



# **RICHLAND COUNTY COUNCIL**

## **DEVELOPMENT AND SERVICES COMMITTEE**

Julie-Ann Dixon	Bill Malinowski	Norman Jackson (Chair)	Jim Manning	Seth Rose
District 9	District 1	District 11	District 8	District 5

**JANUARY 28, 2014  
5:00 PM**

**2020 Hampton Street**

### **CALL TO ORDER**

### **ELECTION OF CHAIR**

1. Election of Chair

### **APPROVAL OF MINUTES**

2. Regular Session: December 17, 2013 [PAGES 4-6]

### **ADOPTION OF AGENDA**

### **ITEMS FOR ACTION**

3. Sewage Sludge Spray Field Applications [PAGES 7-30]

**ADJOURNMENT**



**Special Accommodations and Interpreter Services**

Citizens may be present during any of the County’s meetings. If requested, the agenda and backup materials will be made available in alternative formats to persons with a disability, as required by Section 202 of the Americans with Disabilities Act of 1990 (42 U.S.C. Sec. 12132), as amended and the federal rules and regulations adopted in implementation thereof.

Any person who requires a disability-related modification or accommodation, including auxiliary aids or services, in order to participate in the public meeting may request such modification, accommodation, aid or service by contacting the Clerk of Council’s office either in person at 2020 Hampton Street, Columbia, SC, by telephone at (803) 576-2061, or TDD at 803-576-2045 no later than 24 hours prior to the scheduled meeting.

# Richland County Council Request of Action

**Subject**

Election of Chair

**Reviews**

# Richland County Council Request of Action

## **Subject**

Regular Session: December 17, 2013 [**PAGES 4-6**]

## **Reviews**

# MINUTES OF



## RICHLAND COUNTY COUNCIL DEVELOPMENT AND SERVICES COMMITTEE TUESDAY, DECEMBER 17, 2013 5:00 P.M.

*In accordance with the Freedom of Information Act, a copy of the agenda was sent to radio and TV stations, newspapers, persons requesting notification, and was posted on the bulletin board located in the lobby of the County Administration Building.*

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### MEMBERS PRESENT

Chair: Norman Jackson  
Member: Julie-Ann Dixon  
Member: Bill Malinowski  
Member: Jim Manning  
Member: Seth Rose

**ALSO PRESENT:** Kelvin Washington, Paul Livingston, Torrey Rush, Damon Jeter, Tony McDonald, Sparty Hammett, Roxanne Ancheta, Warren Harley, John Hixon, Tracy Hegler, Brad Farrar, Justine Jones, Buddy Atkins, Anna Lange, Bill Peters, Geo Price, Brandon Madden, Tiaa Rutherford, Holland Leger, Ray Peterson, Valeria Jackson, Monique Walters

### CALL TO ORDER

The meeting started at approximately 5:03 p.m.

### APPROVAL OF MINUTES

**November 26, 2013 (Regular Session)** – Mr. Manning moved, seconded by Ms. Dixon, to approve the minutes as distributed. The vote in favor was unanimous.

### ADOPTION OF AGENDA

Ms. Dixon moved, seconded by Mr. Manning, to adopt the agenda as published. The vote in favor was unanimous.

### ITEMS FOR ACTION

**Approval of the Richland County Neighborhood Improvement Program Five-Year Project Plan**  
– Mr. Rose moved, seconded by Ms. Dixon, to forward to Council with a recommendation to approve the Neighborhood Improvement Program Five-Year Project Plan. The vote in favor was unanimous.

Item# 2

**Sewage Sludge Spray Field Applications** – A discussion took place.

Mr. Rose moved, seconded by Mr. Manning, to defer this item until the January Committee meeting to obtain additional information regarding the testing process. The vote in favor was unanimous.

**Hopkins Water Tank Logo** – Mr. Manning moved, seconded by Mr. Malinowski, to direct staff to draft policy regarding the labeling of property within municipalities and report back at the February Committee meeting. A discussion took place.

The vote in favor was unanimous.

**Crane Creek Pedestrian Trail and Nature Center Construction Award** – Ms. Dixon moved, seconded by Mr. Rose, to forward to Council with a recommendation to approve the request to award a contract to Corley Construction. The vote in favor was unanimous.

**Richland County Community Garden Program** – Mr. Rose moved, seconded by Ms. Dixon, to forward to Council with a recommendation to approve both the Community Garden Program and Inaugural Site and identify funding sources for both. A discussion took place.

The vote was in favor.

#### **ADJOURNMENT**

The meeting adjourned at approximately 5:38 p.m.

Submitted by,

Norman Jackson, Chair

The minutes were transcribed by Michelle M. Onley

# Richland County Council Request of Action

**Subject**

Sewage Sludge Spray Field Applications [**PAGES 7-30**]

**Reviews**

# Richland County Council Request of Action

**Subject:** Sewage Sludge Spray Field Applications

**A. Purpose**

County Council is requested consider prohibiting sewage sludge spray field applications in Richland County.

**B. Background / Discussion**

During the October 1, 2013, Councilman Washington made the following motion:

“I move to prohibit sewage sludge spray field applications in Richland County.”  
This motion was forwarded to the D&S Committee for further consideration.

**C. Legislative / Chronological History**

This motion was referred to the D&S Committee during the October 1, 2013 Council meeting.

**D. Financial Impact**

The financial impact of prohibiting sewer spray fields in general is not available. Each wastewater treatment facility would compare the cost and benefit of constructing a spray field or a sewage sludge disposal process and site as part of the DHEC permitting process.

**E. Alternatives**

1. Approve the request to prohibit sewage sludge spray field applications in Richland County.
2. Do not approve the request to prohibit sewage sludge spray field applications in Richland County.

**F. Recommendation**

It is recommended that Council approve the request to prohibit sewage sludge spray field applications in Richland County.

Recommended by: Hon. Kelvin Washington      Department: County Council      Date: 10/30/13

**G. Reviews**

**Finance**

Reviewed by: Daniel Driggers

Date: 11/1/13

Recommend Council approval

Recommend Council denial

Comments regarding recommendation:

No recommendation

**Utilities**

Reviewed by: Andy H. Metts

Date: 11/4/13

Recommend Council approval

Recommend Council denial

**Item# 3**



Council discretion.

Comments regarding recommendation: Sewer spray fields are an alternative wastewater disposal method to that of a surface water discharge. With spray fields, treated effluent from a wastewater treatment facility is sprayed on land which has been determined to have sufficient water absorbing capacity. SC DHEC requires alternative disposal methods, such as spray fields, be evaluated before a surface water discharge permit will be issued.

Sludge disposal sites are sites permitted by DHEC which allow waste disposal operations to land apply sludge after various levels of treatment. Depending on the level of treatment and the pathogen reduction method, wastewater sludge may be used as a soil enhancement product for the agricultural industry.

Both spray fields and sludge disposal sites are permitted and monitored by DHEC.

**Legal**

Reviewed by: Brad Farrar

Date:

Recommend Council approval

Recommend Council denial

Comments regarding recommendation: Policy decision of Council, subject to the compliance with state laws and regulations, and the oversight of SC DHEC in this area as noted by Utilities Director. Also, compliance with any federal laws or regulations must be observed.

**Administration**

Reviewed by: Sparty Hammett

Date: 11/19/13

Recommend Council approval

Recommend Council denial

Comments regarding recommendation: This a policy decision for Council. As indicated by the Utilities Director, sewer spray fields are permitted by SC DHEC.



## REPORT TO COUNTY COUNCIL

### ADDITIONAL INFORMATION

## LAND APPLICATION OF SLUDGES INCLUDING SPRAY FIELDS

DECEMBER 12, 2013

County Council is considering the prohibition of sewage sludge spray field applications in Richland County. During the October 1, 2013, Council meeting Chairman Washington made the following motion:

“I move to prohibit sewage sludge spray field applications in Richland County.”  
This motion was forwarded to the D&S Committee for further consideration.

At the November 26, 2013 D&S Committee, Utilities Director Andy Metts, provided a brief overview of spray field applications. During the discussion, Chairman Washington requested additional information pertaining to monitoring and Councilman Malinowski requested information on the impact a prohibition might have. In follow-up discussion with the Chairman for clarification, Chairman Washington indicated the motion applied to a general prohibition of all land applications.

Subsequently, within the time available, a limited review of literature from the South Carolina Department of Health and Environmental Control (SCDHEC) and the US Environmental Protection Agency (EPA) was conducted using available website information from these agencies. SCDHEC and EPA are the primary agencies responsible for the regulation of land-applied sludges in South Carolina. The regulations in general under both agencies refer to Part 503 for typical domestic sludges and Part 504 for industrial sludges.

It is important to note what spray fields are and what land application is, along with related terms, in order to have a better understanding of the potential impact a ban would have on land application. Essentially, land application can include all tile fields, spray fields, subsurface injection, rapid infiltration beds, etc. of either treated sewage effluent or treated sewage sludges, but might also be expanded to include wastes from animal operations and the beneficial reuse of treated solid sludges typically referred to as biosolids. Biosolids are often used as a low-grade fertilizer and/or soil amendment for poor soils, and can include dried and/or pelletized sludges treated by heat or mixed with

lime to destroy pathogens before applying. Biosolids can also include composting operations and tillage of treated sludge.

Facilities that typically land-apply their treated effluent (not necessarily solids) in lieu of discharging to a water body typically receive a No-Discharge Permit. The following excerpts on land application were obtained:

SCDHEC Bureau of Water Web Page (excerpts)

## Land Application: Permit Program Definitions

"Spray field" means a specified area where properly treated wastes, treated effluent from process, agricultural or domestic wastewater, sewage sludge, industrial sludge or other sources is applied to the land. The terms "application area", "application site", or "spray disposal area" may also be used.

"Land Application" means use and/or disposal of treated wastewater, sewage sludge, industrial sludge, septage, or additional sources (see R.61-9.505.1(b)(2)) to the land.

"ND" or "No Discharge" means land application. The terms "ND permit" or "No Discharge permit" may be used for "Land Application permit".

R.61-9.503.11(h) "Land application" is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

### Permitting

SCDHEC, and in a few cases EPA, issue ND permits and sludge permits in South Carolina. For those facilities falling under Part 503 regulations for the disposal of sludges, an annual report must also be submitted directly to the EPA:

505.1(b) Scope of the Land Application permit and State permit requirement.

(1) The Land Application permit and State permit program requires permits for the discharge of pollutants from any source directly or indirectly into groundwaters of the State and to the land of the State. The terms "Land Application permit," "State permit," "pollutant," "source," "groundwaters of the State," and the "land of the State" are defined in section 505.2.

(2) The following are additional sources that may require Land Application permits or State permits for discharges:

(i) Recirculated Process Wastewater. The submission and information requirements shall be determined by the Department.

(ii) Wastewater Evaporation Systems for Process Wastewater. The submission and information requirements shall be determined by the Department.

(iii) Agricultural Waste Facilities, except those regulated under South Carolina R.61-43. The submission and information requirements shall be determined by the Department.

# Land Application Permit Program (Also Known As the No Discharge Permit Program)

Early Program. Land application of effluent from wastewater treatment facilities began in South Carolina in the early 1970s. Over the years the program evolved to include the permitting of sludge and [septage](#) land application. At first, a wastewater construction permit was the only permit required for a land application system. In 1985, SC Regulation 61-68, Water Classifications and Standards, was amended to include [ground water](#) as waters of the State. Also, standards for the quality of ground water were established at that time.



In accordance with Section 48-1-100 of the SC Pollution Control Act and Section 67.300 of SC Regulation 61-67, Standards for Wastewater Facility Construction, a proposed wastewater treatment facility with effluent disposal by land application is required to obtain a discharge permit before a construction permit can be issued to build the facility. The ground water discharge permit is the State [Land Application permit](#). These permits are also known as [ND](#) permits since there is no direct discharge (ND) to surface waters.



Today's Program. The Land Application Permit Program addresses land application of wastewater treatment plant effluent, non hazardous sludge, and septage. The Bureau of Water is responsible for the permitting, compliance, monitoring, and enforcement activities of the program. Sludge that is characterized as hazardous is regulated by DHEC's Bureau of Land and Waste

Management.

Persons with discharges to ground water are required to have State Land Application Permits. Typical effluent land application systems include:

- [spray fields](#),
- [tile fields](#),
- rapid infiltration basins,
- [percolation ponds](#), and
- [evaporation basins](#).



If a wastewater facility that generates waste sludge discharges to surface waters, the method of sludge disposal or use is normally

addressed in the [NPDES](#) permit rather than a separate Land Application Permit. Facilities that land apply both their effluent and sludge are normally issued one Land Application Permit for both activities. For more information on the use or disposal of sludge from wastewater treatment facilities with surface or ground water discharges, please visit our [Sludge Program](#) WEB page.

Industrial pretreatment facilities that land apply waste sludge are required to have State Land Application Permits for the sludge land disposal. These facilities must receive a State Land Application Permit for sludge disposal before a construction permit can be issued on the wastewater pretreatment system.



Agricultural facilities land apply manure and litter as fertilizer for growing crops. However, agricultural facilities are not permitted under the Land Application Permit Program. Rather, they are regulated under the State Agricultural Permit Program. For information on agricultural facilities, please visit our WEB page on the [Agricultural Program](#).

Also, all facilities that use injection for emplacement of fluid into the subsurface or groundwater by means of a well are regulated by the Underground Injection Control (UIC) Program rather than the Land Application Permit Program. The UIC program issues Permits to Construct and Permits to Operate to these facilities. For more information on the UIC Program, please visit our WEB page on the "[Underground Injection Control Program](#)."

While General Permits are allowed under this program, presently no Land Application General Permits have been issued. Ground water dischargers are, therefore, issued individual Land Application permits. All draft permits are public noticed. When there is sufficient public interest or significant issues, a public hearing will be held prior to a final permit decision. SC has about 170 active individual Land Application Permits.

To ensure protection of water quality, Land Application permits may contain:

The "Water Facilities Permitting Division " is responsible for issuing Land Application Permits for industrial facilities, federal facilities, municipalities, state owned facilities, commercial facilities, and private non-industrial systems including septage facilities. The Land Application System Permit Program, [Wastewater Construction Permit Program](#), the [NPDES Permit Program](#), the [Pretreatment Program](#), the [Satellite Sewer System Program](#), and the [Sludge Program](#) are integrated into a comprehensive water pollution control program on transportation, treatment, and disposal or use of wastewater and sludge.

Wastewater facilities and land application sites are routinely monitored by the [EQC Regional Offices](#) for compliance with their Land Application permits. Dischargers are assisted by the Bureau and EQC Regional Offices in achieving and maintaining compliance with their permits. Enforcement actions are used by the Bureau when necessary to attain compliance with permits, water quality standards, and State and Federal Laws and Regulations.

Bureau and Regional Staff are available to give talks and presentations on the different aspects of the Land Application Permit Program. Please send an E-mail to one of the [contacts](#) if you are interested in arranging a presentation for a group or class.

## Land Application: Public Notice Requirements

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Overview. Proposed decisions to issue, modify, reissue, deny, or terminate an ND permit must be public noticed prior to the Bureau making the final decision except for minor modifications. If there are significant issues or sufficient public interest in a proposed decision, the Bureau must hold a public hearing. Public hearings must also be public noticed. The notice for a public hearing may be combined with the notice of the proposed permit decision when the Bureau is aware that a hearing is necessary.

Final permit decisions do not have to be public noticed. Instead, the final determination must be mailed to every person who submitted written comments or requested notice of the final decision. If a public hearing was held, every person who signed in at the hearing is mailed a copy of the final permit decision and, even though it is not required, the final decision may also be placed in a newspaper of general circulation in the area of the discharge.

All public notices except public hearing notices, must be mailed to the following persons, unless they have asked not to receive public notices:

- the applicant;
- State and Federal Agencies agencies with jurisdiction over fish, shellfish, and wildlife resources and over coastal zone management plans, the Advisory Council on Historic Preservation, the State Historic Preservation Officer, including affecting States. In SC, this includes the SC Department of Natural Resource, the SC Department of Archives and History, DHEC's Office of Ocean and Coastal Resource Management, and as appropriate, the States of Georgia or North Carolina;
- the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the appropriate Council of Governments;
- Persons on the Bureau's [Mailing Lists](#);

In addition to mailing public notices to the above persons, the Bureau also uses any other method of notice calculated to give actual notice. This includes posting the public notices: on the Bureau's WEB page on Public Notices and in public places, such as post offices, county court house, and town halls.

Public notices on proposed permit issuances, reissuances, modifications, and terminations must include:

- the name and address of the Division in the Bureau of Water that is processing the permit action,
- name and address of the permittee,
- a brief description of the business conducted at the facility,
- the name, address, and telephone phone number of the permit writer,
- a brief description of the comment procedures,
- a brief description of the each existing or proposed discharge point and the name of the receiving water, and
- any other information necessary to explain the action being noticed.

If a public notice is for a proposed modification, the proposed permit modifications must be briefly explained. If the public notice is for a public hearing, the notice must give:

- the date of previous public notices related to the permit;
- the date, time, and place of the hearing; and
- a brief description of the of the nature and purpose of the hearing.

**New or Expanding Discharge.** Public notices for new or expanding discharges are mailed to the persons listed in Item I. Also, public notices for new or expanding discharges are placed in newspapers of general circulation in the areas of the discharges. Additionally, for new discharges, the Department posts the notices in locations in the areas of the facilities and/or application sites.

**Modification Other Than Expansion.** Public notices on proposed modifications, except minor modifications, are mailed to the persons listed in Item I. Also, public notices for major modifications are posted in the County Court Houses of the counties where the facilities are located and the Post Offices and Town Halls of the towns nearest the discharges. Please note that minor modifications do not have to be public noticed. For more information on modifications, please visit our ND WEB page on [Permit Modifications](#).

**Reissuance.** All public notices on reissuances of ND permits are mailed to the persons listed in Item I. Public notices on reissuance of ND permits are posted in the County Court Houses of the counties where the facilities are located and the Post Offices and Town Halls of the towns nearest the facilities. For more information on renewals, please visit our ND WEB page on [Permit Renewal Information](#).

**Termination.** All public notices of termination of ND permits are mailed to the persons listed in Item I. Public notices on termination of ND permits are posted in the County Court Houses of the counties where the facilities are located and the Post Offices and Town Halls of the towns nearest the discharges. For more information on terminations, please visit our ND WEB page on [Cancellations and Terminations](#).

**Public Hearings.** Public notices on public hearings are placed in newspapers of general circulation in the areas of the discharges. Additionally, if a previous public notice was issued on the proposed permit decision, the public notice of the hearing will be mailed to every person who sent written comments to the Bureau.

## Sludge Program

**Background.** Sludge is a by-product of water and wastewater treatment operations. Sludge from biological treatment operations is sometimes referred to as wastewater biosolids. Before sludge can be disposed, it needs to be treated to a certain degree. The type of treatment needed depends on the disposal method proposed. The two most common disposal methods are landfilling and land application. DHEC regulates the disposal of sludge via its various permitting programs.

**Programs.** Dewatered sludge can be landfilled in a municipal landfill if it is not a hazardous waste and if it has been properly dewatered. When a wastewater operation wants to landfill its sludge, the applicable Bureau of Water permit for the treatment plant (e.g., NPDES) identifies the specific landfill as a permit condition. Outside of landfilling, land application of sludge is regulated under R.61-9.503 (Domestic Sewage Sludge) and R.61-9.504 (Industrial Sludge) by the Bureau of Water. Permitting sites for land application of sludge normally is governed by the application of sludge on the land for beneficial use (i.e., agronomic rate for nitrogen). The application rate, though typically governed by nitrogen, is set by evaluating a variety of relevant pollutants and setting a conservative application rate.

**Beneficial use of sludge.** The beneficial use of sludge can be carried out on private farmland as well as dedicated sites owned by the owner of the wastewater treatment facility.

**Septage.** Septage is the material removed from septic tanks and grease traps. By regulatory definition septage is a type of sewage sludge. Land application of septage is regulated by R.61-9.503. Persons wanting to land-apply septage must receive a land application permit (and possibly a wastewater construction permit depending on the application and handling processes proposed).

**Regulation details.** All publicly owned and privately owned treatment facilities treating domestic wastewater are regulated by federal regulations 40 CFR 503. 40 CFR 503 deals with use and disposal of domestic sludge. The Bureau has developed a state regulation (R61-9.503) based on the key elements of the federal regulation. The industrial sludge regulations are in Section 504 of Regulation 61-9 and there are no comparable federal regulations.

**NPDES/ND Facilities** For a new wastewater treatment facility or an expansion of an existing wastewater treatment facility, a report on the method of sludge disposal is part of the NPDES or ND permit application that is included in a preliminary engineering report (PER) submittal package. The sludge report must address the applicable criteria contained in Sections 503 and 504 of Regulation 61-9.

The method of sludge disposal is reviewed with the PER on the wastewater treatment facility. After approval of the PER, the NPDES or ND permit will be drafted with the method of sludge disposal contained in it. Therefore, the procedures for processing a new wastewater treatment facility or an expansion of an existing wastewater treatment facility will include sludge handling for the wastewater treatment facility. Contact Brenda Green for permitting assistance at [greenba@dhec.sc.gov](mailto:greenba@dhec.sc.gov).



Industrial Pretreatment Facilities. For new or expanding industries with pretreatment systems that generate sludge, a report on the method of sludge disposal is included with the wastewater construction permit application on the pretreatment facility. When the method of sludge disposal is land application, a separate state land application system permit for the disposal of the sludge disposal must be issued before the state wastewater construction permit can be issued. When the method of sludge disposal is transporting to a landfill or other wastewater treatment facility, a letter of acceptance from the owner of the receiving facility must be included with the wastewater construction permit application package.

## **Ag Program**

South Carolina started regulating agricultural facilities in the 1960s. The Agricultural Program is administered by several Divisions within the Bureau of Water which oversee permitting, compliance, monitoring, and enforcement activities for agricultural facilities. State Law and Regulations require owners/operators of most commercial animal growing operations to obtain permits for the handling, storage, treatment (if necessary), and disposal of the manure, litter, and dead animals generated at their facilities. In addition to the state permit, animal operations that are Concentrated Animal Feeding Operations (CAFOs) are now required to have a National Pollutant Discharge Elimination System Permit if they have a discharge to surface water. Other agricultural activities such as peach packing, stock yards, slaughter houses, and meat markets may also be required to have agricultural permits depending upon their specific situation. The history of this program is given on our AG Program page.

The Bureau of Water's Stormwater, Construction, and Agricultural Permitting Division is responsible for issuing agricultural facility permits. Permitted facilities are routinely inspected by field staff for compliance. Owners of agricultural facilities are assisted by Bureau and field staff in achieving and maintaining compliance with their permits. Enforcement actions are used by the Bureau when necessary to attain compliance with permits, water quality standards, and State Laws and Regulations.

## **Contact**

- Program Manager -- Agricultural and Dams Permitting Section  
[Bill Chaplin](#) - (803) 898-3532
- [Henry Gibson](#) - (803) 898-4230
- Compliance  
[Tonya O'Cain](#) - (803) 898-4225

# NPDES Permitting **Sludge Disposal and Use**

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All publicly owned and privately owned treatment facilities treating domestic wastewater are regulated by federal regulations 40 CFR 503 deals with use and disposal of domestic sludge. This federal regulation has been adopted by the Bureau and is included in Regulation 61-9 under Section 503. Also, the Bureau has state regulations for use and disposal of industrial sludge not regulated either under R.61-9.503 or as a hazardous waste. The industrial sludge regulations are in Section 504 of Regulation 61-9.

For a new wastewater treatment facility or an expansion of an existing wastewater treatment facility, a report on the method of sludge disposal is part of the NPDES or ND permit application that is included in a preliminary engineering report (PER) submittal package. The sludge report must address the applicable criteria and conditions contained in Sections 503 and 504 of Regulation 61-9.

For a new facility, the method of sludge disposal is reviewed with the PER on the wastewater treatment facility. After approval of the PER, the NPDES or ND permit will be drafted with the method of sludge disposal contained in it. Therefore, the procedures for processing a new wastewater treatment facility or an expansion of an existing wastewater treatment facility will include sludge handling for the wastewater treatment facility. This involves a public notice with the opportunity for a public hearing and any appeals.

## **Monitoring, Sampling and Limitations**

Depending on the land application or sludge disposal methods, SCDHEC will establish within the permit the sampling and monitoring frequency requirements for each facility.

61-9.503.8 Sampling and analysis.

(a) Sampling. Representative samples of sewage sludge that is applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator shall be collected and analyzed. The Department may establish minimum requirements in permits for the proper method of sampling and analysis of sewage sludge.

61-9.503.12(o)

(2) Sludge analysis information shall be included as follows:

(i) Test results or rationale that demonstrates the non-hazardous nature of the sludge to the satisfaction of the Department.

(ii) Name, address, lab certification number, and telephone number of the laboratory conducting the analyses.

(iii) Sludge shall be analyzed for:

(A) Total solids (mg/l) and volatile solids (mg/kg).

(B) Nutrients (on a dry weight basis).

(1) Total Kjeldahl Nitrogen (mg/kg).

(2) Total inorganic nitrogen (mg/kg).

(3) Total ammonia nitrogen (mg/kg) and Total nitrate nitrogen (mg/kg).

(4) Total phosphorus (mg/kg).

- (5) Total potassium (mg/kg).
- (6) Calcium Carbonate Equivalency (if sewage sludge is alkaline stabilized).
- (C) Pollutants (on a dry weight basis).
  - (1) Arsenic (mg/kg).
  - (2) Cadmium (mg/kg).
  - (3) Copper (mg/kg).
  - (4) Lead (mg/kg).
  - (5) Mercury (mg/kg).
  - (6) Molybdenum (mg/kg).
  - (7) Nickel (mg/kg).
  - (8) Selenium (mg/kg).
  - (9) Zinc (mg/kg).
  - (10) Other compounds required by the permit or any pollutant required for monitoring under effluent guidelines (40 CFR Part 136; Subchapter N (40 CFR Parts 400 through 402 and 404 through 471)) may be required to be monitored for in the sewage sludge (if applicable).

- (vi) Site Monitoring Plan information shall be included as follows (when required):
  - (A) Groundwater monitoring information (if applicable).
  - (B) Soil monitoring methods and locations (if applicable).
  - (C) Surface water sampling methods and locations (if applicable).
  - (D) Metals testing, if required, due to previous application(s) (if applicable).
  - (E) Method to insure that the soil pH will remain within agronomic ranges during the life of the site (e.g. alkaline stabilized sludge projects).

**61-9.503.13 (b) Pollutant concentrations and loading rates - sewage sludge.**

- (1) Ceiling concentrations.

TABLE 1 OF SECTION 503.13 -- CEILING CONCENTRATIONS

Ceiling Concentration  
(milligrams per kilogram)  
Pollutant Dry weight basis

Arsenic	75
Cadmium	85
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7500

- (2) Cumulative pollutant loading rates.

TABLE 2 OF SECTION 503.13 -- CUMULATIVE POLLUTANT LOADING RATES

Cumulative Pollutant Loading Rate  
Pollutant (kilograms per hectare)

Arsenic	41
Cadmium	39

Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2800

(4) Annual pollutant loading rates.

TABLE 4 OF SECTION 503.13 -- ANNUAL POLLUTANT LOADING RATES

Annual Pollutant Loading Rate

Pollutant (kilograms per hectare per 365 day period)

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Arsenic	2.0
Cadmium	1.9
Copper	75
Lead	15
Mercury	0.85
Nickel	21
Selenium	5.0
Zinc	140

(c) Domestic septage. The annual application rate for domestic septage applied to agricultural land, forest, or a reclamation site shall not exceed the annual application rate calculated using equation (1), or the agronomic rate.

$$AAR = 0.0026N$$

(Equation 1)

Where :

AAR = Annual application rate in gallons per acre per 365 day period.

N = Amount of nitrogen in pounds per acre per 365 day period needed by the crop or vegetation grown on the land.

(d) Additional parameters may be required, from the application information or subsequent monitoring in a permit thereafter, but such needs will be assessed on an individual project basis. Any pollutant required for monitoring under effluent guidelines (40 CFR 136; Subchapter N (40 CFR Part 400 through 402 and 404 through 471)) may be required (in a permit) to be monitored for in the sewage sludge.

503.16 Frequency of monitoring.

(a) Sewage sludge.

(1) The frequency of monitoring for the pollutants listed in Table 1, Table 2, Table 3 and Table 4 of section 503.13; the pathogen density requirements in section 503.32(a) and section 503.32(b)(2) and the vector attraction reduction requirements in section 503.33(b)(1) through (b)(4) and sections 503.33(b)(7) and (b)(8) shall be the frequency in Table 1 of section 503.16. Facilities which generate less than 290 metric tons of sludge per year and dispose of the sludge once per year or less, may request a reduction in monitoring to a frequency of once per year. The Department will review these requests on a case-by-case basis.

TABLE 1 OF SECTION 503.16 - FREQUENCY OF MONITORING - LAND APPLICATION

Amount of Sewage Sludge:

(metric tons per 365-day period)

Frequency

Greater than zero but less than 1,500 Once per quarter (four times per year)

Equal to or greater than 1,500 but less than 15,000 Once per 60 days (six times per year)

Equal to or greater than 15,000. Once per month (12 times per year)

## Regulations

In addition to monitoring requirements SCDHEC provides numerous regulations governing the land application of effluents and sludges. They are primarily covered, within the Water program under Parts 503-505 of R.61-9. Other regulations may fall under DHEC's Bureau of Land and Waste as well other programs. The following is very general language as an overview for covering the requirement for permitting and managing such activities:

61-9.503.12(l) The Department may establish in permits the application buffer setbacks for property boundaries, roadways, residential developments, dwellings, water wells, drainageways, and surface water as deemed necessary to protect public health and the environment. Factors taken into consideration in the establishment of setbacks would indicate sludge application method, adjacent land usage, public access, aerosols, runoff prevention, and adjacent groundwater usage.

(m) The Department may establish permit conditions to require that sludge application remain consistent with the lime and fertilizer requirements for the cover, feed, food, and fiber crops based on published lime and fertilizer recommendations (such as "Nutrient Management for South Carolina", Cooperative Extension Service, Clemson University, EC 476).

(n) The Department may establish minimum requirements in permits for soil and/or groundwater monitoring, for bulk application sites, to verify compliance with this Regulation. Factors taken into consideration in the establishment of soil and groundwater monitoring will include groundwater depth, operation flexibility, application frequency, type of sludge, size of application area, and loading rate.

### 503.14 Management practices.

(a) Bulk sewage sludge shall not be applied to the land if it is likely to adversely affect a threatened or endangered species listed under section 4 of the Endangered Species Act or its designated critical habitat.

(b) Bulk sewage sludge shall not be applied to agricultural land, forest, a public contact site, or a reclamation site that is flooded, frozen, or snow-covered so that the bulk sewage sludge enters a wetland or other waters of the State, as defined in R.61-9.122.2, except as provided in a permit issued pursuant to section 402 or 404 of the CWA.

(c) Bulk sewage sludge shall not be applied to agricultural land, forest, or a reclamation site that is 10 meters or less from waters of the State, as defined in R.61-9.122.2, unless otherwise specified by the Department.

(d) Bulk sewage sludge shall be applied to agricultural land, forest, a public contact site, or a reclamation site at a whole sludge application rate that is equal to or less than the agronomic rate for the bulk sewage sludge, unless, in the case of a reclamation site, otherwise specified by the Department.

## Benefits and Impacts

The following may be helpful in addressing general concerns about land application of sludges:

### USEPA Water: Sewage Sludge (Biosolids)

You are here: [Water](#) » [Pollution Prevention & Control](#) » [Wastewater Programs](#) » [Treatment](#) » [Sewage Sludge \(Biosolids\)](#) » Frequently Asked Questions

#### Frequently Asked Questions

##### 1) What are Biosolids?

They are nutrient-rich organic materials resulting from the treatment of domestic sewage in a treatment facility. When treated and processed, these residuals can be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth.

##### 2) What is the difference between biosolids and sludge?

Biosolids are treated sewage sludge. Biosolids are carefully treated and monitored and must be used in accordance with regulatory requirements.

##### 3) Why do we have biosolids?

We have biosolids as a result of the wastewater treatment process. Water treatment technology has made our water safer for recreation and seafood harvesting. Thirty years ago, thousands of American cities dumped their raw sewage directly into the nation's rivers, lakes, and bays. Through regulation of this dumping, local governments now required to treat wastewater and to make the decision whether to recycle biosolids as fertilizer, incinerate it, or bury it in a landfill.

##### 4) How are biosolids generated and processed?

Biosolids are created through the treatment of domestic wastewater generated from sewage treatment facilities. The treatment of biosolids can actually begin before the wastewater reaches the sewage treatment plant. In many larger wastewater treatment systems, pre-treatment regulations require that industrial facilities pre-treat their wastewater to remove many hazardous contaminants before it is sent to a wastewater treatment plant. Wastewater treatment facilities monitor incoming wastewater streams to ensure their recyclability and compatibility with the treatment plant process.

Once the wastewater reaches the plant, the sewage goes through physical, chemical and biological processes which clean the wastewater and remove the solids. If necessary, the solids are then treated with lime to raise the pH level to eliminate objectionable odors. The wastewater treatment processes sanitize wastewater solids to control pathogens (disease-causing organisms, such as certain bacteria, viruses and parasites) and other organisms capable of transporting disease.

### **5) How are biosolids used?**

After treatment and processing, biosolids can be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth. The controlled land application of biosolids completes a natural cycle in the environment. By treating sewage sludge, it becomes biosolids which can be used as valuable fertilizer, instead of taking up space in a landfill or other disposal facility.

### **6) Where are biosolids used?**

Farmers and gardeners have been recycling biosolids for ages. Biosolids recycling is the process of beneficially using treated residuals from wastewater treatment to promote the growth of agricultural crops, fertilize gardens and parks and reclaim mining sites. Land application of biosolids takes place in all 50 states.

### **7) Why are biosolids used on farms?**

The application of biosolids reduces the need for chemical fertilizers. As more wastewater plants become capable of producing high quality biosolids, there is an even greater opportunity to make use of this valuable resource.

### **8) What percentage of biosolids are recycled and how many farms use biosolids?**

About 50% of all biosolids are being recycled to land. These biosolids are used on less than one percent of the nation's agricultural land.

### **9) Are biosolids safe?**

The National Academy of Sciences has reviewed current practices, public health concerns and regulator standards, and has concluded that "the use of these materials in the production of crops for human consumption when practiced in accordance with existing federal guidelines and regulations, presents negligible risk to the consumer, to crop production and to the environment."

### **10) Do biosolids smell?**

Biosolids may have their own distinctive odor depending on the type of treatment it has been through. Some biosolids may have only a slight musty, ammonia odor. Others have a stronger odor that may be offensive to some people. Much of the odor is caused by compounds containing sulfur and ammonia, both of which are plant nutrients.

### **11) Are there regulations for the land application of biosolids?**

The federal biosolids rule is contained in 40 CFR Part 503. Biosolids that are to be land applied must meet these strict regulations and quality standards. The Part 503 rule governing the use and disposal of biosolids contain numerical limits, for metals in biosolids, pathogen reduction standards, site restriction, crop harvesting restrictions and monitoring, record keeping and reporting requirements for land applied biosolids as well as similar requirements for biosolids that are surface disposed or incinerated. Most recently, standards have been proposed to include requirements in the Part 503 Rule that limit the concentration of dioxin and dioxin like compounds in biosolids to ensure safe land application.

### **12) Where can I find out more about the regulations?**

The biosolids rule is described in the EPA publication, [A Plain English Guide to the EPA Part 503 Biosolids Rule](#) . This guide states and interprets the Part 503 rule for the general reader. This guide is also available in hard copy. In addition to the Plain English Guide, EPA has prepared [A Guide to the Biosolids Risk Assessments for the EPA Part 503 Rule](#) which shows the many steps followed to develop the scientifically defensible, safe set of rules (also available from EPA in hard copy.)

### **13) How are biosolids used for agriculture?**

Biosolids are used to fertilize fields for raising crops. Agricultural use of biosolids, that meet strict quality criteria and application rates, have been shown to produce significant improvements in crop growth and yield. Nutrients found in biosolids, such as nitrogen, phosphorus and potassium and trace elements such as calcium, copper, iron, magnesium, manganese, sulfur and zinc, are necessary for crop production and growth. The use of biosolids reduces the farmer's production costs and replenishes the organic matter that has been depleted over time. The organic matter improves soil structure by increasing the soil's ability to absorb and store moisture.

The organic nitrogen and phosphorous found in biosolids are used very efficiently by crops because these plant nutrients are released slowly throughout the growing season. This enables the crop to absorb these nutrients as the crop grows. This efficiency lessens the likelihood of groundwater pollution of nitrogen and phosphorous.

### **14) Can biosolids be used for mine reclamation?**

Biosolids have been used successfully at mine sites to establish sustainable vegetation. Not only does the organic matter, inorganic matrix and nutrients present in the biosolids reduce the bioavailability of toxic substances often found in highly disturbed mine soils, but also regenerate the soil layer. This regeneration is very important for reclaiming abandoned mine sites with little or no topsoil. The biosolids application rate for mine reclamation is generally higher than the agronomic rate which cannot be exceeded for use of agricultural soils.

### **15) How are biosolids used for forestry?**



Biosolids have been found to promote rapid timber growth, allowing quicker and more efficient harvest of an important natural resource.

**16) Can biosolids be used for composting?**

Yes, biosolids may be composted and sold or distributed for use on lawns and home gardens. Most biosolids composts, are highly desirable products that are easy to store, transport and use.

**17) Are there rules about where biosolids can be applied?**

To determine whether biosolids can be applied to a particular farm site, an evaluation of the site's suitability is generally performed by the land applier. The evaluation examines water supplies, soil characteristics, slopes, vegetation, crop needs and the distances to surface and groundwater.

There are different rules for different classes of biosolids. Class A biosolids contain no detectible levels of pathogens. Class A biosolids that meet strict vector attraction reduction requirements and low levels metals contents, only have to apply for permits to ensure that these very tough standards have been met. Class B biosolids are treated but still contain detectible levels of pathogens. There are buffer requirements, public access, and crop harvesting restrictions for virtually all forms of Class B biosolids.

Nutrient management planning ensures that the appropriate quantity and quality of biosolids are land applied to the farmland. The biosolids application is specifically calculated to match the nutrient uptake requirements of the particular crop. Nutrient management technicians work with the farm community to assure proper land application and nutrient control.

**18) Are there buffer requirements or restrictions on public access to sites with biosolids?**

In general, exceptional quality (Class A) biosolids used in small quantities by general public have no buffer requirements, crop type, crop harvesting or site access restrictions. Exceptional Quality biosolids is the name given to treated residuals that contain low levels of metals and do not attract vectors. When used in bulk, Class A biosolids are subject to buffer requirements, but not to crop harvesting restrictions. In general, there are buffer requirements, public access, and crop harvesting restrictions for virtually all forms of Class B biosolids (treated but still containing detectible levels of pathogens).

**19) Can anyone apply biosolids to land?**

Anyone who wants to use biosolids for land application must comply with all relevant federal and state regulations. In some cases a permit may be required.

**20) What will it mean for a wastewater treatment plant, biosolids manager or land applier to agree to follow an Environmental Management System (EMS) for Biosolids?**

A voluntary EMS is now being developed for biosolids by the National Biosolids Partnership (NBP). The NBP consists of members from the Association of Metropolitan Sewerage Agency, the Water Environment Federation, the U.S. Environmental Protection Agency (EPA) and other stakeholders including the general public. Those facilities who pledge to follow the EMS are agreeing to follow community-friendly practices in addition to being in compliance with applicable state and Federal regulations. Community friendly practices refer to the control of odor, traffic, noise, and dust as well as the management of nutrients. Those who pledge to follow the EMS will be subjected to audit by impartial independent third parties.

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**U.S. Environmental Protection Agency** Office of Research and Development (ORD), National Risk Management Research Laboratory (NRMRL) Land Remediation and Pollution Control Division (LRPCD) 1

## **Study Examines the Fate of Multiple Contaminants when Biosolids are Applied to Agricultural Land**

### **Background:**

Biosolids are solid residues produced by wastewater that are treated to meet federal and state regulations for land application. About 60% of biosolids are applied to land as an agricultural amendment in the United States. Communities in all 50 states reuse their biosolids, many for the nutrient-rich benefits.

Anything that can be flushed down a toilet, go down a drain in a home or industrial facility, or enter a storm sewer can potentially end up in wastewater. Chemicals such as pharmaceuticals and cleaning products often used in homes are being detected in wastewater. Domestic wastewater also contains bacteria and other microbes from the digestive tracts of humans. Appropriate wastewater treatment methods are designed to remove pathogens in biosolids to safe levels. Many chemicals are monitored in biosolids before land application.



In 1993 under the Clean Water Act, the U.S. Environmental Protection Agency (EPA) issued regulations governing land application of biosolids, commonly referred to as the Part 503 Rule. In the years since the regulations were issued, however, wastewater treatment technologies and practices have changed and public concerns about the land application of biosolids have grown.

In 2002, the National Research Council (NRC) of the National Academy of Science issued a report entitled: "Biosolids Applied to Land: Advancing Standards and Practices" (NRC, 2002) recommending additional research to reduce uncertainties about the potential for adverse human health effects from exposure to biosolids.

Motivated by this report and other research questions, a collaborative research team under the leadership of the EPA's Office of Research and Development was assembled. A field-scale land application study was undertaken to evaluate sampling methods and analytical techniques.

### **Research Details:**

A major objective of the Biosolids study was to screen many of the available methods for applicability. The study included four environmental matrices (air, airborne particles, soil, and biosolids), 35 analyte groups, and 13 sampling methods.

The multimedia approach and numerous analyte-matrix combinations used in this study were unique in comparison with other projects in this area of study. Many studies focus narrowly on a class of analytes such as pathogens or chemicals, or an environmental matrix such as air or soil.

### Conducting Bioaerosol Sampling Behind Biosolids Applicator

The sewage sludge used in this study was anaerobically digested, dewatered by centrifugation, and treated with lime. Polymer was added during sludge treatment. This type of sludge treatment is commonly used in wastewater treatment plants and is likely to produce biosolids with detectable odors and aerosolized particulates. These biosolids were applied at typical rates using a commercial spreader to a field at the Piedmont Research Station of the North Carolina Department of Agriculture and Consumer Services. **2 EPA / 600 / F-12 / 625 National Risk Management Research Laboratory December 2012 Land Remediation and Pollution Control Division [www.epa.gov/nrmrl](http://www.epa.gov/nrmrl)** In this study, microbial and chemical concentrations were measured in the air and soil around the applied biosolids. Microbial analyses of air samples included indicator organisms, bacterial pathogens, viruses, and bacterial endotoxins. Air samples were also analyzed for odors, volatile compounds, ammonia, and hydrogen sulfide before, during and after application. Microbial and chemical concentrations were determined for soil samples before and after biosolids application.



Some of the results of the research, while not definitive, were encouraging in terms of public health impact. While in some cases microbes were detected, no bacterial pathogens or viruses were detected in the air samples collected. This study was not able to determine whether this result was because microbes were absent, or present and not detected. Approximately 20% of the soil samples contained detectable concentrations of enteric viruses, *Salmonella* spp. and viable helminth ova. Odors were detected in the air after biosolids application, but dissipated after 4 days.

Collection of Biosolids Sample for Headspace Analysis of Volatile Organic Compounds

### Outcomes and Impacts:

By obtaining data on the concentrations of airborne and soil-bound contaminants during the application of biosolids on land, this research along with the research of others may lead to the development of protocols that can be used in future studies to protect public health. Data gained from this project constitute a landmark set of simultaneous multimedia information associated with the application of biosolids on land. These data will be used to assist in the development of method protocols for sampling at other land sites where biosolids are applied. This information can also be used by risk managers, such as those at EPA program offices and regions, to evaluate the benefits and potential concerns with land application of biosolids.

**LAND RESEARCH PROGRAM WEB SITE:** [www.epa.gov/nrmrl/lrpcd](http://www.epa.gov/nrmrl/lrpcd)

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## **Concerns over land application of treated sewage effluents and sludges**

- Land application may have a negative perception by the public unless educated about the benefits of land application.
- During the actual land applying there may be some odor depending on the type of application and treatment method, the temperature, the type of sludge, and proximity to neighbors.
- Spray fields and rapid infiltration beds for treated sewage effluent can become saturated over time to the extent nitrates may leach into the groundwater or nearby surface waters. This greatly depends on the local soil conditions, the volume of water applied and the frequency of application.
- The integrity of reporting and accurate application of sludges, including animal wastes such as cow manure and chicken litter is dependent on the farmer or landowner.
- There may be reduced sampling compared to surface water disposal due to the use of the ground layers acting as filters to remove particulates and pathogens.

## **Benefits of land application of treated sewage effluents and sludges**

- A well managed land application program will provide for odor abatement, proper site selection, safe frequency of application, public education, and good community relations.
- Land application of treated effluents can provide for a viable alternative when a surface water body is not available.
- Biosolids applied to the land is a good way to condition poor soils and provide a low-cost, low grade fertilizer. Farmers have been land-applying animal wastes for centuries.
- Biosolids is a beneficial use of a waste that would otherwise be placed in landfills. They can improve soil conditions.
- Land application can reduce costs for wastewater treatment facilities and farmers.
- Class “A” compost and other biosolids can be used for landscaping, golf courses, parks, agriculture, and other general use by the public.

## **Impacts of a prohibition**

Information provided by SCDHEC shows there are 170 “No-discharge” facilities in South Carolina. This is in addition to many biosolids sites throughout the State. Within Richland County there are 4 No-discharge facilities:

Manchester Farms, Hopkins  
Ni America/Palmetto Utilities Spears Creek WWTF, Elgin  
Sandy Haven Realty, Elgin  
Linde Gas, Blythewood

In addition to the above facilities who have some type of treated effluent spray field or rapid infiltration beds, there are probably several wastewater treatment facilities that have a biosolids program, including our own Broad River WWTF. The Broad River plant is currently waiting on SCDHEC to issue a final biosolids permit to allow for selling or giving away its biosolids. Currently the County has temporary approval from SCDHEC to use the biosolids as a cover material and top-dressing for soil erosion control at the County's C&D landfill which reduces disposal cost for the Utilities Department and helps the Solid Waste Department with their soil conditions.

If the ban on all land application were to include existing sites then the above four facilities would have to find alternative means for effluent disposal. If the prohibition were to extend to all land application methods, then additional facilities would be impacted including the Broad River WWTF. This would increase costs and also eliminate the beneficial reuse of treated wastes from wastewater facilities and possibly animal facilities forcing them to landfill all sludges. Whether perceived as good or not, there are an estimated 50-60 animal "Ag" facilities with manure management plans in Richland County, primarily in the Hopkins/Eastover area and some in Blythewood.

## **In Summary**

- SCDHEC and USEPA are the primary agencies regulating all land application of treated effluent and sludges. The Part 503 Program has been in existence since the 1980's. These programs are intended for non-hazardous materials. Hazardous substances are managed by DHEC's Bureau of Land & Waste. Although these agencies are responsible for regulating land application it did not appear that a local governing body would not be allowed to establish stricter requirements.
- SCDHEC and EPA establish permitting and monitoring requirements for land application sites, including public notices and site approvals.
- "Spray fields" include more than spreading "sludge" on the ground. They may include use of treated effluent on golf courses and other public places as well as subsurface injection of treated solids, semi-solids, tillage, composting or top-dressing depending on the treatment and application method.
- Permit limits are established to control toxic metals, application rates, nitrogen, and pathogens.
- Biosolids is a proven alternative to recycle natural wastes for beneficial use that would otherwise go to landfills.
- The success of a spray field or other biosolids program is dependent on good public education and community relations, reliable monitoring and reporting, rotation of application sites, and proper site selection.

- Prohibition will potentially limit or eliminate existing facilities and prevent future facilities from land-applying.
- Disposal at septage sites would no longer be available and would most likely require disposal at a public wastewater treatment facility capable of handling septage.
- SCDHEC is currently updating their policies on land application to include greater accountability and include all sources of nitrogen at application sites. For example, a farmer who receives biosolids from a wastewater treatment facility and also applies chicken manure from his own farm will have to report both sources of nitrogen. This is intended to mitigate high levels of nitrogen in the soil and groundwater as well as address run-off to nearby water bodies. The final Broad River WWTF biosolids permit has been delayed while waiting on DHEC policy revisions.
- A prohibition, if approved should define the types of application methods and effluents or sludges that would be prohibited along with the type of sites prohibited. It should also determine if it would include existing facilities.
- Staff have asked for a meeting with SCDHEC to discuss land-application in general and also the impact of new policies on the Broad River WWTF biosolids program. If Council members wish to be included in this meeting staff will try to schedule a suitable time with SCDHEC.

