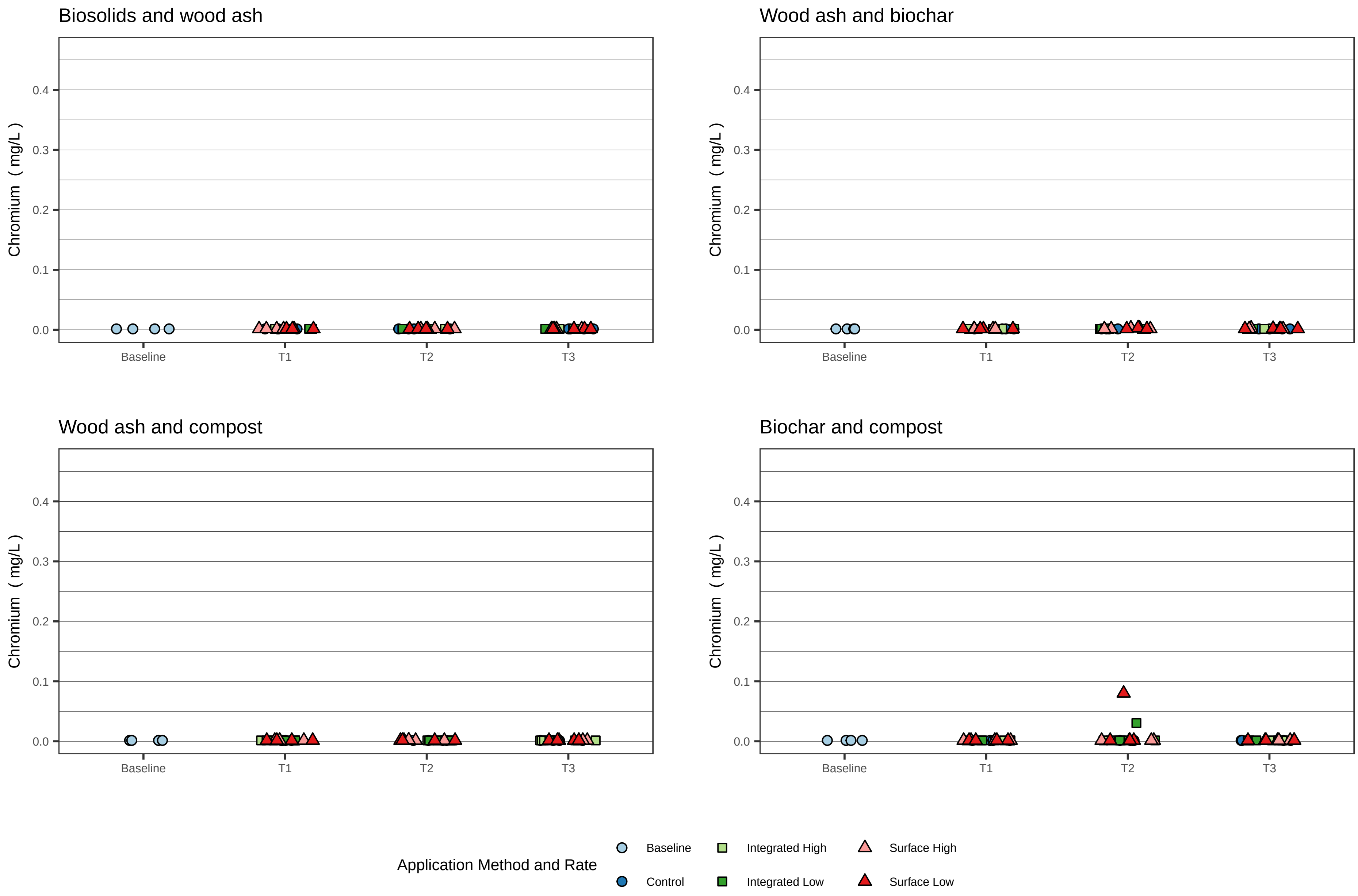

Figure 5−8c Chromium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

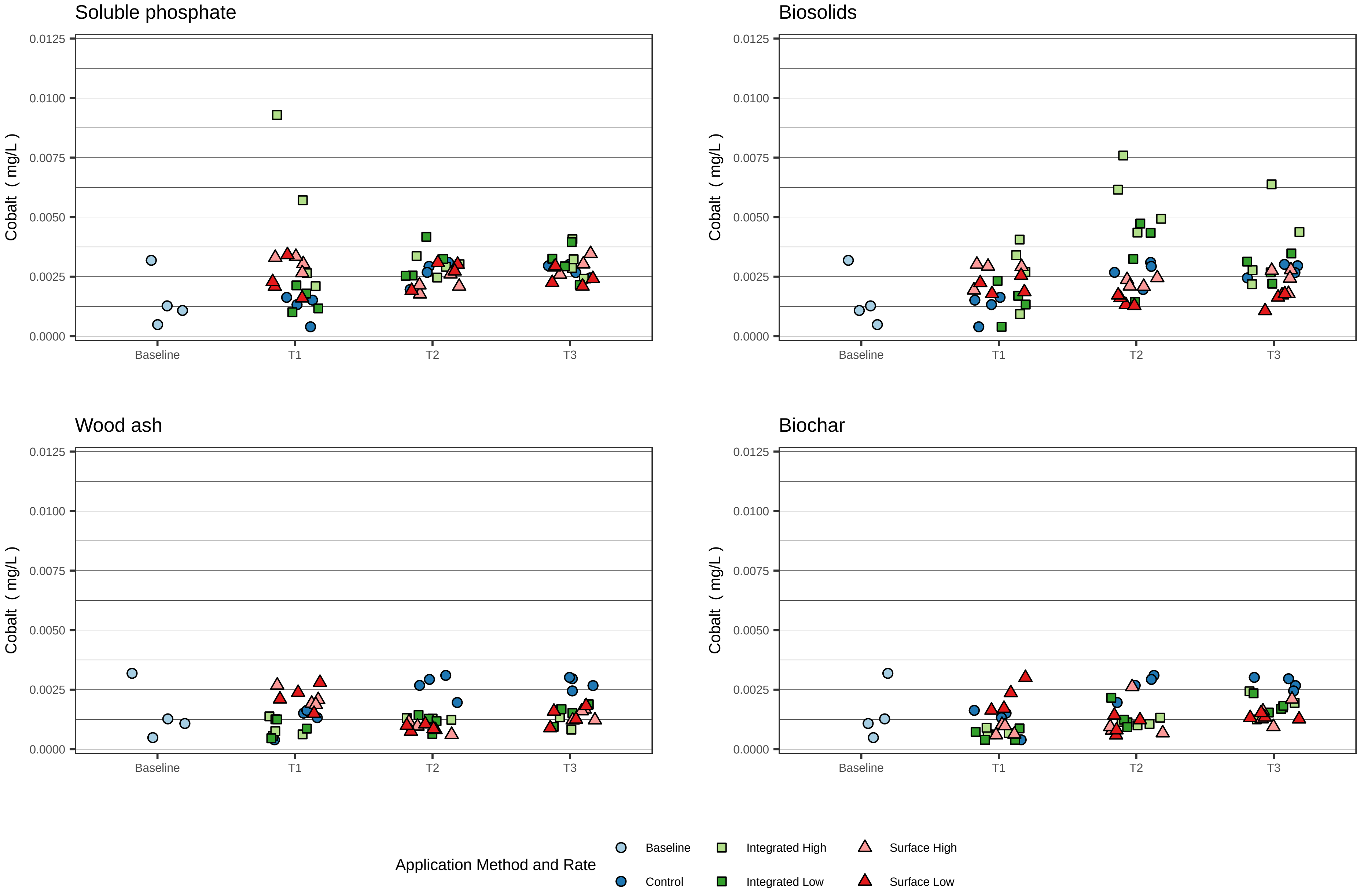

Figure 5−9a Cobalt in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

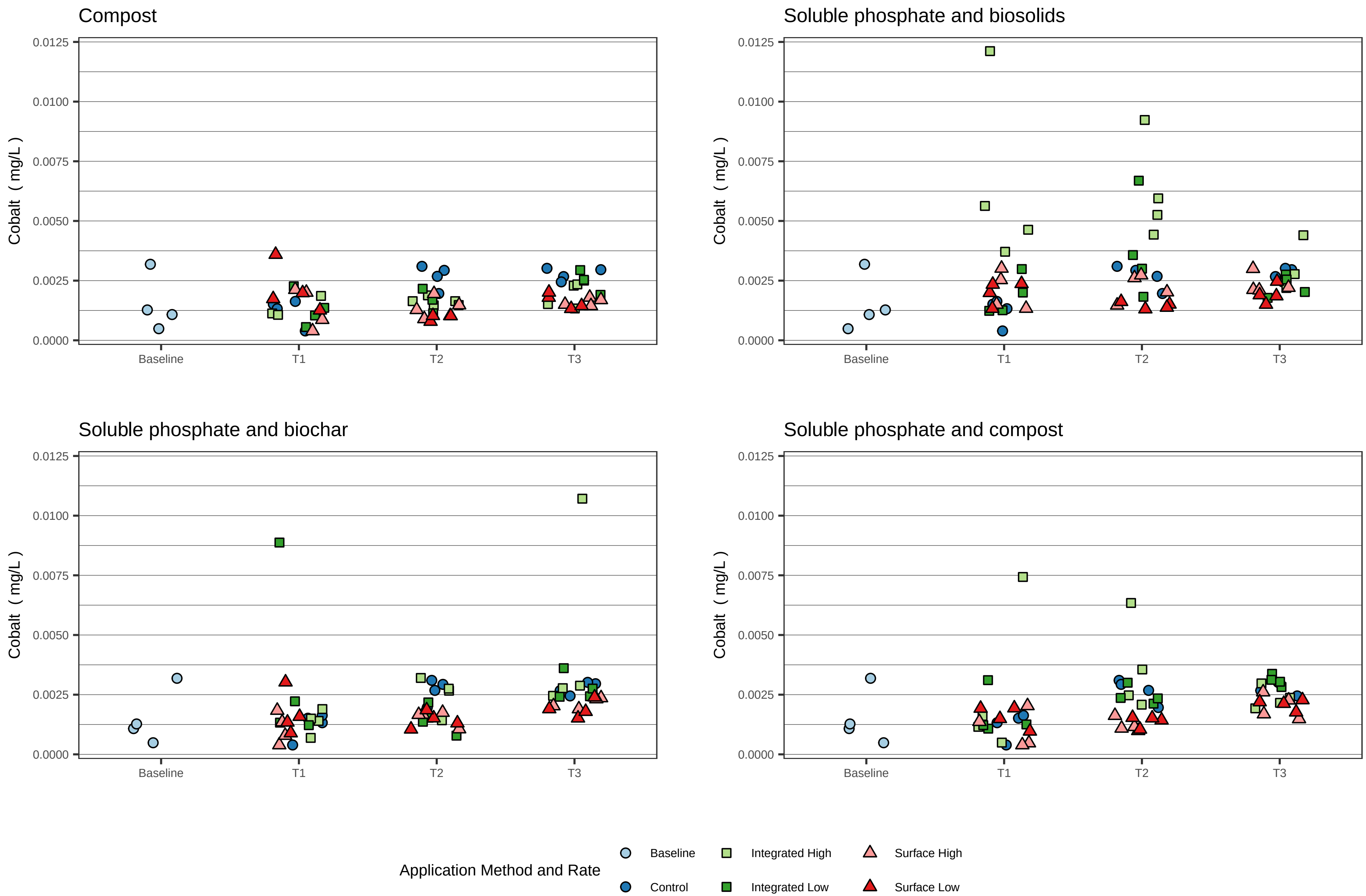

Figure 5−9b Cobalt in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

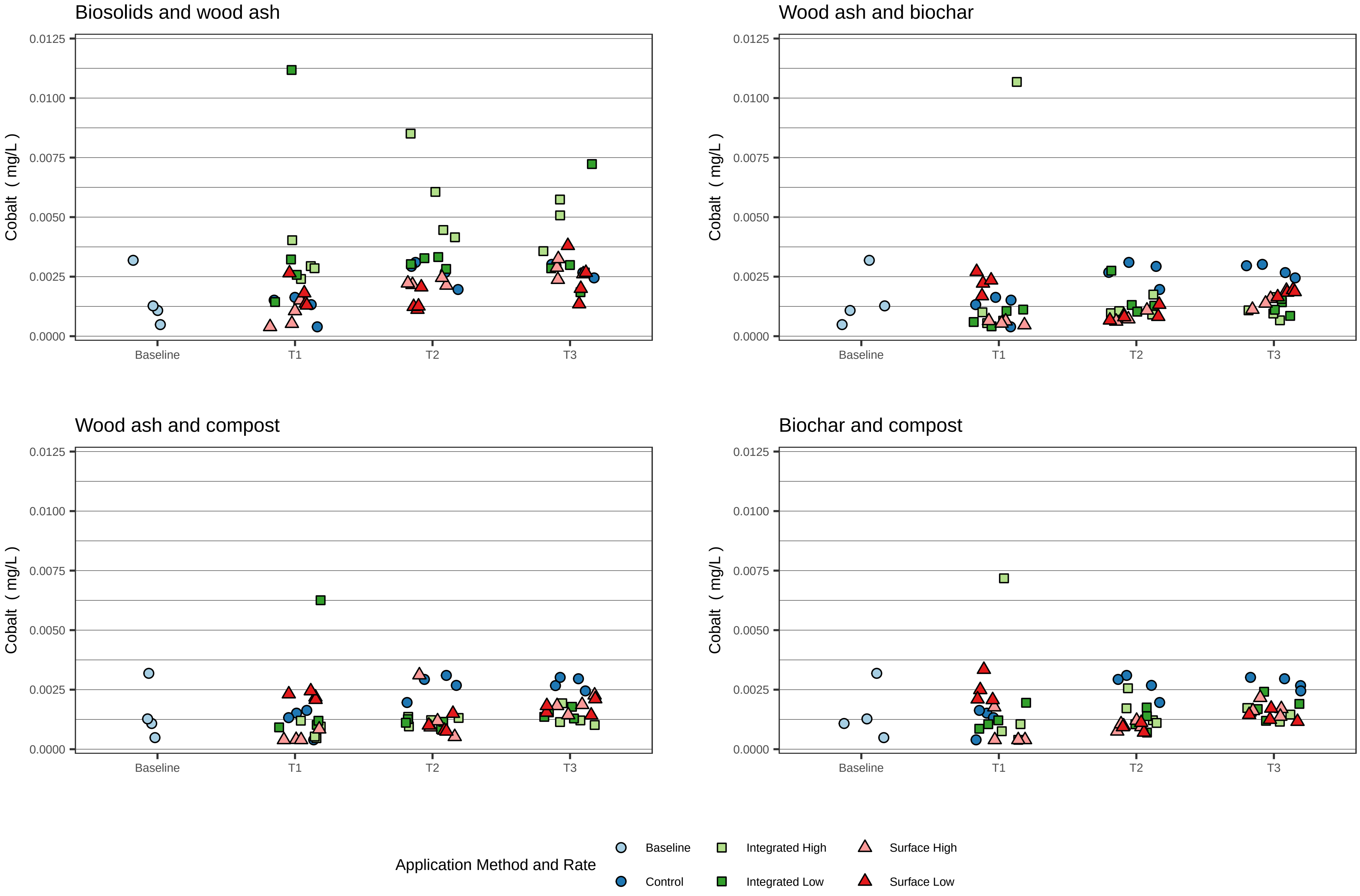

Figure 5−9c Cobalt in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

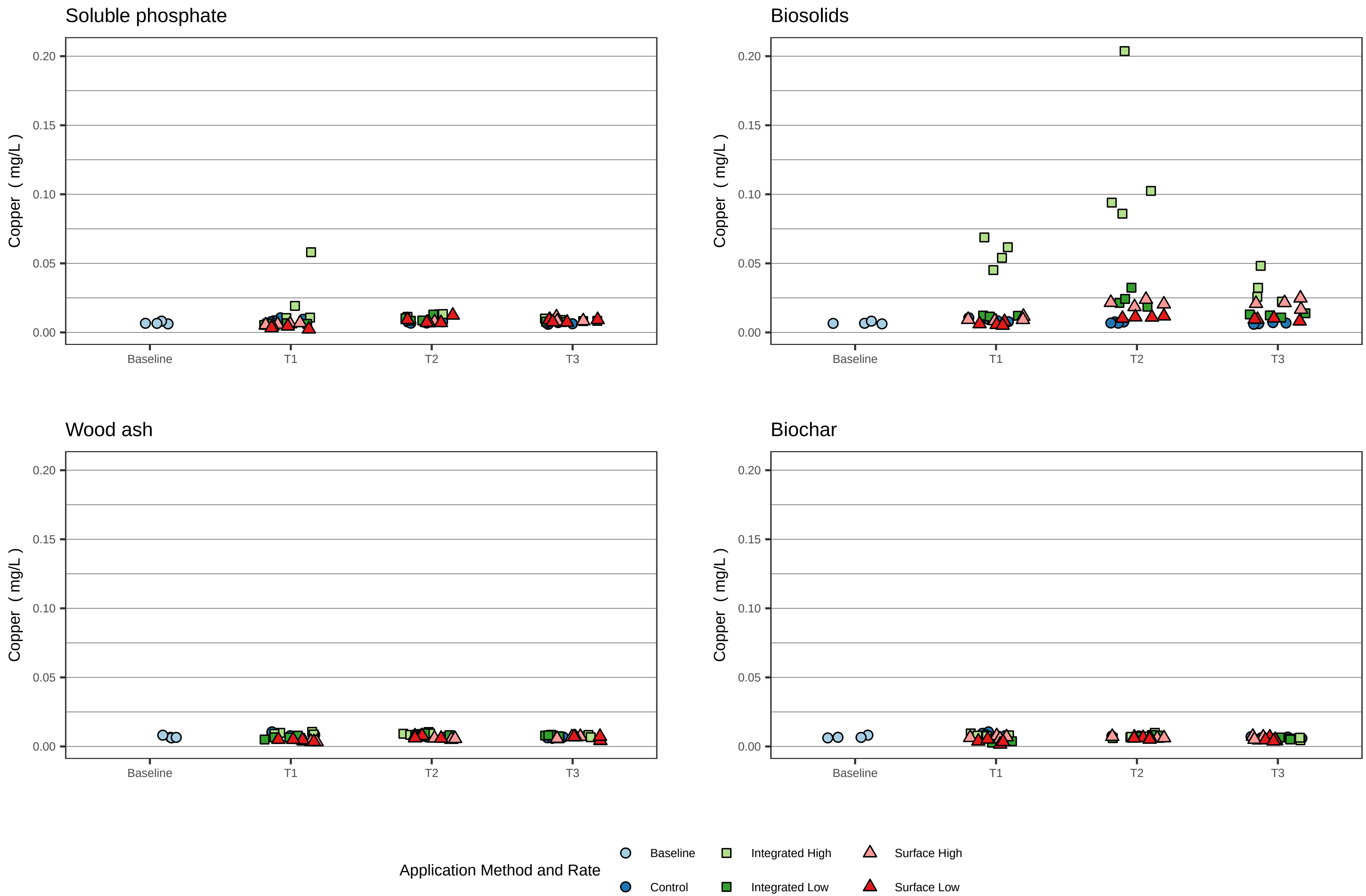

Figure 5−10a Copper in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

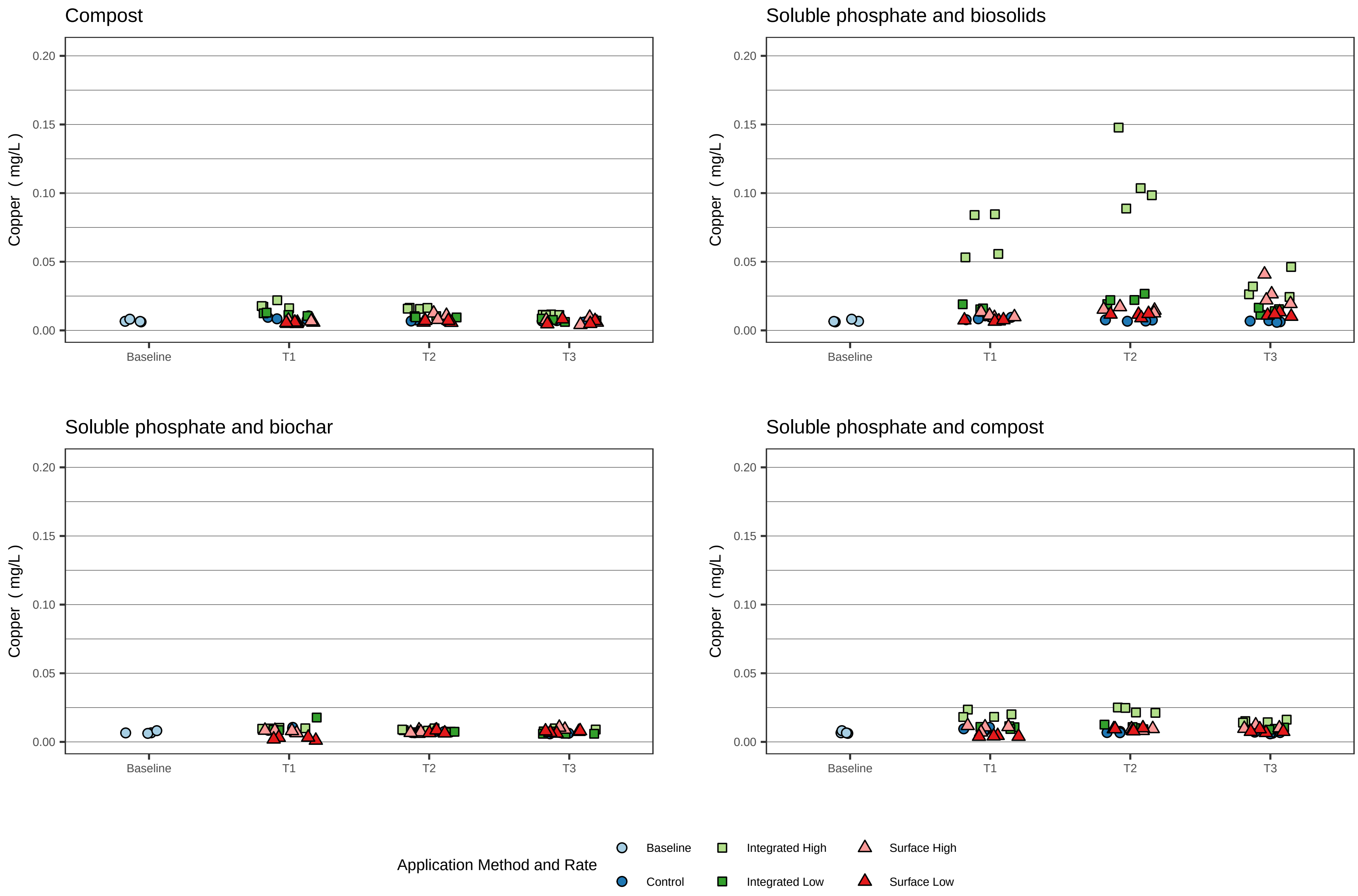

Figure 5-10b Copper in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

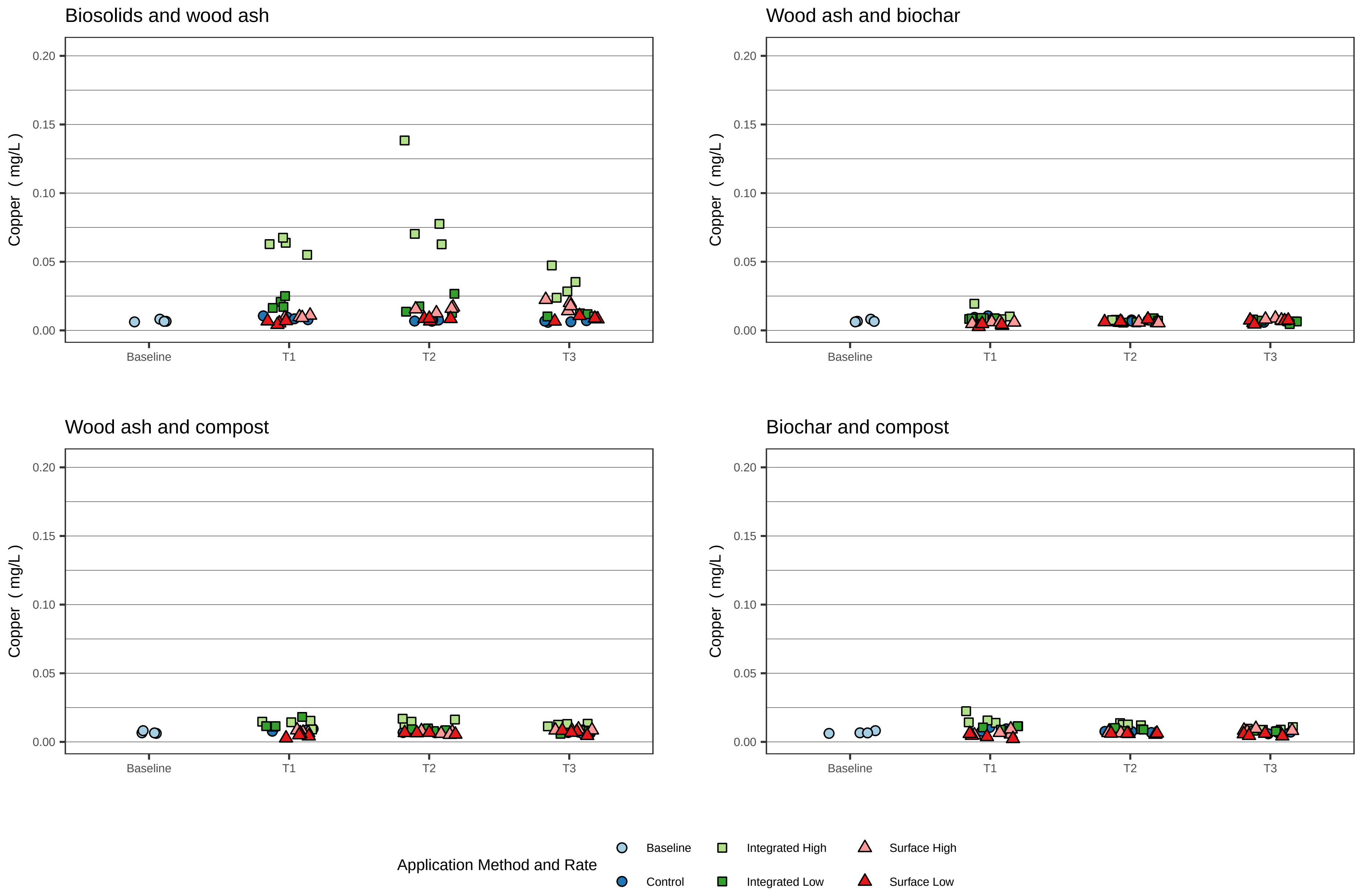

Figure 5−10c Copper in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

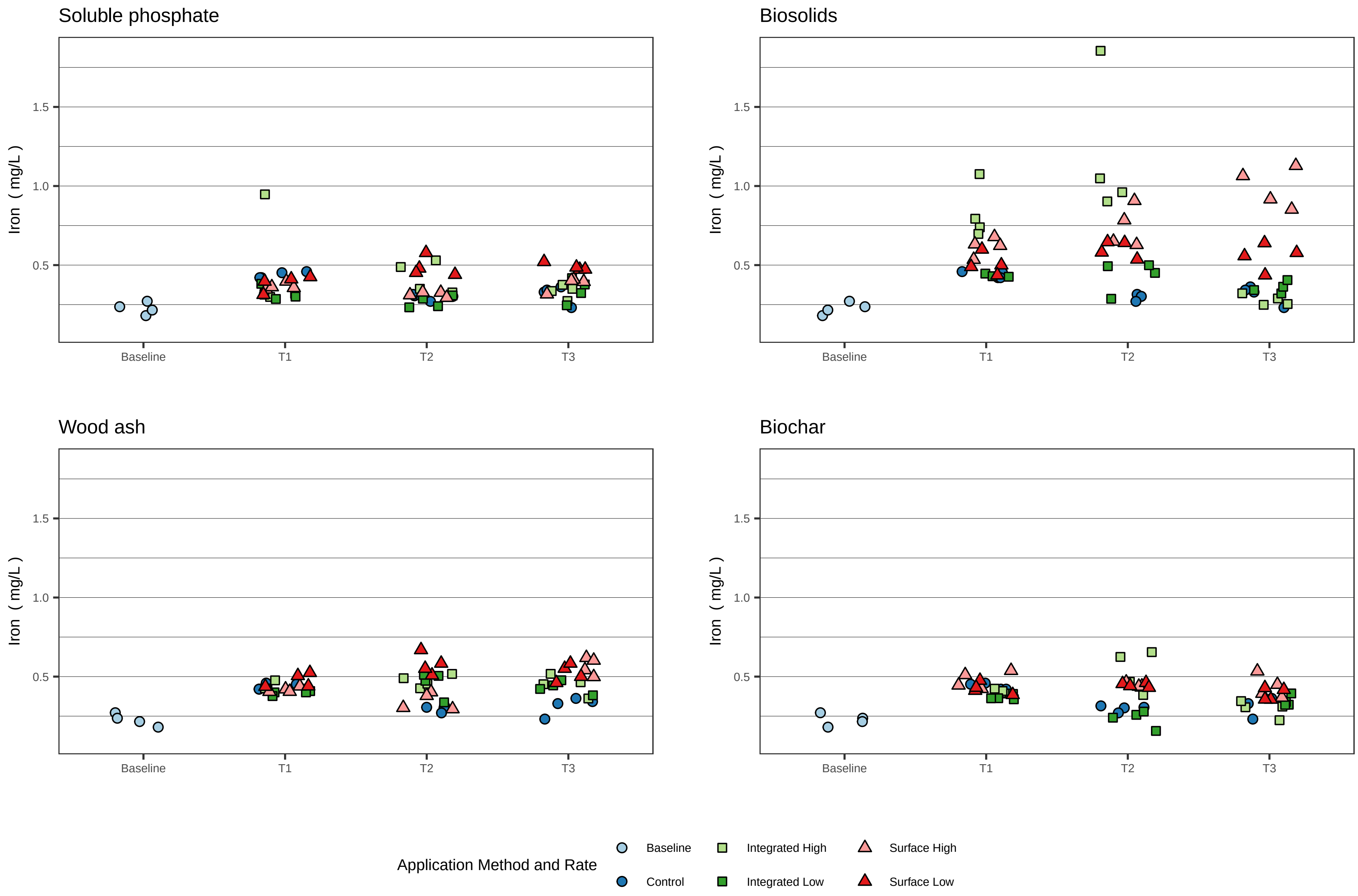

Figure 5‒11a Iron in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

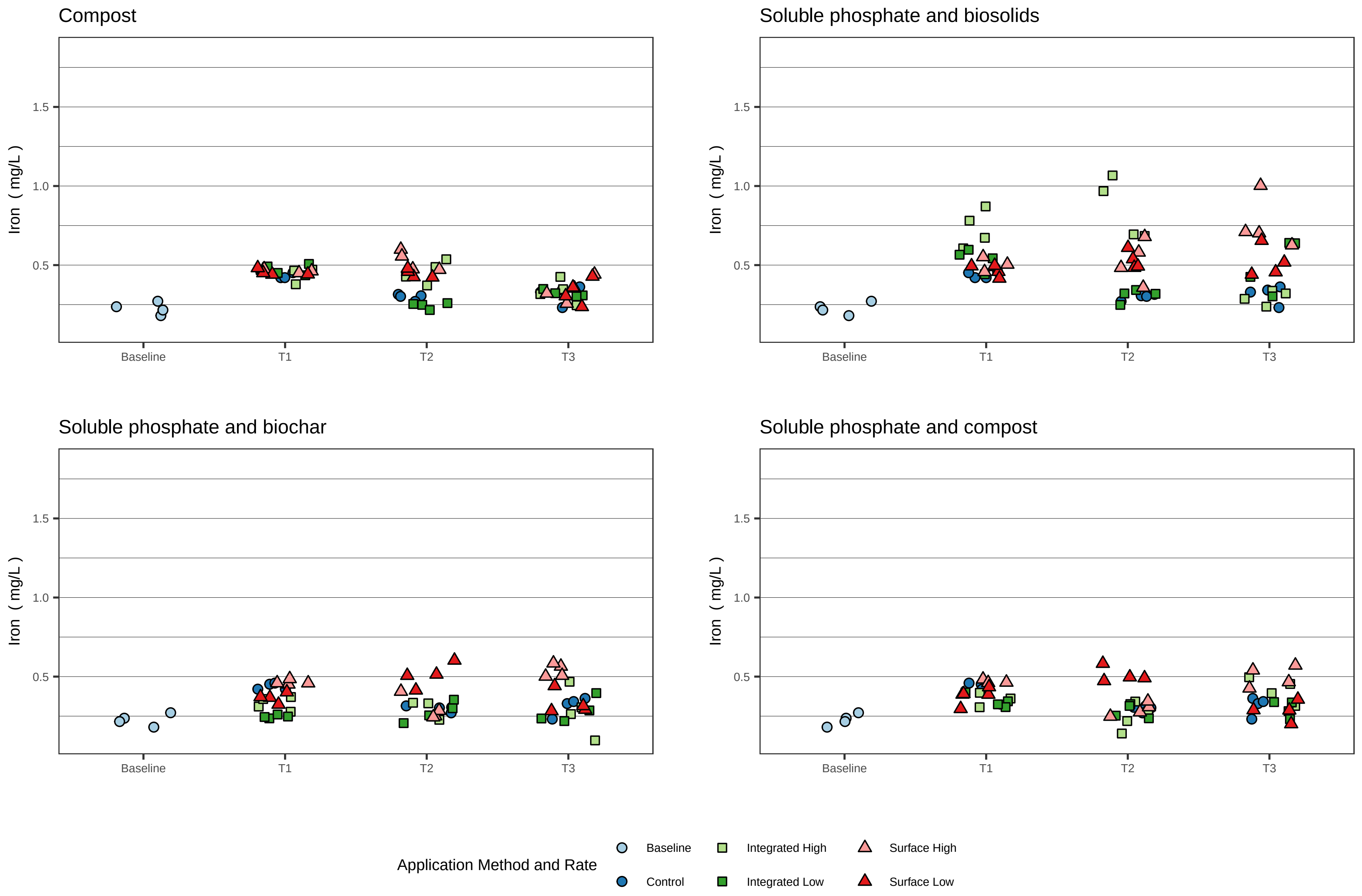

Figure 5−11b Iron in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

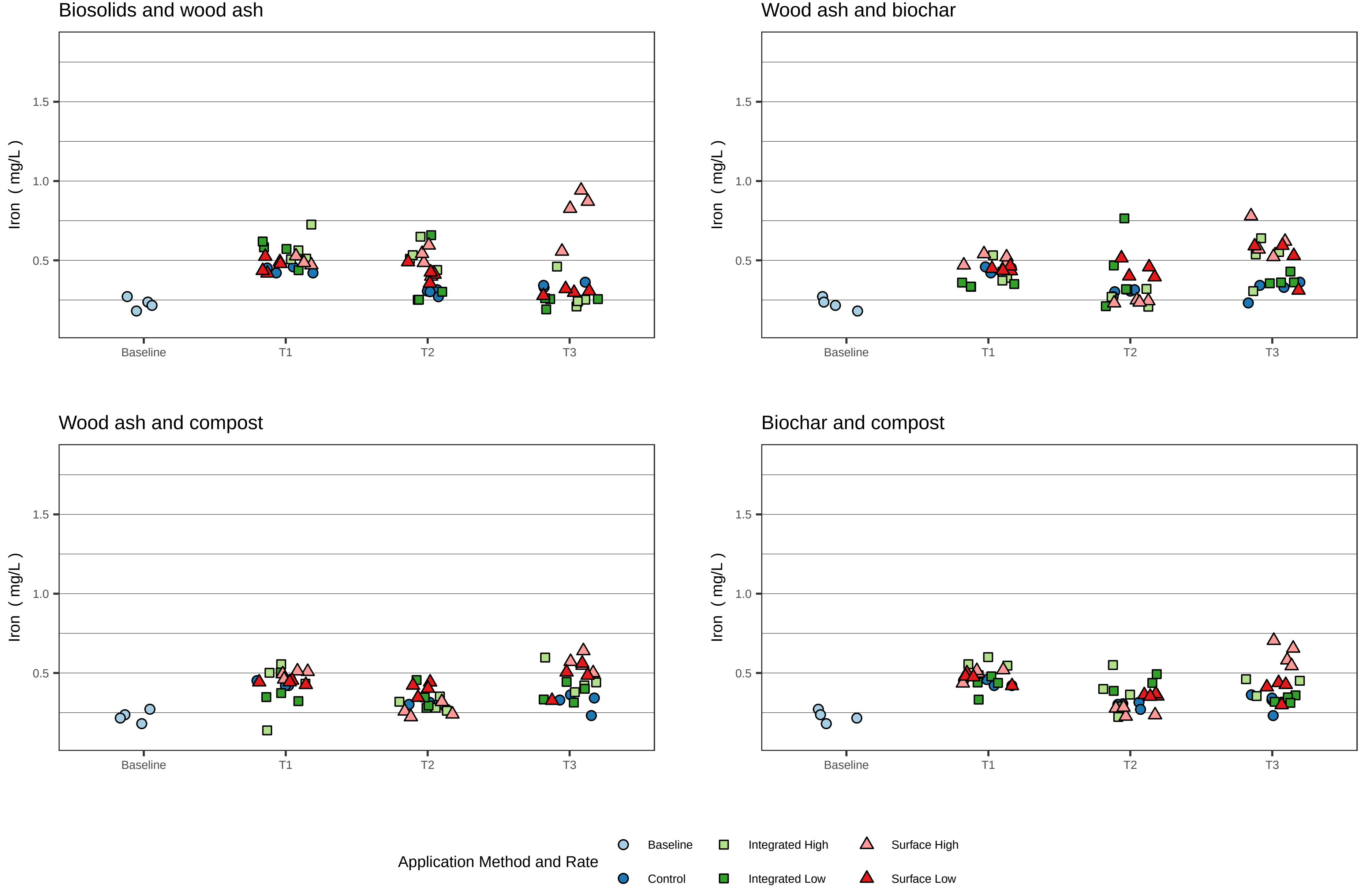

Figure 5−11c Iron in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

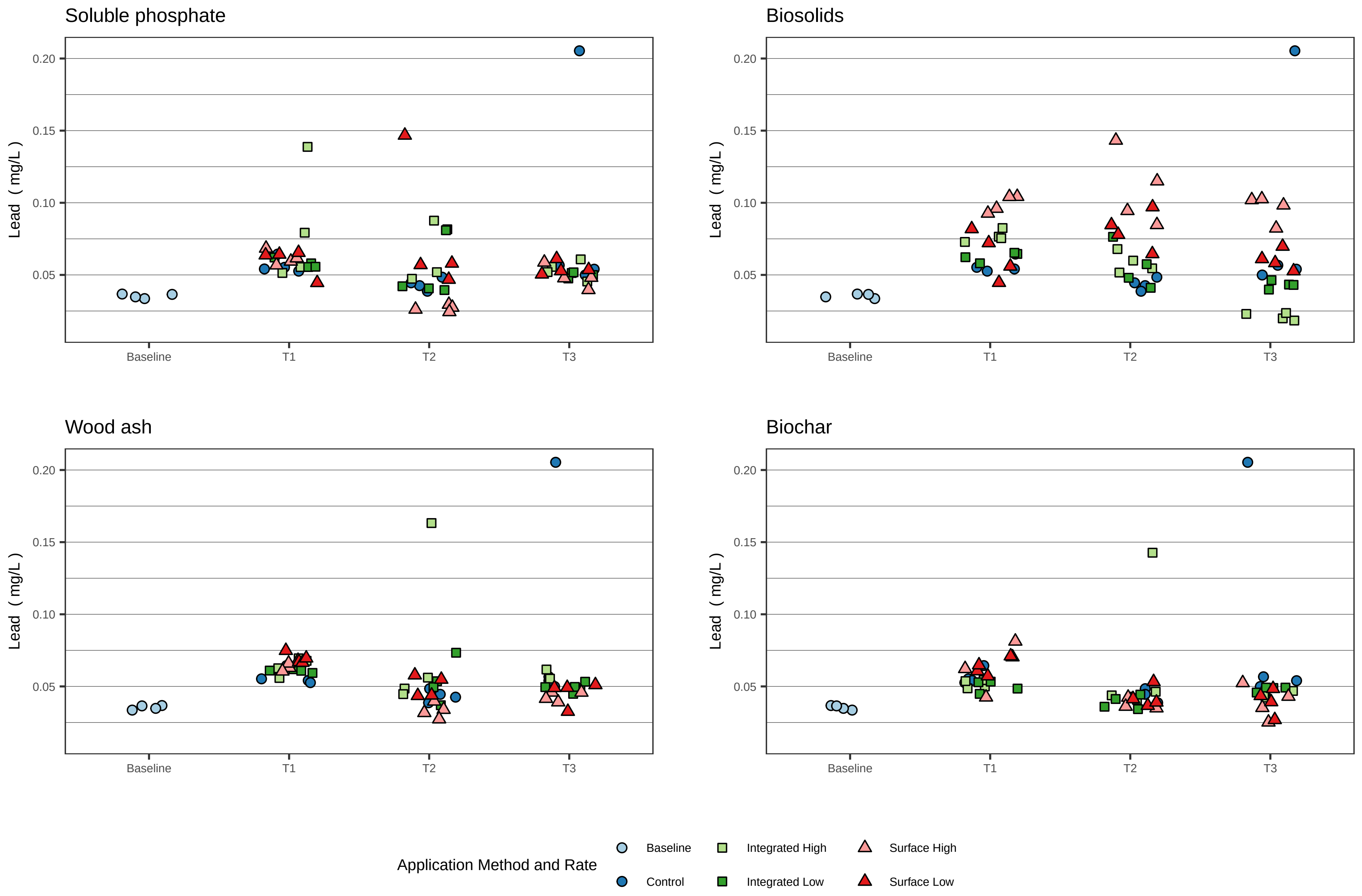

Figure 5−12a Lead in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

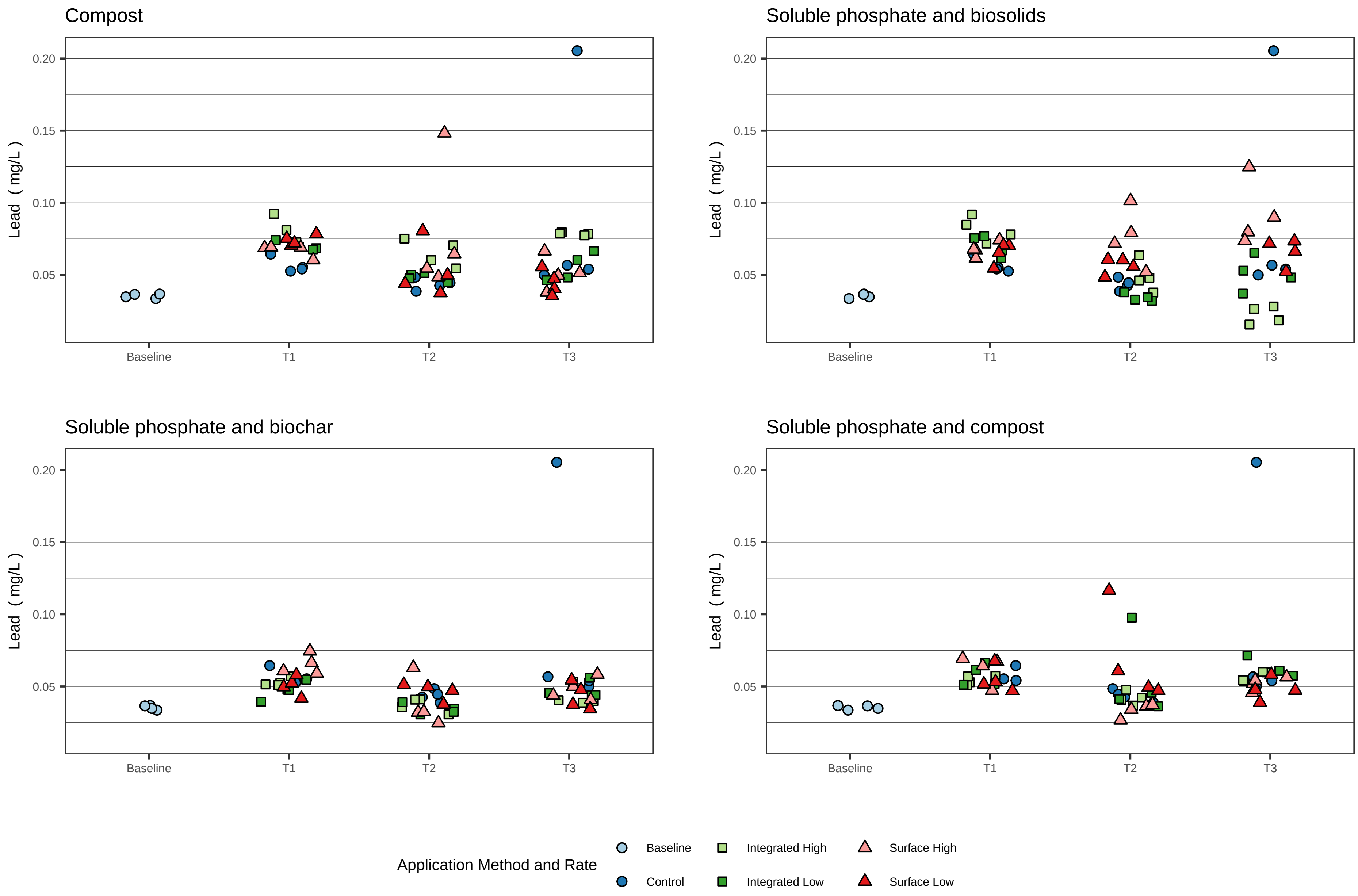

Figure 5−12b Lead in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

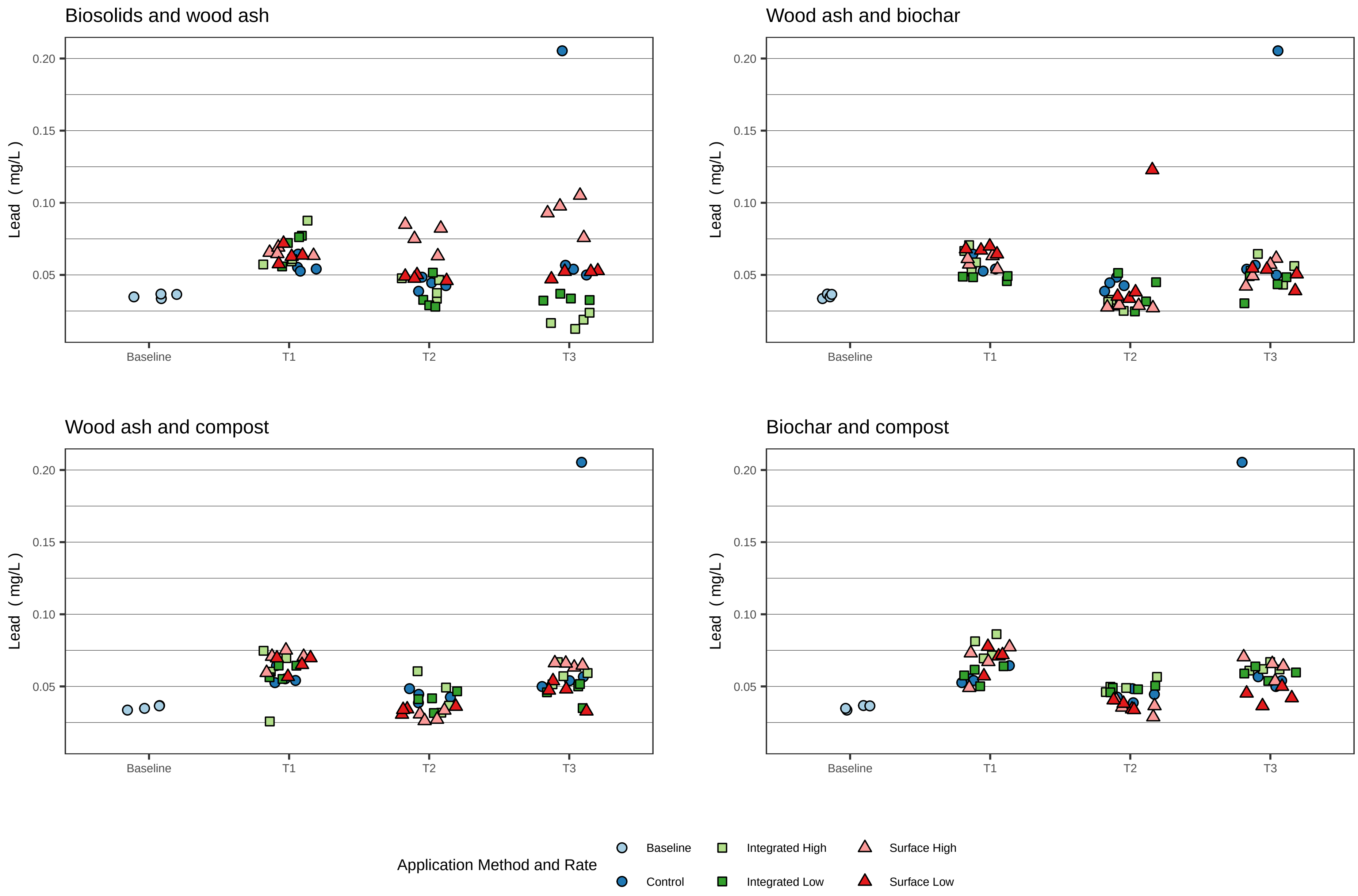

Figure 5−12c Lead in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

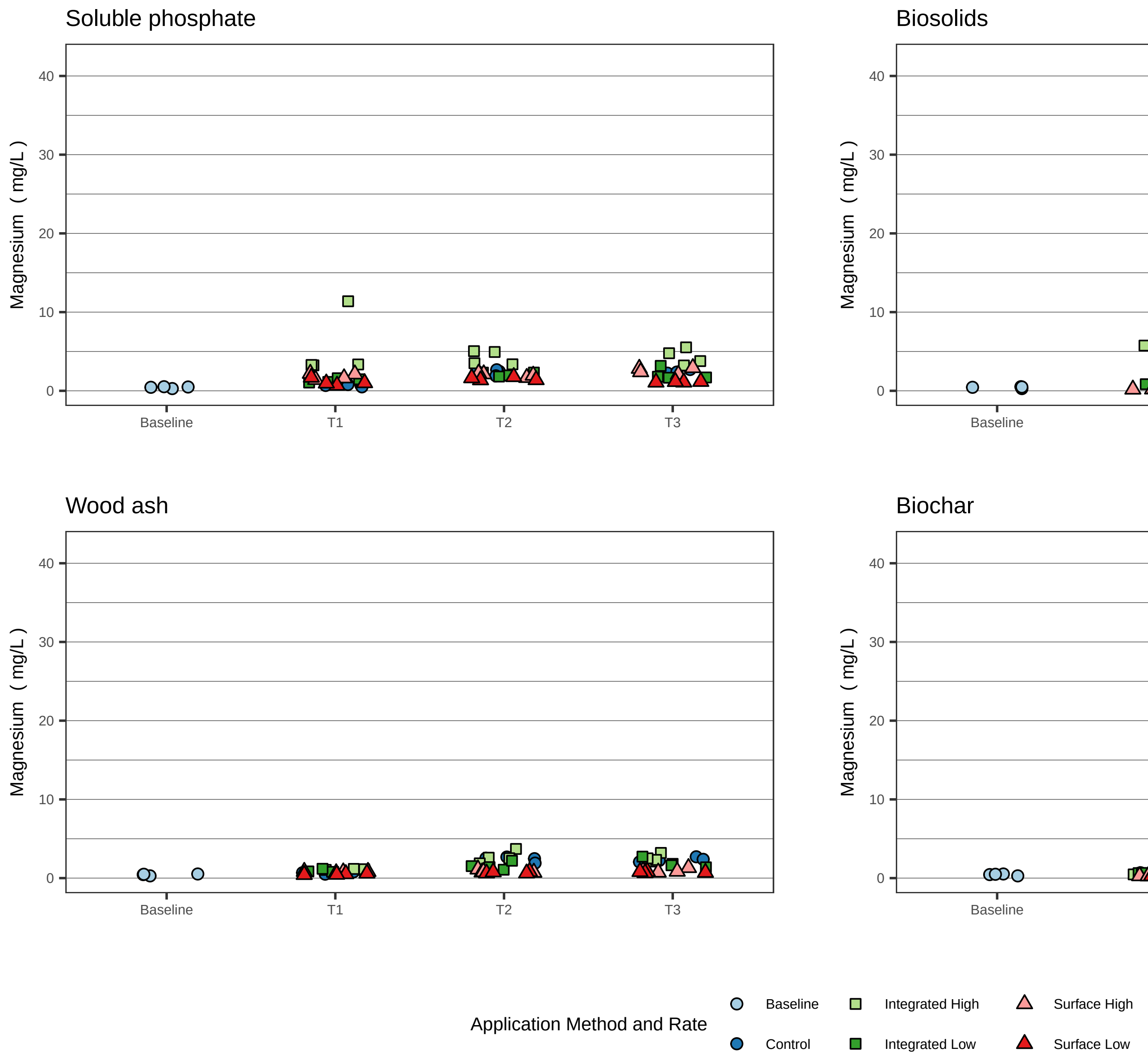

Figure 5−13a Magnesium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

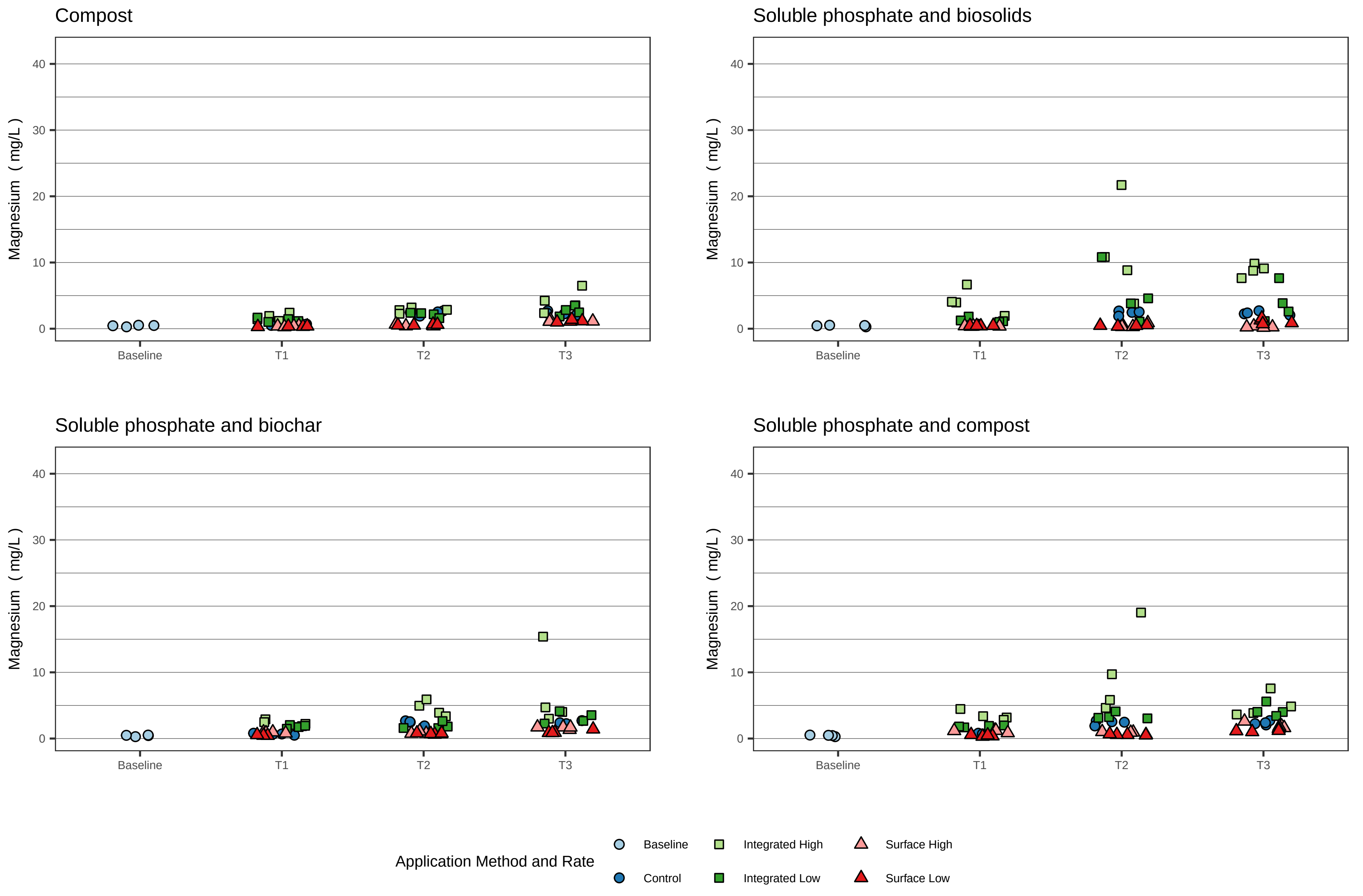

Figure 5−13b Magnesium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

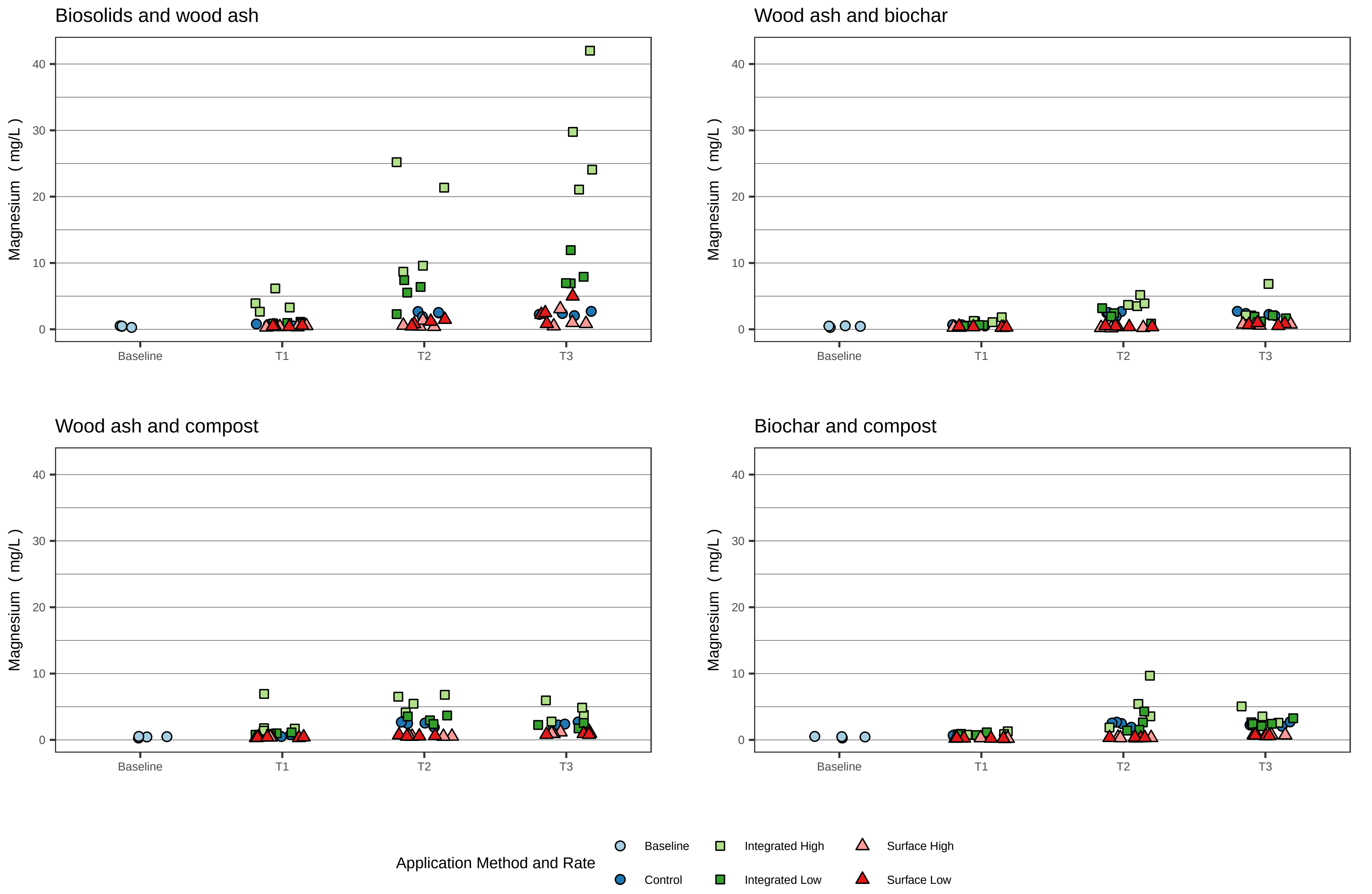

Figure 5−13c Magnesium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

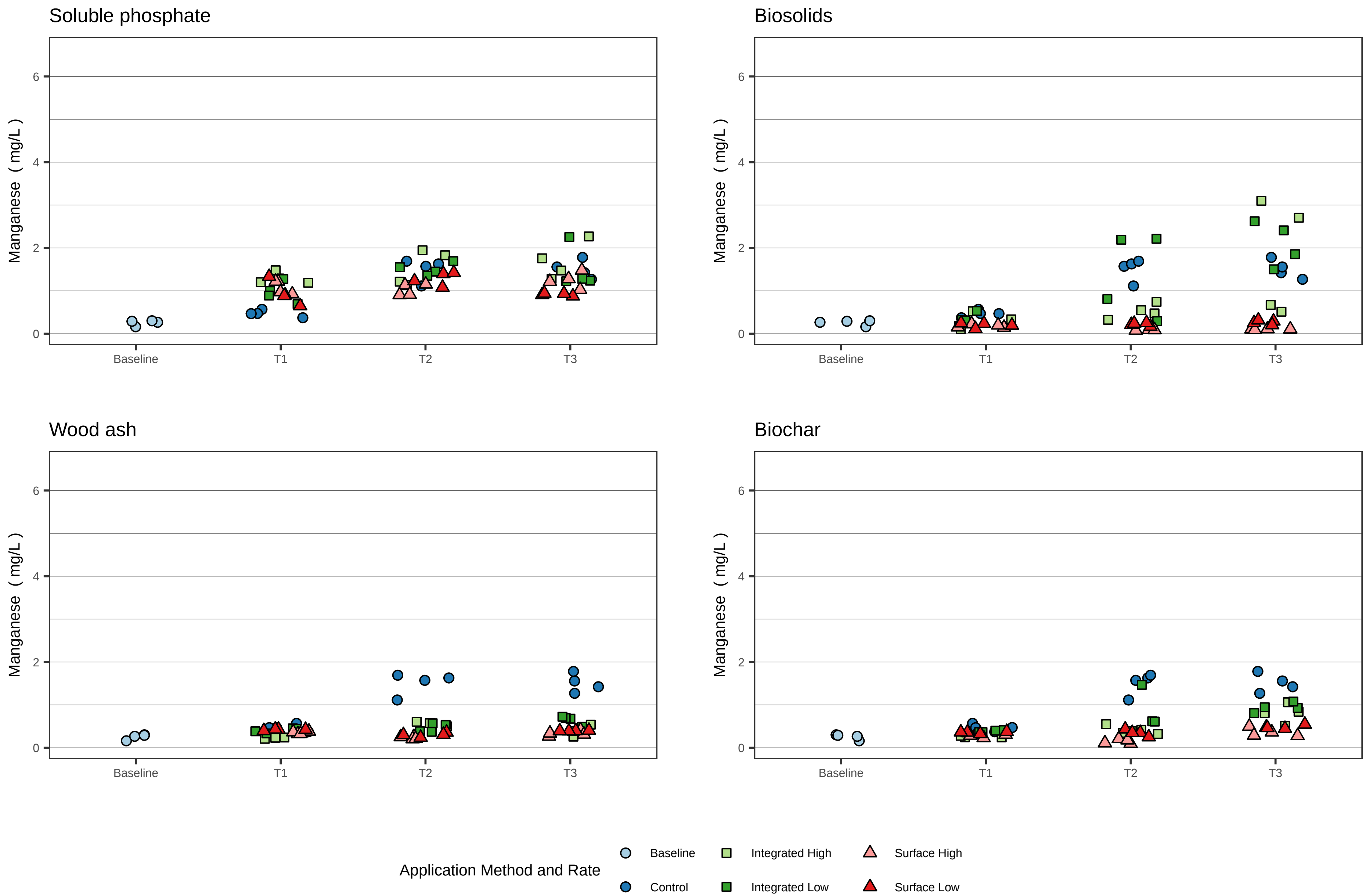

Figure 5−14a Manganese in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

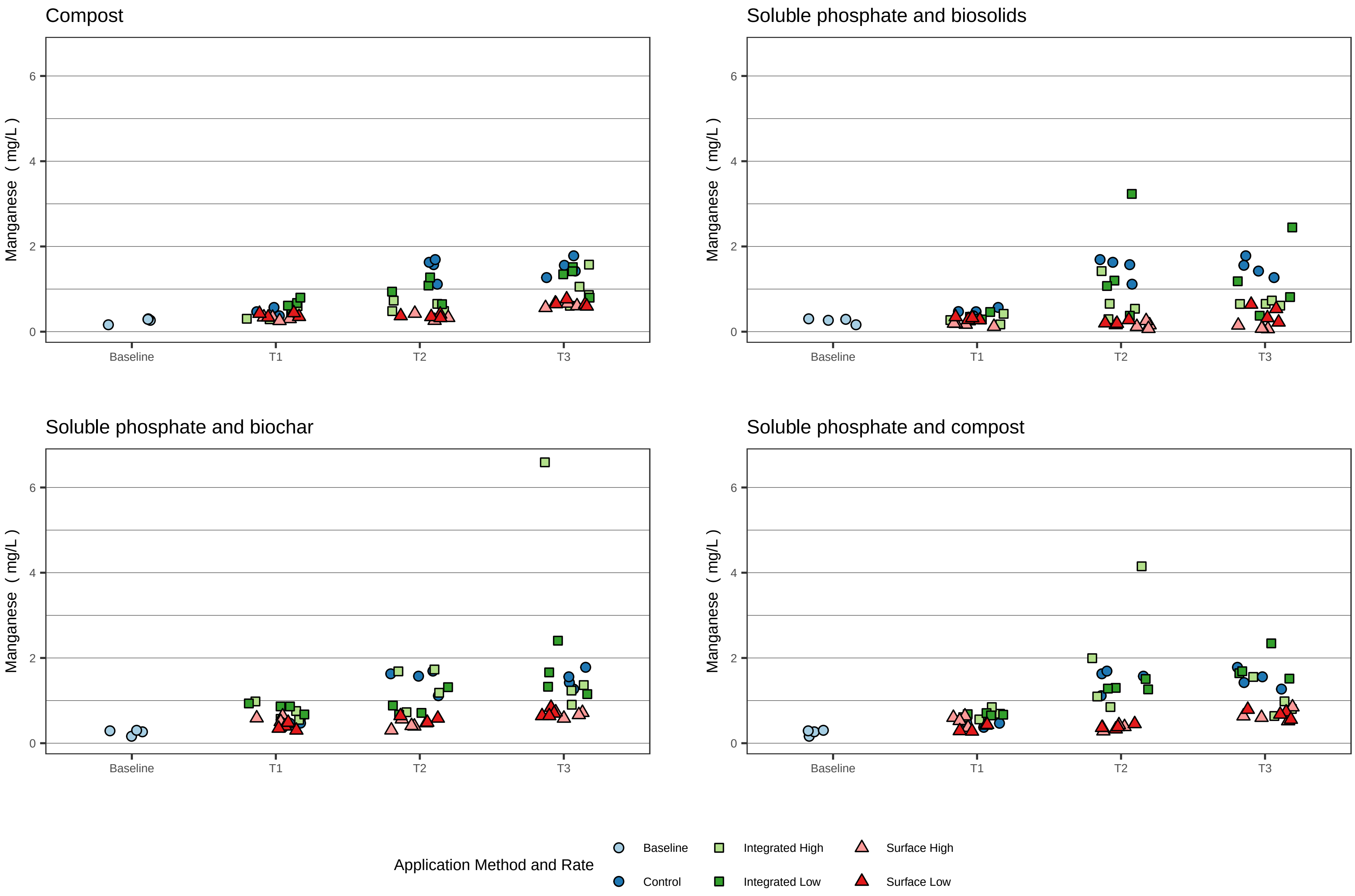

Figure 5−14b Manganese in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

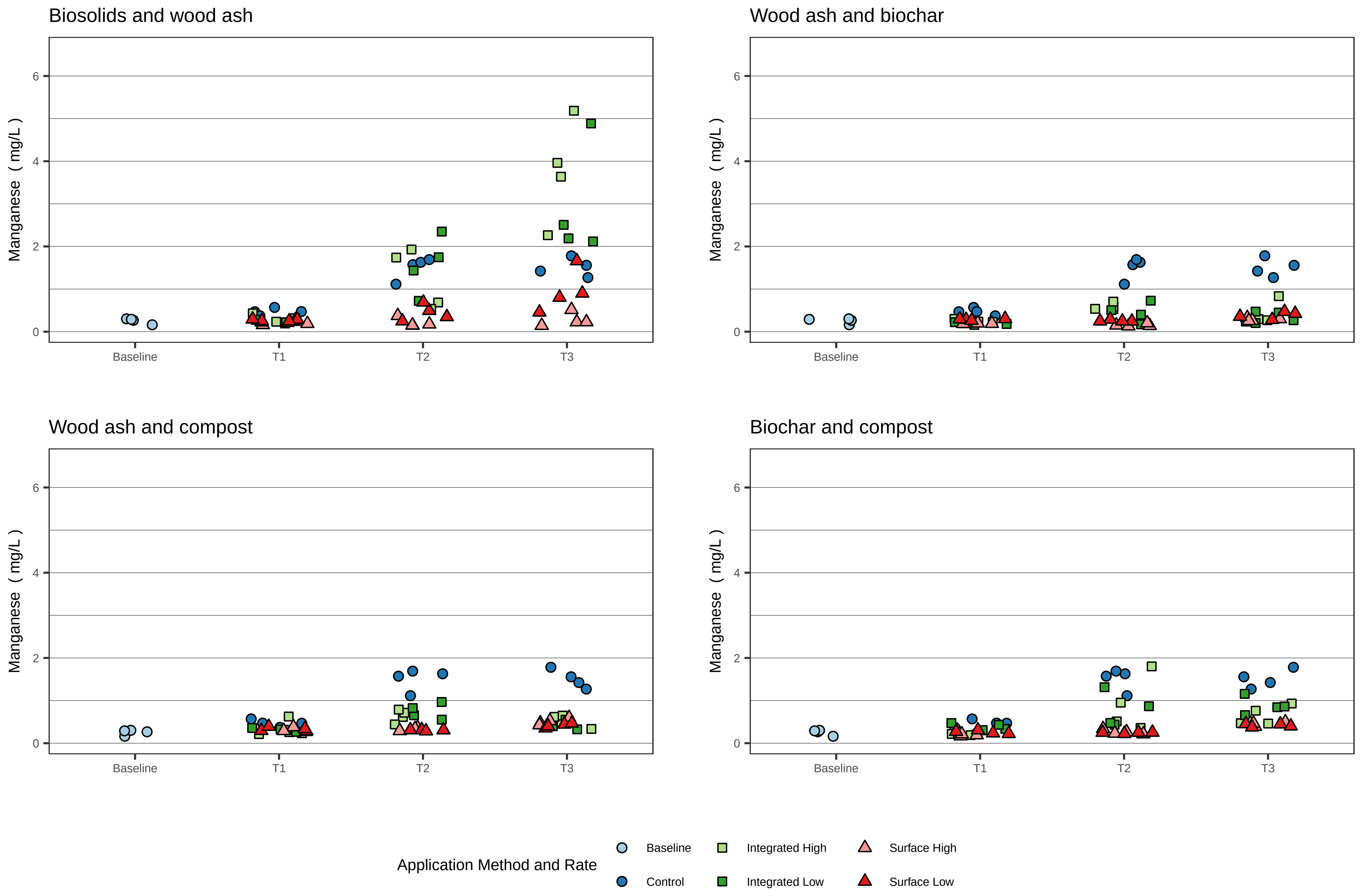

Figure 5−14c Manganese in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

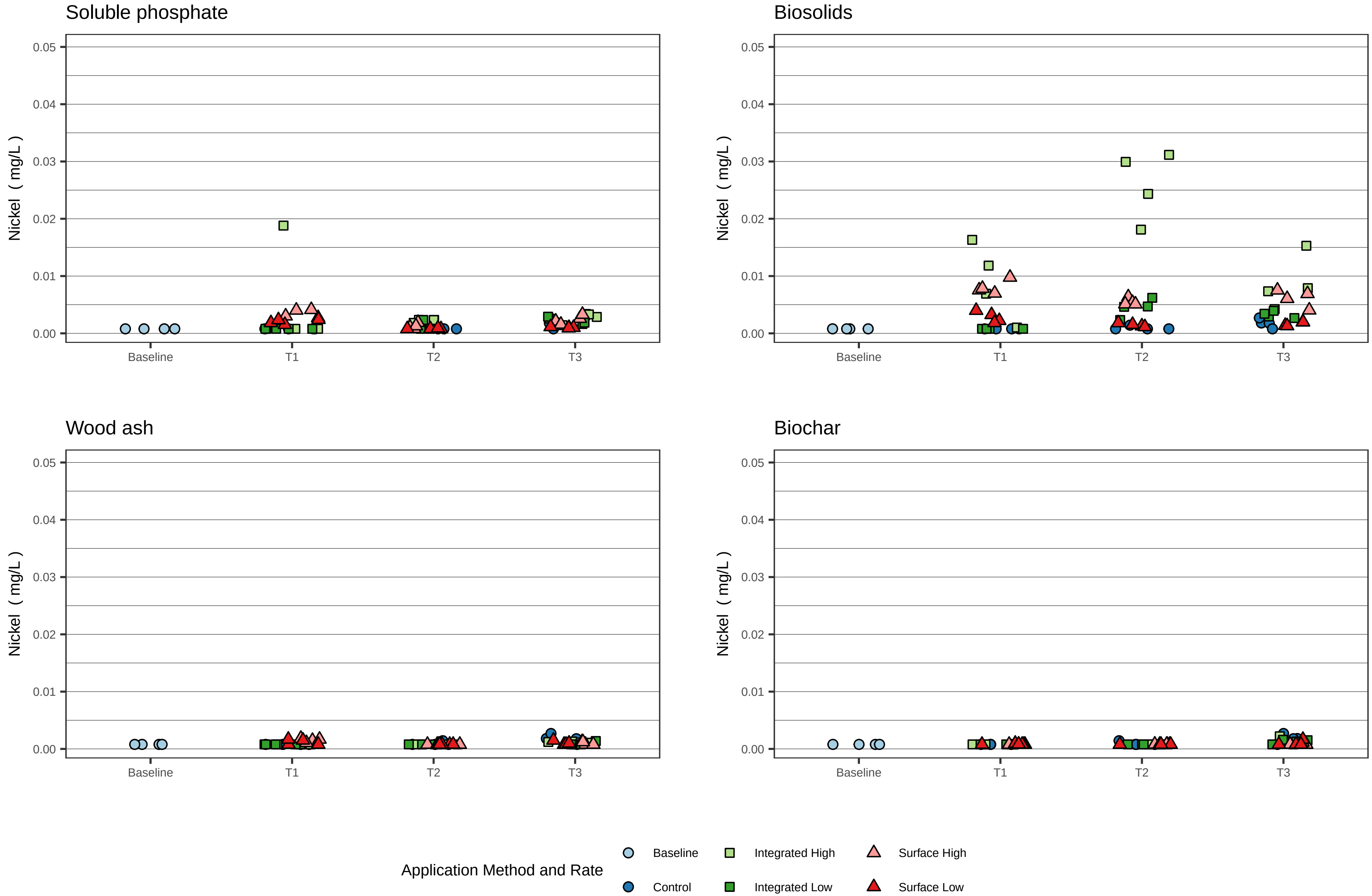

Figure 5−15a Nickel in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

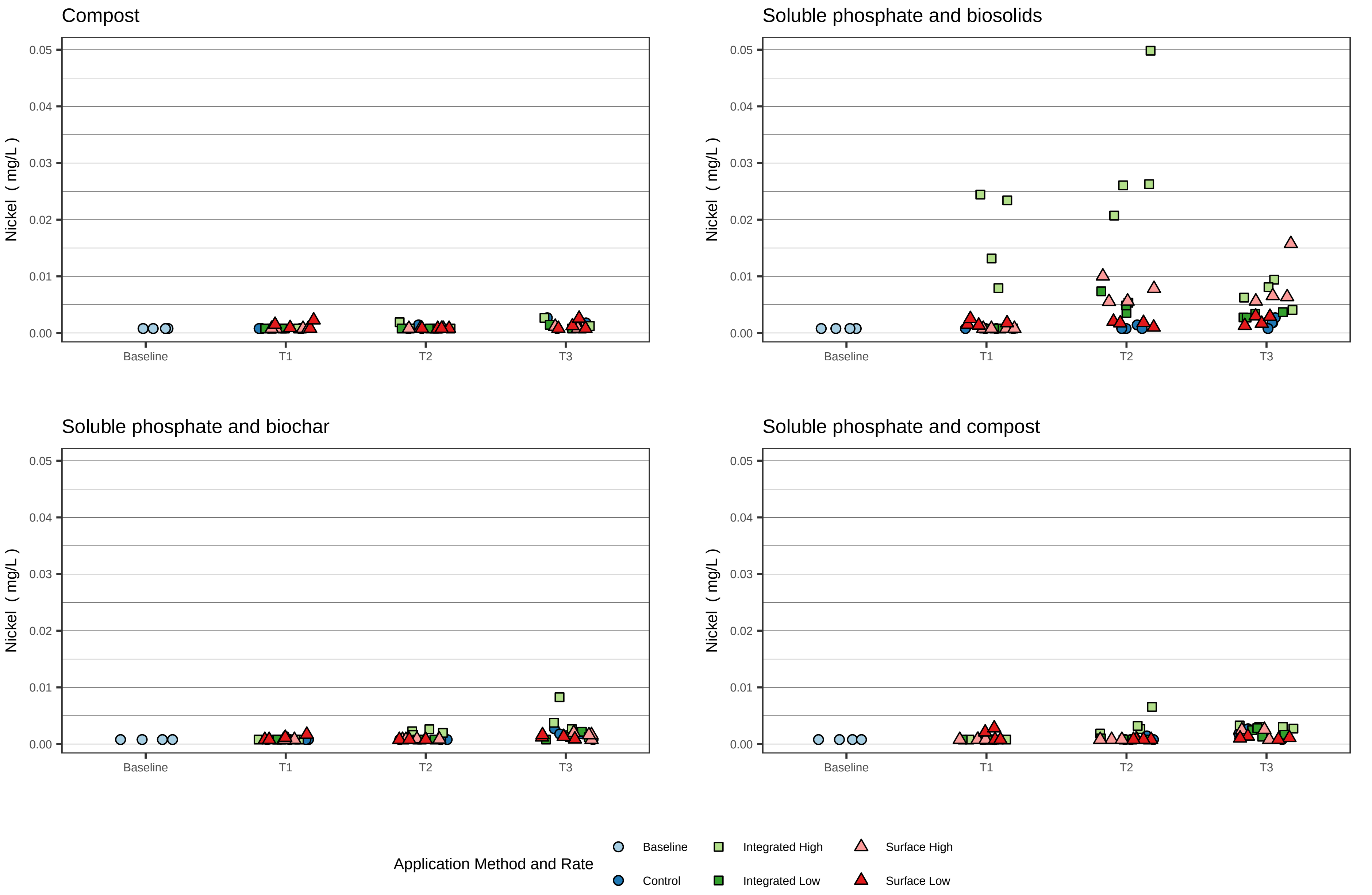

Figure 5−15b Nickel in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

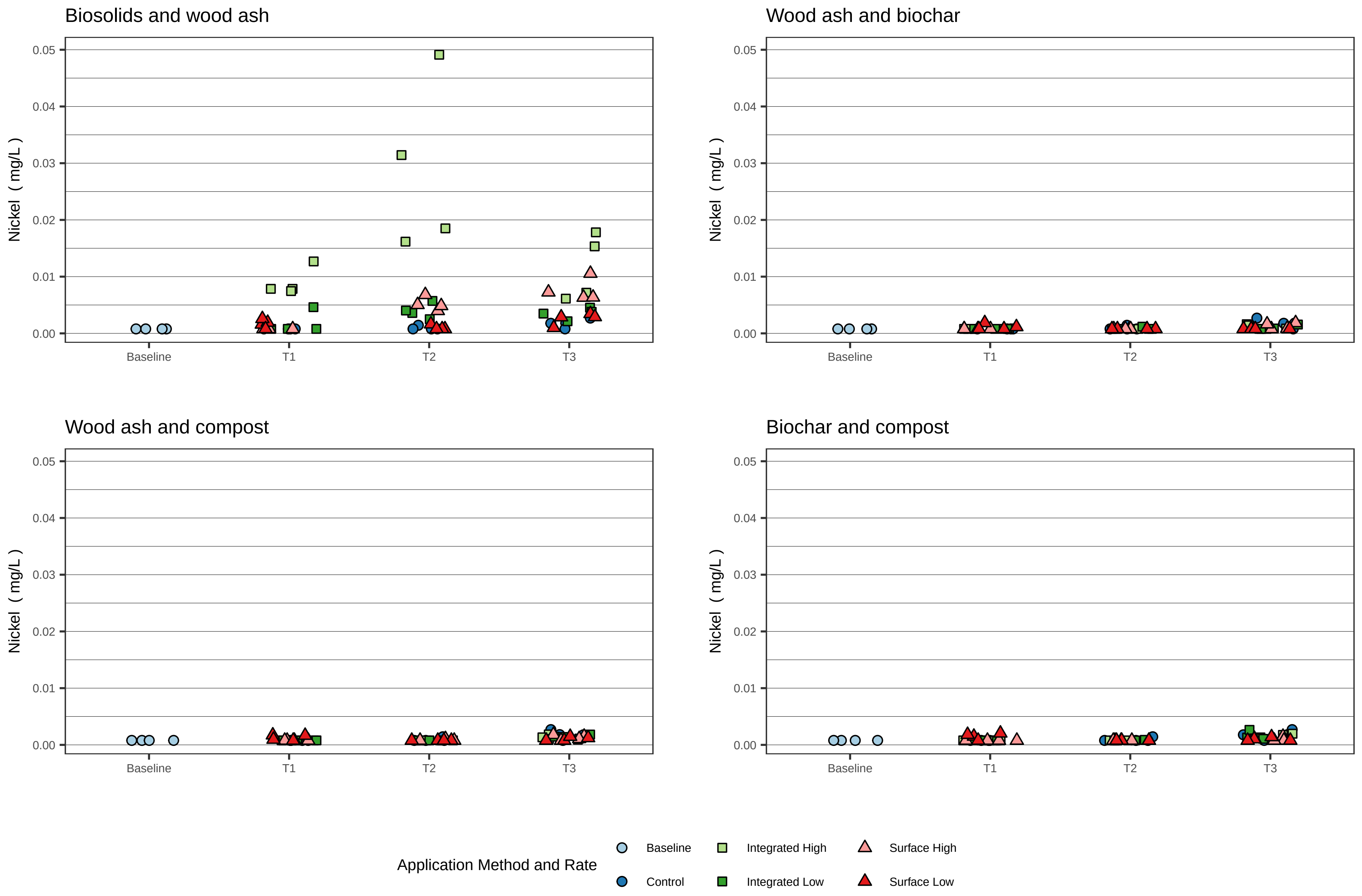

Figure 5‑15c Nickel in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

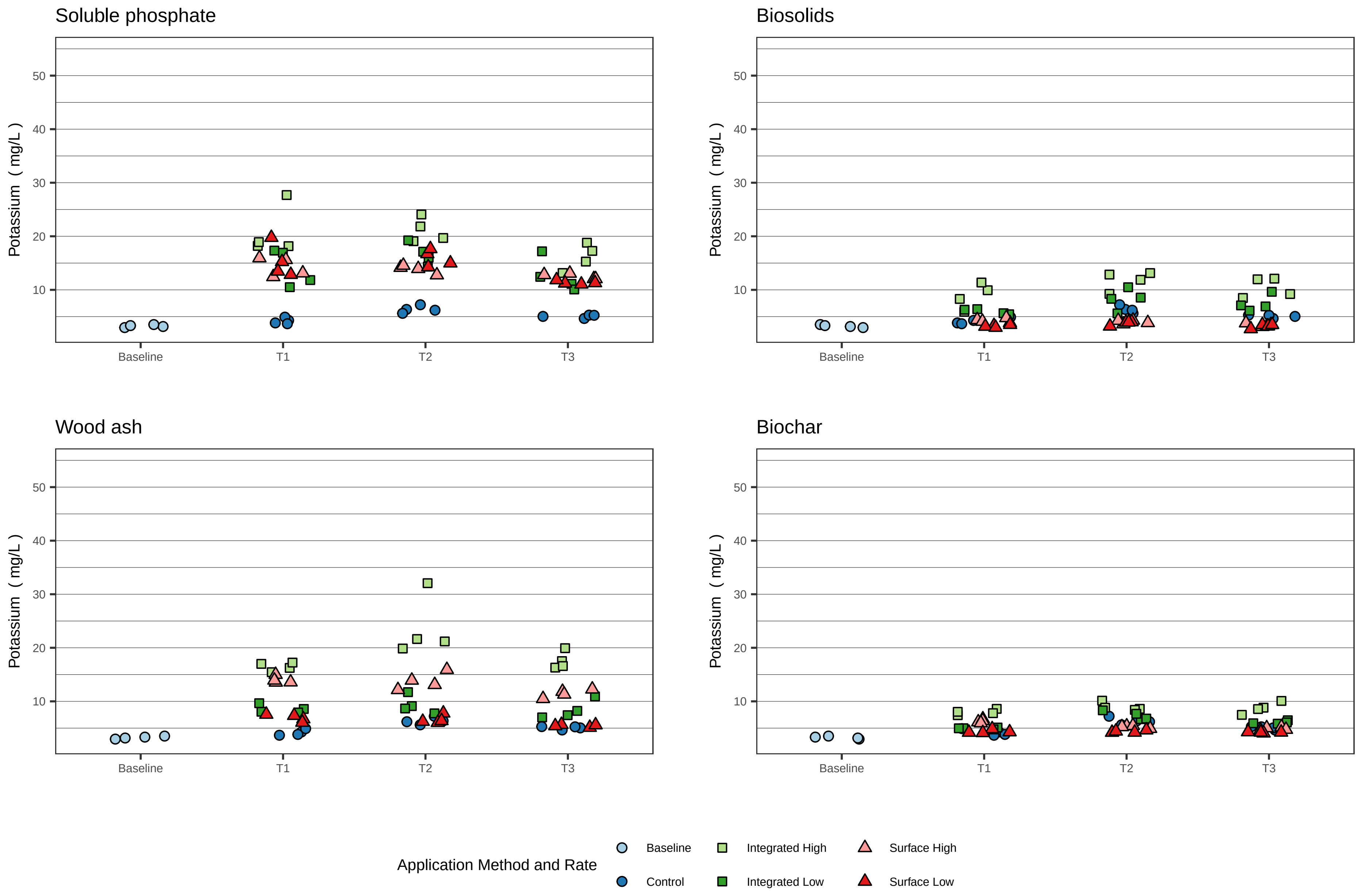

Figure 5−16a Potassium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

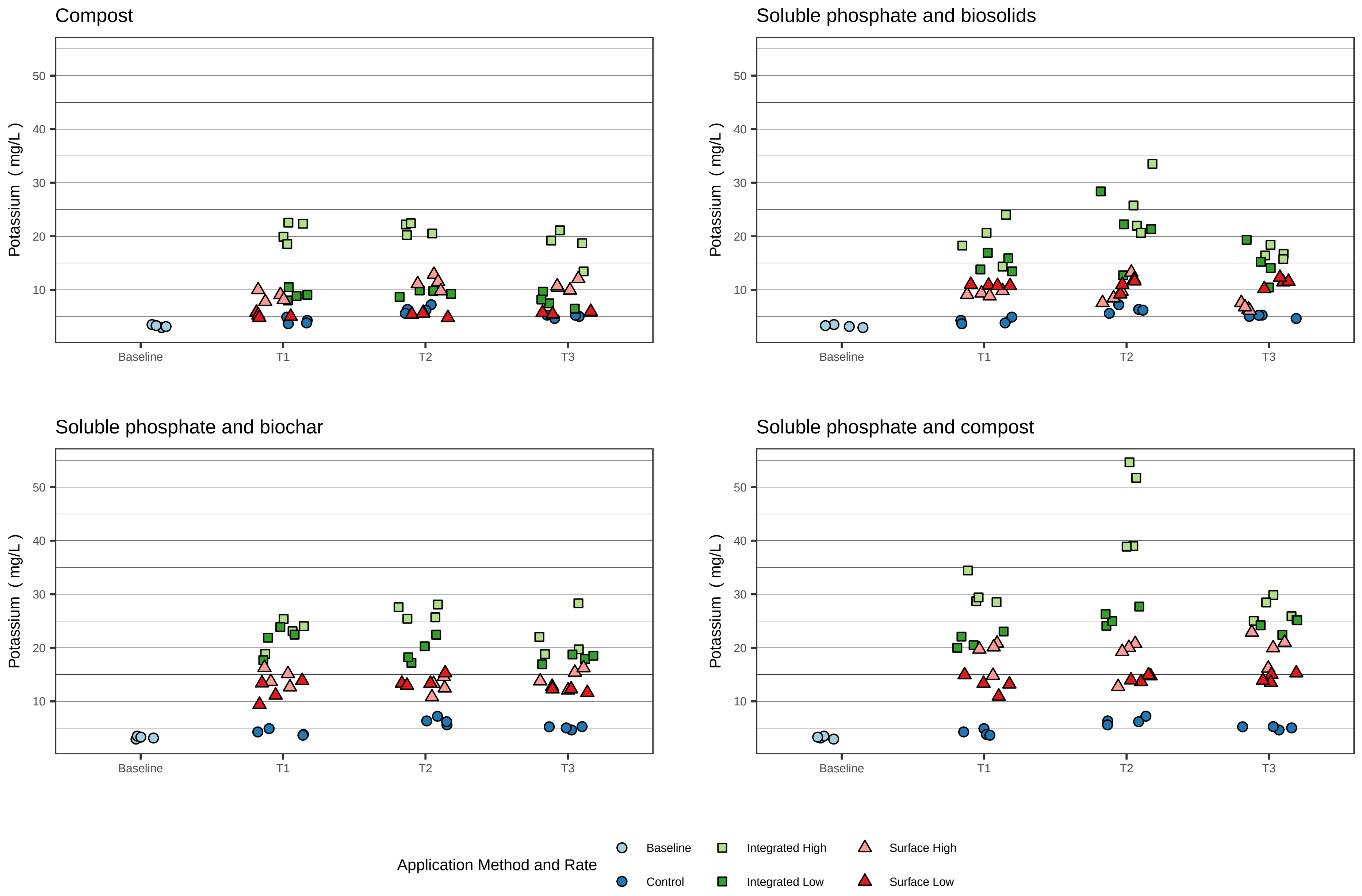

Figure 5−16b Potassium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

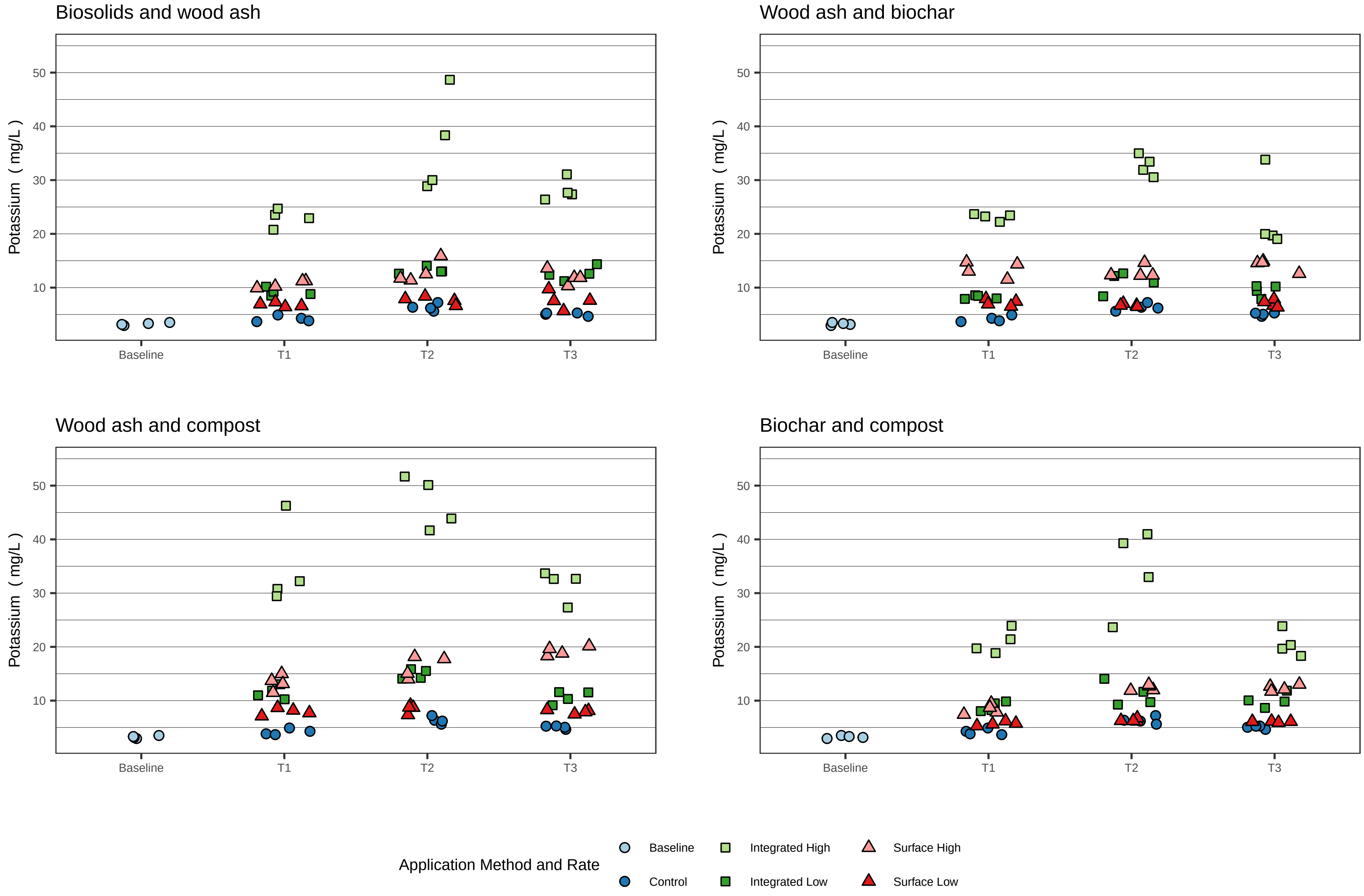

Figure 5−16c Potassium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

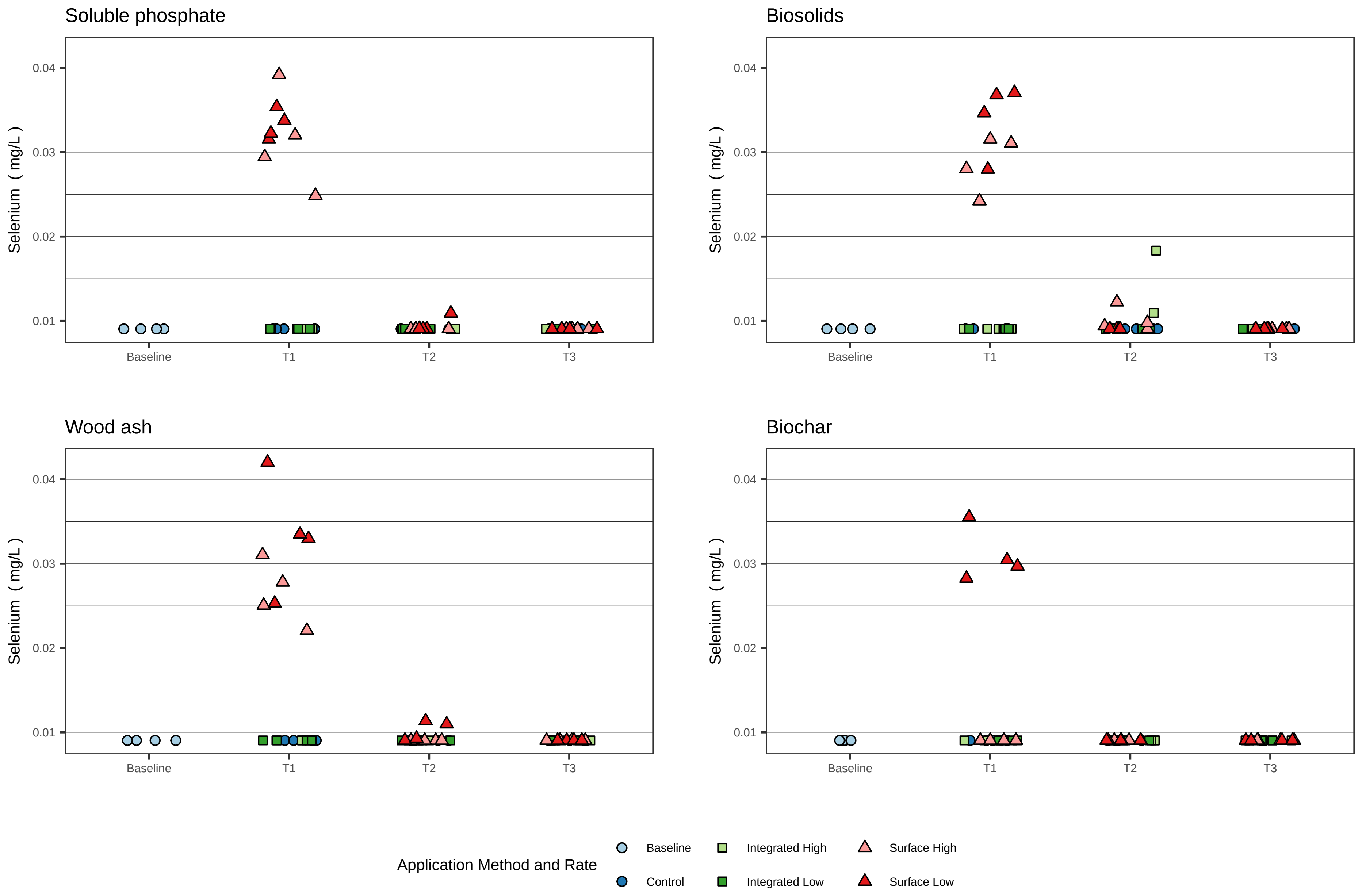

Figure 5−17a Selenium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

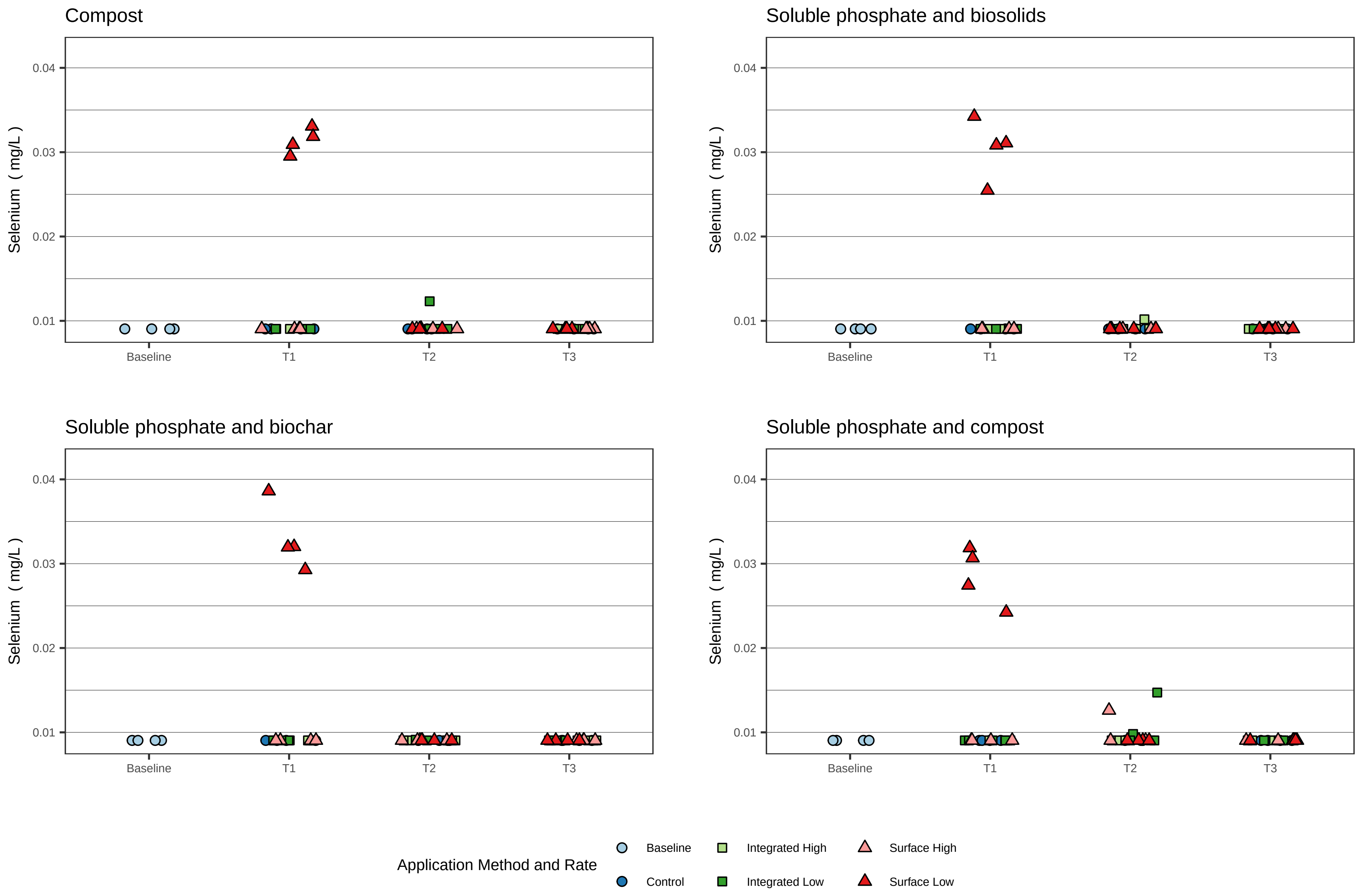

Figure 5−17b Selenium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

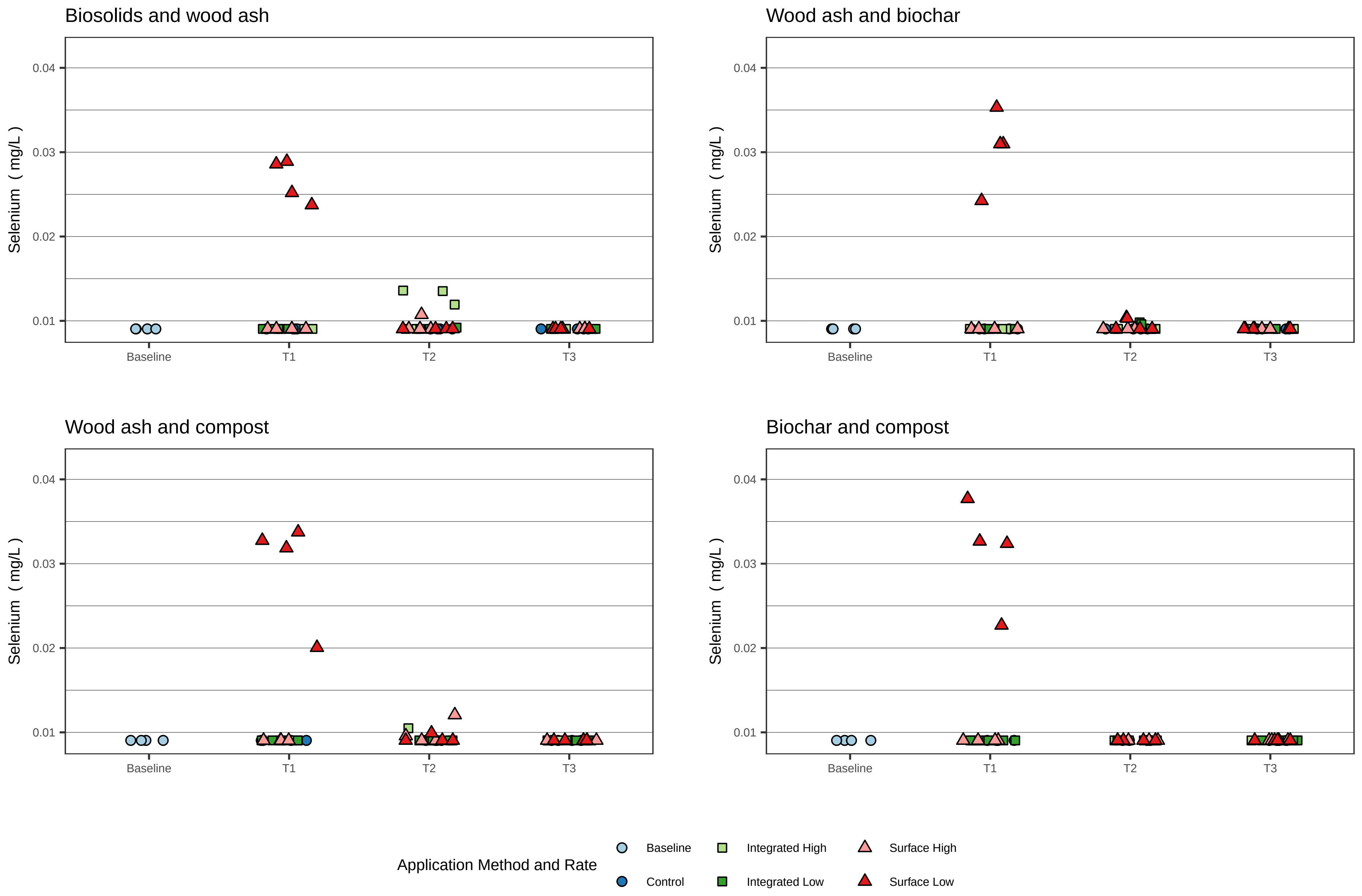

Figure 5−17c Selenium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

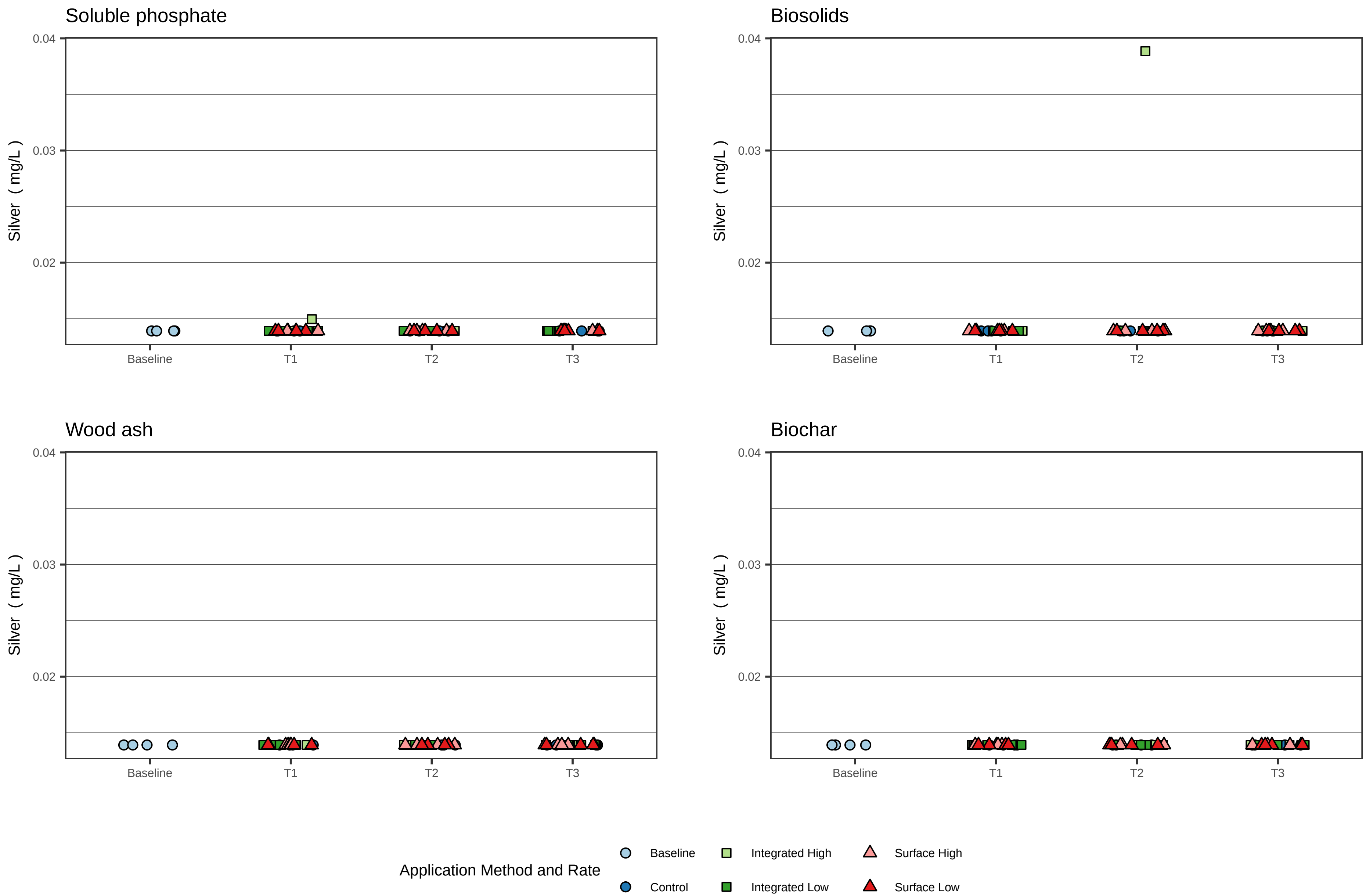

Figure 5−18a Silver in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

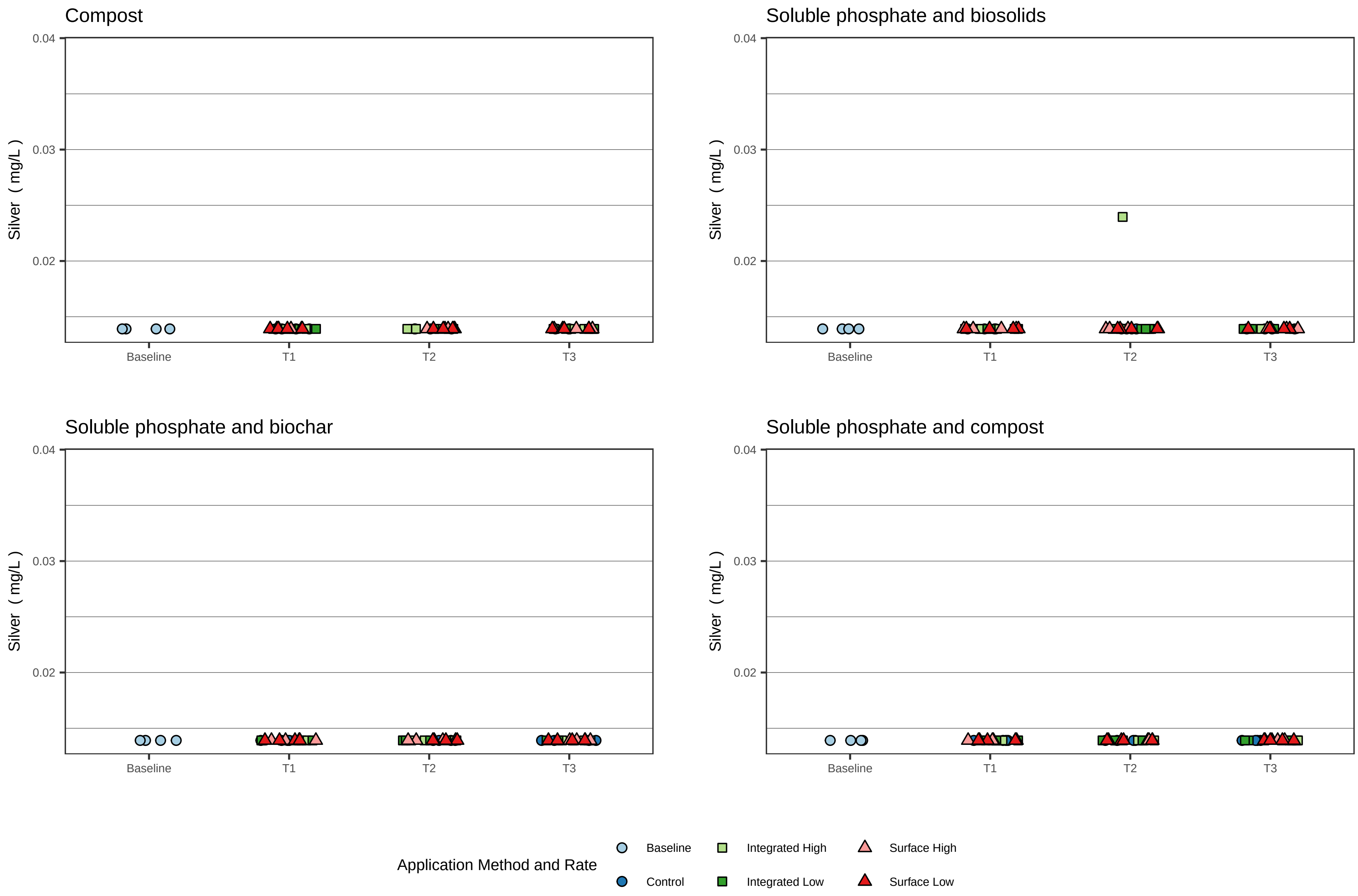

Figure 5−18b Silver in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

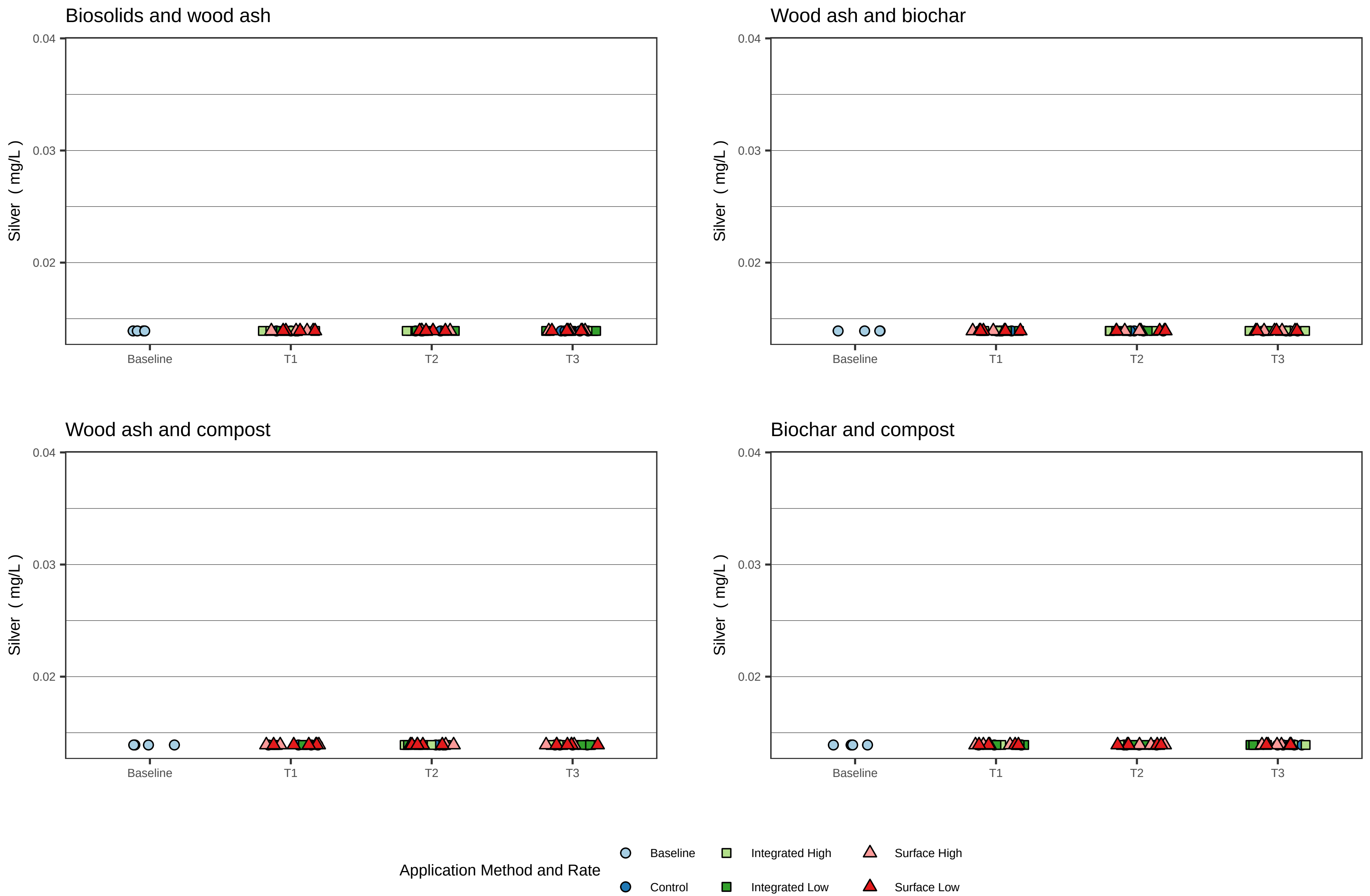

Figure 5−18c Silver in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

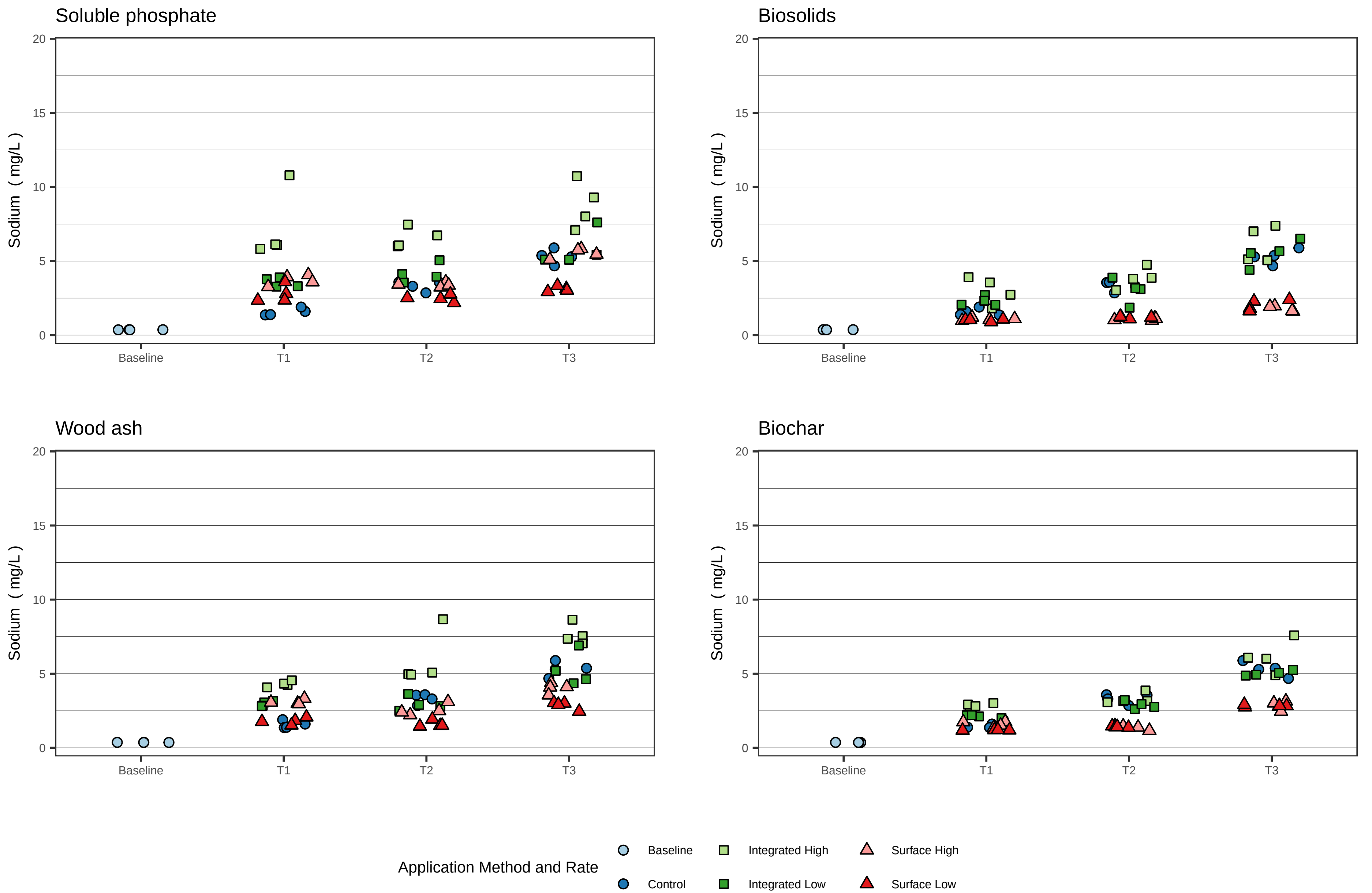

Figure 5−19a Sodium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

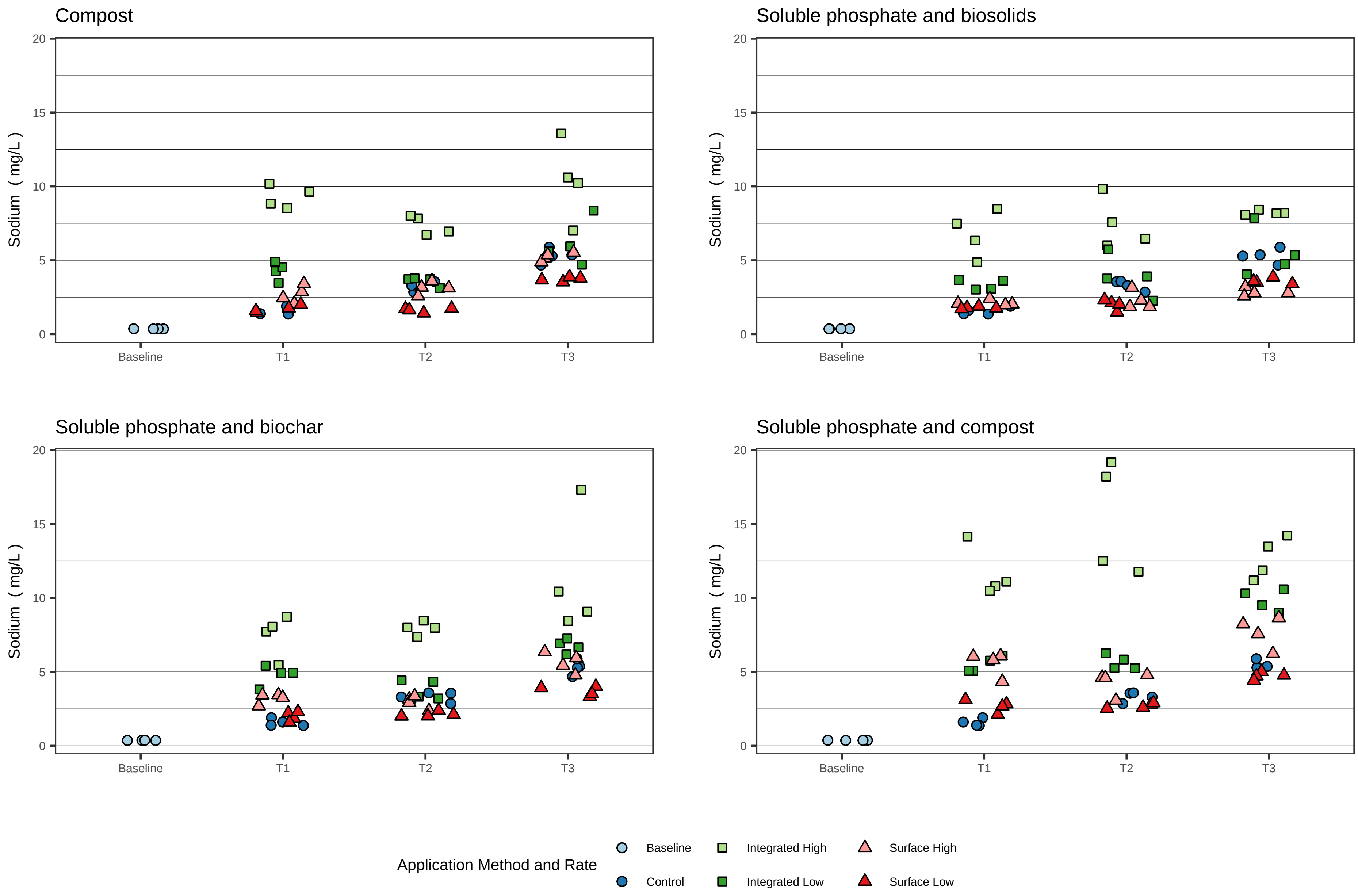

Figure 5−19b Sodium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

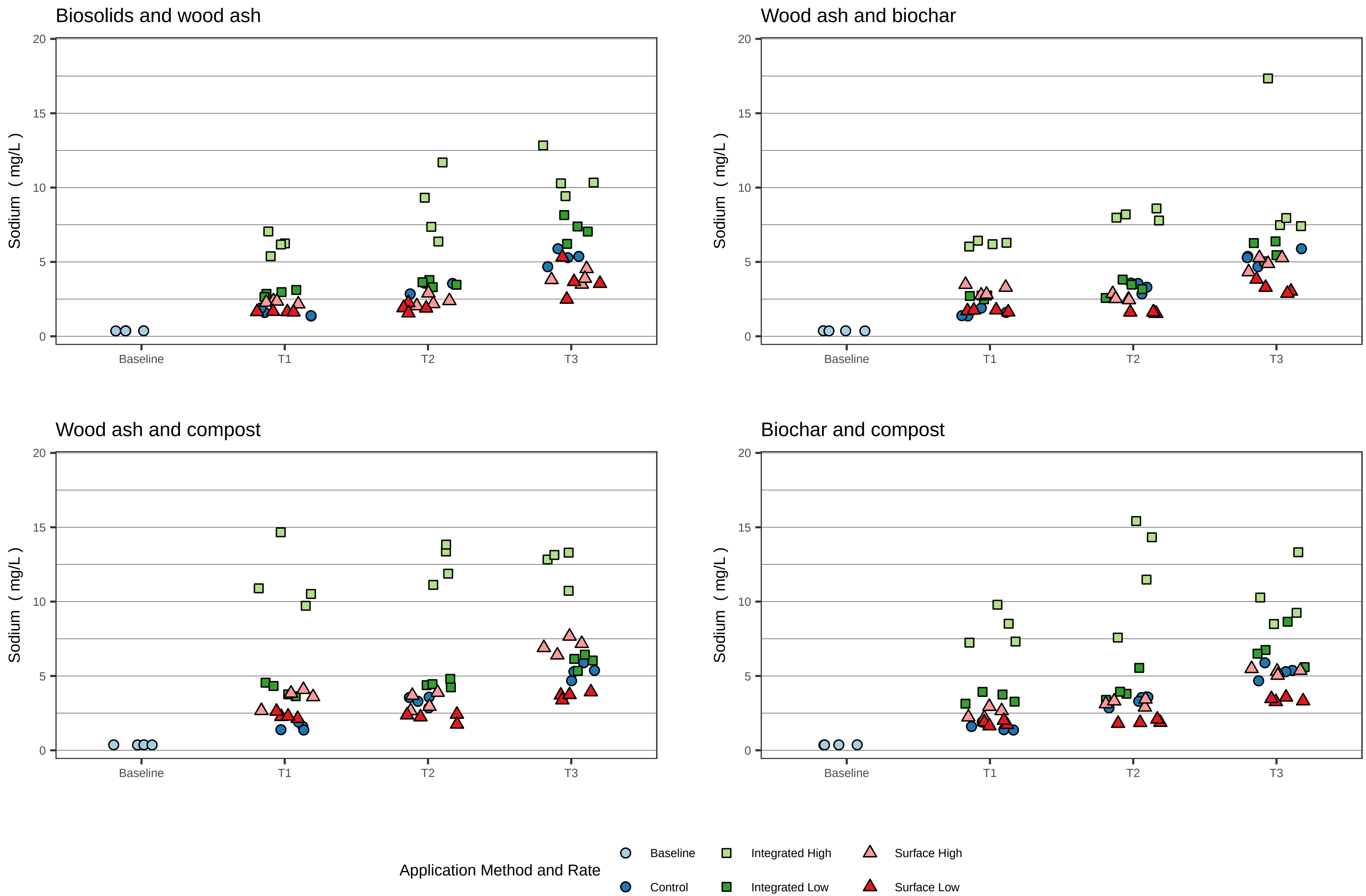

Figure 5−19c Sodium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

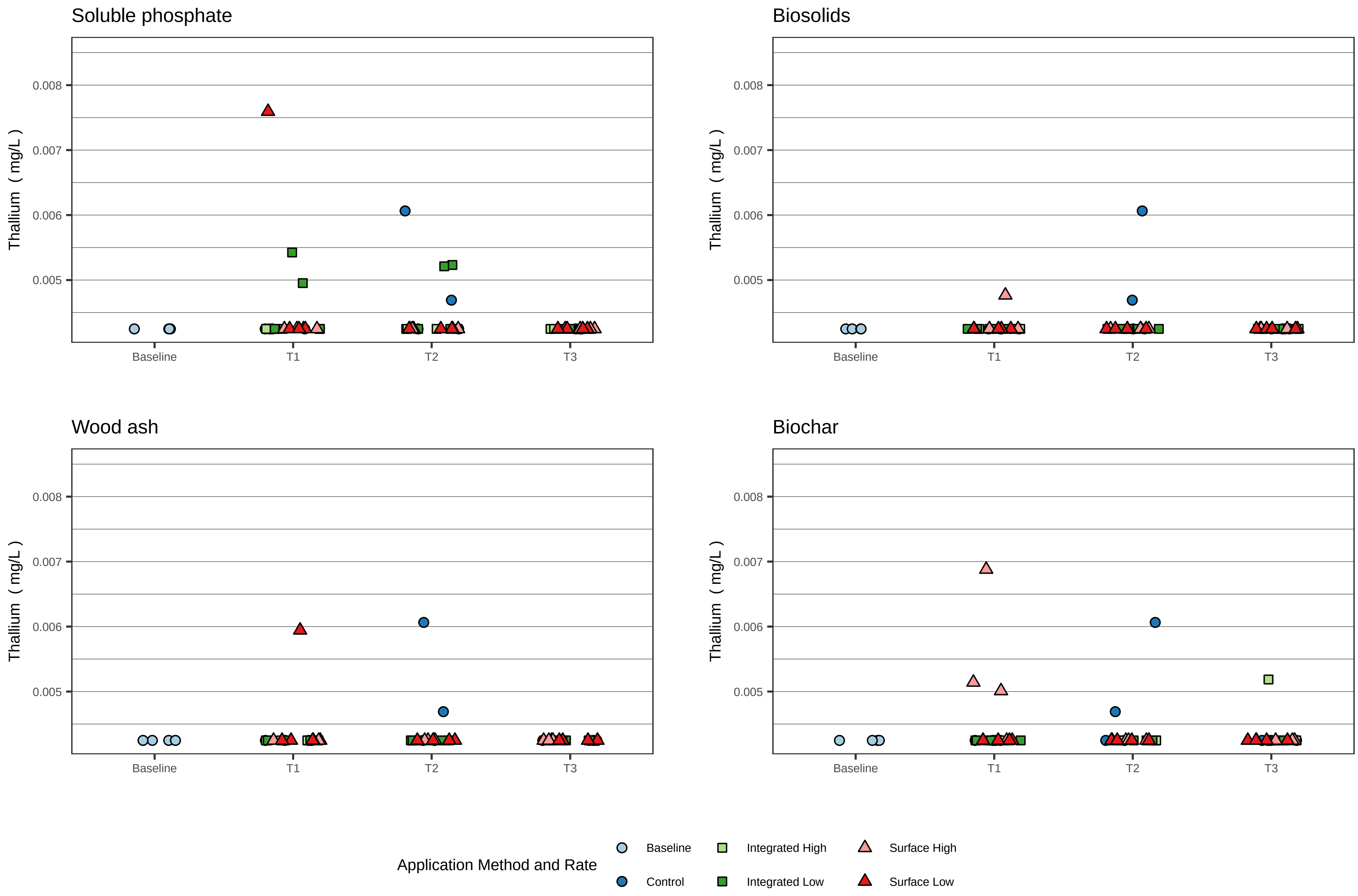

Figure 5−20a Thallium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

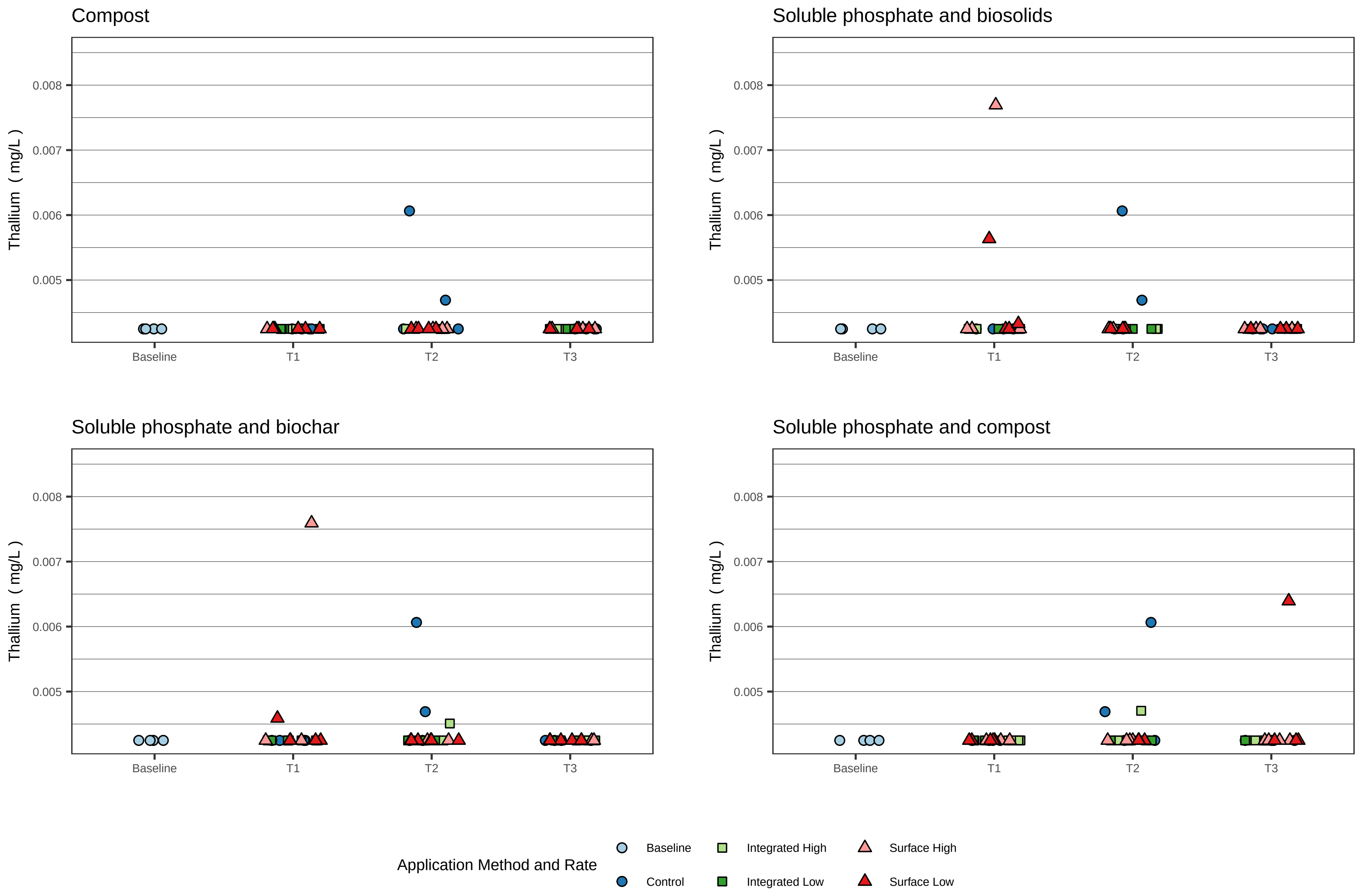

Figure 5−20b Thallium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

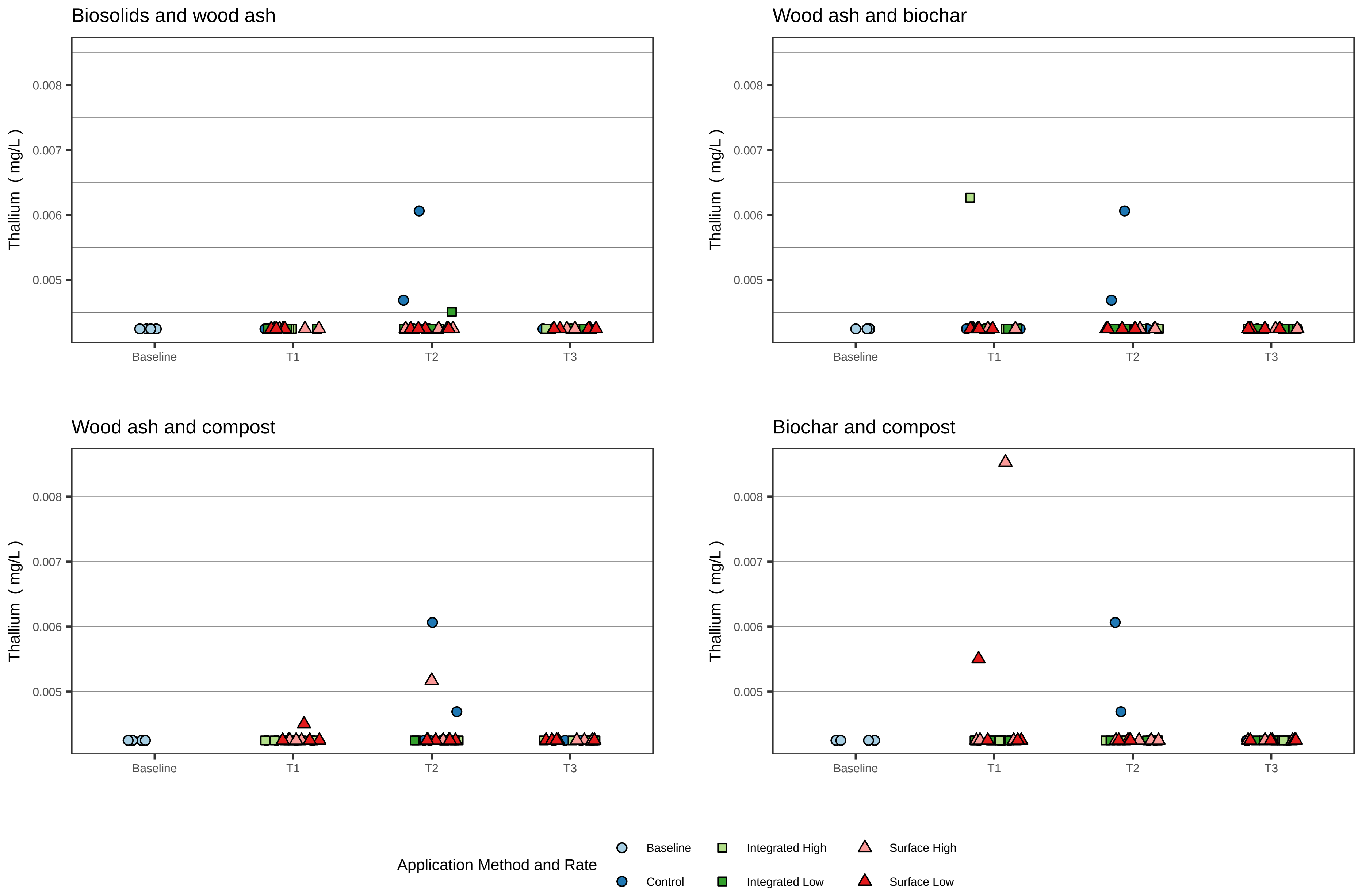

Figure 5−20c Thallium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

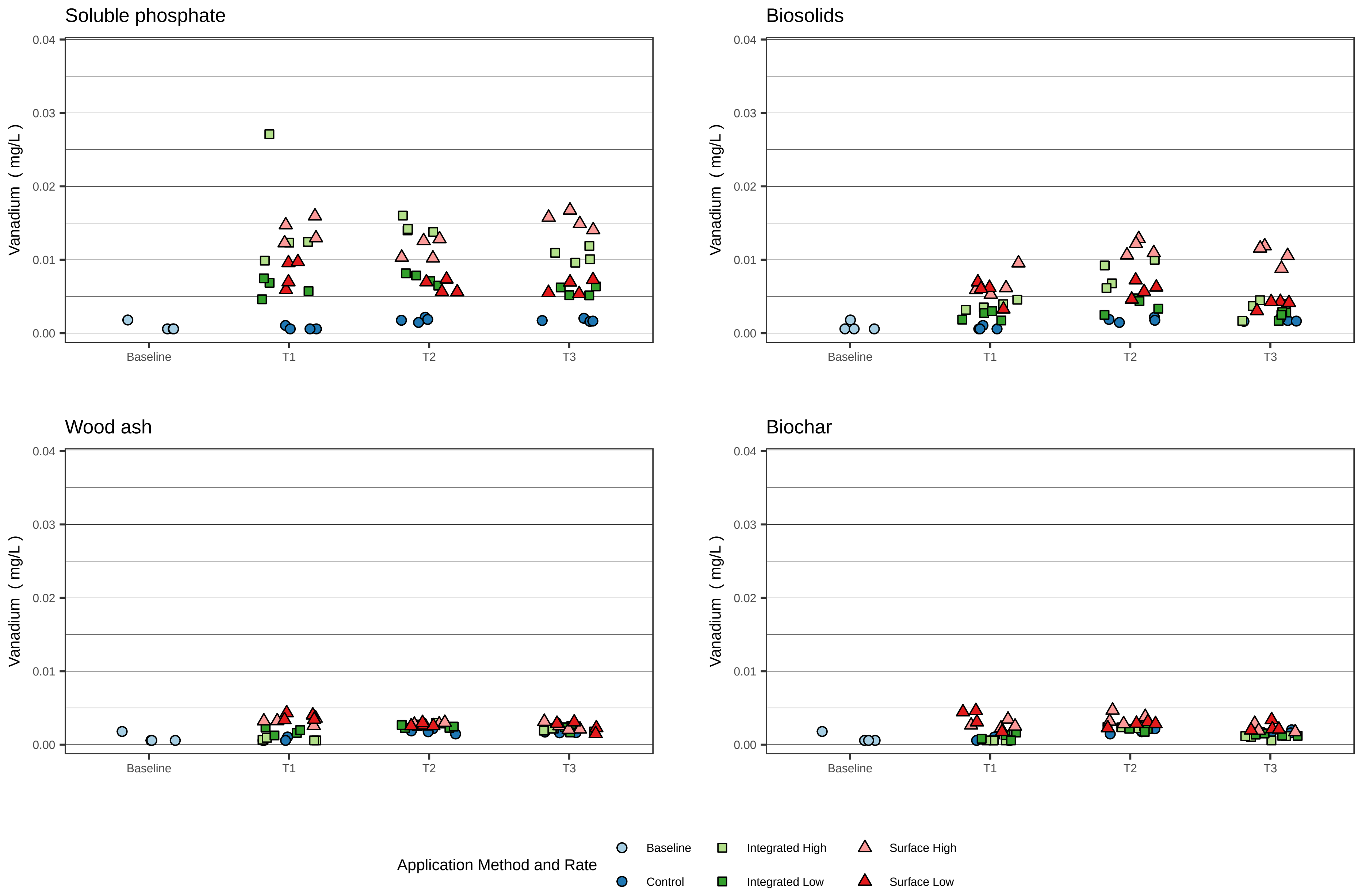

Figure 5−21a Vanadium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

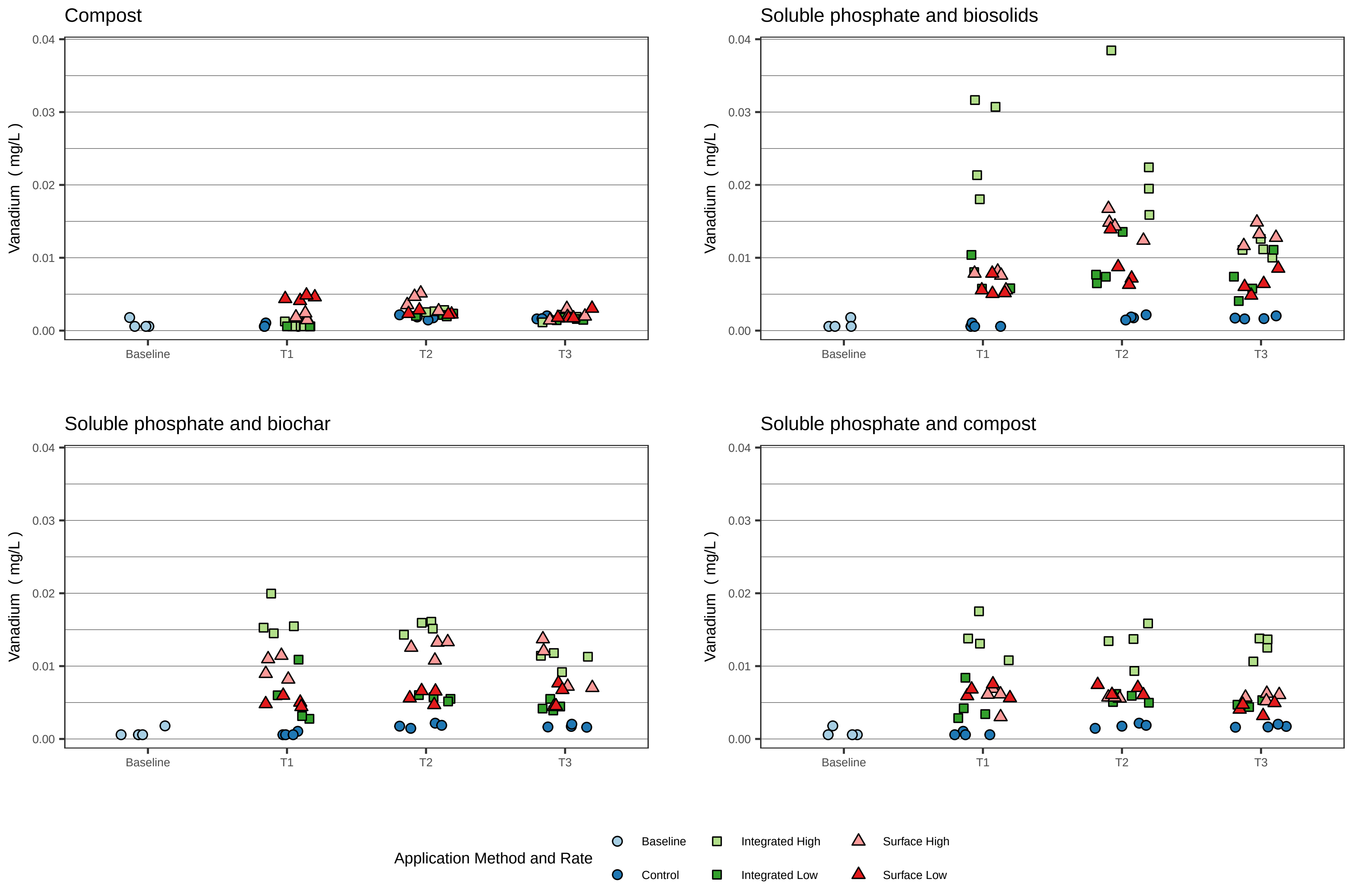

Figure 5−21b Vanadium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

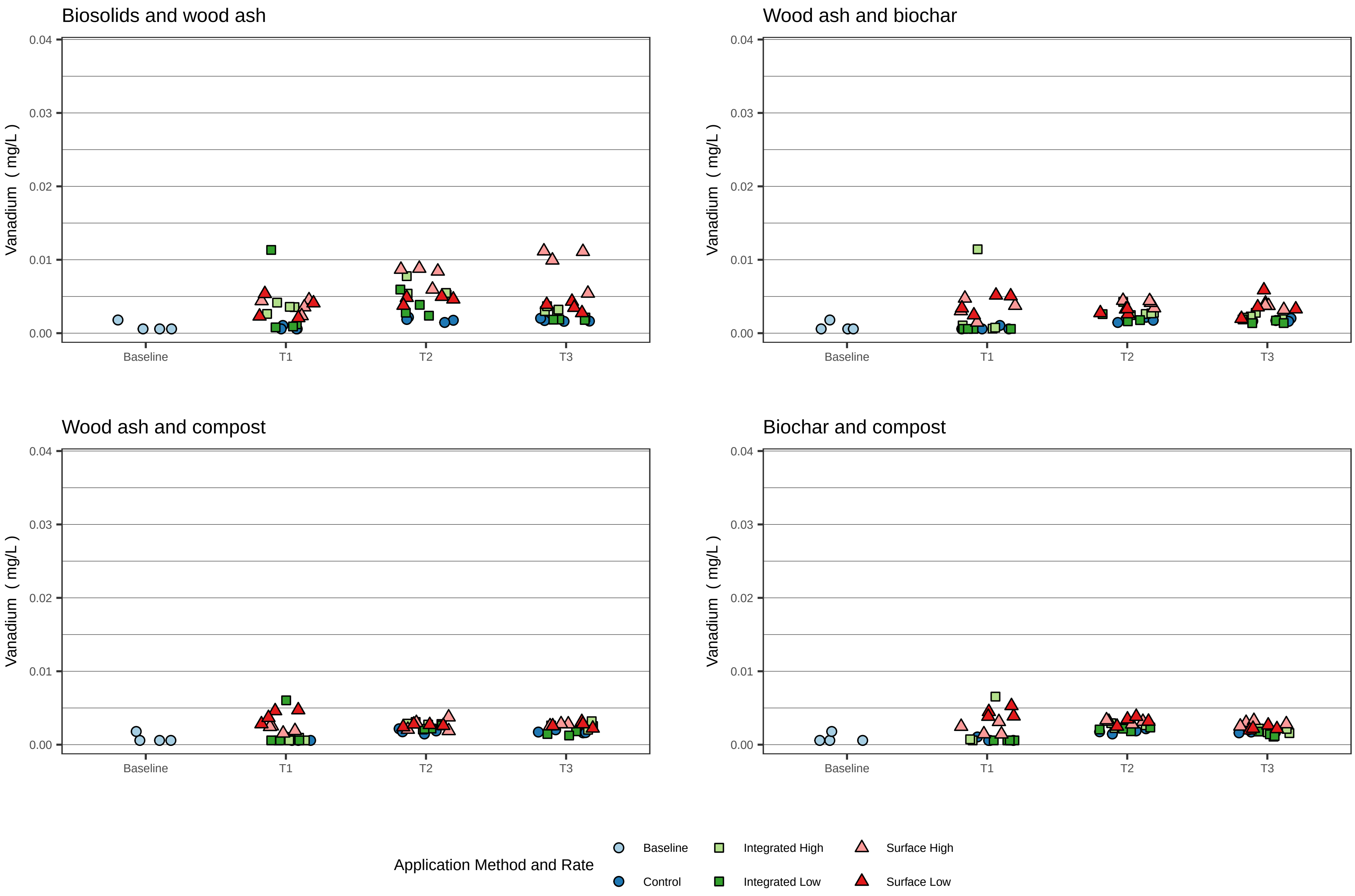

Figure 5−21c Vanadium in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

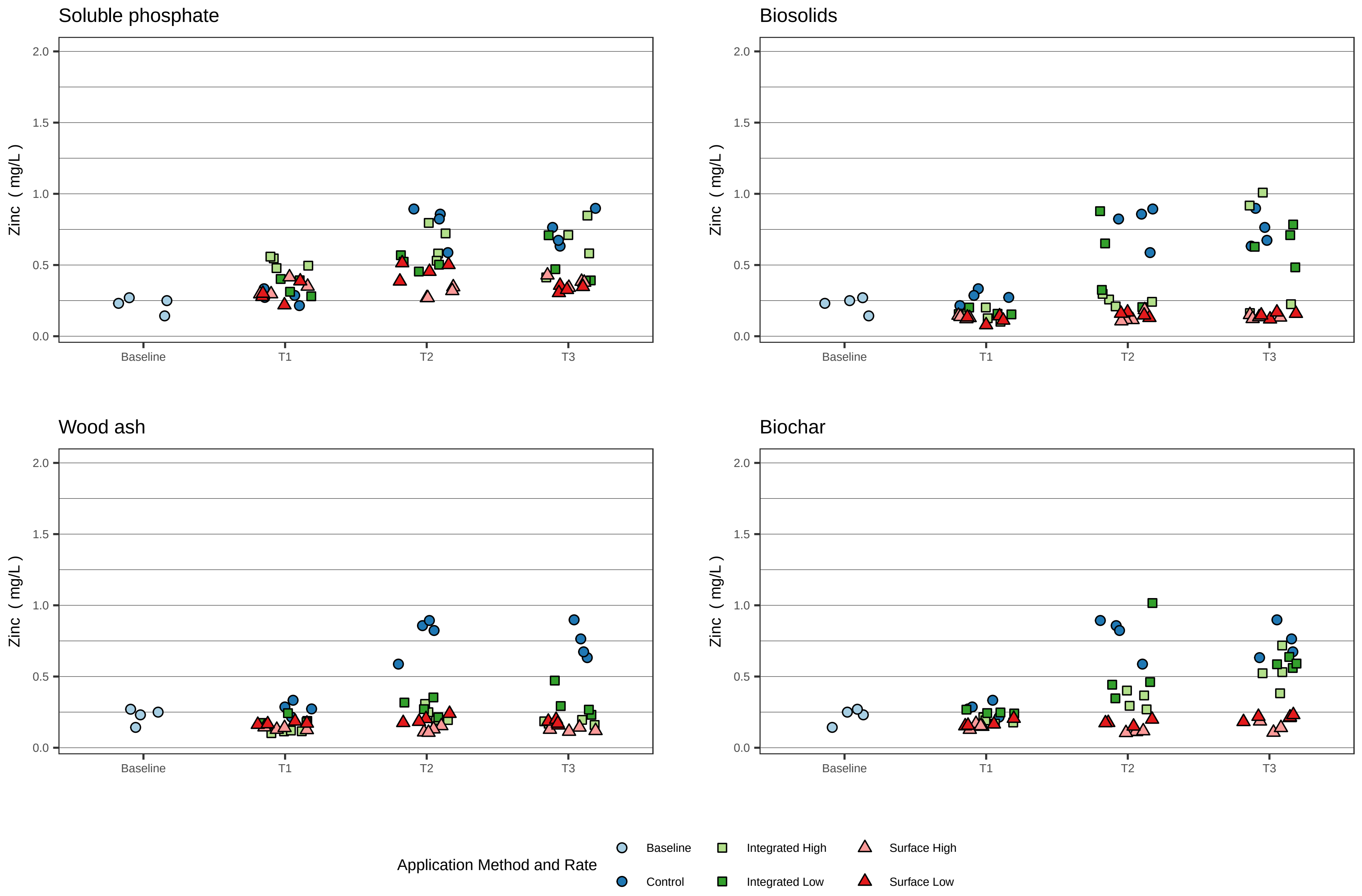

Figure 5–22a Zinc in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

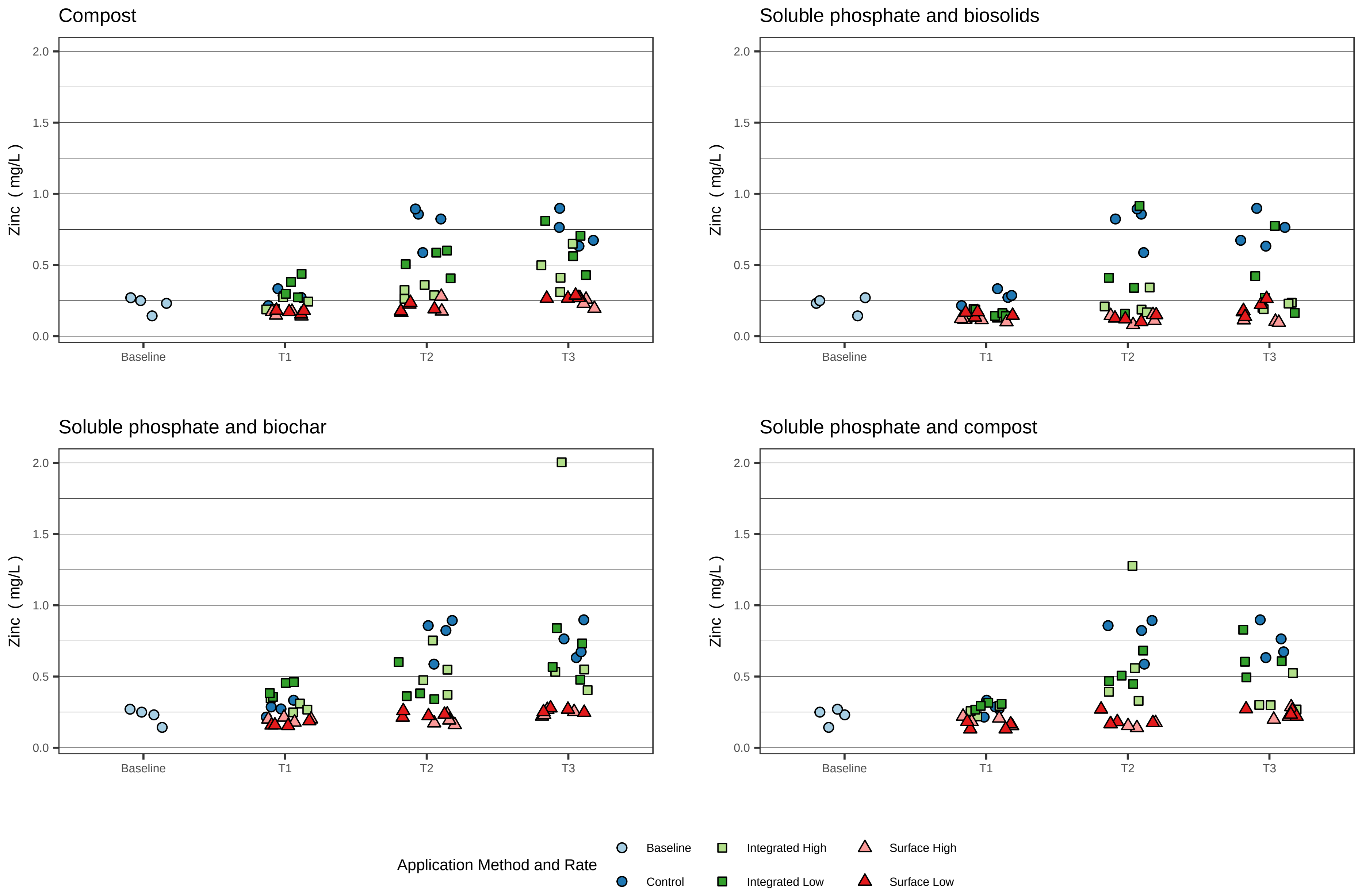

Figure 5−22b Zinc in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

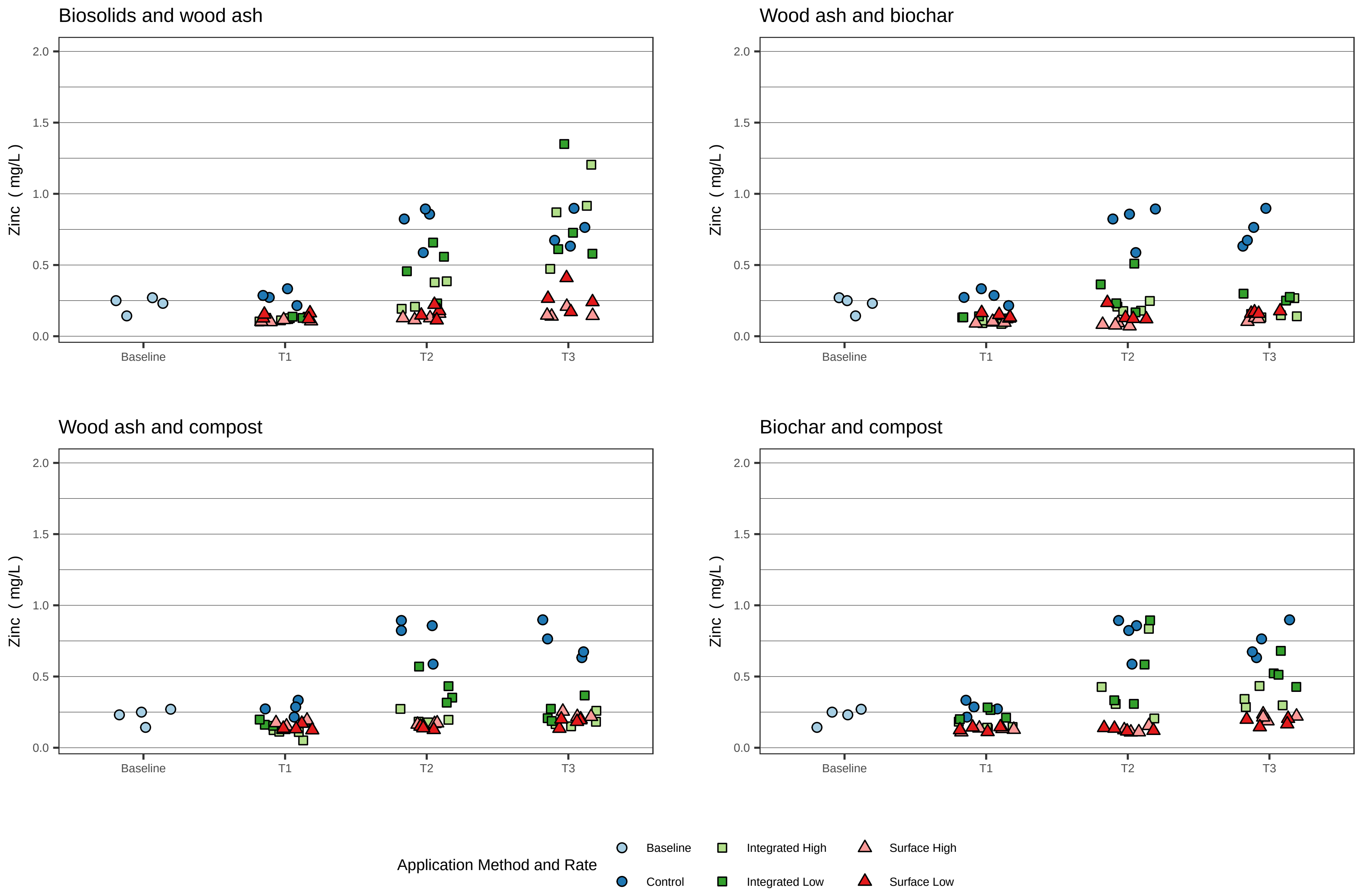

Figure 5‒22c Zinc in SPLP Extract Analyses for Test Pot Soil Samples in mg/L

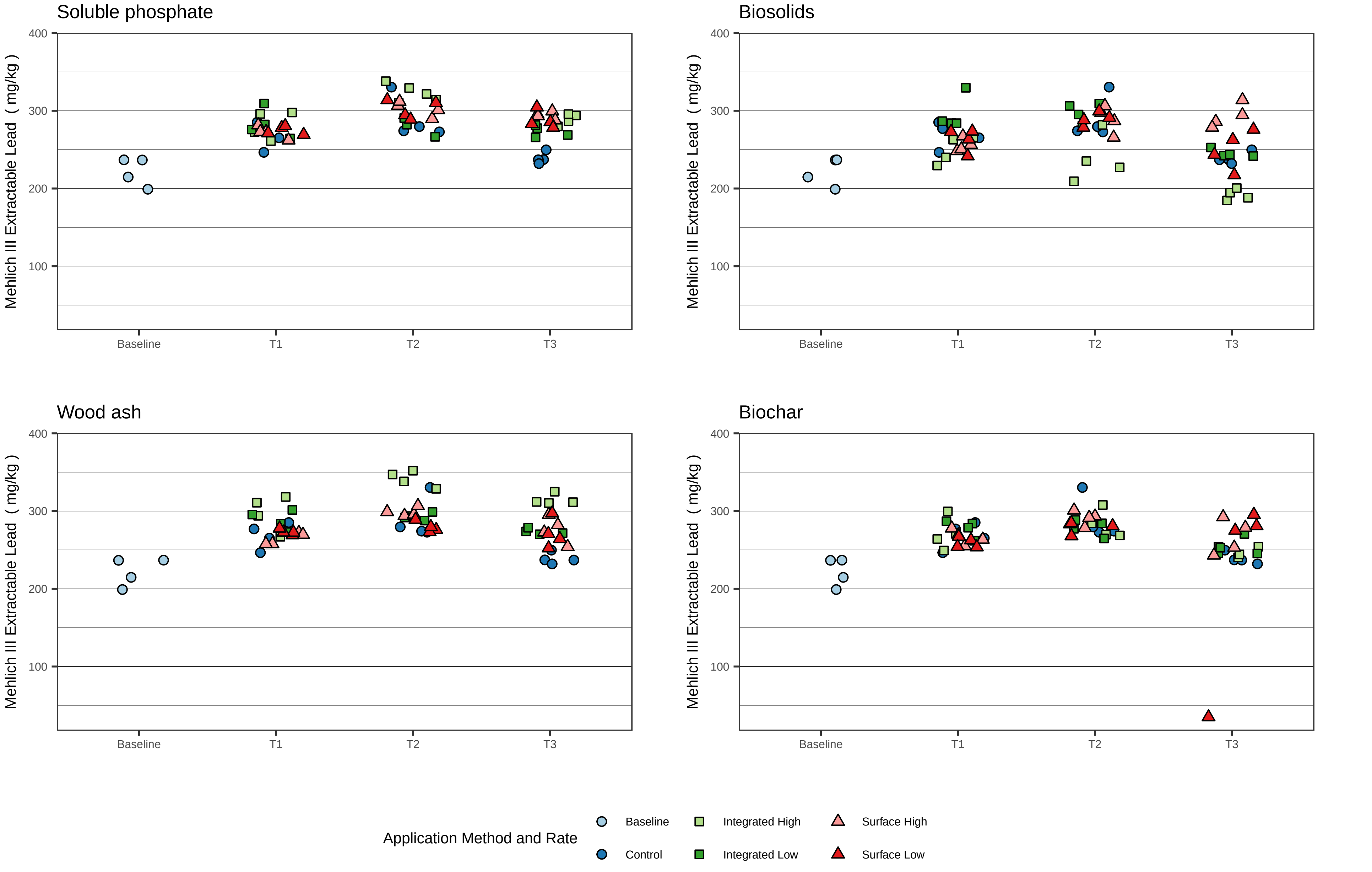

Figure 5−23a Mehlich III Extractable Lead in Test Pot Soil Samples

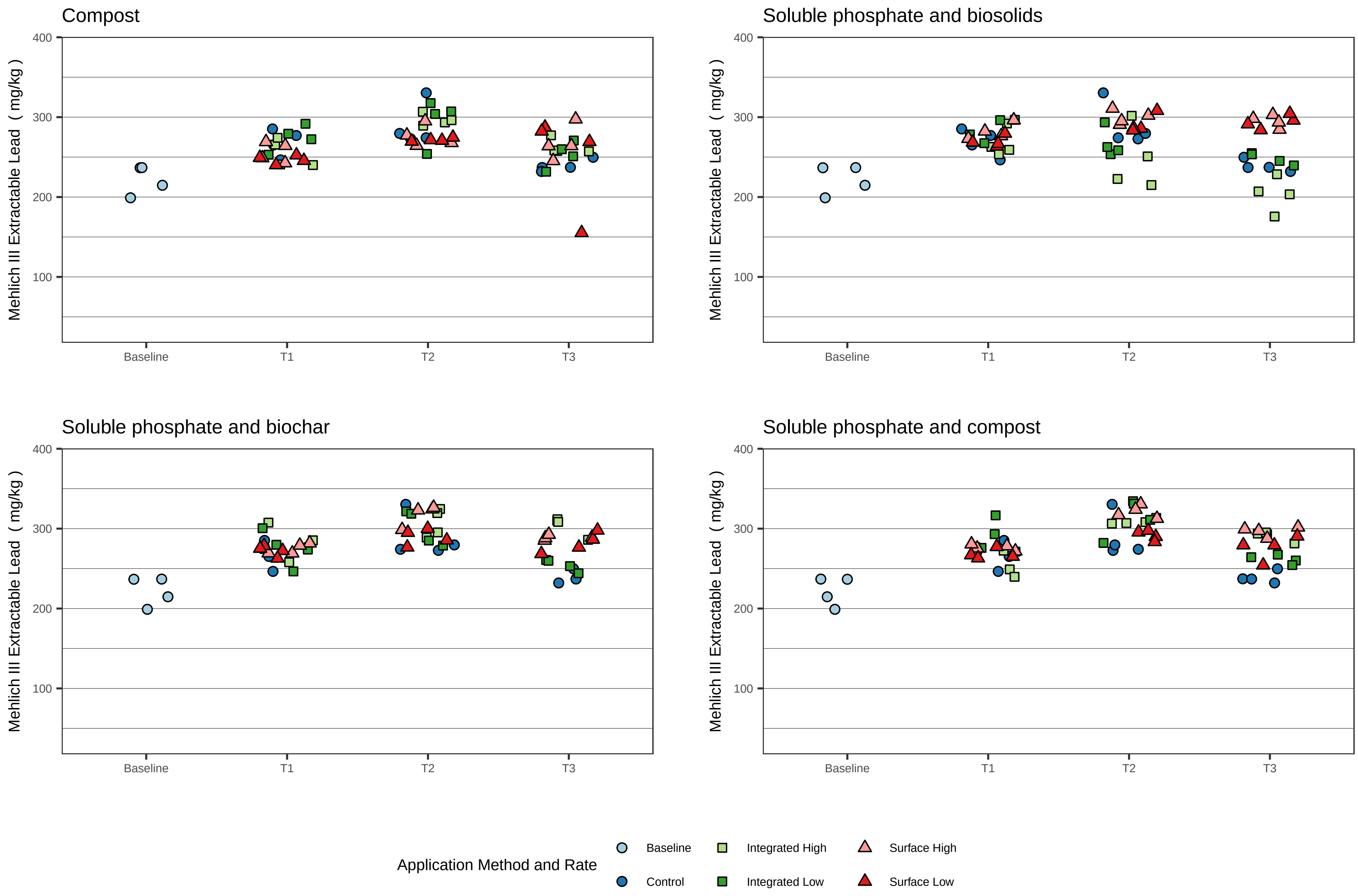

Figure 5−23b Mehlich III Extractable Lead in Test Pot Soil Samples

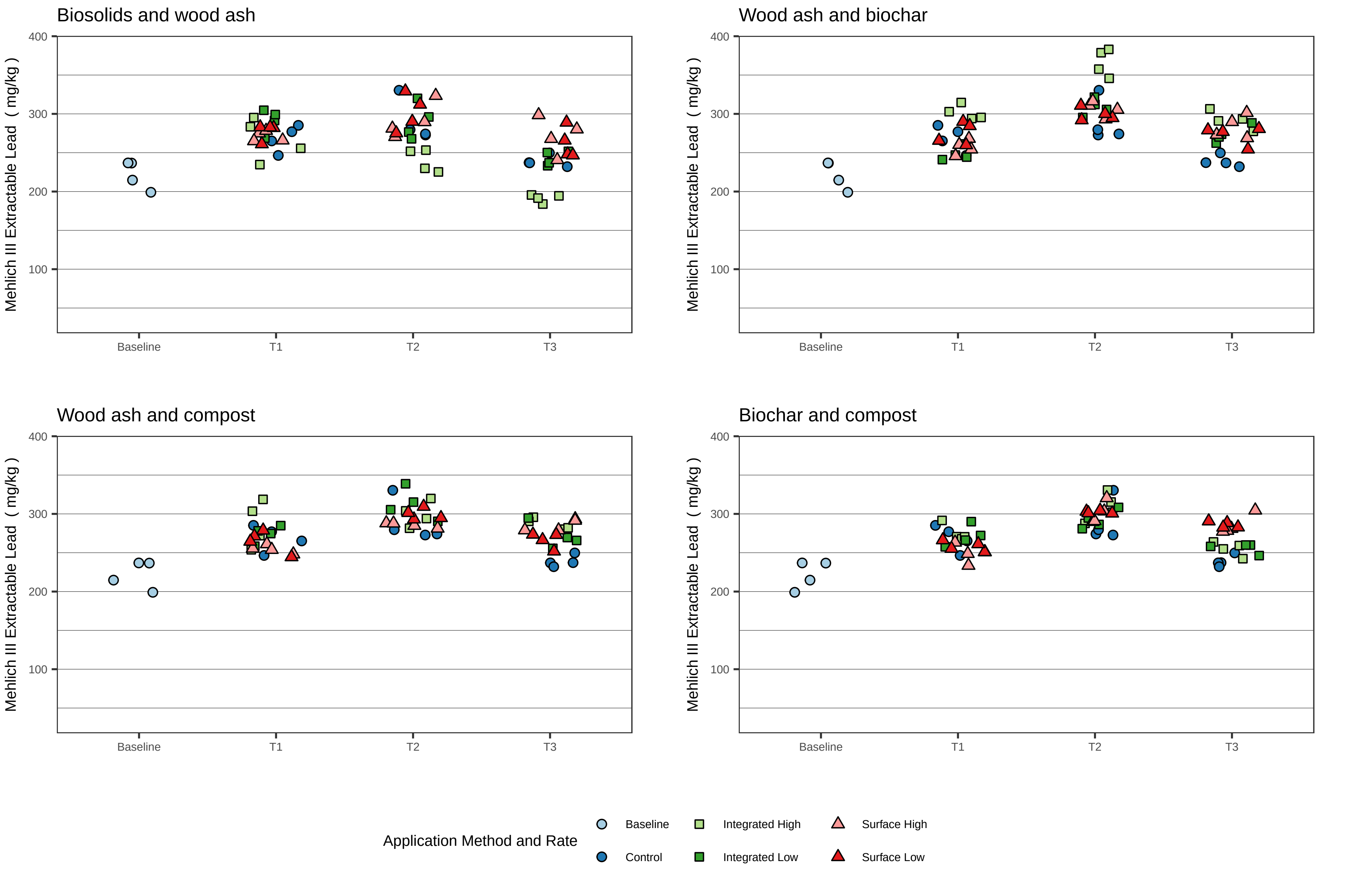

Figure 5–23c Mehlich III Extractable Lead in Test Pot Soil Samples

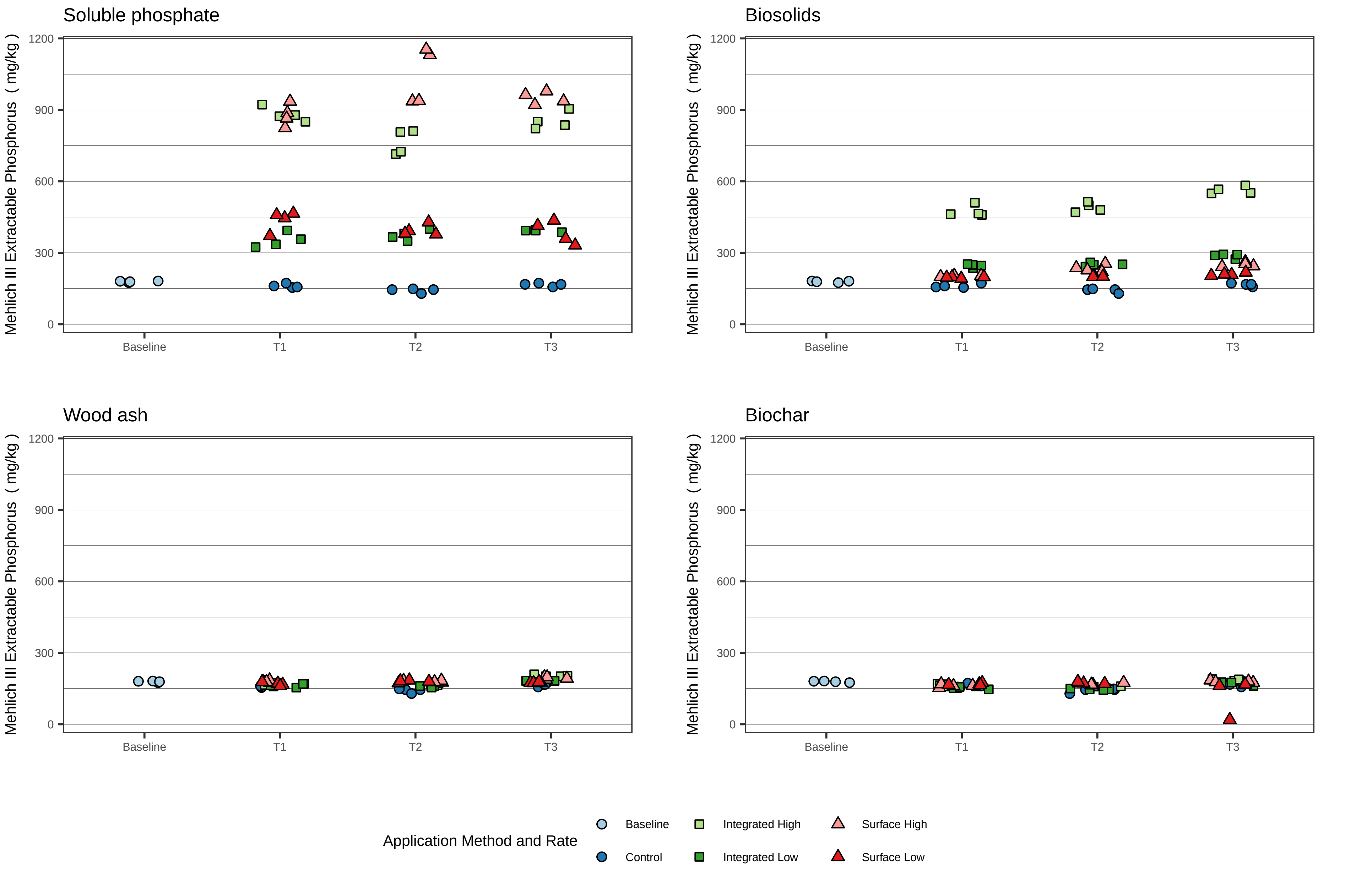

Figure 5−24a Mehlich III Extractable Phosphorus in Test Pot Soil Samples

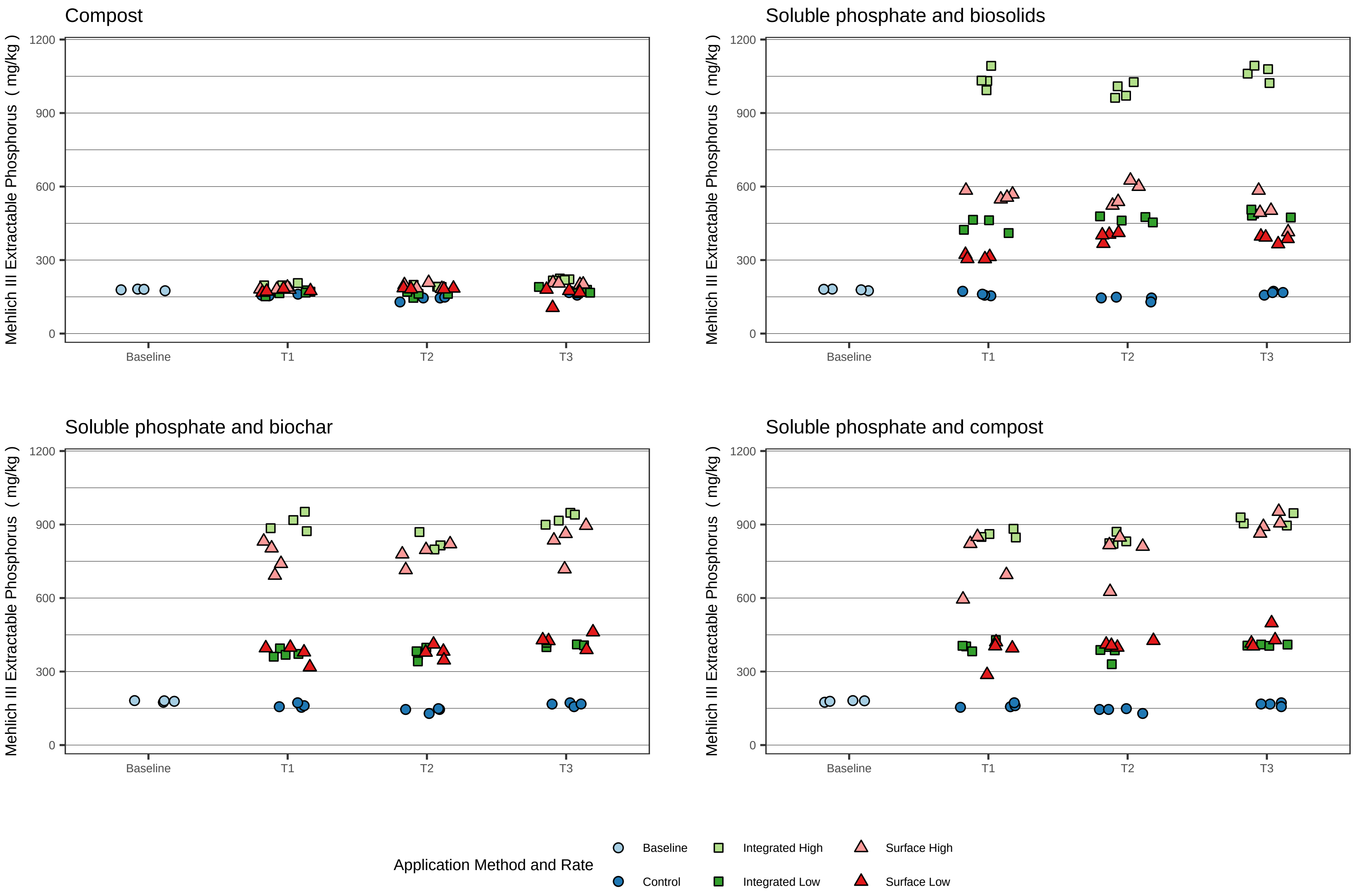

Figure 5−24b Mehlich III Extractable Phosphorus in Test Pot Soil Samples

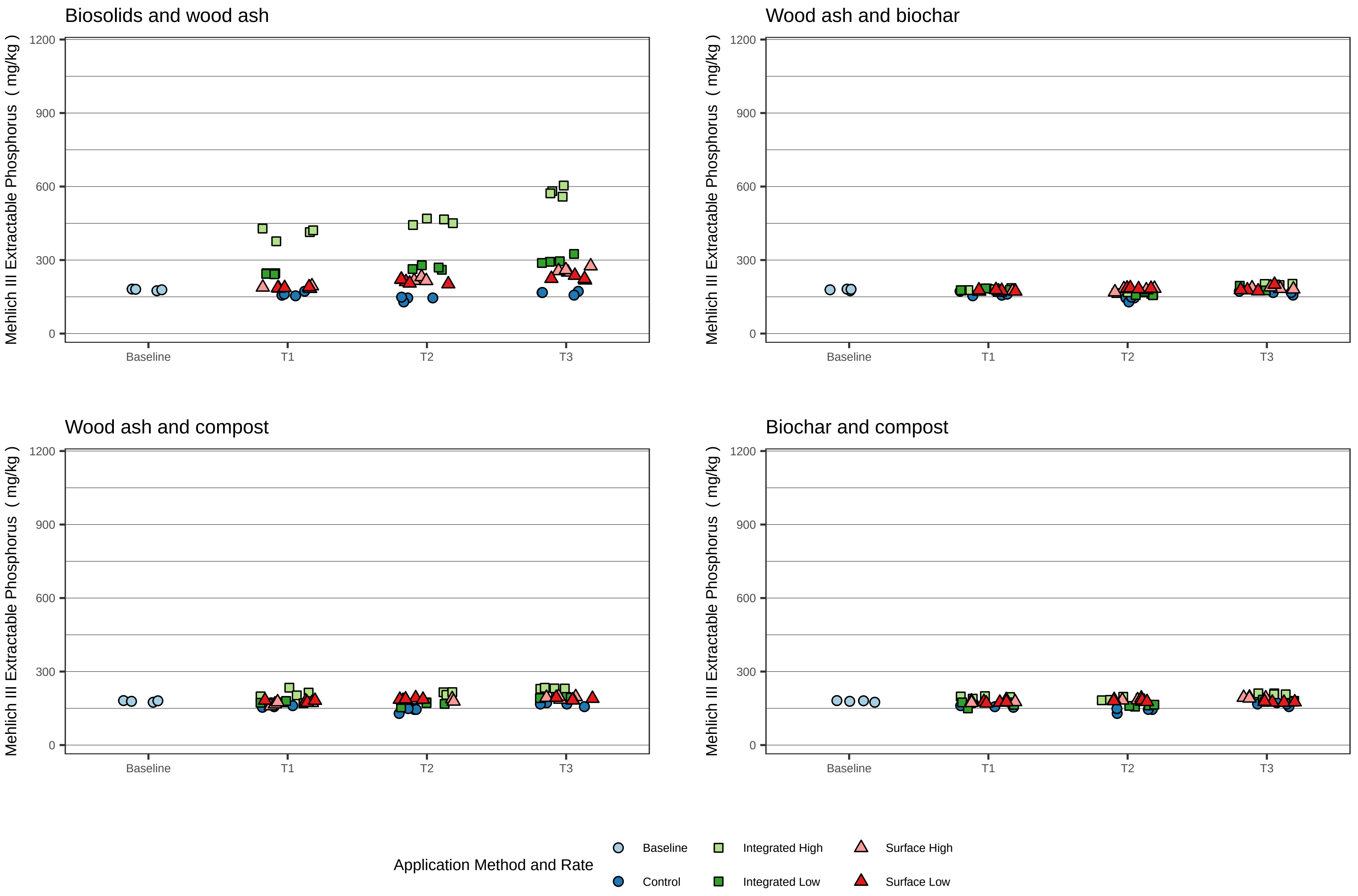

Figure 5−24c Mehlich III Extractable Phosphorus in Test Pot Soil Samples

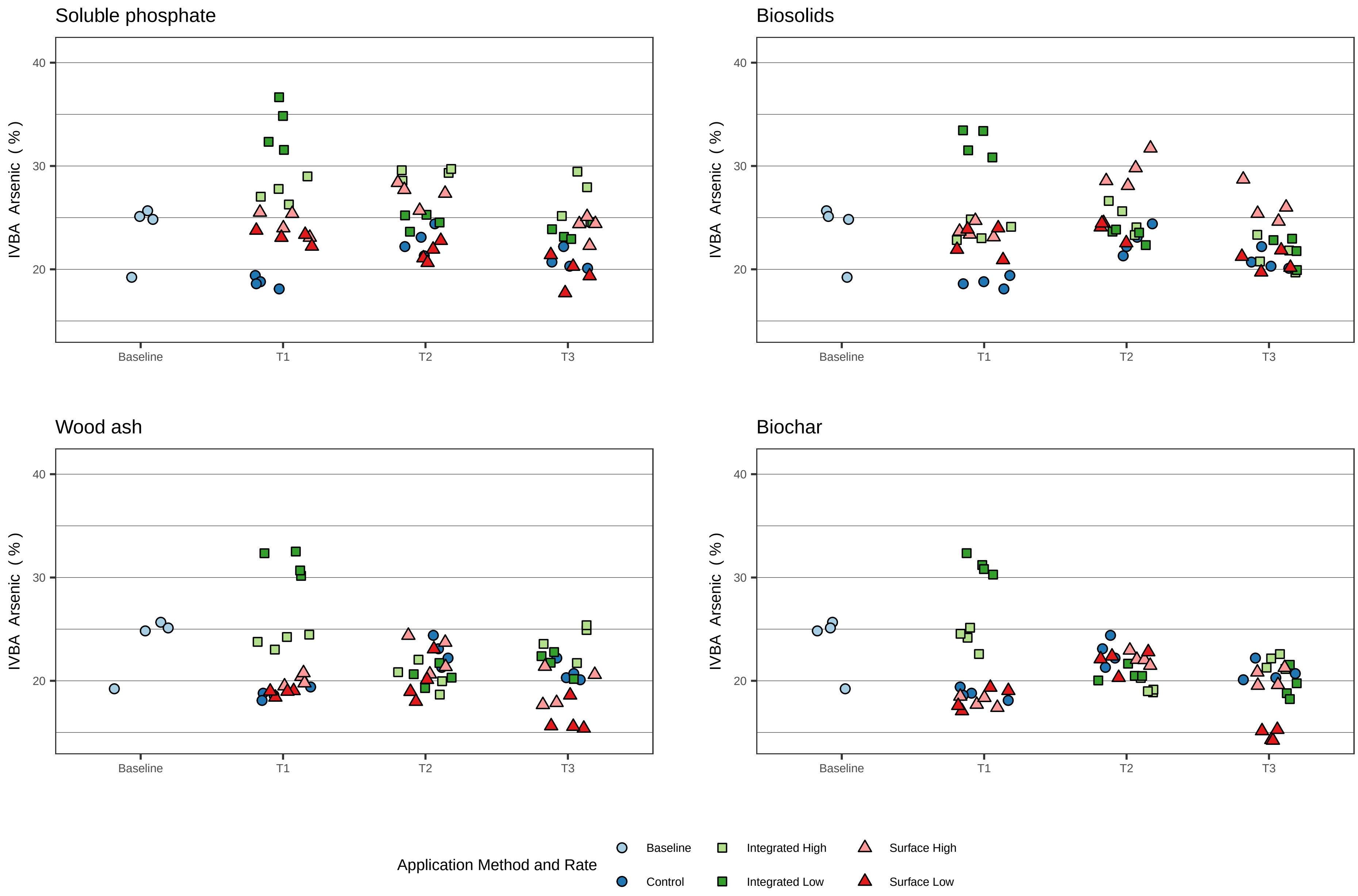

Figure 5−25a IVBA Arsenic (Extracted at pH 1.5) in Test Pot Soil Samples

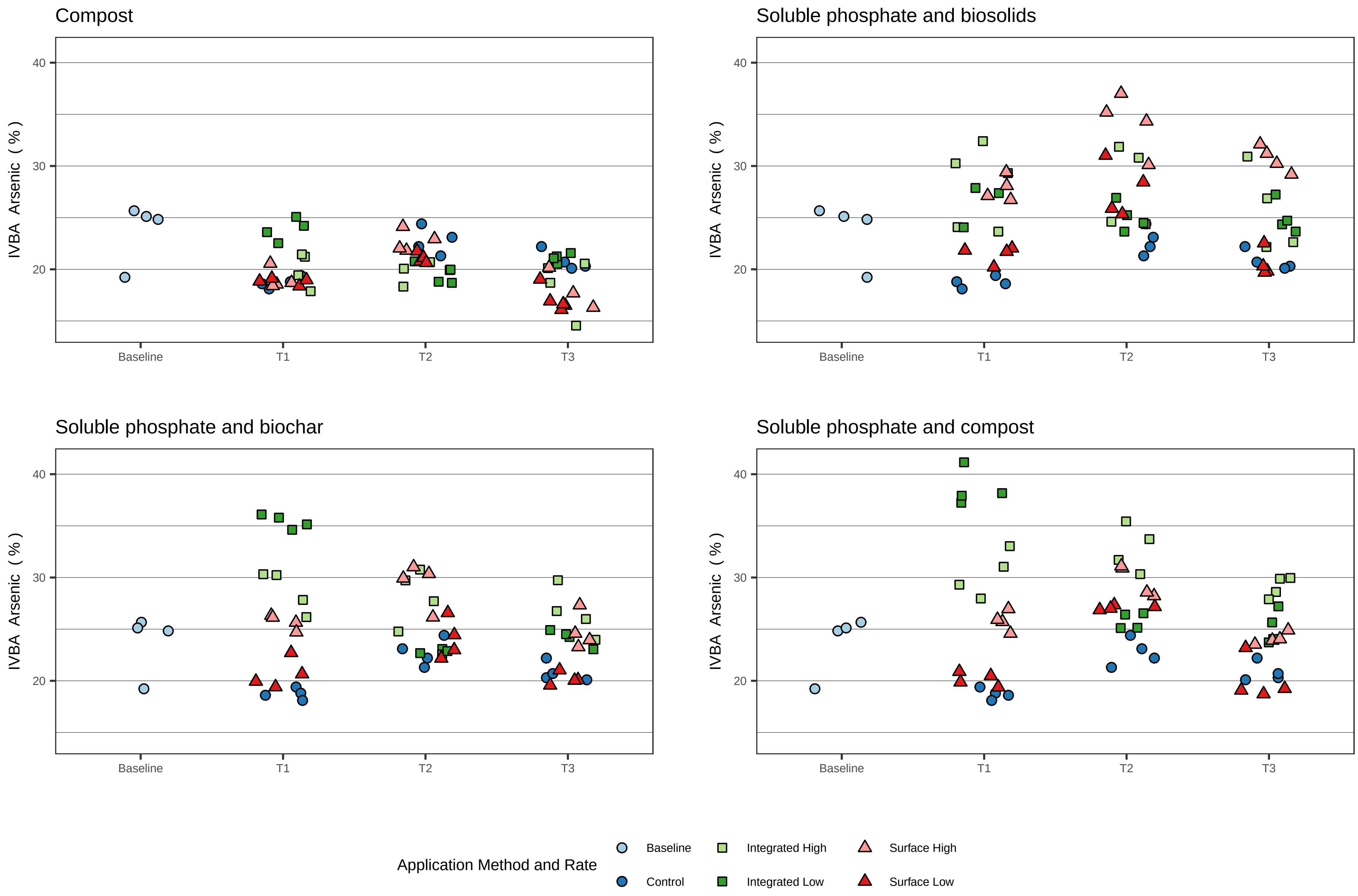

Figure 5−25b IVBA Arsenic (Extracted at pH 1.5) in Test Pot Soil Samples

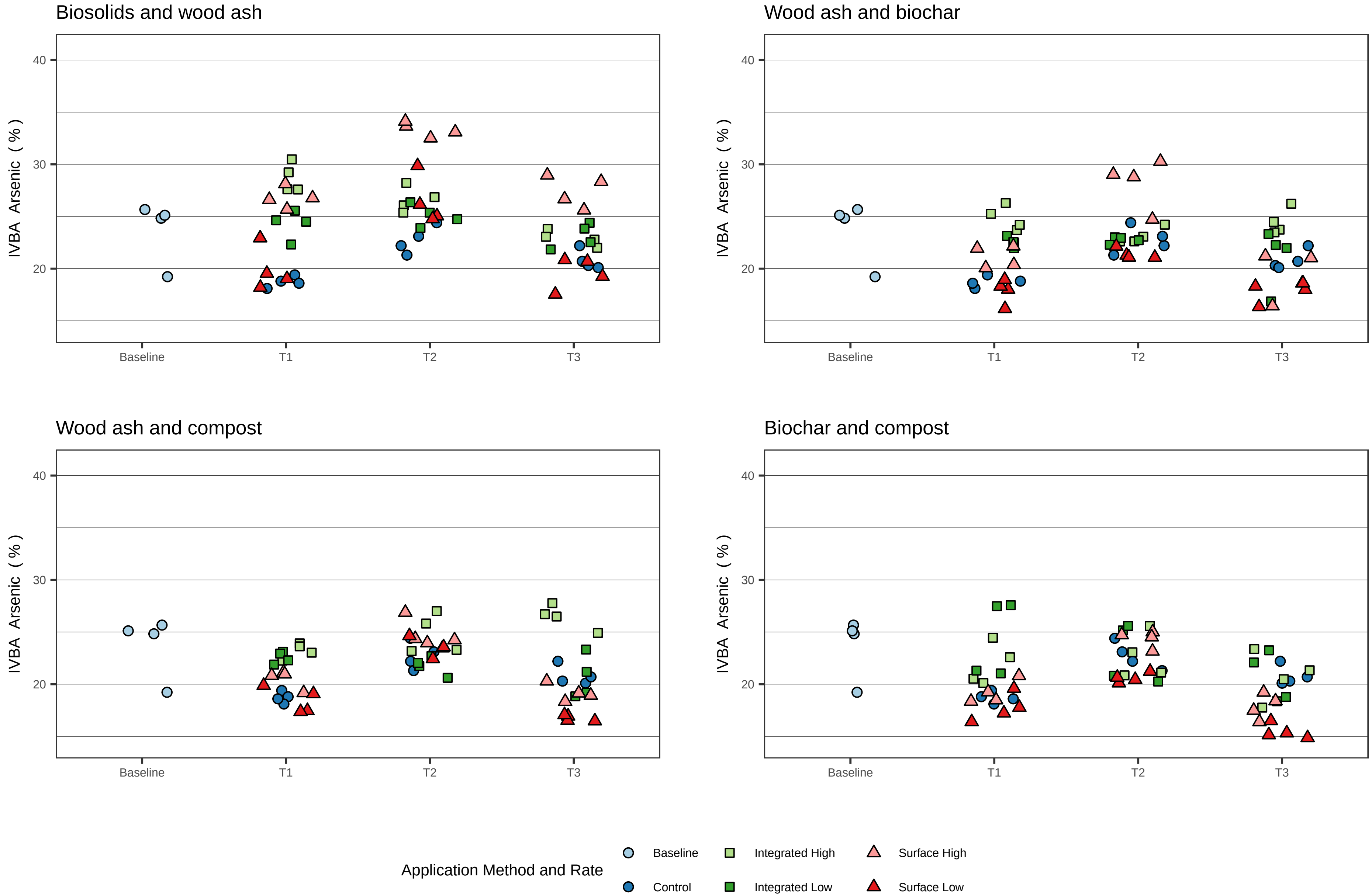

Figure 5−25c IVBA Arsenic (Extracted at pH 1.5) in Test Pot Soil Samples

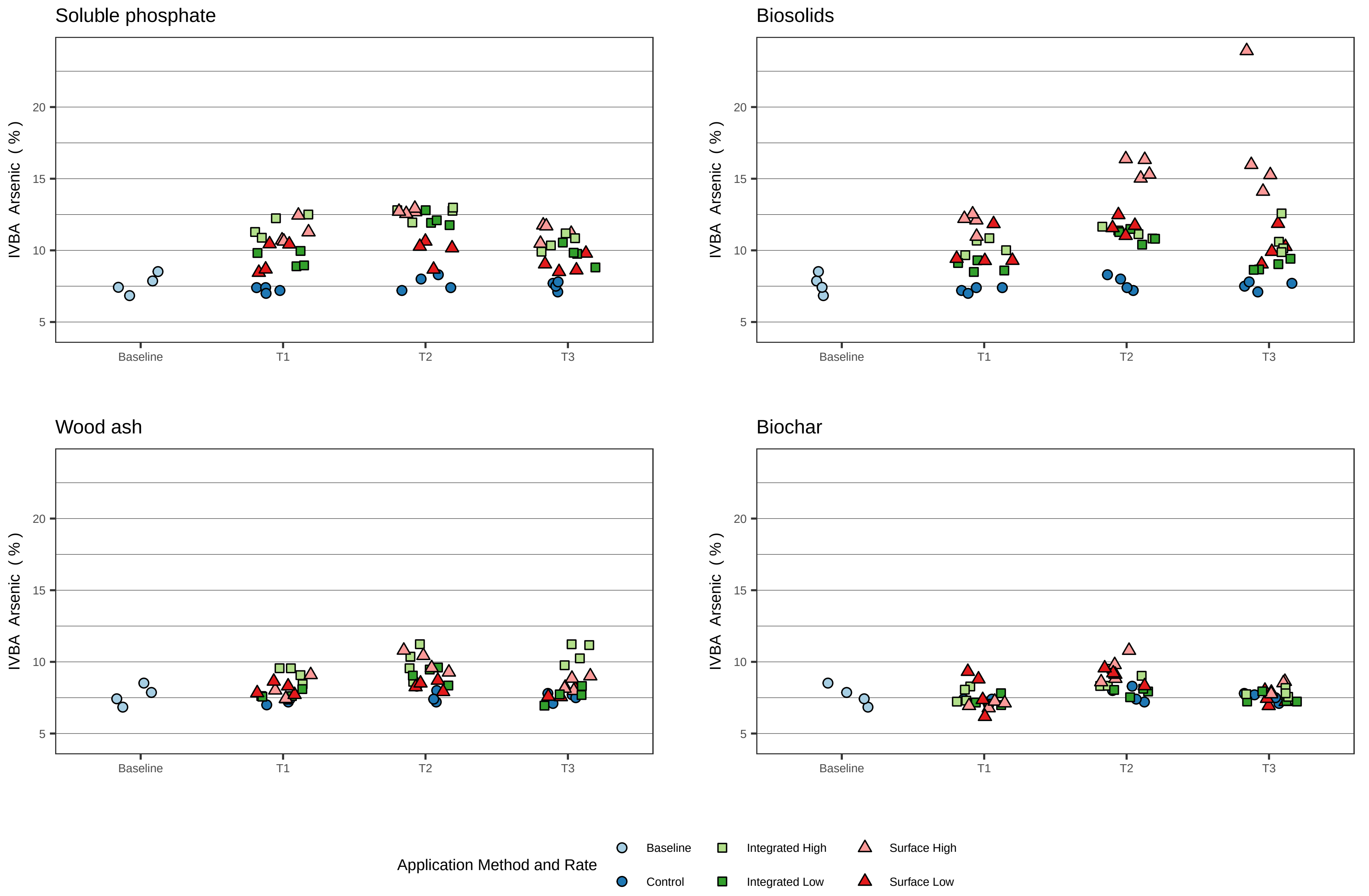

Figure 5−26a IVBA Arsenic (Extracted at pH 2.5) in Test Pot Soil Samples

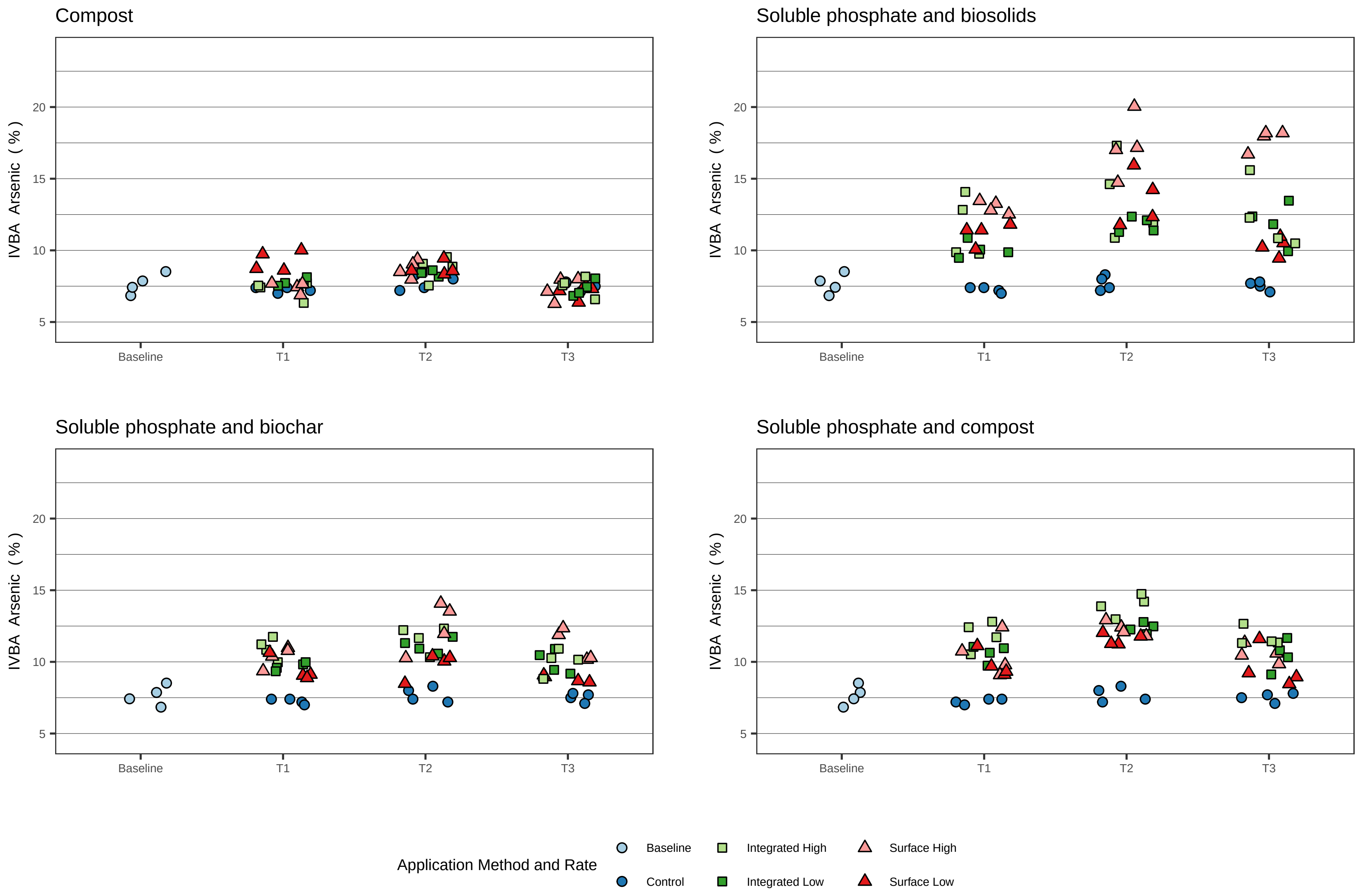

Figure 5−26b IVBA Arsenic (Extracted at pH 2.5) in Test Pot Soil Samples

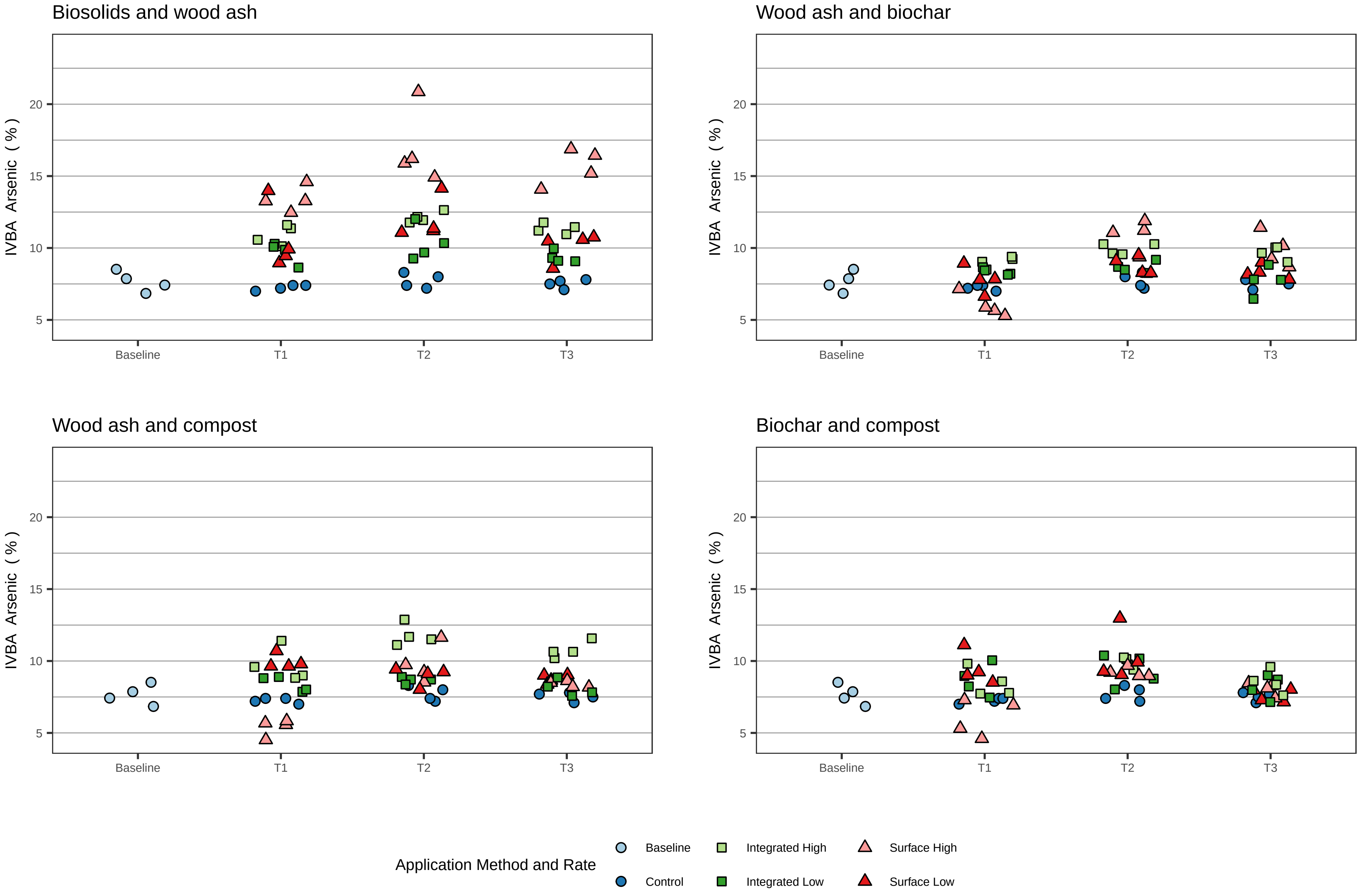

Figure 5−26c IVBA Arsenic (Extracted at pH 2.5) in Test Pot Soil Samples

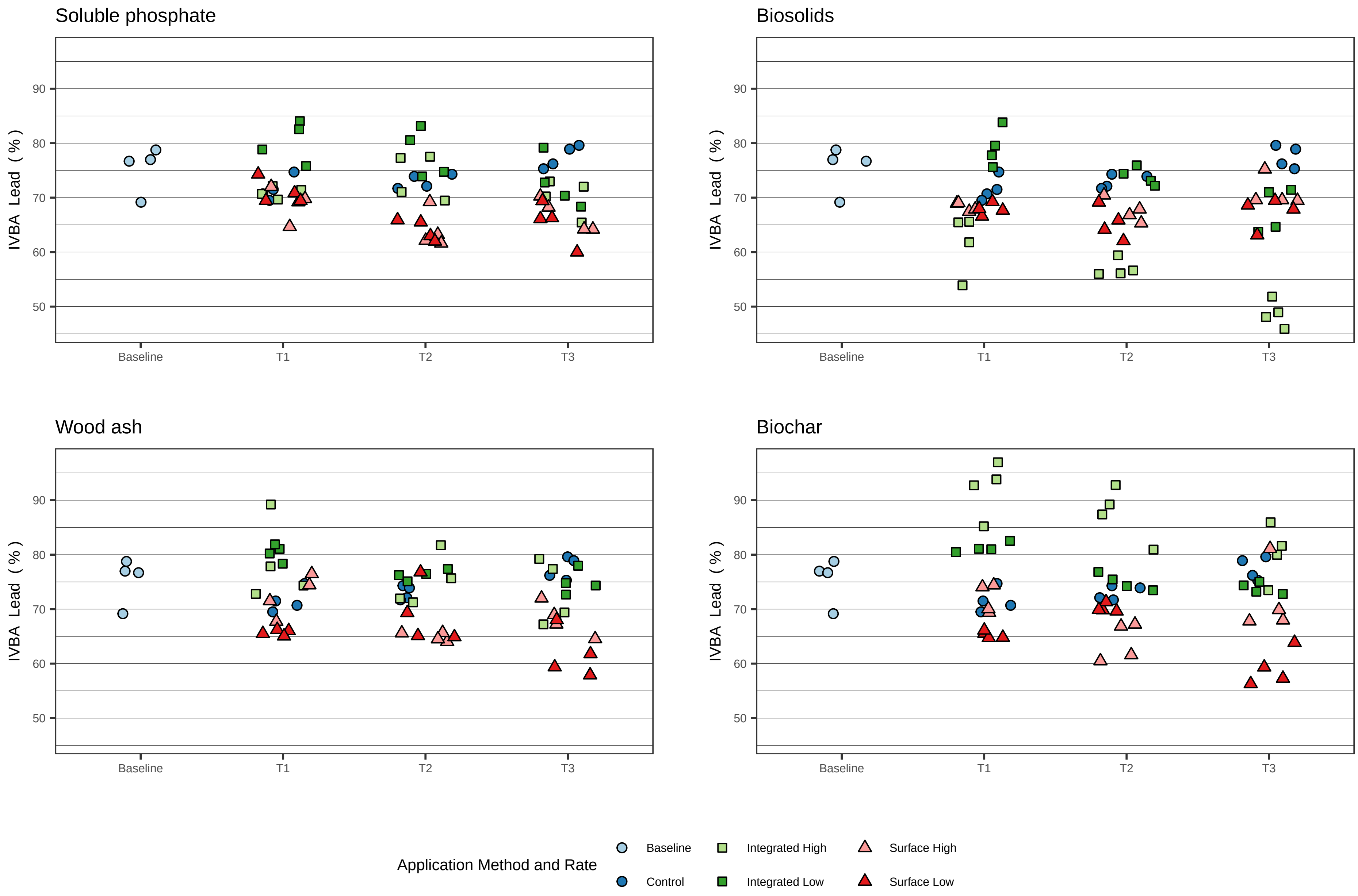

Figure 5−27a IVBA Lead (Extracted at pH 1.5) in Test Pot Soil Samples

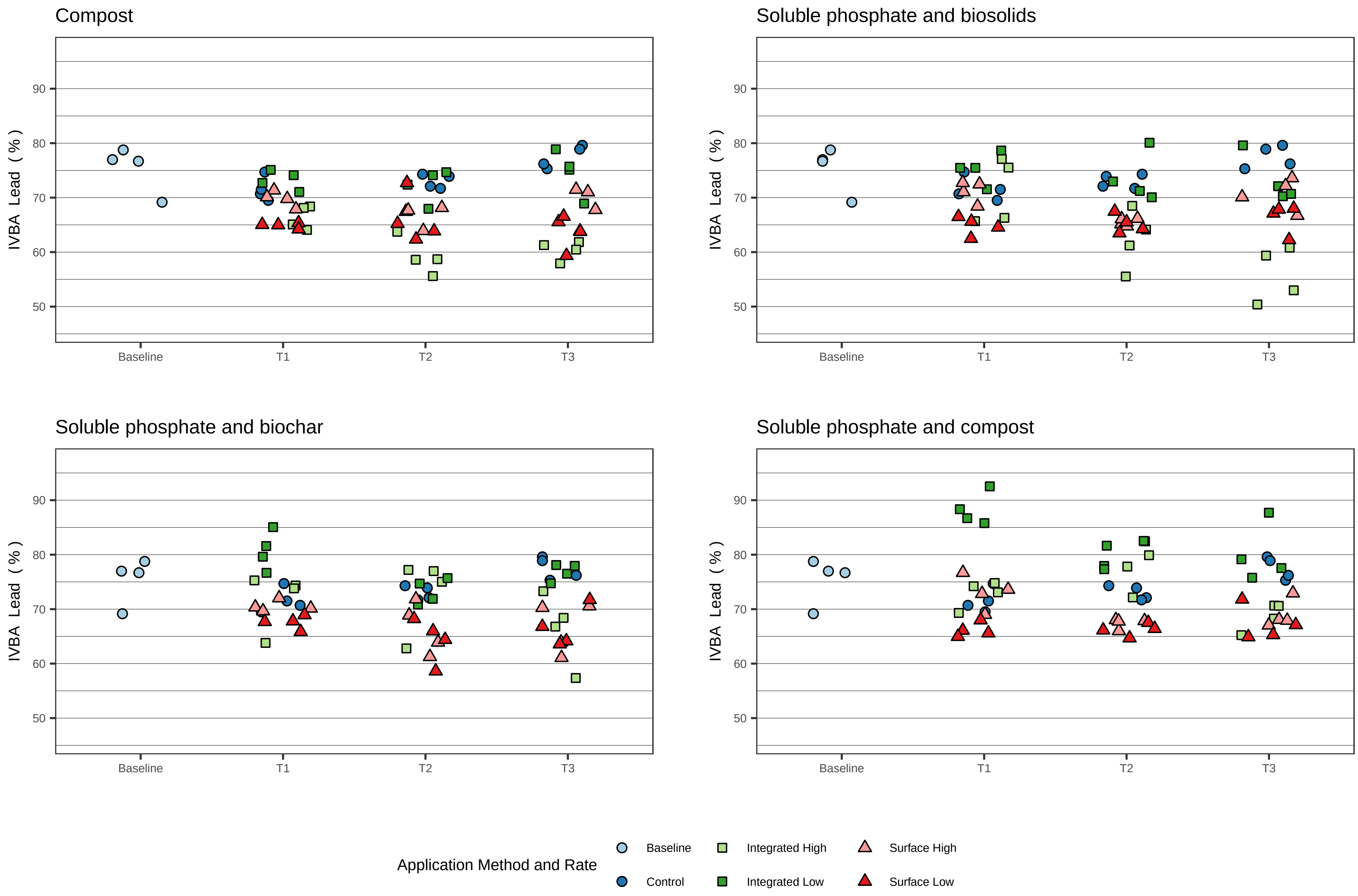

Figure 5−27b IVBA Lead (Extracted at pH 1.5) in Test Pot Soil Samples

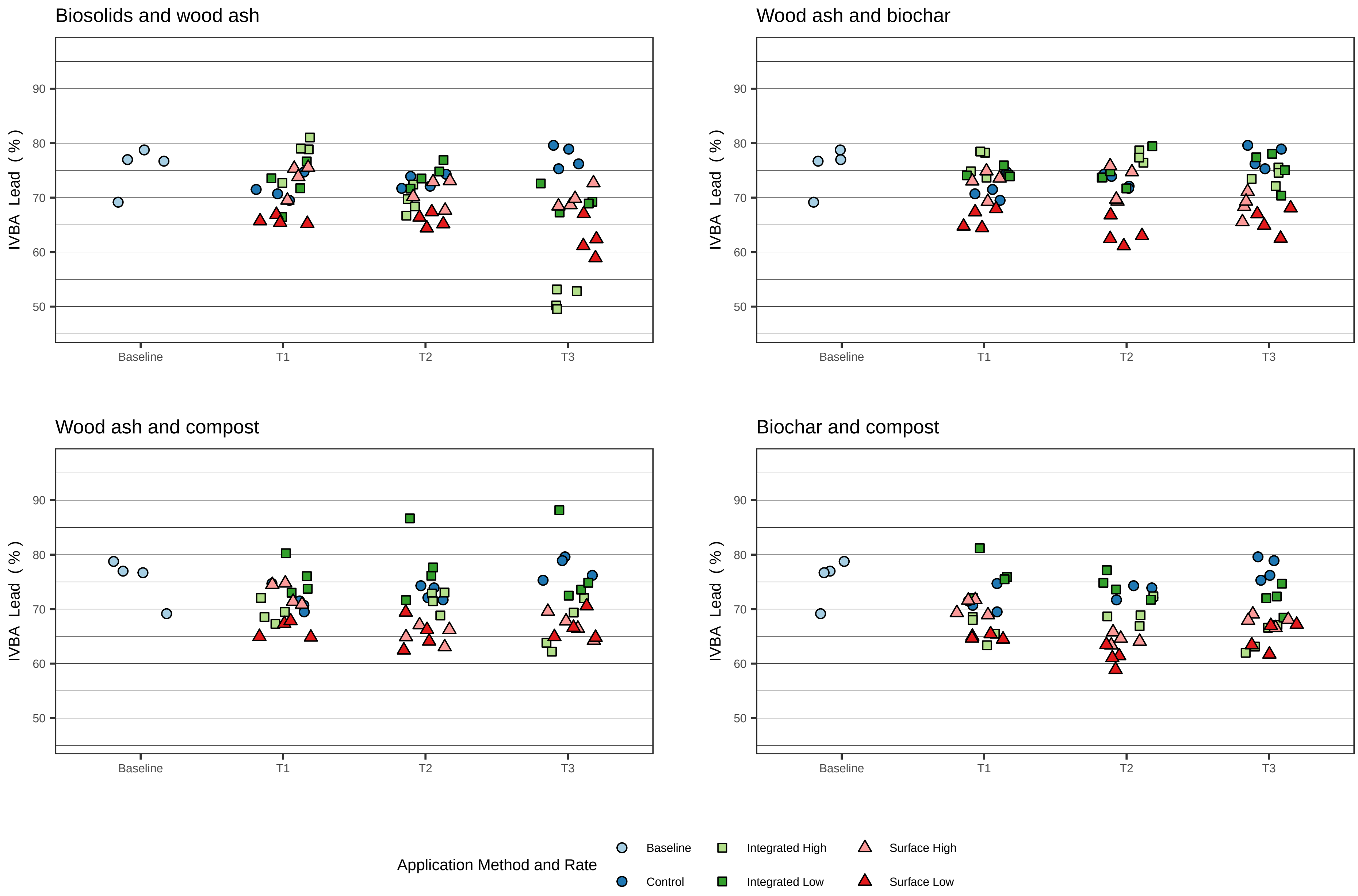

Figure 5−27c IVBA Lead (Extracted at pH 1.5) in Test Pot Soil Samples

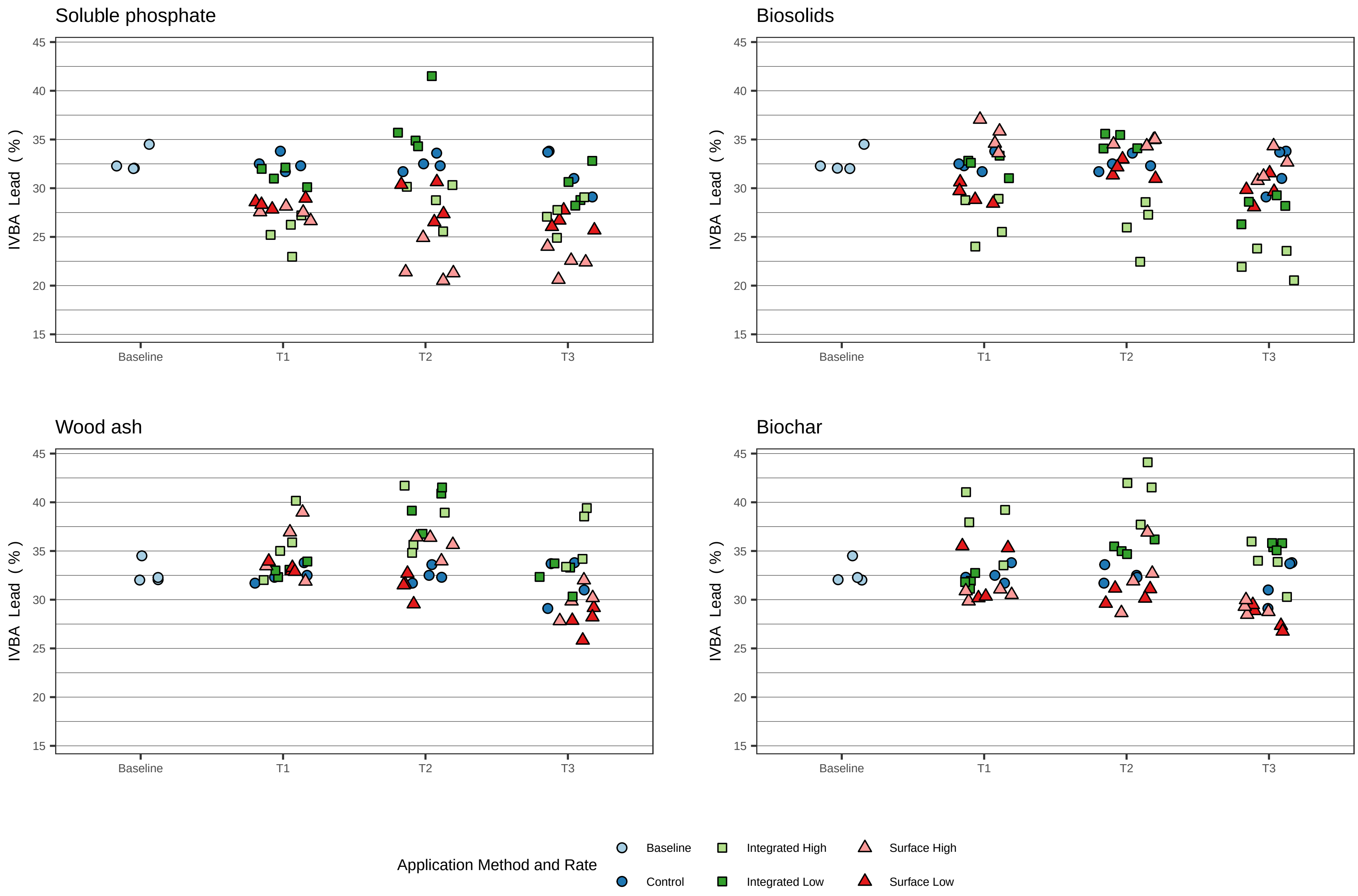

Figure 5−28a IVBA Lead (Extracted at pH 2.5) in Test Pot Soil Samples

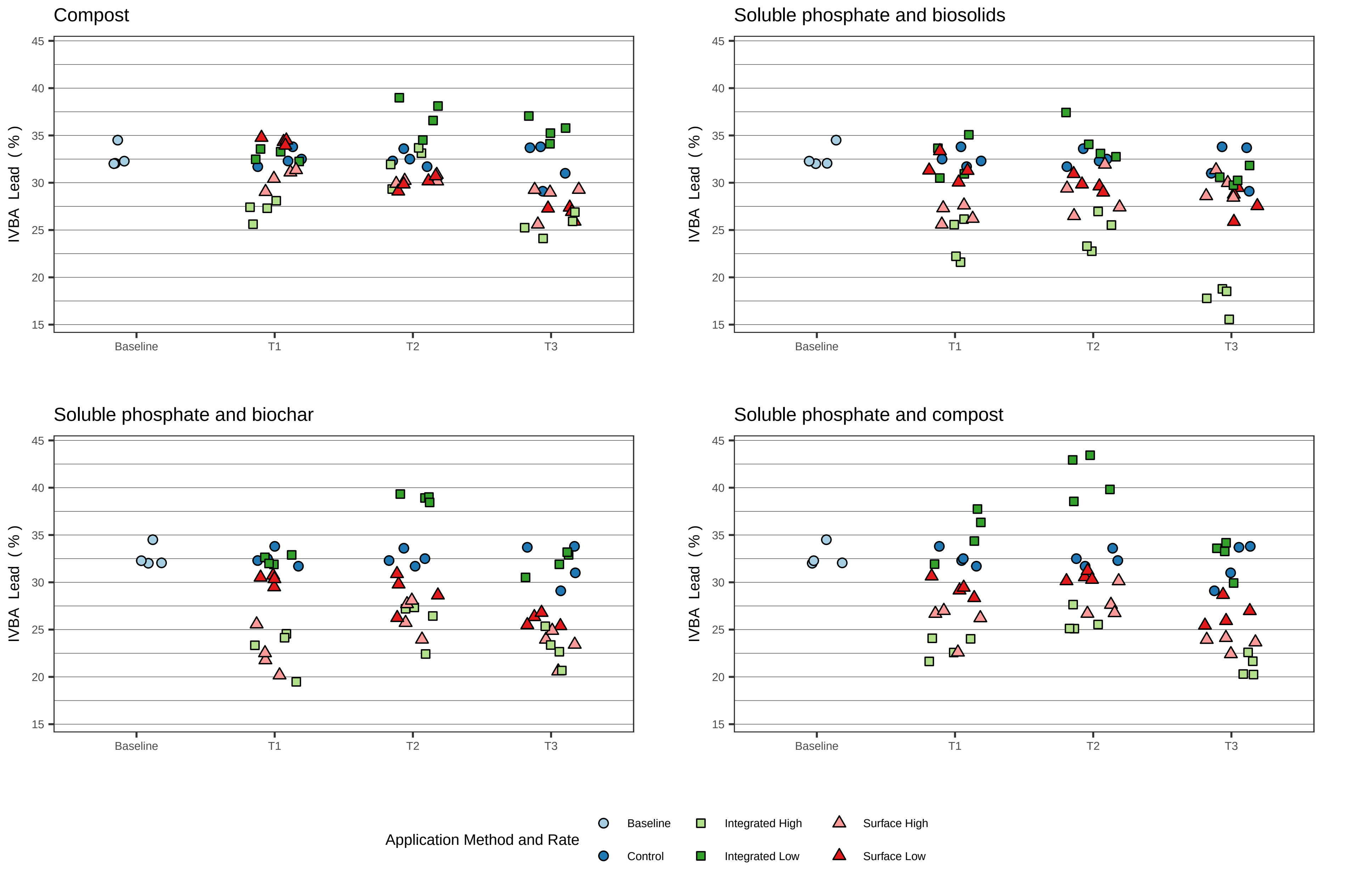

Figure 5−28b IVBA Lead (Extracted at pH 2.5) in Test Pot Soil Samples

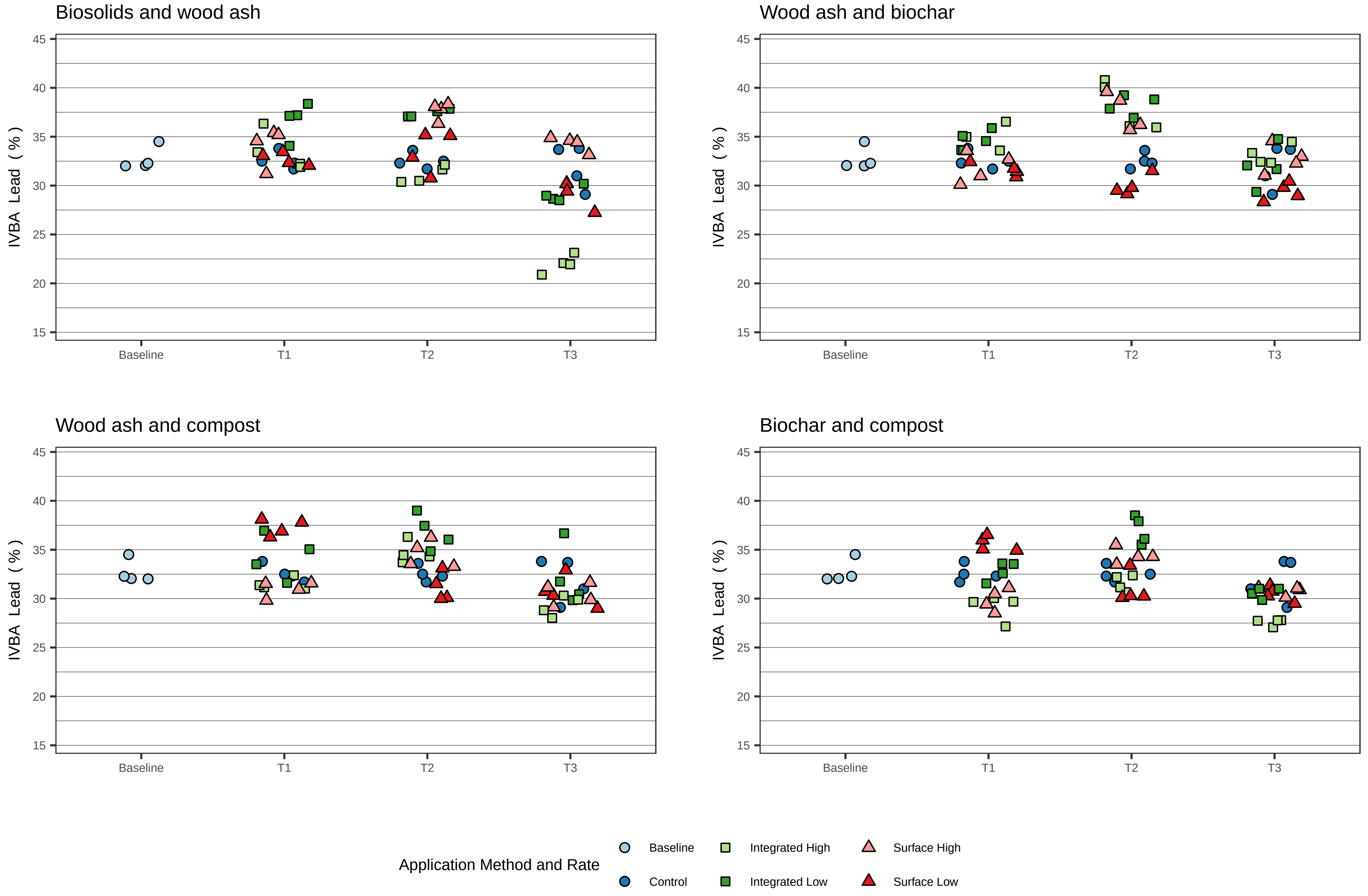

Figure 5−28c IVBA Lead (Extracted at pH 2.5) in Test Pot Soil Samples

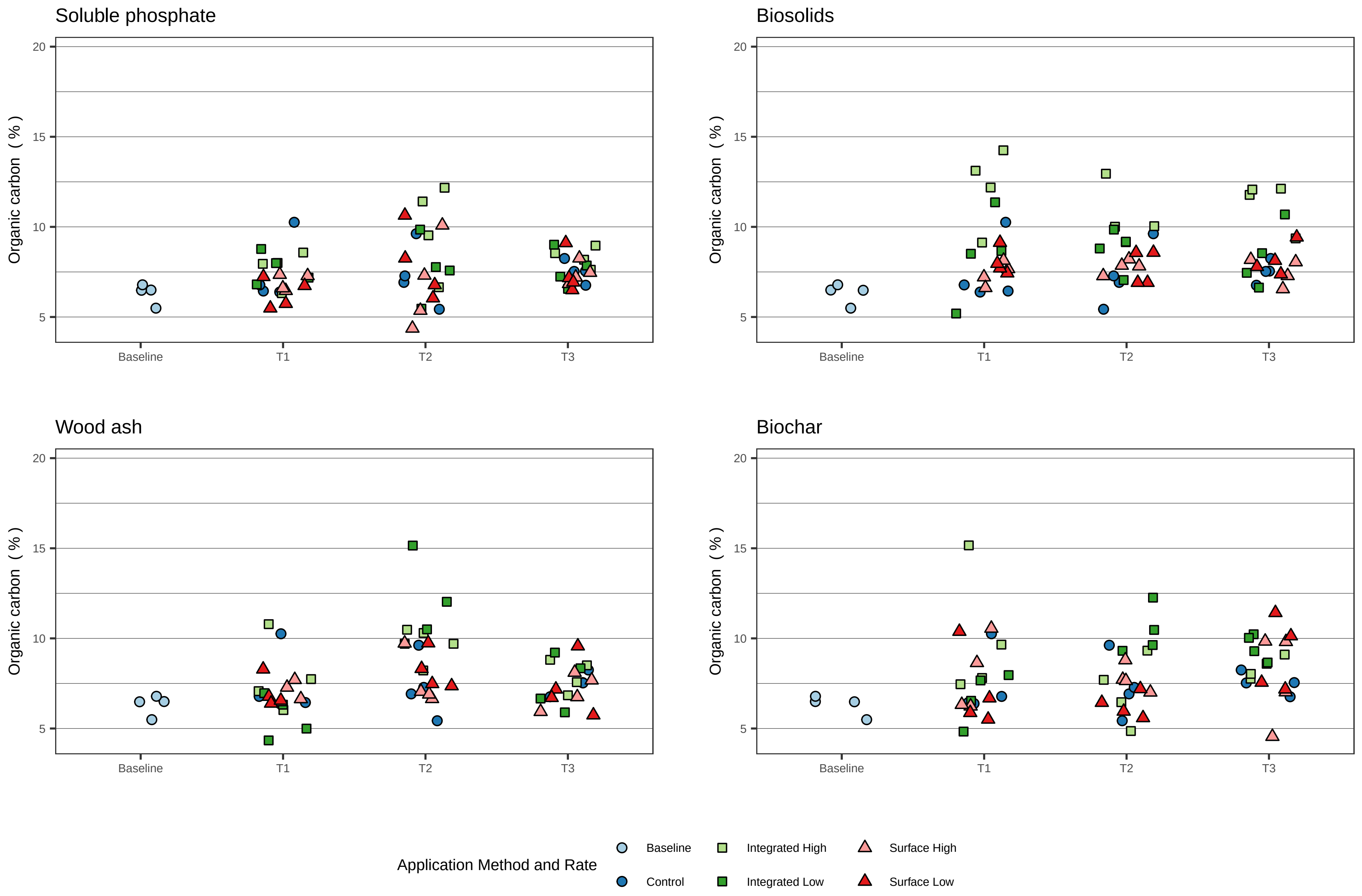

Figure 5−29a Total Organic Carbon in Test Pot Soil Samples

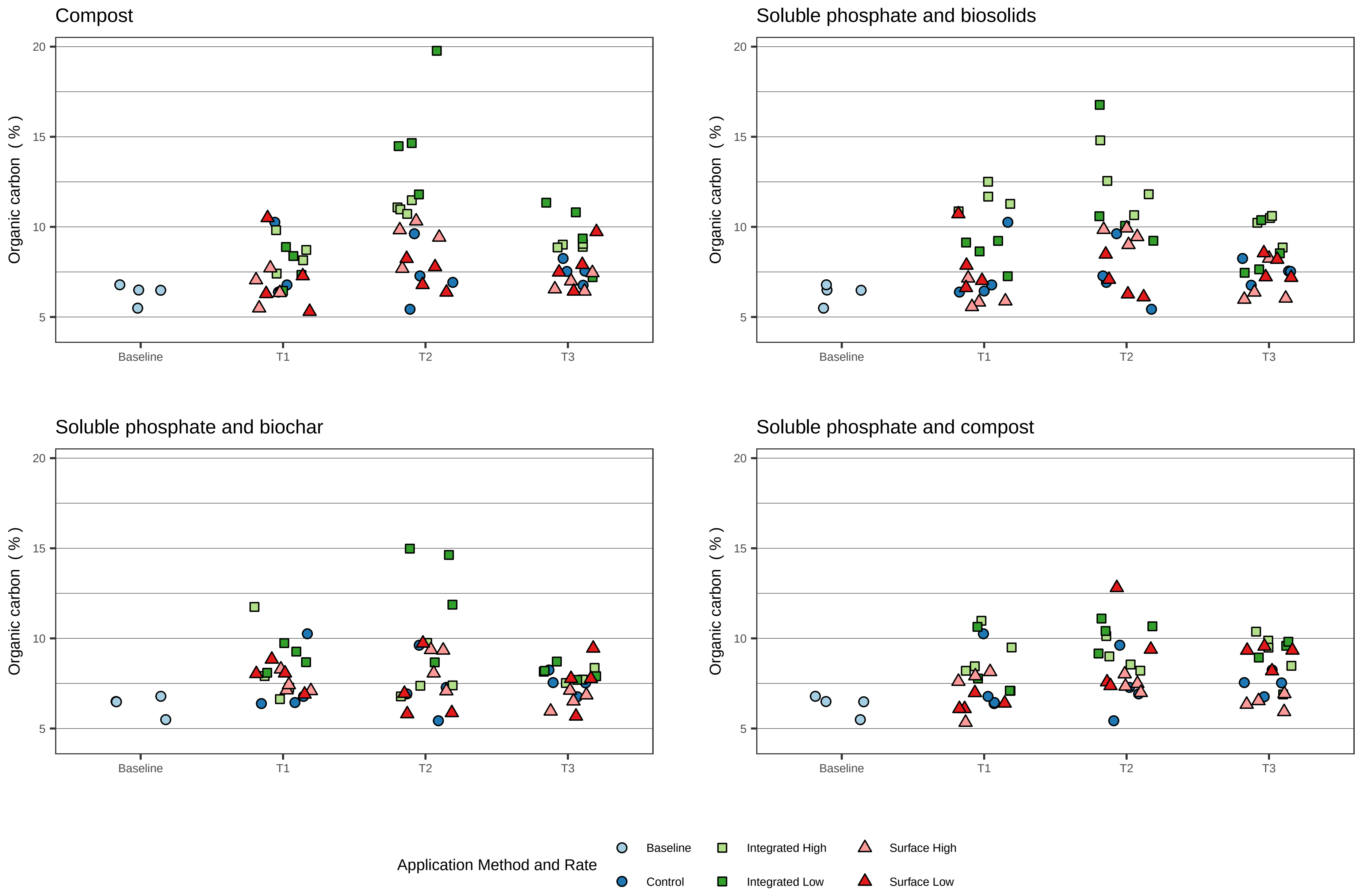

Figure 5−29b Total Organic Carbon in Test Pot Soil Samples

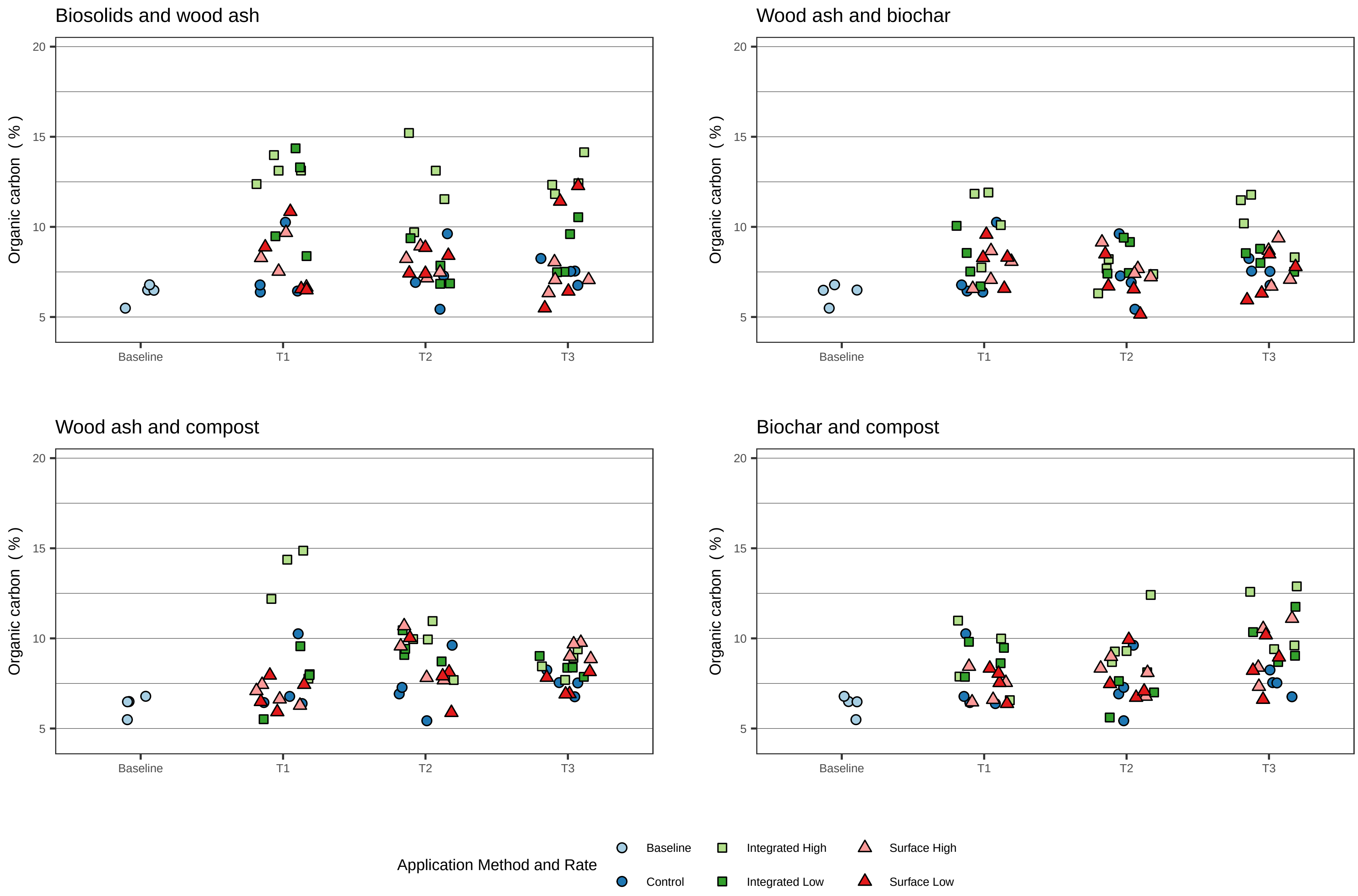

Figure 5−29c Total Organic Carbon in Test Pot Soil Samples

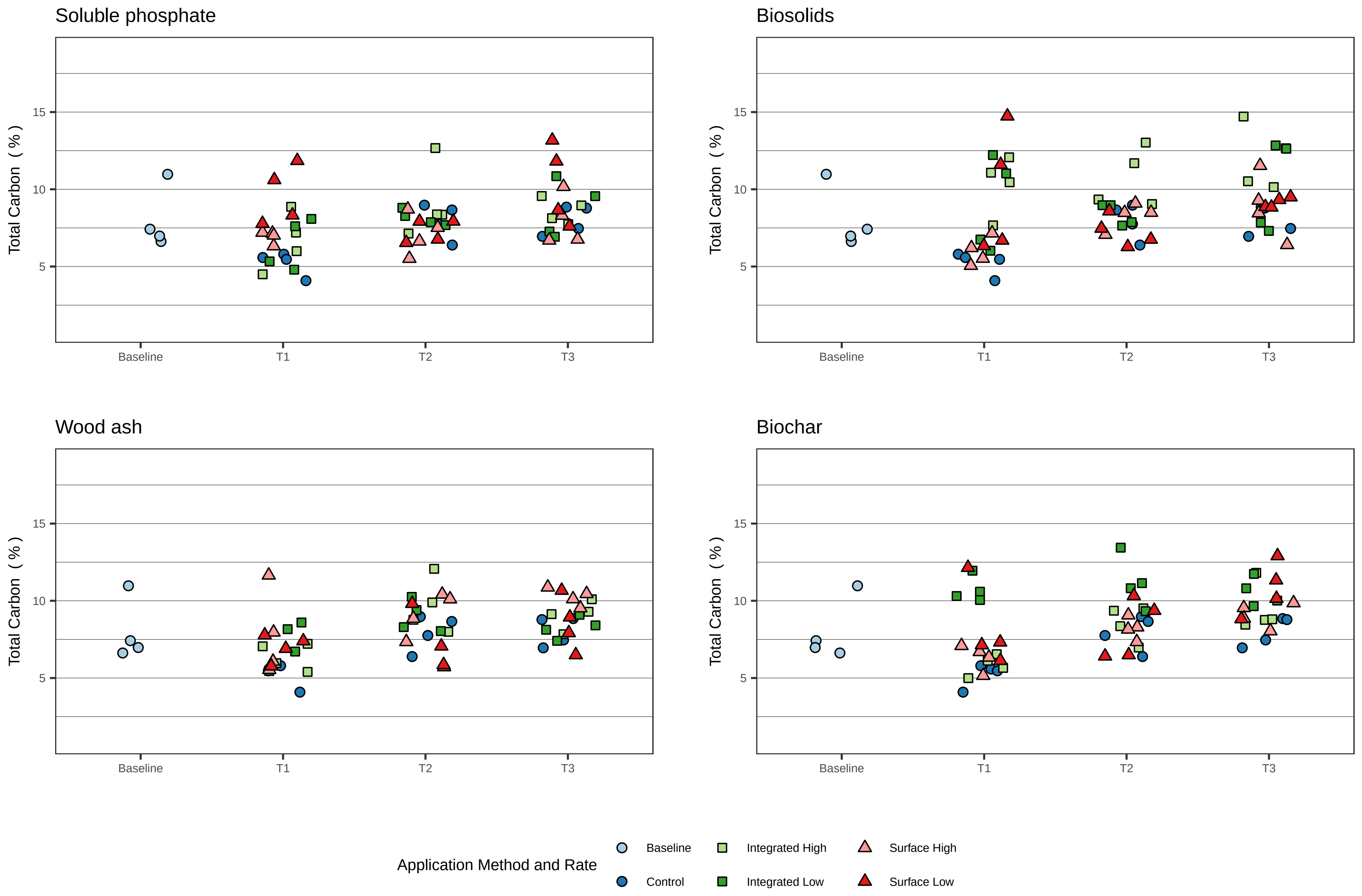

Figure 5−30a Total Carbon in Test Pot Soil Samples

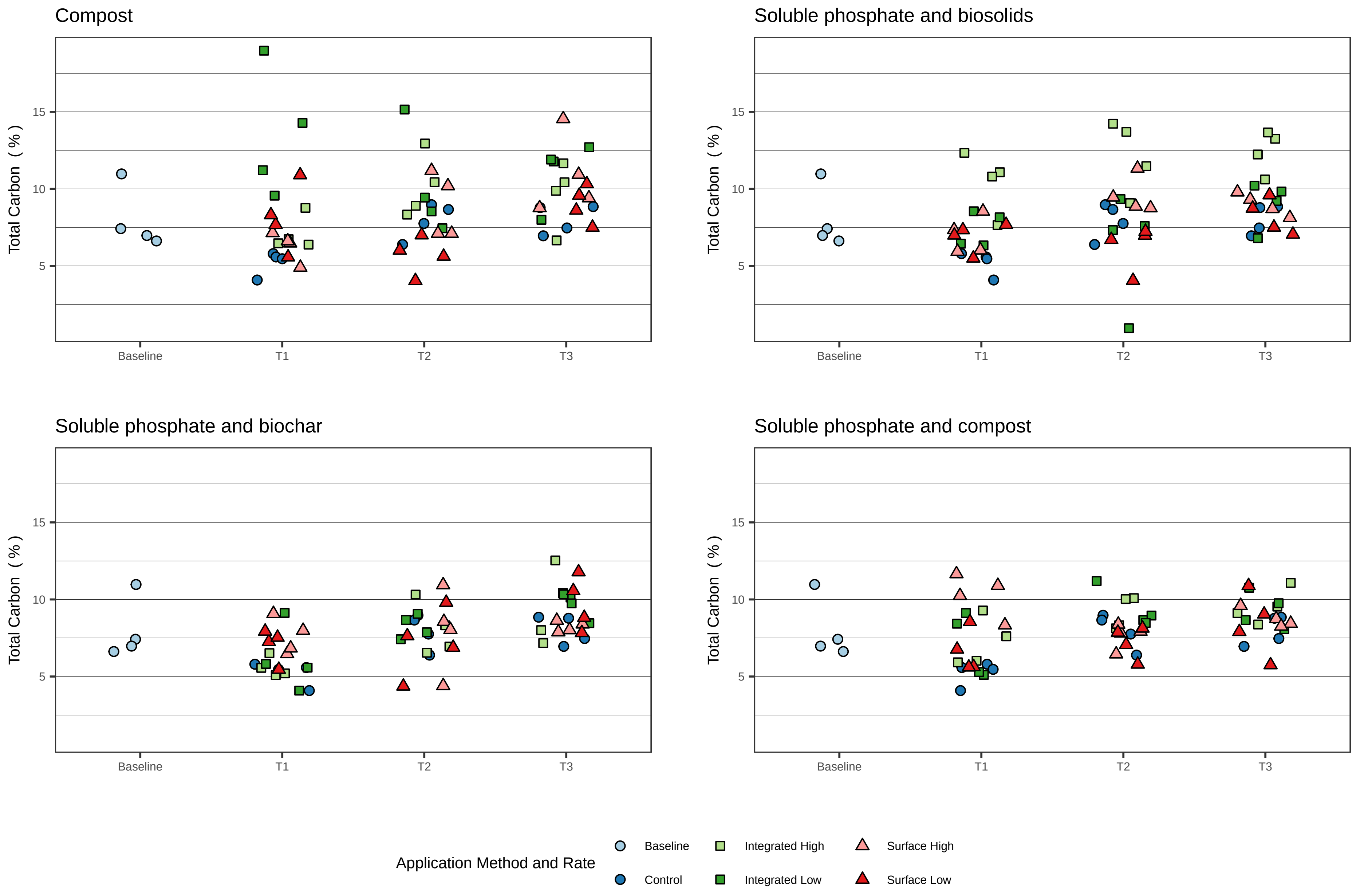

Figure 5−30b Total Carbon in Test Pot Soil Samples

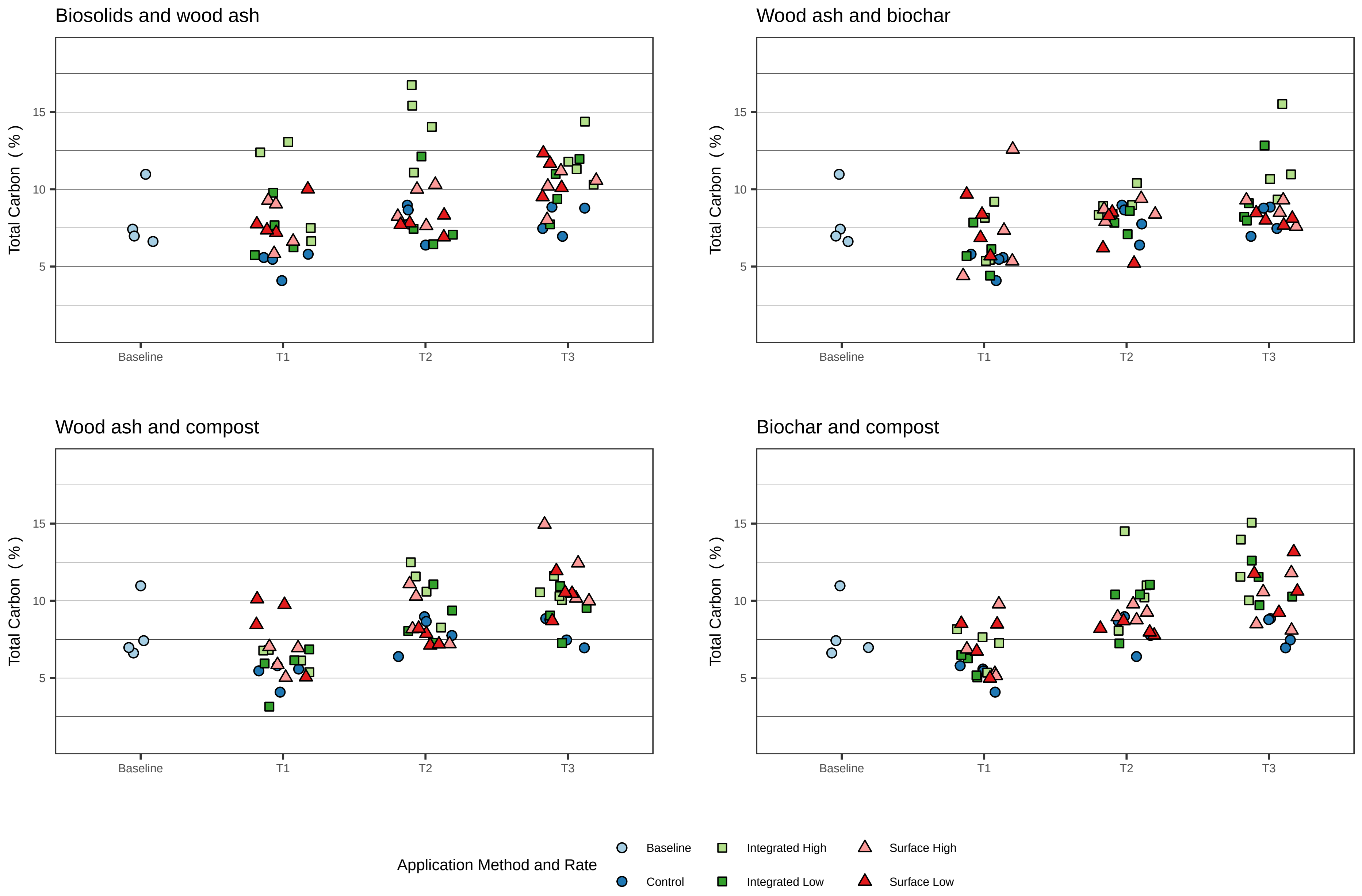

Figure 5−30c Total Carbon in Test Pot Soil Samples

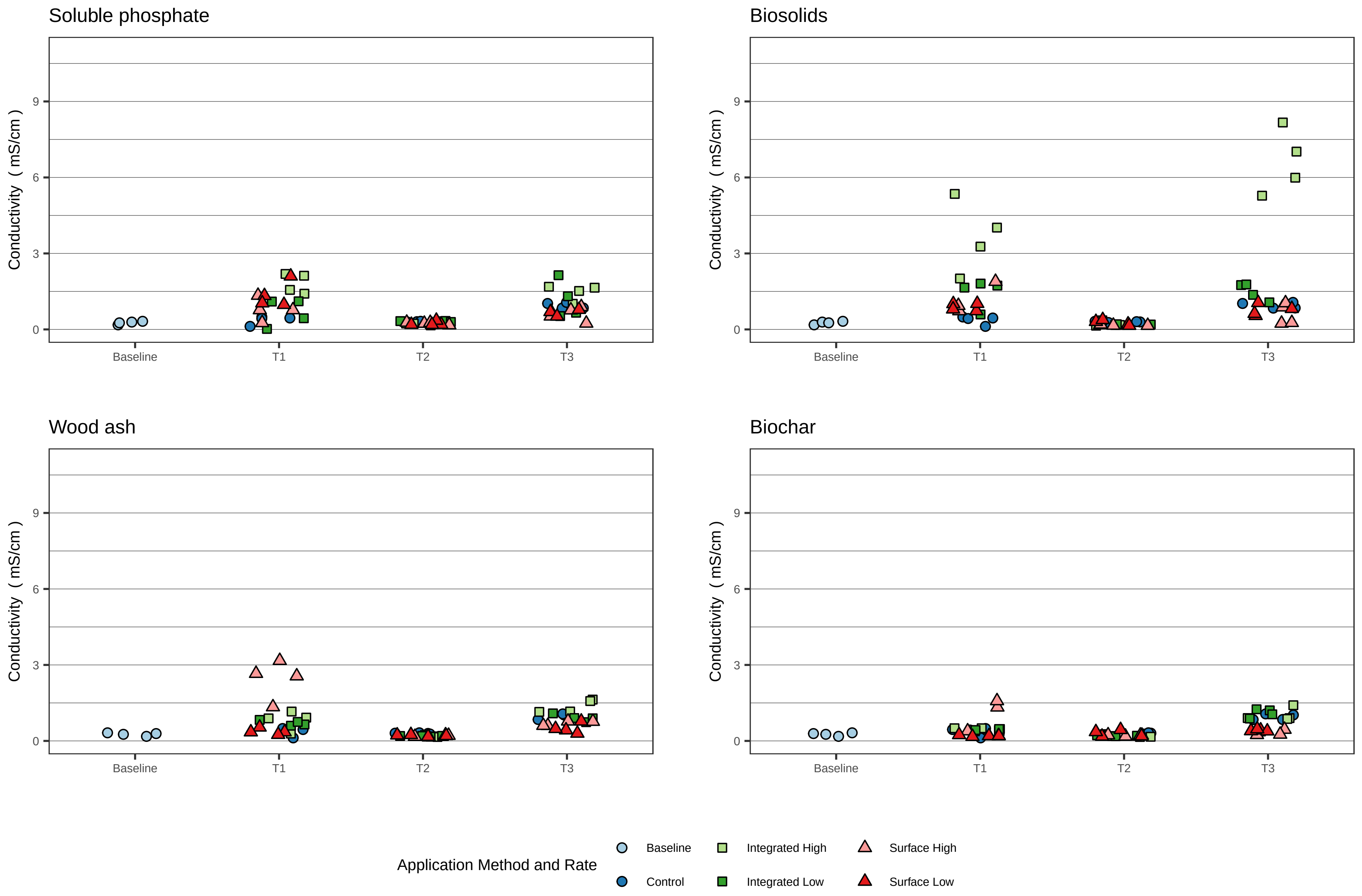

Figure 5−31a Test Pot Soil Sample Conductivity Values

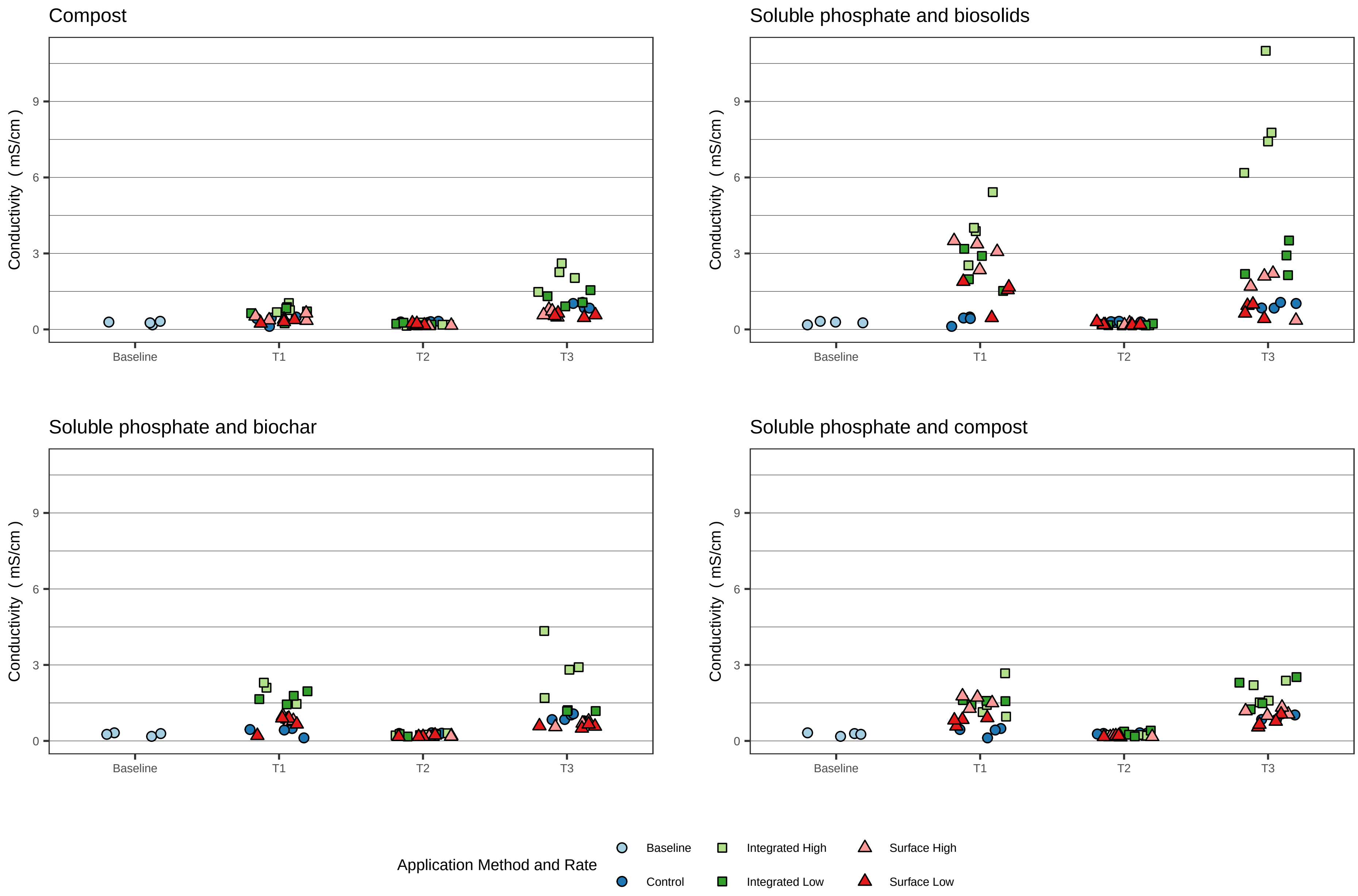

Figure 5−31b Test Pot Soil Sample Conductivity Values

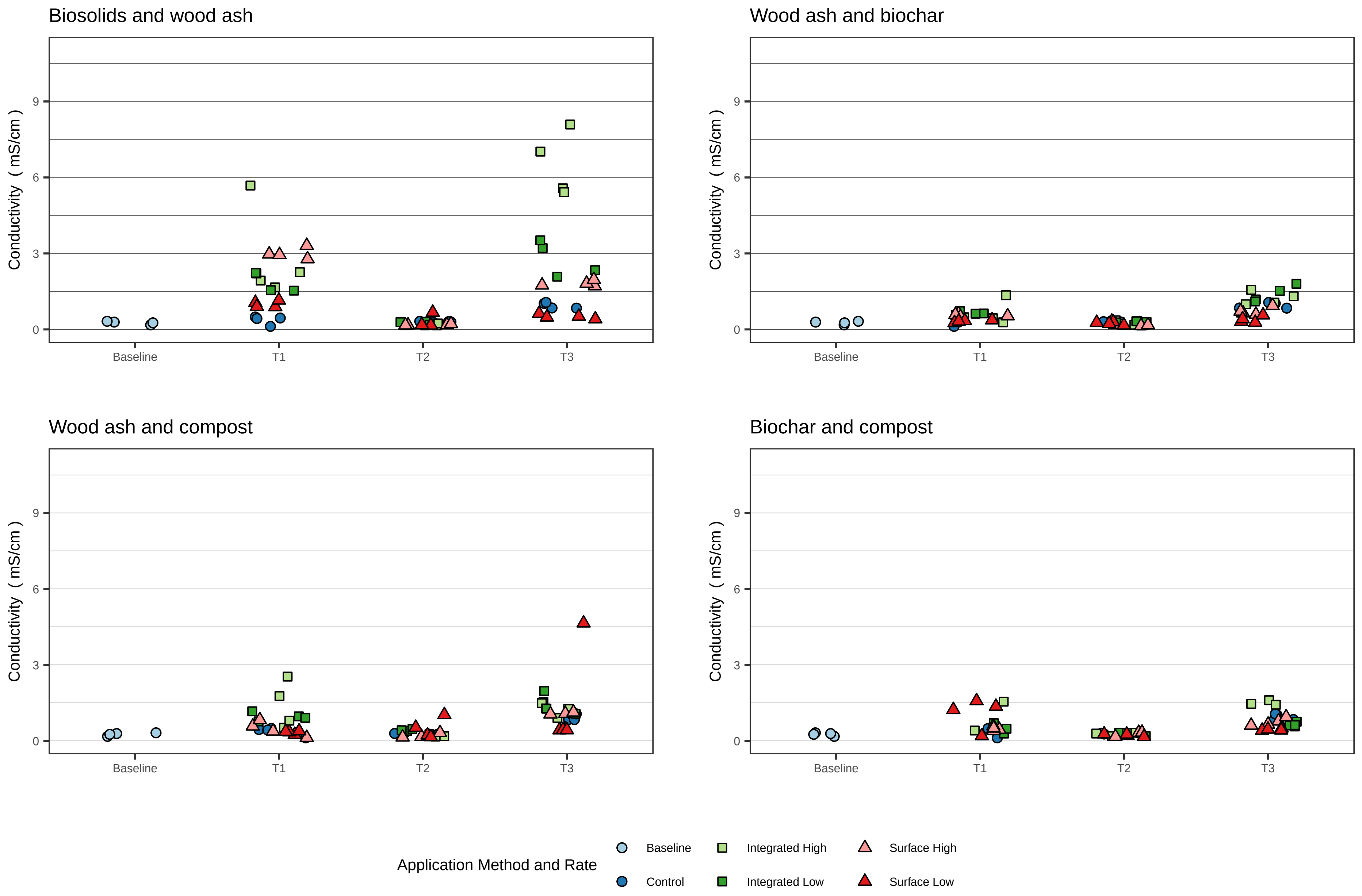

Figure 5−31c Test Pot Soil Sample Conductivity Values

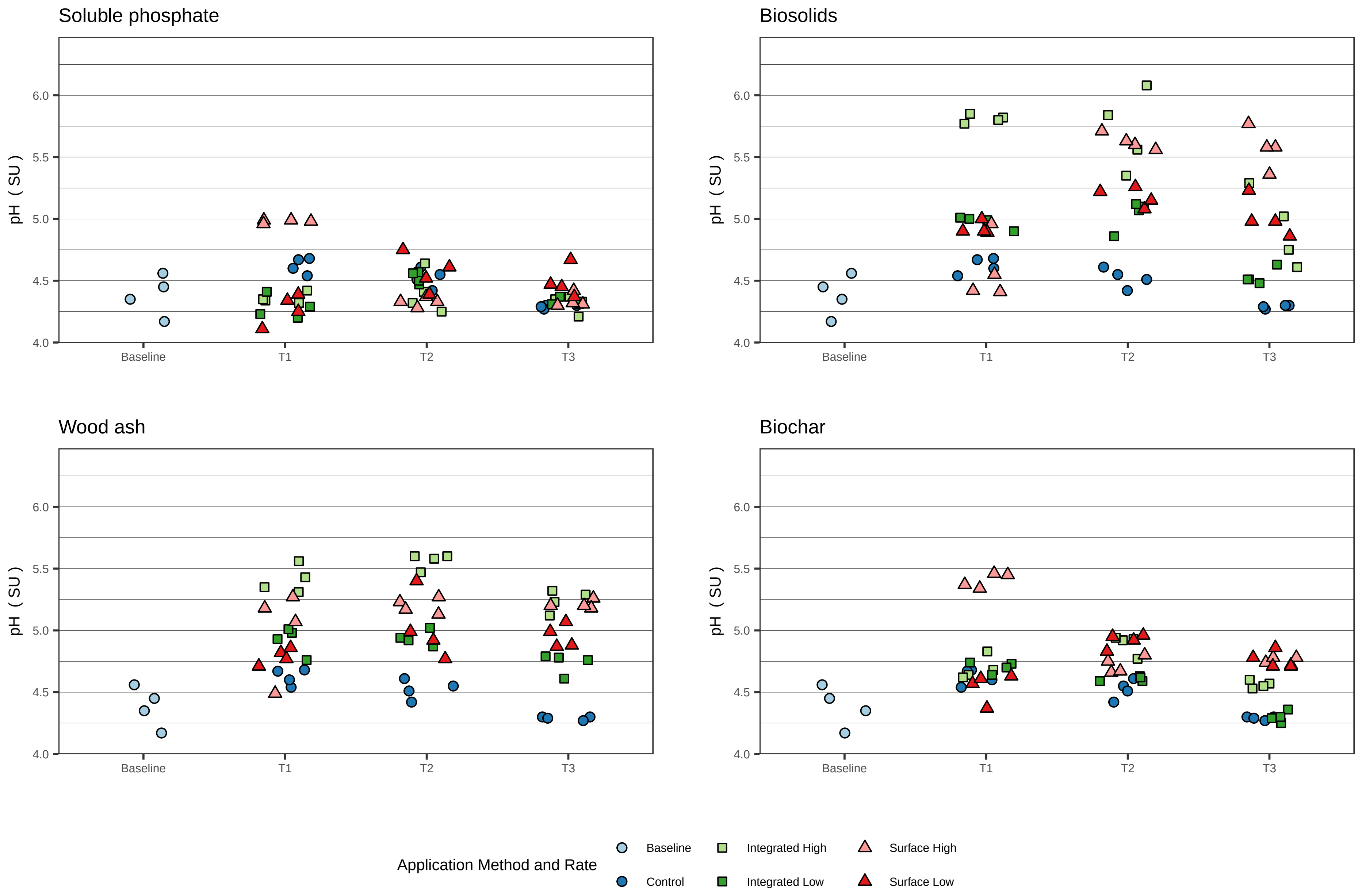

Figure 5‒32a Test Pot Soil Sample pH Values

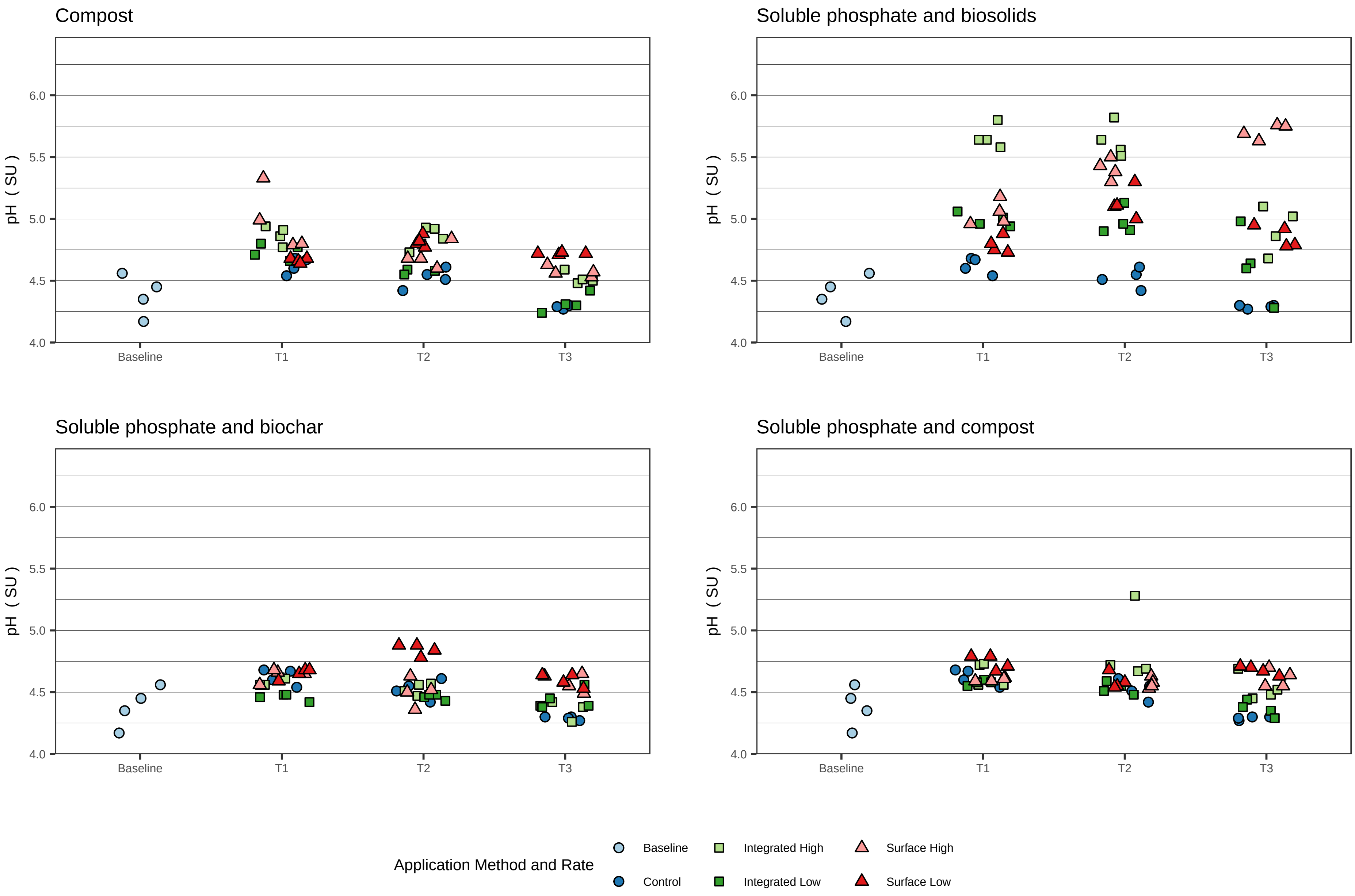

Figure 5‒32b Test Pot Soil Sample pH Values

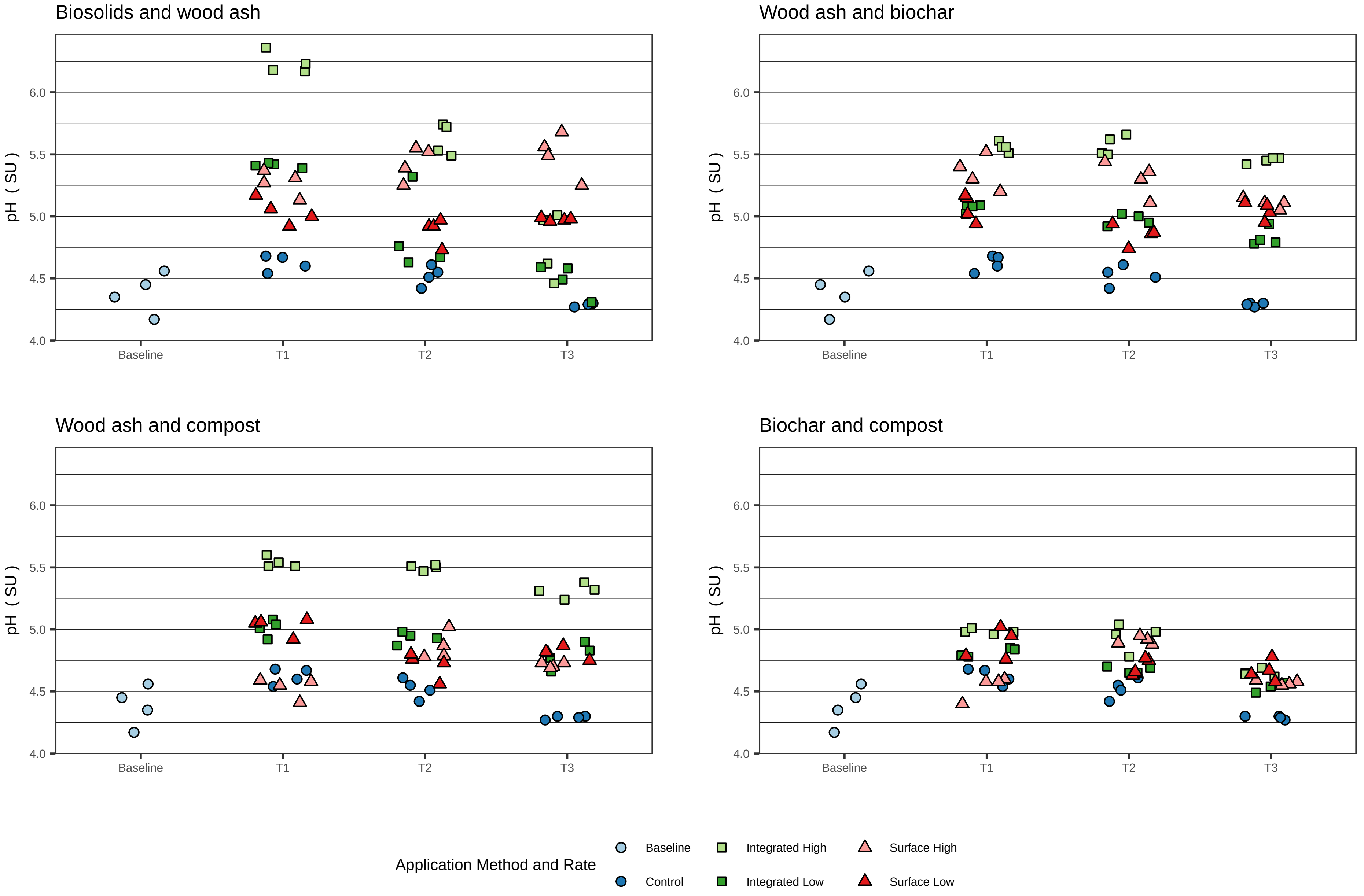

Figure 5−32c Test Pot Soil Sample pH Values

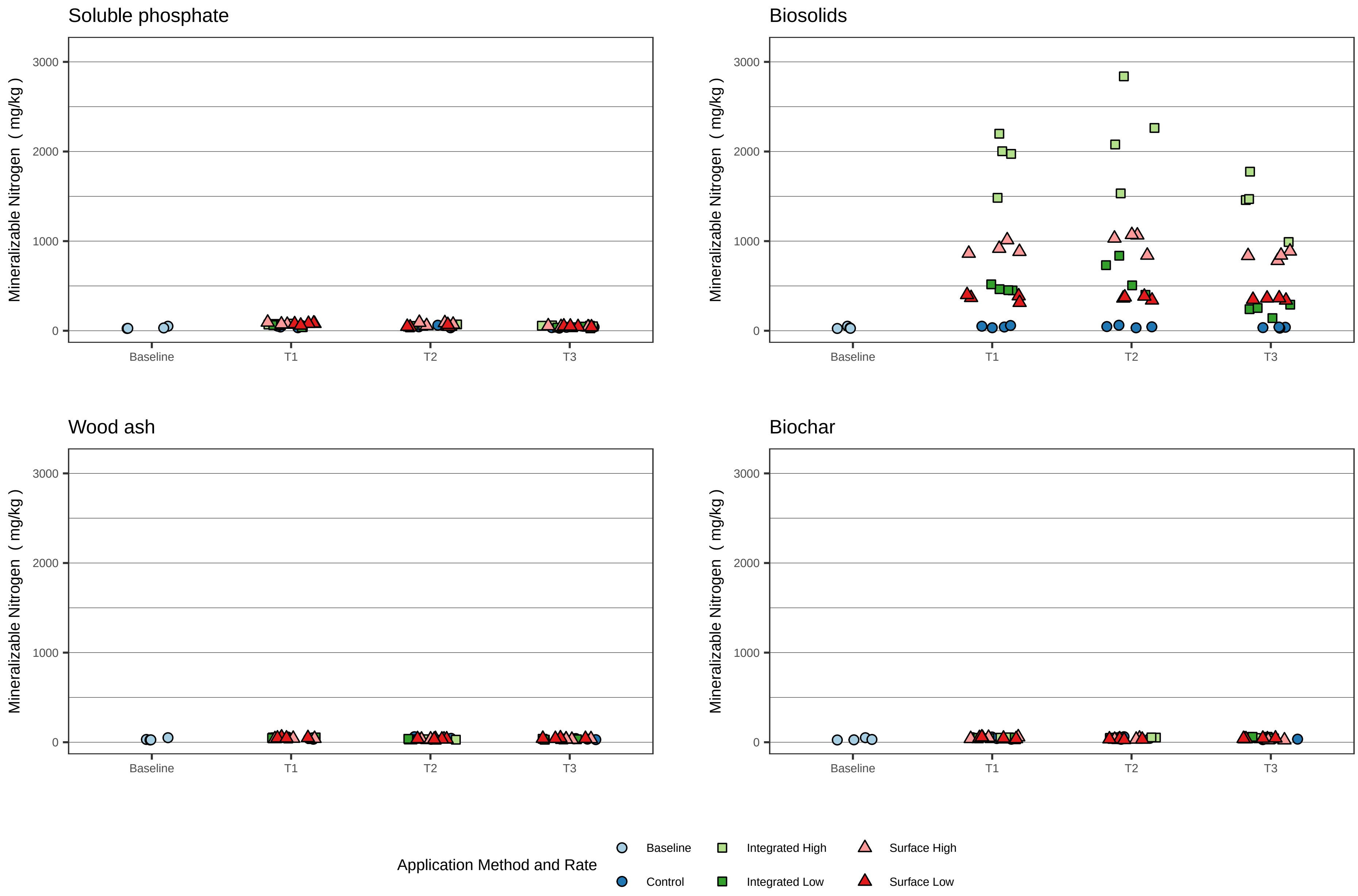

Figure 5−33a Mineralizable Nitrogen in Test Pot Soil Samples

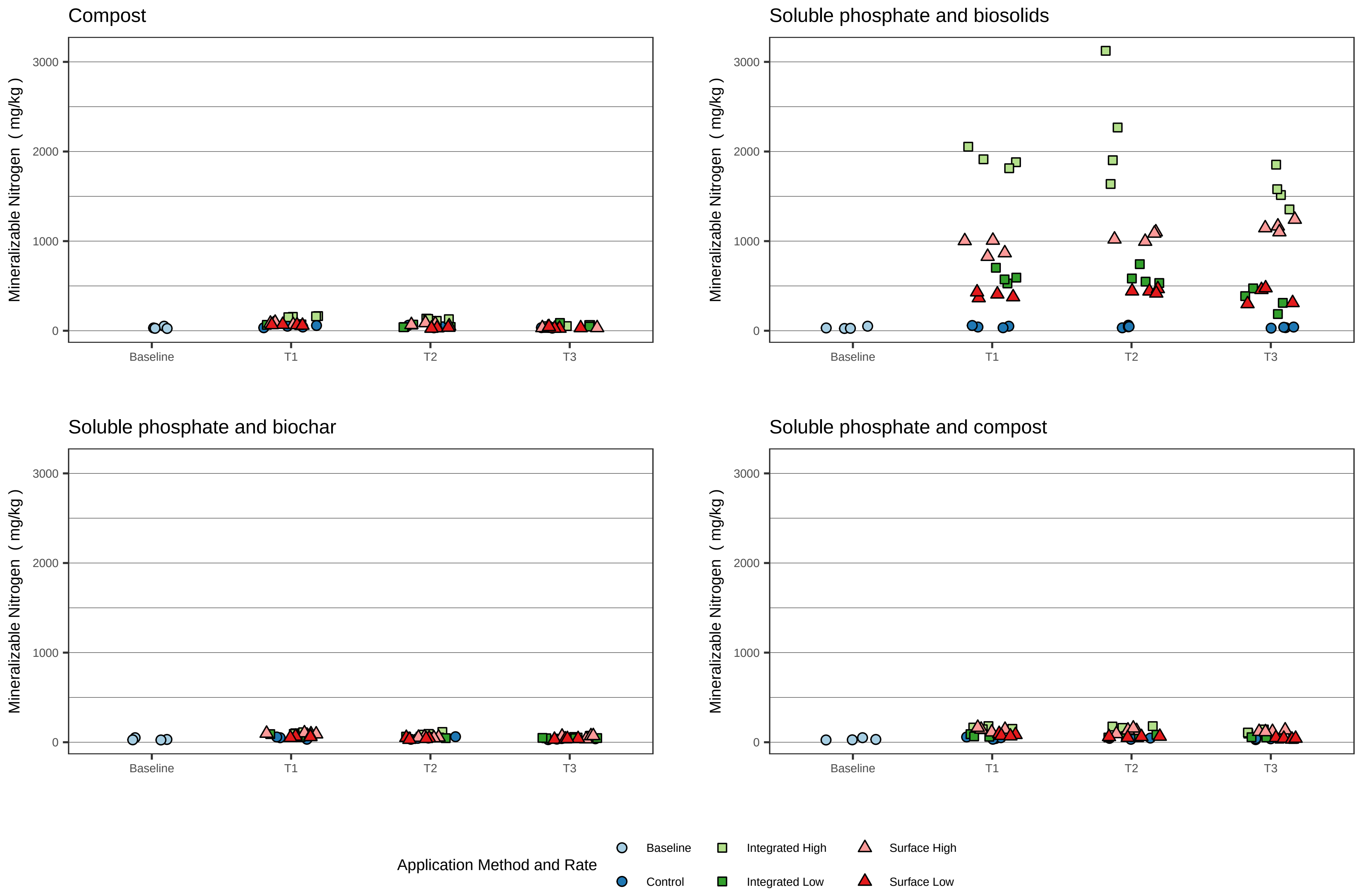

Figure 5−33b Mineralizable Nitrogen in Test Pot Soil Samples

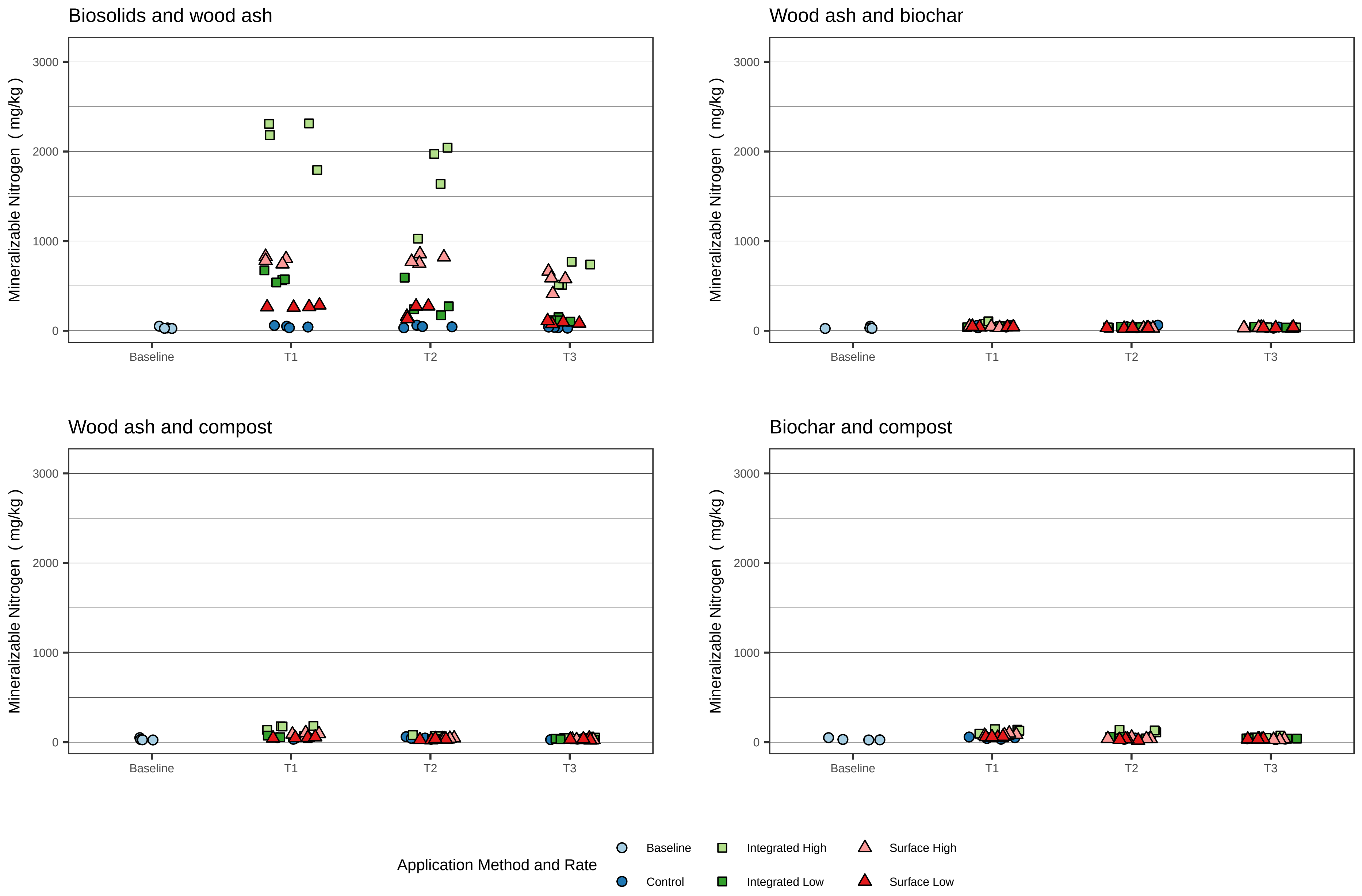

Figure 5−33c Mineralizable Nitrogen in Test Pot Soil Samples

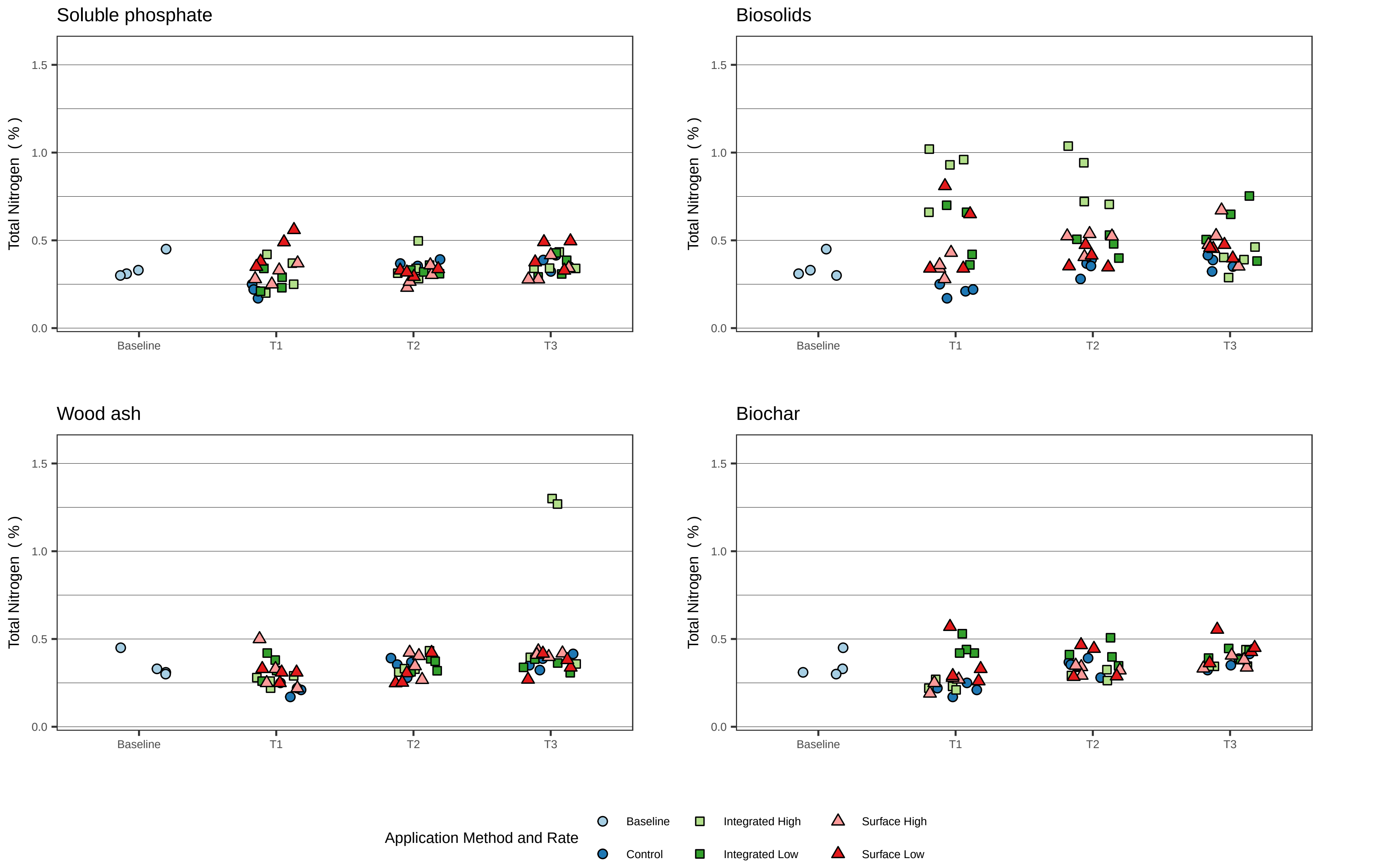

Figure 5−34a Total Nitrogen in Test Pot Soil Samples

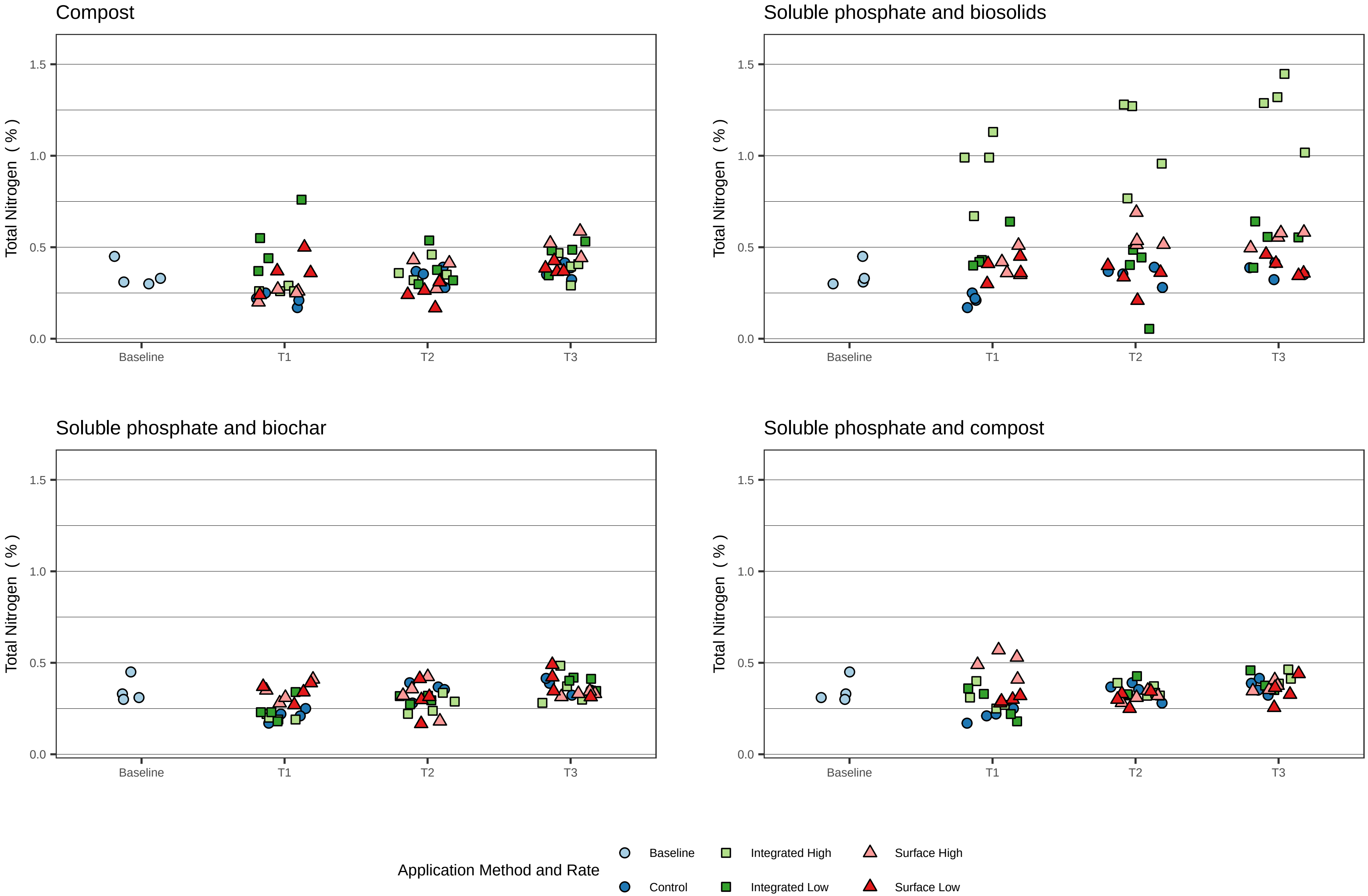

Figure 5-34b Total Nitrogen in Test Pot Soil Samples

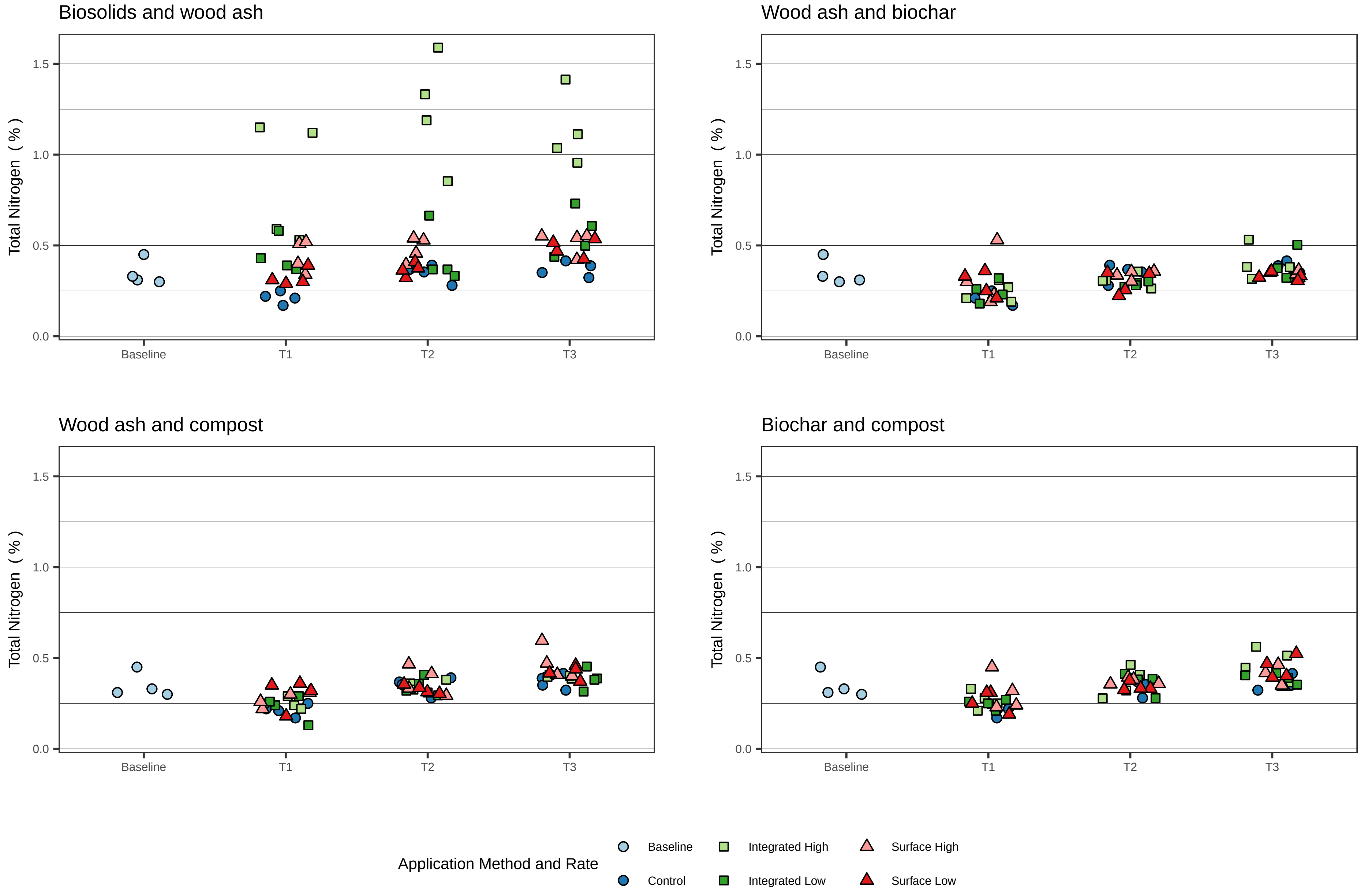

Figure 5−34c Total Nitrogen in Test Pot Soil Samples

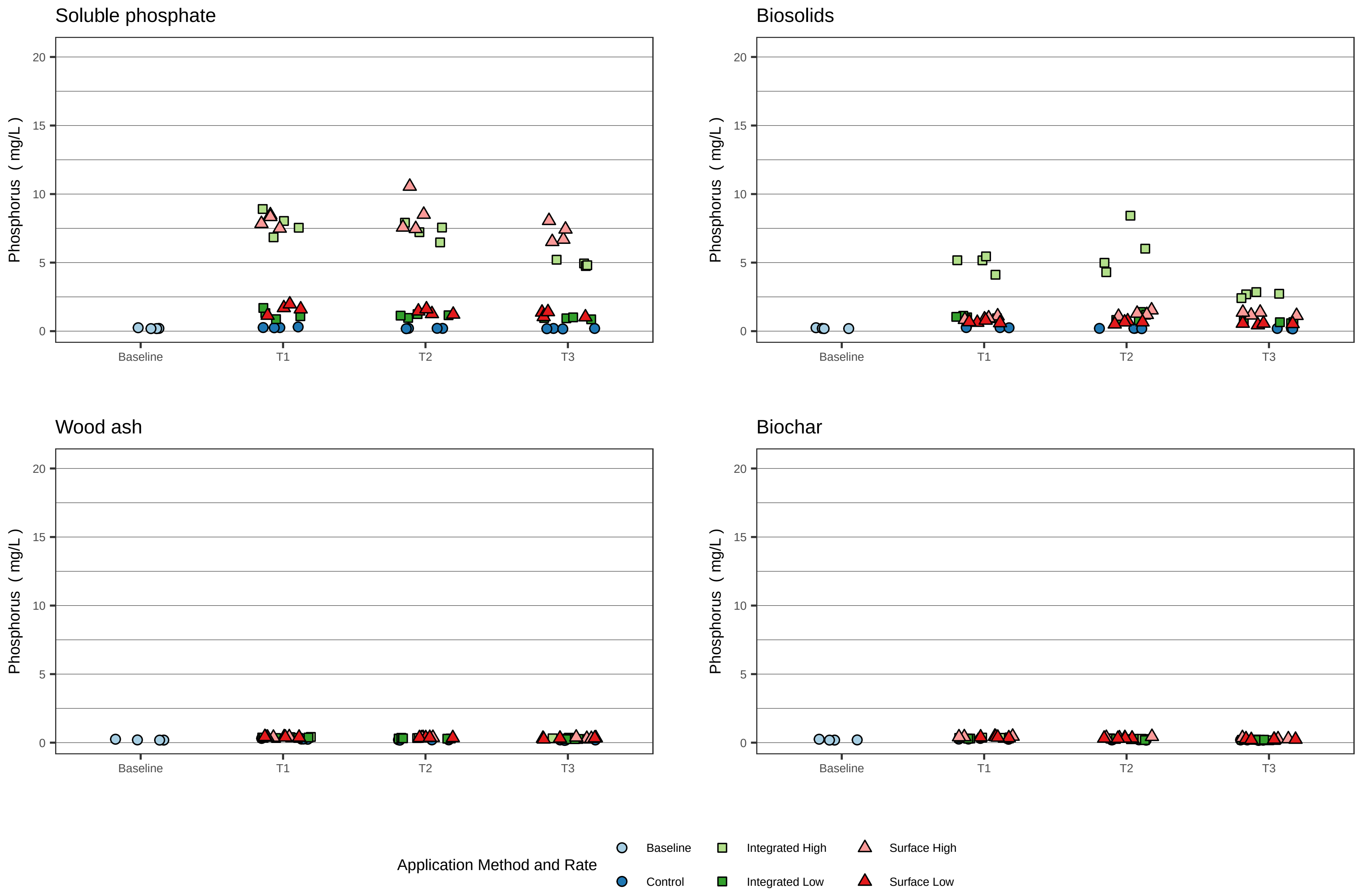

Figure 5−35a Phosphorus in Test Pot Soil Samples

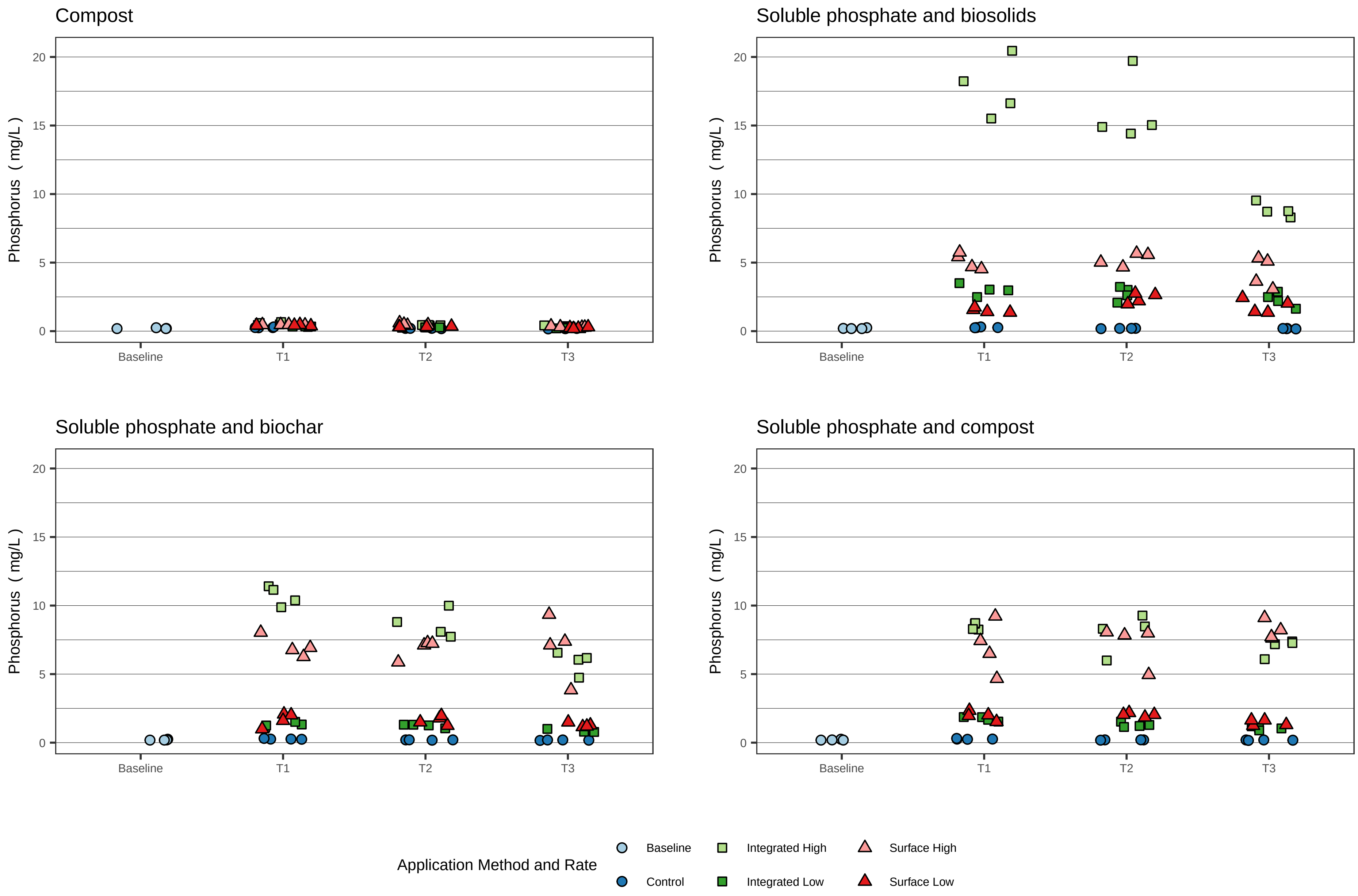

Figure 5−35b Phosphorus in Test Pot Soil Samples

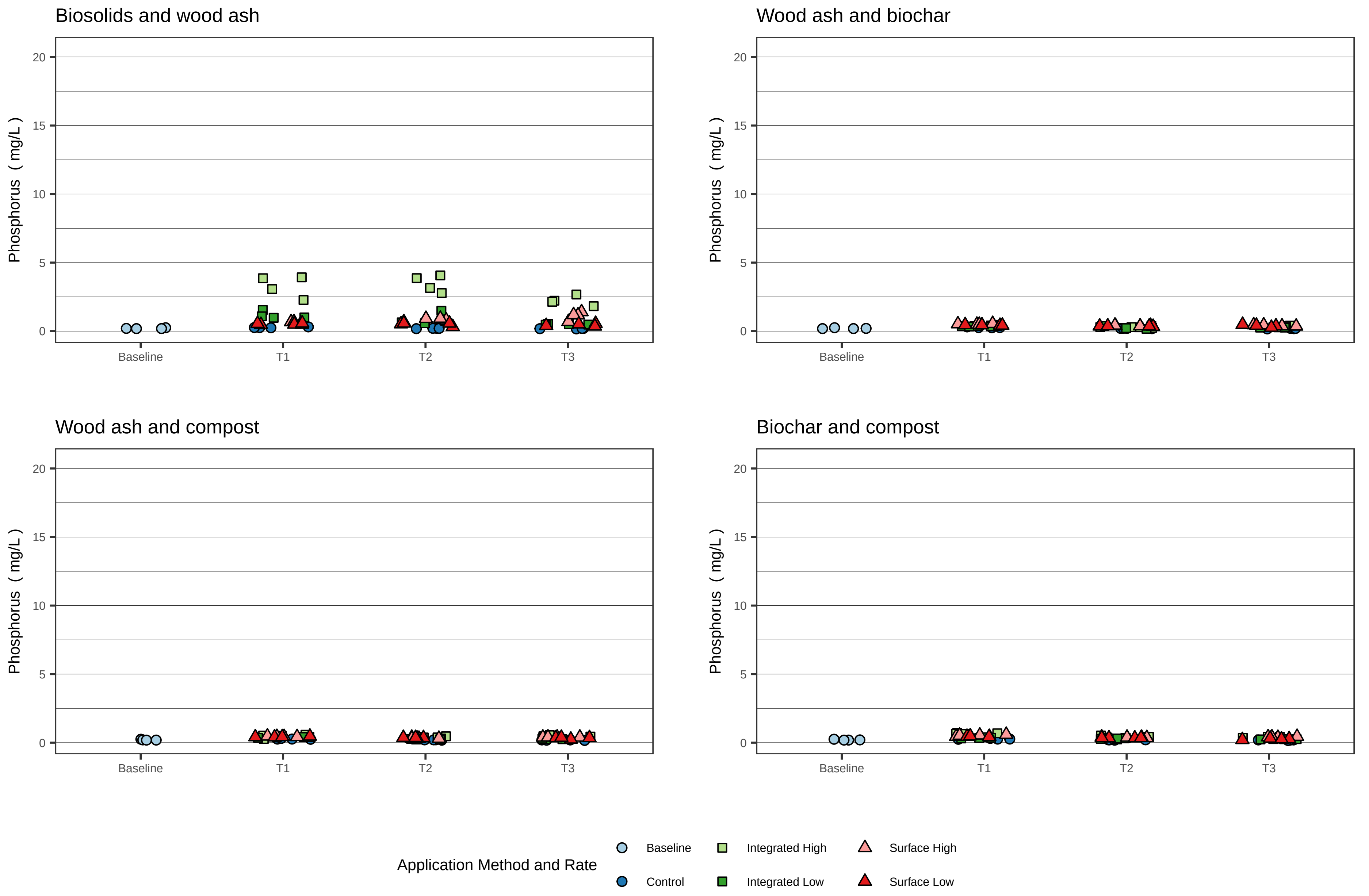

Figure 5−35c Phosphorus in Test Pot Soil Samples

TABLES

Table 2-1. Soil Treatment Amendment Application Rates Used in Bench-scale Testing

Treatment Number	Soil Amendment	Treatment Rate*	Rate Rationale	Estimated Amount per Pot
Individual Amendments				
1	Soluble phosphate	Low: 1.625 ton/A MAP or 1.875 TSP ton/A + 0.375 KCl ton/A High: 4.875 ton/A MAP or 5.625 ton/A TSP + 0.375 KCl ton/A	Low: Approximately 5 times the P/Pb molar ratio + 2 times the Cl/Pb molar ratio for pyromorphite formation High: Approximately 15 times the P/Pb molar ratio + 2 times the Cl/Pb molar ratio for pyromorphite formation. Has produced reductions in lead bioaccessibility in previous studies but not so much as to induce long-term increases in salinity.	Low: 1.3 g MAP or 1.5 g TSP + 0.3 g KCl (0-0-60) fertilizer High: 3.9 g MAP or 4.5 g TSP (TSP preferred) + 0.3 g KCl (0-0-60) fertilizer
2	Biosolid	Low: 1/4-inch application is estimated to be 22 ton/A High: 1-inch application is estimated to be 89 ton/A	Low: A 1/4-inch application is a reasonable application of biosolid without major disturbance of existing vegetation High: A 1-inch application is the maximum depth that would be considered	Low: 16.6 g High: 133.5 g
3	Wood ash	Low: 1 percent addition by mass estimated to be 5 ton/A High: 3 percent addition by mass estimated to be 15 ton/A	Low: A 1% application is a reasonable application of biochar without major disturbance of existing vegetation High: A 3% application is the maximum mass that would be considered	Low: 4 g High: 12 g
4	Biochar	Low: 1 percent addition by mass estimated to be 5 ton/A High: 2.5 percent addition by mass estimated to be 12.5 ton/A	Low: A 1% application is a reasonable application of biochar without major disturbance of existing vegetation High: A 2.5% application is the maximum mass that would be considered	Low: 4 g High: 10 g
5	Compost	Low: 1/4-inch application is estimated to be 22 ton/A High: 1-inch application is estimated to be 89 ton/A	Low: A 1/4-inch application is a reasonable application of compost without major disturbance of existing vegetation High: A 1-inch application is the maximum depth that would be considered	Low: 16.6 g High: 133.5 g
Amendment Combinations				
6	Soluble phosphate and biosolids	Low: Low phosphate + low biosolid High: High phosphate + high biosolid	NA	Low: 1.3 g MAP, or 1.5 g TSP + 33.25 g biosolid + 0.3 g KCl fertilizer High: 3.9 g MAP or 4.5 g TSP + 267 g biosolid + 0.3 g KCl fertilizer
7	Soluble phosphate and biochar	Low: Low phosphate + low biochar High: High phosphate + high biochar	NA	Low: 1.3 g MAP, or 1.5 g TSP + TBD biochar + 0.3 g KCl fertilizer High: 3.9 g MAP or 4.5 g TSP + TBD biochar + 0.3 g KCl fertilizer
8	Soluble phosphate and compost	Low: Low phosphate + low compost High: High phosphate + high compost	NA	Low: 1.3 g MAP, or 1.5 TSP + 33.25 g compost + 0.3 g KCl fertilizer High: 3.9 g MAP or 4.5 g TSP + 267 g compost + 0.3 g KCl fertilizer
9	Biosolids and wood ash	Low: Low biosolid + low wood ash High: High biosolid + high wood ash	NA	Low: 33.25 g biosolid + 4 g wood ash High: 266 g biosolid + 12 g wood ash
10	Wood ash and biochar	Low: Low wood ash + low biochar High: High wood ash + high biochar	NA	Low: 4 g wood ash + 33.25 g biochar High: 12 g wood ash + 267 g biochar
11	Wood ash and compost	Low: Low wood ash + low compost High: High wood ash + high compost	NA	Low: 4 g wood ash + 33.25 g compost High: 12 g wood ash + 267 g compost
12	Biochar and compost	Low: Low biochar + low compost High: High biochar + high compost	NA	Low: 16.63 g biochar + 16.63 g compost High: 267 g biochar + 267 g compost

Notes:
*Treatment rates were calculated based on treating to a 3-inch soil depth in the field.
Cl = chloride
Cl/Pb = chloride-to-lead molar ratio
g = gram(s)
g/kg = gram(s) per kilogram
KCl = potassium (i.e., potash) fertilizer (0-0-60)
kg = kilogram(s)
MAP = monoammonium phosphate (11-52-0)
NA = not applicable
P/Pb = phosphate-to-lead molar ratio
ton/A = dry ton(s) per acre
TSP = triple super phosphate (0-46-0)

Table 4-1. Data Requirements for Bench-Scale Testing

Analysis	Rationale	Laboratory
Soil moisture holding capacity	Determine water content for incubations	OSU
Total TAL metals (except mercury)	Determine total Pb and As for determination of percent bioaccessible; identify changes in total metal content due to treatment	OSU
pH	Affects bioavailability of metals and plant nutrients	OSU
SPLP TAL metals (except mercury)	Monitor changes in leachability of metals	OSU
Bioaccessible arsenic and lead pH 1.5	Characterize bioaccessibility of arsenic and lead in soil collected for bench testing	OSU
Bioaccessible arsenic and lead pH 2.5	Evaluate treatment effect on bioaccessible arsenic and lead	OSU
Mehlich III extractable lead and phosphorous	Evaluate treatment effect on available lead and phosphorus	OSU
Mineralizable nitrogen	Evaluate potentially available nitrogen	OSU
Total carbon and nitrogen	Evaluate treatment effect on nutrient balance	OSU
Total organic carbon	Evaluate treatment effect on soil quality and nutrient balance	OSU
Electric Conductivity (Salinity)	Evaluate treatment effect on soil quality	OSU
Volatile Organic Compounds (VOCs)	Evaluate composition of amendments	ALS
Semivolatile Organic Compounds (SVOCs)	Evaluate composition of amendments	ALS
Polychlorinated biphenyls (PCBs)	Evaluate composition of amendments	ALS
Mercury	Evaluate mercury in baseline soils	ALS
Lead and arsenic and general soil mineralogy, synchrotron X-rays*	Evaluate treatment effect on changes in lead and arsenic minerology	EPA

Notes:

*Lead/arsenic and general soil mineralogy, synchrotron X-rays, is pending sample selection for analysis based on results of the bioaccessibility analyses in this study, and is dependent upon scheduling the synchrotron.

EPA = U.S. Environmental Protection Agency

OSU = The Ohio State University

SPLP = synthetic precipitation leaching procedure

TAL = target analyte list

ALS = ALS Environmental Laboratory

Table 4-2. Monitoring and Analysis Plan for Bench-scale Soil Treatability Testing

Analysis	Sample Preparation Method Reference	Sample Preparation Procedure	Sample Analysis Method Reference	Sample Analysis Procedure	Sample Sources[a]	Sample Time Points	Soil Grain Size Fraction	Required Soil Mass Per Sample (grams)	Total Number of Original Samples
Amendment Samples									
Total TAL metals (except mercury)	EPA 3015A	Acid digestion	EPA 6010	ICP-AES	Amendments	Baseline	NA	0.5	5
Mercury	7471B	Acid/Permanganate digestion	7471B	CVAA	Amendments	Baseline	NA	15	5
Volatile organic compounds	EPA 5035	Purge and trap	EPA 8260	GC/MS	Amendments	Baseline	NA	90	5
Semivolatile organic compounds	EPA 3501	Separatory Funnel Liquid- Liquid Extraction	EPA 8270	GC/MS	Amendments	Baseline	NA	120 May be collected in the same jar as mercury	5
Polychlorinated biphenyls	EPA 3540/3541/3550/3546	Soxhlet/auto-Soxhlet/sonication/microwave	8082A - Low Level	GC/ECD	Amendments	Baseline	NA	120 May be collected in the same jar as SVOCs and mercury	1
Total carbon and nitrogen	NA	NA	Bremner and Mulvaney 1982, Nelson and Sommers 1996	Dry combustion at 900 degrees Celsius	Amendments	Baseline	NA	0.1	7
Baseline and Progress Soil Samples									
Soil moisture	NA	NA	Direct measurement	Gravimetric	Baseline, treatments, and controls	Bi-weekly and during Baseline, t_1, t_2, t_3	<2 mm	0	592
Soil moisture holding capacity	0 bar	Water saturation	Cassel and Nielsen 1986	Gravimetric	Baseline, treatments	Baseline	<2 mm soil + bulk amendment	400	25
pH	NA	NA	Thomas 1996	Electrode	Baseline, treatments, and controls	Baseline, t_1, t_2, t_3	<2 mm	5	592
Electrical conductivity (salinity)	NA	NA	SM2510B	Conductivity meter	Treatment and controls	Baseline, t_1, t_2, t_3	<2 mm	5	209
Total TAL metals (except mercury)	EPA 3051A	Acid digestion	EPA 6010	ICP-AES	Baseline	Baseline	<2 mm	0.5	4
SPLP TAL metals (except mercury) and phosphorus	EPA 1312	SPLP	EPA 6010	ICP-AES	Baseline, treatment, and controls	Baseline, t_1, t_2, t_3	<2 mm	1.5	592
Mercury	7471B	Acid/Permanganate digestion	7471B	CVAA	Baseline	Baseline	<2 mm	15	4

Table 4-2. Monitoring and Analysis Plan for Bench-scale Soil Treatability Testing

Analysis	Sample Preparation Method Reference	Sample Preparation Procedure	Sample Analysis Method Reference	Sample Analysis Procedure	Sample Sources[a]	Sample Time Points	Soil Grain Size Fraction	Required Soil Mass Per Sample (grams)	Total Number of Original Samples
Baseline and Progress Soil Samples (continued)									
Bioaccessible arsenic and lead	EPA Method 1340	Glycine extraction (extract at pH 1.5)	EPA 6010B	ICP-AES	Baseline, treatment, and controls	Baseline, t_1, t_2, t_3	<150 µm	1	592
Bioaccessible arsenic and lead	EPA Method 1340	Glycine extraction (extract at pH 2.5)	EPA 6010B	ICP-AES	Baseline, treatment, and controls	Baseline, t_1, t_2, t_3	<150 µm	1	592
Mehlich III extractable lead and phosphorus	Mehlich 1984	Acetic and nitric acid; ammonium fluoride and ammonium nitrate; EDTA	EPA 6010	ICP-AES	Baseline, treatment, and controls	Baseline, t_1, t_2, t_3	<2 mm	1	592
Total arsenic and lead	EPA 3051A	Acid digestion	EPA 6010	ICP-AES	Baseline	Baseline	<150 µm	0.5	4
					Treatment and controls	t_1	<150 µm	0.5	196
Mineralizable nitrogen	Waring and Bremner 1964	Short-term (7-day) anaerobic incubation for mineralizable nitrogen from organic matter	Waring and Bremner 1964	Lachat	Baseline, treatment, and controls	Baseline, t_1, t_2, t_3	<2 mm	5	592
Total carbon and nitrogen	NA	NA	Bremner and Mulvaney 1982, Nelson and Sommers 1996	Dry combustion at 900 degrees Celsius	Baseline, treatment, and controls	Baseline, t_1, t_2, t_3	<2 mm	10	592
Total organic carbon	NA	NA	Heanes 1984	Dichromate oxidation	Baseline, treatment, and controls	Baseline, t_1, t_2, t_3	<2 mm	0.5	592
Lead/arsenic and general soil mineralogy[b]	NRMRL QMP L18735 ~500 mg of <250-µm freeze-dried soil	~100 mg of soil blended with 10 mg of PVP binder, pressed into a 7-mm pellet and encased in Kapton tape	NRMRL QMP L18735 Athena software data analysis	Synchrotron X-rays	Baseline, treatment, and controls[c]	Baseline, t_1, t_2, t_3[c]	<2 mm	20	≥4[c]

Notes:
[a]The treatments tested are the individual raw amendment materials and the combined amendment materials applied to the experimental pots for bench-scale testing.
[b] Lead/arsenic and general soil mineralogy, synchrotron x-rays, is pending and dependent on scheduling the synchrotron.
[c] Selection of samples, sample events, and amount of sample medium is pending. Samples will be selected for testing the discretion of the project technical team.

ASTM = American Society for Testing and Materials
EDTA = ethylenediaminetetraacetic acid
EPA = U.S. Environmental Protection Agency
ICP-AES = inductively coupled plasma - atomic emission spectroscopy
GC/MS = gas chromatography/mass spectroscopy
mg = milligram(s)
mm = millimeter
µm = micrometer
NA = not applicable
NRMRL QMP = National Risk Management Research Laboratory Quality Management Plan
PVP = polyvinylpyrrolidone
SPLP = synthetic precipitation leaching procedure
SVOCs = semivolatile organic compounds
t_1 = One month after pot preparation; t_2 = Four months after pot preparation; t_3 = Six months after pot preparation
TAL = target analyte list

Table 4-3. Analytical Parameters, Methods, and Target Laboratory Reporting Limits[1]

Analyte (units)	CAS Number	Laboratory MDL [2]	Laboratory RL [2]
TAL Metals (6010) (mg/kg)			
Aluminum	7429-90-5	30	30
Antimony	7440-36-0	2	4
Arsenic	7440-38-2	2	4
Barium	7440-39-3	0.3	0.8
Beryllium	7440-41-7	0.08	0.2
Cadmium	7440-43-9	0.09	0.2
Calcium	7440-70-2	1	100
Chromium	7440-47-3	0.3	0.8
Cobalt	7440-48-4	0.2	0.4
Copper	7440-50-8	0.4	0.8
Iron	7439-89-6	2	40
Lead	7439-92-1	0.7	2
Magnesium	7439-95-4	0.2	100
Manganese	7439-96-5	0.04	1.0
Nickel	7440-02-0	0.2	0.8
Potassium	7440-09-7	10	100
Selenium	7782-49-2	2	5
Silver	7440-22-4	0.3	0.8
Sodium	7440-23-5	5	100
Thallium	7440-28-0	1	2
Vanadium	7440-62-2	0.3	2
Zinc	7440-66-6	0.2	5
Other Analyses			
Soil Moisture Capacity (%)	NA	NA	NA
pH (unitless)	NA	NA	NA
Electrical Conductivity (Salinity) (mS/m)	NA	NA	NA
SPLP TAL metals (except mercury) and phosphorus (mg/L)	NA	0.7	1
Bioaccessible Arsenic and Lead (at pH 1.5 and pH 2.5) (%)	NA	NA	NA
Mehlich III Extractable Lead and Phosphorus (mg/kg)	NA	NA	NA
Mineralizable Nitrogen (mg/kg)	NA	Equal to RL	Varies [3]
Total Carbon and Nitrogen (%)	NA	Equal to RL	Varies [3]
Total Organic Carbon (%)	NA	1000	1000

Notes:
1. All analyses were performed by The Ohio State University Laboratory.
2. MDL and RL concentrations are reported in mg/kg dry weight, unless otherwise noted.
3. RLs for carbon (C) and nitrogen (N) can vary depending on the amount of soil used in combustion. For example, for a 100-mg sample, typical RLs would be 0.7% for C and 0.05% for N.

% - percent
CAS - Chemical Abstracts Service
MDL - method detection limit
mg - milligram
mg/kg - milligram(s) per kilogram dry weight
mg/L - milligram(s) per liter
mS/m - milliSiemens per meter
NA - not applicable
RL - reporting limit
SPLP - synthetic precipitation leaching procedure
TAL - target analyte list

Table 5-1. Amendment and Test Pot Soil Sample Descriptions

Sample ID	Pot No.	Treatment Medium Applied to Test Pot	Treatment Application Method[a]	Rate	Replicate[b]	Lab
Amendments						
BIOSOLIDS B	Biosolids	Biosolids Class B[c]	--	--	--	ALS
BLACK OWL BIOCHAR	Biochar	Black Owl Biochar	--	--	--	ALS
LANDFILL ASH	Wood Ash	Wood Ash	--	--	--	ALS
MURIATE OF POTASH 60	KCl Fertilizer	Muriate of Potash 0-0-60 Fertilizer	--	--	--	ALS
PS-GNB	Potting Soil	Compost Soil (GNB Organics potting soil)	--	--	--	ALS
TSP	3X Superphosphate	Triple Super Phosphate Fertilizer	--	--	--	ALS
Baseline Soil Samples						
1-baseline-A	BS1	Baseline	--	--	A	OSU
2-baseline-B	BS2	Baseline	--	--	B	OSU
3-baseline-C	BS3	Baseline	--	--	C	OSU
4-baseline-D	BS4	Baseline	--	--	D	OSU
BASELINE SOIL	DU-401-2	Composite baseline soil samples	--	--	L	ALS
Control Pot Samples						
385-0-Control-A	385	Control	I	--	A	OSU
386-0-Control-B	386	Control	I	--	B	OSU
387-0-Control-C	387	Control	I	--	C	OSU
388-0-Control-D	388	Control	I	--	D	OSU
413-0-Control-M	413	Control	I	--	M	OSU
Soluble Phosphate Treatment, Incorporated Application Method, High Application Rate						
337-1-I-high-A	337	Soluble Phosphate	I	high	A	OSU
338-1-I-high-B	338	Soluble Phosphate	I	high	B	OSU
339-1-I-high-C	339	Soluble Phosphate	I	high	C	OSU
340-1-I-high-D	340	Soluble Phosphate	I	high	D	OSU
389-1-I-high-M	389	Soluble Phosphate	I	high	M	OSU
Soluble Phosphate Treatment, Incorporated Application Method, Low Application Rate						
289-1-I-low-A	289	Soluble Phosphate	I	low	A	OSU
290-1-I-low-B	290	Soluble Phosphate	I	low	B	OSU
291-1-I-low-C	291	Soluble Phosphate	I	low	C	OSU
292-1-I-low-D	292	Soluble Phosphate	I	low	D	OSU
401-1-I-low-M	401	Soluble Phosphate	I	low	M	OSU
Soluble Phosphate Treatment, Surface Application Method, High Application Rate						
145-1-S-high-A	145	Soluble Phosphate	S	high	A	OSU
146-1-S-high-B	146	Soluble Phosphate	S	high	B	OSU
147-1-S-high-C	147	Soluble Phosphate	S	high	C	OSU
148-1-S-high-D	148	Soluble Phosphate	S	high	D	OSU
193-1-S-high-A	193	Soluble Phosphate	S	high	A	OSU
194-1-S-high-B	194	Soluble Phosphate	S	high	B	OSU
195-1-S-high-C	195	Soluble Phosphate	S	high	C	OSU
196-1-S-high-D	196	Soluble Phosphate	S	high	D	OSU
414-1-S-high-M	414	Soluble Phosphate	S	high	M	OSU
Soluble Phosphate Treatment, Surface Application Method, Low Application Rate						
1-1-S-low-A	1	Soluble Phosphate	S	low	A	OSU
2-1-S-low-B	2	Soluble Phosphate	S	low	B	OSU
3-1-S-low-C	3	Soluble Phosphate	S	low	C	OSU
4-1-S-low-D	4	Soluble Phosphate	S	low	D	OSU
426-1-S-low-M	426	Soluble Phosphate	S	low	M	OSU
49-1-S-low-A	49	Soluble Phosphate	S	low	A	OSU
50-1-S-low-B	50	Soluble Phosphate	S	low	B	OSU
51-1-S-low-C	51	Soluble Phosphate	S	low	C	OSU
52-1-S-low-D	52	Soluble Phosphate	S	low	D	OSU
Biosolid Treatment, Incorporated Application Method, High Application Rate						
341-2-I-high-A	341	Biosolid	I	high	A	OSU
342-2-I-high-B	342	Biosolid	I	high	B	OSU
343-2-I-high-C	343	Biosolid	I	high	C	OSU
344-2-I-high-D	344	Biosolid	I	high	D	OSU
390-2-I-high-M	390	Biosolid	I	high	M	OSU
Biosolid Treatment, Incorporated Application Method, Low Application Rate						
293-2-I-low-A	293	Biosolid	I	low	A	OSU
294-2-I-low-B	294	Biosolid	I	low	B	OSU
295-2-I-low-C	295	Biosolid	I	low	C	OSU
296-2-I-low-D	296	Biosolid	I	low	D	OSU
402-2-I-low-M	402	Biosolid	I	low	M	OSU

Table 5-1. Amendment and Test Pot Soil Sample Descriptions

Sample ID	Pot No.	Treatment Medium Applied to Test Pot	Treatment Application Method[a]	Rate	Replicate[b]	Lab
Biosolid Treatment, Surface Application Method, High Application Rate						
149-2-S-high-A	149	Biosolid	S	high	A	OSU
150-2-S-high-B	150	Biosolid	S	high	B	OSU
151-2-S-high-C	151	Biosolid	S	high	C	OSU
152-2-S-high-D	152	Biosolid	S	high	D	OSU
197-2-S-high-A	197	Biosolid	S	high	A	OSU
198-2-S-high-B	198	Biosolid	S	high	B	OSU
199-2-S-high-C	199	Biosolid	S	high	C	OSU
200-2-S-high-D	200	Biosolid	S	high	D	OSU
415-2-S-high-M	415	Biosolid	S	high	M	OSU
Biosolid Treatment, Surface Application Method, Low Application Rate						
427-2-S-low-M	427	Biosolid	S	low	M	OSU
5-2-S-low-A	5	Biosolid	S	low	A	OSU
53-2-S-low-A	53	Biosolid	S	low	A	OSU
54-2-S-low-B	54	Biosolid	S	low	B	OSU
55-2-S-low-C	55	Biosolid	S	low	C	OSU
56-2-S-low-D	56	Biosolid	S	low	D	OSU
6-2-S-low-B	6	Biosolid	S	low	B	OSU
7-2-S-low-C	7	Biosolid	S	low	C	OSU
8-2-S-low-D	8	Biosolid	S	low	D	OSU
Wood Ash Treatment, Incorporated Application Method, High Application Rate						
345-3-I-high-A	345	Wood Ash	I	high	A	OSU
346-3-I-high-B	346	Wood Ash	I	high	B	OSU
347-3-I-high-C	347	Wood Ash	I	high	C	OSU
348-3-I-high-D	348	Wood Ash	I	high	D	OSU
391-3-I-high-M	391	Wood Ash	I	high	M	OSU
Wood Ash Treatment, Incorporated Application Method, Low Application Rate						
297-3-I-low-A	297	Wood Ash	I	low	A	OSU
298-3-I-low-B	298	Wood Ash	I	low	B	OSU
299-3-I-low-C	299	Wood Ash	I	low	C	OSU
300-3-I-low-D	300	Wood Ash	I	low	D	OSU
403-3-I-low-M	403	Wood Ash	I	low	M	OSU
Wood Ash Treatment, Surface Application Method, High Application Rate						
153-3-S-high-A	153	Wood Ash	S	high	A	OSU
154-3-S-high-B	154	Wood Ash	S	high	B	OSU
155-3-S-high-C	155	Wood Ash	S	high	C	OSU
156-3-S-high-D	156	Wood Ash	S	high	D	OSU
201-3-S-high-A	201	Wood Ash	S	high	A	OSU
202-3-S-high-B	202	Wood Ash	S	high	B	OSU
203-3-S-high-C	203	Wood Ash	S	high	C	OSU
204-3-S-high-D	204	Wood Ash	S	high	D	OSU
416-3-S-high-M	416	Wood Ash	S	high	M	OSU
Wood Ash Treatment, Surface Application Method, Low Application Rate						
10-3-S-low-B	10	Wood Ash	S	low	B	OSU
11-3-S-low-C	11	Wood Ash	S	low	C	OSU
12-3-S-low-D	12	Wood Ash	S	low	D	OSU
428-3-S-low-M	428	Wood Ash	S	low	M	OSU
57-3-S-low-A	57	Wood Ash	S	low	A	OSU
58-3-S-low-B	58	Wood Ash	S	low	B	OSU
59-3-S-low-C	59	Wood Ash	S	low	C	OSU
60-3-S-low-D	60	Wood Ash	S	low	D	OSU
9-3-S-low-A	9	Wood Ash	S	low	A	OSU
Biochar Treatment, Incorporated Application Method, High Application Rate						
349-4-I-high-A	349	Biochar	I	high	A	OSU
350-4-I-high-B	350	Biochar	I	high	B	OSU
351-4-I-high-C	351	Biochar	I	high	C	OSU
352-4-I-high-D	352	Biochar	I	high	D	OSU
392-4-I-high-M	392	Biochar	I	high	M	OSU
Biochar Treatment, Incorporated Application Method, Low Application Rate						
301-4-I-low-A	301	Biochar	I	low	A	OSU
302-4-I-low-B	302	Biochar	I	low	B	OSU
303-4-I-low-C	303	Biochar	I	low	C	OSU
304-4-I-low-D	304	Biochar	I	low	D	OSU
404-4-I-low-M	404	Biochar	I	low	M	OSU

Table 5-1. Amendment and Test Pot Soil Sample Descriptions

Sample ID	Pot No.	Treatment Medium Applied to Test Pot	Treatment Application Method[a]	Rate	Replicate[b]	Lab
Biochar Treatment, Surface Application Method, High Application Rate						
157-4-S-high-A	157	Biochar	S	high	A	OSU
158-4-S-high-B	158	Biochar	S	high	B	OSU
159-4-S-high-C	159	Biochar	S	high	C	OSU
160-4-S-high-D	160	Biochar	S	high	D	OSU
205-4-S-high-A	205	Biochar	S	high	A	OSU
206-4-S-high-B	206	Biochar	S	high	B	OSU
207-4-S-high-C	207	Biochar	S	high	C	OSU
208-4-S-high-D	208	Biochar	S	high	D	OSU
417-4-S-high-M	417	Biochar	S	high	M	OSU
Biochar Treatment, Surface Application Method, Low Application Rate						
13-4-S-low-A	13	Biochar	S	low	A	OSU
14-4-S-low-B	14	Biochar	S	low	B	OSU
15-4-S-low-C	15	Biochar	S	low	C	OSU
16-4-S-low-D	16	Biochar	S	low	D	OSU
429-4-S-low-M	429	Biochar	S	low	M	OSU
61-4-S-low-A	61	Biochar	S	low	A	OSU
62-4-S-low-B	62	Biochar	S	low	B	OSU
63-4-S-low-C	63	Biochar	S	low	C	OSU
64-4-S-low-D	64	Biochar	S	low	D	OSU
Compost Treatment, Incorporated Application Method, High Application Rate						
353-5-I-high-A	353	Compost	I	high	A	OSU
354-5-I-high-B	354	Compost	I	high	B	OSU
355-5-I-high-C	355	Compost	I	high	C	OSU
356-5-I-high-D	356	Compost	I	high	D	OSU
393-5-I-high-M	393	Compost	I	high	M	OSU
Compost Treatment, Incorporated Application Method, Low Application Rate						
305-5-I-low-A	305	Compost	I	low	A	OSU
306-5-I-low-B	306	Compost	I	low	B	OSU
307-5-I-low-C	307	Compost	I	low	C	OSU
308-5-I-low-D	308	Compost	I	low	D	OSU
405-5-I-low-M	405	Compost	I	low	M	OSU
Compost Treatment, Surface Application Method, High Application Rate						
161-5-S-high-A	161	Compost	S	high	A	OSU
162-5-S-high-B	162	Compost	S	high	B	OSU
163-5-S-high-C	163	Compost	S	high	C	OSU
164-5-S-high-D	164	Compost	S	high	D	OSU
209-5-S-high-A	209	Compost	S	high	A	OSU
210-5-S-high-B	210	Compost	S	high	B	OSU
211-5-S-high-C	211	Compost	S	high	C	OSU
212-5-S-high-D	212	Compost	S	high	D	OSU
418-5-S-high-M	418	Compost	S	high	M	OSU
Compost Treatment, Surface Application Method, Low Application Rate						
17-5-S-low-A	17	Compost	S	low	A	OSU
18-5-S-low-B	18	Compost	S	low	B	OSU
19-5-S-low-C	19	Compost	S	low	C	OSU
20-5-S-low-D	20	Compost	S	low	D	OSU
430-5-S-low-M	430	Compost	S	low	M	OSU
65-5-S-low-A	65	Compost	S	low	A	OSU
66-5-S-low-B	66	Compost	S	low	B	OSU
67-5-S-low-C	67	Compost	S	low	C	OSU
68-5-S-low-D	68	Compost	S	low	D	OSU
Soluble Phosphate and Biosolids Treatment, Incorporated Application Method, High Application Rate						
357-6-I-high-A	357	Soluble Phosphate and Biosolids	I	high	A	OSU
358-6-I-high-B	358	Soluble Phosphate and Biosolids	I	high	B	OSU
359-6-I-high-C	359	Soluble Phosphate and Biosolids	I	high	C	OSU
360-6-I-high-D	360	Soluble Phosphate and Biosolids	I	high	D	OSU
394-6-I-high-M	394	Soluble Phosphate and Biosolids	I	high	M	OSU
Soluble Phosphate and Biosolids Treatment, Incorporated Application Method, Low Application Rate						
309-6-I-low-A	309	Soluble Phosphate and Biosolids	I	low	A	OSU
310-6-I-low-B	310	Soluble Phosphate and Biosolids	I	low	B	OSU
311-6-I-low-C	311	Soluble Phosphate and Biosolids	I	low	C	OSU
312-6-I-low-D	312	Soluble Phosphate and Biosolids	I	low	D	OSU
406-6-I-low-M	406	Soluble Phosphate and Biosolids	I	low	M	OSU

Table 5-1. Amendment and Test Pot Soil Sample Descriptions

Sample ID	Pot No.	Treatment Medium Applied to Test Pot	Treatment Application Method[a]	Rate	Replicate[b]	Lab
Soluble Phosphate and Biosolids Treatment, Surface Application Method, High Application Rate						
165-6-S-high-A	165	Soluble Phosphate and Biosolids	S	high	A	OSU
166-6-S-high-B	166	Soluble Phosphate and Biosolids	S	high	B	OSU
167-6-S-high-C	167	Soluble Phosphate and Biosolids	S	high	C	OSU
168-6-S-high-D	168	Soluble Phosphate and Biosolids	S	high	D	OSU
213-6-S-high-A	213	Soluble Phosphate and Biosolids	S	high	A	OSU
214-6-S-high-B	214	Soluble Phosphate and Biosolids	S	high	B	OSU
215-6-S-high-C	215	Soluble Phosphate and Biosolids	S	high	C	OSU
216-6-S-high-D	216	Soluble Phosphate and Biosolids	S	high	D	OSU
419-6-S-high-M	419	Soluble Phosphate and Biosolids	S	high	M	OSU
Soluble Phosphate and Biosolids Treatment, Surface Application Method, Low Application Rate						
21-6-S-low-A	21	Soluble Phosphate and Biosolids	S	low	A	OSU
22-6-S-low-B	22	Soluble Phosphate and Biosolids	S	low	B	OSU
23-6-S-low-C	23	Soluble Phosphate and Biosolids	S	low	C	OSU
24-6-S-low-D	24	Soluble Phosphate and Biosolids	S	low	D	OSU
431-6-S-low-M	431	Soluble Phosphate and Biosolids	S	low	M	OSU
69-6-S-low-A	69	Soluble Phosphate and Biosolids	S	low	A	OSU
70-6-S-low-B	70	Soluble Phosphate and Biosolids	S	low	B	OSU
71-6-S-low-C	71	Soluble Phosphate and Biosolids	S	low	C	OSU
72-6-S-low-D	72	Soluble Phosphate and Biosolids	S	low	D	OSU
Soluble Phosphate and Biochar Treatment, Incorporated Application Method, High Application Rate						
361-7-I-high-A	361	Soluble Phosphate and Biochar	I	high	A	OSU
362-7-I-high-B	362	Soluble Phosphate and Biochar	I	high	B	OSU
363-7-I-high-C	363	Soluble Phosphate and Biochar	I	high	C	OSU
364-7-I-high-D	364	Soluble Phosphate and Biochar	I	high	D	OSU
395-7-I-high-M	395	Soluble Phosphate and Biochar	I	high	M	OSU
Soluble Phosphate and Biochar Treatment, Incorporated Application Method, Low Application Rate						
313-7-I-low-A	313	Soluble Phosphate and Biochar	I	low	A	OSU
314-7-I-low-B	314	Soluble Phosphate and Biochar	I	low	B	OSU
315-7-I-low-C	315	Soluble Phosphate and Biochar	I	low	C	OSU
316-7-I-low-D	316	Soluble Phosphate and Biochar	I	low	D	OSU
407-7-I-low-M	407	Soluble Phosphate and Biochar	I	low	M	OSU
Soluble Phosphate and Biochar Treatment, Surface Application Method, High Application Rate						
169-7-S-high-A	169	Soluble Phosphate and Biochar	S	high	A	OSU
170-7-S-high-B	170	Soluble Phosphate and Biochar	S	high	B	OSU
171-7-S-high-C	171	Soluble Phosphate and Biochar	S	high	C	OSU
172-7-S-high-D	172	Soluble Phosphate and Biochar	S	high	D	OSU
217-7-S-high-A	217	Soluble Phosphate and Biochar	S	high	A	OSU
218-7-S-high-B	218	Soluble Phosphate and Biochar	S	high	B	OSU
219-7-S-high-C	219	Soluble Phosphate and Biochar	S	high	C	OSU
220-7-S-high-D	220	Soluble Phosphate and Biochar	S	high	D	OSU
420-7-S-high-M	420	Soluble Phosphate and Biochar	S	high	M	OSU
Soluble Phosphate and Biochar Treatment, Surface Application Method, Low Application Rate						
25-7-S-low-A	25	Soluble Phosphate and Biochar	S	low	A	OSU
26-7-S-low-B	26	Soluble Phosphate and Biochar	S	low	B	OSU
27-7-S-low-C	27	Soluble Phosphate and Biochar	S	low	C	OSU
28-7-S-low-D	28	Soluble Phosphate and Biochar	S	low	D	OSU
432-7-S-low-M	432	Soluble Phosphate and Biochar	S	low	M	OSU
73-7-S-low-A	73	Soluble Phosphate and Biochar	S	low	A	OSU
74-7-S-low-B	74	Soluble Phosphate and Biochar	S	low	B	OSU
75-7-S-low-C	75	Soluble Phosphate and Biochar	S	low	C	OSU
76-7-S-low-D	76	Soluble Phosphate and Biochar	S	low	D	OSU
Soluble Phosphate and Compost Treatment, Incorporated Application Method, High Application Rate						
365-8-I-high-A	365	Soluble Phosphate and Compost	I	high	A	OSU
366-8-I-high-B	366	Soluble Phosphate and Compost	I	high	B	OSU
367-8-I-high-C	367	Soluble Phosphate and Compost	I	high	C	OSU
368-8-I-high-D	368	Soluble Phosphate and Compost	I	high	D	OSU
396-8-I-high-M	396	Soluble Phosphate and Compost	I	high	M	OSU
Soluble Phosphate and Compost Treatment, Incorporated Application Method, Low Application Rate						
317-8-I-low-A	317	Soluble Phosphate and Compost	I	low	A	OSU
318-8-I-low-B	318	Soluble Phosphate and Compost	I	low	B	OSU
319-8-I-low-C	319	Soluble Phosphate and Compost	I	low	C	OSU
320-8-I-low-D	320	Soluble Phosphate and Compost	I	low	D	OSU
408-8-I-low-M	408	Soluble Phosphate and Compost	I	low	M	OSU

Table 5-1. Amendment and Test Pot Soil Sample Descriptions

Sample ID	Pot No.	Treatment Medium Applied to Test Pot	Treatment Application Method[a]	Rate	Replicate[b]	Lab
Soluble Phosphate and Compost Treatment, Surface Application Method, High Application Rate						
173-8-S-high-A	173	Soluble Phosphate and Compost	S	high	A	OSU
174-8-S-high-B	174	Soluble Phosphate and Compost	S	high	B	OSU
175-8-S-high-C	175	Soluble Phosphate and Compost	S	high	C	OSU
176-8-S-high-D	176	Soluble Phosphate and Compost	S	high	D	OSU
221-8-S-high-A	221	Soluble Phosphate and Compost	S	high	A	OSU
222-8-S-high-B	222	Soluble Phosphate and Compost	S	high	B	OSU
223-8-S-high-C	223	Soluble Phosphate and Compost	S	high	C	OSU
224-8-S-high-D	224	Soluble Phosphate and Compost	S	high	D	OSU
421-8-S-high-M	421	Soluble Phosphate and Compost	S	high	M	OSU
Soluble Phosphate and Compost Treatment, Surface Application Method, Low Application Rate						
29-8-S-low-A	29	Soluble Phosphate and Compost	S	low	A	OSU
30-8-S-low-B	30	Soluble Phosphate and Compost	S	low	B	OSU
31-8-S-low-C	31	Soluble Phosphate and Compost	S	low	C	OSU
32-8-S-low-D	32	Soluble Phosphate and Compost	S	low	D	OSU
433-8-S-low-M	433	Soluble Phosphate and Compost	S	low	M	OSU
77-8-S-low-A	77	Soluble Phosphate and Compost	S	low	A	OSU
78-8-S-low-B	78	Soluble Phosphate and Compost	S	low	B	OSU
79-8-S-low-C	79	Soluble Phosphate and Compost	S	low	C	OSU
80-8-S-low-D	80	Soluble Phosphate and Compost	S	low	D	OSU
Biosolids and Wood Ash Treatment, Incorporated Application Method, High Application Rate						
369-9-I-high-A	369	Biosolids and Wood Ash	I	high	A	OSU
370-9-I-high-B	370	Biosolids and Wood Ash	I	high	B	OSU
371-9-I-high-C	371	Biosolids and Wood Ash	I	high	C	OSU
372-9-I-high-D	372	Biosolids and Wood Ash	I	high	D	OSU
397-9-I-high-M	397	Biosolids and Wood Ash	I	high	M	OSU
Biosolids and Wood Ash Treatment, Incorporated Application Method, Low Application Rate						
321-9-I-low-A	321	Biosolids and Wood Ash	I	low	A	OSU
322-9-I-low-B	322	Biosolids and Wood Ash	I	low	B	OSU
323-9-I-low-C	323	Biosolids and Wood Ash	I	low	C	OSU
324-9-I-low-D	324	Biosolids and Wood Ash	I	low	D	OSU
409-9-I-low-M	409	Biosolids and Wood Ash	I	low	M	OSU
Biosolids and Wood Ash Treatment, Surface Application Method, High Application Rate						
177-9-S-high-A	177	Biosolids and Wood Ash	S	high	A	OSU
178-9-S-high-B	178	Biosolids and Wood Ash	S	high	B	OSU
179-9-S-high-C	179	Biosolids and Wood Ash	S	high	C	OSU
180-9-S-high-D	180	Biosolids and Wood Ash	S	high	D	OSU
225-9-S-high-A	225	Biosolids and Wood Ash	S	high	A	OSU
226-9-S-high-B	226	Biosolids and Wood Ash	S	high	B	OSU
227-9-S-high-C	227	Biosolids and Wood Ash	S	high	C	OSU
228-9-S-high-D	228	Biosolids and Wood Ash	S	high	D	OSU
422-9-S-high-M	422	Biosolids and Wood Ash	S	high	M	OSU
Biosolids and Wood Ash Treatment, Surface Application Method, Low Application Rate						
33-9-S-low-A	33	Biosolids and Wood Ash	S	low	A	OSU
34-9-S-low-B	34	Biosolids and Wood Ash	S	low	B	OSU
35-9-S-low-C	35	Biosolids and Wood Ash	S	low	C	OSU
36-9-S-low-D	36	Biosolids and Wood Ash	S	low	D	OSU
434-9-S-low-M	434	Biosolids and Wood Ash	S	low	M	OSU
81-9-S-low-A	81	Biosolids and Wood Ash	S	low	A	OSU
82-9-S-low-B	82	Biosolids and Wood Ash	S	low	B	OSU
83-9-S-low-C	83	Biosolids and Wood Ash	S	low	C	OSU
84-9-S-low-D	84	Biosolids and Wood Ash	S	low	D	OSU
Wood Ash and Biochar Treatment, Incorporated Application Method, High Application Rate						
373-10-I-high-A	373	Wood Ash and Biochar	I	high	A	OSU
374-10-I-high-B	374	Wood Ash and Biochar	I	high	B	OSU
375-10-I-high-C	375	Wood Ash and Biochar	I	high	C	OSU
376-10-I-high-D	376	Wood Ash and Biochar	I	high	D	OSU
398-10-I-high-M	398	Wood Ash and Biochar	I	high	M	OSU
Wood Ash and Biochar Treatment, Incorporated Application Method, Low Application Rate						
325-10-I-low-A	325	Wood Ash and Biochar	I	low	A	OSU
326-10-I-low-B	326	Wood Ash and Biochar	I	low	B	OSU
327-10-I-low-C	327	Wood Ash and Biochar	I	low	C	OSU
328-10-I-low-D	328	Wood Ash and Biochar	I	low	D	OSU
410-10-I-low-M	410	Wood Ash and Biochar	I	low	M	OSU

Table 5-1. Amendment and Test Pot Soil Sample Descriptions

Sample ID	Pot No.	Treatment Medium Applied to Test Pot	Treatment Application Method[a]	Rate	Replicate[b]	Lab
Wood Ash and Biochar Treatment, Surface Application Method, High Application Rate						
181-10-S-high-A	181	Wood Ash and Biochar	S	high	A	OSU
182-10-S-high-B	182	Wood Ash and Biochar	S	high	B	OSU
183-10-S-high-C	183	Wood Ash and Biochar	S	high	C	OSU
184-10-S-high-D	184	Wood Ash and Biochar	S	high	D	OSU
229-10-S-high-A	229	Wood Ash and Biochar	S	high	A	OSU
230-10-S-high-B	230	Wood Ash and Biochar	S	high	B	OSU
231-10-S-high-C	231	Wood Ash and Biochar	S	high	C	OSU
232-10-S-high-D	232	Wood Ash and Biochar	S	high	D	OSU
423-10-S-high-M	423	Wood Ash and Biochar	S	high	M	OSU
Wood Ash and Biochar Treatment, Surface Application Method, Low Application Rate						
37-10-S-low-A	37	Wood Ash and Biochar	S	low	A	OSU
38-10-S-low-B	38	Wood Ash and Biochar	S	low	B	OSU
39-10-S-low-C	39	Wood Ash and Biochar	S	low	C	OSU
40-10-S-low-D	40	Wood Ash and Biochar	S	low	D	OSU
435-10-S-low-M	435	Wood Ash and Biochar	S	low	M	OSU
85-10-S-low-A	85	Wood Ash and Biochar	S	low	A	OSU
86-10-S-low-B	86	Wood Ash and Biochar	S	low	B	OSU
87-10-S-low-C	87	Wood Ash and Biochar	S	low	C	OSU
88-10-S-low-D	88	Wood Ash and Biochar	S	low	D	OSU
Wood Ash and Compost Treatment, Incorporated Application Method, High Application Rate						
377-11-I-high-A	377	Wood Ash and Compost	I	high	A	OSU
378-11-I-high-B	378	Wood Ash and Compost	I	high	B	OSU
379-11-I-high-C	379	Wood Ash and Compost	I	high	C	OSU
380-11-I-high-D	380	Wood Ash and Compost	I	high	D	OSU
399-11-I-high-M	399	Wood Ash and Compost	I	high	M	OSU
Wood Ash and Compost Treatment, Incorporated Application Method, Low Application Rate						
329-11-I-low-A	329	Wood Ash and Compost	I	low	A	OSU
330-11-I-low-B	330	Wood Ash and Compost	I	low	B	OSU
331-11-I-low-C	331	Wood Ash and Compost	I	low	C	OSU
332-11-I-low-D	332	Wood Ash and Compost	I	low	D	OSU
411-11-I-low-M	411	Wood Ash and Compost	I	low	M	OSU
Wood Ash and Compost Treatment, Surface Application Method, High Application Rate						
185-11-S-high-A	185	Wood Ash and Compost	S	high	A	OSU
186-11-S-high-B	186	Wood Ash and Compost	S	high	B	OSU
187-11-S-high-C	187	Wood Ash and Compost	S	high	C	OSU
188-11-S-high-D	188	Wood Ash and Compost	S	high	D	OSU
233-11-S-high-A	233	Wood Ash and Compost	S	high	A	OSU
234-11-S-high-B	234	Wood Ash and Compost	S	high	B	OSU
235-11-S-high-C	235	Wood Ash and Compost	S	high	C	OSU
236-11-S-high-D	236	Wood Ash and Compost	S	high	D	OSU
424-11-S-high-M	424	Wood Ash and Compost	S	high	M	OSU
Wood Ash and Compost Treatment, Surface Application Method, Low Application Rate						
41-11-S-low-A	41	Wood Ash and Compost	S	low	A	OSU
42-11-S-low-B	42	Wood Ash and Compost	S	low	B	OSU
43-11-S-low-C	43	Wood Ash and Compost	S	low	C	OSU
436-11-S-low-M	436	Wood Ash and Compost	S	low	M	OSU
44-11-S-low-D	44	Wood Ash and Compost	S	low	D	OSU
89-11-S-low-A	89	Wood Ash and Compost	S	low	A	OSU
90-11-S-low-B	90	Wood Ash and Compost	S	low	B	OSU
91-11-S-low-C	91	Wood Ash and Compost	S	low	C	OSU
92-11-S-low-D	92	Wood Ash and Compost	S	low	D	OSU
Biochar and Compost Treatment, Incorporated Application Method, High Application Rate						
381-12-I-high-A	381	Biochar and Compost	I	high	A	OSU
382-12-I-high-B	382	Biochar and Compost	I	high	B	OSU
383-12-I-high-C	383	Biochar and Compost	I	high	C	OSU
384-12-I-high-D	384	Biochar and Compost	I	high	D	OSU
400-12-I-high-M	400	Biochar and Compost	I	high	M	OSU
Biochar and Compost Treatment, Incorporated Application Method, Low Application Rate						
333-12-I-low-A	333	Biochar and Compost	I	low	A	OSU
334-12-I-low-B	334	Biochar and Compost	I	low	B	OSU
335-12-I-low-C	335	Biochar and Compost	I	low	C	OSU
336-12-I-low-D	336	Biochar and Compost	I	low	D	OSU
412-12-I-low-M	412	Biochar and Compost	I	low	M	OSU

Table 5-1. Amendment and Test Pot Soil Sample Descriptions

Sample ID	Pot No.	Treatment Medium Applied to Test Pot	Treatment Application Method[a]	Rate	Replicate[b]	Lab
Biochar and Compost Treatment, Surface Application Method, High Application Rate						
189-12-S-high-A	189	Biochar and Compost	S	high	A	OSU
190-12-S-high-B	190	Biochar and Compost	S	high	B	OSU
191-12-S-high-C	191	Biochar and Compost	S	high	C	OSU
192-12-S-high-D	192	Biochar and Compost	S	high	D	OSU
237-12-S-high-A	237	Biochar and Compost	S	high	A	OSU
238-12-S-high-B	238	Biochar and Compost	S	high	B	OSU
239-12-S-high-C	239	Biochar and Compost	S	high	C	OSU
240-12-S-high-D	240	Biochar and Compost	S	high	D	OSU
425-12-S-high-M	425	Biochar and Compost	S	high	M	OSU
Biochar and Compost Treatment, Surface Application Method, Low Application Rate						
437-12-S-low-M	437	Biochar and Compost	S	low	M	OSU
45-12-S-low-A	45	Biochar and Compost	S	low	A	OSU
46-12-S-low-B	46	Biochar and Compost	S	low	B	OSU
47-12-S-low-C	47	Biochar and Compost	S	low	C	OSU
48-12-S-low-D	48	Biochar and Compost	S	low	D	OSU
93-12-S-low-A	93	Biochar and Compost	S	low	A	OSU
94-12-S-low-B	94	Biochar and Compost	S	low	B	OSU
95-12-S-low-C	95	Biochar and Compost	S	low	C	OSU
96-12-S-low-D	96	Biochar and Compost	S	low	D	OSU

Notes:

[a] Each sample included four replicates labeled as either "I" (Incorporated) or "S" (Surface) corresponding to the amendment application method.
[b] Each sample included four replicates labeled A thru D, and one replicate which was only used to measure soil moisture, labeled M.
[c] Class B biosolids are biosolids that have undergone treatment that has reduce but not eliminated pathogens.

ALS = ALS Environmental Laboratory
KCl = Potassium chloride
OSU = The Ohio State University laboratory
-- = not sampled

Table 5-2. Amendment and Baseline Soil Samples Results (mg/kg)

Sample ID	Biosolids B Soil	Black Owl Biochar	Wood Ash	Muriate of Potash 60 Fertilizer	Compost Soil	Triple Super Phosphate Fertilizer	Baseline Soil - ALS	Baseline Soil - OSU			
								A	B	C	D
TAL Metals (and mercury)											
Aluminum	11,781 J+	714 J+	12,192 J+	40.6 J	3,288 J+	6,467 J+	--	15,419 J+	15,687 J+	15,879 J+	15,294 J+
Antimony	5.28	0.732 U	0.934 J	0.732 U	1.08 J	9.10	--	34.3	33.5	35.4	34.4
Arsenic	6.35 U*	20.1	14.9	1.43 U*	1.62 U*	26.6	--	54.8	52.5	54.2	55.4
Barium	281	103	976	0.503 J	38.9	44.8	--	116 J+	116 J+	123 J+	116 J+
Beryllium	0.125 J	0.125 J	0.387 J+	0.125 J	0.125 J	5.10 J+	--	0.458 J+	0.437 J+	0.471 J+	0.445 J+
Cadmium	3.79	0.125 U*	4.69	0.125 U*	0.813	69.4	--	12.8	12.5	13.2	12.6
Calcium	24,834	6,707	93,755	2,059	10,159	178,473	--	3,109 J+	3,143 J+	3,054 J+	3,009 J+
Chromium	79.5 J+	23.1 J+	34.6 J+	6.53 J+	15.9 J+	829 J+	--	28.4 J	31.6 J	26.8 J	31.4 J
Cobalt	4.97	0.662 U*	7.09	0.198 U*	5.21	3.60	--	6.69	6.85	6.98	7.23
Copper	661	53.0	45.8	1.11	111	92.4	--	44.0	41.9	44.9	43.9
Iron	23,827	531	10,386	93.6	11,102	8,030	--	22,297 J+	24,107 J+	23,874 J+	25,181 J+
Lead	37.8	2.7 U*	12.6	1.57 U*	2.38 U*	4.16 U*	--	1,399	818	856	821
Magnesium	6,426 J+	1,343 J+	10,740 J+	1,097 J+	3,883 J+	10,342 J+	--	3,028 J	3,412 J	3,091 J	3,083 J
Manganese	390	345	2,939	3.82	245	123	--	570 J+	541 J+	573 J+	559 J+
Mercury	0.85 J	0.002 U	0.06 J	0.001 UJ	0.01 J	0.016 J	0.203 J	--	--	--	--
Nickel	26.8	1.75 J	13.3	0.232 U*	7.47 J	92.6	--	12.0	11.7	11.4	12.4
Potassium	1,966 J+	6,428 J+	21,829 J+	493,668 J+	4,394 J+	2,077 J+	--	1,196 J+	1,209 J+	1,337 J+	1,093 J+
Selenium	8.44 U*	4.74 U*	7.45 U*	8.09 U*	5.14 U*	8.14 U*	--	4.63 U*	4.80 U*	5.21 U*	6.15 U*
Silver	5.39	1.39 U	1.39 U	1.39 U	1.39 U	1.39 U	--	1.39 U	1.39 U	1.39 U	1.39 U
Sodium	508 J+	1,150 J+	4,410 J+	9,182 J+	2,122 J+	5,817 J+	--	224 J+	228 J+	232 J+	199 J+
Thallium	0.425 U	0.425 U	2.75	1.55 J	0.425 U	1.62 J	--	0.42 U	1.08 U*	1.33 U*	1.59 U*
Vanadium	14.1 J+	1.63 U*	28.3 J+	1.56 U*	35.4 J+	597 J+	--	55.7 J+	60.1 J+	58.9 J+	61.0 J+
Zinc	1,380	11.2	455	4.40	86.0	832	--	481	465	501	479
SVOCs											
2,2'-oxybis(1-Chloropropane)	0.49 U	0.025 R	0.016 R	0.0079 UJ	0.067 U	0.0079 U	--	--	--	--	--
2,4,5-Trichlorophenol	0.52 U	0.026 R	0.017 R	0.0083 U	0.07 UJ	0.0083 U	--	--	--	--	--
2,4,6-Trichlorophenol	0.87 U	0.044 R	0.028 R	0.014 U	0.12 UJ	0.014 U	--	--	--	--	--
2,4-Dichlorophenol	0.48 U	0.024 R	0.016 R	0.0077 U	0.065 UJ	0.0077 U	--	--	--	--	--
2,4-Dimethylphenol	2.3 U	0.12 R	0.071 R	0.036 U	0.31 UJ	0.036 U	--	--	--	--	--
2,4-Dinitrophenol	8.7 U	0.44 R	0.28 R	0.14 U	1.2 UJ	0.14 U	--	--	--	--	--
2,4-Dinitrotoluene	0.93 U	0.047 R	0.03 R	0.015 UJ	0.13 U	0.015 U	--	--	--	--	--
2,6-Dinitrotoluene	0.46 U	0.023 R	0.015 R	0.0073 UJ	0.062 U	0.0073 U	--	--	--	--	--
2-Chloronaphthalene	0.62 U	0.031 R	0.02 R	0.01 UJ	0.084 U	0.01 U	--	--	--	--	--
2-Chlorophenol	0.54 U	0.027 R	0.017 R	0.0086 U	0.072 UJ	0.0086 U	--	--	--	--	--
2-Methylphenol	0.93 U	0.047 R	0.03 R	0.015 U	0.13 UJ	0.015 U	--	--	--	--	--
2-Nitroaniline	2.7 U	0.14 R	0.083 R	0.042 UJ	0.36 U	0.042 U	--	--	--	--	--
2-Nitrophenol	0.87 U	0.044 R	0.028 R	0.014 U	0.12 UJ	0.014 U	--	--	--	--	--
3,3'-Dichlorobenzidine	1.7 U	0.084 R	0.053 R	0.027 UJ	0.23 U	0.027 U	--	--	--	--	--
3-Nitroaniline	0.49 U	0.025 R	0.016 R	0.0079 UJ	0.067 U	0.0079 U	--	--	--	--	--
4,6-Dinitro-2-methylphenol	2 U	0.1 R	0.063 R	0.032 U	0.27 UJ	0.032 U	--	--	--	--	--

Table 5-2. Amendment and Baseline Soil Samples Results (mg/kg)

Sample ID	Biosolids B Soil	Black Owl Biochar	Wood Ash	Muriate of Potash 60 Fertilizer	Compost Soil	Triple Super Phosphate Fertilizer	Baseline Soil - ALS	Baseline Soil - OSU			
								A	B	C	D
SVOCs (continued)											
4-Bromophenyl-phenylether	0.81 U	0.041 R	0.026 R	0.013 UJ	0.11 U	0.013 U	--	--	--	--	--
4-Chloro-3-methylphenol	10 U	0.5 R	0.32 R	0.16 U	1.4 UJ	0.16 U	--	--	--	--	--
4-Chloroaniline	0.44 U	0.022 R	0.014 R	0.007 UJ	0.059 U	0.007 U	--	--	--	--	--
4-Chlorophenyl-phenyl ether	0.53 U	0.027 R	0.017 R	0.0085 UJ	0.072 U	0.0085 U	--	--	--	--	--
4-Methylphenol	4 J	0.031 R	0.02 R	0.01 U	0.084 UJ	0.01 U	--	--	--	--	--
4-Nitroaniline	0.62 U	0.031 R	0.02 R	0.0099 UJ	0.083 U	0.0099 U	--	--	--	--	--
4-Nitrophenol	3.1 U	0.16 R	0.096 R	0.049 U	0.41 UJ	0.049 U	--	--	--	--	--
Aniline	0.75 UJ	0.038 R	0.024 R	0.012 UJ	0.11 U	0.012 UJ	--	--	--	--	--
Benzoic acid	8.7 U	0.44 R	0.28 R	0.14 U	1.2 UJ	0.14 U	--	--	--	--	--
Benzyl alcohol	0.46 U	0.023 R	0.015 R	0.0073 UJ	0.062 U	0.0073 U	--	--	--	--	--
Benzyl n-butyl phthalate	0.93 U	0.047 R	0.03 R	0.015 UJ	0.13 U	0.015 U	--	--	--	--	--
bis(2-Chloroethoxy)methane	0.59 U	0.03 R	0.019 R	0.0094 UJ	0.079 U	0.0094 U	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	82	0.027 J	0.014 R	0.0094 J	0.06 U	0.01 J	--	--	--	--	--
Diethyl phthalate	0.74 J	0.031 U*	0.022 J	0.0079 UJ	0.089 U*	0.0086 J	--	--	--	--	--
Dimethyl phthalate	0.48 U	0.024 R	0.015 R	0.0076 UJ	0.064 U	0.0076 U	--	--	--	--	--
Di-n-butyl phthalate	0.93 U	0.047 R	0.03 R	0.015 UJ	0.13 U	0.015 U	--	--	--	--	--
Di-n-octylphthalate	0.62 U	0.031 R	0.02 R	0.041 J	0.084 U	0.01 U	--	--	--	--	--
Hexachlorobenzene	1 U	0.05 R	0.032 R	0.016 UJ	0.14 U	0.016 U	--	--	--	--	--
Hexachlorobutadiene	0.69 U	0.035 R	0.022 R	0.011 UJ	0.093 U	0.011 U	--	--	--	--	--
Hexachlorocyclopentadiene	1.5 U	0.075 R	0.047 R	0.024 UJ	0.21 U	0.024 U	--	--	--	--	--
Hexachloroethane	0.49 U	0.025 R	0.016 R	0.0079 UJ	0.067 U	0.0079 U	--	--	--	--	--
Isophorone	0.69 U	0.035 R	0.022 R	0.011 UJ	0.093 U	0.011 U	--	--	--	--	--
Nitrobenzene	0.69 U	0.035 R	0.022 R	0.011 UJ	0.093 U	0.011 U	--	--	--	--	--
N-Nitrosodimethylamine	19 U	0.93 R	0.59 R	0.3 UJ	2.6 U	0.3 U	--	--	--	--	--
N-Nitrosodi-n-propylamine	0.69 U	0.035 R	0.022 R	0.011 UJ	0.093 U	0.011 U	--	--	--	--	--
N-Nitrosodiphenylamine	0.47 U	0.024 R	0.015 R	0.0075 UJ	0.063 U	0.0075 U	--	--	--	--	--
Pentachlorophenol	4 U	0.2 R	0.13 R	0.063 U	0.53 UJ	0.063 U	--	--	--	--	--
Phenol	2.5 J	0.059 R	0.038 R	0.019 U	0.66 J	0.019 U	--	--	--	--	--
VOCs											
1,1,1,2-Tetrachloroethane	0.00028 U	0.0016 R	0.00042 R	0.00011 U	0.00057 UJ	0.00012 U	--	--	--	--	--
1,1,1-Trichloroethane	0.00028 U	0.0016 R	0.00042 R	0.00011 U	0.00057 UJ	0.00012 U	--	--	--	--	--
1,1,2,2-Tetrachloroethane	0.00034 UJ	0.0019 R	0.0005 R	0.00013 U	0.00068 UJ	0.00014 U	--	--	--	--	--
1,1,2-Trichloroethane	0.00039 U	0.0021 R	0.00058 R	0.00015 U	0.00078 UJ	0.00016 U	--	--	--	--	--
1,1-Dichloroethane	0.00031 U	0.0017 R	0.00046 R	0.00012 U	0.00062 UJ	0.00013 U	--	--	--	--	--
1,1-Dichloroethene	0.00064 U	0.0035 R	0.00096 R	0.00025 U	0.0013 UJ	0.00026 U	--	--	--	--	--
1,1-Dichloropropene	0.00034 U	0.0019 R	0.0005 R	0.00013 U	0.00068 UJ	0.00014 U	--	--	--	--	--
1,2,3-Trichloropropane	0.0012 UJ	0.0063 R	0.0018 R	0.00045 U	0.0024 UJ	0.00047 U	--	--	--	--	--
1,2,4-Trichlorobenzene	0.69 U	0.035 R	0.022 R	0.011 UJ	0.093 U	0.011 U	--	--	--	--	--
1,2,4-Trimethylbenzene	0.00014 UJ	0.00075 R	0.00021 R	0.000054 U	0.00028 UJ	0.0034 J	--	--	--	--	--
1,2-Dibromo-3-chloropropane	0.0011 UJ	0.0056 R	0.0016 R	0.0004 U	0.0021 UJ	0.00041 U	--	--	--	--	--
1,2-Dibromoethane	0.00024 U	0.0014 R	0.00036 R	0.000094 U	0.00049 UJ	0.000097 U	--	--	--	--	--

Table 5-2. Amendment and Baseline Soil Samples Results (mg/kg)

Sample ID	Biosolids B Soil	Black Owl Biochar	Wood Ash	Muriate of Potash 60 Fertilizer	Compost Soil	Triple Super Phosphate Fertilizer	Baseline Soil - ALS	Baseline Soil - OSU			
								A	B	C	D
VOCs (continued)											
1,2-Dichlorobenzene	0.49 U	0.025 R	0.016 R	0.0078 UJ	0.066 U	0.0078 U	--	--	--	--	--
1,2-Dichloroethane	0.00018 U	0.00098 R	0.00027 R	0.00007 U	0.00037 UJ	0.000072 U	--	--	--	--	--
1,2-Dichloropropane	0.00034 U	0.0019 R	0.0005 R	0.00013 U	0.00068 UJ	0.00014 U	--	--	--	--	--
1,3,5-Trimethylbenzene	0.00024 UJ	0.0013 R	0.00036 R	0.000092 U	0.00048 UJ	0.00043 J	--	--	--	--	--
1,3-Dichlorobenzene	0.53 U	0.027 R	0.017 R	0.0084 UJ	0.071 U	0.0084 U	--	--	--	--	--
1,3-Dichloropropane	0.00031 U	0.0017 R	0.00046 R	0.00012 U	0.00062 UJ	0.00013 U	--	--	--	--	--
1,4-Dichlorobenzene	0.52 U	0.026 R	0.017 R	0.0083 UJ	0.07 U	0.0083 U	--	--	--	--	--
123TriClBenzene	0.00049 UJ	0.0027 R	0.00073 R	0.00019 U	0.00099 UJ	0.0002 U	--	--	--	--	--
2,2-Dichloropropane	0.00025 U	0.0014 R	0.00038 R	0.000098 U	0.00051 UJ	0.00011 U	--	--	--	--	--
2-Butanone	0.74 J	0.013 R	0.0035 R	0.0009 U	0.15 J-	0.03	--	--	--	--	--
2-Chlorotoluene	0.00031 UJ	0.0017 R	0.00046 R	0.00012 U	0.00062 UJ	0.00035 J	--	--	--	--	--
2-Hexanone	0.098	0.013 R	0.0036 R	0.00093 U	0.0048 UJ	0.00096 U	--	--	--	--	--
4-Chlorotoluene	0.00023 UJ	0.0013 R	0.00034 R	0.000088 U	0.00046 UJ	0.00009 U	--	--	--	--	--
4-Isopropyltoluene	0.048 J	0.00089 R	0.00025 R	0.000064 U	0.16 J	0.0003 J	--	--	--	--	--
4-Methyl-2-pentanone	0.04 J	0.025 R	0.0069 R	0.0018 U	0.0093 UJ	0.0019 U	--	--	--	--	--
Acetone	2.5	1.8 J	0.13 J	0.012 J	2.9 J-	0.83 U	--	--	--	--	--
Benzene	0.0021 J	0.00075 R	0.00021 R	0.00056 J	0.00028 UJ	0.0089	--	--	--	--	--
Bis(2-chloroethyl)ether	0.51 U	0.026 R	0.017 R	0.0082 UJ	0.069 U	0.0082 U	--	--	--	--	--
Bromobenzene	0.00023 UJ	0.0013 R	0.00034 R	0.000088 U	0.00046 UJ	0.00009 U	--	--	--	--	--
Bromochloromethn	0.00061 U	0.0034 R	0.00092 R	0.00024 U	0.0013 UJ	0.00025 U	--	--	--	--	--
Bromodichloromethane	0.00041 U	0.0023 R	0.00062 R	0.00016 U	0.00083 UJ	0.00017 U	--	--	--	--	--
Bromoform	0.00036 U	0.002 R	0.00054 R	0.00014 U	0.00073 UJ	0.00015 U	--	--	--	--	--
Bromomethane	0.00051 U	0.0028 R	0.00077 R	0.0002 U	0.0011 UJ	0.002 J	--	--	--	--	--
Carbon disulfide	0.1	0.0013 R	0.00036 R	0.000092 U	0.00048 UJ	0.011	--	--	--	--	--
Carbon Tetrachloride	0.00024 U	0.0014 R	0.00036 R	0.000094 U	0.00049 UJ	0.000097 U	--	--	--	--	--
Chlorobenzene	0.00017 U	0.00091 R	0.00025 R	0.000065 U	0.00034 UJ	0.000067 U	--	--	--	--	--
Chloroethane	0.0019 U	0.011 R	0.0029 R	0.00074 U	0.0039 UJ	0.0016 J	--	--	--	--	--
Chloroform	0.00028 U	0.0016 R	0.00042 R	0.00011 U	0.00057 UJ	0.00012 U	--	--	--	--	--
Chloromethane	0.0029 J	0.0025 R	0.00069 R	0.00075 J	0.015 J	0.0018 J	--	--	--	--	--
cis-1,2-Dichloroethene	0.00031 U	0.0017 R	0.00046 R	0.00012 U	0.00062 UJ	0.00013 U	--	--	--	--	--
cis-1,3-Dichloropropene	0.00034 U	0.0019 R	0.0005 R	0.00013 U	0.00068 UJ	0.00014 U	--	--	--	--	--
Cumene	0.00021 U	0.0012 R	0.00031 R	0.000081 U	0.00042 UJ	0.00038 J	--	--	--	--	--
Dibromochloromethane	0.00046 U	0.0025 R	0.00069 R	0.00018 U	0.00093 UJ	0.00019 U	--	--	--	--	--
Dibromomethane	0.00072 U	0.0039 R	0.0011 R	0.00028 U	0.0015 UJ	0.00029 U	--	--	--	--	--
Dichlorodifluoromethane	0.00031 UJ	0.24 J	0.00046 R	0.00012 UJ	0.00062 UJ	0.00013 UJ	--	--	--	--	--
Ethylbenzene	0.00024 U	0.0014 R	0.00036 R	0.00025 J	0.00049 UJ	0.0052	--	--	--	--	--
m,p-Xylenes	0.0029 J	0.0014 R	0.00039 R	0.00054 J	0.00052 UJ	0.0052	--	--	--	--	--
Methylene Chloride	0.0034 U*	0.071 J	0.0092 U*	0.0012 U*	0.0068 U*	0.0012 U*	--	--	--	--	--
n-Butylbenzene	0.00018 UJ	0.00096 R	0.00027 R	0.000069 U	0.00036 UJ	0.000071 U	--	--	--	--	--
n-Propylbenzene	0.00034 UJ	0.0019 R	0.0005 R	0.00013 U	0.00068 UJ	0.00073 J	--	--	--	--	--
o-Xylene	0.00021 U	0.0012 R	0.00031 R	0.000081 U	0.00042 UJ	0.0024 J	--	--	--	--	--

Table 5-2. Amendment and Baseline Soil Samples Results (mg/kg)

Sample ID	Biosolids B Soil	Black Owl Biochar	Wood Ash	Muriate of Potash 60 Fertilizer	Compost Soil	Triple Super Phosphate Fertilizer	Baseline Soil - ALS	Baseline Soil - OSU			
								A	B	C	D
VOCs (continued)											
sec-Butylbenzene	0.00019 UJ	0.0011 R	0.00029 R	0.000074 U	0.00039 UJ	0.00019 J	--	--	--	--	--
Styrene	0.00036 U	0.002 R	0.00054 R	0.00014 U	0.00073 UJ	0.00032 J	--	--	--	--	--
tert-Butylbenzene	0.00036 UJ	0.002 R	0.00054 R	0.00014 U	0.00073 UJ	0.00015 U	--	--	--	--	--
Tetrachloroethene	0.00041 U	0.0023 R	0.00062 R	0.00016 U	0.00083 UJ	0.00017 U	--	--	--	--	--
Toluene	0.0039 J	0.0021 R	0.00058 R	0.001 J	0.026 J-	0.011	--	--	--	--	--
Total Trichloroethene	0.00039 U	0.0021 R	0.00058 R	0.00015 U	0.00078 UJ	0.00016 U	--	--	--	--	--
trans-1,2-Dichloroethene	0.00031 U	0.0017 R	0.00046 R	0.00012 U	0.00062 UJ	0.00013 U	--	--	--	--	--
trans-1,3-Dichloropropene	0.00028 U	0.0016 R	0.00042 R	0.00011 U	0.00057 UJ	0.00012 U	--	--	--	--	--
Trichlorofluoromethane	0.00022 U	0.14 J	0.00033 R	0.000085 U	0.00044 UJ	0.000087 U	--	--	--	--	--
Vinyl Chloride	0.00046 U	0.0025 R	0.00069 R	0.00018 U	0.00093 UJ	0.00019 U	--	--	--	--	--
PCBs											
Aroclor 1016	0.099 U	0.01 U	0.013 U	0.0092 U	0.0029 U	0.0099 U	--	--	--	--	--
Aroclor 1221	0.2 U	0.02 U	0.026 U	0.019 U	0.0029 U	0.02 U	--	--	--	--	--
Aroclor 1232	0.099 U	0.01 U	0.013 U	0.0092 U	0.0029 U	0.0099 U	--	--	--	--	--
Aroclor 1242	0.099 U	0.01 U	0.013 U	0.0092 U	0.0029 U	0.0099 U	--	--	--	--	--
Aroclor 1248	0.099 U	0.01 U	0.013 U	0.0092 U	0.0029 U	0.0099 U	--	--	--	--	--
Aroclor 1254	0.099 U	0.01 U	0.013 U	0.0092 U	0.0029 U	0.0099 U	--	--	--	--	--
Aroclor 1260	0.099 U	0.01 U	0.013 U	0.0092 U	0.0029 U	0.0099 U	--	--	--	--	--

Notes:

ALS = ALS Environmental Laboratory
mg/kg = milligram(s) per kilogram
OSU = The Ohio State University

R = Unusable result; the analyte may or may not be present in this sample due to accuracy or precision issues (see section 5.1.3)

U = The analyte was not detected at or above the associated detection limit.
-- = not sampled

J = Quantitation is approximate due to limitations identified during the QA review.
J+ = Quantitation is approximate, but the result may be biased high.
J- = Quantitation is approximate, but the result may be biased low.

U* = The analyte should be considered "not-detected" because it was detected in an associated blank at a similar level.

UJ = The analyte was not detected and the detection limit may be higher due to a low bias identified during the QA review.

Table 5-3. Soil Physical Properties for Test Pot Soil Samples Collected at Time Points 1, 2, and 3

Test Pot Sample ID	Electrical Conductivity (Salinity) (mS/cm)			pH		
	t_1	t_2	t_3	t_1	t_2	t_3
Baseline Soil Samples						
1-baseline-A	0.181	--	--	4.35	--	--
2-baseline-B	0.288	--	--	4.56	--	--
3-baseline-C	0.317	--	--	4.45	--	--
4-baseline-D	0.261	--	--	4.17	--	--
Control Pot Samples						
385-0-Control-A	0.487	0.295	0.846	4.54	4.55	4.3
386-0-Control-B	0.45	0.272	1.025	4.68	4.51	4.27
387-0-Control-C	0.116	0.306	0.841	4.67	4.61	4.3
388-0-Control-D	0.434	0.321	1.067	4.6	4.42	4.29
Experimental Test Pot Soil Samples						
1-I-high-A	1.41	0.323 J	1.011	4.42	4.32	4.37
1-I-high-B	1.56	0.235 J	1.684	4.32	4.25	4.21
1-I-high-C	2.12	0.23 J	1.518	4.34	4.41	4.33
1-I-high-D	2.19	0.252 J	1.647	4.35	4.64	4.35
1-I-low-A	0.0202	0.334	0.527	4.29	4.57	4.37
1-I-low-B	1.11	0.328	0.659	4.2	4.47	4.33
1-I-low-C	0.444	0.293	2.14	4.23	4.5	4.31
1-I-low-D	1.1	0.16	1.308	4.41	4.56	4.31
1-S-high-A	1.34	0.235	0.24	4.99	4.33	4.31
1-S-high-B	0.26	0.173	0.893	4.96	4.37	4.32
1-S-high-C	0.774	0.268	0.762	4.99	4.33	4.42
1-S-high-D	0.771	0.277	0.521	4.98	4.28	4.3
1-S-low-A	2.1	0.191	0.783	4.11	4.61	4.45
1-S-low-B	1.33	0.355	0.7	4.34	4.39	4.37
1-S-low-C	1.04	0.193	0.695	4.39	4.52	4.47
1-S-low-D	0.975	0.189 J	0.517	4.25	4.75	4.67
2-I-high-A	4.02	0.174 J	7.02	5.82	6.08	5.02
2-I-high-B	5.35	0.226 J	5.28	5.77	5.84	5.29
2-I-high-C	3.27	0.148 J	5.99	5.85	5.35	4.61
2-I-high-D	2.01	0.176 J	8.17	5.8	5.56	4.75
2-I-low-A	0.589	0.181	1.068	5.01	5.07	4.51
2-I-low-B	1.73	0.204	1.364	4.9	4.86	4.51
2-I-low-C	1.81	0.193	1.751	4.99	5.1	4.63
2-I-low-D	1.65	0.358	1.774	5	5.12	4.48
2-S-high-A	0.814	0.158	0.238	4.96	5.71	5.36
2-S-high-B	0.729	0.18	0.881	4.42	5.6	5.58
2-S-high-C	0.936	0.203	0.266	4.41	5.56	5.58
2-S-high-D	1.89	0.152	1.045	4.55	5.63	5.77
2-S-low-A	1.01	0.307 J	0.542	4.89	5.22	5.23
2-S-low-B	0.8	0.208	1.053	4.9	5.26	4.86
2-S-low-C	0.727	0.152	0.625	4.9	5.08	4.98
2-S-low-D	1.02	0.382	0.819	5	5.15	4.98
3-I-high-A	0.92	0.234 J	1.632	5.35	5.6	5.12
3-I-high-B	0.892	0.179 J	1.161	5.56	5.6	5.29
3-I-high-C	1.16	0.187 J	1.146	5.31	5.47	5.23
3-I-high-D	0.286	0.156 J	1.574	5.43	5.58	5.32
3-I-low-A	0.653	0.195	0.741	4.98	4.94	4.78
3-I-low-B	0.6	0.199	1.087	4.93	4.92	4.79
3-I-low-C	0.831	0.167	0.903	4.76	4.87	4.61
3-I-low-D	0.748	0.194	0.892	5.01	5.02	4.76
3-S-high-A	3.17	0.171	0.603	4.49	5.27	5.26
3-S-high-B	2.66	0.234	0.778	5.07	5.23	5.2
3-S-high-C	2.56	0.149	0.766	5.27	5.17	5.18

Table 5-3. Soil Physical Properties for Test Pot Soil Samples Collected at Time Points 1, 2, and 3

Test Pot Sample ID	Electrical Conductivity (Salinity) (mS/cm)			pH		
	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)						
3-S-high-D	1.34	0.213	0.606	5.18	5.13	5.2
3-S-low-A	0.537	0.171	0.428	4.86	4.92	4.88
3-S-low-B	0.346	0.228	0.298	4.82	5.4	5.07
3-S-low-C	0.353	0.204	0.777	4.71	4.77	4.87
3-S-low-D	0.245	0.245	0.483	4.77	4.99	4.99
4-I-high-A	0.497	0.268 J	1.409	4.64	4.93	4.57
4-I-high-B	0.497	0.163 J	0.902	4.62	4.92	4.53
4-I-high-C	0.469	0.192 J	0.901	4.68	4.94	4.55
4-I-high-D	0.383	0.156 J	0.868	4.83	4.77	4.6
4-I-low-A	0.423	0.185	0.883	4.64	4.59	4.36
4-I-low-B	0.427	0.218	1.207	4.73	4.63	4.25
4-I-low-C	0.394	0.222	1.25	4.74	4.59	4.3
4-I-low-D	0.468	0.204	1.05	4.7	4.62	4.29
4-S-high-A	1.33	0.182	0.353	5.34	4.75	4.74
4-S-high-B	1.58	0.221	0.452	5.46	4.66	4.72
4-S-high-C	0.201	0.234	0.258	5.45	4.67	4.78
4-S-high-D	0.39	0.223	0.244	5.37	4.8	4.78
4-S-low-A	0.24	0.181	0.425	4.37	4.95	4.78
4-S-low-B	0.173	0.191	0.395	4.57	4.96	4.71
4-S-low-C	0.199	0.359	0.387	4.61	4.92	4.71
4-S-low-D	0.195	0.442	0.469	4.63	4.83	4.86
5-I-high-A	1.04	0.184 J	1.48	4.77	4.92	4.59
5-I-high-B	0.884	0.271 J	2.26	4.94	4.93	4.48
5-I-high-C	0.755	0.184 J	2.03	4.86	4.73	4.5
5-I-high-D	0.676	0.143 J	2.61	4.91	4.84	4.51
5-I-low-A	0.831	0.223	1.066	4.66	4.59	4.24
5-I-low-B	0.714	0.264	1.55	4.77	4.58	4.31
5-I-low-C	0.237	0.162	0.91	4.8	4.55	4.42
5-I-low-D	0.635	0.188	1.309	4.71	4.8	4.3
5-S-high-A	0.365	0.153	0.484	5.33	4.68	4.63
5-S-high-B	0.347	0.158	0.789	4.99	4.68	4.53
5-S-high-C	0.639	0.142	0.57	4.79	4.84	4.56
5-S-high-D	0.522	0.144	0.722	4.8	4.6	4.57
Experimental Test Pot Soil Samples (continued)						
5-S-low-A	0.398	0.171	0.641	4.68	4.88	4.72
5-S-low-B	0.378	0.249	0.538	4.66	4.8	4.71
5-S-low-C	0.24	0.168	0.463	4.68	4.77	4.73
5-S-low-D	0.297	0.227	0.571	4.64	4.82	4.72
6-I-high-A	3.88	0.16 J	6.18	5.64	5.56	5.1
6-I-high-B	2.53	0.176 J	7.42	5.64	5.64	5.02
6-I-high-C	4.01	0.22 J	11	5.58	5.51	4.68
6-I-high-D	5.42	0.164 J	7.77	5.8	5.82	4.86
6-I-low-A	3.18	0.23	3.51	4.94	4.9	4.28
6-I-low-B	1.52	0.167	2.14	5.01	5.13	4.98
6-I-low-C	1.98	0.161	2.92	4.96	4.91	4.64
6-I-low-D	2.9	0.158	2.19	5.06	4.96	4.6
6-S-high-A	3.5	0.249	0.357	4.98	5.43	5.76
6-S-high-B	3.37	0.171	2.21	5.18	5.3	5.63
6-S-high-C	3.07	0.182	1.701	4.96	5.38	5.69
6-S-high-D	2.35	0.193	2.1	5.06	5.5	5.75
6-S-low-A	0.456	0.18	0.424	4.75	5	4.92
6-S-low-B	1.56	0.166	0.942	4.73	5.1	4.79
6-S-low-C	1.89	0.193	0.636	4.88	5.11	4.78
6-S-low-D	1.67	0.3	0.994	4.8	5.3	4.95
7-I-high-A	1.46	0.247 J	1.694	4.56	4.56	4.42
7-I-high-B	2.1	0.217 J	4.34	4.56	4.51	4.26

Table 5-3. Soil Physical Properties for Test Pot Soil Samples Collected at Time Points 1, 2, and 3

Test Pot Sample ID	Electrical Conductivity (Salinity) (mS/cm)			pH		
	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)						
7-I-high-C	0.828	0.23 J	2.81	4.62	4.47	4.39
7-I-high-D	2.3	0.305 J	2.91	4.61	4.57	4.38
7-I-low-A	1.78	0.218	0.805	4.46	4.48	4.56
7-I-low-B	1.96	0.173	1.18	4.42	4.46	4.39
7-I-low-C	1.65	0.246	1.215	4.48	4.48	4.45
7-I-low-D	1.44	0.272	1.174	4.48	4.43	4.38
7-S-high-A	0.994	0.203	0.78	4.66	4.63	4.49
7-S-high-B	0.86	0.178	0.555	4.65	4.5	4.55
7-S-high-C	0.764	0.166	0.694	4.56	4.52	4.65
7-S-high-D	0.795	0.167	0.697	4.68	4.36	4.63
7-S-low-A	0.888	0.167	0.497	4.65	4.84	4.64
7-S-low-B	0.657	0.226	0.575	4.68	4.78	4.64
7-S-low-C	0.205	0.164 J	0.659	4.59	4.88	4.53
7-S-low-D	0.902	0.168 J	0.59	4.68	4.88	4.58
8-I-high-A	0.956	0.231 J	2.38	4.72	4.72	4.45
8-I-high-B	1.14	0.241 J	2.2	4.73	4.67	4.48
8-I-high-C	2.67	0.206 J	1.59	4.56	4.69	4.52
8-I-high-D	1.42	0.236 J	1.52	4.56	5.28	4.69
8-I-low-A	1.57	0.369	1.249	4.6	4.51	4.44
8-I-low-B	1.43	0.407	1.485	4.58	4.48	4.35
8-I-low-C	1.61	0.245	2.52	4.58	4.55	4.38
8-I-low-D	1.58	0.178	2.3	4.55	4.59	4.29
8-S-high-A	1.5	0.158	1.055	4.62	4.53	4.55
8-S-high-B	1.72	0.165	1.183	4.59	4.63	4.64
8-S-high-C	1.77	0.151	1.326	4.59	4.58	4.55
8-S-high-D	1.28	0.187	1	4.61	4.55	4.7
8-S-low-A	0.912	0.18 J	0.544	4.67	4.68	4.7
8-S-low-B	0.836	0.2 J	0.651	4.79	4.58	4.67
8-S-low-C	0.576	0.205 J	1.055	4.79	4.55	4.71
8-S-low-D	0.821	0.161 J	0.771	4.71	4.54	4.63
9-I-high-A	1.66	0.159 J	8.09	6.17	5.53	4.46
9-I-high-B	2.26	0.171 J	5.57	6.18	5.49	4.97
9-I-high-C	5.68	0.168 J	5.42	6.23	5.74	5.01
9-I-high-D	1.93	0.235 J	7.02	6.36	5.72	4.62
9-I-low-A	2.21	0.161	3.21	5.42	5.32	4.31
9-I-low-B	1.55	0.305	2.34	5.41	4.76	4.49
9-I-low-C	2.23	0.183	2.08	5.39	4.67	4.59
9-I-low-D	1.53	0.286	3.52	5.43	4.63	4.58
9-S-high-A	2.97	0.182	1.713	5.37	5.39	5.68
9-S-high-B	3.31	0.171 J	1.815	5.13	5.55	5.56
9-S-high-C	2.95	0.165	1.746	5.31	5.25	5.25
9-S-high-D	2.78	0.219	1.964	5.27	5.52	5.49
9-S-low-A	1.06	0.671 J	0.513	4.92	4.92	4.97
9-S-low-B	0.899	0.168 J	0.409	5.06	4.73	4.99
9-S-low-C	0.891	0.161 J	0.625	5.17	4.92	4.96
9-S-low-D	1.15	0.18 J	0.482	5	4.97	4.98
10-I-high-A	1.35	0.36 J	0.994	5.61	5.62	5.45
10-I-high-B	0.481	0.183	1.061	5.51	5.51	5.47
10-I-high-C	0.436	0.226	1.309	5.56	5.5	5.47
10-I-high-D	0.278	0.154	1.561	5.56	5.66	5.42
10-I-low-A	0.563	0.291	1.521	5.08	4.92	4.78
10-I-low-B	0.625	0.305	1.183	5.09	5	4.79
10-I-low-C	0.719	0.323	1.8	5.02	4.95	4.81
10-I-low-D	0.624	0.273	1.103	5.08	5.02	4.94
10-S-high-A	0.609	0.186	0.591	5.4	5.11	5.11

Table 5-3. Soil Physical Properties for Test Pot Soil Samples Collected at Time Points 1, 2, and 3

Test Pot Sample ID	Electrical Conductivity (Salinity) (mS/cm)			pH		
	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)						
10-S-high-B	0.532	0.143	0.644	5.52	5.3	5.11
10-S-high-C	0.498	0.173	0.937	5.2	5.36	5.15
10-S-high-D	0.578	0.318	0.711	5.3	5.44	5.05
10-S-low-A	0.257	0.292 J	0.274	4.94	4.86	5.03
10-S-low-B	0.365	0.227 J	0.313	5.02	4.87	5.11
10-S-low-C	0.341	0.27 J	0.563	5.15	4.74	4.95
10-S-low-D	0.315	0.163 J	0.415	5.17	4.94	5.09
11-I-high-A	0.515	0.173	0.907	5.51	5.5	5.32
11-I-high-B	1.77	0.186	1.533	5.54	5.52	5.31
11-I-high-C	2.54	0.198	1.491	5.51	5.47	5.38
11-I-high-D	0.802	0.211	1.26	5.6	5.51	5.24
11-I-low-A	1.17	0.399	1.073	5.08	4.93	4.9
11-I-low-B	0.965	0.265	1.282	5.01	4.95	4.77
11-I-low-C	0.909	0.469	1.97	4.92	4.87	4.66
11-I-low-D	0.768	0.423	1.271	5.04	4.98	4.83
11-S-high-A	0.578	0.168	0.462	4.41	5.02	4.7
11-S-high-B	0.379	0.196	1.055	4.55	4.87	4.73
11-S-high-C	0.125	0.323	1.08	4.59	4.78	4.69
11-S-high-D	0.833	0.147	1.13	4.58	4.79	4.73
11-S-low-A	0.245	1.03 J	0.429	5.05	4.56	4.75
11-S-low-B	0.347	0.53 J	0.444	5.06	4.76	4.81
11-S-low-C	0.365	0.226 J	0.432	4.92	4.73	4.87
11-S-low-D	0.39	0.159 J	4.65	5.08	4.8	4.82
12-I-high-A	0.62	0.325	1.607	4.98	4.78	4.69
12-I-high-B	1.55	0.291	1.462	4.96	5.04	4.62
12-I-high-C	0.408	0.244	1.427	4.98	4.98	4.65
12-I-high-D	0.529	0.188	0.84	5.01	4.96	4.64
12-I-low-A	0.704	0.326	0.76	4.78	4.69	4.57
12-I-low-B	0.482	0.314	0.571	4.79	4.65	4.56
12-I-low-C	0.285	0.186	0.609	4.85	4.65	4.49
12-I-low-D	0.479	0.187 J	0.625	4.84	4.7	4.54
12-S-high-A	0.452	0.33	0.778	4.4	4.89	4.58
12-S-high-B	0.4	0.176	0.612	4.6	4.88	4.59
12-S-high-C	0.587	0.17	0.949	4.58	4.92	4.56
12-S-high-D	0.502	0.337	0.652	4.58	4.95	4.55
12-S-low-A	0.201	0.211 J	0.505	4.76	4.63	4.64
12-S-low-B	1.58	0.271 J	0.415	4.95	4.75	4.78
12-S-low-C	1.36	0.26	0.458	4.79	4.77	4.58
12-S-low-D	1.23	0.166	0.425	5.02	4.66	4.67

Notes:
mS/cm = milliSiemen(s) per centimeter
J = Quantitation is approximate due to limitations identified during the QA review.
t_1 = 1 month after pot preparation; t_2 = 4 months after pot preparation; t_3 = 6 months after pot preparation
-- = not sampled

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Aluminum (mg/L)			Antimony (mg/L)			Arsenic (mg/L)			Barium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Baseline Samples												
1-baseline-A	0.82	--	--	0.017	--	--	0.028	--	--	0.015	--	--
2-baseline-B	0.73	--	--	0.012	--	--	0.022	--	--	0.027	--	--
3-baseline-C	0.66	--	--	0.009	--	--	0.026	--	--	0.036	--	--
4-baseline-D	0.72	--	--	0.020	--	--	0.036	--	--	0.031	--	--
Control Samples												
385-0-Control-A	1.24	1.14	1.29	0.027 J	0.045 J	0.033 U*	0.034 U*	0.026 J	0.033 U*	0.041 J	0.122	0.100 J
386-0-Control-B	1.37	1.16	1.18	0.036 J	0.039 J	0.031 U*	0.041 U*	0.024 J	0.031 U*	0.035 J	0.122	0.112
387-0-Control-C	1.26	1.09	0.97	0.029 J	0.040 J	0.023 U*	0.043 U*	0.029 J	0.023 U*	0.038 J	0.085	0.134
388-0-Control-D	1.29	0.96	1.24	0.027 J	0.042 J	0.033 U*	0.038 U*	0.024 J	0.033 U*	0.024 J	0.132	0.123
Experimental Test Pot Soil Samples												
1-I-high-A	1.10	1.27	1.47	0.023 J	0.045 J	0.141	0.175	0.180	0.141	0.026 J	0.039 J	0.033 J
1-I-high-B	1.12	1.24	1.33	0.026 J	0.043 J	0.125	0.177	0.187	0.125	0.029 J	0.045 J	0.044 J
1-I-high-C	1.16	1.65	1.39	0.030 J	0.050 J	0.151	0.185	0.193	0.151	0.037 J	0.030 J	0.038 J
1-I-high-D	2.45	1.45	1.30	0.047 J	0.052	0.113	0.157	0.199	0.113	0.035 J	0.026 J	0.022 J
1-I-low-A	1.06	0.94	1.31	0.047 J	0.054	0.077	0.082	0.077	0.077	0.034 J	0.057	0.042 J
1-I-low-B	0.99	1.00	1.15	0.036 J	0.045 J	0.076	0.080	0.080	0.076	0.047 J	0.048 J	0.044 J
1-I-low-C	0.99	0.98	1.13	0.031 J	0.047 J	0.073	0.071	0.076	0.073	0.050 J	0.063	0.083 J
1-I-low-D	1.17	1.01	1.53	0.040 J	0.051	0.077	0.098	0.090	0.077	0.031 J	0.055	0.056 J
1-S-high-A	1.19	1.28	1.71	0.024 J	0.025 J	0.186	0.170	0.137	0.186	0.017 J	0.016 J	0.012 J
1-S-high-B	1.24	1.22	1.32	0.025 J	0.022 J	0.132	0.184	0.142	0.132	0.023 J	0.011 J	0.018 J
1-S-high-C	1.28	1.15	1.60	0.030 J	0.025 J	0.153	0.197	0.148	0.153	0.015 J	0.009 J	0.018 J
1-S-high-D	1.18	1.12	1.61	0.028 J	0.023 J	0.152	0.162	0.147	0.152	0.016 J	0.012 J	0.018 J
1-S-low-A	1.11	1.58	2.00	0.020 J	0.038 J	0.090	0.083	0.110	0.090	0.032 J	0.031 J	0.027 J
1-S-low-B	1.41	1.45	1.85	0.027 J	0.031 J	0.098	0.135	0.073	0.098	0.021 J	0.041 J	0.023 J
1-S-low-C	1.38	1.52	1.84	0.034 J	0.025 J	0.085	0.130	0.090	0.085	0.016 J	0.030 J	0.020 J
1-S-low-D	1.34	1.52	1.88	0.036 J	0.034 J	0.097	0.087	0.101	0.097	0.027 J	0.034 J	0.021 J
2-I-high-A	1.28	3.07	0.73	0.029 J	0.118	0.058	0.088	0.123	0.058	0.010 J	0.018 J	0.016 J
2-I-high-B	1.40	1.88	0.82	0.039 J	0.073	0.070	0.123	0.143	0.070	0.006 J	0.012 J	0.012 J
2-I-high-C	1.23	1.71	0.70	0.030 J	0.076	0.056	0.088	0.112	0.056	0.014 J	0.019 J	0.060 J
2-I-high-D	1.71	1.85	0.67	0.038 J	0.070	0.053	0.128	0.096	0.053	0.004 J	0.018 J	0.048 J
2-I-low-A	1.12	1.29	1.10	0.039 J	0.065	0.061	0.075	0.085	0.061	0.024 J	0.030 J	0.082 J
2-I-low-B	1.12	0.90	1.16	0.044 J	0.050	0.053	0.080	0.046 J	0.053	0.017 J	0.079	0.074 J
2-I-low-C	1.14	1.21	1.25	0.036 J	0.056	0.064	0.072	0.084	0.064	0.017 J	0.014 J	0.073 J
2-I-low-D	1.12	1.45	1.33	0.040 J	0.057	0.063	0.071	0.046 J	0.063	0.017 J	0.069	0.060 J
2-S-high-A	1.50	2.03	2.88	0.036 J	0.044 J	0.119	0.091	0.156	0.119	0.014 J	0.011 J	0.009 J
2-S-high-B	1.59	1.78	2.46	0.048 J	0.039 J	0.119	0.151	0.140	0.119	0.011 J	0.010 J	0.007 J
2-S-high-C	1.37	1.55	2.42	0.042 J	0.040 J	0.101	0.100	0.124	0.101	0.013 J	0.010 J	0.007 J
2-S-high-D	1.45	1.51	2.95	0.037 J	0.036 J	0.118	0.116	0.123	0.118	0.010 J	0.010 J	0.008 J
2-S-low-A	1.37	1.72	1.36	0.032 J	0.032 J	0.064	0.072 U*	0.087	0.064	0.012 J	0.011 J	0.014 J

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Beryllium (mg/L)			Cadmium (mg/L)			Calcium (mg/L)			Chromium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Baseline Samples												
1-baseline-A	0.000056	--	--	0.000	--	--	1.00	--	--	0.001	--	--
2-baseline-B	0.000058	--	--	0.001	--	--	1.70	--	--	0.001	--	--
3-baseline-C	0.001993	--	--	0.004	--	--	1.99	--	--	0.001	--	--
4-baseline-D	0.000069	--	--	0.001	--	--	1.84	--	--	0.001	--	--
Control Samples												
385-0-Control-A	0.000119 U*	0.000060 J	0.000045 U	0.0024 J	0.0135 J	0.0103	2.87	9.47 J	6.88	0.001 UJ	0.001 U	0.001 U
386-0-Control-B	0.001280 J	0.000045 U	0.000134 J	0.0028 J-	0.0130 J	0.0115	2.42	9.69 J	8.20	0.001 UJ	0.001 U	0.001 U
387-0-Control-C	0.000065 U*	0.000045 U	0.000053 J	0.0017 J	0.0094 J	0.0151	2.63	6.37 J	11.60	0.001 UJ	0.001 U	0.001 U
388-0-Control-D	0.000066 U*	0.000062 J	0.000045 U	0.0006 J	0.0144 J	0.0126	1.72	10.30 J	8.68	0.001 UJ	0.001 U	0.001 U
Experimental Test Pot Soil Samples												
1-I-high-A	0.000067 U*	0.000056 J	0.000045 U	0.0059 J-	0.0121 J	0.0098 J	11.30	16.50	11.81	0.001 UJ	0.004 J	0.003 J
1-I-high-B	0.000070 U*	0.000045 U	0.000045 U	0.0064 J-	0.0130 J	0.0142	12.00	17.20	19.17	0.001 UJ	0.004 J	0.002 J
1-I-high-C	0.007110	0.000078 J	0.000180 J	0.0139	0.0094 J	0.0122	12.60	10.50	15.38	0.001 UJ	0.003 J	0.005 J
1-I-high-D	0.000125 U*	0.000045 U	0.000045 U	0.0055 J-	0.0088 J	0.0075 J	25.80	10.00	10.24	0.001 UJ	0.003 J	0.003 J
1-I-low-A	0.000045 U	0.000045 U	0.000045 U	0.0046	0.0080	0.0064 J	3.89	6.99	5.49	0.001 UJ	0.002 J	0.003 J
1-I-low-B	0.000045 U	0.000045 U	0.000045 U	0.0066	0.0075	0.0064 J	5.86	6.41	5.57	0.001 UJ	0.001 U	0.003 J
1-I-low-C	0.000045 U	0.000045 U	0.000045 U	0.0065	0.0092	0.0117	5.06	8.11	11.28	0.001 UJ	0.005 J	0.001 U
1-I-low-D	0.000045 U	0.00136 J	0.000045 U	0.0046	0.0093	0.0075 J	3.75	6.19	6.28	0.001 UJ	0.005 J	0.002 J
1-S-high-A	0.000045 U	0.000051 J	0.000045 U	0.0053	0.0055	0.0051 J	8.08	6.95	6.26	0.001 UJ	0.002 J	0.003 J
1-S-high-B	0.000045 U	0.000052 J	0.000045 U	0.0062	0.0040	0.0064 J	8.79	5.63	8.46	0.001 UJ	0.001 U	0.002 J
1-S-high-C	0.000045 U	0.000045 U	0.000045 U	0.0042	0.0041	0.0066 J	5.81	6.48	7.65	0.001 UJ	0.001 U	0.002 J
1-S-high-D	0.000045 U	0.000045 U	0.000045 U	0.0044	0.0051	0.0072 J	6.36	7.55	9.50	0.001 UJ	0.001 U	0.003 J
1-S-low-A	0.000045 U	0.000056 J	0.000104 J	0.0059	0.0073	0.0053 J	5.68	4.40 J	3.34	0.001 UJ	0.004 J	0.003 J
1-S-low-B	0.000045 U	0.000063 J	0.000045 U	0.0040	0.0073	0.0050 J	3.42	5.49	3.70	0.001 UJ	0.016 J	0.001 U
1-S-low-C	0.000045 U	0.000045 U	0.000045 U	0.0029	0.0052	0.0046 J	2.44	4.02 J	3.07	0.001 UJ	0.001 U	0.001 U
1-S-low-D	0.000045 U	0.000061 J	0.000045 U	0.0041	0.0069	0.0046 J	3.37	5.12	3.51	0.001 UJ	0.001 U	0.001 U
2-I-high-A	0.000057 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0031 J	0.0033 J	7.44	10.70	14.02	0.001 UJ	0.004 J	0.001 U
2-I-high-B	0.000053 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0028 J	0.0029 J	3.30	5.81	9.42	0.001 UJ	0.001 U	0.001 U
2-I-high-C	0.000045 U	0.000045 U	0.000045 U	0.0004 J	0.0036 J	0.0098 J	11.60	14.60	54.05	0.001 UJ	0.001 U	0.001 U
2-I-high-D	0.000050 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0031 J	0.0091 J	1.79	12.30	65.80	0.001 UJ	0.001 U	0.001 U
2-I-low-A	0.000045 U	0.000049 J	0.000045 U	0.0026	0.0043	0.0111	3.70	5.19	15.00	0.001 UJ	0.001 U	0.001 U
2-I-low-B	0.000045 U	0.000045 U	0.000045 U	0.0021 J	0.0115	0.0084 J	2.01	22.30	11.40	0.001 UJ	0.001 U	0.001 U
2-I-low-C	0.000045 U	0.000045 U	0.000045 U	0.0023 J	0.0027	0.0098 J	2.12	1.85 J	15.19	0.001 UJ	0.001 U	0.001 U
2-I-low-D	0.000045 U	0.000056 J	0.000045 U	0.0020 J	0.0089	0.0066 J	2.11	17.90	9.13	0.001 UJ	0.001 U	0.001 U
2-S-high-A	0.000063 J	0.000045 U	0.000192 J	0.0015 J	0.0028	0.0028 J	0.85	0.63 J	0.53 J	0.001 UJ	0.001 U	0.002 J
2-S-high-B	0.000045 U	0.000061 J	0.000045 U	0.0013 J	0.0023 J	0.0023 J	0.57	0.44 J	0.48 J	0.001 UJ	0.001 U	0.001 U
2-S-high-C	0.000045 U	0.000045 U	0.000045 U	0.0016 J	0.0024 J	0.0019 J	0.78	0.48 J	0.42 J	0.001 UJ	0.001 U	0.001 U
2-S-high-D	0.000045 U	0.000045 U	0.000045 U	0.0013 J	0.0020 J	0.0024 J	0.60	0.52 J	0.53 J	0.001 UJ	0.001 U	0.001 U
2-S-low-A	0.000045 U	0.000045 U	0.000045 U	0.0015 J	0.0018 J	0.0025 J	0.82	0.75 J	1.21	0.001 UJ	0.001 U	0.001 U

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Cobalt (mg/L)			Copper (mg/L)			Iron (mg/L)			Lead (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Baseline Samples												
1-baseline-A	0.001	--	--	0.007	--	--	0.272	--	--	0.034	--	--
2-baseline-B	0.000	--	--	0.006	--	--	0.237	--	--	0.037	--	--
3-baseline-C	0.003	--	--	0.008	--	--	0.180	--	--	0.035	--	--
4-baseline-D	0.001	--	--	0.007	--	--	0.216	--	--	0.037	--	--
Control Samples												
385-0-Control-A	0.000 U	0.003 J	0.003 U*	0.010 U*	0.008 J	0.007 J	0.421 J	0.306 J	0.362 J	0.055	0.043 J	0.050 J
386-0-Control-B	0.002 U*	0.003 J	0.003 U*	0.011 U*	0.008 J	0.006 J	0.452 J	0.315 J	0.329 J	0.064	0.048 J	0.205
387-0-Control-C	0.001 U*	0.002 U*	0.003 U*	0.008 U*	0.007 J	0.006 J	0.421 J	0.302 J	0.232 J	0.054	0.039 J	0.054
388-0-Control-D	0.002 U*	0.003 J	0.002 U*	0.008 U*	0.007 J	0.007 J	0.459 J	0.271 J	0.342 J	0.053	0.045 J	0.057
Experimental Test Pot Soil Samples												
1-I-high-A	0.003 U*	0.003 U*	0.003 U*	0.011 U*	0.011	0.008 J	0.299 J	0.350 J	0.375 J	0.051	0.047 J	0.056
1-I-high-B	0.002 U*	0.003 J	0.004 U*	0.010 U*	0.012	0.009 J	0.313 J	0.327 J	0.273 J	0.055	0.052 J	0.052
1-I-high-C	0.009 J	0.003 U*	0.003 U*	0.019	0.013	0.010	0.368 J	0.530	0.336 J	0.079	0.082 J	0.061
1-I-high-D	0.006 U*	0.002 U*	0.002 U*	0.058	0.013	0.007 J	0.947	0.488 J	0.350 J	0.139	0.088 J	0.045 J
1-I-low-A	0.002 J	0.003 U*	0.002 U*	0.007 J	0.010	0.008 J	0.319 J	0.233 J	0.378 J	0.058	0.041 J	0.050 J
1-I-low-B	0.002 J	0.003 U*	0.003 U*	0.006 J	0.008 J	0.008 J	0.286 J	0.287 J	0.323 J	0.056	0.042 J	0.051
1-I-low-C	0.001 J	0.003 U*	0.004 J	0.006 J	0.009 J	0.008 J	0.301 J	0.240 J	0.246 J	0.056	0.040 J	0.048 J
1-I-low-D	0.001 J	0.004 U*	0.003 U*	0.005 J	0.013	0.008 J	0.382 J	0.308 J	0.418 J	0.062	0.081 J	0.052
1-S-high-A	0.003 U*	0.003 J	0.003 U*	0.005 J	0.008 J	0.011	0.347 J	0.328 J	0.395 J	0.059	0.030 J	0.059
1-S-high-B	0.003 U*	0.002 J	0.003 U*	0.006 J	0.007 J	0.008 J	0.362 J	0.327 J	0.316 J	0.062	0.028 J	0.040 J
1-S-high-C	0.003 U*	0.002 J	0.003 U*	0.007 J	0.007 J	0.008 J	0.397 J	0.295 J	0.410 J	0.068	0.024 J	0.048 J
1-S-high-D	0.003 U*	0.002 J	0.003 U*	0.006 J	0.007 J	0.009 J	0.357 J	0.311 J	0.402 J	0.057	0.026 J	0.048 J
1-S-low-A	0.003 U*	0.003 U*	0.002 U*	0.002 J	0.012	0.009 J	0.313 J	0.578	0.521	0.045	0.147 J	0.061
1-S-low-B	0.002 U*	0.003 U*	0.002 U*	0.005 J	0.007 J	0.009 J	0.397 J	0.440 J	0.472 J	0.064	0.057 J	0.054
1-S-low-C	0.002 U*	0.002 U*	0.002 U*	0.004 J	0.007 J	0.007 J	0.425 J	0.480 J	0.473 J	0.066	0.047 J	0.050
1-S-low-D	0.002 U*	0.003 U*	0.003 U*	0.003 J	0.009 J	0.008 J	0.412 J	0.452 J	0.486 J	0.064	0.058 J	0.053
2-I-high-A	0.004 U*	0.008	0.003 U*	0.069	0.204	0.032	0.739	1.850	0.289 J	0.073	0.060 J	0.020 J
2-I-high-B	0.003 U*	0.004 J	0.002 U*	0.054	0.086	0.022	0.697	1.050	0.322 J	0.077	0.068 J	0.018 J
2-I-high-C	0.003 U*	0.006	0.004 U*	0.062	0.102	0.026	1.080	0.903	0.249 J	0.076	0.052 J	0.023 J
2-I-high-D	0.001 U*	0.005 J	0.006 J	0.045	0.094	0.048	0.793	0.961	0.254 J	0.083	0.055 J	0.024 J
2-I-low-A	0.002 J	0.003 U*	0.003 U*	0.012	0.032	0.012	0.429 J	0.493 J	0.321 J	0.065	0.057 J	0.043 J
2-I-low-B	0.002 J	0.004 U*	0.003 U*	0.012	0.021	0.013	0.446 J	0.287 J	0.342 J	0.062	0.041 J	0.046 J
2-I-low-C	0.000 U	0.001 U*	0.003 U*	0.010	0.019	0.014	0.430 J	0.451 J	0.363 J	0.065	0.076 J	0.043 J
2-I-low-D	0.001 J	0.005 J	0.002 U*	0.012	0.024	0.011	0.426 J	0.499 J	0.405 J	0.058	0.048 J	0.040 J
2-S-high-A	0.003 U*	0.002 J	0.003 U*	0.009 J	0.024	0.021	0.632	0.907	1.064	0.096	0.143 J	0.098
2-S-high-B	0.003 U*	0.002 J	0.002 U*	0.012 J-	0.022	0.021	0.679	0.785	0.917	0.104	0.115 J	0.102
2-S-high-C	0.003 U*	0.002 J	0.003 U*	0.008 J	0.021	0.017	0.535	0.650	0.852	0.104	0.095 J	0.082
2-S-high-D	0.002 U*	0.002 J	0.002 U*	0.009 J	0.019	0.025	0.623	0.629	1.129	0.093	0.085 J	0.103
2-S-low-A	0.002 U*	0.001 U*	0.002 U*	0.006 J	0.012	0.009 J	0.500	0.581	0.436 J	0.072	0.065 J	0.053

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Magnesium (mg/L)			Manganese (mg/L)			Nickel (mg/L)			Phosphorus a (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Baseline Samples												
1-baseline-A	0.29	--	--	0.16	--	--	0.0008	--	--	0.25	--	--
2-baseline-B	0.45	--	--	0.27	--	--	0.0008	--	--	0.20	--	--
3-baseline-C	0.52	--	--	0.30	--	--	0.0008	--	--	0.19	--	--
4-baseline-D	0.49	--	--	0.29	--	--	0.0008	--	--	0.19	--	--
Control Samples												
385-0-Control-A	0.80	2.47 J	2.06	0.57	1.57 J	1.27	0.0008 UJ	0.0014 J	0.0018 J	0.26	0.20 J	0.20
386-0-Control-B	0.68	2.68 J	2.25	0.47	1.63 J	1.42	0.0008 UJ	0.0008 U	0.0027 J	0.31	0.21 J	0.18
387-0-Control-C	0.69	1.90 J	2.71	0.47	1.11 J	1.78	0.0008 UJ	0.0008 U	0.0018 J	0.25	0.20 J	0.16
388-0-Control-D	0.50	2.54 J	2.38	0.37	1.69 J	1.56	0.0008 UJ	0.0008 U	0.0008 U	0.26	0.18 J	0.20
Experimental Test Pot Soil Samples												
1-I-high-A	3.24	4.94 J	3.78	1.19	1.83	1.47	0.0008 UJ	0.0024 J	0.0029 J	8.04	7.22	4.94
1-I-high-B	3.35	5.04 J	5.52	1.29	1.95	2.27	0.0008 UJ	0.0023 J	0.0034 J	7.54	6.47	4.75
1-I-high-C	3.29	3.51 J	4.78	1.20	1.21	1.76	0.0008 UJ	0.0024 J	0.0033 J	8.91	7.56	5.21
1-I-high-D	11.40	3.37 J	3.22	1.48	1.13	1.28	0.0188 J	0.0018 J	0.0014 J	6.84	7.91	4.81
1-I-low-A	1.13	2.31	1.70	1.00	1.69	1.24	0.0008 UJ	0.0008 U	0.0016 J	1.09 U*	0.97	0.94
1-I-low-B	1.60	1.96	1.67	1.28	1.45	1.22	0.0008 UJ	0.0009 J	0.0026 J	1.32	1.16	1.01
1-I-low-C	1.47	2.32	3.17	0.89	1.55	2.26	0.0008 UJ	0.0008 U	0.0029 J	0.88 U*	1.13	0.86
1-I-low-D	1.05	1.81	1.79	0.69	1.35	1.28	0.0008 UJ	0.0023 J	0.0019 J	1.69	1.24	0.96
1-S-high-A	2.20	2.13	2.06	1.22	1.13	1.03	0.0040 J	0.0010 J	0.0021 J	8.48	7.47	8.06
1-S-high-B	2.12	1.67	2.83	1.22	0.91	1.28	0.0027 J	0.0008 J	0.0026 J	7.50	7.58	6.69
1-S-high-C	1.42	1.96	2.40	0.93	0.92	1.22	0.0041 J	0.0019 J	0.0016 J	8.35	10.60	6.52
1-S-high-D	1.62	2.22	2.92	0.97	1.15	1.48	0.0030 J	0.0013 J	0.0033 J	7.84	8.51	7.43
1-S-low-A	1.71	1.39 J	1.09	1.33	1.23 J	0.91	0.0015 U*	0.0008 U	0.0010 J	1.61	1.46	1.03
1-S-low-B	1.01	1.78 J	1.16	0.90	1.40 J	0.94	0.0018 U*	0.0008 U	0.0010 J	1.70	1.23	1.38
1-S-low-C	0.69	1.37 J	1.08	0.65	1.08 J	0.88	0.0024 U*	0.0008 U	0.0011 J	1.97	1.26	1.05
1-S-low-D	0.96	1.63 J	1.17	0.89	1.42 J	0.94	0.0024 U*	0.0009 J	0.0009 J	1.14	1.61	1.41
2-I-high-A	3.78	5.46 J	7.86	0.33	0.47	0.67	0.0118 J	0.0312 J	0.0079 J	5.17	8.42	2.85
2-I-high-B	1.60	3.03 J	5.33	0.18	0.33	0.51	0.0069 J	0.0181 J	0.0042 J	5.17	6.02	2.68
2-I-high-C	5.75	8.21 J	18.87	0.52	0.74	3.10	0.0163 J	0.0299 J	0.0073 J	4.12	4.99	2.41
2-I-high-D	0.77	6.88 J	23.46	0.11	0.55	2.71	0.0010 J	0.0243 J	0.0153 J	5.45	4.30	2.73
2-I-low-A	1.68	2.17	5.95	0.53	0.81	2.62	0.0008 UJ	0.0062 J	0.0029 J	1.01 U*	1.40	0.58
2-I-low-B	0.84	7.04	4.58	0.26	2.19	1.86	0.0008 UJ	0.0047 J	0.0034 J	1.12 U*	0.81	0.65
2-I-low-C	0.89	0.81	6.26	0.32	0.29	2.41	0.0008 UJ	0.0023 J	0.0039 J	1.04 U*	1.20	0.71
2-I-low-D	0.91	6.50	3.73	0.31	2.21	1.50	0.0008 UJ	0.0046 J	0.0027 J	0.94 U*	0.82	0.66
2-S-high-A	0.34	0.28	0.35	0.23	0.13	0.11	0.0070 J	0.0064 J	0.0061 J	0.84	1.54	1.13
2-S-high-B	0.19 J	0.20 J	0.21	0.15	0.08	0.11	0.0098 J	0.0054 J	0.0075 J	1.10	1.20	1.37
2-S-high-C	0.33	0.19 J	0.24	0.20	0.09	0.09	0.0076 J	0.0051 J	0.0040 J	0.88	1.07	1.16
2-S-high-D	0.21 J	0.25	0.28	0.15	0.09	0.11	0.0078 J	0.0051 J	0.0069 J	0.96	1.29	1.37
2-S-low-A	0.32	0.38 J	0.62	0.25	0.21 J	0.26	0.0033 U*	0.0013 J	0.0020 J	0.63	0.74 J	0.56

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Potassium (mg/L)			Selenium (mg/L)			Silver (mg/L)			Sodium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Baseline Samples												
1-baseline-A	2.95	--	--	0.0090	--	--	0.0139	--	--	0.36	--	--
2-baseline-B	3.15	--	--	0.0090	--	--	0.0139	--	--	0.37	--	--
3-baseline-C	3.52	--	--	0.0090	--	--	0.0139	--	--	0.37	--	--
4-baseline-D	3.32	--	--	0.0090	--	--	0.0139	--	--	0.36	--	--
Control Samples												
385-0-Control-A	4.29	6.35	4.65	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.60	3.55	5.37
386-0-Control-B	4.91	7.22	5.04	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.90	3.58	4.68
387-0-Control-C	3.82	5.61	5.28	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.36	2.85	5.29
388-0-Control-D	3.67	6.19	5.25	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.38	3.30	5.89
Experimental Test Pot Soil Samples												
1-I-high-A	18.20	21.80	15.28	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	6.08	6.73 J	8.01
1-I-high-B	18.20	24.10	18.80	0.0091 UJ	0.0091 U	0.0090 U	0.0150 J	0.0139 U	0.0139 U	6.12	7.46 J	10.73
1-I-high-C	18.90	19.70	17.27	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	5.82	6.00 J	9.29
1-I-high-D	27.70	19.10	13.14	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	10.80	6.06 J	7.09
1-I-low-A	11.80	17.10	11.11	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.27	5.06	5.42
1-I-low-B	16.90	16.00	12.43	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.89	3.55	5.10
1-I-low-C	17.30	19.20	17.19	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.77	4.12	7.60
1-I-low-D	10.50	14.30	10.08	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.30	3.94	5.09
1-S-high-A	15.60	14.20	13.07	0.0295 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	4.07	3.58	5.83
1-S-high-B	16.00	12.80	12.06	0.0320 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.92	3.23	5.74
1-S-high-C	13.10	13.90	12.05	0.0249 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.27	3.43	5.10
1-S-high-D	12.40	14.60	12.81	0.0392 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.58	3.36	5.45
1-S-low-A	19.80	16.70	11.30	0.0354 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.59	2.52 J	2.92
1-S-low-B	15.20	15.00	11.23	0.0315 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.80	2.46 J	3.13
1-S-low-C	13.50	14.30	11.05	0.0322 U*	0.0109 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.36	2.18 J	3.02
1-S-low-D	12.80	17.70	11.85	0.0337 U*	0.0091 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.34	2.76 J	3.34
2-I-high-A	9.93	12.90	9.22	0.0091 UJ	0.0183 J	0.0090 U	0.0139 U	0.0389 J	0.0139 U	3.56	3.87 J	5.05
2-I-high-B	8.30	9.24	8.48	0.0091 UJ	0.0109 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.72	3.04 J	5.11
2-I-high-C	11.40	13.10	11.97	0.0091 UJ	0.0091 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.91	4.75 J	7.01
2-I-high-D	5.91	11.90	12.09	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.80	3.80 J	7.38
2-I-low-A	6.40	8.55	7.10	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.70	3.11	5.67
2-I-low-B	5.44	10.50	6.90	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.04	3.88	5.53
2-I-low-C	6.29	5.61	9.64	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.32	1.86	6.51
2-I-low-D	5.63	8.32	6.12	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.05	3.17	4.40
2-S-high-A	4.41	4.32	3.80	0.0315 U*	0.0094 U*	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.10 U*	1.16	1.96
2-S-high-B	3.85	3.62	3.13	0.0280 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.05 U*	0.99	1.60
2-S-high-C	4.78	3.85	3.46	0.0311 U*	0.0098 U*	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.20	1.03	1.92
2-S-high-D	4.10	4.26	3.22	0.0242 U*	0.0122 U*	0.0090 U	0.0139 U	0.0139 U	0.0139 U	0.98 U*	1.10	1.64
2-S-low-A	3.51	4.01	3.49	0.0280 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.08 U*	1.19 J	2.28

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Thallium (mg/L)			Vanadium (mg/L)			Zinc (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Baseline Samples									
1-baseline-A	0.0042	--	--	0.0006	--	--	0.143	--	--
2-baseline-B	0.0042	--	--	0.0006	--	--	0.231	--	--
3-baseline-C	0.0042	--	--	0.0018	--	--	0.270	--	--
4-baseline-D	0.0042	--	--	0.0006	--	--	0.250	--	--
Control Samples									
385-0-Control-A	0.0043 U*	0.0061 J	0.0042 U	0.0006 UJ	0.0022 U*	0.0017 J	0.333	0.857 J	0.633
386-0-Control-B	0.0043 U*	0.0047 J	0.0042 U	0.0011 J	0.0018 U*	0.0020 J	0.273	0.823 J	0.673
387-0-Control-C	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0019 U*	0.0016 J	0.286	0.587 J	0.898
388-0-Control-D	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0015 U*	0.0016 J	0.215	0.893 J	0.764
Experimental Test Pot Soil Samples									
1-I-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0123 J	0.0140 J	0.0101 J	0.495	0.722 J	0.582
1-I-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0124 J	0.0138 J	0.0096 J	0.546	0.796 J	0.847
1-I-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0271	0.0142 J	0.0109 J	0.559	0.581 J	0.711
1-I-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0099 J	0.0160 J	0.0119 J	0.478	0.530 J	0.413
1-I-low-A	0.0050 J	0.0052 J	0.0042 U	0.0069 J	0.0079 J	0.0062 J	0.312	0.502	0.392
1-I-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0057 J	0.0071 J	0.0064 J	0.402	0.454	0.390
1-I-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0046 J	0.0065 J	0.0052 J	0.393	0.569	0.709
1-I-low-D	0.0054 J	0.0052 J	0.0042 U	0.0075 J	0.0082 J	0.0052 J	0.280	0.523	0.470
1-S-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0147 J	0.0128 J	0.0167 J	0.350	0.346	0.342
1-S-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0123 J	0.0103 J	0.0149 J	0.416	0.269	0.384
1-S-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0130 J	0.0126 J	0.0141 J	0.297	0.270	0.378
1-S-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0160 J	0.0102 J	0.0158 J	0.296	0.319	0.429
1-S-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0059 U*	0.0070 J	0.0054 J	0.387	0.514	0.356
1-S-low-B	0.0076 J	0.0043 U*	0.0042 U	0.0096 J	0.0056 J	0.0073 J	0.278	0.502	0.348
1-S-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0097 J	0.0057 J	0.0055 J	0.219	0.386	0.305
1-S-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0070 U*	0.0074 J	0.0069 J	0.300	0.454	0.327
2-I-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0040 J	0.0092 J	0.0040 J	0.158	0.258 J	0.225
2-I-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0046 J	0.0100 J	0.0037 J	0.126	0.209 J	0.163
2-I-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0032 J	0.0068 J	0.0017 J	0.202	0.297 J	1.009
2-I-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0035 J	0.0062 J	0.0045 J	0.102	0.241 J	0.918
2-I-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0027 J	0.0048 J	0.0028 J	0.201	0.325	0.784
2-I-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0019 J	0.0025 U*	0.0017 J	0.158	0.878	0.628
2-I-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0030 J	0.0044 J	0.0029 J	0.153	0.204	0.710
2-I-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0017 J	0.0033 U*	0.0025 J	0.156	0.652	0.483
2-S-high-A	0.0048 J	0.0043 U*	0.0042 U	0.0059 U*	0.0129 J	0.0119 J	0.146	0.185	0.151
2-S-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0095 U*	0.0122 J	0.0106 J	0.129	0.116	0.133
2-S-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0053 U*	0.0110 J	0.0088 J	0.137	0.116	0.123
2-S-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0062 U*	0.0106 J	0.0116 J	0.122	0.107	0.135
2-S-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0062 U*	0.0057 J	0.0043 J	0.134	0.130	0.120

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Aluminum (mg/L)			Antimony (mg/L)			Arsenic (mg/L)			Barium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
2-S-low-B	1.59	1.91	1.86	0.043 J	0.041 J	0.056	0.099	0.091	0.056	0.012 J	0.010 J	0.015 J
2-S-low-C	1.43	1.58	2.04	0.025 J	0.030 J	0.077	0.080	0.063	0.077	0.009 J	0.014 J	0.012 J
2-S-low-D	1.21	2.02	2.24	0.018 J	0.038 J	0.066	0.094	0.084	0.066	0.006 J	0.013 J	0.010 J
3-I-high-A	1.11	1.17	1.02	0.023 J	0.050	0.037 J	0.046	0.036 J	0.037 J	0.025 J	0.065	0.075 J
3-I-high-B	1.10	1.05	1.39	0.030 J	0.054	0.044 J	0.046	0.033 J	0.044 J	0.030 J	0.085	0.053 J
3-I-high-C	1.15	1.17	1.29	0.028 J	0.052	0.039 J	0.048	0.034 J	0.039 J	0.033 J	0.064	0.055 J
3-I-high-D	1.25	1.26	1.24	0.026 J	0.049 J	0.040 J	0.057	0.042 J	0.040 J	0.032 J	0.047 J	0.064 J
3-I-low-A	1.09	1.34	1.30	0.040 J	0.053	0.040 J	0.055	0.035 J	0.040 J	0.031 J	0.054	0.061 J
3-I-low-B	1.04	1.07	1.35	0.040 J	0.049 J	0.046 J	0.051	0.037 J	0.046 J	0.033 J	0.037 J	0.045 J
3-I-low-C	1.13	1.40	1.28	0.038 J	0.058	0.036 J	0.051	0.037 J	0.036 J	0.046 J	0.076	0.094 J
3-I-low-D	1.08	1.49	1.41	0.033 J	0.055	0.039 J	0.046	0.036 J	0.039 J	0.033 J	0.051	0.054 J
3-S-high-A	1.23	1.07	1.75	0.034 J	0.031 J	0.037 U*	0.055	0.030 J	0.037 U*	0.030 J	0.036 J	0.036 J
3-S-high-B	1.12	0.83	1.45	0.033 J	0.027 J	0.033 U*	0.059	0.030 J	0.033 U*	0.030 J	0.028 J	0.024 J
3-S-high-C	1.11	1.05	1.76	0.028 J	0.030 J	0.044 U*	0.045	0.034 J	0.044 U*	0.031 J	0.028 J	0.026 J
3-S-high-D	1.15	0.82	1.49	0.027 J	0.029 J	0.039 U*	0.041 U*	0.035 J	0.039 U*	0.025 J	0.026 J	0.030 J
3-S-low-A	1.36	1.84	1.66	0.030 J	0.034 J	0.041 J	0.059 U*	0.038 J	0.041 J	0.021 J	0.030 J	0.025 J
3-S-low-B	1.35	1.53	1.71	0.042 J	0.026 J	0.046 J	0.061 U*	0.041 J	0.046 J	0.019 J	0.024 J	0.019 J
3-S-low-C	1.45	1.75	1.38	0.033 J	0.043 J	0.031 U*	0.056 U*	0.039 J	0.031 U*	0.026 J	0.031 J	0.026 J
3-S-low-D	1.53	1.66	1.89	0.036 J	0.030 J	0.050	0.052 U*	0.039 J	0.050	0.020 J	0.022 J	0.019 J
4-I-high-A	1.15	1.76	1.03 J	0.039 J	0.059	0.024 U*	0.048 U*	0.038 J	0.024 U*	0.020 J	0.041 J	0.112
4-I-high-B	1.15	1.25	1.18 J	0.038 J	0.049 J	0.030 U*	0.045 U*	0.033 J	0.030 U*	0.026 J	0.062	0.089 J
4-I-high-C	1.18	1.39	1.17 J	0.038 J	0.052	0.032 J	0.051 U*	0.034 J	0.032 J	0.023 J	0.045 J	0.087 J
4-I-high-D	1.21	1.35	1.22 J	0.038 J	0.057	0.038 J	0.047 U*	0.038 J	0.038 J	0.020 J	0.039 J	0.060 J
4-I-low-A	1.08	0.92 J	1.27	0.033 J	0.053	0.034 U*	0.041	0.034 J	0.034 U*	0.031 J	0.050	0.083 J
4-I-low-B	1.13	0.90 J	1.28	0.034 J	0.051	0.033 U*	0.050	0.031 J	0.033 U*	0.029 J	0.064	0.088 J
4-I-low-C	1.07	1.01 J	1.27	0.031 J	0.054	0.034 U*	0.048	0.034 J	0.034 U*	0.030 J	0.067	0.095 J
4-I-low-D	1.03	0.75 J	1.43	0.037 J	0.041 J	0.035 J	0.049	0.025 J	0.035 J	0.034 J	0.152	0.088 J
4-S-high-A	1.25	1.28	1.53	0.044 J	0.031 J	0.045 J	0.052 U*	0.053	0.045 J	0.016 J	0.014 J	0.022 J
4-S-high-B	1.52	1.29	1.81	0.053 J	0.031 J	0.057	0.072	0.053	0.057	0.017 J	0.010 J	0.018 J
4-S-high-C	1.35	1.34	1.06	0.036 J	0.029 J	0.036 U*	0.062	0.042 J	0.036 U*	0.016 J	0.011 J	0.015 J
4-S-high-D	1.08	1.42	1.37	0.029 J	0.029 J	0.038 U*	0.052 U*	0.053	0.038 U*	0.013 J	0.010 J	0.012 J
4-S-low-A	1.12	1.52	1.48	0.023 J	0.034 J	0.053	0.044	0.042 J	0.053	0.023 J	0.021 J	0.020 J
4-S-low-B	1.20	1.51	1.45	0.038 J	0.029 J	0.040 J	0.054	0.048 J	0.040 J	0.014 J	0.016 J	0.021 J
4-S-low-C	1.36	1.35	1.30	0.042 J	0.028 J	0.037 J	0.065	0.041 J	0.037 J	0.015 J	0.016 J	0.024 J
4-S-low-D	1.27	1.46	1.23	0.034 J	0.031 J	0.034 J	0.059	0.045 J	0.034 J	0.015 J	0.018 J	0.023 J
5-I-high-A	1.31	1.11	1.44 J	0.026 J	0.041 J	0.044 J	0.053 U*	0.048 J	0.044 J	0.038 J	0.062	0.044 J
5-I-high-B	1.24	1.32	1.28 J	0.025 J	0.045 J	0.039 J	0.070	0.049 J	0.039 J	0.024 J	0.045 J	0.065 J
5-I-high-C	1.12	1.42	1.22 J	0.027 J	0.048 J	0.040 J	0.045 U*	0.049 J	0.040 J	0.048 J	0.045 J	0.081 J

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Beryllium (mg/L)			Cadmium (mg/L)			Calcium (mg/L)			Chromium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
2-S-low-B	0.000045 U	0.000045 U	0.000045 U	0.0018 J	0.0022 J	0.0020 U*	0.78	0.58 J	1.27	0.001 UJ	0.001 U	0.001 U
2-S-low-C	0.000045 U	0.000045 U	0.000045 U	0.0013 J	0.0023 J	0.0025 J	0.68	0.87 J	1.25	0.001 UJ	0.001 U	0.001 U
2-S-low-D	0.000045 U	0.000045 U	0.000045 U	0.0006 J	0.0024 J	0.0029 J	0.49	0.76 J	0.66 J	0.001 UJ	0.001 U	0.001 U
3-I-high-A	0.000045 U	0.000045 U	0.000045 U	0.0002 UJ	0.0035 J	0.0042 J	4.55	11.50	13.48	0.001 UJ	0.001 U	0.001 U
3-I-high-B	0.000045 U	0.000045 U	0.000045 U	0.0002 UJ	0.0045 J	0.0035 J	4.92	16.40	8.59	0.001 UJ	0.001 U	0.001 U
3-I-high-C	0.000045 U	0.000048 J	0.000045 U	0.0002 UJ	0.0034 J	0.0040 J	5.68	10.60	8.92	0.001 UJ	0.001 U	0.001 U
3-I-high-D	0.000046 U*	0.000052 J	0.000045 U	0.0002 UJ	0.0056 J	0.0038 J	5.55	8.10	10.39	0.001 UJ	0.001 U	0.001 U
3-I-low-A	0.000045 U	0.000079 J	0.000172 J	0.0026	0.0050	0.0051 J	3.14	5.76	6.27	0.001 UJ	0.001 U	0.001 U
3-I-low-B	0.000045 U	0.000045 U	0.000045 U	0.0030	0.0034	0.0044 J	3.16	3.84 J	4.79	0.001 UJ	0.001 U	0.001 U
3-I-low-C	0.000045 U	0.000049 J	0.000045 U	0.0036	0.0055	0.0077 J	4.72	8.48	9.57	0.001 UJ	0.001 U	0.001 U
3-I-low-D	0.000045 U	0.000045 U	0.000045 U	0.0028	0.0044	0.0047 J	3.43	5.04	5.74	0.001 UJ	0.019 J	0.001 U
3-S-high-A	0.000045 U	0.000045 U	0.000045 U	0.0022 J	0.0027	0.0028 J	3.42	5.03	5.08	0.001 UJ	0.001 U	0.001 U
3-S-high-B	0.000045 U	0.000045 J	0.000045 U	0.0016 J	0.0020 J	0.0026 J	4.15	3.53 J	2.43	0.001 UJ	0.001 U	0.001 U
3-S-high-C	0.000045 U	0.000045 U	0.000045 U	0.0021 J	0.0026	0.0029 J	3.91	3.74 J	3.02	0.001 UJ	0.001 U	0.001 U
3-S-high-D	0.000045 U	0.000045 U	0.000045 U	0.0020 J	0.0022 J	0.0025 J	2.98	3.38 J	3.24	0.001 UJ	0.001 U	0.001 U
3-S-low-A	0.000045 U	0.000045 U	0.000045 U	0.0022 J	0.0030	0.0031 J	2.20	2.84 J	2.74	0.001 UJ	0.001 U	0.001 U
3-S-low-B	0.000045 U	0.000045 U	0.000045 U	0.0020 J	0.0023 J	0.0033 J	1.89	2.11 J	2.13	0.001 UJ	0.013 J	0.001 U
3-S-low-C	0.000094 J	0.000052 J	0.000135 J	0.0025	0.0034	0.0031 J	2.38	2.69 J	2.46	0.001 UJ	0.001 U	0.001 U
3-S-low-D	0.000045 U	0.000045 U	0.000045 U	0.0025 J	0.0026	0.0031 J	1.77	2.11 J	2.23	0.001 UJ	0.017 J	0.001 U
4-I-high-A	0.000046 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0041	0.0114	1.68	2.86 J	9.81 J	0.001 UJ	0.001 U	0.001 U
4-I-high-B	0.000045 U	0.000045 U	0.000045 U	0.0007 J	0.0061	0.0086 J	2.10	4.79 J	6.85 J	0.001 UJ	0.028 J	0.001 U
4-I-high-C	0.000047 U*	0.000045 U	0.000045 U	0.0003 J	0.0045	0.0083 J	1.87	3.33 J	6.38 J	0.001 UJ	0.001 U	0.001 U
4-I-high-D	0.000066 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0054	0.0063 J	1.64	2.73 J	4.58 J	0.001 UJ	0.001 U	0.001 U
4-I-low-A	0.000045 U	0.000045 U	0.000045 U	0.0036 J-	0.0054 J	0.0086 J	2.20	3.37 J	5.91 J	0.001 UJ	0.001 U	0.001 U
4-I-low-B	0.000045 U	0.000045 U	0.000045 U	0.0038 J-	0.0068 J	0.0090 J	2.11	4.46 J	6.18 J	0.001 UJ	0.001 U	0.001 U
4-I-low-C	0.000045 U	0.000045 U	0.000045 U	0.0036 J-	0.0072 J	0.0102	2.25	4.55 J	6.99 J	0.001 UJ	0.001 U	0.001 U
4-I-low-D	0.000045 U	0.000045 U	0.000045 U	0.0039 J-	0.0163 J	0.0092 J	2.47	13.10 J	6.28 J	0.001 UJ	0.001 U	0.001 U
4-S-high-A	0.000065 J	0.00139 J	0.000140 J	0.0022 J	0.0032	0.0038 J	1.01	0.72 J	1.92	0.001 UJ	0.003 J	0.002 J
4-S-high-B	0.000045 U	0.000045 U	0.000045 U	0.0027	0.0018 J	0.0034 J	1.04	0.58 J	1.42	0.001 UJ	0.001 U	0.001 U
4-S-high-C	0.000045 U	0.000045 U	0.000045 U	0.0023 J	0.0022 J	0.0029 J	1.03	0.64 J	1.08	0.001 UJ	0.001 U	0.001 U
4-S-high-D	0.000045 U	0.000045 U	0.000045 U	0.0019 J	0.0017 J	0.0022 U*	0.90	0.65 J	1.13	0.001 UJ	0.001 U	0.001 U
4-S-low-A	0.000045 U	0.000045 U	0.000045 U	0.0030	0.0029	0.0039 J	1.59	1.45 J	1.78	0.001 UJ	0.002 J	0.001 U
4-S-low-B	0.000045 U	0.000053 J	0.000045 U	0.0019 J	0.0025 J	0.0037 J	1.01	1.05 J	1.85	0.001 UJ	0.002 J	0.001 U
4-S-low-C	0.000045 U	0.000045 U	0.000045 U	0.0024 J	0.0025	0.0035 J	1.00	1.05 J	2.11	0.001 UJ	0.001 U	0.001 U
4-S-low-D	0.000045 U	0.000045 U	0.000045 U	0.0020 J	0.0025 J	0.0034 J	0.99	1.15 J	1.78	0.001 UJ	0.001 U	0.001 U
5-I-high-A	0.000053 U*	0.000045 U	0.000045 U	0.0010 J	0.0057	0.0049 J	4.21	7.18	4.83 J	0.001 UJ	0.001 U	0.001 U
5-I-high-B	0.000045 U	0.000045 U	0.000045 U	0.0005 J	0.0043	0.0065 J	3.04	5.49	7.31 J	0.001 UJ	0.001 U	0.001 U
5-I-high-C	0.000065 U*	0.000045 U	0.000045 U	0.0019 J	0.0046	0.0082 J	5.55	4.60 J	9.34 J	0.001 UJ	0.001 U	0.001 U

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Cobalt (mg/L)			Copper (mg/L)			Iron (mg/L)			Lead (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
2-S-low-B	0.002 U*	0.002 U*	0.002 U*	0.008 J	0.011	0.008 J	0.600	0.642	0.558	0.082	0.085 J	0.058
2-S-low-C	0.003 U*	0.001 U*	0.002 U*	0.006 J	0.010	0.010	0.490 J	0.537	0.578	0.056	0.097 J	0.061
2-S-low-D	0.002 U*	0.002 U*	0.001 U*	0.005 J	0.011	0.010 J	0.437 J	0.647	0.640	0.045	0.078 J	0.070
3-I-high-A	0.001 U*	0.001 U*	0.001 U*	0.011 U*	0.009 J	0.007 J	0.424 J	0.490 J	0.362 J	0.063	0.056 J	0.049 J
3-I-high-B	0.001 U*	0.001 U*	0.001 U*	0.010 U*	0.010	0.008 J	0.424 J	0.426 J	0.517	0.056	0.049 J	0.062
3-I-high-C	0.001 U*	0.001 U*	0.001 U*	0.009 U*	0.008 J	0.006 J	0.426 J	0.455 J	0.464 J	0.068	0.045 J	0.048 J
3-I-high-D	0.001 U*	0.001 U*	0.002 U*	0.009 U*	0.009 J	0.007 J	0.476 J	0.517	0.452 J	0.070	0.163 J	0.055
3-I-low-A	0.001 J	0.001 U*	0.002 U*	0.007 J	0.009 J	0.008 J	0.400 J	0.474 J	0.422 J	0.062	0.073 J	0.045 J
3-I-low-B	0.001 J	0.001 U*	0.002 U*	0.008 J	0.008 J	0.008 J	0.377 J	0.337 J	0.444 J	0.061	0.037 J	0.050 J
3-I-low-C	0.001 J	0.001 U*	0.002 U*	0.007 J	0.009 J	0.008 J	0.408 J	0.511	0.382 J	0.061	0.054 J	0.053
3-I-low-D	0.000 J	0.001 U*	0.001 U*	0.005 J	0.008 J	0.007 J	0.400 J	0.505	0.477 J	0.059	0.050 J	0.050 J
3-S-high-A	0.002 U*	0.001 J	0.001 U*	0.004 J	0.007 J	0.007 J	0.439 J	0.402 J	0.620	0.068	0.040 J	0.046 J
3-S-high-B	0.002 U*	0.001 J	0.002 U*	0.003 J	0.005 J	0.004 J	0.421 J	0.295 J	0.499 J	0.063	0.032 J	0.039 J
3-S-high-C	0.003 U*	0.001 J	0.002 U*	0.004 J	0.006 J	0.006 J	0.405 J	0.379 J	0.603	0.066	0.034 J	0.046 J
3-S-high-D	0.002 U*	0.001 J	0.001 U*	0.004 J	0.006 J	0.007 J	0.406 J	0.304 J	0.542	0.061	0.027 J	0.042 J
3-S-low-A	0.003 U*	0.001 U*	0.002 U*	0.005 J	0.008 J	0.007 J	0.440 J	0.669	0.551	0.067	0.044 J	0.049 J
3-S-low-B	0.002 U*	0.001 U*	0.001 U*	0.005 J	0.006 J	0.007 J	0.437 J	0.509	0.500 J	0.067	0.044 J	0.051
3-S-low-C	0.002 U*	0.001 U*	0.001 U*	0.003 J	0.008 J	0.004 J	0.505	0.584	0.461 J	0.070	0.055 J	0.033 J
3-S-low-D	0.002 U*	0.001 U*	0.002 U*	0.005 J	0.006 J	0.007 J	0.525	0.551	0.584	0.075	0.058 J	0.049 J
4-I-high-A	0.001 U*	0.001 U*	0.002 U*	0.008 U*	0.007 J	0.004 J	0.393 J	0.655	0.224 J	0.049	0.046 J	0.042 J
4-I-high-B	0.001 U*	0.001 U*	0.002 U*	0.009 U*	0.007 J	0.006 J	0.398 J	0.384 J	0.310 J	0.050	0.041 J	0.047 J
4-I-high-C	0.001 U*	0.001 U*	0.002 U*	0.008 U*	0.007 J	0.006 J	0.409 J	0.467 J	0.306 J	0.054	0.044 J	0.047 J
4-I-high-D	0.001 U*	0.001 U*	0.001 U*	0.008 U*	0.010 J	0.005 J	0.424 J	0.624	0.345 J	0.054	0.143 J	0.044 J
4-I-low-A	0.000 U	0.001 U*	0.002 U*	0.004 U*	0.008 J	0.006 J	0.363 J	0.258 J	0.322 J	0.045	0.034 J	0.049 J
4-I-low-B	0.000 U	0.001 U*	0.002 U*	0.005 U*	0.007 J	0.005 J	0.391 J	0.240 J	0.340 J	0.053	0.036 J	0.046 J
4-I-low-C	0.001 U*	0.001 U*	0.002 U*	0.004 U*	0.008 J	0.006 J	0.363 J	0.279 J	0.321 J	0.053	0.044 J	0.049 J
4-I-low-D	0.001 U*	0.002 U*	0.002 U*	0.003 U*	0.006 J	0.006 J	0.356 J	0.157 J	0.394 J	0.049	0.041 J	0.049 J
4-S-high-A	0.001 U*	0.003 J	0.002 U*	0.007 J	0.007 J	0.007 J	0.445 J	0.433 J	0.450 J	0.062	0.041 J	0.043 J
4-S-high-B	0.001 U*	0.001 J	0.001 U*	0.008 J	0.007 J	0.007 J	0.538	0.439 J	0.534	0.081	0.042 J	0.052
4-S-high-C	0.001 U*	0.001 J	0.002 U*	0.006 J	0.006 J	0.004 J	0.511	0.438 J	0.369 J	0.070	0.035 J	0.025 J
4-S-high-D	0.001 U*	0.001 J	0.001 U*	0.005 J	0.006 J	0.005 J	0.423 J	0.464 J	0.393 J	0.043	0.036 J	0.035 J
4-S-low-A	0.002 U*	0.001 U*	0.001 U*	0.002 J	0.006 J	0.007 J	0.385 J	0.461 J	0.417 J	0.057	0.041 J	0.048 J
4-S-low-B	0.003 U*	0.001 U*	0.001 U*	0.004 J	0.006 J	0.005 J	0.412 J	0.455 J	0.429 J	0.061	0.053 J	0.039 J
4-S-low-C	0.002 U*	0.001 U*	0.002 U*	0.005 J	0.005 J	0.005 J	0.475 J	0.431 J	0.356 J	0.071	0.037 J	0.044 J
4-S-low-D	0.002 U*	0.001 U*	0.001 U*	0.003 J	0.006 J	0.004 J	0.431 J	0.441 J	0.357 J	0.065	0.039 J	0.027 J
5-I-high-A	0.002 U*	0.002 U*	0.002 U*	0.016 U*	0.016 J	0.012	0.486 J	0.371 J	0.426 J	0.073	0.060 J	0.078
5-I-high-B	0.001 U*	0.002 U*	0.001 U*	0.022	0.016 J	0.011	0.465 J	0.488 J	0.348 J	0.081	0.055 J	0.080
5-I-high-C	0.001 U*	0.001 U*	0.002 U*	0.017 U*	0.016 J	0.011	0.379 J	0.537	0.317 J	0.073	0.075 J	0.079

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Magnesium (mg/L)			Manganese (mg/L)			Nickel (mg/L)			Phosphorus a (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
2-S-low-B	0.27	0.32 J	0.68	0.24	0.17 J	0.32	0.0040 U*	0.0011 J	0.0014 J	0.68	0.66 J	0.45
2-S-low-C	0.25	0.47 J	0.74	0.20	0.26 J	0.29	0.0022 U*	0.0018 J	0.0013 J	0.60	0.51 J	0.57
2-S-low-D	0.19 J	0.38 J	0.31	0.12	0.24 J	0.21	0.0019 U*	0.0015 J	0.0020 J	0.79	0.66 J	0.54
3-I-high-A	0.93	2.59 J	3.20	0.21	0.50	0.54	0.0008 UJ	0.0008 U	0.0011 J	0.42	0.33 J	0.29
3-I-high-B	1.04	3.71 J	2.11	0.23	0.61	0.26	0.0008 UJ	0.0008 U	0.0012 J	0.40	0.31 J	0.36
3-I-high-C	1.17	2.53 J	2.32	0.35	0.58	0.39	0.0008 UJ	0.0008 U	0.0011 J	0.37	0.30 J	0.30
3-I-high-D	1.13	1.87 J	2.51	0.24	0.31	0.43	0.0008 UJ	0.0008 U	0.0013 J	0.39	0.34 J	0.32
3-I-low-A	0.78	1.52	1.81	0.38	0.57	0.68	0.0008 UJ	0.0008 U	0.0008 U	0.38 U*	0.29 J	0.27
3-I-low-B	0.79	1.07	1.37	0.45	0.39	0.69	0.0008 UJ	0.0008 U	0.0008 U	0.36 U*	0.29 J	0.29
3-I-low-C	1.18	2.20	2.73	0.44	0.53	0.72	0.0008 UJ	0.0008 U	0.0008 U	0.34 U*	0.35 J	0.26
3-I-low-D	0.85	1.39	1.63	0.34	0.37	0.49	0.0008 UJ	0.0008 U	0.0014 J	0.35 U*	0.32 J	0.26
3-S-high-A	0.76	1.13	1.31	0.38	0.26	0.41	0.0015 J	0.0008 U	0.0012 J	0.42	0.37 J	0.35
3-S-high-B	0.82	0.76	0.74	0.32	0.21	0.27	0.0011 J	0.0008 U	0.0008 U	0.42	0.34 J	0.30
3-S-high-C	0.83	0.80	0.85	0.37	0.21	0.31	0.0018 J	0.0008 U	0.0008 U	0.38	0.36 J	0.39
3-S-high-D	0.65	0.72	0.91	0.33	0.25	0.34	0.0017 J	0.0008 U	0.0012 J	0.39	0.34 J	0.29
3-S-low-A	0.53	0.81 J	0.84	0.43	0.36 J	0.39	0.0008 U	0.0008 U	0.0015 J	0.40	0.36 J	0.31
3-S-low-B	0.46	0.62 J	0.65	0.43	0.24 J	0.39	0.0017 U*	0.0008 U	0.0008 U	0.39	0.35 J	0.32
3-S-low-C	0.60	0.77 J	0.81	0.43	0.31 J	0.39	0.0015 U*	0.0008 U	0.0008 U	0.40	0.36 J	0.25
3-S-low-D	0.43	0.62 J	0.71	0.40	0.30 J	0.40	0.0008 U	0.0008 U	0.0010 J	0.43	0.37 J	0.34
4-I-high-A	0.48	0.95 J	2.81 J	0.25	0.35 J	1.06 J	0.0008 UJ	0.0008 U	0.0009 U*	0.37	0.32 J	0.17
4-I-high-B	0.59	1.46 J	2.06 J	0.31	0.55 J	0.84 J	0.0008 UJ	0.0008 U	0.0022 U*	0.35	0.27 J	0.21
4-I-high-C	0.54	1.05 J	2.00 J	0.28	0.42 J	0.81 J	0.0008 UJ	0.0008 U	0.0011 U*	0.35	0.28 J	0.22
4-I-high-D	0.47	0.89 J	1.45 J	0.24	0.32 J	0.51 J	0.0008 UJ	0.0008 U	0.0008 U	0.38	0.29 J	0.23
4-I-low-A	0.64	1.02 J	1.85 J	0.37	0.39 J	0.81	0.0008 UJ	0.0008 U	0.0016 J	0.30	0.28 J	0.20
4-I-low-B	0.61	1.32 J	1.91 J	0.37	0.62 J	0.93	0.0008 UJ	0.0008 U	0.0013 J	0.31	0.25 J	0.21
4-I-low-C	0.65	1.40 J	2.15 J	0.40	0.61 J	1.08	0.0008 UJ	0.0008 U	0.0008 U	0.30	0.27 J	0.20
4-I-low-D	0.71	2.87 J	1.92 J	0.41	1.47 J	0.94	0.0008 UJ	0.0008 U	0.0015 J	0.29	0.19 J	0.22
4-S-high-A	0.28	0.24 J	0.68 J	0.31	0.21 J	0.50 J	0.0008 UJ	0.0008 J	0.0008 U	0.42 U*	0.34 J	0.27 J
4-S-high-B	0.28	0.19 J	0.48 J	0.35	0.10 J	0.36 J	0.0008 UJ	0.0008 U	0.0008 U	0.46 U*	0.44 J	0.36 J
4-S-high-C	0.28	0.21 J	0.40 J	0.29	0.11 J	0.28 J	0.0008 UJ	0.0008 U	0.0012 J	0.46 U*	0.37 J	0.21 J
4-S-high-D	0.26	0.22 J	0.42 J	0.23	0.18 J	0.29 J	0.0008 UJ	0.0008 U	0.0008 U	0.41 U*	0.36 J	0.27 J
4-S-low-A	0.44	0.50	0.64	0.38	0.44	0.48	0.0008 U	0.0008 U	0.0017 U*	0.35	0.32 J	0.27
4-S-low-B	0.28	0.38	0.69	0.33	0.35	0.47	0.0008 U	0.0008 U	0.0008 U	0.41	0.32 J	0.24
4-S-low-C	0.27	0.38	0.77	0.36	0.25	0.55	0.0010 U*	0.0008 U	0.0008 U	0.42	0.32 J	0.24
4-S-low-D	0.27	0.41	0.68	0.36	0.35	0.45	0.0008 U*	0.0008 U	0.0008 U	0.39	0.30 J	0.21
5-I-high-A	1.92	3.20 J	2.37 J	0.47	0.73 J	0.61 J	0.0008 UJ	0.0008 U	0.0008 U	0.49	0.42 J	0.42
5-I-high-B	1.43	2.81 J	3.53 J	0.30	0.48 J	0.86 J	0.0008 UJ	0.0008 U	0.0027 U*	0.66	0.45 J	0.36
5-I-high-C	2.42	2.26 J	4.23 J	0.60	0.48 J	1.06 J	0.0008 UJ	0.0008 U	0.0012 U*	0.45	0.45 J	0.34

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Potassium (mg/L)			Selenium (mg/L)			Silver (mg/L)			Sodium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
2-S-low-B	3.31	3.20	3.22	0.0368 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.04 U*	1.09 J	1.81
2-S-low-C	3.16	3.94	3.50	0.0371 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	0.89 U*	1.26 J	2.40
2-S-low-D	2.97	3.95	2.71	0.0347 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.04 U*	1.20 J	1.63
3-I-high-A	15.40	21.20	19.93	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	4.08	5.07 J	8.64
3-I-high-B	16.20	32.10	17.51	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	4.24	8.67 J	7.54
3-I-high-C	17.00	21.60	16.30	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	4.33	4.97 J	7.36
3-I-high-D	17.20	19.90	16.59	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	4.55	4.94 J	7.04
3-I-low-A	8.58	9.12	8.22	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.06	2.90	5.19
3-I-low-B	8.06	7.75	7.00	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.84	2.49	4.35
3-I-low-C	9.65	11.70	10.90	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.15	3.63	6.90
3-I-low-D	7.93	8.67	7.42	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.81	2.82	4.63
3-S-high-A	15.00	15.90	12.27	0.0278 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.33	3.10	4.39
3-S-high-B	13.60	13.10	11.83	0.0221 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.99	2.49	4.09
3-S-high-C	13.90	12.20	10.49	0.0311 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.07	2.21	3.55
3-S-high-D	13.60	13.90	11.31	0.0251 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.96	2.40	4.11
3-S-low-A	7.57	7.79	5.67	0.0253 U*	0.0110 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.07	1.92 J	3.00
3-S-low-B	6.70	6.03	5.12	0.0330 U*	0.0114 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.76	1.49 J	2.45
3-S-low-C	7.34	6.23	5.59	0.0335 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.83	1.45 J	3.04
3-S-low-D	6.07	6.37	5.41	0.0420 U*	0.0093 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.52	1.51 J	2.92
4-I-high-A	7.42	8.61 J	10.08	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.55	3.07 J	7.58
4-I-high-B	8.60	10.10 J	8.82	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.02	3.87 J	6.08
4-I-high-C	8.04	8.82 J	8.56	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.92	3.15 J	6.01
4-I-high-D	7.79	8.40 J	7.47	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.81	3.16 J	4.89
4-I-low-A	5.11	6.67 J	5.90	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.19	2.61 J	4.93
4-I-low-B	4.76	6.78 J	5.83	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.00	2.76 J	5.05
4-I-low-C	4.98	7.68 J	6.47	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.12	2.95 J	5.25
4-I-low-D	4.97	8.32 J	6.07	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.20	3.22 J	4.87
4-S-high-A	6.13	5.37 J	5.20 J	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.37	1.46 J	3.15 J
4-S-high-B	6.70	5.45 J	5.04 J	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.75	1.38 J	2.79 J
4-S-high-C	6.38	4.91 J	4.64 J	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.74	1.16 J	3.01 J
4-S-high-D	5.96	5.23 J	4.74 J	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.52	1.49 J	2.45 J
4-S-low-A	4.86	4.64	4.22	0.0297 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.20	1.46	2.83
4-S-low-B	4.19	4.19	4.06	0.0355 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.19 U*	1.40	2.74
4-S-low-C	4.28	4.42	4.29	0.0304 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.22	1.37	2.84
4-S-low-D	4.13	4.20	4.21	0.0283 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.18 U*	1.42	2.92
5-I-high-A	19.90	22.20 J	13.45	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	8.83	7.84 J	7.03
5-I-high-B	22.50	22.40 J	18.70	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	10.20	8.00 J	10.24
5-I-high-C	22.30	20.50 J	19.20	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	9.64	6.95 J	10.61

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Thallium (mg/L)			Vanadium (mg/L)			Zinc (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)									
2-S-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0070 U*	0.0072 J	0.0030 U*	0.142	0.148	0.159
2-S-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0033 U*	0.0046 U*	0.0041 J	0.111	0.169	0.169
2-S-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0061 U*	0.0063 J	0.0043 J	0.079	0.160	0.148
3-I-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0025 U*	0.0022 J	0.102	0.195 J	0.196
3-I-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0030 U*	0.0023 J	0.115	0.249 J	0.160
3-I-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0007 J	0.0027 U*	0.0022 J	0.121	0.194 J	0.169
3-I-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0009 J	0.0028 U*	0.0019 J	0.116	0.308 J	0.185
3-I-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0013 J	0.0023 U*	0.0025 J	0.174	0.317	0.293
3-I-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0016 J	0.0023 U*	0.0024 J	0.188	0.213	0.231
3-I-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0023 J	0.0025 U*	0.0018 J	0.243	0.353	0.471
3-I-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0020 J	0.0027 U*	0.0017 J	0.180	0.271	0.267
3-S-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0032 U*	0.0028 U*	0.0032 J	0.145	0.154	0.143
3-S-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0026 U*	0.0025 U*	0.0021 J	0.128	0.110	0.114
3-S-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0032 U*	0.0028 U*	0.0026 J	0.140	0.131	0.128
3-S-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0036 U*	0.0030 U*	0.0021 J	0.126	0.107	0.119
3-S-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0043 U*	0.0026 U*	0.0023 U*	0.163	0.203	0.186
3-S-low-B	0.0059 J	0.0043 U*	0.0042 U	0.0040 U*	0.0026 U*	0.0029 U*	0.167	0.176	0.198
3-S-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0034 U*	0.0026 U*	0.0015 U*	0.186	0.240	0.158
3-S-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0034 U*	0.0030 U*	0.0031 U*	0.171	0.184	0.171
4-I-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0026 U*	0.0006 U	0.177	0.269 J	0.718 J
4-I-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0024 U*	0.0011 J	0.213	0.401 J	0.531 J
4-I-high-C	0.0043 U*	0.0043 U*	0.0052 J	0.0006 UJ	0.0023 U*	0.0012 J	0.192	0.294 J	0.523 J
4-I-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0025 U*	0.0012 J	0.169	0.367 J	0.382 J
4-I-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0017 J	0.0022 U*	0.0012 J	0.243	0.347 J	0.560
4-I-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0013 J	0.0021 U*	0.0015 J	0.240	0.442 J	0.586
4-I-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0008 J	0.0024 U*	0.0014 J	0.247	0.461 J	0.637
4-I-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0018 U*	0.0012 J	0.268	1.020 J	0.591
4-S-high-A	0.0050 J	0.0043 U*	0.0042 U	0.0022 J	0.0047 J	0.0020 J	0.149	0.112 J	0.210 J
4-S-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0035 J	0.0032 U*	0.0029 J	0.169	0.113 J	0.186 J
4-S-high-C	0.0069 J	0.0043 U*	0.0042 U	0.0027 J	0.0028 U*	0.0017 J	0.153	0.118 J	0.107 J
4-S-high-D	0.0051 J	0.0043 U*	0.0042 U	0.0025 J	0.0038 J	0.0019 J	0.128	0.105 J	0.140 J
4-S-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0018 U*	0.0031 U*	0.0034 J	0.205	0.199	0.219
4-S-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0031 U*	0.0029 U*	0.0021 J	0.152	0.176	0.215
4-S-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0045 U*	0.0023 U*	0.0020 J	0.165	0.150	0.231
4-S-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0046 U*	0.0029 U*	0.0021 J	0.157	0.174	0.182
5-I-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0027 U*	0.0022 J	0.243	0.360 J	0.310 J
5-I-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0025 U*	0.0019 J	0.188	0.262 J	0.410 J
5-I-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0028 U*	0.0019 J	0.274	0.288 J	0.498 J

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Aluminum (mg/L)			Antimony (mg/L)			Arsenic (mg/L)			Barium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
5-I-high-D	1.26	1.17	1.06 J	0.029 J	0.044 J	0.038 J	0.057 U*	0.045 J	0.038 J	0.024 J	0.057	0.104
5-I-low-A	1.40	0.98 J	1.32	0.024 J	0.048 J	0.035 J	0.048	0.040 J	0.035 J	0.050	0.091	0.114
5-I-low-B	1.52	0.93 J	1.25	0.038 J	0.046 J	0.030 U*	0.040	0.041 J	0.030 U*	0.034 J	0.079	0.065 J
5-I-low-C	1.45	0.91 J	1.23	0.028 J	0.045 J	0.028 U*	0.037	0.038 J	0.028 U*	0.036 J	0.090	0.084 J
5-I-low-D	1.37	0.87 J	1.24	0.035 J	0.048 J	0.029 U*	0.038	0.034 J	0.029 U*	0.057	0.062	0.104
5-S-high-A	1.26	1.79	1.65	0.028 J	0.040 J	0.055	0.041 U*	0.092	0.055	0.024 J	0.023 J	0.041 J
5-S-high-B	1.26	1.60	1.35	0.034 J	0.027 J	0.039 J	0.048 U*	0.059	0.039 J	0.021 J	0.019 J	0.036 J
5-S-high-C	1.31	1.83	1.05	0.038 J	0.037 J	0.033 U*	0.079	0.072	0.033 U*	0.018 J	0.018 J	0.028 J
5-S-high-D	1.27	1.53	1.18	0.032 J	0.028 J	0.029 U*	0.073	0.049 J	0.029 U*	0.016 J	0.020 J	0.035 J
5-S-low-A	1.35	1.39	1.38	0.029 J	0.024 J	0.035 J	0.068	0.034 J	0.035 J	0.015 J	0.020 J	0.031 J
5-S-low-B	1.31	1.40	1.23	0.032 J	0.026 J	0.034 J	0.071	0.034 J	0.034 J	0.017 J	0.027 J	0.032 J
5-S-low-C	1.41	1.40	1.57	0.052 J	0.026 J	0.049 J	0.071	0.032 J	0.049 J	0.016 J	0.024 J	0.031 J
5-S-low-D	1.35	1.58	0.95	0.041 J	0.030 J	0.027 U*	0.061	0.042 J	0.027 U*	0.018 J	0.021 J	0.042 J
6-I-high-A	1.18	1.53	0.85 J	0.035 J	0.055	0.096	0.175	0.151	0.096	0.015 J	0.011 J	0.006 J
6-I-high-B	1.41	2.17	0.88 J	0.036 J	0.072	0.099	0.158	0.158	0.099	0.012 J	0.017 J	0.006 J
6-I-high-C	1.48	1.50	0.67 J	0.031 J	0.056	0.094	0.139	0.161	0.094	0.008 J	0.011 J	0.004 J
6-I-high-D	1.92	2.03	0.80 J	0.025 J	0.077	0.106	0.155	0.243	0.106	0.011 J	0.012 J	0.004 J
6-I-low-A	1.27	0.77 J	1.09	0.031 J	0.049 J	0.075	0.088	0.094	0.075	0.016 J	0.036 J	0.059 J
6-I-low-B	1.55	0.91 J	1.90	0.035 J	0.056	0.115	0.103	0.134	0.115	0.010 J	0.010 J	0.010 J
6-I-low-C	1.57	1.00 J	1.98	0.031 J	0.052	0.091	0.111	0.092	0.091	0.011 J	0.032 J	0.021 J
6-I-low-D	1.73	0.95 J	1.47	0.034 J	0.048 J	0.094	0.119	0.084	0.094	0.009 J	0.071	0.031 J
6-S-high-A	1.23	1.93	2.42	0.026 J	0.038 J	0.169	0.147	0.227	0.169	0.009 J	0.010 J	0.016 J
6-S-high-B	1.24	1.37	1.88	0.034 J	0.036 J	0.167	0.153	0.198	0.167	0.008 J	0.011 J	0.008 J
6-S-high-C	1.38	1.83	1.65	0.028 J	0.035 J	0.135	0.153	0.191	0.135	0.009 J	0.009 J	0.006 J
6-S-high-D	1.50	1.02	1.88	0.033 J	0.031 J	0.143	0.154	0.191	0.143	0.008 J	0.006 J	0.007 J
6-S-low-A	1.36	1.72	2.12	0.029 J	0.034 J	0.116	0.098	0.129	0.116	0.011 J	0.011 J	0.012 J
6-S-low-B	1.17	1.54	1.72	0.039 J	0.031 J	0.080	0.097	0.105	0.080	0.013 J	0.009 J	0.017 J
6-S-low-C	1.43	1.56	1.67	0.027 J	0.029 J	0.088	0.114	0.137	0.088	0.010 J	0.009 J	0.020 J
6-S-low-D	1.39	1.87	1.76	0.035 J	0.038 J	0.093	0.116	0.163	0.093	0.014 J	0.009 J	0.009 J
7-I-high-A	0.95	0.88 J	0.79 J	0.027 J	0.046 J	0.133	0.177	0.174	0.133	0.016 J	0.027 J	0.078 J
7-I-high-B	1.02	1.10 J	1.21 J	0.026 J	0.047 J	0.156	0.183	0.190	0.156	0.015 J	0.026 J	0.027 J
7-I-high-C	1.13	0.95 J	1.57 J	0.027 J	0.042 J	0.193	0.183	0.174	0.193	0.011 J	0.035 J	0.025 J
7-I-high-D	1.17	1.10 J	1.02 J	0.035 J	0.049 J	0.160	0.211	0.210	0.160	0.014 J	0.021 J	0.028 J
7-I-low-A	0.93	1.14	1.41	0.044 J	0.047 J	0.068	0.093	0.077	0.068	0.059	0.040 J	0.054 J
7-I-low-B	0.86	1.01	1.15	0.027 J	0.047 J	0.066	0.068	0.084	0.066	0.040 J	0.045 J	0.067 J
7-I-low-C	0.95	0.98	1.00	0.031 J	0.053	0.058	0.073	0.083	0.058	0.043 J	0.044 J	0.096 J
7-I-low-D	0.91	0.82	1.02	0.024 J	0.046 J	0.061	0.083	0.065	0.061	0.050	0.075	0.086 J
7-S-high-A	1.41	0.92 J	1.83	0.037 J	0.027 J	0.114	0.203	0.163	0.114	0.013 J	0.007 J	0.014 J
7-S-high-B	1.36	1.29 J	1.71	0.028 J	0.023 J	0.157	0.186	0.120	0.157	0.012 J	0.010 J	0.014 J
7-S-high-C	1.36	1.01 J	1.93	0.026 J	0.026 J	0.146	0.138	0.126	0.146	0.014 J	0.008 J	0.011 J
7-S-high-D	1.35	0.89 J	1.68	0.022 J	0.024 J	0.213	0.177	0.141	0.213	0.011 J	0.009 J	0.013 J
7-S-low-A	1.12	1.89	1.19	0.019 J	0.033 J	0.070	0.098	0.108	0.070	0.013 J	0.017 J	0.020 J

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Beryllium (mg/L)			Cadmium (mg/L)			Calcium (mg/L)			Chromium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
5-I-high-D	0.000066 U*	0.000045 U	0.000045 U	0.0003 J	0.0053	0.0111	2.55	6.37	12.85 J	0.001 UJ	0.001 U	0.001 U
5-I-low-A	0.000661 J	0.000047 J	0.000189 J	0.0039 J-	0.0096 J	0.0130	4.16	7.22 J	9.35 J	0.001 UJ	0.001 U	0.001 U
5-I-low-B	0.000091 U*	0.000045 U	0.000045 U	0.0016 J	0.0081 J	0.0069 J	2.86	6.50 J	4.83 J	0.001 UJ	0.003 J	0.001 U
5-I-low-C	0.000076 U*	0.000045 U	0.000045 U	0.0020 J	0.0093 J	0.0090 J	3.14	7.42 J	6.61 J	0.001 UJ	0.020 J	0.001 U
5-I-low-D	0.000066 U*	0.000045 U	0.000045 U	0.0041 J-	0.0066 J	0.0110	4.95	4.67 J	8.17 J	0.001 UJ	0.001 U	0.001 U
5-S-high-A	0.000045 U	0.000045 U	0.000045 U	0.0027	0.0038	0.0045 J	1.31	1.48 J	2.72	0.001 UJ	0.001 U	0.001 U
5-S-high-B	0.000045 U	0.000045 U	0.000045 U	0.0027	0.0023 J	0.0042 J	1.19	1.10 J	2.36	0.001 UJ	0.001 U	0.001 U
5-S-high-C	0.000045 U	0.000045 U	0.000045 U	0.0024 J	0.0025	0.0037 J	1.01	1.00 J	1.97	0.001 UJ	0.001 U	0.001 U
5-S-high-D	0.000045 U	0.0000532 J	0.000045 U	0.0022 J	0.0024 J	0.0046 J	0.85	1.04 J	2.37	0.001 UJ	0.001 U	0.001 U
5-S-low-A	0.000045 U	0.000045 U	0.000045 U	0.0022 J	0.0026	0.0041 J	1.00	1.29 J	2.47	0.001 UJ	0.001 U	0.001 U
5-S-low-B	0.000045 U	0.000045 U	0.000045 U	0.0027	0.0033	0.0041 J	1.19	1.67 J	2.65	0.001 UJ	0.001 U	0.001 U
5-S-low-C	0.000100 J	0.0000506 J	0.000156 J	0.0024 J	0.0036	0.0043 J	1.01	1.57 J	2.44	0.001 UJ	0.001 U	0.001 U
5-S-low-D	0.000045 U	0.000045 U	0.000045 U	0.0024 J	0.0028	0.0046 J	1.18	1.31 J	3.26	0.001 UJ	0.004 J	0.001 U
6-I-high-A	0.00741	0.000045 U	0.000151 J	0.0070 J-	0.0033	0.0031 J	8.03	23.90	20.64 J	0.001 UJ	0.003 J	0.002 J
6-I-high-B	0.000214 U*	0.0000582 J	0.000045 U	0.0007 J	0.0056	0.0032 J	13.90	58.20	16.74 J	0.001 UJ	0.004 J	0.003 J
6-I-high-C	0.000150 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0030	0.0033 J	8.45	17.90	15.58 J	0.001 UJ	0.021 J	0.006 J
6-I-high-D	0.000177 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0024 J	0.0029 J	4.21	7.54	13.35 J	0.001 UJ	0.004 J	0.002 J
6-I-low-A	0.000056 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0063 J	0.0107	4.42	12.80 J	18.30 J	0.001 UJ	0.001 U	0.001 U
6-I-low-B	0.000045 U	0.000045 U	0.000045 U	0.0002 UJ	0.0023 J	0.0026 J	2.62	2.83 J	2.67 J	0.001 UJ	0.001 U	0.002 J
6-I-low-C	0.000048 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0054 J	0.0034 J	2.98	9.86 J	5.89 J	0.001 UJ	0.001 U	0.002 J
6-I-low-D	0.000058 U*	0.0000461 J	0.000045 U	0.0002 UJ	0.0145 J	0.0055 J	2.32	43.60 J	9.25 J	0.001 UJ	0.004 J	0.002 J
6-S-high-A	0.000045 U	0.000045 U	0.000045 U	0.0016 J	0.0020 J	0.0033 J	0.93	0.86 J	0.87 J	0.001 UJ	0.001 U	0.001 U
6-S-high-B	0.000045 U	0.000045 U	0.000045 U	0.0017 J	0.0022 J	0.0020 U*	0.69	1.51 J	0.47 J	0.001 UJ	0.001 U	0.001 U
6-S-high-C	0.000045 U	0.000045 U	0.000155 J	0.0018 J	0.0015 J	0.0024 J	0.94	0.67 J	0.40 J	0.001 UJ	0.001 U	0.001 U
6-S-high-D	0.000045 U	0.000045 U	0.000045 U	0.0017 J	0.0017 J	0.0024 J	0.88	0.54 J	0.46 J	0.001 UJ	0.001 U	0.001 U
6-S-low-A	0.000045 U	0.000045 U	0.000045 U	0.0017 J	0.0023 J	0.0031 J	1.08	1.16 J	1.70	0.001 UJ	0.002 J	0.001 U
6-S-low-B	0.000045 U	0.000045 U	0.000045 U	0.0020 J	0.0018 J	0.0037 J	1.28	0.70 J	2.55	0.001 UJ	0.001 U	0.001 U
6-S-low-C	0.000045 U	0.000045 U	0.000045 U	0.0017 J	0.0020 J	0.0040 J	1.07	0.98 J	3.17	0.001 UJ	0.001 U	0.001 U
6-S-low-D	0.000045 U	0.000079 J	0.000045 U	0.0017 J	0.0019 J	0.0024 J	1.21	0.94 J	1.25	0.001 UJ	0.010 J	0.001 U
7-I-high-A	0.000103 U*	0.000061 J	0.000045 U	0.0033 J-	0.0097	0.0432	10.00 J	17.10 J	95.65 J	0.001 UJ	0.003 J	0.001 U
7-I-high-B	0.000062 U*	0.000073 J	0.000045 U	0.0025 J-	0.0083	0.0098 J	8.39 J	12.80 J	13.75 J	0.001 UJ	0.005 J	0.003 J
7-I-high-C	0.000062 U*	0.000063 J	0.000045 U	0.0013 J	0.0130	0.0071 J	6.41 J	26.10 J	9.35 J	0.001 UJ	0.006 J	0.003 J
7-I-high-D	0.000062 U*	0.000045 U	0.000045 U	0.0019 J	0.0064	0.0103	7.28 J	10.40 J	17.35 J	0.001 UJ	0.003 J	0.002 J
7-I-low-A	0.00759	0.000045 U	0.000177 J	0.0124 J-	0.0055 J	0.0078 J	6.82	4.88 J	7.32 J	0.001 UJ	0.009 J	0.002 J
7-I-low-B	0.000424 J	0.000045 U	0.000045 U	0.0035 J-	0.0060 J	0.0093 J	5.11	5.42 J	8.93 J	0.001 UJ	0.001 U	0.001 U
7-I-low-C	0.000073 U*	0.000045 U	0.000045 U	0.0038 J-	0.0064 J	0.0142	5.96	5.78 J	16.39 J	0.001 UJ	0.465	0.001 U
7-I-low-D	0.000087 U*	0.000045 U	0.000045 U	0.0048 J-	0.0101 J	0.0122	7.15	9.94 J	12.46 J	0.001 UJ	0.004 J	0.001 U
7-S-high-A	0.000045 U	0.000045 U	0.000045 U	0.0034	0.0032	0.0038 J	3.47	2.19 J	3.63	0.001 UJ	0.001 U	0.001 U
7-S-high-B	0.000045 U	0.000045 U	0.000045 U	0.0034	0.0024 J	0.0044 J	3.48	2.12 J	4.77	0.001 UJ	0.001 U	0.001 U
7-S-high-C	0.000045 U	0.000045 U	0.000045 U	0.0033	0.0026	0.0039 J	2.91	2.43 J	4.63	0.001 UJ	0.001 U	0.002 J
7-S-high-D	0.000045 U	0.000045 U	0.000045 U	0.0028	0.0027	0.0044 J	2.85	3.38 J	5.05	0.001 UJ	0.001 U	0.002 J
7-S-low-A	0.000045 U	0.000063 J	0.000045 U	0.0024 J	0.0031	0.0044 J	1.63	1.85 J	3.99	0.001 UJ	0.002 J	0.001 U

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Cobalt (mg/L)			Copper (mg/L)			Iron (mg/L)			Lead (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
5-I-high-D	0.001 U*	0.002 U*	0.002 U*	0.018 U*	0.016 J	0.011	0.471 J	0.427 J	0.246 J	0.092	0.071 J	0.077
5-I-low-A	0.002 U*	0.001 U*	0.003 J	0.012 U*	0.010	0.009 J	0.436 J	0.249 J	0.308 J	0.069	0.051 J	0.067
5-I-low-B	0.001 U*	0.002 U*	0.002 U*	0.011 U*	0.010	0.006 J	0.507	0.260 J	0.349 J	0.068	0.050 J	0.046 J
5-I-low-C	0.001 U*	0.002 U*	0.003 U*	0.011 U*	0.010 J	0.008 J	0.491 J	0.216 J	0.322 J	0.070	0.045 J	0.048 J
5-I-low-D	0.001 U*	0.001 U*	0.003 U*	0.013 U*	0.009 J	0.007 J	0.451 J	0.254 J	0.302 J	0.074	0.048 J	0.060
5-S-high-A	0.002 U*	0.002 J	0.002 U*	0.006 J	0.013	0.009 J	0.451 J	0.599	0.442 J	0.060	0.148 J	0.066
5-S-high-B	0.000 U	0.001 J	0.002 U*	0.006 J	0.009 J	0.008 J	0.462 J	0.475 J	0.353 J	0.069	0.049 J	0.051
5-S-high-C	0.002 U*	0.001 J	0.001 U*	0.007 J	0.011	0.004 J	0.467 J	0.556	0.257 J	0.069	0.065 J	0.038 J
5-S-high-D	0.001 U*	0.001 J	0.002 U*	0.007 J	0.008 J	0.006 J	0.476 J	0.472 J	0.322 J	0.069	0.055 J	0.050 J
5-S-low-A	0.002 U*	0.001 U*	0.002 U*	0.005 J	0.006 J	0.007 J	0.441 J	0.423 J	0.360 J	0.070	0.038 J	0.047 J
5-S-low-B	0.001 U*	0.001 U*	0.001 U*	0.006 J	0.006 J	0.005 J	0.451 J	0.425 J	0.304 J	0.078	0.044 J	0.040 J
5-S-low-C	0.002 U*	0.001 U*	0.002 U*	0.005 J	0.007 J	0.008 J	0.482 J	0.459 J	0.428 J	0.075	0.081 J	0.056
5-S-low-D	0.004 U*	0.001 U*	0.001 U*	0.006 J	0.007 J	0.005 J	0.443 J	0.480 J	0.236 J	0.072	0.050 J	0.036 J
6-I-high-A	0.012 J	0.006	0.004 J	0.085	0.104 J	0.046	0.606	0.694	0.321 J	0.078	0.038 J	0.026 J
6-I-high-B	0.006 J	0.009	0.003 U*	0.084	0.148 J	0.026	0.781	0.968	0.338 J	0.085	0.048 J	0.028 J
6-I-high-C	0.005 J	0.005	0.002 U*	0.056	0.089 J	0.032	0.673	0.684	0.237 J	0.072	0.046 J	0.016 J
6-I-high-D	0.004 U*	0.004 J	0.002 U*	0.053	0.098 J	0.024	0.871	1.070	0.287 J	0.092	0.064 J	0.018 J
6-I-low-A	0.003 U*	0.004 J	0.002 U*	0.015 U*	0.022	0.011	0.442 J	0.248 J	0.302 J	0.062	0.032 J	0.037 J
6-I-low-B	0.001 U*	0.002 U*	0.002 U*	0.014 U*	0.019	0.017	0.543	0.343 J	0.638	0.067	0.038 J	0.065
6-I-low-C	0.001 U*	0.003 U*	0.003 J	0.019	0.022	0.015	0.566	0.318 J	0.640	0.077	0.035 J	0.048 J
6-I-low-D	0.002 U*	0.007	0.003 U*	0.016 U*	0.027	0.014	0.597	0.321 J	0.425 J	0.076	0.033 J	0.053
6-S-high-A	0.003 U*	0.003 J	0.003 U*	0.009 J	0.015	0.041 J	0.458 J	0.679	1.003	0.067	0.101 J	0.125
6-S-high-B	0.002 U*	0.003 J	0.002 U*	0.013	0.017	0.026 J	0.489 J	0.484 J	0.711	0.074	0.072 J	0.080
6-S-high-C	0.001 U*	0.002 J	0.002 U*	0.011	0.015	0.019 J	0.504	0.581	0.626	0.062	0.079 J	0.074
6-S-high-D	0.003 U*	0.001 J	0.002 U*	0.010 J	0.013	0.022 J	0.552	0.359 J	0.702	0.068	0.052 J	0.090
6-S-low-A	0.002 U*	0.002 U*	0.002 U*	0.007 J	0.012	0.013	0.459 J	0.539	0.655	0.055	0.061 J	0.072
6-S-low-B	0.002 U*	0.001 U*	0.002 U*	0.007 J	0.009 J	0.011	0.416 J	0.484 J	0.456 J	0.070	0.049 J	0.066
6-S-low-C	0.002 U*	0.002 U*	0.002 U*	0.008 J	0.012	0.012	0.494 J	0.492 J	0.441 J	0.071	0.056 J	0.073
6-S-low-D	0.001 U*	0.001 U*	0.002 U*	0.007 J	0.012	0.010	0.497 J	0.610	0.518	0.065	0.060 J	0.052
7-I-high-A	0.002 U*	0.003 J	0.011	0.010 U*	0.009 J	0.010 J	0.278 J	0.227 J	0.097 J	0.052	0.031 J	0.039 J
7-I-high-B	0.001 U*	0.003 U*	0.003 U*	0.010 U*	0.009 J	0.007 J	0.311 J	0.331 J	0.306 J	0.051	0.041 J	0.040 J
7-I-high-C	0.001 U*	0.003 J	0.002 U*	0.010 U*	0.008 J	0.009 J	0.358 J	0.247 J	0.467 J	0.051	0.036 J	0.053
7-I-high-D	0.002 U*	0.001 U*	0.003 U*	0.010 U*	0.010 J	0.008 J	0.371 J	0.335 J	0.263 J	0.057	0.041 J	0.040 J
7-I-low-A	0.009 J	0.001 J	0.002 U*	0.018 U*	0.007 J	0.008 J	0.248 J	0.354 J	0.396 J	0.055	0.039 J	0.056
7-I-low-B	0.001 U*	0.002 J	0.002 U*	0.009 U*	0.007 J	0.006 J	0.236 J	0.300 J	0.286 J	0.039	0.035 J	0.045 J
7-I-low-C	0.001 U*	0.001 J	0.004 U*	0.007 U*	0.007 J	0.006 J	0.260 J	0.255 J	0.219 J	0.048	0.032 J	0.044 J
7-I-low-D	0.002 U*	0.002 J	0.003 U*	0.009 U*	0.007 J	0.006 J	0.245 J	0.206 J	0.235 J	0.048	0.031 J	0.044 J
7-S-high-A	0.001 U*	0.002 U*	0.002 U*	0.008 J	0.009 J	0.007 J	0.452 J	0.251 J	0.565	0.075	0.063 J	0.044 J
7-S-high-B	0.002 U*	0.002 U*	0.002 U*	0.008 J	0.006 J	0.009 J	0.460 J	0.406 J	0.501	0.066	0.032 J	0.050 J
7-S-high-C	0.000 U	0.001 U*	0.002 U*	0.007 J	0.007 J	0.007 J	0.486 J	0.285 J	0.585	0.061	0.033 J	0.041 J
7-S-high-D	0.001 U*	0.002 U*	0.002 U*	0.008 J	0.007 J	0.011	0.459 J	0.244 J	0.507	0.059	0.025 J	0.058
7-S-low-A	0.002 U*	0.001 U*	0.002 U*	0.003 J	0.008 J	0.006 J	0.368 J	0.603	0.292 J	0.050	0.051 J	0.034 J

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Magnesium (mg/L)			Manganese (mg/L)			Nickel (mg/L)			Phosphorus a (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
5-I-high-D	1.18	2.85 J	6.50 J	0.29	0.65 J	1.57 J	0.0008 UJ	0.0019 J	0.0017 U*	0.59	0.43 J	0.28
5-I-low-A	1.45	2.41 J	3.49 J	0.67	1.08 J	1.51	0.0008 UJ	0.0008 U	0.0014 J	0.31	0.27 J	0.23
5-I-low-B	1.03	2.17 J	1.85 J	0.47	0.94 J	0.80	0.0008 UJ	0.0008 U	0.0008 J	0.33	0.28 J	0.22
5-I-low-C	1.15	2.35 J	2.46 J	0.61	1.27 J	1.35	0.0008 UJ	0.0008 U	0.0008 U	0.34	0.25 J	0.22
5-I-low-D	1.68	1.60 J	2.83 J	0.80	0.65 J	1.42	0.0008 UJ	0.0008 U	0.0011 J	0.34	0.28 J	0.20
5-S-high-A	0.45	0.68	1.36 J	0.34	0.43 J	0.67 J	0.0008 UJ	0.0008 U	0.0009 J	0.44 U*	0.60 J	0.37 J
5-S-high-B	0.38	0.50	1.13 J	0.30	0.37 J	0.66 J	0.0008 UJ	0.0008 U	0.0008 J	0.46 U*	0.41 J	0.30 J
5-S-high-C	0.38	0.40	1.08 J	0.33	0.33 J	0.56 J	0.0008 UJ	0.0008 U	0.0012 J	0.47 U*	0.49 J	0.27 J
5-S-high-D	0.27	0.41	1.21 J	0.26	0.26 J	0.60 J	0.0008 UJ	0.0008 U	0.0008 U	0.47 U*	0.46 J	0.27 J
5-S-low-A	0.32	0.53	1.10	0.35	0.37	0.64	0.0009 U*	0.0008 U	0.0013 U*	0.42	0.31 J	0.25
5-S-low-B	0.38	0.66	1.16	0.44	0.41	0.65	0.0008 U	0.0008 U	0.0008 U	0.38	0.30 J	0.20
5-S-low-C	0.29	0.62	0.98	0.34	0.35	0.60	0.0015 U*	0.0008 U	0.0008 U	0.47	0.32 J	0.30
5-S-low-D	0.36	0.52	1.39	0.43	0.33	0.77	0.0023 U*	0.0008 U	0.0026 U*	0.42	0.35 J	0.18
6-I-high-A	3.96	10.80 J	9.83 J	0.27	0.66 J	0.61 J	0.0244 J	0.0261 J	0.0094 J	20.50	15.00	8.72
6-I-high-B	6.67	21.70 J	9.10 J	0.42	1.42 J	0.65 J	0.0234 J	0.0498 J	0.0062 J	18.20	14.40	8.29
6-I-high-C	4.06	8.83 J	8.76 J	0.26	0.54 J	0.73 J	0.0131 J	0.0263 J	0.0081 J	15.50	14.90	9.53
6-I-high-D	1.94	3.79 J	7.64 J	0.17	0.29 J	0.65 J	0.0079 J	0.0207 J	0.0041 U*	16.60	19.70	8.75
6-I-low-A	1.83	4.58 J	7.64 J	0.46	1.20 J	2.45	0.0008 UJ	0.0053 J	0.0034 J	2.49	3.01 J	1.64
6-I-low-B	1.13	1.07 J	1.15 J	0.30	0.38 J	0.37	0.0008 UJ	0.0035 J	0.0027 J	2.98	3.23 J	2.87
6-I-low-C	1.24	3.82 J	2.59 J	0.35	1.07 J	0.81	0.0008 UJ	0.0049 J	0.0027 J	3.50	2.62 J	2.48
6-I-low-D	1.02	10.80 J	3.86 J	0.29	3.23 J	1.18	0.0008 UJ	0.0074 J	0.0037 J	3.03	2.08 J	2.19
6-S-high-A	0.42	0.40	0.39 J	0.17	0.16 J	0.15 J	0.0008 UJ	0.0078 J	0.0158 J	5.41	5.02	5.33 J
6-S-high-B	0.34	0.88	0.24 J	0.12	0.26 J	0.07 J	0.0008 UJ	0.0100 J	0.0066 J	5.75	4.67	5.09 J
6-S-high-C	0.42	0.30	0.18 J	0.19	0.12 J	0.08 J	0.0008 UJ	0.0055 J	0.0056 J	4.69	5.58	3.06 J
6-S-high-D	0.37	0.29	0.24 J	0.20	0.07 J	0.08 J	0.0008 UJ	0.0056 J	0.0064 J	4.54	5.67	3.63 J
6-S-low-A	0.45	0.57	0.87	0.28	0.28	0.32	0.0015 U*	0.0020 J	0.0030 U*	1.57	2.20	2.44
6-S-low-B	0.47	0.35	1.29	0.35	0.16	0.54	0.0025 U*	0.0010 J	0.0017 U*	1.37	1.98	1.36
6-S-low-C	0.40	0.48	1.59	0.28	0.20	0.64	0.0018 U*	0.0017 J	0.0029 U*	1.75	2.65	1.42
6-S-low-D	0.44	0.47	0.72	0.32	0.19	0.22	0.0014 U*	0.0018 J	0.0013 U*	1.42	2.76	2.03
7-I-high-A	2.90 J	4.96 J	15.39 J	0.98 J	1.69 J	6.59 J	0.0008 UJ	0.0020 J	0.0083 J	10.40 J	7.73 J	4.74
7-I-high-B	2.48 J	3.90 J	4.01 J	0.76 J	1.18 J	1.36 J	0.0008 UJ	0.0023 J	0.0016 J	9.88 J	8.80 J	6.05
7-I-high-C	1.87 J	5.91 J	3.00 J	0.55 J	1.73 J	0.90 J	0.0008 UJ	0.0026 J	0.0026 J	11.40 J	8.09 J	6.18
7-I-high-D	2.21 J	3.36 J	4.70 J	0.57 J	0.73 J	1.23 J	0.0008 UJ	0.0016 J	0.0038 J	11.10 J	9.99 J	6.56
7-I-low-A	2.04	1.58 J	2.26	0.86	0.67 J	1.15	0.0008 UJ	0.0008 UJ	0.0022 J	1.32	1.26	1.00
7-I-low-B	1.47	1.59 J	2.67	0.67	0.71 J	1.32	0.0008 UJ	0.0008 UJ	0.0008 U	1.10	1.31	0.87
7-I-low-C	1.73	1.81 J	4.12	0.86	0.88 J	2.41	0.0008 UJ	0.0008 UJ	0.0012 J	1.25	1.31	0.78
7-I-low-D	1.93	2.63 J	3.53	0.93	1.31 J	1.66	0.0008 UJ	0.0008 UJ	0.0012 J	1.52	1.05	0.80
7-S-high-A	0.97	0.76	1.35	0.64	0.40	0.58	0.0008 UJ	0.0008 J	0.0008 U	6.93	7.11	3.84
7-S-high-B	0.97	0.70	1.72	0.59	0.31	0.72	0.0008 UJ	0.0008 U	0.0020 J	8.04	5.87	7.38
7-S-high-C	0.80	0.76	1.71	0.42	0.41	0.67	0.0008 UJ	0.0008 U	0.0016 J	6.27	7.28	7.11
7-S-high-D	0.84	1.11	1.72	0.50	0.57	0.73	0.0008 UJ	0.0009 J	0.0016 J	6.77	7.23	9.35
7-S-low-A	0.50	0.62	1.41 J	0.40	0.48	0.84 J	0.0008 U	0.0008 U	0.0009 U*	2.08	1.79	1.28 J

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Potassium (mg/L)			Selenium (mg/L)			Silver (mg/L)			Sodium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
5-I-high-D	18.50	20.20 J	21.12	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	8.53	6.72 J	13.59
5-I-low-A	9.06	9.80 J	9.66	0.0091 UJ	0.0123 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	4.28	3.73 J	8.36
5-I-low-B	8.02	9.25 J	6.49	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.47	3.72 J	4.71
5-I-low-C	8.85	9.88 J	7.48	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	4.54	3.78 J	5.60
5-I-low-D	10.50	8.68 J	8.19	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	4.91	3.12 J	5.95
5-S-high-A	9.09	12.90 J	12.06 J	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.87	3.59 J	5.54 J
5-S-high-B	7.79	11.10 J	10.43 J	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.07	3.17 J	5.15 J
5-S-high-C	9.99	11.50 J	9.93 J	0.0091 U	0.0091 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.42	3.12 J	4.89 J
5-S-high-D	8.16	9.78 J	10.72 J	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.46	2.57 J	5.36 J
5-S-low-A	5.80	4.80	5.73	0.0331 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.01	1.43	3.79
5-S-low-B	5.27	5.77	5.45	0.0309 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.77	1.73	3.67
5-S-low-C	4.81	5.43	5.81	0.0295 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.46	1.64	3.53
5-S-low-D	5.03	5.60	5.95	0.0319 U*	0.0091 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.58	1.74	3.88
6-I-high-A	20.60	25.80 J	18.40	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	7.49	7.58 J	8.21
6-I-high-B	24.00	33.50 J	16.42	0.0091 UJ	0.0102 J	0.0090 U	0.0139 U	0.024 J	0.0139 U	8.48	9.82 J	8.42
6-I-high-C	18.30	22.00 J	16.72	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	6.35	6.47 J	8.18
6-I-high-D	14.30	20.60 J	15.74	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	4.88	6.01 J	8.08
6-I-low-A	16.90	22.20 J	19.33	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.67	3.91 J	7.86
6-I-low-B	13.50	12.70 J	10.45	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.02	2.27 J	4.05
6-I-low-C	15.90	21.30 J	14.07	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.61	3.77 J	4.75
6-I-low-D	13.80	28.40 J	15.23	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.08	5.74 J	5.37
6-S-high-A	9.10	9.72 J	7.60 J	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.08	2.29 J	3.21 J
6-S-high-B	9.83	13.30 J	6.37 J	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.40	3.16 J	2.56 J
6-S-high-C	9.37	8.46 J	6.14 J	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.03	1.85 J	2.79 J
6-S-high-D	8.84	7.60 J	6.79 J	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.98	1.86 J	2.79 J
6-S-low-A	10.80	11.90	11.46	0.0255 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.89	2.11	3.51
6-S-low-B	10.80	9.20	11.57	0.0342 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.76	1.49	3.40
6-S-low-C	10.80	11.60	12.31	0.0311 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.79	2.02	3.87
6-S-low-D	11.00	11.00	10.20	0.0308 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.72	2.33	3.58
7-I-high-A	24.00	25.70 J	28.30	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	8.71	8.01 J	17.31 J
7-I-high-B	23.10	25.40 J	19.71	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	7.72	7.36 J	9.07 J
7-I-high-C	18.80	27.60 J	18.82	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	5.47	7.98 J	8.44 J
7-I-high-D	25.40	28.10 J	22.03	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	8.05	8.47 J	10.43 J
7-I-low-A	23.90	17.20	16.91	0.0091 UJ	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	5.41	3.32 J	6.19
7-I-low-B	17.70	18.20	17.92	0.0091 UJ	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	3.81	3.20 J	6.66
7-I-low-C	22.50	20.30	18.51	0.0091 UJ	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	4.93	4.42 J	6.92
7-I-low-D	21.90	22.40	18.75	0.0091 UJ	0.0091 J	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	4.92	4.32 J	7.25
7-S-high-A	16.30	13.30	12.08	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.44	3.16	4.77
7-S-high-B	15.10	10.80	15.40	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.26	2.36	5.94
7-S-high-C	12.70	12.50	13.79	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.69	2.91	5.43
7-S-high-D	13.70	14.60	16.24	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.42	3.36	6.34
7-S-low-A	13.40	13.30	12.77 J	0.0320 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.21	2.00	4.01 J

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Thallium (mg/L)			Vanadium (mg/L)			Zinc (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)									
5-I-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0013 J	0.0023 U*	0.0011 J	0.192	0.324 J	0.650 J
5-I-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0023 U*	0.0018 J	0.381	0.602 J	0.810
5-I-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0022 U*	0.0016 J	0.273	0.506 J	0.429
5-I-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0020 U*	0.0014 J	0.298	0.587 J	0.562
5-I-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0020 U*	0.0015 J	0.438	0.407 J	0.705
5-S-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0017 J	0.0051 J	0.0030 J	0.172	0.279 J	0.269 J
5-S-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0015 J	0.0035 J	0.0020 J	0.173	0.165 J	0.259 J
5-S-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0024 J	0.0047 J	0.0014 J	0.147	0.175 J	0.195 J
5-S-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0019 J	0.0027 U*	0.0019 J	0.141	0.171 J	0.230 J
5-S-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0041 U*	0.0023 U*	0.0017 J	0.155	0.176	0.266
5-S-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0044 U*	0.0023 U*	0.0018 J	0.181	0.224	0.265
5-S-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0046 U*	0.0022 U*	0.0030 J	0.172	0.236	0.270
5-S-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0049 U*	0.0028 U*	0.0017 J	0.180	0.191	0.287
6-I-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0317	0.0195 J	0.0126 J	0.152	0.209 J	0.199 J
6-I-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0180 J	0.0159 J	0.0111 J	0.191	0.342 J	0.190 J
6-I-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0213 J	0.0224 J	0.0100 J	0.130	0.187 J	0.235 J
6-I-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0307	0.0385	0.0112 J	0.120	0.168 J	0.229 J
6-I-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0058 J	0.0074 J	0.0041 J	0.187	0.410 J	0.775
6-I-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0058 J	0.0136 J	0.0111 J	0.142	0.158 J	0.163
6-I-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0104 J	0.0077 J	0.0074 J	0.162	0.339 J	0.270
6-I-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0080 J	0.0065 J	0.0058 J	0.142	0.915 J	0.422
6-S-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0056 J	0.0167 J	0.0149 J	0.116	0.151 J	0.171 J
6-S-high-B	0.0077 J	0.0043 U*	0.0042 U	0.0081 J	0.0124 J	0.0133 J	0.100	0.144 J	0.104 J
6-S-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0076 J	0.0148 J	0.0117 J	0.115	0.110 J	0.096 J
6-S-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0079 J	0.0143 J	0.0128 J	0.123	0.080 J	0.113 J
6-S-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0056 U*	0.0072 J	0.0085 J	0.133	0.149	0.179
6-S-low-B	0.0056 J	0.0043 U*	0.0042 U	0.0051 U*	0.0063 J	0.0048 J	0.167	0.101	0.221
6-S-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0079 U*	0.0087 J	0.0060 J	0.146	0.126	0.264
6-S-low-D	0.0043 J	0.0043 U*	0.0042 U	0.0052 U*	0.0139 J	0.0064 J	0.171	0.120	0.137
7-I-high-A	0.0043 U*	0.0045 J	0.0042 U	0.0200 J	0.0143 J	0.0092 J	0.347	0.548 J	2.004 J
7-I-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0145 J	0.0159 J	0.0113 J	0.310	0.474 J	0.533 J
7-I-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0153 J	0.0161 J	0.0114 J	0.248	0.753 J	0.404 J
7-I-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0155 J	0.0151 J	0.0118 J	0.267	0.371 J	0.549 J
7-I-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0109 J	0.0055 J	0.0055 J	0.455	0.341 J	0.478
7-I-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0028 J	0.0057 J	0.0042 J	0.357	0.362 J	0.567
7-I-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0031 J	0.0060 J	0.0045 J	0.383	0.382 J	0.840
7-I-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0060 J	0.0052 J	0.0039 J	0.461	0.601 J	0.732
7-S-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0090 J	0.0133 J	0.0070 J	0.213	0.235	0.221
7-S-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0115 J	0.0108 J	0.0072 J	0.200	0.161	0.267
7-S-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0082 J	0.0133 J	0.0121 J	0.201	0.173	0.232
7-S-high-D	0.0076 J	0.0043 U*	0.0042 U	0.0110 J	0.0126 J	0.0137 J	0.178	0.193	0.253
7-S-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0050 U*	0.0066 J	0.0044 J	0.158	0.213	0.278

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Aluminum (mg/L)			Antimony (mg/L)			Arsenic (mg/L)			Barium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
7-S-low-B	1.10	1.59	1.23	0.031 J	0.027 J	0.075	0.095	0.073	0.075	0.013 J	0.020 J	0.015 J
7-S-low-C	0.96	1.72	1.76	0.015 J	0.038 J	0.105	0.080	0.112	0.105	0.015 J	0.022 J	0.019 J
7-S-low-D	1.22	1.41	1.30	0.037 J	0.029 J	0.084	0.112	0.084	0.084	0.016 J	0.018 J	0.016 J
8-I-high-A	1.24	0.74 J	1.43 J	0.022 J	0.033 J	0.168	0.173	0.154	0.168	0.022 J	0.065	0.017 J
8-I-high-B	1.12	1.14 J	1.24 J	0.020 J	0.038 J	0.133	0.159	0.178	0.133	0.015 J	0.021 J	0.027 J
8-I-high-C	0.98	0.98 J	1.63 J	0.021 J	0.041 J	0.162	0.157	0.195	0.162	0.018 J	0.026 J	0.017 J
8-I-high-D	0.97	0.84 J	1.24 J	0.018 J	0.032 J	0.157	0.160	0.187	0.157	0.024 J	0.035 J	0.019 J
8-I-low-A	1.10	0.87	1.36	0.026 J	0.042 J	0.080	0.099	0.080	0.080	0.029 J	0.053	0.071 J
8-I-low-B	1.16	0.83	1.18	0.031 J	0.040 J	0.067	0.099	0.069	0.067	0.036 J	0.068	0.073 J
8-I-low-C	0.99	0.87	1.20	0.026 J	0.043 J	0.074	0.092	0.074	0.074	0.036 J	0.082	0.059 J
8-I-low-D	1.04	1.04	1.06	0.031 J	0.041 J	0.057	0.088	0.072	0.057	0.033 J	0.061	0.098 J
8-S-high-A	1.44	0.93 J	1.79	0.034 J	0.023 J	0.142	0.187	0.144	0.142	0.016 J	0.009 J	0.014 J
8-S-high-B	1.35	1.00 J	1.91	0.035 J	0.023 J	0.127	0.184	0.113	0.127	0.015 J	0.009 J	0.012 J
8-S-high-C	1.34	1.12 J	1.55	0.023 J	0.025 J	0.138	0.200	0.149	0.138	0.012 J	0.011 J	0.013 J
8-S-high-D	1.09	0.86 J	1.62	0.026 J	0.026 J	0.156	0.115	0.150	0.156	0.013 J	0.009 J	0.017 J
8-S-low-A	1.21	1.87	0.92	0.020 J	0.032 J	0.063	0.101	0.124	0.063	0.015 J	0.013 J	0.022 J
8-S-low-B	1.20	1.65	1.29	0.028 J	0.028 J	0.104	0.110	0.110	0.104	0.010 J	0.014 J	0.022 J
8-S-low-C	0.89	1.65	1.33	0.016 J	0.028 J	0.087	0.111	0.097	0.087	0.009 J	0.014 J	0.014 J
8-S-low-D	1.31	1.59	1.37	0.026 J	0.024 J	0.077	0.115	0.097	0.077	0.017 J	0.017 J	0.019 J
9-I-high-A	0.93	0.90 J	0.61 J	0.030 J	0.067	0.042 J	0.080	0.070	0.042 J	0.011 J	0.028 J	0.078 J
9-I-high-B	1.50	1.06 J	0.68 J	0.037 J	0.084	0.048 J	0.065	0.068	0.048 J	0.023 J	0.052	0.055 J
9-I-high-C	1.01	0.76 J	0.57 J	0.038 J	0.077	0.044 J	0.075	0.068	0.044 J	0.016 J	0.044 J	0.075 J
9-I-high-D	0.98	1.34 J	1.22 J	0.032 J	0.085	0.057	0.086	0.091	0.057	0.010 J	0.022 J	0.082 J
9-I-low-A	1.12	1.63	0.60	0.031 J	0.072	0.051	0.069	0.098	0.051	0.013 J	0.032 J	0.140
9-I-low-B	1.56	0.95	0.88	0.032 J	0.055	0.045 J	0.078	0.044 J	0.045 J	0.014 J	0.080	0.100
9-I-low-C	1.47	0.82	0.83	0.045 J	0.054	0.037 J	0.083	0.042 J	0.037 J	0.025 J	0.079	0.090 J
9-I-low-D	1.74	0.82	0.84	0.039 J	0.056	0.047 J	0.063	0.045 J	0.047 J	0.014 J	0.098	0.094 J
9-S-high-A	1.34	1.22 J	2.48	0.029 J	0.037 J	0.123	0.084	0.128	0.123	0.012 J	0.012 J	0.009 J
9-S-high-B	1.23	1.36 J	2.28	0.026 J	0.036 J	0.130	0.061	0.109	0.130	0.017 J	0.012 J	0.014 J
9-S-high-C	1.22	1.06 J	1.86	0.027 J	0.043 J	0.087	0.074	0.106	0.087	0.012 J	0.025 J	0.026 J
9-S-high-D	1.30	1.61 J	2.63	0.028 J	0.040 J	0.140	0.067	0.131	0.140	0.014 J	0.014 J	0.015 J
9-S-low-A	1.14	1.31	1.15	0.036 J	0.034 J	0.056	0.039 U*	0.075	0.056	0.023 J	0.022 J	0.058 J
9-S-low-B	1.19	1.22	1.04	0.030 J	0.029 J	0.064	0.060 U*	0.053	0.064	0.017 J	0.034 J	0.029 J
9-S-low-C	1.32	1.41	1.08	0.028 J	0.028 J	0.055	0.059 U*	0.061	0.055	0.013 J	0.018 J	0.033 J
9-S-low-D	1.40	1.48	1.27	0.030 J	0.029 J	0.047 J	0.068 U*	0.064	0.047 J	0.019 J	0.014 J	0.015 J
10-I-high-A	1.09 J	0.71 J	0.83 J	0.030 J	0.047 J	0.035 U*	0.052	0.034 J	0.035 U*	0.044 J	0.080	0.097 J
10-I-high-B	1.01 J	0.82	1.63 J	0.021 J	0.051	0.052	0.045	0.040 J	0.052	0.033 J	0.088	0.042 J
10-I-high-C	1.36 J	0.84	1.41 J	0.027 J	0.045 J	0.046 J	0.046	0.036 J	0.046 J	0.030 J	0.079	0.051 J
10-I-high-D	0.93 J	0.58 J	1.39 J	0.030 J	0.053	0.042 J	0.043	0.033 J	0.042 J	0.051	0.101	0.051 J

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Beryllium (mg/L)			Cadmium (mg/L)			Calcium (mg/L)			Chromium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
7-S-low-B	0.000045 U	0.000045 U	0.000045 U	0.0019 J	0.0033	0.0038 J	1.55	2.11 J	2.52	0.001 UJ	0.001 U	0.001 U
7-S-low-C	0.000069 J	0.000072 J	0.000153 J	0.0019 J	0.0040	0.0040 J	1.51	2.52 J	2.66	0.001 UJ	0.001 U	0.001 U
7-S-low-D	0.000045 U	0.000045 U	0.000045 U	0.0024 J	0.0032	0.0046 J	1.90	2.32 J	2.62	0.001 UJ	0.001 U	0.001 U
8-I-high-A	0.00587	0.000077 J	0.000151 J	0.0073 J-	0.0257	0.0057 J	7.55 J	71.70 J	8.20 J	0.001 UJ	0.001 U	0.003 J
8-I-high-B	0.000463 J	0.000056 J	0.000045 U	0.0014 J	0.0057	0.0101	6.55 J	10.20 J	19.42 J	0.001 UJ	0.002 J	0.002 J
8-I-high-C	0.000291 U*	0.000065 J	0.000045 U	0.0019 J	0.0070	0.0058 J	8.79 J	14.60 J	8.67 J	0.001 UJ	0.002 J	0.003 J
8-I-high-D	0.000276 U*	0.000045 U	0.000045 U	0.0029 J-	0.0108	0.0060 J	11.50 J	25.60 J	11.11 J	0.001 UJ	0.001 U	0.004 J
8-I-low-A	0.000052 U*	0.000055 J	0.000045 U	0.0015 J	0.0076 J	0.0099 J	4.64	8.54 J	10.37 J	0.001 UJ	0.001 U	0.002 J
8-I-low-B	0.000069 U*	0.000045 U	0.000045 U	0.0023 J	0.0087 J	0.0102	5.42	9.99 J	11.05 J	0.001 UJ	0.001 U	0.001 U
8-I-low-C	0.000045 U	0.000045 U	0.000045 U	0.0024 J	0.0114 J	0.0080 J	5.48	12.50 J	8.94 J	0.001 UJ	0.001 U	0.002 J
8-I-low-D	0.000077 U*	0.000045 U	0.000045 U	0.0020 J	0.0080 J	0.0141	5.01	9.04 J	16.38 J	0.001 UJ	0.001 U	0.001 U
8-S-high-A	0.000045 U	0.000045 U	0.000045 U	0.0038	0.0024 J	0.0041 J	3.83	2.39 J	4.17	0.001 UJ	0.001 U	0.001 U
8-S-high-B	0.000045 U	0.000064 J	0.000045 U	0.0032	0.0023 J	0.0037 J	3.22	1.45 J	3.52	0.001 UJ	0.001 U	0.001 U
8-S-high-C	0.000045 J	0.000045 U	0.000185 J	0.0030	0.0026	0.0045 J	3.34	2.54 J	3.84	0.001 UJ	0.001 U	0.001 U
8-S-high-D	0.000045 U	0.000045 U	0.000045 U	0.0023 J	0.0026	0.0047 J	2.38	2.20 J	6.07	0.001 UJ	0.001 U	0.001 U
8-S-low-A	0.000045 U	0.000045 U	0.000045 U	0.0019 J	0.0029	0.0045 J	1.71	1.33 J	3.60	0.001 UJ	0.001 U	0.001 U
8-S-low-B	0.000045 U	0.000045 U	0.000045 U	0.0014 J	0.0025	0.0040 J	1.18	1.40 J	3.06	0.001 UJ	0.001 U	0.001 U
8-S-low-C	0.000045 U	0.000060 J	0.000045 U	0.0014 J	0.0028	0.0039 J	1.05	1.49 J	2.26	0.001 UJ	0.001 U	0.001 U
8-S-low-D	0.000045 U	0.000045 U	0.000045 U	0.0025 J	0.0041	0.0040 J	1.66	1.71 J	2.93	0.001 UJ	0.001 U	0.001 U
9-I-high-A	0.00017 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0034	0.0096 J	7.91 J	22.80 J	85.06 J	0.001 UJ	0.001 U	0.001 U
9-I-high-B	0.000049 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0062	0.0058 J	10.80 J	55.00 J	62.03 J	0.001 UJ	0.001 U	0.001 U
9-I-high-C	0.000051 U*	0.000049 J	0.000045 U	0.0002 UJ	0.0065	0.0111	14.00 J	75.20 J	162.89 J	0.001 UJ	0.001 U	0.001 U
9-I-high-D	0.000065 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0028	0.0138	6.93 J	18.00 J	144.26 J	0.001 UJ	0.001 U	0.001 J
9-I-low-A	0.000062 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0033 J	0.0183	3.39	6.56 J	42.72 J	0.001 UJ	0.001 U	0.001 U
9-I-low-B	0.000045 U	0.000085 J	0.000045 U	0.0002 UJ	0.0078 J	0.0104	2.47	20.30 J	23.75 J	0.001 UJ	0.001 U	0.001 U
9-I-low-C	0.0103	0.00124 J	0.000159 J	0.0096 J-	0.0078 J	0.0087 J	2.73	15.80 J	21.53 J	0.001 UJ	0.001 U	0.001 U
9-I-low-D	0.000246 J	0.000063 J	0.000045 U	0.0002 UJ	0.0097 J	0.0081 J	2.55	21.90 J	20.36 J	0.001 UJ	0.001 U	0.001 U
9-S-high-A	0.000045 U	0.000045 U	0.000045 U	0.0011 J	0.0019 J	0.0026 J	0.79	0.86 J	0.91 J	0.001 UJ	0.001 U	0.001 U
9-S-high-B	0.000045 U	0.000049 J	0.000045 U	0.0018 J	0.0024 J	0.0030 J	1.26	0.97 J	1.64	0.001 UJ	0.001 U	0.001 U
9-S-high-C	0.000045 U	0.000045 U	0.000045 U	0.0013 J	0.0021 J	0.0036 J	0.88	2.60 J	4.42	0.001 UJ	0.001 U	0.001 U
9-S-high-D	0.000045 U	0.000045 U	0.000045 U	0.0013 J	0.0021 J	0.0027 J	0.95	1.12 J	1.75	0.001 UJ	0.001 U	0.001 U
9-S-low-A	0.000045 U	0.000045 U	0.000045 U	0.0019 J	0.0022 J	0.0054 J	1.74	2.54 J	11.53	0.001 UJ	0.001 U	0.001 U
9-S-low-B	0.000045 U	0.000045 U	0.000045 U	0.0015 J	0.0030	0.0039 J	1.42	3.32 J	4.98	0.001 UJ	0.001 U	0.001 U
9-S-low-C	0.000045 U	0.000045 U	0.000045 U	0.0012 J	0.0022 J	0.0037 J	1.14	1.76 J	5.63	0.001 UJ	0.001 U	0.001 U
9-S-low-D	0.000045 U	0.000045 U	0.000045 U	0.0017 J	0.0022 J	0.0031 J	1.42	1.12 J	1.78	0.001 UJ	0.001 U	0.001 U
10-I-high-A	0.0103	0.000045 U	0.000151 J	0.0093 J-	0.0036	0.0060 J	6.79 J	15.90	27.06 J	0.001 UJ	0.001 U	0.001 U
10-I-high-B	0.000138 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0042	0.0029 J	6.10 J	18.00	6.59 J	0.001 UJ	0.001 U	0.001 U
10-I-high-C	0.000045 U	0.000076 J	0.000045 U	0.0002 UJ	0.0035	0.0033 J	5.06 J	15.90	8.41 J	0.001 UJ	0.001 U	0.001 U
10-I-high-D	0.000045 U	0.000054 J	0.000045 U	0.0002 UJ	0.0050	0.0036 J	11.80 J	26.40	8.74 J	0.001 UJ	0.001 U	0.001 U

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Cobalt (mg/L)			Copper (mg/L)			Iron (mg/L)			Lead (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
7-S-low-B	0.001 U*	0.002 U*	0.002 U*	0.002 J	0.007 J	0.007 J	0.372 J	0.514	0.283 J	0.052	0.047 J	0.037 J
7-S-low-C	0.001 U*	0.002 U*	0.002 U*	0.001 J	0.009 J	0.008 J	0.324 J	0.507	0.441 J	0.042	0.050 J	0.054
7-S-low-D	0.003 U*	0.001 U*	0.002 U*	0.003 J	0.006 J	0.008 J	0.402 J	0.414 J	0.315 J	0.058	0.038 J	0.048 J
8-I-high-A	0.007 U*	0.006	0.002 U*	0.024 J	0.025 J	0.015 J	0.398 J	0.140 J	0.454 J	0.057	0.037 J	0.054
8-I-high-B	0.001 U*	0.002 U*	0.003 U*	0.018 J	0.021 J	0.014 J	0.361 J	0.342 J	0.315 J	0.053	0.048 J	0.060
8-I-high-C	0.000 U*	0.002 U*	0.002 U*	0.018 J	0.021 J	0.014 J	0.323 J	0.281 J	0.496 J	0.051	0.042 J	0.060
8-I-high-D	0.002 U*	0.004 J	0.002 U*	0.020 J	0.025 J	0.016 J	0.306 J	0.219 J	0.395 J	0.057	0.041 J	0.054
8-I-low-A	0.001 U*	0.002 J	0.003 U*	0.011 U*	0.010	0.010	0.344 J	0.253 J	0.339 J	0.061	0.041 J	0.071
8-I-low-B	0.003 U*	0.002 J	0.003 U*	0.011 U*	0.009 J	0.009 J	0.400 J	0.236 J	0.282 J	0.066	0.036 J	0.061
8-I-low-C	0.001 U*	0.003 J	0.003 U*	0.011 U*	0.013	0.010 J	0.307 J	0.326 J	0.337 J	0.052	0.098 J	0.061
8-I-low-D	0.001 U*	0.002 J	0.003 U*	0.009 U*	0.011	0.009 J	0.325 J	0.315 J	0.231 J	0.051	0.046 J	0.057
8-S-high-A	0.000 U*	0.002 U*	0.001 U*	0.011	0.010 J	0.010	0.483 J	0.275 J	0.540	0.069	0.034 J	0.052
8-S-high-B	0.001 U*	0.001 U*	0.002 U*	0.012	0.008 J	0.010	0.464 J	0.308 J	0.571	0.067	0.036 J	0.054
8-S-high-C	0.002 U*	0.001 U*	0.002 U*	0.011	0.009 J	0.010 J	0.461 J	0.344 J	0.426 J	0.064	0.037 J	0.046 J
8-S-high-D	0.000 U	0.001 U*	0.003 U*	0.007 J	0.009 J	0.012	0.388 J	0.248 J	0.466 J	0.047	0.027 J	0.057
8-S-low-A	0.002 U*	0.001 U*	0.002 U*	0.004 J	0.010	0.007 J	0.387 J	0.583	0.201 J	0.052	0.061 J	0.039 J
8-S-low-B	0.001 U*	0.002 U*	0.002 U*	0.005 J	0.008 J	0.009 J	0.391 J	0.473 J	0.287 J	0.053	0.049 J	0.058
8-S-low-C	0.001 U*	0.001 U*	0.002 U*	0.004 J	0.008 J	0.008 J	0.297 J	0.491 J	0.289 J	0.047	0.047 J	0.047 J
8-S-low-D	0.002 U*	0.002 U*	0.002 U*	0.004 J	0.009 J	0.007 J	0.434 J	0.497 J	0.356 J	0.068	0.117 J	0.048 J
9-I-high-A	0.003 U*	0.004 J	0.004 U*	0.064 J	0.063 J	0.024 J	0.511	0.439 J	0.209 J	0.059	0.034 J	0.013 J
9-I-high-B	0.002 U*	0.006	0.003 U*	0.055 J	0.078 J	0.028 J	0.726	0.510	0.252 J	0.088	0.047 J	0.017 J
9-I-high-C	0.004 U*	0.009	0.005 J	0.063 J	0.138 J	0.035 J	0.506	0.533	0.242 J	0.057	0.038 J	0.019 J
9-I-high-D	0.003 U*	0.004 J	0.006 J	0.068 J	0.070 J	0.047 J	0.563	0.649	0.461 J	0.061	0.048 J	0.024 J
9-I-low-A	0.001 U*	0.003 J	0.007 J	0.021 U*	0.027	0.012	0.438 J	0.659	0.191 J	0.056	0.052 J	0.033 J
9-I-low-B	0.003 U*	0.003 J	0.003 U*	0.017 U*	0.018	0.012	0.572	0.302 J	0.256 J	0.072	0.033 J	0.037 J
9-I-low-C	0.011 J	0.003 J	0.002 U*	0.025 U*	0.014	0.010	0.582	0.251 J	0.256 J	0.077	0.029 J	0.034 J
9-I-low-D	0.003 U*	0.003 J	0.003 U*	0.016 U*	0.013	0.010	0.619	0.252 J	0.261 J	0.076	0.028 J	0.032 J
9-S-high-A	0.001 U*	0.002 J	0.002 U*	0.011	0.016	0.022	0.527	0.486 J	0.871	0.063	0.085 J	0.093
9-S-high-B	0.001 U*	0.002 J	0.003 U*	0.009 J	0.017	0.020	0.471 J	0.543	0.827	0.066	0.075 J	0.098
9-S-high-C	0.000 U	0.002 J	0.003 U*	0.010 J	0.013	0.014	0.485 J	0.399 J	0.557	0.069	0.063 J	0.076
9-S-high-D	0.002 U*	0.002 J	0.003 U*	0.009 J	0.016	0.018	0.491 J	0.595	0.942	0.065	0.082 J	0.105
9-S-low-A	0.001 U*	0.001 U*	0.004 U*	0.005 J	0.009 J	0.011	0.419 J	0.412 J	0.307 J	0.063	0.049 J	0.053
9-S-low-B	0.003 U*	0.002 U*	0.002 U*	0.004 J	0.007 J	0.008 J	0.435 J	0.355 J	0.277 J	0.058	0.050 J	0.052
9-S-low-C	0.001 U*	0.001 U*	0.003 U*	0.007 J	0.009 J	0.009 J	0.479 J	0.425 J	0.297 J	0.064	0.046 J	0.052
9-S-low-D	0.002 U*	0.001 U*	0.001 U*	0.007 J	0.008 J	0.007 J	0.524	0.490 J	0.321 J	0.072	0.048 J	0.047 J
10-I-high-A	0.011 J	0.001 U*	0.002 U*	0.019	0.008 J	0.007 J	0.429 J	0.270 J	0.306 J	0.067	0.029 J	0.043 J
10-I-high-B	0.001 J	0.002 U*	0.001 U*	0.009 U*	0.007 J	0.008 J	0.390 J	0.316 J	0.639	0.052	0.033 J	0.065
10-I-high-C	0.001 J	0.001 U*	0.001 U*	0.010 U*	0.007 J	0.007 J	0.532	0.320 J	0.553	0.071	0.031 J	0.056
10-I-high-D	0.001 J	0.001 U*	0.001 U*	0.008 U*	0.007 J	0.007 J	0.373 J	0.208 J	0.537	0.059	0.025 J	0.053

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Magnesium (mg/L)			Manganese (mg/L)			Nickel (mg/L)			Phosphorus a (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
7-S-low-B	0.45	0.72	0.88 J	0.35	0.49	0.70 J	0.0008 U	0.0008 U	0.0012 U*	2.01	1.25	1.15 J
7-S-low-C	0.47	0.81	0.91 J	0.30	0.64	0.64 J	0.0012 U*	0.0008 U	0.0016 U*	0.99	1.96	1.19 J
7-S-low-D	0.56	0.79	0.87 J	0.49	0.58	0.64 J	0.0017 U*	0.0008 U	0.0013 U*	1.61	1.50	1.49 J
8-I-high-A	3.17 J	19.00 J	3.63 J	0.61 J	4.15 J	0.64 J	0.0008 UJ	0.0066 J	0.0030 J	8.25 J	6.00 J	7.38
8-I-high-B	2.82 J	4.63 J	7.57 J	0.56 J	0.85 J	1.55 J	0.0008 UJ	0.0019 J	0.0030 J	8.67 J	9.27 J	6.09
8-I-high-C	3.38 J	5.84 J	3.85 J	0.69 J	1.10 J	0.80 J	0.0008 UJ	0.0027 J	0.0033 J	8.72 J	8.48 J	7.27
8-I-high-D	4.46 J	9.71 J	4.85 J	0.85 J	1.99 J	0.98 J	0.0008 UJ	0.0032 J	0.0027 J	8.29 J	8.31 J	7.18
8-I-low-A	1.68	3.04 J	4.03	0.68	1.26 J	1.64	0.0008 UJ	0.0008 UJ	0.0024 J	1.86	1.53	1.19
8-I-low-B	1.91	3.25 J	4.01	0.71	1.30 J	1.69	0.0008 UJ	0.0008 UJ	0.0016 J	1.87	1.14	1.04
8-I-low-C	1.98	4.09 J	3.41	0.67	1.51 J	1.52	0.0008 UJ	0.0008 UJ	0.0013 J	1.54	1.22	1.08
8-I-low-D	1.81	3.13 J	5.59	0.65	1.28 J	2.34	0.0008 UJ	0.0010 J	0.0028 J	1.67	1.29	0.89
8-S-high-A	1.24	0.95	1.86	0.64	0.39	0.64	0.0008 UJ	0.0008 U	0.0008 U	7.43	8.06	8.22
8-S-high-B	1.20	0.57	1.62	0.60	0.28	0.52	0.0008 UJ	0.0008 U	0.0026 J	6.50	4.95	7.61
8-S-high-C	1.17	1.02	1.81	0.53	0.43	0.60	0.0008 UJ	0.0008 U	0.0017 J	9.22	7.84	7.71
8-S-high-D	0.85	0.92	2.60	0.37	0.37	0.85	0.0008 UJ	0.0008 U	0.0025 J	4.67	7.99	9.11
8-S-low-A	0.58	0.51	1.50 J	0.42	0.33	0.79 J	0.0021 U*	0.0008 U	0.0014 U*	2.01	2.18	1.30 J
8-S-low-B	0.37	0.58	1.20 J	0.29	0.37	0.73 J	0.0008 U	0.0008 U	0.0011 U*	2.34	2.05	1.64 J
8-S-low-C	0.32	0.58	1.01 J	0.28	0.38	0.56 J	0.0008 U	0.0008 U	0.0010 U*	1.97	2.04	1.25 J
8-S-low-D	0.51	0.69	1.14 J	0.44	0.45	0.68 J	0.0028 U*	0.0008 U	0.0008 U	1.53	1.85	1.64 J
9-I-high-A	3.29 J	9.59 J	24.08 J	0.23 J	0.69 J	3.64 J	0.0078 J	0.0162 J	0.0072 J	3.86 J	3.15 J	2.22
9-I-high-B	3.92 J	21.40 J	21.07 J	0.32 J	1.74 J	2.26 J	0.0079 J	0.0314 J	0.0061 J	2.27 J	2.78 J	2.14
9-I-high-C	6.16 J	25.20 J	29.76 J	0.43 J	1.93 J	3.96 J	0.0127 J	0.0491 J	0.0153 J	3.07 J	4.07 J	1.82
9-I-high-D	2.66 J	8.68 J	42.01 J	0.19 J	0.54 J	5.18 J	0.0075 J	0.0185 J	0.0178 J	3.93 J	3.87 J	2.67
9-I-low-A	1.13	2.29 J	11.94	0.28	0.72 J	4.89	0.0008 UJ	0.0057 J	0.0045 J	1.54	1.48	0.48
9-I-low-B	0.88	6.39 J	7.92	0.23	1.75 J	2.51	0.0008 UJ	0.0036 J	0.0021 J	1.08	0.75 J	0.51
9-I-low-C	0.96	5.53 J	6.92	0.22	1.44 J	2.12	0.0046 J	0.0040 J	0.0038 J	0.98	0.64 J	0.53
9-I-low-D	0.90	7.42 J	6.97	0.25	2.35 J	2.19	0.0008 UJ	0.0025 J	0.0035 J	1.00	0.58 J	0.47
9-S-high-A	0.30	0.41	0.49	0.16	0.15	0.14	0.0008 UJ	0.0040 J	0.0073 J	0.68 U*	0.80	1.40
9-S-high-B	0.52	0.44	0.85	0.27	0.15	0.23	0.0008 UJ	0.0068 J	0.0106 J	0.49 U*	0.93	1.17
9-S-high-C	0.35	1.34	3.07	0.19	0.37	0.52	0.0008 UJ	0.0051 J	0.0063 J	0.68 U*	0.68 J	0.69
9-S-high-D	0.38	0.58	0.99	0.22	0.18	0.23	0.0008 UJ	0.0049 J	0.0064 J	0.57 U*	0.92	1.19
9-S-low-A	0.58	1.19	4.98 J	0.29	0.49	1.66 J	0.0016 U*	0.0008 U	0.0035 U*	0.50	0.52 J	0.40 J
9-S-low-B	0.49	1.48	2.23 J	0.25	0.69	0.80 J	0.0019 U*	0.0008 U	0.0029 U*	0.48	0.32 J	0.51 J
9-S-low-C	0.39	0.81	2.48 J	0.25	0.35	0.90 J	0.0026 U*	0.0016 J	0.0029 U*	0.55	0.58 J	0.56 J
9-S-low-D	0.48	0.46	0.84 J	0.29	0.25	0.46 J	0.0008 U*	0.0008 U	0.0010 U*	0.58	0.58 J	0.36 J
10-I-high-A	1.20 J	3.49 J	6.84 J	0.24	0.53 J	0.83 J	0.0008 UJ	0.0008 U	0.0016 J	0.46	0.28 J	0.28
10-I-high-B	1.26 J	3.91 J	1.65 J	0.23	0.59 J	0.24 J	0.0008 UJ	0.0008 U	0.0008 J	0.37	0.29 J	0.41
10-I-high-C	1.08 J	3.68 J	2.09 J	0.22	0.54 J	0.27 J	0.0008 UJ	0.0008 U	0.0008 U	0.42	0.29 J	0.36
10-I-high-D	1.82 J	5.17 J	2.11 J	0.30	0.71 J	0.30 J	0.0008 UJ	0.0008 U	0.0014 J	0.37	0.24 J	0.35

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Potassium (mg/L)			Selenium (mg/L)			Silver (mg/L)			Sodium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
7-S-low-B	11.10	13.30	11.63 J	0.0293 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.84	2.01	3.33 J
7-S-low-C	9.41	15.30	12.29 J	0.0386 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.57	2.38	3.91 J
7-S-low-D	13.90	13.00	12.29 J	0.0320 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.29	2.11	3.51 J
8-I-high-A	28.70	51.70 J	25.90	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	11.10	18.20 J	11.87 J
8-I-high-B	29.40	39.00 J	29.85	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	10.80	12.50 J	14.22 J
8-I-high-C	28.50	38.90 J	25.02	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	10.50	11.80 J	11.19 J
8-I-high-D	34.40	54.60 J	28.47	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	14.10	19.20 J	13.47 J
8-I-low-A	20.50	24.10	25.23	0.0091 UJ	0.0147 J	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	5.06	5.25 J	10.32
8-I-low-B	22.10	25.00	24.20	0.0091 UJ	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	5.76	5.26 J	9.51
8-I-low-C	23.00	27.70	22.41	0.0091 UJ	0.0098 J	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	6.09	6.26 J	8.99
8-I-low-D	20.00	26.30	25.15	0.0091 UJ	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	5.06	5.83 J	10.58
8-S-high-A	20.80	20.80	19.97	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	6.08	4.78	7.57
8-S-high-B	19.70	12.70	16.17	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	5.82	3.07	6.23
8-S-high-C	20.10	20.00	21.00	0.0091 U	0.0126 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	6.03	4.62	8.23
8-S-high-D	14.80	19.30	22.88	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	4.34	4.59	8.65
8-S-low-A	15.00	13.70	15.02 J	0.0319 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.12	2.52	5.01 J
8-S-low-B	13.30	14.70	15.28 J	0.0242 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.82	2.77	4.71 J
8-S-low-C	10.90	14.00	13.52 J	0.0274 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.11	2.59	4.77 J
8-S-low-D	13.20	14.90	13.89 J	0.0307 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.67	2.89	4.42 J
9-I-high-A	23.50	28.90 J	26.39	0.0091 UJ	0.0135 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	6.24	6.37 J	9.42 J
9-I-high-B	22.90	38.30 J	27.34	0.0091 UJ	0.0119 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	6.17	9.32 J	10.28 J
9-I-high-C	24.70	48.70 J	27.66	0.0091 UJ	0.0136 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	7.05	11.70 J	10.34 J
9-I-high-D	20.80	30.00 J	31.07	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	5.38	7.36 J	12.83 J
9-I-low-A	10.20	13.00	14.36	0.0091 UJ	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	3.11	3.46 J	8.15
9-I-low-B	8.80	14.10	12.58	0.0091 UJ	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	2.85	3.78 J	7.38
9-I-low-C	8.50	13.00	11.20	0.0091 UJ	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	2.64	3.30 J	6.21
9-I-low-D	9.24	12.60	12.39	0.0091 UJ	0.0092 J	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	2.97	3.63 J	7.04
9-S-high-A	9.92	11.40	10.31	0.0091 U	0.0107 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.16	2.04	3.49
9-S-high-B	11.20	11.70	11.86	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.38	2.18	3.80
9-S-high-C	10.20	15.90	13.61	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.28	2.90	4.54
9-S-high-D	11.20	12.50	11.85	0.0091 U	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.35	2.39	3.89
9-S-low-A	7.32	8.38	9.74 J	0.0237 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.64	2.25	5.32 J
9-S-low-B	6.59	7.90	7.55 J	0.0252 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.62	1.91	3.54 J
9-S-low-C	6.42	7.58	7.62 J	0.0289 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.66	1.89	3.67 J
9-S-low-D	6.94	6.63	5.67 J	0.0286 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.65	1.56	2.48 J
10-I-high-A	23.20	31.90	33.81 J	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	6.19	7.98	17.34 J
10-I-high-B	22.20	33.40	19.69 J	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	6.03	8.20	7.48 J
10-I-high-C	23.40	30.50	19.98 J	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	6.43	7.79	7.95 J
10-I-high-D	23.70	35.00	19.04 J	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	6.29	8.60	7.41 J

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Thallium (mg/L)			Vanadium (mg/L)			Zinc (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)									
7-S-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0048 U*	0.0047 U*	0.0045 J	0.154	0.234	0.247
7-S-low-C	0.0046 J	0.0043 U*	0.0042 U	0.0044 U*	0.0066 J	0.0077 J	0.159	0.259	0.269
7-S-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0060 J	0.0056 U*	0.0068 J	0.188	0.224	0.252
8-I-high-A	0.0043 U*	0.0047 J	0.0042 U	0.0175 J	0.0093 J	0.0138 J	0.242	1.280 J	0.269 J
8-I-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0131 J	0.0159 J	0.0106 J	0.220	0.329 J	0.524 J
8-I-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0138 J	0.0137 J	0.0125 J	0.257	0.393 J	0.301 J
8-I-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0108 J	0.0134 J	0.0137 J	0.293	0.559 J	0.299 J
8-I-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0042 J	0.0059 J	0.0053 J	0.267	0.448 J	0.604
8-I-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0084 J	0.0050 J	0.0046 J	0.308	0.507 J	0.608
8-I-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0034 J	0.0051 J	0.0047 J	0.316	0.682 J	0.494
8-I-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0029 J	0.0062 J	0.0044 J	0.294	0.468 J	0.828
8-S-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0069 J	0.0057 J	0.0061 J	0.220	0.166	0.231
8-S-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0061 J	0.0057 J	0.0062 J	0.207	0.140	0.199
8-S-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0062 J	0.0056 J	0.0052 J	0.183	0.175	0.220
8-S-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0030 J	0.0057 J	0.0057 J	0.153	0.154	0.287
8-S-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0059 J	0.0070 J	0.0032 J	0.166	0.182	0.262
8-S-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0075 J	0.0060 U*	0.0050 J	0.131	0.175	0.272
8-S-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0068 J	0.0075 J	0.0041 J	0.131	0.168	0.219
8-S-low-D	0.0043 U*	0.0043 U*	0.0064 J	0.0056 J	0.0061 U*	0.0047 J	0.183	0.270	0.234
9-I-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0036 J	0.0054 J	0.0028 J	0.111	0.207 J	0.916 J
9-I-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0042 J	0.0052 J	0.0032 J	0.121	0.386 J	0.473 J
9-I-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0026 J	0.0055 J	0.0030 J	0.127	0.378 J	0.870 J
9-I-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0036 J	0.0078 J	0.0037 J	0.103	0.193 J	1.204 J
9-I-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0008 J	0.0059 J	0.0019 J	0.137	0.231 J	1.350
9-I-low-B	0.0043 U*	0.0045 J	0.0042 U	0.0012 J	0.0028 U*	0.0018 J	0.137	0.558 J	0.727
9-I-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0113 J	0.0039 U*	0.0021 J	0.128	0.456 J	0.612
9-I-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0009 J	0.0024 U*	0.0018 J	0.129	0.658 J	0.579
9-S-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0045 J	0.0084 J	0.0112 J	0.101	0.128	0.140
9-S-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0036 J	0.0087 J	0.0099 J	0.116	0.115	0.145
9-S-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0044 J	0.0060 J	0.0054 J	0.103	0.160	0.209
9-S-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0024 J	0.0088 J	0.0111 J	0.106	0.128	0.147
9-S-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0021 U*	0.0048 U*	0.0039 J	0.163	0.179	0.410
9-S-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0023 U*	0.0038 U*	0.0043 J	0.127	0.222	0.241
9-S-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0054 J	0.0046 U*	0.0035 J	0.122	0.147	0.265
9-S-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0041 U*	0.0050 U*	0.0028 J	0.154	0.113	0.171
10-I-high-A	0.0063 J	0.0043 U*	0.0042 U	0.0114 J	0.0026 U*	0.0019 J	0.096	0.179 J	0.267 J
10-I-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0006 J	0.0028 U*	0.0028 J	0.092	0.208 J	0.132 J
10-I-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0011 J	0.0027 U*	0.0023 J	0.110	0.177 J	0.147 J
10-I-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0008 J	0.0025 U*	0.0021 J	0.087	0.248 J	0.140 J

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Aluminum (mg/L)			Antimony (mg/L)			Arsenic (mg/L)			Barium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
10-I-low-A	0.95	0.93	1.11	0.039 J	0.045 J	0.040 J	0.049 U*	0.026 J	0.040 J	0.018 J	0.076	0.053 J
10-I-low-B	0.99	1.17	1.17	0.029 J	0.058	0.041 J	0.052 U*	0.039 J	0.041 J	0.016 J	0.058	0.061 J
10-I-low-C	0.96	0.70 J	1.09	0.033 J	0.045 J	0.029 U*	0.047 U*	0.024 J	0.029 U*	0.019 J	0.100	0.034 J
10-I-low-D	1.01	1.93	1.33	0.031 J	0.049 J	0.038 U*	0.044 U*	0.041 J	0.038 U*	0.020 J	0.028 J	0.056 J
10-S-high-A	1.35	0.66 J	2.15	0.022 J	0.030 J	0.061	0.054 U*	0.051	0.061	0.013 J	0.011 J	0.024 J
10-S-high-B	1.37	0.74 J	1.65	0.030 J	0.031 J	0.049 J	0.066	0.052	0.049 J	0.013 J	0.014 J	0.020 J
10-S-high-C	1.26	0.72 J	1.74	0.026 J	0.026 J	0.048 J	0.042 U*	0.054	0.048 J	0.015 J	0.010 J	0.024 J
10-S-high-D	1.41	0.68 J	1.57	0.032 J	0.029 J	0.052	0.064	0.061	0.052	0.014 J	0.009 J	0.020 J
10-S-low-A	1.18	1.28	1.70	0.032 J	0.028 U*	0.062	0.050 U*	0.045 J	0.062	0.021 J	0.018 J	0.020 J
10-S-low-B	1.24	1.29	1.05	0.034 J	0.030 U*	0.044 J	0.058 U*	0.046 J	0.044 J	0.018 J	0.015 J	0.031 J
10-S-low-C	1.29	1.42	1.83	0.032 J	0.037 U*	0.065	0.068 U*	0.043 J	0.065	0.014 J	0.021 J	0.021 J
10-S-low-D	1.24	1.41	1.89	0.033 J	0.030 U*	0.057	0.065 U*	0.046 J	0.057	0.015 J	0.015 J	0.017 J
11-I-high-A	0.35 J	0.71 J	1.18 J	0.023 J	0.045 J	0.054	0.038	0.040 J	0.054	0.134	0.084	0.058 J
11-I-high-B	1.33 J	0.69 J	0.95 J	0.023 J	0.049 J	0.047 J	0.055	0.041 J	0.047 J	0.032 J	0.091	0.070 J
11-I-high-C	1.06 J	0.93	1.55 J	0.025 J	0.050	0.057	0.055	0.048 J	0.057	0.030 J	0.064	0.044 J
11-I-high-D	1.24 J	0.86	1.20 J	0.018 J	0.048 J	0.049 J	0.060	0.048 J	0.049 J	0.027 J	0.093	0.081 J
11-I-low-A	1.06	0.84	1.31	0.035 J	0.044 J	0.038 U*	0.053 U*	0.030 J	0.038 U*	0.026 J	0.071	0.042 J
11-I-low-B	1.46	1.24	0.95	0.028 J	0.054	0.026 U*	0.047 U*	0.034 J	0.026 U*	0.023 J	0.065	0.044 J
11-I-low-C	1.05	0.99	1.07	0.035 J	0.045 J	0.035 U*	0.058 U*	0.031 J	0.035 U*	0.035 J	0.098	0.075 J
11-I-low-D	0.96	1.01	1.18	0.031 J	0.040 J	0.035 U*	0.044 U*	0.029 J	0.035 U*	0.030 J	0.089	0.061 J
11-S-high-A	1.34	1.03	1.79	0.030 J	0.028 J	0.051	0.047 U*	0.045 J	0.051	0.028 J	0.022 J	0.038 J
11-S-high-B	1.40	0.84	1.84	0.033 J	0.026 J	0.054	0.056 U*	0.032 J	0.054	0.026 J	0.028 J	0.043 J
11-S-high-C	1.35	0.81	2.01	0.030 J	0.023 J	0.058	0.062	0.033 J	0.058	0.022 J	0.028 J	0.034 J
11-S-high-D	1.26	0.76 J	1.68	0.021 J	0.026 J	0.047 J	0.060 U*	0.031 J	0.047 J	0.017 J	0.031 J	0.031 J
11-S-low-A	1.27	1.26	1.05	0.019 J	0.031 U*	0.040 J	0.062 U*	0.041 J	0.040 J	0.014 J	0.024 J	0.024 J
11-S-low-B	1.25	1.12	1.62	0.025 J	0.027 U*	0.051	0.065 U*	0.042 J	0.051	0.015 J	0.020 J	0.024 J
11-S-low-C	1.30	1.34	1.85	0.026 J	0.029 U*	0.050 J	0.061 U*	0.042 J	0.050 J	0.021 J	0.020 J	0.026 J
11-S-low-D	1.22	1.27	1.74	0.039 J	0.027 U*	0.046 J	0.059 U*	0.042 J	0.046 J	0.017 J	0.020 J	0.022 J
12-I-high-A	1.33 J	0.82	1.38 J	0.030 J	0.032 J	0.050	0.071	0.037 J	0.050	0.016 J	0.111	0.051 J
12-I-high-B	1.53 J	1.09	1.17 J	0.030 J	0.039 J	0.038 J	0.065	0.035 J	0.038 J	0.021 J	0.088	0.076 J
12-I-high-C	1.47 J	1.14	1.52 J	0.041 J	0.043 J	0.047 J	0.070	0.041 J	0.047 J	0.033 J	0.062	0.048 J
12-I-high-D	1.11 J	1.48	1.04 J	0.032 J	0.049 J	0.045 J	0.051	0.056	0.045 J	0.018 J	0.037 J	0.066 J
12-I-low-A	1.00	1.33	1.29	0.030 J	0.046 J	0.030 U*	0.044 U*	0.037 J	0.030 U*	0.028 J	0.044 J	0.071 J
12-I-low-B	1.33	1.10	1.31	0.035 J	0.040 J	0.037 U*	0.060 U*	0.033 J	0.037 U*	0.024 J	0.118	0.085 J
12-I-low-C	1.30	1.24	1.31	0.029 J	0.043 J	0.030 U*	0.050 U*	0.032 J	0.030 U*	0.036 J	0.085	0.107
12-I-low-D	1.31	1.41	1.23	0.036 J	0.047 J	0.030 U*	0.044 U*	0.035 J	0.030 U*	0.039 J	0.048 J	0.082 J
12-S-high-A	1.09	0.95	1.98	0.026 J	0.031 J	0.055	0.054 U*	0.051	0.055	0.016 J	0.019 J	0.028 J
12-S-high-B	1.30	0.70 J	1.92	0.038 J	0.025 J	0.047 J	0.062	0.047 J	0.047 J	0.011 J	0.014 J	0.022 J

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Beryllium (mg/L)			Cadmium (mg/L)			Calcium (mg/L)			Chromium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
10-I-low-A	0.000076 U*	0.000056 J	0.000045 U	0.0002 UJ	0.0057	0.0044 J	2.34	10.10	5.86	0.001 UJ	0.001 U	0.001 U
10-I-low-B	0.000045 U	0.001490 J	0.000045 U	0.0002 UJ	0.0051	0.0051 J	2.00	7.49	7.13	0.001 UJ	0.002 J	0.001 U
10-I-low-C	0.000057 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0082	0.0028 J	2.54	15.70	3.55	0.001 UJ	0.001 U	0.001 U
10-I-low-D	0.000056 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0025 J	0.0046 J	2.60	2.98 J	6.61	0.001 UJ	0.001 U	0.001 U
10-S-high-A	0.000045 U	0.000045 U	0.000045 U	0.0017 J	0.0015 J	0.0033 J	1.14	0.94 J	2.45	0.001 UJ	0.003 J	0.003 J
10-S-high-B	0.000045 U	0.000045 U	0.000045 U	0.0015 J	0.0018 J	0.0017 U*	1.15	1.46 J	2.05	0.001 UJ	0.001 U	0.001 U
10-S-high-C	0.000045 U	0.000079 J	0.000186 J	0.0013 J	0.0014 J	0.0032 J	1.22	0.90 J	2.62	0.001 UJ	0.001 U	0.001 U
10-S-high-D	0.000045 U	0.000045 U	0.000045 U	0.0014 J	0.0016 J	0.0027 J	1.08	0.79 J	1.90	0.001 UJ	0.001 U	0.001 U
10-S-low-A	0.000045 U	0.000046 U*	0.000045 U	0.0018 J	0.0025 J	0.0031 J	1.76	1.57 J	2.42	0.001 UJ	0.003 J	0.002 J
10-S-low-B	0.000045 U	0.000058 U*	0.000045 U	0.0019 J	0.0022 J	0.0034 J	1.38	1.22 J	3.20	0.001 UJ	0.003 J	0.001 U
10-S-low-C	0.000045 U	0.000045 U	0.000045 U	0.0017 J	0.0035	0.0035 J	1.11	1.77 J	2.68	0.001 UJ	0.001 U	0.001 U
10-S-low-D	0.000045 U	0.000045 U	0.000045 U	0.0018 J	0.0019 J	0.0028 J	1.25	1.25 J	1.81	0.001 UJ	0.001 U	0.001 U
11-I-high-A	0.000062 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0038	0.0042 J	56.20 J	18.40	11.45 J	0.001 UJ	0.001 U	0.001 U
11-I-high-B	0.000045 U	0.000045 U	0.000045 U	0.0002 UJ	0.0039	0.0041 J	5.86 J	24.30	15.30 J	0.001 UJ	0.001 U	0.001 U
11-I-high-C	0.000073 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0036	0.0034 J	5.78 J	12.80	8.00 J	0.001 UJ	0.001 U	0.001 U
11-I-high-D	0.000045 U	0.000045 U	0.000045 U	0.0002 UJ	0.0053	0.0052 J	4.79 J	22.90	19.13 J	0.001 UJ	0.001 U	0.001 U
11-I-low-A	0.00007 U*	0.000062 J	0.000045 U	0.0002 J	0.0058	0.0038 J	3.33	10.90	4.89	0.001 UJ	0.001 U	0.001 U
11-I-low-B	0.000045 U	0.000045 U	0.000045 U	0.0002 UJ	0.0051	0.0036 J	2.59	8.20	4.71	0.001 UJ	0.001 U	0.001 U
11-I-low-C	0.00659	0.000072 J	0.000132 J	0.0068 J-	0.0090	0.0063 J	3.09	13.70	8.64	0.001 UJ	0.001 U	0.001 U
11-I-low-D	0.000197 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0068	0.0048 J	3.95	13.50	7.30	0.001 UJ	0.001 U	0.001 U
11-S-high-A	0.000045 U	0.000063 J	0.000045 U	0.0030	0.0024 J	0.0040 J	1.69	1.51 J	2.90	0.001 UJ	0.001 U	0.001 U
11-S-high-B	0.000045 U	0.000045 U	0.000045 U	0.0028	0.0026	0.0046 J	1.56	1.67 J	3.32	0.001 UJ	0.001 U	0.001 U
11-S-high-C	0.000045 U	0.000045 U	0.000045 U	0.0020 J	0.0026	0.0035 J	1.30	1.74 J	2.22	0.001 UJ	0.001 U	0.001 U
11-S-high-D	0.000045 U	0.00221 J	0.000045 U	0.0020 J	0.0048	0.0038 J	0.94	1.77 J	2.36	0.001 UJ	0.002 J	0.001 U
11-S-low-A	0.000045 U	0.000045 U	0.000045 U	0.0016 J	0.0026	0.0033 J	1.16	2.23 J	2.16	0.001 UJ	0.001 U	0.001 U
11-S-low-B	0.000045 U	0.000045 U	0.000045 U	0.0016 J	0.0023 J	0.0035 J	1.16	1.81 J	2.73	0.001 UJ	0.001 U	0.001 U
11-S-low-C	0.000045 U	0.000045 U	0.000045 U	0.0023 J	0.0024 J	0.0038 J	1.53	1.71 J	2.81	0.001 UJ	0.001 U	0.001 U
11-S-low-D	0.000045 U	0.000045 U	0.000045 U	0.0015 J	0.0027	0.0037 J	1.44	1.61 J	2.25	0.001 UJ	0.001 U	0.001 U
12-I-high-A	0.000048 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0143	0.0049 J	1.80 J	24.80	5.68 J	0.001 UJ	0.001 U	0.001 U
12-I-high-B	0.000049 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0073	0.0073 J	2.12 J	12.20	9.40 J	0.001 UJ	0.001 U	0.001 U
12-I-high-C	0.00609	0.000089 J	0.000171 J	0.0066 J-	0.0052	0.0047 J	3.05 J	7.61	5.61 J	0.001 UJ	0.001 U	0.001 U
12-I-high-D	0.000151 U*	0.000045 U	0.000045 U	0.0002 UJ	0.0034	0.0059 J	2.07 J	3.89 J	8.18 J	0.001 UJ	0.001 U	0.001 U
12-I-low-A	0.000153 U*	0.000045 U	0.000045 U	0.0009 J	0.0047	0.0070 J	2.46	3.61 J	6.10	0.001 UJ	0.030 J	0.001 U
12-I-low-B	0.000055 U*	0.00005 J	0.000045 U	0.0003 J	0.0137	0.0084 J	2.07	13.00	6.76	0.001 UJ	0.001 U	0.001 U
12-I-low-C	0.000056 U*	0.000045 U	0.000045 U	0.0011 J	0.0089	0.0109	2.99	7.91	8.60	0.001 UJ	0.001 U	0.001 U
12-I-low-D	0.000046 U*	0.00005 J	0.000045 U	0.0017 J	0.0051	0.0083 J	3.33	4.00 J	6.56	0.001 UJ	0.001 U	0.001 U
12-S-high-A	0.000045 U	0.000045 U	0.000045 U	0.0020 J	0.0027	0.0040 J	0.87	0.99 J	1.67	0.001 UJ	0.001 U	0.001 U
12-S-high-B	0.000045 U	0.000045 U	0.000045 U	0.0019 J	0.0019 J	0.0033 J	0.54	0.73 J	1.33	0.001 UJ	0.001 U	0.001 U

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Cobalt (mg/L)			Copper (mg/L)			Iron (mg/L)			Lead (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
10-I-low-A	0.000 J	0.001 U*	0.001 U*	0.008 U*	0.006 J	0.006 J	0.333 J	0.318 J	0.360 J	0.046	0.032 J	0.044 J
10-I-low-B	0.001 J	0.003 U*	0.001 U*	0.009 U*	0.009 J	0.007 J	0.351 J	0.468 J	0.361 J	0.049	0.051 J	0.048 J
10-I-low-C	0.001 J	0.001 U*	0.001 U*	0.009 U*	0.006 J	0.005 J	0.335 J	0.211 J	0.355 J	0.049	0.025 J	0.030 J
10-I-low-D	0.001 J	0.001 U*	0.002 U*	0.009 U*	0.007 J	0.008 J	0.360 J	0.765	0.429 J	0.048	0.045 J	0.049 J
10-S-high-A	0.001 U*	0.001 J	0.002 U*	0.006 J	0.006 J	0.009 J	0.487 J	0.231 J	0.780	0.057	0.029 J	0.061
10-S-high-B	0.000 U*	0.001 J	0.002 U*	0.006 J	0.006 J	0.006 J	0.521	0.250 J	0.570	0.061	0.028 J	0.042 J
10-S-high-C	0.001 U*	0.001 J	0.001 U*	0.005 J	0.005 J	0.008 J	0.470 J	0.244 J	0.620	0.054	0.029 J	0.057
10-S-high-D	0.001 U*	0.001 J	0.001 U*	0.006 J	0.006 J	0.007 J	0.541	0.236 J	0.523	0.063	0.027 J	0.049 J
10-S-low-A	0.002 U*	0.001 U*	0.002 U*	0.004 J	0.006 J	0.007 J	0.433 J	0.395 J	0.530	0.067	0.034 J	0.051
10-S-low-B	0.003 U*	0.001 U*	0.002 U*	0.003 J	0.006 J	0.004 U*	0.448 J	0.400 J	0.311 J	0.068	0.035 J	0.039 J
10-S-low-C	0.002 U*	0.001 U*	0.002 U*	0.004 J	0.008 J	0.007 J	0.464 J	0.514	0.590	0.070	0.123 J	0.054
10-S-low-D	0.002 U*	0.001 U*	0.002 U*	0.005 J	0.006 J	0.007 J	0.436 J	0.458 J	0.593	0.064	0.038 J	0.055
11-I-high-A	0.001 J	0.001 U*	0.001 U*	0.009 U*	0.013	0.013	0.138 J	0.262 J	0.441 J	0.026	0.032 J	0.057
11-I-high-B	0.000 J	0.001 U*	0.001 U*	0.014 U*	0.015	0.011	0.555	0.280 J	0.379 J	0.075	0.037 J	0.051
11-I-high-C	0.001 J	0.001 U*	0.001 U*	0.015 U*	0.016	0.013	0.432 J	0.352 J	0.597	0.060	0.049 J	0.067
11-I-high-D	0.001 J	0.001 U*	0.002 U*	0.015 U*	0.017	0.013	0.501	0.319 J	0.422 J	0.070	0.061 J	0.059
11-I-low-A	0.001 J	0.001 U*	0.002 U*	0.011 U*	0.008 J	0.009 J	0.373 J	0.280 J	0.444 J	0.056	0.032 J	0.046 J
11-I-low-B	0.001 J	0.001 U*	0.001 U*	0.012 U*	0.010 J	0.006 J	0.504	0.456 J	0.314 J	0.065	0.047 J	0.035 J
11-I-low-C	0.006 J	0.001 U*	0.002 U*	0.018 U*	0.009 J	0.008 J	0.348 J	0.295 J	0.333 J	0.064	0.042 J	0.050
11-I-low-D	0.001 J	0.001 U*	0.001 U*	0.012 U*	0.009 J	0.008 J	0.322 J	0.346 J	0.400 J	0.055	0.041 J	0.052
11-S-high-A	0.000 U*	0.001 J	0.002 U*	0.007 J	0.007 J	0.009 J	0.509	0.319 J	0.572	0.071	0.033 J	0.063
11-S-high-B	0.001 U*	0.001 J	0.002 U*	0.009 J	0.006 J	0.009 J	0.512	0.259 J	0.548	0.075	0.031 J	0.066
11-S-high-C	0.000 U	0.001 J	0.002 U*	0.007 J	0.005 J	0.008 J	0.494 J	0.240 J	0.640	0.071	0.026 J	0.066
11-S-high-D	0.000 U	0.003 J	0.001 U*	0.007 J	0.008 J	0.009 J	0.461 J	0.223 J	0.501	0.060	0.027 J	0.065
11-S-low-A	0.002 U*	0.001 U*	0.001 U*	0.003 J	0.007 J	0.005 U*	0.443 J	0.422 J	0.326 J	0.057	0.034 J	0.033 J
11-S-low-B	0.002 U*	0.001 U*	0.002 U*	0.004 J	0.005 J	0.007 J	0.454 J	0.346 J	0.485 J	0.070	0.031 J	0.048 J
11-S-low-C	0.002 U*	0.002 U*	0.002 U*	0.006 J	0.006 J	0.008 J	0.444 J	0.442 J	0.561	0.070	0.034 J	0.054
11-S-low-D	0.002 U*	0.001 U*	0.002 U*	0.005 J	0.007 J	0.007 J	0.426 J	0.403 J	0.505	0.065	0.036 J	0.047 J
12-I-high-A	0.000 U	0.003 U*	0.001 U*	0.014 U*	0.014	0.011	0.546	0.223 J	0.451 J	0.072	0.046 J	0.062
12-I-high-B	0.001 J	0.002 U*	0.002 U*	0.014 U*	0.012	0.010 J	0.600	0.364 J	0.319 J	0.081	0.049 J	0.067
12-I-high-C	0.007 J	0.001 U*	0.002 U*	0.022	0.013	0.009 J	0.555	0.399 J	0.461 J	0.086	0.050 J	0.061
12-I-high-D	0.001 J	0.001 U*	0.001 U*	0.016 U*	0.013	0.009 J	0.486 J	0.550	0.355 J	0.069	0.057 J	0.062
12-I-low-A	0.001 J	0.001 U*	0.001 U*	0.009 U*	0.009 J	0.008 J	0.332 J	0.437 J	0.359 J	0.050	0.050 J	0.060
12-I-low-B	0.001 J	0.002 U*	0.002 U*	0.011 U*	0.010	0.008 J	0.479 J	0.291 J	0.346 J	0.058	0.049 J	0.059
12-I-low-C	0.001 J	0.001 U*	0.002 U*	0.011 U*	0.008 J	0.008 J	0.440 J	0.387 J	0.312 J	0.062	0.048 J	0.064
12-I-low-D	0.002 J	0.001 U*	0.002 U*	0.011 U*	0.009 J	0.008 J	0.438 J	0.493 J	0.318 J	0.064	0.046 J	0.054
12-S-high-A	0.002 U*	0.001 J	0.002 U*	0.005 J	0.008 J	0.008 J	0.436 J	0.278 J	0.581	0.049	0.041 J	0.066
12-S-high-B	0.000 U	0.001 J	0.002 U*	0.006 J	0.006 J	0.007 J	0.498 J	0.227 J	0.545	0.067	0.029 J	0.054

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Magnesium (mg/L)			Manganese (mg/L)			Nickel (mg/L)			Phosphorus a (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
10-I-low-A	0.55	2.42	1.65	0.18	0.51	0.27	0.0008 UJ	0.0008 U	0.0016 J	0.39	0.22 J	0.29
10-I-low-B	0.49	1.93	2.08	0.16	0.40	0.45	0.0008 UJ	0.0012 J	0.0009 J	0.38	0.38 J	0.26
10-I-low-C	0.61	3.19	1.21	0.21	0.73	0.20	0.0008 UJ	0.0008 U	0.0008 U	0.34	0.17 J	0.26
10-I-low-D	0.64	0.86	1.90	0.22	0.17	0.47	0.0008 UJ	0.0008 U	0.0008 U	0.35	0.38 J	0.29
10-S-high-A	0.26	0.24 J	0.76	0.20	0.14	0.33	0.0008 UJ	0.0008 U	0.0009 J	0.49 U*	0.41 J	0.45
10-S-high-B	0.28	0.36	0.66	0.19	0.20	0.26	0.0008 UJ	0.0008 U	0.0008 U	0.52 U*	0.38 J	0.36
10-S-high-C	0.32	0.24 J	0.76	0.19	0.15	0.30	0.0008 UJ	0.0008 U	0.0019 J	0.49 U*	0.38 J	0.44
10-S-high-D	0.27	0.19 J	0.59	0.19	0.13	0.26	0.0008 UJ	0.0008 U	0.0016 J	0.55 U*	0.43 J	0.37
10-S-low-A	0.45	0.46	0.69	0.29	0.29	0.36	0.0008 U	0.0008 U	0.0008 U	0.41	0.34 J	0.37
10-S-low-B	0.36	0.36	0.97	0.30	0.24	0.47	0.0019 J	0.0008 U	0.0008 U	0.45	0.36 J	0.27
10-S-low-C	0.27	0.52	0.82	0.26	0.25	0.42	0.0012 J	0.0008 U	0.0008 J	0.46	0.36 J	0.48
10-S-low-D	0.31	0.37	0.54	0.30	0.25	0.28	0.0008 U	0.0008 U	0.0008 U	0.42	0.38 J	0.42
11-I-high-A	6.93 J	5.45 J	3.76 J	0.63	0.62 J	0.46 J	0.0008 UJ	0.0008 U	0.0018 J	0.27	0.38 J	0.46
11-I-high-B	1.76 J	6.52 J	4.86 J	0.26	0.72 J	0.62 J	0.0008 UJ	0.0008 U	0.0011 J	0.52	0.38 J	0.46
11-I-high-C	1.70 J	4.14 J	2.76 J	0.24	0.44 J	0.34 J	0.0008 UJ	0.0008 U	0.0013 J	0.50	0.46 J	0.55
11-I-high-D	1.39 J	6.80 J	5.95 J	0.21	0.79 J	0.65 J	0.0008 UJ	0.0008 U	0.0009 J	0.58	0.42 J	0.44
11-I-low-A	0.99	2.95	1.58	0.36	0.66	0.33	0.0008 UJ	0.0008 U	0.0014 J	0.38	0.23 J	0.33
11-I-low-B	0.77	2.39	1.73	0.27	0.55	0.41	0.0008 UJ	0.0008 U	0.0011 J	0.41	0.30 J	0.25
11-I-low-C	0.91	3.53	2.56	0.32	0.97	0.55	0.0008 UJ	0.0008 U	0.0018 J	0.41	0.23 J	0.25
11-I-low-D	1.13	3.68	2.25	0.32	0.82	0.40	0.0008 UJ	0.0008 U	0.0014 J	0.36	0.27 J	0.29
11-S-high-A	0.49	0.52	1.17	0.33	0.33	0.52	0.0008 UJ	0.0008 U	0.0015 J	0.43 U*	0.38 J	0.39
11-S-high-B	0.46	0.53	1.28	0.38	0.36	0.60	0.0008 UJ	0.0008 U	0.0011 J	0.44 U*	0.31 J	0.40
11-S-high-C	0.39	0.51	0.92	0.29	0.29	0.47	0.0008 UJ	0.0008 U	0.0018 J	0.47 U*	0.31 J	0.39
11-S-high-D	0.31	0.53	0.96	0.27	0.34	0.43	0.0008 UJ	0.0011 J	0.0008 U	0.43 U*	0.30 J	0.40
11-S-low-A	0.34	0.74	0.81	0.30	0.31	0.35	0.0017 J	0.0008 U	0.0012 J	0.41	0.36 J	0.25
11-S-low-B	0.32	0.60	0.98	0.29	0.31	0.44	0.0017 J	0.0008 U	0.0008 U	0.46	0.32 J	0.34
11-S-low-C	0.42	0.56	0.92	0.39	0.28	0.47	0.0010 J	0.0008 U	0.0015 J	0.42	0.37 J	0.38
11-S-low-D	0.40	0.53	0.81	0.34	0.31	0.40	0.0008 U	0.0008 U	0.0008 U	0.43	0.37 J	0.35
12-I-high-A	0.78 J	9.68 J	2.58 J	0.19	1.80 J	0.47 J	0.0008 UJ	0.0008 U	0.0020 J	0.71	0.34 J	0.42
12-I-high-B	0.91 J	5.42 J	5.05 J	0.22	0.95 J	0.93 J	0.0008 UJ	0.0008 U	0.0013 J	0.65	0.37 J	0.34
12-I-high-C	1.30 J	3.55 J	2.65 J	0.30	0.51 J	0.46 J	0.0008 UJ	0.0008 U	0.0012 J	0.64	0.43 J	0.43
12-I-high-D	0.88 J	1.86 J	3.54 J	0.21	0.36 J	0.76 J	0.0008 UJ	0.0008 U	0.0018 J	0.68	0.52 J	0.35
12-I-low-A	0.84	1.40	2.06	0.34	0.43	0.66	0.0008 UJ	0.0008 U	0.0013 J	0.31	0.32 J	0.25
12-I-low-B	0.72	4.28	2.43	0.31	1.31	0.84	0.0008 UJ	0.0009 J	0.0026 J	0.39	0.24 J	0.25
12-I-low-C	1.03	2.64	3.27	0.43	0.87	1.16	0.0008 UJ	0.0008 U	0.0011 J	0.36	0.28 J	0.25
12-I-low-D	1.14	1.52	2.41	0.47	0.48	0.86	0.0008 UJ	0.0008 U	0.0011 J	0.34	0.31 J	0.24
12-S-high-A	0.29	0.38	0.80	0.19	0.34	0.47	0.0008 UJ	0.0008 U	0.0015 J	0.45 U*	0.39 J	0.41
12-S-high-B	0.17 J	0.29	0.68	0.17	0.23	0.39	0.0008 UJ	0.0008 U	0.0008 U	0.60 U*	0.36 J	0.37

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Potassium (mg/L)			Selenium (mg/L)			Silver (mg/L)			Sodium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
10-I-low-A	8.57	11.00	9.39	0.0091 UJ	0.0098 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.75	3.17	5.45
10-I-low-B	7.90	12.60	10.27	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.48	3.81	6.38
10-I-low-C	8.46	12.20	7.87	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.71	3.47	5.04
10-I-low-D	7.99	8.38	10.20	0.0091 UJ	0.0096 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.74	2.58	6.27
10-S-high-A	14.70	12.30	14.92	0.0091 U	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	3.48	2.49	5.27
10-S-high-B	11.50	14.70	12.61	0.0091 U	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	2.77	2.87	4.33
10-S-high-C	13.00	12.30	14.60	0.0091 U	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	2.82	2.45	4.88
10-S-high-D	14.40	12.30	14.69	0.0091 U	0.0104 J	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	3.29	2.52	5.28
10-S-low-A	7.92	6.68	6.69	0.0310 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.70	1.58	3.03
10-S-low-B	7.42	6.46	7.85	0.0310 U*	0.0103 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.75	1.53	3.83
10-S-low-C	6.51	7.04	7.35	0.0242 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.63	1.63	3.28
10-S-low-D	6.93	6.69	6.36	0.0353 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.76	1.62	2.88
11-I-high-A	46.30	41.70	32.63 J	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	14.70	11.10	13.29 J
11-I-high-B	32.20	51.70	32.66 J	0.0091 UJ	0.0105 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	10.90	13.40	12.83 J
11-I-high-C	30.80	43.90	27.32 J	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	10.50	11.90	10.73 J
11-I-high-D	29.40	50.10	33.68 J	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	9.72	13.80	13.14 J
11-I-low-A	13.00	14.20	10.32	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	4.55	4.38	5.34
11-I-low-B	10.20	14.10	9.14	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.64	4.23	6.04
11-I-low-C	11.00	15.50	11.53	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.76	4.45	6.15
11-I-low-D	11.80	15.80	11.58	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	4.32	4.80	6.43
11-S-high-A	11.50	18.20	18.31	0.0091 U	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	2.67	3.89	6.40
11-S-high-B	15.00	17.80	19.66	0.0091 U	0.0121 J	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	4.08	3.69	6.90
11-S-high-C	13.70	14.00	20.14	0.0091 U	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	3.59	2.66	7.67
11-S-high-D	13.10	15.10	18.80	0.0091 U	0.0096 J	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	3.84	2.95	7.18
11-S-low-A	7.12	9.11	8.13	0.0327 U*	0.0099 J	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.13	2.42	3.93
11-S-low-B	7.71	8.72	7.89	0.0337 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.26	2.37	3.70
11-S-low-C	8.20	7.36	7.48	0.0201 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.29	1.75	3.38
11-S-low-D	8.68	8.77	8.29	0.0319 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.62	2.24	3.74
12-I-high-A	18.80	41.00	19.67 J	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	7.24	15.40	9.25 J
12-I-high-B	21.40	39.30	23.85 J	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	8.51	14.30	13.32 J
12-I-high-C	23.90	33.00	18.32 J	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	9.79	11.50	8.49 J
12-I-high-D	19.70	23.70	20.35 J	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	7.31	7.58	10.27 J
12-I-low-A	8.25	9.26	8.65	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.13	3.80	5.59
12-I-low-B	8.04	14.10	10.05	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.27	5.54	6.75
12-I-low-C	9.49	11.60	11.85	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.75	3.94	8.65
12-I-low-D	9.85	9.72	9.83	0.0091 UJ	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	3.93	3.39	6.50
12-S-high-A	7.85	12.00	13.02	0.0091 U	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	2.23	2.90	5.49
12-S-high-B	7.43	11.90	12.12	0.0091 U	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	2.18	3.12	5.32

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Thallium (mg/L)			Vanadium (mg/L)			Zinc (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)									
10-I-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0018 U*	0.0017 J	0.132	0.364	0.250
10-I-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0043 J	0.0014 J	0.125	0.231	0.299
10-I-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0016 U*	0.0014 J	0.133	0.510	0.156
10-I-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0026 U*	0.0019 J	0.140	0.167	0.276
10-S-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0038 U*	0.0034 U*	0.0041 J	0.091	0.082	0.146
10-S-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0030 U*	0.0042 U*	0.0032 J	0.098	0.094	0.103
10-S-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0015 U*	0.0044 U*	0.0037 J	0.103	0.077	0.131
10-S-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0048 U*	0.0045 U*	0.0038 J	0.097	0.071	0.122
10-S-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0025 U*	0.0028 U*	0.0036 J	0.165	0.129	0.160
10-S-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0034 U*	0.0033 U*	0.0020 J	0.151	0.123	0.170
10-S-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0051 U*	0.0026 U*	0.0059 J	0.126	0.236	0.177
10-S-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0052 U*	0.0033 U*	0.0033 J	0.133	0.121	0.159
11-I-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0027 U*	0.0025 J	0.051	0.196 J	0.182 J
11-I-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0009 J	0.0031 U*	0.0020 J	0.124	0.183 J	0.166 J
11-I-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0028 U*	0.0032 J	0.110	0.178 J	0.150 J
11-I-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0029 U*	0.0026 J	0.112	0.273 J	0.259 J
11-I-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0021 U*	0.0019 J	0.161	0.352	0.207
11-I-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0026 U*	0.0015 J	0.154	0.317	0.188
11-I-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0060 J	0.0022 U*	0.0018 J	0.198	0.570	0.367
11-I-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0022 U*	0.0013 J	0.183	0.432	0.274
11-S-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0016 U*	0.0030 U*	0.0028 J	0.193	0.149	0.218
11-S-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0019 U*	0.0019 U*	0.0028 J	0.175	0.169	0.255
11-S-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0025 U*	0.0021 U*	0.0025 J	0.151	0.164	0.218
11-S-high-D	0.0043 U*	0.0052 J	0.0042 U	0.0025 U*	0.0038 U*	0.0028 J	0.126	0.173	0.201
11-S-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0046 U*	0.0026 U*	0.0022 J	0.124	0.142	0.135
11-S-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0028 U*	0.0027 U*	0.0026 J	0.135	0.127	0.195
11-S-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0037 U*	0.0024 U*	0.0031 J	0.170	0.150	0.201
11-S-low-D	0.0045 J	0.0043 U*	0.0042 U	0.0047 U*	0.0028 U*	0.0028 J	0.132	0.138	0.183
12-I-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0023 U*	0.0022 J	0.132	0.835 J	0.286 J
12-I-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0006 UJ	0.0023 U*	0.0016 J	0.145	0.427 J	0.433 J
12-I-high-C	0.0043 U*	0.0043 U*	0.0042 U	0.0066 J	0.0026 U*	0.0021 J	0.183	0.307 J	0.297 J
12-I-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0007 J	0.0029 U*	0.0017 J	0.141	0.206 J	0.342 J
12-I-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0023 U*	0.0011 J	0.211	0.308	0.427
12-I-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0018 U*	0.0018 J	0.200	0.894	0.522
12-I-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0022 U*	0.0014 J	0.265	0.584	0.680
12-I-low-D	0.0043 U*	0.0043 U*	0.0042 U	0.0006 U	0.0021 U*	0.0012 J	0.283	0.333	0.512
12-S-high-A	0.0043 U*	0.0043 U*	0.0042 U	0.0014 U*	0.0032 U*	0.0030 J	0.128	0.155	0.221
12-S-high-B	0.0043 U*	0.0043 U*	0.0042 U	0.0015 U*	0.0028 U*	0.0028 J	0.110	0.109	0.188

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Aluminum (mg/L)			Antimony (mg/L)			Arsenic (mg/L)			Barium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
12-S-high-C	1.37	0.89	2.20	0.040 J	0.026 J	0.057	0.073	0.055	0.057	0.015 J	0.014 J	0.028 J
12-S-high-D	1.34	0.78 J	2.22	0.029 J	0.024 J	0.055	0.063	0.052	0.055	0.015 J	0.016 J	0.028 J
12-S-low-A	1.37	1.17	1.60	0.038 J	0.025 U*	0.039 J	0.067 U*	0.041 J	0.039 J	0.014 J	0.015 J	0.020 J
12-S-low-B	1.33	1.14	1.03	0.025 J	0.031 U*	0.039 J	0.066 U*	0.052	0.039 J	0.012 J	0.012 J	0.021 J
12-S-low-C	1.33	1.19	1.67	0.042 J	0.029 U*	0.041 J	0.081	0.056	0.041 J	0.014 J	0.013 J	0.020 J
12-S-low-D	1.19	1.13	1.46	0.022 J	0.028 U*	0.043 J	0.061 U*	0.051	0.043 J	0.011 J	0.013 J	0.021 J

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Beryllium (mg/L)			Cadmium (mg/L)			Calcium (mg/L)			Chromium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
12-S-high-C	0.000045 U	0.000045 U	0.000045 U	0.0021 J	0.0021 J	0.0040 J	0.73	0.65 J	1.65	0.001 UJ	0.001 U	0.001 U
12-S-high-D	0.000045 U	0.000045 U	0.000045 U	0.0019 J	0.0024 J	0.0039 J	0.70	0.83 J	1.54	0.001 UJ	0.001 U	0.001 U
12-S-low-A	0.000113 J	0.000045 U	0.000157 J	0.0020 J	0.0024 J	0.0037 J	0.87	0.87 J	1.71	0.001 UJ	0.080 J	0.001 U
12-S-low-B	0.000045 U	0.000045 U	0.000045 U	0.0015 J	0.0017 J	0.0030 J	0.71	0.71 J	1.40	0.001 UJ	0.001 U	0.001 U
12-S-low-C	0.000045 U	0.000045 U	0.000045 U	0.0018 J	0.0021 J	0.0032 J	0.88	0.88 J	1.63	0.001 UJ	0.001 U	0.001 U
12-S-low-D	0.000045 U	0.000045 U	0.000045 U	0.0014 J	0.0023 J	0.0034 J	0.71	0.82 J	1.43	0.001 UJ	0.001 U	0.001 U

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Cobalt (mg/L)			Copper (mg/L)			Iron (mg/L)			Lead (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
12-S-high-C	0.000 U	0.001 J	0.001 U*	0.009 J	0.006 J	0.010 J	0.519	0.283 J	0.656	0.077	0.037 J	0.070
12-S-high-D	0.000 U	0.001 J	0.002 U*	0.007 J	0.007 J	0.008 J	0.515	0.235 J	0.705	0.073	0.036 J	0.064
12-S-low-A	0.003 U*	0.001 U*	0.001 U*	0.005 J	0.005 J	0.006 J	0.500	0.362 J	0.412 J	0.078	0.034 J	0.045 J
12-S-low-B	0.002 U*	0.001 U*	0.002 U*	0.004 J	0.006 J	0.005 U*	0.480 J	0.354 J	0.299 J	0.071	0.034 J	0.036 J
12-S-low-C	0.002 U*	0.001 U*	0.001 U*	0.006 J	0.006 J	0.006 J	0.475 J	0.368 J	0.439 J	0.072	0.038 J	0.050 J
12-S-low-D	0.002 U*	0.001 U*	0.001 U*	0.002 J	0.006 J	0.004 U*	0.419 J	0.352 J	0.427 J	0.057	0.041 J	0.042 J

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Magnesium (mg/L)			Manganese (mg/L)			Nickel (mg/L)			Phosphorus a (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
12-S-high-C	0.22 J	0.26	0.75	0.22	0.22	0.50	0.0008 UJ	0.0008 U	0.0011 J	0.54 U*	0.41 J	0.45
12-S-high-D	0.22 J	0.33	0.72	0.21	0.26	0.47	0.0008 UJ	0.0008 U	0.0008 U	0.53 U*	0.38 J	0.40
12-S-low-A	0.25 J	0.34	0.74	0.27	0.25	0.45	0.0015 J	0.0008 U	0.0008 U	0.45	0.34 J	0.28
12-S-low-B	0.21 J	0.28	0.59	0.24	0.22	0.40	0.0008 U	0.0008 U	0.0010 J	0.49	0.34 J	0.21
12-S-low-C	0.26	0.37	0.69	0.31	0.25	0.45	0.0021 J	0.0008 U	0.0014 J	0.44	0.35 J	0.32
12-S-low-D	0.22 J	0.31	0.60	0.22	0.25	0.38	0.0018 J	0.0008 U	0.0008 U	0.43	0.35 J	0.26

Table 5-4. SPLP TAL Metals Concentrations < 2 mm Fraction from Test Pot Soil Samples

Test Pot Sample ID	Potassium (mg/L)			Selenium (mg/L)			Silver (mg/L)			Sodium (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)												
12-S-high-C	9.49	12.70	12.64	0.0091 U	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	2.94	3.31	5.37
12-S-high-D	8.72	13.00	11.72	0.0091 U	0.0091 U	0.0090 UJ	0.0139 U	0.0139 U	0.0139 U	2.66	3.44	5.04
12-S-low-A	5.62	6.27	6.15	0.0227 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.73	1.86	3.57
12-S-low-B	5.75	6.16	6.10	0.0324 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.90	1.87	3.32
12-S-low-C	6.21	6.76	5.92	0.0377 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	2.01	2.09	3.27
12-S-low-D	5.29	6.24	6.10	0.0327 U*	0.0091 U	0.0090 U	0.0139 U	0.0139 U	0.0139 U	1.64	1.80	3.47

Table 5-4. SPLP TAL Metals Concer

Test Pot Sample ID	Thallium (mg/L)			Vanadium (mg/L)			Zinc (mg/L)		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)									
12-S-high-C	0.0085 J	0.0043 U*	0.0042 U	0.0031 U*	0.0032 U*	0.0033 J	0.137	0.110	0.236
12-S-high-D	0.0043 U*	0.0043 U*	0.0042 U	0.0025 U*	0.0034 U*	0.0025 J	0.133	0.125	0.214
12-S-low-A	0.0043 U*	0.0043 U*	0.0042 U	0.0045 U*	0.0025 U*	0.0027 J	0.144	0.140	0.199
12-S-low-B	0.0043 U*	0.0043 U*	0.0042 U	0.0039 U*	0.0035 U*	0.0020 J	0.125	0.116	0.146
12-S-low-C	0.0043 U*	0.0043 U*	0.0042 U	0.0053 U*	0.0038 U*	0.0022 J	0.146	0.121	0.205
12-S-low-D	0.0055 J	0.0043 U*	0.0042 U	0.0038 U*	0.0032 U*	0.0022 J	0.112	0.135	0.166

Notes:
mg/L = milligram(s) per liter
mm = millimeter(s)
SPLP = synthetic precipitation leaching procedure
t_1 = 1 month after pot preparation; t_2 = 4 months after pot preparation; t_3 = 6 months after pot preparation
TAL = target analyte list J = Quantitation is approximate due to limitations identified during the QA review.
J- = Quantitation is approximate, but the result may be biased low.
U = The analyte was not detected at or above the associated detection limit.
U* = The analyte should be considered "not-detected" because it was detected in an associated blank at a similar level.
UJ = The analyte was not detected and the detection limit may be higher due to a low bias identified during the QA review.

Table 5-5. Bioaccessible Arsenic and Lead for < 150 µm Fraction and Mehlich III Extract Data for < 2 mm Fraction from Test Pot Soil Samples Collected at Time Points 1, 2, and 3

Test Pot Sample ID	% IVBA Arsenic						% IVBA Lead						Mehlich III Extracts (mg/kg)					
	1.5 pH			2.5 pH			1.5 pH			2.5 pH [a,b]			Lead			Phosphorus		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Baseline Soil Samples																		
1-baseline-A	24.8	--	--	6.8	--	--	77.0	--	--	32.1	--	--	237	--	--	175	--	--
2-baseline-B	25.7	--	--	7.9	--	--	78.8	--	--	32.0	--	--	215	--	--	181	--	--
3-baseline-C	19.2	--	--	7.4	--	--	69.2	--	--	32.3	--	--	199	--	--	181	--	--
4-baseline-D	25.1	--	--	8.5	--	--	76.7	--	--	34.5	--	--	237	--	--	179	--	--
Control Pot Samples																		
385-0-Control-A	19.4	24.4	20.3	7.2	8.3 U*	7.7 U*	74.7 J-	72.1	75.3	33.8	33.6	29.1	285	273	237	154	145	173
386-0-Control-B	18.8	22.2	20.1	7.4	7.2 U*	7.1 U*	70.7 J-	74.3	79.6	31.7	31.7	33.8	277	274	250	157	145	157
387-0-Control-C	18.1	23.1	20.7	7.4	8.0 U*	7.5	71.5	73.9	78.9	32.3	32.5	31.0	265	330	237	161	129	167
388-0-Control-D	18.6	21.3	22.2	7.0	7.4 U*	7.8	69.5	71.7	76.2	32.5	32.3	33.7	247	280	232	173	149	168
Experimental Test Pot Soil Samples																		
1-I-high-A	29.0	29.3	29.5	12.5	12.8	10.3	70.7	69.5 J-	72.0	25.2	30.1	27.1	298	329	294	878	811	851
1-I-high-B	26.3	28.6	25.2	11.3	12.8	9.9	72.1	77.5 J-	70.2	27.2	30.3	27.8	273	322	287	850	715	836
1-I-high-C	27.0	29.6	27.9	10.9	13.0	10.8	71.4	77.3 J-	73.0	26.2	28.8	29.1	296	338	296	873	724	821
1-I-high-D	27.8	29.7	24.6	12.2	11.9 U*	11.2	69.7	71.0 J-	65.4	23.0	25.6	24.9	261	314	280	922	807	904
1-I-low-A	36.7	24.5	23.1	10.0	11.9	9.8	84.0	73.9	68.3	31.0	34.9	28.8	264	266	269	324	366	393
1-I-low-B	34.8	25.2	24.5	9.8	12.8	10.5	82.6	80.6	79.2	32.0	41.5	32.8	276	282	278	357	400	397
1-I-low-C	31.6	25.3	23.9	8.9	11.8	9.8	78.8	83.2	72.8	32.1	35.7	30.6	282	291	282	336	381	393
1-I-low-D	32.3	23.6	22.9	9.0	12.1	8.8 U*	75.8	74.7	70.3	30.1	34.3	28.2	309	310	266	394	349	387
1-S-high-A	23.1	28.4	24.4	12.4	12.7	11.8	64.7	63.2	64.2	26.6	21.3	22.4	282	307	296	887	936	936
1-S-high-B	25.4	27.3	22.3	10.7	12.9	10.5	69.2	61.6	64.2	27.6	21.4	20.6	273	312	299	824	938	978
1-S-high-C	24.0	25.7	24.4	10.6	12.6	11.7	69.8	62.1	68.2	28.1	20.5	24.0	273	290	293	864	1130	921
1-S-high-D	25.5	27.7	25.1	11.3	12.7	11.2	72.0	69.2	70.3	27.5	24.9	22.6	262	301	288	935	1150	963
1-S-low-A	23.8	21.1	19.4	8.5	10.6	8.5	70.9	63.0	66.1	29.0	26.5	26.7	278	314	305	465	391	359
1-S-low-B	23.1	21.9	17.7	10.4	8.7 U*	8.6	69.5	65.9	60.0	28.6	27.4	25.7	269	295	286	446	378	332
1-S-low-C	22.2	22.8	21.4	10.4	10.3	9.8	69.4	65.5	69.4	27.8	30.4	27.7	271	310	283	459	381	436
1-S-low-D	23.4	20.6	20.3	8.7	10.2	9.0	74.3	62.0	66.3	28.3	30.7	26.1	281	289	278	371	428	414
2-I-high-A	24.1	25.6	21.8	10.7	11.7 U*	10.6	65.6	59.4 J-	51.8	28.9	28.6	23.8	240	209	185	510	500	552
2-I-high-B	24.8	24.1	23.3	10.8	11.1 U*	12.6	65.5	56.6 J-	48.1	28.8	26.0	23.6	265	235	195	459	514	583
2-I-high-C	23.0	23.3	19.7	10.0	11.4	10.1 U*	61.8	56.0 J-	48.9	25.5	27.3	21.9	263	282	188	465	470	549
2-I-high-D	22.8	26.6	20.8	9.7	10.8 U*	9.9	53.9	56.1 J-	45.9	24.0	22.5	20.5	230	227	200	462	480	567
2-I-low-A	30.8	23.6	19.9	9.1	11.5	8.7 U*	75.6	73.1	63.7	31.0	34.1	26.3	330	295	253	236	250	273
2-I-low-B	31.5	22.3	21.8	8.6	10.4	8.6 U*	77.8	74.4	64.6	32.8	35.6	28.6	284	309	242	249	242	289
2-I-low-C	33.4	23.6	23.0	9.3	11.3	9.4	79.5	72.2	71.0	33.3	34.1	29.3	287	306	244	253	252	293
2-I-low-D	33.4	23.8	22.8	8.5	10.8	9.0	83.8	75.9	71.4	32.6	35.5	28.2	284	281	242	246	260	292
2-S-high-A	23.1	28.6	28.7	12.1	16.3	16.0	69.0	65.3	75.2	37.1	35.0	34.3	256	298	286	199	255	244
2-S-high-B	23.4	29.8	26.0	12.5	15.0	14.1	67.4	70.4	69.6	34.6	34.5	30.8	248	266	314	199	227	262
2-S-high-C	23.7	28.1	24.6	11.0	15.3	23.9	67.9	66.8	69.6	33.6	35.0	32.7	251	306	279	204	220	242
2-S-high-D	24.7	31.7	25.4	12.2	16.4	15.3	69.0	67.9	69.5	35.8	34.3	31.2	267	287	295	204	237	253
2-S-low-A	20.9	24.1	21.9	9.4	11.6	11.9	66.6	65.9 J-	67.9	28.8	33.0	31.6	273	299	217	199	201	217
2-S-low-B	21.9	24.5	20.2	9.3	12.5	9.0	67.7	64.2 J-	69.5	30.6	31.3	29.9	242	291	276	196	203	208
2-S-low-C	24.0	24.5	19.7	9.3	11.7	10.3	68.0	62.1 J-	63.1	28.4	31.0	28.1	263	278	263	192	200	204
2-S-low-D	23.9	22.6	21.2	11.9	11.0 U*	9.9	69.2	69.1	68.6	29.7	32.2	29.7	273	288	244	199	200	209
3-I-high-A	23.8	20.8	24.9	8.4	9.6 U*	10.2	72.8	75.7	79.2	35.9	38.9	39.4	318	352	312	166	164	210
3-I-high-B	24.5	20.0	25.4	9.6	10.4 U*	11.2	74.3	72.0	69.4	32.0	35.6	34.2	267	338	325	188	174	202
3-I-high-C	23.0	18.7	21.7	9.1	8.6 U*	9.8	77.9	71.2	67.2	35.0	34.8	33.4	294	329	310	173	176	202
3-I-high-D	24.2	22.0	23.6	9.6	11.2 U*	11.2	89.2	81.7	77.4	40.2	41.7	38.5	311	347	311	159	173	203
3-I-low-A	32.3	21.7	22.8	7.6	9.6 U*	8.3 U*	78.3	76.5	72.7	32.3	40.9	33.7	296	294	272	164	161	182

Table 5-5. Bioaccessible Arsenic and Lead for < 150 µm Fraction and Mehlich III Extract Data for < 2 mm Fraction from Test Pot Soil Samples Collected at Time Points 1, 2, and 3

Test Pot Sample ID	% IVBA Arsenic						% IVBA Lead						Mehlich III Extracts (mg/kg)					
	1.5 pH			2.5 pH			1.5 pH			2.5 pH [a,b]			Lead			Phosphorus		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)																		
3-I-low-B	32.5	20.6	21.7	7.6	9.5 U*	7.7 U*	81.1	77.4	74.3	33.0	41.5	30.3	273	292	274	170	158	183
3-I-low-C	30.2	20.3	22.4	8.1	9.0 U*	7.7 U*	81.9	76.2	78.0	33.9	36.8	33.3	302	299	279	154	154	178
3-I-low-D	30.7	19.3	20.2	7.6	8.4 U*	6.9 U*	80.2	75.1	74.8	33.1	39.1	32.3	284	288	270	169	161	182
3-S-high-A	20.4	20.6	17.7	9.1	9.3 U*	8.0	67.7	64.0	64.5	36.9	34.0	27.8	272	299	254	175	176	192
3-S-high-B	19.8	21.4	17.9	8.0	9.6 U*	8.1	71.5	65.7	72.0	39.0	36.4	32.0	258	294	295	185	184	188
3-S-high-C	20.8	23.7	20.6	7.4	10.4 U*	8.8	76.5	65.6	69.0	33.5	35.7	30.2	270	296	273	179	178	198
3-S-high-D	19.5	24.4	21.4	7.4	10.8 U*	9.0	74.4	64.5	67.2	31.9	36.4	29.9	258	307	282	178	183	198
3-S-low-A	18.4	20.1	18.6	8.6	8.3 U*	7.6	66.0 J-	69.3	68.0	32.9	32.7	29.2	269	276	271	178	179	175
3-S-low-B	19.0	23.1	15.6	7.7	8.7 U*	8.2	66.2 J-	76.8	61.8	33.3	31.6	27.9	273	273	264	171	185	173
3-S-low-C	19.0	19.0	15.4	8.3	7.9 U*	7.6	65.0 J-	65.1	59.4	32.9	29.6	28.2	273	280	297	166	173	174
3-S-low-D	19.0	18.0	15.6	7.8	8.5 U*	8.1	65.5 J-	64.9	57.9	33.9	31.5	25.8	278	289	252	161	181	178
4-I-high-A	22.6	18.9	21.3	7.2	8.3 U*	7.6	92.7	87.4	81.6	39.2	41.5	34.0	300	269	240	170	160	189
4-I-high-B	25.1	19.1	22.6	8.3	9.5 U*	8.2	93.8	89.2	80.0	37.9	42.0	33.9	264	308	254	159	151	182
4-I-high-C	24.2	19.0	21.1	7.3	8.3 U*	7.7	85.2	80.9	73.5	33.5	37.7	30.3	271	284	244	159	158	183
4-I-high-D	24.6	20.3	22.2	8.1	9.0 U*	7.8	97.0	92.8	85.9	41.0	44.1	36.0	249	270	254	168	159	188
4-I-low-A	31.2	20.0	21.5	7.0	8.0 U*	7.9	81.0	73.5	74.4	31.9	36.2	35.8	284	265	245	152	150	175
4-I-low-B	30.8	20.5	18.8	7.1	7.5 U*	7.2	82.5	74.2	73.2	31.1	35.5	35.4	287	288	246	147	147	177
4-I-low-C	32.4	21.7	19.8	7.2	7.9 U*	7.3 U*	81.1	75.5	72.8	31.8	35.0	35.8	279	284	253	157	147	176
4-I-low-D	30.3	20.5	18.2	7.8	8.1 U*	7.2 U*	80.5	76.8	75.0	32.7	34.7	35.1	262	277	271	164	144	161
4-S-high-A	17.7	23.0	19.6	6.8	10.8 U*	7.9	74.1	66.8	68.0	31.1	36.9	28.5	263	293	292	161	175	175
4-S-high-B	18.4	22.1	21.3	6.9	9.8 U*	8.6	69.4	60.5	67.8	29.9	32.7	29.3	278	301	243	154	166	185
4-S-high-C	17.4	22.0	19.6	7.2	8.6 U*	8.5	70.0	61.6	69.9	30.9	28.7	30.0	255	278	253	169	164	180
4-S-high-D	18.5	21.5	20.8	7.1	8.8 U*	7.8	74.4	67.2	81.1	30.5	31.9	28.8	269	292	279	162	167	177
4-S-low-A	17.1	20.3	14.3	6.2	8.3 U*	8.0	64.8 J-	69.8	56.3	30.2	31.1	27.3	263	281	275	166	172	166
4-S-low-B	17.6	22.4	14.2	7.4	9.1 U*	7.2	65.5	69.6	59.3	30.3	31.2	26.8	254	283	295	174	172	167
4-S-low-C	19.4	22.8	15.1	9.3	9.2 U*	6.9 U*	64.7	71.3	57.3	35.5	30.1	28.9	267	285	35	169	170	19
4-S-low-D	19.0	22.1	15.3	8.8	9.6 U*	7.4	66.1	69.9	63.9	35.3	29.6	29.5	254	268	281	165	179	162
5-I-high-A	21.2	19.9	18.7	7.4	8.9 U*	7.6	68.4	58.7	57.9	28.1	33.1	25.2	240	307	277	171	190	221
5-I-high-B	21.4	20.7	20.1	7.5	9.5 U*	7.7	68.1	58.6	61.3	27.3	31.9	25.9	266	289	258	197	199	225
5-I-high-C	19.4	20.1	20.6	7.7	9.1 U*	8.2	64.1	63.7	61.8	27.4	33.7	26.9	274	293	257	197	191	219
5-I-high-D	17.9	18.3	14.6	6.3	7.5 U*	6.6	65.1	55.6	60.5	25.6	29.3	24.1	241	296	258	206	190	217
5-I-low-A	25.1	20.8	20.5	7.7	8.2 U*	6.8	72.7	74.7	75.1	32.5	36.6	35.2	292	307	271	152	146	179
5-I-low-B	23.6	18.7	21.2	7.5	8.6 U*	7.4	71.0	68.0	68.9	32.2	34.5	34.1	253	254	251	176	170	190
5-I-low-C	24.2	20.0	21.6	7.7	8.5 U*	8.0	75.1	74.1	78.9	33.6	38.1	35.8	272	318	232	167	163	167
5-I-low-D	22.5	18.8	21.1	8.1	8.4 U*	7.0	74.1	72.4	75.7	33.3	39.0	37.1	279	304	260	165	162	165
5-S-high-A	18.6	21.8	20.2	7.4	9.4 U*	8.0	71.4	67.4	71.0	31.1	30.9	29.3	269	268	264	180	208	200
5-S-high-B	18.4	24.1	17.7	6.9	9.0 U*	8.0	67.9	67.7	71.5	30.4	30.2	29.3	249	277	264	180	199	207
5-S-high-C	18.7	22.0	16.3	7.7	8.5 U*	7.1	69.8	68.2	67.8	31.4	30.2	29.0	264	264	297	181	186	201
5-S-high-D	20.6	22.9	16.5	7.7	8.0 U*	6.3	70.1	63.9	63.8	29.0	29.9	25.6	243	295	245	189	183	205
5-S-low-A	18.8	21.8	16.9	9.7	8.3 U*	7.2	65.4	72.7	65.5	34.3	29.1	27.3	252	272	155	168	185	106
5-S-low-B	19.1	20.8	16.1	10.0	9.5 U*	7.3	64.2	62.4	59.4	34.5	29.8	27.4	246	270	287	174	181	180
5-S-low-C	18.4	21.1	19.0	8.7	8.6 U*	7.6	65.0	65.2	66.6	33.9	30.2	26.9	240	275	269	183	186	175
5-S-low-D	19.0	20.6	16.6	8.6	8.6 U*	6.4 U*	65.0	63.9	63.8	34.8	30.7	25.9	249	271	282	172	182	168
6-I-high-A	24.1	24.6	22.6	9.8	10.9 U*	10.5	65.7	61.2	53.0	21.6	22.8	18.8	263	251	228	1090	1010	1022
6-I-high-B	23.7	24.4	22.2	9.9	11.9	10.8	66.3	55.5	50.4	22.2	23.3	15.6	259	223	207	1030	971	1061
6-I-high-C	30.3	30.8	26.9	12.8	14.6	12.3	77.1	68.5	59.4	25.6	27.0	18.5	292	302	203	1030	1030	1079
6-I-high-D	32.4	31.9	30.9	14.1	17.3	15.6	75.5	64.1	60.8	26.2	25.5	17.8	254	215	176	993	962	1093

Table 5-5. Bioaccessible Arsenic and Lead for < 150 µm Fraction and Mehlich III Extract Data for < 2 mm Fraction from Test Pot Soil Samples Collected at Time Points 1, 2, and 3

Test Pot Sample ID	% IVBA Arsenic						% IVBA Lead						Mehlich III Extracts (mg/kg)					
	1.5 pH			2.5 pH			1.5 pH			2.5 pH [a,b]			Lead			Phosphorus		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)																		
6-I-low-A	27.4	23.7	24.4	9.5	11.4	9.9	75.5	71.2	70.3	30.9	32.7	29.7	297	254	240	423	461	474
6-I-low-B	27.9	25.2	23.7	9.9	12.4	13.5	75.5	70.1	72.1	30.5	33.1	30.2	278	258	255	462	476	489
6-I-low-C	24.1	26.9	27.2	10.1	12.1	12.4	71.5	80.1	79.6	35.1	37.4	31.8	296	263	253	410	454	481
6-I-low-D	29.3	24.5	24.7	10.9	11.3	11.8	78.6	73.0	70.7	33.6	34.1	30.6	267	293	245	464	478	506
6-S-high-A	26.7	35.2	30.2	12.5	17.0	18.0	71.0	65.1	66.7	25.6	27.4	28.6	296	311	303	569	523	494
6-S-high-B	29.4	34.3	32.1	13.3	17.2	18.2	72.5	66.2	70.1	27.3	29.4	28.4	276	291	285	584	538	584
6-S-high-C	28.1	30.1	29.2	13.5	14.7	16.7	72.7	64.8	73.6	27.6	26.5	31.3	282	302	294	549	600	415
6-S-high-D	27.1	37.0	31.2	12.8	20.0	18.2	68.4	66.1	72.2	26.2	31.9	30.0	273	295	298	556	625	502
6-S-low-A	22.0	25.4	19.8	11.8	11.8 U*	9.4	62.5	64.3	62.3	31.3	29.6	25.9	280	308	284	314	405	397
6-S-low-B	21.8	25.9	19.7	11.4	12.3 U*	10.5	65.6	67.5	68.0	33.4	30.9	29.5	264	286	296	305	367	387
6-S-low-C	21.7	28.4	20.3	11.4	14.2	10.2	66.5	65.5	67.1	31.3	29.8	28.8	268	287	304	323	412	366
6-S-low-D	20.2	31.0	22.5	10.1	15.9	11.0	64.6	63.5	67.9	30.0	29.0	27.6	267	284	291	305	402	393
7-I-high-A	30.2	29.7	29.7	11.7	12.2 U*	10.2	74.3	77.0	73.3	23.3	27.3	25.4	275	295	310	873	815	948
7-I-high-B	26.2	24.8	24.0	10.0	10.3 U*	8.8	63.8	62.8	57.4	19.5	22.4	20.7	285	289	312	885	815	899
7-I-high-C	27.8	27.7	26.7	10.8	11.7 U*	10.3	75.3	75.0	68.4	24.6	27.2	23.4	308	325	308	952	798	916
7-I-high-D	30.3	30.8	26.0	11.2	12.3	10.9	73.8	77.2	66.8	24.1	26.4	22.7	258	320	286	918	869	940
7-I-low-A	36.1	23.1	23.0	9.6	10.9	9.4	81.6	75.7	74.7	32.9	38.9	31.9	246	322	261	395	368	400
7-I-low-B	34.6	22.6	24.9	9.8	10.6	9.2 U*	76.7	70.8	76.5	32.6	39.0	30.5	274	285	253	361	397	411
7-I-low-C	35.1	22.7	24.2	9.3	11.3	10.5	79.6	71.9	78.1	31.9	38.4	32.9	301	319	244	368	383	418
7-I-low-D	35.8	22.9	24.5	10.0	11.7	10.9	85.1	74.7	77.9	32.0	39.3	33.2	280	279	260	372	341	407
7-S-high-A	26.3	31.0	24.0	11.0	14.1	10.2	70.2	63.9	63.9	21.8	25.7	23.4	269	299	285	740	821	718
7-S-high-B	25.6	29.9	24.6	10.8	12.0	11.9	70.4	68.9	70.3	22.5	27.7	24.0	269	323	289	832	715	836
7-S-high-C	26.1	26.2	23.3	9.4	10.3	10.3	72.0	61.3	61.1	25.6	24.0	20.6	282	324	288	693	779	863
7-S-high-D	24.7	30.4	27.3	10.4	13.5	12.4	69.7	71.9	70.6	20.2	28.1	24.9	279	326	293	804	797	896
7-S-low-A	20.7	23.0	19.6	9.1	10.0 U*	9.0	67.7	64.4	66.8	29.5	28.6	26.3	272	286	277	379	382	425
7-S-low-B	19.9	22.2	20.1	9.1	8.5 U*	9.1	67.8	58.6	64.2	30.5	26.3	25.5	279	277	287	396	347	461
7-S-low-C	19.4	24.4	20.0	8.9	10.4 U*	8.7	65.9	66.0	63.6	30.7	29.8	25.4	275	300	269	319	411	429
7-S-low-D	22.7	26.6	21.0	10.7	10.3 U*	8.6	68.9	68.2	71.7	30.4	30.9	26.8	263	295	298	398	378	389
8-I-high-A	29.3	31.7	30.0	11.7	13.0	11.4	74.2	77.8	70.7	24.0	25.1	22.6	272	306	293	883	822	896
8-I-high-B	31.0	33.7	28.6	12.4	13.9	11.4	74.8	82.4	70.6	24.1	27.6	21.7	274	313	294	861	824	904
8-I-high-C	28.0	30.3	27.9	10.5	14.2	11.3	69.3	72.2	65.2	22.6	25.5	20.3	249	307	295	849	831	929
8-I-high-D	33.0	35.4	29.9	12.8	14.7	12.7	73.1	79.9	68.3	21.6	25.1	20.2	240	308	281	847	871	947
8-I-low-A	37.2	25.1	24.0	9.7	12.5	10.8	85.8	77.9	77.5	31.9	38.6	34.2	317	334	267	403	400	406
8-I-low-B	38.2	25.1	23.7	11.0	12.3	10.3	86.7	77.3	75.8	34.4	39.8	33.6	276	311	260	405	388	410
8-I-low-C	41.2	26.4	27.2	11.0	11.9	11.7	92.5	82.5	87.7	37.7	43.4	33.3	293	331	254	382	330	410
8-I-low-D	37.9	26.5	25.6	10.6	12.8	9.1	88.3	81.6	79.2	36.3	42.9	29.9	271	282	264	428	387	405
8-S-high-A	27.0	28.2	23.9	12.4	12.4	9.9	73.6	68.0	68.1	26.7	27.6	23.7	278	331	288	822	817	892
8-S-high-B	25.7	28.6	24.9	9.8	11.8	11.3	72.8	67.9	72.9	26.2	30.1	23.9	275	324	299	695	626	953
8-S-high-C	25.9	30.9	23.5	10.7	12.9	10.6	69.0	66.0	67.1	22.6	26.7	22.4	272	317	302	851	811	864
8-S-high-D	24.6	31.1	24.0	9.1	12.1	10.5	76.7	67.8	67.9	27.0	26.8	24.1	281	313	297	595	848	906
8-S-low-A	20.5	26.9	19.1	9.7	11.2 U*	8.9	68.0	67.5	65.3	30.6	30.6	27.0	277	290	279	421	411	429
8-S-low-B	20.9	27.3	19.2	11.1	11.8	9.2	65.6	66.4	67.1	29.2	30.1	25.9	267	296	279	404	399	415
8-S-low-C	19.4	27.0	23.2	9.1	11.3 U*	11.6	66.1	66.1	71.8	29.5	31.2	28.7	265	298	291	396	426	498
8-S-low-D	19.9	27.2	18.7	9.3	12.0	8.5 U*	65.0	64.7	64.9	28.4	30.3	25.4	263	284	254	287	406	404
9-I-high-A	30.5	28.2	22.8	11.4	12.6 U*	11.0	78.9	72.4	50.2	33.4	31.6	20.9	235	252	184	414	466	581
9-I-high-B	29.2	26.1	23.8	11.6	11.9 U*	11.2	81.0	69.7	53.1	36.3	32.1	23.1	283	253	196	377	443	559
9-I-high-C	27.6	25.4	22.0	10.1	11.8	11.8	79.0	66.7	49.5	32.2	30.5	22.1	256	230	192	421	450	572

Table 5-5. Bioaccessible Arsenic and Lead for < 150 µm Fraction and Mehlich III Extract Data for < 2 mm Fraction from Test Pot Soil Samples Collected at Time Points 1, 2, and 3

Test Pot Sample ID	% IVBA Arsenic						% IVBA Lead						Mehlich III Extracts (mg/kg)					
	1.5 pH			2.5 pH			1.5 pH			2.5 pH [a,b]			Lead			Phosphorus		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)																		
9-I-high-D	27.6	26.9	23.1	10.6	12.2	11.5	72.7	68.4	52.8	31.9	30.4	21.9	295	225	194	429	469	604
9-I-low-A	22.3	23.9	21.8	10.3	12.0	10.0	66.5	71.7 J-	69.2	37.2	37.6	28.6	305	320	233	246	279	325
9-I-low-B	24.6	24.7	22.5	9.9	10.3 U*	9.1	71.7	74.8 J-	67.3	34.1	37.9	28.5	291	277	250	246	263	293
9-I-low-C	24.5	25.4	24.4	8.6	9.3 U*	9.3	73.5	76.9 J-	72.6	37.1	37.1	30.2	269	296	237	244	260	288
9-I-low-D	25.6	26.4	23.8	10.1	9.7 U*	9.1	76.6	73.5 J-	68.9	38.4	37.1	29.0	299	268	252	242	269	295
9-S-high-A	26.6	32.5	29.0	13.3	20.9	16.4	69.5	67.7 J-	68.7	31.2	37.8	33.2	275	270	241	189	216	250
9-S-high-B	26.8	33.1	26.7	13.3	15.9	15.2	75.4	72.9 J-	69.8	35.4	38.3	34.6	265	281	280	185	231	256
9-S-high-C	25.7	33.6	25.6	12.5	14.9	14.1	73.8	73.1 J-	72.7	34.6	38.1	34.4	266	323	299	189	215	260
9-S-high-D	28.1	34.1	28.3	14.6	16.2	16.9	75.5	70.2 J-	68.4	35.2	36.3	34.9	278	290	268	194	220	275
9-S-low-A	18.2	29.9	17.5	9.0	14.1	8.6	65.2	67.4	62.4	32.3	35.1	27.2	283	275	248	183	211	218
9-S-low-B	19.0	26.2	20.7	9.5	11.2	10.5	66.9	66.4	58.9	33.5	35.2	30.2	282	290	247	186	202	237
9-S-low-C	22.9	25.0	20.8	14.0	11.4 U*	10.6	65.7	65.2	67.0	33.1	32.9	30.2	283	329	266	187	221	224
9-S-low-D	19.5	24.8	19.2	9.9	11.1	10.8	65.4	64.4	61.2	32.1	30.8	29.4	261	312	289	190	205	224
10-I-high-A	23.7	23.1	26.2	9.0	9.6 U*	9.7	74.8	73.7	72.1	33.6	36.0	33.3	315	379	306	177	162	200
10-I-high-B	24.2	22.6	23.7	9.2	10.3 U*	9.0	73.7	76.4	75.5	35.0	40.8	32.3	295	346	291	184	169	202
10-I-high-C	26.3	24.2	24.5	9.4	10.3 U*	10.0	78.2	78.7	73.4	36.5	40.1	34.5	303	383	277	181	159	203
10-I-high-D	25.3	22.6	23.5	8.5	9.6 U*	10.1	78.5	77.4	74.5	33.6	36.1	32.4	294	358	294	186	165	198
10-I-low-A	22.0	23.0	22.3	8.2	8.7 U*	7.8	74.2	73.7 J-	77.4	33.6	36.9	31.7	247	312	274	176	157	176
10-I-low-B	23.1	22.7	23.3	8.7	8.5 U*	7.8	74.1	74.8 J-	78.0	35.9	38.8	32.1	261	306	262	177	168	189
10-I-low-C	22.5	22.3	16.9	8.4	8.3 U*	6.5 U*	73.9	71.7 J-	70.4	35.1	37.9	29.4	244	295	270	184	171	195
10-I-low-D	22.6	22.9	22.0	8.1	9.2 U*	8.8	75.9	79.4 J-	75.0	34.6	39.2	34.8	241	322	288	178	157	176
10-S-high-A	21.9	30.3	21.2	7.2	11.2	10.2	73.0	75.8 J-	68.4	33.6	38.7	33.0	268	306	273	172	182	183
10-S-high-B	20.1	24.7	16.4	5.6 U*	9.4	8.7	69.3	69.3 J-	65.6	30.1	36.2	31.1	254	311	290	168	178	186
10-S-high-C	20.4	28.8	18.6	5.3 U*	11.1	9.2	74.9	74.7 J-	71.1	31.0	39.6	34.6	260	293	269	173	184	190
10-S-high-D	22.2	29.0	21.0	5.9 U*	11.9	11.4	73.6	69.7 J-	69.3	32.7	35.7	32.3	246	316	302	173	170	181
10-S-low-A	16.2	21.3	18.0	6.6	9.1 U*	8.2	64.7	61.1	64.9	30.9	29.2	28.3	290	311	254	177	185	178
10-S-low-B	18.0	21.1	18.3	7.9	8.3 U*	7.8	67.4	63.0	67.0	31.4	29.5	29.8	285	295	281	172	186	178
10-S-low-C	18.3	21.1	16.3	7.8	8.3 U*	8.3	64.5	62.5	62.5	31.8	29.8	29.0	266	292	277	175	182	200
10-S-low-D	19.0	22.1	18.6	8.9	9.5 U*	9.0	67.9	66.8	68.1	32.4	31.5	30.4	260	300	279	178	184	173
11-I-high-A	23.9	27.0	27.8	11.4	12.9	11.6	69.5	68.8	63.8	31.0	33.7	28.0	254	294 J	296	234	210	230
11-I-high-B	23.0	23.2	24.9	9.0	11.1 U*	10.2	72.1	73.0	69.4	31.2	34.5	30.3	272	304 J	280	214	215	231
11-I-high-C	23.6	25.8	26.5	9.6	11.5 U*	10.6	68.5	72.9	62.2	31.4	34.3	28.8	303	320 J	290	203	205	234
11-I-high-D	22.3	23.3	26.7	8.8	11.7	10.6	67.3	71.5	72.0	32.4	36.3	29.9	319	282 J	282	199	216	231
11-I-low-A	23.1	21.7	21.2	8.8	8.9 U*	7.8 U*	73.7	76.1 J-	72.5	33.5	36.0	30.4	285	315	266	174	168	197
11-I-low-B	22.9	22.0	18.8	7.9	8.7 U*	7.6 U*	80.3	77.7 J-	73.6	35.0	37.5	29.8	278	305	295	171	174	194
11-I-low-C	22.3	22.7	23.3	8.9	8.7 U*	8.9 U*	76.1	86.7 J-	88.2	36.9	39.0	36.7	275	339	270	173	154	192
11-I-low-D	21.9	20.6	19.2	8.0	8.4 U*	8.2 U*	73.0	71.7 J-	74.8	31.6	34.8	31.7	258	290	256	180	171	196
11-S-high-A	19.2	26.9	18.9	5.6 U*	9.7	8.2	71.4	66.2 J-	64.3	29.8	33.3	29.1	261	285	293	159	188	197
11-S-high-B	21.1	24.2	20.3	5.7 U*	11.6	8.6	74.8	67.1	69.6	31.5	36.3	31.2	256	288	279	167	184	194
11-S-high-C	20.8	24.4	18.3	4.5 U*	9.2 U*	8.2	74.5	64.9	67.8	31.6	35.2	31.6	254	288	292	173	179	186
11-S-high-D	21.0	24.0	19.1	5.8 U*	8.5 U*	8.5	70.9	63.1	66.5	30.9	33.6	29.9	248	281	279	176	182	199
11-S-low-A	19.1	24.6	16.9	9.6	9.1 U*	9.0	67.4	64.1	66.6	37.8	30.1	30.7	279	309	273	180	186	190
11-S-low-B	17.5	23.5	16.5	9.6	9.2 U*	9.0	65.0	66.2	64.9	36.3	31.5	29.0	271	293	252	182	192	194
11-S-low-C	17.4	22.4	16.5	9.8	8.0 U*	8.4	64.8	62.5	64.8	36.9	30.0	30.3	265	295	274	174	186	183
11-S-low-D	19.9	23.6	17.1	10.7	9.4 U*	8.7	67.9	69.4	70.6	38.1	33.1	32.9	245	301	267	182	188	183
12-I-high-A	20.1	21.1	20.5	7.7	9.8 U*	7.6	63.4	72.4	67.1	27.2	32.4	27.1	271	302 J	264	200	190	211
12-I-high-B	22.6	23.1	21.3	8.6	10.1 U*	8.6	68.5	68.9	66.6	29.7	32.2	27.8	292	331 J	255	189	183	211

Table 5-5. Bioaccessible Arsenic and Lead for < 150 µm Fraction and Mehlich III Extract Data for < 2 mm Fraction from Test Pot Soil Samples Collected at Time Points 1, 2, and 3

Test Pot Sample ID	% IVBA Arsenic						% IVBA Lead						Mehlich III Extracts (mg/kg)					
	1.5 pH			2.5 pH			1.5 pH			2.5 pH [a,b]			Lead			Phosphorus		
	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Soil Samples (continued)																		
12-I-high-C	20.5	20.8	17.8	7.8	9.4 U*	8.4	65.5	66.9	62.0	29.7	30.7	27.8	268	315 J	259	196	184	207
12-I-high-D	24.5	25.6	23.4	9.8	10.2 U*	9.6	68.0	68.7	63.1	30.1	31.1	27.7	270	288 J	242	198	197	207
12-I-low-A	21.0	20.8	18.8	7.5	8.8 U*	8.0 U*	75.9	73.6 J-	72.0	32.6	38.5	31.0	290	308	246	150	157	185
12-I-low-B	21.3	20.3	18.4	8.2	8.0 U*	7.1 U*	72.0	71.7 J-	68.4	31.6	35.5	30.5	258	295	260	174	160	180
12-I-low-C	27.5	25.2	23.2	10.0	10.4 U*	8.7 U*	75.5	74.8 J-	74.7	33.5	37.9	31.0	272	286	258	164	162	177
12-I-low-D	27.6	25.6	22.1	9.0	10.2 U*	9.0 U*	81.2	77.2 J-	72.3	33.6	36.1	29.9	266	281	260	174	165	176
12-S-high-A	19.3	24.7	18.4	4.6 U*	9.0 U*	8.3	71.7	65.8	68.1	28.5	35.5	31.1	249	290	281	185	183	195
12-S-high-B	18.4	25.0	16.4	5.3 U*	9.2	7.4	68.9	64.6	69.1	29.4	33.5	30.9	234	303	305	179	185	194
12-S-high-C	20.8	24.5	19.2	7.3	9.7	8.5	71.6	63.4	67.9	31.1	34.3	31.1	251	321	278	177	184	192
12-S-high-D	18.5	23.2	17.5	6.9	9.0 U*	8.1	69.3	64.1	66.6	30.5	34.3	30.1	263	291	277	173	191	191
12-S-low-A	16.4	20.1	14.9	9.0	9.0 U*	8.0	64.5	61.4	67.0	34.9	30.1	31.4	255	303	288	174	178	174
12-S-low-B	17.2	20.4	15.3	8.5	9.9 U*	8.0 U*	65.5	58.9	61.7	35.1	30.3	30.7	251	301	291	177	180	175
12-S-low-C	19.6	20.7	16.5	11.1	13.0	7.3 U*	65.0	63.5	67.2	36.0	33.4	30.3	266	301	283	171	183	178
12-S-low-D	17.8	21.2	15.1	9.2	9.3 U*	7.1 U*	64.6	61.1	63.4	36.5	30.2	29.5	261	304	283	176	177	176

Notes:

[a]Bioaccessability (%) was obtained for each sample by dividing the reported bioaccessible value (mg/kg) by the t_1 total lead or arsenic value (mg/kg) in Table 5-6, excluding control pot samples for lead 2.5 pH at t_3. Bioaccessibility (%) for control pot lead Samples at 2.5 pH t_3 were calculated by dividing the reported pH 2.5 value by the t_3 total lead or arsenic value (mg/kg) in Table 5-7.

[b] Qualifiers (i.e. J, R, UJ, etc.) reflect the bioaccessible lead; qualifiers for total lead can be found in Table 5-6.

t_1 = 1 month after pot preparation; t_2 = 4 months after pot preparation; t_3 = 6 months after pot preparation
J = Quantitation is approximate due to limitations identified during the QA review.
J- = Quantitation is approximate, but the result may be biased low.
U* = The analyte should be considered "not-detected" because it was detected in an associated blank at a similar level.
IVBA = in-vitro bioaccessibility
µm = micrometer
mg/kg = milligram(s) per kilogram
mm = millimeter

Table 5-6. General Chemistry Data for Baseline and Test Pot Soil Samples Collected at Time Points 1, 2, and 3

	<150 µm Fraction		< 2 mm Fraction												
	Total Arsenic (mg/kg)[a]	Total Lead (mg/kg)[b]	Mineralizable Nitrogen (mg/kg)			Total Carbon (%)			Total Nitrogen (%)			Total Organic Carbon (%)		
	t_1	t_1	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Baseline Soil Samples														
1-baseline-A	108.55	1,399	50.82	--	--	6.62	--	--	0.31	--	--	5.49	--	--
2-baseline-B	106.85	1,400	31.10	--	--	7.42	--	--	0.33	--	--	6.49	--	--
3-baseline-C	108.13	1,429	25.52	--	--	6.97	--	--	0.30	--	--	6.48	--	--
4-baseline-D	112.36	1,413	27.00	--	--	10.97	--	--	0.45	--	--	6.79	--	--
Control Pot Samples														
385-0-Control-A	98.87	1,504	41.79	32.82	34.74	4.09	8.97	8.85	0.17	0.37	0.39	6.38	9.62	7.55
386-0-Control-B	95.64	1,557	50.71	61.81	38.72	5.80	8.66	7.46	0.25	0.39	0.35	6.44	5.43	8.25
387-0-Control-C	95.89	1,549	33.50	43.72	29.12	5.58	6.39	6.95	0.21	0.28	0.32	6.78	6.92	7.53
388-0-Control-D	100.33	1,443	58.80	46.76	41.31	5.46	7.75	8.78	0.22	0.35	0.42	10.26	7.28	6.76
Experimental Test Pot Samples														
1-I-high-A	92.96	1,516	69.38	69.11	49.77	4.50	12.67	7.75	0.20	0.50	0.34	7.95	9.53 J	8.54
1-I-high-B	96.49	1,455	79.84	55.78	55.89	7.20	7.13	9.56	0.37	0.28	0.34	8.58	11.41 J	8.96
1-I-high-C	93.54	1,448	78.44	70.33	59.83	8.87	8.36	8.96	0.42	0.34	0.43	8.00	12.17 J	8.18
1-I-high-D	94.17	1,563	75.95	56.76	56.12	6.00	8.37	8.13	0.25	0.31	0.34	6.32	6.65 J	7.62
1-I-low-A	102.50	1,482	40.37	53.26	35.20	4.79	8.27	10.85	0.21	0.33	0.43	7.18	7.77	9.01
1-I-low-B	97.91	1,361	39.77	37.65	27.10	8.08	8.80	9.56	0.34	0.36	0.39	8.77	9.85	7.24
1-I-low-C	101.57	1,406	63.32	49.23	46.39	5.33	7.68	7.26	0.23	0.31	0.31	6.81	7.58	6.56
1-I-low-D	100.84	1,433	62.82	54.29	39.06	7.61	7.87	6.93	0.29	0.32	0.29	7.99	5.46	7.86
1-S-high-A	95.47	1,536	79.83	88.28	53.50	7.21	5.52	8.31	0.28	0.23	0.34	6.46	4.37	8.26
1-S-high-B	99.98	1,569	70.32	55.78	38.34	6.33	7.52	6.76	0.25	0.30	0.28	7.35	7.31	7.47
1-S-high-C	101.51	1,524	93.82	71.24	41.94	7.15	6.64	10.17	0.37	0.27	0.42	6.61	5.36	6.85
1-S-high-D	97.31	1,446	73.83	91.78	45.00	7.02	8.71	6.70	0.33	0.36	0.28	7.28	10.09	7.20
1-S-low-A	106.06	1,558	76.46	46.67	44.50	8.32	7.93	11.82	0.38	0.34	0.49	5.49	8.26	9.11
1-S-low-B	103.07	1,502	84.44	40.47	41.65	10.61	7.92	8.66	0.49	0.33	0.38	6.74	10.64 J	6.50
1-S-low-C	101.46	1,488	80.42	47.12	51.30	11.85	6.55	13.17	0.56	0.29	0.50	5.74	6.78 J	7.17
1-S-low-D	98.08	1,525	60.41	68.12	50.30	7.78	6.76	7.61	0.35	0.32	0.33	7.23	6.05	6.93
2-I-high-A	96.75	1,403	2,198	2,263	1,775	7.67	9.04	10.52	0.66	0.72	0.39	9.13	10.01 J	9.36
2-I-high-B	101.68	1,490	2,003	1,533	1,459	10.46	13.02	10.14	0.93	1.04	0.46	12.18	12.95 J	12.12
2-I-high-C	102.12	1,510	1,483	2,838	990	11.08	11.69	12.66	0.96	0.94	0.29	14.25	9.15 J	11.78
2-I-high-D	101.53	1,622	1,973	2,078	1,470	12.07	9.34	14.71	1.02	0.71	0.40	13.12	10.04 J	12.07
2-I-low-A	99.98	1,455	450.32	837.23	240.56	6.02	7.65	12.84	0.36	0.40	0.75	8.66	9.85	10.69
2-I-low-B	101.41	1,382	463.82	400.76	140.82	12.22	8.97	12.63	0.70	0.53	0.65	11.36	9.18	8.54
2-I-low-C	96.95	1,350	452.82	731.86	290.82	11.03	8.97	7.85	0.66	0.51	0.50	8.51	7.05	7.45
2-I-low-D	101.33	1,368	517.82	506.25	253.91	6.75	7.87	7.31	0.42	0.48	0.38	5.19	8.80	6.63
2-S-high-A	100.98	1,473	882.87	1,066	782.06	7.16	8.50	9.28	0.43	0.54	0.53	7.67	7.82	6.56
2-S-high-B	104.36	1,521	1,013	841.25	887.14	5.06	7.07	11.53	0.28	0.41	0.67	7.22	7.28	8.18
2-S-high-C	99.88	1,482	917.84	1,031	837.00	5.52	9.09	8.46	0.34	0.52	0.48	6.62	8.21	7.29
2-S-high-D	102.67	1,522	862.87	1,071	841.75	6.21	8.49	6.41	0.36	0.52	0.35	8.14	7.86	8.05
2-S-low-A	100.59	1,472	387.89	340.68	339.80	11.60	8.59	8.87	0.65	0.48	0.45	7.44	6.91	8.13
2-S-low-B	101.85	1,473	313.89	384.17	362.80	6.34	7.47	9.50	0.34	0.42	0.48	7.71	6.91	7.79
2-S-low-C	98.53	1,533	368.87	362.68	348.30	6.70	6.28	9.33	0.34	0.35	0.46	7.97	8.58	9.43
2-S-low-D	96.38	1,465	401.41	374.68	365.30	14.73	6.76	8.84	0.81	0.35	0.40	9.13	8.57	7.38
3-I-high-A	95.72	1,422	56.00	30.90	31.08	7.05	7.99	10.10	0.28	0.31	1.30	10.79	10.48 J	8.50
3-I-high-B	96.09	1,522	41.97	33.45	38.65	7.21	8.77	9.29	0.29	0.33	1.27	7.74	10.30 J	6.84
3-I-high-C	104.48	1,523	35.83	28.43	28.66	5.40	9.89	9.14	0.22	0.33	0.40	6.02	8.22 J	7.57
3-I-high-D	94.07	1,332	53.48	33.97	38.65	5.96	12.07	7.84	0.26	0.43	0.36	7.07	9.70 J	8.81
3-I-low-A	102.01	1,428	46.62	31.08	35.62	5.45	8.30	7.41	0.26	0.32	0.31	4.34	9.70	6.66
3-I-low-B	101.01	1,396	47.17	28.39	29.97	8.16	8.04	8.13	0.38	0.31	0.34	6.96	10.50	9.21

Table 5-6. General Chemistry Data for Baseline and Test Pot Soil Samples Collected at Time Points 1, 2, and 3

	<150 µm Fraction		< 2 mm Fraction												
	Total Arsenic (mg/kg)[a]	Total Lead (mg/kg)[b]	Mineralizable Nitrogen (mg/kg)			Total Carbon (%)			Total Nitrogen (%)			Total Organic Carbon (%)			
	t_1	t_1	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	
Experimental Test Pot Samples (continued)															
3-I-low-C	101.97	1,402	53.82	38.20	41.52	8.59	10.25	9.09	0.42	0.39	0.39	6.32	15.15	8.34	
3-I-low-D	104.18	1,393	51.32	37.81	33.22	6.71	9.40	8.41	0.32	0.37	0.36	4.99	12.03	5.90	
3-S-high-A	102.76	1,475	41.02	33.01	36.30	6.08	10.42	9.53	0.25	0.42	0.40	6.48	7.05	7.68	
3-S-high-B	99.83	1,428	38.02	34.64	31.07	5.54	10.11	10.45	0.22	0.40	0.42	7.28	6.65	8.11	
3-S-high-C	96.56	1,429	43.32	39.62	34.40	7.96	8.85	10.88	0.33	0.35	0.43	6.64	6.90	6.75	
3-S-high-D	96.87	1,496	42.33	34.42	37.91	11.65	7.34	10.12	0.50	0.27	0.41	7.71	9.73	5.93	
3-S-low-A	100.99	1,453	50	36	48	7.78	5.72	6.50	0.31	0.25	0.27	6.77	9.74	7.18	
3-S-low-B	101.87	1,489	57	34	40	5.77	9.82	10.67	0.25	0.42	0.42	6.40	7.36	9.57	
3-S-low-C	104.48	1,538	46	38	42	7.40	7.06	7.92	0.33	0.31	0.34	6.56	8.32	6.71	
3-S-low-D	104.80	1,526	46	33	41	6.91	5.86	8.94	0.31	0.25	0.38	8.29	7.48	5.74	
4-I-high-A	91.70	1,213	40.98	51.96	44.36	6.54	9.36	8.45	0.27	0.33	0.34	7.80	9.32 J	7.76	
4-I-high-B	90.44	1,208	50.75	51.59	56.13	5.66	6.97	8.76	0.23	0.26	0.34	7.46	7.70 J	8.59	
4-I-high-C	94.87	1,334	43.42	55.83	52.85	4.99	8.36	11.81	0.21	0.29	0.44	9.65	6.46 J	9.10	
4-I-high-D	87.45	1,158	54.70	53.92	47.43	6.12	9.51	8.80	0.22	0.34	0.35	15.16	4.86 J	8.03	
4-I-low-A	102.19	1,406	49.82	46	60.82	11.95	13.44	10.81	0.53	0.51	0.44	6.54	9.31	8.66	
4-I-low-B	103.93	1,413	33	38.04	59.32	10.31	9.33	10.01	0.42	0.35	0.39	7.67	12.26	10.23	
4-I-low-C	100.33	1,408	45.22	40	43.27	10.59	11.14	11.74	0.44	0.40	0.45	7.96	9.63	10.03	
4-I-low-D	101.90	1,382	52.34	49	60.44	10.05	10.81	9.65	0.42	0.41	0.38	4.83	10.47	9.29	
4-S-high-A	98.41	1,468	58.84	28.43	36.64	6.70	8.30	9.55	0.27	0.34	0.41	6.24	7.72	4.55	
4-S-high-B	99.66	1,524	52.82	44.34	36.30	5.16	9.07	8.87	0.19	0.35	0.34	8.65	8.80	9.81	
4-S-high-C	94.09	1,479	49.82	32.27	25.39	7.09	7.35	9.86	0.28	0.29	0.38	10.55	7.01	7.02	
4-S-high-D	100.26	1,445	39.55	31.40	24.32	6.34	8.15	8.04	0.25	0.32	0.33	6.33	7.65	9.84	
4-S-low-A	105.85	1,513	38.15	31.97	36.72	12.15	9.37	10.15	0.57	0.45	0.43	10.38	7.20	7.56	
4-S-low-B	104.43	1,505	50.36	37.06	40.45	7.32	6.49	12.91	0.29	0.29	0.55	6.69	6.44	11.42	
4-S-low-C	99.26	1,473	57.34	35.64	43.25	6.13	10.32	11.34	0.26	0.47	0.45	5.51	5.59	7.18	
4-S-low-D	101.73	1,478	44.30	27.83	45.74	7.14	6.41	8.83	0.33	0.29	0.36	5.88	5.95	10.13	
5-I-high-A	104.96	1,557	163.69	128.99	63.62	6.38	8.33	9.87	0.26	0.32	0.39	7.41	11.08 J	8.89	
5-I-high-B	101.68	1,488	155.16	135.46	50.69	6.73	8.90	11.65	0.29	0.35	0.47	8.15	10.97 J	9.01	
5-I-high-C	103.60	1,524	160.63	110.50	63.25	8.77	10.43	6.66	0.26	0.36	0.29	9.82	10.72 J	9.06	
5-I-high-D	112.24	1,662	151.12	132.51	52.16	6.47	12.94	10.43	0.26	0.46	0.41	8.72	11.48 J	8.86	
5-I-low-A	102.23	1,429	65.82	41.77	46.21	11.21	9.44	11.78	0.44	0.38	0.48	6.45	11.80	11.34	
5-I-low-B	104.94	1,449	73.82	39.42	86.90	14.28	8.54	7.99	0.55	0.32	0.35	7.33	14.48	7.21	
5-I-low-C	100.22	1,333	63.32	42.28	40.22	9.56	7.44	12.70	0.37	0.30	0.53	8.38	14.65	10.81	
5-I-low-D	103.19	1,398	70.70	68.54	36.39	18.97	15.15	11.90	0.76	0.54	0.49	8.88	19.77	9.35	
5-S-high-A	99.74	1,452	75.97	76.38	40.64	4.90	7.10	14.54	0.20	0.27	0.59	7.05	9.42	6.99	
5-S-high-B	96.52	1,446	67.33	67.30	25.68	6.47	10.19	10.93	0.26	0.41	0.44	5.49	7.69	6.43	
5-S-high-C	100.83	1,490	82.32	87.49	32.63	6.61	7.11	9.41	0.25	0.32	0.39	6.35	10.32	6.55	
5-S-high-D	104.92	1,525	92.82	53.43	32.48	7.15	11.18	8.77	0.27	0.43	0.52	7.71	9.83	7.45	
5-S-low-A	104.19	1,496	69.36	27.97	26.00	7.67	4.04	9.57	0.37	0.17	0.39	5.30	7.78	7.90	
5-S-low-B	101.34	1,512	65.32	30.61	31.65	10.90	5.62	8.61	0.50	0.24	0.37	6.29	6.79	6.43	
5-S-low-C	104.76	1,504	64.84	25.92	25.60	8.31	6.01	10.32	0.36	0.26	0.43	7.28	8.24	7.48	
5-S-low-D	104.36	1,521	59.34	36.77	44.35	5.57	7.00	7.50	0.24	0.31	0.37	10.50	6.37	9.73	
6-I-high-A	104.54	1,475	1,881	1,638	1,853	12.34	13.70	12.23	1.13	1.27	1.32	10.86	14.80 J	10.23	
6-I-high-B	107.47	1,520	2,053	3,124	1,514	11.08	9.08	13.25	0.99	0.77	1.29	11.28	11.81 J	10.49	
6-I-high-C	83.66	1,222	1,813	1,903	1,580	10.80	11.48	10.61	0.99	0.96	1.02	12.50	10.65 J	10.61	
6-I-high-D	84.32	1,256	1,913	2,268	1,354	7.65	14.23	13.66	0.67	1.28	1.45	11.68	12.55 J	8.86	
6-I-low-A	93.22	1,331	592.82	532.56	186.49	8.15	7.59	9.22	0.43	0.44	0.56	7.26	10.59	7.64	
6-I-low-B	95.45	1,372	527.82	583.07	472.88	6.33	9.34	9.83	0.42	0.49	0.55	8.64	9.23	7.45	

Table 5-6. General Chemistry Data for Baseline and Test Pot Soil Samples Collected at Time Points 1, 2, and 3

	<150 µm Fraction		< 2 mm Fraction											
	Total Arsenic (mg/kg)[a]	Total Lead (mg/kg)[b]	Mineralizable Nitrogen (mg/kg)			Total Carbon (%)			Total Nitrogen (%)			Total Organic Carbon (%)		
	t_1	t_1	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Samples (continued)														
6-I-low-C	89.20	1,272	572.82	548.06	310.82	8.55	7.33	10.21	0.64	0.40	0.64	9.13	10.06	10.38
6-I-low-D	96.39	1,328	702.82	743.07	386.25	6.44	0.96	6.80	0.40	0.05	0.39	9.22	16.77 J	8.53
6-S-high-A	98.90	1,548	1,008	996.29	1,167	7.34	8.86	9.31	0.42	0.51	0.58	5.88	9.93	8.25
6-S-high-B	99.12	1,488	1,003	1,101	1,102	8.54	9.45	8.71	0.51	0.54	0.55	5.82	9.85	6.37
6-S-high-C	95.92	1,460	867.87	1,086	1,147	6.02	11.33	9.79	0.35	0.69	0.58	5.57	9.01	6.04
6-S-high-D	93.93	1,487	827.90	1,021	1,242	5.93	8.76	8.13	0.36	0.52	0.50	7.15	9.45	5.98
6-S-low-A	103.30	1,517	407.84	441.24	457.80	7.33	6.98	8.74	0.41	0.36	0.41	6.62	7.08	7.19
6-S-low-B	100.50	1,465	365.86	467.71	299.80	7.68	6.71	7.51	0.45	0.34	0.36	10.72	8.48	8.55
6-S-low-C	98.32	1,461	431.32	441.68	311.80	6.99	7.23	7.05	0.36	0.40	0.34	7.02	6.27	7.22
6-S-low-D	103.58	1,502	376.83	418.21	476.95	5.50	4.05	9.60	0.30	0.21	0.46	7.86	6.11	8.19
7-I-high-A	96.93	1,481	100.25	63.32	52.09	5.20	10.32	12.53	0.19	0.34	0.48	6.63	7.37 J	8.36
7-I-high-B	112.79	1,794	97.82	84.99	59.09	5.09	6.54	8.01	0.19	0.22	0.30	11.74	7.39 J	7.52
7-I-high-C	98.47	1,499	92.77	92.87	72.59	6.52	8.32	10.42	0.22	0.29	0.37	7.91	9.75 J	8.15
7-I-high-D	99.04	1,514	111.19	114.45	70.40	5.56	6.94	7.17	0.20	0.24	0.28	7.27	6.78 J	7.72
7-I-low-A	101.70	1,383	90.82	52.55	44.55	5.82	8.67	10.13	0.23	0.32	0.41	9.74	14.63 J	8.20
7-I-low-B	100.73	1,420	57.32	63.04	44.73	5.58	7.42	8.46	0.23	0.27	0.35	8.09	11.87 J	7.90
7-I-low-C	100.72	1,428	69.82	60.08	46.64	4.08	7.87	10.33	0.18	0.30	0.42	9.27	8.67 J	8.71
7-I-low-D	93.31	1,376	65.32	45.86	48.41	9.13	9.07	9.75	0.34	0.32	0.40	8.68	14.98 J	7.70
7-S-high-A	96.43	1,539	92.32	57.93	35.59	6.47	10.94	7.88	0.28	0.42	0.31	7.13	9.34	6.85
7-S-high-B	94.23	1,505	90.82	53.43	66.28	6.84	4.40	8.40	0.31	0.18	0.33	8.29	8.07	7.11
7-S-high-C	104.70	1,614	103.32	55.93	70.85	7.98	8.56	8.64	0.35	0.36	0.34	7.09	9.37	6.52
7-S-high-D	94.59	1,463	98.32	47.45	71.82	9.08	8.04	8.02	0.41	0.32	0.33	7.42	7.08	5.96
7-S-low-A	102.53	1,489	70.38	52.23	39.26	5.46	6.88	7.84	0.27	0.30	0.31	8.84	6.94	5.68
7-S-low-B	105.40	1,516	65.86	30.13	31.30	7.25	9.80	8.83	0.34	0.41	0.35	8.04	9.73	7.77
7-S-low-C	105.68	1,512	50.82	45.20	35.63	7.54	7.63	11.78	0.39	0.32	0.49	8.07	5.87	9.45
7-S-low-D	99.39	1,440	60.34	39.68	38.85	7.93	4.37	10.56	0.37	0.17	0.42	6.90	5.81	7.77
8-I-high-A	93.47	1,376	163.97	133.86	96.65	6.02	8.12	11.07	0.25	0.32	0.46	8.20	8.55 J	10.37
8-I-high-B	86.71	1,370	179.86	175.27	89.28	7.61	10.08	8.37	0.31	0.39	0.37	10.98	10.13 J	8.48
8-I-high-C	97.80	1,457	144.94	159.86	108.21	5.92	10.03	9.54	0.27	0.37	0.41	9.50	9.00 J	9.88
8-I-high-D	91.07	1,424	149.45	179.73	142.82	9.28	8.32	9.11	0.40	0.32	0.39	8.45	8.21	9.49
8-I-low-A	91.91	1,358	90.32	52.56	40.24	5.11	8.66	8.66	0.18	0.32	0.36	7.09	11.10 J	8.94
8-I-low-B	96.24	1,308	65.30	55.07	36.68	5.29	8.96	9.76	0.22	0.34	0.38	7.77	10.67	9.59
8-I-low-C	93.04	1,242	80.24	69.55	56.03	9.12	11.20	8.07	0.36	0.43	0.35	7.10	10.41	6.89
8-I-low-D	88.52	1,288	61.81	83.53	53.49	8.43	8.48	10.76	0.33	0.33	0.46	10.64	9.16 J	9.81
8-S-high-A	96.49	1,527	143.82	128.42	118.83	10.90	7.81	8.44	0.53	0.32	0.35	7.91	7.49	6.54
8-S-high-B	96.66	1,516	142.32	93.91	118.32	11.66	7.93	9.60	0.57	0.31	0.41	5.33	7.34	6.92
8-S-high-C	97.56	1,568	164.82	134.18	115.82	8.34	6.45	8.75	0.41	0.28	0.38	7.61	8.02	6.34
8-S-high-D	94.39	1,511	112.82	156.59	135.32	10.24	8.39	8.26	0.49	0.35	0.35	8.15	6.99	5.93
8-S-low-A	100.04	1,450	95.84	61.23	50.30	5.63	5.79	7.91	0.28	0.25	0.33	6.10	12.81	9.34
8-S-low-B	99.27	1,481	84.32	64.73	42.55	5.60	8.13	10.89	0.30	0.34	0.44	6.98	7.58	9.56
8-S-low-C	93.21	1,421	73.83	61.70	32.85	8.55	7.86	9.04	0.32	0.33	0.36	6.40	9.39	8.19
8-S-low-D	98.30	1,495	68.32	52.18	42.55	6.76	7.07	5.75	0.29	0.30	0.26	6.10	7.37	9.33
9-I-high-A	81.09	1,303	2,183	1,638	511.80	6.64	16.75	11.30	0.53	1.59	1.04	12.38	15.21	12.42
9-I-high-B	85.23	1,316	2,313	1,028	738.92	7.49	14.04	11.79	0.59	1.19	1.11	13.12	13.12	11.82
9-I-high-C	93.49	1,330	1,793	2,043	769.63	13.06	15.42	10.30	1.12	1.33	0.96	13.98	11.54	14.14
9-I-high-D	91.09	1,326	2,308	1,973	515.41	12.39	11.08	14.38	1.15	0.85	1.41	13.12	9.70	12.33
9-I-low-A	93.12	1,327	568.39	592.81	151.67	9.78	7.44	7.73	0.58	0.37	0.44	9.48	6.86 J	7.51
9-I-low-B	94.46	1,411	573.60	240.14	101.23	7.67	7.06	11.96	0.43	0.37	0.73	13.30	6.84 J	10.54

Table 5-6. General Chemistry Data for Baseline and Test Pot Soil Samples Collected at Time Points 1, 2, and 3

	<150 µm Fraction		< 2 mm Fraction											
	Total Arsenic (mg/kg)[a]	**Total Lead (mg/kg)[b]**	**Mineralizable Nitrogen (mg/kg)**			**Total Carbon (%)**			**Total Nitrogen (%)**			**Total Organic Carbon (%)**		
	t_1	**t_1**	**t_1**	**t_2**	**t_3**	**t_1**	**t_2**	**t_3**	**t_1**	**t_2**	**t_3**	**t_1**	**t_2**	**t_3**
Experimental Test Pot Samples (continued)														
9-I-low-C	90.89	1,340	538.56	272.83	115.91	6.24	6.44	9.37	0.39	0.33	0.50	8.38	7.85 J	9.60
9-I-low-D	89.10	1,292	673.61	172.63	117.50	5.74	12.12	10.99	0.37	0.66	0.61	14.36	9.37 J	7.48
9-S-high-A	96.55	1,554	827.82	856.46	662.86	5.83	10.00	10.20	0.34	0.53	0.54	7.53	7.16	7.07
9-S-high-B	92.70	1,474	782.82	821.40	587.85	6.63	7.64	8.04	0.40	0.39	0.42	8.29	8.24	7.07
9-S-high-C	94.95	1,475	802.82	751.39	412.36	9.28	8.24	11.19	0.51	0.46	0.55	6.65	7.48	8.05
9-S-high-D	92.66	1,497	742.82	771.36	577.82	9.04	10.31	10.57	0.52	0.54	0.55	9.68	8.93	6.34
9-S-low-A	101.90	1,474	264.33	159.71	95.80	7.20	6.91	10.10	0.30	0.32	0.47	6.56	8.41	12.28
9-S-low-B	103.61	1,496	260.32	132.75	76.82	10.01	7.81	9.50	0.39	0.36	0.42	6.50	7.41	5.49
9-S-low-C	97.25	1,442	285.34	274.16	82.30	7.36	8.32	12.35	0.31	0.41	0.52	10.85	8.85	6.43
9-S-low-D	102.76	1,505	266.85	273.64	111.30	7.75	7.71	11.67	0.29	0.38	0.54	8.88	7.43	11.42
10-I-high-A	99.24	1,463	77.90	40.43	37.84	5.44	10.40	10.96	0.21	0.36	0.38	7.75	7.69	8.31
10-I-high-B	102.09	1,399	55.48	33.82	38.21	8.16	8.92	15.52	0.27	0.31	0.53	11.91	8.21	11.78
10-I-high-C	99.44	1,362	105.06	37.01	35.81	9.20	8.98	9.34	0.31	0.31	0.32	10.10	7.38	10.19
10-I-high-D	103.45	1,454	61.58	44.91	36.60	5.36	8.34	10.67	0.19	0.26	0.38	11.84	6.31	11.48
10-I-low-A	97.12	1,386	44.44	34.37	43.76	4.41	8.41	12.84	0.18	0.30	0.50	10.06	7.41 J	8.54
10-I-low-B	101.87	1,412	50.70	44.07	35.35	7.85	8.60	8.21	0.32	0.29	0.33	6.70	7.44 J	7.51
10-I-low-C	103.49	1,446	46.14	40.00	39.32	6.13	7.83	7.97	0.26	0.28	0.32	8.55	9.16 J	8.79
10-I-low-D	95.60	1,415	38.78	43.81	44.39	5.68	7.09	9.10	0.23	0.27	0.38	7.52	9.40 J	8.00
10-S-high-A	93.26	1,422	48.82	27.82	37.28	7.34	9.40	7.59	0.30	0.36	0.32	8.67	9.15	6.70
10-S-high-B	104.47	1,471	42.92	28.72	36.24	5.34	8.38	8.50	0.23	0.34	0.34	7.08	7.22	9.38
10-S-high-C	98.81	1,376	46.67	24.98	32.39	12.59	8.71	9.30	0.53	0.36	0.35	8.08	7.68	7.08
10-S-high-D	90.46	1,465	32.92	27.70	31.09	4.40	7.91	9.30	0.19	0.30	0.36	6.57	7.41	8.69
10-S-low-A	111.65	1,570	40.46	25.50	25.95	8.38	6.20	8.11	0.33	0.26	0.33	8.29	6.71	6.32
10-S-low-B	105.83	1,481	47.20	34.32	39.19	9.68	8.51	8.47	0.36	0.35	0.36	9.58	5.15	8.49
10-S-low-C	109.59	1,516	41.48	33.09	34.28	5.68	8.29	8.00	0.21	0.35	0.32	8.31	8.49	5.94
10-S-low-D	101.06	1,433	41.32	32.91	32.89	6.87	5.21	7.67	0.25	0.22	0.31	6.58	6.55	7.79
11-I-high-A	87.73	1,481	137.71	44.97	51.96	6.83	8.27	10.55	0.25	0.31	0.39	12.19	9.96	8.92
11-I-high-B	96.59	1,340	177.97	80.48	45.74	5.38	10.60	10.05	0.24	0.36	0.40	14.37	7.69	7.69
11-I-high-C	92.45	1,419	181.96	70.61	46.75	6.78	12.49	11.61	0.29	0.38	0.41	7.77	9.94	8.45
11-I-high-D	96.31	1,385	176.02	67.16	41.90	6.13	11.57	10.30	0.22	0.33	0.40	14.87	10.96	9.39
11-I-low-A	103.12	1,426	55.71	41.16	29.98	5.94	9.37	9.54	0.24	0.36	0.39	8.01	9.08 J	8.37
11-I-low-B	97.74	1,314	69.29	35.00	31.54	6.15	8.05	9.05	0.26	0.32	0.38	9.56	10.45 J	8.38
11-I-low-C	95.07	1,261	74.38	40.11	39.07	3.15	7.28	10.95	0.13	0.29	0.45	5.51	8.72 J	9.02
11-I-low-D	97.31	1,444	45.71	36.71	33.82	6.85	11.06	7.27	0.29	0.41	0.32	7.96	9.42 J	7.87
11-S-high-A	102.49	1,557	54.82	46.64	29.93	7.03	8.18	12.44	0.31	0.33	0.47	6.28	7.82	8.86
11-S-high-B	97.76	1,461	93.32	42.06	31.21	5.04	10.30	9.98	0.22	0.41	0.40	6.63	10.69	9.77
11-S-high-C	100.92	1,459	89.32	38.86	28.29	6.95	11.10	10.16	0.30	0.47	0.41	7.44	9.57	9.00
11-S-high-D	103.10	1,521	105.32	37.65	27.26	5.86	7.21	14.95	0.26	0.29	0.60	7.09	7.69	9.68
11-S-low-A	100.42	1,507	48.82	28.13	45.89	8.45	7.12	10.47	0.32	0.31	0.42	7.95	8.13	7.83
11-S-low-B	105.04	1,481	51.32	24.81	23.33	10.11	7.88	11.94	0.36	0.34	0.46	6.49	7.91	6.92
11-S-low-C	108.74	1,530	57.84	32.85	31.90	9.75	8.21	10.53	0.35	0.36	0.44	7.44	10.03	6.91
11-S-low-D	97.80	1,399	45.30	39.01	35.33	5.06	7.19	8.70	0.18	0.30	0.37	5.92	5.88	8.15
12-I-high-A	99.22	1,377	95.68	69.67	41.96	7.64	14.50	11.56	0.33	0.46	0.45	7.88	12.41	9.40
12-I-high-B	87.96	1,479	145.99	110.67	48.39	7.26	10.21	13.96	0.25	0.32	0.51	10.98	8.69	9.61
12-I-high-C	94.26	1,494	140.69	138.12	53.53	8.16	11.00	15.06	0.28	0.41	0.56	9.99	9.27	12.89
12-I-high-D	85.35	1,464	128.56	131.61	74.69	5.35	8.06	10.03	0.21	0.28	0.37	6.57	9.30	12.58
12-I-low-A	93.67	1,320	53.90	48.62	40.26	6.28	11.04	9.71	0.26	0.41	0.40	7.87	5.61 J	10.35
12-I-low-B	100.53	1,384	72.06	59.58	40.51	5.04	10.41	10.27	0.21	0.38	0.42	9.47	8.12 J	8.69

Table 5-6. General Chemistry Data for Baseline and Test Pot Soil Samples Collected at Time Points 1, 2, and 3

	<150 µm Fraction		< 2 mm Fraction												
	Total Arsenic (mg/kg)[a]	Total Lead (mg/kg)[b]	Mineralizable Nitrogen (mg/kg)			Total Carbon (%)			Total Nitrogen (%)			Total Organic Carbon (%)		
	t_1	t_1	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3	t_1	t_2	t_3
Experimental Test Pot Samples (continued)														
12-I-low-C	80.99	1,309	59.51	43.16	42.49	6.49	10.41	12.60	0.27	0.39	0.39	8.62	7.63 J	11.75
12-I-low-D	83.65	1,329	78.50	60.13	43.68	5.17	7.24	11.55	0.25	0.28	0.35	9.81	7.00 J	9.04
12-S-high-A	99.68	1,417	74.32	38.95	35.20	5.29	9.79	8.50	0.24	0.39	0.34	7.55	8.34	8.39
12-S-high-B	103.88	1,477	85.32	39.39	27.34	6.87	9.26	10.57	0.32	0.38	0.42	6.46	8.99	11.10
12-S-high-C	99.50	1,499	100.82	56.16	28.41	5.14	8.96	8.09	0.23	0.36	0.35	6.60	6.78	10.53
12-S-high-D	104.98	1,489	81.82	38.03	29.34	9.79	8.76	11.81	0.45	0.36	0.46	8.44	8.10	7.33
12-S-low-A	105.72	1,484	59.84	20.53	34.86	6.73	8.21	11.76	0.25	0.33	0.47	6.38	6.72	10.18
12-S-low-B	105.93	1,545	52.83	35.92	33.65	4.98	8.69	10.62	0.19	0.38	0.40	8.34	7.48	8.22
12-S-low-C	100.65	1,487	64.32	35.91	37.01	8.52	7.77	9.24	0.31	0.33	0.39	7.54	7.07	8.96
12-S-low-D	105.56	1,532	59.82	28.62	33.25	8.48	7.96	13.17	0.31	0.33	0.52	8.05	9.93	6.61

Notes:

[a]Total Arsenic concentrations for Control Pot Samples were also collected for t_3. The < 150-µm fraction, Total Arsenic concentrations (mg/kg) were as follows:

385-0-Control-A = 89 mg/kg
386-0-Control-B = 89 mg/kg
387-0-Control-C = 87 mg/kg
388-0-Control-D = 89 mg/kg

[b]Total Lead concentrations for Control Pot Samples were also collected for t_3. The < 150-µm fraction, Total Lead concentrations (mg/kg) were as follows:

385-0-Control-A = 1,370 mg/kg
386-0-Control-B = 1,309 mg/kg
387-0-Control-C = 1,329 mg/kg
388-0-Control-D = 1,298 mg/kg

J = Quantitation is approximate due to limitations identified during the quality assurance review.
t_1 = 1 month after pot preparation; t_2 = 4 months after pot preparation; t_3 = 6 months after pot preparation
mm = millimeter(s)
µm = micrometer(s)
mg/kg = milligram(s) per kilogram

Table 5-7. Time 3 Reanalysis of Select Samples in %IVBA Lead 2.5 pH Treatment

Amendment	Test Pot Sample ID	Bioaccessible Lead 2.5 pH (mg/kg)[a,b]		Bioaccessible Arsenic 2.5 pH (mg/kg)[b,c]		Total Lead (mg/kg)[b]		Total Arsenic (mg/kg)[b]	
		t_3 First Analysis	t_3 Second Analysis	t_3 First Analysis	t_3 Second Analysis	t_1	t_3	t_1	t_3
Control Pot Samples									
Control	385-0-Control-A	379	399	6.4	6.9	1,504	1,370	99	89
	386-0-Control-B	410	443	6.1	6.4	1,557	1,309	96	89
	387-0-Control-C	408	412	6.9	6.6	1,549	1,329	96	87
	388-0-Control-D	404	437	7.0	6.9	1,443	1,298	100	89
Experimental Test Pot Soil Samples									
Soluble phosphate	1-I-high-A	323	410	10.2	9.6	--	--	--	--
	1-I-high-B	301	404	8.8	9.6	--	--	--	--
	1-I-high-C	329	421	9.4	10.1	--	--	--	--
	1-I-high-D	288	389	9.9	10.5	--	--	--	--
Biosolids	2-I-high-A	246	334	9.4	10.3	--	--	--	--
	2-I-high-B	240	351	10.5	12.8	--	--	--	--
	2-I-high-C	222	331	7.7	10.4	--	--	--	--
	2-I-high-D	252	333	8.1	10.0	--	--	--	--
Wood Ash	3-I-high-A	515	560	9.3	9.8	--	--	--	--
Biochar	4-I-low-A	444	503	8.6	8.1 U*	--	--	--	--
	4-I-low-B	453	500	7.8	7.5 U*	--	--	--	--
	4-I-low-C	432	504	7.1 U*	7.3 U*	--	--	--	--
	4-I-low-D	440	485	7.4 U*	7.4 U*	--	--	--	--
Compost	5-I-high-C	399	410	9.0	8.5	--	--	--	--
	5-I-high-D	395	401	8.0	7.4	--	--	--	--
	5-I-low-A	456	504	8.0	7.0 U*	--	--	--	--
	5-I-low-B	468	494	8.4	7.8 U*	--	--	--	--
	5-I-low-C	450	477	8.2	8.1 U*	--	--	--	--
	5-I-low-D	471	518	8.0	7.3 U*	--	--	--	--
Soluble phosphate and biosolids	6-I-high-A	238	277	9.9	11.0	--	--	--	--
	6-I-high-B	201	236	11.2	11.7	--	--	--	--
	6-I-high-C	190	226	10.1	10.3	--	--	--	--
	6-I-high-D	189	223	12.3	13.2	--	--	--	--
	6-I-low-A	361	396	9.3	9.3	--	--	--	--
Soluble phosphate and biochar	7-I-high-A	356	375	11.1	9.8	--	--	--	--
	7-I-high-B	330	371	10.4	9.9	--	--	--	--
	7-I-high-C	298	350	9.3	10.1	--	--	--	--
	7-I-high-D	336	343	11.9	10.8	--	--	--	--
Soluble phosphate and compost	8-I-high-A	298	311	11.3	10.6	--	--	--	--
	8-I-high-B	293	297	10.0	9.9	--	--	--	--
	8-I-high-C	279	296	11.2	11.1	--	--	--	--
	8-I-high-D	288	288	11.4	11.5	--	--	--	--
Biosolids and wood ash	9-I-high-A	246	272	9.0	8.9	--	--	--	--
	9-I-high-B	275	305	9.0	9.6	--	--	--	--
	9-I-high-C	265	293	10.0	11.0	--	--	--	--
	9-I-high-D	259	291	10.0	10.4	--	--	--	--
Biochar and compost	12-I-high-B	396	411	10.6	7.6	--	--	--	--
	12-I-high-C	367	415	7.5	7.9	--	--	--	--
	12-I-high-D	363	406	7.5	8.2	--	--	--	--

Notes:

[a] Bioaccessibility (%) as shown in Table 5-5 is calculated by dividing bioaccessible lead (mg/kg) by total lead (mg/kg). The total lead and arsenic used for t_1 and t_2 calculations of %IVBA were calculated using the t_1 values for total lead shown in Table 5-6, while the t3 %IVBA lead and arsenic were calculated using the t_3 control samples. Control samples for %IVBA at pH 2.5 in Table 5-5 were calculated using the values for total lead at t_3 shown above.

[b] All data were validated. No qualifiers were assigned to samples listed in this table.

[c] Bioaccessibility (%) as shown in Table 5-5 is calculated by dividing bioaccessible arsenic (mg/kg) by total arsenic (mg/kg). The total arsenic used for all calculations of %IVBA at pH 2.5 were calculated using the t_1 values for total arsenic shown in Table 5-6, with the exception of the t3 control samples. Control samples for %IVBA at pH 2.5 in Table 5-5 were calculated using the values for total arsenic at t_3 shown above.

IVBA = in vitro bioaccessibility
mg/kg = milligram(s) per kilogram
-- = not sampled

APPENDIX A

SOIL COLLECTION FIELD SUMMARY REPORT

Teck American Incorporated

SOIL AMENDMENT TECHNOLOGY EVALUATION STUDY

Phase II Bench-Scale Treatability Studies
Soil Collection: Field Summary Report

July 27, 2020

SOIL AMENDMENT TECHNOLOGY EVALUATION STUDY

Phase II Bench-Scale Treatability Studies
Soil Collection:
Field Summary Report

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ACRONYMS AND ABBREVIATIONS

Arcadis	Arcadis U.S., Inc.
biochar study	EPA biochar amendment evaluation study
CCC	Citizens for a Clean Columbia
CCT	Confederated Tribes of the Colville Reservation
DU	decision unit
EPA	U.S. Environmental Protection Agency
GPS	global positioning system
HASP	Health and Safety Plan
mg/kg	milligram per kilogram
Phase I Work Plan	Work Plan for the Soil Amendment Technology Evaluation Study Phase I: Test Plot Characterization and Initial Amendment Alternatives Evaluation
QAPP	Quality Assurance Project Plan
Report	Soil Amendment Technology Evaluation Study, Phase II Bench-Scale Treatability Studies Soil Collection: Field Summary Report
SATES	soil amendment technology evaluation study
Site	Upper Columbia River site
TAI	Teck American Incorporated
Work Plan	Work Plan for the Soil Amendment Technology Evaluation Study, Phase II: Bench-Scale Treatability Studies Soil Collection
XRF	X-ray fluorescence

1 INTRODUCTION

On behalf of Teck American Incorporated (TAI), Arcadis U.S., Inc. (Arcadis) prepared this Soil Amendment Technology Evaluation Study, Phase II Bench-Scale Treatability Studies Soil Collection: Field Summary Report (Report) to document soil collection activities conducted at the Upper Columbia River (UCR) site (Site). Soil collection was conducted for two studies that are evaluating the impact of soil amendment technologies on the bioaccessibility of lead in upland soils: 1) the Soil Amendment Technology Evaluation Study (SATES) being conducted by TAI in collaboration with U.S. Environmental Protection Agency (EPA), and 2) a related biochar research project being conducted by EPA's Office of Research and Development.

The SATES program was designed to identify and field test a soil amendment technology or technologies that could appropriately and cost effectively reduce the long-term potential for human exposure to lead in shallow soil at the site (Ramboll 2018). The soil collection activities described in this Report were conducted in accordance with the approved Work Plan for the Soil Amendment Technology Evaluation Study, Phase II: Bench-Scale Treatability Studies Soil Collection (Work Plan; Ramboll 2018).

In 2019, EPA's Office of Research and Development undertook the biochar research project to study the impact of different types of biochar on soil lead gastrointestinal bioavailability to humans and wildlife. This study is being conducted by EPA at the National Health and Environmental Effects Research Laboratory, Western Ecology Division laboratory in Corvallis, Oregon. The objectives, design, and requirements for this study are detailed in the Final Quality Assurance Project Plan (QAPP) for the biochar study (Plunkett 2019). This QAPP specified that soil from the Site be used for this study, specifically land belonging to the Confederated Tribes of the Colville Reservation (CCT). Therefore, this Report includes information for the soil collection effort conducted by Arcadis, under contract to TAI, for the biochar study.

Field sampling activities for the soil sample collection conducted in October 2018 for the SATES Phase II bench tests and the additional soil collection conducted in July 2019 for EPA's biochar study are summarized in this Report.

2 BACKGROUND

The comprehensive background, purpose, and description of the SATES program are detailed in the Work Plan for the Soil Amendment Technology Evaluation Study Phase I: Test Plot Characterization and Initial Amendment Alternatives Evaluation (Phase I Work Plan; Ramboll 2017a) and the Addendum – Soil Amendment Technology Evaluation Study Final Work Plan for the Soil Amendment Technology Evaluation Study, Phase I: Test Plot Characterization and Initial Amendment Alternatives Evaluation (Ramboll 2017b). The program is subdivided into four phases:

- Phase I – Test plot characterization and amendment alternatives screening:
    - Phase IA – Test plot screening and selection (Part 1) and baseline soil characterization (Part 2)
    - Phase IB – Soil amendment technology screening and design

- Phase II – Bench-scale treatability studies
- Phase III – Test plot field implementation
- Phase IV – Test plot monitoring.

Phase II comprises laboratory bench-scale treatability tests designed to evaluate different soil amendment options. The Phase II results will inform selection of amendment options that will advance to the field-scale pilot study in Phase III.

The objectives of the Phase II bench-scale treatability testing are to:

- Determine if soil amendments show potential to reduce lead bioaccessibility
- Determine the impact of amendments on key soil chemical and physical properties
- Obtain data that can be used to reduce uncertainty about selection of amendment technologies for pilot field-scale testing.

Field testing (Phase III and IV) of the selected soil treatment or treatments will occur within decision units (DUs) on tribal allotments that belong to the CCT and that were sampled during the 2014 residential soil sampling study at the Site. Six initial test plot areas within these DUs were selected based on criteria described in the Phase I Work Plan (Ramboll 2017a). Of these, four test plots (258-3, 401-1, 401-2, and 441-1) were selected for potential use for the field-scale pilot testing of soil amendments based on results of additional detailed characterization completed during Phase IA. Test Plot 401-2 was determined to have the greatest volume of soil with target lead concentrations, lead bioaccessibility, and physical properties, and was therefore selected as the source of soil to be used in the Phase II bench-scale testing (Ramboll 2018). The location of Test Plot 401-2 is shown on Figure 1.

Soil from Test Plot 401-2 was also collected for EPA's biochar study, in accordance with the QAPP (Plunkett 2019).

3 FIELD METHODS

This section describes the field methods that were used to complete the soil collection activities in October 2018 and July 2019.

3.1 Pre-Field Activities

3.1.1 Health and Safety Plan

All site operations were conducted in accordance with the site-specific Health and Safety Plan (HASP), which was consistent with the Health and Safety Addendum provided as Appendix C to the Work Plan (Ramboll 2018). As required by the Occupational Safety and Health Administration's Hazardous Waste Operations and Emergency Response guidelines (29 Code of Federal Regulations, Section 1910.120), the HASP was updated before commencement of field work to address potential health and safety concerns associated with the proposed field activities. Before beginning work, a health and safety tailgate meeting was performed with all personnel on site, including TAI, and for the SATES Phase II bench-scale testing soil collection event, a Citizens for a Clean Columbia (CCC) representative.

3.1.2 Cultural Resource Monitoring

In addition to development of the HASP and before implementing field activities at the site, cultural resource monitors and archaeologists from the CCT were informed of the planned activities. CCT resource monitors determined that oversight would not be needed during soil collection activities In the absence of direct oversight by a cultural resource and/or archaeological monitor, the field team self-monitored the field soil collection activities to protect potential cultural artifacts in accordance with the Cultural Resource Monitoring Protocol and the Cultural Resources Coordination Plan, provided in SOP-3 in Appendix C and as Appendix D, respectively, to the Work Plan (Ramboll 2018).

3.2 Locating

Soil for the SATES Phase II testing and for the biochar study was collected from Test Plot 401-2 because this test plot has the highest volume of soil with elevated concentrations of lead, mineralogy, lead bioaccessibility, and physical characteristics (Ramboll 2018). The Work Plan (Ramboll 2018) specifies that soil should be collected from locations within the buffer (4 feet from identified center lines) at the edge of each 50-foot by 50-foot subplot to minimize disturbance of the areas (i.e., the subplots) designated for field-scale testing of soil amendments. Survey stakes laid out during the SATES Phase I work were located and their spatial coordinates confirmed with a hand-held global positioning system (GPS) unit. The survey stakes marked test plot corners, center line endpoints, and the intersecting center point, which mark the corners of each of the four subplots, as shown on Figure 2. Strings were placed between the stakes to provide physical references for the center lines during sampling activities. Proposed soil collection locations were identified by measuring from the center lines with measuring tape. Locations were confirmed to be inside the designated 4-foot buffer, including collection locations relocated due to inaccessibility of the original planned sample collection locations, as described in Sections 3.2.1 and 3.2.2. Soil sample locations are shown on Figure 2.

3.2.1 October 2018 Soil Sample Locating

Soil for the Phase II bench-scale testing was collected on October 18, 2018. During this event, 16 soil collection locations were selected. Table 1 presents a complete list of locations based on lead concentrations detected in soil samples collected during the 2017 Phase I event. Of the 16 locations proposed, five soil collection locations (A5, A6, E9, E10, and F10) were moved due to site features (e.g., bushes, trees, tree stumps). The most significant location adjustment was for location F10, which was moved 8 feet to the west within the 4-foot buffer to avoid a large tree stump and other trees. This adjustment was discussed with and concurrence was provided by TAI and CCC representatives in the field. Locations were confirmed to be inside the designated 4-foot buffer, including the five collection locations that were relocated.

3.2.2 July 2019 Soil Sample Locating

Soil collection for the biochar study was conducted on July 17, 2019. During this event, three soil collection locations were selected (D6, E10, and F4) within 2 feet of the original location. These locations were selected based on data from the sample results from the 2017 Phase I sampling event and as specified in the QAPP (Plunkett 2019). Location D6 was moved 2 feet north, before soil collection to encompass soil with a sufficiently high (as described further in Section 3.3.2) lead concentration measured using a hand-held X-ray fluorescence (XRF) field meter. This adjustment was discussed with and concurrence was provided by TAI and Arcadis representatives via telephone prior to collecting soil from this location. The new location was confirmed to be inside the designated 4-foot buffer.

3.3 Field Screening

Before collection, soil at each location was screened using a calibrated hand-held XRF field meter. Prior to screening, the XRF field meter was calibrated using standards with known lead and arsenic concentrations to ensure the instrument was reading in an acceptable range. Calibration was repeated after 40 readings were taken to check for any instrument drift and readings were recorded in the field documentation included in Appendix A. The sample location determination and sampling standard of practice are described in the Work Plan (Ramboll 2018). The XRF screening results are summarized in Table 1.

Based on field observations and XRF measurements at soil collection locations, decomposed woody debris below the initial organic material (duff) was removed prior to field screening and soil collection to ensure that representative soil was collected. The Work Plan (Ramboll 2018) indicates that care should be taken to avoid removing materials that are partially incorporated into the soil (e.g., compressed, decomposing vegetation). However, when screened with the XRF field meter, this material was found to be below the target lead concentration threshold. Field screening results below the partially decomposed woody debris confirmed lead concentrations greater than target threshold. Therefore, after discussions with TAI and the Arcadis project manager, the decomposed woody debris was removed prior to sample collection. Soil collection during both events generally followed these procedures.

3.3.1 October 2018 Field Screening

During the 2018 soil collection event, the thickness of the duff layer atop the soil collection area was measured and then the duff was carefully removed to provide a clean soil surface for XRF screening. Duff thicknesses observed at each location are provided in Table 1. An XRF reading was taken at the cleared surface and again at the same location, 1 inch below the first reading after removal of 1 inch of soil. The target threshold for field screening for the Phase II soil collection event was a soil lead concentration of 800 milligrams per kilogram (mg/kg). If the field screening lead concentration was greater than the target threshold on the surface or 1 inch below ground surface, then the soil was collected as part of the sample. If the lead concentration was less than 800 mg/kg for both readings, the soil collection location was offset and the process started over. When offsetting, the sample location was moved along the center gridlines to prevent sampling outside the buffer zone. Samples were adjusted approximately 2 feet when feasible; where not feasible, they were moved the minimum distance to avoid obstacles such as trees and stumps while staying within the 4-foot buffer between subplots.

3.3.2 July 2019 Field Screening

Field screening for the 2019 soil collection event generally followed the same procedures used in October 2018. Duff thickness was measured at each location (see Table 1). An XRF reading was taken at the cleared surface and again at the same location 1 inch below the first reading after 1 inch of soil was removed. The duff thicknesses and XRF screening results are provided in Table 1. The target lead threshold for field screening for the biochar study was 1,000 mg/kg. Field screening lead measurements were greater than the target threshold on the surface and at 1 inch below the ground surface (Table 1).

3.4 Soil Collection

Soil collection methods were similar for both the October 2018 and July 2019 sampling events. After XRF screening, soil was collected from 2- by 2-foot squares, with their center points on the measured location. Soil was removed to a maximum depth of 3 inches below the cleared surface with a clean spade. Soil was collected and placed in clean, food-grade buckets with two layers of 3-mil (0.003-inch) liners. Soil from each location was divided between two to three plastic-lined buckets to minimize the weight of each individual bucket to reduce field staff fatigue. After collection, each bucket was weighed on an electric scale and weights from all collection buckets for each sample location were summed to calculate the total weight of soil collected. Total weights were recorded in field documentation (Appendix A) and compared to the average minimum weight (approximately 54 pounds per sample) as identified in the Work Plan (Ramboll 2018). For the Phase II bench tests, the average minimum weight of soil to collect was determined based on the total volume required (863 pounds) split between the 16 samples to be collected (approximately 54 pounds per location); a total 961.9 pounds of soil was collected for the Phase II bench tests. For the biochar study soil collection, 182.6 pounds of soil was collected in 3 buckets. The weight of soil collected in each bucket and the total weights of soil collected for each study are shown in Table 1. Once the minimum average weight was collected, the plastic liners were secured with zip ties and the buckets were labeled with a unique sample identifier (see Table 1).

Between each soil collection location, the spade was dry-decontaminated for gross contamination before collecting soil at the next sample location. After soil sample collection, the area was photographed and a GPS point was collected using the hand-held unit (see Figure 2). A photograph log is included as Appendix B. Soil collection locations were restored to original conditions, including replacing the duff layer.

3.5 Soil Processing

Soil processing methods were similar for the sampling events in October 2018 and July 2019. After collection, soil was prepared for shipment under chain-of-custody protocol. The soil buckets were shipped in cardboard boxes with bubble wrap to minimize movement during shipping. The boxes were sealed with fiber-reinforced packing tape in accordance with the Work Plan (Ramboll 2018). During the October 2018 event, soil buckets were temporarily stored in freezers at Anatek Labs in Spokane, Washington for 72 hours over the weekend prior to shipment. Approval for the temporary storage of soil buckets was provided by EPA on October 15, 2018 via email to Ramboll. The soil samples collected for the SATES Phase II bench-scale testing were shipped to the soil laboratory at The Ohio State University School of Environmental and Natural Resources in Columbus, Ohio for the Phase II bench tests. Soil samples collected for the biochar study in July 2019 were shipped directly to EPA's Western Ecology Division laboratory in Corvallis, Oregon.

3.6 Deviations

During the handling and shipment of the soil collected during the October 2018 sampling event, the chain-of-custody forms included with the samples were not signed when the samples were relinquished to the shipper for transport to OSU; however, the chain-of-custody forms were signed by the receiving staff at the OSU testing laboratory. This deviation does not affect data quality or the usability of the data from the Phase II bench-scale treatability tests. Other minor adjustments are noted in the sections above. There were no significant deviations from the biochar study QAPP (Plunkett 2019).

4 SUMMARY

On October 18, 2018, Arcadis collected 16 buckets of soil (961.9 pounds) from previously selected locations within a 4-foot-wide buffer area within Test Plot 401-2 in accordance with the Work Plan (Ramboll 2018). This soil was shipped to The Ohio State University School of Environmental and Natural Resources for the SATES Phase II bench-scale testing. On July 17, 2019, additional soil (3 buckets [182.6 pounds]) was collected from the Test Plot 401-2 buffer area for EPA's biochar study in general accordance with the Work Plan (Ramboll 2018) and the biochar study QAPP (Plunkett 2019). This soil was shipped to EPA's Western Ecology Division laboratory in Corvallis, Oregon.

5 REFERENCES

Plunkett, S. . 2019. Quality Assurance Project Plan, Evaluation of the Impact of Biochar Amendment on Soil and Sediment Gastrointestinal Pb Bioavailability (SHC Project 3.63, Task 2, Subtask 5), National Health and Environmental Effects Research Laboratory, Western Ecology Division, U.S. Environmental Protection Agency, Corvallis, OR. June.

Ramboll. 2017a. Work Plan for the Soil Amendment Technology Evaluation Study Phase I: Test Plot Characterization and Initial Amendment Alternatives Evaluation. July.

Ramboll. 2017b. Addendum – Soil Amendment Technology Evaluation Study Final Work Plan for the Soil Amendment Technology Evaluation Study, Phase I: Test Plot Characterization and Initial Amendment Alternatives Evaluation. September.

Ramboll. 2018. Work Plan for the Soil Amendment Technology Evaluation Study Phase II: Bench-Scale Treatability Studies Soil Collection. September.

TABLE

Table 1
Soil Collection Summary
Soil Amendment Technology Evaluation Study
Phase II Bench-Scale Treatablity Studies: Field Summary Report

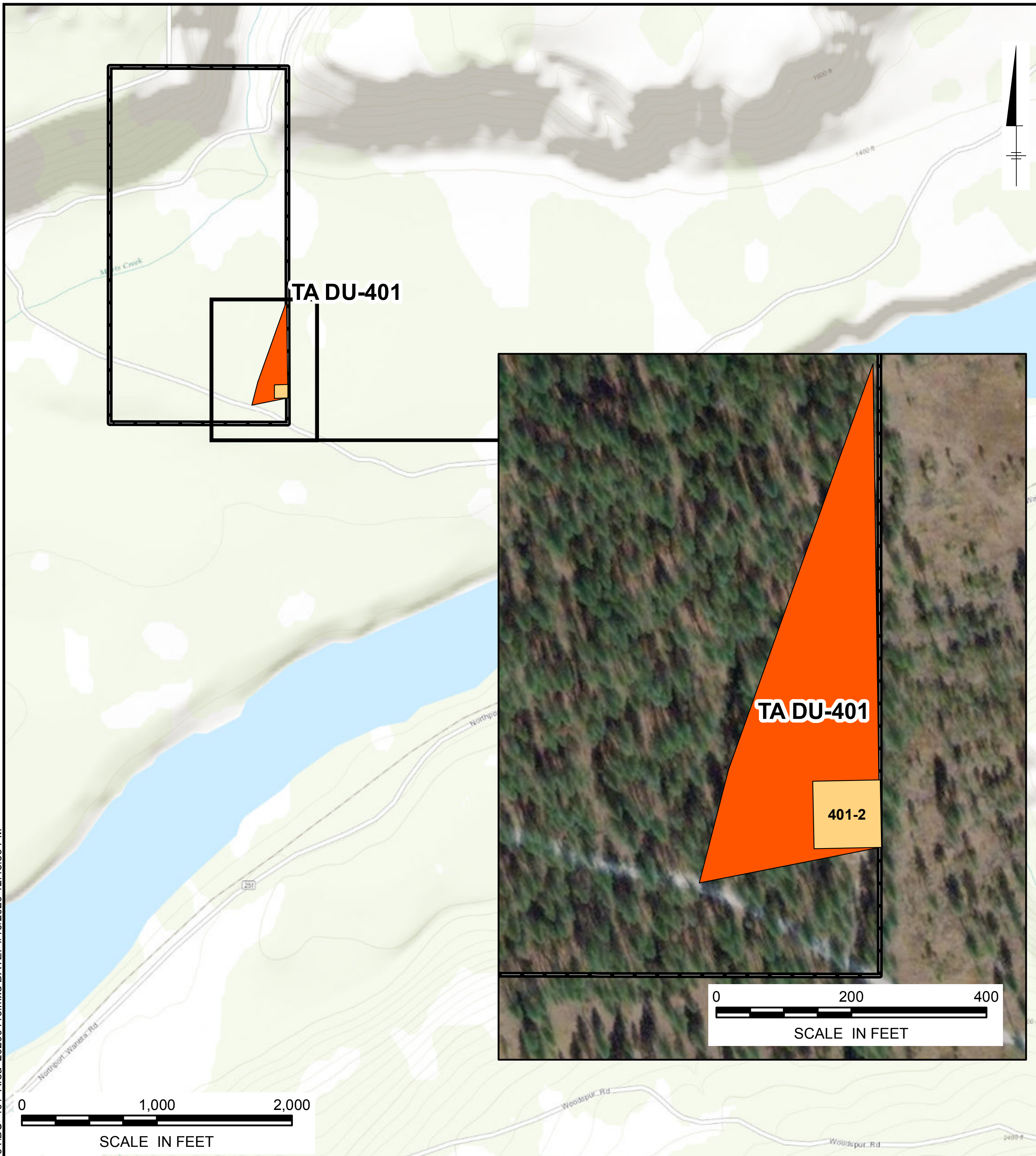
ARCADIS Design & Consultancy for natural and built assets

Sample ID	Sample Date	GPS Coordinates[1]		Weight	XRF Readings				Duff Thickness
					Surface		1 Inch Below Ground Surface		
		Latitude	Longitude	(Pounds)	Lead (mg/kg)	Arsenic (mg/kg)	Lead (mg/kg)	Arsenic (mg/kg)	(Inches)
Soil Collected for SATES Phase II Bench Tests									
D-401-2-A5-101818-3	10/18/2018	48.97055779	-117.6737194	62.6	977 ± 21	143 ± 17	905 ± 22	114 ± 17	3
D-401-2-A6-101818-3	10/18/2018	48.97056084	-117.6737079	54.8	931± 27	102 ± 21	820 ± 34	104 ± 28	3
D-401-2-B6-101818-3	10/18/2018	48.97053157	-117.6736987	65.3	1309 ± 29	106 ± 23	144 ± 15	60 ± 13	3
D-401-2-C5-101818-3	10/18/2018	48.97050823	-117.6737282	61.6	1728 ± 37	178 ± 30	238 ± 23	80 ± 20	3
D-401-2-D6-101818-3	10/18/2018	48.97048328	-117.6736873	58.5	2075 ± 37	128 ± 29	918 ± 41	918 ± 41	3
D-401-2-E3-101818-3	10/18/2018	48.97043549	-117.6738031	54.4	1290 ± 24	190 ± 20	203 ± 26	203 ± 26	3
D-401-2-E5-101818-3	10/18/2018	48.97045102	-117.6737116	58.1	1177 ± 34	78 ± 27	2376 ± 49	2376 ± 49	3
D-401-2-E6-101818-3	10/18/2018	48.97045319	-117.6736869	51.7	1718 ± 34	106 ± 27	1975 ± 45	98 ± 35	3
D-401-2-E7-101818-3	10/18/2018	48.97043958	-117.6736488	63.6	1199 ± 32	132 ± 25	105 ± 15	78 ± 14	3
D-401-2-E9-101818-3	10/18/2018	48.97044037	-117.6735501	53.7	930 ± 24	131 ± 19	35 ± 13	<15	3
D-401-2-E10-101818-3	10/18/2018	48.97043894	-117.6735085	54.5	1911 ± 28	128 ± 22	1621 ± 46	113 ± 37	3
D-401-2-F4-101818-3	10/18/2018	48.97042419	-117.6737604	64.4	1864 ± 39	134 ± 31	265 ± 22	74 ± 19	3
D-401-2-F10-101818-3	10/18/2018	48.97043251	-117.673542	59.0	2246 ± 38	167 ± 30	1352 ± 29	190 ± 24	3
D-401-2-G6-101818-3	10/18/2018	48.9703927	-117.6736925	62.9	1065 ± 23	87 ± 18	1154 ± 44	<52	3
D-401-2-H6-101818-3	10/18/2018	48.97036895	-117.6736903	65.2	1695 ± 30	121 ± 24	1207 ± 47	90 ± 37	3
D-401-2-J5-101818-3	10/18/2018	48.97031291	-117.6737105	71.6	1494 ± 34	112 ± 27	500 ± 39	48 ± 31	3
Total weight, SATES Phase II Bench Tests Soil:				**961.9**					
Soil Collected for EPA Biochar Study									
D-401-2-D6-071719	7/17/2019	48.97048328	-117.6736873	60.8	2766 ± 23	226 ± 19	1385 ± 20	190 ± 17	3
D-401-2-E10-071719	7/17/2019	48.97043894	-117.6735085	63.0	1837 ± 18	111 ± 15	3499 ± 26	219 ± 21	4
D-401-2-F4-071719	7/17/2019	48.97042419	-117.6737604	58.8	1863 ± 20	185 ± 16	2236 ± 23	259 ± 20	2
Total weight, EPA Biochar Study Soil:				**182.6**					

Notes:
[1] North American Datum of 1983

Acronyms and Abbreviations:
< = less than
GPS = global positioning system
mg/kg = milligrams per kilogram
XRF = X-ray fluorescence

FIGURES



LEGEND:

- SELECTED DECISION UNIT (DU)
- SATES TEST PLOT
- TRIBAL ALLOTMENT (TA) BOUNDARIES

TECK AMERICAN INCORPORATED

SATES PHASE II BENCH-SCALE TREATABILITY STUDIES SOIL COLLECTION: FIELD SUMMARY REPORT

TEST PLOT AREA

ARCADIS

FIGURE

1

CITRIX-IM/DV DB: mgress LD: NP
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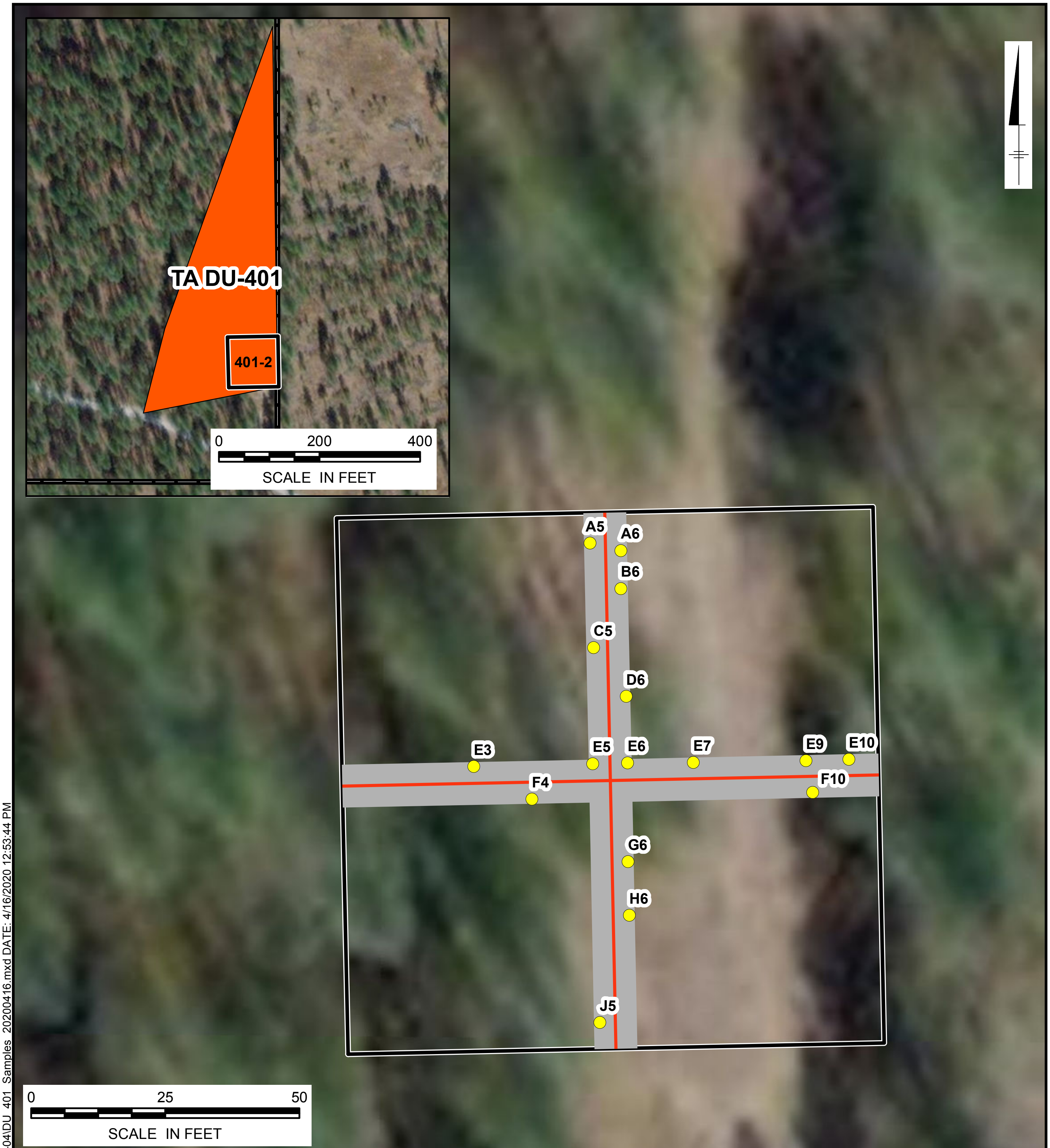


LEGEND:

- SOIL COLLECTION LOCATION*
- SELECTED DECISION UNIT (DU)
- SATES TEST PLOT
- TRIBAL ALLOTMENT (TA) BOUNDARIES
- TEST PLOT CENTER LINES
- CENTER LINE BUFFER

NOTE:
* - SOIL COLLECTED FOR BOTH THE SATES PHASE II BENCH TESTS AND EPA BIOCHAR STUDY AT LOCATIONS D6, E10, AND F4.

Coordinate System: NAD 1983 UTM Zone 11N
Projection: Transverse Mercator
Datum: North American 1983

TECK AMERICAN INCORPORATED
SATES PHASE II BENCH-SCALE TREATABILITY STUDIES SOIL COLLECTION: FIELD SUMMARY REPORT

SOIL COLLECTION LOCATIONS

ARCADIS

FIGURE
2

CITRIX-IM/DV DB: mgress LD: NP
FILE: Z:\GISProjects_ENV\TECK_WA\MXD\2020-04\DU_401_Samples_20200416.mxd DATE: 4/16/2020 12:53:44 PM

APPENDIX A

Field Documentation

APPENDIX A-1

SOIL COLLECTION FOR SATES PHASE II BENCH-SCALE TREATABILITY TESTING OCTOBER 28, 2018

XRF Cal Log Teck 2018 SATEs

#	As	Pb	Blank	As	Pb
1103	<5	<7	SiO_2	0	0
1104	82±9	30±8	Till-4	111	50
1142	<5	<7	SiO_2	0	0
1143	91±9	31±8	Till-4	111	50

A5 - original location: ~~(47, 5)~~AP (45N, 3W)
new location: ~~(47, 6)~~AP (44N, 3W)

A6 - original ~~(53, 5)~~AP (45N, 3E) new: ~~(53, 7)~~AP (43N, 3E)

E9 - original (3N, 35E) new: (3N, 36E)

E10 - original (3N, 45E) new (3N, 46E)

F10 - original (3S, 45E) new (3S, 37E)

X: initial, sample point moved

Teck 2018 SATES ~~Phase III~~ XRF

Reading #	# ID	Pb (surface)	As (surface)	Pb (1")	As (1")
	A5	977±21	143±17	905±22	114±17
1108	A6 X	322±12	28±10		
1112	A6	931±27	102±21	1112 820±34	104±28
	B6	1304±19	106±23	144±15	60±13
1123	C5	1728±37	178±30	238±23	80±20
1127	D6	2075±37	128±29	918±41	103±33
1129	E6	1718±34	106±27	1975±45	98±35
1134	E5	1177±34	78±27	2376±49	182±39
1139	E3	1240±14	190±20	1141 203±26	95±22
1144	F4	1864±34	134±31	265±22	74±19
1147	E7	1199±32	132±25	105±15	78±14
1149	E9	930±24	131±19	35±13	<15
1151	E10	1411±28	128±22	1152 16[illegible]1±46	113±37
1153	F10	2246±38	167±30	1154 1352±39	190±24
1156	G6	1065±23	87±18	1154±44	<52
1159	H6	1695±30	121±24	1207±47	90±37
1161	J5	1494±34	112±27	500±34	48±31

Teck 2018 SATE Weight Log

	~~bucket 1~~ bucket 1	bucket 2	bucket 3	total
A5	23.6	21.3	15.9	62.6
A6	19.4	17.7	17.7	54.8
B6	22.8	21.2	21.3	65.3
C5	18.0	22.9	20.7	61.6
D6	19.6	20.9	18.0	58.5
E5	21.7	14.7	21.7	58.1
E6	17.1	17.1	17.5	51.7
E3	18.5	21.7	14.2	54.4
F4	25.2	23.0	16.2	64.4
E7	21.5	21.5	20.6	63.6
E9	18.2	18.2	17.3	53.7
F10	26.9	24.1	18.0	59.0
E10	21.2	14.3	19.0	54.5
G6	17.9	19.2	25.8	62.9
H6	22.3	25.6	17.3	65.2
J5	21.5	22.5	27.6	71.6
TOTAL				961.9 lbs

Teck SATES Daily Log

~~0830~~ 10/18/18

weather: sunny, ~65°F
staff: A. Pink, K. Franz, J. Latham
visitors: D. Enos from Teck, Joe from Citizens for Clean Columbia

0830 - staff meets at the station, perform H&S tailgate, load equipment

0925 - arrive at DU 401-2. Locate DU reference points, string out midlines of DU

0945 - stake out sample locations

1045 - Begin uncovering sample locations and testing with XRF. During XRF screening, it is discovered that the duff layer includes roughly 1-2" of semi-decomposed woody debris that tests below the action level of 800 ppm for lead.

→

Teck 2018 SATES continued

discuss with D. Enos and Joe from CCC. It is agreed that this layer should also be removed to access impacted soil beneath. Call E. Epple to inform him of findings. Continue uncovering and screening sample locations

1210 - sample D-401-2-A5-101818-3
1240 - sample D-401-2-A6-101818-3
1340 - sample D-401-2-B6-101818-3
1410 - Sample D-401-2-C5-101818-3
1425 - Sample D-401-2-D6-101818-3
1440 - Sample D-401-2-E5-101818-3
1500 - Sample D-401-2-E6-101818-3
1530 - Sample D-401-2-E3-101818-3
1545 - sample D-401-2-F4-101818-3
1605 - Sample D-401-2-E7-101818-3
1620 - Sample D-401-2-E9-101818-3
1630 - Sample D-401-2-F10-101818-3
1645 - Sample D-401-2-E10-101818-3
1705 - Sample D-401-2-G6-101818-3
1715 - Sample D-401-2-H6-101818-3
1725 - Sample D-401-2-J5-101818-3

Teck 2018 SATES continued

1830 - return to station, store samples

10/18/18 Alex Pink

10/19/18 Weather: sunny, ~65°F
staff: A. Pink, K. Franz, J. Latham

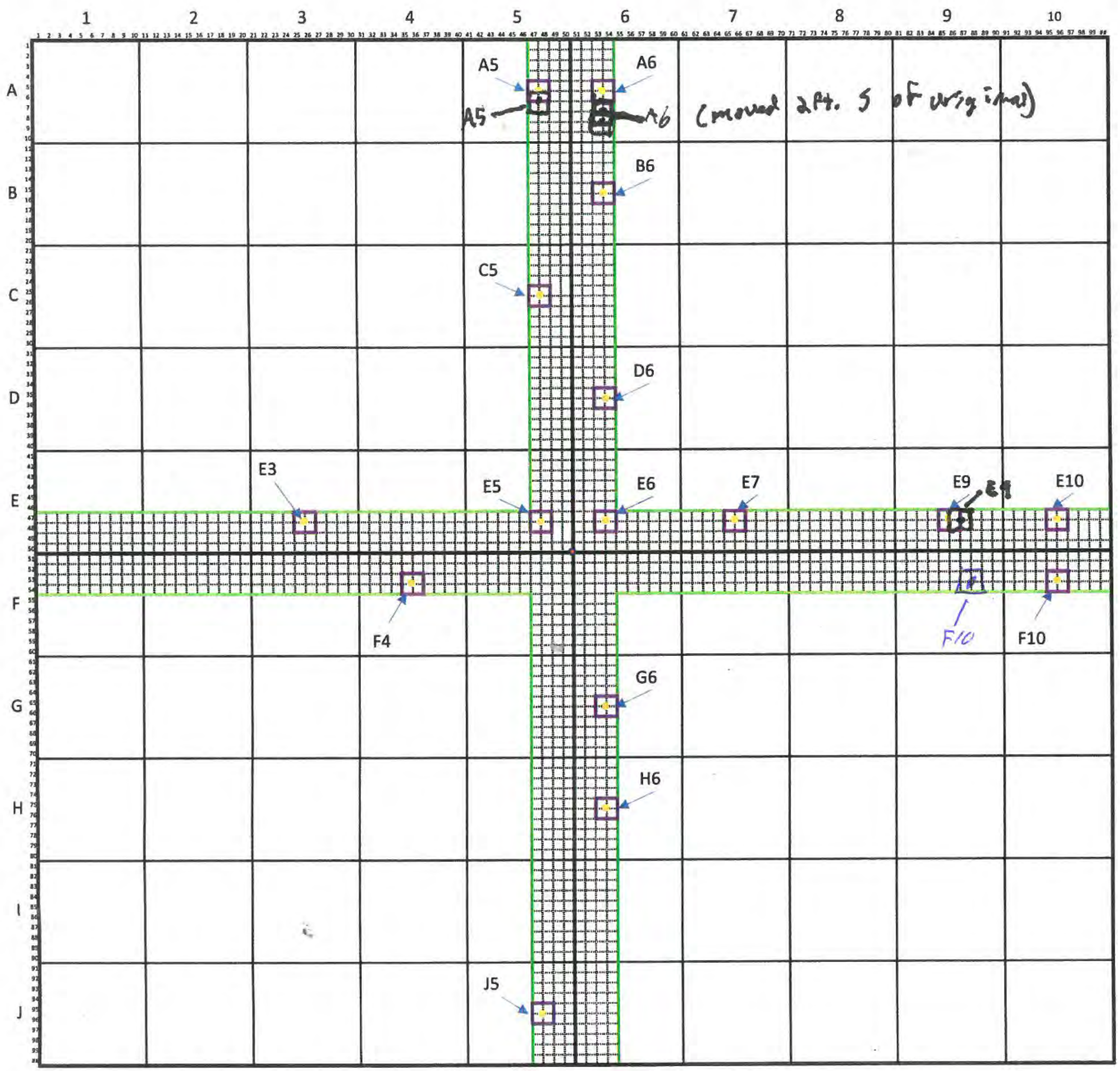
0830 - staff meets at station. Begin packing samples and equipment

1300 - Depart for Walmart in Colville to purchase packing material for void space and finish packing sample boxes.

1600 - Depart for Anatek labs in Spokane to store samples

1800 - Arrive @ Anatek labs. Store samples in Anatek freezer. Depart for Spokane airport

10/19/18 Alex Pink



Notes:

1.) Test plot size is 100' x 100'.
2.) Major grid size is 10' x 10'.
3.) Minor grid size is 1' x 1'.
4.) Sample location grid size is 2' x 2'.
5.) Transition buffer zone is 4' away from the center line in each direction.
6.) Center point of the test plot (red dot) is the reference point, which is assigned with a coordinate of (0,0)

Center of Sample Location	Coordinate in Reference to Center Point
A5	45N, 3W ✓
A6	45N, 3E ✓
B6	35N, 3E ✓
C5	25N, 3W ✓
D6	15N, 3E ✓
E3	3N, 25W ✓
E5	3N, 3W ✓
E6	3N, 3E ✓
E7	3N, 15E ✓
E9	3N, 35E ✓
E10	3N, 45E ✓
F4	3S, 15W ✓
F10	3S, 45E ✓
G6	15S, 3E
H6	25S, 3E
J5	45S, 3W

For example, sample location A5 (purple square) has a coordinate of 45N, 3W indicating that the center of the sample location (orange dot) is 45' north and 3' west from the center point.

mitchell Rd

ARCADIS GENERAL PERMIT TO WORK /DAILY TAILGATE FORM

Facility # DU-401-2 Project Address: Mitchell Rd. Designated Health and Safety Supervior: Alex Pink	Project # B0095010.0010.00001 ARCADIS PM: Rebecca Andresen Total # On-site Workers: 5	
Today's Date: 10/18/18	Time Written: 0830	Time Closed-out:

1.	a. Have necessary work permits been obtained (including those for subcontractors)?	☑ Yes ☐ No ☐ N/A
	b. If **CONFINED SPACE** activities are to be conducted has the CONFINED SPACE portion of the HIGH RISK WORK PERMIT been completed?	☐ Yes ☐ No ☑ N/A
	c. If **EXCAVATION / TRENCHING / DRILLING / OVERHEAD CLEARANCE** activities deeper than 4 feet and/or within 10 feet of a high pressure gas line and/or within 3 feet of a buried active product or electric line or overhead work involving equipment within 15 feet of an overhead electric line or pole supporting the line are to be conducted has the applicable portion of the HIGH RISK WORK PERMIT been completed?	☐ Yes ☐ No ☑ N/A
	d. If **HOTWORK** activities are to be conducted has the HOTWORK and FIRE MONITOR ACTIVITY LOG portions of the HIGH RISK WORK PERMIT been completed?	☐ Yes ☐ No ☑ N/A
	e (i). If **LOCK OUT / TAG OUT (LO/TO)** activities are to be conducted has the LO/TO portion of the HIGH RISK WORK PERMIT been completed? *See e (ii) below.*	☐ Yes ☐ No ☑ N/A
	f. If workers are **WORKING AT AN ELEVATION over 6 feet** has the WORKING AT ELEVATION portion of the HIGH RISK WORK PERMIT been completed?	☐ Yes ☐ No ☑ N/A
	g. If **DEMOLITION, REMOVAL OF PIPELINES AND BURIED STRUCTURES** work activities are to be conducted has the EXCAVATION / TRENCHING / DRILLING / OVERHEAD CLEARANCE and DEMOLITION, REMOVAL OF PIPELINES AND BURIED STRUCTURES portions of the HIGH RISK WORK PERMIT been completed?	☐ Yes ☐ No ☑ N/A
2.	Have applicable vehicle inspection checklists been completed by ARCADIS personnel and ARCADIS subcontractors (if applicable)? Has subcontractor paperwork been inspected?	☑ Yes ☐ No ☐ N/A
3.	Has the HASP been signed by appropriate on-site personnel?	☑ Yes ☐ No ☐ N/A
4.	Have all sections of the HASP applying to today's tasks been reviewed by all workers and visitors?	☑ Yes ☐ No ☐ N/A
5.	Has the scope of work/work plan been reviewed and fully understood?	☑ Yes ☐ No ☐ N/A
6.	Has everyone reviewed the HASP section related to emergencies and know his/her role during an emergency?	☑ Yes ☐ No ☐ N/A
7.	Does everyone know the location, directions to, and name of the nearest hospital?	☑ Yes ☐ No ☐ N/A
8.	Where will the scope of work or work plan and HASP be kept on site?	Location: Field vehicle
9.	What level of PPE is required (See note on following page)?	A ☐ B ☐ C ☑ D ☐ Other
10.	Are appropriate tools on-site to complete tasks safety and appropriately?	☑ Yes ☐ No ☐ N/A
11.	Has ARCADIS hand safety policy been discussed and highlighted during the health and safety meeting?	☑ Yes ☐ No ☐ N/A
12.	Has everyone reviewed the applicable SOPs and JLAs for their assigned work duties?	☑ Yes ☐ No ☐ N/A
13.	Has JLA been modified in the field to include up-to-minute site conditions and notation of puncture resistant footwear required/not required?	☑ Yes ☐ No ☐ N/A
14.	Have the action levels and work zones been identified and reviewed?	☑ Yes ☐ No ☐ N/A
15.	a. If monitoring is required, what type of monitoring will be performed?	Type: (See 15b-15d) ☑ N/A
	b. Is monitoring equipment present and properly calibrated?	☐ Yes ☐ No ☑ N/A
	c. Have HASP requirements for air monitoring been reviewed?	☐ Yes ☐ No ☑ N/A
	d. Will Air Monitoring Log be completed by Health & Safety Supervisor (HSS)?	☐ Yes ☐ No ☑ N/A
16.	Will work conducted by others in the area affect/conflict your work area?	☐ Yes ☑ No ☐ N/A
17.	Will GFCI in-line protectors, positioned next to the power source, be tested and utilized if AC-powered equipment is used?	☐ Yes ☐ No ☑ N/A
18.	Are above-ground utilities identified and clearly visible by equipment operators? Underground utilities marked?	☑ Yes ☐ No ☐ N/A
19.	Has the underground/overhead utilities checklist been completed?	☐ Yes ☐ No ☑ N/A
20.	Have shut-off switches/valves been located (as required by scope work)?	☑ N/A ☐ Electric ☐ Gas ☐ Water
21.	Are proper traffic and/or fire control measures in-place? Has the STAR plan been reviewed?	☐ Traffic ☐ Fire Prevention ☑ N/A
22.	Where is the support zone located?	Location: Field vehicle
23.	Has an evacuation signal (i.e. emergency alarm, hand signal) been communicated to site personnel?	☑ Yes ☐ No ☐ N/A
24.	Where is the nearest working phone located (non-cell phone)	Location: Mustang grill
25.	What is the local emergency phone number?	Number: 911
26.	Where is the location of the primary first aid kit (to include portable eyewash & CPR shield)	Location: Field vehicle
27.	Where is the location of the primary fire extinguisher?	Location: Field vehicle
28.	Document last inspection date of primary fire extinguisher and expiration of primary first aid kit contents:	Extinguisher - 10/18 First Aid Kit - 8/19
29.	Have modifications to safety procedures (e.g JLAs) been made and communicated to onsite personnel?	☑ Yes ☐ No ☐ N/A
30.	Has a plan been established to sample, store, label and dispose of waste properly?	☐ Yes ☐ No ☑ N/A
31.	Are MSDS for ALL chemicals being used at site (oils, detergents, preservatives, etc.) included in HASP?	☑ Yes ☐ No ☐ N/A
32.	Are personnel qualified to perform work at site? Training records verified?	☑ Yes ☐ No ☐ N/A
33.	Has operating vehicle/machinery in reverse been discouraged duringtailgate? Will spotters be used when available?	☑ Yes ☐ No ☐ N/A

Special Safety Concerns For Today

Personnel wishing to volunteer information relating to allergies/ailments/illnesses AND whether s/he is wearing contact lenses:

Last Name:	Note:	Last Name:	Note:
Last Name:	Note:	Last Name:	Note:
Last Name:	Note:	Last Name:	Note:

Stop Work Authority: You are responsible and authorized to stop any work that is not safe. There will be **NO** repercussions for initiating Stop Work Authority.

Corporate H&S Number: 720.344.3500
Corporate Legal Department: 678.373.9555

NOTICE TO ALL WORKERS: – By signing below, you agree that you have read and fully understand the JLAs applicable to you and your assigned duties.

Signature Section

Name (PRINT)	Company	Before Work (Time)	Signature	Mid Day (Time)	Initials (Mid- Day Meeting)
1. Alex Pirk	Arcadis	0850	Alex Pirl		
2. Kelsey Franz	Arcadis	0850	[signature]		
3. Joe Latham	Arcadis	0850	Joe Latham		
4. Dave Snow	Tech	0850	[signature]		
5. Joe Wichmann	CCC	0830	Joe Wichmann		
6.					
7.					
8.					

"I have assessed the risks posed by work activities planned for today and steps to mitigate those risks (e.g. E-HASP, JLA, PTW, tailgate meeting, coordination with other parties on site, etc.) have been completed to the best of our ability. Work is safe to proceed. If site conditions change, Stop Work Authority will be used to assess work conditions."

Permit Writer/Holder: Alex Pirl **Date (** 10 / 18 / 18 **)**

Reference Section

5 Keys to Operational Discipline

1. Everyone knows how to do their job correctly and safely.
2. Workers recognize hazards and anticipate unusual situations.
3. When unusual situations occur, work is stopped and change is effectively managed.
4. Supervisors and leaders reinforce the right behaviors and correct poor behavior and performance.
5. Workers expect and demand that their coworkers follow procedures.

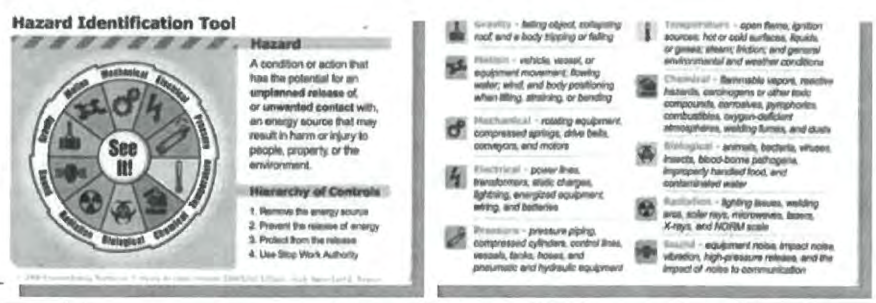
T

R

A

C

K



Identified Hazards	Steps to Mitigate
Gravity – S, T, F s	**Gravity -** housekeeping
Motion – tool motion	**Motion -** space while working
Mechanical – pinch points	**Mechanical -** gloves
Electrical – N/A	**Electrical -** —
Pressure – N/A	**Pressure -** —
Temperature – cold	**Temperature -** proper attire
Chemical – N/A potential residuals	**Chemical -** nitriles
Biological – N/A	**Biological -** —
Radiation – solar	**Radiation -** sunscreen
Sound – N/A	**Sound -** —

SOIL COLLECTION FIELD FORM

Project Name: Teck 2018 SATES Project No.: B0085010.0010 Page: 1 of 6

Date: 10/18/18 Sampling Crew: AP, KF, JL

Weather: Sunny, ~65°F Sampling Equipment: shovels, buckets, bucket liners

---

Time: 1210 Station No.: A5 Elevation:
Latitude: Longitude: Accuracy:

Sample ID: D-401-2-A5-101818-3 Depth: 3"
Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 62.6 lbs
Vegetation: heavy duff layer
Photograph numbers:

Comments: moved 1 Ft. South of original location

Time: 1240 Station No.: A6 Elevation:
Latitude: Longitude: Accuracy:

Sample ID: D-401-2-A6-101818-3 Depth: 3"
Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 54.8 lbs.
Vegetation: heavy duff layer
Photograph numbers:

Comments: moved 2 Ft. South of original location

Time: 1340 Station No.: B6 Elevation:
Latitude: Longitude: Accuracy:

Sample ID: D-401-2-B6-101818-3 Depth: 3"
Sample analysis: No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 65.3 lbs.
Vegetation: heavy duff layer, some small rooted plants.
Photograph numbers:

Comments:

SOIL COLLECTION FIELD FORM

Project Name: Teck 2018 SATES Project No.: B0095010.0010 Page: 2 of 6

Date: 10/18/18 Sampling Crew: AP, KF, JL

Weather: sunny, ~65°F Sampling Equipment buckets, shovels, bucket liners

Time: 1410 Station No.: C5 Elevation:
Latitude: Longitude: Accuracy:

Sample ID: D-401-2-C5-101818-3 Depth: 3"
Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 61.6 lbs.
Vegetation: heavy duff layer
Photograph numbers:

Comments:

Time: 1425 Station No.: D6 Elevation:
Latitude: Longitude: Accuracy:

Sample ID: D-401-2-D6-101818-3 Depth: 3"
Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 58.5 lbs
Vegetation: heavy duff layer
Photograph numbers:

Comments:

Time: 1440 Station No.: E5 Elevation:
Latitude: Longitude: Accuracy:

Sample ID: D-401-2-E5-101818-3 Depth: 3"
Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 58.1 lbs
Vegetation: heavy duff layer
Photograph numbers:

Comments:

SOIL COLLECTION FIELD FORM

Project Name: Teck 2018 SATES Project No.: B0095010.0010 Page: 3 of 6

Date: 10/18/18 Sampling Crew: AP, KF, JL

Weather: sunny, 65° F Sampling Equipment shovels, buckets, bucket liners

---

Time: 1500 Station No.: E6 Elevation:
Latitude: Longitude: Accuracy:

Sample ID: D-401-2-E6-101818-3 Depth: 3"
Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 51.7 lbs
Vegetation: heavy duff layer
Photograph numbers:

Comments:

Time: 1530 Station No.: E3 Elevation:
Latitude: Longitude: Accuracy:

Sample ID: D-401-2-E3-101818-3 Depth: 3"
Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 54.4 lbs.
Vegetation: heavy duff layer, trees
Photograph numbers:

Comments:

Time: 1545 Station No.: F4 Elevation:
Latitude: Longitude: Accuracy:

Sample ID: D-401-2-F4-101818-3 Depth: 3"
Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 64.4 lbs
Vegetation: heavy duff layer, trees
Photograph numbers:

Comments:

SOIL COLLECTION FIELD FORM

Project Name: Teck 2018 SATES Project No.: B2098010.0010 Page: 4 of 6

Date: 10/18/18 Sampling Crew: AP, KF, JL

Weather: Sunny, ~65°F Sampling Equipment shovels, buckets, bucket liners

---

Time: 1605 Station No.: E7 Elevation:
Latitude: Longitude: Accuracy:

Sample ID: D-401-2-E7-101818-3 Depth: 3"
Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 65.6
Vegetation: heavy duff layer
Photograph numbers:

Comments:

Time: 1620 Station No.: E9 Elevation:
Latitude: Longitude: Accuracy:

Sample ID: D-401-2-E9-101818-3 Depth: 3"
Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 53.7 lbs
Vegetation: heavy duff layer
Photograph numbers:

Comments:

Time: 1630 Station No.: F10 Elevation:
Latitude: Longitude: Accuracy:

Sample ID: D-401-2-F10-101818-3 Depth: 3"
Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 59.0 lbs.
Vegetation: heavy duff layer
Photograph numbers:

Comments: moved location 8ft. west of original location due to stump & trees

SOIL COLLECTION FIELD FORM

Project Name: Teck 2018 SATES Project No.: B0085010.0010 Page: 5 of 6

Date: 10/18/18 Sampling Crew: AP, KF, JL

Weather: sunny, ~65 °F Sampling Equipment shovels, buckets, bucket liners

---

Time: 1645 Station No.: E10 Elevation:

Latitude: Longitude: Accuracy:

Sample ID: D-401-2-E10-101818-3 Depth: 3"

Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 54.5 lbs.

Vegetation: heavy duff layer

Photograph numbers:

Comments: moved 1 ft. East of original location due to trees

Time: 1705 Station No.: G6 Elevation:

Latitude: Longitude: Accuracy:

Sample ID: ~~D-401-2-401818~~ G6 AP D-401-2-G6-101818-3 Depth: 3"

Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 62.9 lbs.

Vegetation: heavy duff layer

Photograph numbers:

Comments:

Time: 1715 Station No.: H6 Elevation:

Latitude: Longitude: Accuracy:

Sample ID: D-401-2-H6-101818-3 Depth: 3"

Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 65.2

Vegetation: heavy duff layer

Photograph numbers:

Comments:

SOIL COLLECTION FIELD FORM

Project Name: Teck 2018 SATES Project No.: B0095010.0010 Page: 6 of 6

Date: 10/18/18 Sampling Crew: AP, KF, JL

Weather: sunny, ~65°F Sampling Equipment shovels, buckets, bucket liner

---

Time: 1725 Station No.: J5 Elevation: ________

Latitude: ________ Longitude: ________ Accuracy: ________

Sample ID: D-401-2-J5-101818-3 Depth: 3"

Sample analysis: bench scale testing No. sample containers: 3

Soil Volume: ~1,728 in³ weight: 71.6 lbs.

Vegetation: heavy duff layer

Photograph numbers: ________

Comments: ________

Time: ________ Station No.: ________ Elevation: ________

Latitude: ________ Longitude: ________ Accuracy: ________

Sample ID: ________ Depth: ________

Sample analysis: ________ No. sample containers: ____

Soil Volume: ________

Vegetation: ________

Photograph numbers: ________

Comments: ________

Time: ________ Station No.: ________ Elevation: ________

Latitude: ________ Longitude: ________ Accuracy: ________

Sample ID: ________ Depth: ________

Sample analysis: ________ No. sample containers: ____

Soil Volume: ________

Vegetation: ________

Photograph numbers: ________

Comments: ________

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
Project Contact: Rebecca Andresen
Office Arcadis
Phone 206.726.4717
Ship to: Lab Name Ohio State University, School of Environmental and Natural Resources
Address 210 Kottman Hall
2021 Coffey Rd
Columbus, OH 43210
Contact Shane Whitacre
Phone 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D-40f2-AS-101818-3	10/18/18	1216	SO	Ø	X							1 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** 10/24/18 / 1215

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** ________

Special Intructions:

SA_141

AS

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
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Columbus, OH 43210
Contact: Shane Whitacre
Phone: 614.578.6635

AS 5A.141

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing (ANALYSES REQUESTED)					Extra Container	Archive	Comments
D-401-2-AS-101818-3	10/18/18	1210	SO	Ø	X							2 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** [signature] (signature) **Date/Time:** 10/24/18 1215

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** ____________ (signature) **Date/Time:** ______

Special Intructions:

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

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ANALYSES REQUESTED

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-AS-101818 3	10/18/18	1210	SO	Ø	X							3 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) Date/Time: ________ Received by: [signature] (signature) Date/Time: 10/24/18/1215

Relinquished by: ____________ (signature) Date/Time: ________ Received by: ____________ (signature) Date/Time: ________

Special Intructions:

SA-141

AS

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
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Contact: Shane Whitacre
Phone: 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-A6-101818-3"	10/18/18	1240	SO	none								bucket 1 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ________ (signature) **Date/Time:** ________ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ________ (signature) **Date/Time:** ________ **Received by:** ________ (signature) **Date/Time:** ________

Special Intructions:

SA-1-1/2

A6

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
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SA_142

A6

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-A6-101818-5"	10/18/18	1240	SO	none	X							bucket 2 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** [signature] (signature) **Date/Time:** 10/24/18 / 1215

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** ____________ (signature) **Date/Time:** ______

Special Intructions:

CHAIN OF CUSTODY FORM

SA-142

A6

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

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Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-~~2~~-A6-101818-3	10/18/18	1240	SO	—								bucket 3 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** ____________ (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** ____________ (signature) **Date/Time:** ______

Matrix Code:
SO - Soil
Other:

Special Intructions:

CHAIN OF CUSTODY FORM

SA 1143

BC

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

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Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
~~D-401-2-101812~~			SO									
D-401-2-BG-101818-3"	10/18/18	1340	SO	none	X							bucket 1 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Relinquished by: ________ *(signature)* **Date/Time:** ________ **Received by:** [signature] *(signature)* **Date/Time:** 10/24/18 / 1215

Relinquished by: ________ *(signature)* **Date/Time:** ________ **Received by:** ________ *(signature)* **Date/Time:** ________

Matrix Code:
SO - Soil
Other:

Special Intructions:

CHAIN OF CUSTODY FORM

SA-143

Project: Teck American Incorporated - SATES 2018
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ANALYSES REQUESTED

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
D-901-2-B6-101818-3"	10/18/18	1340	SO	—	X							bucket 2 of 3

B6

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ______ (signature) Date/Time: ______ Received by: [signature] (signature) Date/Time: 10/24/18/ 1215

Relinquished by: ______ (signature) Date/Time: ______ Received by: ______ (signature) Date/Time: ______

Special Intructions:

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
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Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-B6-101818-3"	10/18/18	1340	SO	—	X							bucket 3 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** [signature] (signature) **Date/Time:** 10/24/18 / 1215

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** ________

Special Intructions:

SA-143

B6

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
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5A-144

C5

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-C5-101818-3"	10/18/18	1410	SO	—	X							bucket 1 of 3

ANALYSES REQUESTED: Bench Scale Testing

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Matrix Code:
SO - Soil
Other:

Condition of Samples Upon Receipt: Custody Seal Intact?

Relinquished by: ____________ (signature) Date/Time: ______ Received by: [signature] (signature) Date/Time: 10/24/18/1215

Relinquished by: ____________ (signature) Date/Time: ______ Received by: ____________ (signature) Date/Time: ______

Special Intructions:

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
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Phone 614.578.6635

SA-144

C5

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D-401-2-C5-101818-3"	10/18/18	1410	SO	—	X							bucket 2 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ______ (signature) **Date/Time:** ______ **Received by:** [signature] (signature) **Date/Time:** 10/24/18 / 1215

Relinquished by: ______ (signature) **Date/Time:** ______ **Received by:** ______ (signature) **Date/Time:** ______

Special Intructions:

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen

Office: Arcadis
Phone: 206.726.4717

Ship to:
Lab Name: Ohio State University, School of Environmental and Natural Resources
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Phone: 614.578.6635

SA-4B
1414
CS

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-CS-101818-3"	10/18/18	1410	SO	—	X							bucket 3 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** ____________ (signature) **Date/Time:** ______

Special Intructions:

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
Project Contact: Rebecca Andresen
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Ship to:
Lab Name Ohio State University, School of Environmental and Natural Resources
Address 210 Kottman Hall
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Contact Shane Whitacre
Phone 614.578.6635

ANALYSES REQUESTED

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-D6-101818-3	10/18/18	1425	SO	Ø	X							1 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____ (signature) **Date/Time:** ____ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ____ (signature) **Date/Time:** ____ **Received by:** ____ (signature) **Date/Time:** ____

Special Intructions:

SA-145

DC

CHAIN OF CUSTODY FORM

[redacted]

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
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Ship to:
Lab Name Ohio State University, School of Environmental and Natural Resources
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2021 Coffey Rd
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Contact Shane Whitacre
Phone 614.578.6635

SA_145

D6

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-D6-101818-3	10/18/18	1425	SO	Ø	X							2 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ *(signature)* **Date/Time:** ________ **Received by:** [signature] *(signature)* **Date/Time:** 10/24/18/1215

Relinquished by: ____________ *(signature)* **Date/Time:** ________ **Received by:** ____________ *(signature)* **Date/Time:** ________

Special Intructions:

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

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5A-145

D6

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-D6-101818-3	10/18/18	1425	SO	Ø	X							3 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Matrix Code:
SO - Soil
Other:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Relinquished by: ____________ *(signature)* **Date/Time:** ________ **Received by:** [signature] *(signature)* **Date/Time:** 10/24/18 1215

Relinquished by: ____________ *(signature)* **Date/Time:** ________ **Received by:** ____________ *(signature)* **Date/Time:** ________

Special Intructions:

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

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Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
~~D-401-2-1018~~			~~SO~~									
D-401-2-E3-101818-3"	10/18/18	1530	SO	—	X							bucket 1 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Matrix Code:
SO - Soil
Other:

Condition of Samples Upon Receipt: Custody Seal Intact?

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** ________

Special Intructions:

SA_146

E3

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
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Ship to:
Lab Name: Ohio State University, School of Environmental and Natural Resources
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Contact: Shane Whitacre
Phone: 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D-4101-2-E3-101818-3"	10/18/18	1530	SO	—	X							bucket 2 of 3

SA_14G

E3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) Date/Time: ______ Received by: Sh (signature) Date/Time: 10/24/18/1215

Relinquished by: ____________ (signature) Date/Time: ______ Received by: ____________ (signature) Date/Time: ______

Special Intructions:

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
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Ship to:
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Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-E3-101818-3'	10/18/18	1530	SO	—	X							~~Buck~~ bucket 3 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** ____________ (signature) **Date/Time:** ______

Special Intructions:

SA-146

E3

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
Project Contact: Rebecca Andresen
Office Arcadis
Phone 206.726.4717
Ship to:
Lab Name Ohio State University, School of Environmental and Natural Resources
Address 210 Kottman Hall
2021 Coffey Rd
Columbus, OH 43210
Contact Shane Whitacre
Phone 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D-401-2-ES-101818-3	10/18/18	1440	SO	Ø	X							1 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt:

Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ *(signature)* **Date/Time:** ________ **Received by:** ____________ *(signature)* **Date/Time:** 10/24/18 1215

Relinquished by: ____________ *(signature)* **Date/Time:** ________ **Received by:** ____________ *(signature)* **Date/Time:** ________

Special Intructions:

SA-14D

ES

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
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Lab Name: Ohio State University, School of Environmental and Natural Resources
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SA-1147

ES-3

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D401-2-ES-101818-3	10/18/18	1440	SO	Ø	X							2 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ________ (signature) **Date/Time:** ________ **Received by:** ________ (signature) **Date/Time:** 10/24/18 1215

Relinquished by: ________ (signature) **Date/Time:** ________ **Received by:** ________ (signature) **Date/Time:** ________

Special Intructions:

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
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Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-461-2-ES-101818-3	10/18/18	1440	SO	Ø	X							3 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** ________

Matrix Code:
SO - Soil
Other:

Special Intructions:

SA_147

ES

CHAIN OF CUSTODY FORM

Page ___ of ___

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
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Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D-401-2-EG-101818-3	10/18/18	1500	SO	Ø	X							1 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ______ (signature) **Date/Time:** ______ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ______ (signature) **Date/Time:** ______ **Received by:** ______ (signature) **Date/Time:** ______

Special Intructions:

SA_148

E6

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
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Phone: 614.578.6635

SA-148

E6

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D-401-2-56-101818-3	10/18/18	1506	SO	Ø	X							2 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** 10/24/18 1215

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** ________

Special Intructions:

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

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Phone: 614.578.6635

SA-148

E6

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D-401-2-E6-101818-3	10/18/18	1500	SO	Ø	X							3 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** 10/21/18/12 15

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** ________

Special Intructions:

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

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Contact: Shane Whitacre
Phone: 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-E7-101818-3	10/18/18	1605	SO	Ø	X							1 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) Date/Time: ______ Received by: ____________ (signature) Date/Time: 10/24/18/1415

Relinquished by: ____________ (signature) Date/Time: ______ Received by: ____________ (signature) Date/Time: ______

Special Intructions:

E7 SA-149

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
Office: Arcadis
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Ship to:
Lab Name: Ohio State University, School of Environmental and Natural Resources
Address: 210 Kottman Hall
2021 Coffey Rd
Columbus, OH 43210
Contact: Shane Whitacre
Phone: 614.578.6635

ANALYSES REQUESTED

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
D-401-7-E7-101818-3	10/18/18	1605	SO	⊘	X							2 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) Date/Time: ________ Received by: [signature] (signature) Date/Time: 10/24/18/1215

Relinquished by: ____________ (signature) Date/Time: ________ Received by: ____________ (signature) Date/Time: ________

Special Intructions:

SA_149

E7

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
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Contact Shane Whitacre
Phone 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D-40-Z-E7-101818-3	10/18/18	1605	SO	Ø	X							3 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** ____________ (signature) **Date/Time:** 10/24/18/1045

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** ____________ (signature) **Date/Time:** ______

Special Intructions:

E7 SA-149

CHAIN OF CUSTODY FORM

5A_15-0

E9

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
Project Contact: Rebecca Andresen
Office: Arcadis
Phone: 206.726.4717
Ship to:
Lab Name: Ohio State University, School of Environmental and Natural Resources
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Contact: Shane Whitacre
Phone: 614.578.6635

ANALYSES REQUESTED

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-E9-101818-3	10/18/18	1620	SO	Ø	X							1 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** ________

Special Intructions:

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018

Samplers: Kelsey Franz, Joe Latham, Alex Pink

Page ____ of ____

Project Contact: Rebecca Andresen

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Phone 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-E9-101818-3	10/18/18	1620	SO	0	X							2 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code: SO - Soil Other:

Relinquished by: ____ (signature) **Date/Time:** ____ **Received by:** [signature] (signature) **Date/Time:** 10/24/18 11:15

Relinquished by: ____ (signature) **Date/Time:** ____ **Received by:** ____ (signature) **Date/Time:** ____

Special Intructions:

SA-150

E9

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
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Contact Shane Whitacre
Phone 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-E9-101818-3	10/18/18	1620	SO	Ø	X							3 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** [signature] (signature) **Date/Time:** 10/24/18 / 1215

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** ________

Special Intructions:

SA_150

E9

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
Project Contact: Rebecca Andresen
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Lab Name: Ohio State University, School of Environmental and Natural Resources
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2021 Coffey Rd
Columbus, OH 43210
Contact: Shane Whitacre
Phone: 614.578.6635

SA-151

E10

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-E10-101818-3	~~1645~~ 101818	1645	SO	Ø	X							1 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____ (signature) Date/Time: ____ Received by: [signature] (signature) Date/Time: 10/24/18/1215

Relinquished by: ____ (signature) Date/Time: ____ Received by: ____ (signature) Date/Time: ____

Special Intructions:

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018

Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen

Office: Arcadis

Phone: 206.726.4717

Ship to:

Lab Name: Ohio State University, School of Environmental and Natural Resources

Address: 210 Kottman Hall

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Columbus, OH 43210

Contact: Shane Whitacre

Phone: 614.578.6635

SA-151

E10

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D-401-2-E10-101818-3	10/18/18	1645	SO	Ø	X							2 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Relinquished by: ______ *(signature)* **Date/Time:** ______ **Received by:** [signature] *(signature)* **Date/Time:** 10/24/18/1215

Relinquished by: ______ *(signature)* **Date/Time:** ______ **Received by:** ______ *(signature)* **Date/Time:** ______

Matrix Code:
SO - Soil
Other:

Special Intructions:

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
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Ship to:
Lab Name Ohio State University, School of Environmental and Natural Resources
Address 210 Kottman Hall
2021 Coffey Rd
Columbus, OH 43210
Contact Shane Whitacre
Phone 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D-401-2-E10-101818-3	10/18/18	1045	SO	Ø	X							3 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** 10/24/18/11:15

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** ________

Special Intructions:

SA-151

E10

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
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Ship to:
Lab Name Ohio State University, School of Environmental and Natural Resources
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Columbus, OH 43210
Contact Shane Whitacre
Phone 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-F4-101818-3	10/18/18	1545	SO	Ø	X							1 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Matrix Code:
SO - Soil
Other:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Relinquished by: ______ (signature) **Date/Time:** ______ **Received by:** [signature] (signature) **Date/Time:** 10/24/18 / 1215

Relinquished by: ______ (signature) **Date/Time:** ______ **Received by:** ______ (signature) **Date/Time:** ______

Special Intructions:

SA-152 F4

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
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Columbus, OH 43210
Contact Shane Whitacre
Phone 614.578.6635

ANALYSES REQUESTED

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-F4-101818-3	10/18/18	1545	SO	Ø	X							2 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** [signature] (signature) **Date/Time:** 10/24/18 / 1215

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** ____________ (signature) **Date/Time:** ______

Matrix Code:
SO - Soil
Other:

Special Intructions:

SA_152
F4

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
Office: Arcadis
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Ship to:
Lab Name: Ohio State University, School of Environmental and Natural Resources
Address: 210 Kottman Hall
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Columbus, OH 43210
Contact: Shane Whitacre
Phone: 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-F4-101818-3	10/18/18	1545	SO	Ø	X							3 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____ (signature) **Date/Time:** ____ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ____ (signature) **Date/Time:** ____ **Received by:** ____ (signature) **Date/Time:** ____

Special Intructions:

F4 SA.15-2

SA_153

F10

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
Project Contact: Rebecca Andresen
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Contact Shane Whitacre
Phone 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-F10-101818-3	10/18/18	1630	SO	Ø	X							1 of 3

ANALYSES REQUESTED

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Matrix Code:
SO - Soil
Other:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** ________

Special Intructions:

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
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Contact: Shane Whitacre
Phone: 614.578.6635

SA-153

F10

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D-401-2-F10-101818-3	10/18/18	1630	SO	Ø	X							2 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ______________ (signature) **Date/Time:** ________ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ______________ (signature) **Date/Time:** ________ **Received by:** ______________ (signature) **Date/Time:** ________

Special Intructions:

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
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Contact: Shane Whitacre
Phone: 614.578.6635

SA_153

F10

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-F10-101818-2	10/18/18	1630	SO	Ø	X							3 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ________ (signature) **Date/Time:** ________ **Received by:** [signature] (signature) **Date/Time:** 10/24/18 / 1215

Relinquished by: ________ (signature) **Date/Time:** ________ **Received by:** ________ (signature) **Date/Time:** ________

Special Intructions:

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
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Contact Shane Whitacre
Phone 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-G6-101818-3	10/18/18	1705	SO	Ø	X							1 of 3

ANALYSES REQUESTED

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____ (signature) **Date/Time:** ____ **Received by:** ____ (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ____ (signature) **Date/Time:** ____ **Received by:** ____ (signature) **Date/Time:** ____

Special Intructions:

SA-15-4

G6

CHAIN OF CUSTODY FORM

Page ____ of ____

Project: Teck American Incorporated - SATES 2018
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Contact Shane Whitacre
Phone 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-66-161818-3	10/18/18	1705	SO	Ø	X							2 of 3

ANALYSES REQUESTED

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ______ (signature) **Date/Time:** ______ **Received by:** [signature] (signature) **Date/Time:** 10/24/18 / 1215

Relinquished by: ______ (signature) **Date/Time:** ______ **Received by:** ______ (signature) **Date/Time:** ______

Special Intructions:

SA-151

66

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
Office: Arcadis
Phone: 206.726.4717

Ship to:
Lab Name: Ohio State University, School of Environmental and Natural Resources
Address: 210 Kottman Hall
2021 Coffey Rd
Columbus, OH 43210
Contact: Shane Whitacre
Phone: 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D-401-2-G6-101818-3	10/18/18	1725	SO	Ø	X							3 of 7

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** 10/24/18 / 1215

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** ________

Special Intructions:

SA-154

G6

CHAIN OF CUSTODY FORM

SA-155

H6

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
Project Contact: Rebecca Andresen
Office: Arcadis
Phone: 206.726.4717
Ship to:
Lab Name: Ohio State University, School of Environmental and Natural Resources
Address: 210 Kottman Hall
2021 Coffey Rd
Columbus, OH 43210
Contact: Shane Whitacre
Phone: 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-H6-101818-3	10/18/18	1715	SO	Ø	X							1 of 3

ANALYSES REQUESTED

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ____________ (signature) **Date/Time:** ________ **Received by:** ____________ (signature) **Date/Time:** ________

Special Intructions:

CHAIN OF CUSTODY FORM

Page ____ of ____

SA-155

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink
Project Contact: Rebecca Andresen
Office Arcadis
Phone 206.726.4717
Ship to:
Lab Name Ohio State University, School of Environmental and Natural Resources
Address 210 Kottman Hall
2021 Coffey Rd
Columbus, OH 43210
Contact Shane Whitacre
Phone 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-H6-101818-3	10/18/18	1715	SO	Ø	X							2 of 3

116

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ______________ (signature) **Date/Time:** ________ **Received by:** [signature] (signature) **Date/Time:** 10/24/18 / 1215

Relinquished by: ______________ (signature) **Date/Time:** ________ **Received by:** ______________ (signature) **Date/Time:** ________

Special Intructions:

Page ____ of ____

CHAIN OF CUSTODY FORM

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
Office: Arcadis
Phone: 206.726.4717

Ship to:
Lab Name: Ohio State University, School of Environmental and Natural Resources
Address: 210 Kottman Hall
2021 Coffey Rd
Columbus, OH 43210
Contact: Shane Whitacre
Phone: 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
												3 of 3
D-401-2-H6-101818-3	10/18/18	1715	SO	∅	X							

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Matrix Code:
SO - Soil
Other:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Relinquished by: ____ (signature) **Date/Time:** ____ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ____ (signature) **Date/Time:** ____ **Received by:** ____ (signature) **Date/Time:** ____

Special Intructions:

SA_155

H6

CHAIN OF CUSTODY FORM

SA-156

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
Office: Arcadis
Phone: 206.726.4717

Ship to:
Lab Name: Ohio State University, School of Environmental and Natural Resources
Address: 210 Kottman Hall
2021 Coffey Rd
Columbus, OH 43210
Contact: Shane Whitacre
Phone: 614.578.6635

J5

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-J5-101818-3	10/18/18	1725	SO	Ø	X							1 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Matrix Code:
SO - Soil
Other:

Condition of Samples Upon Receipt: Custody Seal Intact?

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** [signature] (signature) **Date/Time:** 10/24/18/1215

Relinquished by: ____________ (signature) **Date/Time:** ______ **Received by:** ____________ (signature) **Date/Time:** ______

Special Intructions:

CHAIN OF CUSTODY FORM

Page ____ of ____

SA_15_6

JS

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
Office Arcadis
Phone 206.726.4717

Ship to:
Lab Name Ohio State University, School of Environmental and Natural Resources
Address 210 Kottman Hall
2021 Coffey Rd
Columbus, OH 43210
Contact Shane Whitacre
Phone 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
					ANALYSES REQUESTED							
D-401-2-JS-101818-3	10/18/18	1725	SO	Ø	X							2 of 3

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ______________ *(signature)* **Date/Time:** ______ **Received by:** ______________ *(signature)* **Date/Time:** 10/24/18/1215

Relinquished by: ______________ *(signature)* **Date/Time:** ______ **Received by:** ______________ *(signature)* **Date/Time:** ______

Special Intructions:

CHAIN OF CUSTODY FORM

Page ____ of ____

SA_15_6.

J5

Project: Teck American Incorporated - SATES 2018
Samplers: Kelsey Franz, Joe Latham, Alex Pink

Project Contact: Rebecca Andresen
Office: Arcadis
Phone: 206.726.4717

Ship to:
Lab Name: Ohio State University, School of Environmental and Natural Resources
Address: 210 Kottman Hall
2021 Coffey Rd
Columbus, OH 43210
Contact: Shane Whitacre
Phone: 614.578.6635

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	Bench Scale Testing					Extra Container	Archive	Comments
D-401-2-J5-101818-3	10/18/18	1725	SO	Ø	X							3 of 3

ANALYSES REQUESTED

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: ____ (signature) **Date/Time:** ____ **Received by:** [signature] (signature) **Date/Time:** 10/24/18 / 14:15

Relinquished by: ____ (signature) **Date/Time:** ____ **Received by:** ____ (signature) **Date/Time:** ____

Special Intructions:

APPENDIX A-2

SOIL COLLECTION FOR EPA BIOCHAR STUDY JULY 17, 2019

Teck 2019 SATES

7/17/19 weather: Rain on and off, overcast

8:30 Met with Dave Enos at station mobilize to site

9:00 Arrive at site, completed tailgate meeting

10:45 Twine strung up, sample points marked

11:45 began XRFing / sampling E10. Lead results were higher than expected, called Eric and consulted Dave Enos. continued sampling, Dave said it was acceptable and to continue

13:30 Dave leaves site, continue sampling

14:00 Finish sampling, pack up

14:15 Informed Dave and Eric that we were leaving site. Arcadis off-site

XRF CAL Log Teck 2019 SATES

#	measured As	measured Pb	standard	standard As	standard Pb
71	395 ± 12	395 ± 13	RCRA 180-661	500	500
73	< 19.2	51 ± 17	chrome quarter		
75	335 ± 11	334 ± 11	RCRA 180-661	500	500
76	< 19.2	65 ± 18	chrome quarter		
77	340 ± 11	351 ± 11	RCRA 180-661	500	500
78	< 19.3	64 ± 18	chrome quarter		

New standard tested upon returning to the cabins. Pine sent it in a second shipment

#	measured As	measured Pb	Standard	standard As	standard Pb
102	13 ± 4	7 ± 4	NIST 2709	17.7	18.9
103	11 ± 3	< 6.3	NIST 2709	17.7	18.9
104	12 ± 3	< 5.7	NIST 2709	17.7	18.9

Teck 2019 SATES XRF

ID	Surface Pb	Surface As	1" Pb	1" As
E10	1837 ± 18	111 ± 15	3499 ± 26	219 ± 21
D6	2766 ± 23	226 ± 19	1385 ± 20	190 ± 17
F4	1863 ± 20	185 ± 16	2236 ± 23	259 ± 20

Teck 2019 SATES weight log

Location	Bucket1	Bucket2
E10	32 lbs	31 lbs
D6	29.4	31.4
F4	30.4	28.4

SOIL COLLECTION FIELD FORM

Project Name: Tech 2019 SATES Project No.: Page: 1 of 1

Date: 07/17/19 Sampling Crew: S. Dunne D. Gilbert

Weather: light rain off + on 65° F Sampling Equipment Shovels, spades, buckets, bags, XRF

Time: 1145 Station No.: E10 Elevation:

Latitude: Longitude: Accuracy:

Sample ID: D-401-2-E10-071719 Depth: 3

Sample analysis: Bench Scale Testing No. sample containers: 2

Soil Volume: weight 63lbs

Vegetation: Thick Duff layer

Photograph numbers:

Comments:

Time: ~~1145~~ 50 1200 Station No.: D6 Elevation:

Latitude: Longitude: Accuracy:

Sample ID: D-401-2-D6-071719 Depth: 3

Sample analysis: Bench Scale Testing No. sample containers: 2

Soil Volume: weight 60.8lbs

Vegetation:

Photograph numbers:

Comments: moved location 2ft North of original location

Time: 1300 Station No.: F4 Elevation:

Latitude: Longitude: Accuracy:

Sample ID: D-401-2-F4-071719 Depth: 3

Sample analysis: Bench scale Testing No. sample containers: 2

Soil Volume: weight 58.8 lbs

Vegetation: thin duft layer

Photograph numbers:

Comments:

Project: Teck American Incorporated - SATES 2019
Samplers: Dan Gilbert, Sam Dunne

Project Contact: Rebecca Andresen
Office Arcadis
Phone 206.726.4717

Ship to: Lab Name Western Ecology Division
Address 200 SW 35th St
Corvallis, OR 97333
johnson.markg@epa.gov
Contact Mark G. Johnson
Phone 541-754-4696

Soil Sample No.	Date	Time	Matrix	Preservative (if any)	ANALYSES REQUESTED: Treatability Study					Extra Container	Archive	Comments
D-401-2-E10-071719	07/17/19	1145	SO	None	X							2 Buckets
D-401-2-D6-071719	07/17/19	1300	SO	None	X							2 Buckets
D-401-2-F4-071719	07/17/19	1345	SO	None	X							2 Buckets

Analysis Turn Time: Normal X Rush Rush Results Needed By:

Shipped by: FedEx Shipping Tracking No.:

Condition of Samples Upon Receipt: Custody Seal Intact?

Matrix Code:
SO - Soil
Other:

Relinquished by: [signature] (signature) **Date/Time:** 07/18/19 0900 **Received by:** FedEx (signature) **Date/Time:** 07/18/19 0900

Relinquished by: (signature) **Date/Time:** **Received by:** [signature] (signature) **Date/Time:** 7/19/19 1500

Special Intructions:

3
7/19/19
SRLBOTS

APPENDIX B

Photograph Log

Photograph: 1

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-A5
(after restoration)

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 2

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-A6

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 3

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-B6

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 4

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-C5

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 5

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-D6

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 6

Description:
(Camera facing northeast)
Type: Bulk Soil
Location:
401-2-E10

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 7

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-E3

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 8

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-E6

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 9

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-E5

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 10

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-E7

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 11

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-E9

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 12

Description: (Camera facing north)
Type: Bulk Soil
Location:
401-2-F10

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 13

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-F4

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 14

Description: (Camera facing north)
Type: Bulk Soil
Location:
401-2-G6

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 15

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-H6

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 16

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-J5

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Alex Pink

Date: 10/18/2018

Photograph: 17

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-D6
(after restoration)

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Daniel Sly Gilbert

Date: 7/17/2019

Photograph: 18

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-E10

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Daniel Sly Gilbert

Date: 7/17/2019

Photograph: 19

Description:
(Camera facing north)
Type: Bulk Soil
Location:
401-2-F4

Location:
Upper Columbia River
DU: 401-2

Photograph taken by:
Daniel Sly Gilbert

Date: 7/17/2019

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