

**DRAFT SOLID WASTE MANAGEMENT FACILITY CERTIFICATION
10 V.S.A. §6605**

APPLICANT: Lawrence Young, Jr.
OPERATOR: Working Dog Septic Service Inc.
AUTHORIZED REPRESENTATIVE: Lawrence Young, Jr., Owner
SOLID WASTE FACILITY I.D. NUMBER: SW-380
CERTIFICATION NUMBER: F2001

FIELD AND MONITORING WELL DESIGNATIONS:

Boyden Site			
Cambridge, VT	FCA0101	MW-1	WCA0101
		MW-2	WCA0102
		MW-3	WCA0103

CERTIFICATION PERIOD: Date of Signature through **(TBD)**, 2030

PURPOSE OF THE CERTIFICATION: The purpose of this Certification is to ensure that the solid waste management facility (Facility) operated by Working Dog Septic Service, Inc.(Applicant), for the management of stabilized domestic septage via land application, operates in accordance with the conditions set forth herein to protect the public health and safety and the environment.

FACILITY DESCRIPTION & LOCATION: The Facility includes one (1), 49.3 usable acre agricultural field and three (3) groundwater monitoring wells located at River Road in the Town of Cambridge, Vermont (44°38'42.5"N, 72°55'14.4"W).

FACILITY OPERATION: The Facility will be used for the land application of stabilized domestic septage and will be applied to the site at agronomic rates via surface application. Land application rates of stabilized septage shall be based upon crop nutrient requirements, contribution of nutrients from other sources, and the average nutrient content for septage. Domestic septage is required to be treated for pathogen and vector attraction reduction prior to land application, according to the Vermont Solid Waste Management Rules, effective March 15, 2012 (Rules), 40 CFR Part 503, and this Certification. Prior to land application, pathogen and vector attraction reduction for domestic septage will be achieved by lime stabilization (Ca(OH)₂ or its equivalent). Stabilized septage will be incorporated into the soil as required by rule §6-702 for sites residing in the one hundred-year flood plain unless a no till management practice is planned. As a contingency management strategy, domestic septage collected by the Permittee will be hauled to suitable in-state or out-of-state solid waste management facility.

APPLICATION REVIEW: The application for recertification of the Permittee's management plan and facilities was reviewed by the Agency of Natural Resources (Agency), Department of

Environmental Conservation (Department) Waste Management & Prevention Division, Residual Management & Emerging Contaminants Program in accordance with the Vermont Solid Waste Management Act, 10 V.S.A. §§6601 et seq. and the Vermont Solid Waste Management Rules, effective March 15, 2012 (Rules). The application is on file with the Department, in Montpelier, Vermont and available for viewing on internet via the Vermont Environmental Notice Bulletin.

FINDINGS

1. Certification for the Working Dog Septic Service’s solid waste management facility is required by 10 V.S.A. §6605 and Section 6-303 of the Vermont Solid Waste Management Rules, effective March 15, 2012.
2. On March 12, 2020, Lawrence Young, owner, Working Dog Septic Service, Inc., submitted an application, consisting of a plan titled Residual Waste Management Plan (Plan) containing information supplementing the application dated May 21, 2020 to the Department for certification of the Facility. The application was reviewed in accordance with §6-305 of the Rules.
3. The proposed Facility is comprised of one agricultural field totaling 49.3 usable acres for the management of stabilized septage via land application and the installation of three (3) groundwater monitoring wells, located on a farm owned by Mark & Lauri Boyden on River Road in Cambridge, Vermont.
4. The application was prepared and certified to conform to the Rules by Christopher Leister of Hogg Hill Design, LLC for Lawrence Young (Applicant), owner of Working Dog Septic Service, Inc. Upon request by the Applicant, the Secretary waived the requirement that the application be completed under the direction of a professional engineer licensed in the State of Vermont.
5. In accordance with 10 V.S.A. § 6605(f), the Applicant provided notice of the application and submitted a Personal History and Business Disclosure Statement.
6. The Applicant provided notice of the application to adjoining property owners on March 7, 2020 per 10 V.S.A. Chapter 170.
7. The application was found to be administratively complete on April 3, 2020.
8. The public notice was advertised via direct mail to all parties stipulated by 10 V.S.A. Chapter 170 on March 7, 2020 and advertised on the Department’s Environmental Notice Bulletin (ENB) on April 20, 2020.
9. The application was found to be technically complete on July 2, 2020 and a draft certification and fact sheet were prepared by the Department on July 2, 2020 in accordance with Subchapter 3 of the Rules.
10. Per § 6-305 of the Rules, the Secretary actively solicited comment on the draft

certification and fact sheet via public comment period, which ran from July 2 to July 31, 2020. Notice was provided to the parties established in the Rules and by publication to the ENB and via direct mail.

CONDITIONS AND REQUIREMENTS FOR OPERATION

- A. The Permittee shall perform all actions necessary for the proper management of septage in accordance with the Application and the provisions of this certification.
- B. The Permittee shall comply with the provisions, requirements and standards set forth in 10 V.S.A. §§6601 et. seq. and the Rules, except as expressly provided herein.
- C. The site identified in the application on the Boyden Farm in Cambridge, Vermont, or other in-state or out-of-state solid waste facilities are authorized for septage management under this certification. Use of other sites for septage management via land application without prior written approval from the Secretary is expressly prohibited and shall constitute grounds for revocation of this Certification.
- D. Domestic septage managed by the Permittee is the only waste authorized for management via land application. Management via land application of other regulated solid wastes without prior written approval from the Secretary shall constitute grounds for revocation of this Certification. Land application of commercial or industrial septage, portable toilet waste, and holding tank waste is expressly prohibited.
- E. The Permittee is authorized to use the contingency option of disposing domestic septage at suitable and certified in-state or out-of-state solid waste management facilities.

COMPLIANCE SCHEDULE

- F. On or before **(TBD)**, 2030, the Permittee shall either submit an application for renewal of this certification; or if recertification will not be sought or land application is abandoned as a management strategy, all end of certification monitoring shall be completed, and submit a plan documenting the strategy for closure of the Facility.

MATERIALS AND SITE MANAGEMENT AND MONITORING REQUIREMENTS

- G. The Permittee shall comply with all the siting conditions specified for diffuse disposal facilities in Subchapter 5 and with all the facility operation standards, requirements, and conditions specified in Subchapter 7 of the Rules.
- H. The following actions are specifically prohibited:
 - (1) the application of solid wastes on frozen or snow-covered ground is prohibited;
 - (2) the application of solid wastes is prohibited at times when saturated soil is within

three feet of the ground surface on the site.

- I. The Permittee shall restrict public access to the site certified herein for the duration of any domestic septage land application event and for a minimum period of twelve (12) months following the last septage application event. The Permittee shall ensure the site is properly posted for this purpose during these periods.
- J. The Permittee shall ensure that the following site and crop use restrictions are observed:
 - (1) domestic food source animals shall be prohibited from grazing on the waste amended land application site for the duration of disposal and for a period of six (6) months beyond the last septage application event;
 - (2) the site shall not be used for the production of crops for direct human consumption during any domestic septage application event and for the duration of the disposal and a period of thirty-eight (38) months beyond last septage application event;
 - (3) fiber and feed crops (including silage) grown on the waste amended land application site shall not be harvested for a period of five (5) weeks beyond the last septage application event;
 - (4) prohibit the feeding of silage grown on the site to domestic food source animals for a period of four (4) months beyond the last septage application event;
 - (5) turf grown on the waste amended land application site shall not be harvested for twelve (12) months beyond the last septage application event.
- K. The Permittee shall inform all persons involved with cropping on the site of the crop restrictions and limitations established in Condition J of this certification.
- L. The Permittee shall sample the septage, the site's soils and groundwater, and the tissues of the crops raised thereon, at the frequency established in Table 2 of this certification. The samples shall be submitted to an independent laboratory for an analysis of the applicable parameters established in Table 2 of this certification. Testing for metals in the septage shall be for the total form and shall be reported in milligrams per kilogram (mg/kg), dry weight basis. Testing for metals in the soil and plant tissue shall be for the available form, and shall be reported in mg/kg, dry weight basis. Testing for metals in the groundwater shall be for the total dissolved form and shall be reported in milligrams or micrograms per liter. All testing shall be in accordance with the Department's "*Procedure Designating Methods for Chemical and Biological Analyses for Residual Wastes*" which is attached as Appendix I of this certification.
- M. The Permittee shall ensure that each load of septage that is applied to the land is treated with hydrated lime [Ca(OH)₂], to reduce pathogen content and vector attraction prior to land application. Treatment will be achieved by adding sufficient hydrated lime, or its equivalent, to raise the pH to greater than or equal to 12.0 Standard Units (S.U.)

and maintain the pH at greater than or equal to 12.0 S.U. for a period of two (2) hours without the addition of additional lime. Direct monitoring of each load of septage's pH, to demonstrate that the pH and hold time requirements are being met, shall be conducted, and documented. Documentation of compliance with this requirement shall be submitted with the appropriate quarterly report.

- N. Application of domestic septage by "straight piping" from the Permittee's collection vehicles is prohibited. The use of a diffuser bar, splash plate, or other appropriate device or equipment is required to provide even dispersal. Domestic septage shall be free of nonbiodegradable material prior to land application. Any nonbiodegradable material that is inadvertently land applied must be removed within 48 hours.
- O. Use of the site is specifically prohibited at times when the soil's pH is not within the required range of 6.5 to 8.0 S.U. (aqueous). The Permittee shall institute a program including the addition of agricultural lime to the site's soil to raise and/or maintain the soil pH of the land application site within the specified range. The Permittee shall monitor soil pH in accordance with Table 2 of this certification and submit data to the Department with the appropriate quarterly report.
- P. The Permittee shall calculate, revise, and submit to the Department the allowable application rates prior to each growing season using a calculation method approved by the Secretary. Rates are determined based upon crop nitrogen and phosphorus demand as determined by the current University of Vermont Cooperative Extension System's "Nutrient Recommendations for Field Crops in Vermont" handbook, nitrogen and water extractable phosphorus content in the stabilized septage and/or other nutrient sources, available phosphorus and reactive aluminum in sites soils, as well as previous applications of nutrients (including septage, manures or chemical fertilizers). The Permittee shall not apply stabilized septage to the site in excess of the nutrient requirements of the crop(s) grown on the site. If a nitrogen-based septage application rate is determined appropriate, the following formula is to be utilized. The application rate is in units of gallons/acre and the crop N requirement and N supplied from other sources are in units of lbs N/acre:

$$\text{Application rate} = \frac{(\text{crop N requirement} - \text{N supplied from other sources})}{0.0026}$$

Example Application Rate Recommendations			
Soil Drainage Class	Crop	Expected Yield	Application Rate
Well to Mod. Well	Corn-Grain	150 bu/acre	57,692 gals./acre
Well to Mod. Well	Corn-Silage	25 ton/acre	57,692 gals./acre
Well to Mod. Well	Corn-Grain	180 bu/acre	69,231 gals./acre
Well to Mod. Well	Corn-Silage	30 ton/acre	69,231 gals./acre
Well to Mod. Well	Grass	<2 ton/acre	15,384 gals/acre
Well to Mod. Well	Grass	>2 ton/acre	26,923 gals./acre

- Q. The Permittee or the landowner may apply supplemental nitrogen to the sites provided:
- (1) the additional nitrogen, if derived from non-solid waste sources, will not result in the application of nitrogen in excess of the annual amount required by the crop being grown on the sites; or,
 - (2) the additional nitrogen, if derived from solid waste sources, will not result in the application of nitrogen in excess of that required by the crop being grown on the sites and written authorization from the Secretary has been obtained in advance of the application; or,
 - (3) having already applied nitrogen derived from any source(s) sufficient to meet the crop's specified annual nitrogen requirement, a plant available nitrogen deficit exists in the sites' soils for the crop being raised thereon and the Department has reviewed and approved documentation of the deficit and proposed nitrogen supplement. The additional nitrogen shall not be applied at a rate greater than is necessary to supply the documented plant available nitrogen deficiency. In this case, the additional nitrogen may only be applied upon receiving written authorization from the Secretary in advance of the application.
- R. The Permittee shall conduct sampling and analysis of the domestic septage, groundwater, site soil, and plant tissue of the crop grown on the site in accordance with the parameters and frequencies set forth in Table 2 of this Certification, as follows:
- (1) Testing of domestic septage shall be conducted on a sample collected prior to the addition of lime,
 - (2) Testing of parameters in septage and EOC parameters in soils and site plant tissue shall be for the total form, reported in units of milligrams per kilogram (mg/kg), dry weight basis.
 - (3) Testing for nutrients in the site soils shall be for the available form (Modified Morgan's extraction), reported in units of milligrams per kilogram (mg/kg).
 - (4) Testing for metals in the groundwater shall be for total dissolved metals and shall be reported in units of milligrams per liter (mg/l) or micrograms per liter ($\mu\text{g/l}$).
 - (5) All testing shall be in accordance with Department's "Procedure Designating Methods for Chemical and Biological Analyses for Residual Wastes", attached as Appendix I of this Certification.
- R. The Permittee shall sample the groundwater monitoring wells at the site, submit the samples for an analysis of the applicable parameters established in Table 2 of this Certification, and have received the analytical results, prior to the onset of each year's land application events conducted during the term of this Certification. Samples shall not be taken more than sixty (60) days prior to the

onset of annual application events.

- S. The Permittee shall notify the Department a minimum of two (2) weeks prior to the first land application event in the Spring.
- T. The Permittee shall verify that there is at least thirty-six (36) inches of separation between the bottom of the zone of incorporation and saturated soil by conducting soil borings or using hand augers at three locations at the interior of each field, or by use of monitoring wells installed on the site. This verification shall be conducted once during each week that septage is applied to the site, prior to its application.
- U. The Permittee shall delineate by the placing of stakes or other suitable markers, those areas of the fields where land application is restricted or prohibited.

RECORD KEEPING AND REPORTING

- V. The Permittee shall electronically submit quarterly reports to the Department by the 15th day of the month following the end of each quarter (April 15, July 15, October 15, and January 15) on forms provided by the Secretary.
- W. All sampling and monitoring results, dates and volumes of lime additions, and calculations for determining application rate shall be included with the appropriate quarterly submittal to the Department.
- X. If the results of any of the required domestic septage monitoring shows an exceedence of a regulatory standard established in the Rules, the Permittee shall notify the Secretary in writing of this fact and reasons for the non-compliance within five (5) days of when the exceedence is detected, together with a proposed strategy for remediation of conditions resulting in the exceedence. If such an exceedence occurs, the Secretary reserves the right to require the Permittee to:
 - (1) conduct studies necessary to determine the source(s) and/or cause(s) of contamination;
 - (2) take actions necessary to control or repair the cause of any impacts; and
 - (3) take actions necessary to remediate any impacts.
- Y. If the results of any of the required groundwater monitoring shows an exceedence of a trigger value specified in Table 1 of this Certification, the Permittee shall notify the Secretary in writing of this fact and reasons for the non-compliance within ten (10) days of when the exceedence is detected, together with a proposed strategy for remediation of conditions resulting in the exceedence. If such an exceedence occurs, the Secretary reserves the right to require the Permittee to:
 - (1) install additional sampling locations and/or require expanded water quality analyses;

- (2) conduct studies necessary to determine the source of contamination;
 - (3) take actions necessary to control or repair the cause of any impacts;
 - (4) take actions necessary to remediate any impacts; and
 - (5) determine and specify the response(s) to be implemented, as authorized in Subchapter 3 of the Investigation and Remediation of Contaminated Properties Rule.
- Z. The Permittee shall give prior notice to the Secretary of any changes planned in the Permittee's septage management practices.
- AA. Complaints regarding odors or other emissions or discharges from the Facility received by the Permittee shall be reported to the Department within twenty-four (24) hours, or on the next business day, with a report of the measures taken to resolve the situation. The Secretary reserves the right to require the Permittee to utilize reasonable measures including, but not limited to, those measures set forth in this Certification and the management plan, to remediate problems associated with odors or other nuisance conditions resulting from the operation of any of the facilities certified herein.
- BB. The Permittee shall maintain all records regarding activities, management practices, complaints, and observations in a secure, dry place for a minimum period of five (5) years following expiration of this Certification.
- CC. Any discharge or emission from the Facility not expressly authorized under the terms and conditions of this Certification shall be reported by the Permittee within twenty-four (24) hours of its occurrence or on the next business day, whichever is later, to the Department and to the local health officer and the select person(s) of the Town of Cambridge.
- DD. The Permittee shall apply for an amendment to this Certification to the Department if the Permittee wishes to pursue the use of alternative land application sites for domestic septage management during the term of this Certification.
- EE. The Permittee shall make any other reports that may be reasonably required by the Secretary during the term of this Certification.

CLOSURE AND POST-CLOSURE REQUIREMENTS

- FF. Upon determination by the Secretary that no further land application will be conducted at the Facility, or upon Permittee's notice that site use is no longer occurring, the Permittee shall comply with the following post-closure requirements:
- (1) provide for control of public access to the site for a period of twelve (12) months following the last application of domestic septage;

- (2) prohibit grazing of domestic food source animals on the site for a period of six (6) months following the last application of domestic septage;
- (3) prohibit production of crops for direct human consumption on the site for a period of thirty-eight (38) months following the last application of domestic septage;
- (4) prohibit the harvest of fiber and feed crops (including silage) on the site for a period of five (5) weeks beyond the last disposal episode;
- (5) prohibit the harvest of turf grown on the site for 12 months after the last disposal episode;
- (6) test the groundwater annually, in the spring after the thaw, for minimum of two years if the site has received seventy-five percent (75%) of the maximum allowable cumulative level based on soil type for any of the metals monitored, or if the Secretary determines a need. The required parameters are listed in this Certification in Table 2. The results shall be submitted to the Department; and,
- (7) test the soils biannually for a minimum of two years if the site has received seventy-five percent (75%) of the maximum allowable cumulative level based on soil type for any of the metals monitored, or if the Secretary determines a need. The required parameters are listed in this Certification in Table 2. The results shall be submitted to the Department.

GENERAL CONDITIONS

- GG. The Permittee shall comply with all existing federal and state laws, rules and regulations that apply to septage use and management, and with all applicable technical standards set forth in Section 405(d) of the federal Clean Water Act, and 40 C.F.R. Part 503. If an applicable management practice or numerical limitation for pollutants in septage more stringent than existing federal and state regulations is promulgated pursuant to Section 405(d) of the federal Clean Water Act, this Certification shall be modified or revoked and reissued to conform to the promulgated regulations. The Permittee shall comply with the limitations no later than the compliance date specified in the applicable regulations as required by Section 405(d) of the federal Clean Water Act and 40 C.F.R. Part 503.
- HH. This Certification does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to private property or any invasion of personal rights.
- II. This Certification is not alienable, transferable, or assignable without prior written approval from the Secretary. Requests for such approval shall include an application for reissuance under the new name and a written agreement which specifies the date of transfer and includes the signatures of the authorized representatives.
- JJ. If the Permittee anticipates that any compliance date or operating condition will not be met, the Permittee shall notify the Secretary in writing of this fact and reasons for the anticipated non-compliance at least five (5) days prior to the compliance date or conditions in question.

- KK. This Certification may be modified or amended for cause during its term with the written approval of the Secretary. If the Secretary determines modification is appropriate, only the conditions subject to modifications are reopened. Until a modification or amendment is granted, all conditions set forth in the Certification remain in full force and effect, pursuant to Section 6-307(a) of the Rules.
 - LL. This Certification may be revoked, in whole or in part, at any time during its effective term in accordance with the Rules.
 - MM. The Permittee agrees to allow Agency personnel access to the Facility during normal business hours to perform such inspections or other activities pursuant to 10 V.S.A. §8005 as may be required to ensure compliance with this Certification, with all applicable statutes, and with the Rules.
 - NN. The Secretary retains the right to require the Permittee to perform any other action deemed necessary in accordance with 10 V.S.A. §6610a.
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TABLE 1:

Groundwater Preventative Action Level (PAL) and Enforcement Standards

Substance	Enforcement Standard (ug/L)	PAL (ug/L)
Arsenic	10	1
Barium	2000	1000
Cadmium	5	1
Chromium	100	50
Copper	1300	650
Lead	15	2
Manganese	300	150
Mercury (inorganic)	2	0.5
Molybdenum	6	3
Nickel	100	50
Nitrate/Nitrite	10000	5000
Polychlorinated Biphenyls	0.5	0.25
Selenium	50	25

Notes:

Concentration levels of other parameters are of concern for determining application rates and monitoring impacts upon the sites used for residuals management. Levels of the other parameters will be evaluated on a case-by-case basis.

An analysis for Total Organic Halides (TOX) may be conducted in lieu of analyzing for PCBs. However, if TOX is detected in concentrations equal to or greater than the applicable regulatory standard, then an analysis specific for PCBs shall be conducted.

TABLE 2
REQUIRED SAMPLING AND TESTING FREQUENCIES

Concentration levels of other parameters are of concern to the Department. Requirements to monitor for other parameters will be evaluated on a case-by-case basis.

<u>PARAMETER</u>	<u>SEPTAGE</u>	<u>SOIL</u>	<u>GROUNDWATER</u>	<u>PLANT TISSUE</u>
Arsenic	Annual	EOC	Annual	EOC
Cadmium	Annual	EOC	Annual	EOC
Chromium	Annual	EOC	Annual	EOC
Copper	Annual	EOC	Annual	EOC
Lead	Annual	EOC	Annual	EOC
Mercury	Annual	EOC	Annual	EOC
Molybdenum	Annual	EOC	Annual	EOC
Nickel	Annual	EOC	Annual	EOC
Selenium	Annual	EOC	Annual	EOC
Zinc	Annual	EOC	None	EOC
Total Kjeldahl Nitrogen	Annual	Annual	None	None
Ammonia-Nitrogen	Annual	Annual	Annual	None
Nitrate-Nitrogen	Annual	Annual	Annual	None
Total Phosphorus	Annual	None	None	EOC
Total Potassium	Annual	None	None	EOC
Polychlorinated Biphenyls (PCBs) ¹	None	EOC	None	None
Percent Solids	Annual	None	None	None
pH	2	Annual	Annual	None
Liming Requirement	None	Annual	None	None
Available Potassium	None	Annual	None	None
Available Magnesium	None	Annual	None	None
Available Phosphorus ³	None	Annual	None	None
Reactive Aluminum	None	Annual	None	None

NOTES:

1: An analysis for Total Organic Halides (TOX) in groundwater or Extractable Organic Halides (EOX) in soil may be conducted in lieu of analyzing for PCBs. However, if TOX or EOX is detected in concentrations or greater than or equal to 0.5 µg/l in the groundwater or greater than or equal to 10.0 mg/kg (dry wt.) in the septage and/or soil, then an analysis specific for PCB's must be conducted.

2: Each load of septage shall be monitored for pH as stipulated by **Condition M** of this certification.

3: Available Phosphorus and Reactive Aluminum in soil analysis via Modified Morgan Extraction Method.

Septage: Sample once in the first quarter of each year prior to lime stabilization.

Soil: Annual sampling should be completed once in fall.

Groundwater: Annual sampling should be completed once in spring.

EOC: Sampling prior to the end of the certification, such that the results may be submitted with the requirements established in **Conditions G**. This monitoring is not required if septage is not applied during the term of this certification.

None: No sampling or testing is required for that parameter.

The Department issuance of this Solid Waste Management Facility Certification relies upon the data, judgment, and other information supplied by the Permittee, the hired professional consultants and other experts who have participated in the preparation of the Application.

The Department makes no assurances that the system certified herein will meet performance objectives of the operator and no warranties or guarantees are given or implied.

The Department staff has reviewed the above project and application and finds it to conform with current technical standards. It is recommended that the foregoing findings be made and the Solid Waste Management Facility Certification be issued.

I do affirmatively make the findings as recommended by the staff and approve this Certification.

Dated this **(TBD)** day, at Montpelier, Vermont.

AGENCY OF NATURAL RESOURCES

Peter Walke, Commissioner
Department of Environmental Conservation

BY: _____
Chuck Schwer, Director
Wastewater Management Division
Department of Environmental Conservation

APPENDIX I

“Procedure Designating Methods for Chemical and Biological Analyses for Residual Waste Management”

Updates to this Procedure will be posted to the Residuals Management Section web page at:

<http://www.watershedmanagement.vt.gov/ww/html/residuals.htm>

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Vermont Agency of Natural Resources
Department of Environmental Conservation

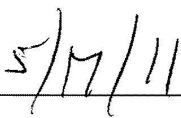
Procedure Designating Methods for Chemical and Biological Analyses
for Residual Waste Management

This procedure establishes the acceptable test methods for the chemical and biological analysis of residual solid wastes, groundwater, soil, and plant tissue as may be required under Subchapter 14 of the Vermont Solid Waste Management Rules. Alternative test methods may be used for any analysis required by Subchapter 14 only with prior written approval by the Secretary of the Vermont Agency of Natural Resources or his/her designee.

For the purposes of Table 1 of this Procedure, "sludges" is defined to include wastewater treatment sludge and/or biosolids, septage, composted and heat dried biosolids products, and any other biosolids derived products.



David K. Mears, Commissioner – VTDEC



date

APPENDIX 1A

**Methods for the Analysis of Sludges, Short Paper Fiber,
Wood Ash, and Water Treatment Residual Wastes**

APPENDIX 1A

<u>Analyte</u>	<u>CAS #</u>	<u>Required Analytical Method(s)</u>	<u>Sample Container</u>	<u>Preservation</u>	<u>Reporting Units</u>
<u>Total Metals</u>					
Arsenic	7440-38-2	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Barium	7440-39-3	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Cadmium	7440-43-9	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Calcium	7440-70-2	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Chromium	7440-47-3	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Cobalt	7440-48-4	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Copper	7440-50-8	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Lead	7439-92-1	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Magnesium	7439-95-4	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Mercury	7439-97-6	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Molybdenum	7439-98-7	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Nickel	7440-02-0	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Selenium	7782-49-2	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Silver	7440-22-4	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Zinc	7440-66-6	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
<u>TCLP</u>	multiple	SW-846, Method 1311	amber glass	cool to 4°C	mg/l
<u>Volatile Organics</u>	multiple	SW-846, Method 8260	amber glass	cool to 4°C	mg/kg dry wt.
<u>Semi-volatile Organics</u>	multiple	SW-846, Method 8270	amber glass	cool to 4°C	mg/kg dry wt.
<u>Polychlorinated aromatics</u>					
PCB-1242	53469-21-9	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.
PCB-1254	11097-69-1	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.
PCB-1221	11104-28-2	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.
PCB-1232	11141-16-5	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.
PCB-1248	12672-29-6	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.
PCB-1260	11096-82-5	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.
PCB-1016	12674-11-2	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.
Chlorinated dibenzodioxins and dibenzofurans	multiple	SW-846, Method 1613B	amber glass w/ Teflon lined cap	cool to 4°C	pg/kg and parts per trillion TEQ
PCBs in short paper fiber	multiple	SW-846, Method 1668A	amber glass w/ Teflon lined cap	cool to 4°C	pg/kg and parts per trillion TEQ

**Methods for the Analysis of Sludges, Short Paper Fiber,
 Wood Ash, and Water Treatment Residual Wastes**

Note:

<u>Analyte</u>	<u>CAS #</u>	<u>Required Analytical Method(s)</u>	<u>Sample Container</u>	<u>Preservation</u>	<u>Reporting Units</u>
<u>Pathogen Indicators</u>					
Fecal Coliform	na	SW-846, Method 1681	sterile glass or sterile plastic	cool to 4°C	MPN / g
Salmonella	na	SW-846, Method 1682	sterile glass or sterile plastic	cool to 4°C	MPN / 4 g
Helminth Ova	na	EPA 600/1-87-014	sterile glass or sterile plastic	cool to 4°C	viable ova/ 4 g
Enteric Viruses	na	ASTM D 4994-89	sterile glass or sterile plastic	cool to 4°C	PFU / 4 g
<u>Nutrients</u>					
Nitrate/Nitrite	NO ₃ 1479-76-50 NO ₂ 7697-37-2	SW-4500-NO ₃ or SW-846 Method 9210 or EPA 353, 3000 series	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
TKN	na	SM-4500-N _{org} or EPA 351.3	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
Ammonia	na	SM-4500-NH ₃ or EPA 350	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
Total Organic Nitrogen	na	calculation	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
Total Phosphorus	7723-14-0	SM-4500-P or EPA 365	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
Water Extractable phosphorus	7723-14-0	Universal Water Extractable P Test for Manure and Biosolids (see note below)	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
Total Potassium	7440-97	SM-3500K or SW-846 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
<u>Compost Stability</u>					
	na	TBD			
<u>Other</u>					
pH	na	SM-4500H	glass or plastic	cool to 4°C	Standard Units (S.U.)
Total Solids	na	SM-2540G	glass or plastic	cool to 4°C	%

Determining water extractable P in animal manure and biosolids

Ann Wolf, Pennsylvania State University

Philip Moore, Jr., USDA-ARS, Fayetteville, AR

Peter Kleinman, USDA-ARS, University Park, PA

Dan Sullivan, University of Oregon

http://www.aasl.psu.edu/Water-soluble%20P%20Test%201_100%20ratio.pdf

APPENDIX 1B

Methods for the Analysis of Soils

<u>Analyte</u>	<u>CAS #</u>	<u>Required Analytical Method(s)</u>	<u>Sample Container</u>	<u>Preservation</u>	<u>Reporting Units</u>
Total Metals					
Aluminum	7429-90-5	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Arsenic	7440-38-2	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Barium	7440-39-3	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Cadmium	7440-43-9	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Calcium	7440-70-2	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Chromium	7440-47-3	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Cobalt	7440-48-4	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Copper	7440-50-8	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Lead	7439-92-1	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Magnesium	7439-95-4	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Mercury	7439-97-6	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Molybdenum	7439-98-7	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Nickel	7440-02-0	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Selenium	7782-49-2	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Zinc	7440-66-6	SW-846, 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt.
Polychlorinated aromatics					
PCB-1242	53469-21-9	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.
PCB-1254	11097-69-1	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.
PCB-1221	11104-28-2	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.
PCB-1232	11141-16-5	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.
PCB-1248	12672-29-6	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.
PCB-1260	11096-82-5	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.
PCB-1016	12674-11-2	SW-846, Method 8081/8082	amber glass	cool to 4°C	mg/kg dry wt.

APPENDIX 1B

Methods for the Analysis of Soils

<u>Analyte</u>	<u>CAS #</u>	<u>Required Analytical Method(s)</u>	<u>Sample Container</u>	<u>Preservation</u>	<u>Reporting Units</u>
<u>Nutrients</u>					
Nitrate/Nitrite	NO ₃ 1479-76-50 NO ₂ 7697-37-2	SW-4500-NO ₃ or SW-846 Method 9210 or EPA 353, 3000 series	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
TKN	na	EPA 351.3/350.1	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
Ammonia	na	EPA 351.3/350.1	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
Total Organic Nitrogen	na	calculation	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
Total Phosphorus	7723-14-0	SM-4500-P or EPA 365.1	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
Water Extractable phosphorus	7723-14-0	Modified Morgan Extraction	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
Reactive Aluminum	NA	Modified Morgan Extraction	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
Total Potassium	7440-09-7	SM-3500K or SW- 846 6000/7000 series	glass or plastic	cool to 4°C	mg/kg dry wt. (or %)
<u>Other</u>					
pH	na	EPA 150.1	glass or plastic	cool to 4°C	Standard Units (S.U.)

APPENDIX 1C

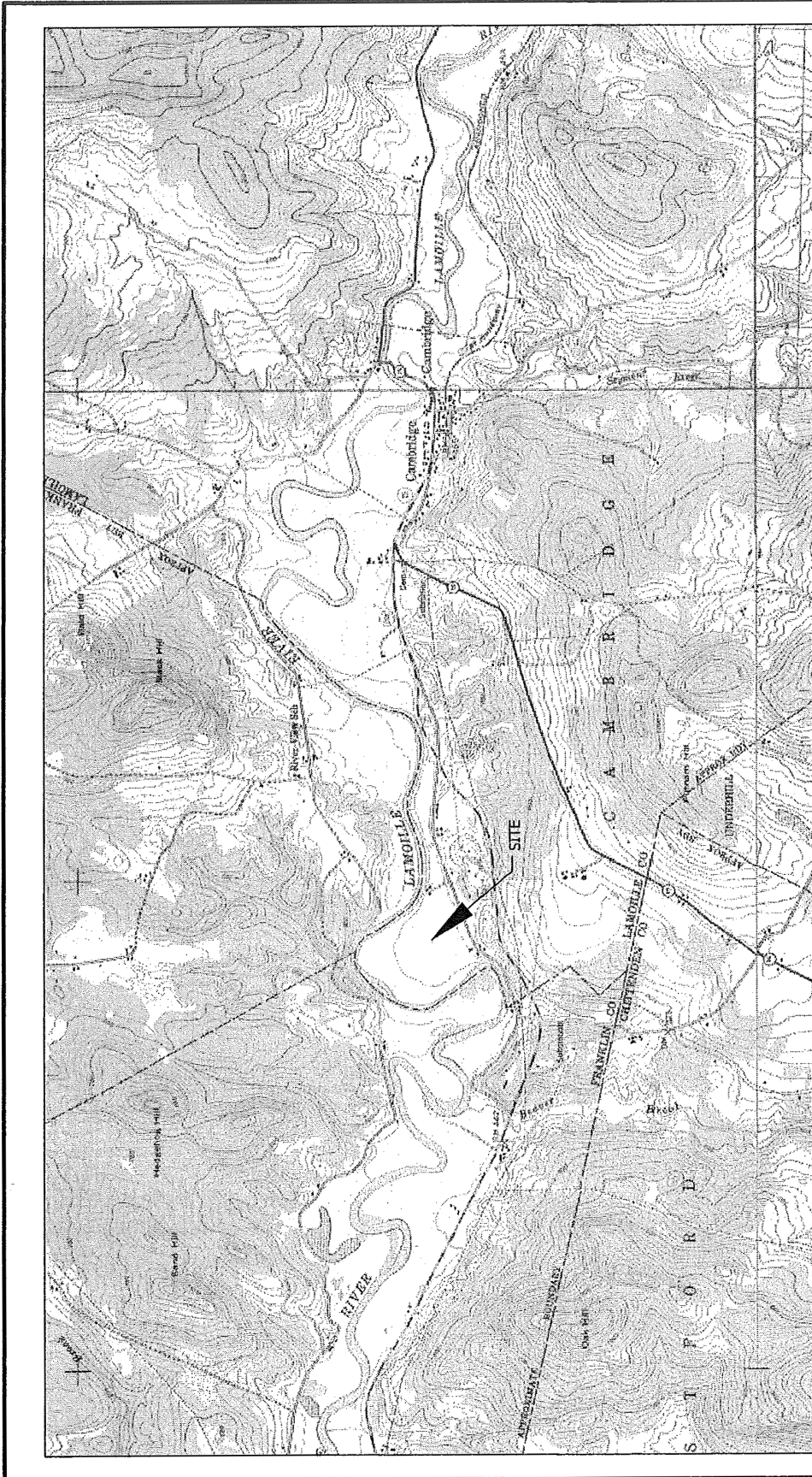
Methods for the Analysis of Groundwater

<u>Analyte</u>	<u>CAS #</u>	<u>Required Analytical Method(s)</u>	<u>Sample Container</u>	<u>Preservation</u>	<u>Reporting Units</u>
<u>Dissolved Metals</u>					
Arsenic	7440-38-2	SM 18 3113	glass or plastic	cool to 4°C	mg/l
Barium	7440-39-3	SM 3111D	glass or plastic	cool to 4°C	mg/l
Cadmium	7440-43-9	SM 18 3113	glass or plastic	cool to 4°C	mg/l
Chromium	7440-47-3	SM 18 3113	glass or plastic	cool to 4°C	mg/l
Copper	7440-50-8	SM 18 3113	glass or plastic	cool to 4°C	mg/l
Lead	7439-92-1	SM 18 3113	glass or plastic	cool to 4°C	mg/l
Mercury	7439-97-6	EPA 245.1	glass or plastic	cool to 4°C	mg/l
Molybdenum	7439-98-7	SM 18 3113	glass or plastic	cool to 4°C	mg/l
Nickel	7440-02-0	SM 18 3113	glass or plastic	cool to 4°C	mg/l
Selenium	7782-49-2	SM 18 3113	glass or plastic	cool to 4°C	mg/l
Zinc	7440-66-6	SM 18 3113	glass or plastic	cool to 4°C	mg/l
<u>Nutrients</u>					
Nitrate	1479-76-50	EPA 352.2	glass or plastic	cool to 4°C	mg/l
TKN	na	EPA 351.3/350.1	glass or plastic	cool to 4°C	mg/l
Ammonia	na	EPA 350.3/350.1	glass or plastic	cool to 4°C	mg/l
Total Organic Carbon	na	EPA 9060	glass or plastic	cool to 4°C	mg/l
Total Phosphorus	7723-14-0	EPA 365.1	glass or plastic	cool to 4°C	mg/l
Chloride	na	EPA 325.2	glass or plastic	cool to 4°C	mg/l
<u>Other</u>					
pH	na	EPA 150.1	glass or plastic	cool to 4°C	Standard Units (S.U.)
Total Dissolved Solids	na	SM 18 2540C	glass or plastic	cool to 4°C	mg/l

TABLE 1D

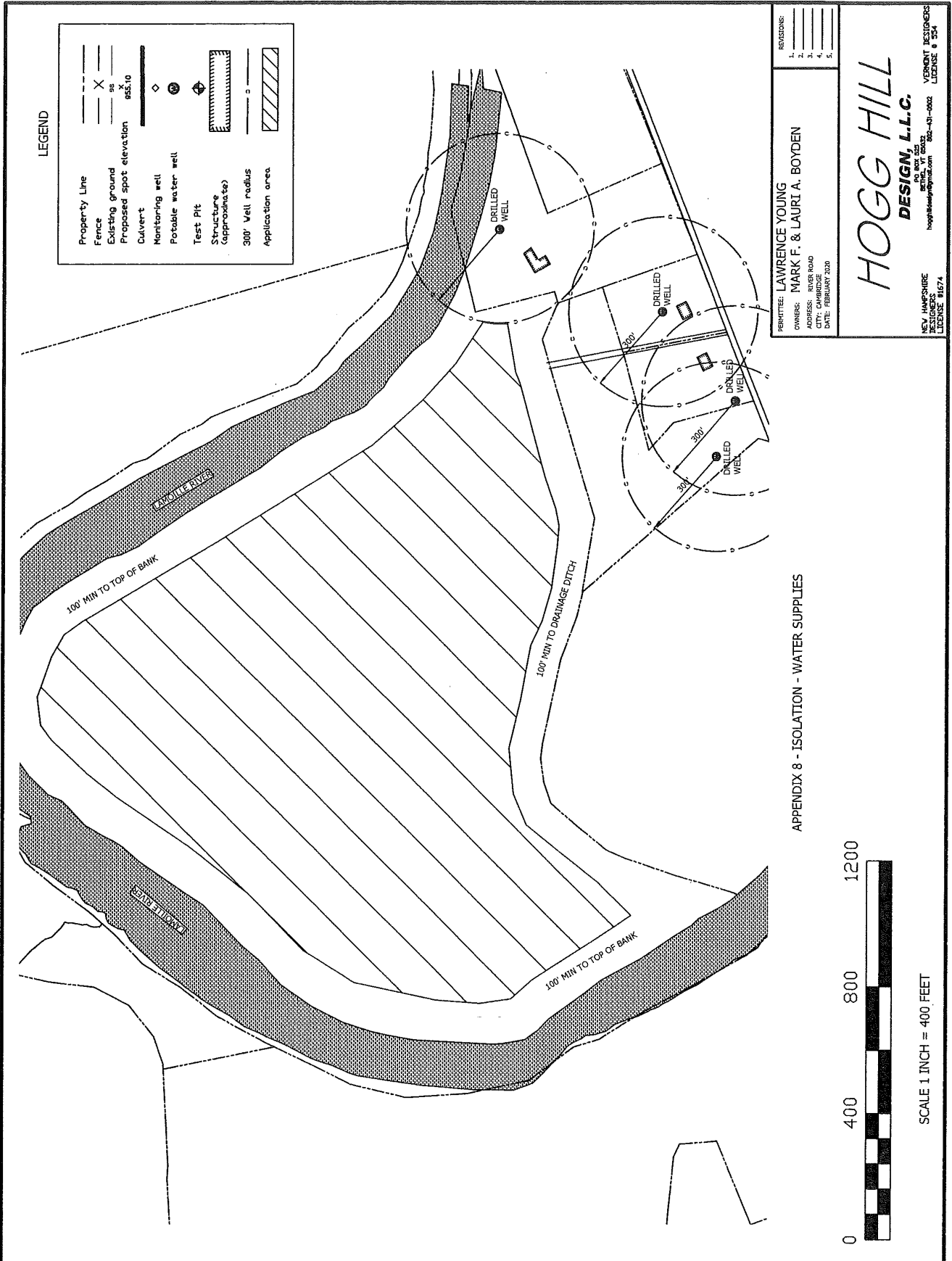
Methods for the Analysis of Plant Tissue

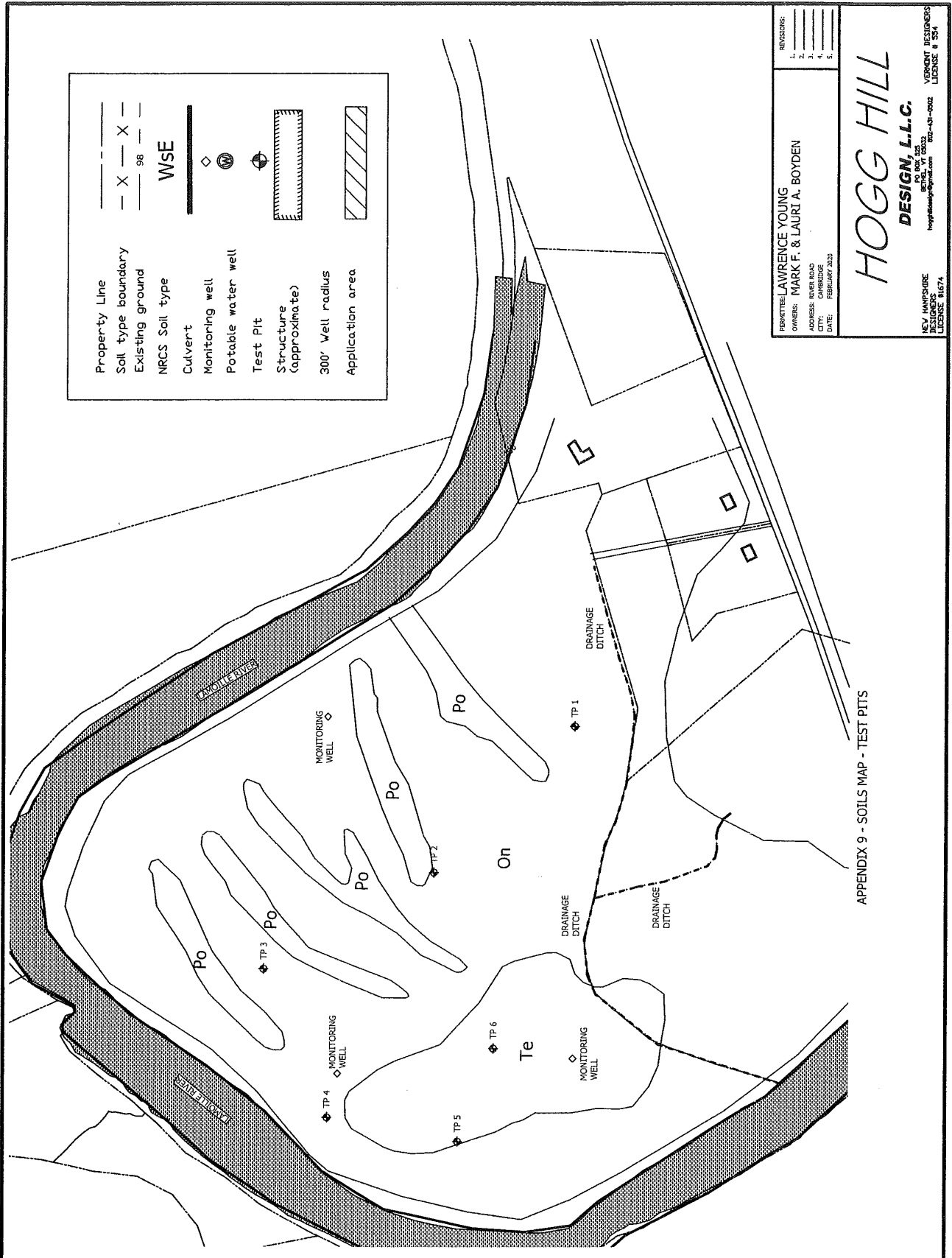
<u>Analyte</u>	<u>CAS #</u>	<u>Required Analytical Method(s)</u>	<u>Sample Container</u>	<u>Preservation</u>	<u>Reporting Units</u>
<u>Total Metals</u>					
Arsenic	7440-38-2	EPA 6010	glass or plastic	cool to 4°C	mg/kg
Barium	7440-39-3	EPA 6010	glass or plastic	cool to 4°C	mg/kg
Cadmium	7440-43-9	EPA 6010	glass or plastic	cool to 4°C	mg/kg
Chromium	7440-47-3	EPA 6010	glass or plastic	cool to 4°C	mg/kg
Copper	7440-50-8	EPA 6010	glass or plastic	cool to 4°C	mg/kg
Lead	7439-92-1	EPA 6010	glass or plastic	cool to 4°C	mg/kg
Mercury	7439-97-6	EPA 7471	glass or plastic	cool to 4°C	mg/kg
Molybdenum	7439-98-7	EPA 6010	glass or plastic	cool to 4°C	mg/kg
Nickel	7440-02-0	EPA 6010	glass or plastic	cool to 4°C	mg/kg
Selenium	7782-49-2	EPA 6010	glass or plastic	cool to 4°C	mg/kg
Zinc	7440-66-6	EPA 6010	glass or plastic	cool to 4°C	mg/kg
<u>Other</u>					
Total Nitrogen	7727-37-9	EPA 351.3	glass or plastic	cool to 4°C	mg/kg
Total Phosphorus	7723-14-0	EPA 365.1	glass or plastic	cool to 4°C	%
Total Potassium	7440-09-7	EPA 6010	glass or plastic	cool to 4°C	mg/kg



APPENDIX 6 - USGS SITE LOCATION

PREPARED BY: LAWRENCE YOUNG OWNER: ROBERT & LINDA SWEET ADDRESS: 509 FLETCHER ROAD CITY: FERRISBURGH STATE: VT DATE: APRIL 2012	REVISIONS: 1. _____ 2. _____ 3. _____ 4. _____ 5. _____
<h1>HOGG HILL</h1> <h2>DESIGN, L.L.C.</h2> <p> NO. 807 553 ROUTE 171 BOX 223 FERRISBURGH VERMONT 05749 PHONE 802-253-4000 FAX 802-253-4002 LICENSE # 81674 </p>	





PERMITTEE: LAWRENCE YOUNG
 OWNERS: MARK F. & LAURI A. BOYDEN
 ADDRESS: SILVER ROAD
 CITY: CARROLLTON
 DATE: FEBRUARY 2022

REVISIONS:
 1. _____
 2. _____
 3. _____
 4. _____
 5. _____

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 HOGG HILL, VT 05643
 hoggdesign.com
 802-431-0802
 VERMONT DESIGNER LICENSE # 254
 NEW HAMPSHIRE DESIGNER LICENSE # 8174

APPENDIX 9 - SOILS MAP - TEST PITS