



Lake George Park Commission



LAKE GEORGE SEPTIC SYSTEM INSPECTIONS

Needs, Concepts, Costs, Logistics

January 2022

The Lake George Park Commission is tasked in NYS Environmental Conservation Law with the long-term protection of Lake George. Septic systems, when not properly constructed or maintained, can have significant impacts to waterbodies through nutrient and pollutant inputs. This report seeks to identify concepts for septic system inspections around Lake George, working in concert with state and local experts, partners, municipalities and stakeholders.

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Lake George Regional Septic Inspection Program Concepts

January 2022

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Executive Summary

The Lake George Park is home to nearly 6,000 properties that maintain onsite wastewater treatment systems (septic systems). A large number of these systems are within close proximity to the lake's shore and its many streams. Septic systems, when properly designed, installed and maintained, should have very little impact on public health or nearby waterbodies. However, when one of these factors falls short, these systems can fail and cause significant issues.

The Lake George Park Commission (Commission) is a NYS agency charged with the long-term protection of Lake George and its legendary water quality. Part of this charge in Article 43 of the Environmental Conservation Law relates to the creation of regulations to ensure that septic systems are not impacting public health or the quality of Lake George.



In June of 2021 the Commission created an Ad-Hoc Committee to discuss septic systems around Lake George and the idea of an inspection program within the Lake George watershed. This committee consists of five Commission Board Members plus 14 individuals from varying backgrounds representing engineering, building codes, business and planning professions. The Commission also tasked its retained engineer Chazen Companies LLC to provide considerable expertise and knowledge to the project, to help ensure a thorough understanding of all issues involved. Meetings are held monthly and are fully accessible to the public via Zoom teleconference due to the Covid 19 pandemic. All meetings, materials, agendas, minutes, videos and reports are posted on the Commission website at www.lgpc.ny.gov.

Tasks set forth for this initiative included a detailed literature review of relevant studies in the state and region, an analysis of the geologic and environmental factors that may impact septic system functioning around Lake George, and a review of all other recurrent lake-based septic inspection programs throughout NY State. Over the period of several months, these analyses were conducted and presented to the Ad-Hoc Committee and the interested public. The results of these analyses indicates that Lake George is prone to impacts from failing systems, and that a recurrent (every five years) septic inspection program would help ensure that septic systems near Lake George and its tributaries are functioning properly.

Commission regulation defines the Critical Environmental Area of Lake George to include all properties within 500 feet of the lake. This area, plus properties that are within 100 feet of all regulated streams in the watershed have been determined to be the program area with the greatest degree of impact/environmental benefit for a program such as this. This program area represents approximately 2,700 properties in the watershed that would be included in mandatory septic inspections and tank pumpouts every five years.

Inspection models across the state utilize either agency/municipal inspectors or outside privately trained and certified inspectors. Costs and results vary depending upon the model utilized. The Commission has evaluated those costs and results and believes that the appropriate model to be utilized would be one conducted by Commission seasonal staff. Costs for such a program would likely be borne by the affected property owners, at an annual cost of \$60-\$80 per year.



If, upon inspection, a system was found to be failing or deficient, the owner of the system would be responsible to undertake those repairs or upgrades. Simple repairs would be overseen by the Commission, but any system upgrades requiring engineering would be overseen by the appropriate municipal or county entity.

To undertake any such new regulatory initiative and program, the Commission needs to complete all appropriate documents including draft regulations, impact statements and public outreach. It is anticipated that these steps will be conducted in the first half of year 2022. All specifics of program details would be outlined in these documents, and the public would have considerable opportunity to comment prior to action taken by the Commission to approve any new regulations.

Background

The Lake George Park Commission is empowered by Article 43 of the Environmental Conservation Law to protect Lake George, including the establishment of regulations and programs to achieve long-term sustainability and maintain the lake's premier water quality. Within this law (Section 43-110), the Commission is required adopt rules and regulations for the discharge of sewage in the Lake George Park to ensure optimum protection of ground and surface waters of the Park.

To meet this goal, the Commission is currently working with a diverse and knowledgeable array of partners and experts to discuss how best to achieve this mandate, through an Ad-Hoc Committee established by the Commission Chairman in the early summer of 2021. The Commission's Ad-Hoc Committee meets publicly, every first Thursday of each month at 2pm, beginning July 1, via Zoom teleconference. The public is welcome and invited to attend. Committee members include:

LGPC Board Members:

1. Ken Parker, Chair
2. Bill Mason
3. Cathy LaBombard
4. Dave Floyd
5. Joe Stanek

Advisory Members:

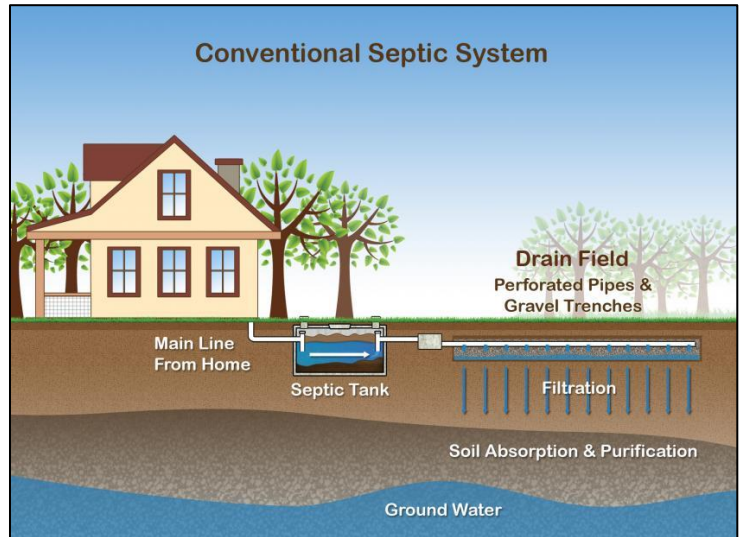
1. Tom Snow, NYS Department of Environmental Conservation, Director of NYC Watershed Program
2. Kevin Kenyon, Professional Engineer, NYS Department of Health Glens Falls Office
3. Tom Jarrett, Professional Engineer, Jarrett Engineering
4. Kathy Flacke Muncil, Proprietor of Fort William Henry Resort, business leader
5. Susan Wilson, Deputy Supervisor, Town of Bolton
6. Walt Lender, Executive Director, Lake George Association
7. Chris Navitsky, Professional Engineer, Lake George Waterkeeper
8. Dan Barusch, Director of Planning and Zoning, Town of Lake George
9. Claudia Braymer, Warren County Supervisor from Glens Falls Ward 3
10. Ethan Gaddy, Planner, Warren County Planning
11. Samuel Hall, Chairman, Washington County Board of Supervisors
12. John Graham, Code Enforcement Administrator, Washington County



13. Tom Cunningham, Ticonderoga Town Board

14. Hannah Neilly, Project Coordinator, Essex County Office of Community Resources

Following several months of research and discussions, the Commission has determined that the primary means to help achieve long-term septic system sustainability and minimal environmental impacts is to ensure that each system in proximity to the lake or tributary meets the requirements of the NYS Health Code. This research concluded that the most effective means to help ensure the viability of these systems is through a septic system inspection program.



Identifying the Need

Septic systems, when not properly designed, constructed and maintained, can have negative impacts upon nearby waterbodies and groundwater. Nutrients in wastewater include phosphorus and nitrogen, both of which are key components of algae and plant growth in waterbodies. In properly functioning systems in good soils, these nutrients and pollutants are predominately retained in close proximity to the infiltration bed and don't significantly impact groundwater, lakes, or streams. However, when a system has not been maintained, has broken components or inadequate soils, these pollutants can migrate offsite and into waterbodies, causing algae blooms and significant aquatic plant increases. These failing systems also have concerns from a public health perspective, as pathogens and bacteria do not get treated properly and can enter drinking water supplies.

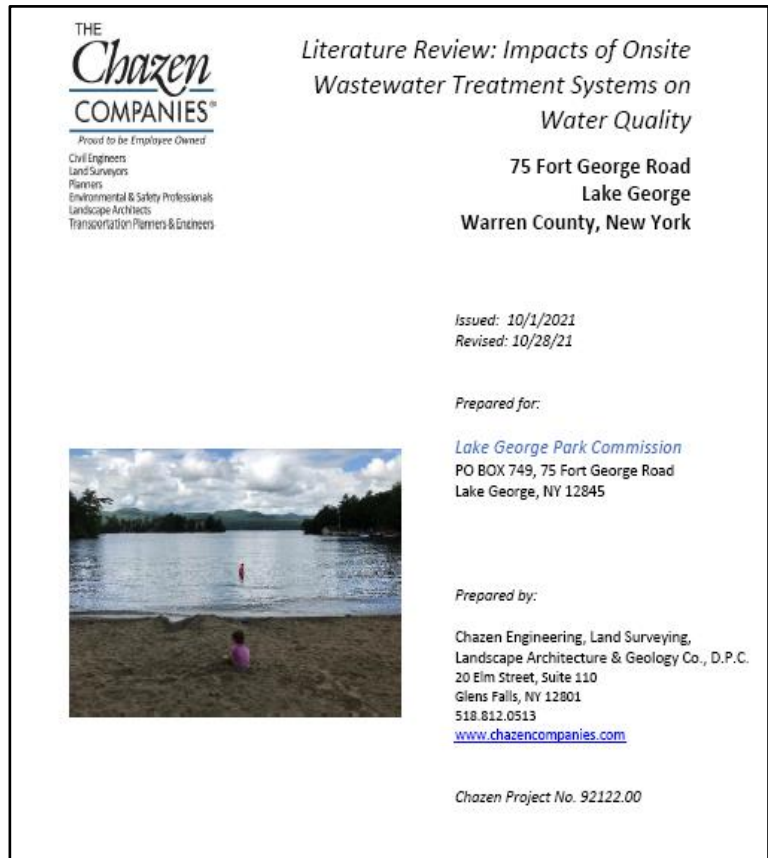
To better understand the population of septic systems around Lake George, the Commission and its retained engineer, Chazen Companies, have conducted extensive research and reviews of these topics. Chazen was tasked with researching and compiling all pertinent scientific literature regarding septic systems and lake impacts, and what factors can lead to water quality impairments. In addition, Commission staff and advisors conducted Geographic Information System (GIS) analyses of the population of septic systems around Lake George, specifically focusing on the factors that affect system performance (soil type, depth to bedrock and water table, slope, system age, proximity to waterbody, etc). Lastly, the Commission researched all known lake-based septic system inspection programs in NYS to determine why those programs were created, how they are administered, and what their findings are. A brief review of each of

these three tasks is described below, and the full analyses are detailed on the Commission's website.

Task 1: Literature Review

With guidance from regional subject matter experts and the Commission, the review of existing literature was focused on eleven (11) studies of particular relevance to Lake George and as identified through review of readily available resources. The literature reviewed covers nearly a 40-year span from 1981 to 2020, and includes research from academia, the public sector, and private sector. Findings from the literature suggest the efficacy of onsite wastewater treatment systems (OWTS) is highly variable depending on system maintenance, design, and local environmental factors such as soil type and proximity to groundwater. The risk of groundwater contamination from OWTS is largely dependent on system loading, soil composition, and unsaturated soil depth above groundwater. The siting of systems and understanding potential septic plume migration in the context of local groundwater systems is critical to mitigating the risk of groundwater contamination.

Properly functioning septic systems can contribute to elevated levels of phosphorus in groundwater. High concentration of phosphorus in septic plumes are a common concern with OWTS. Many regulations for OWTS are aimed at mitigating the risk of groundwater contamination. Specific to Lake George, the report entitled "The Total Phosphorous Budget Analysis, Lake George" suggests that OWTS's contribution to annual phosphorus load is minor when compared to surface runoff (Stearns & Wheler, 2001). However, the results of this study are based on a small sampling of just four (4) sites around Lake George. Literature reviewed indicates that historical assumptions about phosphorus loading and migration from OWTS may not be accurate.



Phosphorus from properly functioning septic systems may migrate to surface water. This condition was observed on a seasonal lake front community and coincide with increased algal blooms. Of note, septic systems can contribute 4 to 55% of total phosphorus to lakes (Lombardo, 2006). However, the main threat of OWTS phosphorus loading to surface waters is from system failures where overloaded or saturated drainfields, or short circuiting via drainage ditches and pipes results in surface breakout of untreated wastewater (Robertson et al., 2019).

Work conducted by the U.S. Geological Survey found that phosphorus plumes may migrate slowly within groundwater systems and rise steeply upward to discharge into surface waters at localized discharge points (U.S. Geological Survey, 2016). Research on phosphorus loading finds that while phosphorus loading from septic systems is generally a small component of the total phosphorus load to waterbodies such as lakes, impacts can be substantial since the phosphorus is in a soluble form and readily available to algae (Green, 2002). Because near-lake systems are often seasonal, this phosphorus is added to lakes at the height of the algal growing season.

Septic systems are not specifically designed to treat or remove trace organics which contribute to degradation of groundwater quality. Trace organic compounds such as surfactant metabolites, metalchelating agents, antimicrobials, antibiotics, and stimulants have been found in groundwater proximate to OWTS at concentrations that can be significantly higher than those reported in centralized treatment plant wastewaters (Conn et al., 2010).

In summation, properly sited and maintained OWTS are an effective method of wastewater treatment for many rural communities and locations where public sewer is not viable. However, systems that are not sited, constructed, and maintained appropriately may result in negative impacts to water quality and present significant risk to public health. Regular maintenance and monitoring of OWTS can be highly effective for mitigating negative impacts of OWTS on water quality.

The studies and abstracts of these studies are available on the Commission website at www.lgpc.ny.gov.

Task 2: Understanding Lake George Septic Systems

In addition to the detailed literature review, the Commission has conducted a comprehensive Geographic Information Systems review of the population of septic systems within proximity to Lake George and its tributaries. Research reveals that the geology and topography of the near-shore lands surrounding the lake can have significant limitations on the effectiveness of septic systems. Limiting factors such as shallow depth to bedrock or water table, poorly drained and

excessively drained soils and steep slopes affect the treatment efficiency of septic effluent prior to reaching groundwater or a surface water body.

The purpose of this analysis was to obtain a count of the total number of privately owned onsite wastewater treatment systems in the Lake George Park, their proximity to critical environmental resources and limiting factors for effectiveness.

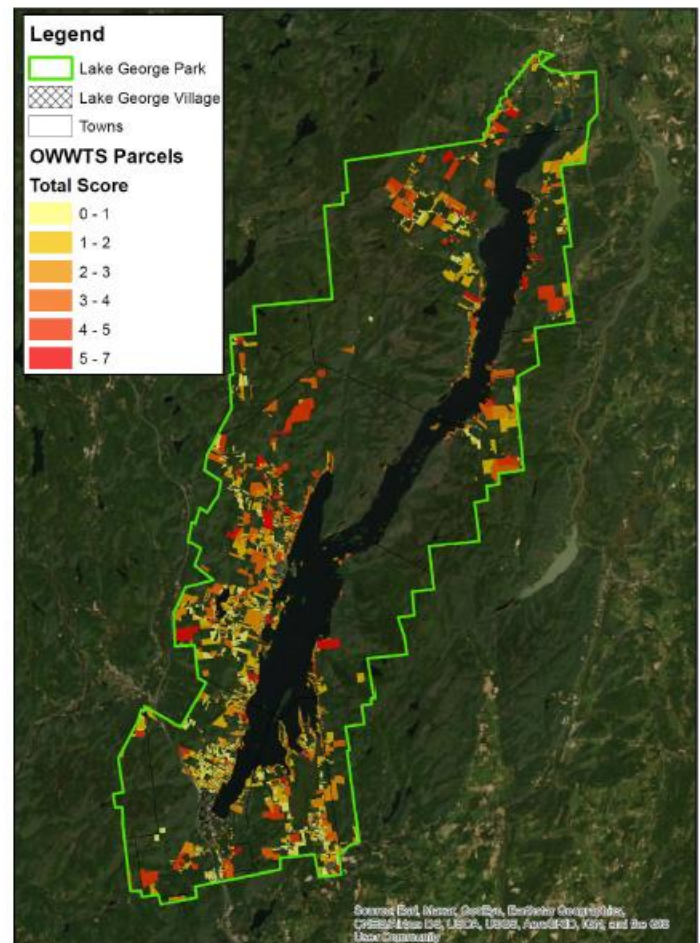
Methods and Sources:

All data used in this analysis was obtained from publicly open sources. The software used were ArcMap Desktop 10.5.1 and Microsoft Excel 2016. Soils data were mapped with the ArcGIS Add-In Soil Data Viewer 6.2. Real Property data from Washington, Warren, and Essex counties as well as Environmental Resources Data were clipped to the border of the Lake George Park. Parcels were selected by their property code to be non-vacant (i.e. excluding 100s – Agricultural, 300s – Vacant, 900s – Forested/Natural.) Parcels were considered to have private OWTS if labeled a “Private” in the data field “Sewer”.

The Critical Environmental Area utilized is a 500’ buffer around the Lake George shoreline and 100’ buffer around DEC regulated streams flowing into Lake George. A scoring system was

developed to estimate parcels’ potential for OWTS failure or underperformance based on any geographic/geologic limiting features. Parcels were scored if any part of it intersected with a resource or if the primary structure of the parcel was within 500’ of Lake George shoreline or 100’ of streams area as viewed from aerial imagery. Scoring was cumulative with each parcel receiving point(s) for intersection with each factor. All OWTS parcel received a score ranging from 0 to 8.5 which were analyzed in total and across all towns in the Lake George Park. It is understood that a septic system may not be located on a portion of a parcel that shows limiting factors, so this

Map 8 – OWWTS Parcel Environmental Resources Scoring



analysis attempts to provide a general understanding of the geologic issues that may be affecting systems in the Lake George basin.

Results:

- There are 5,957 parcels with Private On-Site Wastewater Treatment Systems (OWTS) in the Park.
- 84% of properties in the LG Park with septic systems intersect with Resources of Concern.
- 45% (2,682) of septic systems are within Lake George's are within a distance of 500' around Lake and 100' around Streams.
- 9% intersect with APA Wetlands
- 21% intersect with Shallow Water Table
- 25% intersect with Shallow Depth to Bedrock
- 34% intersect with Steep Slopes
- 20% intersect with Excessively Drained Soils
- 3% intersect with Very Poorly Drained Soils
- 94% of the septic systems in the LG Park are residential, 6% are commercial, community, etc.
- The median size of a residential parcel with a septic system is 0.9 acres. The median sizes of residential parcels w/ septic systems are 0.56 acres inside the CEA and 1.22 acres outside of the CEA.
- Bolton, Lake George, and Queensbury have the most parcels with septic systems (>1,200).
- The most common score for a parcel was 2.0 points (intersects with 2 resources of concern or the lakefront and stream buffers), and the average score was 1.96 points.
- The towns with the highest average score were Dresden, Fort Ann, and Putnam.
- The average age of residential houses with septic systems in the Lake George Basin is approximately 50 years old, with the majority of houses constructed between 1950 and 1994. If their OWTS has not been upgraded or replaced (an unknown at this time), the age of most septic systems would range from 25-70 years in age.

Task 3: Other NYS Septic Inspection Programs

To help inform background and concepts for a potential Lake George septic system inspection program, the Commission researched all identified lakes that maintain such programs. The majority of these programs are active in central New York (Finger Lakes region), with the majority of those waterbodies having a recurrent, five year inspection of all septic systems within proximity of the lake. The NYC Watershed Program manages a broad and extensive septic system inspection program in the southeast (Catskill area) of the state as part of their drinking water supply program. Locally, the Towns of Queensbury and Bolton have maintained septic system inspection programs on property transfers for the past few years, which have been instrumental in providing a general understanding of local conditions and potential expectations for a Lake.

The Commission spoke with the managers of those programs, to help discern the reasoning behind the programs, any specific driving factors, what founding documents they maintained, how they were funded, and what their findings

are. Several of the programs have been in place for many years, with a few programs running for more than 20 years. The founding reason behind every program researched was to protect the lake and its water quality and clarity. Additional stated reasons included public health of the homeowners and neighbors, beach closures due to e-coli bacteria spikes, and prevention of Harmful Algae Blooms.

The results of the programs were strikingly similar, particularly if the program has been in place for two five-year inspection cycles. The patterns revealed that the first five year cycle yields the most issues with many individuals not knowledgeable about their individual septic systems, and thusly have completed very little maintenance or management (e.g. pumpouts). The next cycles of inspections have been found to be important to help ensure functionality and identify any new issues, but generally require fewer major repairs than the original inspections.

Management of these programs occur most often through one regulatory government agency or consortium of municipalities working together through a Memo of Understanding. Inspections are conducted generally in one of two ways, either through agency inspectors or through trained private individuals. The larger the number of inspections that had to be conducted, the more those waterbodies rely on trained private contractors. The program managers noted the benefits

Existing Program Survey

- 13 Septic Inspection Systems Programs Researched
- Canandaigua Lake
- Western Finger Lakes
- Keuka Lake
- Cayuga County
- Otsego Lake
- Skaneateles Lake
- Chautauqua Lake
- NYC/Croton River Watershed
- Town of Queensbury
- Town of Bolton
- Erie County
- Maricopa County, AZ
- Algonquin Highlands, ON



of utilizing private trained individuals (easier logistics and management, less agency staffing), but were concerned that those inspections might be yielding lower quality results (consistency, comprehensiveness, potential conflicts). All programs that managed more than 200 inspections per year did so with trained private contractors, not agency staffing. This is largely due to staffing challenges at the agency levels, and the flexibility inherent in the private model. Funding for these programs varies in their composition, but most of the costs are generally offset by inspection fees to the property owners in the inspection area.

Septic System Inspection Program Concepts

The goal of the Commission's Ad-Hoc Committee on Septic Systems is to more specifically identify the potential impact of nearby septic systems on Lake George, and to determine any program(s) which will help minimize any impacts to the lake. Several large lakes in New York State maintain recurrent mandatory septic system inspections for near-shore property owners, and these lakes provide models which the Commission has reviewed in detail. A summary of these programs including need, costs and logistics is available on the LGPC website.

Any potential septic system inspection program will have its pros and cons, benefits and limitations. The goal is to identify the upland area most concerning related to septic system impacts, and then develop a program that seeks a balance between environmental protection and the impact upon the regulated public.

Inspection Program Area

Lake George Park Commission regulation 645-3.8 defines the lake's 'Critical Environmental Area' as the area within 500 feet of the shore of Lake George and adjacent wetlands to the lake. This zone around Lake George and its contiguous wetlands would be considered high priority for any septic inspection program. In addition, the Commission has determined that DEC regulated streams within the Lake George Park, as the primary conduits for water to the lake, are also concerning from a septic systems impact standpoint. However, given the larger general distance to the lake itself from these upland properties, the Commission has determined that a lesser zone of 100 feet around DEC regulated streams tributary to Lake George would be the priority in relation to septic system impacts.

To determine the properties that would specifically be included in any septic system inspection

program, the Commission has undertaken an analysis to determine which residential and commercial structures are within 500 feet of the lake and 100 feet of streams. It is difficult to determine exactly where a septic system is located on any particular property, so for this purpose, the structure location as viewed from aerial imagery was used as a proxy to determine which properties would be included in an inspection program. This analysis resulted in approximately 2,700 properties being identified as potentially being included in any new septic system inspection program in the Lake George Park. The Geographic Information Systems analysis to determine this outcome is available on the LGPC website.

Inspection Interval

The vast majority of lake-based recurrent septic system inspection programs in New York state have an inspection interval of once every five years. Discussions regarding this timeframe with program managers revealed their reasoning, being that septic tanks should generally be pumped out once every five years to keep the system functional, and their inspection programs always involve a



pumpout from a NYS licensed hauler. The system inspection at the time of pumpout is critical, as many of the system components require the removal of ports and covers which are often done by haulers. Also, an empty tank allows for the proper inspection of baffles and tank integrity. The LGPC concurs that an inspection interval of all involved properties once every five years would be an appropriate timeframe for Lake George.

To accommodate a generally consistent number of inspections every year for the five year period, the 2,700+ properties in the inspection program area could be divided into five distinct populations, each representing approximately 540 properties (one fifth of the total number of properties in the program). Each year, the Commission would mail letters to each of the property owners in one of the five sections, notifying them that they need to get their system inspected within a year's time. By the end of the five year interval, all 2,700 property owners in the program would have had their systems inspected. After the fifth year, the program would begin again in the same order of inspections.

Based on the outcome of other programs in NYS, it is anticipated that a modest percentage of septic systems inspected will require upgrade. These upgrades and approvals would be processed through the existing framework of regulatory entities, generally local municipalities or the county.

To help alleviate significantly increased workload in any particular town, the population of inspections to be conducted in each of the municipalities would be divided by five, and one fifth of those inspections planned each year. This would provide a more even anticipated workload for the approving bodies over the course of the inspection program.

Inspections – Who Would Conduct?

Lakes that have septic system inspection programs generally administer the program in one of two ways:

1. Utilizing trained staff inspectors from the managing government agency (agency inspectors)
2. Operate with outside/private inspectors who are trained and certified to conduct inspections by that agency (private inspectors)
3. Hybrid program using private inspectors with agency oversight

Each of the three inspection staffing models discussed (Agency, Private, Hybrid) have different costs associated with them. The cost of any inspection program would include the cost of the inspector (agency or private) plus the cost of the septic tank pumpout at the time of inspection conducted by a licensed hauler.

Under all considered scenarios, the homeowner would be responsible for the cost of the tank uncovering and pumpout, paid directly to the hauler. However, the cost of the inspection itself would vary depending upon who would be responsible for conducting the inspection.

If the Commission conducted all inspections, that staff cost would

be offset by a fee from the agency to the property owner, likely annually. If a certified private inspector program model was utilized, that inspection fee would likely be set by the Commission to help ensure program consistency and clarity for the property owner. With this private inspector model, the cost of those inspections would be built into an annual fee from the Commission to the property owner. This would eliminate the need for multiple payments by the property owner; one to the inspector and one to the Commission for program management. The



Commission would absorb that cost into the annual property owner fee to increase administrative efficiency and simplicity to the property owner.

A hybrid program model would involve the cost of a certified private inspector, plus the cost of random compliance inspections and program oversight by the Commission. The following information summarizes how each of these programs could work, their likely costs and logistics. Estimated residential property owner costs are reflected in the analysis below. Given their complexity and size, commercial properties would likely be charged at the rate of two times the residential rate, similar to the Commission’s 1990’s era program. Approximately 95% of the properties in the proposed inspection area are residential in nature, only 5% are commercial).

Program Concept #1 - LGPC Agency Inspectors

This concept would rely on the Lake George Park Commission to hire seasonal technicians and train them on septic inspection protocols. The Commission would be responsible for administration of the entire program, including contacting property owners to schedule the inspection, coordinating with the homeowner on their schedule with a septic hauler, conducting the inspection and all follow-up activities resulting from the inspection. This model is similar to the current Town of Queensbury septic inspection program in its general administration. This program model would benefit from being able to utilize existing several Commission field staff to absorb inspections during busy times, thus lowering the need for the number of dedicated inspection technicians hired specifically for this program.

Anticipated program operating period	4/1-12/1 each year (8 months)
# of systems in inspection program	2,700
# inspections/yr	540 ±
# inspections/week	20
# LGPC program staff needed	2 inspectors
Cost: 2 seasonal inspectors + part time admin	\$100,000
Cost of outside/private inspection to homeowner	\$0
Estimated Total Cost to Property Owner	Residential = \$50 per year Commercial = \$100 per year

Pros and Cons of this model:

Pros: Higher consistency among inspections, likely leading to higher quality output and a more detailed and integrated program. No additional outside inspector cost to homeowner. Existing staff could conduct inspections during the shoulder seasons and during peaks, thus lowering the cost of staffing.

Cons: More difficult logistically to schedule inspections between all parties (homeowner, hauler/inspector, LGPC).

Program Concept #2 – Private Inspectors

This concept would seek to train outside private septic system inspectors and certify them for the Lake George septic inspection program. Individuals could include septic system haulers, private engineers, builders, etc. Some level of experience in the building or codes trades would likely be a requirement for becoming a certified inspector. The homeowner would contact a certified inspector and schedule the inspection/pumpout without involvement from the Commission. Reporting back to the Commission from the inspectors would be required, and the Commission would primarily just track and record progress on inspections. This model is similar to the current Town of Bolton septic inspection program in its general administration.

All of the lakes in NYS that administer recurrent septic inspection programs with annual inspections exceeding 200 per year utilize outside/private inspectors for their programs.

Anticipated program operating period	4/1-12/1 each year (8 months)
# of systems in inspection program area	2,700
# inspections/yr	540±
# inspections/week	5-30
# LGPC inspectors needed	0
# LGPC program staff needed	0
LGPC staff cost: \$0, existing staff would absorb the program management	\$0
Cost of outside/private inspection to homeowner	\$150-200 per inspection
Estimated Total Cost to Property Owner	Residential = \$30-40 per year Commercial = \$60-80 per year

Pros and Cons of this model:

Pros: Less difficult logistically to schedule inspections without Commission staff involvement, as the inspection is solely between the hauler/inspector and homeowner.

Cons: Lesser consistency among inspections, likely leading to lower overall quality output and a less uniform and integrated program. Without any additional seasonal staff dedicated to this program, the LGPC would be challenged to confirm program integrity, compliance and requisite follow-up.

Realizing these challenges inherent in both of these models, a hybrid combining these two concepts could help address some of these issues. Some NYS lakes that utilize outside inspectors have some level of inspection oversight, while others simply record the results. Speaking with the program managers on these lakes, the recurring theme is that high quality inspections can be achieved with outside inspectors, but that good program oversight is crucial to a successful and consistent program. Given these factors, a third alternative for a Lake George septic inspection program is discussed below.

Program Concept #3 – Hybrid Program (Private inspectors with LGPC oversight)

This concept would utilize outside, trained private inspectors to conduct all of the inspections, while LGPC staff would administer the program and provide daily compliance reviews on a percentage of the inspections. The homeowner would schedule the inspections with the hauler and the inspector (in many cases the hauler would be the inspector), eliminating a significant logistical step of coordinating inspections with the Commission. Once the inspections were scheduled, the inspector/hauler would inform the Commission by entering data into the agency’s new publicly facing database system. This database would be used by the Commission to conduct oversight reviews of the inspections as available. The Commission would hire one seasonal inspection technician to attend as many inspections as possible to help ensure consistency and quality.

Anticipated program operating period	4/1-12/1 each year (8 months)
# of systems in inspection program area	2,700
# inspections/yr	540±
# inspections/week	5-30
# inspections/day	0-10
# program staff needed	1 inspector/admin
Annual Estimated Agency Program Cost:	\$50,000/year
Cost of outside/private inspection to homeowner	\$150-200 per inspection
Estimated Total Cost to Property Owner	Residential = \$55-65 per year Commercial \$110-130 per year

Pros and Cons of this model:

Pros: Eliminates three-way inspection coordination, inspection oversight helps create consistency and quality among inspectors long-term.

Cons: The cost of the hybrid program would likely be the highest among the three, as there would be fees from private inspectors and the cost of agency oversight.

Based on the factors above and considerable discussion by the Ad-Hoc Committee, the preferred inspection program model would utilize Option 1: LGPC inspectors. This option provides the best cost/benefit, primarily because it utilizes existing Commission staff to absorb some of the program administration and off-season inspections. It also provides the greatest consistency and programmatic integrity, as it is all managed internally.

Cost Offset for Inspection Programs

Any new septic system inspection program in the Lake George Park would require dedicated funding to implement. The Commission operates its existing programs almost exclusively through user-generated fees, as required by Article 43 of the NYS Environmental Conservation Law. To ensure the long-term integrity of any new program, a fee based system for the properties in the lake's Critical Environmental Area would be the most probable means to fund such an initiative. It is the goal of the Commission to balance program needs against the cost to the regulated public.

In the early 1990's, the Commission administered a new regulatory program to identify and ultimately inspect septic systems around the Lake George Park. That initiative was funded through annual permits to discharge wastewater in the Lake George Park, amounting to \$40 per year for typical residential homeowners and \$80+ per year for those with higher daily average flow (>1,000gpd) such as commercial properties (in today's dollars that number equates to \$87 for residential and \$174 commercial). The current preferred proposal of \$50 per residential customer per year is only \$10 higher than the program in place 30 years ago.

That original 1990's program, while successful, was challenged on procedural grounds and was vacated by a court. The Commission, as a new agency, continued developing its other requisite regulatory requirements and did not at the time seek to correct the procedural issues and the program languished. However, the funding concept and programmatic ideas behind the original 1990's program still have strong merit.

In analyzing how septic inspection programs are administered on various lakes throughout NYS and the northeast, there are primarily two models currently in use.

The first funding model utilizes a cost-per-inspection system, whereby the affected property owner is charged a fee for inspection at the time of service. The second funding model follows the Commission's early 1990's program of fees charged annually, at a lower rate (annual management program). Both funding models achieve the same goal of raising enough revenue to offset the cost of administration of a septic system inspection program.

Cost-Per-Inspection Program: This is the traditional model of a septic inspection program, based on a cost per inspection once every five-plus years, payment provided in advance or at the time of inspection by the property owner. This fee tends to average approximately \$200-\$300 for the inspection, plus the cost of the septic tank pumpout which averages \$300-\$400 paid to the hauler separately. This cost-per-inspection model reflects a higher one-time fee than the annual model, but no additional fees for another five years for their next inspection.

Pros:

- A higher one-time fee to owners every five years might be easier for the public to embrace versus a lower annual management cost
- Can calibrate inspection fee based on actual staffing needs
- Easier to seek payment from only approximately 1/5th of amount of property owners versus an annual fee management program

Cons:

- Higher one-time cost might be more fiscally challenging than spread out over five years on an annual basis
- Could ultimately generate less consistent funding for the overall program versus a management program
- Funding stream would be based on inspections conducted rather than funding in advance, which is more difficult for operations

Annual Management Program: This model would utilize the Commission's original 1991 system of charging an annual, smaller fee-based wastewater 'permit to discharge'. Inspection cost would be covered by a smaller annual fee paid by those in the CEA, and the pumpout cost every five years would be additional.

Pros:

- Lower bills to homeowners (although recurring annually), might be easier to accept from the regulated public
- Even a modest annual fee could generate enough funding to run the program
- Annual fee becomes second nature, easier to annually generate bills, similar to Commission dock fee program

Cons:

- Annual fee could generate public resistance, as it is not directly tied to their property like a one-time inspection fee
- Difficulty in chasing down annual fee payments

Following considerable discussion among the LGPC Ad-Hoc Committee members regarding this topic, the currently preferred option related to funding of any septic inspection program would be

the 'Management Program' model of charging a lower annual fee to those property owners affected by any new regulation.

To improve payment efficiency for the property owner, the cost of the inspection itself could be integrated into the annual fee charged to property owners within the program area. Doing so would eliminate the need for payment of the private inspection at the time of service, if a private or hybrid inspector model is used. The only cost to a property owner at the time of inspection would be the cost of the pumpout of the tank.

Capacity: Septic Haulers in the Lake George Region

In order to conduct an efficient lake-wide septic system inspection program, there needs to exist a fairly robust septic system hauler network throughout the region. All inspections include system pump-outs, which must be conducted by NYS licensed septage haulers. Presumably, these haulers are currently staffed and equipped to handle their current customer workload, with capacity for increased business. What is unknown currently is how existing haulers could accommodate an increase of 400-700 new pumpouts per year in the region. A review of the currently active haulers identifies the following companies working regularly in the Lake George region is below. Commission staff is working to determine the number of trucks, staffing, and capacity of each individual company, to help ensure that an inspection program could be adequately performed at the hauler level.



1. Hometown Sewer, Warrensburg, NY
2. Cook's Septic, Lake Luzerne, NY
3. IBS, Queensbury, NY
4. Morning Star Excavation & Septic, Gansevoort, NY
5. Sanitary Sewer Service, Glens Falls, NY
6. Bradley's Septic Service, Corinth, NY
7. J H Schrade Enterprises, North Creek, NY
8. Action Septic, South Glens Falls, NY
9. M C Environmental Services, Queensbury, NY
10. Spa Septic Tank Company, Saratoga Springs, NY
11. Stone Industries, Saratoga Springs, NY

12. Empire Septic Service, Granville, NY
13. Straight's Septic Service, South Glens Falls, NY
14. Snell's Septic Service, Greenwich, NY
15. Smith's Sewage, Pottersville, NY
16. Fort Edward Express Company, Fort Edward, NY
17. Septic Sallie, Hudson Falls, NY
18. Finch Waste Company, Gansevoort, NY
19. Geraws OK Sanitary, Ticonderoga, NY
20. Adirondack Sanitary, Ticonderoga, NY

Septic System Inspection Process

To get an effective understanding of the functioning of an onsite wastewater treatment system, the inspector needs to visually confirm as many components of that system as possible. In most cases, this includes the septic tank (inlet and outlet), distribution box, alarm systems and any other associated components that can be effectively exposed. In addition, it is important that the inspector confirms that all water generating fixtures (baths, sinks, toilets, showers) are connected to the septic system and are not discharging to another location.

To achieve these goals, proper septic system inspections typically follow this general process:

1. In advance of the inspection, the landowner or agent (septic hauler or similar) unearths the septic tank ports, distribution box, and any pump chambers.
2. For the inspection, the septic hauler needs to be present to ultimately pump out the septic tank as part of the inspection and program.
3. The inspector looks at the property to see if there is any evident surface discharge of untreated wastewater on the ground or surrounding area.
4. The inspector works with the homeowner or hauler to confirm that all water generating devices are discharging into the septic tank, by turning on and off each fixture and witnessing the water entering the tank.
5. The inspector looks to see the water level in the uncovered distribution box, to ensure that the infiltration bed is not backing up, to ensure proper leveling of outlet pipes and that the system has an even discharge into the leach lines.
6. If there is a pump tank, the inspector will check the alarms to ensure proper operation.
7. Following these items, the hauler will pump the septic tank, and the inspector will review the tank for integrity of baffles and water tightness.
8. The inspector will confirm that the septic system is sized properly for the number of bedrooms in the house, based on NYS Health Code Part 75-A or NYS DEC, as applicable.
9. Once complete, the hauler will replace the system caps and restore the grounds to their

original state.

10. The inspector will provide the homeowner with a report of the inspection, and notify the owner of any follow-up actions that may be required to pass inspection.

Administration of Data – CitizenServe Database

The administration of the inspection program would best be managed through the Commission’s new CitizenServe regulatory database system.

If outside inspections are used, this system would allow septic inspectors to create accounts within the database, input the inspection results, and conduct billing to the Commission for their inspection services.

This system would fully coordinate the inspection program process and eliminate duplication and paper processing. The onus would be on the inspector to input all requisite information and outcomes before the inspector was paid. It would eliminate a separate billing process for the inspector, and guarantee payment by the Commission instead of working to get payment from private landowners.

If LGPC inspectors were used, all involved staff would have access to the program to input data and generate requisite reports.

Inspector Qualifications and Training for Certification

The goal of any inspection program is to have well-trained and knowledgeable individuals completing the inspection process. The Commission will work with the NYS Onsite Wastewater Treatment Training Network (OTN) to develop the appropriate requirements for a Lake George septic inspection program. The OTN was developed for the sole purpose of training and education of individuals to improve knowledge of wastewater system design and function. The Commission would also work with the Town of Queensbury Codes Office to set up on-site inspections as part of the training program, as the town regularly conducts septic system inspections. Training for certification would involve both in-class training and in-the-field inspections. If private contractors/haulers are used for inspections, a minimum requirement for eligibility would be established, likely limited to individuals with experience in wastewater system design, construction, maintenance, management, codes compliance, etc.

What Constitutes a Failure, or Requires Upgrades?

A non-compliant OWTS includes the following examples:

1. Lack of a pre-treatment vessel (e.g. no septic tank, no aerobic treatment unit, no ETU, etc.) prior to effluent discharge to any subsurface treatment (soil treatment area or absorption field)

2. Where there is a discharge of effluent directly or indirectly to the ground's surface, with surface breakouts, ponding or saturated soil areas

3. Where there is a direct pipe surface discharge of grey water (into a drywell, over an embankment, into a roadside ditch or stream/tributary, etc.)

4. Where a quantifiable test (e.g. dye test) demonstrates effluent is reaching the ground surface or a water body

5. Where there is a backup of sewage into the dwelling, building, septic tank, distribution box, or facility indicative of system overload, malfunction, or clogged soil treatment area



6. Where the existing septic tank requires pumping more than four times per year and/or effluent is observed flowing back into the septic tank from the secondary treatment area during pump out

7. The presence of a metal septic tank

8. The presence of a cesspool, defined as a hole or pit used to receive untreated sewage

9. The presence of a holding tank that discharges effluent to any outlet

10. Where a septic tank, seepage pit, enhanced treatment unit (ETU) or soil treatment area (STA) upon inspection is found to be discharging to any outlet

11. Every substantial failure or substantial non-conformity with the requirements of New York State Department of Health or NYS DEC, such as if the size of the septic tank is less than 75% of the required capacity, or if a setback from the OWTS to surface waters is less than 75% of the required distance

12. Every substantial failure or substantial non-conformity with the requirement of a validly issued and current SPDES permit or New York State Department of Health approval permit.

Administration of Septic System Repairs and Upgrades

If the septic system inspection reveals the need for minor repairs (speed levelers in the distribution box, baffle repair/replacement in septic tank, cracked pipe, etc), it is anticipated that those repairs would be made in a short period of time of the inspection (four weeks or less). Septic haulers routinely conduct such repairs, and those repairs would be confirmed to the Commission following such repairs, so that the system would be brought into compliance.

In instances where the system is found to be failing or non-compliant in a manner that would require engineering services and municipal approvals, those approvals would be conducted through the existing town, county, and State processes. The Commission would coordinate with the approving entity to help ensure that those systems have been upgraded to meet current standards and have received appropriate government approvals, within set time limits.

Septic Standards and Variances

Regulations and standards for residential onsite wastewater systems are primarily described in Appendix 75-A of Public Health Law 201(1). These standards are primarily intended to protect public health, and also minimize environmental issues such as degradation of nearby waterbodies. Deviations from these standards for new or replacement septic systems require engineering design, professional review, and government approval usually by a municipality or county agency.

When certain design standards cannot be met (setback from waterbodies, separation from groundwater, etc) due to site limitations on a property, there is a much higher risk that the system will not perform adequately and those protections are lessened. To help mitigate these issues, there is opportunity to improve the quality of the wastewater flowing into the infiltration area, where the septic effluent gets discharged into the ground. Systems known as Enhanced Treatment Units (ETU's) are increasingly utilized in situations where traditional standards cannot be met. New York State maintains standards for design for ETU's in Part 75-A(6), but the utilization and approval of these individual systems comes at the local level when variances from state design standards are required. ETU's primarily improve solids removal and organic load (biological oxygen demand) removals when placed in series after traditional septic tanks, extending the life of

the infiltration bed. These ETU's require regular maintenance and are more costly than traditional septic tanks, but they are effective at improving the septic effluent quality and reducing impacts to surrounding natural resources.

However, ETU's don't largely affect the amount of phosphorus in the wastewater, and phosphorus is the primary pollutant of concern related to impacts to nearby waterbodies. Generally, the soils that the septic infiltration bed reside in are the primary factor that affects the removal of phosphorus from the waste stream, keeping it from groundwater and nearby waterbodies.

When approvals (variances) are granted for septic systems that require deviation from NYS standards, it is important that those approvals incorporate the best means to minimize potential impacts to public health and water quality. As each municipality in the Lake George basin operates independently regarding such reviews and approvals, there would be benefit in setting standards for variance approvals that would require systems to address phosphorus removal improvements. The Commission is working to research variances granted for septic systems in the Lake George watershed, to discover if there is consistency among the approving parties in how such variances are reviewed and approved (or denied).

Following this review, the Commission will consider regulations requiring that certain variances granted include enhanced treatment systems, minimize absorption field size reductions, or other amendments that help protect water quality. These discussions will be held with the local approving entities, so a full understanding of the potential impacts are known and considered prior to such rules going into effect.

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