

HAZARDOUS WASTE FACILITY PERMIT

In compliance with the provisions of the Vermont Waste Management Act, as amended,
(10 V.S.A. Chapter 159)

**University of Vermont and State Agricultural College
Environmental Safety Facility
BioResearch Complex
667 Spear Street
Burlington, Vermont 05405**

EPA ID: VTD000636563


is authorized to operate a hazardous waste storage facility and perform certain hazardous waste treatment activities at the above location in accordance with the conditions and requirements set forth in this permit.

This permit shall become effective on the date of signing.

Signed this 20th day of NOVEMBER, 2012

David K. Mears, Commissioner
Department of Environmental Conservation

By


George Desch, Director
Waste Management & Prevention Division
Department of Environmental Conservation
103 South Main Street/West Office Building
Waterbury, Vermont 05671-0404

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**State of Vermont
Agency of Natural Resources**

HAZARDOUS WASTE FACILITY PERMIT

**10 V.S.A. Chapter 159
Vermont Hazardous Waste Management Regulations § 7-504**

Applicant: University of Vermont and State Agricultural College
Department of Risk Management
BioResearch Complex
667 Spear Street
Burlington, VT 05405

EPA ID No: VTD000636563

Facility: University of Vermont and State Agricultural College
Environmental Safety Facility
BioResearch Complex
667 Spear Street
Burlington, VT 05405

Permit Period: Ten (10) years from date of signing

FINDINGS OF FACT

1. The University of Vermont and State Agricultural College (hereafter called UVM) is a public institution of higher education. The Environmental Safety Facility (hereafter called facility or ESF) is a hazardous waste treatment and storage facility owned and operated by UVM and located at 667 Spear Street in Burlington, Vermont. The ESF is used by UVM to provide hazardous waste management services to its various administrative, academic and research departments. UVM also supports local community hazardous waste collection activities through this facility. A description and drawings of the ESF are provided in Appendix B of this permit.
2. The ESF was first issued a hazardous waste facility permit on June 12, 1991. The facility's most recent renewal permit was issued on July 14, 2006, and expired on July 14, 2011. Through UVM's submittal of a timely and administratively complete renewal application on January 14, 2011, the permit issued on July 14, 2006, was continued in full force and effect pursuant to the Vermont Hazardous Waste Management Regulations (hereafter called VHWMR) § 7-504(h).
3. This permit will govern the hazardous waste storage and treatment activities at the ESF pursuant to 10 V.S.A. Chapter 159 and the VHWMR.

4. UVM has submitted information determined by the Agency to be equivalent to a RCRA Facility Assessment (RFA) and RCRA Facility Investigation (RFI). This information is included in the administrative record for the ESF within the Waste Management & Prevention Division's Sites Management Section file # **[95-1786]**. This information describes whether any releases or likely releases have occurred. Any required corrective action at this facility is identified in **Section 11** of this permit.
5. On February 11, 1997, the Agency sent UVM a letter stating that, based on the results of annual groundwater monitoring conducted at the ESF, the Agency determined that contaminant concentrations detected in groundwater do not pose a significant threat to human health and the environment, quantifiable impact or risk to receptors were not identified from the contamination detected on site, and therefore site management activities were completed at the ESF.
6. At this time, there is no known release of hazardous constituents to the environment at the ESF, and in accordance with **40 CFR Part 264 Subparts F and S**, no corrective action, as referenced in **Section 11** of this permit, is necessary at this time.
7. A list of permits issued to UVM for its ESF is found in **Appendix M** of this permit.

CONDITIONS

Section 1: General Conditions

- 1.1 For the purposes of this permit, the terms used herein shall have the same meaning as those in the VHWMR and 40 CFR Parts 124, 264, 266, 268 and 270, unless this permit specifically states otherwise. Where terms are not defined in the VHWMR, 40 CFR, or the permit, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.
- 1.2 As used in this permit, the term “permit” has the same meaning as “certification” as used in the VHWMR and 10 VSA § 6606.
- 1.3 As used in this permit, the term “Director” means:

Division Director - Waste Management & Prevention Division
Department of Environmental Conservation
Vermont Agency of Natural Resources
- 1.4 As used in this permit, the term “waste” means hazardous waste, non-hazardous waste and waste that is exempted or conditionally exempted from regulation under the VHWMR.
- 1.5 “Secretary” means the Secretary of the Vermont Agency of Natural Resources or his or her duly authorized representative. When implementing the provisions of **10 V. S. A. §§ 6608a and 6608b** relating to economic poisons and low-level radioactive wastes, the term

Secretary includes the Secretary of Agriculture, Food & Markets and the Commissioner of Health.

- 1.6 “RCRA” means Resource Conservation and Recovery Act (RCRA) of 1976, (42 USC 6901 et seq.).
- 1.7 UVM shall maintain compliance with the VHWMR as amended. UVM shall modify this permit in accordance with **Condition 2.5** if an amendment to the VHWMR results in conflict between the permit and the amended VHWMR.
- 1.8 The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance is held invalid, such a determination shall not have any effect on the validity of the remainder of the permit, or on the application of the provision to other circumstances.
- 1.9 The permit does not convey any property rights of any sort, or any exclusive privilege.
- 1.10 This permit is not transferable to any person except after notice to the Secretary. The Secretary may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under **40 CFR § 270.40**.
- 1.11 UVM shall comply with all applicable statutes, rules, and regulations of any federal, state, or local authority as may be amended. This permit shall not be a shield to the continued conformance to regulatory requirements.
- 1.12 The Secretary may require UVM to establish and maintain an information repository at any time, based on the factors set forth in **40 § CFR 124.33(b)**. The information repository will be governed by the provisions in **40 CFR §§ 124.33(c) through (f)**.
- 1.13 All waste received by the ESF, including any hazardous waste, non-hazardous waste and waste that is exempted or conditionally exempted from regulation under the VHWMR, shall be managed according to the terms of this permit, as renewed and modified.

Section 2: Duration, Modification and Renewal of Permit

- 2.1 This permit shall be effective for 10 years from the date of signing.
- 2.2 If UVM wishes to continue an activity regulated by this permit after the expiration date of this permit, UVM must apply for and obtain a new permit.
- 2.3 If UVM wishes to continue an activity regulated by this permit after the expiration date of this permit, UVM shall submit a new application at least 180 days before the expiration date of this permit, unless permission for a later date has been granted by the Secretary. (**see 40 CFR § 270.10(h)**)

- 2.4 This permit and all conditions will remain in effect beyond the permit's expiration date, if UVM has submitted a timely, administratively complete application for a renewed permit, and, through no fault of UVM, the Secretary has not issued a new permit. Permits continued under this section remain fully effective and enforceable.
- 2.5 If any of the causes for modification found in **VHWMR §7-507(e)** apply, UVM shall seek a permit modification prior to making physical alterations or operational changes. Class I modifications for which prior approval is not required under **40 CFR § 270.42** may be implemented without prior notice or approval by the Secretary if notice of the modification is submitted to the Director within seven (7) calendar days after the change is put into effect.
- 2.6 This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by UVM for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

Section 3: Compliance and Enforcement

- 3.1 UVM shall allow the Secretary, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:
 - (a) Enter at reasonable times upon the UVM premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
 - (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
 - (d) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by RCRA, any substances or parameters at any location.
- 3.2 UVM shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. UVM may not treat, store, or dispose of hazardous waste in any modified portion of the facility except as provided in **40 CFR § 270.42**, until:
 - (a) UVM has submitted to the Director by certified mail or hand delivery a letter signed by UVM and a registered professional engineer stating that the facility has been constructed or modified in compliance with the permit; and
 - (b) (i) The Director has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of the permit; or

(ii) Within 15 days of the date of submission of the letter in paragraph (a) of this condition, UVM has not received notice from the Director of his or her intent to inspect, prior inspection is waived and UVM may commence treatment, storage, or disposal of hazardous waste.

- 3.3 Notwithstanding any other provisions of this permit, enforcement actions may be brought pursuant to **10 V.S.A. Chapters 159, 201, and 211.**
- 3.4 It shall not be a defense for UVM in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- 3.5 Compliance with the terms of this permit does not constitute a defense to any order issued or any action brought under 10 V.S.A. Chapters 159, 201, or 211, or Sections 3008(a), 3008(h), 3013, or 7003 of the Resource Conservation and Recovery Act (RCRA) of 1976, (42 USC 6901 et seq.) or § 106(a), 104 or 107 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 (42 U.S.C. 9601 et seq.), or any other law providing for protection of public health or the environment.
- 3.6 In the event that the land on which the facility is located is transferred to a new owner, any actions or inactions of the land owner, or refusal by the land owner to provide access to UVM or the Secretary, shall not be a defense for UVM for any non-compliance with this permit or the VHWMR.

Section 4: Duties of the Permit Holder

- 4.1 UVM must comply with all conditions of this permit, except that UVM need not comply with the conditions of this permit to the extent and for the duration such noncompliance is authorized in an emergency permit. Any permit noncompliance, except under the terms of an emergency permit, constitutes a violation of the appropriate Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
- 4.2 In the event of noncompliance with the permit, UVM shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.
- 4.3 UVM shall furnish to the Secretary, within a reasonable time, any relevant information which the Secretary may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. UVM shall also furnish to the Secretary, upon request, copies of records required to be kept by this permit.
- 4.4 UVM shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.

- 4.5 The Contingency Plan contained in **Appendix G** of this permit shall be reviewed and, if necessary amended in accordance with **Condition 2.5** of this permit, whenever:
- (a) This permit is amended;
 - (b) The plan is implemented;
 - (c) The facility changes (in its design, construction, operation, maintenance or other circumstances) in a way that materially increases the potential for fires, explosions, or the release of a hazardous waste or its constituents, or changes the response to an emergency;
 - (d) The list of emergency coordinators changes; or
 - (e) The list of emergency equipment changes.
- 4.6 UVM shall submit a copy of the Contingency Plan, and all amendments of that plan, to the local police department, fire department, hospital(s) and any other state or local emergency service provider(s) that may be called upon in the event of an emergency. A record of transmittal of the Contingency Plan to each service provider named above shall be maintained at the facility.
- 4.7 UVM shall attempt to maintain emergency service arrangements with the state and local authorities specified in **Condition 4.6**. If any of these authorities decline to enter into such an arrangement, UVM must document this refusal in the facility operating record.
- 4.8 UVM shall retain copies of all reports required by the terms and conditions of this permit and records of all data used to complete its permit application for at least three (3) years from the date of the report or the submission of the application. This retention period and other retention periods required by the terms and conditions of this permit shall be automatically extended during the pendency of any unresolved enforcement action involving UVM.
- 4.9 UVM shall maintain a written operating record, either at the facility or at an alternative location approved by the Secretary, which includes all applicable requirements of **40 CFR § 264.73** and any additional requirements listed below. The following information shall be maintained, as it becomes available, in the operating record until facility closure is completed in accordance with **Section 9** of this permit.
- (a) A description and the quantity of each hazardous waste received at the facility and the method(s) and date(s) of its receipt, treatment or storage;
 - (b) A current inventory of each hazardous waste within the facility and the quantity at each location. This information must include cross-references to specific manifest document numbers, if the waste is accompanied by a manifest;
 - (c) Records and results of any waste screening or analysis performed (**Appendix I** of this permit);

- (d) The contingency plan and all amendments, and a notation of the time, date and details of any incident that requires implementation of the Contingency Plan (**Appendix G** of this permit);
- (e) Records and results of inspections (except these data need be kept only 3 years);
- (f) Monitoring, testing or analytical data and corrective action where required by **40 CFR § 264.191, § 264.193, § 264.195 and § 264.1064**;
- (g) Notices to generators as specified in **40 CFR § 264.12(b)** (notice of appropriate permits and waste acceptance);
- (h) The closure plan, the initial closure cost estimate, and all subsequent closure cost estimates prepared under **Conditions 9.2 and 9.3**;
- (i) Plans submitted in accordance with **10 V.S.A., § 6629** (Toxic Use Reduction and Hazardous Waste Reduction Plan);
- (j) Records demonstrating that storage of hazardous waste at the facility for a period beyond one year was necessary for the purpose of accumulation of quantities of hazardous waste necessary to facilitate proper recovery, treatment or disposal. These records shall be required beginning when storage has been for a period of one year;
- (k) A record of refusal by any state and local authority as stated under **Condition 4.7** of this section, who declines to enter into an arrangement to provide emergency services to the facility;
- (l) Records of hazardous waste storage area containment surface inspections required under **Condition 4.19**; and
- (m) A copy of the current information provided to state and local authorities and first responders for the purpose of emergency preparedness and prevention pursuant to **Condition 4.18**.

4.10 UVM shall maintain the following personnel documents and records at the facility:

- (a) A listing of the job title for each position at the facility related to hazardous waste management and the name of the employee filling that position;
- (b) A written job description for each position listed above which includes the requisite skill, education, or other qualification, and duties of employees assigned to the position;
- (c) A written description of the employee training required for each position listed in Appendix H of this permit; and

- (d) Records verifying that the employee training program contained in **Appendix H** of this permit has been presented to, and completed by, appropriate facility personnel.
- 4.11 Training records on current ESF personnel shall be kept until facility closure is completed in accordance with **Section 9** of this permit. Training records on former employees shall be kept for at least three (3) years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within UVM. Personnel training records for current and past ESF personnel may be kept in a central database maintained by UVM's human resources department.
- 4.12 UVM shall follow the waste analysis procedures contained in **Appendix I** of this permit.
- 4.13 Prior to accepting waste from a source, UVM shall follow the waste approval process described in the Waste Analysis Plan contained in **Appendix I** of this permit. At a minimum, the waste approval process shall identify for each waste all of the information necessary for shipment to, and acceptance by, an appropriate treatment, storage and disposal facility.
- 4.14 All sampling, monitoring, and/or analysis performed in relation to activities covered by this permit shall be performed according to the appropriate method specified in the edition of "Test Methods for Evaluating Solid Waste, SW-846, Standard Methods of Wastewater Analysis", or an equivalent method, such as those developed by the American Society for Testing and Materials (ASTM) incorporated in the VHWMR by reference or approved by EPA through rulemaking or by the Agency in writing. If other methods are to be used, UVM shall receive approval from the Secretary prior to utilizing the method. The Secretary may reject any data that does not meet the requirements of EPA analytical methods and may require re-sampling and additional analysis.
- 4.15 UVM shall document the name(s), address(es), and telephone number(s) of any consultant(s) and/or laboratory(ies) retained by UVM to perform sampling, monitoring, and/or analysis required by the Waste Analysis Plan contained in **Appendix I** of this permit.
- 4.16 UVM shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, the certification required by **40 CFR § 264.73(b)(9)**, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report, certification, or application. This period may be extended by request of the Secretary at any time. UVM shall maintain records from all ground-water monitoring wells and associated ground-water surface elevations, for the active life of the facility.

Records for monitoring information shall include:

- (a) The date, exact place, and time of sampling or measurements;
- (b) The individual(s) who performed the sampling or measurements;

- (c) The date(s) analyses were performed;
 - (d) The individual(s) who performed the analyses;
 - (e) The analytical techniques or methods used; and
 - (f) The results of such analyses.
- 4.17 UVM shall submit to the Director, upon request, the results of all sampling and/or tests or other data generated pursuant to **Section 11** (Corrective Action) of this permit.
- 4.18 UVM shall provide written information regarding waste quantities, types, and locations at the facility, to state and local authorities (including SERCs and LEPCs) and first responders for the purpose of emergency preparedness and prevention, and place a copy of this information in the facility's operating record. Such information shall be updated as necessary, and the updates shall be provided to state and local authorities and first responders. The written information shall also describe the layout of the facility, locations where personnel normally work, and entrances and possible evacuation routes.
- 4.19 UVM shall inspect each hazardous waste storage area containment surface at least once every five (5) years by removing the grates from the surface of the secondary containment system and assessing the surface area below to ensure that the all surfaces are free of cracks or gaps per **40 CFR §264.175(b)(1)**. The inspector's name, date of inspection and inspection findings shall be recorded in the written facility operating record pursuant to **Condition 4.9(I)**.

Section 5: Facility Design and Operation

- 5.1 UVM shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by UVM to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.
- 5.2 UVM shall design, maintain and operate the facility in a manner which minimizes the possibility of a fire, explosion, or any unplanned, sudden or non-sudden release of a hazardous waste or hazardous waste constituents to air, soil, surface waters or groundwater which could threaten human health or the environment. At a minimum, UVM shall maintain and operate the facility in accordance with the preparedness and prevention procedures contained in **Appendix G** of this permit.
- 5.3 UVM shall immediately carry out the provisions of the Contingency Plan contained in **Appendix G** of this permit whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

- 5.4 Spills, leaks, drips and other discharges which occur as a result of the storage, loading, transfer, or other handling of hazardous waste shall be immediately cleaned up in accordance with the procedures described in the Contingency Plan contained in **Appendix G** of this permit. Any spill debris generated from such events shall be managed in accordance with this permit and the VHWMR.
- 5.5 UVM shall inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing, or may lead to, release of hazardous waste constituents to the environment, or a threat to human health. UVM shall conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment. At a minimum, UVM shall follow the facility inspection schedules contained in **Appendix J** of this permit.
- 5.6 UVM shall remedy any deterioration or malfunction of equipment or structures which the inspection reveals on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action shall be taken immediately in accordance with the Contingency Plan contained in **Appendix G** of this permit.
- 5.7 Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- 5.8 All monitoring equipment required by this permit shall be properly installed, used and maintained and the appropriate monitoring methods used.
- 5.9 Hazardous waste treatment, storage, or disposal activities other than those specified in this permit are prohibited.
- 5.10 UVM may receive from off-site, store and treat only those wastes specified in **Appendix C** of this permit.
- 5.11 UVM shall store and treat waste only in those areas of the ESF designated in **Appendix B** of this permit.
- 5.12 The maximum amount of hazardous waste in storage at any point in time shall not exceed 188 fifty-five (55) gallon drums or its equivalent of the hazardous wastes specified in **Appendix C** of this permit, including no more than 20 fifty-five (55) gallon drums or its equivalent in each of the rooms in the main ESF that are designated as waste storage areas in **Appendix B**, and eight fifty-five (55) gallon drums or its equivalent in the separate reactives building.
- 5.13 UVM shall maintain aisle space between rows of containerized waste stored at the facility that is sufficient to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment and decontamination equipment. In no circumstance shall the aisle space be less than 24 inches wide.
- 5.15 UVM shall manage all containerized waste stored at the facility in accordance with the procedures in **Appendix E** of this permit.

- 5.16 All wastes accepted by the ESF shall be shipped to a designated facility within one year, unless it can be demonstrated that insufficient quantities exist to facilitate proper recovery, treatment or disposal. Records demonstrating the storage of hazardous waste at the facility that was necessary for a period beyond one year shall be recorded in the written facility operating record pursuant to **Condition 4.9(j)**.
- 5.16 UVM shall maintain at the facility the equipment identified in **Appendix G** of this permit.
- 5.17 UVM shall prevent the unknowing entry of, and minimize the possibility for unauthorized entry of, persons or livestock onto any portion of the facility. UVM shall maintain security devices and warning signs in accordance with the Security Plan contained in **Appendix F** of this permit.
- 5.18 Any work plans developed for the purposes of closure, post-closure, or corrective action shall be approved by the Secretary prior to implementation.
- 5.19 UVM may conduct only those treatment activities specified in **Appendix E** of this permit.

Section 6: Reporting Requirements

- 6.1 All applications, reports, or information submitted to the Director shall be signed and certified in accordance with **VHWMR § 7-108**.
- 6.2 All reports, notifications, and submissions required by this permit shall be sent by certified mail with shipment tracking and receipt documentation, or given to:

*Division Director, Waste Management & Prevention Division
Vermont Agency of Natural Resources
1 National Life Drive, Davis 1
Montpelier, Vermont 05620-3704*
- 6.3 Monitoring results shall be reported at the intervals specified elsewhere in this permit.
- 6.4 Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
- 6.5 Reporting noncompliance:
 - (a) UVM shall orally report any noncompliance which may endanger health or the environment immediately upon discovery of the noncompliance, including:
 - (i) Information concerning release of any hazardous waste that may cause an endangerment to public drinking water supplies.

- (ii) Any information of a release or discharge of hazardous waste or of a fire or explosion at the facility, which could threaten the environment or human health outside the facility.
 - (b) The description of the occurrence and its cause shall include:
 - (i) Name, address, and telephone number of the owner or operator;
 - (ii) Name, address, and telephone number of the facility;
 - (iii) Date, time, and type of incident;
 - (iv) Name and quantity of material(s) involved;
 - (v) The extent of injuries, if any;
 - (vi) An assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable; and
 - (vii) Estimated quantity and disposition of recovered material that resulted from the incident.
 - (c) A written submission shall also be provided within five (5) days of the time UVM becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Secretary may waive the five day written notice requirement in favor of a written report within fifteen days.
- 6.6 If a significant discrepancy in a manifest is discovered, UVM must attempt to reconcile the discrepancy. If not resolved within fifteen days, UVM must submit a letter report, including a copy of the manifest, to the Director. (See **VHWMR § 7-704 (g)**)
- 6.7 An un-manifested waste report must be submitted to the Director within 15 days of receipt of unmanifested waste. (See **VHWMR § 7-704 (h)**)
- 6.8 A biennial report must be submitted by March 1st, or an alternative date specified by the Secretary, of each even numbered year covering facility activities during the previous odd numbered calendar year. The biennial report shall be submitted electronically in file and data formats compatible with the BRState software or other software that the EPA and Secretary use to process biennial report data.
- 6.9 UVM shall report all instances of noncompliance not reported under **Conditions 6.3, 6.4, and 6.5** of this permit, at the time monitoring reports are submitted. The reports shall contain the information listed in **Condition 6.5** of this permit.

- 6.10 Where UVM becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

Section 7: Waste Transport

- 7.1 UVM shall comply with the manifest requirements of **VHWMR Subchapter 7**.
- 7.2 Any hazardous waste removed from the facility shall be transported by a Vermont-permitted hazardous waste transporter, in accordance with 10 V.S.A. § 6607a and the VHWMR, to a designated facility.
- 7.3 UVM shall not accept any shipment of hazardous waste which is not accompanied by a manifest, unless the waste is both generated and delivered by a conditionally exempt generator who is exempt from the manifest requirements pursuant to **VHWMR Section 7-306(c)(3)**.
- 7.4 UVM shall notify the Director and the EPA Region I RCRA Import/Export Coordinator, in writing, at least four weeks in advance of the date UVM expects to receive hazardous waste from a non-U.S. source, as required by **40 CFR § 264.12(a)** and **VHWMR § 7-706**. Notice of subsequent shipments of the same waste from the same foreign source in the same calendar year is not required.

Section 8: Personnel Training

- 8.1 All facility personnel involved in the handling of hazardous waste shall successfully complete a program of classroom instruction or on-the-job training that prepares them to perform their hazardous waste management duties. This introductory training shall be conducted in accordance with the Training Plan contained in **Appendix H** of this permit.
- 8.2 All facility personnel shall complete their introductory training within six (6) months after the date of their employment at the facility. An employee may not work in an unsupervised position until completing the introductory training program.
- 8.3 All facility personnel involved in the handling of hazardous waste shall take part in a training program each calendar year which includes a review of the introductory training program. This training shall be conducted in accordance with the Training Plan contained in **Appendix H** of this permit.

Section 9: Facility Closure

- 9.1 UVM shall close the facility in a manner that eliminates threats to human health or the environment due to the post-closure escape of a hazardous waste or its constituents, directly or through leachate or surface run-off, or the escape of waste decomposition products to the

ground or surface waters or ambient air. At a minimum, closure shall be conducted in accordance with the Closure Plan contained in **Appendix K** of this permit. The Closure Plan shall be amended whenever changes in operations or facility design affect the plan or when there is a change in the expected year of closure.

- 9.2 UVM shall maintain a written estimate of the cost of closing the facility and shall amend that estimate pursuant to **Condition 9.3** and whenever there is an amendment to the existing Closure Plan contained in **Appendix K** of this permit. Any amended closure cost estimate shall be equal to the cost of closing the facility at the point in the facility's operating life when the extent and manner of its operation would make closure the most expensive, as indicated in the Closure Plan.
- 9.3 UVM shall annually update the closure cost estimate for inflation according to applicable requirements of **40 CFR 264.142(b)**. The initial closure cost estimate, and all subsequent closure cost estimates shall be recorded in the written facility operating record pursuant to **Condition 4.9(h)**.
- 9.4 UVM shall notify the Director in writing of its intent to close the facility at least six (6) months prior to the date on which it expects to begin final closure.
- 9.5 Within three (3) months after receiving the final volume of hazardous waste, UVM shall remove all waste from the facility in accordance with the Closure Plan contained in **Appendix K** of this permit. Within six (6) months after receiving the final volume of waste at the facility, UVM shall complete all closure activities in accordance with the Closure Plan.
- 9.6 Facility closure shall not be considered to have been completed until:
 - (a) UVM and an independent Vermont-licensed professional engineer have provided the Director written certification that the closure has been completed in accordance with the provisions of the Closure Plan; and
 - (b) The Secretary has inspected the facility;
 - (c) The Secretary has given written approval of the closure.

Section 10: Financial Requirements

- 10.1 UVM shall maintain liability coverage for claims arising from sudden accidental occurrences, which occur as a result of the operations of the facility, that cause injury to persons and property in an amount of at least one million dollars (\$1,000,000) per occurrence with an annual aggregate of at least two million dollars (\$2,000,000) until closure of the facility has been completed. This liability coverage must be equivalent to the coverage held by UVM at the time of issuance of this permit, as evidenced by the documents included in **Appendix K** of this permit.

- 10.2 UVM shall demonstrate liability coverage for claims arising from sudden accidental occurrences in the amount of at least \$1 million per occurrence, with an annual aggregate of at least \$2 million, exclusive of legal defense costs. This liability coverage shall be demonstrated using one of the financial assurance instruments specified in **40 CFR 264.147(a)**. Documentation of proof of insurance shall be included in **Appendix K** of this permit.
- 10.3 UVM shall establish financial assurance as required by **40 CFR 264.143**. Financial assurance shall be in at least the amount required by **Conditions 9.2 and 9.3** of this permit.
- 10.4 UVM shall maintain financial assurance for closure of the facility until closure has been certified in accordance with **40 CFR 264.115** and the Director approves the release of the financial instrument in accordance with **40 CFR 241.143(i)**.
- 10.5 Any changes in the financial assurance mechanism shall be approved by the Secretary.
- 10.6 UVM shall notify the Director by certified mail of the commencement of any voluntary or involuntary proceeding under the United States Bankruptcy Code (Title 11, U.S. Code), naming the owner or operator as debtor, within 10 days after commencement of the proceeding.
- 10.7 In the event of the bankruptcy of or suspension of issuing authority of the trust fund trustee or trustee institution issuing any surety bond, letter of credit or insurance policy required by this permit, UVM shall establish other financial assurance or liability coverage within 60 days after the event and in accordance with **Condition 10.5** of this permit.

Section 11: Corrective Action

- 11.1 If UVM determines that hazardous waste or hazardous materials have been released to the environment at the facility or that there is a likelihood of a release of hazardous waste or hazardous materials to the environment, then UVM shall immediately notify the Director of any such release, and comply with the applicable requirements of **VHWMR § 7-105** and 40 CFR Part 264 Subparts F and S.
- 11.2 In the event of a release at the facility, UVM shall report the release to the Director and conduct an assessment of the release in accordance with **VHWMR § 7-105**. Information submitted must be sufficient to determine whether further investigation is necessary.
- 11.3 Corrective action may be required beyond the facility's boundary if the Secretary determines that it is necessary to protect human health and the environment.

Hazardous Waste Facility Permit

University of Vermont

Environmental Safety Facility

List of Appendices

APPENDIX A	Part A Application and
APPENDIX B	Notification of Regulated Waste Activity
	Facility Description
	<ul style="list-style-type: none">• Orthographic Site Maps• Facility Construction Drawings• Flood Plain Certification• Wind Rose
APPENDIX C	List of Wastes To Be Accepted
APPENDIX D	List of UVM Source Generators
APPENDIX E	Container Management Plan
	<ul style="list-style-type: none">• PPE Recommendations• Storage Documentation• Sump Area Construction Plans• Container Compatibility
APPENDIX F	Security Plan
APPENDIX G	Contingency Plan
	<ul style="list-style-type: none">• Site Plan, Floor Plan and Evacuation Routes• Hazardous Properties of Wastes Stored at ESF
APPENDIX H	Training Plan & Job Descriptions
APPENDIX I	Waste Identification and Analysis Plan
	<ul style="list-style-type: none">• Waste Profile for Non-UVM Generator
APPENDIX J	Inspection Plan and Facility Checklists
APPENDIX K	Closure and Closure and Liability Insurance Plan
	<ul style="list-style-type: none">• Closure Cost Worksheet• Financial Assurance Letter & Liability Worksheet• Annual Financial & Auditors' Report
APPENDIX L	Corrective Action
APPENDIX M	Related Permits
	<ul style="list-style-type: none">• Air Pollution Control Permit• Air Pollution Control Permit Technical Analysis

MAIL THE COMPLETED FORM TO: The Appropriate EPA Regional or State Office.	United States Environmental Protection Agency RCRA SUBTITLE C SITE IDENTIFICATION FORM		
1. Reason for Submittal (See instructions on page 25) CHECK CORRECT BOX(ES)	Reason for Submittal: <input type="checkbox"/> To provide initial notification (to obtain an EPA ID Number for hazardous waste, universal waste, or used oil activities). <input checked="" type="checkbox"/> To provide subsequent notification (to update site identification information). <input type="checkbox"/> As a component of a First RCRA Hazardous Waste Part A Permit Application. <input type="checkbox"/> As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment # _____). <input type="checkbox"/> As a component of the Hazardous Waste Report.		
2. Site EPA ID Number (See instructions on page 26)	EPA ID Number: VTD000636563		
3. Site Name (See instructions on page 26)	Name: University of Vermont Environmental Safety Facility		
4. Site Location Information (See instructions on page 26)	Street Address: 667 Spear Street - UVM		
	City, Town, or Village: Burlington	State: VT	
	County Name: Chittenden	Zip Code: 05405-0570	
5. Site Land Type (See instructions on page 26)	Site Land Type: Private County District Federal Indian Municipal <input checked="" type="checkbox"/> State* Other * Instrumentality of the State		
6. North American Industry Classification System (NAICS) Code(s) for the Site (See instructions on page 26).	A. 611310	B.	
	C.	D.	
7. Site Mailing Address (See instructions on page 27)	Street or P. O. Box: SAME		
	City, Town, or Village:		
	State:		
	Country:	Zip Code:	
8. Site Contact Person (See instructions on pages 27)	First Name: Jeff	MI: L	Last Name: Rogers
	Phone Number: (802) 656-0767		Phone Number Extension: (802) 656-0767
9. Legal Owner and Operator of the Site (See instructions on pages 27 and 28)	A. Name of Site's Legal Owner: University of Vermont & State Agricultural College		Date Became Owner (mm/dd/yyyy): 06/12/1991 *(Date of First TSDF Permit)
	Owner Type: Private County District Federal Indian Municipal <input checked="" type="checkbox"/> State* Other * Instrumentality of the State		
	B. Name of Site's Operator: University of Vermont & State Agricultural College		Date Became Operator (mm/dd/yyyy): 06/12/1991 *(Date of First TSDF Permit)
	Operator Type: Private County District Federal Indian Municipal <input checked="" type="checkbox"/> State* Other * Instrumentality of the State		

EPA ID No. V T D 0 0 0 6 3 6 5 6 3

10. Type of Regulated Waste Activity (Mark 'X' in the appropriate boxes. See instructions on pages 28 to 32)**A. Hazardous Waste Activities****1. Generator of Hazardous Waste**

(choose only one of the following three categories)

- ☒ a. LQG: Greater than 1,000 kg/mo (2,200 lbs./mo.) of non-acute hazardous waste; or
- ☐ b. SQG: 100 to 1,000 kg/mo (220 - 2,200 lbs./mo.) of non-acute hazardous waste; or
- ☐ c. CESQG: Less than 100 kg/mo (220 lbs./mo.) of non-acute hazardous waste

In addition, indicate other generator activities (check all that apply)

- ☐ d. United States Importer of Hazardous Waste
- ☒ e. Mixed Waste (hazardous and radioactive) Generator

For Items 2 through 6, check all that apply:

- ☒ 2. Transporter of Hazardous Waste
- ☒ 3. Treater, Storer, or Disposer of Hazardous Waste (at your site) Note: A hazardous waste permit is required for this activity.
- ☐ 4. Recycler of Hazardous Waste (at your site) Note: A hazardous waste permit may be required for this activity.
- 5. Exempt Boiler and/or Industrial Furnace**
- ☐ a. Small Quantity On-site Burner Exemption
- ☐ b. Smelting, Melting, and Refining Furnace Exemption
- ☐ 6. Underground Injection Control

B. Universal Waste Activities

- 1. Large Quantity Handler of Universal Waste (accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste generated and/or accumulated at your site. (check all boxes that apply):**

	Generated	Accumulated
a. Batteries	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
b. Pesticides	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
c. Thermostats	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
d. Lamps	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e. Other (specify) <u>PCB lamp ballasts</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
f. Other (specify) <u>Mercury Containing Devices</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
g. Other (specify) <u>Cathode Ray Tubes</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

- ☒ 2. Destination Facility for Universal Waste

Note: A hazardous waste permit may be required for this activity.

C. Used Oil Activities**1. Used Oil Transporter - Indicate Type(s) of Activity(ies)**

- ☒ a. Transporter
- ☐ b. Transfer Facility

2. Used Oil Processor and/or Re-refiner - Indicate Type(s) of Activity(ies)

- ☐ a. Processor
- ☐ b. Re-refiner

☐ 3. Off-Specification Used Oil Burner**4. Used Oil Fuel Marketer - Indicate Type(s) of Activity(ies)**

- ☐ a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner
- ☐ b. Marketer Who First Claims the Used Oil Meets the Specifications

11. Description of Hazardous Wastes (See instructions on page 33)

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

D001	D002	D003	D004	D005	D006	D007
D008	D009	D010	D011	D012	D013	D014
D015	D016	D017	D018	D019	D020	D021
D022	D023	D024	D025	D026	D027	D028
D029	D030	D031	D032	D033	D034	D035
D036	D037	D038	D039	D040	D041	D042
D043	F001	F002	F003	F004	F005	F027
All P-listed waste in 40 CFR§261.33(e) and VT HWMR §7-215			All U-listed waste in 40 CFR§261.33(f) and VT HWMR §7-214			

EPA ID No. V T D 0 0 0 6 3 6 5 6 3


B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed for waste codes.

VT01	VT02	VT03	VT06	VT08	VT11	VT20
VT99						

12. Comments (See instructions on page 33)

Most of the hazardous waste operations occur at the University's permitted TSDF. Contiguous to this property is UVM's Miller Research Farm, Bio Research Complex and 705 Spear Street building. Wastes generated at these locations are in support of the University's academic and research mission, managed under this site identification number and are transported to the TSDF.

13. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See instructions on page 33)

Signature of owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
	Richard H Cate, Vice President for Finance & Administration	9/26/12

Appendix B

**Facility Description
of the
Environmental Safety Facility (ESF)**

Facility Description of the Environmental Safety Facility (ESF)

NAICS Code	NAICS Title	SIC Code	SIC Title
611310	College	8221	College

Nature of the ESF Business

The primary function that takes place at the Environmental Safety Facility (ESF) is the management of hazardous waste generated by the University of Vermont (UVM). UVM may also manage waste at the ESF from UVM tenants and affiliates, as well as source generators as listed in Appendix D. Management policies are set forth in UVM's Environmental Management Plan (EMP) available at esf.uvm.edu/uvmemp.

Hazardous wastes are transported from UVM campuses to the ESF in accordance with DOT, OSHA and Vermont Hazardous Waste Management Regulations (VHWMR). They are bulked or labpacked with compatible wastes and shipped off-site to be managed at other permitted TSD facilities. Hazardous wastes can be stored at the ESF for up to one year. Waste can be stored for greater than one year only if UVM can show that storage beyond one year is solely for the purpose of accumulating sufficient quantities necessary to facilitate proper recovery, treatment or disposal, or if there is no acceptable disposal outlet (procedures for this are detailed in Appendix E "Process Information and Container Management Plan).

Description of the ESF Site

The ESF is located in the City of Burlington at 667 Spear Street, approximately one mile South of UVM's athletic facilities within the UVM BioResearch Complex (BRC) on the West side of Spear Street. The land on which the ESF sits, is owned by the University. The Burlington Country Club golf course forms the North and West boundaries of the site, approximately 300 feet from the ESF. The BRC is bounded by Spear Street on the East, approximately 1200 feet from the ESF. The Meadowbrook Condominium Association's multi-family housing, and the Roman Catholic Diocese's Rice High School, are located approximately 1000 feet to the South, and southwest respectively, of the ESF on the other side of a field cultivated by the University's Miller Research Farm.

The ESF is sited at the BioResearch Complex to the West of the existing Large Animal Facility. The Large Animal Facility houses some UVM research activities as well as UVM's low-level radioactive waste storage area. These are not part of the ESF nor are they covered by this permit.

The land on which the ESF is built is approximately 3 acres in size. This parcel of land is defined by the golf course on the north, UVM's Large Animal Facility on the east, a UVM agricultural field to the south, and a hedgerow and drainage swale on the west. The ESF was built in 1993; waste operation began in 1994. The land was previously used by UVM's College of Agriculture for small garden plots and as a test field for a study on the growth of hay. The field is not prime agricultural land because of poor drainage and wet conditions at various times of the year.

The ESF is located in close proximity to the main campus. This provides ease of transporting materials as well as a quick response time for UVM Police Services to the ESF and a quick response time for the ESF staff to campus. Vehicles access Spear Street at the intersection of the Bio-Research Complex access road and Spear Street, located approximately 1/4 mile south of the University Dairy Farm on the west side of the road. The ESF site has been designed to handle tractor-trailer rigs and can accommodate a truck with a wheelbase of 50 feet.

Two access routes have been designed for emergency vehicles, one to the north and one to the south on the east side of the site. The paved drive all the way around the building is wide enough for emergency vehicles such as fire trucks.

The ESF has ten parking spaces including one handicap accessible space. The vehicles typically on site include one box-style truck and van, which are usually stored in the truck bay when not in use, and approximately 7 cars. Car traffic at the ESF site generally consists of privately owned vehicles of the people working in the building (approximately 6 to 9 people arriving and leaving work). Truck and van traffic consists of several daily trips by the ESF staff to the main campus. Typical delivery, maintenance and trash removal vehicles already serving the Bio-Research Complex also serve the ESF. Occasional traffic associated with training and meetings is also expected.

A security fence has been constructed around the facility with access through a remote operated, automatic gate as well as a locked, manually operated gate. Exterior lighting has been installed for security and safety purposes.

The ESF site is elevated above the surrounding area. The entire site is pitched to drain into a moat along the Southern and Western sides to control runoff from the area and prevent run-on from outside the site. There is a subsurface drainage system outside along the north side of the building, adjacent to the waste storage rooms, to divert rain and snow water away from the facility and into the moat.

Topographic maps of the site, facility construction plans, a letter from the Vermont Agency of Natural Resources stating that the site is not within the 100-year flood plain and a wind rose are included as Attachments B-1, B-2, B-3 and B-4, respectively.

Description of the Environmental Safety Facility

The Environmental Safety Facility (ESF) consists of the site contained within a 6 foot chain-link fence that includes a 9,000 square foot main building; and a 59 square foot, prefabricated steel, reactivities storage building. Both buildings and all areas within the fence-line are considered the “ESF” and are managed in accordance with this permit.

The main building is constructed of non-combustible concrete block with a concrete floor slab on grade. It has 9000 sq. ft. of floor area on two levels. The building includes offices for the ESF staff, a QA/QC laboratory, loading dock, truck bay, work area, chemical storage rooms, a chemical distribution and exchange room, restroom, locker room and shower, storage, mechanical spaces, and corridors.

The restroom, shower, laboratory sink and workroom sink are connected to the South Burlington public sewer system. There are no floor drains in the hazardous waste storage areas of the ESF. Hazardous chemicals are not discharged into the sanitary sewer system.

The facility's alarm systems include fire detection, sprinkler flow, and intruder alarms. The entire facility is protected by a wet sprinkler system connected to the Champlain Water District water main. The alarm systems are supervised twenty-four hours a day by the University's Physical Plant and Police Services Departments at a central monitoring station on the main campus. All lights, switches, fans, and other electrical devices in the areas where hazardous wastes are stored are intrinsically safe to guard against fire or explosion caused by sparks.

A reactives storage building is located approximately 40 feet from the main building. The back of the reactives building is approximately 5 feet from the 6 foot high, chain-link, perimeter fence, which borders on 200 feet of unused marsh area owned by UVM. It is used to store water reactive, air reactive, poly-nitrated compounds, and other reactive materials.

All hazardous wastes are stored inside either the ESF main building or the reactives storage building.

Description of the Interior Spaces:

Offices:

The offices have fluorescent lighting and positive ventilation with respect to the rest of the building.

Laboratory:

The laboratory is well lighted. A 6-foot chemical fumehood is located on one wall. There is a sink with connection to the sanitary sewer and a drench hose style eyewash. Limited quality assurance testing may be conducted in the fume hood. Office work area is also provided in the laboratory.

Work Area:

This area is well lighted with explosion proof lighting. This area has a sink with a connection to the sanitary sewer, a safety shower/eyewash, and a pouring station to consolidate waste chemicals into bulk containers.

Loading Dock:

This area is located at the end of the truck bay and has easy access to the work area. The area includes a dock leveler capable of serving all types of vehicles servicing the facility, and a door from the truck bay for driver access. A containment sump is located below the dock leveler to contain a spill if one should occur at this transfer point.

Chemical Distribution and Exchange Room:

This room is used to store stock chemicals for academic teaching labs and other campus users, and to store pre-owned chemicals for redistribution to campus users. It is well lighted with explosion proof lighting and equipped with explosion proof electrical outlets. Managing the distribution of stock chemicals and pre-owned chemicals is one part of the University's waste minimization and toxics use reduction efforts required by law.

Truck Bay:

The truck bay is a fully enclosed, roofed garage area with a concrete paved surface large enough to receive a 60 ft. long semi-tractor trailer. A 12 feet wide automatic overhead door serves as the entrance into the truck bay from the outside of the building. The truck bay serves as a garage for the ESF hazardous waste transportation truck and spill response van.

Waste Storage Areas - Main Building:

The ESF has nine waste storage areas in the main building, each room measures approximately 21.5 feet by 8.5 feet and is designed to store up to 20-55 gallon drums or the equivalent capacity in variable sized containers. Only compatible materials will be stored together in each room.

There are two separate ventilation systems; one for the four storage rooms on the West and the other for the five storage rooms on the East. Each room is ventilated above and below the floor grate to prevent a buildup of any fumes.

An access door from inside the building opens from the direction of egress out of each area. An emergency exit opening directly outside the building is located in each chamber.

The floors are constructed of epoxy coated fiberglass grate to allow any spilled material to fall into a ventilated sump area. The floor grates are removable. The capacity of the sump in each room is equal to the volume of all the drums (20 x 55 gallons = 1,100 gallons) plus 20 minutes of sprinkler flow. The threshold at the emergency exit door of each room is 8 inches higher than the door into the building so in the event of a catastrophic release, the materials would overflow into the building instead of to the exterior. Each sump measures approximately 21.5 feet by 8.5 feet (same foot print as the storage room) by approximately 2 feet in depth. The floor and walls of each sump are constructed of epoxy-coated concrete; the joints are filled with non-shrink grout. The floor of each sump is sloped to the center of the sump/room.

The storage areas are constructed of two hour rated concrete block with one and one-half hour rated doors to meet the building code requirements for Type H (Hazardous) Occupancy rating of this building.

Waste Storage Area – Corridor

This area is well lighted with explosion proof lighting and equipped with three emergency eyewash and shower stations. Wastes may be staged in the corridor in preparation for outbound shipments.

Waste Storage Areas - Reactives Storage Building:

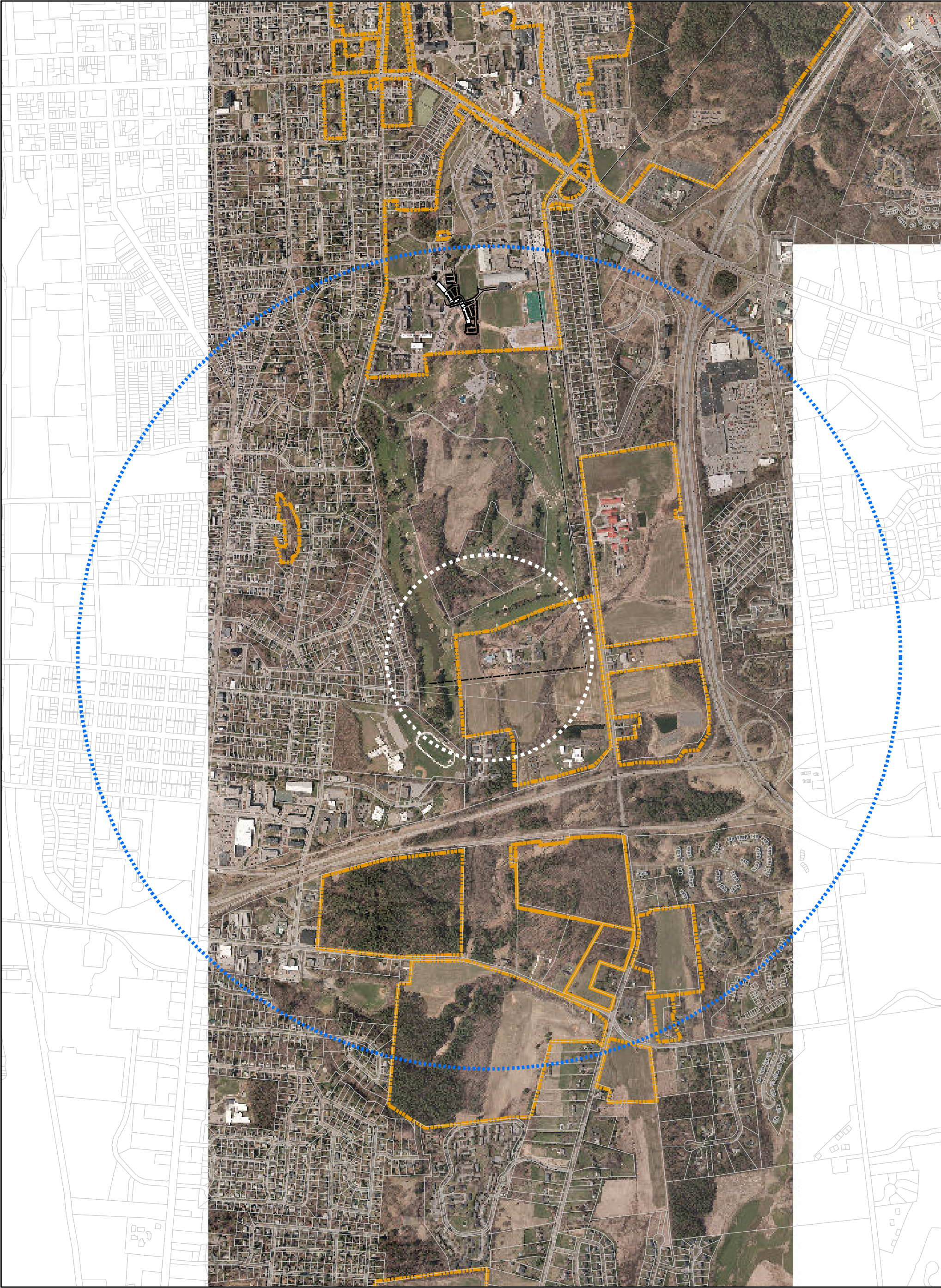
The ESF's reactive materials storage building has one waste storage area designed to store up to 12-55 gallon drums or the equivalent capacity in variable sized containers. Materials that may ignite, explode, generate toxic gases or otherwise react in a violent manner when in contact with air, water, or other initiating factor will be stored in this area. Each reactive material is contained within its laboratory container, which in turn is packed within a secondary, DOT rated, shipping container. The reactives storage building itself forms a third container. The reactives building is commercially manufactured with the following safety features:

- Fire resistant wallboard and steel construction;
- Corrosion protected steel;
- UL listed, Group D, Division 1 electromechanical exhaust ventilation system;
- UL listed, Groups C and D, Division 1 lighting and electrical receptacle;
- Pressure release panel on rear wall (releases at 20 psi), safety chained to wall;
- 250 gallon capacity containment sump lined with 20 mils HDPE;
- UL listed and FM approved, Pre-engineered, dry chemical fire suppression system with exterior, audible alarm, fusible link detection for automatic activation and means for manual activation
- Door locked and keyed to ESF key set, explosion relief panel is equipped with security bars;
- Class 1, Groups C & D, Division 1 lighting, fan and electrical outlet; and
- Static grounding system.

The Reactives Storage Building is located 40 feet to the northeast of the main ESF building within the perimeter fence. As shown on maps in attachment B-1, the building is located greater than 15 meters (or greater than 50 feet) from UVM's property line.

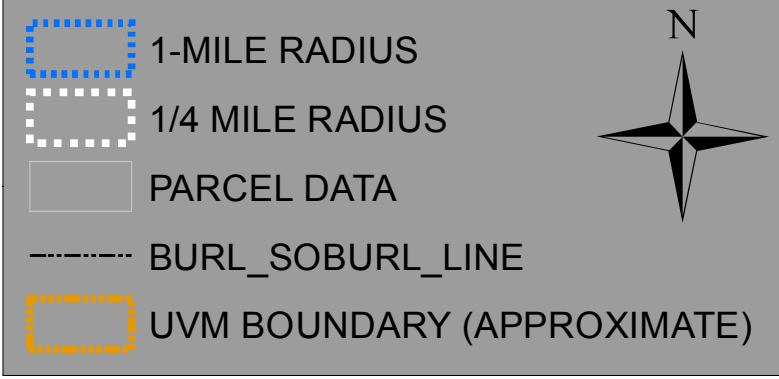
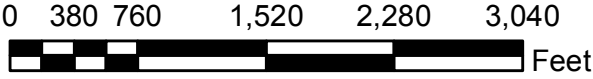
Attachment B-1

Orthographic Site Maps



UVM MAIN CAMPUS
ORTHO: 2011 WSP SELLS MAPPING
PARCEL DATA: CITY OF BURLINGTON/S. BURLINGTON

Produced by UVM Campus Planning Services
09/11/2012



Attachment B-2

Environmental Safety Facility
Construction Drawings

Attachment B-3
Flood Plain Certification

State of Vermont

Department of Fish and Wildlife
Department of Forests, Parks and Recreation
Department of Environmental Conservation
State Geologist
Natural Resources Conservation Council



AGENCY OF NATURAL RESOURCES
103 SOUTH MAIN STREET
Waterbury, Vermont 05676
Department of Environmental Conservation

FLOOD PLAIN MANAGEMENT
10 North Building
(802) 244-6951

October 25, 1988

Mr. Ken Bean
University of Vermont
Architectural and Engineering Services
107 South Prospect Street
Burlington, VT 05405-0016

PROJECT ENVIRON.
SAFETY FACILITY
FEAS / DES / CONST.
CLIENT A IN
EQUIP. B OUT
CONSUL. _____

Dear Mr. Bean:
Subject: Flood Plain Site Investigation

The site of a proposed University hazardous waste storage building to be located in the field south of the Ram Test Barn at the Bioresearch Complex off Spear Street is not within the 100-year flood plain of the small tributary of Potash Brook.

If this does not meet with your needs, please give me a call at 244-6951.

Sincerely,

Roy Gaffney
Flood Plain Management

vld

ATTACHMENT

RECEIVED

OCT 27 1988

Architectural &
Engineering Services

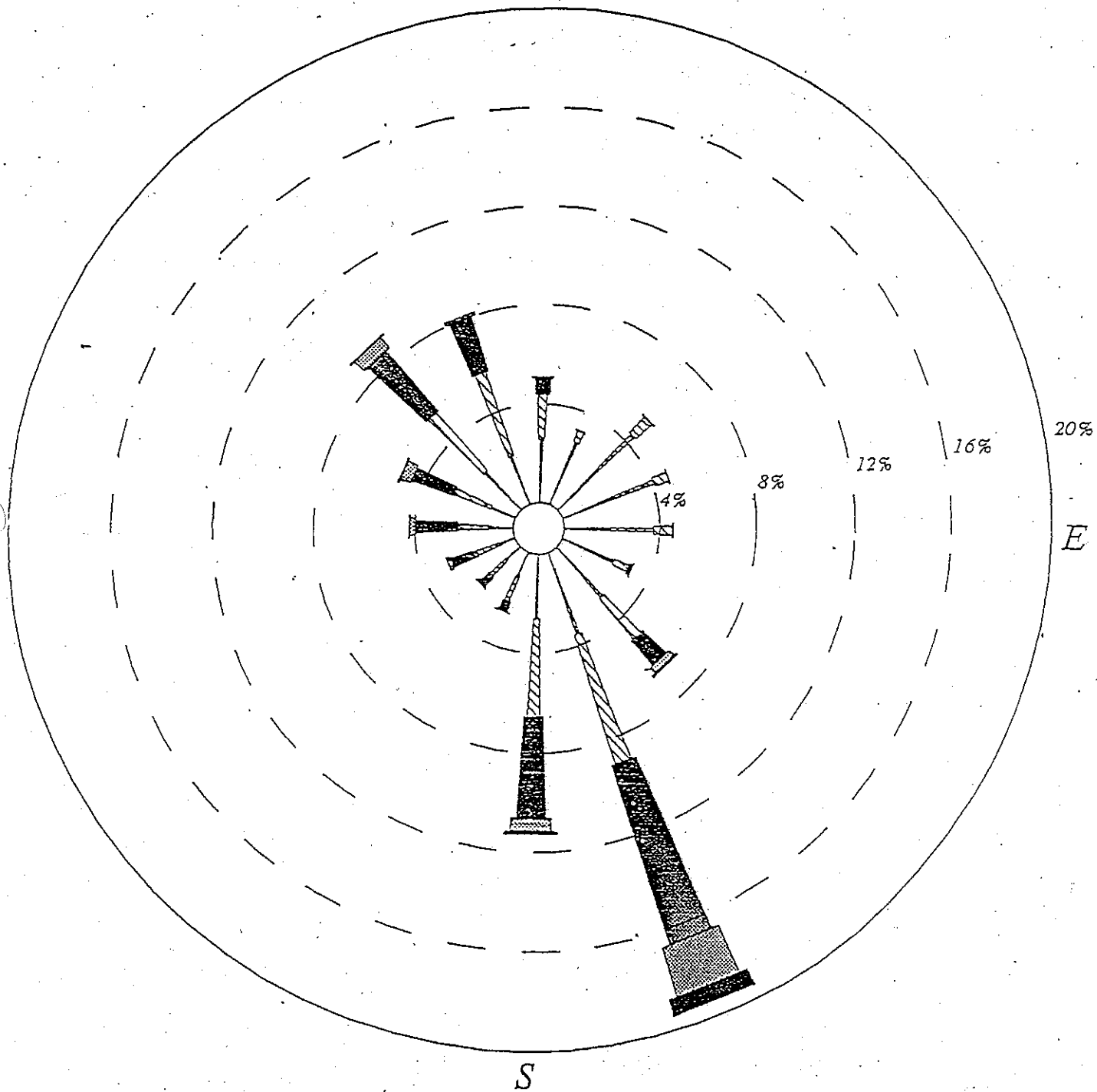
Attachment B-4

Wind Rose

FIGURE B-3 - WIND ROSE
 Burlington, VT 1989

January 1-December 31; Midnight-11 PM

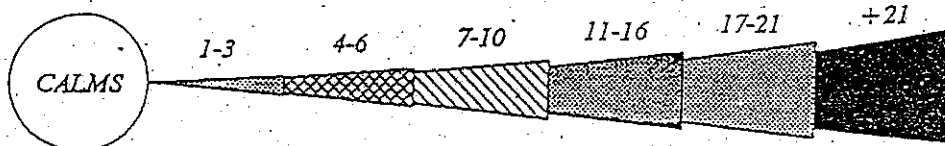
N



CALM WINDS 2.07%

WIND SPEED (KNOTS)

NOTE: Frequencies
 indicate direction
 from which the
 wind is blowing.



Appendix C

University of Vermont Environmental Safety Facility List of Hazardous Wastes To be Accepted

Appendix D

UVM Source Generators

UVM Source Generators

The University's Environmental Safety Facility is permitted to accept waste from the following generators:

- The University of Vermont facilities, including its tenants and affiliates operating at those facilities, that have been issued a temporary or permanent EPA Identification number;
- Conditionally exempt generators within the City of Burlington who have been issued a temporary or permanent EPA Identification number;
- The Chittenden County Solid Waste District as well as conditionally exempt generators who have been issued a temporary or permanent EPA Identification number and households within the district;
- Primary and secondary educational institutions in the state of Vermont who have been issued a temporary or permanent EPA Identification number.

The University of Vermont has research and teaching laboratories, as well as art studios, in many buildings on its campuses. These laboratories handle “laboratory scale” chemicals, which means the work involves containers that can easily and safely be manipulated by one person, multiple chemical procedures or chemical substances are used, and protective laboratory practices and equipment are available and in common use to minimize the potential for employee and environmental exposures to hazardous chemicals. The wastes and leftover chemicals from these labs and studios contribute an average of approximately 55% of UVM’s annual hazardous waste.

The University maintains over 150 buildings as well as a fleet of vehicles. Cleaning chemicals, fuels, oils, paints and other maintenance related materials constitute an average of approximately 10% of UVM’s hazardous wastes.

As part of maintaining these facilities, UVM engages in construction, renovation and excavation projects. These projects often generate non-routine hazardous wastes such as debris from the removal of lead paint, removal of fuel storage tanks, clean up of spills, and remediation of contaminated soils. These waste make up an average of approximately 35% of UVM’s annual hazardous waste stream.

Additionally, universal wastes generated from research, teaching, maintenance and dormitory activities are generated at any of UVM’s campuses.

For the purposes of this permit, UVM has 10 distinct campuses:

1. Main campus (including Central, Athletic, Redstone and Centennial campuses) in Burlington,
2. Trinity campus in Burlington,
3. Bioresearch Facility (including ESF and Miller Research) in Burlington and South Burlington,
4. Blasberg Horticulture Research Center in South Burlington,
5. Rubenstein Ecoscience Systems Lab in Burlington,
6. Fort Ethan Allen (including automotive repair shop) in Colchester,
7. Colchester Research Facility in Colchester,
8. Proctor Maple Research Facility in Underhill,
9. Jericho Research Forest in Jericho and Richmond,
10. Morgan Horse Farm in Weybridge.

UVM owns and leases properties throughout Vermont, conducts field research on lands and waters throughout the state, and maintains clinical research facilities, extension offices and administrative offices in off-campus locations. Any of the hazardous wastes, universal wastes and oil wastes generated by activities of UVM and its affiliates and tenants may be accepted at the Environmental Safety Facility.

Additionally, UVM may accept waste from source generators as listed in Appendix D.

List of Hazardous Wastes to be Accepted

Wastes received at the ESF will be in the form of small containers that are labpacked into larger shipping containers or shipping containers that hold liquid or solid waste in bulk.

Labpacked containers may be solid, liquid, multi-phased, or compressed gas. They may contain unused product or spent reactants. These wastes are assigned a wide variety of hazardous waste codes.

Bulk hazardous wastes are usually contained in 5-gallon to 55-gallon containers. Bulk chemicals from laboratories include, but are not limited to 30-gallon drums of methanol/acetic acid and dye, 30-gallon drums of sulfuric acid waste, and 30-gallon drums of bleach waste. Bulk containers from maintenance include oily rags, oil& water, broken fluorescent light bulbs, petroleum contaminated soils, glycol solutions and aerosol cans.

The following tables list the hazardous waste codes that can be accepted at the ESF.

Waste Codes	Waste Description
F001	The following spent halogenated solvents generated in degreasing processes and their byproducts as noted in 40 CFR 261.31: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1 trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons.
F002	The following spent halogenated solvents and their byproducts as noted in 40 CFR 261.31: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1 trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, o-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichlorethane.
F003	The following spent non-halogenated solvents and their byproducts as noted in 40 CFR 261.31: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol.
F004	The following non-halogenated solvents and their byproducts as noted in 40 CFR 261.31: cresols, cresylic acid, and nitrobenzene.
F005	The following spent non-halogenated solvents and their byproducts as noted in 40 CFR 261.31: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, and 2-nitropropane.
F027	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulation containing compounds derived from these chlorophenols.
D001	Wastes exhibiting the characteristics of ignitability as defined in 40 CFR 261.21
D002	Wastes exhibiting the characteristics of corrosivity as defined in 40 CFR 261.21
D003	Wastes exhibiting the characteristics of reactivity as defined in 40 CFR 261.21
D004 - D043	Wastes exceeding the maximum concentration as defined when tested in accordance with 40 CFR 261.24
*All "P"& "U" Listed Wastes	Waste that are specifically listed in VHWMR 7-214 and 7-215 or 40 CFR 261-33

Waste Codes	Waste Description
VT01	Wastes containing polychlorinated biphenyls in concentrations equal to or greater than 50 ppm
VT02	Waste containing greater than 5% by weight of petroleum distillates with melting points of less than 100 degrees F, including but not limited to kerosene, fuel oil, hydraulic oils, lubricating oils, penetrating oils, tramp oils, quenching oils, and crankcase and automotive oils which have not been exempted under Section 7-203(n), (o), and (p).
VT03	Waste water soluble oils which have not been exempted under Section 7-203 (1)
VT06	Pesticidal wastes and obsolete pesticidal products not specifically listed otherwise in Subchapter 2.
VT08	Waste ethylene glycol based coolants, antifreezes, solutions containing greater than 700 ppm of ethylene glycol.
VT11	Wastes determined to be hazardous under provisions of Section 7-213 or 7-216
VT20	A solid material that when mixed with an equal weight of distilled water causes the liquid fraction of the mixture to exhibit the properties of the corrosivity characteristic as specified under Section 7-206(a)(3).
VT99	Non-hazardous waste.

Low-Level Mixed Wastes

Low-Level Mixed Waste (LLMW) generated by UVM may be received and stored at the ESF. LLMW is waste that contains both a RCRA hazardous waste and a low-level radioactive waste as defined in 40 CFR §266.210. This waste may be exempt from RCRA hazardous waste determination in accordance with Vermont Hazardous Waste Management Regulations §7-203(f) and 40 CFR §266.230. LLMW that is exempted will be managed under UVM's NRC License #: 44-00728-13.

RCRA Waste Codes included in this exemption: D001, D002, D003, D008, D022, F001, F002, F003, F004, F005, VT01, VT02.

List of Universal Wastes to be Accepted

Universal waste generated from activities at UVM may be accepted at the ESF.

"**Universal waste**" means any of the following hazardous wastes that are subject to the universal waste requirements of Vermont Hazardous Waste Management Regulations (VHWMR):

- (a) Batteries as described in **Section § 7-902** of VHWMR from equipment throughout campus;
- (b) Pesticides as described in **Section § 7-903** of VHWMR from University farms, greenhouses and research;
- (c) Thermostats as described in **Section § 7-904** of VHWMR from maintenance operations and equipment disposal;
- (d) PCB-containing fluorescent light ballasts as described in **Section § 7-905** of VHWMR from maintenance operations and equipment disposal;

- (e) Mercury-containing lamps as described in **Section § 7-906** of VHWMR from maintenance operations and equipment disposal;
- (f) Mercury-containing devices as described in **§ 7-907** of VHWMR from maintenance operations and equipment disposal; and
- (g) Cathode ray tubes (CRTs) as described in **§ 7-908** of VHWMR from equipment disposal.

Appendix E

University of Vermont Environmental Safety Facility

Process Information and Container Management Plan

Process Information and Container Management Plan

Receiving Containers of Waste at the ESF

Wastes shipped to the ESF are accompanied with a hazardous waste manifest or, if appropriate, a standard bill of lading. As the ESF is a permitted captive hazardous waste storage facility for UVM and performs no disposal operations, Land Disposal Restriction notifications do not accompany shipments from UVM personnel. Land Disposal Restriction notifications are required for hazardous wastes shipped from non-UVM generators. Wastes are transported in appropriate containers (see Appendix E4 for a list of container compatibilities) to the ESF from the University in a hazardous waste permitted vehicle. The waste containers are unloaded from the truck into the building at the loading dock using the hydraulic dock leveler if necessary. The waste containers are moved into the waste storage rooms after being unloaded from the truck.


Wastes received at the ESF are hazardous or non-hazardous, including universal waste and used oil. Except for florescent lamps, containers of these wastes are labeled and managed as “hazardous” or “non-hazardous.” The following describes procedures for labeling these types of wastes:

Hazardous and Non-hazardous Labeling and Inventory

ESF uses the tags waste inventory and tracking system (i.e. tags database) to communicate:

- waste information as described in Appendix I: Waste Analysis Plan,
- inventory, tracking, and labeling of waste containers, and
- tracking of waste during consolidation and repackaging as described in this Appendix.

Individual tags containing waste information are associated with specific waste bottles and entered into the online tags database. This information follows the waste from the point of generation on UVM’s campuses through the waste management process to the ESF. Non-UVM waste accepted at ESF is entered into the tags database upon arrival at the ESF.

<p>Hazardous Waste</p> <p><small>Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency</small></p> <p>Generator Information: EPA ID Number: VTD000638563 University Of Vermont Environmental Safety Facility 667 Spear Street, Burlington, Vt 05405 (802) 656-5400</p>
<p>Barrel # 120619A Room 111 Accumulation Start Date: 6/19/2012</p> <p>Accumulation Full Date: 0/0/0000 Incoming Manifest & Line: ESF Generated: Waste Flammable Solid, organic, NOS DOT code: 4.1, UN1325, PG II</p> <p>EPA Codes: D001</p> <p>*120619A*</p> 
<p>Material "CH122715"</p>

Upon receiving hazardous and non-hazardous wastes, ESF personnel input container information into the tags database, and container labels are printed (see inset). Printed labels are affixed to the containers and replace the labels affixed to the container upon receipt. ESF personnel verify the new label is consistent with the original label. All container labels meet the container markings required in section 7-309 of the VHWMR. Each container is issued a unique container number and, once created, this is used for waste tracking and inventory purposes. The container number is identified both in the newly printed label and on the exterior of the container.

The database can produce a complete inventory of all wastes stored in any room at the ESF. ESF personnel check the physical inventory in accordance with the Inspection Plan (Appendix J). For each container the tags database can report its location in the ESF, content information as reported in the tags system and the ESF arrival date.

Non-hazardous wastes are received, inventoried and stored in the same manner as hazardous waste except that the label states “Non-Hazardous Waste.”

Florescent Lamp Labeling and Inventory

Upon receiving spent florescent lamps at the ESF, personnel count and repack the bulbs into similar groups. For example 4 foot, U-tube and compact fluorescents would be separated and stored accordingly. Due to the variability in frequency and volume, bulbs awaiting repack may be temporarily stored in the mixing room of the facility. Lamps are counted, and packaged in cardboard containers. When a new container is started, it is labeled with a “Universal Waste Lamps” sticker (see inset). When the containers are full, the box is closed and adequately sealed with packing tape to prevent unintentional opening during transport. Each time lamps are added a paper inventory is updated. The inventory is kept on the door of the storage room and contains information regarding the type of lamp, type of container and number of containers currently in storage. Both the inventory and the container label have storage dates recorded on them to ensure no container is stored longer than one year.

<p>Universal Waste Lamps</p> <p>University of Vermont Environmental Safety Facility 867 Spear Street Burlington, VT 05405</p> <p>EPA ID # VTD000636563</p> <p>ARRIVAL DATE _____</p>

ESF Operations: Consolidate, Repack and Treat

To mitigate costs and facilitate disposal, ESF personnel consolidate, repack and on occasion treat hazardous and non-hazardous wastes at the ESF.

Waste Consolidation - Labeling and Inventory

At the ESF some wastes are consolidated according to their chemical compatibility. New containers used for consolidation are entered into the tags database with a unique container number and properly labeled. Wastes that are consolidated are tracked into the new container using the tags database. Containers that are emptied through the process of consolidation are removed from the inventory but the tracking history remains available in the tags database.

When waste consolidation is complete, containers are transported to their appropriate storage room and a complete container inventory is generated.

Repackaging of Labpacks – Labeling and Inventory

At the ESF labpacks may be repackaged to meet the requirements of regulations or end disposal facilities, and to lower costs. If a new labpack container is entered into the tags database, a new label is printed, that includes a unique container number and affixed to the container. Labpacked wastes are tracked into the new container using the tags database. Containers that are emptied through the process of repackaging are removed from the inventory but the tracking history remains available in the tags database.

When waste repacking is complete, containers are transported to their appropriate storage room and a complete container inventory is generated

Treatment – Methods, Labeling and Inventory

At the ESF wastes may be treated in the following way: 1) compaction; 2) aerosol cans punctured; 3) gases captured or liquefied, and 4) reactive compounds stabilized. The follow are procedures for each of these methods.

Compaction for Consolidation

ESF personnel compact waste to minimize its total volume saving raw materials (drums, liners etc.), energy and lowering disposal costs. Some examples of wastes that are compacted include

- plastic contaminated with lead paint chips,
- empty waste containers and
- paper towels containing trace amounts of mineral spirits

Compaction is performed using the hydraulic crusher located in the mixing room. Wastes are compacted and consolidated into a new container. Procedures for labeling and inventorying the waste containers is the same as listed in the “Consolidation – Labeling and Inventory” section of this appendix.

Puncturing Aerosol Cans

Waste aerosol cans are stored and punctured at the ESF following the Vermont DEC “Procedure Addressing the Management and Disposal of Aerosol Cans.” The emptied aerosol cans are sent for metal reclamation, The captured contents are labeled and inventoried following the same procedures as those listed in the “Consolidation – Labeling and Inventory” section of this appendix.

Management of Compressed Gas Cylinders

Cylinders containing unwanted and unused gases and liquefied compressed gases are occasionally generated as a result of University teaching and research activities. Prior to off-site disposal, it is sometimes prudent to transfer these compressed gases from the cylinders into containers of compatible liquid solvents or into filters (e.g. carbon filter).

The recontainerization of the contents of compressed gas cylinders is performed by specialists who are trained to handle cylinders and chemicals; these may include outside contractors. Prior to conducting this treatment activity, notice will be provided to the Secretary that meets the information requirements of “The Treatment of Hazardous Waste in Containers or Tanks by Generators,” VHWMR 7-502(o), and a site specific health and safety plan will be developed.

Stabilization of Reactive Compounds

Reactive wastes such as unstable peroxide formers and nitro-compounds should be stable prior to being received at the ESF; however, compounds will be stabilized by means of remote or safe opening and then wetting with water or appropriate solvent at the ESF as necessary. This

stabilization process will be performed with all appropriate safety measures in place and specialized contractors trained to stabilize reactive materials will be utilized as appropriate. Prior to conducting this treatment activity, notice will be provided to the Secretary and a site specific health and safety plan will be developed.

Movement and Storage of Waste Containers

Upon receipt at the ESF, all waste containers are moved to storage rooms based on compatibility.

All hazardous, non-hazardous or florescent lamp wastes at the ESF are stored in appropriate containers (see Appendix E4) that have good structural integrity and are compatible with the contents of the container.

All containers are kept closed during storage except when necessary to add or remove waste (e.g., consolidation). Containers holding waste will not be opened, handled, or stored in a manner that may rupture the container or cause it to leak. Containers will be placed in storage areas in such a way that at least 24 inches of aisle space will be maintained.

Containers may be stacked no higher than the equivalent height of two stacked 55-gallon drums. Stacking will only take place as long as the containers are stable, the integrity of the containers is not impaired, the appropriate markings are visible for inspection, and the required aisle space is maintained.

Containers of hazardous wastes are transported throughout the ESF on drum carts, flat bed carts, service carts with shelf sides, or other appropriate means.

Reactive wastes (air reactive, water reactive, high energy compounds etc) are stored in their original containers and labpacked or overpacked into appropriate containers. Most of these containers are stored in the Reactives Storage Building; air-reactive materials that are packed in water may be stored in the main ESF building to prevent the water from freezing. No more than eight 55-gallon drums or the equivalent of reactive and water-reactive wastes will be stored in the reactives building. The maximum manufacturer's suggested capacity for this building is 12 55-gallon drums.

Transport to Off-Site TSDFs

All hazardous waste removed from the ESF will be transported to permitted TSD facilities. Hazardous wastes leaving the ESF for off-site treatment, storage and disposal may be staged within the workroom or in the corridor for no greater than 24 hours. These drums may be staged according to the line items on the manifest or according to the destination site's accepted waste information profiles.

All hazardous wastes transported from the ESF will be packaged in accordance with DOT regulations as set forth in 49 CFR §172 and §173. Containers are loaded onto vehicles destined for off-site treatment, storage or disposal with the aid of the hydraulic loading dock leveler located at the end of the truck bay. All hazardous waste shipped from the ESF will be transported

by Vermont permitted hazardous waste haulers in vehicles permitted for hazardous waste hauling.

Wastes in Storage for Longer than 1-Year

Under 40 CFR §268.50, the ESF is allowed to store hazardous wastes for up to one year. In some instances storage beyond one year is necessary for the purpose of accumulating such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment, or disposal. ESF personnel will document all containers of waste that are stored at the ESF for more than one year. Such documentation will include the reason for storage of the waste as well as the intended fate of the container. Examples of this documentation are listed in attachment E2 of this appendix; additional documentation letters may be created as needed.

Personal Protective Equipment

ESF personnel wear appropriate levels of personal protective equipment (PPE) to control the risks associated with handling hazardous materials. Attachment E-1 includes a list of the PPE associated with specific ESF operations.

Prevention of Hazardous Release to the Environment

Precautions to Prevent Accidental Ignition or Reaction of Ignitable, Reactive, or Incompatible Wastes

The UVM Environmental Safety Facility has the following precautions in place to prevent accidental ignition or reaction of ignitable, reactive, or incompatible wastes:

- Only compatible materials are stored together in each of the waste storage rooms.
- All lights, switches, fans, and other electrical devices in the areas where hazardous wastes are stored are intrinsically safe to guard against fire or explosion caused by sparks.
- There are separate ventilation systems for the East and the West waste storage rooms. Each room is ventilated above and below the floor grate to prevent a buildup of fumes.
- The storage areas are constructed of 2-hour fire rated concrete block with 1½-hour fire rated doors to meet the building code requirements for Type H (Hazardous) Occupancy rating of this building.
- The facility is protected by a wet sprinkler system connected to the Champlain Water District water main. The alarm systems are supervised 24 hours a day by the University's Physical Plant and Police Services Departments at a central monitoring station on the main campus.
- Most reactive wastes are stored in a separate, appropriately labeled, building designed for reactive storage.
- Drums of bulk ignitable wastes are grounded during consolidation at the pouring station.

- Before co-mingling, samples of the wastes to be co-mingled are combined in a smaller container at the pouring station to ensure that the wastes are compatible.
- Non-ferrous, spark-proof tools are used when appropriate.
- The facility has ABC fire extinguishers accessible throughout the building as well as a Class D extinguisher for use on flammable metal fires.
- Smoking is not allowed anywhere within the facility fence line and “No smoking” signs are prominently displayed throughout the facility.
- All ESF personnel are trained in the appropriate emergency response procedures and there is an emergency response drill conducted annually as part of the emergency response training refresher course.
- Daily inspections reduce the likelihood of a potentially dangerous incident from developing. Any noted deficiencies to any of the emergency and fire protection equipment discovered during the daily inspections are corrected as soon as possible.
- UVM Police Services regularly patrol the area during nights, weekends, and holidays.

Secondary Containment System Design and Operation

The waste storage rooms are designed and operated to provide the secondary containment system at the ESF; design specifications for each room are found in attachment E-3 of this Appendix. The floor of each room is constructed of a removable, epoxy-coated fiberglass grate that allows any spilled material to fall into a ventilated sump area. Each sump measures approximately 21.5 feet by 8.5 feet (same foot print as the storage room) by approximately 2 feet in depth.

1. The floor and walls of each sump are constructed of epoxy-coated concrete and the joints are filled with non-shrink grout. This creates a base that underlies the containers which is free of cracks or gaps and is sufficiently impervious to contain leaks and spills until the collected material is detected and removed. Appendix J (Inspection Plan) contains an inspection plan to ensure that the sump areas are free of visible cracks and gaps.
2. The floor of each sump is sloped to the center of the sump/room. The removable, epoxy-coated fiberglass grate elevates the waste containers approximately 2 feet above the base, protecting them from contact with accumulated liquids.
3. The capacity of the sump in each room is equal to the volume of all the drums (20 x 55 gallons = 1,100 gallons) plus 20 minutes of sprinkler flow. The containment system has sufficient capacity to contain 10% of the volume of containers that could be stored in the room. Furthermore, the threshold at the emergency exit door of each room is 8 inches higher than the door into the hallway; in the event of a catastrophic release, the materials would overflow into the building instead of to the exterior.
4. The roof and walls of the ESF prevent run-on into the containment system.
5. The removable floor grates allow for timely removal of spilled or leaked waste from the sump/containment area as necessary to prevent overflow of the collection system.

A containment sump is located below the loading dock leveler in the truck bay to contain a spill within the building should occur at this transfer point. The control valve for the containment sump is maintained in a closed position.

The reactivities storage building contains a 6-inch deep sump area located below the grated floor with capacity to store 250 gallons of material below the floor level at which waste is stored. In addition, all reactive hazardous wastes stored in this building are in individual containers that are labpacked or overpacked into appropriate shipping containers that serve as secondary containment.

In accordance with 40 CFR§264.15, a written schedule for inspecting equipment and devices that are important to preventing, detecting or responding to environmental or human health hazards is included in Appendix J.

Leaking Containers

If a container is found to be leaking, the contents of the container will be transferred into an appropriate container or the leaking container will be overpacked into an appropriate overpack container. Any material that has leaked will be absorbed using an appropriate absorbent material (e.g. Speedi-Dri, absorbent pads, etc). Hazardous waste spill debris will be placed in appropriate containers, sealed, labeled, stored in an appropriate storage room, and ultimately transported off site to a certified TSDF.

Control of Stormwater

The ESF is elevated above the surrounding area and enclosed by a drainage ditch that leads to a water retention pond in order to prevent run-on from outside the facility. There is a subsurface drainage system outside along the north side of the building adjacent to the waste storage rooms to divert rain and snow water away from the facility.

Removal of Accumulated Liquids from Containment System

Any liquids, which accumulate within the ESF, will be removed upon detection as soon as possible by pumping or by using absorbents to soak up the spill. The ventilated sump areas in each waste storage room are easily accessible by removing the epoxy coated grated floors. All spilled and cleanup materials that are removed from the sumps will be assumed to be hazardous waste and managed accordingly. Materials from a known waste container will be disposed of according to requirements and standards necessary for that waste type. Materials from an unknown source will be containerized and handled as an unknown waste (Appendix I).

The truck bay is designed to drain to the containment sump where spilled materials could be pumped out of the building. The control valve for the truck bay containment sump is maintained in the closed position and opened only for the following non-emergency uses:

- Snowmelt from vehicles in the truck bay is drained into the retention pond via the containment sump.
- City water generated from flushing safety showers and eye wash stations may be discharged into the drain leading to the containment sump and released into the retention pond. This material also may be discharged into the sanitary sewer system.

Appendix E: Process Information and Container Management

- City water used to hose down ordinary dirt and grit from the truck bay floor, vehicle washing or other cleaning operation, is discharged into the drain leading to the containment sump and into the retention pond.

The retention pond is equipped with a manual release valve that is maintained in the closed position. When necessary, ESF personnel open the valve to drain the pond in order to control mosquitoes and drain excess water. After draining, the pond valve is returned to the closed position. The pond valve is inspected weekly.

Attachment E-1

Personal Protective Equipment Recommendations

**University of Vermont Environmental Safety Facility
Personal Protective Equipment Recommendations**

Task	Body Protection	Eye/Face Protection	Respiratory Protection	Foot Protection	Hand Protection	Head Protection	Hearing Protection
Delivering Chemicals	Work Uniform	Safety Glasses	None	ANSI shoes	Nitrile gloves	None	None
Collecting Chemical Waste	Work Uniform	Safety Glasses	None	ANSI shoes	Nitrile gloves	None	None
Bulking Chemicals	yellow tyvek coveralls	Full-face respirator		ANSI shoes	Inner: Nitrile gloves; Outer: Neoprene (or suitable) gloves	None	None
Lab-Packing	Work Uniform	Safety Glasses	None	ANSI shoes	Nitrile gloves	None	None
ESF Inspections	none	Safety Glasses	None	None	None	None	None
Lab Visits	none	Safety Glasses	None	None	Nitrile gloves	None	None
Biowaste handling	Work Uniform	Safety Glasses	None	ANSI shoes	Nitrile gloves	None	None
Moving Drums	Work Uniform	none	None	ANSI shoes	Leather/Cotton gloves	None	None
Performing Lab Tests	Lab coat	Safety Glasses	None	ANSI shoes	Nitrile gloves	None	None
Outdoor work	Work Uniform	Safety Glasses	None	ANSI shoes	Leather/Cotton gloves	Hard Hat, if necessary	To be determined
Spill Clean-up	To be determined by emergency coordinator on-site						

These recommendations are made based on hazard assessments reviewed by the ESF staff January 2011.

Attachment E-2

Storage Documentation Letters

The University of Vermont
Environmental Safety Facility
667 Spear Street
Burlington, VT 05405
802/656-5400

Storage Documentation

Drum #: _____

Date when drum was first stored at ESF: _____

Contents of Drum: _____ <No U.S. Disposal Option> _____

Comments:

There are no permitted disposal outlets in the United States that can manage this material in a cost effective and environmentally acceptable manner. When a cost-effective, legal and acceptable disposal outlet is identified, this drum will be closed out and transported on the next available shipment, which can handle this type of waste in accordance with all regulations and end disposal requirements, for proper recovery, treatment or disposal.

_____/_____/_____
Compliance Manager Date

The University of Vermont
Environmental Safety Facility
667 Spear Street
Burlington, VT 05405
802/656-5400

Storage Documentation

Drum #: _____

Date when drum was first stored at ESF: _____

Contents of Drum: _____<Drum Not full>_____

Comments:

This drum is not full, and due to the costs associated with proper handling of the hazardous waste, continued storage is necessary until the drum is full to facilitate proper recovery, treatment or disposal.

Once filled, the drum will be transported on the next available shipment, which can handle this type of waste in accordance with all regulations and end disposal requirements, for proper recovery, treatment or disposal.

_____/_____/_____
Compliance Manager Date

The University of Vermont
Environmental Safety Facility
667 Spear Street
Burlington, VT 05405
802/656-5400

Storage Documentation

Drum #: _____

Date when drum was first stored at ESF: _____

Contents of Drum: _____<Drum not filled within one year>_____

Comments:

This drum was not full within one year of its storage date, and due to the costs associated with proper handling of the hazardous waste, continued storage was necessary until the drum became full to facilitate proper recovery, treatment or disposal.

This drum became full on _____ and will be transported on the next available shipment, which can handle this type of waste in accordance with all regulations and end disposal requirements, for proper recovery, treatment or disposal.

_____/_____/_____
Compliance Manager Date

The University of Vermont
Environmental Safety Facility
667 Spear Street
Burlington, VT 05405
802/656-5400

Storage Documentation

Drum #: _____

Date when drum was first stored at ESF: _____

Contents of Drum: _____<cyinders>_____

Comments:

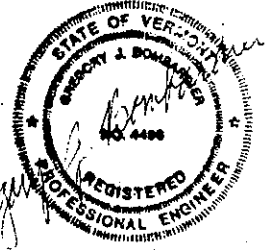
Due to the costs associated with proper handling of compressed gas cylinders containing hazardous materials, continued storage is necessary to accumulate quantities sufficient to facilitate proper recovery, treatment or disposal; specifically hiring a qualified contractor to download these cylinders into an appropriate solvent.

When sufficient amounts of this material have been accumulated, treatment and disposal will be scheduled at the next available opportunity to handle this type of waste in accordance with all regulations and end disposal requirements, for proper recovery, treatment or disposal.

_____/_____/_____
Compliance Manager Date

Attachment E-3

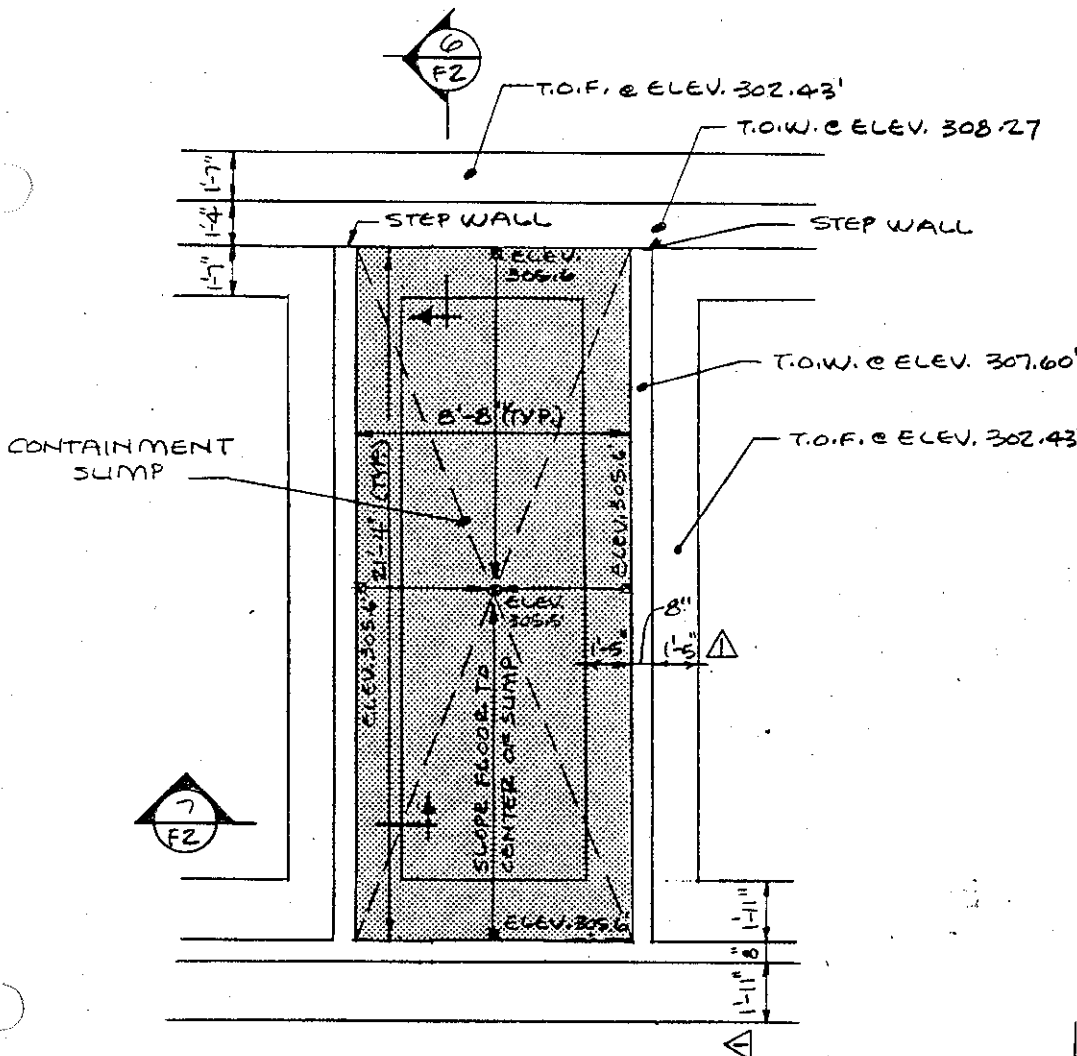
Sump Area Construction Plans



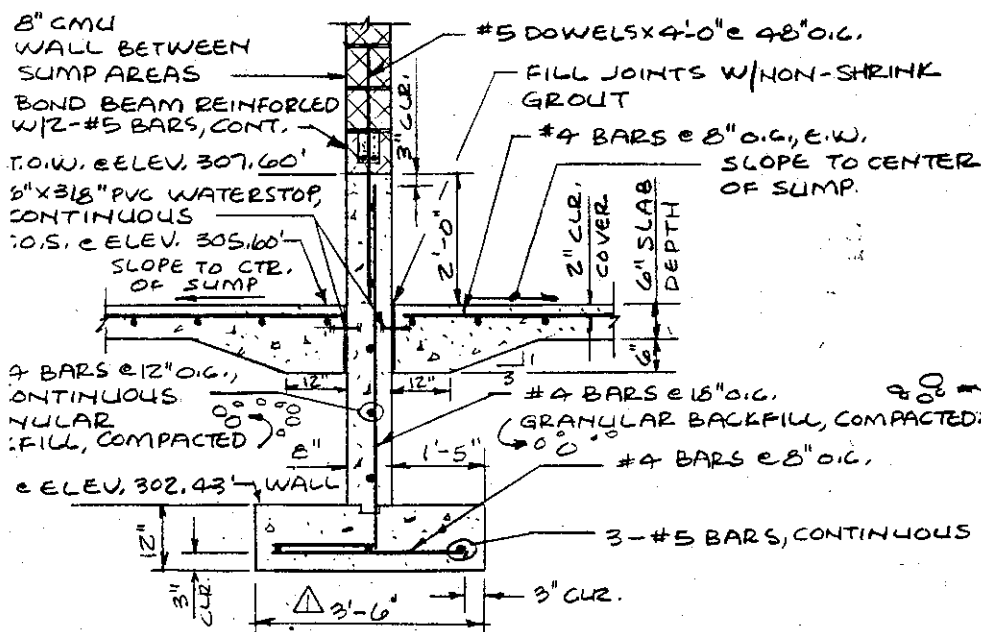
CHAMPLAIN CONSULTING ENGINEER
HARBORSIDE PROFESSIONAL BUILDING
SUITE 1D
128 PRIM ROAD
COLCHESTER, VERMONT 05446
(802) 863-8060

UNIVERSITY OF VERMONT
ENVIRONMENTAL SAFETY FACILITY

SHEET 2 OF 5



① (5) TYPICAL CONTAINMENT SUMP PLAN
14" = 1'0"



① ⑦ CONTAINMENT SUMP WALL DETAIL
112" = 140"

Attachment E-4

Compatibility of Waste with Containers

Compatibility of Waste with Containers

Hazardous wastes stored at the Environmental Safety Facility will be stored in appropriate containers that have good structural integrity and are made of, or lined with, materials that will not react with, and are otherwise compatible with, the hazardous waste to be stored. All containers will be in good condition.

UVM's ESF uses DOT standards as set forth in 49 CFR §172 and §173 as a guideline for compatibility of hazardous waste with its container. Hazardous materials destined for recycling or managed as Universal Wastes are shipped according to DOT requirements and are stored with compatible materials.

An example of the types of wastes stored in compatible containers follows:

WASTE TYPE	COMPATIBLE CONTAINER MATERIAL
Alkaline liquids	Poly/fiber/stainless steel
Acid liquids	Poly/fiber/stainless steel
Flammable liquids/solids	Steel , Poly/fiber
PCB liquids	Steel
PCB solids	Steel
Poison liquids	Steel, Poly/fiber
Halogenated solvents	Steel, Poly/fiber
Flammable, corrosives	Poly/fiber
Other Haz waste (ie. lead paint chips)	Steel, Poly/fiber, cubic yard boxes
Reactive Wastes	Steel, Poly/fiber, combination

Appendix F

University of Vermont Environmental Safety Facility Security Plan

Security Plan

The ESF has the following security features to minimize the possibility of unauthorized entry of persons or livestock onto the facility's premises.

Access control

A 6-foot high fence surrounds the perimeter of the facility approximately 50 feet from the building meeting the requirements of 40 CFR§ 264.14(b)(2)(i). The access road to the facility has a gate to restrict entry onto the premises. The gate is secured after hours except to allow access to authorized persons only.

Both the main ESF building and the Reactives Storage building have locks that operate on the campus master key system. The Reactives Storage building remains in the locked position at all times. Daily inspections are used to verify that all exterior doors in both buildings are locked.

The security fence and locked doors prevent the unknowing entry, and minimizes the possibility for the unauthorized entry, of persons or livestock onto the active portion of this facility. Physical contact with the waste containers, structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of the facility because the waste is containerized. There are no open piles, lagoons or other uncontainerized waste storage.

During routine ESF operations, only the front entrance to the main ESF building is unlocked. Any building entrants must pass through the occupied office space prior to accessing the active portion of the facility. ESF staff, within these offices, control entry of personnel into the active portion of the facility. The front entrance is locked when these offices are unoccupied. This meets the requirements of 40 CFR§ 264.14(b)(2)(ii).

24-hour surveillance system

The main ESF building is connected to a central intrusion alarm system tied to the University's Physical Plant and Police Services dispatchers. This system includes contacts on all doors, and motion detectors in the offices, conference room and laboratory. Furthermore, the ESF grounds are within the area that is patrolled by UVM police who are on duty 24 hours every day. This meets the requirements of 40 CFR§ 264.14(b)(1). While the Reactives Storage Building is not monitored remotely for intrusion, it is always locked and located within the security fence and within the area of UVM Police patrols.

Lighting

Six light poles are located around the parking area, and 6 flood lamps are mounted on the exterior of the building. Three of the building mounted lights are on the wall outside of the waste storage area. The area lights are photosensitive, meaning they come on when the sky gets dark. The light pole closest to the gate stays on all night; a timer shuts off the other lights automatically. The lights can be controlled remotely from the campus service operations support office, which is staffed 24 hours every day.

Signage

Signs with the legend, “Danger - Unauthorized Personnel Keep Out” as well as signs with the legend, “No Smoking” are posted at each entrance to the active portion of the facility. This includes each of the two gates, the door entering into the waste storage area from the office area, the loading dock door, each of the hazardous waste storage room emergency exit doors, the two side doors leading out from the waste storage area, and the door to the Reactives Storage Building. This meets the requirements of 40 CFR§ 264.14(c).

Appendix G

University of Vermont Environmental Safety Facility Contingency Plan

Contingency Plan Control Sheet

This is copy

Numbered copies of this contingency plan for UVM's permitted hazardous waste treatment, storage and disposal facility (TSDF) will be issued to the following organizations and companies to ensure they are familiar with the operations at and potential hazards associated with UVM's Environmental Safety Facility (ESF). The copies must be kept at the specified location. Only these copies will be updated, do not make unauthorized copies.

1. UVM Environmental Safety Facility 667 Spear Street Burlington, VT 05405 *(Contained in ESF permit)	2. UVM Risk Management Department 284 East Avenue Burlington, VT 05405 *(Contained in ESF permit)
3. UVM Police Services 284 East Avenue Burlington, VT 05405	4. UVM Rescue 284 East Avenue Burlington, VT 05405
5. Burlington Fire Department Station#3, Mansfield Ave Burlington, VT 05401	6. South Burlington Fire Department 575 Dorset Street South Burlington, VT 05403
7. Fletcher Allen Medical Center, Risk Management Colchester Ave Burlington, VT 05401	8. Chittenden County LEPC c/o CCRPC 110 West Canal Street, Suite 202 Winooski, VT 05404
9. Environmental Products and Services 273 Commerce Street Williston, VT 05495	10. ENPRO Services, Inc 54 Avenue D Williston, VT 05495

Contingency Plan

Introduction

This plan describes the actions to be taken by University of Vermont personnel in the event of an incident involving hazardous waste materials at the Environmental Safety Facility. The plan will be implemented as soon as possible should any of the following conditions exist at the facility: fire; explosion; or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment. The contingency plan will be reviewed and, if necessary, amended whenever the facility's permit is revised, the plan fails in an emergency, changes in the facility's operations alter the plan, or changes occur in the list of emergency coordinators or emergency equipment.

Coordination Agreements

A critical event at the ESF may require resources beyond the capacity of ESF staff. Therefore emergency preparedness planning with and awareness within local response agencies is necessary and beneficial. This planning takes place at several levels: formal response plans and training, informal tours, routine interactions, and activities through the Local Emergency Planning Committee (LEPC). Each agency is provided a copy of UVM's contingency plan (see Contingency Plan Control Sheet); however, the potential response is continuously improved by regular interaction with the agencies involved.

Local Emergency Planning Committee (LEPC)

UVM ESF staff have been active participants in the Chittenden County LEPC since its inception in 1988. ESF staff submits the annual Tier II chemical inventory as well as all updated hazardous waste contingency plans to the LEPC. UVM participates in LEPC exercises, monthly meetings, and routine communications. The LEPC provides a forum to plan, become familiar with and to coordinate activities with Burlington Fire Department, South Burlington Fire Department, Fletcher Allen Health Care, Vermont Emergency Management, Vermont State Hazardous Materials team, District 3 EMS, Vermont Health Department, Vermont's Homeland Security office, Vermont State Police and other emergency response and planning organizations in Chittenden County and the State.

Resources made available by UVM and by the larger community are included within the LEPC's countywide emergency response plan. This plan includes, for each municipality in Chittenden County as well as for UVM and a few other specific entities:

- An emergency response resource inventory,
- A critical infrastructure inventory,
- A "rapid response plan," and
- An emergency operation plan.

The goal of this plan is to provide a system where all of these contingency and response plans can be coordinated, tested, communicated and improved on a continuing basis. UVM's ESF staff participates in and helps to facilitate this process.

UVM Police Services

UVM's police officers and dispatchers monitor fire and intrusion alarms at the ESF. They are likely to be the first response personnel on scene to an off-hours emergency at the ESF. Each police officer receives training to become familiar with the layout of the ESF and the locations where hazardous materials are stored.

UVM Police are expected to respond no further than the closest point where the emergency is recognized or the front door of the ESF whichever is farthest from the hazard.

UVM police roles at an ESF emergency may include law enforcement activities, notification of additional responders, evacuating area personnel, site security, mobile communications and participation in unified command structure.

Burlington Fire Department - primary emergency response

Burlington Fire Department (BFD) has the primary responsibility for fire alarms at the ESF. Firefighters from Station 3, located on Mansfield Avenue, along with ESF, prepare trainings for all shifts of BFD firefighters; these have included planned tours of the building as well as presentations with photographs of the ESF. Additionally, BFD crews make impromptu visits to the ESF for tours.

Burlington Fire Department has primary responsibility for uncontrolled releases of hazardous materials at the ESF. As the ESF building is designed to contain most releases, BFD would only need to assume this responsibility in the event of fire, explosion, injury, death or excessive water release (such as fire suppression sprinklers) in the waste handling area of the building.

Burlington Fire Department also has the training, equipment and capability to decontaminate patients that have been exposed to hazardous materials. Burlington Fire Department's Emergency Medical Technicians are trained to respond to hazardous materials emergencies.

South Burlington Fire Department - secondary emergency response

South Burlington Fire Department (SBFD) will back-up Burlington Fire as necessary in responding to fire alarms at the ESF. Training for SBFD has comprised of tours of the ESF and exercises and trainings coordinated through the LEPC.

Vermont Hazardous Materials Response Team – Hazmat support to fire departments

Organized under the State Emergency Response Commission (SERC) and operated through Vermont Emergency Management, the State HAZMAT Team is available to support any fire department in Vermont in responding to hazardous materials emergencies. The team is equipped for response into environments that require Level A, B, C or D personal protective equipment. The team is also equipped to identify and evaluate hazardous materials emergencies.

The State HAZMAT team will respond in a defensive mode to contain a spill and stop the source. They will function under the incident command of the local fire department to assure the safety of personnel and the environment. UVM, not the State HAZMAT team, is responsible for the cleanup of material spilled at the ESF.

The team is supported by any of several fire departments that are trained and equipped to provide decontamination services at hazardous materials scenes. These decontamination lines can be used to decontaminate emergency responders or victims. Rinse water from the decontamination line would be containerized and become the responsibility of UVM for hazardous waste determination and management.

UVM Rescue - primary medical response

UVM Rescue, like most Vermont EMS units, has a policy of receiving HAZMAT contaminated patients only after they have been decontaminated on-scene. Burlington Fire Department's emergency medical response team is prepared to backup UVM Rescue if necessary.

Fletcher Allen Health Care – emergency and long-term medical care

UVM works closely with Fletcher Allen Health Care (FAHC) in many areas. These include coordinating hazardous and medical waste efforts, mercury spill response, indoor air quality investigations, regulatory training, shared space for medical research labs and for clinical research labs. Many of UVM's faculty who operate the research labs that generate the hazardous waste are also on staff at FAHC.

FAHC emergency department operates a decontamination room in the emergency room. ESF and FAHC emergency planning personnel interact regularly at the LEPC.

Environmental Products and Services of Vermont -
and

ENPRO Services, Inc. - 24-hour HAZMAT emergency response and remediation

ESF staff use these two contractors routinely for additional labor in handling waste, cleaning up spills, removing fuel tanks and other projects. ESF maintains open budgets with each contractor for spill response. Each contractor plans to be able to provide a two-hour response to ESF emergencies. The contractors are familiar with the layout and operations of the ESF.

UVM Physical Plant - facilities and mechanical systems management

UVM's Physical Plant Department (PPD) staff maintain and repair building electrical, plumbing, air handling and other systems at the ESF. ESF personnel escort PPD personnel if their work will bring them into the waste handling areas.

Hazardous Materials Emergency Coordinator

UVM's hazardous materials emergency coordinator is available 24 hours a day to respond to and coordinate hazardous materials emergency response measures at the ESF. The emergency coordinator is familiar with the contingency plan, the facility layout and operations, locations and characteristics of the wastes handled, and the location of hazardous waste records within the facility. The emergency coordinator has the authority to commit the resources needed to carry out the contingency plan.

In case of a fire, explosion, or chemical release involving hazardous waste, UVM's police dispatch will notify the emergency coordinator. If the dispatcher is unable to reach the primary emergency coordinator, he/she will contact one of the alternate emergency coordinators. The

emergency coordinator or alternate emergency coordinator will be accessible by phone or pager. The primary emergency coordinator or one alternate emergency coordinator will always be available on-site, or on call. A UVM Police Shift supervisor is always be on-site at the UVM campus and available to respond to nearby noncontiguous sites including the ESF.

The ranking, on-duty Police Shift Supervisor will secure the site in the event of a spill or release until chemical handling and emergency response staff arrive on the scene. The UVM Police Services Shift Supervisor is authorized to contact a hazardous material response contractor in the unlikely event that none of the emergency coordinators can be reached.

The Contingency Plan will be reviewed with UVM Police Services' Supervisors at least annually.

The emergency coordinator will be prepared to provide the following:

1. Emergency coordinator's name and telephone number;
2. Facility name and address;
3. Time and type of incident;
4. Name and quantity of material(s) involved to the extent known;
5. Extent of any injuries;
6. Possible hazards to human health and the environment outside the facility.

Emergency Coordinator List		September 2012
Primary Emergency Coordinator		
<p>Jeff L Rogers Environmental Compliance Manager 15 Swamp Rd Fairfax, VT 05454 656-0767 (Work) (802) 849-6375 (Home) Cell: (802) 310-2493</p>		
Alternate Emergency Coordinators		
<p>1. Brian Medor Environmental Safety Technician 53 Pine Street Swanton, Vermont 05488 656-5408 (work) (802) 868-3727 (home) Cell: (802) 228-6729</p>	<p>2. Brian Hodge Environmental Safety Technician 8368 Main Road Huntington, VT 05462 656-5408 Cell: (802) 777-9183</p>	
<p>3. Lee Diamond Laboratory Safety Professional 746 Dugway Road Richmond, VT 05477 656-5408 or 656-5400 (work) Cell: (802) 318-5570</p>	<p>4. Francis Churchill Assistant Director of Risk Management 20 Wheeler Lane Richmond, VT 05477 656-5405 (work) Cell: (802) 316-9566</p>	
<p>5. Elayna Mellas Laboratory Safety Professional 55 Foster Rd Essex Jct., VT 05452 656-7857(work) Cell: (617) 947-6985</p>		

Emergency Notification Procedures

The following procedures are integrated into the University of Vermont’s Emergency Preparedness Plan and, if necessary, the emergency coordinating board will assemble in accordance with that plan. Should any conditions exist at the facility that could threaten human health or the environment, the emergency coordinator will immediately implement the following emergency notification procedures:

1. Activate the internal alarm or communication system by pulling fire alarm pull boxes, or using facility intercom or telephone if necessary.
2. The internal alarm system will notify the UVM Police Services’ dispatcher that an emergency exists at the facility; alternatively, Police Services can be called directly. Police Services will notify the Risk Management Department if an alarm occurs during non-operating hours.
3. The emergency coordinator will notify the Burlington Fire Department through the UVM Police Services’ dispatcher if the incident involves fire or explosion, or if there is a potential need to evacuate areas outside of the facility.
4. The emergency coordinator will notify a hazmat spill response contractor, if facility personnel cannot contain the release of hazardous waste.
5. The emergency coordinator will notify the Vermont Department of Environmental Conservation HAZMAT Hotline immediately upon determining that a release has occurred.
6. The emergency coordinator will notify the US Coast Guard if the incident threatens surface waters.
7. The emergency coordinator will notify the National Response Center if it is determined that the facility has had a fire, explosion, or release that could threaten human health or the environment outside of the facility.
8. The emergency coordinator will notify the University of Vermont Administrative and Facilities Services office. This activates, if necessary, UVM’s Emergency Operations Center and Emergency Operations Group, including financial, public relations, police and physical plant services.

Emergency Telephone Numbers

UVM Police - Emergency (on campus).....	911
UVM Police - non-emergency	656-3473
Burlington Fire Department.....	911
HAZMAT Contractor: Environmental Products and Services	802 862-1212
HAZMAT Contractor: ENPRO Services, Inc.	802 860-1200
Vermont Emergency Management (“Hazmat”) Hotline.....	1-800-641-5005
Vermont DEC (business hours)	802 241-3888
National Response Center	1-800-424-8802
US Coast Guard	802 864-6791
UVM Administrative and Facilities	656-2240

Evacuation Plan

The fire alarm is the signal to initiate an evacuation of the facility. Upon hearing the fire alarm, facility personnel will proceed to the nearest emergency exit. All emergency exits have an illuminated EXIT light.

- Facility personnel's normal work activities occur mostly in the offices and laboratory portion of the building. Personnel would exit from these areas through the main ESF entrance (East side) or through the laboratory in room 108 (West side).
- Routine waste activities occur in the workroom (109). There are two exits from this room that allow access to exits at the West stair, East stair or laboratory. Personnel would doff PPE as necessary once they achieve a safe distance from the emergency.
- Emergency exiting from the waste storage rooms (110 – 120) will primarily happen through any of the 11 doors that exit directly to the outside (North side). If the situation requires alternative exits, personnel will exit the rooms into the main facility hallway and then proceed to the nearest, accessible stairwell exit.

All facility personnel will meet outside of the upwind (Northeast or Southeast) gate of the facility and will report to the emergency coordinator.

The evacuation plan will be reviewed with all facility personnel on an annual basis. A copy of the building plan with emergency exits marked can be found in Attachment G1.

Identification of Hazardous Waste Materials

Should a fire, explosion, or release occur at the facility, the emergency coordinator must immediately identify the character, source, amount, and extent of any released materials by observation, record review, or if necessary, chemical analysis.

The facility maintains a drum report identifying the DOT shipping name, quantity and locations of all bulk and lab-packed wastes stored at the facility. The inventory is updated whenever there is a change, and posted in the front foyer of the ESF as well as at <http://esf.uvm.edu/emergency>. See Appendix G2 for a listing of hazardous properties associated with the wastes stored at the ESF.

Assessment of Risk to Community, Health & Environment

Whenever there is a release to the environment, fire, or explosion, the emergency coordinator will assess the known hazards to human health and the environment, considering all direct and indirect effects. The assessment will include source, identity, amount, and extent of a release; the effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat-induced explosions, wind direction, and containment.

If the assessment indicates that evacuation of a surrounding area may be advisable, the emergency coordinator will advise the ranking on-scene Fire Department officer of the situation and provide University assistance as requested. The emergency coordinator will also notify the

National Response Center if it is determined that the facility has had a fire, explosion, or release that could threaten human health or the environment outside of the facility.

Control and Containment Procedures for Hazardous Waste Releases

The following actions must be taken in the event of a release of hazardous waste to the environment:

1. If a danger of fire exists, contact the Burlington Fire Department through the UVM Police dispatcher. See the notification section for the information that must be provided.
2. If facility personnel cannot contain the release, contact a hazardous material response contractor.
3. Identify the source of the leak. The emergency coordinator will determine the appropriate level of personal protective equipment.
4. Stop the source of the leak if possible.
5. Contain any leaked fluid by diking, if necessary, with absorbent materials or by trenching.
6. If necessary, the emergency coordinator or his or her designee will close the control structure at the end of the stormwater retention pond.

Emergency Procedures for Fire and/or Explosion

The following actions must be taken in the event of a fire or explosion at the facility:

1. Activate the fire alarm system.
2. Initiate evacuation procedures. Evacuation routes will be posted throughout the facility. In addition, all facility personnel will be trained in the proper evacuation procedures.
3. Meet the first arriving fire company and inform the officer of the following:
 - a. Unaccounted facility personnel, if any;
 - b. Amount and types of hazardous wastes involved;
 - c. Area of the facility involved;
 - d. Any additional information, as needed.
4. If a release of hazardous waste has occurred, implement the emergency procedures for hazardous waste releases outlined above.
5. During the emergency, the emergency coordinator will act as liaison between the Fire Department, the emergency contractor, and University personnel.
6. Once the fire department has given the “all clear” signal, the emergency coordinator or the designated emergency contractor will inspect the facility to determine if it is safe for others to enter the facility.

Prevention of Recurrence or Spread of Fires, Explosions, or Releases

1. Take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other areas at the facility. These measures will include, where applicable:
 - a. Stopping processes and operations;
 - b. Collecting and containing released waste; and
 - c. Removing or isolating containers.
2. If the facility stops operations in response to a fire, explosion, or chemical release, the emergency coordinator or the designated emergency contractor will monitor for leaks,

pressure buildup, gas generation or ruptures in valves, pipes or other equipment, wherever this is appropriate.

Cleanup Procedures

Clean up and repair activities shall be initiated within 24 hours of discovering a spill or leak.

1. Personnel involved in clean up activities will wear appropriate personal protective equipment. The emergency coordinator or the designated emergency contractor will evaluate the hazards present and recommend the appropriate level of protection.
2. All contaminated soil, vegetation, and absorbent material will be collected and placed in suitable DOT approved containers, which will be properly labeled for future disposal.
3. Any runoff water held within the storm water retention pond will be analyzed in accordance with appropriate test methods to determine if it meets the definition of hazardous waste. If it is determined to be hazardous, the run-off will be pumped out and transported to a permitted TSDF. If the run-off is determined not to be hazardous, the control structure will be opened and the pond will be drained in accordance with the laws and regulations enforced by the DEC Watershed Management Division.
4. Any freestanding liquid hazardous waste will be pumped into a compatible, properly labeled, DOT approved containers. The drums will then be stored in the appropriate storage area until transported for final disposal.
5. The contents of any leaking drum will be transferred into a compatible non-leaking drum, or the leaking drum will be overpacked into a DOT approved drum.
6. All emergency equipment utilized during the emergency will be cleaned and returned to duty after the emergency. Any equipment determined to be unfit will be replaced.
7. The facility will not accept any waste for storage until the released material has been cleaned up.

Post Emergency Procedures

After the Emergency Coordinator has evaluated the situation and determined that the emergency is over and an adequate cleanup of the affected areas is complete, she/he must do the following:

1. Notify the Secretary of Natural Resources that the facility is in compliance with Section 7-308(b)(9)(E)(ix) of the Vermont Hazardous Waste Regulations before operations are resumed in the affected areas of the facility;
2. Maintain on file with the contingency plan; the time, date, and details of any incident that requires implementing the contingency plan; and
3. Within 10 days after the incident, submit a written report on the incident to the Secretary of Natural Resources. The report must include:
 - Name, address, and telephone number of the owner or operator of the facility;
 - Name, address, and telephone number of the facility;
 - Date, time, and type of incident;
 - Name and quantity of material(s) involved;
 - Extent of any injuries;
 - Assessment of actual or potential hazards to human health or the environment, where this is applicable; and
 - Estimated quantity and disposition of the recovered material that resulted from the incident.

Emergency Equipment

Fire Protection Equipment

The facility is equipped with a temperature-activated fire suppression system. All water-reactive waste is stored in a separate outdoor storage building that is equipped with fire-resistant wallboard and a dry chemical extinguishing system.

Hand-held ABC rated fire extinguishers are located within the chemical storage and work areas of the facility. In addition, a Class D extinguisher is mounted in the general work area for use on flammable metal fires. Class D fire extinguishers do not currently have an extinguishing rating from the National Fire Protection Association. Fire extinguishers are visually inspected on a monthly basis.

Communications Equipment

- Internal and external phone lines allow communication among personnel throughout the building; phone locations are shown on maps on pages 1 and 2 of Attachment G1.
- A fire alarm system capable of summoning emergency assistance, including detection and pull stations, has been installed throughout the facility in accordance with local fire codes. Fire alarm pull box locations are shown on maps on pages G1-1 and G1-2.
- Facility staff members carry beepers or cell phones.

First Aid

First Aid and emergency medical treatment is available through UVM rescue. The waste storage area is equipped with three safety shower and eyewash stations, and the work area is equipped with one safety shower eyewash station.

Respiratory Protective Equipment

The ESF is equipped with two emergency escape air packs accessible to the general work area. All responding facility personnel will be provided with respiratory protection, annual respirator training, and an annual hazardous material exam including a pulmonary function test (PFT).

Spill Response Equipment

Spill response equipment, sufficient for any spill which would be contained by facility personnel without the aid of an outside emergency contractor, is maintained and kept accessible to the general work area. In the event of an emergency involving more than minimal spill equipment, the 24-hour emergency response contractor will be called to respond.

The following equipment is reserved at the ESF for emergency spills and maintained at positions indicated on the facility site plan:

2 chemical splash goggles	rubber gloves
2 rubber aprons	
10 sponges	2 pails
10 sample vials	1 container of pH paper
2 level "B" suits	10 tyvek suits
2 brooms	2 dust pans

	2 squeegees		20 poly bags
	10 bags Speedi-Dry		25 lb of sodium bicarbonate
	2 hand pumps		1 85 gallon overpack drum
	2 55 gallon open head steel drum		2 55 gallon steel closed head drums
	2 55 gallon poly closed head drums		2 30 gallon poly closed head drums
	2 16 gallon poly open head drums		2 15 gallon poly closed head drums

Any spill containment equipment utilized during a spill will be cleaned or properly disposed of and replaced.

The locations where emergency equipment and personal protective equipment are stored are marked on the 1st floor plan included in this contingency plan (page G1-1).

Procedures and equipment used to mitigate the effects of equipment failure or power outage

The ESF has an emergency generator located outside the building capable of powering phones, ventilation, exhaust fans, heat, fire alarms, security alarms, and exterior site lighting. In the case of a power outage, the emergency generator powers critical ESF equipment. The physical plant department is responsible for maintaining the onsite generator. Routine testing by physical plant occurs monthly, and planned maintenance by on outside contractor occurs every 6 months. The location of the emergency generator is shown on page 3 of Attachment G1.

Critical ESF systems are monitored 24 hours a day by UVM's Physical Plant Department. Should a critical piece of equipment fail during off-hours, both ESF staff and physical plant personnel are on-call to address the situation.

Contingency Plan for the Reactives Storage Building at the Environmental Safety Facility

Prevention

In order to minimize the chance of a reaction, all reactive chemicals will be stored in the laboratory bottles in which they were shipped. To protect against a release, all bottles will be placed in secondary containers. Containers of reactive waste will be stored in the Reactives Storage Building. During periods of extreme hot or cold weather, some materials may be stored in the main ESF building when the temperature poses a safety concern. Packaging or depackaging of containers of reactive chemicals is done in room 109 of the main ESF building.

Containment

The Reactives Storage Building is used to store water reactive, air reactive, spontaneously combustible, poly-nitrated compounds, and other reactive material. This building is a commercially manufactured product with the following safety features:

- Fire resistant wallboard and steel construction;
- Corrosion protected steel;
- Pressure release panel on rear wall, safety chained to wall;
- 6" deep secondary containment sump lined with 20 mils HDPE;
- Dry chemical fire suppression system, with fusible-link, automatic activation and manual pull station activation;
- Exterior audible fire alarm;
- Class 1, Groups C & D, Division 1 lighting, fan & electrical outlet; and
- Static grounding system

Response to a release of hazardous materials

In case of a release that does not result in an energetic reaction, the material will be stabilized only if the exact contents are known. For instance, sodium metal would be covered in mineral oil. The material would then be cleaned up using the emergency spill equipment located within the East Stairwell of the main ESF building which includes:

- Static-proof brooms,
- Shovels, and
- Water absorbing towels.

Small reactions or fires can be controlled with the Class D fire extinguisher, located outside of room 109 in the loading area of the ESF (see map on page G1-1). This extinguisher is approximately 120 feet from the reactive storage building and 30 feet from room 109.

Response to explosion, fire or other energetic release

ESF personnel WILL NOT attempt to control a large, energetic reaction, explosion, or fire. ESF personnel will attempt to control the resulting release using absorbents, diking and trenching methods; and the pond valve will be closed. Emergency response personnel will be called as specified in the notification portion of the contingency plan.

In all instances

The emergency coordinator will choose the proper PPE.

Clean-up personnel will follow decontamination procedures.
Emergency coordinator will follow Emergency Notification Procedures.

Contingency Plan for Transporting Hazardous Wastes

For operators of UVM vehicles that transport hazardous materials:

Prevention

Wastes are packaged in sealed DOT-approved containers and transported to the ESF only in properly permitted, vehicles that are placarded in accordance with DOT regulations. The waste containers are unloaded at the loading dock inside the truck bay.

Response to accident or release

1. Protect Yourself

Stay upwind and uphill of any accident involving suspected hazardous materials. Do not touch any spilled material; breathe any smoke, fumes or vapors. Do not eat, drink or smoke. Use Personal Protective Equipment! All vehicles carrying hazardous materials are equipped with the PPE necessary for dealing with discharges of those materials.

2. Call for Help

All ESF vehicles are equipped with a cellular telephone while transporting hazardous waste. UVM Police will notify appropriate fire department and / or EMS.

UVM Police Service (from a cell phone)	656-3473
UVM Police Services (from a campus phone)	911
Burlington Fire Department	911
South Burlington Fire Department	911
UVM Rescue	911
Environmental Safety Facility	656-5400

Relay all pertinent information including:

- Location of accident,
- Injuries
- Chemical involved
- Size of spill
- Danger to public and environment
- Assistance needed

ESF will notify spill contractors.

Environmental Products and Services	802 862-1212
ENPRO Services, Inc	802 860-1200

3. Rescue the Injured

While considering all hazards, using appropriate safety equipment, recognizing your training limitations and assessing the immediate danger to the victim and yourself, administer first aid and emergency response.

For contamination, flush area with water for 15 minutes, remove contaminated clothing. Protect yourself.

Do not move victim unless there is an immediate danger in that area.

Administer First Aid, being aware that the victim may be contaminated with a hazardous material.

Inform EMS, hospital and any other responder of the nature of the hazardous exposure.

Blankets can be used to prevent contamination of the ambulance interior.

4. Stop The Spread

Using proper PPE determined by the emergency coordinator, attempt to stop, slow or contain the leak. Plugging holes, constructing dikes or simply changing the position of the drum can accomplish this. All hazardous materials hauling vehicles should carry proper PPE.

If the discharge has reached the ground, use absorbent materials or trenching techniques to control the spread of the material. Prevent spilled material or firefighting runoff from entering sewers, drains, buildings, and water sources, by using absorbents, trenching, diking or diverting the material. All hazardous materials hauling vehicles should also have proper spill containment equipment, such as absorbent materials, broom, shovel and a salvage type drum.

Prevent the public from entering the area. Evacuate all unnecessary persons. Direct and reroute traffic. Consult North American Emergency Response Guidebook, table of Isolation & Evacuation Distances to determine if downwind evacuation or contamination zones need to be implemented.

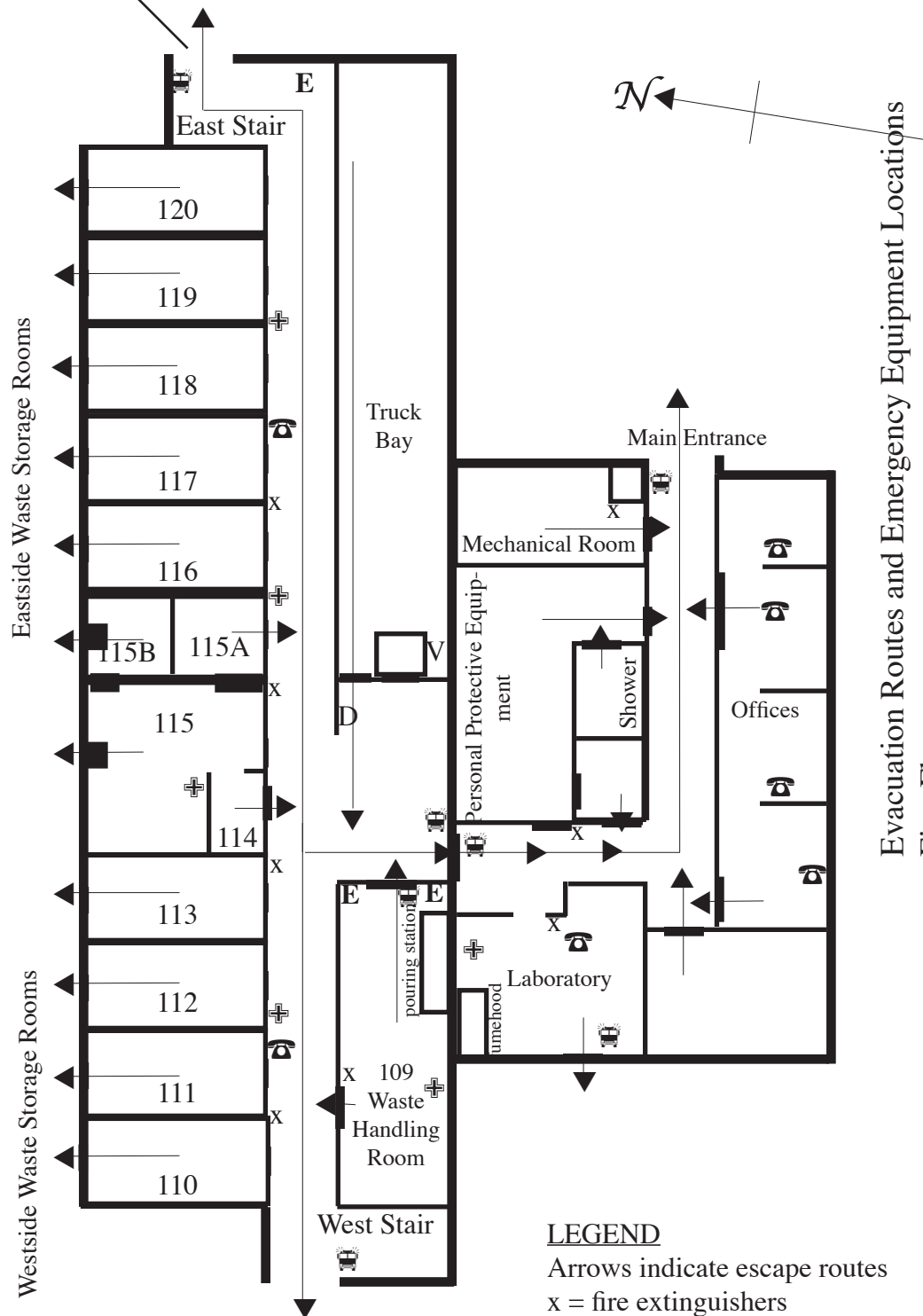
5. Allow Trained Personnel to Perform Their Tasks

When the fire department arrives, inform them of the nature of the chemical, and allow them to work. Assist spill response personnel with information, but allow them to clean up the contamination.

Attachment G-1

Site Plan & Floor Plans

Reactive Storage
Building (~40 feet)



Evacuation Routes and Emergency Equipment Locations
First Floor
Environmental Safety Facility
University of Vermont

LEGEND

Arrows indicate escape routes

x = fire extinguishers

D = Class D fire extinguisher

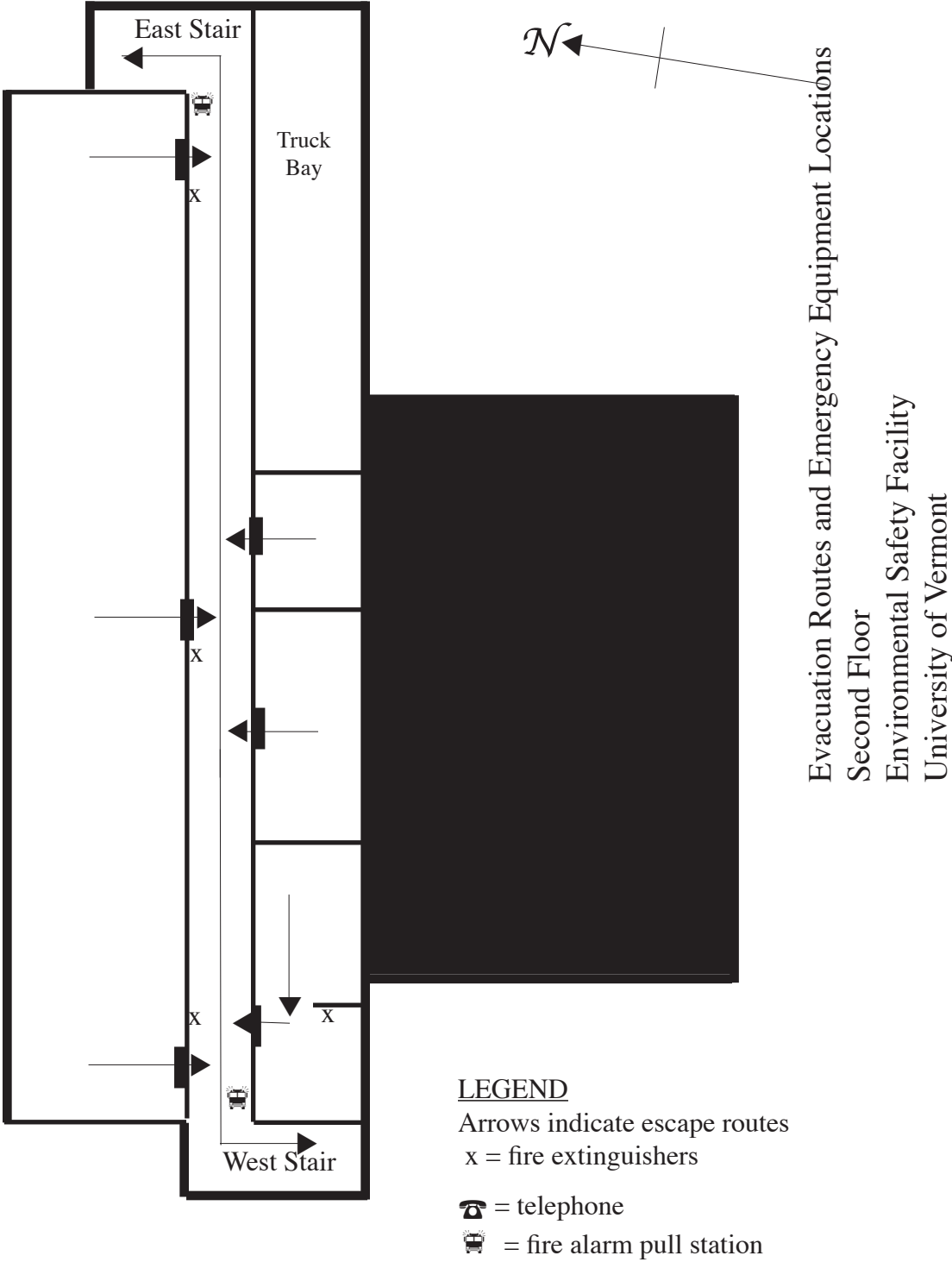
= fire alarm pull station

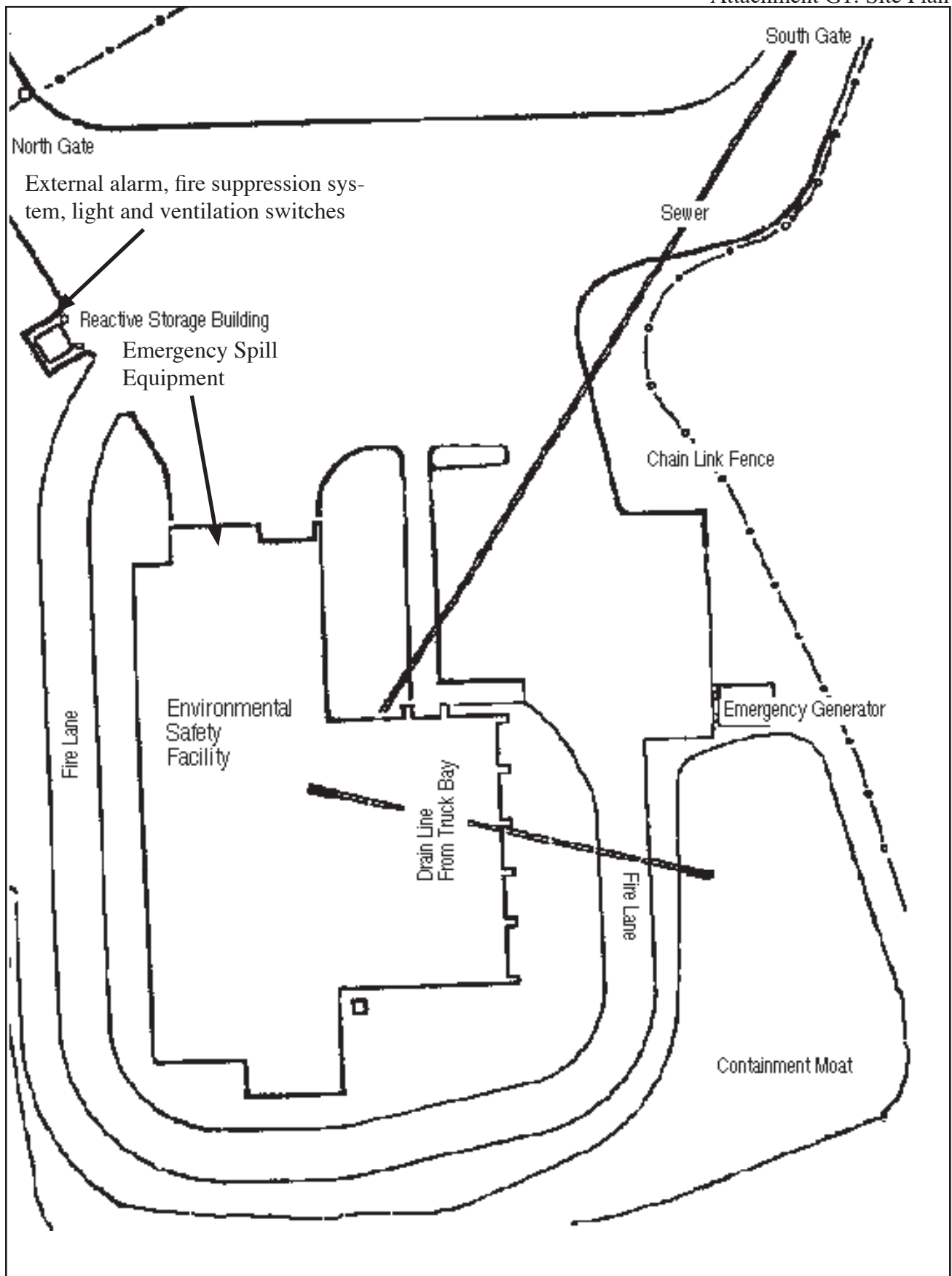
= telephone

= eyewash / safety shower

E = Emergency Spill Equipment

V = Shut-off valve for trench drain in truck bay





Attachment G-2

Properties of Hazardous Waste Stored at the ESF

Properties of Hazardous Waste Stored at the ESF

The ESF receives waste chemicals from all of UVM's laboratories. At any point, the ESF will store waste from between 1,000 and 5,000 chemicals. Most of these are in laboratory amounts (less than 1 gallon, less than 1 pound). The following table, extracted from Prudent Practices in the Laboratory summarizes the types of waste, along with the associated hazards and types of injuries or illnesses that could result from fires, explosions, or releases at the facility.

Type of Waste	Hazardous properties, injury or illness that could result from exposure to chemicals involved in fires, explosions, or releases at ESF
Flammable Liquids and Gases	Flammable liquids and gases readily catch fire and burn in air. Containerized flammable liquids may boil or become pressurized in a fire and vent explosively with either a spout of flame or shrapnel from the container. These can cause serious tissue burns. Superheated vapors can be inhaled causing excessive burns to the respiratory system.
Flammable Solids	Flammable solids readily catch fire and burn in air, often with intense heat. These are often difficult to extinguish and can cause deep tissue burns.
Pyrophoric or Spontaneously Combustible Materials	Pyrophoric chemicals react with the air to catch fire, or release a toxic, flammable or corrosive gas. These can cause temperature burns, corrosive burns, asphyxiation or other toxic effects.
Water Reactive	Water reactive chemicals react with water (including excessive humidity in the air) to catch fire, or release a toxic, flammable or corrosive gas.
Oxidizing Agents	Oxidizing agents may react violently when they come into contact with reducing agents and sometimes with ordinary combustibles. The resulting fire or explosion can cause serious burns.
Corrosive Materials	Corrosive materials are acids (pH less than 2.0) and bases (pH>12.5). These can cause destruction of living tissue by chemical action at the site of contact and can be solids, liquids or gases. Corrosive effects can occur on the skin and in eyes, as well as in the respiratory or gastrointestinal tract. Corrosive effects can happen rapidly. Some materials, such as hydrofluoric acid, are specific to the materials they target, making emergency decontamination difficult. Many oxidizing agents also have corrosive effects.
Toxic – Irritants	Irritants are non-corrosive chemicals that cause reversible inflammatory effects.

Toxic – Allergen	Chemical allergies can result from low-level exposures to chemicals, following previous sensitization. Allergy-related symptoms can range from mild skin irritation to chemical pneumonitis and anaphylactic shock. Allergy symptoms can present soon after exposure or can be delayed.
Toxic – Asphyxiant	Asphyxiants prevent oxygen from getting into the body (simple asphyxiants) or prevent oxygen from getting to organs and tissue once inside the body (chemical asphyxiants).
Toxic – Carcinogens, Reproductive & Developmental toxins	Carcinogenic materials cause, or are suspected to cause, cancer or uncontrolled cell growth. Mutagens cause mutations in cell growth. Teratogens cause birth defects in the offspring of the exposed individual. Reproductive toxins may target the male or female reproductive systems resulting in adverse effects on fertility, gestation, lactation or reproductive performance. Developmental toxins produce adverse effects on the development of an embryo or fetus.
Toxic – Neurotoxin	Neurotoxins target the central nervous system (brain, spinal cord, neurotransmission, cerebrospinal fluid) or the peripheral nervous system (nerves and neurons). Neurotoxic effects range from slurred speech and headaches to neuropathy, paralysis and death.
Toxic – Toxins affecting specific organs or systems	Specific chemicals can target and disrupt the function of the kidneys, liver, blood formation system and other body systems and organs.

Prudent Practices in the Laboratory, National Academy Press 1995,
Chapter 3: Evaluating Hazards and Assessing Risks in the Laboratory

The general hazards described in the above table do not account for routes of exposure, duration or frequency of exposure, concentration of chemical, or the hazards of mixed chemicals. A chemical may be expected to have more than one hazard (i.e. flammable and toxic). Those factors, along with the acute and chronic affects of exposure, need to be considered in any hazard analysis.

Hazard information about a specific chemical involved in an event will have to be researched. Whenever possible, three sources of information should be consulted. These sources can include material safety data sheets, a chemical dictionary, The Merck Index, Prudent Practices in the Laboratory, and A Comprehensive Guide to Hazardous Properties of Chemical Substances (Patnaik).

Appendix H

**Training Plan
And Job Descriptions**

Training Plan and Job Descriptions

Training Program Content, Frequency and Techniques

The training program in place for ESF personnel ensures that they know how to operate and maintain the facility in a safe manner. The program consists of both introductory and continuing training and includes on the job as well as classroom training. New employees will complete their introductory training within six months of their first day of work at the ESF. Trained ESF staff will closely supervise new employees until they successfully complete their initial training. Introductory training includes instructions, descriptions and demonstrations of daily operations including, as appropriate:

- Emergency systems, alarms and communication systems;
- Emergency response procedures including response to fires and ground water contamination incidents, where applicable;
- Inspecting, repairing and replacing facility emergency and monitoring equipment;
- Internal waste tracking instructions;
- Container management;
- Waste packing; and
- Waste stream verification.

ESF Chemical Handling and Emergency Response Staff receive a 40 hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training, which meets the requirements of 29 CFR 1910.120. The ESF Office Management and Clerical Support Staff, and the UVM Police Services Shift Supervisors receive, at a minimum, the HAZWOPER Awareness Level Training which meets the requirements of 29 CFR 1910.120.

ESF personnel participate in annual training relevant to their position. This training is provided through internal personnel or through contractors who specialize in various aspects of the hazardous waste management field.

Topics included in a typical annual training program are listed below. Similar timely and equivalent information is presented each year.

- Implementation of the Contingency Plan (Appendix G)
- Chemical Safety and toxicology
- Personal Protective Equipment and Respiratory Protection
- Emergency Procedures
- RCRA and DOT Regulations
- Waste Minimization
- OSHA HAZWOPER (29 CFR 1910.120) refresher training

ESF personnel are also encouraged to attend at least one applicable off-site training program each year.

Job Description for ESF Chemical Handling and Emergency Response Staff

All ESF chemical handling and emergency response personnel have an appropriate level of training and experience or education to adequately perform the tasks described below:

Basic Function

To manage the University Hazardous Waste Management program in accordance with applicable state and federal regulations. Train the campus community in the relevant hazardous waste laws and regulations including proper disposal of waste materials and minimization techniques.

Characteristic Duties/Responsibilities

- Manage hazardous waste storage facility.
- Pickup, label and transport waste chemicals in accordance with all applicable local, state and federal regulations.
- Prepare waste for proper disposal.
- Respond to chemical spills and releases.
- Implement Contingency Plan (Appendix G)
- Maintain records related to program activities including hazardous waste manifests and other documents required as part of the ESF operating record.
- Serve as a liaison with agencies regulating hazardous waste.

Transportation

ESF personnel required to drive the hazardous waste transport vehicle as part of their job duties will attend a training course for hazardous materials/waste transporters.

In addition, any employee who is required to drive a University vehicle will attend the University's Defensive Driving course. This is conducted through the Department of Risk Management.

ESF Job Titles & Descriptions Relating to Hazardous Waste

Title:	Environmental Compliance Manager
Job Description:	Provide regulatory and technical oversight for hazardous waste operations and coordinate emergency response to chemical spills and releases.
Title:	Assistant Director of Risk Management
Job Description:	Coordinate emergency response to chemical spills and releases.
Title:	Environmental Safety Technician
Job Description:	Collect, transport, package and consolidate, and oversee disposal of hazardous waste, and coordinate emergency response to chemical spill and releases
Title:	Laboratory Safety Professional
Job Description:	Provide safety and environmental Management system training and oversight to campus users of hazardous materials, and coordinate emergency response to chemical spills and releases.
Title:	Biosafety Program Manager and Biosafety Assistant
Job Description:	Provide safety and environmental Management system training and oversight to campus users of hazardous materials, and coordinate emergency response to chemical spills and releases.

UVM Police Services

Title:	UVM Police Services Shift Supervisor
Job Description:	Secure site in the event of a spill or release until chemical handling and emergency response staff arrive on the scene. Authorized to contact a hazardous material response contractor.

To maintain staffing flexibility; within this facility permit “ESF personnel” refers to anyone with the following job descriptions: 1) Environmental Compliance Manager; 2) Assistant Director of Risk Management; 3) Environmental Safety Technician; 4) Laboratory Safety Professional; and 5) the Biosafety Program Manager and Biosafety Assistant.

Recordkeeping

The following training information is kept as part of the facility operating record:

- Job titles and the names of the employees filling those positions;
- Written job descriptions;
- Descriptions of introductory and continuing training, and;
- Records that document the training received by personnel.

Training records on present personnel are kept until the closure of the facility. Records on former employees are kept for three years from the date they last worked at the ESF.

Appendix I

University of Vermont Environmental Safety Facility Waste Analysis Plan

Purpose

The purpose of this plan is to describe how wastes accepted at the University's Environmental Safety Facility (ESF), from the source generators listed in Appendix D, are identified in order to safely manage them as well as to arrange for proper final disposition. This plan assures compliance with applicable requirements found in 40 CFR 270.14(b)(2) and 264.13.

Introduction

All wastes accepted at the ESF go through an approval process based predominantly on "generator knowledge." The ESF primarily accepts waste from the University of Vermont, and its tenants and affiliates (referred to as "University personnel" or "UVM personnel" hereafter). UVM can also accept waste at the ESF from the generators not affiliated with the University that are listed in Appendix D. Procedures for waste analysis vary depending on whether the waste is generated by University personnel or not.

Waste Analysis Procedures for Wastes from UVM Personnel

The University of Vermont assumes generator status of all wastes from the activities of University personnel at the point of generation. The two main activities generating these wastes are laboratory activities (teaching/research) and facility maintenance.

Laboratory Waste

The majority of wastes accepted at the ESF are generated in UVM's research and teaching labs. These "laboratory wastes" consist of small containers (usually less than 4 liters) filled or partially filled with different types of laboratory chemicals. A substantial percentage (approximately 15% to 40%) of the University's laboratory waste is composed of surplus or excess unused chemicals still in the original containers with manufacturer labels describing the chemical constituents and their relative concentrations. Other laboratory wastes are typically mixtures of known materials generated as byproducts from activities performed by, or under the supervision of, qualified laboratory personnel. Occasionally, due to laboratory closures and errors in labeling or marking, some laboratory wastes are considered "unknowns." Procedures for managing and screening unknowns are outlined later in this Appendix (see "Procedures for Unknown Wastes"). A small portion of laboratory wastes are collected in containers greater than 5 gallons.

Facilities Waste

The University also generates wastes from facilities maintenance and construction activities. Examples of facility wastes include, but are not limited to, oily debris, paint related materials and lead paint debris. The University also generates used oil and universal wastes such as spent batteries, florescent lamps, mercury-containing devices, ballasts and cathode ray tubes. All of these wastes are accepted at the ESF.

Waste Identification

ESF personnel typically rely upon the knowledge of the person creating a waste, not on laboratory analysis, to identify the hazardous constituents and/or characteristics of the waste (i.e., “generator knowledge”). The University personnel who control the processes and experiments generating laboratory and facility wastes generally know, and can provide supporting documentation of, the chemical components used.

University personnel identify and communicate chemical constituent information to ESF personnel by filling out a “Laboratory Waste” tag (see inset) for each container of waste generated. Each waste tag is identified with a unique number that is entered into an on-line tracking system, along with the waste-specific information provided on the paper tag.

ESF personnel routinely communicate the importance of accurate generator knowledge, as well as proper waste identification procedures (i.e. complete use of the tag system), to University personnel using the following methods:

- Regular classroom training provided by ESF personnel
- Regular ESF inspections/audits of laboratories and other UVM waste-generating activities
- On-line training and reference material available to all University personnel
- Printed reference material available to all University personnel
- Frequent interaction between ESF personnel and University personnel

Laboratory Waste			
154351			
Lab Supervisor		Building/Room	
Department		Phone Number	
Date		Physical State (circle)	
		Solid Liquid Gas	
Amount (with units)	No. Containers	For ESF Use	
		pH: Oxi:	
Chemical			%
UVM The Environmental Safety Facility esf@uvm.edu or (802) 656-5400 Instructions on Back and at www.uvm.edu/esf			

The veracity of generator knowledge information provided to the ESF has been excellent since the ESF began accepting waste in 1994. This can be credited to UVM’s emphasis on training and communicating the need to provide accurate waste constituent information to ESF personnel, routine oversight of laboratories and University personnel by ESF personnel, frequent interaction between ESF personnel and UVM personnel, and a waste management system that provides no incentives for University personnel to mismanage waste or withhold information from ESF personnel.

Commercial TSDFs that accept waste from un-affiliated off-site generators cannot rely solely on “generator knowledge” for hazardous waste identification information because those generators may: 1) have a financial incentive to “downplay” the hazardous nature of a waste; 2) rely on TSDF representatives or a third party to complete waste profile information based on limited process and/or waste constituent information; 3) have a poor understanding of applicable state/federal hazardous waste regulations. Since UVM already owns its waste, UVM personnel do not have a financial incentive to improperly describe waste being sent to the ESF. In addition, ESF personnel are familiar with most waste generating processes conducted by UVM personnel and always have the ability to follow-up immediately with the individuals responsible for generating waste to resolve waste identification questions.

Waste Pickup and Verification

In response to UVM personnel entering tag information into the tags system, ESF personnel collect tagged waste from UVM campus locations. As wastes are collected, ESF personnel inspect the waste containers and their contents to verify that the wastes visually conform to the information on the tag. The professional judgment of the ESF personnel comes into play when verifying tag information. For example, if a waste is identified as acetone but is purple and viscous, or if a waste is identified as a liquid but appears to be a solid, then ESF personnel will attempt to resolve the discrepancy by communicating with University personnel at the time of the waste pickup. If the discrepancy is resolved, the information is corrected on the tag and in the database, and the waste is accepted.

If the ESF personnel cannot visually verify a waste at the time of pickup and no University personnel are present, it will be left under the control of the person or group that generated the waste until sufficient information can be gathered. When campus safety or security is of concern, main campus wastes may be moved to the short-term storage area until sufficient information can be gathered. If sufficient waste information is not available, ESF personnel will follow the procedures for managing and screening unknowns outlined later in this Appendix (see “Procedures for Unknown Wastes”). ESF personnel will then communicate with the person or group who submitted the tag information, investigate the waste identification procedures used, and re-emphasize the importance of proper waste identification. When ESF personnel observe repeated instances of incorrect or inadequate tag information, they will address this performance issue with the generator and his or her supervisor as appropriate. If the problems are not resolved, they will be handled through the oversight procedure in the University’s Environmental Management Plan (esf.uvm.edu/uvmemp).

In addition to visually inspecting waste, ESF personnel regularly field test liquid wastes to verify the pH and oxidation potential. These tests are performed at the time of pickup or upon arrival at the short-term storage area, and results are compared to the laboratory waste tag information and recorded on the physical tag attached to the chemical container. Any discrepancy between tag information and field verification results in a communication between ESF personnel and the person or group who generated the waste. ESF personnel will investigate the waste identification procedures used, and re-emphasize the importance of proper waste identification. When ESF personnel observe repeated instances of incorrect or inadequate tag information, they will address this performance issue with the generator and his or her supervisor as appropriate. If the problems are not resolved, they will be handled through the oversight procedure in the University’s Environmental Management Plan (esf.uvm.edu/uvmemp).

Short-term Storage Operations and Waste Verification

The primary function of the short-term storage area is to receive wastes from main campus locations, and evaluate tag and label information for the purpose of making hazardous waste determinations and, if applicable, identifying underlying hazardous constituents and making hazardous waste determinations.

In most cases, ESF personnel accept wastes from University personnel and then transport them to the campus short-term storage area. The campus short-term storage area is operated by ESF personnel who utilize the laboratory waste tag information to determine if the wastes are

hazardous wastes or not. In the short-term storage area, waste containers are segregated into compatible groups, labeled and, if appropriate, marked with applicable EPA and Vermont hazardous waste codes. If sufficient information for making a waste determination is not available, ESF personnel will follow the procedures for managing and screening unknowns outlined later in this Appendix (see “Procedures for Unknown Wastes”). Any discrepancy noted results in a communication from ESF to the person or group who generated the waste. ESF personnel will investigate the waste identification procedures and re-emphasize the importance of proper waste identification. When ESF personnel observe repeated instances of incorrect or inadequate tag information, they will address this performance issue with the generator and his or her supervisor as appropriate. If the problems are not resolved, they will be handled through the oversight procedure in the University’s Environmental Management Plan (esf.uvm.edu/uvmemp).

In some situations, such as the transportation of wastes generated at UVM locations that are not on the main campus, ESF personnel accept wastes and transport them directly to the ESF, instead of the short-term storage area. In these cases ESF personnel follow the same waste verification and determination procedures described above at the point of generation.

ESF Operations and Waste Verification

Prior to accepting wastes at the ESF, ESF personnel have verified that the wastes conform to tag and label information, and determined if the wastes are hazardous according to the procedures described above.

At the ESF, many wastes are consolidated, or “bulked,” with other compatible wastes into larger containers. Prior to bulking any waste, ESF personnel re-examine the laboratory waste tag information to ensure that all wastes to be bulked are compatible with each other and the container. After reviewing the tag information, a small amount of each waste to be bulked is poured into a bucket to further ensure waste/container compatibility. Throughout this process, any discrepancy noted results in a review of relevant tag and process information related to the waste to determine where the error in identification occurred. A communication from ESF to the person or group who made the error will re-emphasize the importance of proper waste identification. When ESF personnel observe repeated instances of incorrect or inadequate tag information, they will address this performance issue with the generator and his or her supervisor as appropriate. If the problems are not resolved, they will be handled through the oversight procedure in the University’s Environmental Management Plan (esf.uvm.edu/uvmemp).

End Disposal Verification

ESF personnel prepare hazardous waste profiles for all hazardous wastes prior to shipping them to commercial end disposal facilities. Those disposal facilities are required to perform waste analysis on UVM wastes, according to their TSDF permit procedures. If they inform UVM of a discrepancy, ESF personnel review relevant tag and process information related to the waste to determine where the error in identification occurred. A communication from ESF to the person or group who made the error will re-emphasize the importance of proper waste identification.

Waste Analysis Procedures for Wastes from Generators Not Affiliated with UVM

In order to assist local governments in managing household and conditionally-exempt hazardous waste generated in their communities, the University has included the City of Burlington and the Chittenden County Solid Waste District, as well as primary and secondary educational institutions as generators allowed to ship hazardous waste to the ESF. Refer to Appendix D for a complete listing of accepted source generators. While UVM is required to be available to accept these wastes, they are typically managed by the local solid waste district. The following procedures are designed for those situations when UVM accepts wastes from generators not affiliated with UVM.

Non-UVM generators must complete a Waste Profile (Attachment I2) and submit this to the ESF for approval. ESF personnel will approve or reject the waste based on information provided in the profile as well as any additional information that may be necessary to properly identify the waste (sample, MSDS, etc.). Approved wastes can then be shipped to the ESF. ESF personnel maintain the right to reject hazardous wastes from off-site generators at any time.

Wastes received at the ESF from off-site generators are transported by a Vermont-certified hazardous waste transporter and must be accompanied by a uniform hazardous waste manifest or, if appropriate, a standard bill of lading. If applicable, completed Land Disposal Restriction notifications must also be provided. In all cases, the off-site generator's EPA ID# must be included on the shipping document. The wastes accepted at the ESF must be accompanied by a hazardous waste manifest or bill of lading as appropriate.

In order to ensure quality control, every non-labpack container received at the ESF from "Non-UVM" generators will be visually inspected to verify the information on the waste profile and checked for pH and oxidation potential. One of every ten non-labpack containers will be randomly sampled for analysis by an independent, NELAP certified laboratory to verify profile information. Results of the analysis will be compared to the approved Waste Profile. If the analysis results differ from the profile, ESF will work with the generator to resolve the discrepancy. Additional wastes from the shipment may be sampled and analyzed. If obvious discrepancies remain, ESF may return all hazardous wastes from the shipment to that generator.

Procedures for Characterizing Unknown Wastes

Wastes will be classified and typically tagged as unknowns when generator knowledge is insufficient for purposes of making a hazardous waste determination. ESF personnel or a contracted waste management firm will screen unknowns prior to shipping the wastes. In addition to screening unknown wastes, samples of the wastes may be taken for further testing and analysis. Characterized unknowns will be lab packed and sent for disposal.

Screening does not always specifically identify the unknown material being tested, but is used to accomplish the following three objectives:

- 1.) Determine the compatibility of unknown materials in order to safely labpack or consolidate them;

- 2.) Determine any dangerous properties of a material to ensure safe transportation and storage; and,
- 3.) Determine if the material exhibits any hazardous waste characteristics to ensure proper disposal.

Materials believed to be reactive or contain unstable peroxides produced by the decomposition of organic solvents will not be screened. These will be individually packed, handled, stored and managed as reactive wastes as described in the container management plan (Appendix E).

Screening Methods for Characterization of Unknown Wastes

The following analytical parameters and test methods may be used for wastes stream identification on unknown wastes prior to shipment to the ESF:

- Physical description - including liquid - solid - sludge content, water layer, color, and viscosity - an inspection of the general wastestream is used to determine its suitability for consolidation and consistency with tag and label information.
- pH - used to determine the corrosivity of the waste by using a pH indicator strip which measures waste stream as a strong acid, moderately acidic, weak acid, neutral, moderately basic, or a strong base.
- Oxidizer screen - used to determine if the waste is an oxidizer having the potential to react with a wide range of waste streams. The test method uses a potassium iodide-starch, or equivalent, indicator strip that turns color if the waste is an oxidizer.
- Reactive Cyanides - used to determine if the waste would produce hydrogen cyanide if mixed with a strong acid by using a hydrogen cyanide indicator strip and reagents.
- Reactive Sulfides - used to determine if the waste would produce hydrogen sulfide if mixed with a strong acid by using a hydrogen sulfide indicator strip and reagents.
- Water reactivity - used to determine whether the waste has the potential to react with water to generate heat, flammable gases, or other products. Water reactivity is determined by adding approximately 3 mls of water to 1/10 ml of liquid or 1/10 gm of solid. If there is gas evolution or a significant rise in temperature the test is considered positive.
- Peroxides - used to determine if the waste contains explosive peroxides. If there are crystalline solids on or in a container that is suspected to contain a peroxide-forming compound, the container will not be opened and the peroxide test will be assumed positive. The test uses peroxide indicator strips.
- Ignitability - used to indicate the fire-producing potential of the waste and determines whether the waste is RCRA ignitable. A closed crucible ignitability screening test may be used. A closed cup flash test is used to determine the flash point of wastes if necessary.
- Specific gravity - used in conjunction with other test data to determine whether the waste conforms to generator supplied data. A hydrometer is used to determine specific gravity.
- Lead - used to indicate whether the waste is RCRA hazardous due to lead toxicity by using a colorimetric strip and an acetic acid reagent.
- Chlorine - used to indicate if the waste is chlorinated. This information is used to determine disposal options. The test uses either colorimetric test strips or flame color.
- Organic solvents - used to indicate if the waste contains organic solvents. This information is used to determine disposal options. This test uses colorimetric test strips.

- Arsenic - used to indicate whether the waste is RCRA hazardous due to arsenic toxicity by using colorimetric strips.
- Compatibility - used to verify compatibility of liquid or sludge waste prior to commingling with other wastes. A representative sample of the waste to be consolidated is mixed with a representative sample of the wastes with which it will be commingled. If any reactions are observed, the wastes are considered incompatible and will not be commingled.

Results from the screening of unknowns are recorded on a characterization sheet and attached to the hazardous waste manifest.

Attachment I2

Waste Profile



University of Vermont - Environmental Safety Facility
667 Spear Street, UVM-ESF, Burlington, VT 05405
Tel: 802-656-5400

ESF USE ONLY
Approved Profile # _____

Management Code: _____

Date: _____

Approved by: _____

Waste Profile for Non-UVM Generators of Hazardous Waste

1. Generator Information

Name: _____

U.S. EPA ID #: _____

Site Address: _____

Mailing Address: _____

Contact Name: _____ Phone #: _____

Generator type (Check One)

City of Burlington
CEG
Chittenden Solid
Waste District
Primary/Secondary
School

2. Waste Description

Common Name of Waste: _____	Source of Waste (check one) <input type="checkbox"/> Unused chemical	Form Code: _____ Source Code: _____
Process Generating Waste: _____	<input type="checkbox"/> Process waste by-product	
_____	<input type="checkbox"/> Spill clean-up	
_____	<input type="checkbox"/> Lab pack	
_____	<input type="checkbox"/> Other: _____	

Metals (Total, TCLP) Arsenic: _____ Barium: _____ Cadmium: _____ Chromium: _____ Lead: _____ Mercury: _____ Selenium: _____ Silver: _____	Air Reactive Asbestos CFC Dioxins Explosive Gas Halogens Infectious PCB Strong odor Water Reactive
---	--

Waste Composition MSDS attached? ☐ Yes ☐ No

Chemical Name	Concentration	Units	CAS#
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

3. Physical Properties (at 25°C or 77°F)

Physical State: <input type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Semi-solid (pumpable? Y / N) <input type="checkbox"/> Gas	Viscosity: <input type="checkbox"/> low (water) <input type="checkbox"/> med (oil) <input type="checkbox"/> high (molasses) Specific Gravity: <input type="checkbox"/> < 1 <input type="checkbox"/> > 1	Flash Point: <input type="checkbox"/> <100°F <input type="checkbox"/> 100 – 140°F <input type="checkbox"/> >140°F Boiling Point <input type="checkbox"/> <100°F <input type="checkbox"/> >100°F
---	---	--

Number of Phases: ☐ 1 ☐ 2 ☐ 3
PH: _____

PH: _____

PH: _____

4. Manifest Information Is this a DOT Hazardous Material? ☐ Yes ☐ No

Proper DOT Shipping Name: _____

Hazard Class: _____ ID number: _____ PG: _____ RQ: _____

EPA Waste Code(s): _____

5. Generator Assurance

I certify that the information provided regarding this hazardous waste, including this profile, any sample submitted or additional conversations is accurate.

This information is based upon ☐ Process knowledge ☐ Waste analysis (check one).

Signature

Printed name

Date

Appendix J

University of Vermont Environmental Safety Facility Inspection Plan

Inspection Plan

The ESF inspection plan is designed to detect malfunctions, deterioration, operator errors or discharges that could result in a release of hazardous waste constituents into the environment or pose a threat to human health.

All ESF staff members are trained in the use of the Daily Inspection Checklist and the Weekly Inspection Checklist included in this section. This training includes instruction on how to perform inspections, inspection recordkeeping procedures, procedures for corrective actions, and documented follow-up. Daily inspections are recorded every day that ESF personnel are normally scheduled to be on site. The inspection checklists are maintained at the ESF.

Daily Inspection

ESF staff will perform a daily inspection of the main ESF building, reactivities storage building and grounds. This inspection includes the areas subject to spills such as, but not limited to, the loading dock, storage rooms and bulking room.

Any indication of unusual odors, possible spills or leaks, inadequate aisle space between drums, container defects or mechanical problems will be immediately reported to other ESF staff members who will promptly assist in investigating the problem. If necessary, the contingency plan will be implemented. The UVM Physical Plant Department will be notified if there are any mechanical problems.

Upon entering the waste storage area, the inspector checks the truck bay for any noticeable problems such as spills, unusual odors or unsecured waste containers. The containment sump control valve is checked to make sure that it is in the closed position; a sign in the truck bay indicates the open and shut positions. Power to the truck bay door is switched off to lock the door.

The inspector proceeds into the chemical workroom (room 109). This room is checked for evidence of spills or releases, the presence of required safety equipment, and the integrity and inventory of waste containers. Drums stored in this room may be partially filled drums that are awaiting further consolidation or labpacking. Other drums stored in this room may be drums that are stored in the pouring station following consolidation activities. Containers may also be stored in this room when they are staged for a scheduled shipment to an off-site TSDF.

The inspector checks the rooms where wastes are stored, including rooms 110, 111, 112, 113, 116, 117, 118, 119, and 120; as well as rooms 115, 115-A, and 115-B where virgin product, and pre-owned chemicals are stored. While inspecting each storage room for leaking or deteriorated containers, the inspector also takes a drum inventory to compare with the Emergency Response Inventory that is posted at the entrance of the facility and on-line at <http://esf.uvm.edu/emergency>. The barrel count also confirms that the maximum storage capacity of each room (20-55 gallon drums or the equivalent) has not been exceeded. The exterior doors in the storage rooms are checked to confirm that they are locked and the lights in the hallway and in each storage room are inspected to ensure that they are functioning properly.

The second floor rooms 200 (heating), 201 (storage), 201-A (fan room), 202 (mechanical room) and EF-1 (fan room) are checked for water leaks, odors and odd mechanical noises. The upper truck bay delivery doors are checked to confirm that they are locked. The inspector checks the stairwells to ensure that they are accessible.

The inspector checks the Reactives Storage Building for any evidence of chemical leaks or spills, water leaks, unusual odors, container defects, or mechanical problems. The inspector confirms that there is adequate aisle space and that the storage limit of the building (8-55 gallon drums or the equivalent) has not been exceeded. Finally the inspector ensures that the door is locked (this should always be in the locked configuration) and closed.

The ESF Main Building exterior is inspected to ensure that exterior doors are locked (Note – the front door to the ESF may remain unlocked at the time of the inspection; this door is locked, and the security alarm is set, when the last person leaves the ESF for the day). The inspector checks the fire alarm panel to be sure the power light is on and the trouble lights are off. He or she also checks the security alarm to ensure that the power light is lit. The inspector compares the result of his or her inventory to the Emergency Response inventory and makes sure that the emergency response inventory is posted in the foyer. The inspector checks the communications system by activating the intercom to the waste storage area from the office area.

Throughout the walk-around, the inspector observes the grounds and general building structures and systems for necessary maintenance or repairs. These include, but are not limited to, lighting, plumbing, snow removal and housekeeping. Deficiencies in these areas, that do not increase the risk of a release of hazardous materials nor the threat to human health or the environment, may be remedied through UVM's general work order process and do not have to be documented on the inspection form.

After concluding a complete walk around the ESF and building exterior, the inspector fills out the daily inspection checklist, recording any problems and corrective actions taken. Records of the daily inspection are retained at the ESF for three years as part of the facility operating record.

Weekly Inspection

ESF staff persons perform weekly inspections of safety showers, eyewashes and emergency equipment. During the inspection, the safety showers are flushed in accordance with VOSHA regulations. A type of amoebae, which can potentially cause severe eye infections, is commonly found in stagnant safety showers and eyewash stations; flushing this equipment weekly reduces the hazards associated with this microorganism.

ESF staff also checks the emergency spill supplies specified in the Contingency Plan portion of this permit. These supplies are located in room 109 and in the East Stairwell of the ESF. ESF staff also inspects the retention pond on a weekly basis to assure the control valve is in the closed position. If the pond is holding water, it is drained. The retention pond control valve is returned to the closed position after draining. This process ensures that the valve is operable. The fence and gates outside the facility as well as the exterior lights are also checked.

Records of the weekly inspection are kept at the ESF for three years as part of the facility operating record.

Fire Extinguisher Inspection

All fire extinguishers are inspected and tagged monthly by UVM's Department of Physical Plant to verify that they are charged and full, and to comply with Vermont Department of Labor regulations. Fire alarms and the main building sprinkler system are inspected and tagged annually in compliance with Vermont Department of Labor regulations. The dry chemical fire suppression systems in the pouring station and in the reactives storage building are inspected semi-annually and tagged in accordance with Vermont Department of Labor regulations. The above-mentioned fire safety equipment will carry a tag that shows current certification.

Additional Inspections

UVM's Electrical Department checks all exterior lights as part of the routine campus maintenance program and makes repairs as necessary. UVM's Grounds Department routinely maintains the lawns and vegetation in the moat; the use of chemical pesticides and herbicides is avoided. Preventative maintenance and repairs on air handling systems, heating systems, electrical, plumbing and other building operational systems are scheduled and performed by UVM's Department of Physical Plant.

At a frequency of every 5-years, the sump area beneath each waste storage room will be inspected to ensure that the epoxy-coated concrete is free of cracks or gaps and is sufficiently impervious to contain leaks and spills until the collected material is detected and removed and that it complies with 40 CFR§264.175. Records of these inspections, including the inspector's name, the date of the assessment, the method of the assessment and the results of the assessment will be maintained with the ESF permit.

Environmental Safety Facility Daily Inspection Checklist

This completed checklist is part of the facility operating record for three years following the inspection date.

Inspected by: _____

Inspection Date: _____

Inspection Time: _____

Deficient? Yes/No

Storage Areas

Chemical Releases (spills, leaks, odors): ☐ ☐

Water Leaks: ----- ☐ ☐

Container Defects/Deterioration: ----- ☐ ☐

Aisle Space: ----- ☐ ☐

Labels (deficient if not visible): ----- ☐ ☐

Spill Control Supplies

Inventory & Location (deficient if used and not replaced or if not in proper location): ☐ ☐

Truck Loading/Unloading Bay

Containment sump control: ----- ☐ ☐

Unsecured waste containers: ----- ☐ ☐

Evidence of spills or releases: ----- ☐ ☐

Communications Test

Dial 167 from any ESF phone

Test (deficient if test is not heard in facility): ☐ ☐

Fire Equipment

Extinguishers (deficient if missing or discharged): ----- ☐ ☐

Alarm panel (deficient if power light is off or if trouble lights are on): ----- ☐ ☐

Emergency Response Inventory----- ☐ ☐

Security Check

Door Locks: ----- ☐ ☐

Reactives Building: ----- ☐ ☐

Fence & Gate: ----- ☐ ☐

Alarm (deficient if power light is off): --- ☐ ☐

Storage Room	Number of Containers	Visual Inspection Comments
109		
110		
111		
112		
113		
114, 115, 115A, 115B	(Non waste)	
116		
117	(Non waste)	
118		
119		
120		
Reactives Bldg		

Mechanical Rooms/Comments

200 (Heat)	
201 (Storage)	
201-A (Fan)	
202 (Mech.)	
EF-1 (Fan)	

Remedy / Remedial Action: for each item identified above as being deficient

Deficiency	Repair or Corrective Action	Date Completed

Environmental Safety Facility Weekly Inspection Checklist

This completed checklist is part of the facility operating record for three years following the inspection date.

Inspected by: _____

Inspection Date: _____

Inspection Time: _____

Safety Showers & Eyewashes

Flush Safety Showers and Eye Wash Stations.

Check when completed	Safety Showers	Eye Wash Stations
Chemical Workroom	⑧	⑧
West Hallway	⑧	⑧
Center Hallway	⑧	⑧
East Hallway	⑧	⑧
Chemical Distribution	⑧	⑧
Laboratory Drench Hose	⑧	

Emergency Spill Supplies

Check that spill supplies, as specified in Contingency Plan are in proper locations.

Supplies in room 109	Yes ⑧	No ⑧
Supplies in East Stairwell	Yes ⑧	No ⑧

Truck Bay

Valve is operable and left closed	Yes ⑧	No ⑧
Heat is on (November – March)	Yes ⑧	No ⑧

Exterior Inspection

Retention Pond Control Valve

Inspected and drained if there is standing water.	Yes ⑧	No ⑧
Pond valve operable & returned to closed position?	Yes ⑧	No ⑧
Perimeter fence intact?	Yes ⑧	No ⑧
Exterior lights intact?	Yes ⑧	No ⑧

Remedy / Remedial Action: for each item identified above as being deficient

Deficiency	Repair or Corrective Action	Date Completed

Appendix K

University of Vermont Environmental Safety Facility Closure Plan and Closure and Liability Insurance

Closure Plan

This plan is designed to close the University's Environmental Safety Facility in manner that:

1. Minimizes the need for further maintenance;
2. Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground, surface waters, or the atmosphere; and
3. Complies with the closure requirements outlined in 40CFR§264.111.

Partial Closure

The Environmental Safety Facility is considered as one hazardous waste management unit. The University will not request partial closure as all hazardous waste operations at the ESF are anticipated to cease at the time of final permit closure.

Post Closure Plan

The Environmental Safety Facility is not a hazardous waste disposal facility, nor does it operate a waste pile, surface impoundment, or tank system. Hazardous waste will not remain on site, nor will access to the site pose a hazard to the public or domestic livestock, after the ESF has been closed. Therefore a post closure plan, as identified in 40 CFR§264.117, is not required.

Amendment of the Closure Plan

The University of Vermont shall submit a written request for certification modification to authorize a change in the approved closure plan. The written request shall include a copy of the amended closure plan for approval by the Secretary of Natural Resources.

The University may submit a written request to the Secretary for a certification modification to amend the closure plan at any time prior to notification of final closure of the facility.

The University shall submit a written request for certification modification to authorize a change in the approved closure plan whenever:

1. Changes in operating plans or facility design affect the closure plan; or
2. There is a change in the expected year of closure, if applicable; or
3. In conducting partial or final closure activities, unexpected events require a modification of the approved closure plan.

The University shall submit the written request for certification modification including a copy of the amended closure plan to the Secretary:

1. At least 60 days prior to a proposed change in facility design or operation; or
2. No later than 60 days after an unexpected event has occurred which affects the closure plan; or
3. Within 60 days of a request for modification of the approved closure plan from the Secretary; or

4. No later than 30 days after an unexpected event has occurred during the final closure period; or
5. Within 30 days of a request for modification of the approved closure facility from the Secretary.

Closure Date

The final closure date for the Environmental Safety Facility and the Reactives Storage Building is January 1, 2042. This is based on the design life of the building and mechanical systems without major renovation (see attachment K-3 “Structural Assessment Letter”). The University reserves the right to change the closure date based on future renovations and needs.

Closure Schedule for UVM’s One (1) Hazardous Waste Management Unit (40CFR§264.112 & §264.113)

- January 1, 2041 - Notify the Secretary of Natural Resources and the EPA Regional Administrator
- July 5, 2041 - Last shipment of hazardous waste received at the facility
- September 3, 2041 – Demonstrate requirements of 40 CFR 264.113 if requesting an extension to waste removal deadline.
- October 3, 2041 - Complete removal of all wastes for final disposal
- October 31, 2041 – Initial decontamination of facility complete & samples submitted for analysis.
- November 7, 2041 – Determination made as to need for further decontamination.
- November 21, 2041 – Subsequent decontamination of facility complete (if necessary) and samples submitted for analysis.
- November 30, 2041 – Determination made as to need for further decontamination.
- December 2, 2041 – Demonstrate requirements of 40 CFR 264.113 if requesting an extension to final closure activities deadline.
- December 15, 2041 – All clean up materials decontaminated and removed from site or removed for final disposal.
- January 1, 2042 - Final closure activities are complete
- March 1, 2042 - Certification of closure completed by a Vermont licensed, independent, professional engineer.

Notification

The University shall notify the Secretary and the Region I Administrator by January 1, 2021 in writing that the facility will begin final closure activities on July 1, 2021 [40CFR§264.112(d)].

Extension

If the activities required to remove all hazardous wastes from the facility will, of necessity, take longer than 90 days to complete; or if the facility has the capacity to receive additional hazardous wastes, and there is a reasonable likelihood that UVM or another person will recommence operation of the hazardous waste management unit or the facility within one year; and closure of the hazardous waste management unit or facility would be incompatible with continued operation of the site; and UVM has taken and will continue to take all steps to prevent threats to human health and the environment, including compliance with all applicable permit requirement then UVM will request of the Regional Administrator, an extension to the waste removal deadline. Such request and demonstration of compliance with 40 CFR§264.113 will be made at least 30 days prior to the deadline.

If the activities required to complete final closure of the facility will, of necessity, take longer than 180 days to complete; or if the facility has the capacity to receive additional hazardous wastes, and there is a reasonable likelihood that UVM or another person will recommence operation of the hazardous waste management unit or the facility within one year; and closure of the hazardous waste management unit or facility would be incompatible with continued operation of the site; and UVM has taken and will continue to take all steps to prevent threats to human health and the environment, including compliance with all applicable permit requirements then UVM will request of the Regional Administrator, an extension to the final closure deadline. Such request and demonstration of compliance with 40 CFR§264.113 will be made at least 30 days prior to the deadline.

Final Closure Activities

Maximum Inventory [40CFR§264.112(b)(2) & (3)]

All of the waste stored at the facility will be stored in drums or other suitable containers. The following is a listing of a hypothetical maximum inventory for each room:

Room 110	20x55 gallon drums	Poisons/Flammables/non-hazardous
Room 111	20x55 gallon drums	Poisons/Flammables/non-hazardous
Room 112	20x55 gallon drums	Flammables/corrosives
Room 113	20x55 gallon drums	Poisons
Room 116	20x55 gallon drums	Other regulated material/organic acids
Room 117	20x55 gallon drums	Inorganic acids/oxidizers
Room 118	20x55 gallon drums	Inorganic acids/oxidizers
Room 119	20x55 gallon drums	Caustics/mercury 10x55 gallon drums
Room 120	20x55 gallon drums	Ballasts/fluorescent lights
Reactive Building	8x55 gallon drums	Reactive wastes

UVM, or a hired hazardous material cleanup company, will package and remove all hazardous waste from the ESF for disposal within 90 days of receipt, at the ESF, of the final volumes of hazardous waste [40CFR§264.114]. All hazardous waste will be removed from the ESF and transported to permitted, TSD facilities. All hazardous wastes transported from the ESF will be packaged in accordance with DOT regulations as set forth in 49 CFR §172 and §173. All hazardous waste, shipped from the ESF, will be transported by Vermont permitted, hazardous waste haulers in vehicles permitted for hazardous waste hauling.

Decontamination of Facility [40CFR§264.112(b)(4) and 40CFR§264.114]

After all hazardous wastes are removed from the ESF, UVM will begin activities to decontaminate or dispose of equipment and structures. UVM may contract a hazardous material cleanup company, such as Environmental Products and Services of Vermont (EPS), to perform these closure activities; EPS personnel were consulted to develop the scope of closure activities and determine the estimate of costs for the closure. These activities will be complete within 180 days of receipt of the final volumes of hazardous waste at the ESF, unless an extension is requested from and granted by the Regional Administrator.

All walls, air ducts, ceilings and floors of the of the waste storage rooms, the waste handling room and the hallway will be cleaned by hand scraping and or scrubbing followed by the use of a

HEPA vacuum. All containment sump areas will be visually inspected for cracks and sealed prior to wet cleaning. The surfaces will then be steam cleaned using a steam generator, pressure washer and detergent. Additional cleaning will be performed where necessary. Additional cleaning solutions may be used if necessary; the specific solution will vary with the contaminant and the area being cleaned; these will need to be identified at the time of closure activities. The surfaces will be triple rinsed with clear water; the rinseate will be collected and sampled for hazardous waste determination by UVM or its contractor. Cleaning procedures will be repeated until the rinseate is determined to be non-hazardous.

The Reactives Building will be cleaned by hand scraping followed by the use of a HEPA vacuum. The containment sump area will be visually inspected for cracks and sealed prior to wet cleaning. The surfaces will then be steam cleaned using a steam generator, pressure washer and detergent. Additional cleaning will be performed where necessary. Additional cleaning solutions may be used if necessary; the specific solution will vary with the contaminant and the area being cleaned; these will need to be identified at the time of closure activities. The surfaces will be triple rinsed with clear water; the rinseate will be collected for hazardous waste determination by UVM or its contractor. Rinse waters may be commingled as long as the contaminants are shown to be compatible. UVM or its contractor will collect samples from the final rinse water for hazardous waste determination. Cleaning procedures will be repeated until the rinseate is determined to be non-hazardous.

The truck bay and containment sump will only require pressuring washing, because any spill that affects this area will have been cleaned immediately after the spill occurred. If any noticeable contaminants are discovered through rinseate analysis, the area will be decontaminated using the same protocol as the waste storage rooms.

Rinseate sampling parameters will vary depending upon the storage area. Composite samples will be taken from rooms storing similar types of wastes. Decontamination efforts will continue until contamination levels are at or below the most stringent, accepted, risk based criteria in effect at the time of closure.

UVM's hazardous waste cleanup contractor, Environmental Products and Services of Vermont, has estimated that seven 55-gallon drums will be generated during the decontamination process. UVM has increased that estimate to 19 55-gallon drums from the following areas:

- One drum from each of rooms 110, 111, 112 and 113 which are used primarily for organic waste storage,
- One drum from each of rooms 116, 117, 118, 119 and 120 which are used primarily for inorganic waste storage,
- Two drums from the waste handling room,
- Two drums from the hallway, and
- One drum from the Reactives Storage Building
- Five drums from final rinse water.

These decontamination wastes will be treated and disposed of according to the Best Demonstrated Available Technology (BDAT) at the time of closure; these technologies can only be identified at the time of closure.

Any releases to the retention pond and associated drainage ditch during the life of the facility will have been cleaned up immediately following the release. Therefore there are no anticipated closure costs associated with the retention pond and the drainage ditch.

Decontamination Sampling and Analysis Quality Assurance

To ensure that decontamination efforts have been thoroughly and effectively completed, UVM or its hired clean-up contractor will sample and analyze the decontamination areas and residues. Materials will be assayed to monitor the efficacy of the decontamination procedure and include: DI rinses, area scrapings, decontamination tools, and affected areas.

Sampling and analysis of these materials will be performed in accordance with “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA Publications SW-846.

Appropriate sampling procedures will be implemented as dictated by the sample media type. Analytical procedures best suited to evaluate the hazards and contaminants associated with specific waste classifications will be selected. A listing of these procedures follows.

Waste Classification	Analytical Methodology
Ignitability	A Pensky-Martens Closed Cup Tester using the test methods specified in “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA Publication SW-846.
Corrosivity	pH - Method 5.2 in “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.” EPA Publications SW-846.
Reactivity	Vermont Hazardous Waste Management Regulations 7-206
Toxicity	“Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA Publications SW-846. Method 6010 Metals Method 8260 Volatile Organics Method 8150 Herbicides

* Test methods will use the most applicable protocol edition and or method. Those described above are the most applicable at the time of the writing of this permit.

Decontamination procedures and subsequent analyses will continue until residues of contaminants are at levels that are at or below the most stringent, accepted, risk based criteria in effect at the time of closure. This will be evaluated by UVM or its engineer hired to certify closure activities.

Environmental Sampling [40CFR§264.112(b)(5)]

It is not anticipated that there will be any releases of hazardous waste to the area outside of the facility.

If a release does occur however, or if contamination outside of the facility is suspected, UVM will conduct an environmental monitoring program in consultation with a hydrogeology firm and revise the closure cost estimate accordingly. UVM has installed 6 pairs of monitoring wells surrounding the facility. If determined to be necessary, samples will be taken from these wells and analyzed to determine if contamination from the facility is present. In addition, soils samples will be taken in the area surrounding the facility and from the retention pond. The consulting

geologist will determine the proper number of sampling points and will determine if there is any environmental contamination.

Certification [40CFR§264.115]

The facility will be certified closed by a Vermont licensed, independent professional engineer on or before March 1, 2042. The engineer will review disposal records, decontamination procedures and laboratory analysis, visually inspect the site and conduct any interviews necessary to certify the closure of the site. The engineer will summarize these reviews in a closure report; a copy of the engineer's report will be forwarded to the Secretary and Regional Administrator. The Certification of Facility Closure will be signed by the owner or operator of the facility, as well as by the independent, registered, professional engineer.

The ESF has no landfill cells or hazardous waste disposal units at this site. Therefore the survey plat specified in 40CFR§264.116 is not required

Future Use [40CFR§264.117]

Once the facility has been certified closed, the University reserves the right to utilize this space for other efforts in conjunction with its overall mission.

Closure Cost [40CFR§264.142]

A detailed, written estimate, in current dollars, of the cost of closing the ESF is included in the spreadsheet in attachment K-1. This estimate assumes:

- The ESF is operating at its maximum extent and manner;
- No University personnel are assisting with the closure and all costs are based on hiring a third party contractor; and
- No value is realized from the salvage of materials from the ESF or from hazardous waste that may have economic value.

By July 30 of each year, this estimate will be updated for inflation, changes in site conditions (i.e. releases or condition of building), and current pricing and submitted to the regional administrator within 90 days of the close of UVM's fiscal year.

Financial Guarantee for Liability and Closure

Financial Assurance for Closure

The University of Vermont establishes financial assurances for the closure of the ESF, satisfying the requirements of §264.143, and demonstrates this by passing the financial test specified in 40 CFR§264.143(f)(1)(i). UVM demonstrates that it meets these criteria by completing and submitting a letter worded as specified in §264.151(g) and containing “Part B” that is signed by the University’s Chief Financial Officer.

The closure costs are described on the closure cost worksheet, included as attachment K-1.

Financial Assurance for Liability Coverage

The University of Vermont establishes financial assurances for coverage of sudden accidental occurrences at the ESF, satisfying the requirements of §264.147(a), and demonstrates this coverage as specified in §264.147 (a)(2) by passing the financial test specified in 264.147(f)(1)(i). UVM demonstrates that it meets these criteria by completing and submitting a letter worded as specified in §264.151(g) and containing “Part A” that is signed by the University’s Chief Financial Officer. This meets all of the requirements of §264.147 as outlined in §264.147(a)(2); therefore, neither the Hazardous Waste Facility Endorsement specified in §264.151(i) nor the Certificate of Liability specified in §264.151(j) are required.

UVM assures liability coverage for sudden accidental occurrences in the amount of \$1 million per occurrence with an annual aggregate of \$2 million, exclusive of legal costs.

Financial Test

To demonstrate that UVM meets the financial tests described above, the University will submit annually the following items to the Department of Environmental Conservation:

- A letter signed by the University’s Chief Financial Officer and worded as specified in §264.151(g) that demonstrates financial responsibility requirements of Subpart H of 40 CFR, parts 264 and 265 for both assurance for closure and post-closure care as well as liability (a copy is included in Attachment K-2); and
- A copy of the University’s “Annual Financial Report” which includes the “Independent Auditors’ Report” for the last completed fiscal year (a copy is included in Attachment K-2).
- A copy of the “Special Report” from an independent certified public accountant.

After the initial submission of the items mentioned above, the University will update the information and submit it to the Regional Administrator within 90 days after the close of each succeeding fiscal year.

If the University at anytime can not meet the requirements of this section, a notice to the Regional Administrator will be sent by certified mail within 90 days after the end of the fiscal year for which the year end financial data show that the University no longer meets the requirements. The University will provide alternative financial assurances within 120 days after the end of such fiscal year.

Attachment K-1
Closure Cost Worksheet

University of Vermont & State Agricultural College
Environmental Safety Facility
Hazardous Waste Facility Permit

**Attachment K-1
Closure Cost Worksheet**

Disposal of Maximum Inventory of Hazardous Waste							
Room 110	Bulk poisons & flammables for incineration	20	x55	@	\$210.00	=	\$ 4,200
Room 111	Labpacked poisons & flammables for incineration and treatment	20	x55	@	\$600.00	=	\$ 12,000
Room 112	Labpacked flammables & corrosives for incineration and treatment	20	x55	@	\$600.00	=	\$ 12,000
Room 113	Labpacked poisons for incineration and treatment	20	x55	@	\$600.00	=	\$ 12,000
Room 116	Bulk acids for treatment	20	x55	@	\$160.00	=	\$ 3,200
Room 117	Labpacked oxidizers and acids for incineration and treatment	20	x55	@	\$600.00	=	\$ 12,000
Room 118	Labpacked caustics for treatment	20	x55	@	\$600.00	=	\$ 12,000
Room 119	Labpacked caustics for treatment	10	x55	@	\$600.00	=	\$ 6,000
Room 119	Labpacked mercury for retorting	10	x55	@	\$1,250.00	=	\$ 12,500
Room 120	Electronic ballasts for recycling	10	x55	@	\$464.00	=	\$ 4,640
Room 120	Fluorescent light bulbs for recycling	20,000	ft	@	\$0.07	=	\$ 1,400
Room 120	Fluorescent light bulbs for recycling	1,500	bulb s	@	\$1.50	=	\$ 2,250
Reactives Bld	Labpacked reactives for treatment and incineration	8	x55	@	\$1,000.00	=	\$ 8,000
	Transportation Fees	6	trips	@	\$2,500.00		\$ 15,000
	Labor for shipping papers and final packing	80	hrs	@	\$85.00	=	\$ 6,800
	Materials and Equipment						\$ 2,000
	Fuel and Insurance surcharge	20%					\$ 25,198
Total disposal cost for maximum hazardous waste inventory:							\$ 151,188
Based on cost estimate provided by Environmental Products & Services of Vermont							
Decontamination of Facility							
	Site Manager & vehicle for 180 day closure period	1040	hrs	@	\$110.00		\$ 114,400
	Decontamination of waste storage rooms, includes dry clean, wet clean & PPE						\$ 10,000
	Decontamination of reactives building, includes dry clean, wet clean & PPE						\$ 1,000
	Truck bay and containment sump sampling						\$ 450
	Decontamination of containment sump						\$ 1,200
	Lab analysis (3) - composite sample wipes for PCB and mercury area						\$ 2,070
	Lab analysis (3) - analysis of rinse water from organic storage rooms, inorganic storage rooms & reactive storage building						\$ 2,100
	Disposal of estimated 19x55 gallon drums of wash water @ \$250						\$ 4,750
	Disposal of HEPA filter						\$ 1,000
	Transportation Fees						\$ 2,000
	Labor for packaging materials and preparing manifests & pape	10	hrs	@	\$85.00	=	\$ 850
	Materials and Equipment						\$ 2,000
Total for facility decontamination:							\$ 141,820
Based on cost estimate provided by Environmental Products & Services of Vermont							
Environmental Monitoring Contingency (soils, moat, monitoring wells, etc)							\$ 19,000
Based on 1989 screening for environmental contaminants at facility's proposed site.							
Closure Certification & Report by Registered Professional Engineer		20	hrs	@	\$100.00		\$ 2,000
Based on cost estimate provided by ESPC Engineering and Environmental Services							
Subtotal							\$ 314,008
15% contingency (required by VT DEC)							\$ 47,101
Total Closure Costs based on 2010 pricing							\$ 361,109

Attachment K-2

**Chief Financial Officer's Letter
&
Liability Worksheet,**

**Financial Report
&
Auditors' Report**



The
UNIVERSITY
of **VERMONT**

University of Vermont
Environmental Safety Facility
667 Spear Street, UVM-ESF
Burlington, VT 05405

Tel: 802-656-0767

September 28, 2012

Ms. Lynn Metcalf
Vermont Agency of Natural Resources, Waste Management Division
103 South Main Street / West Building
Waterbury, VT 05671-0404

Subject: **2012 Financial Assurance Letter**

CERTIFIED MAIL
7005 3110 0002 9376 9548

Dear Ms. Metcalf:

Enclosed you will find UVM's annual letter providing assurance that UVM has sufficient assets to pay the costs associated with closing its hazardous waste facility as well as to cover the costs associated with accidents at that facility. The letter references costs that have been updated as necessary to reflect current market prices (see attached Closure Cost Worksheet).

The FY 2012 Annual Financial Report, including the Independent Auditors' Report and the Special Report pertaining to this letter is not enclosed, as it has not yet been printed. UVM's independent auditors are completing their review of the fiscal information and will send their findings to UVM's Board of Trustees and to the Auditor of Accounts for the State of Vermont. The report will be printed following that submission.

An electronic version of the current Financial Statement and Independent Auditors report will be available at <http://www.uvm.edu/~cntrlrs/> under UVM Financial Statements. I will forward a copy of this to you as soon as it is available to me.

If you have any concerns please contact me at 802 656-0767 or by email to <jrogers2@uvm.edu>.

Sincerely,

Jeff L. Rogers
Environmental Compliance Manager

Cc: Richard Cate, Vice President for Finance and Enterprise Services
Claire Burlingham, Controller
Mary Dewey, Director Risk Management Department

Attached: FY12 Financial Assurance Letter
2012 Closure Cost Worksheet



The University of Vermont

Richard H. Cate

*Vice President for Finance and Administration
and University Treasurer*

September 26, 2012

Ms. Lynn Metcalf

Vermont Agency of Natural Resources, Waste Management Division
103 South Main Street / West Building
Waterbury, VT 05671-0404

Dear Ms. Metcalf:

I am the chief financial officer of University of Vermont and State Agricultural College, 85 South Prospect Street, Burlington, Vermont 05405. This letter is in support of the use of the financial test to demonstrate financial responsibility for liability coverage and closure and/or post-closure care as specified in subpart H of 40 CFR parts 264 and 265.

The firm identified above is the owner or operator of the following facilities for which liability coverage for both sudden and nonsudden accidental occurrences is being demonstrated through the financial test specified in subpart H of 40 CFR parts 264 and 265: University of Vermont, Environmental Safety Facility, 667 Spear Street, Burlington, VT.

The firm identified above guarantees, through the guarantee specified in subpart H of 40 CFR parts 264 and 265, liability coverage for both sudden and nonsudden accidental occurrences at the following facilities owned or operated by the following: University of Vermont, Environmental Safety Facility, 667 Spear Street, Burlington, VT. The firm identified above is the direct or higher-tier parent corporation of the owner or operator.

1. The firm identified above owns or operates the following facilities for which financial assurance for closure or post-closure care or liability coverage is demonstrated through the financial test specified in subpart H of 40 CFR parts 264 and 265. The current closure and/or post-closure cost estimate covered by the test are shown for each facility:

EPA Identification Number:	VTD000636563
Name:	University of Vermont Environmental Safety Facility
Address:	667 Spear Street, Burlington, VT 05405-0570.
Current Closure cost estimate:	\$361,109.

2. The firm identified above guarantees, through the guarantee specified in subpart H of 40 CFR parts 264 and 265, the closure and post-closure care or liability coverage of the following facilities owned or operated by the guaranteed party. The current cost estimates for closure or post-closure care so guaranteed are shown for each facility: **None**

The firm identified above is the direct or higher-tier parent corporation of the owner or operator.

3. In States where EPA is not administering the financial requirements of subpart H of 40 CFR parts 264 and 265, this firm is demonstrating financial assurance for the closure or post-closure care of the following facilities through the use of a test equivalent or substantially equivalent to the financial test specified in subpart H of 40 CFR parts 264 and 265. The current closure or post-closure cost estimates covered by such a test are shown for each facility: **None**

The firm identified above is the direct or higher-tier parent corporation of the owner or operator.

OFFICE OF THE VICE PRESIDENT FOR FINANCE AND ADMINISTRATION
350B Waterman Building
85 South Prospect Street, Burlington, VT 05405
phone (802)656-0219 • fax (802)656-9220

Equal Opportunity/Affirmative Action Employer

4. The firm identified above owns or operates the following hazardous waste management facilities for which financial assurance for closure or, if a disposal facility, post-closure care, is not demonstrated either to EPA or a State through the financial test or any other financial assurance mechanisms specified in subpart H of 40 CFR parts 264 and 265 or equivalent or substantially equivalent State mechanisms. The current closure and/or post-closure cost estimates not covered by such financial assurance are shown for each facility: **None**

The firm identified above is the direct or higher-tier parent corporation of the owner or operator.

5. This firm is the owner or operator or guarantor of the following UIC facilities for which financial assurance for plugging and abandonment is required under part 144 and is assured through a financial test. The current closure cost estimates as required by 40 CFR 144.62 are shown for each facility: **None**

The firm identified above is the direct or higher-tier parent corporation of the owner or operator.

This firm is not required to file a Form 10K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this firm ends on June 30. The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statements for the latest completed fiscal year, ended **June 30, 2012**.

Part A. Liability Coverage for Accidental Occurrences

Alternative I

1. Amount of annual aggregate liability coverage to be demonstrated \$2,000,000
- *2. Current assets: \$247,542,000.
- *3. Current liabilities: \$78,337,000
4. Net working capital (line 2 minus line 3) \$169,205,000
- *5. Tangible net worth: \$485,250,000
- *6. If less than 90% of assets are located in the U.S., give total U.S. assets N/A
7. Is line 5 at least \$10 million? (Yes/No) Yes
8. Is line 4 at least 6 times line 1? (Yes/No) Yes
9. Is line 5 at least 6 times line 1? (Yes/No) Yes
- *10. Are at least 90% of assets located in the U.S.? (Yes/No) Yes If not, complete line 11.
11. Is line 6 at least 6 times line 1? (Yes/No) N/A

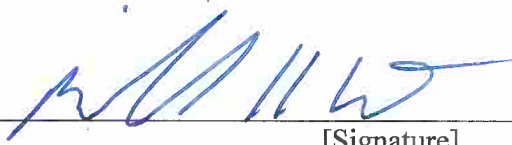
Part B. Closure or Post-Closure Care and Liability Coverage

Alternative I

1. Sum of current closure and post-closure cost estimates (total of all cost estimates listed above): \$361,109
2. Amount of annual aggregate liability coverage to be demonstrated: \$2,000,000
3. Sum of lines 1 and 2: \$2,361,109
- *4. Total liabilities (if any portion of your closure or post-closure cost estimates is included in your total liabilities, you may deduct that portion from this line and add that amount to lines 5 and 6): \$666,096,000

- *5. Tangible net worth: \$485,250,000
- *6. Net worth: \$485,250,000
- *7. Current assets: \$247,542,000
- *8. Current liabilities: \$78,337,000
- 9. Net working capital (line 7 minus line 8): \$169,205,000
- 10. The sum of net income plus depreciation, depletion, and amortization N/A
- *11. Total assets in U.S. (required only if less than 90% of assets are located in the U.S.) \$N/A
- 12. Is line 5 at least \$10 million? (Yes/No) Yes
- 13. Is line 5 at least 6 times line 3? (Yes/No) Yes
- 14. Is line 9 at least 6 times line 3? (Yes/No) Yes
- *15. Are at least 90% of assets located in the U.S.? (Yes/No) Yes If, not, complete line 16.
- 16. Is line 11 at least 6 times line 3? (Yes/No): N/A
- 17. Is line 4 divided by line 6 less than 2.0? (Yes/No) Yes
- 18. Is line 10 divided by line 4 greater than 0.1? (Yes/No) N/A
- 19. Is line 7 divided by line 8 greater than 1.5? (Yes/No) Yes

I hereby certify that the wording of this letter is identical to the wording specified in 40 CFR 264.151(g) as such regulations were constituted on the date shown immediately below.



[Signature]

9/27/12

[Date]

Richard H. Cate
Vice President for Finance and Administration
and University Treasurer

Cc: Claire Burlingham, Controller
Mary Dewey, Director Risk Management Department

The University of Vermont

ANNUAL 2010 Financial Report

UNIVERSITY OF VERMONT & STATE AGRICULTURAL COLLEGE
(a component unit of the State of Vermont)





The University of Vermont

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Cynthia L. Belliveau	Dean, Continuing Education

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Letter from the President



Members of the Board of Trustees:

I am pleased to present the Annual Financial Report for the Fiscal Year ended June 30, 2010 to you and to our faculty, staff, and students, to our generous alumni and friends, and to the citizens of the State of Vermont.

These financial statements demonstrate that, though the University's finances were negatively affected by the recession in FY 2008 and FY 2009, net assets increased by \$24.3 million in FY 2010. That increase was achieved even though we had to recognize an additional \$18.8 million in our post-retirement medical benefits liability. We now have access to 99% of the cash that was restricted by the CommonFund in September of 2008. And, as a further indication that our finances are sound, the University has no variable rate debt.

In addition, I am pleased to report that our cost containment strategies of the past year resulted in an increase in operating costs of only .6% while operating revenues increased by 5.1%. Fiscal year 2010 also saw the completion of James M. Jeffords Hall, a state-of-the-art facility featuring both research labs for the agricultural plant sciences and instructional labs for life science courses offered by colleges and schools across the campus. With the completion of Jeffords Hall, we were able to begin work on the renovation and expansion of the home of the Rubenstein School of Environment and Natural Resources, Aiken Hall.

Academic quality is the linchpin of the University's financial strength. Undergraduate application volume for fall 2010 remained over 22,000, enabling the University to meet enrollment targets ahead of schedule with one of the two or three academically strongest entering classes in UVM's history and with record diversity. Importantly, student outcomes continued to climb, with an all-time high in the six-year graduation rate of 76.3% overall, including an impressive 80.4% rate for Vermont students. At the same time, the scientific and scholarly power of the faculty was reflected in record sponsored program awards of \$145.9 million (of \$564.5 million in total expenses, sponsored projects represented just under \$110 million).

As we pursue UVM's Focus and Excel strategy, we must continue to constrain costs while we diversify our revenue streams. Only by doing so will we be able to make essential investments in the long-term needs of the University, including support of our faculty, students, and staff, continuing invigoration of academic programs and initiatives, and the preservation and improvement of the physical campus.

The one sure way forward for our University is to continue to build academic quality at the highest levels. I am confident that our Annual Financial Report for Fiscal Year 2010 accurately portrays an institution that with discipline and focus has the financial strength to do just that.

Daniel Mark Fogel
President

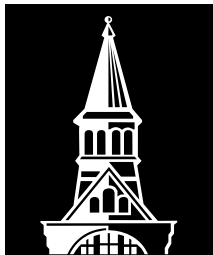
The University of Vermont

Management's Responsibility for the Financial Report

The accompanying financial statements of the University of Vermont and State Agricultural College for the year ended June 30, 2010 are official documents prepared in accordance with U.S. generally accepted accounting principles set forth for public colleges and universities by the Governmental Accounting Standards Board. The management of the University is responsible for the integrity and objectivity of these financial statements, which are accessible to all. The University's system of internal accounting controls is designed to ensure that the financial reports and the books of account properly reflect the transactions of the institution, in accordance with established policies and procedures as implemented by qualified personnel.

The University Trustees selected the certified public accounting firm of KPMG, LLP to conduct the annual financial audit for fiscal year 2010.

Periodically throughout the year the Trustee Audit Committee meets with the Institutional Risk and Audit Services Office staff and the external independent audit firm to review the audit plan and later the report. The Vermont State Auditor is invited to attend those meetings to offer comments and opinions. Both KPMG and the Institutional Risk and Audit Services Office staff have full access to the University Trustees and the State Auditor throughout the year



Richard H. Cate
Vice President for Finance and Administration
and University Treasurer

Claire L. Burlingham
Controller



KPMG LLP
P.O. Box 564
Burlington, VT 05402

Suite 400
356 Mountain View Drive
Colchester, VT 05446

Independent Auditors' Report

The Honorable Thomas Salmon,
Auditor of the Accounts of the
State of Vermont and

The Board of Trustees
The University of Vermont and
State Agricultural College:

We have audited the accompanying financial statements of the business-type activities and the discretely presented component unit of The University of Vermont and State Agricultural College (the University) (a component unit of the State of Vermont) as of and for the years ended June 30, 2010 and 2009, which collectively comprise the University's basic financial statements as listed in the table of contents. These financial statements are the responsibility of the University's management. Our responsibility is to express opinions on these financial statements based on our audits. We did not audit the financial statements of the discretely presented component unit. Those financial statements were audited by other auditors whose report thereon has been furnished to us and our opinions, insofar as they relate to the amounts included for the discretely presented component unit, are based on the report of the other auditors.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the University's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinions.

In our opinion, based on our audits and the report of other auditors, the financial statements referred to above present fairly, in all material respects, the respective financial position of the business-type activities and the discretely presented component unit of the University as of June 30, 2010 and 2009, and the respective changes in financial position, and where applicable, cash flows thereof for the years then ended in conformity with U.S. generally accepted accounting principles.

KPMG LLP is a Delaware limited liability partnership,
the U.S. member firm of KPMG International Cooperative
("KPMG International"), a Swiss entity.

Independent Auditor's Report

continued



The Management's Discussion and Analysis (MD&A) and the schedules of funding progress and employer contributions are not a required part of the basic financial statements but are supplementary information required by U.S. generally accepted accounting principles. We have applied certain limited procedures, which consisted principally of inquiries of management regarding the methods of measurement and presentation of the required supplementary information. However, we did not audit the information and express no opinion on it.

KPMG LLP

November 1, 2010

The University of Vermont

Management's Discussion and Analysis (Unaudited)

June 30, 2010 and 2009

Introduction

The Management's Discussion and Analysis (MD&A) provides a broad overview of the University of Vermont's financial condition as of June 30, 2010 and 2009, the results of its operations for the years then ended, and significant changes from the previous years, and outlook for the future where appropriate and relevant. Management has prepared the financial statements and related footnote disclosures along with this MD&A. The MD&A should be read in conjunction with the financial statements and related notes.

The University is a public, non-profit, comprehensive research institution of higher education established in 1791 as the fifth college in New England. The University consists of seven undergraduate schools and colleges, including the College of Agriculture and Life Sciences, Arts and Sciences, Education and Social Services, Engineering and Mathematical Sciences, Nursing and Health Sciences, the School of Business Administration, and the Rubenstein School of Environment and Natural Resources. The University also includes an Honors College, the College of Medicine, the Division

of Continuing Education and the Graduate College.

The University of Vermont is the only comprehensive research university in Vermont. The University has 10,461 undergraduate students and 1,961 graduate and medical students. It is located in Burlington, Vermont with satellite instructional and research sites throughout Vermont. It is a component unit of the State of Vermont as it receives an annual appropriation from the State. For financial reporting purposes the University's reporting entity consists of all sectors of the University and also includes the financial information for University Medical Education Associates, Inc. (UMEA). UMEA is a legally separate tax-exempt component unit of the University whose purpose is to support the operations, activities and objectives of the College of Medicine of the University of Vermont. The MD&A discusses the University's financial statements only and not those of its component unit.

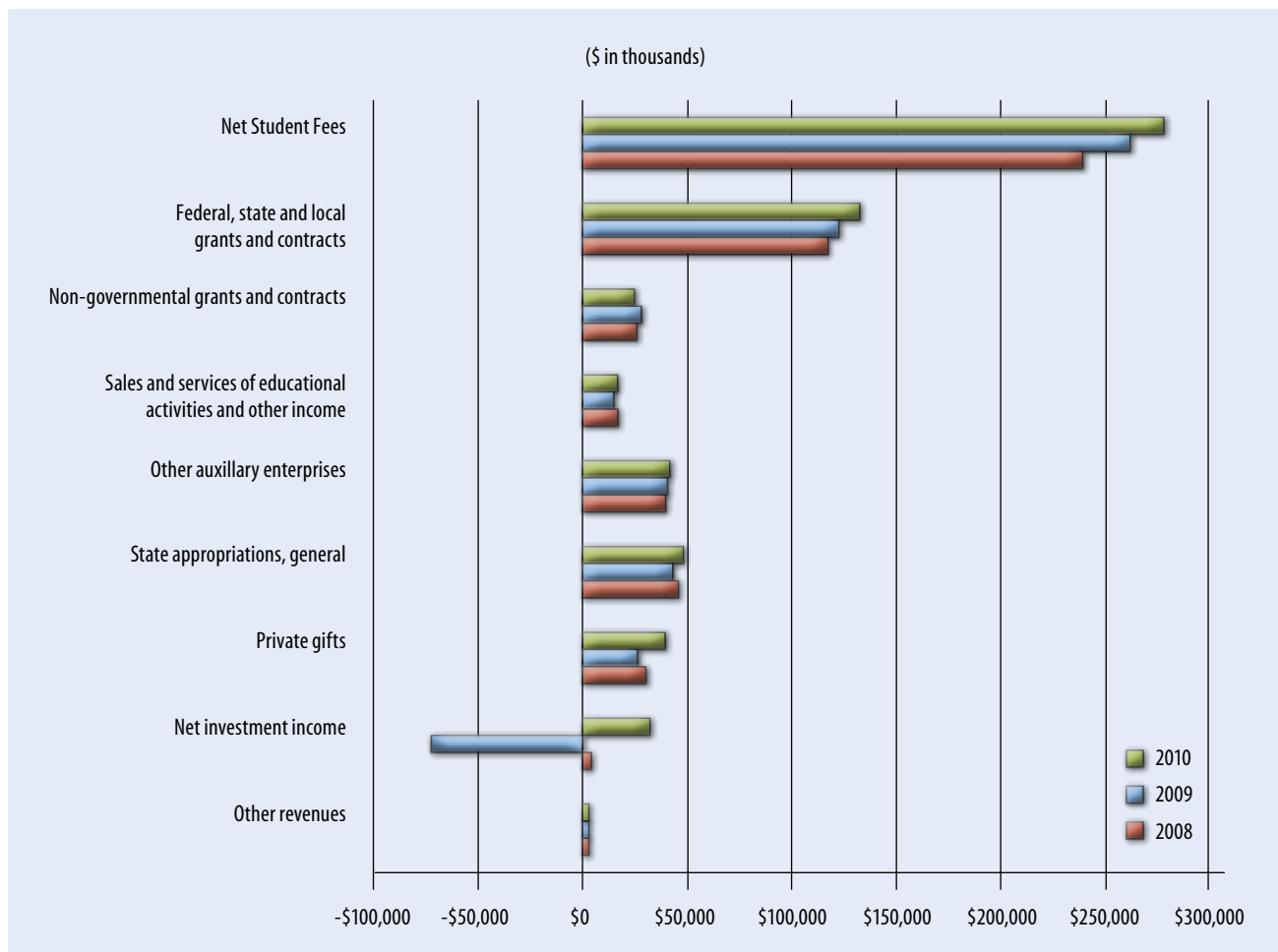
The focus of the MD&A is on the University's financial information contained in the Statement of Net Assets, the Statements of Revenues, Expenses and Changes in Net Assets and the Statements of Cash Flows.

Financial Highlights and Economic Outlook

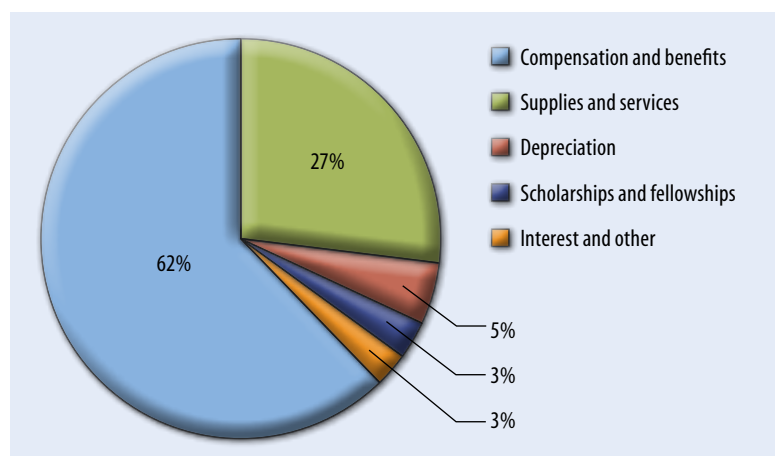
The University's net assets increased by \$24.3 million in fiscal 2010, compared to a decrease in fiscal 2009 of \$115.8 million. Two contributors to the change in net assets is the recovery in the financial markets, resulting in a net gain on the investment portfolio of \$31.6 million in fiscal 2010 as compared with a \$71.0 million decrease in fiscal 2009 and the recognition of the University's liability for other postemployment benefits. Effective for fiscal year beginning July 1, 2007 the University is required to account for its postemployment benefit plan in accordance with GASB Statement 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions* (OPEB). GASB Statement 45 prescribes a methodology which requires the employer to recognize an expense for the value of benefits earned during the current year by active employees (i.e. the normal cost) plus an amortization of the unfunded portion of the value of the plan benefits earned to date by active and retired employees (i.e., the actuarial accrued liability). The University recognized \$29.2 million of OPEB cost in fiscal 2010. The actuarial accrued liability at the measurement date of July 1, 2007 was \$320.2 million.

The University has been engaged in implementing a long-term strategic plan that was incorporated into a financial feasibility study and then into a strategic financial model in 2004. The financial model is dynamic and has been updated each year to incorporate actual results. A cornerstone of the strategic plan has been growth in each area of the University's diverse revenue base. Total operating revenues increased in fiscal 2010 by \$23.8 million or 5.2%. This included an increase in net student tuition and fees of \$14.9 million, or 5.8% and an increase in auxiliary revenues of \$6 million, or 1.4%. There was an increase of \$7.7 million, or 5.2% in federal, state, and private grants and contracts. Other critical revenues include state appropriations which increased by 11.5% in 2010, compared to a 4.8% decrease in 2009. The increase in state appropriations is due to a one-time addition in the general revenue appropriation of \$5.2 million. Investment income, as noted above, experienced an increase compared with 2009 in which the University experienced a significant decrease. As presented in the chart below, net student fees and grants and contracts comprise the largest sources of revenue.

The University experienced an increase in operating costs of \$3.4 million, or 0.6% in fiscal 2010. Compensation and benefits



represents the most significant operating cost, comprising 63.7% and 63.6% of operating costs in 2010 and 2009, respectively. Health care benefits are an increasing portion of compensation and benefits, with increases to the net cost of health plan benefits of 4.5% and 9.8% for 2010 and 2009, respectively. As noted above, recognition of other postemployment benefit costs, primarily for retiree health insurance, was a significant addition to compensation and benefits cost in fiscal 2010. In addition, increases in compensation for staff of 2.0% and faculty of 5.0% also contributed to the increase in compensation and benefits. Other significant non-operating expenses include interest which was \$16.4 million in 2010 compared to \$15.3 million in 2009, reflecting the addition of the 2010 Series-A (taxable) Build America Bonds and the 2010 Series-B general obligation bonds issued in February 2010.



The chart above presents operating, interest, and other expenses for fiscal 2010:

The strategic financial and capital plans include investment in the physical and technological infrastructure of the University. Financing for this investment has come from a combination of donor generosity and the issuance of debt by the University.

On February 11, 2010 the University issued \$9.0 million in taxable Build America Bonds for the purpose of financing the cost of construction for the greening of Aiken capital project. In addition, also in February of 2010, the University issued \$20.4 of general obligation bonds for the purpose of refunding outstanding Series 1998 bonds.

Projects completed during the current fiscal year included the completion of the new James M. Jeffords Hall and the renovations to Given Courtyard.

The University's strategic plan includes a planned increase in undergraduate and graduate enrollment. That plan exceeded expectations in the fall of 2010, with 602 in-state and 1,870 out-of-state first-time, first-year enrollments. In the fall of 2010 the University enrolled 10,461 students in more than 100 undergraduate majors, 1,509 students in graduate and post-baccalaureate programs, and 452 students at the College of Medicine. While the University attracts undergraduates from 48 states and many foreign countries, the University is primarily a regional institution, drawing 89.9% of the undergraduates enrolled in the fall of 2010 from New England and the Middle Atlantic States, including 33.4% of its undergraduate students from Vermont. In the fall of 2010, 39.3% of total students at the University were from Vermont.

The tables below present applications, admissions, and enrollment for in-state and out-of-state students. Final numbers for the fall of 2010 show that total applications have increased 170% since

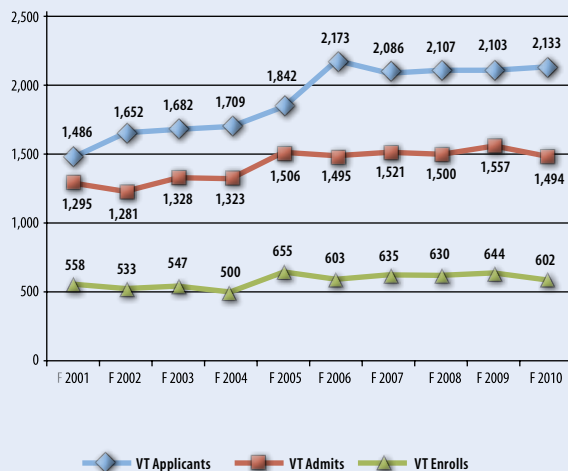
2001, with in-state applications increasing 43% and out-of-state applications increasing 130%. Total admissions have increased for that period by 139%, with in-state admissions increasing 15% and out-of-state admissions increasing 169%. Since 2001, total first-time, first year enrollments have increased 33%, with in-state enrollments increasing by 7% and out-of-state enrollments increasing by 45%.

The University and its Board of Trustees have made a concerted effort to contain increases in tuition and fees with the average annual increases for in-state and out-of-state held to 6.04% and 5.58%, respectively, since 2003. The table below presents tuition and fees, as well as room and board for that period.

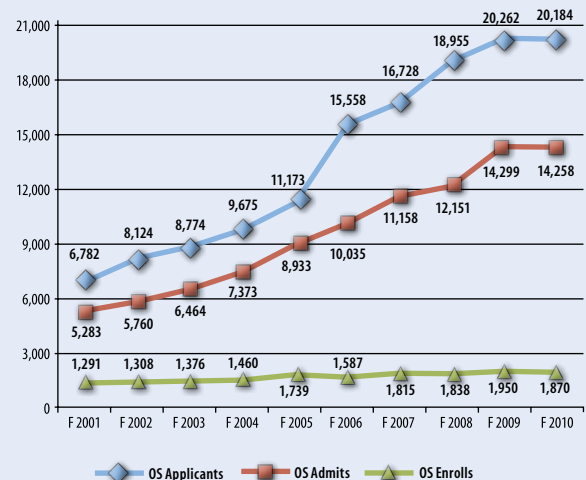
State of Vermont ("the State") general appropriations represented 8.2% of the University's total revenues for fiscal year 2010. For fiscal year 2009 the State appropriation was adjusted mid-year by a reduction of \$2.5 million bringing it to its fiscal 2007 funding level. The State capital appropriation was increased to \$2.0 million from the fiscal 2009 level of \$1.6 million, a 25% increase, and appropriations for special scholarships and technology innovations decreased by \$48 thousand.

Grant and contract revenues of \$155.4 million represented 27.0% of total revenues for fiscal 2010, and included facility and administrative cost recoveries of \$27.1 million. During fiscal 2010, the University was awarded over \$145.9 million in sponsored funds, 82.9% of which were for research activities. Approximately 74.8% of sponsored funds awarded during fiscal 2010 were from federal sources. The University's leading areas of externally sponsored programs are the biomedical sciences, agriculture, the environment, and education.

**Trends in Vermont Applications, Admits, and Enrollments
Fall 2001 to Fall 2010**



**Trends in Out-of-State Applications, Admits, and Enrollments
Fall 2001 to Fall 2010**



The following chart presents the growth of sponsored programs over the past decade:

Friends of the University continued to provide support in fiscal 2010 with private gifts of \$21.0 million and gifts for endowment and capital purposes of \$13.5 million.

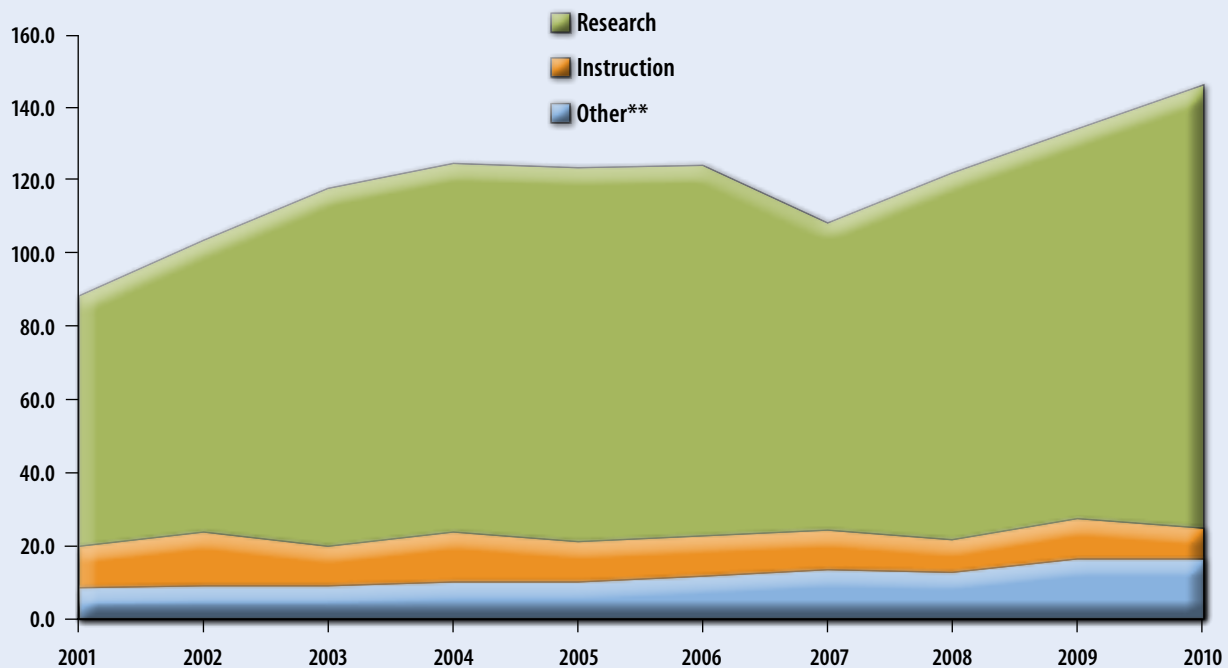
Overview of the Financial Statements

The financial statements of the University of Vermont and State Agricultural College (the "University") have been prepared in accordance with U.S. generally accepted accounting principles as prescribed by the Governmental Accounting Standards Board (GASB). The financial statement presentation consists of comparable Statements of Net Assets, Statements of Revenues, Expenses, and Changes in Net Assets, Statements of Cash

Flows and accompanying notes for the June 30, 2010 fiscal year. These statements provide information on the financial position of the University and the financial activity and results of its operations during the years presented. A description of these statements is below. The financial statements focus on the University as a whole, rather than upon individual funds or activities.

In-State & Out-of-State Fees								Average Annual
	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	% Increase
Student Fees								
In-State Tuition and Fees	\$9,636	\$10,226	\$10,748	\$11,324	\$12,054	\$12,844	\$13,554	6.04%
Out-of-State Tuition and Fee	\$22,688	\$23,866	\$24,934	\$26,308	\$27,938	\$29,682	\$31,410	5.58%
Room (Double)	\$4,465	\$4,710	\$4,936	\$5,150	\$5,426	\$5,752	\$5,964	5.03%
Board (Average Meal Plan)	\$2,216	\$2,306	\$2,396	\$2,492	\$2,598	\$2,782	\$3,032	5.08%
Total, In-State Cost	\$16,317	\$17,242	\$18,080	\$18,966	\$20,078	\$21,378	\$22,550	
Increase Over Previous Year	6.15%	5.67%	4.86%	4.90%	5.86%	6.47%	5.48%	5.63%
Total, Out-of-State Cost	\$29,369	\$30,882	\$32,266	\$33,950	\$35,962	\$38,216	\$40,406	
Increase Over Previous Year	5.41%	5.15%	4.48%	5.22%	5.93%	6.27%	5.73%	5.46%

Sponsored Program Awards by Purpose



University Medical Associates, Inc. (UMEA) is a legally separate tax-exempt component unit of the University of Vermont which issues separate audited financial statements. UMEA is presented as a separate column on the University's Statement of Net Assets and Statement of Revenues, Expenses and Change in Net Assets.

Statement of Net Assets

Net assets, or the difference between total assets and total liabilities, is considered an indicator of the current financial condition of the

University. The Statement of Net Assets presents all assets and liabilities of the University as of a specific date, June 30. Assets and liabilities are classified as current or non-current. Current assets are classified as such if they are available to satisfy current liabilities, which are generally defined as being due within one year of the date of the Statement of Net Assets. Condensed information for net assets at June 30, 2010, with comparative information for June 30, 2009 and 2008 follows:

	<i>(In thousands)</i>		
	<u>2010</u>	<u>2009</u>	<u>2008</u>
Assets			
Current assets	<u>\$214,432</u>	<u>\$168,209</u>	<u>\$179,701</u>
Non-current assets:			
Endowment, annuities and life income			
Cash and cash equivalents and investments	276,153	261,229	325,375
Deposits with Trustees	33,948	60,828	40,343
Capital assets, net	544,755	533,027	503,333
Other	<u>40,175</u>	<u>38,613</u>	<u>39,650</u>
Total non-current assets	<u>895,031</u>	<u>893,697</u>	<u>908,701</u>
Total assets	<u>1,109,463</u>	<u>1,061,906</u>	<u>1,088,402</u>
Liabilities			
Current liabilities	81,271	78,546	76,311
Non-current liabilities	<u>562,164</u>	<u>541,598</u>	<u>454,552</u>
Total liabilities	<u>643,435</u>	<u>620,144</u>	<u>530,863</u>
Net assets			
Invested in capital assets, net of related debt	73,754	99,736	115,623
Restricted:			
Nonexpendable	89,758	84,006	79,276
Expendable	248,903	211,460	277,558
Unrestricted	<u>53,613</u>	<u>46,560</u>	<u>85,082</u>
Total Net assets	<u>\$466,028</u>	<u>\$441,762</u>	<u>\$557,539</u>

Net assets totaled \$466.0 million, \$441.8 million, and \$557.5 million at June 30, 2010, 2009, and 2008 respectively, increasing by \$24.2 million in 2010 and decreasing by \$115.8 in 2009. Both 2010 and 2009 were significantly impacted by the investment market and the recognition of other postemployment benefits as prescribed by the implementation of GASB 45.

Current assets of \$214.4 million, \$168.2 million, and \$179.7 million at June 30, 2010, 2009, and 2008, respectively, consist primarily

of cash and cash equivalents, and operating investments, which totaled \$155.2 million at June 30, 2010, \$111.8 million at June 30, 2009, and \$110.6 million at June 30, 2008. Cash and cash equivalents and operating investments represents approximately 5.1, 2.5, and 2.6 months of total operating expenses, excluding depreciation, for 2010, 2009, and 2008, respectively. The net increase to current assets in 2010 of \$46.2 million was driven by a \$43.3 million increase in cash, cash equivalent and operating investments, the net decrease to current assets for 2009 of \$11.5

million was driven by a \$12.9 million decrease in accounts, loans, notes and pledges receivable.

Endowment cash, cash equivalents and investments totaled \$276.2 million, \$261.2 million and \$325.4 million at June 30, 2010, 2009, and 2008, respectively, representing an increase of \$15.0 million, or 5.8% in 2010 and a decrease of \$64.2 million, or 19.7% in 2009. The University's long-term investment pool consists of permanent endowments, term endowments, and funds functioning as endowment, commonly referred to as quasi-endowments.

Permanent endowments are those funds received from donors with the stipulation that the principal be invested in perpetuity to produce income to be expended for the purposes specified by the donor. Term endowments are those funds received from donors that function as endowment for a period of time or until a specific event occurs, such as reaching a certain balance. Funds functioning as endowment consist of restricted gifts and unrestricted funds that have been designated by the University for long-term investment purposes. These funds are not subject to donor restrictions requiring the University to preserve the principal in perpetuity. Programs supported by the endowment include scholarships, fellowships, professorships, research efforts and other programs and activities related to the University's mission. Investments are reported in three categories in the Statement of Net Assets. Investments reported as non-current assets include endowment, annuity, and life income funds. Investments for capital activities reported as current assets are replacement reserves designated for capital renovations. All other investments are reported as operating investments.

The University's investment objective for endowment growth is to obtain an average real annual rate of return (net of investment fees) over the long-term, using a five-year moving average, of at least 5% over inflation, as measured by the Consumer Price Index. The current annual spending allocation is at a budgeted rate of 4.5% of the previous 13 quarters' average market value of the long-term investment pool. The spending distributions from the total endowment were \$14.9 million, \$14.2 million, and \$12.1 million in fiscal years ended June 30, 2010, 2009, and 2008, respectively. These distributions were 5.6%, 4.3%, and 3.6% of the beginning market value of the endowment for fiscal years 2010, 2009, and 2008, respectively.

The decrease to *Deposits with trustees* of \$26.9 million was primarily the result of net proceeds from the 2010 Series-A and B general obligation bonds and the Build America Bonds issued in February 2010, interest earned on deposits of \$130 thousand, offset by draw downs for construction and other capital projects of \$36.2 million. The proceeds from the 2010 Series-B bonds were used for refunding the 1998 Series bonds of \$20.4 million. The increase of \$20.5 million in 2009 was primarily the result of net proceeds from the 2009 Series general obligation bonds issued in April 2009. The construction fund of the 2010A bonds totaled \$8.8 million at June 30, 2010. The construction fund of the 2009 bonds

totaled \$2.3 million at June 30, 2010 and \$34.1 million at June 30, 2009. The construction fund of the 2007 bonds totaled \$5.4 million at June 30, 2010, \$8.3 million at June 30, 2009, and \$15.6 million at June 30, 2008. The construction fund of the 2005 bond totaled \$3.9 million at June 30, 2010, \$4.8 million at June 30, 2009, and \$7.6 million at June 30, 2008. The construction fund of the 2002 bond totaled \$.2 million at June 30, 2010, \$.2 million at June 30, 2009, and \$.6 million at June 30, 2008. Major capital projects funded through the 2010A bond include the construction, renovation and equipping of the University's greening of the Aiken building.

Capital assets, net of accumulated depreciation, totaled \$544.8 million, \$533.0 million, and \$503.3 million at June 30, 2010, 2009 and 2008, respectively, representing an increase of \$11.8 million, or 2.2%, in 2010 and \$29.7 million, or 5.9%, in 2009. Gross capital additions totaled \$39.2 million in 2010 and \$56.8 million in 2009. Capital additions in 2010 included land acquisitions of \$.3 million, renovations to residence halls, Given Health Science Complex, Jeffords Hall construction, and other building of \$19.5 million, building components and equipment of \$12.7 million, fixed equipment of \$1.1 million, building interiors of \$5.5 million, and movable equipment of \$.1 million. Capital additions in 2009 included land acquisitions of \$.2 million, renovations to residence halls, Given Health Science Complex, Terrill Hall, Williams Hall, and other buildings of \$26.6 million, building components and equipment of \$7.0 million, fixed equipment of \$1.2 million, software systems of \$.4 million and construction in progress of \$21.4 million.

Current liabilities had an increase of \$2.7 million in 2010 and \$2.2 million in 2009. The increase in 2010 was comprised of a decrease to accounts payable and accrued liabilities of \$.9 million, an increase to deferred revenue, deposits, and funds held for others of \$1.5 million and an increase in the current portion of bonds and notes payable of \$2.2 million. The increase in 2009 was comprised of an increase to accounts payable and accrued liabilities of \$3.3 million, a decrease to deferred revenue, deposits, and funds held for others of \$1.2 million and an increase to current portion of bonds payable of \$.1 million.

Non-current liabilities increased \$20.6 million in 2010 compared to \$87.0 million in 2009. The increase in 2010 was the result of the recognition of \$18.8 million in additional liability for postemployment benefits and an increase of \$2.4 million to bonds and notes payable resulting from the Series 2010 Build America Bonds and the 2010 general obligation bonds issued in 2010. The increase in 2009 was the result of the recognition of \$24.6 million in liability for postemployment benefits and an increase of \$64.1 million in bonds and notes payable resulting from the Series 2009 general obligation bonds issued in 2009.

Net assets invested in capital assets, net of related debt, of \$73.8 million, \$99.7 million, and \$115.6 million, at June 30, 2010, 2009, and 2008, respectively, represent the University's capital assets of land, buildings and equipment net of accumulated depreciation

and net of outstanding principal balances of debt attributable to the acquisition, construction or improvement of those assets. The decrease of \$25.9 million in 2010 was primarily the result of the net effect of additions and disposals to capital assets of \$39.2 million, the increase in bonds payable related to those assets of \$42.7 million, and depreciation expense of \$27.4 million. The decrease of \$15.9 million in 2009 was primarily the result of the net effect of additions and disposals to capital assets of \$56.8 million, the increase in bonds payable related to those assets of \$51.4 million, and depreciation expense of \$27.1 million.

Restricted nonexpendable net assets totaling \$89.8 million, \$84.0 million, and \$79.2 million at June 30, 2010, 2009, and 2008, respectively, consist entirely of the University's permanent endowment funds. The corpus of restricted nonexpendable resources is only available for investment purposes. The increase of \$5.8 million, or 6.8%, in 2010, resulted from gifts of \$5.8 million. The increase of \$4.7 million, or 5.9%, in 2009 was due to gifts of \$4.7 million.

Restricted expendable net assets are subject to externally imposed restrictions governing their use. Restricted expendable net assets totaled \$248.9 million, \$211.5 million, and \$277.6 million, as of June 30, 2010, 2009, and 2008, respectively.

Unrestricted net assets are not subject to externally imposed stipulations. However, substantially all of the University's unrestricted net assets have been designated for various academic and research programs and initiatives, as well as capital projects.

Unrestricted net assets totaled \$53.6 million, \$46.6 million, and \$85.1 million for June 30, 2010, 2009, and 2008, respectively. The increase of \$7.0 million in 2010 is primarily due to an increase in net tuition and fees of \$14.9 million and investment income of \$33.8 million offset by the accrual of expense for postemployment benefits of \$29.7 million. The decrease in 2009 is primarily due to the accrual of expense for postemployment benefits of \$36.8 million in 2009.

Statement of Revenues, Expenses and Changes in Net Assets

The components of the change in net assets are presented in the Statement of Revenues, Expenses and Changes in Net Assets. This statement displays the revenues earned by the University, the expenses incurred by the University and the resulting increase or decrease in net assets. Revenues and expenses are categorized as either operating or non-operating, and net operating income or loss is displayed. Operating revenues generally are those earned through providing services or goods to the University's customers. Operating expenses are incurred in providing those services and goods. Significant recurring sources of the University's revenues, including state appropriations, gifts and investment income or loss are considered non-operating.

Condensed information for the year ended June 30, 2010, with comparative totals for the years ended June 30, 2009 and June 30, 2008, follows:

	<i>(In thousands)</i>		
	2010	2009	2008
Operating revenues	\$486,434	\$462,594	\$431,688
Operating expenses	564,465	561,055	543,823
Operating loss	(78,031)	(98,461)	(112,135)
Net non-operating revenues (expenses)	86,756	(24,556)	53,763
Revenue (loss) before capital			
And endowment additions	8,725	(123,017)	(58,372)
State capital appropriations	2,000	1,600	1,600
Capital and endowment gifts and grants	13,541	5,640	8,512
Total capital and endowment additions	15,541	7,240	10,112
Increase (decrease) in net assets	24,266	(115,777)	(48,260)
Net assets, beginning of year	441,762	557,539	605,799
Net assets, end of year	\$466,028	\$441,762	\$557,539

Net assets increased by \$24.3 million in 2010, decreased by \$115.8 million in 2009, and decreased by \$48.3 million in 2008. Contributors to the increase in 2010 include an increase in operating revenues of \$23.8 million and an increase in operating expenses of \$3.4 million. Operating revenues increased mostly due to an increase of \$14.9 million in net student fees and an increase of \$7.7 million in grants and contracts revenues. The increase in operating expenses consists mostly of an increase in compensation and benefits of \$2.5 million and an increase in scholarship expense of \$3.2 million. These expenses were offset by a decrease in supplies and services expense of \$2.7 million. Investment income of \$31.6 million was recognized in 2010 as compared to a \$71.0 million loss in 2009. The decrease in 2009 net assets included an increase in operating expenses of \$17.2 million which includes an increase in compensation and benefit expense of \$15.4 million. Other operating expense categories such as supplies and services and depreciation remained relatively unchanged from the 2008 spending levels while scholarship and fellowship expense increased by \$1.3 million in 2009. A decrease in 2009 investment income of \$75.1 million was partially offset by an increase in operating revenues of \$30.9 million.

Operating revenues include the following:

- *Student Tuition and Residential Life Fees, net of scholarship allowances*, are the largest component of operating revenues and the primary source of funding for the University's academic programs. Net Student Fees increased by \$14.9 million in 2010, comprised of an increase to tuition and fees of \$27.4 million, or 10.0%, and residential life of \$3.3 million, or 7.4%, offset by an increase in scholarship allowances of \$15.7 million, or 26.6%. Net Student Fees increased by \$23.9 million in 2009, comprised of an increase to tuition and fees of \$28.7 million, or 11.8%, and residential life of \$2.9 million, or 6.8%, offset by an increase in scholarship allowances of \$7.6 million, or 14.8%. Scholarship and fellowship awards applied to student accounts are presented as a reduction of student tuition and fee and residential life revenues, while payments directly made to students are presented as scholarship and fellowship expenses. Total scholarships and fellowships of \$92.0 million, \$73.0 million, and \$64.0 million, were awarded to students in 2010, 2009, and 2008, respectively. This represents a total increase of \$19.0 million, or 26.0%, for 2010 as compared to \$9.0 million, or 14.0% for 2009.
- *Revenues for sponsored programs*, of \$155.4 million in 2010, \$147.7 million in 2009, and \$141.6 million in 2008, include federal appropriations, grants and contracts, as well as state and non-governmental grants and contracts that normally provide for the recovery of direct and indirect costs or expenses. The increase of \$7.7 million in 2010 is the result of an increase of \$6.0 million in federal and private grants and an increase \$1.7 million in state grants. The increase of \$6.1 million in 2009 is primarily the result of an increase of \$5.3 million in federal

appropriations, grants and contracts and an increase of \$.8 million in private grants. Revenues for sponsored programs are generally recognized as expenses are incurred or when significant milestones have been met under the terms of the award. The revenues for sponsored programs include recovery of indirect costs, referred to as facilities and administrative costs, of \$27.1 million, \$24.9 million, and \$25.8 million, in 2010, 2009, and 2008, respectively.

- *Auxiliary enterprise and educational activities revenues* totaled \$46.8 million, \$46.4 million, and \$44.0 million, in 2010, 2009, and 2008, respectively. Auxiliary enterprises include business type enterprises such as the bookstore, printing, mail services and conferences and events that provide support to the University's primary missions of education, research and public service. The \$.4 million increase in 2010 and the \$2.4 million increase in 2009 are primarily due to increased activity related to Conferences and Events Services and activity in the Davis Center.
- *Student loan interest and other operating revenues* were \$10.9 million, \$10.1 million, and \$11.7 million in 2010, 2009, and 2008, respectively.

Significant components of operating expenses include the following:

- *Compensation and benefits* of \$359.5 million, \$356.9 million, and \$341.6 million in 2010, 2009, and 2008, respectively, comprise the most significant portion of total expenses. Compensation and benefits increased by \$2.6 million, or 0.7%, in 2010 and \$15.3 million, or 4.5%, in 2009. These increases reflected budgeted increases of 2.0% in 2010 and 3.8% in 2009 in the non-represented staff salary pool, as well as budgeted increases of 5.0% in 2010 and 5.0% in 2009 to faculty salaries subsequent to the bargained agreement reached in 2008. In addition, health plan benefit costs increased by \$1.9 million, or 4.5%, in 2010 and \$3.8 million, or 9.8%, in 2009. In 2010, the increase to compensation and benefits also includes \$18.8 million accrued for post retirement benefits.
- *Supplies and services* expenses decreased by \$2.7 million, or 1.7%, in 2010 and \$.4 million, or by less than 1%, in 2009. This classification encompasses the many and varied non-compensation expenses that are required for the operation of the University, including utilities, professional services, non-capitalized equipment, and minor renovations.
- *Depreciation* expense increased slightly by \$.4 million, or 1.3%, in 2010 and \$1.0 million, or 3.8%, in 2009, resulting from the increase in capital assets as projects were completed. During 2010, a review of the 2008 componentization study took place and updates were recorded along with a complete study of the James Jeffords Hall.
- *Scholarships and fellowships* of \$17.1 million in 2010, \$13.9 million in 2009, and \$12.6 million in 2008 are comprised of direct payments to students. As noted above, in addition

to the amounts reflected in scholarships and fellowships expense, financial aid is applied to tuition and residential life fees and amounts applied to each are reflected in the financial statements as a reduction of those revenues.

- *Net non-operating revenue* is comprised of several revenue and expense categories that are not considered to be operating or exchange transactions. Net non-operating revenues totaled \$ 86.8 million, \$(24.6) million, and \$53.8 million, in 2010, 2009, and 2008, respectively, resulting in an increase of \$111.4 million in 2010 and a decrease of \$78.4 million in 2009. Net non-operating revenues reflected a gain of \$111.4 million in 2010 primarily due to net investment gains of \$102.6 million. Other contributors included an increase of \$4.7 million in State appropriations, an increase of \$4.2 million in private gifts, and a increase of \$1.1 million in interest on indebtedness. The decrease of \$78.4 million in 2009 was primarily the result of a decrease to investment income of \$75.1 million and a decrease to state appropriations of \$2.1 million. Net non-operating revenue includes various non-operating revenues and expenses that are grouped together on the Statement of Revenues, Expenses and Changes in Net Assets and include the following:
- *State appropriations*, which represent funding provided by the State of Vermont, were \$47.1 million, \$42.4 million, and \$44.6 million, in 2010, 2009, and 2008, respectively, increasing by 11.0% in 2010 and decreasing by 4.8% in 2009.
- *Private gifts and UMEA Grants to the UVM College of Medicine* totaled \$25.4 million, \$20.3 million, and \$21.1 million, in 2010, 2009, and 2008, respectively.
- *Net investment income/(loss)* was \$31.6 million, \$(71.0) million, and \$4.2 million in 2010, 2009, and 2008, respectively. Net investment income includes realized investment income/(loss)

and the change in the unrealized appreciation or depreciation of investments. The change in unrealized appreciation/(depreciation) included in net investment income was \$ 102.6 million in 2010, \$(68.4) million in 2009, and \$(34.0) in 2008. Realized gains/(losses) and other income included in net investment income totaled \$1.1 million, \$(2.6) million, and \$38.2 million in 2010, 2009, and 2008, respectively.

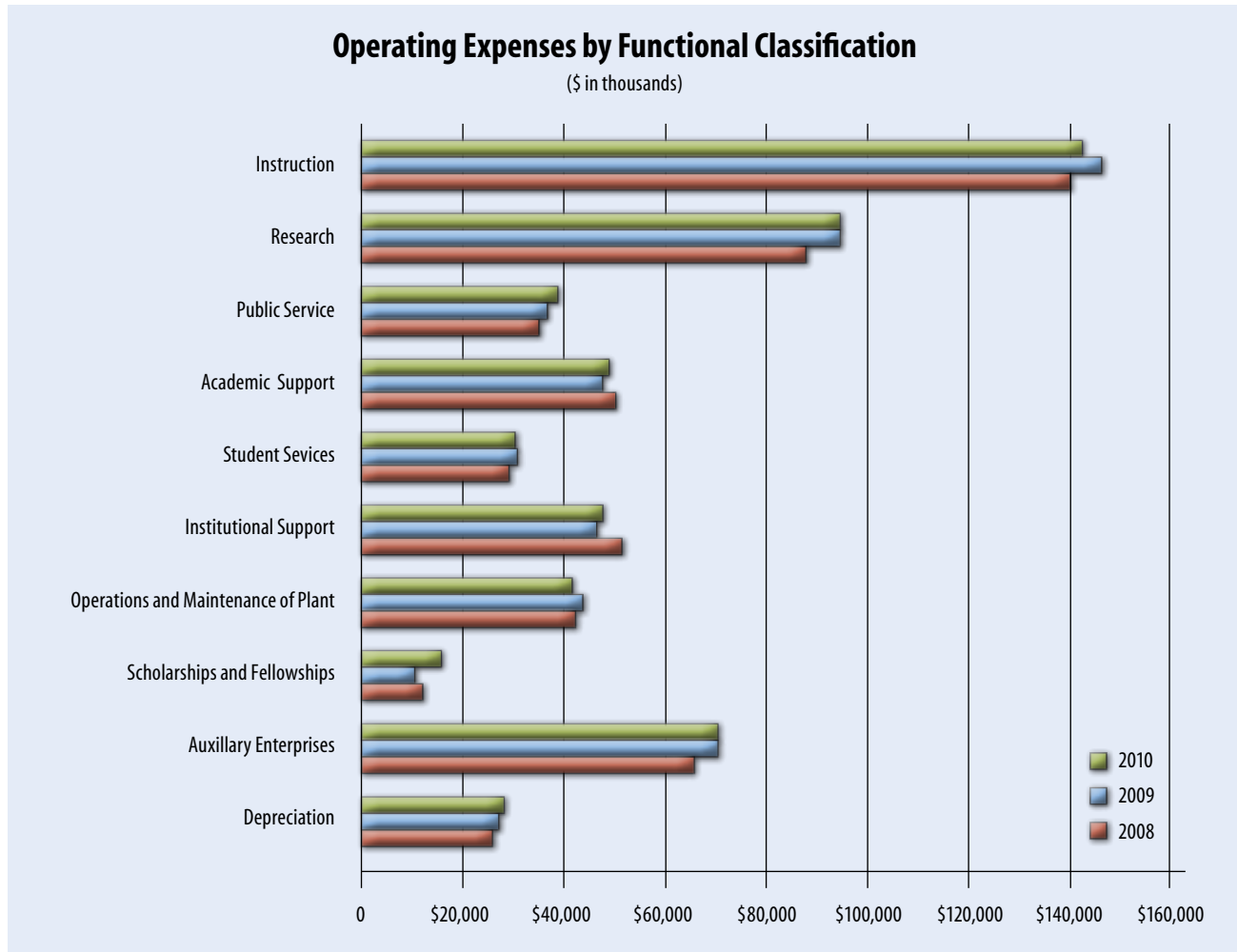
- *Interest on indebtedness* totaled \$16.4 million in 2010, \$15.3 million in 2009, and \$14.4 million in 2008. Interest on indebtedness represents interest on notes and bonds net of capitalized interest. The increases are primarily due to the increases in debt outstanding.

Other financial resources presented after *Revenue (Loss) before capital and endowment additions* include the following:

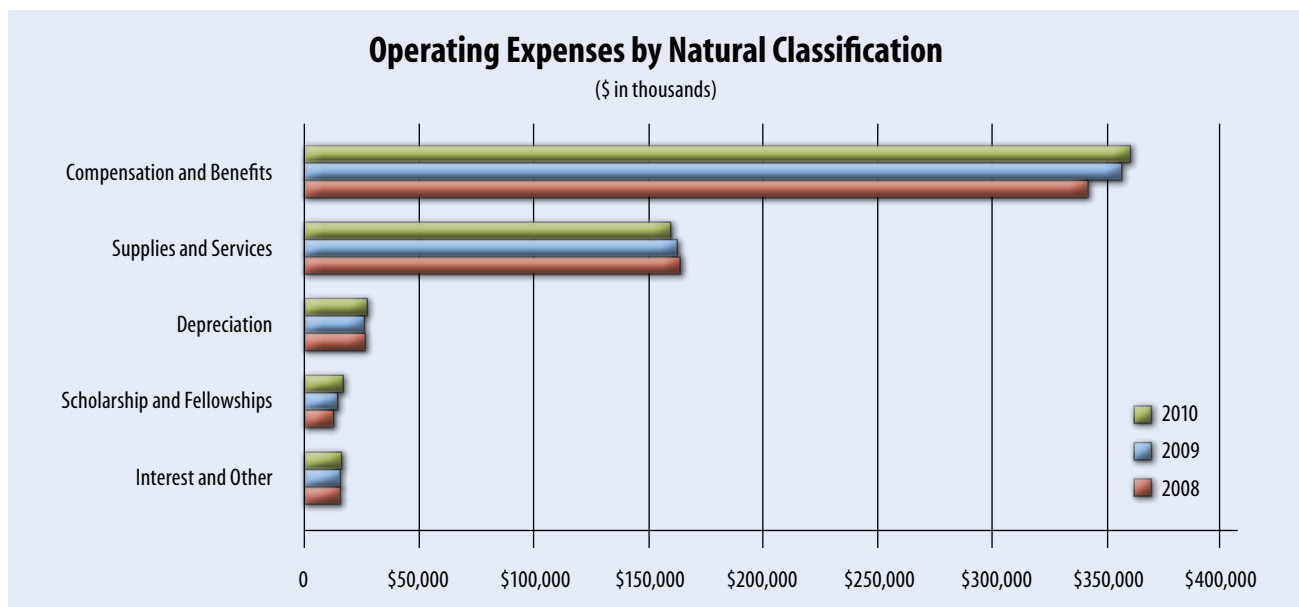
- *State capital appropriations* increased in 2010 to \$2.0 million which reflected a \$400 thousand increase from 2009. This amount was consistent at \$1.6 million in both 2009 and 2008 respectively.
- *Capital and endowment gifts and grants* were \$13.5 million, \$5.6 million, and \$8.5 million, in 2010, 2009, and 2008, respectively.

Expenses are presented in the financial statements by natural classification, according to the type of expense, such as compensation and benefits. In addition, expenses may be aggregated by the functions that they support. Total expenses increased by \$4.5 million, or 7.6% in 2010 and \$17.4 million, or 3.2%, in 2009 and \$54.6 million, or 10.8% in 2008. With the exception of scholarships and fellowships, depreciation, and interest expense, the increases in each of the functional categories reflect the increases in compensation and benefits offset slightly by the decreases in supplies and services.

The chart below presents total expenses by function for 2010, 2009, and 2008:



The following chart presents total expenses by natural classification (object) for 2010, 2009, and 2008:



Statements of Net Assets
as of June 30, 2010 and 2009
(dollars in thousands)

	2010	2009	UMEA 2010	UMEA 2009
ASSETS				
Current Assets:				
Cash and cash equivalents	\$131,129	\$75,701	\$4,997	\$3,902
Operating investments	24,033	36,114	8,799	6,246
Investments for capital activities	11,320	5,926	-	-
Accounts, loans, notes and pledges receivable, net	36,591	39,295	5,013	3,028
Inventories, prepaid expenses and deferred charges	11,359	11,173	9	10
Total current assets	214,432	168,209	18,818	13,186
Non-current assets:				
Endowment cash, cash equivalents and investments	276,153	261,229	-	-
Student loans, notes, and pledges receivable, net	33,648	32,716	-	-
Deposits with Trustees	33,948	60,828	-	-
Prepaid expenses, deferred charges and other assets	6,527	5,897	34	74
Capital assets, net	544,755	533,027	-	-
Total non-current assets	895,031	893,697	34	74
Total Assets	1,109,463	1,061,906	18,852	13,260
LIABILITIES				
Current Liabilities:				
Accounts payable and accrued liabilities	56,285	57,224	588	422
Deferred revenue, deposits, and funds held for others	16,871	15,416	-	-
Bonds and notes payable	8,115	5,906	-	-
Total current liabilities	81,271	78,546	588	422
Non-current liabilities:				
Accrued liabilities	13,129	13,760	-	-
Post employment benefits	69,605	50,841	-	-
Bonds and notes payable	479,430	476,997	-	-
Total non-current liabilities	562,164	541,598	-	-
Total Liabilities	643,435	620,144	588	422
NET ASSETS				
Invested in capital assets net of related debt	73,754	99,736	-	-
Restricted:				
Non-Expendable	89,758	84,006	-	-
Expendable	248,903	211,460	309	331
Unrestricted	53,613	46,560	17,955	12,507
Total Net Assets	\$466,028	\$441,762	\$18,264	\$12,838

The accompanying notes are an integral part of the financial statements.

Statements of Revenues, Expenses and Changes in Net Assets
for the years ended June 30, 2010 and 2009
(dollars in thousands)

	2010	2009	UMEA 2010	UMEA 2009
Operating revenues				
Tuition and fees	\$300,009	\$272,659	\$-	\$-
Residential Life	48,130	44,827	-	-
Less scholarship allowances	(74,853)	(59,138)	-	-
Net student fees	273,286	258,348	-	-
Federal, state, and private grants and contracts	155,362	147,677	-	-
Sales and services of educational activities	5,211	5,407	-	-
Other Auxiliary Enterprises	41,626	41,039	-	-
Student loan interest and other operating revenues	10,949	10,123	325	226
Total operating revenues	486,434	462,594	325	226
Operating expenses				
Compensation and benefits	(359,467)	(356,943)	(310)	(397)
Supplies and services	(160,456)	(163,164)	-	-
Depreciation	(27,435)	(27,081)	-	-
Scholarships and fellowships	(17,107)	(13,867)	-	-
Total operating expenses	(564,465)	(561,055)	(310)	(397)
Operating income (loss)	(78,031)	(98,461)	15	(171)
Non-operating revenues (expenses)				
State appropriations	47,143	42,477	-	-
Private gifts	21,068	16,861	9,759	8,392
Net investment income/(loss)	31,609	(70,983)	996	(2,001)
Interest on indebtedness	(16,414)	(15,316)	-	-
Gain on disposal of capital assets	-	78	-	-
Net other non-operating expense	(1,021)	(1,064)	-	-
UMEA Grants to UVM College of Medicine & others	4,371	3,391	(5,344)	(4,871)
Net non-operating revenues (expenses)	86,756	(24,556)	5,411	1,520
Revenue (loss) before capital and endowment additions	8,725	(123,017)	5,426	1,349
State capital appropriations	2,000	1,600	-	-
Capital gifts and grants	7,865	985	-	-
Gifts for endowment purposes	5,676	4,655	-	-
Total capital and endowment additions	15,541	7,240	-	-
Increase (decrease) in net assets	24,266	(115,777)	5,426	1,349
Net Assets, Beginning of Year	441,762	557,539	12,838	11,489
Net Assets, End of Year	\$466,028	\$441,762	\$18,264	\$12,838

The accompanying notes are an integral part of the financial statements.

Statements of Cash Flows
for the years ended June 30, 2010 and 2009
(dollars in thousands)

	2010	2009
Cash Flows From Operating Activities		
Tuition and fees	\$244,361	\$223,672
Grants and contracts	159,714	156,108
Sales & services of educational activities	5,211	5,407
Sales and services of auxiliary enterprises:		
Residential Life fees	30,892	36,477
Other	41,626	41,039
Payments to employees and benefit providers	(340,430)	(333,007)
Payments to vendors	(161,949)	(160,934)
Payments for scholarships and fellowships	(17,107)	(13,867)
Student loans issued	(3,897)	(4,704)
Student loans collected, interest and other revenue	3,913	4,137
Other receipts, net	10,277	9,254
Net cash used in operating activities	(27,389)	(36,418)
Cash Flows From Noncapital Financing Activities		
State general appropriation	47,143	42,477
Private gifts for other than capital purposes	24,627	25,047
Deposits of affiliates and life income payments	(247)	(704)
Net cash provided by non-capital financing activities	71,523	66,820
Cash Flows From Capital Financing Activities		
Proceeds from capital debt	29,987	94,745
State capital appropriation	2,000	1,600
Capital grants, gifts and other income	6,089	1,348
Purchases and construction of capital assets	(39,793)	(56,519)
Principal and interest paid on capital debt	(41,549)	(45,063)
Changes in deposits with trustees, net	27,349	(23,578)
Net cash used in capital financing activities	(15,917)	(27,467)
Cash Flows From Investing Activities		
Proceeds from sales and maturities of investments	138,848	160,232
Purchase of investments	(113,935)	(103,469)
Interest and dividends on investments, net	6,513	10,680
Net cash provided by investing activities	31,426	67,443
Net Increase in Cash and Cash Equivalents	59,643	70,378
Cash and cash equivalents - beginning of year	78,640	8,262
Cash and Cash Equivalents - End of Year *	\$138,283	\$78,640
Reconciliation of Operating Loss To Cash Used by Operating Activities		
Operating loss	\$(78,031)	\$(98,461)
Adjustments to reconcile net income to net cash used in Operating Activities:		
Depreciation expense	27,435	27,081
Changes in assets and liabilities:		
Accounts receivable and loan receivables, net	5,596	11,309
Inventories and prepaid expense	(186)	(352)
Accounts payable	(6,278)	(746)
Deferred revenue, deposits and accrued liabilities	24,075	24,751
Net cash used in operating activities	\$(27,389)	\$(36,418)

* of total cash and cash equivalents for 2010, \$131,129 is current and \$7,154 is non-current endowment and for 2009, \$75,701 is current and \$2,939 is non-current endowment

The accompanying notes are an integral part of the financial statements.

(dollars in thousands)

Notes to Financial Statements

For the Year Ended June 30, 2010

A. Summary of Significant Accounting Policies

1. Organization and Presentation

The University of Vermont and State Agricultural College is a public, non-profit, comprehensive research institution of higher education with an enrollment of approximately 12,380 undergraduate, graduate, and medical students. It is located in Burlington, Vermont with satellite instructional and research buildings throughout the State.

The University of Vermont and State Agricultural College is a component unit of the State of Vermont as it receives an annual appropriation from the State.

University Medical Education Associates, Inc. (UMEA) is a legally separate tax-exempt component unit of the University of Vermont. UMEA is governed by a minimum nine-member board; six members are named as a result of their positions at the University of Vermont and the remaining are elected by the other members. UMEA's purpose is to support the operations, activities and objectives of the College of Medicine of the University of Vermont. UMEA is a public non-profit organization that reports under Governmental Accounting Standards Board (GASB) standards. UMEA issues separate audited financial statements, which may be obtained by contacting the Dean's Office, College of Medicine. In accordance with GASB Statement No. 39, *Determining Whether Certain Organizations are Component Units* (an amendment of GASB 14), UMEA is discretely presented on the University's Statement of Net Assets and Statement of Revenues, Expenses, and Changes in Net Assets.

The University has received a letter from the Internal Revenue Service recognizing the University as an organization that is tax-exempt on related income under Section 501(a) of the Internal Revenue Code.

The accompanying financial statements have been prepared using the economic resources measurement focus and the accrual basis of accounting in accordance with US generally accepted accounting principles as defined for public colleges and universities by the GASB. The University has elected not to adopt statements issued by the Financial Accounting Standards Board (FASB) after November 30, 1989.

Net assets are categorized as follows:

- **Invested in capital assets, net of related debt:** Capital assets, net of accumulated depreciation and outstanding principal balances of debt attributable to the acquisition, construction or improvement of those assets. Such assets include the University's physical plant.
- **Restricted:**
 - Non-Expendable** - Net assets subject to externally imposed stipulations that they be maintained permanently by the University. Such assets include the corpus of the University's true endowment funds.
 - Expendable** - Net assets whose use by the University is subject to externally imposed stipulations that can be fulfilled by actions of the University to meet those stipulations or that

expire through the passage of time. Such assets include restricted gifts, grants and contracts.

- **Unrestricted:** Net assets that are not subject to externally imposed stipulations. Unrestricted net assets may be designated for specific purposes by action of management, the Board of Trustees or may otherwise be limited by contractual agreements with outside parties.

The University's policy for defining operating activities as reported on the Statement of Revenues, Expenses, and Changes in Net Assets are those that generally result from exchange transactions such as payments received for providing services and payments made for services or goods received. Non-exchange transactions such as gifts, investment income, state appropriations and interest on indebtedness are reported as non-operating revenues and expenses.

When both restricted and unrestricted net assets are available and appropriate to fund an expense, the University's practice is to allow the budget manager to determine which to use in each instance.

The preparation of financial statements in accordance with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect reported amounts and disclosures. Actual results could differ from those estimates. The most significant areas that require management estimates relate to valuation of certain investment balances, the valuation of the postemployment benefit obligation, allowances on accounts and loans receivable, depreciation, and certain accruals.

Certain prior year balances have been reclassified to conform to the current year presentation.

2. Investments

Investments are stated at fair value in the case of marketable securities. Investments in private partnerships are stated at cost as they do not meet the definition of marketable securities. Nonmarketable investments include alternative investments such as venture capital and real estate funds, which are valued using current estimates of fair value obtained from the investment manager in the absence of readily determinable public market values. Marketable alternative investments, generally referred to as hedge funds, may contain non-marketable as well as marketable investments. Such valuations generally reflect discounts for liquidity and consider variables such as financial performance of investments, including comparison of comparable companies' earning multiples, cash flow analysis, recent sales prices of investments, and other pertinent information. Because of the inherent uncertainty of valuation for these investments, the estimated values may differ from the values that would have been used had a ready market existed. University management is responsible for the fair measurements of investments reported in the financial statements. The University has implemented policies and procedures to assess the reasonableness of the fair values provided and believes that reported fair values at the balance sheet date are reasonable.

Investments are reported in three categories in the Statement of Net Assets. Investments reported as non-current assets include endowment, annuity, and life income funds. Investments for capital activities reported as current assets are replacement reserves designated for capital renovations. All other investments are reported as operating investments.

(dollars in thousands)

Deposits with trustees include \$10,606 in 2010 and \$10,158 in 2009 of assets held under deferred giving arrangements and \$1,152 in 2010 and \$1,130 in 2009 of investments in the waste disposal fund required by the EPA.

Investment income is recorded as revenue when earned. Net investment income is reported as non-operating revenue and includes income net of investment fees and the change in the fair value of investments. The calculation of realized gains (losses) is independent of the calculation of the net increase in the fair value of investments. Realized gains and losses on investments that had been held for more than one fiscal year and sold in the current year may have been recognized as an increase or decrease in the fair value of investments reported in the prior year. The fair value of investments increased \$25,211 during 2010 including \$1,142 of realized gains and \$24,069 of unrealized gains. For 2009 the fair value of investments decreased \$79,784 including \$11,400 of realized losses and \$68,384 of unrealized losses. For 2010 the unrealized gains on investments held at year-end was \$19,019 compared to an unrealized loss of \$5,050 for 2009.

The University records its purchases and sales of investments on a trade date basis.

3. Government Appropriations and Grants

The University has recorded reimbursement of indirect costs relating to government contracts and grants at a predetermined rate. The reimbursement of indirect costs included in grant revenue is \$27,122 in 2010 and \$24,986 in 2009.

Revenues associated with grants and contracts are generally recognized as related costs are incurred or when milestones are achieved. Federal, state and private grants and contracts revenues for 2010 and 2009 consists of:

Grants and Contracts	FY10	FY09
Federal appropriations, grants and contracts	\$ 125,953	\$ 117,852
State grants and contracts	4,750	2,978
Private grants and contracts	24,659	26,847
TOTAL	\$ 155,362	\$ 147,677

State appropriations (general fund and capital) are reported as non-operating revenue.

4. Gifts

Gifts are recorded at their fair value and reported as non-operating revenue.

Promises to donate to the University are recorded as receivables and revenues when the University has met all applicable eligibility and time requirements. Since the University cannot fulfill the requirement to invest in perpetuity for gifts to endowments until the gift is received, pledges to endowments are not recognized.

5. Deposits and Unearned Revenue

Deposits and advance payments for the following academic year are deferred and recorded as revenues when earned. Summer session revenues are deferred to the extent that they relate to courses scheduled in July and August.

The University records deferred revenue for cash received in excess of expenditures on grants and contracts. Grants and contracts deferred revenue at June 30, is \$8,441 in 2010 and \$7,953 in 2009.

6. Employee Benefits

The University provides health and dental insurance to retired employees and their families during their lives and life insurance until age 70.

Health, dental and life insurance are paid by the University on a premium basis at the same rate as for active employees. The total cost for active and retired employees for health, dental and life insurance, net of employee contributions, was \$46,233 in 2010 and \$44,362 in 2009. See note J for further information about postemployment benefits.

7. Compensated Absences

The University accrues amounts for compensated absences (principally vacation allowances) as earned. They are included in the current portion of accrued liabilities.

As of June 30, 2010, \$18,421 (\$16,988 in 2009) was accrued for vacation pay of which \$13,602 (\$12,531 in 2009) was charged to unrestricted net assets and \$4,819 (\$4,457 in 2009) was included in deferred charges to be recovered from restricted expendable assets when paid.

8. Collections and Works of Art

The University maintains collections of inexhaustible assets, including: works of art; historical artifacts; biological, geological, archaeological and ethnographic materials; and literature. While the collections are undoubtedly quite valuable and irreplaceable, the University has not placed a dollar value on these assets. It is the University's policy to hold these assets for public exhibit, education and research rather than for financial gain and to protect, care for and maintain such assets in perpetuity. Accordingly, the collections are not capitalized for financial statement purposes.

B. Accounts, Loans, Notes, and Pledges Receivable

Accounts, loans, notes and pledges receivable at June 30, 2010 and 2009 are summarized as follows:

Accounts, Loans, Notes and Pledges Receivable, Net	June 30, 2010	June 30, 2009
Current		
Federal, state, and private grants receivable	\$ 19,787	\$ 27,347
Student and company accounts receivable	4,585	4,750
Other accounts receivable	4,219	1,871
Student loans and other notes receivable, net	2,982	2,810
Pledges receivable, net	5,018	2,517
Total Current	\$ 36,591	\$ 39,295
Non-Current		
Student loans and other notes receivable, net	\$ 24,846	\$ 25,484
Pledges receivable, net	8,802	7,232
Total Non-Current	\$ 33,648	\$ 32,716

The student accounts receivable are carried net of an allowance for doubtful accounts of \$322 in 2010 and \$267 in 2009.

(dollars in thousands)

Student loans and other notes receivable current portion of \$2,982 and non-current portion of \$24,846 at June 30, 2010, are carried net of an allowance for uncollectible UVM loans of \$125 and \$950, respectively. Student loans receivable current portion of \$2,810 and non-current portion of \$25,484 at June 30, 2009, were carried net of an allowance for uncollectible UVM loans of \$90 and \$804, respectively. The University does not record an allowance for uncollectible federal student loans since they can be assigned to the government.

The University's liability for the federal capital contribution to the Perkins, Health Professions, Primary Care, and Nursing Student loan programs is \$8,832 for 2010 (\$8,992 for 2009). These amounts are included in non-current accrued liabilities.

Collections and disbursements of pass through student loans such as Stafford Guaranteed Loans, Plus Loans, and Vermont Student Assistance Corporation's Green Mountain Loans are reported net in the Statement of Cash Flows.

Current and non-current pledges receivable are recorded at the present value of expected future cash flows, net of an allowance for unfulfilled pledges of \$542 (\$487 in 2009) and \$950 (\$1,398 in 2009) respectively. Discount rates ranging from 2.73% to 5.03% were applied to pledges.

C. Accounts Payable and Current Accrued Liabilities

Accounts payable and current accrued liabilities of \$56,285 (\$57,224 in 2009) are composed of accounts payable of \$12,132 (\$18,415 in 2009) and accrued liabilities of \$44,153 (\$38,809 in 2009). Accounts payable is mostly comprised of supplies and services payables, including construction, renovation and equipment of \$10,978 (\$10,366 in 2009).

D. Capital Assets

Capital assets are stated at cost or, in the case of gifts, at the fair value at the date of donation.

Interest expense, net of interest earnings on unspent bond proceeds is capitalized for debt funded construction projects. In 2010, net interest expense of \$6,348 (\$5,520 in 2009) was capitalized for projects that were funded by the 2005, 2007, 2009, and 2010 general obligation bonds.

Depreciation is calculated using the straight-line method over the estimated economic useful lives of the related assets. In order to more accurately reflect the useful lives of the Colchester Research Facility, Cook, Central Heating Plant, Marsh Life Sciences, Environmental Safety Facility, Rubenstein Lab, Dana Library, and leasehold improvements in Technology Park and the College of Medicine Freezer Farm, a componentization study was conducted by an independent appraiser in 2008. These building assets were then reclassified into the following components which are also used for Given, Stafford, and the Health Science Research Facility: 1) building (basic construction components/shell) with an estimated useful life of 40 years; 2) building service systems (plumbing, electrical, etc.) with an estimated useful life of 25 years and 3) interiors/renovations with an estimated useful life of 20 years and 4) fixed equipment with an estimated useful life of 15 years.

Other buildings are depreciated over a useful life of 40 years, fixed equipment is depreciated over a useful life of 15 years, and movable equipment is depreciated over a useful life of 5 years. Software systems are depreciated over a useful life of 7 years. Major construction projects are capitalized, but are not depreciated until they are put into service.

Depreciation expense for buildings and components including fixed equipment for fiscal year 2010 is \$23,276 (\$22,950 in 2009). Moveable equipment and software systems depreciation expense is \$4,159 for 2010 (\$4,131 in 2009).

Capital assets activity for the years ended June 30, 2010 and 2009 is summarized as follows:

Land and construction in progress are the only non-depreciable capital assets.

Fiscal Year 2010

Asset	Beginning Balance	Additions	Deductions	Reclassification	Balance	Accum. Deprec.	Net Balance
Land	\$ 20,665	\$ 307	\$ -	\$ -	\$ 20,972	\$ -	\$ 20,972
Buildings	532,233	19,455		8,370	560,058	(175,364)	384,694
Building Service Systems	57,753	12,702		12,132	82,587	(18,593)	63,994
Building Interiors	34,896	5,454		5,277	45,627	(18,024)	27,603
Fixed Equipment	99,767	1,117		1,394	102,278	(65,644)	36,634
Moveable Equipment	16,095	127			16,222	(15,592)	630
Software Systems	27,934				27,934	(17,706)	10,228
Construction In Progress	27,173			(27,173)	-	-	-
Total	\$ 816,516	\$ 39,162	\$ -	\$ -	\$ 855,678	\$ (310,923)	\$ 544,755

(dollars in thousands)

Fiscal Year 2009

Asset	Beginning Balance	Additions	Deductions	Reclassification	Balance	Accum. Deprec.	Net Balance
Land	\$ 20,499	\$ 194	\$ (28)	\$ -	\$ 20,665	\$ -	\$ 20,665
Buildings	508,574	23,659			532,233	(162,391)	369,842
Building Service Systems	50,852	6,901			57,753	(15,169)	42,584
Building Interiors	31,999	2,897			34,896	(15,924)	18,972
Fixed Equipment	98,607	1,160			99,767	(60,866)	38,901
Moveable Equipment	15,981	114			16,095	(15,423)	672
Software Systems	27,501	433			27,934	(13,716)	14,218
Construction In Progress	5,727	21,446			27,173	-	27,173
Total	\$ 759,740	\$ 56,804	\$ (28)	\$ -	\$ 816,516	\$ (283,489)	\$ 533,027

E. Bonds and Notes Payable and Other Long Term Liabilities

Bonds payable at June 30, 2010, totaled \$487,545 of which \$8,115 is current and \$479,430 is long term. Debt obligations are generally callable by the University and bear interest at fixed rates ranging from 1.70% to 7.25%. The debt obligations mature at various dates through 2045.

On February 18, 2010 the University issued \$20,450 of tax exempt general obligation bonds for the purpose of refunding outstanding general obligation bond 1998 and issued \$9,000 taxable Build America Bonds to finance the costs of construction, acquisition, renovation and

equipping the University's greening of Aiken project.

The University partially defeased the outstanding debt on the 1998 bond by placing \$20,970 into an irrevocable trust for the final payment of debt service for this bond. The advance refunding will result in an accounting loss of \$1,553 on early extinguishment of debt and an economic gain, the difference between the present value of the old and new debt service, of \$831.

Long term debt activity for the years ended June 30, 2010 and 2009 is summarized as follows:

Fiscal Year 2010

Long Term Liability	Beginning Balance	New Debt	Decreases	Ending Balance	
				Current	Non-Current
Heat System Bond (1),(2)					
1980 Issue	\$ 1,648	\$ -	\$ 136	\$ 140	\$ 1,372
General Obligation Bonds					
Series 1990	1,793		865	928	-
Series 1998 (3)	45,489		20,402	(35)	25,122
Series 2002 (4)	34,112		2,828	2,874	28,410
Series 2005 (5)	156,287		128	128	156,031
Series 2007 (6)	161,734		1,222	1,342	159,170
Series 2009 (7)	81,840		(50)	1,473	80,417
Series 2010A		9,000		-	9,000
Series 2010B (8)		21,173		1,265	19,908
TOTAL	\$ 482,903	\$ 30,173	\$ 25,531	\$ 8,115	\$ 479,430

- (1) Revenue from this facility is pledged as collateral under debt agreements.
- (2) The assets are pledged as collateral under debt agreements.
- (3) This balance shown net of bond discount of \$1,003.
- (4) This balance shown includes bond premium of \$98.
- (5) This balance shown includes bond premium of \$3,839.
- (6) This balance shown includes bond premium of \$4,392.
- (7) This balance shown net of bond discount of \$1,215.
- (8) This balance shown net of bond premium of \$723.

(dollars in thousands)

Fiscal Year 2009

Long Term Liability	Beginning Balance	New Debt	Decreases	Ending Balance	
				Current	Non-Current
Heat System Bond (1),(2)					
1980 Issue	\$ 1,780	\$ -	\$ 132	\$ 136	\$ 1,512
General Obligation Bonds					
Series 1990	2,599		806	865	928
Series 1998 (3)	46,234		745	777	44,712
Series 2002 (4)	36,841		2,730	2,828	31,283
Series 2005 (5)	156,415		128	128	156,159
Series 2007 (6)	162,906		1,171	1,222	160,513
Series 2009 (7)	-	81,840		(50)	81,890
Commercial Paper	11,950	12,905	24,855	-	-
TOTAL	\$ 418,725	\$ 94,745	\$ 30,567	\$ 5,906	\$ 476,997

- (1) Revenue from this facility is pledged as collateral under debt agreements.
 (2) The assets are pledged as collateral under debt agreements.
 (3) This balance shown net of bond discount of \$1,851.
 (4) This balance shown includes bond premium of \$102.
 (5) This balance shown includes bond premium of \$3,967.
 (6) This balance shown includes bond premium of \$4,525.
 (7) This balance shown includes bond discount of \$1,265.

In compliance with the University's various bond indentures, at June 30, 2010, the University has deposits with trustees of \$22,190 (\$49,539 in 2009) for debt service reserves, sinking funds, other requirements and unspent 2005, 2007, 2009 and 2010 general obligation bond proceeds. Deposits with trustees are invested in obligations of the U.S. Government as required by the University's bond indentures.

The principal and interest due on bonds over the next five years and in subsequent five year periods are presented in the table below:

For the Fiscal Year Ending June 30	Principal Due	Interest Due	Total Due
2011	\$ 7,888	\$ 22,909	\$ 30,797
2012	6,850	22,493	29,343
2013	7,089	22,252	29,341
2014	7,353	21,991	29,344
2015	7,627	21,718	29,345
2016-2020	48,643	102,890	151,533
2021-2025	54,495	91,045	145,540
2026-2030	67,690	76,427	144,117
2031-2035	86,755	57,624	144,379
2036-2040	111,760	33,609	145,369
2041-2045	74,560	8,132	82,692
Total	\$ 480,710	\$ 481,090	\$ 961,800

(dollars in thousands)

Other long term liabilities at June 30, 2010 and 2009 are summarized below:

Fiscal Year 2010

Other Long Term Liability	Beginning Balance	Increases	Decreases	Ending Balance	
				Current	Non-Current
Federal Student Loan Capital Contribution	\$ 8,992	\$ -	\$ (160)	\$ -	\$ 8,832
Green Mountain Loan Guarantee	1,218	-	(16)	-	1,202
Obligations under deferred giving arrangements	3,642	867	(788)	901	2,820
Postemployment Benefits	50,841	29,159	(10,395)	-	69,605
Other Accrued Liabilities	922	693	(1,314)	26	275
Total Other Long Term Liabilities	\$ 65,615	\$ 30,719	\$ (12,673)	\$ 927	\$ 82,734

Fiscal Year 2009

Other Long Term Liability	Beginning Balance	Increases	Decreases	Ending Balance	
				Current	Non-Current
Federal Student Loan Capital Contribution	\$ 9,414	\$ -	\$ (422)	\$ -	\$ 8,992
Green Mountain Loan Guarantee	1,180	38	-	-	1,218
Obligations under deferred giving arrangements	3,824	222	(404)	918	2,724
Postemployment Benefits	26,293	36,530	(11,982)	-	50,841
Other Accrued Liabilities	2,276	790	(2,144)	96	826
Total Other Long Term Liabilities	\$ 42,987	\$ 37,580	\$ (14,952)	\$ 1,014	\$ 64,601

F. Cash and Cash Equivalents and Operating Investments

The University's Cash Management Policy provides parameters for investment of the University's pooled cash. The University classifies resources invested in money market funds and short-term investments with maturities at date of purchase of 90 days or less as cash equivalents. Operating funds invested in vehicles with maturities beyond 90 days are classified as operating investments. The Cash Management Policy establishes three pools for investment: short, intermediate and long term. Allowable investments for the short term pool, which includes cash and cash equivalents and other investments with average weighted maturities of up to one year, and the intermediate pool, which includes investments with an average weighted maturity of between one and six years, are restricted by investment type, dollar level, maturity and rating to mitigate credit risk on investments individually and in the aggregate. Investments are restricted to U.S. Treasury and government securities and high quality corporate securities and commercial and bank paper. Debt securities must be rated Aaa, Aa, A or BBB by Moodys or AAA, AA, A or BBB by Standard and Poors. Bank obligations, banker's acceptances or

negotiable certificates of deposit must be rated B or better and no more than 20% of the funds in the cash pool can be in obligations of institutions within any single holding company. Commercial paper must be rated A-1 by Standard and Poors or P-1 by Moodys. Investments may include repurchase agreements secured by the U.S. government and federal agency obligations, which shall have market values at least 100% of the amount of the repurchase agreement. Investments may also include repurchase agreements with banks having Fitch ratings no lower than B with the condition that these repurchase agreements are 100% collateralized with U.S. government securities. Investments may also include commingled funds if they are in compliance with the other guidelines and the Commonfund, a non-profit provider of investment products for colleges and universities. Investments of the long term pool are restricted to those allowable under the University's Statement of Objectives and Policies for the Long Term Investment Pool, including the endowment fund.

Current and non-current cash and cash equivalents are comprised of the following:

	June 30, 2010	June 30, 2009
Cash	\$ 32,833	\$ 3,392
Repurchase Agreements	102,566	49,260
Certificate of Deposit	-	25,134
Money Markets	2,884	854
Total Cash and Cash Equivalents	\$ 138,283	\$ 78,640

(dollars in thousands)

Of total cash and cash equivalents above, \$7,154 in 2010 and \$2,939 in 2009 are included in non-current endowment cash and cash equivalents.

The balance of cash at the bank was \$138,937 at June 30, 2010 and \$56,604 at June 30, 2009. Of these bank balances, \$769 in 2010 and \$512 in 2009 were covered by the Federal Depository Insurance Corporation. The remainder of cash and equivalents is uninsured and uncollateralized.

Total operating investments were \$24,033 at June 30, 2010 and \$36,114 at June 30, 2009. Operating investments invested in the long term pool were \$8,504 at June 30, 2010 and \$8,284 at June 30, 2009 (see note G). Short and intermediate term operating investments at June 30, 2010 and 2009 were primarily made through commingled funds with the following characteristics:

June 30, 2010

	UVM Amount	Average Maturity Effective Duration	Credit Quality %					
			Govt/ Agency	AAA	AA	A	BBB	Other
Intermediate Fund	8,666	2.9 yrs/ 1.5 yrs	45	27	4	16	3	5
Absolute Return Fund	1,073							
Multi Strategy Equity Fund	4,905							
Other	<u>885</u>							
Total Short and Intermediate Operating	<u>\$15,529</u>							

June 30, 2009

	UVM Amount	Average Maturity Effective Duration	Credit Quality %					
			Govt/ Agency	AAA	AA	A	BBB	Other
Short Term Fund	\$9,298	1.8 yrs/ 0.06 yrs		45	10	28	6	11
Intermediate Fund	8,074	3.2 yrs/ 1.3 yrs	32	29	5	17	5	12
Absolute Return Fund	5,658							
Multi Strategy Equity Fund	4,314							
Other	<u>486</u>							
Total Short and Intermediate Operating	<u>\$27,830</u>							

*(dollars in thousands)***G. Endowment and Other Long Term Investments**

The Board of Trustees Investment Subcommittee has established a formal policy for investment of the endowment and other long term funds that include parameters established for the purpose of controlling risk as well as targeting performance. Guidelines for fixed income include: limiting the average duration to within one year of the Lehman Aggregate Index; a requirement that, with the exception of US Treasury, agency and agency mortgage issues, no more than 5% of the portfolio may be invested in the obligations of any one issuer, a requirement that the weighted average portfolio quality be rated at least A1 by Moody's and/or A+ by Standard & Poor's, individual investments be rated at least BBB/B at the time of purchase and no more than 20% of the assets be rated below Baa/BBB at time of purchase; a limitation that the aggregate notional value of derivative instruments such as options, futures, index based securities (swaps), or derivative mortgage backed securities be used only up to a limit of 25% of the manager's portfolio, with no derivative transaction constituting more than 5% of the portfolio's assets, a requirement that credit counterparties have at least an "AA" rating; and a restriction that under no circumstances should the use of derivatives lengthen the duration of the portfolio beyond 150% of the duration of the Lehman Brother's Aggregate Index. Guidelines for the equity allocation include: the restriction that index options, individual security options, and currency futures utilized by the equity managers only be used to reduce total portfolio risk or to efficiently manage market exposure; the restriction that the notional value of any derivative securities in the manager's portfolio not, in aggregate, exceed 25% of the value of the portfolio's assets and that no single transaction constitute more than 5% of the portfolio's assets except in more concentrated portfolios where such a restriction may impair performance; the requirement that credit counterparties have at least a "AA" rating; a restriction that derivative securities not be used to

increase market exposure beyond 200% of the underlying equity capital or to decrease it below 0%; the requirement that the portfolio not be leveraged or net short, with the exception that the above does not apply to mutual fund investments which follow their own investment guidelines detailed in the prospectus.

The endowment in aggregate (which comprises the consolidated endowment, the Wilbur Trust, and other separately invested assets) and long term capital and operating reserves are invested in a balanced portfolio consisting of: traditional stocks (domestic and international) and bonds; marketable alternatives (hedge funds); non-marketable alternatives (venture capital and private equity); and a diversified portfolio of inflation-hedges (real estate and commodities). The primary objective for the investments in the long term pool is to provide a satisfactory return on investment for the support of University operations based upon the Prudent Person Principle. The University's specific investment objective is to maintain an average annual real total return (net of investment management fees) of at least 5% over the long-term (rolling 5 year periods). Real total return is the sum of capital appreciation (or loss) and current income adjusted for inflation by the Consumer Price Index. The University's investment policies are governed and authorized by the University Board of Trustees. The approved asset allocation policy for the long term investment portfolio sets a general target of 80% equities and 20% fixed income securities with a broader range of 75% to 85% for the equities and 15% to 25% fixed income securities. The asset allocation target and actual percentages at June 30, 2010 and 2009 are presented in the following table:

	June 30, 2010		June 30, 2009	
	Target %	Actual %	Target %	Actual %
US Equity	25.0	24.7	25.0	22.9
Global Excluding US Equity	25.0	23.1	22.0	23.7
Marketable Alternatives	17.5	18.8	17.5	19.6
Real Estate/Inflation Hedges	12.5	14.0	12.5	11.6
Non-marketable Alternatives	10.0	10.3	10.0	8.7
Fixed Income	8.0	7.8	10.0	12.8
Cash & Cash Equivalents	2.0	1.3	3.0	0.7

Endowment and similar investments including \$8,504 and \$8,284 of operating investments and \$10,592 and \$5,926 of capital investments at June 30, 2010 and 2009, respectively, are composed of the following:

	June 30, 2010	June 30, 2009
Cash	\$ 4,270	\$ 2,086
Money Market	2,886	853
Common Stock	59,652	53,347
Industry Bonds	2,320	2,202
Private Equity and Venture Partnerships	39,642	39,160
Mortgages	30	30
Life Estates	417	683
Hedge Funds	54,153	52,641
Mutual Funds	131,879	124,437
Total	\$ 295,249	\$ 275,439

(dollars in thousands)

The fixed income portfolio is composed of one passive fund with the following risk profile at June 30, 2010 and 2009:

2010	Amount	Average Duration Yrs.	Credit Quality %			
			Govt/ Agency	AAA	AA	A Baa-BBB
Passive Bond Fund	\$21,581	6.34		79	4	9 8

2009	Amount	Average Duration Yrs.	Credit Quality %			
			Govt/ Agency	AAA	AA	A Baa-BBB
Passive Bond Fund	\$34,243	6.52		79	4	9 8

The majority of endowment fund assets are pooled for investment purposes. Each individual fund subscribes to or disposes of units on the basis of the value per unit at fair value at the beginning of the month within which the transaction takes place. Income is distributed on a per unit basis. Of the total units (each having a fair value of \$48.56), 5,900.1146 units were owned by endowment funds and 1,659.6068 units by quasi endowment funds at June 30, 2010 (\$47.30, 4,072.6133 and 1,567.6782 respectively, at June 30, 2009).

The Uniform Prudent Management of Institutional Funds Act (UPMIFA) was passed by the State of Vermont effective May 5, 2009. UPMIFA broadens and clarifies the latitude of institutions to manage overall

endowment returns, without specifically isolating those particular endowments, that because of timing of receipt of the gift and market conditions, are deemed underwater. Rather, the institution is expected to define an overall prudent approach both to distribution of funds for spending and long term preservation and growth of capital. The University shall continue with its uniform endowment distribution practice, including distributions from endowments that are temporarily underwater in accordance with the statute. The Investment Subcommittee of the Board of Trustees reviews the income distribution rate annually.

The table below summarizes changes in relationships between cost and fair values of the pooled endowment:

	Fair Value	Cost	Net Return	Fair Value Per Unit
June 30, 2010	\$ 286,493	\$ 269,568	\$ 16,925	48.56
June 30, 2009	266,792	267,854	(1,062)	47.30
Unrealized Net Gain			17,987	
New Gifts			12,502	
Realized Net Gain			79	
Net Income			2,000	
Withdrawn for Spending			(12,867)	
Total Net Change			\$ 19,701	1.26

June 30, 2009	\$ 266,792	\$ 267,854	\$ (1,062)	47.30
June 30, 2008	329,776	277,214	52,561	60.68
Unrealized Net Loss			(53,663)	
New Gifts			9,597	
Realized Net Loss			(10,100)	
Net Income			3,681	
Withdrawn for Spending			(12,499)	
Total Net Change			\$ (62,984)	(13.38)

The average net earnings per unit, exclusive of gains and losses, amounted to \$.35 in fiscal 2010 and \$.66 in fiscal 2009.

The University's endowment spending policy is a budgeted allocation of 4.5% of the previous 13 quarters' average market value.

*(dollars in thousands)***H. Commitments**

Major plant projects include commitments as follows:

Project	Estimated Project Cost	Project-to-Date Expenditures 2010	Project-to-Date Expenditures 2009
Marsh Life Science	\$ 6,815	\$ 332	\$ 328
James M. Jeffords Hall	51,331	44,643	26,486
Aiken Building	12,919	1,358	569
Simpson Dining Renovation	7,200	974	-
Given Courtyard	12,500	10,732	9,727

The University has entered into operating leases for space, which expire at various dates through fiscal 2017. Outstanding commitments for these leases are expected to be paid in the following years ended June 30:

For the Fiscal Year Ending June 30	Rental Payments Due
2011	\$ 718
2012	651
2013	427
2014	344
2015	136
2016-17	150
Total	\$ 2,426

Operating lease expenses totaled \$863 and \$641 in 2010 and 2009, respectively.

The University is obligated under certain of its investments to make future capital contributions in the amount of \$25,880.

The University is exposed to various risks of loss related to torts; theft of, damage to and destruction of assets; errors and omissions; injuries to employees; and natural disasters. The University manages these risks through a combination of self-insurance and commercial insurance purchased in the name of the University. The University's annual self-insured obligation for general liability is \$500 per occurrence and \$25 per occurrence for automobile liability. Its assumption of risk for property losses is \$250 per occurrence. Educator's legal liability risks are subject to a \$250 per loss retention. Workers compensation is subject to a \$550 per occurrence retention. None of these lines of coverage have an annual self-insured aggregate, or stop-gap. Settled claims resulting from these risks have not exceeded commercial insurance coverage in any of the past three fiscal years.

The University elected, effective July 1, 2003, to become a shareholder and member of Genesis Limited, an insurance and reinsurance captive organization domiciled in Bermuda. A Vermont captive, Pinnacle Consortium of Higher Education, was formed in FY '05 as a fronting insurer to Genesis. The captives consist of two insurance lines, general liability and automobile liability. All members are required to participate in the captive general liability program which provides \$2,000 excess limit, written by Pinnacle effective 7/1/05, and the group purchase liability program that provides a \$23,000 excess limit. Pinnacle retains 5% of the risk and cedes 95% to Genesis. The University has purchased an additional \$75,000 to bring the total excess limit to \$100,000.

The University follows the policy of self-insuring risks up to certain limits.

At year end, the University had open claims valued at \$2,049 in 2010 and \$5,598 in 2009; \$1,031 and \$2,540 of this is covered by excess insurance in 2010 and 2009, respectively. The University paid claims of \$1,613 in 2010 and \$1,577 in 2009. Reserves for property and casualty liabilities are included in accrued liabilities (including incurred but not reported) in the amount of \$5,845 at June 30, 2010 and \$4,978 at June 30, 2009.

In conducting its activities, the University from time to time is the subject of various claims and also has claims against others. The ultimate resolution of such claims is not expected to have a material adverse or favorable effect on the financial position of the University.

Three groups of University employees are represented by collective bargaining units. The University participates in contract negotiations with these groups periodically.

The University entered into an agreement in 2001 with Sodexo America, LLC which includes a provision for Sodexo to make 3 annual payments totaling \$2,750 to the University for the Living/Learning Dining renovation project. The project is complete and the payments have been received. If the agreement expires or is terminated by either party prior to ten years from inception, the University is obligated to pay a proportionate share of this amount to Sodexo. The University has recorded deferred revenue of \$368 in 2010 and \$643 in 2009 for this contingency.

The University receives significant financial assistance from federal and state agencies in the form of grants and contracts. Expenditures of funds under these programs require compliance with the grant agreements and are subject to audit. Any disallowed expenditures resulting from such audits become a liability of the University. In the opinion of management such adjustments, if any, are not expected to materially affect the financial condition of the University.

*(dollars in thousands)***I. Retirement Plans**

Faculty and staff at the University of Vermont may participate in the University's 403(b) defined contribution plan and a 457(b) deferred compensation plan provided the following criteria are met:

- faculty and staff must have a full-time equivalency of .75 or greater;
- staff must be employed three years before they qualify for University contributions to their retirement plan, or they must have a vested interest in the retirement plan of their previous nonprofit employer, or have a TIAA-CREF Retirement Account;
- non tenure-track faculty and faculty under the rank of Assistant Professor must wait two years to qualify for University contributions to their retirement plan, or they must have a vested interest in the retirement plan of their previous nonprofit employer, or have a TIAA-CREF Retirement Account;
- tenure track faculty at the level of Assistant Professor or above receive University contributions to their retirement plan immediately upon beginning employment.

To obtain University contributions, faculty members and officers of administration must contribute 3% of their salary, and staff must contribute 2%. The University's contribution to the retirement fund of qualified faculty and staff is 10% of salary and this amount is immediately vested.

The University also offers a 457(b) deferred compensation plan. Faculty and staff can participate provided they are participating in the 403(b) plan. The University makes no contributions to this plan.

The University's 457(b) contributory retirement plan is administered by the Teachers Insurance Annuity Association of America (TIAA), the College Retirement Equities Fund (CREF), and Fidelity Investments. These companies as well as the Prudential Company of America also administer the University's 403(b) plan. The University's policy is to accrue the costs of these defined contribution plans currently.

Since both faculty and staff are immediately vested in all retirement contributions made on their behalf, the University has no control of, responsibility for, or ownership of retirement funds, except that employees may not withdraw funds contributed to either their 403(b) or 457(b) plan while employed at the University. Retirement funds may be transferred among the investment alternatives at the discretion of the employee. Upon leaving the University, employees may either withdraw funds from their accounts, or transfer the funds to other investment alternatives subject to the limitations of 403(b) and/or 457(b) regulations and the contractual provisions of their investment alternative.

For the year ended June 30, 2010 and 2009, the University had total payroll expense of \$247,006 and \$241,294, respectively, of which \$176,276 in 2010 and \$198,241 in 2009 was covered by the University's 403(b) retirement plan. Total employee and employer contributions for 403(b) pension benefits for the year were \$15,685 and \$17,628, respectively, for 2010 and \$13,111 and \$19,824, respectively, for 2009. The University's contribution for 403(b) pension benefits is 10% of the covered payroll. Total employee contributions to the 457(b) retirement plan were \$2,159 in fiscal year 2010 and \$2,091 in fiscal year 2009.

J. Postemployment Benefits

The University is required to account for its postemployment benefit

plan in accordance with GASB Statement 45, Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions. GASB Statement 45 prescribes a methodology which requires the employer to recognize an expense for the value of benefits earned during the current year by active employees (i.e. the normal cost) plus an amortization of the unfunded portion of the value of the plan benefits earned to date by active and retired employees (i.e., the actuarial accrued liability). GASB Statement 45 also introduces the concept of an employer's net postemployment benefit obligation, which is defined as the cumulative difference between the employer's annual postemployment benefit expense and its cash cost for the plan.

The University's postemployment benefit plan covers medical, (base) dental, life insurance and tuition remission benefits provided to eligible University retirees and their dependents. The plan was established under the authority of, and may be amended by, the University. It is a single employer plan administered by the University.

Plan provisions include two levels of eligibility and cost tables: 1) Retirees hired before July 1, 1997 are eligible when retired directly from employment after reaching age 55 with 10 years of continuous employment, with qualification that for employees hired after June 30, 1992 and before July 1, 1997, the rule of 75 applies; and 2) Retirees hired after June 30, 1997 are eligible when retired directly from employment after reaching age 60 with 15 years of continuous employment. In addition, employees who have been awarded full disability benefits from either social security or the University's long term disability carrier are eligible.

Retirees who retired under the Voluntary Separation Plan of 1992 or before are not required to contribute to the plan, however, a surviving spouse receives two years of medical and base dental coverage without charge, after which dental terminates (the surviving spouse would be eligible for 36 month of COBRA) and medical coverage is available at

50% of the cost of providing coverage. Retirees under the Voluntary Separation Plan of 2000 pay for their medical benefits based on the contribution system prior to June 30, 2000 (based on 0.5% times the average final three years' base salary at 75%). Retirees hired after June 30, 1992 have the same salary bands percentage as active employees, which is based on 75% of their average final three years' base salary. Retirees hired after June 30, 1992 and before July 1, 1997 are required to contribute as above plus a percentage based on the sum of their age at retirement and their years of continuous full time service. This surcharge is based on a scale that ranges from 65 to 75 and over. Full-time represented faculty, regardless of salary, currently pay 20% of the cost of providing medical coverage and 10% of the base dental cost.

As of July 1, 2009, there were 617 fully eligible active employees, with total active employees numbering 3,288, with an average age of 46.4 years and average credited service of 10.3 years. Total annual compensation was \$181,542. There were 1,411 participants in receipt of benefits, with an average age of 72.2 years.

A third party actuary performed the valuation of the liability with an actuarial valuation date of July 1, 2009. Actuarial calculations reflect a long term perspective, involve estimates about the probability of events and are subject to continual revision. The calculations were developed using certain actuarial assumptions and methods. The assumptions include an investment return of 7.0% and the RP-2000 mortality table for males and females. The methods include the projected unit credit actuarial cost

(dollars in thousands)

method and a 30 year amortization of the plan's unfunded liability on an open, level dollar basis. Health care cost inflation is assumed to be as high as 7.75% in 2011 and gradually decreasing to 5% in 2016 and beyond.

The actuarial accrued liability at the measurement date of July 1, 2007 was \$320,173. The actuarial value of assets funding the liability was \$0, as the University's contributions are comprised entirely of direct payments for benefits. Employer contributions for fiscal year ended June 30, 2010 totaled \$10,395 (\$11,982 in 2009), or 35.7% (32.8% in 2009) of annual other postemployment benefit (OPEB) cost. The unfunded actuarial accrued liability (UAAL) was \$320,173. The annual required contribution (ARC) of \$29,697 for fiscal year 2010 is the sum of \$9,898, the normal cost at July 1, 2009 plus interest, and \$19,799, the 2010 amortization of the UAAL. The ARC of \$36,808 for fiscal year 2009 is the sum of \$11,008, the normal cost at July 1, 2007 plus interest, and \$25,800, the 2009 amortization of the UAAL.

Total annual OPEB costs and liabilities for the 2010 and 2009 fiscal years include the following components:

	June 30, 2010	June 30, 2009
Annual required contribution	\$ 29,697	\$ 36,808
Interest on net OPEB obligation	3,559	1,842
ARC adjustment	(4,097)	(2,119)
Annual OPEB cost	29,159	36,531
Contributions during FY	(10,395)	(11,982)
Increase in net OPEB obligation	18,764	24,549
Net OPEB obligation, beginning of year	50,841	26,292
Net OPEB obligation, end of year	\$ 69,605	\$ 50,841

In accordance with GASB Technical Bulletin 2006-1, assumed health care costs do not reflect any expected federal reimbursements to the University under the Medicare Part D Program.

K. Operating Expense by Function

Operating expenses by functional classification for the years ended June 30, 2010 and 2009 are summarized as follows:

Year ended June 30, 2010					
Function	Compensation and Benefits	Supplies and Services	Scholarships and Fellowships	Depreciation	Total
Instruction	\$ 124,068	\$ 19,460			\$ 143,528
Research	65,447	31,501			96,948
Public service	29,592	10,076			39,668
Academic support	36,926	12,346			49,272
Student services	20,890	10,274			31,164
Institutional support	32,424	12,927			45,351
Operations and maintenance of plant	19,761	22,798			42,559
Scholarships and fellowships			17,107		17,107
Auxiliary enterprises	30,359	41,074			71,433
Depreciation				27,435	27,435
Total Operating Expenses	\$ 359,467	\$ 160,456	\$ 17,107	\$ 27,435	\$ 564,465

Year ended June 30, 2009					
Function	Compensation and Benefits	Supplies and Services	Scholarships and Fellowships	Depreciation	Total
Instruction	\$ 125,578	\$ 20,817			\$ 146,395
Research	64,176	30,663			94,839
Public service	27,543	9,509			37,052
Academic support	36,384	11,779			48,163
Student services	20,398	10,673			31,071
Institutional support	32,191	14,822			47,013
Operations and maintenance of plant	20,546	23,801			44,347
Scholarships and fellowships			13,867		13,867
Auxiliary enterprises	30,127	41,100			71,227
Depreciation				27,081	27,081
Total Operating Expenses	\$ 356,943	\$ 163,164	\$ 13,867	\$ 27,081	\$ 561,055

(dollars in thousands)

L. Pollution Remediation Obligations

The University is required to account for its pollution remediation activities in accordance with GASB Statement 49, *Accounting and Financial Reporting for Pollution Remediation Obligations*. GASB 49 requires the University to accrue estimated costs to conduct pollution remediation activities if certain obligating events have occurred. It also requires the University to expense pollution remediation costs which cannot be capitalized. The University incurred and expensed pollution remediation costs of \$839 and \$965 in FY10 and FY09, respectively.

Also, in FY10 the University commenced certain renovation projects that included the need for asbestos and lead paint removal. These projects are not expected to be completed until FY11 and therefore FY10 supplies and services expense and current accrued liabilities include \$866 (\$537 in FY09) for the expected remediation portion of these projects. The accrual is based on the estimates of expected outlays provided by the University's Physical Plant department. There are no recoveries associated with this liability.

Required Supplementary Information - Postemployment Benefits

Schedule of Employer Contributions

Fiscal Year Ended June 30	Annual OPEB Cost	Actual Contributions	Percentage of Annual OPEB Cost Contributed
2010	\$ 29,159,176	\$ 10,394,864	35.7%
2009	\$ 36,530,105	\$ 11,982,129	32.8%

Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL)	Funded Ratio	Covered Payroll	UAAL as a Percentage of Covered Payroll
7/1/2007	\$ -	\$ 320,172,968	\$ 320,172,968	0.0%	\$179,609,954	178.3%

Net OPEB Obligation (NOO)

Fiscal Year Ended June 30	Annual Required Contributions	Interest on Existing NOO	Arc Adjustment	Annual OPEB Cost	Actual Contribution Amount	Net Increase in NOO
2010	\$ 29,697,410	\$ 3,558,848	\$ (4,097,082)	\$ 29,159,176	\$ 10,394,864	\$ 18,764,312
2009	\$ 36,808,287	\$ 1,840,489	\$ (2,118,671)	\$ 36,530,105	\$ 11,982,129	\$ 24,547,976



KPMG LLP
P.O. Box 564
Burlington, VT 05402

Suite 400
356 Mountain View Drive
Colchester, VT 05446

Independent Auditors' Report

The Honorable Thomas Salmon,
Auditor of the Accounts of the
State of Vermont and

The Board of Trustees
The University of Vermont and
State Agricultural College:

We have audited the accompanying financial statements of the business-type activities and the discretely presented component unit of The University of Vermont and State Agricultural College (the University) (a component unit of the State of Vermont) as of and for the years ended June 30, 2010 and 2009, which collectively comprise the University's basic financial statements as listed in the table of contents. These financial statements are the responsibility of the University's management. Our responsibility is to express opinions on these financial statements based on our audits. We did not audit the financial statements of the discretely presented component unit. Those financial statements were audited by other auditors whose report thereon has been furnished to us and our opinions, insofar as they relate to the amounts included for the discretely presented component unit, are based on the report of the other auditors.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the University's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinions.

In our opinion, based on our audits and the report of other auditors, the financial statements referred to above present fairly, in all material respects, the respective financial position of the business-type activities and the discretely presented component unit of the University as of June 30, 2010 and 2009, and the respective changes in financial position, and where applicable, cash flows thereof for the years then ended in conformity with U.S. generally accepted accounting principles.

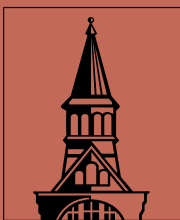
In accordance with *Government Auditing Standards*, we have also issued our report dated November 1, 2010 on our consideration of the University's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal

The Management's Discussion and Analysis (MD&A) and the schedules of funding progress and employer contributions are not a required part of the basic financial statements but are supplementary information required by U.S. generally accepted accounting principles. We have applied certain limited procedures, which consisted principally of inquiries of management regarding the methods of measurement and presentation of the required supplementary information. However, we did not audit the information and express no opinion on it.

KPMG LLP

November 1, 2010

KPMG LLP is a Delaware limited liability partnership, the U.S. member firm of KPMG International Cooperative ("KPMG International"), a Swiss entity.



The University of Vermont

UNIVERSITY FINANCIAL SERVICES

333 WATERMAN BUILDING
85 SOUTH PROSPECT STREET
BURLINGTON, VT 05405
802 656-2903 www.uvm.edu

Attachment K-3

Structural Assessment Letter

The University of Vermont

PHYSICAL PLANT DEPARTMENT
284 EAST AVENUE
P.O. BOX 50501
BURLINGTON, VERMONT 05405-0501
(802) 656-2186



September 21, 2012

Jeff Rogers
Environmental Compliance Project Manager
Risk Management and Safety Department
The University of Vermont
667 Spear Street
Burlington, VT 05405

September 24, 2012

Dear Jeff:

I conducted a site visit on Friday, September 21, 2012, of the Environmental Safety Facility on 667 Spear Street, Burlington, Vermont. This building is very well constructed, with a steel frame, masonry block walls, and concrete foundations. I did not observe any structural issues with this building, and I would anticipate that it would be usable for another 50 years, with routine and deferred maintenance.

See attach photos of the building and building construction. Thank you.

Luce Hillman, P.E.
Assistant Director of Engineering
Physical Plant Department
284 East Avenue
Burlington, VT 05405





Photos of 667 Spear Street,
Exterior Condition



Appendix L

University of Vermont Environmental Safety Facility Corrective Action

-  [Search All Programs](#)
-  [Waste Management](#)
-  [Hazardous Site](#)
-  [Brownfield Site](#)
-  [Spills](#)
-  [UST](#)
-  [Hazardous Waste](#)
-  [Solid Waste](#)
-  [Water Quality](#)
-  [Stormwater](#)

VT DEC

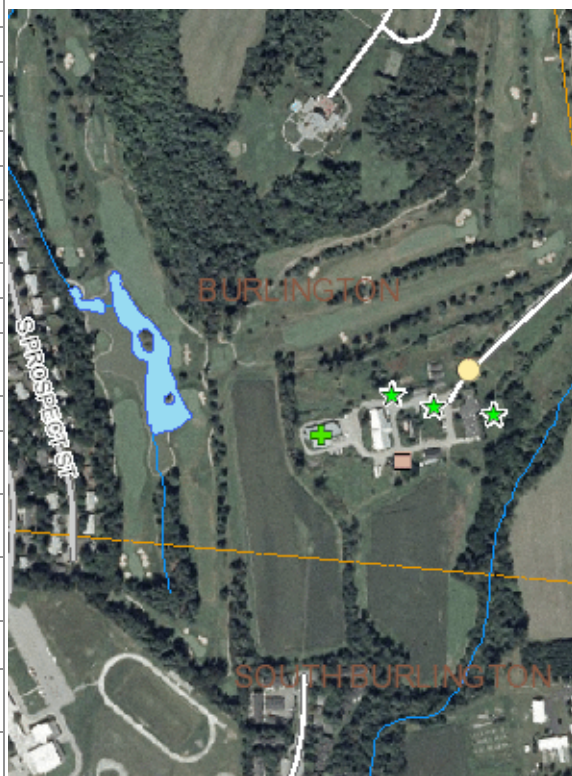
Hazardous Site List

[Help & Definitions](#)

Enter the search criteria below and click the [Search] button when done. (Search will display a maximum of 500 results)

Site#	<input type="text" value="951786"/>	Site Name	<input type="text"/>
Site Town	<input type="text"/>	List Towns	Address
Primary Consultant	<input type="text"/>	List Consultants	
Priority	<input type="text" value="All"/>	<input checked="" type="radio"/> All Sites <input type="radio"/> Active Sites <input type="radio"/> Inactive	
<input type="button" value="Search"/>		Search Tips	

Site Name	UVM Environmental Safety Facility
Address	Spear St
Town	Burlington
Site Use	Other
Site Number	951786
DEC Manager	Linda Elliott
Priority	SMAC - Site Management Activities Completed
Site Status	
Project Status	Gw Monitoring Complete
Source of Contamination	Other
Contaminant	
Institutional Control	
Site Closure Date	12-01-1996
DEC Contact Email Address	Linda.Elliott@state.vt.us
View Map	 Click to view interactive map
Record Last Updated	03-15-2005
Direct URL	http://www.anr.state.vt.us/wmid/Hazsites.aspx?site=951786



Online Site Reports

Report

[951786.si.pdf](#)

[951786smac.pdf](#)

The documents listed above do not represent a comprehensive list of available site reports. To view additional site files, please schedule a file review by calling 802-241-3888.

-----*For Testing Purposes Only*-----

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State of Vermont

Department of Fish and Wildlife
Department of Forests, Parks and Recreation
Department of Environmental Conservation
State Geologist
RELAY SERVICE FOR THE HEARING IMPAIRED
1-800-253-0191 TDD>Voice
1-800-253-0195 Voice>TDD

AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

Waste Management Division
103 South Main Street / West Building
Waterbury, Vermont 05671-0404
802-241-3888
Fax 802-241-3296

February 11, 1997

MILLY ARCHER, HAZARDOUS WASTE MANAGER
RISK MANAGEMENT DEPARTMENT
UNIVERSITY OF VERMONT
PO BOX 50570
BURLINGTON VT 05405-0570

RE: Sites Management Activity Completed at the UVM-Environmental Safety
Facility / SMS Site #95-1786

Dear Ms. Archer:

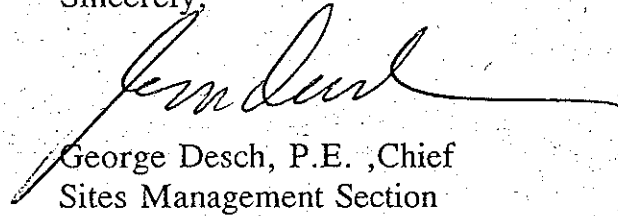
The Sites Management Section (SMS) has received the results of the annual groundwater monitoring at the UVM Environmental Safety Facility located in Burlington, Vermont. The most recent round of groundwater samples was collected on September 23, 1996, by Hoffer & Associates, and analyzed for the presence of volatile organic compounds using EPA Method 8260. The compound dichlorodifluoromethane was detected in the groundwater, but at a concentration below regulatory standards. Based on the results of the ongoing monitoring at this site, the SMS has concluded the following:

- ▶ Contaminant concentrations detected in the groundwater beneath and in the vicinity of the site do not pose a significant threat to human health and the environment;
- ▶ No quantifiable impact or risk to receptors has been identified from the contamination detected onsite;

As a result of the above, the SMS has determined that site management activities have been completed. However, the completion of these activities does not release UVM from any past or future liability which may arise from the contamination detected at this site. It does mean that the SMS is not requiring any additional environmental work be performed at this site in response to the groundwater contamination detected in 1994.

The SMS appreciates UVM's cooperation in conducting the necessary investigation at this site. If you have any questions, then please feel free to contact Linda Elliott at 241-3897 or myself at 241-3491.

Sincerely,



George Desch, P.E., Chief
Sites Management Section

c: Gary Urich, WMD
Jefferson Hoffer
Ruth Stokes, Burlington City Clerk
DEC Regional Office

GD:le/wp51/sites/1786smac.1296

Appendix M

University of Vermont Environmental Safety Facility Related Permits

National Historic Preservation Act

Activities at the Environmental Safety Facility do not adversely affect the congressional declarations or findings of the National Historic Preservation Act of 1966 as amended in 2000. The effects of the construction of the ESF on this Act was properly considered during the Environmental Review Process in 1992, supporting documents can be found in that application (Act 250 permit).

Endangered Species Act

Activities at the Environmental Safety Facility do not adversely affect conservation of the ecosystems upon which endangered species and threatened species depend, nor the conservation of such endangered species and threatened species, nor any other purpose of the Endangered Species Act of 1973 nor its amendments. The effects of the construction of the ESF on this Act was properly considered during the Environmental Review Process in 1992, supporting documents can be found in that application (Act 250 permit).

Coastal Zone Management Act

Activities at the Environmental Safety Facility do not affect development or management of coastal zones, nor any of the purposes of the Coastal Zone Management Act of 1972 nor its amendments. Stormwater and wastewater permits were properly considered during the Environmental Review Process in 1992, supporting documents can be found in that application (Act 250 permit).

Fish & Wildlife Coordination Act

Activities at the Environmental Safety Facility do not adversely affect conservation of neither wildlife nor any of the purposes of the Fish and Wildlife Coordination Act of 1936 or its amendments. Stormwater and wastewater permits were properly considered during the Environmental Review Process in 1992, supporting documents can be found in that application (Act 250 permit).

The Wild and Scenic Rivers Act

Activities at the Environmental Safety Facility do not adversely affect conservation of wild, scenic or recreational river areas nor any of the purposes of the Wild and Scenic Rivers Act of 1983 nor its amendments. Stormwater and wastewater permits were properly considered during the Environmental Review Process in 1992, supporting documents can be found in that application (Act 250 permit).

Air Emissions Standards

ESF activities operate under Air Pollution Control Permit #AP-04-006 issued by Vermont's Air Pollution Control Division on 19 April 2004; the permit and the technical analysis are included as attachments M-1 and M-2.

The ESF mechanical systems are designed to protect workers by removing emissions from their work zone; these systems are not equipped with emission control devices.

Hazardous wastes at the ESF are managed in containers only. All volatile organic wastes are stored in containers that meet the applicable DOT regulations on packaging hazardous materials

and that have a design capacity of less than 111 gallons (0.42 cubic meters). Each container is equipped with a cover or closure device that meets the requirements of 40CFR§264.1086(c) and that is maintained in the closed position except when:

- Waste is being added to or removed from the container,
- Access to the waste is needed for sampling or other routine activities,
- Pressure relief is necessary for maintaining the internal pressure of the container, or
- Conditions require operating a safety device to avoid an unsafe condition.

Containers and covers are inspected when first put in service at the ESF or accepted at the ESF and as part of the daily inspection (See Appendix I) to ensure that they are free of visible cracks, gaps, holes or other open spaces into the interior of the container when the cover is secured in the closed position.

When a defect is detected, the container will be repaired or overpacked or the contents will be transferred to another container that meets the requirements of 40CFR§264.1086(c). Procedures to remedy the defect will begin as soon as possible after detection and within 24 hours; these procedures will be complete within 5 calendar days after detection.



Vermont Department of Environmental Conservation
Water Quality Division
103 South Main Street, Building 10 North
Waterbury, VT 05671-0408

Agency of Natural Resources

[phone] 802-338-4889

December 8, 2011

MD
BB
BY

University of Vermont
attn: Richard Cate, VP of Finance and Administration
350 Waterman Building
85 Prospect Street
Burlington, VT 05405

Re: No Exposure Certification No. 5269-9003.R

Dear Mr. Cate,

The Department of Environmental Conservation has reviewed the No Exposure Certification for Conditional Exclusion from the Multi-Sector General Permit (MSGP) 3-9003 (NPDES# VTR050001) from the University of Vermont & State Agricultural College submitted on August 22, 2011.

The UVM Environmental Safety Facility located on Spear Street in Burlington, Vermont has been assigned a Certification Number, noted above. Please note that the No Exposure exclusion from the requirement for coverage under the MSGP is conditional. Thus, in order to maintain eligibility for No Exposure status, facilities with No Exposure Certifications must comply with the No Exposure terms and conditions of the VT MSGP 3-9003 found in Part 1.6 of the MSGP. A copy of MSGP Section 1.6 is enclosed for your convenience.

If circumstances change and industrial materials or activities become exposed to rain, snow, snowmelt, and/or runoff, then you no longer qualify for conditional exclusion from the requirements of the MSGP and your discharge becomes subject to enforcement or a citizen suit as an un-permitted discharge. If you anticipate such changes in your circumstances you should prepare a Stormwater Pollution Prevention Plan (SWPPP) and apply for and obtain coverage under the MSGP prior to such change of circumstances.

If you have any questions, please call me at (802) 338-4889 or visit the website at www.vtwaterquality.org/stormwater.htm.

Sincerely,

Jenna Calvi
Environmental Analyst
Vermont Stormwater Management Program
jenna.calvi@state.vt.us
(802) 338-4889

1.6 Conditional Exclusion for No Exposure.

If all of your industrial materials or activities are protected by a storm resistant shelter to prevent exposure to rain, snow, snowmelt and/or runoff then you may be eligible for a conditional exclusion from the requirements of this General Permit that require the preparation of a SWPPP and related monitoring of stormwater quality. To qualify for conditional exclusion, you must file an application and certification of No Exposure on forms provided by the Agency and receive approval from the Secretary. If you obtain coverage under this option you will be subject to the limitations and conditions set forth in this section with which you must comply in order to maintain eligibility for exclusion. The requirements pertaining to a demonstration that all your industrial materials or activities are protected by a storm resistant shelter to prevent exposure to rain, snow, snowmelt and/or runoff are set forth in Part 1.6.2 below.

If you meet the requirements of Part 1.6.2, and file a No Exposure Certification on forms provided by the Secretary you are no longer authorized by nor required to comply with this permit upon submission of a no exposure certification to the Agency. If you are no longer required to have permit coverage because of a no exposure exclusion and have submitted a No Exposure Certification form to the Agency, you are not required to submit an NOT.

1.6.1 Certification of No Exposure

In the event that you have elected to apply for conditional exclusion from permit requirements by certifying “No Exposure” as set forth in Part 1.6 of this general permit then you must submit a No Exposure Certification on forms provided by the Secretary.

1.6.2 Requirements to Demonstrate No Exposure

To demonstrate that all your industrial materials or activities are protected by a storm resistant shelter to prevent exposure to rain, snow, snowmelt and/or runoff you must:

- 1.6.2.1 Provide a storm resistant shelter to protect industrial materials and activities from exposure to rain, snow, snow melt, and runoff;
- 1.6.2.2 Demonstrate and certify that none of the following materials or activities are, or will be in the foreseeable future, exposed to precipitation:
 - Using, storing or cleaning industrial machinery or equipment, and areas where residuals from using, storing or cleaning industrial machinery or equipment remain and are exposed to stormwater;
 - Materials or residuals on the ground or in stormwater inlets from spills/leaks;
 - Materials or products from past industrial activity;
 - Material handling equipment (except adequately maintained vehicles);

- Materials or products during loading/unloading or transporting activities;
- Materials or products stored outdoors (except final products intended for outside use, e.g., new cars, where exposure to stormwater does not result in the discharge of pollutants);
- Materials contained in open, deteriorated or leaking storage drums, barrels, tanks, and similar containers;
- Materials or products handled/stored on roads or railways owned or maintained by the discharger;
- Waste material (except waste in covered, non-leaking containers, e.g., dumpsters);
- Application or disposal of process wastewater (unless otherwise permitted); and
- Particulate matter or visible deposits of residuals from roof stacks/vents not otherwise regulated, i.e., under an air quality control permit, and evident in the stormwater outflow.

1.6.3 Materials and Activities Which Need Not Be Sheltered to Demonstrate No Exposure

To demonstrate no exposure, storm resistant shelter is not required for the following industrial materials and activities:

- 1.6.3.1 Drums, barrels, tanks, and similar containers that are tightly sealed, provided those containers are not deteriorated and do not leak (“Sealed” means banded or otherwise secured and without operational taps or valves);
- 1.6.3.2 Adequately maintained vehicles used in material handling; and
- 1.6.3.3 Final products, other than products that would be mobilized in stormwater discharge (e.g., rock salt).

1.6.4 Limitations on No Exposure Demonstrations

- 1.6.4.1 The demonstration of no exposure can only be made on a facility-wide basis, not for individual outfalls. If a facility has some discharges of stormwater that would otherwise be No Exposure discharges, permit requirements under this permit may be adjusted accordingly for these discharges.
- 1.6.4.2 If circumstances change and industrial materials or activities become exposed to rain, snow, snowmelt, and/or runoff, then you no longer qualify for conditional exclusion from the requirements of this permit and your discharge becomes subject to enforcement as an un-permitted discharge. If you anticipate such

changes in your circumstances you should prepare a SWPPP and apply for and obtain coverage under this general permit prior to the change of circumstances.

- 1.6.4.3 Notwithstanding the provisions of this Part 1.6, the Secretary retains the authority to require coverage under this general permit (and deny coverage under this Part 1.6) upon making a determination that the discharge causes, has a reasonable potential to cause, or contributes to an instream excursion above an applicable water quality standard.

1.6.5 Conditions for Claiming and Maintaining No Exposure Status

In order to claim and maintain No Exposure status you must:

- 1.6.5.1 In accordance with the requirements set forth in Part 1.6, submit a signed certification of No Exposure stating that all your industrial materials or activities are protected by a storm resistant shelter to prevent exposure to rain, snow, snowmelt and/or runoff.
- 1.6.5.2 Submit the signed No Exposure certification forms to the Agency once every five years;
- 1.6.5.3 Allow the Agency to inspect the facility to determine compliance with the No Exposure conditions;
- 1.6.5.4 Allow the Agency to make any No Exposure inspection reports available to the public upon request;
- 1.6.5.5 For facilities that discharge through an MS4, upon request you must submit a copy of the certification of No Exposure to the MS4 operator, as well as allow inspection and public reporting by the MS4 operator; and
- 1.6.5.6 Any time there is a change in the owner or operator of your facility you must notify the Agency within 30 days of the change. The No Exposure form is non-transferable. If a new owner or operator takes over the facility, the new owner or operator must complete and submit a new form to claim No Exposure.

1.7 Alternative Permits.

1.7.1 Agency Requiring Coverage under an Alternative Permit.

The Secretary may require you to apply for and/or obtain authorization to discharge under either an individual NPDES permit or an alternative NPDES general permit. The Secretary may determine at his or her own discretion that an individual or an alternative general permit is required. The Secretary may require any person who files a NOI to apply for an individual permit if the discharge does not qualify for coverage under this general permit or the Secretary

Attachment M-1

ESF Air Pollution Control Permit

**State of Vermont
Agency of Natural Resources
Department of Environmental Conservation**



**Air Pollution Control Division
Waterbury, Vermont**

**AIR POLLUTION CONTROL PERMIT
TO CONSTRUCT**

Date Permit Issued: April 19, 2004

Owner/Operator:	University of Vermont Waterman Building 85 South Prospect Street Burlington, Vermont 05405
Source:	UVM Environmental Safety Facility 667 Spear Street Burlington, Vermont 05405

FINDINGS OF FACT

(A) FACILITY DESCRIPTION

The University of Vermont (also referred to herein as "Permittee") owns and operates a permitted treatment, storage and disposal facility located at the BioResearch Complex on the west side of Spear Street in Burlington, Vermont (also referred to herein as "Facility"). The Facility is designed to serve as a storage and management area for hazardous wastes and houses a chemical distribution and resource recovery center. The Permittee has proposed to modify the pouring volumes and frequencies outlined in the existing permit for the following chemicals: benzene, chloroform, trichloroethylene, ethylene dichloride, methylene chloride and aniline. These chemicals are released through the bulking and consolidation of waste materials.

(B) FACILITY CLASSIFICATION

The Facility is classified as a source of air contaminants pursuant to Title 10 of the *Vermont Statutes Annotated* ("10 VSA.") §555 and §5-401 (11), Manufacturing, processing and application of chemicals, including the processing or application of plastics, rubbers or resins of the *Vermont Air Pollution Control Regulations* (hereinafter "*Regulations*"). In addition, §5-101 of the *Regulations* defines a *stationary source* as any structure(s), equipment, installation(s), or operation(s), or combination thereof, which emit or may emit any air contaminant, which is located on one or more contiguous or adjacent properties and which is owned or operated by the same person or persons under common control. Based on this definition, all of the equipment, operations, and structures at the Facility are grouped together by the Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division (hereinafter "Agency") as one stationary air contaminant source for purposes of review under the *Regulations*.

(C) PRIOR AGENCY ACTIONS/APPROVALS

The Facility has been issued the following "Permit to Construct" approval pursuant to 10 VSA §556 and §§5-501 and/or 5-502 of the *Regulations*.

Prior Agency Approvals and Actions	
Date of Action	Description of Agency Approval/Action
April 22, 1994	#AP-92-024 – Original Agency Permit to Construct approval for Facility.

(D) FACILITY PERMIT APPLICABILITY

As noted above, the Facility is classified as a source of air contaminants under §5-401 of the *Regulations*. Pursuant to 10 VSA §556 and §5-501 of the *Regulations* a Permit to Construct, or an amendment to any existing Permit to Construct, must be obtained before commencing the construction, installation, modification or operation of an air contaminant source. The proposed changes in pouring volumes and frequencies of the above listed chemicals is not considered a modification to the Facility under the *Regulations* however, the Agency is considering the proposed changes a technical amendment and consequently, a modified Permit to Construct must be obtained.

Allowable emissions from the Facility are estimated to be less than ten (10) tpy combined and therefore the Facility is not required to obtain a Permit to Operate consistent with the requirements of Subchapter X of the *Regulations*. The allowable emissions for the Facility are summarized below:

Future Allowable Air Contaminant Emissions (tons/year) ¹						
PM/PM ₁₀	SO ₂	NO _x	CO	VOCs	Total Criteria	HAPs ²
0.06	0.10	1.37	0.70	0.35	<10	<1

¹ PM/PM₁₀ - particulate matter and particulate matter of 10 micrometers in size or smaller; SO₂ - sulfur dioxide; NO_x - oxides of nitrogen measured as NO₂ equivalent; CO - carbon monoxide; VOCs - volatile organic compounds; HAPs - hazardous air pollutants as defined in §112 of the federal Clean Air Act.

² Emissions of individual HAPs each < 10 tpy and emissions of total HAPs combined <25 tpy. Actual total combined HAPs estimated at <1 tpy.

(E) REVIEW FOR THE PERMIT TO CONSTRUCT

(a) New Source Review Designation

The Facility, prior to implementation of the proposed modification, is designated as a non-major stationary source of air contaminants since it does not have allowable emissions of a single air contaminant of fifty (50) tons per year or greater. Consequently, any *modification* of the source that would result in a major increase in emissions of any air contaminant, as defined in §5-101 of the *Regulations*, is designated as a major modification and is subject to review under §5-501 and §5-502 of the *Regulations*. The proposed project identified in Findings of Fact (A) above, together with all previous minor modifications constructed at the Facility since July 1, 1979, and which have not been previously reviewed under §5-502 of the *Regulations*, will not result in a major increase in emissions. Consequently, the proposed modification is designated as a non-major modification and is not subject to the requirements of §5-502 of the *Regulations*.

(b) Most Stringent Emission Rate

Pursuant to §5-502 of the *Regulations*, the owner/operator of each new major stationary source or major modification must apply control technology adequate to achieve the Most Stringent Emission Rate ("MSER") with respect to those air contaminants for which there would be a major or significant actual emissions increase, respectively, but only for those currently proposed physical or operational changes which would contribute to the increased emissions.

The proposed project is designated as a non-major modification of a stationary source and therefore is not subject to review under the MSER requirements in §5-502 of the *Regulations*.

(c) Ambient Air Quality Impact Evaluation

An ambient air quality impact evaluation is performed to demonstrate whether or not a proposed project will cause or contribute to violations of the ambient air quality standards and/or significantly deteriorate existing air quality. The Agency's implementation procedures concerning the need for an ambient air quality impact evaluation under §5-406(1) of the *Regulations*, specifies that such analyses may be required when a project results in an allowable emissions increase of ten (10) tons per year or more of any air contaminant, excluding VOCs. Additionally, the Agency may require an air quality impact evaluation where the short-term allowable emission rates will significantly increase as a result of a project.

Based on the level of emissions from this Facility, it is not expected to cause or contribute to a violation of any ambient air quality standard or significantly deteriorate air quality. Therefore, an air quality impact evaluation was not required by the Agency for the proposed project.

(d) Applicable Requirements

The operations at the Facility are subject to the following state and federal laws and regulations, the requirements of which are embodied in the conditions of this Permit.

(i) *Vermont Air Pollution Control Regulations:*

Applicable Requirements from the Vermont Air Pollution Control Regulations	
Section 5-211(2) - Prohibition of Visible Air Contaminants, Installations Constructed Subsequent to April 30, 1970.	
Section 5-231(4) - Prohibition of Particulate Matter; Fugitive Particulate Matter.	
Section 5-241 – Prohibition of Nuisance and Odor.	

Applicable Requirements from the Vermont Air Pollution Control Regulations
Section 5-271 – Control of Air Contaminants from Stationary Reciprocating Internal Combustion Engines.
Section 5-402 – Written Reports When Requested.
Section 5-403 – Circumvention.
Subchapter VIII – Registration of Air Contaminant Sources.

(F) **HAZARDOUS MOST STRINGENT EMISSION RATE**

Pursuant to §5-261 of the *Regulations*, any stationary source whose current or proposed actual emission rate of a hazardous air contaminant ("HAC") is equal to or greater than the respective Action Level (found in Appendix C of the *Regulations*) shall achieve the Hazardous Most Stringent Emission Rate ("HMSER") for the respective HAC. Pursuant to §5-261(1)(b)(ii) of the *Regulations*, all fuel burning equipment which combusts virgin liquid or gaseous fuel is exempt from this section. The Facility is not expected to have regulated emissions of any HAC in excess of an Action Level. Therefore, the Facility is not subject to §5-261 of the *Regulations* at this time.

Based on the Agency's review of the Facility's application and the above Findings of Fact, the Agency concludes that the Facility, subject to the following Permit conditions, complies with all applicable state and federal air pollution control laws and regulations. Therefore, pursuant to 10 VSA §556, as amended, the Agency hereby proposes to issue a Permit approving the Facility, as described in the above Findings of Fact, subject to the following:

PERMIT CONDITIONS

- Construction and Equipment Specifications -

- (1) The Permittee shall construct and operate the Facility in accordance with the plans and specifications submitted to the Agency and in accordance with the conditions set forth herein. [10 V.S.A. §556(c)]
- (2) The exhaust gases from the Facility's ventilation system shall be vented vertically through a stack which extends a minimum of four (4) feet above the roofline. The Permittee shall at the request of the Agency increase the stack height of any respective stack if, in the judgment of the Agency based on inspections of the actual operations at the Facility, proper or adequate dispersion can not be maintained at the current stack height. The stack shall not be equipped with any device that may obstruct the upward discharge of the exhaust gases such as a fixed raincap. [10 V.S.A. §556(c)]

- Operational Limitations -

- (3) The Permittee shall not pour, dispense, or engage in any other activity that releases hazardous vapors during the consolidation of chemical wastes at the Facility for a period of time that exceeds 8 hours per day. The Permittee shall not exceed the following pouring volumes for the chemical wastes listed below during any consecutive 30 day period:

Maximum Pouring Volumes	
Chemical	Maximum monthly pouring volume (gallons)
Chloroform	1.0
Trichloroethylene	10.0
Ethylene dichloride	2.5
Methylene chloride	26.0
Benzene	1.0
Aniline	20.0

[10 V.S.A. §§556(c) and 5-261 of the *Regulations*]

- (4) The Permittee shall handle all chemical wastes in accordance with applicable Hazardous Waste Management Regulations. [10 V.S.A. §556(c)]
- (5) The Permittee shall utilize only Liquefied Petroleum Gas ("LPG") or natural gas in the fuel burning equipment installed and operated at the Facility. [10 V.S.A. §556(c)]
- (6) Engines: The Permittee shall not install or operate a stationary reciprocating internal combustion engine, as defined in the *Regulations*, that is 450 bhp or greater unless the engine complies with §5-271 of the *Regulations*, as applicable. Engines installed after July 1, 1999 must comply with the emission standards of §5-271 of the *Regulations* immediately upon installation. Engines installed prior to July 1, 1999 must comply with the emission standards of §5-271 of the *Regulations* by no later than July 1, 2007. Installation of any size stationary reciprocating internal combustion engine may still require approval from the Agency in the form of an amended Permit prior to installation. Stationary reciprocating internal combustion engines include those used to power generator sets or to provide shaft power for equipment but does not include engines used to power motor vehicles. [§§5-501 and 5-271 of the *Regulations*]

- Emission Limitations -

- (7) Emissions of visible air contaminants from any installation at the Facility, except where otherwise noted in this Permit, shall not exceed twenty (20) percent opacity for more than a period or periods aggregating six (6) minutes in any hour and at no time shall visible emissions exceed sixty (60) percent opacity. Any emission testing conducted to demonstrate compliance with the above emission limits shall be performed in accordance with the proposed Federal Reference Method F-1 contained in the Federal Register Vol.51, No.168, pp. 31076-31081, August 29, 1986 or an equivalent method approved in writing by the Agency. [§§5-211(2) and 5-404 of the *Regulations*]
- (8) Particulate Matter: Emissions of particulate matter ("PM") from any fuel burning device, except motorized vehicles, with a heat input rating of less than ten (10) million British Thermal Units per hour ("MMBTU/hr") shall not exceed 0.5 pounds per MMBTU.
- Any emission testing conducted to demonstrate compliance with the above emission limit shall be performed in accordance with 40 *CFR* Part 60, Appendix A, Reference Method 5 or an equivalent method approved in writing by the Agency. [§§5-231(3)(a)(i) and 5-404 of the *Regulations*]
- (9) Volatile Organic Compounds: Emissions of volatile organic compounds from the Facility shall not equal or exceed fifty (50) tons per calendar year. [§5-501 of the *Regulations*]
- (10) Hazardous Air Pollutants: Emission of federally regulated hazardous air pollutants (HAPs) from the Facility shall not equal or exceed ten (10) tons per year of any single HAP or twenty-five (25) tons per year of all HAPs combined per calendar year. [40 *CFR* Part 63]
- (11) Hazardous Air Contaminants: Emissions of state hazardous air contaminants (HACs) from the applicable operations at the Facility shall not equal or exceed their respective Action Level (found in Appendix C of the *Regulations*) unless the Agency has reviewed and approved such HAC emission under §5-261 of the *Regulations*. [§5-261 of the *Regulations*]
- (12) The Permittee shall not discharge, cause, suffer, allow, or permit from any source whatsoever such quantities of air contaminants or other material which will cause injury, detriment, nuisance or annoyance to any considerable number of people or to the public or which endangers the comfort, repose, health or safety of any such persons or the public or which causes or has a natural tendency to cause injury or damage to business or property. The Permittee shall not discharge, cause, suffer, allow, or permit any emissions of objectionable odors beyond the property line of the premises. [§5-241(1) and (2) of the *Regulations*]

- Record Keeping and Reporting -

- (13) The Permittee shall maintain daily records of the total volume poured during each eight hour work day of each chemical specified in Condition (3) of this Permit. The Permittee shall also maintain annual records of the quantity of chemical wastes received and shipped out of the Facility. [10 V.S.A. §556(c)]

- (14) All records shall be retained for a minimum period of five (5) years from the date of record and shall be made available to the Agency upon request. [§§5-402(1) and 5-405(1) of the *Regulations*]
- (15) The Permittee shall notify the Agency in writing of any proposed physical or operational change at the Facility which may increase the emission rate of any air contaminant to the ambient air regardless of any concurrent emission reductions that may be achieved. If the Agency determines that a permit amendment is required, a new application and the appropriate application fee shall be submitted. The permit amendment shall be obtained prior to commencing any such change. [10 V.S.A. §556(c)] [§§5-402(1) and 5-501 of the *Regulations*]
- (16) All records, reports, and notifications that are required to be submitted to the Agency by this Permit shall be submitted to:

Agency of Natural Resources
Air Pollution Control Division
103 South Main Street, Bldg 3 South
Waterbury, Vermont 05671-0402.

[§5-402(1) of the *Regulations*]

- (17) The Permittee shall notify the Agency in writing within ten (10) days of any violation, of which it is aware, of any requirements of this Permit. This notification shall include, at a minimum, the cause for the violation and corrective action or preventative maintenance taken to correct the violation. [§5-402(1) of the *Regulations*]
- (18) Annual Registration: The Permittee shall calculate the quantity of emissions of air contaminants from the Facility annually. If the Facility emits more than five (5) tons of any and all air contaminants per year, the Permittee shall register the source with the Secretary of the Agency (hereinafter "Secretary"), and shall renew such registration annually. Each day of operating a source which is subject to registration without a valid, current registration shall constitute a separate violation and subject the Permittee to civil penalties. The registration process shall follow the procedures set forth in Subchapter VIII of the *Regulations*, including the payment of the annual registration fee on or before May 15 of each year. [Subchapter VIII §§5-802, 5-803, 5-807 and 5-808 of the *Regulations*]

- Standard Permit Conditions -

- (19) These Permit conditions may be suspended, terminated, modified, or revoked for cause and reissued upon the filing of a written request with the Secretary of the Agency (hereinafter "Secretary") or upon the Secretary's own motion. Any modification shall be granted only with the written approval of the Secretary. If the Secretary finds that modification is appropriate, only the conditions subject to modification shall be re-opened. The filing of a request for modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated non-compliance does not stay any terms or conditions of this Permit. The Secretary may provide opportunity for public comment on any proposed modification of these conditions. If public comments are solicited, the Secretary shall follow the procedures set forth in 10 V.S.A. §556, as amended. [10 V.S.A. §556(d)]

- (20) The Permittee shall furnish to the Agency, within a reasonable time, any information that the Agency may request in writing to determine whether cause exists to modify, revoke, reissue, or terminate the Permit or to determine compliance with this Permit. Upon request, the Permittee shall also furnish to the Agency copies of records required to be kept by this Permit. [10 V.S.A. §556(c)] [§5-402(1) of the *Regulations*]
- (21) By acceptance of this Permit, the Permittee agrees to allow representatives of the State of Vermont access to the properties covered by the Permit, at reasonable times, to ascertain compliance with Vermont environmental and health statutes and regulations and with this Permit. The Permittee also agrees to give the Agency access to review and copy any records required to be maintained by this Permit, and to sample or monitor at reasonable times to ascertain compliance with this Permit. [10 V.S.A. §556(c)] [§§5-402(1) and 5-404 of the *Regulations*]
- (22) All data, plans, specifications, analyses and other information submitted or caused to be submitted to the Agency as part of the application for this Permit or an amendment to this Permit shall be complete and truthful. Any such submission which is false or misleading shall be sufficient grounds for denial or revocation of this Permit, and may result in a fine and/or imprisonment under the authority of Vermont statutes. [10 V.S.A. §556(c)] [§5-505 of the *Regulations*]
- (23) For the purpose of establishing whether or not a person has violated or is in violation of any condition of this Permit, nothing in this Permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed. [10 V.S.A. §556(c)]
- (24) Any permit noncompliance could constitute a violation of the federal Clean Air Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. [10 V.S.A. §556(c)]
- (25) It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this Permit. [10 V.S.A. §556(c)]
- (26) No person shall build, erect, install or use any article, machine, equipment or other contrivances, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which otherwise would constitute a violation of these *Regulations*. [§5-403 of the *Regulations*]
- (27) The provisions of this Permit are severable. If any provision of this Permit, or its application to any person or circumstances is held invalid, illegal, or unenforceable by a court of competent jurisdiction, the invalidity shall not apply to any other portion of this Permit which can be given effect without the invalid provision or application thereof. [10 V.S.A. §556(c)]

- (28) This Permit does not convey any property rights of any sort or any exclusive privilege, nor does it authorize any injury to private property or any invasion of personal rights. [10 V.S.A. §556(c)]
- (29) All subsequent owners and/or operators of this Facility must request an amendment and transfer of this Permit prior to commencing any operations covered by this Permit. All subsequent owners and/or operators shall submit to the Agency as part of the request for amendment all such information the Agency deems necessary to establish legal ownership and/or interest in the property and all such information the Agency deems necessary to ensure the new owners and/or operators will construct and operate the Facility in compliance with the *Regulations* and this Permit. The terms and conditions of this Permit shall remain in full force and effect after submittal of the request for amendment and until the issuance of an amended Permit or denial. Should the Secretary deny the request, the new owner and/or operator must take whatever action is necessary to comply with the denial. [10 V.S.A. §556] [§5-501 of the *Regulations*]
- (30) The conditions of this Permit as set forth above supercede all conditions contained in all prior Permits issued by the Agency to the Permittee for this Facility. [10 V.S.A. §§556(c)]

The Agency's issuance of this Air Pollution Control Permit relies upon the data, judgement, and other information supplied by the Permittee. The Agency makes no assurances that the air contaminant source approved herein will meet performance objectives or vendor guarantees supplied to the source Permittee. It is the sole responsibility of the Permittee to operate the source in accordance with the conditions herein and with all applicable state and federal standards and regulations.

Dated this _____ day of _____, 200__, in the town of Waterbury, county of Washington, state of Vermont.

Agency of Natural Resources

Jeffrey Wennberg, Commissioner
Department of Environmental Conservation

By: _____
Richard A. Valentinetti, Director
Air Pollution Control Division

jh
A2 University of Vermont, Environmental Safety Facility - Burlington

Attachment M-2

Technical Support Document for ESF Air Pollution Control Permit

**VERMONT AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Air Pollution Control Division**

**TECHNICAL SUPPORT DOCUMENT FOR
PERMIT TO CONSTRUCT #AP-04-006**

April 19, 2004

Prepared By: Jay Hollingsworth

APPLICANT:

University of Vermont
Waterman Building
85 South Prospect Street
Burlington, Vermont 05405

SOURCE:

University of Vermont Environmental Safety Facility
UVM BioResearch Complex
667 Spear Street
Burlington, Vermont 05405

**APPLICATION
CONTACT:**

Francis Churchill
Risk Management Department
667 Spear Street
Burlington, Vermont 05405-0016
TEL: (802) 656-5405
FAX: (802) 656-5407

I. INTRODUCTION

The University of Vermont (also referred to herein as "UVM") owns and operates a permitted treatment, storage and disposal facility (also referred to herein as "ESF") located at the BioResearch Complex on the west side of Spear Street in Burlington, Vermont (referred to herein as "Facility"). The Facility serves as a storage and management area for hazardous wastes and houses a chemical distribution and resource recovery center.

A. Administrative Summary

UVM submitted an application for an amendment to an Air Pollution Control Permit to Construct (#AP-92-024) on November 25, 2003. The application was determined to be administratively complete on March 1, 2004. This Technical Analysis details the Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division's (hereinafter "Agency") review of the proposed modifications to the existing Environmental Safety Facility. Table 1-1 is a summary of the administrative procedures undertaken to date by the Agency.

Table 1-1: Administrative Summary

Administrative Item	Result or Date
Date Application for Permit to Construct Received:	11/25/03
Date Application Determined Administratively Complete:	03/01/04
Date & Location Receipt of Application Noticed:	Not Required
Affected State(s) Noticed & Date Affected States Noticed of Application Receipt:	Not Required
Date Technically Complete:	04/16/04
Date Draft Decision:	Not Required
Affected State(s) Noticed & Date Affected States and EPA Noticed of Draft Decision:	Not Required
Date Submitted to U.S. EPA:	Not Required
Total Application Fees:	\$500.00
Classification of Source Under Section 5-401:	(11) Manufacturing, processing and application of chemicals, including the processing or application of plastics, rubbers or resins
New Source Review Designation of Proposed Facility/Modification:	Non-Major
New Source Review Designation of New Facility:	Non-Major
Operating Permit: Designation of Facility:	Not Subject to Subchapter X
Facility SIC Code:	9999

Administrative Item					Result or Date	
Facility SIC Code Description:					9999 – Nonclassifiable Establishments	
Allowable Air Contaminant Emissions (tons/year) ¹						
PM/PM ₁₀	SO ₂	NO _x	CO	VOCs	Total Criteria	HAPs ²
0.06	0.10	1.37	0.70	0.35	<10	<1

¹ PM/PM₁₀ - particulate matter and particulate matter of 10 micrometers in size or smaller; SO₂ - sulfur dioxide; NO_x - oxides of nitrogen measured as NO₂ equivalent; CO - carbon monoxide; VOCs - volatile organic compounds; HAPs - hazardous air pollutants as defined in §112 of the federal Clean Air Act.

² Emissions of individual HAPs each < 10 tpy and emissions of total HAPs combined <25 tpy. Actual total combined HAPs estimated at <1 tpy.

II. FACILITY PROCESS DESCRIPTION AND EMISSIONS

A. Facility Location

The UVM owns and operates the ESF located within the BioResearch Complex on the south end of the University of Vermont campus. This portion of the campus extends down Spear Street to the southeast corner of the city of Burlington's boundary. The Complex is located on the west side of Spear Street.

The area surrounding the Complex is primarily mixed rural and residential with several locations to note; within a half mile of the Facility; to the west is Rice High School; within one mile of the Facility; to the west, Route 7; to the east, Interstate 89 and to the northeast, the UVM farm. Within two miles of the Facility there are two locations to note; to the west, Lake Champlain and to the west, Edmond's Grade School.

B. Facility Description

The Facility is not listed under any Standard Industrial Classification ("SIC") Code however it is listed in the North American Industry Classification System as Academies, college or university (#611310). The regulated sources of air contaminant emissions at the Facility include the bulking and consolidation of waste materials, and the combustion of liquid propane gas or natural gas in the fuel burning equipment described below under "Additional Activities".

The primary source of air contaminants generated by the ESF results from the bulking and consolidation of waste materials. There are three areas of potential airborne emissions from the ESF pouring operations: a laboratory fume hood, a ventilated liquid waste pouring station, and ventilation from the storage rooms. The majority of the air contaminant emissions are generated at the pouring station. The pouring station has the most consistent operation and handles the largest quantity of material. The fume hood is used only intermittently for waste stream verification.

The purpose of the ESF is to store and manage hazardous wastes and to house a chemical distribution and resource recovery center. The ESF consists of a few offices, a testing laboratory, chemical storage areas, enclosed loading dock, a virgin and recycled chemical distribution center, and a work area with a ventilated pouring station. Currently, UVM stores the following chemical wastes at

its ESF: organic solvents, waste oils, acids, and other organic materials and alkalis. These wastes are generated primarily from UVM research, teaching and maintenance activities. The ESF may also accept wastes generated from Burlington and Chittenden County Solid Waste District household hazardous waste collection activities and from primary and secondary educational activities. The ESF has a hazardous waste storage limitation of two hundred (200) 55-gallon drums or the equivalent volume. UVM accumulates wastes for 180 days before removing approximately 80 drums of waste for disposal at a certified treatment, storage and disposal facility.

The ESF was designed with a "pouring station" so that compatible waste chemicals may be commingled in bulk storage containers to reduce overall waste volumes. At the pouring station, small volumes of chemicals are transferred from separate bottles containing up to 5 gallons into 55-gallon drums for off-site disposal. The chemicals are transferred either by hand pouring or hand pumping. In an effort to minimize worker exposure while using the pouring station, vapors produced during the bulking process are captured by the ventilation system and vented to the ambient air.

C. Facility Emissions

The emissions generated through the transfer of small volumes of chemicals into 55-gallon drums at the pouring station consist primarily of volatile organic compounds (VOCs). These emissions have been estimated based on an empirical formula developed for a similar ESF pouring station located at Stanford University. The formula was derived through vent sampling conducted at Stanford by the Radian Corporation to measure the stack emissions when known quantities of two different chemicals (hexane and p-xylene) were poured. (Note: under current design, the UVM ESF pouring station has the same ventilation system as the Stanford ESF pouring station).

Emissions of hexane and p-xylene were selected to represent relatively high and low volatility chemicals having vapor pressures of 120 millimeters of mercury (mmHg) and 6.5 mmHg respectively, both at 20 degrees Celsius. Air samples were taken at the vent of the pouring station process using charcoal tubes. Sampling was performed "two minutes before, during, and two minutes after" the transfer of materials. Concentrations were measured using gas chromatography. During each of the two tests, two 4-liter bottles were poured manually via a funnel and bung hole. Pouring times varied from 80 seconds to 123 seconds. Based on the results of these tests, the following equation was developed to describe the total mass of emissions generated per liter of chemical poured as a function of vapor pressure:

$$M = (4.50 \times 10^{-4}) \cdot V_P$$

where: M = Moles emitted per liter poured
 V_P = Vapor pressure, mmHg

This equation was used to estimate the emissions from the chemical pouring and consolidating operations at UVM ESF. The maximum expected weekly pouring volumes for each of the five categories of chemical wastes to be poured at the facility are defined below in Table 2-1. Since the type and amount of chemicals consolidated at the pouring station will vary depending on the wastes generated at the University's laboratories, it is impossible to accurately predict what volume of each chemical will be poured each day.

TABLE 2-1: Maximum Expected Weekly Pouring Volumes

Chemical Categories	Expected Weekly Pouring Volumes, gallons
Halogenated Chemicals	20
Flammable Liquids	55
Acids	20
Water Based & Non-RCRA Chemicals	55
Alkaline Chemicals	20
Total Weekly Volume Poured, gallons	170

In an effort to define the worst-case scenario emissions, it was assumed that the maximum weekly pouring volume of each category identified above consisted entirely of the most volatile chemical from that category. The most volatile chemical, based on vapor pressure, from each category listed in Table 2-1 was used to calculate worst-case emissions. Table 2-2 below presents the most volatile chemical for each category. A complete list of all chemicals in each category and each chemical's vapor pressure is presented below in Table 7-1.

TABLE 2-2: Worst-Case Emission Scenario Chemicals

Chemical Name	CAS Number	Chemical Category	Vapor Pressure, mmHg
Methylene Chloride	75-09-2	Halogenated Chemicals	350
Acetaldehyde	75-07-0	Flammable Liquids	755
Phosphoric Acid	7664-38-2	Acids	2.2
Formaldehyde	50-00-0	Water Based & Non-RCRA Chemicals	94
-	-	Alkaline Chemicals	-

Note that emissions from compounds classified as "Alkaline Chemicals" poured at the Facility were considered negligible and were not considered VOCs. Using the vapor pressures and molecular weights of the most volatile chemicals in each category, the Stanford relationship was used to calculate the VOC emissions for each of the five categories. Emissions from four of the five categories were then added together to determine total VOC emissions from the pouring station.

The following is a sample calculation demonstrating the method used to determine the annual emission rate of VOCs at the Facility. While emissions of acetaldehyde (the most volatile of all flammable liquids) have been selected for this particular demonstration, the same method was used

to determine emissions of halogenated, acids and water based compounds.

$$\begin{array}{llll} \text{For acetaldehyde:} & V_P & = & 755 \text{ mmHg} \\ & \text{Molecular Weight} & = & 44.1 \text{ grams/mole} \end{array}$$

Using the Stanford relationship:

$$M = 0.00045 \cdot (V_P)$$

$$M = 0.00045 \cdot (755) = 0.340 \text{ moles emitted/L poured}$$

$$M = (0.340 \text{ moles emitted/L poured}) \cdot (1 \text{ L} / 0.2642 \text{ gallons}) = 1.29 \text{ moles emitted/gallon poured}$$

$$M = (1.29 \text{ moles emitted/gallon poured}) \cdot (44.1 \text{ grams/mole}) \cdot (0.0022046 \text{ lb/gram}) = 0.125 \text{ lb emitted/gallon poured}$$

$$M = 0.125 \text{ lb emitted/gallon poured}$$

$$\begin{array}{ll} \text{Annual VOC emissions} & = 0.125 \text{ lb/gallon} \cdot 55 \text{ gal/week} \cdot 52 \text{ weeks/year} = 358 \text{ lb/year} \\ \text{from flammable liquids} & = 0.18 \text{ tpy} \end{array}$$

Worst-case emissions from each category presented above in Table 2-2 were added together to determine the total annual VOC emission rate for the Facility's pouring station. These emissions are presented below in Table 2-3. With the above assumptions, the total annual VOC emissions from the pouring station are estimated to be approximately 0.26 tons per year (tpy).

TABLE 2-3: Annual VOC Emissions

Chemical Category	Annual Emissions, tpy
Halogenated Chemicals	0.06
Flammable Liquids	0.18
Acids	0.0004
Water Based & Non-RCRA Chemicals	0.02
Alkaline Chemicals	-
Total VOC Emissions	0.26

D. Additional Activities

Additional activities at the Facility include the operation of several pieces of fuel burning equipment. Specifications for the fuel burning equipment are listed in Table 2-4 below. The equipment is used to meet the on-site heating and hot water requirements of the approximately 8300 square foot ESF building. All three pieces of fuel burning equipment utilize either Liquefied Petroleum Gas (LPG) or natural gas fuel. A small quantity of air contaminants are produced from the combustion of LPG or natural gas. Emissions produced by the combustion of LPG or natural gas consist primarily of particulate matter (PM/PM₁₀), sulfur dioxide (SO₂), oxides of nitrogen (NO_x), carbon monoxide (CO)

and total organic compounds (TOCs).

Table 2-4: Fuel Burning Equipment and Stack Information

Description	Unit Size, MMBtu/hr	Fuel Type	Stack Height, ft above grade
Boiler, Bryan	1.8	LPG or natural gas	35
Hot Water Tank, HB Smith	0.075		
Make-up Air Heater, Reznor	0.22		

Allowable emissions from fuel burning were calculated based on unrestricted operation (i.e. 8760 hours per year) at maximum rated heat input. Emissions from fuel combustion have been estimated using the worst emitting of the two fuels (LPG and natural gas), on a pollutant by pollutant basis, and emission factors developed by the U.S. EPA and published in *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (5th Edition)*. AP-42, Office of Air Quality Planning and Standards, RTP, NC, January 1995.

For natural gas, depending on the size of each piece of fuel burning equipment, different emission factors are available for NO_x and CO. For emission estimate purposes, the worst-case emission factors were used. The allowable emissions from the fuel burning equipment for natural gas and LPG, as described in Table 2-4 above, are summarized below in Table 2-5 and Table 2-6, respectively.

Table 2-5: Estimated Emissions From Fuel Burning Equipment, Natural Gas

Pollutant	Emission Factor			Emission Estimates, tons/yr
	Factor	Units	Source	
SO ₂	0.6	lb/MMscf	AP-42 Table 1.4-2, 7/98	0.01
NO _x	100	lb/MMscf	AP-42 Table 1.4-1, 7/98	0.83
PM/PM ₁₀	7.6	lb/MMscf	AP-42 Table 1.4-2, 7/98	0.06
CO	84	lb/MMscf	AP-42 Table 1.4-1, 7/98	0.70
VOC	11	lb/MMscf	AP-42 Table 1.4-2, 7/98	0.09
HAPs	5.5	lb/MMscf	AP-42 Table 1.4-3, 7/98	0.05

Assume natural gas heat value of 0.0011 million British thermal units per standard cubic foot.

Assume unrestricted fuel use in all fuel burning equipment combined. Estimated at 2.3 million standard cubic feet of natural

gas.

Table 2-6: Estimated Emissions From Fuel Burning Equipment, LPG

Pollutant	Emission Factor			Emission Estimates, tons/yr
	Factor	Units	Source	
SO ₂	1	lb/1000 gal	AP-42 Table 1.5-1, 10/96	0.10
NO _x	14	lb/1000 gal	AP-42 Table 1.5-1, 10/96	1.37
PM/PM ₁₀	0.4	lb/1000 gal	AP-42 Table 1.5-1, 10/96	0.04
CO	1.9	lb/1000 gal	AP-42 Table 1.5-1, 10/96	0.19
VOC	0.5	lb/1000 gal	AP-42 Table 1.5-1, 10/96	0.05
HAPs	-	-	-	-

S = sulfur content expressed in grains/100ft³ gas vapor. Maximum sulfur content of LPG was estimated to be 10 grains/100ft³. Assume unrestricted fuel use in all fuel burning equipment combined. Estimated at 195,236 gallons of liquid propane gas.

Table 2-7 summarizes the Facility's allowable emissions from fuel burning equipment. Worst-case emissions, based on fuel type, on a pollutant-by-pollutant basis as reflected directly in Tables 2-5 and 2-6 were considered allowable emissions.

Table 2-7: Allowable Emissions From Fuel Burning Equipment

Pollutant	Emissions, tons/yr	Worst Case Fuel Type
SO ₂	0.10	LPG
NO _x	1.37	LPG
PM/PM ₁₀	0.06	Natural Gas
CO	0.70	Natural Gas
VOC	0.09	Natural Gas
HAPs	0.05	Natural Gas

The allowable emissions of criteria pollutants from both the fuel burning equipment and the pouring station are summarized in Table 2-8.

TABLE 2-8: Total Facility Allowable Emissions

Emissions From Pouring Station and Fuel Burning Operations, tons/yr						
Source	PM/PM ₁₀	SO ₂	NO _x	CO	VOCs	HAPs*
Pouring Station	-	-	-	-	0.26	-
Fuel Burning Equipment	0.06	0.10	1.37	0.70	0.09	0.05
Total Facility	0.06	0.10	1.37	0.70	0.35	0.05

For purposes of determining allowable emissions, HAPs and VOCs were not quantified separately for the pouring station. All HAP emissions were quantified under the category of VOCs.

III. PROPOSED AND REMOVED LIMITATIONS

A. Proposed Limitations

The initial permit issued to the ESF limited the quantities of six specific chemicals poured. On November 25, 2003 the Agency received a letter from UVM proposing new limits that would facilitate more efficient processing of UVM's chemical waste stream. The existing limits are on daily basis and the new proposed limits are on a monthly basis. The new proposed limits would allow bulking options that would result in fewer than half the number of 55 gallon drums of UVM's chemical waste stream currently being shipped for disposal. The new proposed limits will allow for increased consolidation of liquid wastes and reduced packing of sub-containers into the drums. The proposed limits are outlined in Table 3-1 below.

Table 3-1: Proposed Maximum Monthly Pouring Volumes

Chemical	Maximum Monthly Pouring Volume, gallons
Chloroform	1.0
Trichloroethylene	10.0
Ethylene dichloride	2.5
Methylene chloride	26.0
Benzene	1.0
Aniline	20.0

B. Removed Limitations

UVM shall not pour, dispense, or engage in any other activity that releases hazardous vapors during the consolidation of chemical wastes at the ESF for a period of time that exceeds 8 hours per day. UVM shall not exceed the following pouring volumes for the chemical wastes listed in Table 2-1 below during any consecutive 8 hour period:

Table 2-1

<i>Chemical Waste</i>	<i>Maximum daily pouring volume, (gallons)</i>
<i>Chloroform</i>	<i>0.050</i>
<i>Trichloroethylene</i>	<i>1.2</i>
<i>Ethylene dichloride</i>	<i>0.13</i>
<i>Methylene chloride</i>	<i>1.4</i>
<i>Benzene</i>	<i>0.43</i>
<i>Aniline</i>	<i>4.0</i>

(Condition 2, Permit #AP-92-024)

The above condition will be removed upon issuance of Permit #AP-04-006. The ESF Facility does not process chemicals on a daily basis due to the need for donning personal protective equipment, setting up decontamination controls and tracking the movement of the waste. Instead, material is accumulated and processed in a single waste stream for about four (4) hours at a time approximately once per month. The majority of chemicals are bulked (consolidation of similar chemicals from smaller containers to larger containers). However, the existing daily pouring limits for the six halogenated solvents make bulking logistically prohibitive and as a result, halogenated solvents currently are labpacked (packing of small containers of chemicals into a larger container without consolidation of the chemicals).

The Agency has reviewed the proposal and has determined that the worst-case pouring scenario for each of the six halogenated solvents does not exceed the respective action level for each Hazardous Air Contaminant (HAC). The six compounds are classified as Category I HACs. Averaging time for Category I and II compounds is 8760 hours per year. Category III averaging times based on actual operating hours of 100 hours per year. The new proposed allowable monthly pouring volumes are less than the allowable daily limits summed over a month.

IV. APPLICABLE REQUIREMENTS

These requirements include state and federal regulations, state statutes and the federal Clean Air Act. Applicable federal regulations may include Federal New Source Performance Standards (NSPS) or National Emission Standards for Hazardous Air Pollutants (NESHAP) found in Title 40 of the Code of Federal Regulations Parts 60, 61, and 63. The applicable requirements and the Agency's findings are presented

below. Applicability of §5-261 (Control of Hazardous Air Contaminants) is discussed separately under Section VII below.

A. Vermont Air Pollution Control Regulations and Statutes

§5-211(2) - Prohibition of Visible Air Contaminants - Installations constructed subsequent to April 30, 1970.

The Facility was constructed subsequent to April 30, 1970 therefore these emission standards apply to all installations at the Facility. The applicant is expected to comply with these emission standards based on proper equipment design, operation and maintenance.

The Agency will assess compliance with these emission standards in the future during any inspections of the Facility. The inspections will include confirmation of the proper operation and maintenance of equipment and any required air pollution control devices and visual observations of emission points.

§5-221(1)(a) - Prohibition of Potentially Polluting Materials in Fuel (sulfur limit in fuel).

This regulation applies to the Facility's boiler, hot water tank and make-up air heater. The applicant is expected to comply with this regulation based on the use of either LPG or natural gas. Both LPG and natural gas, by their official fuel specification definitions, do not exceed two (2) percent sulfur by weight.

The Agency will assess compliance with this regulation in the future during any inspections of the Facility. The inspections will include confirmation of the use of a proper fuel and review of fuel delivery certifications.

§5-231(3)(a) - Prohibition of Particulate Matter; Combustion Contaminants.

Compliance with this emission standard shall be determined in accordance with Title 40 Code of Federal Regulations Part 60, Appendix A, Reference Method 5 or an alternative method approved in writing by the Agency.

This regulation applies to the Facility's boiler, the hot water tank and the make-up air heater. Each unit and its respective emission limit are outlined in Table 4-1 below.

Table 4-1: Fuel Burning Equipment Particulate Matter Emission Limits

Equipment	Heat Input, MMBtu/hr	Fuel Type	Applicable Regulation	Emission Limit	
				Lb/MMBtu	Lb/hr
Boiler	1.8	Natural Gas/LPG	§5-231(3)(a)(i)	0.5	0.9
Hot Water Tank	0.075		§5-231(3)(a)(i)	0.5	0.03
Make-up Air Heater	0.22		§5-231(3)(a)(i)	0.5	0.11

The Agency will assess compliance with these emission standards in the future during any inspections of the Facility. The inspections will include confirmation of the proper operation and maintenance of the fuel burning equipment and any required air pollution control devices and visual observations of the stack exhaust.

§5-241(1) and (2) - Prohibition of Nuisance and Odor.

Based on the application submittal and information available to the Agency, the Facility is currently in compliance with this regulation. The Agency will assess compliance with these emission limitations in the future during any inspections of the Facility.

§5-271 – Control of Air Contaminants from Stationary Reciprocating Internal Combustion Engines.

The Facility is currently in compliance with this regulation. The Facility at this time does not operate any internal combustion engines on-site.

§5-403 - Circumvention.

Based on the application submittal and information available to the Agency, the Facility is currently in compliance with this regulation.

Subchapter VIII - Registration of Air Contaminant Source.

The applicant is currently in compliance and has been registering its emissions with the Agency annually.

B. Federal Air Pollution Control Regulations and the CAA

Section 111 of the Clean Air Act - New Source Performance Standards (NSPS). NSPSs are promulgated under Title 40 of the Code of Federal Regulations ("40 C.F.R.") Part 60. No NSPSs currently apply to the Facility.

Section 112 of the Clean Air Act - National Emission Standards for Hazardous Air Pollutants (NESHAPs). NESHAPs are promulgated under 40 C.F.R. Part 61 and Part 63.

No NESHAPs currently apply to the Facility.

V. CONTROL TECHNOLOGY REVIEW, MAJOR SOURCES AND MAJOR MODIFICATIONS

Pursuant to §5-502 of the Regulations each new major source and major modification must apply control technology adequate to achieve the Most Stringent Emission Rate ("MSER") with respect to those air contaminants for which there would be a major or significant emission increase, respectively. The proposed project is designated as a non-major modification of a stationary source and therefore is not subject to MSER review under §5-502 of the *Regulations*.

VI. AMBIENT AIR QUALITY IMPACT EVALUATION

The Agency's implementation procedures concerning the need for an ambient air quality impact evaluation under §5-501 of the *Regulations* specifies that such analyses shall be performed when projects result in allowable emissions of 10 tpy or more of any air contaminant, excluding VOCs. Air quality impact evaluations are not required by the Agency for individual sources of VOCs. The proposed modifications to the Facility are not estimated to produce greater than 10 tpy of any non-VOC air contaminant. Therefore, an impact evaluation was not necessary to assess compliance with the ambient air quality standards. The Agency has previously established that increases in emissions of less than 10 tpy do not pose a threat to the ambient air quality standards, nor are they expected to significantly deteriorate existing air quality.

VII. HAZARDOUS AIR CONTAMINANTS

Applicability of Section 5-261 of the *Regulations* is based on a comparison of the actual emissions of hazardous air contaminants (HACs) with their respective Action Levels (ALs). A source is subject to Section 5-261 of the *Regulations* if any HAC emission rate exceeds its respective AL. Emission rates have been developed through the relationship developed for Stanford University as described previously in Section II. As previously described above in Section II, a unit emission rate was calculated for each HAC assuming one gallon of each chemical is poured over an eight-hour day. The unit emission rate can then be multiplied by the daily pouring volume to determine daily emissions of each chemical.

In order to determine whether any action levels are likely to be exceeded, a "Maximum Daily Pouring Volume" was calculated for each HAC in Table 7-1 below by dividing the AL of each chemical by its respective unit emission rate. These volumes represent the volumes of each chemical that, hypothetically, would have to be poured during an 8-hour day in order to equal the respective AL.

Since the original determination, the Agency has determined that the six chemicals that historically required low pouring volumes in order to keep emissions below their ALs (listed in Table 3-1) are listed as Category I pollutants. As a result, their emissions can be averaged over an annual period of 8760 hours per year instead of actual pouring hours. Using an averaging time of 8760 hours per year indicates that all respective action levels for the six Category I pollutants will not be exceeded with the new proposed monthly pouring volumes.

For these six chemicals, a "Maximum Monthly Pouring Volume" was calculated and is presented below in Table 7-1. These monthly values were calculated by multiplying the "Maximum Daily Pouring Volume" by 20 operating days per month. Table 7-1 summarizes unit emission rates of HACs along with their respective ALs, maximum daily pouring volumes and maximum monthly pouring volumes for the six chemicals listed in Table 3-1 above. Note that the monthly limits outlined in Table 3-1 above are less than the maximum monthly pouring limits presented below in Table 7-1.

Table 7-1: Allowable Emissions of Hazardous Air Contaminants

Chemical	CAS Number	Action Level, lb/8-hr	Molecular Weight, grams/mol	Vapor Pressure, mmHg	Unit Emission Rate, lb/gal	Max Daily Pouring Vol, gal	Max Monthly Pouring Vol, gal
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Chemical	CAS Number	Action Level, lb/8-hr	Molecular Weight, grams/mol	Vapor Pressure, mmHg	Unit Emission Rate, lb/gal	Max Daily Pouring Vol, gal	Max Monthly Pouring Vol, gal
HALOGENATED (20 gal/wk)							
*Chloroform	67-66-3	0.0034	119.3779	159	0.071	-	1.0
Chlorobenzene	108-90-7	69.10	112.5585	8.8	0.004	18,578	-
1,1,1-Trichloroethane	71-55-6	7980	133.4047	100	0.050	159,302	-
*Trichloroethylene	79-01-6	0.034	131.3889	58	0.029	-	23.8
*Ethylene Dichloride	107-06-2	0.003	98.9596	62	0.023	-	2.6
*Methylene Chloride	75-09-2	0.16	84.9328	350	0.112	-	28.7
Tetrachloroethylene	127-18-4	0.033	165.834	18.9	0.012	3	-
o-Dichlorobenzene	95-50-1	126	147.0036	1.2	0.001	190,218	-
FLAMMABLE LIQUIDS (55 gal/wk)							
Kerosene	8008-20-6	2650	170	1	0.001	4,151,332	
*Benzene	71-43-2	0.0096	78.1134	95.2578	0.028	-	6.9
n-Hexane	110-54-3	223	86.1766	130	0.042	5,301	-
Phenoxyethanol	122-99-6	4.20	138.1658	0.03	0.000	269,847	-
Cyclohexane	110-82-7	441	84.1608	95	0.030	14,689	-
Naphthalene	91-20-3	10	128.1732	0.05	0.000024	415,550	-
Acetaldehyde	75-07-0	75.6	44.053	755	0.125	605	-
Xylenes	1330-20-7	86.30	318.501	5.85	0.0070	12,335	-
Methyl Ethyl Ketone	78-93-3	248	72.1066	78	0.021	11,743	-
Toluene	108-88-3	464	92.1402	21.86	0.008	61,349	-
Acetone	67-64-1	7480	58.0798	181	0.039	189,491	-
Acetic Acid	64-19-7	10.5	60.0524	11	0.002	4,233	-
n-Amyl Acetate (mixed isomers)	628-63-7	2230	130.1864	4	0.002	1,140,433	-
Acetonitrile	75-05-8	294	41.0524	73	0.011	26,126	-

Chemical	CAS Number	Action Level, lb/8-hr	Molecular Weight, grams/mol	Vapor Pressure, mmHg	Unit Emission Rate, lb/gal	Max Daily Pouring Vol, gal	Max Monthly Pouring Vol, gal
t-Butyl Alcohol	75-65-0	126	74.1224	31	0.009	14,603	-
Acrylamide	79-06-1	0.00083	71.0786	0.007	0.000	444	-
Isopropyl Alcohol	67-63-0	4120	60.0956	33	0.007	553,262	-
Ethyl Acetate	141-78-6	5880	88.106	76	0.025	233,856	-
*Aniline	62-53-3	0.00083	93.128	0.6	0.00021	-	79.1
VM & P Naptha	8032-32-4	167	114	10	0.004	39,012	-
Methyl Alcohol	67-56-1	322	32.042	16.8	0.002	159,301	-
Tetrahydrofuran	109-99-9	731	72.1066	162.16	0.044	16,649	-
Ethyl Alcohol	64-17-5	2330	46.0688	57.7547	0.0100	233,213	-
ACIDS (20 gal/wk)							
Phosphoric Acid	7664-38-2	4.20	97.9951	2.2	0.001	5,188	-
Sulfuric Acid	7664-93-9	1.20	98.0734	none	none	unlimited	-
Hydrochloric Acid	7647-01-0	0.87	36.4609	88 (@-115.5 °C)	0.029	30	-
WATER BASED & NON-RCRA (55 gal/wk)							
Ethylene Glycol	107-21-1	53	62.0682	0.06	0.0000140	3,790,059	-
Formaldehyde	50-00-0	0.0066	30.0262	1.3	0.0002	45	-
Glutaraldehyde	111-30-8	340	100.117	0.6	0.000	1,507,337	-
Dimethylformamide	68-12-2	13	73.0944	2.6	0.00071	18,217	-
dimethyl sulfoxide	67-68-5	290	78.1288	0.46	0.00013	2,148,916	-
ALKALINE (20 gal/wk)							
Potassium Hydroxide	1310-58-3	0.84	56.0973	none	none	unlimited	-
Sodium Hydroxide	1310-73-2	0.84	39.99707	none	none	unlimited	-
Ammonium hydroxide (29% NH4)	1336-21-6	75.6 (AL of NH4)	35.0456	-	0.05 (of NH4)	1,500	-

Note that the following chemicals that are poured at the Facility were excluded from this analysis because they

are not classified as HACs: trifluoromethane, dichlorophenol, trichloroacetic acid, trifluoroacetic acid, petroleum distillates, hematoxylin, oil, methyl formate, EDTA, photo chemicals (acetic acid based, hydroquinone based and sodium hydroxide based), dichloroacetic acid, ethidium bromide and ferric chloride. Due to lack of data, emissions of ammonium hydroxide (which contains 29% ammonia) were assumed to be emissions of pure ammonia (i.e. 1 gallon of ammonia poured per day instead of 1 gallon of ammonium hydroxide).

Provided that the daily and monthly pouring volumes, where applicable, are kept below their respective maximum levels, the ALs will not be exceeded. Keeping the pouring volumes below the maximum levels will be easily achieved considering the expected weekly pouring volumes listed in Table 2-1. Further, the estimated emissions of HACs from the UVM ESF will be below their respective ALs and further review under Section 5-261 of the *Regulations* is not required for this Facility at this time.