DEPARTMENT OF ENVIRONMENTAL QUALITY

WATER DIVISION

MEMORANDUM

P. O. Box 10009 Richmond, VA 23240-0009

SUBJECT: Water Division Guidance Memo No. 95-010
VPA Permit Application Forms Revision

TO: Regional Directors

FROM: Larry G. Lawson, P.E.

DATE: November 6, 1995

COPIES: Regional Permit Managers, Martin Ferguson, Cal Sawyer (VDH), Russ Perkinson (DCR), Carter Smith (VDACS), Eldridge R. Collins (VPI-Extension Service)

This memo is to transmit a copy of the revised VPA permit application forms to the regions. The purpose of this revision is to reflect the following changes made recently to the VPA permit program:

1. Elimination of the Local Government Ordinance Form (LGOF) requirement in the process of the individual VPA permits.

2. Elimination of the definition for "Delegated Facilities" and "Non-Delegated Facilities".

3. Change of the definition for "Frequent Application" and "Infrequent Application".

4. Update of the addresses for the VDH, DCR and DEQ's Regional Offices.

5. Elimination of the "Calcium Carbonate Equivalence" as a separate parameter in accordance with the OWRM Guidance Memo No. 94-012, dated October 20, 1994.

You may find the electronic copy of the application forms in the K:\agency\owps\vpa\app file. The regional office is responsible for producing additional copies of these forms. The documents are formatted in Word Perfect 5.1 to print on a HP LaserJet 4Si printer. Due to the inconsistencies among printers and font settings, it may be better to produce copies from the attached hard copy.

VIRGINIA POLLUTION ABATEMENT

PERMIT APPLICATION

GENERAL INSTRUCTIONS

Department of Environmental Quality

GENERAL INSTRUCTIONS

The following is designed to provide the applicant information regarding the requirements for obtaining a VPA Permit and guidance for the preparation of the application. The VPA application is comprised of four parts (Forms A-D) to be submitted in accordance with the following instructions:

1. **Form A** must be submitted when an owner makes application to the Department of Environmental Quality (hereinafter referred to as "DEQ") for approval of any facilities for the management of pollutants which will not be discharged to surface waters.

2. The following forms must also be completed, as applicable, based on the type of pollutants being managed:

   FORM B: Animal Waste
   FORM C: Industrial Waste
   FORM D: Municipal Waste

A preliminary meeting may be arranged prior to completing any part of the application before the application is submitted to DEQ's Regional Office for review. The applicant is advised to contact the Regional Office to determine if a meeting is necessary. DEQ's staff will advise the applicant of a suitable date for the meeting, and what general information will be discussed. After the preliminary meeting, DEQ's staff will advise the applicant which forms must be completed. In some cases, it may be necessary for the applicant to complete Form A before DEQ's staff can determine what additional forms will be necessary.

DEQ reserves the right to request additional information such as groundwater monitoring plans, background monitoring data, sampling regimes, etc., not directly addressed by the applications, if, in its discretions a facility or operation poses a potential impact on water quality.

LIST OF ACRONYMS

AW	*Animal Waste*
CEC	*Cation Exchange Capacity*
CCE	*Calcium Carbonate Equivalency*
CFR	*Code of Federal Regulations*
CWA	*The Clean Water Act, as amended (The Act)*
DEQ	*Department of Environmental Quality*
DSWC	*Department of Soil and Water Conservation*
DWM	*Department of Waste Management*
EPA	*U.S. Environmental Protection Agency*
FO	*Field Office*
MBAS	*Methylene Blue Active Substances*
NDC	*No Discharge Certificate*
NMP	*Nutrient Management Plan*
O&M	*Operations and Maintenance*
PAN	*Plant Available Nitrogen*
PCB	*Polychlorinated Biphenyls*
PN	*Public Notice*
POTW	*Publicly Owned Treatment Works*
PVOTW	*Privately Owned Treatment Works*
RO	*Regional Office (ROs, plural)*
SCS	*USDA Soil Conservation Service*
SIC	*Standard Industrial Classification*
STP	*Sewage Treatment Plant*
SWCB	*State Water Control Board*
TOD	*Total Oxygen Demand*
USDA	*U.S. Department of Agriculture*
VDH	*Virginia Department of Health*
VPA	*Virginia Pollution Abatement*
VPI & SU	*Virginia Polytechnic Institute and State University*

GLOSSARY

ACTIVITY - see Facility and Pollutant management activity.

ADMINISTRATIVELY COMPLETE - an application is considered to be administratively complete when it is verified that an original and one copy of the appropriate VPA application forms have been submitted with all necessary blanks accurately filled in and the proper signature applied; and the SCC Certificate and/or the DSWC approved NMP is attached, if respectively required.

AGRONOMIC RATE - the rate of land application of wastewater or waste based upon the Plant Available Nitrogen (PAN) requirement of the crops on site.

ANIMAL UNITS - a means of determining the size of an animal feeding operation (which does not otherwise meet the Concentrated or Intensified criteria) by adding the following numbers:

-1.0 times the number of slaughter and feeder cattle, plus
-1.4 times the number of mature dairy cattle (milking or dry), plus
-0.4 times the number of swine each weighing over 25 kilograms (approx. 55 pounds), plus
-2.0 times the number of horses, plus
-0.1 times the number of sheep or lambs, plus
-the number of turkeys divided by 55, plus
-the number of laying hens or broilers divided by 100, plus
-for each type of animal not listed above, the number of animals confined times their average weight, divided by 1000 pounds.

ANIMAL FEEDING OPERATION - a lot or facility together with any associated treatment works where the following conditions are met:

1. Animals have been, are or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12 month period; and

2. Crops, vegetation forage growth or post harvest residues are not sustained over any portion of the operation of the lot or facility.

Two or more animal feeding operations under common ownership are considered to be a single animal feeding operation if they adjoin each other or if they use a common area or system for the disposal of waters.

ANIMAL SLUDGE MANAGEMENT PLAN - a Nutrient Management Plan (NMP).

CLEAN WATER ACT (CWA) - (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended by Public Laws 95-217, 96-483, 97-117, 33 U.S.C. 1251, et seq.

CONCENTRATED ANIMAL FEEDING OPERATION - an animal feeding operation which requires a treatment works to store wastewater or otherwise prevent a point source discharge of wastewater pollutants to State waters from the animal feeding operation, except in the case of a 25 year-24 hour or greater storm event, and where more than the following number and types of animals are confined:

1. 1,000 slaughter and feeder cattle
2. 700 mature dairy cattle (whether milked or dry cows)
3. 2,500 swine each weighing over 25 kilograms (approximately 55 pounds)
4. 500 horses
5. 10,000 sheep or lambs
6. 55,000 turkeys
7. 100,000 laying hens or broilers
8. 1,000 animal units

CONSENT DECREE - a unilateral instruction by a judge to the parties involved (this may or may not involve DEQ).

CONSENT ORDER - an administrative action of DEQ directed to a permittee.

DRAFT PERMIT - a document indicating the tentative decision to issue, modify or reissue a permit, or revoke an NDC and issue a VPA permit. A notice of intent to deny is a type of draft permit which must follow the same procedures as any draft permit.

FACILITY OR ACTIVITY - any VPA facility (including land or appurtenances thereto) or activity subject to regulation under the VPA program.

FREQUENT APPLICATION - land application of wastewater or sludge in excess of 70% the agronomic rate at a frequency greater than once in a 3 year (1/3) period.

INDUSTRIAL FACILITY - an establishment engaged as an economic unit, generally at a single location, where business is conducted, services or industrial operations performed and in which raw materials are changed into useful products.

INDUSTRIAL WASTE - liquid or other wastes resulting from any process of industry, manufacture, trade or business, or from the development of any natural resources.

INFREQUENT APPLICATION - land application of wastewater or sludge up to the agronomic rate at a frequency of once in a 3 year (1/3) period.

INTENSIFIED ANIMAL FEEDING OPERATION - an animal feeding operation at which treatment works are required to store wastewater or otherwise prevent a point source discharge of wastewater pollutants to State waters from the feeding operation except in the case of a 25 year-24 hour or greater storm event and where less than or equal to 1,000 animal units but more than the following number and type of animals are confined:

1. 300 slaughter and feeder cattle
2. 200 mature dairy cattle (whether milked or dry cows)
3. 750 swine each weighing over 25 kilograms (approximately 55 pounds)
4. 150 horses
5. 3,000 sheep or lambs
6. 16,500 turkeys
7. 30,000 laying hens or broilers
8. 300 animal units

LAND APPLICATION - the introduction of animal waste, wastewaters or sludge into or onto the ground for treatment or reuse.

MUNICIPAL FACILITIES - Publicly Owned Treatment Works (POTW), a house, store, school, subdivision or other entity with a treatment facility that receives and treats wastewater from primarily domestic sources.

MUNICIPALITY - a city, town, county, district, association, authority, other public body created by or under State law and having jurisdiction over disposal of sewage, industrial, or other wastes; an Indian tribe or an authorized Indian tribal organization; a designated and approved management agency under section 208 of CWA.

MUNICIPAL WASTE - effluent or sewage sludge from a municipal facility.

NITROGEN - an element of matter and an essential nutrient often present in wastewater as ammonia, nitrate, nitrite and organic nitrogen.

NON-PROCESS WASTEWATER - water that does not come in contact with products, by-products, waste, or wastewater (e.g. non-contact cooling water).

NUTRIENTS - any substance used by organisms that promotes growth; generally applied to nitrogen and phosphorus in wastewater.

OTHER WASTE - decayed wood, sawdust, shavings, bark, lime, garbage, refuse, ashes, offal, tar, oil, chemicals and all other substances, except industrial wastes and sewage, which may cause pollution in any State waters.

PERSON - any firm, corporation, association or partnership, one or more individuals, or any governmental unit or agency thereof.

PLANT AVAILABLE NITROGEN (PAN) - the amount of nitrogen available to the crop for the current growing season. The PAN is based upon the characteristics of the nitrogen source applied to the crops and the method of application to the cropping site.

pH - a measure of the hydrogen ion concentration in a solution. On the pH scale of 0 to 14, a value of 7 at 25 degrees C represents a neutral condition.

PHOSPHORUS - an element of matter and an essential nutrient found in orthophosphate, pyrophosphate, tripolyphosphate and organic phosphate forms.

POLLUTANT - any substance, radioactive material or heat which causes or contributes to, or may cause or contribute to pollution.

POLLUTANT MANAGEMENT ACTIVITY - any activity under the Law and the Permit Regulation, including storage and recycle, which involves a pollutant and is not a point source discharge to surface waters.

POLLUTION - such alteration of the chemical, physical or biological properties of any state waters as will or is likely to create a nuisance or render such waters (a) harmful or detrimental or injurious to the public health, safety or welfare, or to the health of animals, fish or aquatic life; (b) unsuitable with reasonable treatment for use as present or possible future sources of public water supply; or (c) unsuitable for recreational, commercial, industrial, agricultural, or other reasonable uses.

PRIVATELY OWNED TREATMENT WORKS (PVOTW) - any sewage treatment works not publicly owned.

PROCESS WASTEWATER - any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, by-product or waste product.

PUBLICLY OWNED TREATMENT WORKS (POTW) - any sewage treatment works that is owned by a State or municipality. Sewers, pipes, or other conveyances are included in this definition only if they convey wastewater to a POTW providing treatment.

REISSUANCE - internal Department of Environmental Quality term that refers to the process by which a VPA permit is issued again to the permittee.

REVOCATION - the act of discontinuing the certification of a facility or activity authorized by an NDC. Revocation may require the simultaneous issuance of a VPA permit if the facility or activity is subject to regulation under the VPA program.

SEWAGE - water-carried human wastes from residences, buildings, industrial establishments or other places together with such industrial wastes, underground, surface, storm or other water, as may be present.

SHALL - indicates a mandatory requirement.

SHOULD OR MAY - indicates a recommendation.

STANDARD INDUSTRIAL CLASSIFICATION (SIC) - is the classification of establishments by type of activity in which they are engaged. The SIC codes are listed in the Standard Industrial Classification Manual produced by the federal Office of Management and Budget. All DEQ Regional Offices have a copy of the 1987 edition of this manual.

SUBSURFACE INJECTION - land application of (1) liquid sludge which is injected into the plow layer; (2) sludges incorporated into the soil on the same day of application onto the soil surface.

VIRGINIA POLLUTION ABATEMENT (VPA) PERMIT - a document issued by DEQ pursuant to Permit Regulation which, under prescribed conditions, authorizes the management of pollutants or activities that are not authorized by VPDES Permits. VPA Permits may be issued to authorize land application of wastewater or sludge or the complete reuse and recycling of wastewater.

APPLICATION FORMAT

General

Application for a VPA Permit consists of completion of all appropriate sections of this informational booklet. Omission of requested information in any such section may result in return of the application as incomplete. Insert N/A in all blanks which do not apply.

An application is to be submitted on the forms provided with additional sheets attached, as necessary. Additional sheets should be submitted on pages 8-l/2" x ll" in size. If it is necessary to use larger size papers, they are to be folded to 8-l/2" x ll" with a minimum of fold-ins. Fold-ins from more than one side should be avoided. The size limitation does not apply to construction drawings. Attachments should clearly identify the part/question of the application form to which they pertain.

It is important that drawings, diagrams, charts, maps or other illustrative material be inked, typed, or in the form of clear reproductions made by blueprints (Ozalid, photostat, photographic), or other methods. Reproductions of line drawings should be blackline (that is, positive), and should be clear so further clear reproductions may be made from them. Copies made by Thermo-Fax and other methods using heat for reproductions should be avoided.

When large-size illustrative material is reduced by photostatic or photographic means to 8-l/2" x ll" (with or without fold-in) the reduction shall not be so great that details are difficult to discern by the unaided eye.

Photographs used to illustrate an application should be clear, but even a poor photograph is preferred to lengthy descriptions. Captions should accompany photographs to identify their content.

Each item of illustrative material should be labeled to identify it as part of the application. Pages of both illustrative and written material are to be numbered to facilitate making references to the application, or to sections of it.

The application may be bound either on the left side, or at the top.

Maps

All maps should be clearly legible and of sufficient scale to show the required features with the site boundaries clearly marked. A map scale of l" = 660' is often preferred. Wherever possible, maps should be provided in a booklet form on 8-1/2" x 11" or folded ll" x l7" paper. If different colors are used to depict map features, please provide the required number of colored copies. **A North arrow and map scale must appear on each map.**

The requirement for a site plan map and topographic map may be met with one combined map if the topography of the site is relatively flat and the landscape features can be clearly shown.

The symbols or designators used to show the locations of different landscape features or delineations of different soil series should be as similar to USGS and USDA standards as possible.

APPLICATION SUBMITTAL

All completed applications shall be submitted to the appropriate Department of Environmental Quality's Regional Office (DEQ's RO). In addition, the Virginia Department of Health (VDH) and the Division of Soil and Water Conservation (DSWC) must review copies of applications for certain categories. Use the following chart to determine the number of applications that should be submitted to each agency. **The original application is to be sent to DEQ's RO.**

Category	DEQ's RO	VDH FO	DSWC RO
Industrial Waste	2	0	0
Municipal Waste Effluent/Sewage Sludge Land Application	2	2	0
Animal Waste Other than Conc. Animal Feeding Operations	2	0	0
Animal Waste Conc. Animal Feeding Operations	2	0	1

The addresses for DEQ, VDH and DSWC Regional Offices are attached.

APPLICATION PROCESSING

DEQ's staff shall review the application for completeness. Owners who have failed to submit a complete application, including the LGOF (if required) and other information, will be requested by DEQ's staff, in writing, to furnish such information as is necessary to allow processing of the application. **Processing of the application will be considered incomplete and will be suspended until such information is provided.**

In accordance with DEQ's Permit Regulation, the application shall be public noticed at the owner's expense. Details and guidelines for the public notice appearance will be sent to the owner after the application has been deemed complete by the staff.

The DEQ's RO will recommend approval of the application provided:

(l) Inquiries resulting from Public Notice can be satisfactorily answered by the staff, and

(2) The pollutant management activities proposed are adequate to comply with the Law, Regulations and Virginia's Water Quality Standards.

If the inquires resulting from Public Notice can not be satisfactorily answered by the staff, a public hearing may be necessary and the issuance of the permit will be decided by the seven citizen members of the State Water Control Board.

VIRGINIA DEPARTMENT OF HEALTH FIELD OFFICES

ABINGDON
454 East Main Street
P. O. Box 1985
Abingdon, VA 24210
Telephone: 540/628-5161

CULPEPER
400 South Main Street
Culpeper, VA 22701-3118
Telephone: 540/829-7340

DANVILLE
1347 Piney Forest Road
Danville, VA 24540
Telephone: 804/836-8416

LEXINGTON
131 Walker Street
Lexington, VA 24450
Telephone: 540/463-7136

EAST CENTRAL
300 Turner Road
Richmond, VA 23225
804/674-2880

SOUTHEAST VA
5700 Thurston Avenue
Suite 203
Virginia Beach, VA 23455
Telephone: 804/363-3876

VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF SOIL AND WATER CONSERVATION REGIONAL OFFICES

ABINGDON
P. O. Box 871
252 W. Main Street, Suite 3
Abingdon, VA 24210
Telephone: 540/676-5529

CHASE CITY
411 Boyd Street
Chase City, VA 23924
Telephone: 804/372-2191

DUBLIN
P. O. Box 1506
401 E. Main Street
Dublin, VA 24084
Telephone: 540/831-4008

STAUNTON
Route 4, Box 99-J
Staunton, VA 24401
Telephone: 540/332-9991

SUFFOLK
1548 Holland Road
Suffolk, VA 23434
Telephone: 804/925-2468

TAPPAHANNOCK
P. O. Box 1425
Rappahannock Office Bldg. #6
Granary Road
Tappahannock, VA 22560
Telephone: 804/443-6752

WARRENTON
98 Alexandria Pike
Suite 33
Warrenton, VA 22186
Telephone: 540/347-6420

DEPARTMENT OF ENVIRONMENTAL QUALITY REGIONAL OFFICES

NORTHERN REGIONAL OFFICE
1519 Old Bridge Road, Suite 108
Woodbridge, VA 22192
703-490-8922

SOUTHWEST REGIONAL OFFICE
355 Deadmore Street
P. O. Box 1688
Abington, VA 24212-1688
540/676-4800

VALLEY REGIONAL OFFICE
116 N. Main Street
P. O. Box 268
Bridgewater, VA 22812
540/828-2595

PIEDMONT REGIONAL OFFICE
Innsbrook Corporate Center
P. O. Box 6030
Glen Allen, VA 23058
804-527-5020

TIDEWATER REGIONAL OFFICE
287 Pembroke Office Park
Suite 310 - Pembroke II
Virginia Beach, VA 23462
804/552-1840

WEST CENTRAL REGIONAL OFFICE
3015 Peters Creek Road, N.W.
P. O. Box 7017
Roanoke, VA 24019
703/562-3666

VIRGINIA POLLUTION ABATEMENT

PERMIT APPLICATION

FORM A
ALL APPLICANTS

Department of Environmental Quality

FORM A
INSTRUCTIONS
INFORMATION REQUIRED FOR ALL VPA PERMIT PROPOSALS

All applications submitted for a VPA Permit shall include this form.

1. **FACILITY NAME AND ADDRESS**: The name of the facility managing the waste. Both the mailing address, county, and physical location should be included.

2. **LEGAL NAME OF OWNER**: The legal name of the owner or the company making application for the VPA Permit.

3. **FACILITY CONTACT**: The name, title, address, and telephone number of the individual whom DEQ's staff should contact regarding this application should be furnished. If same as owner, write SAME.

4. **EXISTING PERMITS**: List all environmentally-related permits issued to the facility by listing the issuing agency and permit number. Include an existing VPA permit if your facility has one.

5. **NATURE OF BUSINESS**: Provide a general statement of the type of business conducted at the facility. Industrial facilities are requested to provide applicable Standard Industrial Classification (SIC) Codes. SIC Codes may be obtained from Standard Industrial Classification Manual 1987, published by the Executive Office at the President's Office of Management and Budget. The manual can be found in libraries and each office of the Department of Environmental Quality.

6. **TYPE OF WASTE**: Indicate type of waste(s) handled and whether the facilities are either existing or proposed, or both. Note that the type of waste determines which other VPA application forms must be completed.

7. **GENERAL LOCATION MAP**: The purpose of the map is to allow the DEQ staff to readily find the establishment. This map is to show the general location of the establishment. Applicants should use county or United States Geological Survey quadrangle maps. DEQ's RO can provide information for obtaining such maps.

8. The application must be signed in accordance with DEQ's Permit Regulation (VR680-14-01):

   a. **FOR A CORPORATION**: by a responsible corporate official. For purposes of this section, a responsible corporate official means (1) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or (2) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25,000,000 (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

   b. **FOR A MUNICIPALITY, STATE, FEDERAL OR OTHER PUBLIC AGENCY**, by either a principal executive officer or ranking elected official. (A principal executive officer of a Federal, Municipal, or State agency includes the chief executive officer of the agency or head executive officer having responsibility for the overall operation of a principal geographic unit of the agency).

   c. **FOR A PARTNERSHIP OR SOLE PROPRIETORSHIP**, by a general partner or the proprietor, respectively.

VIRGINIA POLLUTION ABATEMENT PERMIT APPLICATION
FORM A
ALL APPLICANTS

1. Facility Name: _____

   County and Location: _____

   Address: _____

   _____

2. Legal Name of Owner: _____

   Address: _____

   Telephone Number: _____

3. Facility Contact: _____

   Title: _____

   Address: (if different) _____

   Telephone Number: _____

4. Existing permits (e.g., IWND, VPA, NPDES; RCRA; UIC; PSD; other:

Agency	Permit Type	Number
Agency	Permit Type	Number
Agency	Permit Type	Number

5. Nature of Business: _____

   _____

   SIC Code(s): _____; _____; _____

6. Type of Waste:

(check blank as appropriate)	Proposed	Existing
Animal Waste (complete Form B)	_____	_____
Industrial Waste (complete Form C)	_____	_____
Sewage Effluent (complete Form D, Part I)	_____	_____
Sewage Sludge Infrequent Land Application (complete Form D, Part II)	_____	_____
Sewage Sludge Frequent Land Application (complete Form D, Part III)	_____	_____

7. General Location Map:

Provide a general location map which clearly identifies the location of the facility.

I certify under penalty of law that this document and all information submitted 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 information, the information submitted is to the best of my knowledge 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. I further certify that I am an authorized signatory as specified in the Permit Regulation (VR680-14-01).

Signature: _____ Date: _____

Printed Name: _____

Title: _____

VIRGINIA POLLUTION ABATEMENT

PERMIT APPLICATION

FORM B
ANIMAL WASTE

Department of Environmental Quality

VPA FORM B
ANIMAL WASTE
INSTRUCTIONS

This form is to be completed by applicants requesting a VPA permit for Animal Waste management systems. All applicants must submit Part I of Form B. Applicants who will be land applying will be required to submit Part II. You must respond to every item listed on the application form. Those items which do not apply to your farm or business should be marked "Not Applicable". Provide a brief explanation for each "not applicable" response.

Depending on the operation and the information submitted, the Department of Environmental Quality reserves the right to request further information than what is presented in this form. A preliminary meeting with, or phone call to, the local Department of Environmental Quality Regional Office is recommended prior to completing any part of Form B.

The Department of Environmental Quality may require ground water monitoring wells to be installed in some cases in order to obtain a VPA permit. Typically, the Department of Environmental Quality reviews each application to determine whether monitoring wells will be required for a permit at the particular location described in the application.

PART B-I

1. Provide the name of your farm or business as given on Form A line 1.

2. Provide the best time of day to reach you by telephone.

3. List the number and estimate the average weight of each type of your production animals. If you anticipate expanding your operation in the near future, you may want to include an estimate of your animal production goal. Check with the DEQ permit writer assigned to help you. It is not necessary to list animals kept for personal consumption.

4. List any sources of waste solids or liquids which could flow to your lagoon, tank(s) or pit(s). Does any rain water flow into your storage facility? If so, does it carry loafing area wastes, dairy wastes, spilled fertilizer, lime or pesticide?

5. Describe how sewage from employees is handled (i.e., does it go to a septic tank/drainfield, local sanitary sewage system, etc.)

6. The site plan map should show the lay-out of the farm operations and buildings, particularly where manure or other wastes are handled.

   All maps should be neat and legible and of sufficient scale to show the listed landscape features clearly. A map scale of 1:7920 (1 inch = 660 feet) is often preferred. Wherever possible, maps should be provided in a booklet form on 8-1/2 x 11" or folded 11" x 17" paper. You will probably want to use symbols to show the landscape features listed in the application form, in order to make your map more legible. Use USDA-SCS symbols wherever possible and provide a key or legend for the symbols so that the map can be easily read. **The map should also indicate with an arrow which direction is North and contain the scale.**

   The site plan map does not have to include details of the land application sites since this is addressed in Part B-II. You can use one combined map for the topographic map of the land application sites and/or storage facilities if the storage facilities and land application sites are located close together and you can show everything clearly. Don't crowd the map if it's easier and neater to show the site on two maps.

7. Please indicate the type, number and volume of waste treatment, holding or storage facilities at your operation. Please also indicate if the facility is proposed or existing.

8. All waste treatment, holding and storage facilities and all land application sites must be approved by the Department of Environmental Quality. If the existing facilities have not been approved, it will be necessary to submit the information listed in items 10 and 11. It is also suggested that you discuss this matter with your permit writer from the Department of Environmental Quality Regional Office before completing this section.

9. If previously approved facilities have been expanded, items 10 and 11 must be completed for approval of the expanded unit(s) as required by the application and instructions.

10. The local Soil Conservation Service or your local Cooperative Extension Service may be able to assist you in completing this section.

    CONCEPTUAL DESIGN: Waste management facilities require technical expertise in the planning, design and construction phases of the project to insure that 1) the facility will meet the operational needs of the owner, 2) the facility is structurally sound the treatment system meets all necessary regulatory requirements. Detailed discussion of plans and specifications for the structural stability of the treatment works are beyond the scope of these instructions. Such expertise is available to owners through the local office of the Soil Conservation Service, private engineering firms and Virginia universities. It should be reemphasized that the structural integrity of all facilities is the responsibility of the owner.

    Applicants shall provide design information and/or calculations such as capacities, construction materials, flow directions, loading rates and water balance figures for the waste management structure and any associated piping and pumps. The following areas should be considered in preparing the conceptual design.

    STORAGE/TREATMENT FACILITY CAPACITY: Facilities must be designed and operated to prevent point source discharge of pollutants to State waters except in the case of a 25 year-24 hour or greater storm event.

DEQ requires storage capacity be sufficient to ensure that wastes do not have to be applied to the land when the ground is ice or snow covered, too wet or during periods when fields are unavailable for waste utilization because of the cropping plan. A minimum 60-day storage capacity for wastewater or sludge is recommended to be designed into all pollution abatement facilities.

DEQ suggests that the storage facilities have a 2 ft. freeboard at all times. The above minimum storage capacity should exclude the volume devoted to the 2 ft. of freeboard.

LINER DESIGN: If SCS was consulted in the design of the storage facility (lagoon), please submit the lagoon and liner specifications recommended by SCS.

Concentrated animal operations and new or proposed intensified animal operations must have storage facilities and treatment works designed and operated to ensure compliance with the provisions of the Water Quality Standards for ground water. It is suggested that liners be installed in earthen storage facilities located in rapidly permeable soils (> 2.0 in/hr) or where Karst geology or shallow and fractured rock is encountered.

DEQ requires lagoon liners to have a maximum coefficient of permeability of 1×10^{-6} cm/sec. It is recommended that soils used as liners be capable of achieving a maximum coefficient of permeability of 1×10^{-7} cm/sec or less. Total soil liner thickness should be one foot after compaction of two separate lifts of equal thickness. Synthetic liners should be a minimum of 20 mil. thickness and be appropriately protected from puncture both below and above the liner.

A 2-foot separation distance between the facility bottom and the seasonal high water table is recommended.

FLOOD POTENTIAL: DEQ recommends that waste storage structures not be located on a floodplain unless protected from inundation or damage by a 100-year frequency flood event. Consult your local county zoning/planning office for information on flood plain locations and flood protection options. Such information may be available upon request.

11. Accurate estimates of storm water volumes are necessary to calculate properly sized waste holding and treatment facilities. Wastewater from contaminated storm water inputs to the waste storage facilities must also be considered, i.e., rainfall on to the facility surface and runoff from the surrounding roof and guttering systems. Provide the dimensions and area (ft^2) contributing storm water to waste holding facilities.

12. Please provide the name, date, and telephone number of the organization that designed your existing and or proposed in some instances this may be the owner of the facilities. If additional space is needed, please provide an attachment.

13. If you plan to empty a lagoon, manure pit or any other type waste storage facility by applying the waste to the land, you must show that the nutrients contained in the waste will be used properly for crop production by completing form B-II.

14. If your farm or business meets the criteria for a Concentrated Animal Feeding Operation, you must provide a copy of an approved Department of Conservation and Recreation Division of Soil and Water Conservation (DSWC) Nutrient Management Plan and a list or statement of any animal feed additives which may affect the quality of the waste produced or handled.

PART B-II

1. The land application topographic map should show the fields where manure, pit waste or lagoon wastewater will be applied. All maps should be neat and legible and of sufficient scale to show the listed landscape features clearly. A map scale of 1:7920 (1 inch = 660 feet) is often preferred. You will probably want to use symbols to show the landscape features listed in the application form, in order to make your map more legible. Use USDA-SCS symbols wherever possible and provide a key or legend for the symbols so that the map can be easily read.

   You can use one combined map for the topographic map of the land application sites and/or storage Facilities if the storage facilities and land application sites are located close together and you can show everything clearly. Don't crowd the map, if it's easier and neater to show the site on two maps.

2. List the crops you grow during your normal rotation, the approximate acreages of each crop throughout the seasons and the productivity group assigned to the land application fields for those crops. Productivity groups as assigned by the Virginia Cooperative Extension Service are based on expected crop yield for various soil types and should not be confused with capability classes used by SCS. Use only VPI & SU productivity groups.

3. Indicate your method of removing waste from the manure pit, lagoon or other storage facility and your method and equipment for land application.

4. How will you land apply the waste?

5. If the you do not own the land on which the waste will be applied, complete item 6. If you own the land for the waste application, skip item 6.

6. **OWNERS NAME AND ADDRESS**: Provide the name, address and telephone number of the land owner (if not the applicant). The land owner must sign the authorization for land application before the application is considered complete. A separate approval will be required for each different land owner or joint owner's.

7. Contact the USDA-SCS for assistance.

VIRGINIA POLLUTION ABATEMENT PERMIT APPLICATION

FORM B

ANIMAL WASTE

PART B-I General Information and Storage Facilities

1. Facility Name:_____

2. Best time to contact owner/facility operator (day time):
_____

3. From the list below, indicate the maximum number and average weight of type of animal which will be maintained on your farm:

Animal Type	Maximum Number	Average Weight
Dairy Cattle	_____	_____
Beef Cattle	_____	_____
Swine		
Nursery pig	_____	_____
Growing pig	_____	_____
Finishing pig	_____	_____
Gestating sow	_____	_____
Sow and litter	_____	_____
Boar	_____	_____
Sheep or lambs	_____	_____
Chicken		
Layers	_____	_____
Broilers	_____	_____
Turkey	_____	_____
Horse		
Other_____	_____	_____
_____	_____	_____
_____	_____	_____

4. List waste other than manure (e.g., wash down or dairy parlor waste) which may be discharged to the storage facility:

Type of Waste	Flow (gal/day) or	Volume (ft3/day)
Dairy Wastes		
Bulk Tank		
Automatic	_____	_____
Manual	_____	_____
Pipeline		
In parlor	_____	_____
Pail Milkers	_____	_____
Cow Prep		
Automatic	_____	_____
Manual	_____	_____
Parlor Floor	_____	_____
Milkhouse Floor	_____	_____
All Other Wastes		
Wash-Down Water	_____	_____
Litter	_____	_____
Process Water Excess	_____	_____
Loafing/Feeding Areas	_____	_____
Other_____	_____	_____
_____	_____	_____
_____	_____	_____

5. Explain how sewage from employees is handled.

6. Provide a site plan (map) for entire animal feeding operation which clearly identifies the following structures and landscape features:

   a. *Waste storage facilities*
   b. *Holding ponds*
   c. *Animal houses and/or open lots where animals are kept (specify type for each facility, e.g. house, feed lot, barn, etc.)*

d. *Piping to/from waste storage facilities*
e. *Land application sites adjacent to facility*
f. *Drainageways (e.g. ditches, swales)*
g. *Rock outcrops*
h. *Sink holes*
i. *Drinking water wells and springs*
j. *Monitoring wells (provide identification number)*
k. *Property lines*
l. *Roadways (route number)*
m. *Occupied dwellings*
n. *Slopes (greater than 8% by slope class)*
o. *Wet spots*
p. *Severe erosion*
q. *100-year flood plain (provide elevations, if available)*
r. *Surface waters*

7. Indicate the number and type of waste storage facilities.

No.	Existing	Proposed	Total Volume (ft^3)
___ Earthen Storage Pond	_____	_____	_____
___ Storage Pit	_____	_____	_____
___ Storage Tank	_____	_____	_____
___ Anaerobic Lagoon	_____	_____	_____
___ Other_____	_____	_____	_____

8. Have the existing storage/treatment facilities identified in Part B-I.7 above been previously approved by the Department of Environmental Quality? Yes_____ No_____

   If yes, provide the date of the certificate or permit _____, and proceed to Item 9.

   If no, was SCS involved in the design? Yes_____ No_____. Proceed to Item 10.

9. Have the previously approved facilities been altered or expanded? Yes_____ No____.

   If yes, complete Item 10. If no, proceed to Item I2.

10. The following information must be provided for each of the facilities identified as either proposed in Part B-I.7 and/or existing in Parts B-I.8 and 9 which have not been either previously approved or were altered.

    a. *Design calculations for volume (ft^3) and estimated days of storage*
    b. *Description of liner material and permeability*
    c. *Plan and cross-sectional views*

d. Depth to seasonal high water table and separation to permanent water table
e. Elevation of the lowest point of the berm
f. Soil types in area surrounding storage facility
g. Estimate of direction of ground water movement in area near storage facility (this may be done on site map)

11. Will the proposed or existing storage facilities receive any storm water runoff? _____Yes _____No.

    If yes, provide total area (square feet, acres, etc.) from which runoff will occur and indicate this area on the site map (Item 6).

    Total area: _____
    Dimensions: _____

12. Waste storage facilities designed by:

    Name: _____
    Date: _____
    Organization: _____
    Telephone: _____

13. Will any part of the waste generated at your facility be land applied? Yes_____ No_____. If yes, Part B-II must be completed. If no, explain.

    _____
    _____
    _____
    _____
    _____
    _____
    _____
    _____
    _____
    _____

14. "Concentrated Animal Feeding Operations" must provide a Nutrient Management Plan" which has been reviewed and approved by the Division of Soil and Water Conservation.

    See the **Glossary** for a definition of "Concentrated Animal Feeding Operation" and the Instructions for Form B for details on these and other requirements specific to them.

VIRGINIA POLLUTION ABATEMENT PERMIT APPLICATION

FORM B

ANIMAL WASTE

PART B-II Land Application and Waste Handling Procedure

Facility Name:_____

1. For each land application site provide a topographic map of sufficient scale clearly showing the location of the following features within 0.25 mile of the land application site(s).

   Provide a legend with approximate scale.

   a. Drainageways
   b. Rock outcrops
   c. Sink holes
   d. Drinking water wells and springs
   e. Monitoring wells
   f. Property lines
   g. Roadways
   h. Occupied dwellings
   i. Slopes (greater than 8% by slope class)
   j. Wet spots
   k. Severe erosion (SCS designation)
   l. Frequently flood soils (SCS designation)
   m. Surface waters

2. Describe the crop(s) to be grown and the approximate area used to grow each crop. (The Extension Service may provide VPI-SU Soil Productivity Groups.) Attach an additional page if more spaces are required.

Field Identification Number	**Crop**	**Area (Acres)**	**Soil Productivity Groups**
	TOTAL:		

3. a. Waste and/or wastewater will be removed from the storage facility by:
_____Pump _____Loader Other_____

b. Describe how wastes will be transported to application sites.

_____
_____
_____
_____
_____
_____
_____

4. Waste and/or wastewater will be land applied by: ____ Liquid or Solid Spreader
____ Soil Injection ____ Sprinkler Irrigation ____ Other_____

5. Are the land application sites owned by the applicant? Yes_____ No_____.

If No, answer question 6 and have each land owner complete the authorization form on Page B-II-3.

6. Complete page B-II.3 by providing the name, address, site location and signature of each non-applicant land owner on whose property animal waste for this facility will be applied. (A separate approval is required for each additional owner.):

7. Provide a soil survey map, preferably photographically based, with the field boundaries clearly marked. (A USDA-SCS soil survey should be provided, if available.)

Provide a detailed legend for each soil survey map which uses accepted USDA-SCS descriptions of the typifying pedon for each soil series (soil type). Complex associations may be described a a range of characteristics. Soil descriptions shall include as a minimum the following information.

a. Soil symbol
b. Soil series, textural phase and slope class
c. Depth to seasonal high water table
d. Depth to bedrock
e. Estimated productivity group (for the proposed crop rotation)

AUTHORIZATION TO LAND APPLY WASTE
(Land Owner must sign and date this approval)

As land owner, I authorize _____ to land apply animal waste to my property in accordance with paragraphs Part B-II.1 through 7 above. This authorization will remain in effect until such time as I notify the Department of Environmental Quality in writing that this authorization has been withdrawn.

Name: _____

Telephone: _____

Site Location(s): _____

Date: _____

Signature: _____

VIRGINIA POLLUTION ABATEMENT

PERMIT APPLICATION

FORM C
INDUSTRIAL WASTE

Department of Environmental Quality

VPA FORM C
INDUSTRIAL WASTE
INSTRUCTIONS

This form is to be completed by applicants requesting a VPA permit for industrial waste management systems. All industrial applicants must submit Part I of Form C. Part II must be submitted by applicants who use land application treatment systems for wastewater or sludge. In addition, certain industrial categories may be required to submit more information than this application requests. A preliminary meeting with the local DEQ Regional Office is recommended prior to completing any part of Form C.

PART C-I

1. **FACILITY NAME**: Name as given on Form A line 1.

2. **SOURCE OF WASTE**:

   a. The applicant should supply a short description of the specific manufacturing operation at the facility.

   b. A line drawing, in block diagram form, is to be furnished. Show the various steps or units of the manufacturing or processing operations, all points where industrial wastes or other wastes are produced, the volume of wastes generated at each location, and their method of disposal. List raw materials and show the points where they enter the process. Finished products and the points where they emerge from the process are also to be shown.

   c. Describe how sewage from employees is handled. (i.e., does it go to a septic tank/drainfield, local sanitary sewerage system, etc.).

   d. In the space provided, show the maximum and average hours/day and days/week of operation and the specific months of operation.

3. **NON-HAZARDOUS DECLARATION**: All industrial facilities must sign this declaration in order for the application to be complete. The signature must be in accordance with DEQ's Permit Regulation. The applicant should evaluate waste characteristics as required by Federal and State Regulations to determine if it is hazardous or non-hazardous (TCLP or other tests required by Department of Environmental Qualtiy). If identified as hazardous, it should be processed as a hazardous waste according to the requirements of RCRA and State Regulations through the Department of Environmental Quality.

4. **WASTE CHARACTERIZATION**: Waste characterization applies to waste being removed from the waste management system. For land application operations, analysis should be conducted on waste to be land applied. For proposed operations, estimates may be used based on the characteristics of similar facilities. Provide the references to identify the similar facility.

   The applicant is required to test for all parameters listed in 4.a. and/or 4.b., whichever group of parameters are appropriate. Should you feel that any of the required parameters are not appropriate for your operation, you may request in writing that the testing requirement be waived. The letter should accompany the VPA application when a submission is made. It must be pointed out that your waiver request should be reviewed with a DEQ Regional Office permit writer before the waiver is requested. Enough information must be available on characteristics of the waste to support issuance of the VPA permit. If the waiver request is denied, then the entire application package will be returned incomplete.

   DEQ places great importance on waste characterization. In Item 4.c., the applicant is requested to indicate if a parameter (not listed in 4.a. and/or 4.b.) is believed present or absent. If believed present, at least one analysis should be conducted. If the application is for both wastewater and sludge, make an additional copy of Part 4.c and answer for both.

   If the application is for a waste management system that uses recycling, the waste characterization may be substituted by supporting documentation, for example, MSDS sheets.

5. **POLLUTANT MANAGEMENT FACILIITES**: Provide a detailed flow chart in block diagram form showing the interrelation of all the treatment facilities. Include handling, treatment storage and disposal units in this chart. Recycle systems are also to be included for this application requirement.

   OPERATIONS: Using the above flow diagram as a reference, describe the pollutant management operation of each unit and the system as a whole.

6. Please indicate the type and number of waste treatment units or storage facilities at your operation. Please also indicate if the facility is proposed or existing.

7. All waste treatment, storage facilities and land application sites must be approved by the Department of Environmental Quality. If the existing facilities have not been approved, it will be necessary to submit a conceptual engineering report. It is also suggested that you discuss this matter with a representative of a DEQ Regional Office before submitting the report.

8. If previously approved facilities have been expanded, a conceptual engineering report must be submitted to DEQ for approval for the expanded unit(s) as required by the application and instructions.

9. **CONCEPTUAL DESIGN**: Waste management facilities require technical expertise in the planning, design and construction phases of the project to insure that 1) the facility will meet the operational needs of the owner, 2) the facility is structurally sound and 3) the treatment system meets all necessary regulatory requirements. Detailed discussion of plans and specifications for the structural stability of the treatment works

are beyond the scope of these instructions. Such expertise is available to owners through private engineering firms and Virginia universities. It should reemphasized that the structural integrity of all facilities is the responsibility of the owner.

Applicants should provide design information and/or calculations such as capacities, construction materials, flow directions, loading rates and water balance figures for the waste management structure and any associated piping and pumps. The following areas should be considered in preparing the conceptual design.

STORAGE/TREATMENT FACILITY CAPACITY: Facilities must be designed and operated to prevent point source discharge of pollutants to State waters except in the case of a 25 year-24 hour or greater storm event.

DEQ recommends the storage capacity be sufficient to ensure that wastes do not have to be applied to the land when the ground is ice or snow covered, too wet or during periods when fields are unavailable for waste utilization because of the cropping plan. A minimum 60-day storage capacity for wastewater or sludge is recommended to be designed into all pollution abatement facilities.

DEQ suggests that the storage facilities have a 2 ft. freeboard at all times.

GROUND WATER PROTECTION: Storage facilities and treatment works must be designed and operated to ensure compliance with the provisions of the Water Quality Standards for ground water. DEQ suggests that liners be installed in earthen storage facilities located in rapidly permeable soils (> 2.0 in/hr) or where Karst geology or shallow and fractured rock is encountered.

The Department of Environmental Quality requires lagoon liners to have a maximum coefficient of permeability of 1×10^{-6} cm/sec. It is recommended that soils used as liners be capable of achieving a maximum coefficient of permeability of 1×10^{-7} cm/sec or less. Total soil liner thickness should be one foot after compaction of two separate lifts of equal thickness.

Synthetic liners are preferred and should be a minimum of 20 mil. thickness, appropriate for the type wastewater, and be appropriately protected from puncture both below and above the liner. The liner should clearly be installed according to manufacturers specifications. Such specifications should also include recommendations, if any, for periodically inspecting the integrity of the liner.

A 2-foot separation distance between the facility bottom and the seasonal high water table is recommended.

WASTE VOLUMES: Accurate estimates of waste volumes are necessary to calculate properly sized waste holding and treatment facilities. Wastewater from contaminated storm water inputs to the pollution abatement facilities must also be considered, i.e., rainfall on to the facility surface and runoff from the surrounding roof and guttering systems.

10. **FLOOD POTENTIAL**: DEQ recommends that waste storage structures not be located on a floodplain unless protected from inundation or damage by a 100-year frequency flood event. Consult your local county zoning/planning office for information on flood plain locations and flood protection options. Such information may be available upon request.

11. Storm water runoff may be generated by parking lots, plant roofs or by the surrounding terrain. Proposed or existing facilities should be designed to contain the runoff from a 25 year 24 hour rain storm.

12. **LAND APPLICATION OF WASTES**: Facilities which land apply waste must complete Part C-II.

PART C-II

If instructions beyond those in the form are needed, contact the DEQ Regional Office for assistance.

VIRGINIA POLLUTION ABATEMENT PERMIT APPLICATION

FORM C

INDUSTRIAL WASTE

PART C-I General Information

1. Facility Name: _____

2. Source(s) of Waste

   a. *Provide a narrative which explains your facility operations and how wastes are produced.*

   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____

   b. *Attach a line drawing of the facility in block diagram for showing the manufacturing or processing operations and all points where wastes are produced.*

   c. *Explain how sewage from employees is handled (i.e., septic tank/drainfield,sanitary sewer etc.):*

   _____
   _____
   _____
   _____
   _____
   _____
   _____

d. *Operational Parameters*

Maximum hours/day of operation: _____
Average hours/day of operation: _____
Days/week of operation: _____
Specific months of operation: _____

3. Non-Hazardous Declaration

a. *Statement for Plant Operations*

Is any part of the manufacturing operations, plant processes or waste treatment facilities at these plant facilities under the purview of the "Virginia Hazardous Waste Management Regulations" or the "Virginia Solid Waste Management Regulations?" _____ *Yes* _____*No.*

If Yes, please provide a brief explanation of the type of permit or requirements that apply.

_____
_____
_____
_____
_____
_____
_____
_____

b. *For waste to be land applied, a responsible person, as defined by VR680-14-01, must sign the following statement.*

I certify that the waste described in this application is non-hazardous and not regulated under the Resource Conservation and Recovery Act.

_____**Date**_____
(Signature of Owner)

4. Waste Characterization

a. Wastewater - Provide at least one analysis for each parameter. Upon review, additional analyses may be required by DEQ.

Parameter	Concentration	
Flow to treatment	_____	MGD
Flow to storage	_____	MGD
Vol. to treatment	_____	MG
Vol. to storage	_____	MG
Vol. Land applied	_____	MG/year
BOD_5	_____	mg/l
COD	_____	mg/l
TOC	_____	mg/l
TSS	_____	mg/l
Percent Solids	_____	%
pH	_____	S.U.
Alkalinity as $CaCO_3$	_____	mg/l
Nitrogen, (Nitrate)	_____	mg/l
Nitrogen, (Ammonium)	_____	mg/l
Nitrogen, (Total Kjeldahl)	_____	mg/l
Phosphorus, (Total)	_____	mg/l
Potassium, (Total)	_____	mg/l
Sodium	_____	mg/l
	_____	mg/l

b. Sludge - Provide at least one analysis for each parameter. Upon review, additional analyses may be required by DEQ.

Parameter	Concentration*	
Percent Solids	_____	%
Volatile Solids	_____	%
pH	_____	S.U.
Alkalinity as $CaCO_3$**	_____	mg/kg
Nitrogen (Nitrate)	_____	mg/kg
Nitrogen (Ammonium)	_____	mg/kg
Nitrogen (Total Kjeldahl)	_____	mg/kg
Phosphorous (Total)	_____	mg/kg
Potassium (Total)	_____	mg/kg
Lead	_____	mg/kg
Cadmium	_____	mg/kg
Copper	_____	mg/kg
Nickel	_____	mg/kg
Zinc	_____	mg/kg
	_____	mg/kg

* Unless otherwise noted, report results on dry weight basis.

** Lime treated sludges (l0% or more lime by dry weight) should be analyzed for percent $CaCO_3$.

c. *Provide a separate waste characterization listing for each wastewater and sludge generated at the facility. Insert "Yes" beside all parameters believed present and provide at least one analysis for each. Insert "No" beside all parameters believed not present. Indicate "NA" for any parameter already addressed in Item 4a. or 4b.*

Parameter	Believed Present (yes or no)	Concentration*
Sodium		
Bromide		
Total Residual Chlorine		
Fecal Coliform		
Fluoride		
Oil & Grease		
Total Radioactivity		
Total Alpha		
Total Beta		
Total Radium		
Total Radium 226		
Sulfate (as SO_4)		
Sulfide (as S)		
Sulfite (as SO_3)		
Surfactants		
Total Aluminum		
Total Barium		
Total Boron		
Total Cobalt		
Total Iron		
Total Magnesium		
Total Molybdenum		
Total Manganese		
Total Tin		
Total Titanium		
Total Antimony		
Total Arsenic		
Total Beryllium		
Total Cadmium		
Total Chromium		
Total Copper		
Total Lead		
Total Mercury		
Total Nickel		
Total Selenium		
Total Silver		
Total Thallium		
Total Zinc		
Total Cyanide		
Total Phenols		
Dioxin		
Acrolein		

*If the analysis is for sludge, report results on dry weight basis.

c. (Continued)

Parameter	Believed Presen (yes or no)	Concentration
Acrylonitrile		
Benzene		
Bis(Chloromethyl)Ether		
Bromoform		
Carbon Tetrachloride		
Chlorobenzene		
Chlorodibromomethane		
Chloroethane		
2-Chloroethylvinyl Ether		
Chloroform		
Dichlorobromomethane		
Dichlorodifluoromethane		
1,1-Dichloroethane		
1,2-Dichloroethane		
1,1-Dichloroethylene		
1,2-Dichloropropane		
1,3-Dichloropropylene		
Ethylbenzene		
Methyl Bromide		
Methyl Chloride		
Methylene Chloride		
1,1,2,2-Tetrachlorethane		
Tetrachloroethylene		
Toluene		
1,2-TransDichloroethylene1		
1,1,-Trichloroethane		
1,1,2,-Trichloroethane		
Trichloroethylene		
Trichlorofluoromethane		
Vinyl Chloride		
2-Chlorophenol		
2,4-Dichlorophenol		
2,4-Dimethylphenol		
4,6-Dinitro-O-Cresol		
2,4-Dinitrophenol		
2-Nitrophenol		
4-Nitrophenol		
P-Chlor-M-Cresol		
Pentachlorophenol		
Phenol		
2,4,6-Trichlorophenol		
Acenaphthene		
Acenaphtylene		
Acenaphtylene		
Benzidine		
Benzo(a)Athracene		
Benzo(a)Pyrene		
3,4-Benzofluoranthene		
Benzo(ghi) Perylene		
Benzo(k)Fluoranthene		
Bis(2-Chloroethoxy)Methane		
Bis(2-Chloroethyl) Ether		
Bis(2-Chloroisopropyl)Ether		
Bis(2-Ethylhexyl)Phthalate		
4-Bromophenyl Phenyl Ether		
Butyl Benzyl Phthalate		
4-Chlorophenyl Phenyl Ether		
2-Chloronaphthalene		
Chrysene		
Dibenzo(a,h) Anthracene		

c. (Continued)

Parameter	Believed Present (yes or no)	Concentration
1,2-Dichlorobenzene		
1,3-Dichlorobenzene		
1,4-Dichlorobenzene		
3,3'-Dichlorobenzidine		
Diethyl Phthalate		
Dimethyl Phthalate		
Di-N-Butyl Phthalate		
2,4-Dinitrotoluene		
2,6-Dinitrotoluene		
Di-N-Octyl Phthalate		
1,2-Diphenylhydrazine(as Azobenzene)		
Fluoranthene		
Fluorene		
Hexachlorobenzene		
Hexachlorobutadiene		
Hexachlorocyclopentadiene		
Hexachloroethane		
Indeno(1,2,3-cd)Pyrene		
Isophorone		
Naphthalene		
Nitrobenzene		
N-Nitrosodimethylamine		
N-Nitrosodi-N-Propylamine		
N-Nitrosodiphenylamine		
Phenanthane		
Pyrene		
1,2,4 - Trichlorobenzene		
Aldrin		
α- BHC		
β- BHC		
γ- BHC		
δ- BHC		
Chlordane		
4,4'- DDT		
4,4'- DDE		
4,4'- DDD		
Dieldrin		
α-Endosulfan		
β-Endosulfan		
Endosulfan Sulfate		
Endrin		
Endrin Aldehyde		
Heptachlor		
Heptachlor Epoxide		
PCB - 1242		
PCB - 1254		
PCB - 1221		
PCB - 1232		
PCB - 1248		
PCB - 1260		
PCB - 1016		
Toxaphene		
Chloromethane		
Chlorpyrifos		
Demeton		
Dichloromethane		
(2,4-dichlorophenoxy) acetic acid (2,4-D)		
Di-2-Ethylhexyl Phthalate		
MBAS		

c. (Continued)

Parameter	Believed Present (yes or no)	Concentration
Lindane		
Hydrogen Sulfide		
Silvex		
Tributyltin		
Kepone		
Malathion		
Methoxyclor		
Mirex		
Monochlorobenzene		
Parathion		

d. *Provide a separate waste characterization listing for each wastewater and sludge generated at the facility. List any additional parameters believed present in the spaces provided below and provide at least one analysis for each.*

Parameter	Concentration

5. Briefly describe the design and provide a line drawing of the waste treatment facility which relates the various components of the treatment system including source(s), treatment unit(s), disposal alternatives, and flow estimates from the various process units.

6. Indicate the number and type of waste storage facilities. If existing, indicate the volume; DEQ may require additional information upon review.

No.		Existing (Volume)	Proposed
___	Earthen Storage Pond	_____	_____
___	Storage Pit	_____	_____
___	Storage Tank	_____	_____
___	Anaerobic Lagoon	_____	_____
___	Other _____	_____	_____
	_____	_____	_____

7. Have the existing storage/treatment facilities identified in Item 5 and 6 above been previously approved by the Department of Environmental Quality?
Yes_____ No_____

If yes, provide the date of the approval and proceed to Item 8.
*Approval Date:*_____

If no, provide information required by Items 9, 10, and II.

8. Have the previously approved facilities been altered or expanded?
Yes_____ No_____

If yes, it will be necessary to provide the information for such facilities, as required by Items 9 & 10, and 11.

If no, proceed to Item 12.

9. Provide conceptual design for the treatment facilities including design approach used. Explain how ground water will be protected. Demonstration should include soil evaluation, geology, hydrology, and topography. The following information must be provided for each proposed facility identified in Item 6 above and for those existing facilities in Items 7 and 8 which have not been either previously approved or were altered:

   a. *Design calculations for volume (ft^3) and estimated days of storage*

   b. *Description of lining material and permeability*

   c. *Plan and cross-sectional views*

   d. *Depth to seasonal high water table and separation to permanent water table.*

10. Will the proposed waste storage/treatment facilities be located within the 100-year flood plain? _____Yes _____No.

    If yes, what is the elevation of the l00-year flood plain and elevation of the proposed facilities. Also, how will the waste storage facilities be protected from flooding? (Flood elevation can be obtained from your local county zoning/planning department).

    _____
    _____
    _____
    _____
    _____
    _____
    _____

11. Will the proposed or existing storage/treatment facilities receive any storm water runoff? _____Yes _____No.

    If yes, provide total area (square feet, acres, etc.) from which runoff will occur and indicate this area on the line drawing (Item 5).

    Total area: _____
    Dimensions: _____

12. Will any part of the waste generated at your facility be land applied? Yes _____ No _____. If yes, Part C-II must be completed.

VIRGINIA POLLUTION ABATEMENT PERMIT APPLICATION

FORM C

INDUSTRIAL WASTE

PART C-II Land Application and Waste Handling Procedure

Facility Name: _____

Items 1-12 pertain to the land application of industrial sludge/wastewater at frequent and infrequent rates. The applicant may request a waiver in writing for any of the required information if it is not pertinent to their operation.

1. For each land application site provide a topographic map of sufficient scale (5 foot contour preferred) clearly showing the location of the following features within 0.25 mile of the site. Provide a legend with approximate scale. (See General Instructions for map requirements.)

    a. Proposed or existing ground water monitoring wells
    b. General direction of ground water movement
    c. Water wells, abandoned or operating
    d. Surface water
    e. Springs
    f. Public water supply(s)
    g. Sink holes
    h. Underground and/or surface mines
    i. Mine pool (or others) surface water discharge points
    j. Mining spoil piles and mine dumps
    k. Quarry(s)
    l. Sand and gravel pits
    m. Gas and oil wells
    n. Diversion ditch(s)
    o. Agricultural drainage ditch(s)
    p. Occupied dwellings, including industrial and commercial establishments
    q. Landfills or dumps
    r. Other unlined impoundments
    s. Septic tanks and drainfields
    t. Injection wells
    u. Rock outcrops

v. *Soil boring or test pits locations*
w. *Subsurface drainage tile*

2. For each land application site provide a site plan of sufficient detail to clearly show any landscape features which will require buffer zones or may limit land application. Provide a legend and clearly mark the field boundaries and property lines. The following landscape features should be delineated. (See General Instructions for map requirements.)

   a. *Drainageways*
   b. *Rock outcrops*
   c. *Sink holes*
   d. *Drinking water wells and springs*
   e. *Monitoring wells*
   f. *Property lines*
   g. *Roadways*
   h. *Occupied dwellings*
   i. *Slopes (greater than 8% by slope class)*
   j. *Wet spots*
   k. *Severe erosion (SCS designation)*
   l. *Frequently flooded soils (SCS designation)*
   m. *Surface waters*

3. Provide a complete description of agronomic practices for each crop to be grown, on field-by-field basis including a nutrient management program, soil and/or plant tissue testing, and the coordination of tillage practices, planting and harvesting schedules and timing of land application.

4. Describe all land application methods and any equipment used in the process.

5. Provide a detailed soil survey map, preferably photographically based, with the field boundaries clearly marked. (A USDA-SCS soil survey map should be provided, if available.)

   Provide a detailed legend for each soil survey map which uses accepted USDA-SCS descriptions of the typifying pedon for each soil series (soil type). Complex associations may be described as a range of characteristics. Soil descriptions should include the following information.

   a. *Soil symbol*
   b. *Soil series, textural phase and slope class*
   c. *Depth to seasonal high water table*
   d. *Depth to bedrock*
   e. *Estimated productivity group (for the proposed crop rotation).*

f. Estimated infiltration rate (surface soil)
g. Estimated permeability of most restrictive subsoil layer

6. Representative soil borings for frequent land application and fixed spray irrigations, (to no less than 5 ft. or to the water table) are to be conducted for the typifying pedon of each soil series (soil type) and the following data collected and tests performed. All results for infiltration and permeability tests should be enclosed. Provide information on the items below:

a. Soil symbol
b. Soil series, textural phase and slope class
c. Depth to seasonal high water table
d. Depth to bedrock
e. Estimated productivity group (for the proposed crop rotation).
f. Estimated infiltration rate (surface soil)
g. Estimated permeability of most restrictive subsoil layer

7. Representative soil samples are to be collected for each major soil type and analyzed for the soil parameters indicated on Page C-II-6. Samples are to be taken at a depth of 0-6 in.

8. Land Area Determination:

a. Land area requirements are to be calculated and justified for each of the parameters listed below:

Parameters	*Method of Determining Required Area*
1. Nitrogen	*Crop uptake, immobilization denitrification, leaching*
2. Phosphorus	*Crop uptake, soil adsorption*
3. Potassium	*Crop uptake*
4. Sulfur	*Crop uptake, soil adsorption leaching*
5. Salts	*Sodium Adsorption Ratio (SAR), leaching*
6. Carbon/Nitrogen Ratio	
7. Metals(Ni, Cu, Zn, Pb, Co, Cd or other)	*Cumulative loading for site life*
8. Anions (As, B, Chlorides)	*Leaching, Soil Adsorption*
9. Calcium Carbonate Equivalency	*Soil pH management*
10. Other Parameters (As needed or as requested by DEQ)	

For each parameter and method of assimilation, (i.e. crop uptake, denitrification, immobilization, soil adsorption leaching, etc.), the required land area is to be justified by attaching calculations and appropriate references. Allowances for soil adsorption are to be justified by pertinent soil testing.

Provide calculations describing the nutrient value of the waste as lbs per dry ton or mg/l nitrogen (PAN), phosphorus (P_2O_5), potassium (K_2O), and any liming effects which may occur from land application.

b. *Land area requirements for application of industrial wastewater or liquid sludge are to be determined and an annual water balance on a monthly basis developed integrating the following factors:*

1. *Monthly precipitation*
2. *Monthly evapotranspiration data*
3. *Soil percolation rates (from subsurface permeability data)*
4. *Monthly wastewater loading*
5. *Monthly storage requirement*
6. *Monthly storage input/drawdown*

9. Does the volume of wastewater generated as determined by the water balance in 8.b. exceed the hydraulic loading rate (inches/acre/year) of the soils? _____Yes _____No

If Yes, explain how excess loading will be disposed of:

_____
_____
_____
_____
_____

10. Is the land application site owned by the applicant? _____Yes_____No.

If No, answer question 11 and have the land owner complete the authorization form, Page C-II-5.

11. Complete page C-II.5 by providing the name(s), address(es), site locations and signatures of non-applicant land owner on whose property industrial waste will be applied (A separate approval will be required for each additional owner.):

AUTHORIZATION TO LAND APPLY WASTE

(Land Owner must sign and date this approval)

As land owner, I authorize _____to land apply wastewater/sludge to my property in accordance with their VPA Form C application. This authorization will remain in effect until such time as I notify the Department of Environmental Quality in writing that this authorization has been withdrawn.

Name: _____

Address: _____

_____

Telephone: _____

Site Location(s) _____

Date: _____

Signature: _____

SOIL SAMPLE TEST PARAMETERS FOR LAND APPLICATION SITES[1]

Industrial Operations	Sludge Freq.Below Ag.Rates[2]	Sludge Freq. at Ag.Rates[3]	Sludge Infre-quent	Waste-water
Soil Organic Matter (%)		*		*
Soil pH (Std. Units)	*	*	*	*
Cation Exchange Capacity (meq/100g)	*	*	*	*
Total Nitrogen (ppm)		*		*
Organic Nitrogen (ppm)		*		*
Ammonia Nitrogen (ppm)		*		*
Nitrate Nitrogen (ppm)		*		*
Available Phosphorus (ppm)	*	*	*	*
Exchangeable Potassium (mg/100g)	*	*	*	
Exchangeable Sodium (mg/100g)		*		*
Exchangeable Calcium (mg/100g)		*		*
Exchangeable Magnesium (mg/100g)		*		*
Copper (ppm)		*		*
Nickel (ppm)		*		*
Zinc (ppm)		*		*
Cadmium (ppm)		*		*
Lead (ppm)		*		*
Chromium (ppm)		*		*
Manganese (ppm)		*		*
Particle Size Analysis or USDA Textural Estimate (%)		*		*
Hydraulic Conductivity (in/hr)				*

NOTE: [1] Unless otherwise stated, analysis shall be reported on a dry weight basis.
[2] Less than 70% of agronomic nitrogen rates (annual basis).
[3] Test requirements will be adjusted based on previous test results
* Test for these parameters.

VIRGINIA POLLUTION ABATEMENT

PERMIT APPLICATION

FORM D

MUNICIPAL WASTE

PART D-I **MUNICIPAL EFFLUENT**

PART D-II **MUNICIPAL SLUDGE - INFREQUENT APPLICATION**

PART D-III **MUNICIPAL SLUDGE - FREQUENT APPLICATION**

Contact the Department of Environmental Quality's Regional office if instructions beyond those provided in the form are required.

Department of Environmental Quality

VIRGINIA POLLUTION ABATEMENT PERMIT APPLICATION

FORM D

MUNICIPAL WASTE

PART D-I LAND APPLICATION OF SEWAGE EFFLUENT

General Information

1. Facility Name. Name given on Form A.

2. Briefly describe the design and provide a line drawing of the wastewater treatment facility which relates the various components of the treatment system including source(s), treatment unit(s) disposal alternatives and flow estimates from the various process units.

3. Briefly describe the disposal of any solid or sludge waste materials.

4. List all industrial contributors to the wastewater treatment facility.

5. Submit a copy of any leasing agreements related to the treatment works and the use or management of the application fields not under direct ownership of the applicant.

6. All Privately Owned Treatment Works (PVOTW) designed to serve 50 or more residences must be registered with the State Corporation Commission (SCC) prior to applying for a permit. Provide a copy of the SCC Certificate of Incorporation (for Virginia based operations) or the Certificate of Authority (for out of state operations) with the application.

Design Information

***Note**: This section should be completed for each alternative effluent application system.*

Waste Characterization

7. Provide the design flow of the wastewater treatment plant.

8. Provide a sewage effluent characterization in accordance with Part D-IV of the application. For a proposed facility, estimates based on data obtained from other similar facilities may be used. More than one sample may be required if the effluent may be expected to exhibit diurnal or seasonal variation.

9. Provide calculations describing the nutrient value of the effluent as mg/l nitrogen (PAN), phosphorus (P_2O_5), potassium (K_2O) and any liming effects which may occur from land application.

Storage and Land Application Requirements

10. Provide calculations justifying storage and land area requirements for wastewater application including an annual water balance on a monthly basis incorporating such factors as precipitation, evaporation, evapotranspiration, soil hydraulic conductivity, wastewater loading, dry periods, and monthly storage (input and drawdown). Provide daily, weekly and annual hydraulic loading rates (maximum and average).

    All facilities must be designed and operated to prevent any discharge to State waters except in the event of a 25 year, 24 hour or greater storm event. DEQ recommends the storage capacity be sufficient to store the entire daily design flow of the treatment works for the duration of the winter months, when land application may be restricted, with a minimum of 60 days storage capacity where adequate climatological data are not available.

11. Provide calculations justifying the land area requirements for land application of sewage effluent taking into consideration average productivity group, crop(s) to be grown and most limiting factor(s), specifically PAN, metal loadings, and Sodium Adsorption Ratio (SAR) or Exchangeable Sodium, where applicable. Demonstrate the most limiting factor for land application on an annual and site life basis.

Site Characterization

***Note**: A site characterization is required for each land application site on a field by field basis and for each storage facility. Site booklets organized by Operator/Land Owner and County are preferred.*

Divide the land application site into individualized units of fields on the basis of agronomic management practices. For example, soils which are similar for productivity or pH adjustment which are adjacent to each other should be grouped as one field if they can be anticipated to receive effluent onsimilar schedules. Distinctly different soils which may require different agronomic management should be designated separately.For convenience in meeting permit reporting requirements, keep field units small.

12. Provide a general location map which clearly indicates the location of all the land application sites related to this permit application. (See General Instructions for Map Requirements.)

13. Provide a topographic map of sufficient scale (5 foot contour preferred) clearly showing the location of the following features within 0.25 mile of the site. More than one map may be required if the land application site(s) or treatment/storage facilities are not in close proximity. Provide a legend and approximate scale. Clearly mark field and property boundaries. (See Instructions for map requirements.)

    a. *Proposed or existing ground water monitoring wells*
    b. *General direction of ground water movement*
    c. *Water wells, abandoned or operating*
    d. *Surface waters*
    e. *Springs*
    f. *Public water supply(s)*
    g. *Sinkholes*
    h. *Underground and/or surface mines*
    i. *Mine pool (or other) surface water discharge points*
    j. *Mining spoil piles and mine dumps*
    k. *Quarry(s)*
    l. *Sand and gravel pits*
    m. *Gas and oil wells*
    n. *Diversion ditch(s)*
    o. *Agricultural drainage ditch(s)*
    p. *Occupied dwellings, including industrial and commercial establishments*
    q. *Landfills or dumps*
    r. *Other unlined impoundments*
    s. *Septic tanks and drainfields*
    t. *Injection wells*
    u. *Rock outcrops*

14. For each land application site, provide a site plan, preferably topographically based, of sufficient detail to clearly show any landscape features which require buffer zones or may limit land application. Clearly show the field boundaries, property lines, and the location of any subsurface agricultural drainage tile, as appropriate.

    Provide a site plan legend which identifies the following landscape features:

    a. *Drainageways*
    b. *Rock outcrops*
    c. *Sink holes*
    d. *Drinking water wells and springs*
    e. *Monitoring wells*
    f. *Property lines*
    g. *Roadways*
    h. *Occupied dwellings*
    i. *Slopes (greater than 8% by slope class)*

j. Wet spots
k. Severe erosion
l. Frequently flooded soils (SCS designation)
m. Surface waters

15. Provide a detailed soil survey map, preferably photographically based, with the field boundaries clearly marked. (A USDA-SCS soil survey map should be provided, if available.)

    Provide a detailed legend for each soil survey map which uses accepted USDA-SCS descriptions of the typifying pedon for each soil series (soil type). Complex associations may be described as a range of characteristics. Soil descriptions should include the following information:

    a. Soil symbol
    b. Soil series, textural phase and slope class
    c. Depth to seasonal high water table
    d. Depth to bedrock
    e. Estimated productivity group (for the proposed crop rotation).
    f. Estimated infiltration rate (surface soil)
    g. Estimated permeability of most restrictive subsoil layer

16. Representative soil borings and test pits to a depth of five feet or to bedrock if shallower, are to be coordinated for the typifying pedon of each soil series (soil type). Soil descriptions shall include as a minimum the following information:

    a. Soil symbol
    b. Soil series, textural phase and slope class
    c. Depth to seasonal high water table
    d. Depth to bedrock
    e. Estimated productivity group (for the proposed crop rotation).
    f. Estimated infiltration rate (surface soil)
    g. Estimated permeability of most restrictive subsoil layer

17. Collect and analyze soil samples for the following parameters for each field, weighted to best represent each of the soil borings performed for Item I6.

    a. Soil organic matter (%)
    b. Soil pH (std. units)
    c. Cation exchange capacity (meg/l00g)
    d. Total nitrogen (ppm)
    e. Organic nitrogen (ppm)
    f. Ammonia nitrogen (ppm)
    g. Nitrate nitrogen (ppm)
    h. Available phosphorus (ppm)
    i. Exchangeable sodium (mg/l00g)

j. Exchangeable calcium (mg/l00g)
k. Copper (ppm)
l. Nickel (ppm)
m. Zinc (ppm)
n. Cadmium (ppm)
o. Lead (ppm)
p. Chromium (ppm)
q. Manganese (ppm)
r. Particle size analysis or USDA textural estimate (%)
s. Hydraulic conductivity (in/hr.)

Crop and Site Management

18. Relate the crop nutrient needs to anticipated yields, soil productivity rating and the various fertilizer or nutrient sources from effluent and chemical fertilizers.

    If the effluent may be expected to possess unusual properties, provide a description of any plant tissue testing, supplemental fertilization or intensive agronomic management practices which may be necessary.

19. Using a narrative format and referencing any related charts, describe the proposed cropping system. Show how the crop rotation and management will be coordinated with the design of the land application system. Include any supplemental fertilization program, and the coordination of tillage practices, planting and harvesting schedules and timing of land application.

VIRGINIA POLLUTION ABATEMENT PERMIT APPLICATION

FORM D

MUNICIPAL WASTE

PART D-II INFREQUENT LAND APPLICATION OF SEWAGE SLUDGE

General Information

1. Facility name. Name given on Form A.

2. A general description of the proposed plan including: name, VPDES (NPDES) permit number, and location of the generator(s) involved, sludge treatment and handling processes, means of sludge transport or conveyance, location and volume of storage proposed, general location of sites proposed for application and methods of sludge application proposed. A description of temporary storage methods should be provided.

3. Describe the method of sludge treatment or stabilization for each sludge source. Provide a block diagram of each wastewater treatment plant's residual treatment train and yearly sludge production. In addition, provide the design flow of each facility.

4. Briefly describe the disposal of any supernatant resulting from sludge storage.

5. Describe all land application methods and any equipment used in the process (e.g. transport trucks, spreaders, etc.).

6. Provide a legible copy of any leasing agreements related to the treatment or storage facilities, not under direct ownership of the applicant, which identifies the involved parties.

Design Information

<u>Waste Characterization</u>

7. Provide a sewage sludge characterization in accordance with Part D-V for each sludge. For a proposed facility, estimates based on data obtained from other similar facilities may be used. More than one sample may be required if the sludge may be expected to exhibit seasonal variation.

8. Provide a properly completed Non-Hazardous Declaration Statement for each sludge, Part D-VI.

9. Provide calculations describing the nutrient value of the sludge as lbs per dry Ton nitrogen (PAN), and Calcium Carbonate Equivalence, if applicable.

Sludge Storage Facilities

10. Describe the current status of the available sludge storage facilities. List in a tabular format the sludge storage facilities by location, total storage capacity(s), and the sludge contracts currently permitted or assigned to these facilities.

11. For proposed storage facilities, provide a topographic map of sufficient scale to clearly show the topographic features of the surrounding landscape to a distance of 0.25 mile. Clearly mark the property lines. (See General Instructions for map requirements.)

    a. Water wells, abandoned or operating
    b. Surface waters
    c. Springs
    d. Public water supply(s)
    e. Sinkholes
    f. Underground and/or surface mines
    g. Mine pool (or other) surface water discharge points
    h. Mining spoil piles and mine dumps
    i. Quarry(s)
    j. Sand and gravel pits
    k. Gas and oil wells
    l. Diversion ditch(s)
    m. Agricultural drainage ditch(s)
    n. Occupied dwellings, including industrial and commercial establishments
    o. Landfills or dumps
    p. Other unlined impoundments
    q. Septic tanks and drainfields
    r. Injection wells
    s. Rock outcrops

Land Area Requirements and Summary

12. Provide calculations justifying the land area requirements for land application of sewage sludge taking into consideration average productivity group, crop(s) to be grown and most limiting factor(s), specifically PAN, Calcium Carbonate Equivalence and metal loadings, where applicable. Demonstrate the most limiting factor, PAN, CCE, and metal loadings for land application.

13. List by County and owner all of the fields, (net) acreages, and tract number related to this permit application, and the last date of sludge application. Please report the data in the following format:

COUNTY	OWNER	OPERATOR	FIELD *TRACT NO.	ACRES	DATE OF LAST APPLICATION
King	Charles	Bill Jones	1	6.9	8/22/89
George	Jones		2	12.3	8/22/89

*Agricultural Stabilization and Conservation Service tract

Site Characterization

***Note**: A site characterization is required for each land application site on a field by field basis and for each storage facility. Site booklets organized by Operator/Land Owner and County are preferred.*

Divide the land application site into individualized units or fields on the basis of agronomic management practices. For example, soils which are similar for productivity or pH adjustment which are adjacent to each other should be grouped as one field if they can be anticipated to receive sludge on similar schedules. Distinctly different soils which may require different agronomic management should be designated separately. For convenience in meeting permit reporting requirements, it is suggested that field units be small.

14. Provide a general location map for each County which clearly indicates the location of all the land application sites related to this permit application. (See General Instructions for map requirements.)

15. Provide a properly completed Sludge Application Agreement Form for each land owner, Part D-VII.

16. For each land application site provide a site plan of sufficient detail to clearly show any landscape features which will require buffer zones or may limit land application. Provide a legend and clearly mark the field boundaries and property lines. The following landscape features should be delineated. (See General Instructions for map requirements.)

    a. *Drainageways*
    b. *Rock outcrops*
    c. *Sink holes*
    d. *Drinking water wells and springs*
    e. *Monitoring wells*
    f. *Property lines*
    g. *Roadways*
    h. *Occupied dwellings*

i. Slopes (greater than 8% by slope class)
j. Wet spots
k. Severe erosion (SCS designation)
l. Frequently flooded soils (SCS designation)
m. Surface waters

17. Provide a soil survey map, preferably photographically based, with the field boundaries clearly marked. (A USDA-SCS soil survey map should be provided, if available.)

    Provide a detailed legend for each soil survey map which uses accepted USDA-SCS descriptions of the typifying pedon for each soil series (soil type). Complex associations may be described as a range of characteristics. Soil descriptions shall include as a minimum the following information.

    a. Soil symbol
    b. Soil series, textural phase and slope class
    c. Depth to seasonal high water table
    d. Depth to bedrock
    e. Estimated productivity group (for the proposed crop rotation)

VIRGINIA POLLUTION ABATEMENT PERMIT APPLICATION

FORM D

MUNICIPAL WASTE

PART D-III FREQUENT LAND APPLICATION OF SEWAGE SLUDGE

General Information

1. Facility name. Name given on Form A.

2. A general description of the proposed plan including: name, VPDES (NPDES) permit number, and location of generator(s) involved, sludge treatment and handling processes, means of sludge transport or conveyance, location and volume of storage proposed, general location of sites proposed for application and methods of sludge application proposed. A description of temporary storage methods should be provided.

3. Describe the method of sludge treatment or stabilization for each sludge source. Provide a block diagram of each wastewater treatment plant, residual treatment train, and yearly sludge production. In addition, provide the design flow of each facility.

4. Briefly describe the disposal of any supernatant resulting from sludge storage.

5. Describe all land application methods and any equipment used in the process.

6. Provide a legible copy of any leasing agreements related to the treatment works or storage facilities, not under direct ownership of the applicant, which identifies the involved parties.

Design Information

Waste Characterization

7. Provide a sewage sludge characterization in accordance with Part D-V for each sludge. For a proposed facility, estimates based on data obtained from other similar facilities may be used. More than one sample may be required if the sludge may be expected to exhibit diurnal or seasonal variation.

8. Provide a properly completed Non-Hazardous Declaration Statement for each sludge, Part D-VI.

9. Provide calculations describing the nutrient value of the sludge as lbs per dry Ton nitrogen (PAN), phosphorus (P_2O_5), potassium (K_2O), and Calcium Carbonate Equivalence, if applicable.

Sludge Storage Facilities

10. List in a tabular format the sludge storage facilities by location, total storage capacity(s), and the sludge contracts currently permitted or assigned to these facilities. Describe the current status of the available sludge storage facilities.

11. For proposed storage facilities, provide a topographic map of sufficient scale to clearly show the topographic features of the surrounding landscape to a distance of 0.25 miles. Clearly mark the property lines. (Reference General Instructions for map requirements.)

    a. Water wells, abandoned or operating
    b. Surface waters
    c. Springs
    d. Public water supply(s)
    e. Sinkholes
    f. Underground and/or surface mines
    g. Mine pool (or other) surface water discharge points
    h. Mining spoil piles and mine dumps
    i. Quarry(s)
    j. Sand and gravel pits
    k. Gas and oil wells
    l. Diversion ditch(s)
    m. Agricultural drainage ditch(s)
    n. Occupied dwellings, including industrial and commercial establishments
    o. Landfills or dumps
    p. Other unlined impoundments
    q. Septic tanks and drainfields
    r. Injection wells
    s. Rock outcrops

12. Provide an estimated annual sludge balance on a monthly basis incorporating such factors as storage, contractual agreements, sludge production and land application. Include pertinent calculations justifying storage requirements.

Land Area Requirements

13. Provide calculations justifying the land area requirements for land application of sewage sludge taking into consideration average productivity group, crop(s) to be grown and most limiting factor(s), specifically PAN, Calcium Carbonate Equivalence and metal loadings, where applicable. Relate PAN, CCE, and metal loadings to demonstrate the most limiting factor for land application.

14. List by County and owner all of the fields and (net) acreages, and tract numbers related to this permit application and the last date of sludge application. Please report the data in the following format:

COUNTY	OWNER	OPERATOR	FIELD *TRACT NO.	ACRES	DATE OF LAST APPLICATION
King	Charles	Bill Jones	1	6.9	8/22/89
George	Jones		2	12.3	8/22/89

*Agricultural Stabilization and Conservation Service tract

Site Characterization

Note: *A site characterization is required for each land application site on a field-by-field basis and for each storage facility. Site booklets organized by Operator/Land Owner and County are preferred.*

Divide the land application site into individualized units or fields on the basis of agronomic management practices. For example, soils which are similar for productivity or pH adjustment which are adjacent to each other should be grouped as one field if they can be anticipated to receive sludge onsimilar schedules. Distinctly different soils which may require different agronomic management should be designated separately. For convenience in meeting permit reporting requirements, keep field units small.

15. Provide a general location map for each County which clearly indicates the location of all the land application sites related to this permit application.

16. Provide a properly completed Sludge Application Agreement Form for each land owner, Part D-VII.

17. For land application sites, provide a topographic map of sufficient scale (five foot contour preferred) clearly showing the following features within 0.25 miles of each site. Clearly mark field and property boundaries. (See General Instructions for map requirements.)

    a. *Proposed or existing ground water monitoring wells*
    b. *Water wells, abandoned or operating*
    c. *Surface waters*
    d. *Springs*
    e. *Public water supply(s)*
    f. *Sinkholes*

g. *Underground and/or surface mines*
h. *Mine pool (or other) surface water discharge points*
i. *Mining spoil piles and mine dumps*
j. *Quarry(s)*
k. *Sand and gravel pits*
l. *Gas and oil wells*
m. *Diversion ditch(s)*
n. *Agricultural drainage ditch(s)*
o. *Occupied dwellings, including industrial and commercial establishments*
p. *Landfills or dumps*
q. *Other unlined impoundments*
r. *Septic tanks and drainfields*
s. *Injection wells*
t. *Rock outcrops*

18. Provide a site plan, preferably topographically based, of sufficient detail to clearly show any landscape feature which require buffer zones or may limit land application. Clearly show the field boundaries, property lines, and the location of any subsurface agricultural drain tile, as appropriate.

Provide a site plan legend which identifies the appropriate buffer zones to be used. Some of the landscape features which should be delineated are:

a. *Drainageways*
b. *Rock outcrops*
c. *Sink holes*
d. *Drinking water wells and springs*
e. *Monitoring wells*
f. *Property lines*
g. *Roadways*
h. *Occupied dwellings*
i. *Slopes (greater than 8% by slope class)*
j. *Wet spots*
k. *Severe erosion (SCS designation)*
l. *Frequently flooded soils (SCS designation)*
m. *Surface waters*

19. Provide a detailed soil survey map, preferably photographically based, with the field boundaries clearly marked. (A USDA-SCS soil survey map should be provided, if available.)

Provide a detailed legend for each soil survey map which uses accepted USDA-SCS descriptions of the typifying pedon of each soil series (soil type). Complex associations may be described as a range of characteristics. Soil descriptions shall include as a minimum the following information.

a. *Soil symbol*
b. *Soil series, textural phase and slope class*
c. *Depth to seasonal high water table*

d. *Depth to bedrock*
e. *Estimated productivity group (for the proposed crop rotation)*

20. Representative soil borings and test pits to a depth of five feet or to bedrock if shallower, are to be coordinated for the typifying pedon of each soil series (soil type). Soil descriptions shall include as as a minimum the following information:

    a. *Soil symbol*
    b. *Soil series, textural phase and slope class*
    c. *Depth to seasonal high water table*
    d. *Depth to bedrock*
    e. *Estimated productivity group (for the proposed crop rotation)*

21. Collect and analyze soil samples each field in accordance with the chart on page D-III-6, weighted to best represent each of the soil borings performed for Item 20.

Crop and Site Management

22. Relate the crop nutrient needs to anticipated yields, soil productivity rating and the various fertilizer or nutrient sources from sludge and chemical fertilizers. Describe any specialized agronomic management practices which may be required as a result of high soil pH.

    If the sludge may be expected to possess an unusually high Calcium Carbonate Equivalence or other unusual properties, provide a description of any plant tissue testing, supplemental fertilization or intensive agronomic management practices which may be necessary.

23. Using a narrative format and referencing any related charts, describe the proposed cropping system. Show how the crop rotation and management will be coordinated with the design of the land application system. Include any supplemental fertilization program, soil testing and the coordination of tillage practices, planting and harvesting schedules and timing of land application.

SOIL SAMPLE TEST PARAMETERS FOR LAND APPLICATION SITES[1]

Industrial Operations	Sludge Freq.Below Ag.Rates[2]	Sludge Freq. at Ag. Rates[3]
Soil Organic Matter (%)		*
Soil pH (Std. Units)	*	*
Cation Exchange Capacity (meg/100g)	*	*
Total Nitrogen (ppm)		*
Organic Nitrogen (ppm)		*
Ammonia Nitrogen (ppm)		*
Nitrate Nitrogen (ppm)		*
Available Phosphorus (ppm)	*	*
Exchangeable Potassium (mg/100g)	*	*
Exchangeable Sodium (mg/100g)		*
Exchangeable Calcium (mg/100g)		*
Exchangeable Magnesium (mg/100g)		*
Copper (ppm)		*
Nickel (ppm)		*
Zinc (ppm)		*
Cadmium (ppm)		*
Lead (ppm)		*
Chromium (ppm)		*
Manganese (ppm)		*
Particle Size Analysis or USDA Textural Estimate (%)		*
Hydraulic Conductivity (in/hr)		

NOTE: [1] Unless otherwise stated, analysis shall be reported on a dry weight basis.
[2] Less than 70% of agronomic nitrogen rates (annual basis).
[3] Test requirements will be adjusted based on previous test results
* Test for these parameters.

VIRGINIA POLLUTION ABATEMENT APPLICATION

FORM D

MUNICIPAL WASTE

PART D-IV EFFLUENT CHARACTERIZATION FORM

1. Facility Name: _____

2. Source or Generator: _____

3. Type of Treatment: _____

4. Degree of Treatment: _____

5. Provide at least one analysis for each parameter listed under effluent. Upon review, additional analyses may be required by DEQ.

Parameter	Effluent	
BOD_5	_____	mg/l
TSS	_____	mg/l
TRC	_____	mg/l
Percent Solids	_____	%
pH	_____	S.U.
Nitrogen, (Nitrate)	_____	mg/l
Nitrogen, (Ammonium)	_____	mg/l
Nitrogen, (Total Kjeldahl)	_____	mg/l
Phosphorus, (Total)	_____	mg/l
Potassium, (Total)	_____	mg/l
Sodium	_____	mg/l

6. Provide at least one analysis of any other pollutants which you believe may be present in the effluent. Upon review, additional analyses may be required by DEQ.

Parameter	Effluent	
Lead	_____	mg/l
Cadmium	_____	mg/l
Copper	_____	mg/l
Nickel	_____	mg/l
Zinc	_____	mg/l
Other	_____	mg/l
	_____	

VIRGINIA POLLUTION ABATEMENT PERMIT APPLICATION

FORM D

MUNICIPAL WASTE

PART D-V SLUDGE CHARACTERIZATION FORM

1. Facility Name: _____

2. Source or Generator: _____

3. Type of Treatment: _____

4. Sludge Treatment Classification: _____

5. Provide at least one analysis for each parameter. Upon review, additional analyses may be required by DEQ.

Parameter	Sludge	
Percent Solids	_____	%
Volatile Solids	_____	%
pH	_____	S.U.
Alkalinity as $CaCO_3$ *	_____	mg/kg
Nitrogen, (Nitrate)	_____	mg/kg
Nitrogen, (Ammonium)	_____	mg/kg
Nitrogen, (Total Kjeldahl)	_____	mg/kg
Phosphorus, (Total)	_____	mg/kg
Potassium, (Total)	_____	mg/kg
Lead	_____	mg/kg
Cadmium	_____	mg/kg
Copper	_____	mg/kg
Nickel	_____	mg/kg
Zinc	_____	mg/kg
Arsenic	_____	mg/kg
Boron	_____	mg/kg
Chromium	_____	mg/kg
Mercury	_____	mg/kg
Aluminum	_____	mg/kg
Chlorides	_____	mg/kg
Manganese	_____	mg/kg
Calcium	_____	mg/kg
Sulfates	_____	mg/kg
Molybdenum	_____	mg/kg
PCBs	_____	mg/kg

* Lime treated sludges (l0% or more lime by dry weight) should be analyzed for percent $CaCO_3$.

6. Provide at least one analysis of any other pollutants which you believe may be present in the sludge. Upon review, additional analyses may be required by DEQ.

_____ _____

_____ _____

VIRGINIA POLLUTION ABATEMENT PERMIT APPLICATION

PART D-VI NON-HAZARDOUS WASTE DECLARATION

For waste to be land applied, a responsible person, as defined by VR 680-14-01, must sign the following statement.

I certify that the waste described in this application is non-hazardous and not regulated under the Resource Conservation and Recovery Act.

_____ Date: _____

(Signature of Owner)

VIRGINIA POLLUTION ABATEMENT (VPA) PERMIT APPLICATION

VPA FORM D

MUNICIPAL WASTE

PART D-VII SLUDGE APPLICATION AGREEMENT

This sludge application agreement is made on _____ between _____, referred to here as "landowner", and _____, referred to here as the "Permittee".

Landowner is the owner of agricultural land shown on the map attached as Exhibit A and designated there as _____ ("landowner's land"). Permittee agrees to apply and landowner agrees to comply with certain permit requirements following application of stabilized sewage sludge on landowner's land in amounts and in a manner authorized by (VPA) (VPDES) permit number _____ which is held by the Permittee.

Landowner acknowledges that the appropriate application of stabilized sewage sludge will be beneficial in providing fertilizer and soil conditioning to the property. Moreover, landowner acknowledges having been expressly advised that, in order to protect public health:

1. Public access to landowner's land upon which sludge has been applied should be controlled for at least 12 months following any application of sludge;

2. No root crops shall be grown for a period of time established by state or federal regulations and no other crops for direct human consumption (not processed to eliminate pathogens) should be grown on landowner's land within 18 months of a sludge application;

3. Landowner's land should not be excavated within 12 months of a sludge application;

4. Beef cattle should not be grazed or fed chopped foliage in accordance with access restrictions determined by the level of sludge treatment and milk cattle should be similarly restricted for a minimum of 60 days;

5. Supplemental commercial fertilizer or manure applications should be coordinated with the sludge applications such that the total crop needs for nutrients are not exceeded as identified on the nutrient balance sheet (see attached) to be supplied to the landowner by the owner at the time of application of sludge to a specific permitted site;

6. Tobacco, because it has been shown to accumulate cadmium, should not be grown on landowner's land that has received sludge applications.

Permittee agrees to notify landowner or landowner designee of the proposed schedule for sludge application and specifically prior to any particular application to landowner's land. This agreement may be terminated by either party upon written notice to the address
specified below.

Landowner:

_____

_____

_____

Permittee:

_____

_____

_____

EXAMPLE OF A NUTRIENT BALANCE SHEET

Year	Crop	Crop Needs $N-P_2O_5-K_2O$	Sludge Supplied $N-P_2O_5-K_2O$	Balance Needed From Fertilizer $N-P_2O_5-K_2O$	Notes
l992	Corn	l40-50-80	l40-70-l0	0-0-70	l.
l993	Wheat-Soybeans	l00-90-l40	70-90-0	30-0-l40	2.,3.

NOTES:

l. The supplied information above should be used as a guide to coordinate manure and/or fertilizer applications if needed with the sludge supplied nutrients. Crop needs are based upon Virginia Tech recommendations for your soil sample results and the predominant (l0% or more of acreage) soil series in your field.

2. Significant residual nitrogen and phosphorus is supplied by sewage sludge in the second year following application.

3. Apply l40 pounds potash in fall or winter to small grain, apply 30 pounds nitrogen to small grain in late winter or early spring if needed.