

LEGISLATIVE BUDGET AND FINANCE COMMITTEE

A JOINT COMMITTEE OF THE PENNSYLVANIA GENERAL ASSEMBLY

A Study Pursuant to House Resolution 2021 - 149: Proposed Revisions to Biosolids Permits

June 2023



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REPORT SUMMARY



Objectives

Our objectives for this study were the following:

- 1. To document the contextual and significant perspectives surrounding biosolids management.*
- 2. To assess whether permit holders, considering current testing technology, would practically be able to comply with the proposed revisions to PAG-07, PAG-08, and PAG-09.*
- 3. To estimate the costs that permit holders may incur to comply with the proposed revisions to PAG-07, PAG-08, and PAG-09, and how the costs associated with compliance may be passed on beyond permit holders.*

Report Overview

Biosolids, the organic matter left over from processing wastewater through sewage treatment facilities, and “beneficial use” are unfamiliar terms to most Pennsylvanians. But the beneficial use of biosolids is becoming an increasingly important issue because the Department of Environmental Protection (DEP) has proposed changes to the general permits that govern the beneficial use of biosolids in land application settings. DEP’s general permits are identified formally as PAG-07, PAG-08, and PAG-09. These permits originate from federal requirements (*The Standards for the Use or Disposal of Sewage Sludge – Title 40, Part 503*) and DEP’s responsibilities under the Clean Water Act.¹

In response to these proposed changes, the House of Representatives adopted House Resolution 2021-149 (HR 149). HR149 tasked the Legislative Budget and Finance Committee (LBFC) with determining if permit holders would be able to comply with DEP’s proposed permit changes, and perhaps more importantly, what costs permit holders may incur to comply with DEP’s proposed changes.

Our report is organized and answers the questions posed by HR 149 as follows:

- **Section I – Objectives, Scope, and Methodology**
- **Section II – Background Information**
- **Section III – Contextual Perspectives About Biosolids Management and Use**
- **Section IV – Estimated Costs and Consequences from DEP’s Proposed Revisions**

Our findings, conclusions, and recommendations are summarized on pages S-2 through S-8.

¹ The terms “biosolids” and “sewage sludge” are frequently used interchangeably, but the context of how each term is used may impact its meaning. In this report, we generally refer to biosolids as the treated final product from the wastewater treatment process.

SECTION II

Background Information on Biosolids

Each Pennsylvania household produces nearly 500 pounds of wastewater solids annually, and there are limited options to reuse or dispose of biosolids, creating an end-use problem for wastewater authorities. The beneficial reuse of biosolids is a recognized practice in nearly every state. In particular, biosolids are a valuable resource in farming operations, and in an agriculturally prosperous state like Pennsylvania (with over 50,000 operating farms), land application of biosolids presents an opportunity for inexpensive fertilizer to improve crop yields. Conversely, the biosolids dilemma is complicated by concerns over potential risks to public health and the environment. This concern is further amplified by Pennsylvania's downstream proximity to the Chesapeake Bay and the commonwealth's need to ensure compliance with the Bay's watershed improvement plan.

In the United States, over 16,000 publicly owned treatment systems provide wastewater collection, treatment, and disposal for approximately 75 percent of the population.² In Pennsylvania, there are approximately 700 wastewater treatment facilities.³

Most Pennsylvania households rely on their local public sewer system for wastewater treatment through a direct connection with underground sewer lines. According to DEP, about 26 percent of Pennsylvania households rely on an on-site septic system to collect their wastewater.⁴ For homes with septic tanks, septage haulers remove the wastewater from the tank and deliver it to a treatment plant. As of 2021, there were over 800 residential septage haulers in Pennsylvania.⁵

For the majority of Pennsylvania residents, who rely upon a wastewater treatment facility the process is largely unseen and forgotten. The process begins with wastewater leaving the home and entering sewer lines. First, wastewater (i.e., influent) enters a treatment facility from municipal or industrial sewage systems. The sewage moves through a series of treatment processes to clean the wastewater, during which water and solids are separated. The cleaned water (i.e., effluent) is then released safely back into the waterway. The solids (i.e., sludge) are collected and treated to be beneficially reused or disposed.

² See <https://www.cisa.gov/topics/critical-infrastructure-security-and-resilience/critical-infrastructure-sectors/water-and-wastewater-sector>, accessed March 14, 2023.

³ Department of Environmental Protection, *Understanding Biosolids Land Application in the Community: An Information Sheet for Adjacent Landowners*, March 2014.

⁴ See <https://www.dep.pa.gov/OurCommonwealth/pages/Article.aspx?post=32>, accessed March 13, 2023.

⁵ See <https://www.dep.pa.gov/Business/Water/CleanWater/WastewaterMgmt/Biosolids/Pages/ResidentialSeptage.aspx>, accessed March 22, 2023.

Biosolids are nutrient-rich organic materials produced from stabilizing sewage sludge and residential septage that meet specific criteria and are suitable for land application.⁶ Pennsylvania produces an estimated 2.2 million tons of sewage sludge and residential septage annually.⁷

Before biosolids are beneficially reused or disposed of, a stabilization process minimizes odors, destroys pathogens, and reduces vector attraction potential (e.g., flies and rodents).⁸ In Pennsylvania, biosolids are reused or disposed of in three ways: Land application (beneficial use), landfill, or incineration. In 2018, 43 percent of biosolids were land applied, primarily for agricultural purposes.

Because of Pennsylvania's proximity to the Chesapeake Bay, and lingering concerns about water quality degradation in the Bay, Pennsylvania, along with other neighboring jurisdictions must fall within set Total Maximum Daily Load (TMDL) limits for nitrogen, phosphorus, and sediment. The Chesapeake Bay Watershed Agreement and EPA aligns federal directives with state and local goals and spells out collective goals for the Bay through 2025. Pennsylvania's path toward meeting these goals is outlined in Phase III of the Chesapeake Bay Watershed Implementation Plan.

SECTION III

Contextual Perspectives with Biosolids Management and Use

Biosolids have been used as a beneficial product in agriculture and other land-based applications for decades. Biosolids use falls within the regulatory oversight of federal and state regulators, which can be a confusing and complex interplay.

The Environmental Protection Agency (EPA) published 40 CFR Part 503 – Standards for Use or Disposal of Sewage Sludge, commonly referred to as Part 503, in 1993. Part 503 serves as the comprehensive set of requirements for managing biosolids generated during the municipal wastewater treatment process, including standards regarding the allowable concentrations of several pollutants in sewage sludge, quality control criteria for biosolids - and, most important, for this study - land application guidelines.

⁶ Biosolids are treated wastewater that meets the requirements in Title 40 of the *Code of Federal Regulations (CFR) Part 503*. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge.

⁷ See <https://www.dep.pa.gov/Business/Water/CleanWater/WastewaterMgmt/Biosolids/Pages/default.aspx>, accessed March 14, 2023.

⁸ See <https://www.epa.gov/biosolids/fact-sheet-land-application-biosolids>, accessed March 14, 2023.

DEP released interim guidance regarding Part 503 in 1994. In 1997, the department updated the commonwealth’s current biosolids land application regulations as part of *Title 25, Pa. Code, Chapter 271, Subchapter J – Beneficial Use of Sewage Sludge by Land Application*. DEP monitors biosolids land applications with three “general permits,” which are classified based on quality. While the permits are similar in structure, each establishes separate criteria that must be met for beneficial use and also sets different requirements for when and how biosolids can be land applied. These three permits, which are at the center of HR 149 and this study, are as follows:

- **PAG-07** – Approval for Coverage under the General Permit for Beneficial Use of Exceptional Quality Biosolids.
- **PAG-08** – Approval for Coverage Under the General Permit for Beneficial Use of Biosolids by Land Application.
- **PAG-09** – Approval for Coverage Under the General Permit for Beneficial Use of Residential Septage by Land Application

PAG-07, PAG-08, and PAG-09 were last issued in 2009. The permits were set to expire in 2014 but were administratively extended. Since 2014, the three permits have been administratively extended nine times in either year or year-and-a-half increments. The permits are currently set to expire on November 30, 2023. DEP finalized predraft revisions and submitted the drafts to various stakeholder groups and internal boards for review. Although comments were received, the department has not taken further action to revise or update the permits.

Figure 1. Applicability of New Permit Requirements

	Prohibition of the “Blending” of Hauled-In Waste with Biosolids Unless Fully Treated	Addition of P-Index Based Application Rates Requirement	Addition of PFOA and PFOS Monitoring Requirement	Changes to Covered Storage and Limitations on Storage Requirements
PAG-07	✓	✓	✓	✓
PAG-08	✓	✓	✓	✓
PAG-09	✓	✓		

We reviewed the proposed drafts and identified four key areas that are either new requirements or significant changes to the biosolids/residential septage land application process. These changes include the following: 1) a prohibition on blending hauled-in waste; 2) a requirement to use a “P-Index” when land applying biosolids to control for excess phosphorus; 3) PFAS monitoring requirements; and 4) changes to storage requirements for biosolids. Of these four proposals, two changes would apply to all three permits, while two changes would affect only PAG-07 and PAG-08.

While each proposal has raised issues and concerns, in our opinion, the proposed change that introduces requirements for PFAS testing and uses the P-Index garnered the most attention. PFAS chemicals are known carcinogens, and Pennsylvania has already introduced PFAS limits for drinking water. However, these water standards do not apply to biosolids. In fact, there are no current federal testing requirements, nor limitations on PFAS in biosolids, nor an adopted standard for testing PFAS in biosolids. Further, EPA has not completed a risk assessment on PFAS in biosolids to determine if further federal regulatory action is warranted. This analysis is underway but not expected to be completed until December 2024.

Concerning the P-Index, DEP proposes factoring phosphorus load levels when applying biosolids. Nitrogen and phosphorus are necessary nutrients for plant (crop) growth. However, when applied excessively, these nutrients can be harmful to waterways—particularly the Chesapeake Bay watershed. DEP already regulates nitrogen application levels via an agronomic rate, which specifies levels based on the type of crop or vegetation grown on the land. To factor for phosphorus, DEP proposes the P-Index be used to calculate phosphorus application rates for biosolids. The P-Index is essentially a risk analysis tool that evaluates the consequences of phosphorus loss to surface waters. The P-Index has been an ongoing collaboration and development between the Pennsylvania State University (PSU), the State Conservation Commission (SCC), and USDA's National Resources Conservation Service (NRCS).

We reviewed other states' biosolid regulations for comparative purposes. Our review found little uniformity in biosolid regulations, especially regarding PFAS and P-Index. Only Maine has a complete ban on the land application of biosolids, which was driven by a PFAS contamination issue. Two states, Michigan and Wisconsin, have a testing requirement before biosolids can be land applied. Still, most states do not have a testing requirement, including California, which is often considered a heavily regulated state for environmental issues.

SECTION IV

Costs and Consequences from DEP's Proposed Revisions

HR 149 asked us to determine if permit holders could “practically comply” with DEP's proposed revisions [for PFAS testing] considering current testing technology. DEP proposes a testing frequency based on the commonwealth's existing regulatory requirements for contaminant monitoring, which is based on the tonnage of processed biosolids. Using these existing criteria, we estimate that the cost to permit holders could vary from once a year (at least \$900) to more than 12 times per year, with

an annual cost of over \$13,000. We found these costs are likely to be manageable for larger facilities, but smaller facilities, which are also more rural-based permit holders, are likely to face a disproportionate impact over the long term as they struggle to improve their facility infrastructure.

In developing cost estimates, access to data was problematic. Because PAG-07 and PAG-08 permit holders are similar entities, we grouped these facilities into one cohort and conducted a survey of a selection of small, medium, and large wastewater treatment facilities from different commonwealth regions. We queried the permittees on DEP’s four key permit

Figure 2. Possible Ratepayer Increases


























If Monthly Sewer Bill is Currently:	New Monthly Sewer Bill with Estimated Fee Increases of:				
	5 Percent	10 Percent	15 Percent	20 Percent	25 Percent
\$50	\$52.50	\$55.00	\$57.50	\$60.00	\$62.50
\$75	\$78.75	\$82.50	\$86.25	\$90.00	\$93.75
\$100	\$105.00	\$110.00	\$115.00	\$120.00	\$125.00
\$125	\$131.25	\$137.50	\$143.75	\$150.00	\$156.25

changes and tried to calculate cost estimates. DEP’s permit changes will increase implementation costs, but precisely computing these costs is impossible due to the site-specific nature of each facility. These costs are influenced by the operation’s size, the facility’s age, the type of wastewater treatment procedures used, storage capacity, land availability to disperse biosolids, landfill fees, and transportation costs, among numerous other factors.

Our analysis revealed three unintended consequences with DEP’s proposed changes: (1) issues with landfilling biosolids, (2) issues with incineration of biosolids, and (3) availability of land application sites. Finally, we calculated the possible consequences for ratepayers – increased fees.

With respect to PAG-09 permit holders, data was even more scarce as these permittees are private business entities. We obtained proprietary information from two permit holders whose expenses were similar, which gave us confidence in the data they shared with us. Again, while it is impossible to calculate the precise cost implications for all PAG-09 permit holders, based on the data we collected, a conservative cost increase of \$90 to \$150 per septic cleaning is reasonable.

Figure 3. Known/Unknown Conditions Impacting Cost Calculations

	 KNOWN:	 UNKNOWN:
P H O S P H O R U S	 Excess phosphorus is <i>dangerous</i> to Chesapeake Bay	 Amount of phosphorus reduction from P-Index implementation is <i>unknown</i>
	 DEP will receive <i>credit</i> in Chesapeake Bay WIP program for phosphorus reduction efforts	 DEP <i>not aware</i> of field studies comparing phosphorus loss in biosolids compared to fertilizers
	 P-Index is <i>less restrictive</i> than other potential biosolids land application <i>management practices</i>	 <i>Potential loss</i> of biosolids <i>land application sites</i>
T E S T I N G	 PFAS monitoring could help DEP <i>identify pollution hot spots</i>	 DEP's <i>next steps</i> with PFAS contamination data are <i>unclear</i>
	 PFAS reduction efforts can <i>benefit</i> both the environment and human health	 Pending EPA risk assessment, <i>harmful exposure levels</i> for PFAS in biosolids are <i>unknown</i>
		 <i>National standard</i> for PFAS testing in biosolids is <i>currently not finalized</i>
		 Expected <i>increase in costs</i> to permit holders, but <i>full extent</i> is <i>unknown</i>
B L E N D I N G	 DEP says <i>proposed change</i> is a <i>clarification</i> of existing regulations	 Regulations currently <i>do not define biosolids, blending, industrial residuals,</i> or other key terms
	 Some <i>hauled-in wastes</i> could <i>impact</i> the ability for facilities to <i>adequately treat wastewater</i> and biosolids	 <i>Uncertainty</i> remains regarding <i>oversight of land applying blended material</i>
		 <i>Proposed change</i> to land application of blended material could ultimately <i>require new permits</i> , which are <i>not complete</i>
S T O R A G E	 Preventing <i>excessive stockpiling</i> of biosolids can reduce <i>reliquification, leachate runoff,</i> and <i>pollution events</i>	 <i>Tarps not recommended</i> for large biosolids stockpiles, meaning <i>new structures</i> will likely be <i>needed for field storage</i>
	 <i>Large biosolids piles</i> can lead to <i>foul odors</i> for adjacent landowners	 Some <i>wastewater treatment plants do not have the space</i> to <i>add more storage</i> on-site
		 Expected <i>increase in costs</i> to build <i>new storage structures, find additional storage space, or land application sites</i> , but <i>full extent</i> is <i>unknown</i>
		 Regulations currently <i>do not mention speculative accumulation of biosolids</i>

We outline the complications with DEP’s proposed permit changes, principally that there continues to be a plethora of “unknown” conditions, which are particularly problematic to PAG-07 and PAG-08 permit holders.

DEP is rightly trying to meet its mission to protect the environment and public health, but we believe these unknown conditions need to be resolved holistically and transparently. DEP has the authority to revise its general permits. Still, we believe a more collaborative approach that focuses on updating the underlying regulations governing the beneficial use of biosolids (i.e., 25 Pa Code Chapter 271 Subchapter J) will best achieve this common goal.

Finally, we recognize that innovation is needed to better position the “beneficial use” of biosolids in Pennsylvania, and we recommend a grant program be established to further innovation. We found a model for such a program in the Pennsylvania Dairy Investment Program, which supports research and development, organic transition, value-added processing, and marketing grants supporting

Pennsylvania’s dairy industry. The program is administered jointly by the Department of Community and Economic Development (DCED) and the PA Department of Agriculture (PDA) under the direction of the Commonwealth Financing Authority (CFA).

Recommendations

We recommend:

- 1) DEP should update the underlying regulations on the beneficial use of biosolids by land application (25 Pa Code Chapter 271 Subchapter J) to provide better consistency between the regulations and DEP's proposed general permits.
- 2) If continuing with a P-Index requirement for biosolids land applications, DEP should document all information that will be required from EPA to receive credit in the WIP.
- 3) The General Assembly should consider establishing a grant program similar to the Dairy Investment Program to aid municipal authorities in developing innovative uses for biosolids.

SECTION I OBJECTIVES, SCOPE, AND METHODOLOGY



Why we conducted this study...

House Resolution 149 of 2021 was adopted on December 15, 2021, and required us to review certain aspects of the Department of Environmental Protection's (DEP) proposed revisions to general permits over biosolid handling.

The officers of the Legislative Budget and Finance Committee (LBFC) adopted the project as a staff project on February 9, 2022.

Objectives

The Pennsylvania House of Representatives adopted House Resolution (HR) 149 on December 15, 2021. HR149 focuses on biosolids management and three "general permits" issued by the Pennsylvania Department of Environmental Protection (DEP). These permits are General Permit PAG-07, General Permit PAG-08, and General Permit PAG-09.

As a matter of practice, once a project is adopted by the Legislative Budget and Finance Committee (LBFC) officers, staff develop objectives to answer the intent of the resolution and to further guide planning efforts. The officers adopted HR149 as a staff project on February 9, 2022. With respect to HR149, the following objectives were identified:

1. To document the contextual and significant perspectives surrounding biosolid management and regulation in Pennsylvania.
2. To assess whether permit holders, considering current testing technology, would practically be able to comply with the proposed revisions to PAG-07, PAG-08, and PAG-09.
3. To estimate the costs that permit holders may incur to comply with the proposed revisions to PAG-07, PAG-08, and PAG-09, and how the costs associated with compliance may be passed on beyond permit holders.

Scope

Our audit primarily covered the period January 1, 2019, through December 31, 2022. However, in some areas we extended the scope beyond this period to provide additional context about the subject matter. These areas are noted throughout the report.

Methodology

To develop an understanding of the biosolids industry, we conducted preliminary research and information gathering on wastewater treatment, sewage sludge, biosolids management, and agricultural practices used in Pennsylvania. We reviewed relevant state and federal statutes and guidelines regarding biosolids land application, including *Title 25, Pa. Code, Chapter 271, Subchapter J – Beneficial Use of Sewage Sludge by Land Application*, *40 CFR Part 503*, and EPA procedures and standards regarding PFAS contamination and testing, among other documentation. We also researched information regarding Pennsylvania’s involvement in the Chesapeake Bay Program and the commonwealth’s Watershed Implementation Plan (WIP) submitted as part of the initiative. In addition, we interviewed federal and state government officials, academicians/researchers, wastewater engineers, representatives of municipal authorities, and other stakeholders as part of our information-gathering process.

During our interviews, it became clear that biosolids management is a localized industry. One of the factors that limited DEP’s ability to develop cost estimates for proposed permit revisions was the inability to collect baseline data from all permit holders in the commonwealth. Understanding this limitation for conducting a comprehensive cost analysis, we took a different approach and collaborated with a stakeholder association to identify a diverse selection of small, medium, and large wastewater treatment facilities that maintain either PAG-07 or PAG-08 permits. We then surveyed this sample of permit holders, who agreed to share their thoughts/opinions about the proposed changes on the condition of anonymity.

All survey instruments carry some degree of caution when used. For example, it is important to keep in mind that sample size may not always be representative, word choice can influence responses, and some individuals may not share their true opinions. With respect to our survey, because the proposed revisions are in the “pre-draft” stage, most permit holders are only generally familiar with the changes, rather than having knowledge of the specific requirements in the revision. As a result, there is an inherent bias that *any* change to the status quo will result in negative outcomes, particularly when the proposals involve additional administrative burdens to the permittee. To this point, we specifically chose not to survey all permit holders because in our experience, when conducting these types of information-gathering surveys, responses tend to be over-generalized. However, we acknowledge that not further extending our survey to all permit holders may influence the opinions and conclusions of the reader. Therefore, we caution that the results of our survey should not be applied to the entire population of PAG-07 and PAG-08 permit holders.

Using our survey responses, as well as information obtained from our interviews and research, we were able to develop cost estimate ranges for several of the key proposed permit revisions, including PFAS testing, Phosphorus-Index (P-Index) based land application requirements, additional storage standards, and adaptations to hauled-in waste guidelines. In addition, we were able to project potential impacts that residents could experience because of these changes. Beyond the costs that can directly be associated with potential permit changes, we also identified many indirect costs that could result from changes to biosolids management practices. However, since DEP's permit revisions are still "pre-draft," these indirect costs involve assumptions as to what could potentially happen within the biosolids industry because of changes to the general permits. While this situation makes defining the full cost of the proposed permit changes blurred, our analysis provides a starting point for considerations that should be included when discussing proposed permit revisions.

Similarly, obtaining information on proposed changes to PAG-09 proved to be a challenge, as many of these permit holders are residential septage haulers, which are private business enterprises. However, two PAG-09 permit holders agreed to provide financial information, including their projections for possible outcomes of implemented permit changes. These data points served as the basis for our analysis of the potential impacts to PAG-09 permit changes. We believe the data to be reasonable to use for this preliminary analysis, but it is unaudited, and we cannot provide any assurance as to its validity or accuracy. We believe the information provided to be accurate, as the coverage areas of these residential septage haulers partially overlap, and the cost estimates submitted to us for review were uniform despite both entities being unaware of the information provided by the other. However, much like the discussion with our PAG-07 and PAG-08 survey, we recommend caution when attempting to apply these results to the entire population of PAG-09 permit holders.

Finally, we also explored the biosolids management practices of the Chesapeake Bay Program jurisdictions, as well as many northeastern states. Reviewing these practices, specifically regarding PFAS requirements and phosphorus load management, was beneficial to our understanding of Pennsylvania's biosolids land application policies in the broader national landscape.

Frequently Used Abbreviations and Definitions

Throughout this report, we use a number of abbreviations for government-related agencies, terms, and functions. These abbreviations are defined as follows:

Abbreviation	Name	Definition
AAB	Agricultural Advisory Board	Provides advice and expertise to the DEP Secretary, and reviews and provides comments on policies, rules, and regulations of DEP which have an impact or a potential impact on agriculture or the agricultural community.
CBC	Chesapeake Bay Commission	A tri-state (Pennsylvania, Maryland, Virginia) legislative commission to advise the members of the General Assemblies on issues regarding the Chesapeake Bay.
DEP	Pennsylvania Department of Environmental Protection	The state agency that is responsible for protecting and preserving the land, air, water, and public health through enforcement of the state's environmental laws.
EPA	United States Environmental Protection Agency	An executive agency of the United State Federal government tasked with environmental protection matters.
NPDWR	National Primary Drinking Water Regulation	Legally enforceable primary standards and treatment techniques that apply to public water systems to limit the levels of contaminants in drinking water.
PAG-07	Beneficial Use of Exceptional Quality Biosolids	The DEP general permit for the beneficial use of exceptional quality biosolids.
PAG-08	Beneficial Use of Biosolids by Land Application	The DEP general permit for the beneficial use biosolids by land application.
PAG-09	Beneficial Use of Residential Septage by Land Application	The DEP general permit for beneficial use of residential septage by land application.
PDA	Pennsylvania Department of Agriculture	The Commonwealth agency that is responsible for supporting a sustainable and safe food supply and agricultural products, be good stewards of land and natural resources, promote the viability of farms, protect consumers, and safeguard the health of people, plants, animals, and the environment.
PFAS	Per- and Polyfluorinated Substances	A group of widely used, long-lasting chemicals, components of which break down very slowly over time.

PFOA	Perfluorooctanoic acid	One group of related chemicals known as PFAS. This group of chemicals is commonly used in non-stick and stain-resistant consumer products, food packaging, fire-fighting foam, and industrial processes.
PFOS	Perfluorooctane sulfonic acid	One group of related chemicals known as PFAS. PFOS is a synthetic chemical used to make products resistant to stains, grease, soil, and water.
P-Index	Phosphorus Index	A risk assessment tool used to quantify the potential for phosphorus runoff from a field.
SCC	State Conservation Commission	A commission that has a primary mission to ensure the use of Pennsylvania's natural resources and to protect and restore the natural environment through the conservation of soil, water, and related resources. The commission provides support and oversight to the state's 66 county conservation districts.
TMDL	Total Maximum Daily Load	Federal limits on nitrogen, phosphorus, and sediment pollution related to the Chesapeake Bay.
WRAC	Water Resources Advisory Committee	Provides technical advice to the Department of Environmental Protection on the environmental, economic, and other social impacts of existing, new or proposed regulations, policies, and control techniques or technologies affecting water resources management including but not limited to surface/ground water quality and quantity issues.

Acknowledgments

We thank the staff of the Pennsylvania Department of Environmental Protection, including Taylor Nezat, Director of Legislative Affairs, who served as a liaison for our information requests. We also thank the representatives from the United States Environmental Protection Agency, as well as the numerous researchers, industry experts, and stakeholder groups who provided their insights and perspectives on this subject area.

Important Note

This report was developed by the staff of the Legislative Budget and Finance Committee, including Deputy Executive Director, Stephen Fickes, and staff analysts, Stevi Sprenkle, Shanika Mitchell-Saint Jean and Matthew Thomas. The release of this report should not be construed as an

indication that the Committee as a whole, or its individual members, necessarily concur with the report's findings, conclusions, or recommendations.

Any questions or comments regarding the contents of this report should be directed to the following:

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SECTION II BACKGROUND INFORMATION



Fast Facts...

- ❖ *Pennsylvania generates an estimated 2.2 million tons of sewage sludge and residential septage per year. This sludge can be used beneficially as biosolids.*
- ❖ *As of 2018, 43 percent of biosolids are land applied for agricultural purposes in Pennsylvania.*
- ❖ *The Susquehanna River is the largest tributary to the Chesapeake Bay, providing 90 percent of the freshwater flow to the upper Bay and half of the total freshwater flow to the Bay.*

Biosolids management is becoming an increasingly difficult and complex issue in Pennsylvania. According to the Pennsylvania Department of Environmental Protection (DEP), each Pennsylvania household produces nearly 500 pounds of wastewater solids annually, and there are limited options to reuse or dispose of biosolids, creating an end-use problem for wastewater authorities.

The beneficial reuse of biosolids is a recognized practice in nearly every state. In particular, biosolids are a valuable resource in farming operations, and in an agriculturally prosperous state like Pennsylvania (with over 50,000 operating farms), land application of biosolids presents an opportunity for inexpensive fertilizer to improve crop yields. Conversely, the biosolids dilemma is complicated by concerns over potential risks to public health and the environment. This concern is further amplified by Pennsylvania's downstream proximity to the Chesapeake Bay and the commonwealth's need to ensure compliance with the Bay's watershed improvement plan.

In the following discussion we provide background information about biosolids and how the product is managed and used in Pennsylvania. To that end, an important definitional distinction is necessary. Although the terms "biosolids" and "sewage sludge" are frequently used interchangeably, the terms are different. *Biosolids* refer to *sewage sludge* that has undergone sufficient treatment for stabilization and pathogen reduction and is of sufficiently high quality for land application. Treatment facilities use different processes required by federal and state regulations to meet the stabilization and pathogen requirements. Within this report, we use the term "sewage sludge" to refer to wastewater treatment solids generally and "biosolids" to refer specifically to material suitable for land application.⁹

Wastewater Treatment

Wastewater is "used" water that comes from substances such as human waste, food scraps, oils, soaps, and chemicals. In homes, wastewater comes from sinks, showers, bathtubs, toilets, washing machines, and dishwashers. Wastewater also comes from businesses and industries in the production of food and goods.

⁹ See <https://extension.psu.edu/what-is-sewage-sludge-and-what-can-be-done-with-it>, accessed March 13, 2023.

After wastewater leaves industrial, commercial, and domestic sources, it goes to a wastewater plant.¹⁰ The wastewater treatment process protects human and ecological health from waterborne diseases.¹¹ Wastewater treatment systems assist in reducing pollutants in wastewater before being released back into the environment.

In the United States, over 16,000 publicly owned treatment systems provide wastewater collection, treatment, and disposal for approximately 75 percent of the population.¹² In Pennsylvania, there are approximately 700 wastewater treatment facilities.¹³

Most Pennsylvania households rely on their local public sewer system for wastewater treatment through a direct connection with underground sewer lines. According to DEP, about 26 percent of Pennsylvania households rely on an on-site septic system to collect their wastewater.¹⁴ For homes with septic tanks, septage haulers remove the wastewater from the tank and deliver it to a treatment plant. As of 2021, there were over 800 residential septage haulers in Pennsylvania.¹⁵

Treatment Process

Basic wastewater treatment includes three primary processes: physical, chemical, and biological. Exhibit 1 below provides a summary.

¹⁰ Federal regulations define *treatment works* as: a federally, publicly, or privately owned device or system used to treat (including recycle and reclaim) domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature. (40 CFR Part 503.9)

¹¹ Center for Sustainable Systems, University of Michigan, *U.S. Wastewater Treatment Factsheet*, September 2022.

¹² See <https://www.cisa.gov/topics/critical-infrastructure-security-and-resilience/critical-infrastructure-sectors/water-and-wastewater-sector>, accessed March 14, 2023.




¹³ Department of Environmental Protection, *Understanding Biosolids Land Application in the Community: An Information Sheet for Adjacent Landowners*, March 2014.

¹⁴ See <https://www.dep.pa.gov/OurCommonWealth/pages/Article.aspx?post=32>, accessed March 13, 2023.

¹⁵ See <https://www.dep.pa.gov/Business/Water/CleanWater/WastewaterMgmt/Biosolids/Pages/ResidentialSeptage.aspx>, accessed March 22, 2023.

Exhibit 1

Basic Wastewater Treatment Processes

 <p>Physical</p>	<p><i>Eliminates solids</i> from wastewater as it flows through a screening process that removes debris and solids. Heavy waste metals settle out of wastewater by gravity. Particles with entrapped air float to the top of the water and are removed.</p>
 <p>Chemical</p>	<p>Chemicals are used to create changes in pollutants that increase the removal of these new forms by physical processes. Simple chemicals can be added to wastewater to cause certain pollutants, such as phosphorus, to bunch together into large, heavier masses which can be removed faster through additional physical processes.</p>
 <p>Biological</p>	<p>Bacteria and other small organisms in water consume organic matter in sewage, turning it into new bacterial cells, carbon dioxide, and other by-products. The addition of oxygen into the wastewater allows microorganisms to grow rapidly and metabolize organic pollutants.</p>

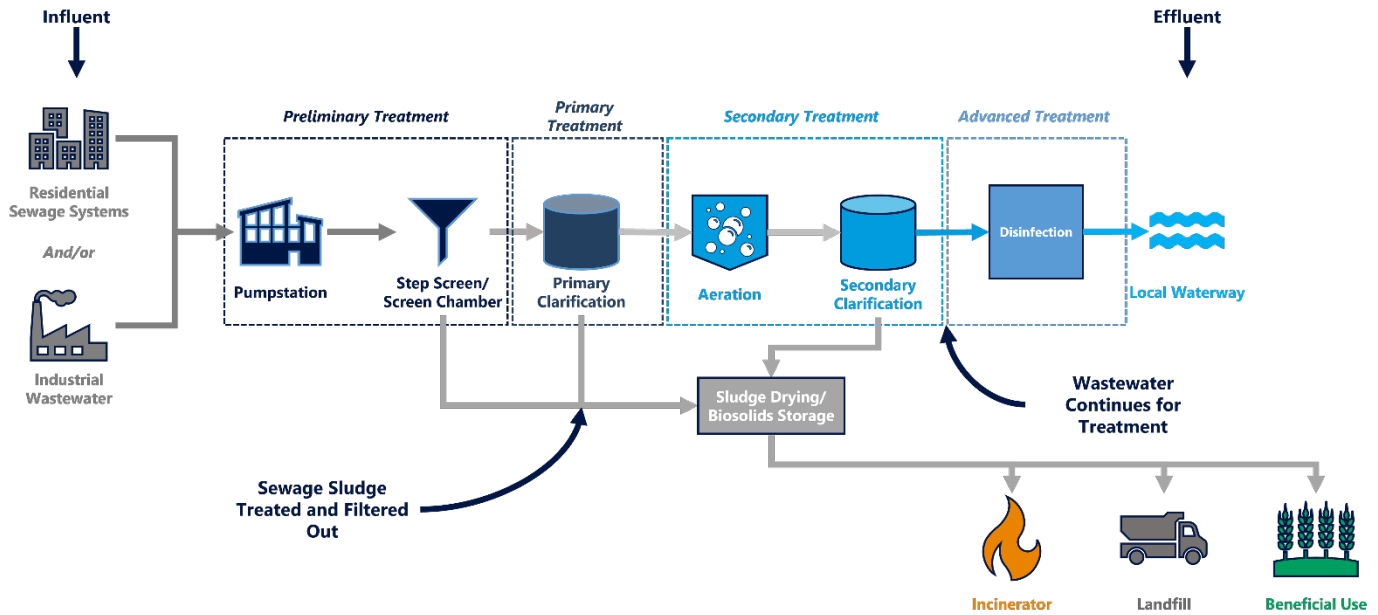
Source: Developed by LBFC staff from information obtained from the United States Environmental Protection Agency.

Although there may be subtle differences in each plant's processes, they are the same for most treatment facilities. First, wastewater (i.e., influent) enters a treatment facility from municipal or industrial sewage systems. The sewage moves through a series of treatment processes to clean the wastewater, during which water and solids are separated. The cleaned water (i.e., effluent) is then released safely back into the waterway. The solids (i.e., sludge) are collected and treated to be beneficially reused or disposed. Exhibit 2 presents a high-level overview of a general wastewater treatment process.¹⁶

¹⁶ Department of Environmental Protection, *Biosolids Sampling Manual*, March 2013.

Exhibit 2

Typical Wastewater Treatment Plant Process*



Note: */ This graphic has been simplified for illustrative purposes.
Source: Developed by LBFC staff from information provided by DEP.

Wastewater treatment is a continuous, 24 hours a day, 7-days-a-week process. According to EPA, wastewater treatment facilities in the United States process approximately 34 billion gallons of wastewater every day.¹⁷

Biosolids

Biosolids are nutrient-rich organic materials produced from stabilizing sewage sludge and residential septage that meet specific criteria and are suitable for land application.¹⁸ Pennsylvania produces an estimated 2.2 million tons of sewage sludge and residential septage annually.¹⁹

¹⁷ See <https://www.epa.gov/nutrientpollution/sources-and-solutions-wastewater>, accessed March 21, 2023.

¹⁸ Biosolids are treated wastewater that meets the requirements in Title 40 of the *Code of Federal Regulations (CFR) Part 503*. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge.

¹⁹ See <https://www.dep.pa.gov/Business/Water/CleanWater/WastewaterMgmt/Biosolids/Pages/default.aspx>, accessed March 14, 2023.

Before biosolids are beneficially reused or disposed of, a stabilization process minimizes odors, destroys pathogens, and reduces vector attraction potential (e.g., flies and rodents).²⁰ Federal regulations classify biosolids into two distinct classes:

- **Class A Biosolids.** Domestic sewage sludge that has been treated to meet the requirements of 40 CFR Part 503.32(a), which includes options for advanced, or additional, pathogen reduction. Biosolid pathogens are at levels below detectable limits. Within this class are Exceptional Quality (EQ) biosolids, which meet EPA's highest pollutant, pathogen, and vector attraction reduction standards. EQ biosolids have little to no use restrictions.²¹ All EQ biosolids have met the pathogen reduction standards to be considered Class A. However, according to DEP, it is important to note that it is possible for sewage sludge to meet Class A pathogen reduction standards but fail to meet the remaining criteria to be considered EQ (see Appendix E).
- **Class B Biosolids.** Domestic sewage sludge that has been treated to meet the requirements of 40 CFR Part 503.32(b), which includes options for significantly reducing pathogens. Within this category, pathogens are detectable but have been reduced to levels that do not threaten public health and the environment.

Biosolid Reuse/Disposal

As previously mentioned, options for the reuse or disposal of biosolids are limited. In Pennsylvania, biosolids are reused or disposed of in three ways: land application; landfill; or incineration.

Land Application of Biosolids. As the name implies, land application involves spraying or spreading biosolids onto the land surface. Application methods include the injection of biosolids below the land surface or incorporating biosolids into the soil so the biosolids can either condition the soil or fertilize crops or vegetation grown in the soil.²² In Pennsylvania, land application is mostly used for agricultural purposes. In addition to agricultural use, biosolids can be land applied to reclamation sites (e.g., coal mining or forestry operations), landscaping, and general horticulture purposes. In Pennsylvania, a permit is required to land-apply biosolids, which will be discussed in Section III.

²⁰ See <https://www.epa.gov/biosolids/fact-sheet-land-application-biosolids>, accessed March 14, 2023.

²¹ Boczek, L., R. Herrmann, E. Resek, and T. Richman, *Pathogens and Vector Attraction in Sewage Sludge*. United States Environmental Protection Agency, January 2023.

²² 40 CFR Part 503.11.

Biosolids can be beneficially used for agricultural purposes because biosolids contain a significant number of macronutrients that can improve crop yields and reduce the need for commercial fertilizers. Biosolids used for agricultural purposes are applied based on "agronomic rates." This rate is based on crop type, geographic location, and soil characteristics.²³ When used correctly, agronomic rates prevent the buildup of macronutrients in the soil. In Pennsylvania, nitrogen is the primary nutrient that limits biosolid land application.²⁴

In addition to agricultural uses, land-applied biosolids provide the following other beneficial uses:²⁵

- Organic matter and nutrients to sod and nursery operations.
- Erosion control.
- Improvement to rangeland soil.
- Slope stabilization.

While there are many beneficial uses to land application, biosolid use is not without controversy. In one significant example (*Gilbert v. Synagro*), adjacent landowners to a York County farm argued that the farm's use of biosolids was a public nuisance. The Pennsylvania Supreme Court concluded that the use of biosolids falls under the definition of "normal agricultural operation" under the state's Right to Farm Act.²⁶ As a result, no municipal nuisance actions can be brought against lawfully operating farms.²⁷

Landfill of Biosolids. Biosolids may be disposed of at a landfill, much like garbage. Landfilling biosolids includes two options for disposal: monofill (a landfill that accepts only wastewater treatment plant biosolids) or co-disposal landfill (a landfill that combines biosolids with municipal solid waste).²⁸ Landfilled biosolids must meet either Class A or Class B pathogen reduction requirements and be covered with soil or other materials at the end of each operating day.²⁹ Biosolids can benefit landfills with energy recovery programs, and biosolids can provide final soil coverage to promote vegetation on a closed landfill. Compared to incineration (discussed below), landfill disposal can be the least costly

²³ See <https://www.epa.gov/biosolids/basic-information-about-biosolids>, assessed March 14, 2023.

²⁴ Pennsylvania Legislative Budget and Finance Committee, *PA's Program for Beneficial Use of Biosolids (Sewage Sludge) by Land Application*, June 2017.

²⁵ Ibid.

²⁶ *Gilbert v. Synagro Cent., LLC*, 131 A. 3d 1 – Pa. Supreme Court 2015.

²⁷ Penn State Dickinson Agricultural Law Resource and Reference Center. *Pennsylvania Right to Farm Law: Protection of Agricultural Operations from Nuisance Suits and Ordinances P.L. 454, No. 133, 1982.*

²⁸ Disposal in a monofill is regulated under 40 CFR Part 503 while disposal in a municipal solid waste landfill is regulated under 40 CFR Part 258. See <https://www.epa.gov/biosolids/fact-sheet-use-landfilling-biosolids-management>, accessed March 14, 2023.

²⁹ See <https://www.epa.gov/biosolids/fact-sheet-use-landfilling-biosolids-management>, accessed March 14, 2023.

option. However, recycling biosolids (through land application or other beneficial reuse) saves landfill space and additional costs associated with biosolids management contracts and tipping fees.³⁰

Pennsylvania has 46 active landfills and six resource recovery (waste-to-energy) facilities, which manage approximately 20 million tons of municipal waste each year.³¹ There are no requirements for landfills to accept biosolids.

Incineration of Biosolids. Incineration is another option for biosolids disposal and involves burning the material. Due to air quality concerns, biosolids incineration requires additional pollutant limitations, management practices, recordkeeping, monitoring, and reporting requirements.

Like land application and landfilling, incineration has both pros and cons. The incineration of biosolids can be a source of energy recovery. However, incineration typically leaves "one-quarter of the original material" in the form of ash.³² The ash produced by incineration can be used as a component in cement brick production, asphalt paving mixes, and manufactured soils. Conversely, if ash cannot be reused, it must be disposed of in a landfill.

Incineration is generally considered the most expensive biosolids disposal option due to the added landfill costs for ash on top of incineration costs. However, the cost is relative to a wastewater treatment facility's capacity. For example, incineration may be a more economical option for facilities with capacities greater than 10 million gallons per day.³³ For smaller operations, land application and landfilling may be more economical. Pennsylvania has 34 incinerators, and many do not accept biosolids.

Exhibit 3 shows the breakdown of biosolids use or disposal in Pennsylvania in 2018 (the most recent year available).³⁴ Less than half of the biosolids generated within the state were land-applied.

³⁰ Elliott, Herschel, Robin Brandt, and James Shortie. *Biosolids Disposal in Pennsylvania*, The Center for Rural Pennsylvania, November 2007.

³¹ See <https://www.dep.pa.gov/Business/Land/Waste/SolidWaste/Pages/default.aspx>, accessed March 14, 2023.

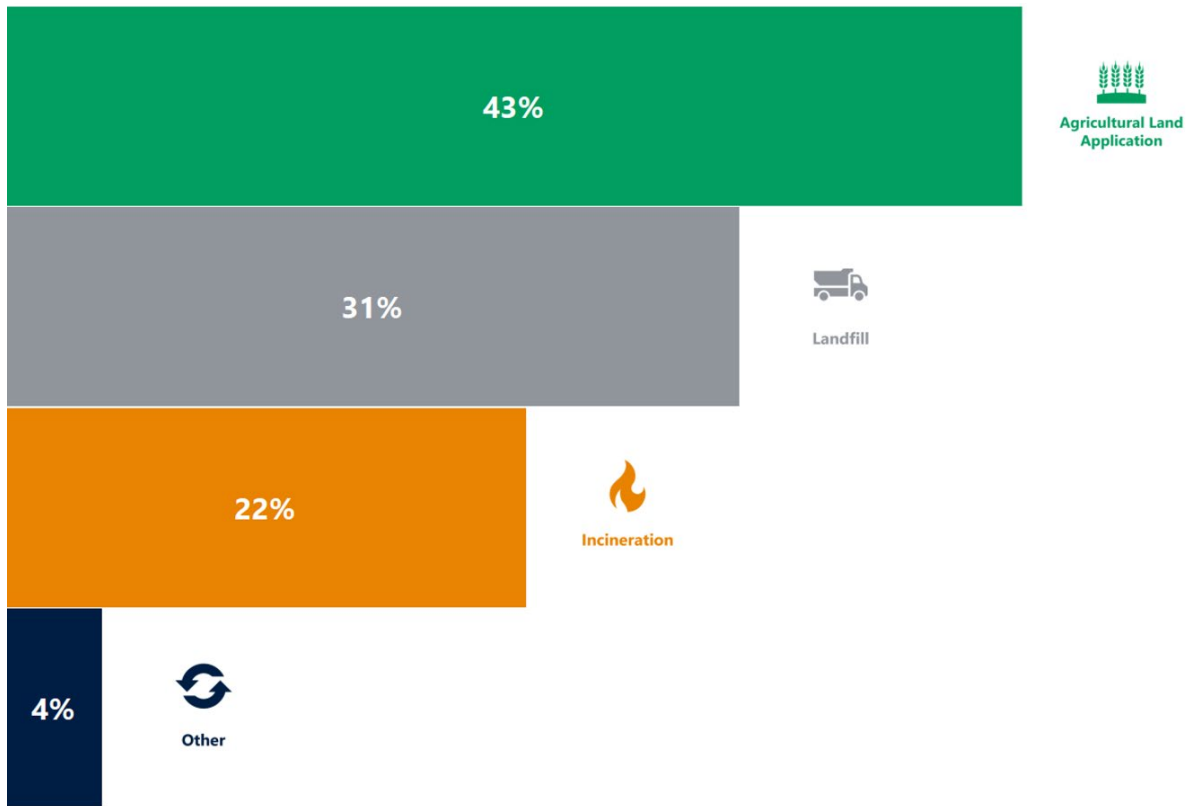
³² Elliott, Herschel, Robin Brandt, and James Shortie. *Biosolids Disposal in Pennsylvania*, The Center for Rural Pennsylvania, November 2007.

³³ Ibid.

³⁴ See <https://www.biosolidsdata.org>, accessed March 13, 2023.

Exhibit 3

**Pennsylvania Biosolids Use/Disposal by Type
2018**



Source: Developed by LBFC Staff from information obtained by National Biosolids Data Project.

Each biosolid disposal method has pros and cons. The method(s) used can vary by wastewater treatment facility size and type. In 2007, the Center for Rural Pennsylvania researched disposal methods and found the cost to be the most important factor in determining which method was used.

Federal and State Biosolid Regulators

Current regulations highlight the balance between the beneficial reuse of biosolids and potential risks. Additionally, the regulations allow room for future research to shape public policy as science evolves and new pollutants (or risks) are realized.

United States Environmental Protection Agency (EPA)

Oversight over wastewater and biosolids starts with the United States Environmental Protection Agency (EPA). The Clean Water Act (CWA) of 1972 (and its amendments) outlines the regulations for discharging pollutants into the waters of the United States.³⁵ Regarding biosolids, the CWA requires EPA to do the following:

1. Establish numeric limits and management practices that protect public health and the environment from the reasonably anticipated adverse effects of chemical and microbial pollutants during the use or disposal of sewage sludge.
2. Review sewage sludge (biosolids) regulations every two years to identify any additional pollutants that may occur in biosolids, and then set regulations for those pollutants if sufficient scientific evidence shows they may harm human health or the environment.³⁶

To accomplish this mandate, EPA established Standards for the Use or Disposal of Sewage Sludge (*40 CFR Part 503*, referred to commonly as "Part 503"), and a risk screening program. EPA conducts biennial reviews and sewage sludge surveys as part of the risk screening. This system assists EPA in identifying pollutants in biosolids. If newly identified pollutants are a concern to EPA, a risk assessment is performed to study further the pollutants' potential harm to human health. The risk assessment is then used to regulate the pollutant under Part 503. As discussed in Section III, EPA is conducting a risk assessment concerning certain "forever chemicals" in biosolids.

CWA also created the National Pollutant Discharge Elimination System (NPDES). The EPA's NPDES Permit Program authorizes state governments to perform many permitting, administrative, and enforcement aspects of the program. Pennsylvania is a "partially authorized" state. For example, Pennsylvania is authorized for the NPDES Permit Program, meaning the state can administer and enforce the program, including issuing permits on behalf of EPA. However, Pennsylvania is not authorized for the Biosolids Program, meaning EPA technically has sole enforcement authority over the Biosolids Program. Biosolids permit holders must report information to both EPA and DEP.

³⁵ The Federal Water Pollution Control Act (1948) came prior to the CWA, however, in 1972 the Act was reorganized and renamed CWA.

³⁶ See <https://www.epa.gov/biosolids/biosolids-laws-and-regulations#how>, accessed March 8, 2023.

Pennsylvania Department of Environmental Protection

The Pennsylvania Department of Environmental Protection's mission is to protect Pennsylvania's air, land, and water from pollution and to provide for the health and safety of its citizens through a cleaner environment. DEP's Bureau of Clean Water (BCW) is responsible for administering the wastewater management program in Pennsylvania, including the NPDES permitting and compliance monitoring.³⁷ While federal law sets Pennsylvania's overall standards for biosolids, state law supplements additional requirements/standards. According to DEP, "to ensure safe use of biosolids, Pennsylvania's regulatory program focuses on setting strict standards for biosolids quality before land application and requiring generators to be more responsible."

Title 25, Pa. Code, Chapter 271, Subchapter J – Beneficial Use of Sewage Sludge by Land Application established standards for general and individual land application of sewage sludge permits. The permits are for the beneficial use of sewage sludge (i.e., biosolids) by land application. The standards include general requirements, pollutant limits, management practices, and operational standards. This subchapter also includes pathogen and alternative vector attraction reduction requirements.³⁸ Additionally, the standards in this subchapter have reporting requirements and the frequency of monitoring and recordkeeping requirements when biosolids are used.³⁹ The permits are a tool to execute DEP's regulations.

Pennsylvania State Conversation Commission and Conservation Districts

The Pennsylvania State Conservation Commission (SCC) oversees the Commonwealth's 66 conservation districts and directs the implementation of conservation programs.⁴⁰ SCC is under the concurrent authority of DEP and the Pennsylvania Department of Agriculture (PDA).⁴¹

The Conservation District Law established Pennsylvania Conservation Districts in 1945.⁴² County conservation districts work to help individuals

³⁷ Pennsylvania Chapter 92a. National Pollutant Discharge Elimination System Permitting, Monitoring and Compliance implement the NPDES Program by DEP under the Federal Act. Authority for these regulations was issued under sections 5(b)(1) and 402 of The Clean Streams Law (5 P.S. § 691.5(b)(1) and 691.402) and section 192013-A of the Administrative Code of 1929 (71 P.S. § 510-20).

³⁸ § 271.901.

³⁹ Ibid.

⁴⁰ See https://www.agriculture.pa.gov/Plants_Land_Water/StateConservationCommission/Pages/default.aspx, accessed March 14, 2023.

⁴¹ Ibid.

⁴² See https://pacd.org/?page_id=57, accessed March 14, 2023.

and communities preserve natural resources. Each conservation district is led by a volunteer board of directors, including farmers, public members, and county government. Apart from Philadelphia County, every county has a conservation district.⁴³

The conservation districts can assist DEP with biosolids land application. DEP may authorize conservation districts to:⁴⁴

- Evaluate biosolid application sites and review permits for land application.
- Provide information and written materials to the general public, the regulated community, and the agricultural community concerning land application of biosolids.
- Conduct educational sessions with interested parties on biosolid land applications.
- Conduct inspections of biosolid application sites and collect samples from those sites.

Conservation districts do not have environmental regulatory authority but are given enforcement functions to solve conservation program issues through landowner cooperation and voluntary compliance.

The Chesapeake Bay Watershed

The Chesapeake Bay is the largest estuary in the United States. According to PDA, Pennsylvania comprises 35 percent of the Chesapeake Bay Watershed. The Susquehanna River is the largest tributary to the Bay, providing 90 percent of the freshwater flow to the upper Bay and half of the total freshwater flow to the Bay.⁴⁵ As shown in Exhibit 4, Pennsylvania plays a key role in the Watershed.

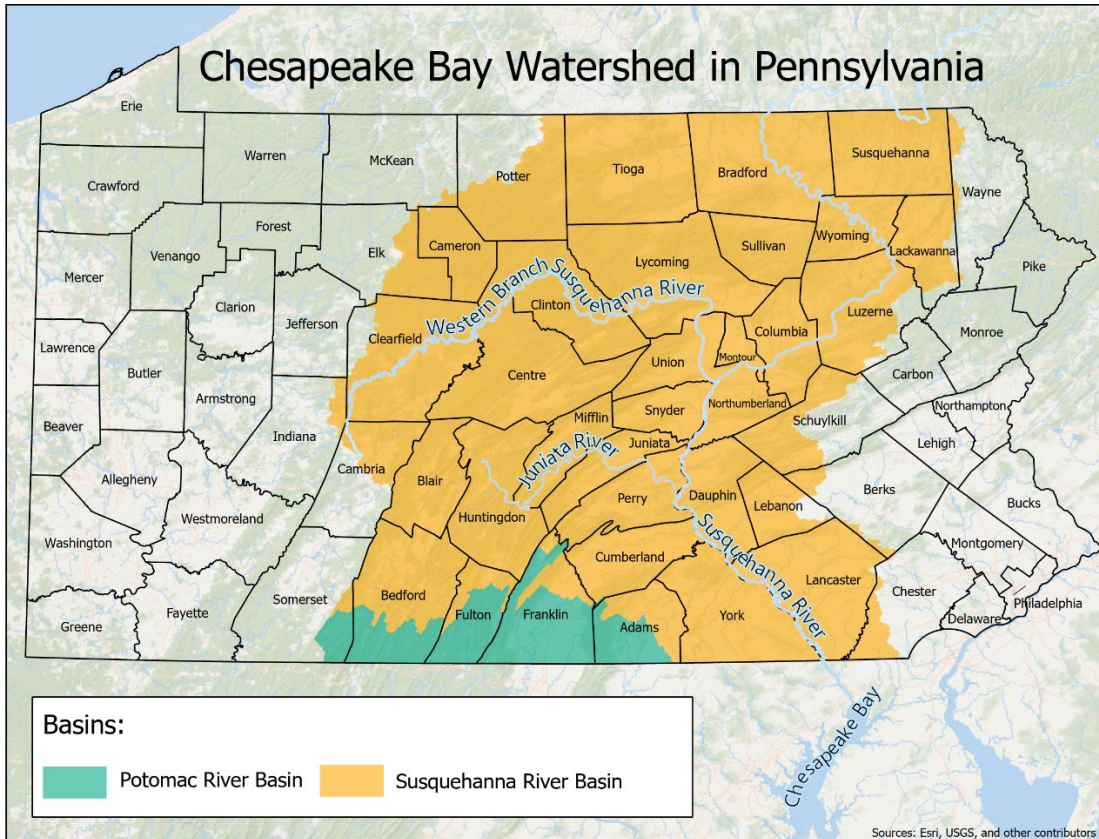
⁴³ Pennsylvania Association of Conservation Districts, *Pennsylvania's Conservation Districts Fact Sheet*, June 2019.

⁴⁴ Stehouwer, Richard. *Sewage Sludge: A Plain English Tour of the Regulations*, Penn State Extension, September 2010.

⁴⁵ See https://www.agriculture.pa.gov/Plants_Land_Water/StateConservationCommission/Pages/Chesapeake-Bay.aspx, accessed March 10, 2023.

Exhibit 4

Map of the Chesapeake Bay Watershed in Pennsylvania



Source: Pennsylvania Department of Environmental Protection.

Chesapeake Bay Restoration

In the late 1970s and early 1980s, the Bay's degradation received significant attention. Excess algae growth was damaging water quality and harming plants and animals within the Bay. As a result, intergovernmental and interstate collaboration focused on restoration efforts. Examples of recent efforts include the following:

- The Chesapeake Bay Commission (CBC) was created as a tri-state (Pennsylvania, Maryland, Virginia) legislative commission in 1980 to advise the members of the General Assemblies on issues regarding the Bay.
- The Chesapeake Bay Program was created to bring Bay partners together to resolve Bay pollution issues. Principal partners include CBC, Pennsylvania, Virginia, Delaware, Maryland, New York,

West Virginia, and the District of Columbia. Other partners include other federal agencies, headwater state partners, academic partners, non-governmental organizations, local governments, and other local and regional partners.⁴⁶

- The Chesapeake Bay Agreement of 1983 was the first signed agreement between states, the federal government, and the District of Columbia. This group became known as the Chesapeake Executive Council (CEC) which included the governors of Maryland, Pennsylvania, and Virginia, the mayor of the District of Columbia, the administrator of EPA, and the chair of CBC.
- The Chesapeake Bay Total Maximum Daily Load (TMDL) is a "federal 'pollution diet' to restore the Chesapeake Bay and its vast network of streams, creeks, and rivers."⁴⁷ TMDL seeks to limit nitrogen, phosphorus, and sediment pollution. As a result of TMDL, DEP executed various phases of the Pennsylvania Chesapeake Bay Watershed Implementation Plan.
- The Chesapeake Bay Watershed Agreement is the most recent agreement to "align federal directives with state and local goals to create a healthy Bay."⁴⁸ This agreement spells out collective goals for the Bay to reach by 2025.

While the Chesapeake agreements and plans do not include goals specific to biosolids, they do include nitrogen, phosphorus, and sediment reduction goals. DEP, along with other state and regional partners, has identified agricultural activities, including the use of biosolids, as one of the sources causing excess nitrogen, phosphorus, and sediment in the Chesapeake Bay.

⁴⁶ See <https://www.chesapeakebay.net/who/partners>, accessed March 13, 2023.

⁴⁷ See <https://www.epa.gov/chesapeake-bay-tmdl>, accessed March 22, 2023.

⁴⁸ See <https://www.chesapeakebay.net/who/bay-program-history>, accessed March 10, 2023.

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SECTION III CONTEXTUAL PERSPECTIVES WITH BIOSOLIDS MANAGEMENT AND USE



Fast Facts...

- *DEP monitors biosolids and residential septage land applications through three “general permits.” These permits are based on state regulations, which are in turn, guided by federal requirements.*
- *DEP’s general permits have been in existence for well over two decades and have been “administratively extended” several times. DEP has sought to revise the permits with additional requirements for permit holders.*
- *DEP’s proposed changes primarily center on these four areas:*
 1. *A prohibition of blending wastes.*
 2. *A requirement to use a “P-Index” to monitor phosphorus in land applications.*
 3. *A requirement to test for PFAS chemicals in biosolids.*
 4. *New storage requirements for biosolids.*

Overview

For decades, Pennsylvania has used biosolids as a beneficial product in agriculture and other land-based applications. Biosolids use falls within the regulatory oversight of federal and state regulators, which can be a confusing and complex interplay.

The Environmental Protection Agency (EPA) published 40 CFR Part 503 – Standards for Use or Disposal of Sewage Sludge, commonly referred to as Part 503, in 1993. Part 503 served as the comprehensive set of requirements for managing biosolids generated during the municipal wastewater treatment process, including standards regarding the allowable concentrations of several pollutants in sewage sludge, quality control criteria for biosolids - and, most important, for this study - land application guidelines.

DEP released interim guidance regarding Part 503 in 1994. In 1997, the department updated the commonwealth’s current biosolids land application regulations as part of *Title 25, Pa. Code, Chapter 271, Subchapter J – Beneficial Use of Sewage Sludge by Land Application*. DEP monitors biosolids land applications with three “general permits,” which are divided based on quality. While the permits are similar in structure, each establishes separate criteria that must be met for beneficial use and also sets different requirements for when and how biosolids can be land applied. These three permits, which are at the center of HR 149 and this study, are as follows:

- **PAG-07** – Approval for Coverage under the General Permit for Beneficial Use of Exceptional Quality Biosolids.
- **PAG-08** – Approval for Coverage Under the General Permit for Beneficial Use of Biosolids by Land Application.
- **PAG-09** – Approval for Coverage Under the General Permit for Beneficial Use of Residential Septage by Land Application

The distinction between PAG-07 and PAG-08 is an important one. PAG-07 pertains to exceptional quality (EQ) biosolids, which indicates the sludge has been treated with greater pathogen reductions. These exceptional quality biosolids carry few land application restrictions. PAG-08 pertains to “general use” biosolids, which have also been treated for

pathogen reduction, but to a lesser extent than EQ biosolids (PAG-07). Lastly, PAG-09 pertains to residential septage haulers who pump out on-site septic systems. Residential septage is also treated and can be land applied under PAG-09.

PAG-07, PAG-08, and PAG-09 were last issued in 2009. The permits were set to expire in 2014 but were administratively extended. Since 2014, the three permits have been administratively extended nine times in either year or year-and-a-half increments. The permits are currently set to expire on November 30, 2023.

DEP staff also informed us that the department has considered revising PAG-07, PAG-08, and PAG-09 for almost a decade. DEP finalized predraft revisions and submitted the drafts to various stakeholder groups and internal boards for review. Although comments were received, the department has not taken further action to revise or update the permits.

We reviewed the proposed drafts and identified four key areas that are either new requirements or significant changes to the biosolids/residential septage land application process. These changes include the following: 1) a prohibition on blending hauled-in waste; 2) a requirement to use a "P-Index" when land applying biosolids to control for excess phosphorus; 3) PFAS monitoring requirements; and 4) changes to storage requirements for biosolids. Of these four proposals, two changes would apply to all three permits, while two changes would affect only PAG-07 and PAG-08.

We reviewed each of the four proposals in detail. While each proposal has raised issues and concerns, in our opinion, the proposed change that introduces requirements for PFAS testing and uses the P-Index garnered the most attention. PFAS chemicals are known carcinogens, and Pennsylvania has already introduced PFAS limits for drinking water. However, these water standards do not apply to biosolids. In fact, there are no current federal testing requirements, nor limitations on PFAS in biosolids, nor an adopted standard for testing PFAS in biosolids. Further, EPA has not completed a risk assessment on PFAS in biosolids to determine if further federal regulatory action is warranted. This analysis is underway but not expected to be completed until December 2024.

Concerning the P-Index, DEP proposes factoring phosphorus load levels when applying biosolids. Nitrogen and phosphorus are necessary nutrients for plant (crop) growth. However, when applied excessively, these nutrients can be harmful to waterways—particularly the Chesapeake Bay watershed. DEP already regulates nitrogen application levels via an agronomic rate, which specifies levels based on the type of crop or vegetation grown on the land. To factor for phosphorus, DEP proposes the P-Index be used to calculate phosphorus application rates for biosolids. The P-Index is essentially a risk analysis tool that evaluates the consequences of

phosphorus loss to surface waters. The P-Index has been an ongoing collaboration and development between the Pennsylvania State University (PSU), the State Conservation Commission (SCC), and USDA's National Resources Conservation Service (NRCS). P-Index is currently limited to animal manure applications regulated by Act 38 of 2005; however, P-Index may also be used voluntarily by farmers as a best management practice.

Finally, we reviewed other states' biosolid regulations. Our review found little uniformity in biosolid regulations, especially regarding PFAS and P-Index. Only Maine has a complete ban on the land application of biosolids, which was driven by a PFAS contamination issue. Two states, Michigan and Wisconsin, have a testing requirement before biosolids can be land applied. Still, most states do not have a testing requirement, including California, which is often considered a heavily regulated state for environmental issues.

Issue Areas

A. DEP General Permits Regulate Biosolids Distribution and Use

Biosolids have been regulated for beneficial use in Pennsylvania for over 40 years. The restrictions on biosolids have evolved as the understanding of the material and its environmental impacts has improved. The current regulatory framework managing biosolids use in the commonwealth represents a shift from how DEP historically monitored the material. DEP monitors biosolids land applications with three general permits, which are separated based on the quality and origination of the material. While the permits are similar in structure, each establishes separate criteria that must be met for beneficial use -- and sets different requirements for when and how biosolids can be land applied.

General Permits for the Land Application of Biosolids and Residential Septage

Pennsylvania's first formal regulations of biosolids for land application were introduced in 1977. Updated in 1988, these regulations were

largely based on the academic research available and emphasized monitoring sewage sludge and soils on the specific sites where the land application was conducted via DEP's individual permitting system.⁴⁹

As discussed in Section II, EPA published 40 CFR Part 503 – The Standards for Use or Disposal of Sewage Sludge, commonly referred to as Part 503, in 1993.⁵⁰ This final rule served as the comprehensive set of requirements for managing biosolids generated during the municipal wastewater treatment process, including standards regarding the allowable concentrations of several pollutants in sewage sludge, quality control criteria for biosolids, and land application guidelines.⁵¹ DEP released interim guidance regarding Part 503 in 1994. In 1997, the department updated the commonwealth's current biosolids land application regulations as part of *Title 25, Pa. Code, Chapter 271, Subchapter J – Beneficial Use of Sewage Sludge by Land Application*.⁵²

The current biosolid regulations represent a shift in how the material was managed before 1997. As noted above, biosolids were originally managed in Pennsylvania for each site where the material was applied under DEP's individual permit system. As a result of EPA's risk assessment and subsequent Part 503 rules, biosolids management has shifted to a focus on sewage sludge quality.

DEP oversees biosolids management in Pennsylvania through three general permits. The permits are distinguished by the quality of sludge that is land applied, with PAG-07 covering exceptional quality (EQ) biosolids, PAG-08 covering non-exceptional quality (non-EQ) biosolids, and PAG-09 covering residential septage.⁵³ Unlike the individual site permitting system, general permits set standard quality, land application, and site requirements that the preparers⁵⁴ of biosolids must follow. Biosolids that meet the requirements under the general permits can be land applied to multiple sites.⁵⁵ Exhibit 5 summarizes the basic requirements of PAG-07, PAG-08, and PAG-09.

⁴⁹ Stehouwer, Richard. *Sewage Sludge: A Plain English Tour of the Regulations*. Penn State Extension. September 2010. <https://extension.psu.edu/sewage-sludge-a-plain-english-tour-of-the-regulations>. (Accessed March 14, 2023).

⁵⁰ 40 CFR, Part 503.

⁵¹ EPA, *A Plain English Guide to the EPA Part 503 Biosolids Rule*, 1994.

⁵² Stehouwer, Richard. *Sewage Sludge: A Plain English Tour of the Regulations*. Penn State Extension. September 2010. <https://extension.psu.edu/sewage-sludge-a-plain-english-tour-of-the-regulations>. (Accessed March 14, 2023).

⁵³ These distinctions follow the findings of EPA's risk assessment and Part 503 rules. Ibid.

⁵⁴ Biosolids preparers (generators) commonly refer to the individuals or entities who perform treatment of sewage sludge prior to disposal. Most current permit holders are wastewater treatment facilities– or in the case of PAG-09, residential septage haulers – but municipalities can also contract these services to biosolids management companies.

⁵⁵ These sites are enrolled through a process called "site registration" under the general permits.

Exhibit 5

Overview of Current Biosolids Land Application Permits in Pennsylvania*

		PAG-07	PAG-08	PAG-09
	Number of Active Permit Holders**	54	143	71
	Who does the Permit Apply to?	Person/Entity Who Prepares the Biosolids		
	What Land Application does the Permit Cover?	Exceptional Quality (EQ) Biosolids	Non-Exceptional Quality (Non-EQ) Biosolids	Residential Septage
	How Long Does the Permit Last?	5 Years		
	How Much Does the Permit Cost?	\$500 Application Fee		
	Quality Requirements	<ul style="list-style-type: none"> • Must Meet Highest Levels of Pollutant Concentration, Pathogen Reduction, and Vector Attraction Standards 	<ul style="list-style-type: none"> • Allowed to Meet Lower Levels of Pollutant Concentration, Pathogen Reduction, and Vector Attraction Standards 	<ul style="list-style-type: none"> • Must be Treated for Pathogens and Vector Attraction
	General Requirements	<ul style="list-style-type: none"> • Biosolids Must be Properly Labeled and Have Instructions for Application 	<ul style="list-style-type: none"> • Written consent of landowner and notification of DEP, Conservation District, and Adjacent Landowners Required • Soil Sample Required before First Application • Cumulative Pollutant Loading Calculation Required • Sewage Sludge Generator Must Be Notified of Nitrogen Content • Biosolids Cannot be Applied Over Agronomic Rate 	<ul style="list-style-type: none"> • Soil Sample Required before First Application • Nonorganic Objects Must be Moved before Application
	Land Application Management Requirements	<ul style="list-style-type: none"> • Biosolids Cannot be Applied Over Agronomic Rate 	<ul style="list-style-type: none"> • Biosolids Cannot be Applied within Certain Distances of Water Sources, Sinkholes, Wetlands, Dwellings, or on Significantly Sloped Land • Biosolids Cannot be Applied on Frozen, Snow-Covered, or Flooded Land 	<ul style="list-style-type: none"> • Biosolids Cannot be Applied Over Rates Set Based on Annual Nitrogen Needs of Application Site
	Site Requirements	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Food, Feed, or Fiber Crops Harvesting Restricted After Application • Animal Grazing Restricted After Application • Public Access Restricted After Application 	<ul style="list-style-type: none"> • Same Site Requirements as Non-EQ Biosolids

Note: */ The contents of PAG-07, PAG-08, and PAG-09 have been summarized for illustrative purposes.

**/ The number of active permit holders was derived from records of permit holders provided by DEP as of March 2023. Permits were considered "active" if the records provided by DEP indicated a permit status as "issued" or "pending."

Source: Developed by LBFC staff from information provided by DEP and Penn State Extension.

As noted in Section II, EQ biosolids must meet the highest levels of pollutant concentration, pathogen reduction, and vector attraction.⁵⁶ Biosolids meeting the EQ standard have few use restrictions under PAG-07.⁵⁷ Currently, the only primary requirements for EQ biosolids under PAG-07 are that the material must be properly identified and labeled with instructions,⁵⁸ and the biosolids cannot be applied over the agronomic rate based on the nitrogen requirements of the crop being grown. EQ biosolids are essentially considered to be fertilizer and can be sold as such. According to DEP records, there were 54 active PAG-07 permit holders as of March 2023.⁵⁹

Non-EQ biosolids do not meet the high-quality standards required to be considered exceptional quality. However, the material still undergoes significant treatment for pollutant concentration, pathogen reduction, and vector attraction to not threaten public health or the environment. However, non-EQ biosolids face the strictest requirements for land application under PAG-08.⁶⁰ Permit holders are required to perform soil tests,⁶¹ receive written notification from the landowner, and provide notice to adjacent landowners, the site's County Conservation District, and the DEP regional office before non-EQ biosolids can ever be land applied.

Similar to EQ biosolids, non-EQ biosolids cannot be applied above the agronomic rate based on the nitrogen requirements of the crop being grown. However, non-EQ material cannot be applied over the cumulative pollutant loading rates for eight elements determined by DEP.⁶² PAG-08 outlines where non-EQ biosolids **cannot** be applied, including within specific distances of sinkholes, wetlands, water sources, and houses or dwellings. In addition, non-EQ biosolids cannot be applied on land that is significantly sloped,⁶³ or on land that is flooded, snow-covered, or frozen. PAG-08 sets restrictions for public access, animal grazing, and crop

⁵⁶ The material must also be non-liquid and non-recognizable as human waste. See Boczek, L., R. Herrmann, E. Resek, and T. Richman, *Pathogens and Vector Attraction in Sewage Sludge*. United States Environmental Protection Agency, January 2023.

⁵⁷ DEP, *PAG-07 Beneficial Use of Exceptional Quality Biosolids (3800-PM-BPNPSM0339)*, 2018.

⁵⁸ In addition to instructions for land application, this labeling must include the name and address of the biosolids preparer, a description of the biosolids' nutrient value and use limitations, and a statement noting that land application of the material is prohibited outside of the EQ biosolids' documented acceptable uses. See Stehouwer, Richard. *Sewage Sludge: A Plain English Tour of the Regulations*. Penn State Extension. September 2010. <https://extension.psu.edu/sewage-sludge-a-plain-english-tour-of-the-regulations>. (Accessed March 14, 2023).

⁵⁹ The number of active permit holders was derived from records of permit holders provided by DEP as of March 2023. Permits were considered "active" if the records provided by DEP indicated a permit status as "issued" or "pending."

⁶⁰ DEP, *PAG-08 Beneficial Use of Biosolids by Land Application (3800-PM-WSFR0340)*, 2018.

⁶¹ A representative soil sample must be tested for its pH level along with pollutants such as arsenic, mercury, and lead, among others.

⁶² These elements are arsenic, cadmium, copper, lead, mercury, nickel, selenium, and zinc.

⁶³ Non-EQ biosolids cannot be applied on land with slopes greater than 25 percent or to reclamation land that is sloped over 35 percent.

harvesting on the land after non-EQ biosolids application.⁶⁴ PAG-08 is the largest general permit of the three, with 143 active permit holders as of March 2023, according to DEP.

In general, residential septage restrictions are much less stringent than those of biosolids. Residential septage must be treated for pathogens and vector attraction to qualify under PAG-09⁶⁵ but is not required to meet the same treatment thresholds as EQ or non-EQ biosolids. Before the first land application, a soil sample must be conducted, and non-organic objects must be removed. Land application of residential septage must also consider the nitrogen needs of the crop being grown, but the rate is based on an annual level rather than the agronomic rate. However, land receiving residential septage under PAG-09 is subject to the same site requirements (public access, animal grazing, and crop harvesting) as land under PAG-08.⁶⁶ According to DEP, 71 active PAG-09 permit holders were active as of March 2023.

B. DEP’s Proposed Permit Changes May Impact Biosolids Use

As outlined in the previous issue area, DEP’s general permits provide the agency with an administrative tool to ensure and monitor compliance with state laws and regulations. Going forward, DEP is proposing to revise the general permits, which would arguably include more restrictive requirements for biosolids-beneficial land use applications. Within this issue area, we explore the proposed revisions, including the origins and basis for the proposed changes.

Proposed Permit Revisions and Timeline of Changes

While the commonwealth’s current system for biosolids land application is a shift from how the material was historically monitored, it has not changed considerably in over twenty years. According to DEP, the regulations outlined in *Title 25, Pa. Code, Chapter 271, Subchapter J* – and consequently, the general permits – have not significantly changed since their inception 26 years ago.

DEP informed us that PAG-07, PAG-08, and PAG-09 were last issued in 2009. The permits were set to expire in 2014 but were administratively

⁶⁴ See Stehouwer, Richard. *Sewage Sludge: A Plain English Tour of the Regulations*. Penn State Extension. September 2010. <https://extension.psu.edu/sewage-sludge-a-plain-english-tour-of-the-regulations>. (Accessed March 14, 2023).

⁶⁵ DEP, *PAG-09 Beneficial Use of Residential Septage by Land Application (3800-PM-BPNPSM0341)*, 2018.

⁶⁶ *Ibid.*

extended. Since 2014, the three permits have been administratively extended nine times in either year or year-and-a-half increments. The permits are currently set to expire on November 30, 2023.

DEP staff also informed us that the department has considered revising PAG-07, PAG-08, and PAG-09 for almost a decade. DEP finalized pre-draft revisions to the permits in early 2021 (see Appendices B-D) and presented them to the department's Agricultural Advisory Board (AAB) and Water Resources Advisory Committee (WRAC)⁶⁷ for comment. Both groups voted to form workgroups to review the proposed revisions and advise DEP on its next steps. However, according to DEP, the AAB workgroup could not establish a quorum after several meetings, and the WRAC workgroup was never formed. The department created an additional stakeholder group consisting of members of the regulated biosolids community in September 2021. This group met six times and provided comments to DEP in March 2022. DEP subsequently integrated these comments into its internal review process.

At the same time, the General Assembly focused more attention on the proposed permit changes. For example, in October 2021, the House Environmental Resources and Energy Committee held a hearing with members of the regulated community on the proposed revisions. This hearing, which included representatives from advocacy groups, biosolids management companies, and wastewater treatment facilities, focused on the immediate and downstream changes to the biosolids management process that the panel believed would result from the proposed revisions. Although invited to attend, DEP did not appear at the hearing.⁶⁸ DEP noted to us that it declined to participate in the meeting because its efforts were best utilized by continuing the stakeholder engagement, which was ongoing at that time. DEP noted that administratively it was still in the pre-draft stage of the permit (as it remains) and was continuing to solicit feedback from stakeholders.

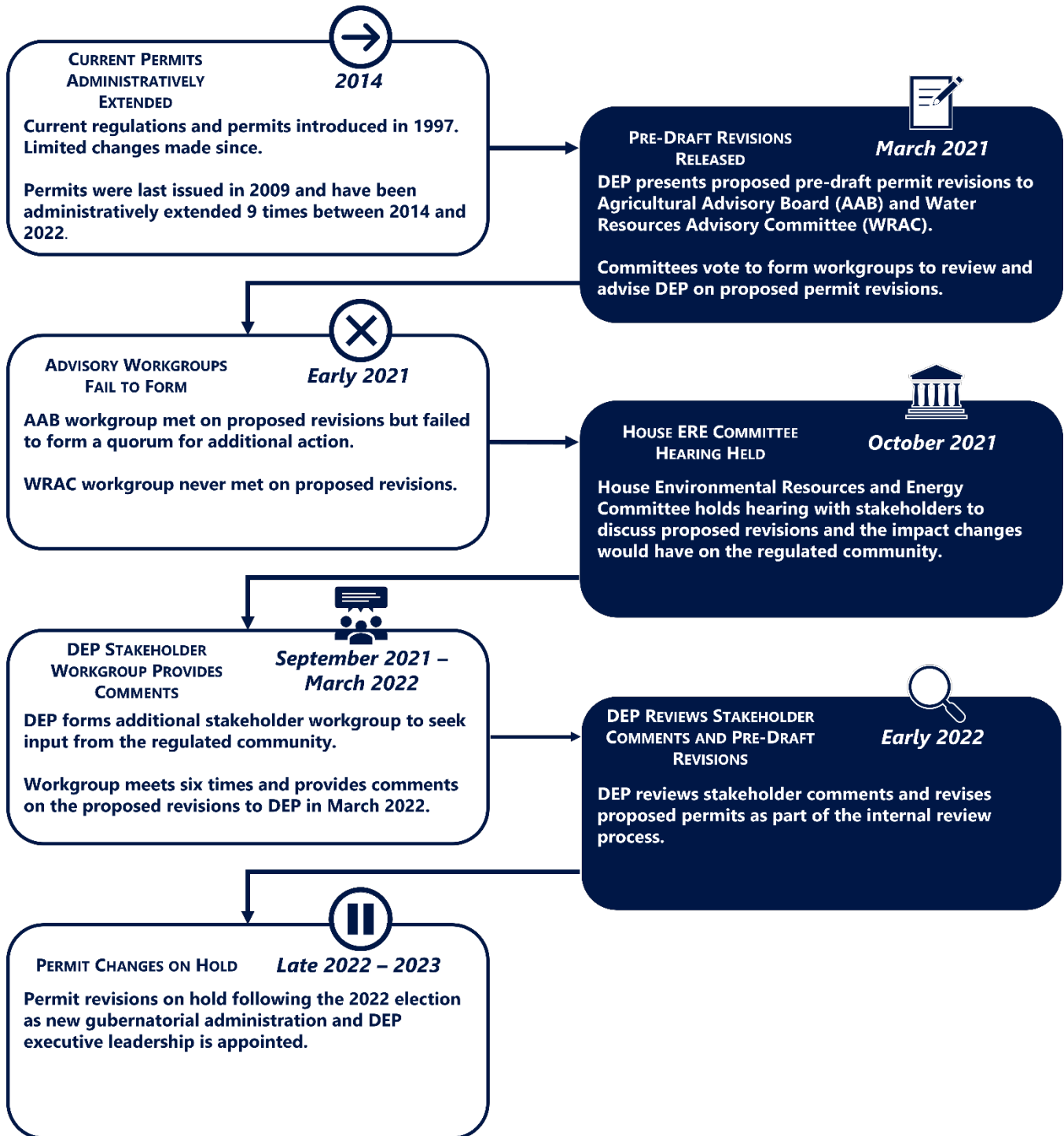
While the department collected comments and feedback for internal review, permit revisions were placed on hold in late 2022 during the gubernatorial transition and appointment of new DEP executive leadership. Exhibit 6 below shows an illustrative timeline of DEP's permit revision process to date.

⁶⁷ DEP, *Minutes of the March 24, 2021 Meeting of the Pennsylvania Department of Environmental Protection's Water Resources Advisory Committee*, March 24, 2021.

⁶⁸ Pennsylvania House of Representatives Environmental Resources and Energy Committee, *Hearing on Pennsylvania Biosolids Management Permit Revisions*, October 25, 2021.

Exhibit 6

Timeline of Proposed Revisions to DEP Biosolids Land Application Permits

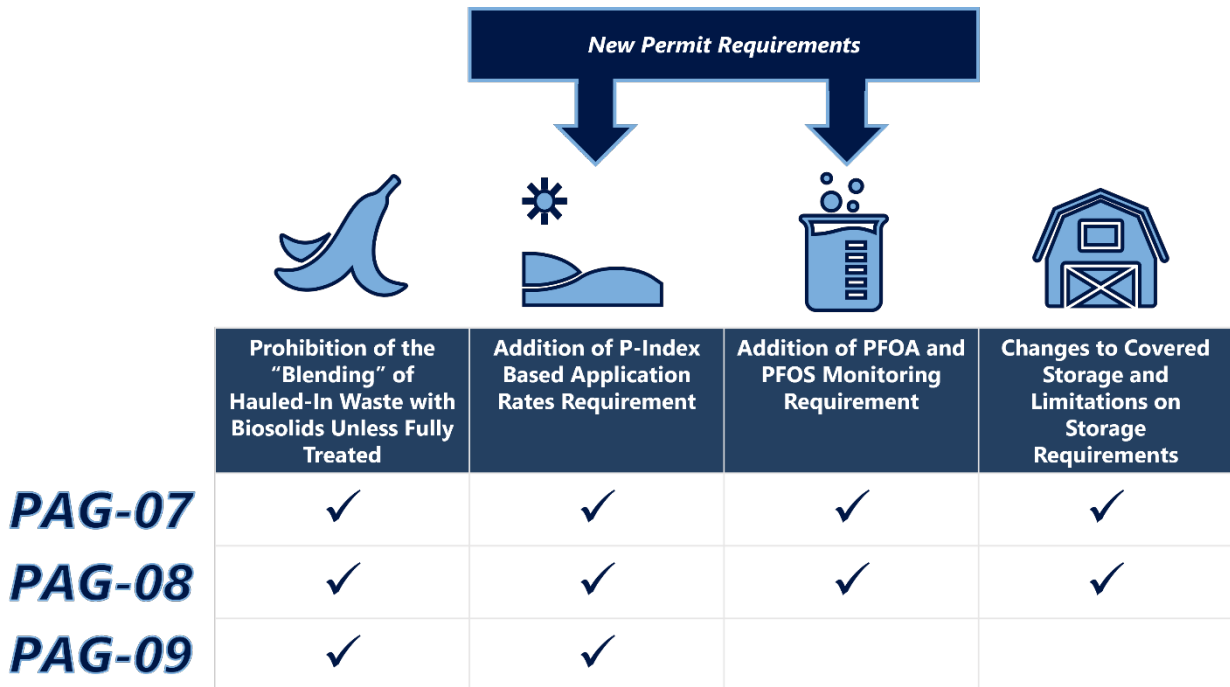


Source: Developed by LBFC staff from information provided by DEP.

While DEP proposed several revisions across PAG-07, PAG-08, and PAG-09, we have identified four key areas as either new requirements or significant changes to the biosolids/residential septage land application process. Of these four proposals, two changes would apply to all three permits, while two changes would affect only PAG-07 and PAG-08. Exhibit 7 summarizes these proposals, with additional background on these changes provided in the remainder of this issue area. For further information, the pre-draft revisions as currently proposed are included in Appendices B-D.

Exhibit 7

Overview of Significant Permit Changes Proposed by DEP



Source: Developed by LBFC staff from information provided by DEP.

Perhaps the most noteworthy proposal in the pre-draft revisions is the new requirement for PAG-07 and PAG-08 permit holders to test for Per- and Polyfluoroalkyl Substances (PFAS) in biosolids. DEP also proposes a new requirement for all permit holders to use the Pennsylvania Phosphorus Index (P-Index) to control biosolids land application rates. DEP considers the two other significant changes to the general permits to be "major revisions" of permit language based on existing regulatory requirements.

All three permits are set to have strengthened language surrounding the mixing or blending of hauled-in wastes and other materials that are not biosolids, such as food processing waste, animal manure, agricultural processing wastewater, or other residual materials. Finally, DEP proposes additional requirements for the covered storage and accumulation of biosolids under PAG-07 and PAG-08. In the following discussion, we provide additional detail on each key revision.

Phosphorus (P-Index)

What is the proposed change? In the proposed permit changes, a new requirement would be added that requires phosphorus loads to be factored. Specifically, within two years after the department issues new permits, biosolids generators under all three permits will be required to use the Pennsylvania Phosphorus Index (P-Index) to help determine biosolids land application rates.⁶⁹ To meet this requirement, permit holders must use the Pennsylvania Phosphorus Index, Version 2 – Penn State Extension, and other applicable materials to determine application needs. This process is similar to the nitrogen considerations already required under the existing permits. If the P-Index-based loading rate is lower than the currently calculated agronomic rate, then the land application will be restricted by the P-Index-based value.

Why is this change significant? Macronutrients, like phosphorus, are essential for plant and animal life. While plants require multiple nutrients to grow, nitrogen and phosphorus are the two nutrients needed at the highest levels. While generally beneficial, nitrogen and phosphorus can also be damaging. For example, plants and soil can absorb only a limited amount of each macronutrient, meaning that excess nitrogen and phosphorus in the soil can eventually end up in local waterways. Nitrogen and phosphorus are a contributor to the Chesapeake Bay eutrophication.⁷⁰

Current DEP regulations specify nitrogen limitations when land applying biosolids based on the agronomic rate. *Chapter 271, Subchapter J* outlines nitrogen agronomic rate as follows:

⁶⁹ For bulk application of EQ biosolids under PAG-07, P-Index-based application rates will be required on the material's instructions two years after the permits are issued. P-Index documentation will be required for new PAG-08 and PAG-09 holders within 30 days of the Notification of First Land Application. Existing PAG-08 and PAG-09 holders will have two years from the effective date of the new permits to supply P-Index documentation. In addition, nutrient balance evaluations with nitrogen and phosphorus information will be required from PAG-08 and PAG-09 holders every three years, or if there is a significant change to a site's farm operations, application area, or source of biosolids/residential septage. PAG-07 does not include a requirement for nutrient balance evaluations with P-Index data.

⁷⁰ Eutrophication is an environmental process whereby a waterway becomes enriched with nutrients; thus, increasing the amount of plant and algae growth to estuaries and coastal waters, which results in harmful algal blooms, dead zones, and fish kills. See <https://oceanservice.noaa.gov/facts/eutrophication.html>, accessed March 23, 2023.

Agronomic rate —The annual whole sludge application rate (dry weight basis) designed to do the following:

- (1) Provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, silvicultural crop, cover crop, horticultural crop, or vegetation grown on the land.
- (2) Minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the groundwater.

In the *Pennsylvania Phase 3 Chesapeake Bay Watershed Implementation Plan* (Phase 3 WIP), DEP suggests that there may be a need for expanding phosphorus concerns in biosolid land applications.⁷¹ According to DEP:

Since typical biosolids contain minimal amounts of nitrogen and much higher amounts of phosphorus, the amount of phosphorus applied to the land in order to meet the agronomic rate for the nitrogen is much higher and more than required which contributes to increased possibilities of phosphorus running off the land during storm events.

In Phase 3 WIP, DEP proposes using the Phosphorus-Index (P-Index) to control phosphorus in the land application of biosolids. While DEP's proposal of a P-Index for biosolids application would be new, it is important to note the P-Index itself is not new.

According to our research, the P-Index has been an ongoing collaboration and development between the Pennsylvania State University (PSU), the State Conservation Commission (SCC), and USDA's National Resources Conservation Service (NRCS). P-Index is currently limited to animal manure applications regulated by Act 38 of 2005; however, P-Index may also be used voluntarily by farmers as a best management practice.

Per- and Polyfluoroalkyl Substances (PFAS)

What is the proposed change? DEP added a requirement for PAG-07 and PAG-08 permit holders to test for Per- and Polyfluoroalkyl Substances (PFAS) in biosolids. In particular, DEP proposes that concentration levels of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) in EQ and non-EQ biosolids be tested and reported to the department. Testing would be conducted on the same frequency used for pollutant monitoring already outlined in *Title 25 Pa. Code §*

⁷¹ July 19, 2022, version.

271.917, which ranges from yearly to monthly based on the volume of biosolids processed by the permit holder. The methods and materials used for testing must be listed in either *Title 25 Pa. Code § 271.906* or the most current edition of the *Federal Register*. In addition, test results must be analyzed by a DEP-accredited laboratory for the testing method used. These results would then be reported to DEP in the Recordkeeping and Reporting Form that is submitted by permit holders on an annual basis. According to DEP, "Concerns have been raised about whether biosolids have been responsible for contributing to the concentrations of PFAS in groundwater. Monitoring will begin to allow for consideration of the impact of PFAS compounds on groundwater."

Why is this change significant? PFAS are a group of manufactured chemicals used in industry and consumer products. PFAS has received increasing attention because research has shown these chemicals are both long-lasting and break down slowly over time. As a result, chemicals in this class are frequently called "forever chemicals," as the chemicals resist water and sunlight and do not easily degrade. According to EPA, exposure to PFAS may be harmful to human health.⁷²

To date, EPA has identified PFAS in air, soil, water (both ground and surface), food, and in homes and workplaces. More specifically, PFAS have been present in:

- Drinking water
- Solid and water at or near waste sites
- Fire extinguishing foam
- Manufacturing or chemical production facilities that produce or use PFAS
- Food
- Food packaging
- Household products and dust
- Personal care products
- Biosolids

As part of EPA's monitoring role over biosolids management, identifying and researching pollutants in biosolids is a significant responsibility. To identify new pollutants, EPA completes biennial reviews of peer-reviewed academic publications on pollutants. With this information, EPA then determines if more research is needed to determine the toxicity of pollutants (pollutant risk screening).⁷³ A "risk assessment" aids EPA in this decision-making process.

⁷² See <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas>.

⁷³ See <https://www.epa.gov/biosolids/biosolids-laws-and-regulations>.

According to EPA, the risk assessment is a scientific process that relies on the following three factors:

1. How much of a stressor is present in an environmental medium (e.g., soil, water, air) over what geographic area?
2. How much contact (exposure) does a person or ecological receptor have with the contaminated environmental medium?
3. How might the pollutant impact the health of humans (e.g., toxicity) or other ecological receptors (e.g., fish killed by lack of oxygen)?⁷⁴

After the risk assessment, if EPA determines that a pollutant poses a health and/or environmental risk, a “risk management” phase will commence. According to EPA, risk management is a public policy process. Risk management relies on the science from the risk assessment weighed with the practicality and ability to regulate a pollutant.

The linkage between risk assessment and risk management can be seen in the EPA’s recent guidance on PFAS in drinking water. Specifically, on March 14, 2023, EPA announced the proposed National Primary Drinking Water Regulation (NPDWR) for six PFAS.⁷⁵ EPA anticipates finalizing the regulation by the end of 2023.⁷⁶ It is important to note that drinking water and biosolids are held to different standards, and therefore, these newly proposed regulations do not apply to biosolids.

What is EPA doing about PFAS in biosolids? For PFAS in biosolids, EPA is currently in the risk assessment (analysis) phase. As shown in Exhibit 8 this includes scientific studies to determine the extent to which PFAS in biosolids may be harmful to the health of both persons and the environment.

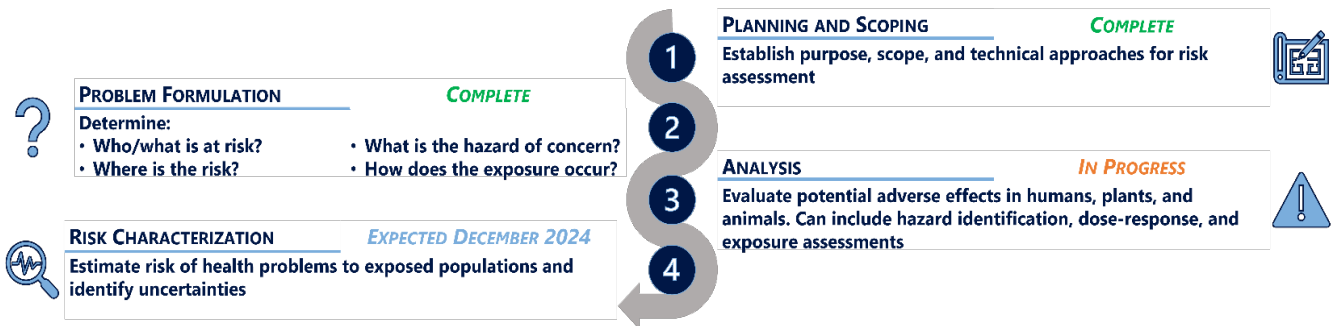
⁷⁴ See <https://www.epa.gov/risk/about-risk-assessment#tab-2>.

⁷⁵ The six chemicals include: perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorononanoic acid (PFNA), hexafluoropropylene oxide dimer acid (HFPO-DA, commonly known as GenX Chemicals), perfluorohexane sulfonic acid (PFHxS), and perfluorobutane sulfonic acid (PFBS).

⁷⁶ See <https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>.

Exhibit 8

EPA Biosolids Risk Assessment Expected to be Completed in 2024



Source: Developed by LBFC staff from information obtained from EPA.

It is significant to note that there are currently no federal testing requirements nor limitations on PFAS in biosolids. Since DEP proposed its revisions in 2021, EPA has started the validation process to approve a method for PFAS testing in biosolids, which will be discussed further in Section IV.

We spoke with EPA representatives, who are responsible for conducting the risk assessment. Staff informed us that after EPA completes its risk assessment, which is expected in December 2024, the agency will determine if public policy changes are necessary.⁷⁷ As a result, any potential rulemaking at the federal level is likely years away.

Blending

What is the proposed change? Under the revisions for PAG-07 and PAG-08, hauled-in waste cannot be mixed with biosolids unless it undergoes the full sewage treatment process. In PAG-09, blending of other wastes with residential septage is prohibited. Additionally, all three permits have strengthened language surrounding the mixing or blending of hauled-in wastes and other materials that are not biosolids, such as food processing waste, animal manure, agricultural processing wastewater, or other residual materials.

Why is this change significant? Blending occurs when waste is brought to the WWTP via a truck/hauler and then is added to a treatment plant at various points. An example of this circumstance might be a WWTP that adds hauled-in food waste to its sewage sludge in an anaerobic digester, which then creates “biogas” (mostly methane and

⁷⁷ This date was EPA’s estimate as of February 13, 2023.

carbon dioxide). Put simply, anaerobic digestion can create energy that the WWTP can sell to natural gas companies.⁷⁸ Renewable energy is a secondary purpose of the anaerobic digestion process, however, for some WWTPs it has become a revenue source. This process may also reduce the volume of landfilled waste.

According to DEP, “the regulations for land application of biosolids (Chapter 271, Subchapter J) apply only to biosolids, and not to other materials or wastes. The land application of biosolids mixed with other material may require a waste management permit issued under Chapter 271, Subchapter I.” In further discussions with the department, it was clarified that hauled-in residual waste⁷⁹ may only be permitted to mix with sewage sludge if it is combined at the headworks,⁸⁰ which is the start of the wastewater treatment process. While DEP claims to be clarifying an existing regulation with the proposed permit change, we would first note the word biosolid(s) does not currently exist anywhere in Pennsylvania Code. While the term biosolids may be interchangeable with sewage sludge, that is not clear in the current regulations.

Exhibit 9 below illustrates the current and proposed process flow for sewage sludge treatment with hauled-in residual waste.

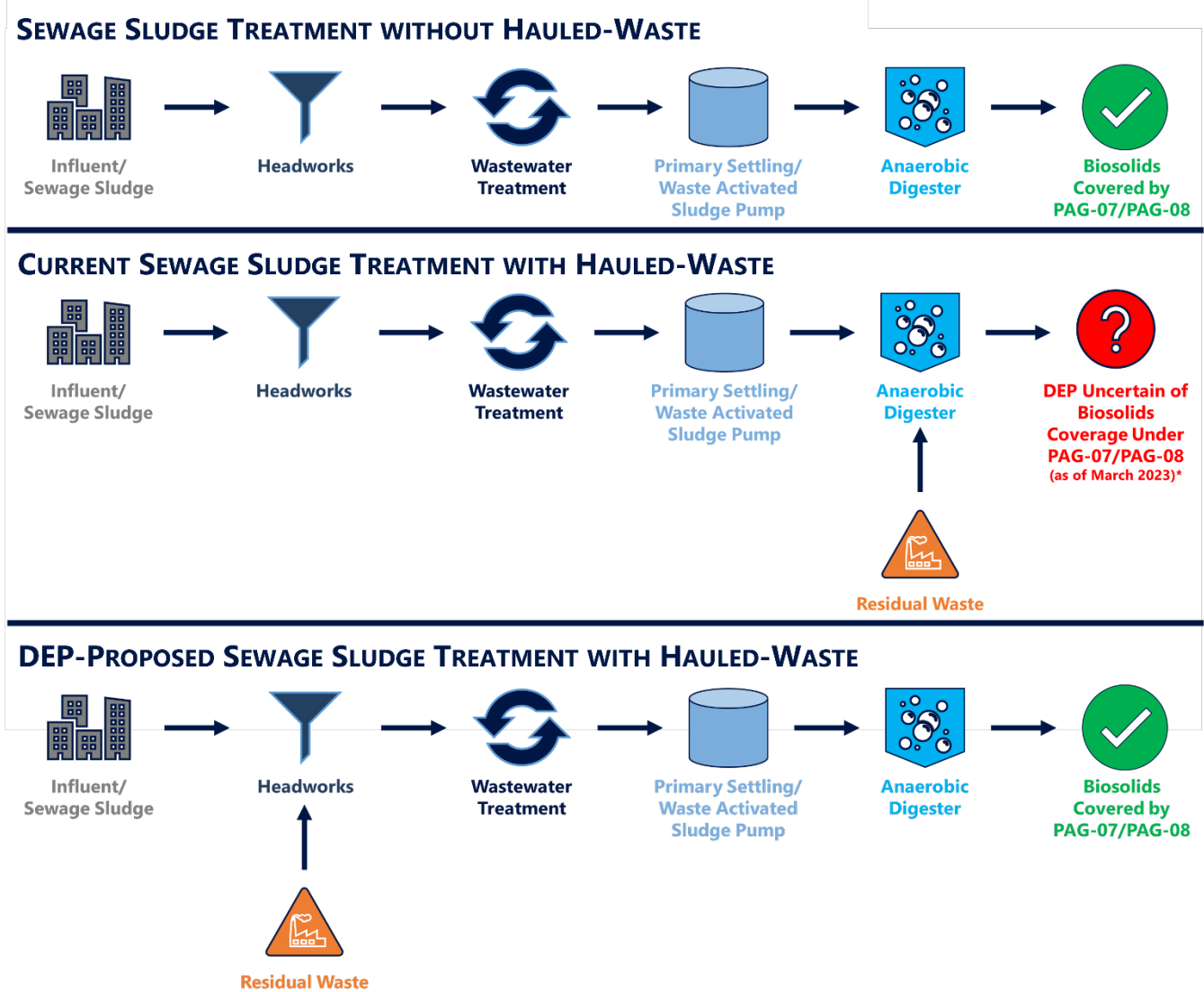
⁷⁸ For more information see <https://www.epa.gov/anaerobic-digestion/basic-information-about-anaerobic-digestion-ad>.

⁷⁹ According to *Title 25 Pa. Code § 271.1*, residual waste is defined as “garbage, refuse, other discarded material or other waste, including solid, liquid, semisolid or contained gaseous materials resulting from industrial, mining and agricultural operations; and sludge from an industrial, mining or agricultural water supply treatment facility, wastewater treatment facility or air pollution control facility, if it is not hazardous.” However, this term does not include coal reuse or sludges covered under the Coal Refuse Disposal Control Act or The Clean Streams Law.

⁸⁰ The headworks is the system of bar screens, comminutors, wet wells, or pumps where wastewater enters the wastewater treatment facility. See University of Florida, *Common Terms Used in Wastewater Treatment*, 2016.

Exhibit 9

**Mixture of Hauled-in Residual Waste with Biosolids Creates Uncertainty
(PAG-07 and PAG-08)**



*/ Note: See also Appendix E for additional clarification from DEP.
Source: Developed by LBFC staff from information obtained from DEP.

It is also important to note there are currently no general permits that would cover DEP’s proposed “refined” definition of blending. DEP did inform us that there are draft permits in the works to cover “facilities that have mixtures of biosolids and other wastes to provide an avenue for facilities to process, generate, and beneficially use mixtures of these materials.”

Storage

What is the proposed change? DEP is proposing additional language surrounding the requirements for the storage of biosolids under PAG-07 and PAG-08. The department is requiring that all storage sites be covered and protected from precipitation. DEP also now emphasizes an existing requirement in *Title 25 Pa. Code § 285.112(e)* which states biosolids must be dried to a total solids concentration of 20 percent to reduce runoff.

In addition, permit holders would now be prohibited from “speculative accumulation of biosolids,” which is defined as the accumulation of biosolids at an application site “in excess of the amount that can be applied for the upcoming growing season or year.” Long-term field storage is not authorized under these two permits unless the storage’s design reduces the potential of precipitation mixing with the biosolids. According to the department, this requirement can be accomplished via a covered storage structure or by securely tarping the material.

Why is this change significant? Biosolids are produced – and must be treated and disposed of – 365 days a year. However, as noted in Issue Area A, there are restrictions on when biosolids can be land applied.⁸¹ Therefore, biosolids slated for beneficial use must be stored either at the wastewater treatment facility or at the application site until it can be land applied. As an example, one facility told us they use a “biosolids storage pad” that is capable of providing up to three months of storage.

However, bulk field storage of biosolids at land application sites has become problematic in recent years according to DEP. The department noted that regional staff has encountered issues with odor complaints, as well as stored biosolids reliquefying under wet conditions and running off into surrounding areas. In particular, DEP informed us that in 2018,⁸² staff encountered pollution events from biosolids leachate runoff that traveled in some cases over 500 yards into nearby bodies of water.

DEP noted that field storage under PAG-07 and PAG-08 has always been intended to be temporary. However, the department has been “liberal in our interpretation of this requirement,” and is therefore proposing the additional language in the permits discussed above. It is DEP’s view that

⁸¹ In PAG-07 and PAG-08, DEP prohibits the land application of biosolids or residential septage above agronomic rates. In addition, PAG-08 states that non-EQ biosolids cannot be applied on land that is significantly sloped, or on land that is flooded, snow-covered, or frozen.

⁸² With nearly 64 inches of rain, 2018 was the wettest year on record for Pennsylvania dating back to 1900. In addition, the five-year period between 2016 and 2020 is also the wettest period recorded in the state. See National Oceanic and Atmospheric Administration, *Pennsylvania State Climate Summary*, 2022.

these changes will reduce further pollution events in years with exceptionally high precipitation.

Other Proposed Changes

In addition to these revisions, DEP is also proposing several other changes in biosolids application procedures, as well as the general layout and structure of the three permits. Although noteworthy, these changes are not expected to have the same potential impact on biosolids land application in the commonwealth as the revisions discussed above.

- **Permit length and layout changes.** Consistent with the other permits issued under *Title 25 Pa. Code § 271*, DEP is proposing that the permit period for PAG-07, PAG-08, and PAG-09 be extended from five to ten years. The department is also reformatting the permits to align with the standards and layout of the other general permits managed by the Bureau of Clean Water.
- **Prohibition of land application practices resulting in off-site deposition of biosolids dust.** Due to complaints received by regional staff, DEP now emphasizes in PAG-07 and PAG-08 that land application practices that result in biosolids dust spreading from the application site to neighboring properties are prohibited. The department does not outline specific requirements for this stipulation but notes those permit holders will “have to evaluate their options to address this concern in a way that works best for their product and processing method.” DEP also informed us that specific changes addressing this issue may be warranted in the future.
- **Additional definitions and direct reference materials.** DEP is also proposing the inclusion of additional definitions across PAG-07, PAG-08, and PAG-09 to further clarify how the terms are used throughout the permits.⁸³ The department is also adding additional tables and appendices for information regarding pollutant ceiling and average concentrations, pathogen and vector attraction reduction alternatives, and analytical methods, among others, for direct reference. Previously permit holders would have to independently research the biosolid’s land application regulations or other outside source materials to obtain this information.

⁸³ Definitions now included across all three permits include: adjacent landowner, cover crop, exceptional value watershed, feed crop, fiber crop, food crop, pasture, pathogen reduction, and vector attraction reduction. As noted above, the term “speculative accumulation” has been added to PAG-07 and PAG-08. In addition, the term “wetland” has been added to PAG-08 and PAG-09.

C. Other State Biosolids Regulations

In 2018, the United States produced 5.8 million dry metric tons of biosolids, with over 50 percent (3,028,000) beneficially used as fertilizer and soil amendment. The overall use and disposal of biosolids increased from 2014 to 2018, except for Class B biosolids, which slightly decreased.⁸⁴ According to the National Biosolids Data Project, this decrease could be due to population changes (increase/decrease), changes in treatments at wastewater treatment facilities, and/or different systems of data tracking and reporting.

In 2018, Pennsylvania produced 273,301 dry metric tons of biosolids, with 46 percent (126,510) used for beneficial use. Interestingly, Pennsylvania is also an importer of biosolids from other states, including Maryland, Delaware, New Jersey, and New York. The end use of out-of-state biosolids includes land application and/or landfill disposal.⁸⁵ Additionally, Pennsylvania ranked number six in total dry metric tons produced for the 2018 calendar year (latest data available).

As we noted in the previous section, two significant changes to the general permits pertain to PFAS testing/monitoring requirements and the incorporation of the P-Index. In conducting research for this study, we also reviewed other states' actions concerning these areas.

PFAS-Related Regulatory Actions

State legislative and agency regulatory actions surrounding PFAS continue to evolve as states work to reduce exposure while protecting public health and the environment. According to the National Conference of State Legislatures (NCSL), "states are using multipronged approaches to manage PFAS: reducing or eliminating its use in the common source material, setting testing and reporting limits, and directing and financing remediation."

According to our research, since 2019 there has been a steady increase in legislative activity surrounding PFAS. For example, in 2019, there were just five bills enacted to address PFAS through funding for remediation, drinking water regulations, and restrictions on firefighting foam and other products. By 2022, 200 bills with PFAS-related language were introduced, with at least 18 states enacting nearly 50 bills related to PFAS

⁸⁴ See <https://www.biosolidsdata.org/>, accessed April 3, 2023.

⁸⁵ Pennsylvania (2018) biosolids dry metric tonnage does not include other states' disposed and/or land-applied biosolids.

in firefighting foam, firefighter personal protective equipment, food packaging, consumer products, and environmental remediation.

PFAS Testing in Biosolids in Other States. To understand what states are doing regarding PFAS testing in biosolids, we first looked at jurisdictions within the Chesapeake Bay watershed. The watershed includes New York, Pennsylvania, West Virginia, Maryland, Delaware, Virginia, and the District of Columbia.⁸⁶ Currently, there are no PFAS testing requirements for biosolids among the Bay states or the District of Columbia. However, some Bay states are beginning to focus more directly on PFAS in biosolids. For example, Maryland is collecting PFAS sampling information from wastewater treatment facilities throughout the state.⁸⁷ Delaware is also investigating PFAS in the influent, effluent, and biosolids from select wastewater treatment facilities across the state.

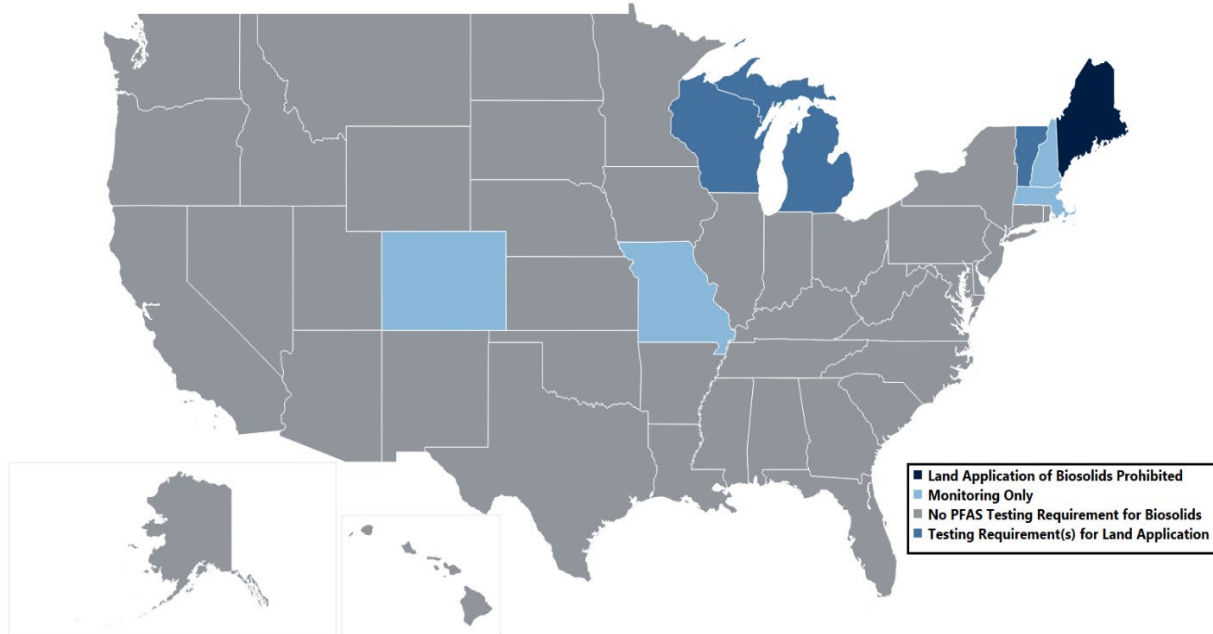
We also looked for any PFAS-related testing or application requirements for biosolids beyond the Chesapeake Bay states. Exhibit 10 highlights these PFAS-related requirements.

⁸⁶ See U.S. Department of Interior, U.S. Geological Survey (USGS), Chesapeake Bay Watershed boundary, USA.

⁸⁷ Maryland Department of the Environment issued a discharge permit (effective 9/1/2021 through 08/31/2026) that is the first of its kind issued to Naval Support Facility Indian Head (NSFIH), NSFIH Wastewater Treatment Plant, that requires monitoring for PFAS in effluent and biosolids.

Exhibit 10

Only Eight States Currently Have PFAS-Related Activity Involving Biosolids



Source: Developed by LBFC staff from a review of other state regulations.

Among the states we reviewed, Maine is the only state with a complete ban on land application of biosolids. As discussed in Section IV, Maine's decision has also resulted in significantly higher fees for biosolids management.

In Michigan, Wisconsin, and Vermont, we found that some PFAS testing is required before biosolids can be land applied. For example, in Michigan, if biosolid tests reveal elevated PFAS concentrations, land application is prohibited and cannot resume until the sources are eliminated and residual concentrations are decreased. In Wisconsin, the total amount of biosolids that can be land applied is based on PFAS concentration levels. PFAS monitoring is also required of biosolids produced in or imported into the state of Vermont (as well as soils, groundwater, and crops at land application sites). In application sites that exceed Vermont's groundwater standards, land application is prohibited.

In New Hampshire, Colorado, and Massachusetts, we found additional examples of PFAS testing requirements, but no limitation on the use of biosolids. For example, New Hampshire requires annual testing for PFAS in biosolids. Although the results are used for informational purposes only. Further, New Hampshire's *Administrative Sludge Management Rule*

requires that, in addition to testing, a narrative addressing pollution prevention and pretreatment efforts be submitted with a facility's annual report. As of January 1, 2023, Colorado requires biosolids to be tested and the results reported to its environmental agency. In Massachusetts, quarterly monitoring is required for PFAS in all biosolids that are permitted to be reused through land application. All of these states have established monitoring requirements, but there are no established PFAS concentration levels that restrict the land application of biosolids.⁸⁸

Interestingly, California, which is often considered to have some of the most restrictive environmental rules, does not restrict biosolids usage. According to the California Association of Sanitation Agencies, a large percentage of biosolids generated are land-applied.⁸⁹ For example, California land applies 56 percent of its biosolids, which consist of Class A (36 percent) and Class B (20 percent) biosolids. Only 13 percent of California's biosolids are disposed of in a landfill. California is also working to divert 75 percent of its organic waste away from landfills and reduce methane emissions by 40 percent by 2030; thus, land application of biosolids is viewed as an acceptable alternative. In 2020, California required wastewater treatment facilities to test for PFAS in biosolids quarterly, for that year only. Beyond this initial requirement, there are no current PFAS testing requirements for biosolids.

Lastly, the remaining 36 states have no current PFAS testing requirement for biosolids. However, there are states where local governments may have taken regulatory action and prohibited or restricted land application of biosolids. For example, in Arizona, Pima County prohibited the land application of biosolids until an environmental study was completed. The study reviewed where biosolids were historically land applied to identify possible PFAS contamination, retention, and migration in farm soils. Ultimately, the results showed low concentrations of PFAS in soils receiving biosolids. Based on those results, Pima County lifted the ban and the land application of biosolids was reinstated.⁹⁰

Phosphorus Index

We also looked at the P-Index and its usage within the Chesapeake Bay states. While this comparison is useful in terms of providing a reference point for how Bay states are approaching phosphorus, it is important to note that the P-Index is a state-specific tool, tailored to each state's

⁸⁸ In Missouri, voluntary PFAS sampling and data collection has begun among wastewater and stormwater permittees. Although not directly focused on biosolids, the data is being collected to identify/monitor PFAS in a facility's effluent.

⁸⁹ See Summary of Meeting between the California Association of Sanitation Agencies (CASA) and EPA February 28, 2023, <https://casaweb.org/renewable-resources/biosolids>, accessed May 5, 2023.

⁹⁰ See *PFAS in Biosolids, A Southern Arizona Case Study*, October 2020.

unique topography and environmental/agricultural needs. As such, the methodology within each state's respective tool will vary.

Maryland requires sites with elevated phosphorus levels to utilize a Phosphorus Management Tool (PMT) to calculate phosphorus-based application rates for manure and biosolids. Further, all farms within the state must have a certified nutrient management plan.⁹¹

In Virginia, land application of Class B biosolids must be per the state's nutrient management standards. These standards include criteria for limitations on land application rates that cannot exceed the nitrogen or phosphorus needs of the crop, whichever is less as established in the nutrient management plan.⁹²

Delaware requires a formal nutrient management plan wherever biosolids are land applied. In addition, Delaware requires that biosolids are land applied based on the agronomic loading rate, which is calculated based on nitrogen required by the crop less any available nitrogen from prior biosolid applications. Land application of biosolids can also be limited by phosphorus, based on the state's P-Index.⁹³

New York requires determining soil nutrient values before biosolids are land applied. The land application rate for biosolids is determined based on the field's nutrient management plan. The New York Phosphorus Run-Off Index soil test is used to determine the total amount of biosolids that can be land applied.⁹⁴

Lastly, West Virginia's Sewage Sludge Management Rule requires monitoring of soil nutrient levels to prevent the over-application of nutrients. However, nutrient management plans are not required on all agricultural lands. The Phosphorus Index is used in nutrient management planning to determine the application rates for soil amendments.

⁹¹ Includes all farmers grossing \$2,500 a year or more or livestock producers with 8,000 pounds or more of live animal weight.

⁹² The nutrient management plan requires the use of Virginia's Phosphorus Index to determine land application rates of Nitrogen and Phosphorus.

⁹³ See National Biosolids Data Project, Data on Biosolids Management in the United States, State Summaries, accessed April 6, 2023.

⁹⁴ In addition, the NY Nitrate Leaching Index (Nitrogen) and RUSLE2 (Annual Soil Loss Rate) are used to assess the risk of nutrient and soil loss.

SECTION IV ESTIMATED COSTS AND CONSEQUENCES FROM DEP'S PROPOSED REVISIONS



Fast Facts...

- *EPA has not approved a standard testing protocol to detect PFAS in biosolids.*
- *DEP's proposed changes to its general permits will result in higher costs to permit holders, and ultimately ratepayers. However, calculating these costs cannot be done with any precision as the costs are site-specific and driven by "unknown" conditions.*
- *Although DEP has the authority to change its general permits, we believe a more holistic and collaborative approach is needed. This approach involves revisiting the underlying regulations governing the beneficial use of biosolids.*

Overview

Within this final section of the report, we continue with the discussions outlined in Section III regarding DEP's proposed changes to PAG-07, PAG-08, and PAG-09, but we take a closer review at how these changes may more directly impact permit holders, as well as ratepayers.

We begin with a discussion surrounding the status of PFAS testing for biosolids. This topic is important because although DEP is proposing permit holders test biosolids for PFAS, there are currently no EPA-approved tests on how to do so. There are currently modified practices in place, which are based on protocols used for testing PFAS in drinking water, but the EPA concedes these tests have not been validated in biosolids. As a result, this lack of uniformity in testing protocols presents challenges to DEP and its goal to collect consistent and meaningful data for statewide analysis. According to EPA, the agency is evaluating a new test, known as EPA Method 1633, for use in biosolids, but its approval as the *de facto* standard is not expected until late 2023 at the earliest.

We worked to determine the expected costs for conducting the test. We found the expense needs to be factored for both the sampling cost (i.e., properly collecting the biosolid sample) and analysis costs (i.e., performing the actual test for PFAS on the biosolid sample). In total, we found the testing cost to perform Method 1633 to be around \$900 to \$1,150 per test conducted, with most experts pointing to the upper limit as more realistic.

DEP proposes a testing frequency based on the commonwealth's existing regulatory requirements for contaminant monitoring, which is based on the tonnage of processed biosolids. Using these existing criteria, we estimate that the cost to permit holders could vary from once a year (at least \$900) to more than 12 times per year, with an annual cost of over \$13,000. We found these costs are likely to be manageable for larger facilities, but smaller facilities, which are also more rural-based permit holders, are likely to face a disproportionate impact over the long term as they struggle to improve their facility infrastructure.

In Issue Area B, we discuss potential costs to PAG-07, PAG-08, and PAG-09 permit holders. However, while all of these permit holders share an interest in biosolids management, they do so from different contexts.

PAG-07 and PAG-08 permit holders are typically municipal waste treatment authorities, whereas PAG-09 permit holders are private business entities dealing with septic cleanout and septage hauling/treatment. As such, we focused our analysis separately, grouping PAG-07 and PAG-08 cost implications and using two case study examples of PAG-09 permit holders to present their estimated cost implications.

Concerning the PAG-07 and PAG-08 cohort, we surveyed eight representative permit holders. These permittees covered a mixture of small, medium, and large wastewater treatment facilities and from different regions. We queried the permittees on the four key permit changes proposed by DEP (see also Section III for detail on these proposed changes): (1) PFAS testing; (2) P-Index usage; (3) biosolids storage, and (4) hauled-in waste requirements. DEP's proposed permit changes will have direct implementation costs to the permit holder in each category, but precisely computing these costs is impossible due to the site-specific nature of each facility. These costs are influenced by the operation's size, the facility's age, the type of wastewater treatment procedures used, storage capacity, land availability to disperse biosolids, landfill fees, and transportation costs, among numerous other factors.

With respect to PAG-09 permit holders, data was even more scarce as these permittees are private business entities. We obtained proprietary information from two permit holders whose expenses were similar, which gave us confidence in the data they shared with us. Again, while it is impossible to calculate the precise cost implications for all PAG-09 permit holders, based on the data we collected, a conservative cost increase of \$90 to \$150 per septic cleaning is reasonable.

In Issue Area C, we returned to the results of our survey of PAG-07 and PAG-08 permit holders and reviewed how the four key areas discussed above may lead to unintended consequences. Interestingly, survey respondents viewed the P-Index requirements as the most impactful permit revision. We identified three areas where unintended consequences may result: (1) issues with landfilling biosolids, (2) issues with incineration of biosolids, and (3) availability of land application sites. Finally, we calculated the possible consequences for ratepayers – increased fees.

We outline the complications with DEP's proposed permit changes, principally that there continues to be a plethora of "unknown" conditions, which are particularly problematic to PAG-07 and PAG-08 permit holders. DEP is rightly trying to meet its mission to protect the environment and public health, but we believe these unknown conditions need to be resolved holistically and transparently. DEP has the authority to revise its general permits. Still, we believe a more collaborative approach that focuses on updating the underlying regulations governing the beneficial use of biosolids (i.e., 25 Pa Code Chapter 271 Subchapter J) will best achieve this common goal.

Finally, we recognize that innovation is needed to better position the “beneficial use” of biosolids in Pennsylvania, and we recommend a grant program be established to further innovation. We found a model for such a program in the Pennsylvania Dairy Investment Program, which supports research and development, organic transition, value-added processing, and marketing grants supporting Pennsylvania’s dairy industry. The program is administered jointly by the Department of Community and Economic Development (DCED) and the PA Department of Agriculture (PDA) under the direction of the Commonwealth Financing Authority (CFA). This grant structure would be an excellent first start for the commonwealth.

Issue Areas

A. Current Status and Estimated Costs of PFAS Testing Technology for Biosolids

Because of increased concerns surrounding possible PFAS contamination in biosolids, DEP proposes biosolids-specific PFAS monitoring requirements.^{95,96} HR 149 directs us to assess if permit holders would be able to “practically comply” (see Appendix A) with proposed permit revisions given the testing technology currently available. Complying with this proposed permit requirement is complicated by the fact that there are currently no nationally recognized testing standards for PFAS in biosolids. In this issue area, we provide an overview of the status of PFAS biosolids testing technology and attempt to estimate if PAG-07 and PAG-08 permit holders can realistically comply with DEP’s proposed PFAS testing requirements.

Current Status of PFAS Testing Technology

DEP is proposing the inclusion of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) monitoring requirements for EQ and non-EQ biosolids covered under PAG-07 and PAG-08. DEP proposes that PFAS testing occurs with the same frequency that permit holders are already required to conduct for other pollutant monitoring under *Title 25*

⁹⁵ See <https://why.org/articles/dep-finds-pfas-in-one-third-of-public-water-systems-none-exceeded-epa-limit/>, accessed April 28, 2023.

⁹⁶ See <https://www.theguardian.com/environment/2022/may/12/maine-bans-sewage-sludge-fertilizer-farms-pfas-poisoning>, accessed April 28, 2023.

Pa. Code § 271.917. These testing requirements are based on the amount of sewage sludge produced per year.⁹⁷

In the proposed permit revisions, DEP notes that testing methods must be listed in either *Title 25 Pa. Code § 271.906* or the most current edition of the *Federal Register* and that test results must be analyzed by a DEP-accredited laboratory for the testing method used. After receiving the results, permit holders use DEP's *Recordkeeping and Reporting Form* to report results annually. While the mechanics of this "sample-test-report" process seem simple, the lack of an approved testing standard complicates the process.

Available methods to test for PFAS in biosolids. Previously, laboratories have taken EPA-approved testing standards for PFAS in drinking water and modified the testing process for non-potable water samples. This process became known as the "Modified EPA Method 537" (Modified 537). Importantly, Modified 537 is not approved by EPA for use on non-drinking water samples (e.g., biosolids). According to the agency, when laboratories modify the procedures of Method 537 for other environmental media like biosolids, they change the standards that have been validated and approved for use by EPA. For example, the procedures used to collect a drinking water sample differ from those of a non-aqueous sample such as biosolids. Since the modified version no longer uses the exact procedures, it is not technically validated nationally. While EPA does not prohibit Modified 537 to test for PFAS in biosolids, the agency explicitly states that this method does not meet the standard that has been validated and approved for EPA Method 537 in drinking water sources.^{98,99}

DEP also informed us of several other testing methods used for non-drinking water. First, the department notes that the American Society for Testing and Materials (ASTM)¹⁰⁰ Method 7979 has been developed and validated to analyze PFAS in non-drinking water, wastewater, and sludge. While this statement is accurate, it is important to note that ASTM 7979 is

⁹⁷ *Title 25 Pa. Code § 271.917* requires that testing for pollutants be conducted on a frequency based on the annual amount of sewage sludge produced as follows: facilities producing under 318 tons of sewage sludge (289 metric tons) test once per year; facilities producing between 319 tons (290 metric tons) and 1,649 tons (1,499 metric tons) test four times per year; facilities producing between 1,650 tons (1,500 metric tons) and 16,499 tons (14,999 metric tons) test six times per year; facilities producing 16,500 tons (15,000 metric tons) or greater test 12 times per year.

⁹⁸ EPA, *Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS): Methods and Guidance for Sampling and Analyzing Water and Other Environmental Media*, 2019.

⁹⁹ EPA, *Analytical Methods for PFAS in Environmental Media*, 2020.

¹⁰⁰ The American Society for Testing and Materials (ASTM) is one of the leading international voluntary standards development organizations, with over 12,000 standards used across more than 90 industries worldwide. See <https://www.astm.org/about/overview/detailed-overview.html>, accessed May 1, 2023.

also not validated by EPA for use in non-potable water and other environmental media samples, including biosolids.¹⁰¹ In addition, DEP also stated that “it may be difficult to find labs that utilize the ASTM methods.”

We tested the veracity of this statement by using open-source information available from DEP’s Accredited Environmental Laboratories search tool. We could not identify any Pennsylvania facilities certified by DEP to use ASTM 7979 on any environmental media.¹⁰² As a result, we question whether ASTM 7979 would be a realistic option for wastewater treatment facilities to test for PFAS in biosolids moving forward.

Similarly, DEP noted the development of EPA Method 8327 for PFAS testing in non-drinking water samples, including wastewater. Although EPA has approved Method 8327 to test for 24 PFAS analytes in groundwater, surface water, and wastewater, the agency has not validated the method for PFAS testing in biosolids.^{103,104}

In the end, although several methods can be used to test for PFAS in biosolids, none have been officially recognized as the method to use by EPA or, subsequently, DEP. As a result, this lack of uniformity in testing protocols presents challenges to DEP and its goal to collect consistent and meaningful data for statewide analysis.

Development of EPA Method 1633

Although no PFAS testing method for biosolids has been fully validated and approved for use by the federal government, this circumstance is expected to change soon. EPA and the United States Department of Defense’s Strategic Environmental Research and Development Program are currently partnering to develop EPA Method 1633, which will test for 40 PFAS compounds in eight different environmental media, including wastewater, landfill leachate, and biosolids. According to representatives we spoke with at EPA, once Method 1633 is approved it is expected to be the national enforceable testing standard for biosolids (see discussion that follows).

¹⁰¹ See <https://www.epa.gov/water-research/pfas-analytical-methods-development-and-sampling-research>, accessed May 2, 2023.

¹⁰² See http://cedatareporting.pa.gov/Reportserver/Pages/ReportViewer.aspx?/Public/DEP/Labs/SSRS/Lab_Certification, accessed May 3, 2023.

¹⁰³ See <https://www.epa.gov/water-research/pfas-analytical-methods-development-and-sampling-research>, accessed May 2, 2023..

¹⁰⁴ EPA, *Method 8327: PFAS Using External Standard Calibration and Multiple Reaction Monitoring Liquid Chromatography with Tandem Mass Spectrometry*, 2019.

Current Status of EPA Draft Method 1633. EPA adheres to a rigorous approval process, which includes single and multi-laboratory validations, as well as acceptance of quality control (QC) standards. Typically, EPA does not release a draft method for public comment until a single laboratory validation report is finalized. However, due to the high demand for this specific PFAS testing method, EPA released a draft version of Method 1633 (Draft Method 1633) along with the single laboratory validation in August 2021. In June 2022, an updated Draft Method 1633 was released, addressing several clarifications from the multi-laboratory validation process. In December 2022, a third draft with QC criteria for wastewater samples was released.

The EPA expected a fourth draft of Method 1633 with QC criteria for all aqueous samples (surface water, groundwater, and wastewater) to be released in early 2023. However, as of May 2023, the fourth draft was unavailable, which will likely further delay any “approved” testing standard at the federal level.

We were informed that a final draft of Method 1633 with QC acceptance criteria for all environmental media, including biosolids, is expected later this year. EPA staff noted that once promulgated in final rulemaking, Method 1633 will become the national standard for PFAS biosolids testing for Clean Water Act (CWA) compliance monitoring. However, even though Method 1633 is not yet finalized, EPA still recommends its use in the National Pollutant Discharge Elimination System (NPDES) Permit Program.¹⁰⁵ Exhibit 11 illustrates a summarized timeline for developing EPA Method 1633.^{106,107}

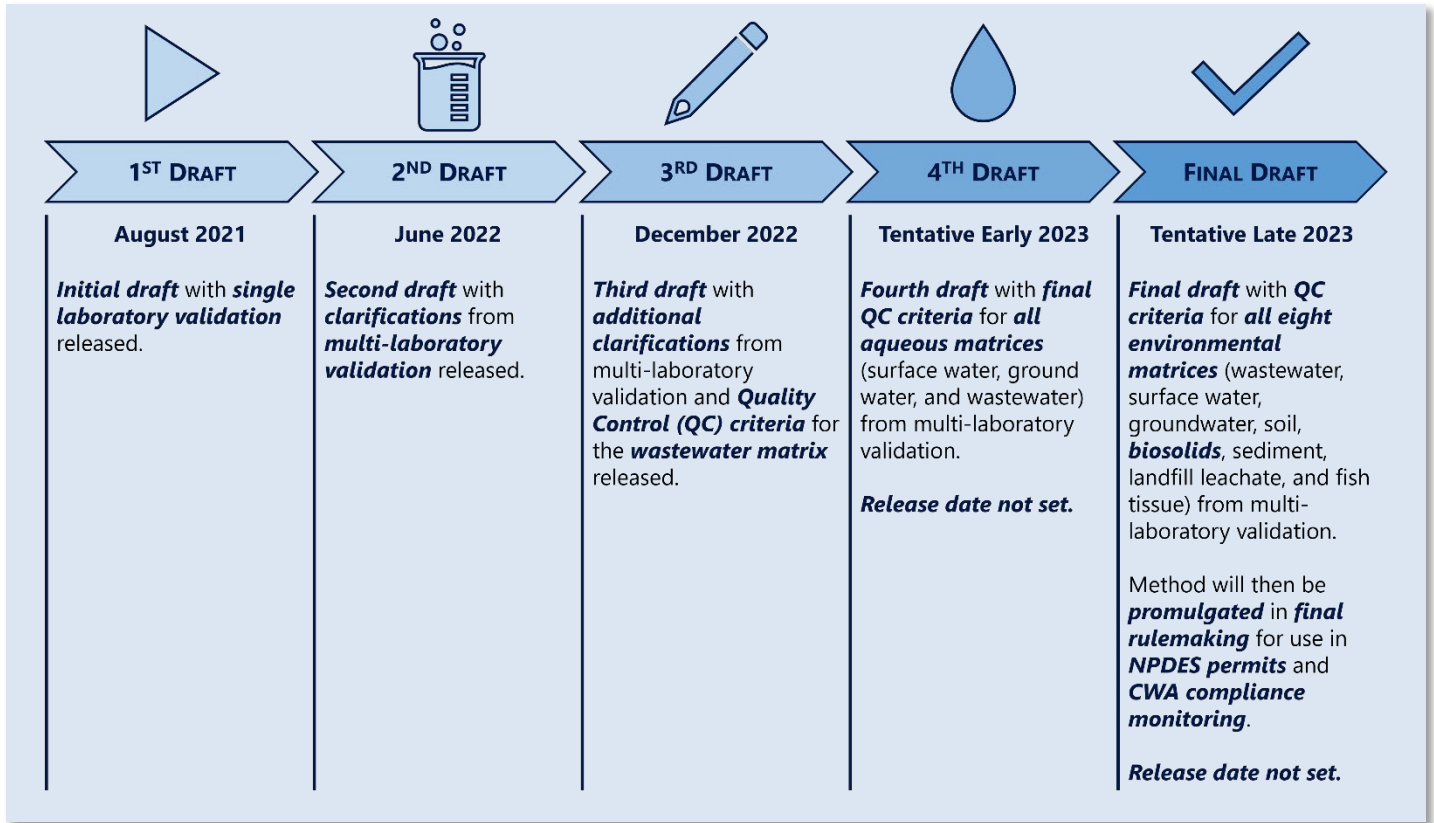
¹⁰⁵ In Section II, we noted that the NPDES Permit Program authorizes state governments to perform many permitting, administrative, and enforcement for EPA. Pennsylvania is not an authorized state for the NPDES Biosolids Program, meaning sole enforcement authority resides with EPA. NPDES permit holders must report data to EPA and DEP.

¹⁰⁶ See <https://www.epa.gov/newsreleases/epa-announces-first-validated-laboratory-method-test-pfas-wastewater-surface-water>, accessed May 4, 2023.

¹⁰⁷ See <https://www.epa.gov/cwa-methods/cwa-analytical-methods-and-polyfluorinated-alkyl-substances-pfas>, accessed May 4, 2023.

Exhibit 11

EPA Method 1633 Is Not Expected to be Finalized until Late 2023



Source: Developed by LBFC staff from information obtained from EPA.

Estimated Testing Costs Associated with EPA Method 1633.

A key requirement of HR 149 was to determine costs associated with PFAS testing and to determine “if facilities could comply with DEP’s proposed testing requirements.” DEP did not include information related to EPA Method 1633 in the proposed revisions or supplemental information provided to us, as the method had not yet been released when these materials were drafted in spring 2021.

However, given that the method is likely to be the national standard for PFAS testing in biosolids, DEP informed us that it is the department’s “expectation” to use Method 1633 once it is promulgated in final rulemaking. With this expectation in mind, we used Method 1633 as a starting point to determine the costs associated with DEP’s proposed PFAS testing requirement.

Establishing the costs associated with Method 1633 proved to be a challenge because the method is still under development and is scarcely used

in the commonwealth. In fact, as of May 2023, only two laboratories in Pennsylvania were accredited by DEP to use Draft Method 1633.¹⁰⁸ As such, our analysis is constrained by two factors: the limited labs performing the test and the relative newness of the testing methodology.

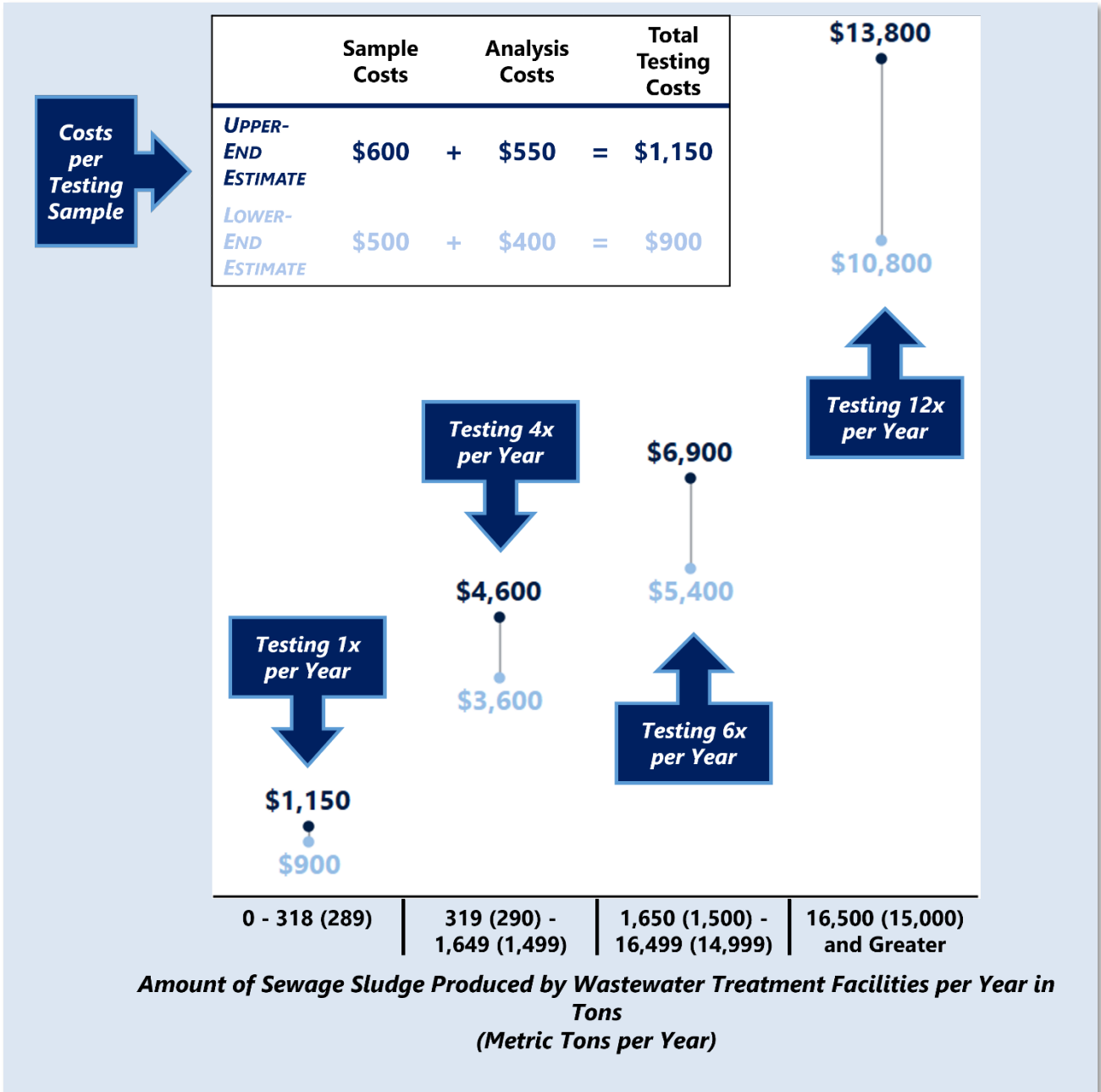
We spoke with representatives familiar with Draft Method 1633 about the testing costs. These representatives informed us that testing costs must be viewed as two distinct parts: sampling and analysis. Sampling costs, which involve strict protocols to ensure the legitimacy of the collection taken, can range between \$500 to \$600 per collection. Once collected, there are additional costs to conduct the analysis. One laboratory informed us that analysis costs range between \$400 to \$550 per sample. This laboratory also told us that biosolids are a more difficult sample to analyze; thus, costs will typically skew toward the upper-end projections. These costs are considered relatively uniform among the labs, but going forward, as more labs are approved to conduct the test, costs may decrease.

Using these price ranges, we calculated cost estimates for facilities using Method 1633 to test for PFAS contamination in biosolids. As noted above, the testing frequency was determined by the amount of annual sewage sludge produced by a facility as outlined in *Title 25 Pa. Code § 271.917*. The results of this analysis are illustrated in Exhibit 12. It is important to note that we assumed each facility would be testing one sample at a time. Costs are expected to increase proportionally if more samples are tested.

¹⁰⁸ See http://cedatareporting.pa.gov/Reportserver/Pages/ReportViewer.aspx?/Public/DEP/Labs/SSRS/Lab_Certification, accessed May 4, 2023.

Exhibit 12

Estimated PFAS Testing Costs Using Method 1633 Range between \$900 and \$1,150 per Sample



Source: Developed by LBFC staff from information obtained from EPA and a DEP-accredited laboratory in Pennsylvania.

Based on the information we obtained, we estimate that testing for PFAS in biosolids, using EPA Method 1633, is between \$900 and \$1,150 per

sample. Using this cost figure, we further calculated the expected cost per facility based on the amount of sludge produced (based on existing regulatory requirements).

At the smallest wastewater treatment facilities (e.g., producing 318 tons of sewage sludge or less), PFAS testing would be required once per year or at an approximate cost of \$900 - \$1,150. Facilities that produce between 319 tons and 1,649 tons of sewage sludge would be required to test quarterly, resulting in potential costs between \$3,600 and \$4,600 annually.

At larger facilities, PFAS testing becomes more frequent. For example, facilities producing between 1,650 tons and 16,499 tons of sludge annually would be required to test every 60 days (six times a year) at an estimated annual cost of \$5,400 to \$6,900. The largest facilities in the commonwealth (producing 16,500 tons or more) would be required to test monthly, resulting in potential testing costs between \$10,800 and \$13,800 annually.

As shown above, PFAS testing costs are not expected to have an overly detrimental impact on wastewater treatment facilities' bottom lines. Nevertheless, given that the costs are an added expense to what can be tight operating budgets, the costs should not be dismissed. Moreover, as we explore further in Issue Area B, we expect there may be unintended consequences that arise from conducting PFAS testing, especially without a clear direction as to how the data will be collected and used to inform policy decisions.

B. Potential Costs to Permit Holders

HR 149 directed us to estimate the costs that permit holders would incur to comply with DEP's proposed revisions to PAG-07, PAG-08, and PAG-09. This task proved difficult because not all of the proposed changes would impact each permit holder uniformly. Moreover, while PAG-07 and PAG-08 permit holders may be more closely aligned in their operations, there is no similarity between them and PAG-09 holders, which are typically privately-owned businesses focused on residential septic cleaning and hauling. Accordingly, we grouped PAG-07 and PAG-08 permit holders together and collectively refer to them as "wastewater treatment facilities." We discuss PAG-09 permit holders as "residential septage haulers."

We found that there is the potential for new expenses directly associated with changes to the permit requirements, as well as many indirect costs that could result from compliance with DEP's revised permits. Therefore, determining the full cost to comply with proposed permit revisions

proved to be difficult. However, the following analysis offers valuable insight into many critical factors that should be considered when discussing proposed revisions to PAG-07, PAG-08, and PAG-09.

Potential Costs to Wastewater Treatment Facilities (PAG-07 and PAG-08)

In reviewing potential costs to wastewater treatment facilities, it is important to underscore some key limitations. For example, biosolids management is a localized process. As such, the associated costs for handling biosolids are driven by local economic factors, which cannot be extrapolated to other operations. Moreover, expenses between facilities can vary greatly depending on the facility's age, the type of wastewater treatment procedures used, storage capacity, land availability to disperse biosolids, landfill fees, and transportation costs, among other factors.

Our analysis was also impacted by access to quantifiable data. To this point, DEP noted that a primary barrier it experienced in establishing cost estimates was the willingness of entities to share data. As we discussed in Section III, DEP attempted to work with the Agricultural Advisory Board (AAB) and Water Resources Advisory Committee (WRAC) workgroups to obtain site-specific data but was unable to obtain meaningful information.

Knowing these previous data limitations, we chose a different path. We collaborated with a stakeholder association to identify a diverse selection of wastewater treatment facilities that maintain PAG-07 or PAG-08 permits. We then surveyed this group, which consisted of eight facilities of representative sizes and statewide locations (small, medium, and large), on the costs and impacts of DEP's proposed changes. When discussing the proposed changes with these permit holders, we limited the discussion to four key cost areas and issues. These four cost areas are as follows:

1. PFAS Testing Requirements.
2. P-Index Requirements.
3. Storage Requirements.
4. Hauled-in Waste Requirements.

While the findings of these case studies are insightful, it is important to view them with some caution. As noted above, biosolids management practices are site-specific. For example, respondents reported that biosolids management expenses contributed anywhere from one percent to 50 percent of the total expenditures for their wastewater treatment facilities. As a result of this variety, the impacts of proposed permit changes will be individualized. Although we attempted to gather input from a

wide selection of permit holders, we are unable to conclude that what was reported to us would hold for the entire population of PAG-07 and PAG-08 permit holders.

Costs Related to PFAS Testing Requirements. In Issue Area A, we outlined the estimated costs to test for PFAS in biosolids using EPA Draft Method 1633. Given the current state of PFAS testing for biosolids, we found that PAG-07 and PAG-08 permit holders had difficulty estimating the full costs associated with complying with new PFAS testing requirements. Our sample of permit holders estimated that compliance with PFAS testing might cost their facilities anywhere between \$1,500 per sampling event to \$100,000 each year for all the sampling, testing, and training that could be encompassed under this requirement.

It is important to note that several unknown factors leave the total cost of compliance for PFAS testing in biosolids undefined. First, because EPA Method 1633 has not undergone final validation and rulemaking yet, many permit holders are estimating costs on the currently available PFAS testing methods. While these costs may be similar to that of Method 1633, in many cases, the currently available testing methods are believed to be less expensive.¹⁰⁹

Laboratory availability may impact costs as well. As noted in Issue Area A, only two laboratories in Pennsylvania are DEP-accredited for EPA Draft Method 1633. These laboratories are located in the southcentral and southeastern portions of the commonwealth. While it is expected that more laboratories will become accredited once Method 1633 has been promulgated in final rulemaking, the timeline for doing so is unknown. The accredited laboratory that we spoke with noted that DEP historically has been conservative with granting accreditation with new testing methods. Without additional laboratories that are geographically distributed across the state, the costs to transport testing samples for some permit holders could increase.

Furthermore, this laboratory told us there is currently a 20 to 25-day turnaround time for the analysis of samples using Method 1633. Consequently, if nearly 200 PAG-07 and PAG-08 permit holders are required to test for PFAS between once and 12 times a year with limited laboratory capacity, then this lag time could be further delayed, potentially impacting biosolids management and compliance reporting. From an environmental perspective, delays in receiving test results may also impact pollutant exposure because there is no requirement in the proposed permit revisions to restrict the land application of biosolids until DEP receives testing results.

¹⁰⁹ Discussions with representatives from the Michigan Department of Environment, Great Lakes, and Energy (EGLE) revealed that in the state's PFAS monitoring program, sampling using Modified Method 537 ranged between \$325 and \$425 per sample, with similar analysis costs to that of EPA Method 1633 (approximately \$500).

Laboratory officials who conduct Method 1633 testing also expressed to us that they had concerns about the ability of smaller facilities to afford the analytical costs of repeated PFAS monitoring without a state subsidy. We found supporting evidence for this suggestion through representatives from the Michigan Department of Environment, Great Lakes, and Energy (EGLE). In our interviews with those officials, they noted that while there have not been issues with PFAS testing requirements, smaller facilities are encountering difficulties with costs related to source monitoring of PFAS contamination, as these facilities cannot seek reimbursement from industrial polluters under the state's Industrial Pretreatment Program (IPP) PFAS Initiative.¹¹⁰

The concern about ongoing costs being more detrimental to smaller facilities should be factored under DEP's planned biosolid monitoring initiatives, which thus far are ambiguous and unclear. According to DEP officials:

Adding PFAS monitoring requirements to the biosolids land application general permits will give the department the information necessary to evaluate and, if necessary, limit the public health risks that may be posed by PFAS in land-applied biosolids (e.g., through runoff into drinking water sources). Moreover, requiring PFAS monitoring for biosolids is anticipated to result in a reduction of PFAS in biosolids in Pennsylvania. This anticipated reduction is due to treatment facilities having greater incentives to enforce pretreatment ordinances with industrial contributors of PFAS, thereby resulting in lower levels of PFAS in industrial discharges to sewer systems. This will likely result in less PFAS in biosolids, and a reduction of health risks from land application of biosolids.

Yet, it is unclear how the department plans to use the information supplied by PAG-07 and PAG-08 permit holders to monitor PFAS contamination or what specific incentives will exist for wastewater treatment facilities to encourage industrial contributors to reduce PFAS pollution.

Given the input we received from industry experts, there are legitimate concerns about the financial burdens that long-term PFAS monitoring could place on smaller wastewater treatment facilities in Pennsylvania. These added burdens are especially sensitive to rural communities, many of which are struggling to update existing systems even with added federal assistance. As a result, since the department could not provide us

¹¹⁰ See <https://www.michigan.gov/-/media/Project/Websites/egle/Documents/Programs/WRD/IPP/IPP-PFAS-FAQ.pdf?rev=2b21426f8213448a8a2e4a5ac6f92278>, accessed May 12, 2023.

with specific next steps for the commonwealth's PFAS monitoring initiatives, we cannot further quantify this issue at this time.

Costs Related to P-Index Requirements. As discussed in Section III, DEP proposes that all permit holders be required to use Pennsylvania P-Index-based phosphorus loading rates to help determine the amount of biosolids that can be land applied to a site. The draft language of PAG-08 notes that documentation regarding the phosphorus levels for application sites will be submitted to DEP at least every three years as part of nutrient balance evaluations already required under the permit.¹¹¹ This frequency is similar to that of Nutrient Management Plans, which are required of Concentrated Animal Feeding Operation (CAFO) or Concentrated Animal Operation (CAO) farms under Act 38 of 2005.¹¹²

We spoke with a representative from the State Conservation Commission (SCC), the entity that oversees Pennsylvania's Nutrient Management Plans, who informed us that the costs to conduct the soil tests and analysis for the P-Index range from approximately \$4,000 to \$5,000 every three years. Further, the researchers who developed the current version of the Pennsylvania P-Index as part of the Penn State Extension informed us that permit holders should already collect the soil nutrient and slope information required for the P-Index through DEP's current requirements. As a result, permit holders will only need to contract the services of a nutrient management specialist to calculate the P-Index.¹¹³

While the up-front testing and analysis costs required to conduct the P-Index may be reasonable, additional consequences could result from enacting phosphorus loading considerations in biosolids land application. As discussed in greater detail below, these consequences include the potential loss of application sites or the need for additional storage for biosolids that cannot be immediately land applied.

We asked our sample of PAG-07 and PAG-08 permit holders to estimate the anticipated costs for their facilities to comply with additional permit requirements related to the P-Index and phosphorus-based land application considerations. These permit holders noted that it is impossible to

¹¹¹ In Section III, we note that PAG-07 does not include a nutrient balance evaluation requirement. Instead, producers of EQ biosolids must place P-Index-based application rates on the external packaging and instructions for the material.

¹¹² CAFOs and CAOs are farms where large quantities of livestock or poultry are housed inside buildings or in confined feedlots. Any livestock or poultry farming operation that has more than 8 total animal equivalent units (AEUs) and exceeds 2,000 pounds of live animal weight per acre suitable for manure application is required by Act 38 to submit a Nutrient Management Plan, which documents the balance of nutrients needed on individual crop fields and nutrients supplied from manure and other nutrient sources. See State Conservation Commission and Penn State Extension, *The Most Common Agricultural Operation Plans and Their Objectives and Differences*, 2022.

¹¹³ A representative from the SCC also informed us that the commission offers trainings which instruct individuals how to calculate the P-Index once all data has been collected.

completely determine the cost without knowing all the new permit requirements, as well as the consequences of the permit changes. However, we received estimates from permit holders ranging from \$5,000 to \$500,000 per year to comply with potential P-Index permit requirements.

It is worth noting that on several instances, DEP indicated to us that Pennsylvania will receive credit for implementing P-Index requirements as part of its phosphorus reduction goals within Phase III of the Chesapeake Bay Watershed Implementation Plan (WIP). According to the department, "...as long as the permit requires that the necessary information is reported for the commonwealth to account for the enhanced nutrient management, Pennsylvania will receive credit for implementing P reduction towards Pennsylvania's goals for cleaning up local waters within the Chesapeake Bay watershed."

However, the situation appears to be more nuanced based on our discussions with EPA. In comments from EPA's WIP program expert, it was noted that each jurisdiction within the Chesapeake Bay Program submits narrative and numeric components as part of its WIP. The agency informed us that while DEP included comments about possibly implementing the P-Index for biosolids management in the narrative portion of the Phase III WIP, DEP did not include the numeric information necessary for EPA to evaluate this action for credit under the WIP's nutrient management Best Management Practices (BMP) scenarios. So, at the least, DEP would need to take additional steps with EPA to receive credit in the WIP for this proposed permit addition.

Further, even though P-Index requirements for biosolids management were not included in the plan, EPA informed us that Pennsylvania would meet 99 percent of its phosphorus reduction goals by 2025 if all steps of the current Phase III WIP were implemented. The agency noted that additional phosphorus reductions over 100 percent of the 2025 goal could be exchanged for credit in areas where the commonwealth is lacking (e.g., nitrogen reduction). Yet, there are outstanding questions as to the level of phosphorus reduction that would be experienced if P-Index requirements were implemented. DEP told us that it is not aware of any field studies comparing phosphorus runoff in biosolids to that of other fertilizers,¹¹⁴ nor does it have the site-specific information available to currently calculate the phosphorus reduction that would be experienced after P-Index implementation. As a result, the percent of phosphorus reduction that DEP would expect to see in the WIP would not be calculated until after the P-Index has been enacted.

¹¹⁴ We met with a researcher from the University of Florida who has extensively studied the runoff of phosphorus and other nutrients from biosolids into waterways. This researcher expressed to us that while there are many studies that compare the runoff of phosphorus in biosolids compared to other fertilizers, there are few studies that explore these impacts outside of a controlled setting.

DEP noted it had experienced difficulty in obtaining baseline information from permit holders; thus, we understand the rationale for approaching phosphorus reduction targets in this manner.¹¹⁵ However, there can also be concerns about enacting new requirements for permit holders when the end goals of those requirements have yet to be determined. Given the unintended consequences that these changes could potentially have on the cost of biosolids management in Pennsylvania (see below), we believe these benefits need to be more clearly delineated for everyone's benefit.

Costs Related to Storage Requirements. Proposed permit revisions to PAG-07 and PAG-08 would prohibit the "speculative accumulation of biosolids" at land application sites, which is storing more than one growing season's worth of biosolids at field locations. Long-term field storage can only occur if the site can prevent precipitation from mixing with the biosolids, which DEP states can be achieved with either a covered storage structure or by securely tarping the material.

The potential costs associated with this permit change must be separated into several sub-issues. First, we attempted to identify the estimated costs of creating more covered storage at land application sites. While tarping excess material would be a more cost-effective option than building a new storage facility, EPA notes that "field experience has shown that tarps are not practical, except for very small stockpiles [of biosolids]." The agency states that tarps large enough to cover significant piles of biosolids are often expensive and difficult to handle. In addition, anchoring large tarps usually requires workers to wade in biosolids, and removing the tarps can significantly drag the material across the site. Finally, the agency explains that there have been some instances of tarps creating fire hazards at field sites and that the coverings can become difficult to dispose of once used, which creates further issues with tarp management.¹¹⁶ These are all legitimate concerns, and as a result, DEP's suggested use of tarps will likely create more unintended problems for permit holders, the cost of which will be passed beyond permit holders.

We next explored the possibility of creating additional covered storage facilities at land application sites. EPA notes that constructed storage facilities "should be designed and built following good engineering principles."¹¹⁷ According to our survey of PAG-07 and PAG-08 permit holders, before they are passed on to wastewater treatment facilities, the costs to construct new storage areas would initially be incurred by either the site owner or the entity that land applies the biosolids. A representative from a leading biosolids management firm informed us that the cost for their

¹¹⁵ DEP noted to us that it experienced pushback from permit holders when trying to obtain baseline data in this area as part of stakeholder workgroups.

¹¹⁶ It is important to note that EPA specifies that states can determine the length of allowable temporary field storage, which typically ranges between 24 hours and two years. See EPA, *Guide to Field Storage of Biosolids*, 2000.

¹¹⁷ *Ibid.*

company to construct a new covered storage facility that meets the engineering requirements of the commonwealth could range between \$50,000 to \$250,000, depending on the needs of the application site. Here again, because of the unspecific nature of the proposal, more specific costs cannot be calculated.

We also considered the costs for additional storage to occur at the wastewater treatment facility. However, stakeholder groups informed us that many facilities do not currently have extra storage capacity, nor do they have the ability to expand the property to create more space for storage. In our sample of eight PAG-07 and PAG-08 permit holders, half of our respondents reported their facility could not store additional biosolids on-site. As a result, the cost estimates to comply with this permit change, which ranged from \$2,500 to \$50,000, likely include expenses related to building covered storage at wastewater treatment facilities and finding additional storage areas offsite. Although, as will be discussed later, identifying additional sites to store and land apply biosolids presents its own challenges for permit holders moving forward.

Costs Related to Hauled-in Waste Requirements.

DEP is proposing to strengthen permit language regarding mixing outside materials with biosolids, including prohibiting the blending of hauled-in waste that does not go through the entire sewage treatment process. According to the department, these changes clarify existing permit requirements (see Section III). Regardless, while not every wastewater treatment facility currently accepts hauled-in waste, these proposed revisions could have several potential impacts on the budgets of those that do.

First, there are potential costs incurred for facilities to adapt or change their current wastewater treatment process. These costs include updating equipment or procedures to safely accept hauled-in waste at another point in the treatment process, as well as the cost for facilities to apply for and implement a new permit covering the land application of biosolids mixed with other materials. Five of our sample PAG-07 and PAG-08 permit holders reported that their facility currently accepts hauled-in waste. These facilities estimated anywhere from \$20,000 to \$500,000 to comply with this proposed revision, with one facility reporting that it believed the proposed change would not impact its current wastewater treatment process.¹¹⁸ However, because pre-draft proposals for PAG-07 and PAG-08 revisions have not been made fully public and requirements for a new permit covering hauled-in waste and biosolids mixtures have not been completed, it was difficult for our sample of wastewater treatment facilities to quantify the potential impact fully.

¹¹⁸ This facility noted that it is a NPDES permit holder, and believes that potential PAG-07 and PAG-08 changes would still align with the standards currently required at the federal level.

As noted in Section III, some facilities accept hauled-in waste into the anaerobic digestion process to create renewable energy that can later be sold for a profit. We also considered the potential loss of revenue that facilities may encounter if they had to limit or stop accepting hauled-in waste entirely. Our respondents who accept hauled-in waste reported that their facilities made between \$118,000 and \$1.2 million in revenue from the process in 2022, with most facilities generating approximately \$500,000 in additional income. Therefore, while it is challenging to determine how revisions to hauled-in waste requirements will impact each facility, we believe it is reasonable to assume that the cost of compliance for permit holders could include revenue losses on top of additional expenditures needed to adhere to the new permit changes.

Potential Costs to Residential Septage Haulers (PAG-09)

Separate from our review of PAG-07 and PAG-08, we also attempted to capture possible cost implications of DEP's proposed permit changes to PAG-09 permit holders. As shown in Section III, the major proposed changes for PAG-09 are the limitation on blended waste and the addition of the P-Index. Obtaining cost information proved to be more difficult as PAG-09 permit holders are residential septage haulers, which are private business enterprises. Nevertheless, two PAG-09 holders provided financial information, including their projections for possible outcomes of implemented permit changes. We will not identify either company in our analysis due to the proprietary nature of their business information.

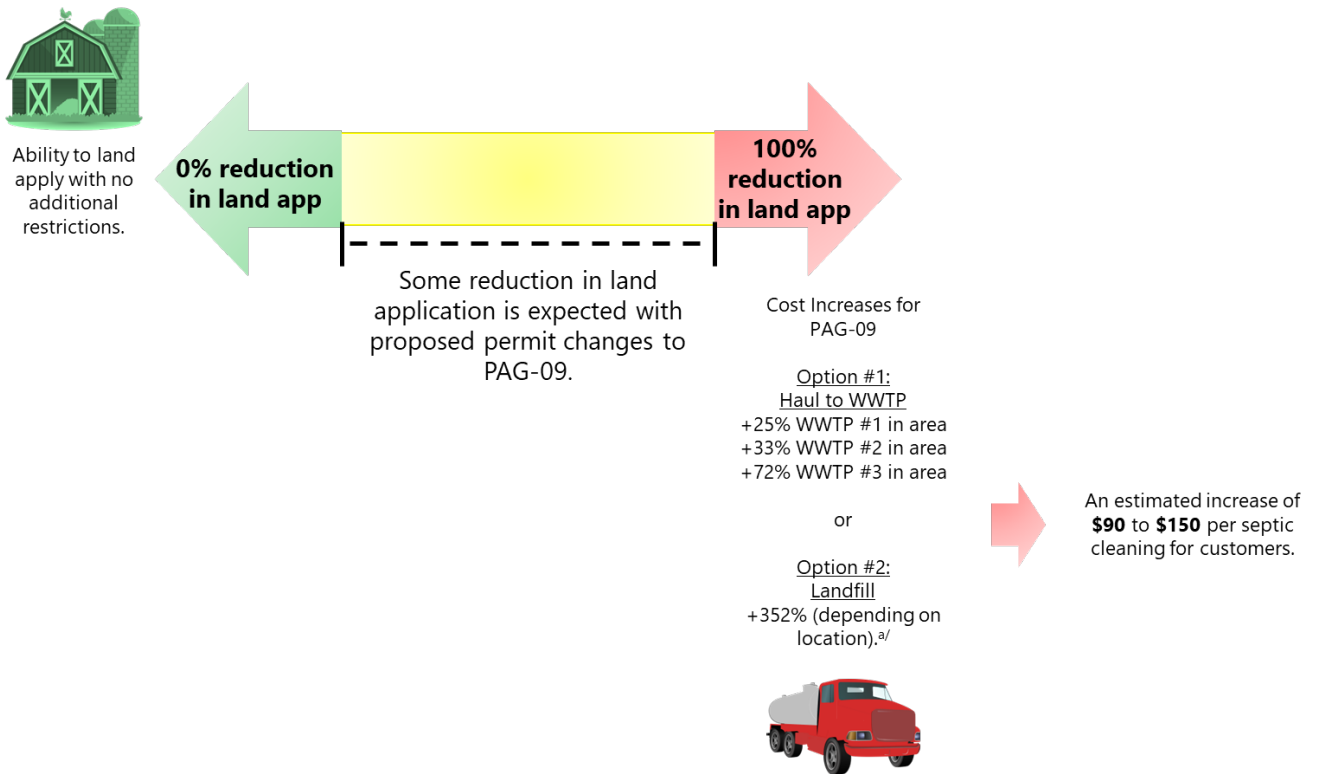
Both PAG-09 permit holders in our analysis are in the eastern part of the state, and their coverage areas partially overlap. Because of this uniformity, we found their numbers to be reliable as they submitted similar numbers for treatment plants and landfill fees, despite submitting the information to us separately. Our analysis showed that both PAG-09 permit holders currently land apply between five million to ten million gallons per year on agricultural land. Both believe the proposed changes will limit their ability to land apply the septage, leaving them needing alternatives. If PAG-09 permit holders are restricted in their ability to land apply, they can (1) haul waste to a wastewater treatment facility, or (2) haul it to a landfill. Their analysis focuses on these two options and is used to discuss the proposed changes to these permits.

It is important to note that the analysis of two permit holders cannot be projected to the entire population of PAG-09 permit holders. Much like PAG-07 and PAG-08, location is an important factor in determining cost, specifically transportation costs, which primarily contribute to the overall cost. Other PAG-09 permit holders, who may have more access to land, or who may be closely located to a landfill or wastewater treatment facility, would have significantly different cost factors.

In Exhibit 13, we present the estimated costs based on a continuum of options from a zero impact to land application to a complete ban of land application (as has occurred in Maine). The actual impact would likely fall somewhere between these two extremes, but this perspective shows the full range of the possible implications for end-user (i.e., residential septic user) costs.

Exhibit 13

DEP's Proposed Changes to PAG-09 Permit Holders May Mean Increased Septage Hauling Fees*



Note:

*/Analysis is based on two septage haulers. Although this is a limited case analysis and cannot be extrapolated to every PAG-09 permit holder, the analysis presents a starting point for understanding DEP's proposed impact on residential septage hauling fees.

a/ Increases are based on actual current rates at the WWTPs and landfills in their region. Estimates also include transportation costs.

Source: Developed by LBFC staff from information obtained from PAG-09 permit holders.

As shown above, using data from these two permit holders, there is a significant variation in current hauled-in WWTP and/or landfill rates. It is also important to note the ability of WWTPs to accept hauled-in waste may be impacted by the proposed changes to PAG-07 and PAG-08 permits. If WWTPs continue to accept hauled-in waste, despite modifications to PAG-07 and PAG-08, rate increases to PAG-09 holders could occur. Any increase in demand for alternative wet solids disposal at landfills (for any reason) would likely increase current landfill rates for PAG-09 permit holders. Transportation costs are another major factor for PAG-09 holders, as landfill capacity can change quickly and may require haulers

to go further distances with little advance notice. Ultimately, it is difficult to determine the precise cost implication for PAG-09 permit holders based on DEP's proposed permit changes. However, based on conservative assumptions, a cost increase of \$90 to \$150 per septic cleaning is reasonable.

C. Proposed Changes to PAG-07 and PAG-08 May Have Larger Impacts on Biosolids Management in Pennsylvania

Our targeted survey of PAG-07 and PAG-08 permit holders revealed other concerns about biosolids management in Pennsylvania. In this issue area, we present additional analysis from our survey to specifically explore how the four areas we identified (P-Index, PFAS testing, hauled-in waste, and storage) could have unintended consequences on biosolids management.

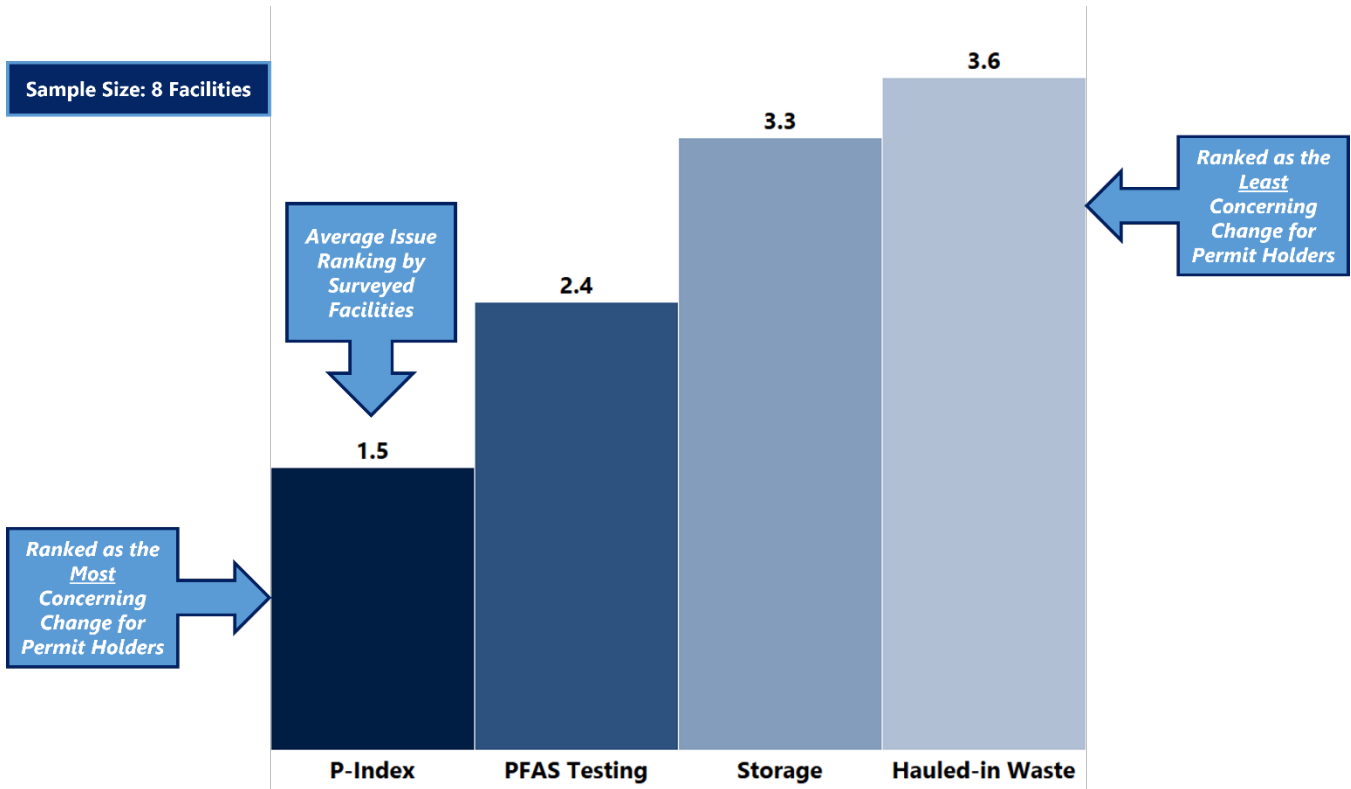
Perspectives of Permit Holders on Proposed Revisions

We asked PAG-07 and PAG-08 permit holders to rank the four key permit revisions based on the order of importance to their facility. The scale varied from one (most important) to five (least important). In Exhibit 14 below, we averaged the rankings provided by each facility for the proposed revisions.

We acknowledge there is possible bias in our question, as it assumes that **any change** to the status quo will result in negative outcomes, particularly when the proposals are expected to involve additional administrative burdens to the permittee. Nevertheless, the perspective is important as it gauges where permit holders view the most impact on the proposed change. In turn, this information is helpful to DEP, policymakers, and stakeholders as it will allow them to target outreach efforts, should DEP continue with the proposed changes.

Exhibit 14

**P-Index Requirements are Considered the Most Impactful Permit Revision
by PAG-07 and PAG-08 Permit Holders**



Source: Developed by LBFC staff from information obtained from PAG-07 and PAG-08 permit holders.

We expected testing requirements for PFAS would be ranked as the most impactful, as there are still many “unknowns” regarding PFAS in biosolids. However, P-Index as a land application requirement was cited as the most significant permit revision. All but one facility rated P-Index as one of their top two issues of importance in our survey. PFAS testing trailed closely behind P-Index requirements as the second most concerning issue, while changes to storage and hauled-in waste requirements were consistently rated as less of a priority.¹¹⁹

However, we encountered slightly different results when we asked permit holders about each proposed revision and its potential impacts on land application.

¹¹⁹ One facility ranked the potential loss of land application sites as another change of priority for their facility. However, since we consider this to be a potential consequence of permit changes – and not a permit change itself – we removed the response from our analysis.

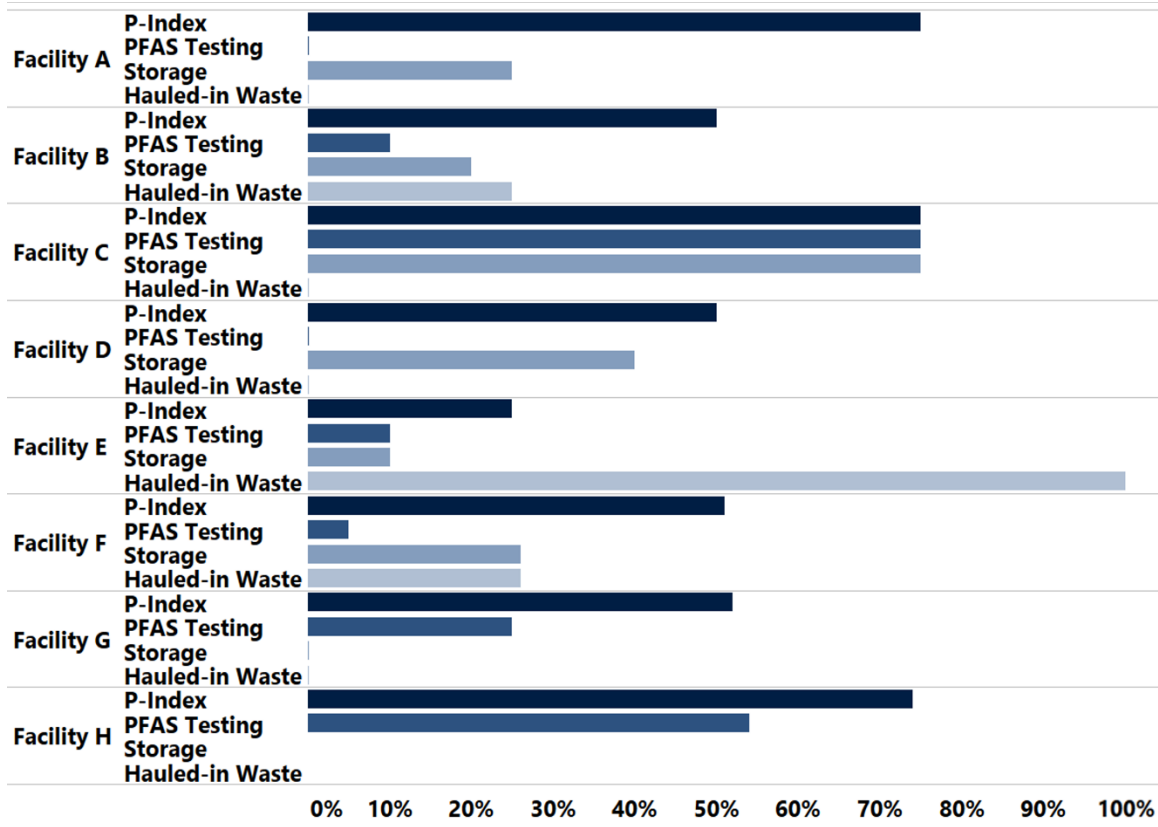
As shown in Exhibit 15, we asked facilities to rate on a percentage scale how much they believed each proposal could impact their land application program. On this scale, 100 percent indicates that the facility felt the proposed permit change would eliminate its land application program.

Overall, proposed P-Index requirements were again believed to have the most significant potential impact on land application, with each facility stating that they thought the new changes could cut land application by at least 25 percent. Interestingly, changes to storage requirements were believed to be the next most prohibitive to the land application programs of permit holders, while PFAS testing was third. Excluding one facility that indicated its program could stop completely, proposed hauled-in waste requirements were not considered a significant impediment to land application. The results are shown in more detail in Exhibit 15.

Exhibit 15

P-Index Requirements are Considered by PAG-07 and PAG-08 Permit Holders to be the Most Impactful to Land Application*

How Much Does Each Facility Anticipate Proposed Requirements Could Impact Their Ability to Land Apply Biosolids?



Note: */ As is our standard practice, we do not identify survey respondents.

Source: Developed by LBFC staff from information obtained from PAG-07 and PAG-08 permit holders.

Unintended Consequences of Changes to Biosolids Management Practices

Our respondents were not privy to the full scope of DEP's proposed permit changes due to the pre-draft nature of DEP's revisions. Therefore,

many respondents must use an “informed judgment” on whether the revisions would result in land application restrictions.¹²⁰ However, given that the changes would introduce new thresholds and standards to the biosolids management process, we believe it is reasonable to consider the limiting of land application as a potential consequence. As such, we explored the impact of alternative biosolid management practices, such as landfilling, incineration, and accessing additional lands.

Landfilling of biosolids. As noted in Section II, biosolids are eligible for disposal in one of Pennsylvania’s 46 active landfills. While landfilling biosolids has several benefits, some challenges must be overcome to make it a viable alternative. First, landfills must be selective with the quantity of biosolids that are accepted. When wet waste, such as biosolids, is brought to a landfill, it must be combined with solid waste to keep the landfill pile from collapsing. If there is not enough solid waste to maintain the structural integrity of the pile, then biosolids are refused.¹²¹ Stakeholders we interviewed noted that biosolids are often the first to be rejected when odor problems occur at landfills, raising yet another unintended consequence of increased landfill usage.

Second, with only 46 active landfills and nearly 200 PAG-07 and PAG-08 permit holders, finding a nearby site that can accept biosolids is a challenge. For example, half of our sample of permit holders said that they had a landfill that accepted biosolids within a 25-mile round trip from their facility. However, two facilities informed us that the nearest landfill was between a 60 and 80-mile trip, while the remaining two reported distances of over 200 miles for a round trip. Further, four of our eight respondents said that their facility had experienced issues with this landfill accepting biosolids in the past. While all but two of our respondents indicated that they would be able to transport more biosolids to a landfill if their land application program were to cease, nearly all noted that landfill capacity is currently in a precarious situation in the commonwealth. As one permit holder emphatically indicated to us:

I cannot stress this enough - there is NOT sufficient landfill capacity in the state to accommodate the biosolids that we currently land apply. I fear that these permit modifications will deter current reuse programs from continuing and [force permit holders to] turn to landfills, which will further exacerbate the landfill capacity issue.

¹²⁰ In our survey of eight PAG-07 and PAG-08 permit holders, five respondents said that they were “unsure” if their wastewater treatment facility would be able to continue a land application program if all the proposed permit revisions were enacted. In addition, one facility stated that it would not be able to continue a land application program, while two indicated that they would be able to continue a program.

¹²¹ See <https://www.jdsupra.com/legalnews/crisis-emerges-in-maine-over-safe-5983843/>, accessed May 19, 2023.

Our sample of permit holders reported transportation costs to landfills that ranged between \$375 and \$1,000 for a round trip. These costs do not include landfill tipping fees,¹²² which facilities told us range between \$40 and \$100 per ton.^{123,124} If PAG-07 and PAG-08 permit holders had to *significantly* increase the amount of biosolids disposed of at landfills, then it is logical to assume that the law of supply and demand would result in higher tipping fees. This increased volume of disposal would also likely stress landfill capacity, forcing permit holders to landfill biosolids out of state, which would subsequently increase transportation costs. The situation would be further exacerbated if the commonwealth's 71 PAG-09 permit holders had to also dispose of more of their residential septage at landfills.

Biosolids Incineration. Biosolids can also be disposed of by burning the material in an incinerator. However, as discussed in Section II, several factors preclude incineration from being a viable alternative to land application for many of the commonwealth's wastewater treatment facilities. There are only 34 incinerators in Pennsylvania, and we were informed many do not accept biosolids.

A representative from a leading biosolids management firm informed us that their organization is aware of only one public incinerator in the commonwealth, which is currently at full capacity. Further, previous research from the Center for Rural Pennsylvania has documented that incinerators have high capital and operating costs. As a result, incineration tends to only be economically feasible for facilities that produce more than 10 million gallons of biosolids per day, which generally are only facilities located in non-rural areas.¹²⁵

Our survey of PAG-07 and PAG-08 permit holders echoed these conclusions. Only two respondents reported knowing where the nearest incinerator to their facility that accepted biosolids was located. Further, only one permit holder could provide a cost estimate for incineration, which at \$150 per ton, was significantly more expensive than the landfill tipping fees reported in our survey.¹²⁶ In the end, based on the information available, it is unlikely that many facilities will be able to use incineration

¹²² Municipal waste disposal fees, also referred to as "tipping fees," are the payments made by waste haulers to landfills in order to dump waste at their sites.

¹²³ We were able to confirm the validity of this information with data provided by a leading biosolids management firm. The 33 landfills in Pennsylvania that this firm works with have tipping fees that range between \$36 and \$95 per ton.

¹²⁴ A 2017 LBFC study reported that the average cost to landfill biosolids in Pennsylvania was \$260 per dry ton. See LBFC, *Pennsylvania's Program for Beneficial Use of Biosolids (Sewage Sludge) by Land Application*, 2017.

¹²⁵ Elliott, Herschel, Robin Brandt, and James Shortie. *Biosolids Disposal in Pennsylvania*, The Center for Rural Pennsylvania, November 2007.

¹²⁶ A 2017 LBFC study reported that the average cost to incinerate biosolids in Pennsylvania was \$290 per dry ton. See LBFC, *Pennsylvania's Program for Beneficial Use of Biosolids (Sewage Sludge) by Land Application*, 2017.

as a replacement for land application, especially in smaller rural communities, where the long-term financial impact of additional permit requirements is an issue.

Availability of additional land application sites. A final option is for permit holders to identify other land application sites. However, finding these sites seems to be strained. A representative of a leading biosolids management firm informed us that there is new land availability that could be turned into application sites, but our survey found differing opinions. In our sample of PAG-07 and PAG-08 permit holders, only one of our surveyed facilities reported having access to more acreage to land apply biosolids. One facility said they did not have access to more land, and the remaining six stated they were unsure if additional sites for land application were available to them.

Even assuming that most facilities have access to more land, it is unclear how many permit holders will be approved to conduct biosolids applications at those sites. As documented in our 2017 report and reiterated by DEP, there has been growing opposition to biosolid use as a normal farming practice, primarily due to odor concerns for adjacent landowners.¹²⁷ To this point, DEP informed us that it has struggled with pushback regarding the land application of non-EQ biosolids. In support of this statement, DEP staff noted that “numerous appeals have been filed as a result of the First Notice of Land Application process,” which is required before a new site is approved.

While the costs associated with identifying new land will vary, one biosolids management firm informed us that they estimate that \$12,000 per 100 acres is reasonable for their operations.¹²⁸ Further, biosolids management stakeholders told us that if new permit requirements limited biosolids applications, permit holders may require up to five times the amount of land to continue beneficially reuse biosolids at current rates. In addition, a representative from the State Conservation Commission (SCC) noted that if phosphorus loading becomes a major restricting factor for land application, then permit holders may need to find new application sites every five to six years. As a result of these contributing factors, identifying additional land application sites will be in jeopardy.

¹²⁷ See LBFC, *Pennsylvania’s Program for Beneficial Use of Biosolids (Sewage Sludge) by Land Application*, 2017.

¹²⁸ According to this organization, the costs include the time needed to identify a site, conduct soil samples, and register the site with DEP. This estimate does not account for travel expenses, which the firm told us are more difficult to quantify and must be calculated on a case-by-case basis.

PAG-07 and PAG-08 Changes Likely to Result in Increased Rates

As permit holders deliberate the proposed changes to their budgets, ultimately, these costs will be passed on to customers via increased wastewater treatment fees. While this exact cost is unknown, another added cost is infrastructure expenditures for wastewater facilities.

To this point, only one respondent in our sample of PAG-07 and PAG-08 permit holders reported they believed their facility has the infrastructure to comply with new biosolids land application requirements.¹²⁹ Several facilities informed us that they believed it could take one to four years to develop the necessary infrastructure for compliance fully.

Because most permit holders are municipal entities, these additional compliance costs will be passed on to the permit holders' customers. To quantify this prospect, we asked our sample of permit holders if they believed their ratepayers would experience increased fees. Five of our eight surveyed facilities responded that their ratepayers would likely experience additional fees, while three said they were unsure. No facilities anticipate that they will be able to comply with new permit requirements -- without passing along costs to their ratepayers. Further, facilities estimated anywhere from two to 25 percent fee increases to their ratepayers, pending the final permit requirements. Our research showed these cost estimates to be comparable to Maine, where some localities have experienced increases in sewer fees between four and 30 percent after the state prohibited the land application of biosolids in 2022.^{130, 131}

We used these anticipated rate increases to estimate what the expected increases may mean to ratepayers. Although fees are localized, our research found that Pennsylvania resident sewer bills typically range between \$50 and \$125 per month.¹³² With this information, we then calculated rate increases based on the estimates provided by our sample of PAG-07 and PAG-08 permit holders. These possible rate payer projections are displayed in Exhibit 16 using a continuum of increases between a low of five percent and a high of 25 percent.

¹²⁹ Five permit holders reported that they did not think their facility currently has the infrastructure to comply with the new requirements, while two said that they were unsure.

¹³⁰ See <https://www.centralmaine.com/2023/05/06/across-maine-sewer-rate-payers-are-starting-to-see-increases-to-cover-the-cost-of-the-sludge-crisis/#:~:text=Sewer%20plant%20operators%20are%20passing,hikes%20likely%20down%20the%20line>, accessed May 22, 2023.

¹³¹ See <https://www.sunjournal.com/2023/02/14/rumford-board-approves-sewer-rate-increase/>, accessed May 22, 2023.

¹³² See <https://www.inquirer.com/business/pennsylvania-american-water-wastewater-rate-increase-20221209.html#:~:text=A%20wastewater%20bill%20for%20a,28%2C%202023,> <https://www.sstwp.org/Faq.aspx?QID=91#:~:text=What%20is%20the%20amount%20of,with%20personal%20water%20use%20habits,> and <https://www.pgh2o.com/residential-commercial-customers/rates>, accessed May 22, 2023.

Exhibit 16

**Possible Sewer Bill Projections Based on Fee Increase Estimates
 Provided by PAG-07 and PAG-08 Permit Holders**

If Monthly Sewer Bill is Currently:	New Monthly Sewer Bill with Estimated Fee Increases of:				
	5 Percent	10 Percent	15 Percent	20 Percent	25 Percent
\$50	\$52.50	\$55.00	\$57.50	\$60.00	\$62.50
\$75	\$78.75	\$82.50	\$86.25	\$90.00	\$93.75
\$100	\$105.00	\$110.00	\$115.00	\$120.00	\$125.00
\$125	\$131.25	\$137.50	\$143.75	\$150.00	\$156.25

Source: Developed by LBFC staff from information obtained from selected PAG-07 and PAG-08 permit holders.

In summary, HR 149 asked us to assess if permit holders can “practically comply” with DEP’s proposed permit changes. On this matter, we conclude that as EPA further completes its research and approves uniform testing protocols, permit holders should be able to comply with DEP’s proposed changes (e.g., testing, analysis, reporting, etc.). From our research, we have identified numerous “unknown conditions” that can factor heavily into both the ability to comply and the overall cost of compliance to permit holders and ratepayers.¹³³ In the next issue area, we will outline these known/unknown issues within the context of the four major revisions with PAG-07 and PAG-08.

D. A Possible Path Forward for Pennsylvania’s Biosolids Permits/Regulations

During our stakeholder interviews and research for this study, a recurring theme emerged that centered on the fact that DEP’s proposed permit changes introduce turmoil within the biosolids management community. This turmoil stems from the fact that there is a plethora of “unknown conditions,” which factor heavily in both future costs to biosolids management and by extension, ratepayer fees. Within this final issue area, we outline the primary unknown conditions and conclude with recommendations for a path forward.

¹³³ It should be noted that not taking steps to curb the contamination caused by pollutants such as PFAS and phosphorus in biosolids has long-term costs as well, specifically to the environment and human health. Our objectives were set by HR 149, which was to identify the costs associated with DEP’s proposed permit changes on permit holders and how those cost might be passed on beyond permit holders.

Knowns/Unknowns Surrounding Biosolids Management

Referring to the four primary concerns we outlined in DEP's proposed permit revisions, we identified the existing "known" and "unknown" conditions that were most prominent in our research. These conditions are an important discussion because it presents a beginning point from which the regulatory perspective (i.e., DEP and EPA) is delineated. Similarly, the unknown conditions are examined, which provides context and perspective as to why the conditions confuse the regulatory intent. Exhibit 17 outlines these viewpoints.

Exhibit 17

Knowns and Unknowns with DEP's Proposed Permit Changes

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KNOWNs:

- Excess phosphorus** is *dangerous* to **Chesapeake Bay**
- DEP will receive **credit** in **Chesapeake Bay WIP** program for **phosphorus reduction efforts**
- P-Index** is *less restrictive* than other potential **biosolids** land application **management practices**



UNKNOWNs:

- Amount of **phosphorus reduction** from **P-Index** implementation is **unknown**
- DEP **not aware** of **field studies** comparing **phosphorus loss** in **biosolids** compared to **fertilizers**
- Potential loss** of biosolids **land application sites**
- Expected **increase in costs** to permit holders, but **full extent** is **unknown**
- Regulations** currently **do not mention phosphorus** or **P-Index**

- PFAS monitoring** could help DEP **identify pollution hot spots**
- PFAS reduction** efforts can **benefit** both the **environment** and **human health**

- DEP's **next steps** with **PFAS contamination data** are **unclear**
- Pending **EPA risk assessment**, **harmful exposure levels** for **PFAS** in **biosolids** are **unknown**
- National standard** for **PFAS testing** in biosolids is **currently not finalized**
- Expected **increase in costs** to permit holders, but **full extent** is **unknown**
- Regulations** currently **do not mention PFAS** or **PFAS monitoring**

- DEP says **proposed change** is a **clarification** of **existing regulations**
- Some **hauled-in wastes** could **impact** the ability for facilities to **adequately treat wastewater** and **biosolids**

- Regulations** currently **do not define biosolids, blending, industrial residuals,** or other key terms
- Uncertainty** remains regarding **oversight** of **land applying blended material**
- Proposed change** to land application of blended material could ultimately **require new permits**, which are **not complete**
- Expected **increase in costs** and potential **loss of revenue** for permit holders, but **full extent** is **unknown**

- Preventing **excessive stockpiling** of biosolids can reduce **reliquification, leachate runoff,** and **pollution events**
- Large biosolids piles** can lead to **foul odors** for adjacent landowners

- Tarps not recommended** for large biosolids stockpiles, meaning **new structures** will likely be **needed for field storage**
- Some **wastewater treatment plants do not have the space** to **add more storage** on-site
- Expected **increase in costs** to build **new storage structures**, find additional **storage space**, or **land application sites**, but **full extent** is **unknown**
- Regulations** currently **do not mention speculative accumulation of biosolids**

Source: Developed by LBFC staff.

As shown above, a recurring premise emerges when presenting the “known and unknown” conditions in a visual representation. This premise is that DEP’s proposed permit changes lack clarity from the supporting regulations. To be clear, this suggestion is not that DEP lacks the authority to revise its general permits to be more restrictive, rather, the suggestion is that there may be a better and more inclusive way to meet the regulatory goal. To that point, we believe DEP should update the regulations governing the general permits.

Procedural Obstacles May Be Hampering Solutions to the “Unknowns” in DEP’s Proposed Permit Changes

Pennsylvania’s regulations on the beneficial use of biosolids by land application have not been updated since the 1990s (except for a “minor amendment” in 2000).¹³⁴ We found many of the proposed changes in PAG-07, 08, and 09 permits to be more restrictive than the current regulations. DEP partially agreed with our interpretation, stating:

The proposed changes can be considered to be more restrictive in two areas [P-Index and PFAS testing]... the other proposed revisions are already contained in the regulations, even if the current permits only reference those regulatory requirements rather than explicitly including them as terms/conditions in the permits.”

We believe that even the “minor” proposed permit changes, such as the addition of new definitions (e.g., “adjacent landowner”), are creating a fractured relationship between the regulations and the permits, which again adds to the concerns over DEP’s regulatory intent and compliance by the permit holders. As discussed further below, we found other procedural and administrative obstacles that may contribute to these difficulties.

DEP’s Existing Staffing and Permitting Issues. In recent years, DEP has complained about complement and funding issues. For example, at its peak, in the early 2000s, DEP’s complement was approximately 3,100 employees. Currently, DEP’s complement is 2,400 employees, a decrease of 23 percent. This struggle was evident at the FY 2023-24 House and Senate appropriation hearings when the Acting Secretary announced DEP’s 2023 permitting reform plan.¹³⁵ At the hearing, the Acting Secretary discussed the need for an additional 30 staff to handle DEP’s permitting backlog.

¹³⁴ See <https://www.pacodeandbulletin.gov/Display/pabull?file=/secure/pabulletin/data/vol30/30-52/2254.html>.

¹³⁵ See <https://www.dep.pa.gov/Business/Pages/default.aspx>.

However, the connection between more staff and improved timeliness is imprecise. For example, in our 2019 study of DEP's Chapter 102 and Chapter 105 permitting programs, we found DEP's data failed to establish a strong relationship between full-time equivalent staff (FTEs) and the total number of permits disposed of by DEP regional offices. Conversely, data provided by the county conservation districts (CCDs) established a strong relationship between the total number of FTEs and the total number of permits disposed of by the CCDs. Consequently, if DEP proposes adding additional staff as a larger solution, it will also need improved data to support the investment.¹³⁶

Biosolids permitting has not been immune from the broader staffing issue at DEP. In our June 2017 report, *PA's Program for Beneficial Use of Biosolids (Sewage Sludge) by Land Application: Conducted Pursuant to HR 2016-60*, we found DEP only conducted periodic inspections of biosolids land application sites.¹³⁷ If DEP went through the complete regulatory process for the proposed biosolids permit changes, a proper cost analysis could be completed to ensure DEP has the necessary funding to oversee and enforce the biosolids general permits administratively.

Through our discussions with EPA staff, they pointed to Michigan as an example of a state who has made significant strides to identify and reduce PFAS in biosolids before any official guidance from EPA. We spoke with staff from Michigan's Department of Environment, Great Lakes, and Energy (EGLE), who stated their department has also "run lean" in terms of funding. However, they created an entire office dedicated to PFAS in biosolids. To this point, in looking at DEP's organizational structure, we could not determine how DEP will process and administratively review the PFAS data it is proposing to collect from PAG-07 and 08 permit holders. This end goal is best achieved by involving all stakeholders and the General Assembly in the regulatory process.

Flexibility Concerns. We asked DEP why it chose to follow an administrative change to its general permits rather than the regulatory process. DEP noted concern over cost savings and flexibility with permitting versus a regulatory change. On this matter, DEP stated the following:

¹³⁶ See LBFC, *Performance Evaluation of DEP's Chapter 102 and Chapter 105 Permitting Programs*, 2019.

¹³⁷ In 2017 LBFC noted: DEP's regulations state that DEP "intends" to conduct an administrative inspection of both biosolids generating facilities and the farms that spread biosolids "at least once a year." DEP guidelines further state that land application sites should be inspected "periodically" when the site is actively receiving biosolids. We reviewed DEP records for 12 facilities and 36 application sites (6 sampled from each DEP region) for the three-year period 2014-2016. None of the 12 facilities had a DEP inspection pertaining to its biosolids operations (one had an inspection, but it was not related to its biosolids permit). Of the 36 application sites we reviewed, an "intended" administrative file review was conducted on only 30 percent of sites and a routine/complete inspection (not a requirement) was conducted at 9 percent of the sites.

Implementing these requirements as permit terms/conditions, rather than as regulatory amendments through a rulemaking... will achieve environmental and public health benefits in a more resource-efficient and flexible manner compared with implementing these requirements as regulatory amendments through the Commonwealth's environmental rulemaking process.

We agree there are reasonable arguments to be made that an administrative change is quicker than a change in the underlying regulations. However, a key reason to take the time necessary to update the regulations is to ensure that the regulations remain current with environmental science and that the resulting permits can be consistently enforced.

We believe that DEP can address all of the unknowns we have noted through the regulatory review process. Further, we acknowledge that DEP has the authority to add additional or more stringent requirements to biosolids permits. As stated in *Title 25 § 271.904*, DEP can:

On a case-by-case basis, the Department may impose requirements in addition to or more stringent than the requirements in this subchapter when necessary to protect public health and the environment from any adverse effect of a pollutant in the sewage sludge.

However, we also question DEP's reliance on "a case-by-case basis" when the proposed permit changes appear to be beyond the scope of a single "case-by-case basis." In the end, we believe that following the regulatory process is good from a public policy perspective, as it forces more involvement in the rulemaking process and would help to resolve these types of interpretative clarifications.

Next Steps

Although we were tasked with identifying the "cost" associated with DEP's proposed permit changes, we cannot complete a full accounting of those costs as the proposed permit changes remain as "pre-draft" versions over very site-specific driven operations. Moreover, as we depicted in Exhibit 17, many unknown conditions continue to drive why the general permits need to be amended in the first place.

The existential issues surrounding DEP's proposed permit changes have led us to conclude that the time is right for revisiting the regulations surrounding the beneficial use of biosolids in Pennsylvania and then updating the general permits accordingly. We believe that going through the regulatory process - while arguably more cumbersome for DEP from an

administrative aspect - will create a more collaborative partnership between DEP and interested parties.

In concert with this regulatory “reboot,” another critical element needed in Pennsylvania’s beneficial use biosolid program is innovation in material handling. Although this goal is not explicitly DEP’s responsibility, we encourage DEP to foster innovation with biosolids management. Reliance on landfills as an alternative biosolids disposal method may not be sustainable in the future or even practical because of concerns over methane releases. We learned of many interesting and successful biosolids projects, which may hold “best practices” for other biosolid generators. For example, the Borough of Mechanicsburg faced challenges finding land application sites for Class B biosolids. Instead of taking all its biosolids to landfill as the assumed “next best choice,” the borough began a biosolids compositing program, creating a revenue-generating Class A/EQ product.

Additionally, we noted that in their *2021 Infrastructure Report Card*, the American Society of Civil Engineers noted the following:

In recent decades, resource recovery has increasingly shifted the traditional wastewater treatment mindset away from generating a product solely for disposal but reconceptualizing ‘waste’ as a ‘resource.’ Innovations such as anaerobic digesters, indirect potable reuse, and biosolids reuse system can recover water, energy, and nutrients from treated wastewater and may contribute to the resilience of treatment facilities, communities, and entire watersheds.¹³⁸

While over the long term, innovation could benefit wastewater treatment facilities and the environment; it may be a challenge to implement these changes on a large scale without funding assistance. To this point, three facilities in our sample of PAG-07 and PAG-08 permit holders noted that they have considered changing their treatment process, and all indicated that updates would be prohibitively expensive. One facility that was advanced enough in the exploratory process informed us that it would cost up to \$15 million to install a biosolids gasification and drum dryer¹³⁹ at their facility.

Currently, there are no state funding or grant programs specific to support innovation with biosolids.¹⁴⁰ Yet, biosolids management is a problem that affects all Pennsylvanians. We recommend a “Biosolids Innovation” grant program be instituted to promote innovation. An excellent

¹³⁸ See [infrastructurereportcard.org](https://www.infrastructurereportcard.org).

¹³⁹ Drum drying is a method used for drying out liquid from raw materials such as sewage sludge.

¹⁴⁰ There are H2O PA Grants available for municipal authorities or municipalities, but these grants target the construction of drinking water, sanitary sewer, and storm sewer projects, not specifically biosolids management.

model for such a grant program can be seen in Act 38 of 2019, which created a grant program for the dairy industry. Known as the Pennsylvania Dairy Investment Program, the grants support research and development, organic transition, value-added processing, and marketing grants supporting Pennsylvania's dairy industry. The program is administered jointly by the Department of Community and Economic Development (DCED) and the PA Department of Agriculture (PDA) under the direction of the Commonwealth Financing Authority (CFA). This grant structure would be an excellent first start for the commonwealth.

Recommendations

We recommend:

1. DEP should update the underlying regulations on the beneficial use of biosolids by land application (25 Pa Code Chapter 271 Subchapter J) to provide better consistency between the regulations and DEP's proposed general permits.
2. If continuing with a P-Index requirement for biosolids land applications, DEP should document all information that will be required from EPA to receive credit in the WIP.
3. The General Assembly should consider establishing a grant program similar to the Dairy Investment Program to aid municipal authorities in developing innovative uses for biosolids.

APPENDICES



Appendix A – House Resolution 149

PRIOR PRINTER'S NO. 2298

PRINTER'S NO. 2542

THE GENERAL ASSEMBLY OF PENNSYLVANIA

HOUSE RESOLUTION

No. 149 Session of
2021

INTRODUCED BY RIGBY, PICKETT, STEPHENS, ZIMMERMAN, MOUL,
SCHEMEL, E. NELSON, O'NEAL, SANKEY, SCHMITT, KNOWLES,
STRUZZI, KEEFER, BURNS AND JONES, OCTOBER 25, 2021

AS AMENDED, HOUSE OF REPRESENTATIVES, DECEMBER 15, 2021

A RESOLUTION

Directing the Legislative Budget and Finance Committee to study the costs and methods for permit holders to comply with the proposed revisions to General Permit PAG-07, General Permit PAG-08 and General Permit PAG-09 called for under Pennsylvania's Phase 3 Chesapeake Bay Watershed Implementation Plan and to provide for a moratorium on revisions to General Permit PAG-07, General Permit PAG-08 and General Permit PAG-09 until the Legislative Budget and Finance Committee reports its findings and conclusions to the House of Representatives.

WHEREAS, The Chesapeake Bay is the nation's largest estuary, with a watershed spanning 64,000 square miles, including parts of six states and the District of Columbia; and

WHEREAS, The Environmental Protection Agency (EPA) has found, through numerous studies of the Chesapeake Bay, that excess nutrients from agricultural development, population growth and discharges from wastewater treatment plants, along with over-harvesting, habitat loss and disease, have contributed to an overall decline in the aquatic health and environmental quality of the bay; and

WHEREAS, Portions of the Chesapeake Bay and its tidal rivers

are listed as impaired waters under the Federal Water Pollution Control Act; and

WHEREAS, The environmental status of the Chesapeake Bay has led the Chesapeake Bay Program, consisting of the states of Maryland, Pennsylvania and Virginia, the District of Columbia, the EPA and the Chesapeake Bay Commission, a tristate legislative commission representing the legislatures of Maryland, Pennsylvania and Virginia, to adopt agreements to restore the environmental integrity of the bay; and

WHEREAS, The Commonwealth is a signatory to the Chesapeake 2000 agreement that establishes a commitment to restore the water quality of the bay and remove the bay from the list of impaired waters; and

WHEREAS, The Department of Environmental Protection (DEP) released "Pennsylvania's Phase 3 Chesapeake Bay Watershed Implementation Plan" in 2019, which calls for the review, consideration and potential incorporation of a revised Phosphorous Index into planning requirements for land application of biosolids; and

WHEREAS, In 2021, the DEP released revisions to the General Permit for the Beneficial Use of Exceptional Quality Biosolids by Land Application (PAG-07), General Permit for the Beneficial Use of Biosolids by Land Application (PAG-08) and General Permit for the Beneficial Use of Residential Septage by Land Application (PAG-09) to include requirements for the monitoring of polyfluoroalkyl substances and Phosphorus Index based land application rate requirements; and

WHEREAS, The DEP has not estimated the cost of permit holder compliance with the proposed revisions to PAG-07, PAG-08 and

PAG-09; and

WHEREAS, It has not been addressed how waste management facilities, communities and the agricultural industry would, in practice, comply with the proposed revisions to PAG-07, PAG-08, PAG-09; and

WHEREAS, The increased costs necessary to comply with the proposed revisions to PAG-07, PAG-08 and PAG-09 may be passed down the economic chain to residents across this Commonwealth who are struggling with financial hardships due to the COVID-19 pandemic; therefore be it

RESOLVED, That the House of Representatives direct the Legislative Budget and Finance Committee to estimate the costs that permit holders will incur to comply with the proposed revisions to PAG-07, PAG-08 and PAG-09 AND HOW THESE COSTS MAY BE PASSED ON BEYOND THE PERMIT HOLDERS; and be it further

~~RESOLVED, That the Legislative Budget and Finance Committee assess the methods by which permit holders may achieve compliance with the proposed revisions to PAG-07, PAG-08 and PAG-09; and be it further~~

~~RESOLVED, That the Legislative Budget and Finance Committee identify the financial resources that other states have committed to assist permit holders in achieving compliance with similar permit revisions and the financial resources currently available to permit holders in this Commonwealth to meet the proposed changes to PAG-07, PAG-08 and PAG-09; and be it further~~

RESOLVED, THAT THE LEGISLATIVE BUDGET AND FINANCE COMMITTEE ASSESS WHETHER PERMIT HOLDERS, CONSIDERING CURRENT TECHNOLOGY, WOULD PRACTICALLY BE ABLE TO COMPLY WITH THE PROPOSED REVISIONS TO PAG-07, PAG-08 AND PAG-09; AND BE IT FURTHER

RESOLVED, That the Legislative Budget and Finance Committee report its findings and conclusions to the Governor, the Department of Environmental Protection of the Commonwealth and the House of Representatives within ~~12~~ 18 months from the date of adoption of this resolution; and be it further

RESOLVED, That the House of Representatives strongly urge the Department of Environmental Protection to refrain from revising PAG-07, PAG-08 and PAG-09 until the Legislative Budget and Finance Committee has reported its findings under this resolution so that the economic consequences of a revision can be adequately analyzed.

Appendix B – DEP Proposed Changes to General Permit, PAG-07

3850-PM-BCW0339 5/2020
Permit



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

**APPROVAL FOR COVERAGE UNDER THE
GENERAL PERMIT (PAG-07) FOR BENEFICIAL USE OF
EXCEPTIONAL QUALITY BIOSOLIDS**

PERMIT NO: PAG-07

In accordance with the provisions of the Federal Clean Water Act (33 U.S.C.A §§1251-1387), the Clean Streams Law (35 P.S. §§691.1 – 691.1001) (Clean Streams Law), Sections 1905-A, 1917-A and 1920-A of the Administrative Code of 1929 (71 P.S. §§510-5, 510-17 and 510-20), the Solid Waste Management Act (35 P.S. §§6018.101 – 6018.1003) (SMWA), and the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P.S. §§4000.101 – 4000.1904) (Act 101), the Department of Environmental Protection (DEP) hereby approves the Notice of Intent (NOI) submitted for coverage by:

INSERT APPLICANT NAME AND ADDRESS BELOW

INSERT FACILITY NAME AND ADDRESS BELOW

to beneficially use exceptional quality biosolids by land application. The above-referenced facility is eligible to obtain coverage for this beneficial use as: (1) a person that prepares sewage sludge that will be sold or given away in a bag or other container or that will be land applied; (2) a person who applies sewage sludge to the land; or (3) both.

Approval of coverage for the beneficial use of exceptional quality biosolids by land application prepared at this facility is subject to DEP's enclosed General Permit (PAG-07) that includes requirements related to pollutant limitations, operational standards, pathogen and vector attraction reduction, recordkeeping, monitoring and reporting.

APPROVAL FOR COVERAGE UNDER THE GENERAL PERMIT IS AUTHORIZED FOR THE TERM SPECIFIED IN THE DATES SHOWN BELOW. IF THE GENERAL PERMIT IS RENEWED, REISSUED OR MODIFIED, THE FACILITY OR ACTIVITY COVERED BY THE APPROVAL FOR COVERAGE MUST COMPLY WITH THE FINAL RENEWED, REISSUED OR MODIFIED GENERAL PERMIT.

Coverage Approval Date:

BY: ____

Coverage Expiration Date:

TITLE: Clean Water Program Manager
Regional Office

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Permit



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

**GENERAL PERMIT
FOR BENEFICIAL USE OF EXCEPTIONAL QUALITY BIOSOLIDS**

PERMIT NO: PAG-07

In accordance with the provisions of the Federal Clean Water Act (33 U.S.C.A §§1251-1387), the Clean Streams Law (35 P.S. §§691.1 - 691.1001), Sections 1905-A, 1917-A and 1920-A of the Administrative Code of 1929 (71 P.S. §§510-5, 510-17 and 510-20), the Solid Waste Management Act (35 P.S. §§6018.101 - 6018.1003), and the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P.S. §§4000.101 - 4000.1904), DEP issues this General Permit for use by eligible persons for the beneficial use of exceptional quality biosolids by land application.

Persons eligible to obtain coverage under this General Permit are: (1) a person that prepares exceptional quality biosolids that will be sold or given away in a bag or other container; (2) a person that prepares exceptional quality biosolids that will be land applied; or (3) both. Persons must satisfy the eligibility requirements in Part A. Biosolids Quality of this General Permit.

Eligible persons seeking coverage under this General Permit must submit a timely, complete and technically adequate NOI in accordance with the requirements of this General Permit using DEP's NOI form, and obtain approval from DEP to beneficially use Exceptional Quality Biosolids by land application.

Approval of coverage for the beneficial use of exceptional quality biosolids by land application is subject to DEP's enclosed General Permit (PAG-07) that includes requirements related to pollutant limitations, operational standards, pathogen and vector attraction reduction, recordkeeping, monitoring and reporting. The approval of coverage authorizes eligible persons to sell, give away, or otherwise distribute biosolids in a bag or other container for the beneficial use by land application, and the beneficial use by land application.

NOI REQUIREMENTS

Deadlines for NOI

An applicant seeking renewal of coverage under this General Permit shall submit a complete and technically adequate NOI at least 150 days prior to the expiration of coverage. An applicant authorized to land apply biosolids under an individual permit who is seeking coverage under this General Permit may continue to land apply in accordance with the individual permit while DEP reviews the NOI and associated documents for coverage under this General Permit.

Contents of NOIs

Persons seeking approval for renewal of coverage under this General Permit must submit a complete NOI in accordance with the requirements of this General Permit using the NOI form provided by DEP. The NOI form shall be signed in accordance with Section II of Part C (Signatory Requirements) of this General Permit and shall include the information specified on the form, as further explained in the instructions for completing the form. The NOI form and instructions (3850-PM-BCW0337) are available on DEP's website at www.dep.pa.gov/biosolids.

Where to Submit

NOIs or modifications to NOIs are to be submitted to the appropriate regional office of DEP having jurisdiction over the wastewater treatment facility or processing facility that prepares the biosolids. NOIs for facilities located outside the Commonwealth are to be submitted to DEP's Bureau of Clean Water in Harrisburg. The NOI form and a list of DEP names, addresses and telephone numbers are included with the instructions for completing the NOI form.

USES NOT COVERED UNDER THIS GENERAL PERMIT

The following beneficial uses of exceptional quality biosolids are not covered by this General Permit, and DEP may deny coverage under this General Permit when one or more of the following conditions exist:

1. Land application of exceptional quality biosolids for beneficial use in watersheds classified as "Exceptional Value (EV)" in 25 Pa. Code Chapter 93;

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2. Land application of exceptional quality biosolids that is not, or will not be, in full compliance with the requirements, terms or conditions of this General Permit;
3. Land application of exceptional quality biosolids that were prepared by a person that has failed and continues to fail to comply, or has shown a lack of ability or intention to comply, with a regulation, permit, schedule of compliance or order issued by DEP;
4. Land application of exceptional quality biosolids for which DEP determines an individual permit is required to ensure compliance with the Clean Water Act, the Clean Streams Law, or the Solid Waste Management Act, and rules and regulations promulgated thereunder;
5. Land application of exceptional quality biosolids that would adversely affect a listed endangered or threatened species, or its critical habitat;
6. Land application of exceptional quality biosolids that results in the off-site deposition of airborne particulate matter consisting of all or part biosolids.
7. Land application, blending, and/or distribution of materials other than exceptional quality biosolids. Land application of exceptional quality biosolids that are mixed with other materials, may require another type of permit.
8. Land application of exceptional quality biosolids mixed with solid waste that is not generated by the preparer of biosolids. This includes hauled-in wastes, unless the hauled-in wastes are first processed through a sewage treatment plant, prior to the exceptional quality biosolids treatment process.
9. This General Permit does not constitute approval or authorization to construct a facility or modify existing facilities to meet the terms and conditions of this General Permit. The permittee shall comply with all other permitting requirements as necessary.

Denial of Coverage

DEP may deny approval of coverage under this General Permit and require submittal of an application for an individual permit based on a review of the NOI or other information submitted or otherwise available to DEP.

1. DEP may require the applicant to apply for and obtain an individual permit for beneficial use of exceptional quality biosolids by land application.
 - a. Any interested person may petition DEP to take action under this paragraph.
 - b. DEP will require the applicant to apply for an individual permit only after the permittee has been notified in writing that such permit application is required. This notice shall include the following:
 - i. a brief statement of the reasons for this decision;
 - ii. an individual permit application form; and
 - iii. a statement setting a deadline for the person to file the application.
2. The applicant may request to be excluded from the approval for coverage under this General Permit by applying for an Individual Permit.
 - a. The applicant shall submit an Individual Permit application to DEP on an approved form available through DEP's website at www.dep.pa.gov/biosolids. Additional information related to this form can be found in the DEP's instruction sheet, *Instructions for Completing and Submitting An Individual Generator Permit for the Beneficial Use of Biosolids by Land Application*, 3800-PM-WSFR0030.
 - b. The request may be granted by issuance of an Individual Permit if the reasons cited by the applicant are adequate to support the request, and the permit application otherwise meets the administrative, technical and regulatory requirements for issuance of the permit.
3. When an Individual Permit is issued to a person covered by this General Permit, the coverage automatically revoked on the effective date of the Individual Permit. When an Individual Permit is denied to a person covered by this General Permit, the coverage continues, provided that all conditions of the General Permit are satisfied.

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4. If DEP determines that a permittee no longer meets the requirements of this General Permit, or is otherwise prohibited from this General Permit coverage, notice of the determination shall be given, and approval of coverage under this General Permit is automatically terminated on the date of such determination.
5. If the permittee determines that they no longer meet the requirements of this General Permit, or are otherwise prohibited from this General Permit coverage, notice of the determination shall be given to DEP, and approval of coverage under this General Permit is automatically terminated on the date of determination, unless otherwise specified by DEP.
6. Persons shall not be issued coverage under this General Permit for beneficial use of exceptional quality biosolids by land application when the exceptional quality biosolids are generated by a facility that receives waste directly from oil and gas industries.

Issuance, Reissuance, or Modifications

1. Unless extended by DEP, this General Permit will expire 10 years from the date of its issuance.
2. DEP will publish a notice in the Pennsylvania Bulletin of its intent to renew, reissue or amend this General Permit, and, after a comment period of 60 days, notice of the final, renewed, reissued or modified general permit will be published in the Pennsylvania Bulletin.
3. The permittee shall be responsible for complying with the final renewed, reissued or amended general permit.
4. If the permittee cannot meet the conditions of the renewed, reissued or modified General Permit, the permittee must apply for an individual permit.
5. DEP may modify, terminate or revoke and reissue this General Permit during its term.
6. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated non-compliance, does not stay any permit condition.
7. This General Permit may be terminated, amended, or revoked and reissued by DEP prior to expiration of this General Permit when necessary to protect public health and the environment from any adverse effect of a pollutant in the biosolids.

The Authority Granted by this General Permit is Subject to the Following Conditions:

1. If there is a conflict between the approval of the application for coverage, its supporting documents and/or amendments, and the terms and conditions of this General Permit, the terms and conditions of this General Permit shall apply.
2. Failure to comply with the terms and conditions of this General Permit may result in any of the following:
enforcement action;
 - a. enforcement action;
 - b. termination of permit coverage; or
 - c. denial of a renewal application.
3. If DEP has validated that malodors from a particular exceptional quality biosolids source have caused a persistent public nuisance, DEP may require the permittee to develop and implement a Biosolids Quality Enhancement Plan (BQEP), focusing on odor mitigation, to retain or obtain coverage under this General Permit.
 - a. DEP may require, as part of the BQEP, that the permittee adopt practices that include soil incorporation, storage restrictions, and more stringent vector attraction reduction practices.
 - b. Soil incorporation shall not be required if it violates the soil conservation plan or erosion and sedimentation control plan at the site of land application, if application involves top-dressing on a hay field, or if it would otherwise increase the risk of the biosolids migrating off the site.

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- c. DEP may terminate coverage under this General Permit if the permittee is unable to mitigate its documented and persistent nuisance odor situations.
4. No condition of this General Permit shall release the permittee from any responsibility or requirement under any other Federal or state statute or regulation.
5. No condition of this General Permit releases the permittee from any responsibility or requirement under any local regulation or ordinance, provided that the local regulation or ordinance is not inconsistent with or more stringent than any provision of the Clean Streams Law, SWMA, Administrative Code, Act 101, Title 25 Pa. Code Chapter 271 or any other applicable statute or regulation.
6. The definition of a waste under Title 25 Pa. Code §271.1 (relating to Definitions), allows materials that are beneficially used under Subchapter I or J to be excluded from being regulated as a waste by a term or condition of this General Permit. Exceptional quality biosolids beneficially used in accordance with this General Permit will not be regulated as a waste. However, this does not relieve the permittee from complying with all applicable requirements under Title 25 Pa. Code Chapter 271, Subchapter J and the provisions of this General Permit.
7. This General Permit is an approval **ONLY** for the beneficial use of exceptional quality biosolids by land application.

This General Permit (PAG-07) for Beneficial Use of Exceptional Quality Biosolids is issued upon publication in the *Pennsylvania Bulletin* and shall expire at midnight on 10 years from effective date, unless extended on or before the expiration date by DEP.

Date Issued:
Upon Publication in Pennsylvania Bulletin

BY: _____
TITLE: Printed Name
Director
Bureau of Clean Water

PART A
BIOSOLIDS QUALITY

I. DEFINITIONS

“Adjacent Landowner” – Includes all landowners whose deeds touch the deed for the parcel of land on which the biosolids will be applied.

“Agricultural Land” – Land on which a food crop, a feed crop, a fiber crop, a silvicultural crop, or a horticultural crop is grown. This includes range land and land used as pasture. (25 Pa Code § 271.907)

“Agronomic Rate” – The annual whole sludge application rate (dry weight basis) designed:

- (1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, silvicultural crop, cover crop, horticultural crop, or vegetation grown on the land; and
- (2) To minimize the amount of nitrogen in the biosolids that passes below the root zone of the crop or vegetation grown on the land to the groundwater. (25 Pa Code § 271.907)

“Bag or Other Container” – Either an open or closed receptacle. This includes, but is not limited to, a bag, bucket, box, container, vehicle, or trailer, with a load capacity of 1.1 tons (or 1.0 metric ton) or less. (25 Pa Code § 271.907)

“Biosolids” – Sewage sludge as defined by 25 Pa. Code §271.1 that meets, at a minimum, the pollutant quality standards listed in 25 Pa. Code §271.914(b)(1), one of the Class B pathogen reduction alternatives listed in §271.932(b), and one of the vector attraction reduction options listed in §271.933 (b)(1)–(10).

“Cover crop” – A small grain crop, such as oats, wheat or barley, not grown for harvest. (25 Pa Code § 271.907)

“Exceptional Quality Biosolids” – Sewage sludge as defined by 25 Pa. Code §271.1 that meets the pollutant quality standards listed in 25 Pa. Code §271.914(b)(1) and (3), one of the Class A pathogen reduction alternatives listed in 25 Pa. Code §271.932(a), and one of the vector attraction reduction options listed in 25 Pa. Code §271.933(b)(1)–(8).

“Exceptional Value Watershed” – Surface waters of high quality which satisfy 25 Pa Code §93.4b(b) (relating to antidegradation).

“Feed crops” – Crops produced primarily for consumption by animals. (25 Pa Code § 271.907)

“Fiber crops” – Crops, such as flax and cotton, characterized by having a large concentration of cellulose, which are traditionally used to make paper, cloth, or rope.

“Food crops” – Crops produced primarily for consumption by humans. The term includes, but is not limited to, fruits, vegetables and tobacco. (25 Pa Code § 271.907)

“Food Processing Waste” – Residual materials in liquid and solid form generated in the slaughtering of poultry and livestock, or in processing and converting fish, seafood, milk, meat and eggs to food products. The term includes residual materials generated in the processing, converting, or manufacturing of fruits, vegetables, crops and other commodities into marketable food items. The term also includes vegetative residuals from food processing activities that are usually recognizable as part of a plant or vegetable, including cabbage leaves, bean snips, onion skins, apple pomace and grape pomace.

“Land Application” – The spraying or spreading of exceptional quality biosolids onto the land surface for beneficial use; the injection of exceptional quality biosolids below the land surface for beneficial use; or the incorporation of exceptional quality biosolids into the soil for beneficial use so that the exceptional quality biosolids can either condition the soil or fertilize crops for vegetation grown in the soil.

“Municipality” – A city, town, borough, county, township, or an authority created by any of the foregoing under state law, including an intermunicipal agency of two or more of the foregoing entities. (25 Pa Code § 271.907)

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“Non-Liquid Waste” – A waste that does not contain free liquid as determined by Method 9095 (paint filter liquids test), as described in the EPA’s “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods” (EPA Publication No. SW-846).

“Pasture” – Land on which animals feed directly on feed crops such as legumes, grasses, grain stubble or stover. (25 Pa Code § 271.907)

“Pathogen Reduction” – Decreasing the presence of pathogens through biosolids treatment.

“Permit” – A permit issued by DEP to operate a municipal waste disposal or processing facility, or to beneficially use municipal waste. The term includes a general permit, permit modification, permit by rule, permit reissuance and permit renewal. (25 Pa Code § 271.1)

“Person” – An individual, corporation, partnership, association, municipality, political subdivision, or an instrumentality of state, federal, or local government, or an agent or employee thereof, or any other legal entity. (25 Pa Code § 271.907)

“Person who operates under this general permit” – Includes the permittee or other agents for the permittee as applicable and the land applier.

“pH” – The logarithm of the reciprocal of the hydrogen ion concentration at 25 degrees Celsius.

“Pollutant” – An organic substance, an inorganic substance, a combination of organic substances, a pathogenic organism, or any other substance identified by DEP that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism, either directly from the environment or indirectly by ingestion through the food chain, could, on the basis of information available to DEP, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction), or physical deformations in either organisms or offspring of the organisms. (25 Pa Code § 271.907)

“Pollutant Limit” – A numerical value that describes the amount of a pollutant allowed per unit amount of biosolids (e.g., milligrams per kilogram of total solids); the amount of a pollutant that can be applied to a unit area of land (e.g., pounds per acre or kilograms per hectare); or the volume of a material that can be applied to a unit area of land (e.g., gallons per acre or liters per hectare). (25 Pa Code § 271.907)

“Public Contact Site” – Land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses. (25 Pa Code § 271.907)

“Public Nuisance” – a nuisance which affects numerous members of the public or the public at large, as distinguished from a nuisance which only does harm to a neighbor or a few private individuals.

“Reclamation Site” – Drastically disturbed land that is reclaimed using biosolids. This includes, but is not limited to, active and abandoned coal and non-coal surface mines and construction sites. (25 Pa Code § 271.907)

“Representative Sample” – A sample that, based on the specific biosolids operation and to the best of the generator’s knowledge, adequately characterizes the quality and/or attributes of the biosolids produced at the permitted facility.

“Sewage Sludge” – Liquid or solid sludges and other residues from a municipal sewage collection and treatment system; and liquid or solid sludges and other residues from septic and holding tank pumpings from commercial, institutional or residential establishments. The term includes materials derived from biosolids. The term does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator, grit and screenings generated during preliminary treatment of biosolids at a municipal sewage collection and treatment system, or grit, screenings and nonorganic objects from septic and holding tank pumpings.

“Specific Oxygen Uptake Rate (SOUR)” – The amount of oxygen utilized in one hour by one gram of the volatile suspended solids in the activated sludge.

“Speculative Accumulation” – Accumulation of exceptional quality sewage sludge at an application site in excess of the amount that can be applied for the upcoming growing season or year.”

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“**Storage**” – The containment of any waste on a temporary basis in such a manner as not to constitute disposal of such waste. It shall be presumed that the containment of waste in excess of 1 year constitutes disposal. This presumption can be overcome by clear and convincing evidence to the contrary.

“**Treat or Treatment of Biosolids**” – The preparation of biosolids for land application. This includes, but is not limited to, thickening, stabilization, and dewatering of biosolids. This does not include storage of biosolids.

“**Vector Attraction**” – The characteristic of biosolids that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

“**Vector Attraction Reduction**” – Decreasing the characteristic of the biosolids that attracts vectors.

II. BIOSOLIDS QUALITY

The permittee shall comply with the following requirements, when preparing exceptional quality biosolids, beneficially using the exceptional quality biosolids by land application, or both.

A. The exceptional quality biosolids cannot exceed the ceiling concentrations for any pollutant listed in 25 Pa. Code §271.914(b)(1), (Table 1, Ceiling Concentrations), as amended and updated, at any time.

TABLE 1—CEILING CONCENTRATIONS

<u>Pollutant</u>	<u>Ceiling Concentration (Milligrams per Kilogram)¹</u>
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
PCBs	8.6
Selenium	100
Zinc	7,500

¹ Dry weight basis

B. The exceptional quality biosolids must continuously meet the pollutant concentrations as listed in 25 Pa. Code §271.914(b)(3), (Table 3, Pollutant Concentrations), as amended and updated.

TABLE 3—POLLUTANT CONCENTRATIONS

<u>Pollutant</u>	<u>Monthly Average Concentrations (Milligrams per Kilogram)¹</u>
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
PCBs	4
Selenium	100
Zinc	2,800

¹ Dry weight basis

C. The exceptional quality biosolids must meet one of the Class A pathogen reduction requirements specified in 25 Pa. Code §271.932(a), as amended and updated. See Appendix A.

D. The exceptional quality biosolids must meet one of the vector attraction reduction (VAR) requirements specified in 25 Pa. Code §271.933(b)(1)-(8), as amended and updated. See Appendix B.

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- E. The Class A pathogen reduction requirements in Item C shall be met prior to or at the same time as the vector attraction reduction requirements in Item D, except for vector attraction reduction requirements (6) (8).
- F. The exceptional quality biosolids must be non-liquid and non-recognizable as a human waste.
- G. Concentrations of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) in exceptional quality biosolids must be monitored and reported to the Department.
 - 1. The frequency of monitoring shall correspond with the sampling frequency specified in 25 Pa. Code § 271.917, as amended and updated.
 - 2. Monitoring results shall be provided with the submission of the Recordkeeping and Reporting Form (see Part C. below) or at the request of the Department.
 - 3. Monitoring results must be obtained by a properly accredited lab using an approved analytical method as described in Part B, Section III below.
- H. DEP approval is required for changes made to the exceptional quality biosolids treatment process that will impact the pathogen reduction alternative or the VAR option originally approved under the permittee's coverage approval.
 - 1. The permittee must submit supporting documentation for the new process, pathogen reduction alternative or VAR option to the DEP office that approved coverage under this permit.
 - 2. DEP staff may approve modifications covered under this General Permit, in writing, to the permittee.
- I. Mixtures of exceptional quality biosolids with other wastes including food processing waste, animal manures, agricultural processing wastewater or residual materials such as cement kiln dust is prohibited.
- J. DEP approval is required of any additive (such as dust suppressant agents) for the purpose of producing exceptional quality biosolids for beneficial use.

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**PART B
MONITORING**

I. REPRESENTATIVE SAMPLING

- A. Sampling of the material must be representative of all the material land applied. Sampling of the biosolids treatment process and process controls must be representative of the entire biosolids treatment process.
- B. Any samples and measurements taken to monitor biosolids quality and process controls must be in accordance with the methods listed in 25 Pa. Code §271.906 (relating to sampling and analysis), §271.915(h) (relating to management practices) and the facility's Sampling Plan submitted with the NOI. See Appendix C.
- C. The most current version of DEP's *Biosolids Sampling Manual* should be used as a guide.
- D. For fecal coliform sampling, a minimum of seven individual samples are required per sampling event, unless otherwise approved by the DEP.

II. MONITORING FREQUENCY

Monitoring for the pollutants, pathogen density, and vector attraction reduction requirements in §271.933(b)(1)-(8), as amended and updated, shall, at a minimum, be at the following frequency:

Amount of biosolids ¹ dry tons (dry metric tons) per 365-day period	Frequency ²
Greater than zero but less than 319 (290)	Once per year
Equal to or greater than 319 (290) but less than 1,650 (1,500)	Once per quarter (four times per year)
Equal to or greater than 1,650 (1,500) but less than 16,500 (15,000)	Once every 60 days (six times per year)
Equal to or greater than 16,500 (15,000)	Once per month (12 times per year)

¹ Either the amount of biosolids land applied or the amount of biosolids generated to be land applied for beneficial use or the amount of biosolids received by a person who prepares biosolids for land application.

² Frequency is based on a 365-day period.

III. TEST PROCEDURES

- A. Methods in the materials listed in 25 Pa. Code §271.906, as shown in Appendix C, or in any later amendments published in the *Federal Register* are incorporated by reference, as amended and updated and shall be used to analyze samples of exceptional quality biosolids.
 - 1. No other analytical methods may be used without prior written approval from DEP.
 - 2. Requests for approval must be submitted in writing to DEP.
- B. Fecal coliform samples shall be analyzed using the multiple-tube procedure (SM Part 9221E) as published in the most current version of Standard Methods for the Examination of Water and Wastewater or by using the either the EPA 1680 or the EPA 1681 methods as published by the EPA.
- C. When pH adjustment is used for either vector attraction reduction or pathogen reduction, the pH readings must be temperature corrected to 25 degrees Celsius.
- D. Analysis shall be done by a PA-accredited laboratory.

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IV. RECORDING OF RESULTS

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

1. The place, date and time of sampling or measurements.
2. The person(s) who performed the sampling or measurements.
3. The date(s) the analyses were performed.
4. The person(s) who performed the analyses.
5. The analytical techniques or methods used and the associated detection level.
6. The results of such analyses.

V. QUALITY ASSURANCE CONTROL

In an effort to assure accurate self-monitoring analyses results:

1. The permittee shall participate in, or shall use a laboratory that agrees to participate in, periodic scheduled quality assurance inspections conducted by DEP or EPA. (25 Pa. Code §§ 92a.3(c), 92a.41(a), 92a.61(i) and 40 CFR §§ 122.41(e), 122.41(i)(3))
2. The permittee shall develop and implement, or shall use a laboratory that has developed and implemented, a program to assure the quality and accurateness of the analyses performed to satisfy the requirements of this permit, in accordance with 40 CFR Part 136. (25 Pa. Code §§ 92a.3(c), 92a.41(a), 92a.61(i) and 40 CFR § 122.41(j)(4))

PART C
RECORDKEEPING AND REPORTING

I. RECORDKEEPING AND REPORTING

- A. The permittee must develop the information specified in 25 Pa. Code §271.918(a)(1) as follows:
1. The concentration of each pollutant listed in Table 3 of §271.914 (relating to pollutant limits) in the biosolids.
 2. The following certification statement:
"I certify, under penalty of law, that the Class A pathogen requirements in §271.932(a) and the vector attraction reduction requirement in [insert one of the vector attraction reduction requirements in §271.933(b)(1) through §271.933(b)(8)] have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements and vector attraction reduction requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fines and imprisonment."
 3. A description of how the Class A pathogen requirements in §271.932(a) (relating to pathogens), as amended and updated, are being met.
 4. A description of how the vector attraction reduction requirements in §271.933(b)(1)-(8) (relating to vector attraction reduction), as amended and updated are being met.
- B. This information in item A above shall be retained by the permittee for five years and made available to DEP upon request.
- C. A signed copy of the *Recordkeeping and Reporting Form* and other supporting data must be submitted to DEP annually on or before March 1 for activities conducted during the previous calendar year.
- D. Notification of the date, time, and location at which land application will occur shall be given to DEP, when requested, for the purpose of inspection or investigation to ascertain compliance or noncompliance with this General Permit and with applicable statutes, rules and regulations.
- E. The permittee must verbally notify DEP immediately, but no longer than 24 hours after becoming aware, of non-compliance of any biosolids quality standard relating to pathogen reduction, vector attraction reduction, or pollutant concentration.
1. The permittee must provide a written report to DEP within five days of the verbal report.
 2. The written report must include:
 - a. the date of non-compliance;
 - b. the nature of the incident;
 - c. the actions taken to mitigate the non-compliance; and,
 - d. the date compliance occurred.

II. SIGNATORY REQUIREMENTS

All NOIs, reports, certifications, records, and other information submitted to DEP, application site landowner, adjacent landowner, or County Conservation District, or that this General Permit requires be maintained by the permittee, shall be signed as follows:

- A. For a municipality, or a State, Federal, or other public agency:
1. By either a principal executive officer, ranking elected official, or other authorized employee.
 2. For purposes of this General Permit, a principal executive officer of a Federal agency includes the following:
 - a. the chief executive officer of the agency, or

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- b. a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).
- B. In the case of corporations, by a principal executive officer of at least the level of vice president, or an authorized representative.
- C. In the case of a partnership, by a general partner.
- D. In the case of a sole proprietorship, by the proprietor.
- E. A person is a duly authorized representative only if:
 - 1. The authorization is made, in writing, by a person described above and the authorization is submitted to DEP with the records.
 - 2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or process, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for the environmental matters for the facility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
- F. Changes in Signatory Authorization.
If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Section II (Signatory Requirements) must be submitted to DEP prior to or together with any records, information, or applications to be signed by an authorized representative.

PART D
STANDARD CONDITIONS

I. DISTRIBUTION REQUIREMENTS

- A. The permittee shall affix a label to either the bag or other container in which the exceptional quality biosolids are to be sold, given away or otherwise distributed for application to the land, or an information sheet shall be provided to the person who receives the exceptional quality biosolids for application to the land.
- B. The label or information sheet shall contain the following information:
 - 1. The name and address of the person who prepared the exceptional quality biosolids and permit number.
 - 2. A statement that land application of the exceptional quality biosolids is permitted only in accordance with the instructions of the label on the bag or in the information sheet.
 - 3. A description of the restrictions or limitations and the nutrient value of the exceptional quality biosolids.

II. LAND APPLICATION REQUIREMENTS

Bulk application activities by a permittee or agent for the permittee operating under this General Permit shall comply with the following land application requirements:

- A. Exceptional quality biosolids may not be applied to the land at a rate that is greater than the agronomic rate, unless a greater application rate is approved by DEP in writing for land reclamation activities.
- B. Agronomic rates should be calculated in accordance with the most current version of DEP's *Biosolids Training Manual*.
 - 1. The Penn State Agronomy Guide, documented yields, or other applicable information sources may be used to determine appropriate yields and nutrient needs for the purposes of calculating application rates.
 - 2. Beginning 2 years after issuance, for bulk application activities that are within the direct control of the permittee or agent of the permittee, the permittee is required to provide P-index based application rates or provide P content of sewage sludge on the fact sheet of the permittee.
 - a. The Pennsylvania Phosphorus Index, Version 2 - Penn State Extension and other applicable information sources may be used to determine appropriate yields and nutrient needs for the purposes of calculating P-Index based application rates.
 - b. The permitted annual application rate is the lesser of the agronomic rate, as calculated in section 3. above, or the P-Index based application rate calculated in this section.
- C. The permittee must notify the appropriate regional DEP office, in writing, a minimum of 24 hours prior to commencing land application activities for the first time.
 - 1. This notification can be accomplished via e-mail, facsimile, or mail.
 - 2. The notification must contain the following information:
 - a. Name, address, and phone number of permittee(s).
 - b. General permit number(s).
 - c. Name, address, and phone number of land applier.
 - d. Name and address of land application site (the address must be the location of the site and not a PO Box or Rural Route number).
 - e. Latitude and longitude coordinates for the application site.
- D. The information in Section C. above must be submitted prior to commencing land application activities, including transportation, storage, and staging.
- E. Dust originating from and/or attributed to biosolids may not be deposited offsite.

- F. Exceptional quality biosolids land applied to a reclamation site shall be incorporated into the soil within 24 hours of land application.
- G. In accordance with 25 Pa. Code §271.911(b)(1) as amended and updated, exceptional quality biosolids that meet the quality criteria listed in Part A.II (Biosolids Quality) are exempt from all the requirements listed in 25 Pa. Code §271.913 (relating to general requirements) and 25 Pa. Code §271.915 (relating to management practices), as amended and updated.
 - 1. However, DEP may apply any of the management practices or general requirements on a case-by-case basis if needed to protect public health and the environment from any reasonably anticipated adverse effect that may occur from any pollutant in the sewage sludge. (25 Pa. Code §271.911(d).)
 - 2. If DEP determines that a specific management practice or general requirement is necessary to protect the environment from reasonably anticipated adverse effects, DEP will notify the permittee of the applicable requirements in the letter granting approval of coverage under this General Permit.

III. STORAGE REQUIREMENTS

- A. Bulk storage activities at land application sites within by the permittee or agent of the permittee shall follow best management practices (BMP) to minimize and control conditions that may create a public or environmental hazard. BMPs should include:
 - 1. Storage areas must be covered and protected from precipitation.
 - 2. Prior to storage, the biosolids must meet a minimum total solids concentration of 20%.
 - 3. Minimizing run-on and runoff from the storage area.
 - 4. Storage may not be conducted:
 - a. within 100 feet of a perennial stream,
 - b. within 33 feet of an intermittent stream, or
 - c. within 50 feet of a property boundary, with written consent of the landowner, unless it is conducted within an enclosed building or other structure.
 - 5. Measures should be taken to minimize and control odors and dust emissions from the storage areas.
 - 6. If the storage area requires earth disturbance, such as in the construction of berms, the applicable BMPs in accordance with Chapter 102 should be utilized.
 - a. These BMPs can be part of or be an amendment to the existing farm conservation or erosion and sedimentation plan.
 - b. If no plan exists, a Chapter 102 erosion and sedimentation plan may be required.
 - 7. Refer to USEPA's Guide to Field Storage of Biosolids, EPA/832-B-00-007 (July 2000) for additional information on appropriate BMPs.
- B. Storage of bulk exceptional quality biosolids by the permittee or agent of the permittee shall not be stored longer than one year, unless otherwise approved by DEP, in writing.
- C. The permittee or agent of the permittee may not engage in the speculative accumulative of biosolids as defined in this permit. Storage shall not exceed the amount needed for the upcoming growing season at the site of land application.
- D. DEP may require the permittee to remove any biosolids abandoned at an off-site location.

IV. TRAINING

- Training obligations must be completed as required by 25 Pa. Code §271.915(j), as amended and updated as follows:
- A. Persons land applying biosolids are required to complete training courses sponsored by DEP in a timely and satisfactory manner.

- B. Satisfactory completion means attendance at all sessions of training and attainment of a minimum grade of 70% on tests given as part of the training courses.
- C. In the case of a person who prepares biosolids that will be land applied, and a person who land applies residential septage, at least one person with responsibility for the land application of biosolids or residential septage shall satisfactorily complete the training in a timely fashion.
- D. DEP may suspend or revoke an individual permit or coverage under this General Permit to beneficially use biosolids by land application if the person does not satisfactorily complete the training courses within the following time periods:
 - 1. Two years for a person conducting land application operations as of January 25, 1997.
 - 2. One year for a person that begins conducting land application operations after January 25, 1997

V. RIGHT OF ENTRY FOR INSPECTIONS

A person operating under this General Permit shall allow authorized representatives of the Commonwealth, without advance notice or a search warrant, upon presentation of appropriate credentials, and without delay:

- A. To enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this General Permit.
- B. To have access to and copy, at reasonable times, any records that must be kept under the conditions of this General Permit.
- C. To inspect at reasonable times any facilities (including land application sites), equipment (including monitoring and control equipment), practices or operations regulated or required under this General Permit.
- D. To sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act or the Clean Streams Law, any substances or parameters at any location.

VI. RESPONSIBILITIES

A. Duty to Comply

The permittee must comply with all terms and conditions of this General Permit and all renewals and reissuances thereof. Any permit non-compliance constitutes a violation of the Federal Clean Water Act, the Pennsylvania Clean Streams Law or The Solid Waste Management Act and constitutes grounds for enforcement action, including, but not limited to, civil and criminal penalties, revocation of coverage, denial of coverage renewal, or denial of an application for an individual permit.

B. Need to Halt or Reduce Activity Not a Defense

The permittee may not use as a defense in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this General Permit.

C. Penalties and Liability.

1. Nothing in this General Permit shall be construed to relieve the permittee from civil or criminal penalties for non-compliance pursuant to Sections 602 or 605 of the Clean Streams Law (35 P.S. §§691.602 or 691.605) and the Federal Clean Water Act.
2. Nothing in this General Permit shall be construed to preclude the institution of any legal action or to relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject to under the Clean Water Act and the Clean Streams Law.

D. Property Rights

The approval of coverage under this General Permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

E. Severability

The provisions of this General Permit are severable, and if any provision of this General Permit or the application of any provision of this General Permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this General Permit shall not be affected thereby.

F. Duty to Provide Information

1. The permittee shall furnish to DEP any information that DEP may request to determine whether cause exists for modifying, revoking, reissuing, or terminating this General Permit or coverage approved under this General Permit, or to determine compliance with this General Permit.
2. The permittee shall furnish to DEP, upon request, copies of records required to be kept by this General Permit.
3. Where the permittee becomes aware that it failed to submit any relevant facts in an NOI, or has submitted incorrect information in an NOI or in any record or report to DEP, it shall promptly submit such facts or information to DEP. **Submitting incorrect information or making any false statement, representation, or certification may result in the imposition of significant penalties including the possibility of fines and imprisonment.**
4. The permittee must give written notice to DEP of major changes or expansions of the existing wastewater treatment plant or any planned physical alterations or additions to the permitted operation which could in any way affect the established quality of the exceptional quality biosolids covered under this General Permit. If such a change disqualifies the biosolids as "exceptional quality" biosolids, the sale, give away or other distribution and land application of such biosolids shall stop immediately.

G. Proper Operation and Maintenance

1. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the terms and conditions of this General Permit.
2. Proper operation and maintenance includes, but is not limited to, adequate laboratory controls such as appropriate quality assurance procedures.
3. The permittee shall properly operate and maintain backup or auxiliary facilities or similar systems installed by the permittee as necessary to achieve compliance with the terms and conditions of this General Permit.

H. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any exceptional quality biosolids use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

I. Adverse Impacts

The permittee shall take all reasonable steps to minimize or prevent any adverse impact on the environment or human health resulting from non-compliance with this General Permit.

J. Transfer of Ownership or Control

1. No approval of coverage under this General Permit may be transferred unless the transfer is approved, in writing, by DEP.
2. In the event of any pending change in control or ownership of facilities from which the authorized processes emanate, the permittee must submit to DEP an *Application for Transfer of Coverage Under a General Permit or Individual Permit* (3800-PM-BCW0479) notifying DEP of such pending change at least 30 days before the proposed transfer date. An application for transfer can be found in the Permits and Forms section of the DEP Biosolids web page at www.dep.pa.gov/biosolids.
3. After receipt of the documentation described above, DEP shall notify the existing permittee and the new owner or controller of its decision concerning approval of the transfer.

K. Confidentiality of Records

Except for data determined to be confidential under §607 of the Clean Streams Law or 25 Pa. Code, Chapter 92a, all records prepared in accordance with the terms of this General Permit shall be available for public inspection at the offices of DEP. Monitoring data shall not be considered confidential.

L. Violations of Permit Conditions

1. DEP may take an enforcement action to restrain violations, to impose criminal or civil penalties, to withhold a permit, or to seek other remedies or relief as authorized by the Clean Streams Law against a permittee that violates any condition or limitation of this General Permit, or any rule, regulation or order issued by DEP pursuant to the Clean Streams Law.
2. In addition, EPA may take an enforcement action to restrain violations, to impose criminal or civil penalties, or to seek other remedies or relief as authorized by the Clean Water Act against a permittee that violates any condition or limitation of this General Permit, or any rule, regulation or order issued by EPA pursuant to the Clean Water Act.

M. Falsifying Information

The permittee or any person who engages in the conduct described below may, upon conviction, be punished by a fine and/or imprisonment pursuant to 18 Pa.C.S. § 4904, or 40 CFR 122.41(j)(5) or (k)(2). (25 Pa. Code §§ 92a.3(c), 92a.41(c)):

1. Falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this General Permit, or
2. Knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this General Permit (including monitoring reports or reports of compliance or non-compliance)

VII. NOTIFICATION OF WITHDRAWAL BY THE PERMITTEE

When coverage under this General Permit is withdrawn, the following information should be submitted to DEP.

A. A notification of withdrawal that includes:

1. Name, mailing address, and location of the facility for which the notification is submitted.
2. The permittee's name, address, telephone number, ownership status and status as federal, state, private, public or other entity.
3. The general permit number for the beneficial use of exceptional quality biosolids by land application identified by the notice of withdrawal.

B. A completed *Recordkeeping and Reporting Form* for the current year's activities.

C. The following certification signed in accordance with Section C.II (Signatory Requirements) of this General Permit:

"I certify under penalty of law that all distribution and land application of exceptional quality biosolids from the identified facility that is authorized under PAG-07, (insert coverage approval number) has ceased. I understand that by submitting this notice of withdrawal I am no longer authorized to distribute or land apply exceptional quality biosolids under this General Permit and that land application of exceptional quality biosolids without a permit is unlawful under the Clean Streams Law and the Solid Waste Management Act."

Appendix A
Pathogen Reduction—Class A

25 PA Code 271.932(a), as amended and updated

Alternative 1.

- (i) Either the density of fecal coliform in the sewage sludge shall be less than 1,000 most probable number per gram of total solids (dry weight basis), or the density of salmonella sp. bacteria in the sewage sludge shall be less than three most probable number per 4 grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3) (relating to special requirements), as amended and updated.
- (ii) The temperature of the sewage sludge that is used shall be maintained at a specific value for a period of time.
- (A) When the percent solids of the sewage sludge is 7% or higher, the temperature of the sewage sludge shall be 122°F (or 50°C) or higher; the time period shall be 20 minutes or longer; and the temperature and time period shall be determined using Equation (2), except when small particles of sewage sludge are heated by either warmed gases or an immiscible liquid.

$$D = \frac{131,700,000}{10^{(T-50)}} \quad \text{Equation (2)}$$

Where,

D = Time in days

T = Temperatures in degrees Celsius

- (B) When the percent solids of the sewage sludge is 7% or higher and small particles of sewage sludge are heated by either warmed gases or an immiscible liquid, the temperature of the sewage sludge shall be 122°F (or 50°C) or higher; the time period shall be 15 seconds or longer; and the temperature and time period shall be determined using Equation (2).
- (C) When the percent solids of the sewage sludge is less than 7% and the time period is at least 15 seconds, but less than 30 minutes, the temperature and time period shall be determined using Equation (2).
- (D) When the percent solids of the sewage sludge is less than 7%; the temperature of the sewage sludge is 122°F (or 50°C) or higher; and the time period is 30 minutes or longer, the temperature and time period shall be determined using Equation (3).

$$D = \frac{50,070,000}{10^{(T-50)}} \quad \text{Equation (3)}$$

Where,

D = Time in days

T = Temperatures in degrees Celsius

Alternative 2.

- (i) Either the density of fecal coliform in the sewage sludge shall be less than 1,000 most probable number per gram of total solids (dry weight basis), or the density of salmonella sp. bacteria in the sewage sludge shall be less than three most probable number per 4 grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3), as amended and updated.
- (ii) pH adjustment as follows:
- (A) The pH of the sewage sludge that is used shall be raised to above 12 and shall remain above 12 for 72 hours.
- (B) The temperature of the sewage sludge shall be above 125°F (or 52°C) for 12 hours or longer during the period that the pH of the sewage sludge is above 12.

- (C) At the end of the 72-hour period during which the pH of the sewage sludge is above 12, the sewage sludge shall be air dried to achieve a percent solids in the sewage sludge greater than 50%.

Alternative 3.

- (i) Either the density of fecal coliform in the sewage sludge shall be less than 1,000 most probable number per gram of total solids (dry weight basis), or the density of salmonella sp. bacteria in sewage sludge shall be less than three most probable number per 4 grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3), as amended and updated.
- (ii) Virus monitoring requirements are as follows:
- (A) The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains enteric viruses.
- (B) When the density of enteric viruses in the sewage sludge prior to pathogen treatment is less than one plaque-forming unit per 4 grams of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses until the next monitoring episode for the sewage sludge.
- (C) When the density of enteric viruses in the sewage sludge prior to pathogen treatment is equal to or greater than one plaque-forming unit per 4 grams of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses when the density of enteric viruses in the sewage sludge after pathogen treatment is less than one plaque-forming unit per 4 grams of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the enteric virus density requirement are documented.
- (D) After the enteric virus reduction in clause (C) is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to enteric viruses when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented in clause (C).
- (iii) Helminth monitoring requirements are as follows:
- (A) The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains viable helminth ova.
- (B) When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is less than 1 per 4 grams of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova until the next monitoring episode for the sewage sludge.
- (C) When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is equal to or greater than one per 4 grams of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova when the density of viable helminth ova in the sewage sludge after pathogen treatment is less than 1 per 4 grams of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the viable helminth ova density requirement are documented.
- (D) After the viable helminth ova reduction in clause (C) is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to viable helminth ova when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented in clause (C).

Alternative 4.

- (i) Either the density of fecal coliform in the sewage sludge shall be less than 1,000 most probable number per gram of total solids (dry weight basis), or the density of salmonella sp. bacteria in the sewage sludge shall be less than three most probable number per 4 grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3), as amended and updated.

- (ii) The density of enteric viruses in the sewage sludge shall be less than one plaque-forming unit per 4 grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3), unless otherwise specified by the Department.
- (iii) The density of viable helminth ova in the sewage sludge shall be less than 1 per 4 grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3), as amended and updated, unless otherwise specified by the Department.

Alternative 5.

- (i) Either the density of fecal coliform in the sewage sludge shall be less than 1,000 most probable number per gram of total solids (dry weight basis), or the density of salmonella, sp. bacteria in the sewage sludge shall be less than three most probable number per 4 grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3), as amended and updated.
- (ii) Sewage sludge that is used shall be treated in one of the processes to further reduce pathogens.

Alternative 6.

- (i) Either the density of fecal coliform in the sewage sludge shall be less than 1,000 most probable number per gram of total solids (dry weight basis), or the density of salmonella, sp. bacteria in the sewage sludge shall be less than three most probable number per 4 grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3), as amended and updated.
- (ii) Sewage sludge that is used shall be treated in a process that is equivalent to a process to further reduce pathogens.

Appendix B

Vector Attraction Reduction

25 Pa Code § 271.933(b), as amended and updated

1. The mass of volatile solids in the sewage sludge shall be reduced by a minimum of 38% (see calculation procedures in "Environmental Regulations and Technology—Control of Pathogens and Vector Attraction in Sewage Sludge," EPA-625/R-92/013, 1992, United States Environmental Protection Agency, Cincinnati, Ohio 45268).
2. When the 38% volatile solids reduction requirement in paragraph 1 above cannot be met for an anaerobically digested sewage sludge, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 86° and 98°F (or 30° and 37°C). When at the end of the 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17%, vector attraction reduction is achieved.
3. When the 38% volatile solids reduction requirement in paragraph 1 above cannot be met for an aerobically digested sewage sludge, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2% or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 68°F (or 20°C). When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 15%, vector attraction reduction is achieved.
4. The SOUR for sewage sludge treated in an aerobic process shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 68°F (or 20°C).
5. Sewage sludge shall be treated in an aerobic process for 14 days or longer. During that time, the temperature of the sewage sludge shall be higher than 104°F (or 40°C) and the average temperature of the sewage sludge shall be higher than 113°F (or 45°C).
6. The pH of sewage sludge shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for 2 hours and then at 11.5 or higher for an additional 22 hours.
7. The percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 75% based on the moisture content and total solids prior to mixing with other materials.
8. The percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90% based on the moisture content and total solids prior to mixing with other materials.

Appendix C
Analytical Methods

As referenced in 25 Pa § Code 271.906(b), as amended and updated

Methods in the materials listed in this subsection, or in any later amendments published in the *Federal Register*, are incorporated by reference and shall be used to analyze samples of sewage sludge. Other methods may be approved by the Department.

1. *Enteric viruses*. ASTM Designation: D 4994-89, "Standard Practice for Recovery of Viruses from Wastewater Sludges," 1992 Annual Book of ASTM Standards: Section 11—Water and Environmental Technology, ASTM, 1916 Race Street, Philadelphia, Pennsylvania 19103-1187.
2. *Fecal coliform*. Part 9221 E. or Part 9222 D., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.
3. *Helminth Ova*. Yanko, W. A. "Occurrence of Pathogens in Distribution and Marketing Municipal Sludges," EPA 600/1-87-014, 1987. National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB 88-154273/AS).
4. *Inorganic pollutants*. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, Second Edition (1982) with Updates I (April 1984) and II (April 1985) and Third Edition (November 1986) with Revision I (December 1987). Second Edition and Updates I and II are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB-87-120-291). Third Edition and Revision I are available from Superintendent of Documents, Government Printing Office, 941 North Capitol Street, NE., Washington, DC 20002 (Document Number 955-001-00000-1).
5. *Salmonella SP. Bacteria*. Part 9260 D., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005; or Kenner, B. A. and H. P. Clark, "Detection and Enumeration of *Salmonella* and *Pseudomonas Aeruginosa*," Journal of the Water Pollution Control Federation, Vol. 46, No. 9, September 1974, pp. 2163- 2171. Water Environment Federation, 601 Wythe Street, Alexandria, Virginia 22314.
6. *Specific oxygen uptake rate*. Part 2710 B., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.
7. *Total fixed and volatile solids*. Part 2540 G., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.

Appendix C – DEP Proposed Changes to General Permit, PAG-08

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APPROVAL FOR COVERAGE UNDER THE GENERAL PERMIT (PAG-08) FOR BENEFICIAL USE OF BIOSOLIDS BY LAND APPLICATION

PERMIT NO: PAG-08

In accordance with the provisions of the Federal Clean Water Act (33 U.S.C.A §§1251-1387), the Clean Streams Law (35 P.S. §§691.1 - 691.1001), (Clean Streams Law), Sections 1905-A, 1917-A and 1920-A of the Administrative Code of 1929 (71 P.S. §§510-5, 510-17 and 510-20), the Solid Waste Management Act (35 P.S. §§6018.101 - 6018.1003), (SWMA) and the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P.S. §§4000.101 - 4000.1904) (Act 101), the Department of Environmental Protection (DEP) hereby approves the Notice of Intent (NOI) submitted for coverage by:

INSERT APPLICANT NAME AND ADDRESS BELOW

INSERT FACILITY NAME AND ADDRESS BELOW

_____	_____
_____	_____
_____	_____
_____	_____

to beneficially use biosolids that will be land applied in the Commonwealth of Pennsylvania. The above-referenced facility is eligible to obtain coverage for this beneficial use as: (1) a person that prepares biosolids that will be land applied; (2) a person who applies biosolids to the land; or (3) both.

Approval of coverage for the land application of biosolids generated at this facility is subject to DEP's enclosed General Permit (PAG-08) which incorporates several standards including, but not limited to, general requirements, pollutant limitations, management practices, operational standards, pathogen and vector attraction reduction requirements, and other terms and conditions for biosolids prepared at the facility and that will be land applied in the Commonwealth.

All recordkeeping, monitoring and reporting requirements specified in this General Permit and DEP's approval for coverage under this General Permit shall apply to all beneficial uses of biosolids generated at the facility.

APPROVAL FOR COVERAGE UNDER THE GENERAL PERMIT IS AUTHORIZED FOR THE TERM SPECIFIED IN THE DATES SHOWN BELOW. IF THE GENERAL PERMIT IS RENEWED, REISSUED OR MODIFIED, THE FACILITY OR ACTIVITY COVERED BY THE APPROVAL FOR COVERAGE MUST COMPLY WITH THE FINAL RENEWED, REISSUED OR MODIFIED GENERAL PERMIT.

Coverage Approval Date: _____

BY: _____

Coverage Expiration Date: _____

TITLE: Clean Water Program Manager
Regional Office

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

**GENERAL PERMIT
FOR
BENEFICIAL USE OF BIOSOLIDS BY LAND APPLICATION**

PERMIT NO: PAG-08

In accordance with the provisions of the Federal Clean Water Act (33 U.S.C.A §§1251-1387), the Clean Streams Law (35 P.S. §§691.1 - 691.1001), Sections 1905-A, 1917-A and 1920-A of the Administrative Code of 1929 (71 P.S. §§510-5, 510-17 and 510-20), the Solid Waste Management Act (35 P.S. §§6018.101 - 6018.1003), and the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P.S. §§4000.101 - 4000.1904), DEP issues this General Permit for use by eligible persons for the beneficial use of biosolids by land application.

Persons eligible to obtain coverage under this General Permit are persons who prepare biosolids that will be land applied. Persons must satisfy the eligibility requirements in Part A. Biosolids Quality of this General Permit.

Eligible persons seeking coverage under this General Permit must submit a timely, complete and technically adequate NOI in accordance with the requirements of this General Permit using DEP's NOI form, and obtain approval from DEP to beneficially use Biosolids by land application.

Approval of coverage for the beneficial use of biosolids by land application is subject to DEP's enclosed General Permit that includes requirements related to pollutant limitations, operational standards, pathogen and vector attraction reduction, recordkeeping, monitoring, and reporting. The approval of coverage authorizes eligible persons to prepare biosolids for the beneficial use by land application and the beneficial use of biosolids by land application.

NOI REQUIREMENTS

Deadlines for NOI

An applicant seeking renewal of coverage under this General Permit shall submit a complete and technically adequate NOI at least 150 days prior to the expiration of coverage. An applicant authorized to land apply biosolids under an individual permit who is seeking coverage under this General Permit may continue to land apply in accordance with the individual permit while DEP reviews the NOI and associated documents for coverage under this General Permit.

Contents of NOIs

Persons seeking approval for renewal of coverage under this General Permit must submit a complete NOI in accordance with the requirements of this General Permit using the NOI form provided by DEP. The NOI form shall be signed in accordance with Section II of Part C (Signatory Requirements) of this General Permit and shall include the information specified on the form, as further explained in the instructions for completing the form. The NOI form and instructions (3850-PM-BCW0337) are available on DEP's website at www.dep.pa.gov/biosolids.

Where to Submit

NOIs or modifications to NOIs are to be submitted to the appropriate regional office of DEP having jurisdiction over the wastewater treatment facility or processing facility that prepares the biosolids. NOIs for facilities located outside the Commonwealth are to be submitted to DEP's Bureau of Clean Water in Harrisburg. The NOI form and a list of DEP names, addresses and telephone numbers are included with the instructions for completing the NOI form.

USES NOT COVERED UNDER THIS GENERAL PERMIT

The following beneficial uses of biosolids are not covered by this General Permit, and DEP may deny coverage under this General Permit when one or more of the following conditions exist:

1. Land application of biosolids for beneficial use in watersheds classified as "Exceptional Value (EV)" in Title 25 Pa. Code Chapter 93;

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2. Land application of biosolids that is not, or will not be, in full compliance with the requirements, terms or conditions of this General Permit;
3. Land application of biosolids that were prepared by a person that has failed and continues to fail to comply, or has shown a lack of ability or intention to comply, with a regulation, permit, schedule of compliance or order issued by DEP;
4. Land application of biosolids for which DEP determines an individual permit is required to ensure compliance with the Clean Water Act, the Clean Streams Law, or the Solid Waste Management Act, and rules and regulations promulgated thereunder;
5. Land application of biosolids that would adversely affect a listed endangered or threatened species, or its critical habitat;
6. Land application of materials other than biosolids. Land application of biosolids that are mixed with other materials, may require another type of permit. This includes hauled-in wastes, unless the hauled-in wastes are first processed through a sewage treatment plant, prior to the biosolids treatment process.
7. This General Permit does not constitute approval or authorization to construct a facility or modify existing facilities to meet the terms and conditions of this General Permit. The permittee shall comply with all other permitting requirements as necessary.

Denial of Coverage

DEP may deny approval of coverage under this General Permit and require submittal of an application for an individual permit based on a review of the NOI or other information submitted or otherwise available to DEP.

1. DEP may require the applicant to apply for and obtain an individual permit for beneficial use of biosolids by land application.
 - a. Any interested person may petition DEP to take action under this paragraph.
 - b. DEP will require the applicant to apply for an individual permit only after the permittee has been notified in writing that such permit application is required. This notice shall include the following:
 - i. a brief statement of the reasons for this decision;
 - ii. an individual permit application form; and
 - iii. a statement setting a deadline for the person to file the application.
 - c. The applicant may request to be excluded from the approval for coverage under this General Permit by applying for an Individual Permit. The applicant shall submit an Individual Permit application to DEP on an approved form available through DEP's website at www.dep.pa.gov/biosolids. Additional information related to this form can be found in the DEP's instruction sheet, *Instructions for Completing and Submitting An Individual Generator Permit for the Beneficial Use of Biosolids by Land Application, 3800-PM-WSFR0030*.
2. When an Individual Permit is issued to a person covered by this General Permit, the coverage under this General Permit is automatically revoked on the effective date of the Individual Permit.
3. When an Individual Permit is denied to a person covered by this General Permit, the coverage under this General Permit continues, provided that all conditions of the General Permit are satisfied.
4. If DEP determines that a permittee no longer meets the requirements of this General Permit, or is otherwise prohibited from coverage under this General Permit, notice of the determination shall be given, and approval of coverage under this General Permit is automatically terminated on the date of such determination.
5. If the permittee determines that they no longer meet the requirements of this General Permit, or are otherwise prohibited from coverage under this General Permit, notice of the determination shall be given to DEP, and

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approval of coverage under this General Permit is automatically terminated on the date of determination, unless otherwise specified by DEP.

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6. Persons shall not be issued coverage under this General Permit for beneficial use of biosolids by land application when the biosolids are generated by a facility that receives waste directly from oil and gas industries.

Issuance, Reissuance, or Modifications

1. Unless extended by DEP, this General Permit will expire 10 years from the date of its issuance.
2. DEP will publish a notice in the Pennsylvania Bulletin of its intent to renew, reissue or amend this General Permit, and after a comment period of 60 days, notice of the final, renewed, reissued or modified General Permit will be published in the Pennsylvania Bulletin.
3. The permittee shall be responsible for complying with the final renewed, reissued or amended General Permit.
4. If the permittee cannot meet the conditions of the renewed, reissued or modified General Permit, the permittee must apply for an individual permit.
5. DEP may modify, terminate or revoke and reissue this General Permit during its term.
6. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated non-compliance, does not stay any permit condition.
7. This General Permit may be terminated, amended, or revoked and reissued by DEP prior to expiration of this General Permit when necessary to protect public health and the environment from any adverse effect of a pollutant in the sewage sludge.

The Authority Granted by this General Permit is Subject to the Following Conditions:

1. If there is a conflict between the approval of the application for coverage, its supporting documents and/or amendments, and the terms and conditions of this General Permit, the terms and conditions of this General Permit shall apply.
2. Failure to comply with the terms and conditions of this General Permit may result in any of the following:
 - a. enforcement action;
 - b. termination of permit coverage; or
 - c. denial of a renewal application.
3. If DEP has validated that malodors from a particular biosolids source have caused a persistent public nuisance, DEP may require the permittee to develop and implement a Biosolids Quality Enhancement Plan (BQEP) or to revise their existing BQEP, focusing on odor mitigation, to retain or obtain coverage under this General Permit.
 - a. DEP may require, as part of the BQEP, that the permittee adopt practices that include soil incorporation, storage restrictions, and more stringent vector attraction reduction practices.
 - b. Soil incorporation shall not be required if it violates the soil conservation plan or erosion and sedimentation control plan at the site of land application, if application involves top-dressing on a hay field, or if it would otherwise increase the risk of the biosolids migrating off the site.
 - c. DEP may terminate coverage under this General Permit if the permittee is unable to mitigate its documented and persistent nuisance odor situations.
4. No condition of this General Permit shall release the permittee from any responsibility or requirement under any other federal or state statute or regulation.
5. No condition of this General Permit releases the permittee from any responsibility or requirement under any local regulation or ordinance, provided that the local regulation or ordinance is not inconsistent with or more stringent than any provision of the Clean Streams Law, SWMA, Administrative Code, Act 101, Title 25 Pa. Code Chapter 271 or any other applicable statute or regulation.

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6. Biosolids beneficially used in accordance with this General Permit will not be regulated as a waste under Title Pa. Code 271.1 (relating to Definitions). However, this does not relieve the permittee from complying with all applicable requirements under Title 25 Pa. Code Chapter 271, Subchapter J and the provisions of this General Permit.

This General Permit (PAG-08) for Beneficial Use of Biosolids is issued upon publication in the *Pennsylvania Bulletin* and shall expire at midnight on 10 years from effective date, unless extended on or before the expiration date by DEP.

Date Issued:
Upon Publication in Pennsylvania Bulletin

BY: _____
TITLE:

Name
Director
Bureau of Clean Water

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PART A
BIOSOLIDS QUALITY

I. DEFINITIONS

"Adjacent Landowner" – Includes all landowners whose deeds touch the deed for the parcel of land on which the biosolids will be applied.

"Agricultural Land" – Land on which a food crop, a feed crop, a fiber crop, a silvicultural crop, or a horticultural crop is grown. This includes range land and land used as pasture. (25 Pa Code § 271.907)

"Agronomic Rate" – The annual whole sludge application rate (dry weight basis) designed:

- (1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, silvicultural crop, cover crop, horticultural crop, or vegetation grown on the land; and
- (2) To minimize the amount of nitrogen in the biosolids that passes below the root zone of the crop or vegetation grown on the land to the groundwater. (25 Pa Code § 271.907)

"Beneficial use" - Use or reuse of residual waste or residual material derived from residual waste for commercial, industrial or government purposes, where the use does not harm or threaten public health, safety, welfare or the environment, or the use or reuse of processed municipal waste for any purpose, where the use does not harm or threaten public health, safety, welfare or the environment. (25 Pa Code § 271.1)

"Biosolids" – Sewage sludge as defined by Title 25 Pa. Code § 271.1 that meets, at a minimum, the pollutant quality standards listed in Title 25 Pa. Code § 271.914(b)(1), one of the Class B pathogen reduction alternatives listed in § 271.932(b), and one of the vector attraction reduction options listed in § 271.933(b)(1)–(10).

"Biosolids Quality Enhancement Plan (BQEP)" – A plan for the characterization of biosolids and for the identification and evaluation of options to improve the physical, chemical or biological quality of the biosolids.

"Cover crop" – A small grain crop, such as oats, wheat or barley, not grown for harvest. (25 Pa Code § 271.907)

"Exceptional Value Watershed" – Surface waters of high quality which satisfy 25 Pa Code § 93.4b(b) (relating to antidegradation).

"Feed crops" – Crops produced primarily for consumption by animals. (25 Pa Code § 271.907)

"Fiber crops" – Field crops, such as flax and cotton, characterized by having a large concentration of cellulose, which are traditionally used to make paper, cloth, or rope.

"Food crops" – Crops consumed by humans. The term includes, but is not limited to, fruits, vegetables and tobacco. (25 Pa Code § 271.907)

"Food Processing Waste" – Residual materials in liquid and solid form generated in the slaughtering of poultry and livestock, or in processing and converting fish, seafood, milk, meat and eggs to food products. The term includes residual materials generated in the processing, converting, or manufacturing of fruits, vegetables, crops and other commodities into marketable food items. The term also includes vegetative residuals from food processing activities that are usually recognizable as part of a plant or vegetable, including cabbage leaves, bean snips, onion skins, apple pomace and grape pomace.

"Forest" – A tract of land thick with trees and underbrush. (25 Pa Code § 271.907)

"Frozen Ground" – Ground frozen to a depth of at least two inches for a period of 72 consecutive hours. (25 Pa Code § 271.907)

"Land Application" – The spraying or spreading of biosolids onto the land surface for beneficial use; the injection of biosolids below the land surface for beneficial use; or the incorporation of biosolids into the soil for beneficial use so that the biosolids can either condition the soil or fertilize crops for vegetation grown in the soil.

"Municipality" – A city, town, borough, county, township, or an authority created by any of the foregoing under state law, including an intermunicipal agency of two or more of the foregoing entities. (25 Pa Code § 271.907)

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"Pasture" – Land on which animals feed directly on feed crops such as legumes, grasses, grain stubble or stover. (25 Pa Code § 271.907)

"Pathogen Reduction" – Decreasing the presence of pathogens through biosolids treatment.

"Permit" – A permit issued by DEP to operate a municipal waste disposal or processing facility, or to beneficially use municipal waste. The term includes a general permit, permit modification, permit by rule, permit reissuance and permit renewal. (25 Pa Code § 271.1)

"Person" – An individual, corporation, partnership, association, municipality, political subdivision, or an instrumentality of state, federal, or local government, or an agent or employee thereof, or any other legal entity. (25 Pa Code § 271.907)

"Person who operates under this general permit" – Includes the permittee or other agents for the permittee as applicable and the land applier.

"pH" – The logarithm of the reciprocal of the hydrogen ion concentration at 25 degrees Celsius.

"Pollutant" – An organic substance, an inorganic substance, a combination of organic substances, a pathogenic organism, or any other substance identified by DEP that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism, either directly from the environment or indirectly by ingestion through the food chain, could, on the basis of information available to DEP, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction), or physical deformations in either organisms or offspring of the organisms. (25 Pa Code § 271.907)

"Pollutant Limit" – A numerical value that describes the amount of a pollutant allowed per unit amount of biosolids (e.g., milligrams per kilogram of total solids); the amount of a pollutant that can be applied to a unit area of land (e.g., pounds per acre or kilograms per hectare); or the volume of a material that can be applied to a unit area of land (e.g., gallons per acre or liters per hectare). (25 Pa Code § 271.907)

"Public Contact Site" – Land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses. (25 Pa Code § 271.907)

"Public Nuisance" – a nuisance which affects numerous members of the public or the public at large, as distinguished from a nuisance which only does harm to a neighbor or a few private individuals.

"Reclamation Site" – Drastically disturbed land that is reclaimed using biosolids. This includes, but is not limited to, active and abandoned coal and non-coal surface mines and construction sites. (25 Pa Code § 271.907)

"Representative Sample" – A sample that, based on the specific biosolids operation and to the best of the generator's knowledge, adequately characterizes the quality and/or attributes of the biosolids produced at the permitted facility.

"Sewage Sludge" – Liquid or solid sludges and other residues from a municipal sewage collection and treatment system; and liquid or solid sludges and other residues from septic and holding tank pumpings from commercial, institutional or residential establishments. The term includes materials derived from sewage sludge. The term does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator, grit and screenings generated during preliminary treatment of sewage sludge at a municipal sewage collection and treatment system, or grit, screenings and nonorganic objects from septic and holding tank pumpings. (25 Pa Code § 271.1)

"Specific Oxygen Uptake Rate (SOUR)" – The amount of oxygen utilized in one hour by one gram of the volatile suspended solids in the activated sludge.

"Speculative Accumulation" – Accumulation of sewage sludge at an application site in excess of the amount that can be applied for the upcoming growing season or year.

"Snow Cover" – Snow cover is defined as snow which covers approximately 95% of the area to be used for land application of residential septage.

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"Storage" – The containment of any waste on a temporary basis in such a manner as not to constitute disposal of such waste. It shall be presumed that the containment of waste in excess of one year constitutes disposal. This presumption can be overcome by clear and convincing evidence to the contrary. (25 Pa Code § 271.1)

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"Treat or Treatment of Biosolids" – The preparation of biosolids for land application. This includes, but is not limited to, thickening, stabilization, and dewatering of biosolids. This does not include storage of biosolids.

"Vector Attraction" – The characteristic of biosolids that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

"Vector Attraction Reduction" – Decreasing the characteristic of the biosolids that attracts vectors.

Waste—A material whose original purpose has been completed and which is directed to a disposal, processing or beneficial use facility or is otherwise disposed of, processed or beneficially used. The term does not include source separated recyclable materials, material approved by the Department for beneficial use under a beneficial use order issued by the Department prior to May 27, 1997, or material which is beneficially used in accordance with a general permit issued under Subchapter I or Subchapter J (relating to beneficial use; and beneficial use of sewage sludge by land application) if a term or condition of the general permit excludes the material from being regulated as a waste. (25 Pa Code § 271.1)

"Wetlands" – Those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions including swamps, marshes, bogs and similar areas. (25 Pa Code § 105.1)

II. BIOSOLIDS QUALITY

The permittee shall comply with the following requirements, when preparing biosolids, beneficially using the biosolids by land application, or both.

A. The biosolids cannot exceed the ceiling concentration for any pollutant as specified in 25 Pa. Code § 271.914(b)(1) as amended and updated, (Table 1, Ceiling Concentrations) at any time.

TABLE 1—CEILING CONCENTRATIONS

<i>Pollutant</i>	<i>Ceiling Concentration (Milligrams per Kilogram)¹</i>
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
PCBs	8.6
Selenium	100
Zinc	7,500

¹ Dry weight basis

B. The biosolids must meet:

1. one of the Class A pathogen reduction requirements as specified in 25 Pa. Code § 271.932(a) (See Appendix A), as amended and updated; OR
2. one of the Class B pathogen reduction alternatives as specified in 25 Pa. Code § 271.932(b), as amended and updated and related site restrictions in 25 Pa. Code §271.932(b)(5), as amended and updated (See Appendix B).

C. The biosolids must meet one of the vector attraction reduction (VAR) requirements as specified in 25 Pa. Code § 271.933(b)(1)-(8), as amended and updated. (See Appendix C).

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- D. Concentrations of perfluroctanoic acid (PFOA) and perfluroctane sulfonate (PFOS) in biosolids must be monitored and reported to DEP.

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1. The frequency of monitoring shall correspond with the sampling frequency specified in 25 Pa. Code § 271.917, as amended and updated.
 2. Monitoring results shall be provided with the submission of the Recordkeeping and Reporting Form (see Part C. below) or at the request of DEP.
 3. Monitoring results must be obtained by a properly accredited lab using an approved analytical method as described in Part B, Section III below.
- E. A *Biosolids Quality Enhancement Plan* (BQEP) must be developed in accordance with 25 Pa. Code § 271.921, as amended and updated.
1. DEP's BQEP publication, available on DEP's website, should be used as a guide in the development of the BQEP.
 2. The BQEP must evaluate options for improving product quality.
 3. The BQEP must be maintained on the premises where the biosolids are prepared for inspection by a representative of DEP, or submitted to DEP upon request.
 4. The plan shall be available no later than one year after receiving initial coverage under the general permit.
 5. The permittee must review the BQEP every five years or as requested by DEP and update it as necessary to address significant changes.
- F. DEP approval is required for changes made to the biosolids treatment process that will impact the VAR option and/or the pathogen reduction alternative originally approved under the permittee's general permit coverage approval.
1. The permittee must submit supporting documentation for the new process, VAR option and/or pathogen alternative to the appropriate DEP office.
 2. DEP staff may approve modifications covered under the General Permit, in writing, to the permittee.
- G. Mixtures of biosolids with other wastes including food processing waste, animal manures, agricultural processing wastewater or residual materials such as cement kiln dust is prohibited.

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**PART B
MONITORING**

I. REPRESENTATIVE SAMPLING

- A. Any samples and measurements taken to monitor biosolids quality and process controls must be representative of the monitored activity.
- B. Any samples and measurements taken to monitor biosolids quality and process controls must be in accordance with the methods listed in 25 Pa. Code § 271.906 (relating to sampling and analysis), as amended and updated, § 271.915(h) (relating to management practices), as amended and updated and the facility's Sampling Plan submitted with the NOI. See Appendix D.
- C. The most current version of DEP's Biosolids Sampling Manual should be used as a guide.

II. MONITORING FREQUENCY

Monitoring for the pollutants, pathogen density, and vector attraction reduction requirements in 25 Pa. Code § 271.933(b)(1)-(8) , as amended and updated shall, at a minimum, be at the following frequency:

Amount of biosolids ¹ dry tons (dry metric tons) per 365-day period	Frequency ²
Greater than zero but less than 319 (290)	Once per year
Equal to or greater than 319 (290) but less than 1,650 (1,500)	Once per quarter (four times per year)
Equal to or greater than 1,650 (1,500) but less than 16,500 (15,000)	Once every 60 days (six times per year)
Equal to or greater than 16,500 (15,000)	Once per month (12 times per year)

¹Either the amount of biosolids land applied or the amount of biosolids generated to be land applied for beneficial use or the amount of biosolids received by a person who prepares biosolids for land application.

²Frequency is based on a 365-day period.

III. TEST PROCEDURES

- A. Methods in the materials listed in 25 Pa. Code § 271.906, as amended and updated, as shown in Appendix D, or in any later amendments published in the *Federal Register* are incorporated by reference and shall be used to analyze samples of biosolids.
 - 1. No other analytical methods may be used without prior written approval from DEP.
 - 2. Requests for approval must be submitted in writing to DEP.
- B. When pH adjustment is used for either vector attraction reduction or pathogen reduction, the pH readings must be temperature corrected to 25 degrees Celsius.
- C. Analysis shall be done by a PA-accredited laboratory.

IV. RECORDING OF RESULTS

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- 1. The place, date, and time of sampling or measurements.
- 2. The person(s) who performed the sampling or measurements.
- 3. The date(s) the analyses were performed.
- 4. The person(s) who performed the analyses.
- 5. The analytical techniques or methods used; and the associated detection level.

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6. The results of such analyses.

V. QUALITY ASSURANCE CONTROL

In an effort to assure accurate self-monitoring analyses results:

1. The permittee shall participate in, or shall use a laboratory that agrees to participate in, periodic scheduled quality assurance inspections conducted by DEP or United States Environmental Protection Agency (EPA). (25 Pa. Code §§ 92a.3(c), 92a.41(a), 92a.61(i) and 40 CFR §§ 122.41(e), 122.41(i)(3))
2. The permittee shall develop and implement or shall use a laboratory that has developed and implemented a program to assure the quality and accurateness of the analyses performed to satisfy the requirements of this permit, in accordance with 40 CFR Part 136. (25 Pa. Code §§ 92a.3(c), 92a.41(a), 92a.61(i) and 40 CFR § 122.41(j)(4))

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PART C
RECORDKEEPING AND REPORTING

I. RECORDKEEPING AND REPORTING

A. The permittee must develop the information specified in 25 Pa. Code § 271.918(a)(2) as follows:

1. The concentration of polychlorinated biphenyls (PCBs) and each pollutant listed in Table 1 of 25 Pa. Code § 271.914 (relating to pollutant limits) , as amended and updated in the biosolids.
2. The following certification statement:
"I certify, under penalty of law, that the pathogen requirements in [insert either § 271.932(a) or § 271.932(b)] and the vector attraction reduction requirement in [insert one of the vector attraction reduction requirements in § 271.933(b)(1) through (b)(8) if one of those requirements is met] have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."
3. A description of how the pathogen requirements in 25 Pa. Code § 271.932(a) or (b) (relating to pathogens) , as amended and updated are being met.
4. A description of how the vector attraction reduction requirements in 25 Pa. Code § 271.933(b)(1)-(8) , as amended and updated (relating to vector attraction reduction) are being met.
5. This information in items 1-4 shall be retained by the permittee for five years and made available to DEP upon request.

B. The person who applies the biosolids shall develop the following information:

1. The location, by either street address or latitude and longitude, of each field on which biosolids is applied.
2. The number of acres (or hectares) in each field on which biosolids are applied.
3. The date and time biosolids are applied to each field.
4. The cumulative amount of each pollutant (in, pounds or kilograms) listed in Table 2 of 25 Pa. Code § 271.914, as amended and updated in the biosolids applied to each field, including the amount in 25 Pa. Code § 271.913(j)(2)(ii) (relating to general requirements) , as amended and updated.
5. The amount of biosolids (in, dry tons or metric tons) applied to each field.
6. The following certification statement:
"I certify, under penalty of law, that the requirements to obtain information in § 271.913(j)(2) have been met for each site on which sewage sludge is applied. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the requirements to obtain information have been met. I am aware that there are significant penalties for false certification including fine and imprisonment."
7. A description of how the requirements to obtain information in 25 Pa. Code § 271.913(j)(2) (referring to cumulative pollutant loading rates) , as amended and updated are met.
8. The following certification statement:
"I certify, under penalty of law, that the management practices in § 271.915 have been met for each site on which sewage sludge is applied. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the management practices have been met. I am aware that there are significant penalties for false certification including fine and imprisonment."
9. A description of how the management practices in 25 Pa. Code § 271.915 (relating to management practices) , as amended and updated are met for each site on which biosolids is applied.
10. The following certification statement:

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"I certify, under penalty of law, that the site restrictions in § 271.932(b)(5) have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the site restrictions have been met. I am aware that there are significant penalties for false certification including fine and imprisonment."

11. A description of how the site restrictions in 25 Pa. Code § 271.932(b)(5) , as amended and updated are met for each site on which Class B biosolids is applied.

12. The following certification statement when the vector attraction reduction requirement in either 25 Pa. Code § 271.933(b)(9) or (10) is met:

"I certify, under penalty of law, that the vector attraction reduction requirement in **[insert either § 271.933(b)(9) or § 271.933(b)(10)]** has been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the vector attraction reduction requirement has been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

13. If the vector attraction reduction requirements in 25 Pa. Code § 271.933(b)(9) or (10) , as amended and updated are met, a description of how the requirements are met.

14. The information contained in items 1-7 shall be retained indefinitely and made available to DEP upon request.

15. The information contained in items 8-13 shall be retained for five years and made available to DEP upon request.

C. A signed copy of the *Recordkeeping and Reporting Form* (DEP ID: 3850-FM-BCW0340), available on eLibrary, and other supporting data must be submitted to DEP annually on or before March 1 for activities conducted during the previous calendar year.

D. Notification of the date, time, and location at which land application will occur, shall be given to DEP, when requested, for the purpose of inspection or investigation to ascertain compliance or noncompliance with this General Permit and with applicable statutes, rules and regulations.

E. The permittee must verbally notify DEP immediately, but no longer than 24 hours after becoming aware, of non-compliance of any biosolids quality standard relating to pathogen reduction, vector attraction reduction, or pollutant concentration.

1. The permittee must provide a written report to DEP within five days of the verbal report.

2. The written report must include:

- a. the date of non-compliance;
- b. the nature of the incident;
- c. the actions taken to mitigate the non-compliance; and,
- d. the date compliance occurred.

II. SIGNATORY REQUIREMENTS

All NOIs, reports, certifications, records, and other information submitted to DEP, application site landowner, adjacent landowner, or County Conservation District, or that this General Permit requires be maintained by the permittee shall be signed as follows:

A. For a municipality, or a State, Federal, or other public agency:

1. By either a principal executive officer, ranking elected official, or other authorized employee.

2. For purposes of this General Permit, a principal executive officer of a Federal agency includes the following:

- a. the chief executive officer of the agency, or

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- b. a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).
- B. In the case of corporations, by a principal executive officer of at least the level of vice president, or an authorized representative.
- C. In the case of a partnership, by a general partner.
- D. In the case of a sole proprietorship, by the proprietor.
- E. A person is a duly authorized representative only if:
 - 1. The authorization is made, in writing, by a person described above and the authorization is submitted to DEP with the records.
 - 2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or process, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for the environmental matters for the facility. (A duly authorized representative may be either a named individual or any individual occupying a named position.)
- F. Changes in Signatory Authorization.

If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Section II (Signatory Requirements) must be submitted to DEP prior to or together with any records, information, or applications to be signed by an authorized representative.

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PART D
STANDARD CONDITIONS

I. NOTIFICATION REQUIREMENTS

A. A person who operates under this General Permit shall comply with the following notification requirements:

1. Obtain written consent of the landowner and provide information to the landowner or occupant as prescribed in 25 Pa. Code § 271.913(e), (f) and (m), as amended and updated as follows:
 - a. Obtain written consent of the owner of the land upon which the biosolids will be land applied, on a form prepared by DEP, prior to land applying the biosolids.
 - b. Provide the occupant of the land with a user instruction sheet prepared by the person operating under the permit that describes the acceptable uses and limitations of the biosolids at least seven days prior to land applying biosolids for the first time at a location.
 - c. Provide the legal or equitable owner, or lease holder, of the land on which the biosolids is applied notice and necessary information to comply with Chapter 271, Subchapter J.
2. Provide notification to adjacent landowners in accordance with 25 Pa. Code § 271.913(g), as amended and updated as follows:

A person who prepares biosolids that are land applied at a location for agricultural, forest or land reclamation purposes shall send or otherwise provide written notification to the adjacent landowner, the County Conservation District and DEP at least 30 days prior to the first application of the biosolids at that location. The notification shall:

- a. Include a brief description of the operation, any site restrictions, the name of the person land applying the biosolids and the applicable permit number.
- b. Be sent by personal delivery or first-class mail and, for an adjacent landowner, shall also be given by posting at the property line in a manner sufficient to notify the adjacent landowner of the items in subparagraph (a).
- c. For the County Conservation District and DEP, include the location of the fields on a United States Geological Survey map and on a Natural Resources Conservation Service Soils Map.
- d. For DEP, be sent to DEP's regional office that has jurisdiction for the location where the biosolids will be applied.

DEP may modify these requirements for purposes of land reclamation where the activity is part of another permit or approval issued by the Department and public notice has been provided as part of the permit or approval. DEP recommends that a copy of the most current version of DEP's *Understanding Biosolids Land Application in Your Community* fact sheet, available on DEP's website, be provided with the notification letter.

3. Provide Notification of First Land Application (30-Day Notice) to the County Conservation District and DEP in accordance with 25 Pa. Code § 271.913(g), as amended and updated on forms provided by DEP.
4. Provide notification to the municipality(s) where the application site is located.
5. Obtain or provide information as required by §271.913(i), (k) and (l), as amended and updated as follows:
 - a. The person who prepares biosolids that are applied to agricultural land, forest, a public contact site or a reclamation site shall provide the person who applies the biosolids written notification of the concentration of total nitrogen (as nitrogen on a dry weight basis) in the biosolids.
 - b. When a person who prepares biosolids provides the biosolids to a person who applies the biosolids to the land, the person who prepares the biosolids shall provide the person who applies the biosolids notice and necessary information to comply with Chapter 271 Subchapter J.
 - c. When a person who prepares biosolids provides the biosolids to another person who prepares the biosolids, the person who provides the biosolids shall provide the person who receives the biosolids notice and necessary information to comply with Chapter 271 Subchapter J.

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- B. Upon receipt of the Notification of First Land Application, DEP will be responsible for the following activities:
1. The appropriate regional DEP office will review the site and make a determination on whether the site meets the regulatory requirements for land application of biosolids. A land application site will only be deemed suitable if it meets applicable site suitability requirements.
 2. Notification of site suitability will be sent to the municipality in which the site is located and will be published in the *Pennsylvania Bulletin*.
 3. Land application activities may commence at the end of the 30-day timeframe even if DEP has not made a determination.
- C. As required by 25 Pa. Code § 271.913(g)(2) , as amended and updated, when using biosolids on active mine sites for mine reclamation purposes, the notification procedures for the reclamation activities must conform to the notification requirements set forth by the DEP's technical guidance document 563-2000-602 entitled "*Beneficial Use of Sewage Sludge at Active Mine Sites*."

DEP may modify these requirements for purposes of land reclamation where the activity is part of another permit or approval issued by the Department and public notice has been provided as part of the permit or approval.

II. LAND APPLICATION REQUIREMENTS

Any person who operates under this General Permit shall comply with the following land application requirements:

- A. Comply with cumulative pollutant loading rate requirements as specified in 25 Pa. Code § 271.913(b) , as amended and updated and related requirements in 25 Pa. Code § 271.913(j) and § 271.919(2) , as amended and updated.
1. A person may not apply biosolids subject to the cumulative pollutant loading rates in 25 Pa. Code § 271.914(b)(2) (Table 2, Cumulative Pollutant Loading Rates) to agricultural land, forest, a public contact site or a reclamation site if any of the cumulative pollutant loading rates in 25 Pa. Code § 271.914(b)(2) , as amended and updated, as shown in the table below, have been reached.

TABLE 2—CUMULATIVE POLLUTANT LOADING RATES

Pollutant	Cumulative Pollutant Loading Rate	
	(Kilograms per Hectare)	(Pounds per Acre)
Arsenic	41	36
Cadmium	39	34
Copper	1,500	1,320
Lead	300	264
Mercury	17	15
Nickel	420	370
Selenium	100	88
Zinc	2,800	2,464

2. The person who applies biosolids to the land shall obtain information needed to comply with the requirements in this subchapter.
3. Before biosolids subject to the cumulative pollutant loading rates in 25 Pa. Code § 271.914(b)(2) , as amended and updated are applied to the land, the person who proposes to apply the biosolids shall contact DEP's regional office that has jurisdiction for the site where the biosolids will be applied to determine, based on existing and readily available information, whether biosolids subject to the cumulative pollutant loading rates in §271.914(b)(2) have been applied to the site. The information will result in the following:
 - a. If sewage sludge subject to the cumulative pollutant loading rates in 25 Pa. Code § 271.914(b)(2) , as amended and updated has not been applied to the site, the cumulative amount for each pollutant listed in Table 2 of 25 Pa. Code § 271.914 may be applied to the site in accordance with 25 Pa. Code § 271.914(a)(2) , as amended and updated.

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- b. If sewage sludge subject to the cumulative pollutant loading rates in § 271.914(b)(2) has been applied to the site, and the cumulative amount of each pollutant applied to the site in the sewage sludge is

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known, the cumulative amount of each pollutant applied to the site shall be used to determine the additional amount of each pollutant that can be applied to the site under 25 Pa. Code § 271.914(a)(2) , as amended and updated.

- c. If sewage sludge subject to the cumulative pollutant loading rates in 25 Pa. Code § 271.914(b)(2) , as amended and updated has been applied to the site, and the cumulative amount of each pollutant applied to the site in the sewage sludge is not known, an additional amount of each pollutant may not be applied to the site in accordance with § 271.914(a)(2) , as amended and updated.

The determination of past cumulative pollutant loading rates should be based on existing and readily available information for biosolids excluding exceptional quality and residential septage, applied to the site since September 7, 1980.

- B. Conduct background soil chemical analyses as specified in 25 Pa. Code §271.913(h) , as amended and updated as follows:

Prior to the first time a site is used for land application, the first person who prepares shall obtain, at a minimum, one representative soil chemical analysis for each field on which biosolids is land applied, for pH and those constituents listed in the tables in 25 Pa. Code § 271.914(b), shown below. If the background soil concentrations are equal to or exceed the values listed below for any pollutant, that field cannot receive additional applications of biosolids unless the biosolids meet the monthly average pollutant concentrations specified in Table 3 of 25 Pa. Code § 271.914(b)(3) , as amended and updated, as shown below.

CONSTITUENTS LISTED IN THE TABLES IN § 271.914(b)

Pollutant	Soil Concentration (mg/kg) [*]	Table 3 Concentrations (mg/kg)
Arsenic	23.5	41
Cadmium	19.7	39
Copper	769	1,500
Lead	161	300
Mercury	8.6	17
Molybdenum		
Nickel	228	420
PCBs		4
Selenium	50.21	100
Zinc	1454	2,800

^{*} Numbers as published in Table 18 Column 6 of EPA's Guide to Biosolids Risk Assessments for the Part 503 Rule, September 1995.

- C. Comply with applicable sections of Title 25 Pa. Code Chapter 285 (relating to storage, collection, and transportation of municipal waste).
- D. Display the permit number on the sides and rear of each land application vehicle, in numbers at least three inches (or 7.6 centimeters) high in a color contrasting to the background.

III. LAND APPLICATION RESTRICTIONS

- A. Biosolids prepared under this General Permit may be land applied only to agricultural land, forests, public contact sites or reclamation sites.
 - 1. Biosolids prepared under this General Permit may not be used for lawns or home gardens.
 - 2. Biosolids prepared under this General Permit may not be sold, given away or otherwise distributed in a bag or other container for application to the land.
 - 3. Dust originating from and/or attributed to biosolids may not be deposited offsite.

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B. A person who operates under this General Permit shall comply with the following:

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1. Biosolids may not be applied to the land if the practice is likely to adversely affect a Federal or Pennsylvania threatened or endangered species, or its designated critical habitat, listed under or pursuant to the Endangered Species Act, 16 U.S.C. §1533, the Fish and Boat Code, 30 Pa. C.S.A. §2305, or the Game and Wildlife Code, 34 Pa. C.S.A. §101 et seq.
2. Biosolids may not be applied to a site that is flooded, frozen, or snow-covered, except as expressly provided in a permit issued under Title 25, Chapters 91, 92a, or 105, as applicable.
3. Biosolids may not be applied to the land at a rate that is greater than the agronomic rate as calculated in 25 Pa. Code § 271.914(c), as amended and updated or the most current version of DEP's *Biosolids Training Manual*, unless a greater rate is approved for land reclamation activities.
 - a. The Penn State Agronomy Guide, documented yields, or other applicable information sources may be used to determine appropriate yields and nutrient needs for the purposes of calculating application rates.
 - b. The source(s) used to calculate rates must be provided with the example calculations provided with the NOI or 30-Day Notice, as appropriate.
4. In accordance with and following guidance provided by DEP, nutrient balance evaluations that include both nitrogen and phosphorus shall be developed and submitted for all biosolids agricultural application areas. The most recent version of the Pennsylvania Phosphorus Index must be used to determine the appropriate biosolids application rate. Biosolids application shall be in accordance with Phosphorus index loading rates, unless that rating allows for agronomic loading rates based on nitrogen. Implementation of the nutrient balance evaluations shall be as follows:
 - a. For any Notification of First Land Application submitted after the effective date of this General Permit, Phosphorus Index results with supporting documentation and applicable loading rates shall be submitted with the 30-day notification required in 25 Pa. Code § 271.913(g), as amended and updated.
 - b. For biosolids application areas where a Notification of First Land Application was submitted prior to the effective date of this General Permit, Phosphorus Index results with supporting documentation and applicable loading rates shall be submitted to DEP and implemented, within two years from the effective date of this permit.
 - c. Nutrient balance evaluations for biosolids application areas shall be updated and submitted to DEP every three years and if any of the following occur:
 - i. Significant changes to farm operations, such as a change in manure management or use of alternative fertilizers.
 - ii. A change in field areas or the available acreage for biosolids application.
 - iii. A change in the source of biosolids proposed for use on the farm.
5. Biosolids may not be applied at a farm if the nutrients available from the manure produced by animals at the farm satisfies the nutrient needs of the farm for realistically expected crop yields, unless a management plan is implemented that allows for uses of the manure other than land application on that farm.
6. Biosolids must be applied to the land in accordance with the setback and slope requirements of 25 Pa. Code § 271.915(c) and (d), as amended and updated as follows:
 - a. Within 100 feet (30.5 meters) or less of a perennial stream or within 33 feet (10 meters) of an intermittent stream.
 - b. Within 100 feet (30.5) of the edge of a sinkhole.
 - c. Within 300 feet (91 meters) from an occupied dwelling unless the current owner there has provide a written waiver consenting to activities closer than 300 feet (or 91 meters). The waiver shall be knowingly made and separate from a lease or deed unless the lease or deed contains an explicit waiver from the current owner. This paragraph does not apply to features that may come into existence after the date upon which adjacent landowner notification is given under Chapter 275 or 25 Pa. Code § 271.913(g) (relating to land application of sewage sludge; and general requirements), as amended

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and updated.

d. In an area without an implemented erosion and sedimentation control plan or a farm conservation plan.

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- e. Within 300 feet (or 91 meters) of a water source unless the current owner has provided a written waiver consenting to the activities closer than 300 feet (or 91 meters). This paragraph does not apply to features that may come into existence after the date upon which adjacent landowner notification is given under Chapter 275 or 25 Pa. Code § 271.913(g), as amended and updated.
- f. Within 100 feet (or 30.5 meters) of an exceptional value wetland, as defined in §105.17 (relating to wetlands).
- g. Within 11 inches (or 28 centimeters) of the seasonal high-water table, nor within 3.3 feet (or 1 meter) of the regional groundwater table. For purposes of this section, the depths to seasonal high-water table and to regional groundwater table shall be based on the most recent soil mapping as published by the United States Department of Agriculture (USDA) Natural Resources Conservation Service, or more detailed mapping data as mapped by an expert in soil science using standard and acceptable mapping procedures as developed by the USDA Natural Resources Conservation Service.
- h. A person may not apply biosolids when the sewage sludge is to be land applied for:
 - i. Agricultural utilization on slopes that exceed 25%, unless otherwise approved in writing by DEP.
 - ii. Land reclamation on slopes that exceed 35%, unless otherwise approved in writing by DEP.
- 7. The soil pH must be as specified in 25 Pa. Code § 271.915(e), as amended and updated as follows:

A person may not apply biosolids unless the soil pH is 6.0 or greater prior to land application unless DEP allows the increase of pH by application of biosolids or other material in which case the soil pH shall be 6.0 or greater within six months following the application of biosolids, or unless otherwise approved in writing by DEP.
- 8. Soil fertility samples (including pH and phosphorus) collected shall be collected every three years.
 - a. The samples shall be collected in a manner acceptable to DEP. The method recommended by the Penn State Extension Service is an acceptable method.
 - b. The results shall be submitted with the annual report.
- C. A person who operates under this General Permit must comply with the following requirements in addition to the applicable restrictions in Section III.B. when land applying biosolids on a land reclamation site.
 - 1. The reclamation activity must be permitted or otherwise approved by DEP.
 - 2. Biosolids may not be applied on slopes that exceed 35%, unless otherwise approved in writing by DEP.
 - 3. Biosolids may not be applied at a rate that is greater than the agronomic rate, unless a greater rate is approved in writing by DEP for reclamation activities.
 - 4. Biosolids land applied to a reclamation site shall be incorporated into the soil within 24 hours of the land application.

IV STORAGE REQUIREMENTS

- A. Any person operating under this General Permit must comply with the following requirements when storing biosolids at the land application site for greater than seven days:
 - 1. Storage areas must be covered and protected from precipitation.
 - 2. Storage sites may not be located within 300 feet of an occupied dwelling, unless written waiver is provided by the current owner,
 - 3. Storage sites may not be located in the areas listed in 25 Pa. Code § 275.202 and § 275.312(3), as amended and updated as referenced in 25 Pa. Code § 285.134(3), as amended and updated.
 - a. Except for areas permitted by DEP prior to April 9, 1988, the land application of biosolids may not be conducted:
 - i. Within 100 feet of an intermittent or perennial stream.
 - ii. Within 300 feet of a water source, unless otherwise approved by DEP, in writing.

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- iii. Within 1,000 feet upgradient of a surface water source unless otherwise approved by DEP, in writing.
 - iv. Within 25 feet of a bedrock outcrop
 - v. Within 50 feet of a property line within which the sludge is applied, unless otherwise approved by DEP, in writing.
 - vi. Within 100 feet of a sinkhole or area draining into a sinkhole.
 - vii. Within 25 feet of the perimeter of an undrained depression.
 - viii. In or within 100 feet of an exceptional value wetland as defined in 25 Pa. Code § 105.17 (relating to wetlands).
 - b. The site has a minimum depth from surface to seasonal high-water table of 20 inches. The operator may establish this minimum depth through the use of a tile drain system, if approved by DEP in writing.
4. Storage may not be located on slopes greater than 3% unless otherwise approved by DEP.
 5. The storage of biosolids must not create conditions that are conducive to the harboring, breeding, or attraction of vectors.
 6. Storage amounts are limited to:
 - a. The amount of material necessary to meet the calculated application rate for the upgrowing season for the permitted site.
 - b. In the case of mine reclamation, storage amounts are limited to the calculated reclamation rate as approved to cover the permitted application area.
 7. Storage area designs must be sent to the appropriate DEP office for written approval prior to installation.
 8. The location of the storage areas must be shown on the land application site map and submitted to the appropriate DEP office prior to installation.
 9. Appropriate best management practices (BMPs) must be implemented to minimize run-on and runoff.
 10. When in use, storage areas must be inspected regularly and after severe precipitation events to ensure run-on and runoff controls are in good working order.
 11. Inspections should be logged documenting:
 - a. the time,
 - b. date,
 - c. inspector,
 - d. conditions of the site,
 - e. and any mitigation measures taken.
 12. When necessary, structures should be utilized to collect runoff or leachate from the storage area.
 13. Any water collected from the storage area should be removed to a treatment facility, sprayed back onto the biosolids piles, or applied on-site to areas included under the 30-Day Notice or other land application permit.
 14. If the storage area requires earth disturbance, such as in the construction of berms, the applicable best management practices (BMPs) as indicated by 25 Pa. Code Chapter 102 should be utilized
 - a. These BMPs can be part of or be an amendment to the existing farm conservation or erosion and sedimentation plan.
 - b. If no plan exists, a plan meeting the 25 Pa. Code Chapter 102 requirements may be required.
 15. Prior to storage, in accordance with 25 Pa. Code § 285.112(e), as amended and updated, biosolids must be dried to a total solids concentration of 20% or greater.
 16. Biosolids must meet one of the vector attraction reduction options listed in 25 Pa. Code § 271.933(b)(1)-

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(8) , as amended and updated prior to storing unless otherwise approved by DEP.

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17. DEP may require additional criteria based on storage length and site conditions.
- B. Staging areas for biosolids must meet the requirements for land application as listed in 25 Pa. Code § 271.915(a), (c), (d), and (e), as amended and updated unless otherwise approved by DEP.

V. TRAINING

Training obligations must be completed as required by 25 Pa. Code § 271.915(j) , as amended and updated as follows:

- A. Persons land applying biosolids are required to complete training courses sponsored by DEP in a timely and satisfactory manner.
- B. Satisfactory completion means attendance at all sessions of training, and attainment of a minimum grade of 70% on tests given as part of the training courses.
- C. In the case of a person who prepares biosolids that will be land applied, and a person who land applies residential septage, at least one person with responsibility for the land application of biosolids shall satisfactorily complete the training in a timely fashion.
- D. DEP may suspend or revoke the individual permit issued under 25 Pa. Code Chapter 275, the individual land application of biosolids permit, or coverage under a land application of biosolids general permit to land apply biosolids, if the person does not satisfactorily complete the training courses within the following time periods:
 1. Two years for a person conducting land application operations as of January 25, 1997.
 2. One year for a person that begins conducting land application operations after January 25, 1997.

VI. RIGHT OF ENTRY FOR INSPECTIONS

A person operating under this General Permit shall allow authorized representatives of the Commonwealth, without advance notice or a search warrant, upon presentation of appropriate credentials, and without delay:

- A. To enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this General Permit.
- B. To have access to and copy, at reasonable times, any records that must be kept under the conditions of this General Permit.
- C. To inspect at reasonable times any facilities (including land application sites), equipment (including monitoring and control equipment), practices or operations regulated or required under this General Permit.
- D. To sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act or the Clean Streams Law, any substances or parameters at any location.

VII. RESPONSIBILITIES

A. Duty to Comply

The permittee must comply with all terms and conditions of this General Permit and all renewals and reissuances thereof. Any permit noncompliance constitutes a violation of the Federal Clean Water Act, the Pennsylvania Clean Streams Law or the Solid Waste Management Act and constitutes grounds for enforcement action, including but not limited to, civil and criminal penalties, termination of coverage, denial of coverage renewal, or denial of an application for an individual permit.

B. Need to Halt or Reduce Activity Not a Defense

The permittee may not use as a defense in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this General Permit.

C. Penalties and Liability.

1. Nothing in this General Permit shall be construed to relieve the permittee from civil or criminal penalties

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for non-compliance pursuant to Sections 602 or 605 of the Clean Streams Law (35 P.S. §§691.602 or 691.605) and the Federal Clean Water Act.

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2. Nothing in this General Permit shall be construed to preclude the institution of any legal action or to relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject to under the Clean Water Act and the Clean Streams Law.

D. Property Rights

The approval of coverage under this General Permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

E. Severability

The provisions of this General Permit are severable, and if any provision of this General Permit, or the application of any provision of this General Permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this General Permit shall not be affected thereby.

F. Duty to Provide Information

1. The permittee shall furnish to DEP any information that DEP may request to determine whether cause exists for modifying, revoking, reissuing, or terminating this General Permit or coverage approved under this General Permit, or to determine compliance with this General Permit.
2. The permittee shall furnish to DEP, upon request, copies of records required to be kept by this General Permit.
3. Where the permittee becomes aware that it failed to submit any relevant facts in an NOI, or has submitted incorrect information in an NOI or in any record or report to DEP, it shall promptly submit such facts or information to DEP. **Submitting incorrect information or making any false statement, representation, or certification may result in the imposition of significant penalties including the possibility of fines and imprisonment.**
4. The permittee must give written notice to DEP of major changes or expansions of the existing wastewater treatment plant or any planned physical alterations or additions to the permitted operation which could in any way affect the established quality of the biosolids covered under this General Permit. If such a change disqualifies the material as biosolids, the land application shall stop immediately.

G. Proper Operation and Maintenance

1. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the terms and conditions of this General Permit.
2. Proper operation and maintenance includes, but is not limited to, adequate laboratory controls such as appropriate quality assurance procedures.
3. The permittee shall properly operate and maintain backup or auxiliary facilities or similar systems installed by the permittee, as necessary to achieve compliance with the terms and conditions of this General Permit.

H. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any biosolids use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

I. Adverse Impacts

The permittee shall take all reasonable steps to minimize or prevent any adverse impact on the environment or human health resulting from noncompliance with this General Permit.

J. Transfer of Ownership or Control

1. No approval of coverage under this General Permit may be transferred unless the transfer is approved, in writing, by DEP.
2. In the event of any pending change in control or ownership of facilities from which the authorized processes emanate, the permittee must submit to DEP an *Application for Transfer of Coverage Under a General Permit or Individual Permit* (3850-PMBCW0479) notifying DEP of such pending change at least 30 days before the proposed transfer date. An application for this action can be found in the Permits and Forms

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section of the DEP biosolids webpage at www.dep.pa.gov/biosolids.

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3. The new owner or controller must submit a new 30-Day Notice to DEP and the County Conservation District prior to land application.
4. After receipt of the documentation described above, DEP shall notify the existing permittee and the new owner or controller of its decision concerning approval of the transfer.

K. Confidentiality of Records

Except for data determined to be confidential under §607 of the Clean Streams Law or 25 Pa. Code Chapter 92a, all records prepared in accordance with the terms of this General Permit shall be available for public inspection at the offices of DEP. Monitoring data shall not be considered confidential.

L. Violations of Permit Conditions

1. DEP may take an enforcement action to restrain violations, to impose criminal or civil penalties, to withhold a permit, or to seek other remedies or relief as authorized by the Clean Streams Law against a permittee that violates any condition or limitation of this General Permit, or any rule, regulation or order issued by DEP pursuant to the Clean Streams Law.
2. In addition, EPA may take an enforcement action to restrain violations, to impose criminal or civil penalties, or to seek other remedies or relief as authorized by the Clean Water Act against a permittee that violates any condition or limitation of this General Permit, or any rule, regulation or order issued by EPA pursuant to the Clean Water Act.

M. Falsifying Information

The permittee or any person who engages in the conduct described below may, upon conviction, be punished by a fine and/or imprisonment pursuant to 18 Pa.C.S. § 4904, or 40 CFR 122.41(j)(5) or (k)(2). (25 Pa. Code §§ 92a.3(c), 92a.41(c))

1. Falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this General Permit, or
2. Knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this General Permit (including monitoring reports or reports of compliance or non-compliance)

VIII. NOTIFICATION OF WITHDRAWAL BY THE PERMITTEE

When coverage under this General Permit is withdrawn, the following information should be submitted to DEP.

A. A notification of withdrawal that includes:

1. Name, mailing address, and location of the facility for which the notification is submitted.
2. The permittee's name, address, telephone number, ownership status and status as federal, state, private, public or other entity.
3. The general permit number for the beneficial use of biosolids by land application identified by the notice of withdrawal.

B. A completed *Recordkeeping and Reporting Form* for the current year's activities.

C. A plan for the removal and proper disposal of any biosolids remaining at the processing, storage, or land application sites.

D. The following certification signed in accordance with Section C.II (Signatory Requirements) of this General Permit:

"I certify under penalty of law that all land application of biosolids from the identified facility that is authorized by PAG-08 (insert permit coverage number) has ceased. I understand that by submitting this notice of withdrawal I am no longer authorized to land apply biosolids under this General Permit and that land application of biosolids without a permit is unlawful under the Clean Streams Law and the Solid Waste Management Act."

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Appendix A
Pathogen Reduction—Class A

25 Pa. Code § 271.932(a), as amended and updated

Alternative 1.

- (i) Either the density of fecal coliform in the sewage sludge shall be less than 1,000 most probable number per gram of total solids (dry weight basis), or the density of salmonella sp. bacteria in the sewage sludge shall be less than three most probable number per four grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3) (relating to special requirements).
- (ii) The temperature of the sewage sludge that is used shall be maintained at a specific value for a period of time.
 - (A) When the percent solids of the sewage sludge is 7% or higher, the temperature of the sewage sludge shall be 122°F (or 50°C) or higher; the time period shall be 20 minutes or longer; and the temperature and time period shall be determined using Equation (2), except when small particles of sewage sludge are heated by either warmed gases or an immiscible liquid.

$$D = \frac{121,700,000}{10^{(T-122)/10}} \quad \text{Equation (2)}$$

Where,

D = Time in days

T = Temperatures in degrees Celsius

- (B) When the percent solids of the sewage sludge is 7% or higher and small particles of sewage sludge are heated by either warmed gases or an immiscible liquid, the temperature of the sewage sludge shall be 122°F (or 50°C) or higher; the time period shall be 15 seconds or longer; and the temperature and time period shall be determined using Equation (2).
- (C) When the percent solids of the sewage sludge is less than 7% and the time period is at least 15 seconds, but less than 30 minutes, the temperature and time period shall be determined using Equation (2).
- (D) When the percent solids of the sewage sludge is less than 7%; the temperature of the sewage sludge is 122°F (or 50°C) or higher; and the time period is 30 minutes or longer, the temperature and time period shall be determined using Equation (3).

$$D = \frac{50,070,000}{10^{(T-122)/10}} \quad \text{Equation (3)}$$

Where,

D = Time in days

T = Temperatures in degrees Celsius

Alternative 2.

- (i) Either the density of fecal coliform in the sewage sludge shall be less than 1,000 most probable number per gram of total solids (dry weight basis), or the density of salmonella sp. bacteria in the sewage sludge shall be less than three most probable number per four grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3).
- (ii) pH adjustment as follows:
 - (A) The pH of the sewage sludge that is used shall be raised to above 12 and shall remain above 12 for 72 hours.
 - (B) The temperature of the sewage sludge shall be above 125°F (or 52°C) for 12 hours or longer during the period that the pH of the sewage sludge is above 12.

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- (C) At the end of the 72-hour period during which the pH of the sewage sludge is above 12, the sewage sludge shall be air dried to achieve a percent solids in the sewage sludge greater than 50%.

Alternative 3.

- (i) Either the density of fecal coliform in the sewage sludge shall be less than 1,000 most probable number per gram of total solids (dry weight basis), or the density of salmonella sp. bacteria in sewage sludge shall be less than three most probable number per four grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3).
- (ii) Virus monitoring requirements are as follows:
 - (A) The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains enteric viruses.
 - (B) When the density of enteric viruses in the sewage sludge prior to pathogen treatment is less than one plaque-forming unit per four grams of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses until the next monitoring episode for the sewage sludge.
 - (C) When the density of enteric viruses in the sewage sludge prior to pathogen treatment is equal to or greater than one plaque-forming unit per four grams of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses when the density of enteric viruses in the sewage sludge after pathogen treatment is less than one plaque-forming unit per four grams of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the enteric virus density requirement are documented.
 - (D) After the enteric virus reduction in clause (C) is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to enteric viruses when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented in clause (C).
- (iii) Helminth monitoring requirements are as follows:
 - (A) The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains viable helminth ova.
 - (B) When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is less than one per four grams of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova until the next monitoring episode for the sewage sludge.
 - (C) When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is equal to or greater than one per 4 grams of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova when the density of viable helminth ova in the sewage sludge after pathogen treatment is less than one per four grams of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the viable helminth ova density requirement are documented.
 - (D) After the viable helminth ova reduction in clause (C) is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to viable helminth ova when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented in clause (C).

Alternative 4.

- (i) Either the density of fecal coliform in the sewage sludge shall be less than 1,000 most probable number per gram of total solids (dry weight basis), or the density of salmonella sp. bacteria in the sewage sludge shall be less than three most probable number per four grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3).
- (ii) The density of enteric viruses in the sewage sludge shall be less than one plaque-forming unit per four grams

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of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at

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the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3), unless otherwise specified by the Department.

- (iii) The density of viable helminth ova in the sewage sludge shall be less than one per four grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3), unless otherwise specified by the Department.

Alternative 5.

- (i) Either the density of fecal coliform in the sewage sludge shall be less than 1,000 most probable number per gram of total solids (dry weight basis), or the density of salmonella, sp. bacteria in the sewage sludge shall be less than three most probable number per four grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3).
- (ii) Sewage sludge that is used shall be treated in one of the processes to further reduce pathogens.

Alternative 6.

- (i) Either the density of fecal coliform in the sewage sludge shall be less than 1,000 most probable number per gram of total solids (dry weight basis), or the density of salmonella, sp. bacteria in the sewage sludge shall be less than three most probable number per four grams of total solids (dry weight basis) at the time the sewage sludge is used; at the time the sewage sludge is prepared for sale, give away or other distribution, in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in § 271.911(b)(1) or (3).
- (ii) Sewage sludge that is used shall be treated in a process that is equivalent to a process to further reduce pathogens.

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Processes to Further Reduce Pathogens

1. Composting 25 Pa. Code Chapter 271, Appendix A, as amended and updated

Using either the within-vessel composting method or the static aerated pile composting method, the temperature of the sewage sludge is maintained at 131°F (or 55°C) or higher for three days. Using the windrow composting method, the temperature of the sewage sludge is maintained at 131°F (or 55°C) or higher for 15 days or longer. During the period when the compost is maintained at 131°F (or 55°C) or higher, there shall be a minimum of five turnings of the windrow.

2. Heat Drying

Sewage sludge is dried by direct or indirect contact with hot gases to reduce the moisture content of the sewage sludge to 10% or lower. Either the temperature of the sewage sludge particles exceeds 176°F (or 80°C) or the wet bulb temperature of the gas in contact with the sewage sludge as the sewage sludge leaves the dryer exceeds 176°F (or 80°C).

3. Heat Treatment

Liquid sewage sludge is heated to a temperature of 356°F (or 180°C) or higher for 30 minutes.

4. Thermophilic Aerobic Digestion

Liquid sewage sludge is agitated with air or oxygen to maintain aerobic conditions and the mean cell residence time of the sewage sludge is 10 days at 131° to 140°F (or 55° to 60°C).

5. Beta Ray Irradiation

Sewage sludge is irradiated with beta rays from an accelerator at dosages of at least 1.0 megarad at room temperature (CA. 68°F or 20°C).

6. Gamma Ray Irradiation

Sewage sludge is irradiated with gamma rays from certain isotopes, such as Cobalt 60 and Cesium 137, at room temperature (CA. 68°F or 20°C).

7. Pasteurization

The temperature of the sewage sludge is maintained at 158°F (or 70°C) or higher for 30 minutes or longer.

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Appendix B
Pathogen Reduction – Class B

25 Pa. Code § 271.932(b), as amended and updated.

Alternative 1.

- (i) Seven samples of the sewage sludge shall be collected at the time the sewage sludge is used.
- (ii) The geometric mean of the density of fecal coliform in the samples collected in subparagraph (i) shall be less than either two million most probable number per gram of total solids (dry weight basis) or two million colony forming units per gram of total solids (dry weight basis).

Alternative 2.

Sewage sludge that is used shall be treated in one of the processes to significantly reduce pathogens described in Appendix A.

Alternative 3.

Sewage sludge that is used shall be treated in a process that is equivalent to a process to significantly reduce pathogens, as determined by the EPA.

Pre-Draft

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Processes to Significantly Reduce Pathogens

25 Pa. Code Chapter 271, Appendix A, as amended and updated

1. *Aerobic Digestion*

Sewage sludge is agitated with air or oxygen to maintain aerobic conditions for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 40 days at 68°F (or 20°C) and 60 days at 59°F (or 15°C).

2. *Air Drying*

Sewage sludge is dried on sand beds or on paved or unpaved basins. The sewage sludge dries for a minimum of three months. During two of the three months, the ambient average daily temperature is above 32°F (or 0°C).

3. *Anaerobic Digestion*

Sewage sludge is treated in the absence of air for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 15 days at 95° to 131°F (or 35° to 55°C) and 60 days at 68°F (or 20°C).

4. *Composting*

Using either the within-vessel, static aerated pile, or windrow composting methods, the temperature of the sewage sludge is raised to 104°F (or 40°C) or higher and remains at 104°F (or 40°C) or higher for five days. For four hours during the five days, the temperature in the compost pile exceeds 131°F (or 55°C).

5. *Lime Stabilization*

Sufficient lime is added to the sewage sludge to raise the pH of the sewage sludge to 12 after two hours of contact.

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Site Restrictions

25 Pa. Code § 271.932(b)(5), as amended and updated.

1. Food crops with harvested parts that touch the sewage sludge/soil mixture and are totally above the land surface may not be harvested for 14 months after application of sewage sludge.
2. Food crops with harvested parts below the surface of the land may not be harvested for 20 months after application of sewage sludge when the sewage sludge remains on the land surface for four months or longer prior to incorporation into the soil.
3. Food crops with harvested parts below the surface of the land may not be harvested for 38 months after application of sewage sludge when the sewage sludge remains on the land surface for less than four months prior to incorporation into the soil.
4. Food crops, feed crops and fiber crops may not be harvested for 30 days after application of sewage sludge.
5. Animals may not be allowed to graze on the land for 30 days after application of sewage sludge.
6. Turf grown on land where sewage sludge is applied may not be harvested for one year after application of the sewage sludge when the harvested turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the Department.
7. Public access to land with a high potential for public exposure shall be restricted for one year after application of sewage sludge.
8. Public access to land with a low potential for public exposure shall be restricted for 30 days after application of sewage sludge.

Appendix C

Vector Attraction Reduction

25 Pa. Code § 271.933(b), as amended and updated

1. The mass of volatile solids in the sewage sludge shall be reduced by a minimum of 38% (see calculation procedures in "Environmental Regulations and Technology—Control of Pathogens and Vector Attraction in Sewage Sludge," EPA-625/R-92/013, 1992, United States Environmental Protection Agency, Cincinnati, Ohio 45268).
2. When the 38% volatile solids reduction requirement in paragraph (b)(1) cannot be met for an anaerobically digested sewage sludge, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 86° and 98°F (or 30° and 37°C). When at the end of the 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17%, vector attraction reduction is achieved.
3. When the 38% volatile solids reduction requirement in paragraph (1) cannot be met for an aerobically digested sewage sludge, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2% or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 68°F (or 20°C). When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 15%, vector attraction reduction is achieved.
4. The SOUR for sewage sludge treated in an aerobic process shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 68°F (or 20°C).
5. Sewage sludge shall be treated in an aerobic process for 14 days or longer. During that time, the temperature of the sewage sludge shall be higher than 104°F (or 40°C) and the average temperature of the sewage sludge shall be higher than 113°F (or 45°C).
6. The pH of sewage sludge shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for two hours and then at 11.5 or higher for an additional 22 hours.
7. The percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 75% based on the moisture content and total solids prior to mixing with other materials.
8. The percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90% based on the moisture content and total solids prior to mixing with other materials.

Appendix D
Analytical Methods

As referenced in 25 Pa § Code 271.906(b), as amended and updated

Methods in the materials listed in this subsection, or in any later amendments published in the *Federal Register*, are incorporated by reference and shall be used to analyze samples of sewage sludge. Other methods may be approved by the Department.

- (1) *Enteric viruses*. ASTM Designation: D 4994-89, "Standard Practice for Recovery of Viruses from Wastewater Sludges," 1992 Annual Book of ASTM Standards: Section 11—Water and Environmental Technology, ASTM, 1916 Race Street, Philadelphia, Pennsylvania 19103-1187.
- (2) *Fecal coliform*. Part 9221 E. or Part 9222 D., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.
- (3) *Helminth Ova*. Yanko, W. A. "Occurrence of Pathogens in Distribution and Marketing Municipal Sludges," EPA 600/1-87-014, 1987. National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB 88-154273/AS).
- (4) *Inorganic pollutants*. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, Second Edition (1982) with Updates I (April 1984) and II (April 1985) and Third Edition (November 1986) with Revision I (December 1987). Second Edition and Updates I and II are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB-87-120-291). Third Edition and Revision I are available from Superintendent of Documents, Government Printing Office, 941 North Capitol Street, NE., Washington, DC 20002 (Document Number 955-001-00000-1).
- (5) *Salmonella SP. Bacteria*. Part 9260 D., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005; or Kenner, B. A. and H. P. Clark, "Detection and Enumeration of *Salmonella* and *Pseudomonas Aeruginosa*," Journal of the Water Pollution Control Federation, Vol. 46, No. 9, September 1974, pp. 2163- 2171. Water Environment Federation, 601 Wythe Street, Alexandria, Virginia 22314.
- (6) *Specific oxygen uptake rate*. Part 2710 B., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.
- (7) *Total, fixed and volatile solids*. Part 2540 G., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.

Appendix D – DEP Proposed Changes to General Permit, PAG-09



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

**APPROVAL FOR COVERAGE UNDER THE
GENERAL PERMIT (PAG-09) FOR BENEFICIAL USE
OF RESIDENTIAL SEPTAGE BY LAND APPLICATION**

PERMIT NO: PAG-09

In accordance with the provisions of the Federal Clean Water Act (33 U.S.C.A §§1251-1387), the Clean Streams Law (35 P.S. §§691.1 - 691.1001), (Clean Streams Law), Sections 1905-A, 1917-A and 1920-A of the Administrative Code of 1929 (71 P.S. §§510-5, 510-17 and 510-20), the Solid Waste Management Act (35 P.S. §§6018.101 - 6018.1003), (SWMA) and the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P.S. §§4000.101 - 4000.1904) (Act 101), the Department of Environmental Protection (DEP) hereby approves the Notice of Intent (NOI) submitted for coverage by:

INSERT HAULER OR FACILITY (IF APPLICABLE) NAME AND ADDRESS BELOW

to beneficially use residential septage that will be applied to the land as specified in this General Permit. The above-referenced facility is eligible to obtain coverage for this beneficial use as a person who land applies residential septage to the land .

Approval of coverage for the land application of residential septage is subject to DEP's enclosed General Permit (PAG-09) which incorporates several standards including, but not limited to, general requirements, management practices, operational standards, annual application rate, pathogen and vector attraction reduction requirements, site restrictions, and other terms and conditions for the residential septage that will be land applied in the Commonwealth.

All recordkeeping, monitoring and reporting requirements specified in this General Permit and DEP's approval for coverage under this General Permit shall apply to all beneficial uses of residential septage generated at the facility.

APPROVAL FOR COVERAGE UNDER THE GENERAL PERMIT IS AUTHORIZED FOR THE TERM SPECIFIED IN THE DATES SHOWN BELOW. IF THE GENERAL PERMIT IS RENEWED, REISSUED OR MODIFIED, THE FACILITY OR ACTIVITY COVERED BY THE APPROVAL FOR COVERAGE MUST COMPLY WITH THE FINAL RENEWED, REISSUED OR MODIFIED GENERAL PERMIT.

Coverage Approval Date:

BY: _____

Coverage Expiration Date: _____

TITLE: Clean Water Program Manager
Regional Office



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

**GENERAL PERMIT
FOR
BENEFICIAL USE OF RESIDENTIAL SEPTAGE BY LAND APPLICATION
PERMIT NO: PAG-09**

In accordance with the provisions of the Federal Clean Water Act (33 U.S.C.A §§1251-1387), the Clean Streams Law (35 P.S. §§691.1 - 691.1001), Sections 1905-A, 1917-A and 1920-A of the Administrative Code of 1929 (71 P.S. §§510-5, 510-17 and 510-20), the Solid Waste Management Act (35 P.S. §§6018.101 - 6018.1003), and the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P.S. §§4000.101 - 4000.1904), DEP issues this General Permit for use by eligible persons for the beneficial use of residential septage by land application.

Persons eligible to obtain coverage under this General Permit are persons who land apply residential septage. Persons must satisfy the eligibility requirements in Part A. Residential Septage Quality of this General Permit.

Eligible persons seeking coverage under this General Permit must submit a timely, complete and technically adequate NOI in accordance with the requirements of this General Permit using DEP's NOI form, and obtain approval from DEP to beneficially use residential septage by land application.

Approval of coverage for the beneficial use of residential septage by land application is subject to DEP's enclosed General Permit (PAG-09) that includes requirements related to general requirements, management practices, site restrictions, annual application rate, pathogen and vector attraction reduction requirements, and other terms and conditions for the land application of residential septage in the Commonwealth. The approval of coverage authorizes the beneficial use of residential septage by land application.

NOI REQUIREMENTS

Deadlines for NOI

An applicant seeking renewal of coverage under this General Permit shall submit a complete and technically adequate NOI at least 150 days prior to the expiration of coverage. An applicant authorized to land apply residential septage under an individual permit who is seeking coverage under this General Permit may continue to land apply in accordance with the individual permit while DEP reviews the NOI and associated documents for coverage under this General Permit.

Contents of NOIs

Persons seeking approval for renewal of coverage under this General Permit must submit a complete NOI in accordance with the requirements of this General Permit using the NOI form provided by DEP. The NOI form shall be signed in accordance with Section II of Part C (Signatory Requirements) of this General Permit and shall include the information specified on the form, as further explained in the instructions for completing the form. The NOI form and instructions (3850-PM-BCW0337) are available on DEP's website at www.dep.pa.gov/biosolids.

Where to Submit

NOIs or modifications to NOIs are to be submitted to the appropriate regional office of DEP having jurisdiction over the residential septage facility. NOIs for facilities located outside the Commonwealth are to be submitted to DEP's Bureau of Clean Water in Harrisburg. The NOI form and a list of DEP names, addresses and telephone numbers are included with the instructions for completing the NOI form.

USES NOT COVERED UNDER THIS GENERAL PERMIT

The following beneficial uses of residential septage are not covered by this General Permit, and DEP may deny coverage under this General Permit when one or more of the following conditions exist:

1. Land application of residential septage for beneficial use in watersheds classified as "Exceptional Value (EV)" in 25 Pa. Code Chapter 93;

2. Land application of residential septage for beneficial use that is not, or will not be, in full compliance with the requirements, terms, or conditions of this General Permit;
3. Land application of residential septage for beneficial use by a person that has failed and continues to fail to comply, or has shown a lack of ability or intention to comply, with a regulation, permit, schedule of compliance or order issued by DEP;
4. Land application of residential septage for beneficial use for which DEP determines an individual permit is required to ensure compliance with the Clean Water Act, the Clean Streams Law, or the Solid Waste Management Act, and rules and regulations promulgated thereunder;
5. Land application of residential septage for beneficial use that would adversely affect a listed endangered or threatened species or its critical habitat;
6. Land application of wastes other than residential septage.
7. This General Permit, except as provided in Part D, Section IV, does not constitute approval or authorization to construct a facility or modify existing facilities to meet the terms and conditions of this General Permit. The permittee shall comply with all other permitting requirements as necessary.

Denial of Coverage

DEP may deny approval of coverage under this General Permit and require submittal of an application for an individual permit based on a review of the NOI or other information submitted or otherwise available to DEP.

1. DEP may require the applicant to apply for and obtain an individual permit for beneficial use of residential septage by land application.
 - a. Any interested person may petition DEP to take action under this paragraph.
 - b. DEP will require the applicant to apply for an individual permit only after the permittee has been notified in writing that such permit application is required. This notice shall include the following:
 - i. a brief statement of the reasons for this decision;
 - ii. an individual permit application form; and
 - iii. a statement setting a deadline for the person to file the application.
 - c. The applicant may request to be excluded from the approval for coverage under this General Permit by applying for an Individual Permit. The applicant shall submit an Individual Permit application to DEP on an approved form available through DEP's website at www.dep.pa.gov/biosolids. Additional information related to this form can be found in the DEP's instruction sheet, *Instructions for Completing and Submitting An Individual Generator Permit for the Beneficial Use of Biosolids by Land Application*, 3800-PM-WSFR0030.
2. When an Individual Permit is issued to a person covered by this General Permit, the coverage under this General Permit is automatically revoked on the effective date of the Individual Permit.
3. When an Individual Permit is denied to a person covered by this General Permit, the coverage under this General Permit continues, provided that all conditions of the General Permit are satisfied.
4. If DEP determines that a permittee no longer meets the requirements of this General Permit, or is otherwise prohibited from coverage under this General Permit, notice of the determination shall be given, and approval of coverage under this General Permit is automatically terminated on the date of such determination.
5. If the permittee determines that they no longer meet the requirements of this General Permit, or are otherwise prohibited from this General Permit coverage, notice of the determination shall be given to DEP, and approval of coverage under this General Permit is automatically terminated on the date of determination, unless otherwise specified by DEP.

Issuance, Reissuance, or Modifications

1. Unless extended by DEP, this General Permit will expire 10 years from the date of its issuance.

2. DEP will publish a notice in the *Pennsylvania Bulletin* of its intent to renew, reissue or amend this General Permit, and after a 60-day comment period, notice of the final, renewed, reissued or modified General Permit will be published in the *Pennsylvania Bulletin*.
3. The permittee shall be responsible for complying with the final renewed, reissued or amended General Permit.
4. If the permittee cannot meet the conditions of the renewed, reissued or modified General Permit, the permittee must apply for an individual permit.
5. DEP may modify, terminate or revoke and reissue this General Permit during its term.
6. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated non-compliance, does not stay any permit condition.
7. This General Permit may be terminated, amended, or revoked and reissued by DEP prior to expiration of this General Permit when necessary to protect public health and the environment from any adverse effect of a pollutant in the residential septage.

The Authority Granted by this General Permit is Subject to the Following Conditions:

1. If there is a conflict between the approval of the application for coverage, its supporting documents and/or amendments, and the terms and conditions of this General Permit, the terms and conditions of this General Permit shall apply.
2. Failure to comply with the terms and conditions of this General Permit may result in any of the following:
 - a. enforcement action;
 - b. termination of permit coverage; or
 - c. denial of a renewal application.
3. If DEP has validated that malodors from a particular residential septage source have caused a persistent public nuisance, DEP may require the permittee to develop and implement a Biosolids Quality Enhancement Plan (BQEP), focusing on odor mitigation, to retain or obtain coverage under this General Permit.
 - a. DEP may require, as part of the BQEP, that the permittee adopt practices that include soil incorporation, storage restrictions, and more stringent vector attraction reduction practices.
 - b. Soil incorporation shall not be required if it violates the soil conservation plan or erosion and sedimentation control plan at the site of land application, if application involves top-dressing on a hay field, or if it would otherwise increase the risk of the residential septage migrating off the site.
 - c. DEP may terminate coverage under this General Permit if the permittee, is unable to mitigate its documented and persistent nuisance odor situations.
4. No condition of this General Permit shall release the permittee from any responsibility or requirement under any other federal or state statute or regulation.
5. No condition of this General Permit releases the permittee from any responsibility or requirement under any local regulation or ordinance, provided that the local regulation or ordinance is not inconsistent with or more stringent than any provision of the Clean Streams Law, SWMA, Administrative Code, Act 101, Title 25 Pa. Code Chapter 271 or any other applicable statute or regulation.
6. The definition of a waste under Title 25 Pa. Code §271.1 (relating to Definitions) as amended and updated, allows materials that are beneficially used under Subchapter I or J to be excluded from being regulated as a waste by a term or condition of this General Permit. Residential septage beneficially used in accordance with this General Permit will not be regulated as a waste. However, this does not relieve the permittee from complying with all applicable requirements under Title 25 Pa. Code Chapter 271, Subchapter J and the provisions of this General Permit.

This General Permit (PAG-09) for Beneficial Use of Residential Septage by Land Application is issued upon publication in the *Pennsylvania Bulletin* and shall expire at midnight on 10 years from effective date, unless extended on or before the expiration date by DEP.

Date Issued: _____ BY: _____
Upon Publication in Pennsylvania Bulletin TITLE: Director
Bureau of Clean Water

PART A
RESIDENTIAL SEPTAGE QUALITY

I. DEFINITIONS

“Adjacent Landowner” – Includes all landowners whose deeds touch the deed for the parcel of land on which the residential septage will be applied.

“Agricultural Land” – Land on which a food crop, a feed crop, a fiber crop, a silvicultural crop, or a horticultural crop is grown. This includes range land and land used as pasture. (25 Pa Code § 271.907)

“Agronomic Rate” – The annual whole residential septage application rate (dry weight basis) designed:

- (1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, silvicultural crop, cover crop, horticultural crop, or vegetation grown on the land; and
- (2) To minimize the amount of nitrogen in the residential septage that passes below the root zone of the crop or vegetation grown on the land to the groundwater. (25 Pa Code § 271.907)

“Annual Application Rate” – The maximum amount of residential septage that can be applied to a unit area of land during a 365-day period.

“Beneficial use” - Use or reuse of residual waste or residual material derived from residual waste for commercial, industrial or government purposes, where the use does not harm or threaten public health, safety, welfare or the environment, or the use or reuse of processed municipal waste for any purpose, where the use does not harm or threaten public health, safety, welfare of the environment. (25 Pa Code § 271.1)

“Biosolids Quality Enhancement Plan (BQEP)” – A plan for the characterization of biosolids and for the identification and evaluation of options to improve the physical, chemical or biological quality of the biosolids.

“Cover crop” – A small grain crop, such as oats, wheat or barley, not grown for harvest. (25 Pa Code § 271.907)

“Exceptional Value Watershed” – Surface waters of high quality which satisfy 25 Pa. Code § 93.4b(b) (relating to antidegradation).

“Feed crops” – Crops produced primarily for consumption by animals. (25 Pa Code § 271.907)

“Fiber crops” – Crops, such as flax and cotton, characterized by having a large concentration of cellulose, which are traditionally used to make paper, cloth, or rope.

“Food crops” – Crops consumed by humans. The term includes, but is not limited to, fruits, vegetables and tobacco. (25 Pa Code § 271.907)

“Food Processing Waste” – Residual materials in liquid and solid form generated in the slaughtering of poultry and livestock, or in processing and converting fish, seafood, milk, meat, and eggs to food products. The term includes residual materials generated in the processing, converting, or manufacturing of fruits, vegetables, crops, and other commodities into marketable food items. The term also includes vegetative residuals from food processing activities that are usually recognizable as part of a plant or vegetable, including cabbage leaves, bean snips, onion skins, apple pomace, and grape pomace.

"Forest" – A tract of land thick with trees and underbrush. (25 Pa Code § 271.907)

"Frozen Ground" – Ground frozen to a depth of at least 2 inches for a period of 72 consecutive hours. (25 Pa Code § 271.907)

"Land Application" – The spraying or spreading of residential septage onto the land surface for beneficial use; the injection of residential septage below the land surface for beneficial use; or the incorporation of residential septage into the soil for beneficial use so that the residential septage can either condition the soil or fertilize crops for vegetation grown in the soil.

"Municipality" – A city, town, borough, county, township, or an authority created by any of the foregoing under state law, including an intermunicipal agency of two or more of the foregoing entities. (25 Pa Code § 271.907)

"Pasture" – Land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover. (25 Pa Code § 271.907)

"Pathogen Reduction" – Decreasing the presence of pathogens through residential septage treatment.

"Permit" – A permit issued by DEP to operate a municipal waste disposal or processing facility, or to beneficially use municipal waste. The term includes a general permit, permit modification, permit by rule, permit reissuance and permit renewal. (25 Pa Code § 271.1)

"Person" – An individual, corporation, partnership, association, municipality, political subdivision or an instrumentality of state, federal or local government, or an agent or employee thereof, or any other legal entity. (25 Pa Code § 271.907)

"Person who operates under this General Permit" – Includes the permittee or other agents for the permittee as applicable and the land applier.

"pH" – The logarithm of the reciprocal of the hydrogen ion concentration at 25 degrees Celsius.

"Pollutant" – An organic substance, an inorganic substance, a combination of organic substances, a pathogenic organism, or any other substance identified by DEP that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism, either directly from the environment or indirectly by ingestion through the food chain, could, on the basis of information available to DEP, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction), or physical deformations in either organisms or offspring of the organisms. (25 Pa Code § 271.907)

"Public Contact Site" – Land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses. (25 Pa Code § 271.907)

"Public Nuisance" – A nuisance which affects numerous members of the public or the public at large, as distinguished from a nuisance which only does harm to a neighbor or a few private individuals.

"Reclamation Site" – Drastically disturbed land that is reclaimed using residential septage. This includes, but is not limited to, active and abandoned coal and non-coal surface mines and construction sites. (25 Pa Code § 271.907)

"Representative Sample" – A sample that, based on the specific operation and to the best of the permittee's knowledge, adequately characterizes the quality and/or attributes of the residential septage at the permitted facility.

"Residential Septage" – Liquid or solid material removed from a septic tank, cesspool or similar treatment works that receives only waste or wastewater from human or household operations. The term includes processed residential septage from a residential septage treatment facility. The term does not include liquid or solid material removed from a septic tank, cesspool, portable toilet, type III marine sanitation device, or similar treatment works that receives either commercial or industrial wastewater and does not include grease removed from a grease trap at a restaurant. (25 Pa Code § 271.1)

"Snow Cover" – Snow cover is defined as snow which covers approximately 95 percent of the area to be used for land application of residential septage.

"Storage" – The containment of any waste on a temporary basis in such a manner as not to constitute disposal of such waste. It shall be presumed that the containment of waste in excess of 1 year constitutes disposal. This presumption can be overcome by clear and convincing evidence to the contrary. (25 Pa Code § 271.1)

"Vector Attraction" – The characteristic of residential septage that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

"Vector Attraction Reduction" – Decreasing the characteristic of the residential septage that attracts vectors.

"Wetlands" – Areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions including swamps, marshes, bogs and similar areas. 25 Pa Code § 105.1)

II. RESIDENTIAL SEPTAGE QUALITY

The permittee shall comply with the following requirements at all times when preparing residential septage and beneficially applying that residential septage to the land:

A. The residential septage must meet the following pathogen reduction standards as specified in [25 Pa. Code § 271.932\(c\)](#), as amended and updated.

1. Residential septage shall be stabilized to meet processes to significantly reduce pathogens (See Appendix A) or processes to further reduce pathogens (See Appendix B) prior to land application.
2. The following site restrictions in subsection [25 Pa. Code § 271.932\(b\)\(5\)\(i\)–\(iv\)](#), as amended and updated, shall be met.
 - a. Food crops with harvested parts that touch the residential septage/soil mixture and are totally above the land surface may not be harvested for 14 months after application of septage.
 - b. Food crops with harvested parts below the surface of the land may not be harvested for 20 months after application of residential septage when the residential septage remains on the land surface for four months or longer prior to incorporation into the soil.
 - c. Food crops with harvested parts below the surface of the land may not be harvested for 38 months after application of residential septage when the residential septage remains on the land surface for less than 4 months prior to incorporation into the soil.
 - d. Food crops, feed crops and fiber crops may not be harvested for 30 days after application of residential septage.
3. For alkali stabilization, the pH of residential septage applied to agricultural land, forest, or a reclamation site shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for 30 minutes and the site restrictions in subsection (b)(5)(i)–(iv), as listed in paragraph 2 above, shall be met.

B. The residential septage must meet one of the following vector attraction reduction requirements as specified in [25 Pa. Code § 271.933\(b\)\(9\), \(10\), or \(11\)](#), as amended and updated, when residential septage is applied to agricultural land, forest, or a reclamation site:

1. Residential septage shall be injected below the surface of the land.
 - a. No significant amount of the residential septage may be present on the land surface within one hour after the residential septage is injected.
 - b. When the residential septage that is injected below the surface of the land is Class A with respect to pathogens, the residential septage shall be injected below the land surface within eight hours after being discharged from the pathogen treatment process;
2. Residential septage applied to the land surface shall be incorporated into the soil within six hours after application to the land. When residential septage that is incorporated into the soil is Class A with respect to pathogens, the residential septage shall be applied within eight hours after being discharged from the pathogen treatment process; or
3. The pH of residential septage shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for 30 minutes.

C. The residential septage must have the non-organic objects removed prior to spreading. Screenings must be disposed of at a facility permitted to accept such wastes.

D. Mixtures of residential septage with other wastes including food processing waste, animal manure, agricultural process wastewater or residual materials such as cement kiln dust is prohibited. Mixtures of residential septage with other wastes may require a different permit.

E. Residential septage shall not be land applied if it contains any deodorizers or other synthetic chemicals, unless those chemicals have been specifically approved by DEP for land application of residential septage.

Pre-Draft

PART B
MONITORING

I. REPRESENTATIVE SAMPLING

- A. Any samples and measurements taken to monitor residential septage quality and process controls must be representative of the monitored activity.
- B. Any samples and measurements taken to monitor residential septage quality and process controls must be in accordance with the methods listed in 25 Pa. Code §271.906 (relating to sampling and analysis) and the facility's Sampling Plan submitted with the NOI.
- C. The most current version of DEP's *Biosolids Sampling Manual* should be used as a guide.

II. MONITORING FREQUENCY

Each container of residential septage must be monitored for compliance with the requirements of the particular pathogen reduction alternative and vector attraction reduction option used. For instance, if alkali stabilization is conducted in the transportation or application vehicle containing the residential septage, the residential septage in the vehicle must be monitored for its pH level.

III. TEST PROCEDURES

- A. Methods in the materials listed at 25 Pa. Code §271.906, as amended and updated, as shown in Appendix C, as amended and updated, or in any later amendments to these methods published in the *Federal Register*, are incorporated by reference and shall be used to analyze samples of residential septage.
 1. No other analytical methods may be used without prior written approval from DEP.
 2. Requests for approval must be submitted in writing to DEP.
- B. When pH adjustment is used for either vector attraction reduction or pathogen reduction, the pH readings must be temperature corrected to 25 degrees Celsius.
- C. Analysis shall be done by a PA-accredited laboratory or a laboratory registered with DEP as being accredited by rule in compliance with 25 Pa Code § 252.6.

IV. RECORDING OF RESULTS

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

1. The place, date, and time of sampling or measurements.
2. The person(s) who performed the sampling or measurements.
3. The date(s) the analyses were performed.
4. The person(s) who performed the analyses.
5. The analytical techniques or methods used; and the associated detection level.
6. The results of such analyses.

V. QUALITY ASSURANCE CONTROL

In an effort to assure accurate self-monitoring analyses results:

1. The permittee shall participate in, or shall use a laboratory that agrees to participate in, periodic scheduled quality assurance inspections conducted by DEP or the United States Environmental Protection Agency (EPA). (25 Pa. Code §§ 92a.3(c), 92a.41(a), 92a.61(i) and 40 CFR §§ 122.41(e), 122.41(i)(3)).

2. The permittee shall develop and implement, or shall use a laboratory that has developed and implemented, a program to assure the quality and accurateness of the analyses performed to satisfy the requirements of this permit, in accordance with 40 CFR Part 136. (25 Pa. Code §§ 92a.3(c), 92a.41(a), 92a.61(i) and 40 CFR § 122.41(j)(4))

Pre-Draft

PART C
RECORDKEEPING AND REPORTING

I. RECORDKEEPING AND REPORTING

- A. The permittee must develop the information specified in 25 Pa. Code §271.918(b) as follows:
1. The person who land applies residential septage must develop the following information:
 - a. The location, by either street address or latitude and longitude, of each field on which residential septage is applied.
 - b. The number of acres (or hectares) in each field on which residential septage is applied.
 - c. The date and time residential septage is applied to each field.
 - d. The nitrogen requirement for the crop or vegetation grown on each field during a 365-day period.
 - e. The rate, in gallons per acre (or liters per hectare) per 365-day period, at which residential septage is applied to each field.
 2. The following certification statement:

"I certify, under penalty of law, that the pathogen requirements in §271.932(c) and the vector attraction reduction requirements in [insert either §271.933(b)(9), §271.933(b)(10), or §271.933(b)(11)] have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements and vector attraction reduction requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."
 3. A description of how the pathogen reduction requirements at 25 Pa. Code § 271.932(c), as amended and updated are being met.
 4. A description of how the vector attraction reduction requirements in 25 Pa. Code § 271.933(b)(9), (10) or (11) (relating to vector attraction reduction), as amended and updated, are being met.
- B. This information shall be retained by the permittee for five years and made available to DEP upon request.
- C. A signed copy of the *Recordkeeping and Reporting Form* (3850-FM-BCW0341a) and other supporting data must be submitted to DEP annually on or before March 1 for activities conducted during the previous calendar year.
- D. Notification of the date, time and location at which land application will occur shall be given to DEP, when requested, for the purpose of inspection or investigation to ascertain compliance or noncompliance with this General Permit and with applicable statutes, rules and regulations.
- E. The permittee must verbally notify DEP immediately, but no longer than 24 hours after becoming aware, of non-compliance, of any residential septage quality standard relating to pathogen reduction or vector attraction reduction.
1. The permittee must provide a written report to DEP within five days of the verbal report.
 2. The written report must include:
 - a. the date of non-compliance;
 - b. the nature of the incident;
 - c. the actions taken to mitigate the non-compliance; and,
 - d. the date compliance occurred.

II. SIGNATORY REQUIREMENTS

All NOIs, reports, certifications, records, and other information submitted to DEP, application site landowner, adjacent landowner, or County Conservation District, or that this General Permit requires be maintained by the permittee, shall be signed as follows:

A. For a municipality, or a State, Federal, or other public agency:

1. By either a principal executive officer, ranking elected official, or other authorized employee.
2. For purposes of this General Permit, a principal executive officer of a Federal agency includes the following:
 - a. the chief executive officer of the agency, or
 - b. a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

B. In the case of corporations, by a principal executive officer of at least the level of vice president, or an authorized representative.

C. In the case of a partnership, by a general partner.

D. In the case of a sole proprietorship, by the proprietor.

E. A person is a duly authorized representative only if:

1. The authorization is made, in writing, by a person described above and the authorization is submitted to DEP with the records.
2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or process, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for the environmental matters for the facility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

F. Changes in Signatory Authorization.

If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Section II (Signatory Requirements) must be submitted to DEP prior to or together with any records, information, or applications to be signed by an authorized representative.

PART D STANDARD CONDITIONS

I. NOTIFICATION REQUIREMENTS

A. A person who operates under this General Permit shall comply with the following notification requirements:

1. Obtain consent of the landowner and provide information to the landowner or occupant as prescribed in [25 Pa. Code § 271.913\(e\), \(f\) and \(m\)](#), as follows:
 - a. Obtain written consent of the owner of the land upon which the residential septage will be land applied, on a form prepared by DEP, prior to land applying the residential septage;
 - b. Provide the occupant of the land with a user instruction sheet prepared by the person operating under the permit that describes the acceptable uses and limitations of the residential septage at least seven days prior to land applying residential septage for the first time at a location; and,
 - c. Provide the legal or equitable owner, or lease holder, of the land on which the residential septage is applied notice and necessary information to comply with Chapter 271, Subchapter J.
2. Provide notification in accordance with [25 Pa. Code § 271.913\(g\)](#) as follows:

A person who land applies residential septage at a location for agricultural, forest, or land reclamation purposes shall send or otherwise provide written notification to the adjacent landowner, the County Conservation District and DEP at least 30 days prior to the first application of the residential septage at that location. The notification shall:

- a. Include a brief description of the operation, any site restrictions, the name of the person land applying the residential septage, and the applicable permit number.
- b. Be sent by personal delivery or first-class mail and, for an adjacent landowner, shall also be given by posting at the property line in a manner sufficient to notify the adjacent landowner of the items in subparagraph (a).
- c. For the County Conservation District and DEP, include the location of the fields on a United States Geological Survey map and on a Natural Resources Conservation Service Soils Map.
- d. For the Department, be sent to DEP's regional office that has jurisdiction for the location where the sewage sludge will be applied.

DEP may modify these requirements for purposes of land reclamation where the activity is part of another permit or approval issued by the Department and public notice has been provided as part of the permit or approval. DEP recommends that a copy of the most current version of DEP's *Understanding Biosolids Land Application in Your Community* fact sheet, available on DEP's website, be provided to the home owners with the notification letter.

3. Provide Notification of First Land Application (30-Day Notice) to the County Conservation District and DEP in accordance with [25 Pa. Code § 271.913\(g\)](#), as amended and updated, on forms provided by DEP.
4. Notify the municipality where the site is located.

B. Upon receipt of the Notification of First Land Application, DEP will be responsible for the following activities:

1. The appropriate regional DEP office will review the site and make a determination on whether the site meets the regulatory requirements for land application of residential septage. A land application site will only be deemed suitable if it meets the applicable site suitability requirements.
2. Notification of site suitability will be sent to the municipality in which the site is located and will be published in the *Pennsylvania Bulletin*.
3. Land application activities may commence at the end of the 30-day timeframe even if DEP has not made a determination.

C. As required by [25 Pa. Code § 271.913\(g\)\(2\)](#), as amended and updated, when using residential septage on active mine sites for mine reclamation purposes, the notification procedures for the reclamation activities must conform to the notification requirements set forth by the DEP's technical guidance document 563-2000-602 entitled "Beneficial Use of Sewage Sludge at Active Mine Sites."

DEP may modify these requirements for purposes of land reclamation where the activity is part of another permit or approval issued by the Department and public notice has been provided as part of the permit or approval.

II. LAND APPLICATION REQUIREMENTS

Any person who operates under this General Permit shall comply with the following land application requirements:

1. Residential septage may not be land applied if the annual application rate has been reached.
2. Background soil chemical analyses as specified in [25 Pa. Code § 271.913\(h\)](#), as amended and updated, must be performed as follows:

Prior to the first time a site is used for land application, the first person who land applies residential septage shall obtain, at a minimum, one representative soil chemical analysis for each field on which residential septage is land applied, for pH and those constituents listed in the tables in [25 Pa. Code § 271.914\(b\)](#), as shown below:

Constituents Listed in Tables in §271.914(b)

Arsenic
Cadmium

Copper
Lead
Mercury
Molybdenum
Nickel
PCBs
Selenium
Zinc

3. A person that operates under this General Permit shall comply with applicable sections of [25 Pa. Code](#) Chapter 285, as amended and updated (relating to storage, collection, and transportation of municipal waste).
4. The person who land applies residential septage under this General Permit must display the permit number on the sides and rear of each land application vehicle, in numbers at least 3 inches (or 7.6 centimeters) high in a color contrasting to the background.

III. LAND APPLICATION RESTRICTIONS

- A. A person who operates under this General Permit shall comply with the following land application restrictions.
1. Residential septage may not be applied to the land if it is likely to adversely affect a Federal or Pennsylvania threatened or endangered species, or its designated critical habitat, listed under or pursuant to Section 4 of the Endangered Species Act, 16 U.S.C. § 1533, the Fish and Boat Code, 30 Pa. C.S.A. §2305, or the Game and Wildlife Code, 34 Pa. C.S.A. §101 *et seq.*
 2. Residential septage may not be applied to a site that is flooded, frozen, or snow-covered, except as expressly provided in a permit issued under Title 25 Pa. Code Chapters 91, 92a, or 105, as applicable.
 3. In accordance with [25 Pa. Code](#) § 271.914(c), residential septage may not be land applied at a rate that exceeds the annual application rate as calculated in Equation 1 below, or in the most current version of DEP's *Biosolids Training Manual*, unless a greater rate is approved for reclamation activities.
 - a. The Penn State Agronomy Guide, documented yields, or other applicable information sources may be used to determine appropriate yields and nutrient needs for the purposes of calculating application rates.
 - b. The source(s) used to calculate rates must be provided with the example calculations provided with the NOI or 30-Day Notice, as appropriate.

$$AAR = \frac{N}{0.0026} \quad \text{Equation (1)}$$

Where:

AAR = Annual Application Rate in gallons per acre per 365-day period.

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

4. In accordance with and following guidance provided by DEP, nutrient balance evaluations that include both nitrogen and phosphorus shall be developed and submitted for all agricultural application areas. The most recent version of the Pennsylvania Phosphorus Index must be used to determine the appropriate residential septage application rate. The application of residential septage shall be in accordance with Phosphorus index loading rates, unless that rating allows for agronomic loading rates based on nitrogen. Implementation of the nutrient balance evaluations shall be as follows:
 - a. For any Notification of First Land Application submitted after the effective date of this General Permit, Phosphorus Index results with supporting documentation and applicable loading rates shall be submitted with the 30-day notification required in [25 Pa. Code](#) § 271.913(g), as amended and updated.
 - b. For residential septage application areas where a Notification of First Land Application was submitted prior to the effective date of this General permit, Phosphorus Index results with supporting

- documentation and applicable loading rates shall be submitted to DEP and implemented, within two years from the effective date of this permit.
- c. Nutrient balance evaluations for residential septage application areas shall be updated and submitted to the Department every three years and if any of the following occur:
 - i. Significant changes to farm operations, such as a change in manure management or use of alternative fertilizers.
 - ii. A change in field areas or the available acreage for the application of residential septage.
 - iii. A change in the source of residential septage proposed for use on the farm.
 5. Residential septage may not be applied at a farm if the nutrients available from the manure produced by animals at the farm satisfies the nutrient needs of the farm for generally accepted crop yields within typical agronomic rates, unless a management plan is implemented that allows for uses of the manure other than land application on that farm.
 6. Residential septage may not be applied within the following areas listed in [25 Pa. Code § 271.915\(c\)](#), as amended and updated and (d):
 - a. Residential septage may not be applied to agricultural land, forest or a reclamation site that is:
 - i. Within 100 feet (or 30.5 meters) or less of a perennial stream or within 33 feet (or 10 meters) of an intermittent stream.
 - ii. Within 100 feet (or 30.5 meters) of the edge of a sink hole.
 - iii. Within 300 feet (or 91 meters) from an occupied dwelling unless the current owner there has provided a written waiver consenting to activities closer than 300 feet (or 91 meters). The waiver shall be knowingly made and separate from a lease or deed unless the lease or deed contains an explicit waiver from the current owner. This paragraph does not apply to features that may come into existence after the date upon which adjacent landowner notification is given under [25 Pa. Code Chapter 275](#) or [25 Pa. Code § 271.913\(g\)](#) (relating to land application of sewage sludge; and general requirements).
 - iv. In an area without an implemented erosion and sedimentation control plan or a farm conservation plan.
 - v. Within 300 feet (or 91 meters) of a water source unless the current owner has provided a written waiver consenting to the activities closer than 300 feet (or 91 meters). This paragraph does not apply to features that may come into existence after the date upon which adjacent landowner notification is given under [25 Pa. Code Chapter 275](#) or [25 Pa. Code § 271.913\(g\)](#).
 - vi. Within 100 feet (or 30.5 meters) of an exceptional value wetland, as defined in [25 Pa. Code § 105.17](#) (relating to wetlands).
 - vii. Within 11 inches (or 28 centimeters) of the seasonal high water table, nor within 3.3 feet (or one meter) of the regional groundwater table. For purposes of this section, the depths to seasonal high water table and to regional groundwater table shall be based on the most recent soil mapping as published by the United States Department of Agriculture (USDA) Natural Resources Conservation Service, or more detailed mapping data as mapped by an expert in soil science using standard and acceptable mapping procedures as developed by the USDA Natural Resources Conservation Service.
 - b. A person may not apply residential septage when residential septage is to be land applied for:
 - i. Agricultural utilization on slopes that exceed 25%, unless otherwise approved in writing by the Department.
 - ii. Land reclamation on slopes that exceed 35%, unless otherwise approved in writing by the Department.
 7. As required by [25 Pa. Code § 271.915\(e\)](#), as amended and updated, a person may not apply residential septage unless the soil pH is 6.0 or greater prior to land application unless DEP allows the increase of pH by application of residential septage or other material, in which case the soil pH shall be 6.0 or greater

within six months following the application of residential septage, or unless otherwise approved in writing by DEP.

8. Soil fertility testing for each field shall be conducted prior to first application and each subsequent three years for the purpose of complying with the requirements in III.4 above. Test shall include pH and Mehlich 3 soil test Phosphorus.
9. The site restrictions listed under [25 Pa. Code § 271.932\(b\)\(5\)\(vi-vii\)](#), as amended and updated must be followed when residential septage is applied to a public contact site. These state:
 - a. Turf grown on land where residential septage is applied may not be harvested for one year after application of the residential septage when the harvested turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by DEP.
 - b. Public access to land with a high potential for public exposure shall be restricted for one year after application of residential septage.
- B. A person who operates under this General Permit must comply with the following requirements in addition to the applicable restrictions in Section III.A. when land applying residential septage on a land reclamation site.
 1. No person may apply residential septage to a reclamation site unless the reclamation activity is permitted or otherwise approved by DEP.
 2. Residential septage shall be incorporated into the soil within 24 hours of land application.

IV. RESIDENTIAL SEPTAGE TREATMENT AND STORAGE

The permittee is considered to have a processing permit for the beneficial use of residential septage by land application if the permittee complies with the following requirements. This permit does not cover storage or processing for residential septage that is solely intended for transport to a landfill or a treatment facility.

- A. Treatment is limited to the screening and alkaline addition when residential septage is intended for beneficial reuse. The receipt for the purchase of the lime or other alkali materials used to treat residential septage prior to land application shall be retained by the permittee for a period of five years and submitted to DEP upon request.
- B. Treatment and storage designs must be submitted with the NOI and approved by DEP.
- C. The designs must be in compliance with, at a minimum, the requirements listed in clauses E through H below.
- D. Modifications to the treatment or storage facilities must be submitted to, and approved by, DEP prior to installation.
- E. The total combined capacity of the treatment and storage tanks shall not exceed 500,000 gallons.
- F. The storage and treatment locations may not be conducted within 50 feet of a property boundary.
- G. Storage and treatment tanks must comply with [25 Pa. Code § 285.122](#), the applicable sections of Chapter 285 and the following additional requirements:
 1. Containment area must be capable of holding the volume of the largest tank.
 2. Tanks and components must be compatible with the stored material.
 3. Tanks and components must be protected from corrosion.
 4. Storage and treatment tanks that are not prefabricated must have the design and construction certified by a Pennsylvania licensed Professional Engineer. The PE certification must be provided to DEP prior to the use of the tanks.
 5. Underground tanks may not be used for storage or treatment unless otherwise approved by DEP.
 6. The tanks must be inspected for leaks at least once per week.
 7. Weekly inspection results must be recorded on a log that must be made available to DEP upon request.
 8. Tanks must be labeled Residential Septage.
- H. The treatment and storage must not create conditions that harbor, breed, or attract vectors.

- I. If a spill or leak from the tank(s) occurs, appropriate and immediate action shall be taken to mitigate the problem and prevent adverse impacts to the environment or public health.
 - 1. DEP must also be verbally notified within 24 hours in the event of a spill or leaking tank.
 - 2. The permittee shall provide a written report to DEP within five days of the verbal report detailing the date the incident occurred, the nature of the incident, and the actions taken to mitigate the problem.
- J. The treatment and storage can only be performed at, or adjacent to, a site that has undergone the Notification of First Land Application procedure or are covered by an Individual Site Permit for the hauler or the facility listed on the approval for coverage under this General Permit unless otherwise approved by DEP.
- K. Treated residential septage that meets the requirements for land application can be land applied at otherland application sites that have undergone the Notification of First Land Application procedure or are covered by an Individual Site Permit for the hauler or the facility listed on the approval for coverage under this General Permit.
- L. Construction activities that involve earth disturbance must comply with appropriate erosion and sedimentation controls as specified in 25 Pa. Code Chapter 102.

V. TRAINING

Training obligations must be completed as required by [25 Pa. Code § 271.915\(j\)](#), as amended and updated as follows:

- A. Persons land applying residential septage are required to complete training courses sponsored by DEP in a timely and satisfactory manner.
- B. Satisfactory completion means attendance at all sessions of training, and attainment of a minimum grade of 70% on tests given as part of the training courses.
- C. In the case of a person who prepares residential septage that will be land applied, and a person who land applies residential septage, at least one person with responsibility for the land application of residential septage shall satisfactorily complete the training in a timely fashion.
- D. DEP may suspend or revoke an individual permit or coverage under this General Permit to beneficially use residential septage by land application, if the person does not satisfactorily complete the training courses within the following time periods:
 - 1. Two years for a person conducting land application operations as of January 25, 1997.
 - 2. One year for a person that begins conducting land application operations after January 25, 1997.

VI. RIGHT OF ENTRY FOR INSPECTIONS

A person operating under this General Permit shall allow authorized representatives of the Commonwealth, without advance notice or a search warrant, upon presentation of appropriate credentials, and without delay:

- A. To enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this General Permit.
- B. To have access to and copy, at reasonable times, any records that must be kept under the conditions of this General Permit.
- C. To inspect at reasonable times any facilities (including land application sites), equipment (including monitoring and control equipment), practices or operations regulated or required under this General Permit.
- D. To sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act or the Clean Streams Law, any substances or parameters at any location.

VII. RESPONSIBILITIES

A. Duty to Comply

The permittee must comply with all terms and conditions of this General Permit and all renewals and reissuances thereof. Any permit non-compliance constitutes a violation of the Federal Clean Water Act, the

Pennsylvania Clean Streams Law or the Solid Waste Management Act and constitutes grounds for enforcement action, including, but not limited to, civil and criminal penalties, revocation of coverage, denial of coverage renewal, or denial of an application for an individual permit.

B. Need to Halt or Reduce Activity Not a Defense

The permittee may not use as a defense in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this General Permit.

C. Penalties and Liability.

1. Nothing in this General Permit shall be construed to relieve the permittee from civil or criminal penalties for non-compliance pursuant to Sections 602 or 605 of the Clean Streams Law (35 P.S. §§691.602 or 691.605) and the Federal Clean Water Act.
2. Nothing in this General Permit shall be construed to preclude the institution of any legal action or to relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject to under the Clean Water Act and the Clean Streams Law.

D. Property Rights

The approval of coverage under this General Permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

E. Severability

The provisions of this General Permit are severable, and if any provision of this General Permit, or the application of any provision of this General Permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this General Permit shall not be affected thereby.

F. Duty to Provide Information

1. The permittee shall furnish to DEP any information that DEP may request to determine whether cause exists for modifying, revoking, reissuing, or terminating this General Permit or coverage approved under this General Permit, or to determine compliance with this General Permit.
2. The permittee shall furnish to DEP, upon request, copies of records required to be kept by this General Permit.
3. Where the permittee becomes aware that it failed to submit any relevant facts in an NOI, or has submitted incorrect information in an NOI or in any record or report to DEP, it shall promptly submit such facts or information to DEP. **Submitting incorrect information or making any false statement, representation, or certification may result in the imposition of significant penalties including the possibility of fines and imprisonment.**
4. The permittee must give written advance notice to DEP of major changes or expansions of the existing treatment facilities or any planned physical alterations or additions to the permitted operation which could in any way affect the established quality and/or quantity of the residential septage covered under this General Permit. If such a change disqualifies the residential septage for land application, the land application of such residential septage shall stop immediately.

G. Proper Operation and Maintenance

1. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the terms and conditions of this General Permit.
2. Proper operation and maintenance includes, but is not limited to, adequate laboratory controls such as appropriate quality assurance procedures.
3. The permittee shall properly operate and maintain backup or auxiliary facilities or similar systems installed by the permittee, as necessary to achieve compliance with the terms and conditions of this General Permit.

H. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any residential septage use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

I. Adverse Impacts

The permittee shall take all reasonable steps to minimize or prevent any adverse impact on the environment or human health resulting from non-compliance with this General Permit.

J. Transfer of Ownership or Control

1. No approval of coverage under this General Permit may be transferred unless the transfer is approved, in writing, by DEP.
2. In the event of any pending change in control or ownership of facilities from which the authorized processes emanate, the permittee must submit to DEP an *Application for Transfer of Coverage Under a General Permit or Individual Permit* (3800-PM-BCW0479) notifying DEP of such pending change at least 30 days before the proposed transfer date. An application for transfer can be found in the Permits and Forms section of the DEP Biosolids web page at www.dep.pa.gov/biosolids.
3. The new owner or controller must submit a new 30-Day Notice to DEP and the County Conservation District prior to land application.
4. After receipt of the documentation described above, DEP shall notify the existing permittee and the new owner or controller of its decision concerning approval of the transfer.

K. Confidentiality of Records

Except for data determined to be confidential under §607 of the Clean Streams Law, or 25 Pa. Code, Chapter 92a, all records prepared in accordance with the terms of this General Permit shall be available for public inspection at the offices of DEP. Monitoring data shall not be considered confidential.

L. Violations of Permit Conditions

1. DEP may take an enforcement action to restrain violations, to impose criminal or civil penalties, to withhold a permit, or to seek other remedies or relief as authorized by the Clean Streams Law against a permittee that violates any condition or limitation of this General Permit, or any rule, regulation or order issued by DEP pursuant to the Clean Streams Law.
2. In addition, EPA may take an enforcement action to restrain violations, to impose criminal or civil penalties, or to seek other remedies or relief as authorized by the Clean Water Act against a permittee that violates any condition or limitation of this General Permit, or any rule, regulation or order issued by EPA pursuant to the Clean Water Act.

M. Falsifying Information

The permittee or any person who engages in the conduct described below may, upon conviction, be punished by a fine and/or imprisonment pursuant to 18 Pa. C.S. § 4904, or 40 CFR 122.41(j)(5) or (k)(2). (25 Pa. Code §§ 92a.3(c), 92a.41(c)):

1. Falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this General Permit, or
2. Knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this General Permit (including monitoring reports or reports of compliance or non-compliance)

VIII. NOTIFICATION OF WITHDRAWAL BY THE PERMITTEE

When coverage under this General Permit is withdrawn, the following information should be submitted to DEP.

A. A notification of withdrawal that includes:

1. Name, mailing address, and location of the facility for which the notification is submitted.
2. The permittee's name, address, telephone number, ownership status and status as federal, state, private, public or other entity.
3. The general permit number for the beneficial use of residential septage by land application identified by the notice of withdrawal.

B. A completed *Recordkeeping and Reporting Form* for the current year's activities.

C. A plan for the removal and proper disposal of any residential septage remaining at the processing, storage, or land application sites.

- D. The following certification signed in accordance with Section C.II (Signatory Requirements) of this General Permit:

"I certify under penalty of law that all treatment, storage and land application of residential septage from the identified facility that is authorized under PAG-09 (insert coverage approval number) has ceased. I understand that by submitting this notice of withdrawal I am no longer authorized to treat, store or land apply residential septage under this General Permit and that treatment, storage and land application of residential septage without a permit is unlawful under the Clean Streams Law and the Solid Waste Management Act."

Pre-Draft

Appendix A
Processes to Significantly Reduce Pathogens
25 Pa. Code Chapter 271, Appendix A, as amended and updated

1. *Aerobic Digestion*

Sewage sludge is agitated with air or oxygen to maintain aerobic conditions for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 40 days at 68°F (or 20°C) and 60 days at 59°F (or 15°C).

2. *Air Drying*

Sewage sludge is dried on sand beds or on paved or unpaved basins. The sewage sludge dries for a minimum of three months. During two of the three months, the ambient average daily temperature is above 32°F (or 0°C).

3. *Anaerobic Digestion*

Sewage sludge is treated in the absence of air for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 15 days at 95° to 131°F (or 35° to 55°C) and 60 days at 68°F (or 20°C).

4. *Composting*

Using either the within-vessel, static aerated pile, or windrow composting methods, the temperature of the sewage sludge is raised to 104°F (or 40°C) or higher and remains at 104°F (or 40°C) or higher for five days. For four hours during the five days, the temperature in the compost pile exceeds 131°F (or 55°C).

5. *Lime Stabilization*

Sufficient lime is added to the sewage sludge to raise the pH of the sewage sludge to 12 after two hours of contact.

Pre-Draft

Appendix B
Processes to Further Reduce Pathogens
25 Pa. Code Chapter 271, Appendix A, as amended and updated

1. *Composting*

Using either the within-vessel composting method or the static aerated pile composting method, the temperature of the sewage sludge is maintained at 131°F (or 55°C) or higher for three days. Using the windrow composting method, the temperature of the sewage sludge is maintained at 131°F (or 55°C) or higher for 15 days or longer. During the period when the compost is maintained at 131°F (or 55°C) or higher, there shall be a minimum of five turnings of the windrow.

2. *Heat Drying*

Sewage sludge is dried by direct or indirect contact with hot gases to reduce the moisture content of the sewage sludge to 10% or lower. Either the temperature of the sewage sludge particles exceeds 176°F (or 80°C) or the wet bulb temperature of the gas in contact with the sewage sludge as the sewage sludge leaves the dryer exceeds 176°F (or 80°C).

3. *Heat Treatment*

Liquid sewage sludge is heated to a temperature of 356°F (or 180°C) or higher for 30 minutes.

4. *Thermophilic Aerobic Digestion*

Liquid sewage sludge is agitated with air or oxygen to maintain aerobic conditions and the mean cell residence time of the sewage sludge is 10 days at 131° to 140°F (or 55° to 60°C).

5. *Beta Ray Irradiation*

Sewage sludge is irradiated with beta rays from an accelerator at dosages of at least 1.0 megarad at room temperature (CA. 68°F or 20°C).

6. *Gamma Ray Irradiation*

Sewage sludge is irradiated with gamma rays from certain isotopes, such as Cobalt 60 and Cesium 137, at room temperature (CA. 68°F or 20°C).

7. *Pasteurization*

The temperature of the sewage sludge is maintained at 158°F (or 70°C) or higher for 30 minutes or longer.

Appendix C
Analytical Methods

As referenced in 25 Pa § Code 271.906(b), as amended and updated

Methods in the materials listed in this subsection, or in any later amendments published in the *Federal Register*, are incorporated by reference and shall be used to analyze samples of sewage sludge. Other methods may be approved by the Department.

- (1) *Enteric viruses*. ASTM Designation: D 4994-89, "Standard Practice for Recovery of Viruses from Wastewater Sludges," 1992 Annual Book of ASTM Standards: Section 11—Water and Environmental Technology, ASTM, 1916 Race Street, Philadelphia, Pennsylvania 19103-1187.
- (2) *Fecal coliform*. Part 9221 E. or Part 9222 D., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.
- (3) *Helminth Ova*. Yanko, W. A. "Occurrence of Pathogens in Distribution and Marketing Municipal Sludges," EPA 600/1-87-014, 1987. National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB 88-154273/AS).
- (4) *Inorganic pollutants*. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, Second Edition (1982) with Updates I (April 1984) and II (April 1985) and Third Edition (November 1986) with Revision I (December 1987). Second Edition and Updates I and II are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB-87-120-291). Third Edition and Revision I are available from Superintendent of Documents, Government Printing Office, 941 North Capitol Street, NE., Washington, DC 20002 (Document Number 955-001-00000-1).
- (5) *Salmonella SP. Bacteria*. Part 9260 D., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005; or Kenner, B. A. and H. P. Clark, "Detection and Enumeration of *Salmonella* and *Pseudomonas Aeruginosa*," *Journal of the Water Pollution Control Federation*, Vol. 46, No. 9, September 1974, pp. 2163- 2171. Water Environment Federation, 601 Wythe Street, Alexandria, Virginia 22314.
- (6) *Specific oxygen uptake rate*. Part 2710 B., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.
- (7) *Total, fixed and volatile solids*. Part 2540 G., "Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.

Appendix E –DEP Response to Draft Report



June 13, 2023

Christopher Latta, Executive Director
Legislative Budget and Finance Committee
Room 400
Finance Building
Harrisburg, PA 17105-8737

Dear Executive Director Latta,

The Department of Environmental Protection (DEP) appreciates the time and effort the Legislative Budget and Finance Committee (LBFC) spent in the evaluation of the pre-draft versions of DEP's proposed revisions to the three (3) general permits (PAG-07, 08, and 09) for land application of biosolids and residential septage pursuant to House Resolution 149 of 2021. The LBFC report is well-researched and thorough. We appreciated the opportunity to review and provide comments on an advanced version of the report. We hope that you find our comments helpful.

DEP believes that the LBFC report follows the direction of House Resolution 149 of 2021 to estimate costs and assess the practicality of the proposed revisions for permit holders, but DEP believes that public health and environmental benefits of the proposed revisions to these permits – which LBFC was not directed to study – also need to be considered in weighing the public interest of the proposed permit revisions. DEP continues to acknowledge that the proposed revisions will lead to increase costs for permittees, but DEP contends that benefits to public health and the environment will offset, to some extent, and potentially outweigh the costs to permittees, even if estimating the scale and distribution of those benefits is subject to some similar challenges as LBFC encountered in estimating the costs of the proposed revisions to permittees (e.g., the necessarily site-specific nature of such analyses).

Generally speaking, we cannot comment on the cost figures contained in the report, as the report includes neither the data nor the methodology used to calculate them. We do, however, offer the following comments, organized by report page number, that we believe will help to clarify the report and help the LBFC, the General Assembly, and other Pennsylvanians to understand DEP's position on these issues.

- **Page S-1 – “... the organic matter left over from processing wastewater through sewage treatment facilities...”**

DEP recommends that LBFC modify this definition of biosolids. As noted on the United States Environmental Protection Agency's (USEPA) "[Basic Information about Biosolids](#)" webpage, biosolids are the finished solid products that are generated from the treatment of wastewater and which are subsequently treated to meet the land application standards

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in EPA's regulations at 40 CFR Part 503 and, in Pennsylvania, the Commonwealth's land application standards at 25 Pa. Code Chapter 271 Subchapter J to reduce the risks to human health and the risks of environmental pollution. The definitions and descriptions of biosolids at the beginning of page S-3, in the third paragraph on page 7, and in the first sentence of the "Biosolids" section on page 10 of LBFC's report are more accurate than this definition on page S-1.

As footnoted on page S-1 of LBFC's report, the terms "sewage sludge" and "biosolids" are often used interchangeably. DEP notes that the term "sewage sludge" is defined at 25 Pa. Code § 271.1.

DEP also notes that, while the PAG-07 and PAG-08 general permits are for land application of biosolids, the PAG-09 general permit is for land application of residential septage, and that the term "residential septage" is also defined at 25 Pa. Code § 271.1.

- **Page S-1 – "... the beneficial use of biosolids is becoming an increasingly important issue because the Department of Environmental Protection (DEP) has proposed changes to the general permits that govern the beneficial use of biosolids in land application settings."**

From DEP's perspective, beneficial use of biosolids and residential septage is an increasingly important issue not because DEP is proposing changes to these general permits, but because some public health and environmental impacts associated with land application of biosolids and residential septage are now better understood, such as the human health impacts associated with exposure to perfluoroalkyl and polyfluoroalkyl substances (PFAS) and impacts to water quality associated with excessive phosphorus loading. DEP also notes that land application of biosolids and residential septage in Pennsylvania has been controversial for a long time, with residents near existing or proposed land application sites often challenging the practice.

- **Page S-1 – "... DEP's responsibilities under the Clean Water Act..."**

It is important to note that Pennsylvania's regulation of the beneficial use of biosolids by land application, in 25 Pa. Code Chapter 271 Subchapter J, is rooted in the federal regulations at 40 CFR Chapter I Subchapter O, which were finalized in 1993, and that Pennsylvania's regulations have retained other requirements that existed prior to those federal regulations, as detailed in the preamble to the Environmental Quality Board's (EQB) 1997 rulemaking published at [27 Pa.B. 521](#). The retention of these other requirements in Pennsylvania's regulations provides for regulations that are more protective than federal regulations when appropriate.

- **Page S-2 – "... the commonwealth's need to ensure compliance with the Bay's watershed improvement plan."**

DEP suggests revising this phrase to "... the Commonwealth's efforts to meet the Chesapeake Bay Total Maximum Daily Load (TMDL) and the goals and outcomes of the

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Chesapeake Bay Watershed Agreement, as detailed in Pennsylvania’s Phase 3 Chesapeake Bay Watershed Implementation Plan.”

DEP recommends similar revisions to the last sentence of the second paragraph on page 7 of the report.

- **Page S-3 – “In 2018, 43 percent of biosolids were land applied, primarily for agricultural purposes.”**

DEP recommends LBFC add a footnote citing the source of this information, which also appears in the “Fast Facts” sidebar on page 7 of LBFC’s report.

- **Page S-3 – “Because of Pennsylvania’s proximity to the Chesapeake Bay...”**

DEP recommends revising this paragraph to read as follows:

“To restore water quality in local waterways that flow to the Chesapeake Bay, Pennsylvania’s Phase 3 Chesapeake Bay Watershed Implementation Plan lays out a path to reducing the amount of nitrogen, phosphorus, and sediment entering Pennsylvania waterways to meet the Chesapeake Bay TMDL and the goals and outcomes of the Chesapeake Bay Watershed Agreement.”

- **Page S-4 – “In 1997, the department updated...”**

Technically, the EQB, not DEP, promulgated these regulations. The same comment applies to the second sentence of the third paragraph on page 21 and the last sentence of the second paragraph on page 24 of LBFC’s report.

- **Page S-4 – “DEP monitors biosolids land applications with three “general permits,” which are classified based on quality.”**

DEP recommends revising this sentence and the remainder of this paragraph as follows:

“DEP authorizes land application of biosolids and residential septage with three general permits, which are the focus of HR 149 and this study: PAG-07 for exceptional quality biosolids; PAG-08 for biosolids other than exceptional quality biosolids; and PAG-09 for residential septage. While the three permits are similar in structure, each establishes separate criteria that must be met for beneficial use and also sets different requirements for when and how biosolids can be land applied.”

DEP recommends similar revisions to the end of the third paragraph on page 21 and the end of the first paragraph in the “Issue Areas” section on page 23 of LBFC’s report.

- **Page S-4 – “DEP finalized predraft versions...”**

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DEP recommends revising this and the following sentence as follows:

“DEP developed pre-draft versions of the permits with proposed revisions and shared the pre-draft permits with a stakeholder workgroup and DEP advisory bodies for review. DEP received comments on the pre-draft permits from the stakeholder workgroup and will use those comments to make revisions to the permit documents prior to publishing draft permits for public comment.”

DEP recommends similar revisions to the corresponding sentences in the third paragraph on page 22 and in the second paragraph on page 28 of LBFC’s report.

- **Page S-5 – “PFAS chemicals are known carcinogens...”**

DEP recommends revising this sentence as follows, potentially with a footnote citing to EPA’s [“Our Current Understanding of the Human Health and Environmental Risks of PFAS”](#) webpage:

“Exposure to PFAS may lead to a variety of adverse human health outcomes,^[potential footnote] and Pennsylvania has already set limits for two PFAS in drinking water.”

DEP recommends similar revisions to the corresponding sentence in the fifth paragraph on page 22 of LBFC’s report.

- **Page S-5 – “... these water standards do not apply to biosolids.”**

It is important to note that the rulemaking promulgated by the EQB in January 2023 (see [53 Pa.B. 333](#)) set maximum contaminant levels (MCLs) for two PFAS – PFOA and PFOS – in drinking water. DEP agrees that those standards are not directly applicable to biosolids; however, DEP has an obligation to ensure that ground and surface waters are sufficiently protected from PFAS contamination so that these waters can be safely used as public and private drinking water sources. The proposed monitoring for PFAS in biosolids allows DEP to begin understanding one potential source of PFAS contamination in the environment.

It is also important to note that, based on discussion with EPA, DEP is expected to begin requiring monitoring of PFAS in biosolids for implementation of the Federal Pretreatment Program. Although DEP does not have primacy of the Federal Pretreatment Program, EPA coordinates with DEP through the NPDES Permitting program to implement pretreatment requirements.

These comments also apply to the corresponding statement in the fifth paragraph on page 22 and the last sentence of the third paragraph on page 34 of LBFC’s report.

- **Page S-5 – “In fact, there are no current federal testing requirements, nor limitations on PFAS in biosolids...”**

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DEP notes that several states have taken or are considering steps to address PFAS in biosolids (see, for instance, the Environmental Council of the States January 2023 report, [*PFAS in Biosolids: A Review of State Efforts & Opportunities for Action.*](#))

- **Page S-7 – “... a more collaborative approach...”**

The environmental rulemaking process in Pennsylvania undoubtedly has robust opportunities for public participation and legislative review. That said, DEP notes that DEP has already engaged in extensive collaborative outreach and engagement on the proposed revisions to these permits at the pre-draft stage through the DEP-convened stakeholder workgroup, consultation with DEP advisory bodies, and in meeting with and providing information to LBFC as LBFC was preparing this report as directed by House Resolution 149 of 2021. DEP also notes that further public participation will occur when the draft permits are published for public comment.

Revising regulations is a very time-intensive and resource-intensive process. As detailed in other comments on LBFC’s report, DEP believes that the proposed revisions to the permits are prudent to manage risks to public health and the environment and that the proposed revisions are entirely consistent with DEP’s authority under the existing regulations. DEP believes that delaying the proposed permit revisions until after a rulemaking process to update the regulations would allow potential risks to public health and the environment to continue for years and unduly delay the public health and environmental benefits that would flow from the proposed permit revisions. DEP believes these delays would not be in the best interest of Pennsylvanians and may not be in keeping with Article I, Section 27 of the Constitution of Pennsylvania.

Given the current scientific understanding of the issues involved in the proposed permit revisions, DEP believes that – if the proposed permit revisions were put on hold until regulatory revisions were completed – it would be extremely unlikely that any proposed regulatory revisions would differ significantly from the proposed permit revisions. In other words, putting the permit revisions on hold pending regulatory revisions would put all parties involved at the same point we are at now, with the same issues and concerns, just at a later point in time. And, in the meantime, no improvements will have been made in public health or environmental protection.

We believe that the proposed permit revisions advance DEP’s mission of protecting human health and the environment and do so well within DEP’s existing regulatory authority. LBFC’s report acknowledges that DEP has the authority to add additional or more stringent requirements to these permits. We agree, and we believe that the proposed permit revisions are the best alternative to timely further DEP’s mission to protect public health and the environment.

This comment also applies to other places in LBFC’s report citing the need for a more collaborative approach (i.e., a rulemaking), including the following:

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- the third bullet in the “Fast Facts” sidebar on page 45;
- the last sentence on page 46;
- the sentence about “... a better and more inclusive way to meet the regulatory goal...” in the first paragraph on page 76;
- the sentence about “involving all stakeholders and the General Assembly in the regulatory process” at the end of the third paragraph on page 77; and
- the last sentence of the last paragraph on page 78 which continues on to page 79.

- **Page S-8 – Recommendation 1**

DEP believes that the proposed revisions to the permits are entirely consistent with the existing regulations and that the existing regulations – particularly 25 Pa. Code §§ 271.902(g) and 271.904 – provide ample authority for DEP to implement the proposed permit revisions.

- **Page 2 – “...collaborated with a stakeholder association...”**

It is important to note that DEP also collaborated with stakeholder workgroup, comprised of permittees, land appliers, and other stakeholders. DEP requested cost data on the pre-draft proposed revisions of the permits from that stakeholder workgroup, but DEP received minimal cost information from workgroup participants. One stakeholder provided cost on PFAS sampling and analysis costs. One stakeholder provide an estimated cost for implementing the P-index but provided little information to support the estimated cost. In general, the stakeholders generally stated that the changes would cost more.

- **Page 4 – “Per- and Polyfluorinated Substances”**

DEP recommends LBFC revise this to “Perfluoroalkyl and polyfluoroalkyl substances”.

- **Page 5 – “Federal limits on nitrogen, phosphorus, and sediment pollution related to the Chesapeake Bay.”**

DEP notes that TMDLs exist for many waterbodies and that the Chesapeake Bay TMDL is one specific TMDL for one specific waterbody.

- **Page 10 – Exhibit 2: Typical Wastewater Treatment Plant Process**

Chlorination is not considered as advanced treatment. It is considered to be a compulsory part of the secondary treatment process, essential to protect public health and safety from pathogens that are found in wastewater effluent.

- **Page 11 – “Federal regulations classify biosolids into two distinct classes...” and “...EPA's highest pollutant, pathogen, and vector attraction reduction standards.”**

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These federal classifications are solely based on pathogen reduction requirements, and do not distinguish biosolids into the Exceptional Quality (EQ) biosolids and non-EQ biosolids. The EQ and Non-EQ classifications are based on Pennsylvania regulations (see 25 Pa. Code § 271.911(b)). As provided in 25 Pa. Code § 271.911(b)(3), EQ biosolids are also required to be non-liquid and non-recognizable as human waste.

- **Page 12 – “In Pennsylvania, nitrogen is the primary nutrient that limits biosolids land application.”**

This statement is accurate to the extent that the current biosolids land application regulations – federal regulations and Pennsylvania regulations – focus on nitrogen rather than phosphorus. However, DEP believes it is important to note that the federal biosolids land application regulations promulgated by EPA in 1993, in which Pennsylvania’s biosolids land application regulations are rooted, anticipated a second round of regulations (which have not yet materialized) that would, among other things, “... further evaluate the potential risks and benefits of nutrients contained in sludge...” including ecological risks such as eutrophication of waterbodies (see [58 FR 9276](#)). The focus of the federal regulations solely on nitrogen as a nutrient is further reflected in EPA’s 1995 [A Guide to the Biosolids Risk Assessments for the EPA Part 503 Rule](#) (see especially the “Step N-8, Management and Regulation of Nutrients” discussion on page 54).

- **Page 19 – “DEP has identified...”**

DEP recommends revising this to “Pennsylvania’s Phase 3 Chesapeake Bay Watershed Implementation Plan has identified...” DEP is only one among an array of partners that came together to develop and implement Pennsylvania’s Phase 3 Chesapeake Bay Watershed Implementation Plan (see [Appendix 1 – Steering Committee and Workgroup Members](#)).

- **Page 21 – “Fast Facts... DEP monitors biosolids and residential septage land application through three “general permits.”**

DEP recommends revising “monitors” to “authorizes” here, and removing the quotation marks around “general permits.”

- **Page 21 – “Fast Facts...”**

DEP recommends removing the quotation marks around “administratively extended”.

- **Page 21 – “PAG-07 pertains to “exceptional value” biosolids...”**

The proper term is “exceptional quality”, not “exceptional value”.

- **Page 21 – “These biosolids, known as Class A...”**

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Class A refers only to pathogen reduction. Biosolids can be Class A in pathogen reduction and not be EQ if they do not meet the other requirements for EQ status as provided at 25 Pa. Code § 271.911(b). For example, biosolids that meet the Class A pathogen reduction requirement, but are liquid would not be EQ biosolids due to the provision in 25 Pa. Code § 271.911(b)(3) that EQ biosolids be non-liquid. The same applies to biosolids that do not meet the pollution concentrations in Table 3 in 25 Pa. Code § 271.914(b)(3) or the EQ vector attraction reduction requirement. All of these requirements must be met for the biosolids to be classified as EQ. DEP recommends that the LBFC provide further explanation in this section.

- **Page 22 – “... but to a lesser extent than Class A biosolids...”**

Note that non-EQ biosolids can meet the Class A pathogen requirements and still be non-EQ if they do not meet all of the other requirements for EQ status. See DEP’s prior comment for details. DEP recommends that the LBFC provide further explanation in this section.

- **Page 23 – “The current regulatory framework managing biosolids use in the commonwealth represents a shift from how DEP historically monitored the material.”**

DEP respectfully suggests that this sentence may lead readers to inaccurately believe that there have been recent changes to the regulatory framework for biosolids management in Pennsylvania when the current regulatory framework has been in place for more than 26 years (with one minor amendment in 2000; see [30 Pa.B. 6685](#)). DEP suggests that revising this sentence as follows may be preferable:

“The regulatory framework for managing biosolids changed significantly in the 1990s with promulgation of federal regulations in 1993 and subsequent promulgation of Pennsylvania regulations in 1997.”

This comment also applies to the first sentence in the third paragraph on page 24 and, to a lesser extent, the first sentence in the “Proposed Permit Revisions and Timeline of Changes” subsection on page 27 of LBFC’s report.

- **Page 24 – “... exceptional quality (EQ, or Class A)...”**

As noted previously, Class A refers only to pathogen reduction. Biosolids can be Class A in pathogen reduction and not be EQ if they do not meet the other requirements for EQ status. DEP recommends removing “or Class A” here.

- **Page 24 – “... non-exceptional quality (non-EQ, or Class B)...”**

As noted previously, non-EQ biosolids can meet the Class A pathogen requirements and still be non-EQ if they do not meet all of the other requirements for EQ status. DEP recommends removing “or Class B” here.

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- **Page 25 – Exhibit 5**

There are three (3) items that DEP recommends adding to the PAG-09 column of the Exhibit 5 table.

1. PAG-09 applies to persons who land apply residential septage.
2. Written consent and notification is required for PAG-09 as provided in Part D.I of the pre-draft PAG-09 and Section E of the Permit Requirements for the currently effective PAG-09.
3. Isolation distances also apply to PAG-09 as provided in Part D.III.A.6. of the pre-draft PAG-09 and Section B.4 of the Permit Requirements for the currently effective PAG-09.

In general, the requirements in PAG-08 for non-EQ biosolids are similar to the requirements in PAG-09 for residential septage.

- **Page 26 – “... EQ biosolids must meet the highest levels of pollutant concentration, pathogen reduction, and vector attraction.”**

It is also important to note that they must also be non-liquid and non-recognizable as human waste.

- **Page 26 – “... considered Class A.”**

As previously noted, Class A refers only to pathogen reduction. Biosolids can be Class A in pathogen reduction and not be EQ if they do not meet the other requirements for EQ status. We recommend replacing “Class A” with “EQ”.

- **Page 26 – “... Class B material...” and “... Class B biosolids...”**

As previously noted, non-EQ biosolids can meet the Class A pathogen requirements and still be non-EQ if they do not meet all of the other requirements for EQ status. We recommend replacing “Class B” with “non-EQ”.

- **Page 26 – “... the cumulative pollutant loading rates for eight elements determined by DEP.”**

DEP notes that the cumulative pollutant loading rates in 25 Pa. Code § 271.914(b)(2) Table 2 mirror those in the federal regulations at 40 CFR 503.13(b)(2) Table 2.

- **Page 27 – “... Class A or B biosolids.”**

For reasons noted in previous comments, we recommend revising “Class A or B biosolids” here to “EQ or non-EQ biosolids”.

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- **Page 27 – “According to DEP, the regulations outlined in Title 25, Pa. Code, Chapter 271, Subchapter J – and consequently, the general permits – have not significantly changed since their inception 26 years ago.”**

Since promulgation by the EQB in 1997, the regulations at 25 Pa. Code Chapter 271 Subchapter J have only been amended once, consisting of a minor amendment to § 271.915 in 2000 (see [30 Pa.B. 6685](#)).

Since originally being issued in 1997 (as draft at [27 Pa.B. 482](#) and as final at [27 Pa.B. 2584](#)), the three general permits have been revised several times in various ways as detailed in the following notices:

- PAG-07: [32 Pa.B. 377](#), [32 Pa.B. 1350](#), [32 Pa.B. 5213](#), [32 Pa.B. 5808](#), [33 Pa.B. 5477](#), [34 Pa.B. 1853](#), [39 Pa.B. 1062](#), [39 Pa.B. 3535](#)
- PAG-08: [32 Pa.B. 376](#), [32 Pa.B. 1350](#), [32 Pa.B. 5213](#), [32 Pa.B. 5808](#), [33 Pa.B. 5477](#), [34 Pa.B. 1853](#), [39 Pa.B. 1062](#), [39 Pa.B. 3535](#)
- PAG-09: [32 Pa.B. 377](#), [32 Pa.B. 1350](#), [32 Pa.B. 5213](#), [32 Pa.B. 5808](#), [33 Pa.B. 5478](#), [34 Pa.B. 1854](#), [39 Pa.B. 1062](#), [39 Pa.B. 3535](#)

This comment also applies to the “Current Permits Administratively Extended” box in Exhibit 6 on page 29 of LBFC’s report.

- **Page 28 – “However, according to DEP, the AAB workgroup could not establish a quorum...”**

For clarification, the AAB formed a workgroup which DEP was a part of, but the workgroup was an ad hoc workgroup that didn’t require a quorum to operate; this comment also applies to the “Advisory Workgroups Fail to Form” box in Exhibit 6 on page 29 of LBFC’s report. The AAB workgroup met several times and discussed the key issues involved in the proposed revisions to the permit. In general, the participants in the AAB workgroup had similar concerns as the DEP-formed stakeholder workgroup. DEP gathered information during the AAB workgroup sessions, but no formal comments or recommendations were provided to DEP from the AAB workgroup or from the AAB. The participants in the AAB workgroup and the topics covered during the workgroup sessions were similar to the participants and the topics covered during the DEP-formed stakeholder workgroup sessions.

- **Page 28 – “As a result, the department created an additional stakeholder group...”**

The DEP-formed stakeholder workgroup was a part of the outreach process DEP planned for the proposed revisions to the permits; it was not a result of the WRAC workgroup not materializing.

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It is also important to note that DEP made several attempts to get the WRAC workgroup to move forward. Ultimately, the DEP-formed stakeholder workgroup represented a more diverse group of stakeholders, so the outreach and information gathered during the DEP-formed stakeholder workgroup was likely representative of feedback that would have been gathered through the WRAC workgroup. It is also important to note that the concerns from both the AAB workgroup and the DEP-formed workgroup were qualitative, not quantitative in nature (e.g., workgroup participants did not provide any information on estimated cost impacts of the proposed permit revisions to DEP). Despite DEP's effort to gather cost information from workgroup participants, the participants were reluctant to provide cost information and were satisfied to generally say the proposed permit revisions would be costly to them and those affected by the requirements.

- **Page 28 – “Although invited to attend, DEP did not appear at the hearing. DEP noted to us that it declined to participate in the meeting because its efforts were best utilized by continuing the stakeholder engagement, which was ongoing at that time. DEP noted that administratively it was still in the pre-draft stage of the permit (as it remains) and was continuing to solicit feedback from stakeholders.”**

Another reason DEP did not offer testimony at the hearing is that DEP thoroughly detailed its positions on the proposed revisions to the permits in an October 2021 letter to the committee's then-Chairman, which responded to a September 2021 letter to DEP from the committee's then-Chairman.

- **Page 28 – “... in late 2022 during the gubernatorial transition and appointment of new DEP executive leadership.”**

DEP put the permit revisions on hold to allow the LBFC to study the proposed revisions as directed by House Resolution 149 of 2021. DEP did not want to move forward with the proposed revisions until the LBFC completed its work and issued its report so that DEP could consider any findings from the report. This comment also applies to the “Permit Changes on Hold” box in Exhibit 6 on page 29 of LBFC's report.

- **Page 32 – “... In the Pennsylvania Phase 3 Chesapeake Bay Watershed Implementation Plan (Phase 3 WIP), DEP suggests...”**

We recommend revising this to “Pennsylvania's Phase 3 Chesapeake Bay Watershed Implementation Plan has identified...” DEP is only one among an array of partners that came together to develop and implement Pennsylvania's Phase 3 Chesapeake Bay Watershed Implementation Plan (see [Appendix 1 – Steering Committee and Workgroup Members](#)). The recommendation for considering use of the P-Index in PAG-07, PAG-08, and PAG-09 came from the Phase 3 WIP's Agriculture Workgroup. This comment also applies to the following phrases on page 32: “In Phase 3 WIP, DEP proposes...” and “While DEP's proposal...”

- **Page 32 – “Since typical biosolids contain...”**

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We recommend LBFC's report add a footnote citing the source of this quote, which appears to be from the pre-draft PAG-07, PAG-08, and PAG-09 executive summaries. We also recommend revising "biosolids" in this quote to "biosolids/septage" to reflect that this language appears in the pre-draft PAG-07 and PAG-08 executive summaries (biosolids) and the pre-draft PAG-09 executive summary (septage).

- **Pages 31-32 – P-Index**

We would like to offer some more information on why DEP believes the P-Index provisions proposed to be added to these permits is appropriate. Sewage treatment facilities throughout the Bay watershed have made significant investments in infrastructure to reduce phosphorus concentrations in their effluent, and – as noted in LBFC's report – use of the P-Index is already required for land application of animal manures regulated by Act 38 of 2005. The [2022 Pennsylvania Integrated Water Quality Report](#) documents that nutrients and related causes of water quality impairment (e.g., organic enrichment, eutrophication) are responsible for impairment of more than 4,000 miles of Pennsylvania waterways. Given the extent of nutrient-related water quality impairments in Pennsylvania, the efforts of that other entities in the Commonwealth (e.g., sewage treatment facilities, animal manure applicators) have made to reduce phosphorus pollution, and the fact that – as noted in a previous comment – the second round of federal biosolids regulations to further evaluate potential risks and benefits of nutrients have not yet materialized, DEP believes that adding the proposed P-Index provisions to PAG-07, PAG-08, and PAG-09 is a prudent addition to an overall strategy to prevent and restore nutrient-related water quality impairments in Pennsylvania.

- **Page 33 – “Concerns have been raised...”**

We recommend LBFC's report add a footnote citing the source of this quote, which appears to be from the pre-draft PAG-07 and PAG-08 executive summaries. DEP similarly recommends adding citations for other DEP quotes throughout LBFC's report.

- **Page 35 – “... any potential rulemaking at the federal level is likely years away.”**

While this is likely true for revisions to the federal biosolids regulations, it is also important to note – as noted in a prior comment – that, based on discussion with EPA, DEP is expected to begin requiring monitoring of PFAS in biosolids for implementation of the Federal Pretreatment Program. Although DEP does not have primacy of the Federal Pretreatment Program, EPA coordinates with DEP through the NPDES Permitting program to implement pretreatment requirements.

- **Page 35-36 – Blending**

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- **Page 35-36 – Blending**

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We are providing the following information in support of DEP's clarification of existing regulations as pertains to blending of other wastes with sewage sludge.

Co-digestion of sewage sludge and high-strength organic waste (HSOW) is becoming a more common practice at sewage treatment facilities. Co-digestion has environmental benefits, which include the reduction in landfilled waste and the use of the waste to enhance methane production during digestion, which enhances energy production. Co-digestion may also provide economic benefits to the processor through fees for accepting the wastes to be co-digested and the potential for reduction in power costs to operate the facility.

DEP understands the beneficial environmental and economic impacts that co-digestion provides facilities. Our goal is to help facilitate these types of projects in a manner consistent with Commonwealth rules and regulations. There are, however, concerns about the permitting of such facilities under permits issued under the authority of 25 Pa. Code Chapter 271 Subchapter J.

As provided in existing regulations, the type of beneficial use permitting is dependent on the type of material being proposed for beneficial use. The following lists the type of material and regulations that provides for its beneficial use:

1. Municipal Waste – 25 Pa. Code Chapter 271 Subchapter I
2. Biosolids (sewage sludge, as a specific type of municipal waste) – 25 Pa. Code Chapter 271 Subchapter J
3. Residual Waste – 25 Pa. Code Chapter 287

More specifically, the Beneficial Use of Sewage Sludge / Residential Septage by Land Application general permits (PAG-07, PAG-08, and PAG-09) are authorized under 25 Pa. Code Chapter 271 Subchapter J.

Co-digestion includes the comingling of various types of waste and sewage sludge prior to the processing of the materials. The types of materials dictate the beneficial use permit that a facility can operate under.

Section 271.801 in Subchapter I provides requirements for general permits for the processing and beneficial use of municipal waste. It provides (emphasis added):

“(2) This subchapter does not set forth requirements for general permits for the beneficial use of sewage sludge by land application, except as provided in § 271.821(b)(6) (relating to application for general permit). **A general or individual permit for the beneficial use of sewage sludge not mixed with residual waste will be issued only under Subchapter J (relating to beneficial use of sewage sludge by land application).**”

In other words, the regulations specifically state that Subchapter J is for coverage of sewage sludge not mixed with residual wastes.

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In § 271.811 (relating to authorization for a general permit under Subchapter I), paragraph (e) authorizes the Department to issue a general permit for processing combinations of municipal and residual wastes when processing is necessary prior beneficial use. It provides that (emphasis added), **“A general permit for processing or beneficial use of combinations of sewage sludge and residual waste will be issued only under this subchapter.”** with the subchapter being referred to being Subchapter I.

Also under Subchapter I, §§ 271.811(f) and (g)(4) further emphasize how comingled material may be permitted, by the following requirements:

“(f) The requirements in this subchapter that apply to municipal waste also apply to residual waste when residual waste is mixed with municipal waste.”

“(g)(4) The beneficial use of sewage sludge by land application for sewage sludge that is not mixed with residual waste.”

The residual waste regulations also provide clarity on the issue. 25 Pa. Code § 287.611 provides authorization for general permits for processing combinations of municipal and residual wastes when processing is necessary to prepare a waste for beneficial use. It also provides that (emphasis added), **“A general permit for processing or beneficial use of combinations of sewage sludge and residual waste will be issued only under Chapter 271, Subchapter I (relating to beneficial use).”**

Based on these regulatory requirements, land application of biosolids may be authorized under 25 Pa. Code Chapter 271 Subchapter J when the material consists only of sewage sludge that is not mixed with residual waste. General permits for processing or beneficial use of combinations of sewage and residual waste may only be issued under 25 Pa. Code Chapter 271 Subchapter I.

- **Page 37 – Exhibit 9**

We have two comments on this exhibit:

1. The digesters should be anaerobic digesters, not aerobic digesters. Aerobic digesters do not produce biogas and would be of no value for energy generation or cost reduction. Adding outside waste to an aerobic digestion process would require more energy to operate and therefore be of less value.
2. In the second schematic (“Current Sewage Sludge Treatment with Hauled-Waste”), this is a “combination of sewage sludge and residual waste” and should be permitted under 25 Pa. Code Chapter 271 Subchapter I, not 25 Pa. Code Chapter 271 Subchapter J.

- **Page 37 - “... proposed “refined” definition of blending.”**

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As noted previously, the regulations are about what can and cannot be covered under 25 Pa. Code Chapter 271 Subchapter J. DEP recognizes the need to provide an avenue for authorized operation of co-digestion facilities and is working toward providing the appropriate avenue to facilitate waste-energy operations (see this March 30, 2023 presentation from DEP's Bureau of Waste Management to DEP's Solid Waste Advisory Committee). Until that permitting mechanism is in place, existing facilities can continue to operate under the existing permits.

- **Page 37 – “... there are draft permits in the works...”**

DEP's Bureau of Waste Management presented an overview of the proposed general permit to DEP's Solid Waste Advisory Committee on March 30, 2023 and is working towards issuing a draft permit for public comment.

- **Page 38-39 – Storage**

We offer this following information on the proposed clarifications of the biosolids storage requirements. The biosolids permits are for beneficial use of biosolids by land application. Staging of material on a land application site on a temporary basis is acceptable to allow for the logistics of land application to take place. When biosolids are stored on site for long periods of time, prevention of run-on and runoff is necessary for protection of public health and the environment.

25 Pa. Code Chapter 285 regulates the storage, collection, and transportation of municipal waste. Section 285.134 provides requirements for the storage of sewage sludge in piles. These requirements include collecting and treating leachate from storage areas, only storing material where land application is allowed, and not storing sewage sludge for more than a week unless approved by DEP in writing.

If land application activities require material to be stored on site for longer than a week as allowed by regulation, then more specific requirements for the storage needs to be in place. Covering long-term on-site storage of material or constructing storages provides compliance with these requirements. DEP may be open to other options if stakeholders propose options that meet the regulatory requirements.

- **Page 38 - “... in 2018, staff encountered pollution events from biosolids leachate runoff that traveled in some cases over 500 yards into nearby bodies of water.”**

Although 2018 was the worst year recently, our field staff indicate that they spend significant time investigating runoff events due to improper storage and field verifying storage locations and conditions. Runoff is an ongoing problem at application sites.

- **Page 39 - “Prohibition of land application practices resulting in off-site deposition of biosolids dust.”**

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This is not a new requirement. Existing provisions prohibit creating public nuisances. The proposed revision provides additional emphasis on dust management because DEP field staff continually deal with dust complaints from landowners next to application sites. Under 25 Pa. Code § 285.211, there are several requirements to eliminate the potential for and to control dust during the storage, collection, and transportation of municipal wastes.

- **Page 41 – “Currently, there are no PFAS testing requirements for biosolids among the Bay states or the District of Columbia.”**

We note that the proposed PFAS monitoring and reporting requirements for PAG-07 and PAG-08 are not driven by any concern specific to the Chesapeake Bay, but rather the adverse health impacts associated with exposure to PFAS.

- **Page 47 – “... requirements for EQ (Class A) and non-EQ (Class B) biosolids...”**

For reasons noted in previous comments, we recommend dropping “(Class A)” and “(Class B)” here.

- **Page 55 – “... DEP attempted to work with the Agricultural Advisory Board (AAB) and Water Resources Advisory Committee (WRAC) workgroups to obtain site-specific data...”**

DEP also sought such information from the DEP-convened stakeholder workgroup.

- **Page 57 – “... it is unclear how the department plans to use the information supplied by PAG-07 and PAG-08 permit holders to monitor PFAS contamination or what specific incentives will exist for wastewater treatment facilities to encourage industrial contributors to reduce PFAS pollution.”**

How the PFAS monitoring information will be used and what incentives may be appropriate for wastewater treatment facilities to encourage reduction of PFAS in their influent will depend on how PFAS regulations evolve over time (e.g., EPA’s finalization of its PFAS drinking water rulemaking, any EPA recommendations on ambient water quality criteria for PFAS). For previously noted reasons, DEP believes the PFAS monitoring and reporting requirements for PAG-07 and PAG-08 are appropriate. These monitoring and requirements will inform DEP and Pennsylvanians if PFAS in land-applied biosolids pose significant risks to public health and the environment, which will allow appropriate steps to be taken to address any such risks.

Regarding the proposed PFAS monitoring and reporting requirements, DEP would also like to note these requirements are proposed to be required because it is well known that there are PFAS compounds in biosolids. What is not known is the level of PFAS in biosolids that are being land applied in Pennsylvania. Several PFAS cause adverse health effects at very low levels, as reflected in [USEPA’s recently proposed PFAS National Primary Drinking Water Regulation](#). Understanding the potential sources and quantities

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of PFAS introduced into the environment from all sources is important. Failure to monitor for PFAS in biosolids in Pennsylvania will hamstring DEP's ability to assess the public health risks that PFAS in biosolids may pose to Pennsylvanians. DEP is committed to protecting public health from the negative health effects of PFAS exposure, and is working to do this through all environmental media within DEP's authority. For example, through the EQB, DEP recently finalized a rulemaking to limit PFAS in drinking water (see [53 Pa.B. 333](#)). Adding PFAS monitoring requirements to the biosolids land application general permits will give DEP the information necessary to evaluate and, if necessary, limit the public health risks that may be posed by PFAS in land-applied biosolids (e.g., through runoff into drinking water sources).

Additionally, requiring PFAS monitoring for biosolids is anticipated to result in a reduction of PFAS in biosolids in Pennsylvania. This anticipated reduction is due to treatment facilities having greater incentives to enforce pretreatment ordinances with industrial contributors of PFAS, thereby resulting in lower levels of PFAS in industrial discharges to sewer systems. This will likely result in less PFAS in biosolids, and a reduction of health risks from land application of biosolids.

Moreover, requiring PFAS monitoring in these permits will prepare Pennsylvania to comply with likely revisions of the federal biosolids regulations to address PFAS. As part of its [PFAS Strategic Roadmap](#), USEPA is conducting a risk assessment for two PFAS in biosolids. In [USEPA's biosolids regulation framework](#), risk assessment is the step prior to considering regulation. By requiring PFAS monitoring in these permits, Pennsylvania will not only incentivize the previously described reductions in PFAS in biosolids and associated health risk reductions, but will also be better prepared to comment on and comply with likely federal regulations on PFAS in biosolids.

- **Page 59 – “... DEP would need to take additional steps with EPA to receive credit in the WIP for this proposed permit addition.”**

Implementing the P-Index provisions in the permits is a first step on which those additional steps towards getting credit in the Phase 3 WIP are predicated.

- **Page 59 – “... the percent of phosphorus reduction that DEP would expect to see in the WIP would not be calculated until after the P-Index has been enacted.”**

These calculations will not be possible unless the P-Index provisions are implemented in the permits.

- **Page 60 – “... the end goals of those requirements have yet to be determined.”**

As pertains to the P-Index provisions specifically, the end goal is, in part, to restore water quality in local waterways that flow to the Chesapeake Bay as detailed in Pennsylvania's Phase 3 Chesapeake Bay Watershed Implementation Plan by reducing the amount of nitrogen, phosphorus, and sediment entering Pennsylvania waterways. Moreover, as previously noted, given the extent of nutrient-related water quality impairments in

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Pennsylvania, the efforts of that other entities in the Commonwealth (e.g., sewage treatment facilities, animal manure applicators) have made to reduce phosphorus pollution, and the fact that – as noted in a previous comment – the second round of federal biosolids regulations to further evaluate potential risks and benefits of nutrients have not yet materialized, DEP believes that adding the proposed P-Index provisions to PAG-07, PAG-08, and PAG-09 is a prudent addition to an overall strategy to prevent and restore nutrient-related water quality impairments in Pennsylvania

- **Page 60 – “... we believe these benefits need to be more clearly delineated for everyone’s benefit.”**

DEP believes LBFC dutifully carried out the direction of House Resolution 149 of 2021 to study the costs and practicality of the proposed permit revisions, but notes that the resolution notably did not direct LBFC to study the benefits of the proposed revisions.

- **Page 73 – “... we conclude that as EPA further completes its research and approves uniform testing protocols, permit holders should be able to comply with DEP’s proposed changes (e.g., testing, analysis, reporting, etc.).”**

We simply wanted to highlight this LBFC conclusion and reemphasize that costs of complying with the proposed changes will be offset, to some extent, and potentially outweighed by the public health and environmental benefits flowing from the proposed revisions.

- **Page 76 – “We found many of the proposed changes in PAG-07, 08, and 09 permits to be more restrictive than the current regulations.”**

We would like to clarify here that the DEP quote following this sentence was intended to state that some of the proposed revisions to the permits were more restrictive than the terms and conditions of the current permits, not necessarily more restrictive than the current regulations. As noted previously, DEP believes that the proposed revisions to the permits are entirely consistent with the existing regulations and that the existing regulations – particularly 25 Pa. Code §§ 271.902(g) and 271.904 – provide ample authority for DEP to implement the proposed permit revisions.

- **Page 76 – “DEP Existing Staffing and Permitting Issues.”**

We appreciate LBFC’s acknowledgment of DEP resource limitations. Although we agree that it would be a resource challenge for DEP to reissue coverage under these permits for all existing permittees, to provide training for the regulated community and for DEP staff to facilitate implementation of the proposed requirements, and to ensure compliance with ongoing operations, these are essential pieces of managing the beneficial use of biosolids in Pennsylvania.

We also want to note that increased staffing is only one part of DEP’s plan to achieve more efficient permitting – a plan which also includes upgraded data systems.

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Regarding the statement “If DEP went through the complete regulatory process for the proposed biosolids permit changes, a proper cost analysis could be completed to ensure DEP has the necessary funding to oversee and enforce the biosolids general permits administratively.”, we note that, regardless if the proposed revisions are implemented in the permits without regulatory revisions or are implemented in the permits after revising the regulations, that similar challenges as LBFC encountered with estimating associated costs in conducting this study – many of which would also be encountered in attempting to estimate associated benefits – would still exist.

- **Page 78 – “... a key reason to take the time necessary to update the regulations is to ensure that the regulations remain current with environmental science and that the resulting permits can be consistently enforced.”**

As previously noted, DEP believes that the proposed revisions to the permits are entirely consistent with the existing regulations and that the existing regulations – particularly 25 Pa. Code §§ 271.902(g) and 271.904 – provide ample authority for DEP to implement the proposed permit revisions. We also believe that these provisions of the regulations provide the flexibility for DEP to implement changes to the permits in ways that reflect current environmental and public health science, which we believe to be more resource-efficient than updating the regulations every time a new pollutant of concern emerges.

- **Page 78 – “... we also question DEP’s reliance on “a case-by-case basis” when the proposed permit changes appear to be beyond the scope of a single “case-by-case basis.”**

DEP believes the “case-by-case” provision in 25 Pa. Code § 271.904 can be tenably interpreted to mean not only that requirements related to particular land application *sites* can be imposed on a case-by-case basis, but also that requirements related to particular *pollutants* (e.g., phosphorus, PFAS) can be imposed on a case-by-case basis.

- **Page 79 – “... up to \$15 million to install a biosolids gasification and drum dryer...”**

We believe this is a wonderful alternative for producing EQ biosolids, but it is not the only one. LBFC’s report states that it would cost one facility \$15 million to upgrade to gasification for producing EQ biosolids – this is indeed a very significant amount. However, LBFC’s report does not state what other alternatives were considered, or the costs of other alternatives considered. LBFC’s report notes that two other facilities stated that upgrading would be prohibitively expensive. We do not know what processes were being considered, what factors were considered in this evaluation, or what criterion was used to determine if the investments would be prohibitively expensive. Although this section of LBFC’s report focuses on innovation, other non-innovative alternatives – including composting and heat drying – are available for upgrading a facility to produce an EQ product. There are organizations that actually make a profit from the sales of EQ biosolids. Although capital cost is an important factor in the process to determine the best

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option for a facility, DEP recommends a life-cycle analysis which considers all aspects of a potential project impact.

Thank you for the time and effort LBFC spent in the evaluation of the pre-draft versions of DEP's proposed revisions to the three (3) general permits (PAG-07, 08, and 09) for the land application of biosolids and residential septage. The information in LBFC's report will help to inform the process of revising and reissuing these permits. If LBFC would like to discuss DEP's response, comments, and recommendations, please contact Jay Patel, Assistant Bureau Director, Bureau of Clean Water, at 717.783.2283 or jaypatel@pa.gov.

Sincerely,



Richard Negrin
Acting Secretary

Appendix F – LBFC Staff Response to DEP’s Comments on the Draft Report

As listed in Appendix E, the majority of DEP’s comments are contextual or seek to provide clarification to matters already addressed in the report. We reviewed these comments, and we have the following clarifications/comments to DEP’s review (note: bold page numbers refer to page number of DEP’s letter in Appendix E, not the report page number).

Page 1 “Generally speaking we cannot...” – The report methodology is presented in depth in Section I of this report. We relied on survey responses and our own research for the cost estimates. Our information is cited with sources, except when survey responses and resulting data provided were used. The survey responses were provided on the condition of anonymity and contained confidential information. LBFC staff relied on the expertise and integrity of wastewater treatment professionals to provide information, but survey responses could not be independently verified.

Page 5 (Legislative Collaboration) – Our report highlights DEP’s efforts to previously engage stakeholders. Further, we outlined the department’s authority to revise PAG-07, PAG-08, and PAG-09. We encourage DEP to view this report as the beginning of that process – not the end. The regulatory process will provide DEP with the opportunity to engage stakeholders and allow the legislature, beyond this report, to exercise its constitutional oversight responsibilities.

Page 6 (Typical Wastewater Treatment Plant Process) – Exhibit 2 has been modified to better reflect “advanced treatment.”

Page 7 (PA Phase 3 Chesapeake Bay WIP) – “Bay partners” was added to page 19 to provide additional clarification.

Page 7 (Exceptional Quality) – We added “exceptional quality” to page 21.

Pages 7, 8, 9, and 16 (Class A, Class B, Exceptional Quality, and Non-Exceptional Quality) – We added a note on page 11 regarding the federal definitions of Class A and Class B. Additionally, we clarified the use of EQ and non-EQ biosolids on pages 21, 22, 24, 26, 27, and 47 of the report. DEP highlights that not all Class A biosolids are EQ biosolids (though all EQ biosolids are Class A biosolids), which we concur.

Page 9 (Non-Liquid and Non-recognizable as Human Waste) – To address DEP’s concern on this distinction, we added a footnote to page 26.

Page 10 (Stakeholder Workgroups) – On page 28, we provided more clarification on the sequence of DEP’s effort to engage stakeholder groups.

Page 14 (Exhibit 14) – We added “anaerobic digesters” for accuracy. We also added a footnote to clarify that the information was as of March 30, 2023.

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