Source Water Protection Plan

December 2018 APPROVED

For
Town of Middleburg
6107450
Middleburg, Virginia

Prepared by:

TETRA TECH

Funded by:

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment
www.vdh.virginia.gov
Office of Drinking Water
Safe Drinking Water for a Healthy Virginia

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Record of Review

The Source Water Protection Plan should be reviewed and revised at least every 3 years.

Date of Review	Name of Reviewer	Description of Updates (if any)
2008	Olver	Initial Plan
2013	Tetra Tech	Major Plan Update
2018	Tetra Tech	Plan Update

1. Statement of Adoption

The Town of Middleburg adopted this Source Water Protection Plan (SWPP) and a copy of the plan is on file with the Virginia Department of Health Office of Drinking Water (VDH-ODW). The service and assistance of the Wellhead Protection Advisory Committee (WPAC), the Utilities Committee, and the Town Council in preparation of the plan are acknowledged and greatly appreciated. The WPAC would like to thank former Town Councilmember Mark Snyder for his contributions to this plan update.

MIDDLEBURG TOWN COUNCIL
Regular Monthly Meeting Minutes
Thursday, December 13, 2018

PRESENT: Mayor Trowbridge M. Littleton
Councilmember Chris W. Bernard
Councilmember Kevin Hazard
Councilmember Peter Leonard-Morgan
Councilmember Philip Miller
Councilmember Cindy C. Pearson

STAFF: Martha Mason Semmes, Town Administrator
Danny Davis, Town Administrator
Martin Crim, Town Attorney
Rhonda S. North, MMC, Town Clerk
Ashley M. Bott, Town Treasurer
A. J. Panebianco, Chief of Police
William M. Moore, Town Planner
Jamie Gaucher, Business & Economic Development Director

ABSENT: Vice Mayor Darlene Kirk
Councilmember J. Kevin Daly

The Town Council of the Town of Middleburg, Virginia held their regular monthly meeting, beginning at 6:00 p.m. on Thursday, December 13, 2018 in the Town Hall Council Chambers, located at 10 W. Marshall Street. Mayor Littleton led Council and those attending in the Pledge of Allegiance to the flag.

[…]

Draft Wellhead Protection Plan

Bud Jacobs, Chair, and Jilann Brunett, Member, of the Wellhead Protection Advisory Committee appeared before Council to present the draft Wellhead Protection Plan update. Mr. Jacobs noted that the Committee worked on the priorities and tasking further and were recommending the update's approval. He opined that the approval was mostly related to the action items, as the remainder of the plan was factual.

Mr. Jacobs noted that, in addition to the update, the Committee was asked to do a committee assessment and advised that they were proposing changes to the ordinance that established it.

Mr. Jacobs reported that the most important priority for the Committee was to inventory the wells in the town and to identify which were closed and which posed a risk of contamination to the Town's groundwater. He noted that TetraTech, the consultant, provided the Town with a scope of work and advised that the Virginia Department of Health would provide $15,000 to pay for the initial cost of the inventory. Mr. Jacobs opined that this would be huge even if nothing else was done. He reminded Council of the grant to defray the cost of closing wells in the Town. Mr. Jacobs requested the Council's approval of the plan update.

Mayor Littleton questioned whether there was anything else the Town should plan on from a resource perspective over the next two years for wellhead protection.

Mr. Jacobs confirmed the Committee identified some items in their assessment form, including additional staff time.

Mayor Littleton thanked the Committee, Town Clerk North and Town Administrator Semmes for their work on the update.

Councilmember Leonard-Morgan moved, seconded by Councilmember Miller, that the Council adopt the source water protection plan prepared by TetraTech, dated November 2018.

Vote: Yes – Councilmembers Bernard, Hazard, Leonard-Morgan, Miller and Pearson
No – N/A
Abstain: N/A
Absent: Councilmembers Kirk and Daly
(Mayor Littleton only votes in the case of a tie.)
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2. Introduction

2.1. Protection of Groundwater Sources

Protection of sources which supply public drinking water is of vital importance to the residents of the Town of Middleburg. The water supply represents a valuable resource and investment which, if it were to become polluted, would negatively impact public health and would be expensive to restore or replace. The Town of Middleburg's water comes solely from groundwater wells. Reducing or preventing chemical and microbiological contamination of water sources can ideally allow public water systems to avoid costly treatments and minimize future monitoring requirements. When drinking water is contaminated, potential impacts include the following:

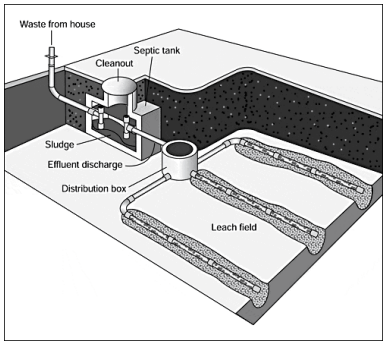
- Providing emergency replacement water;
- Paying for treatment and/or remediation expenses;
- Finding and developing new supplies;
- Paying for consulting services and staff time;
- Litigating against responsible parties;
- Conducting public information campaigns when incidents occur;
- Failing to meet the regulations of the Safe Drinking Water Act;
- Reducing property value or tax revenue;
- Adding health-related costs from exposure to contaminated water;
- Economic impacts, such as interruptions to businesses and loss of development opportunities; and
- Losing community acceptance of treated drinking water.

Source Water Protection is a voluntary program in Virginia. Proposed source water protection strategies are not mandated by state or federal regulations. Proposed commitments and schedules are subject to change. However, the Town of Middleburg has made source water protection a priority, since it relies exclusively on groundwater for the drinking water supply.

To avoid costly remediation, it is vital to reduce or prevent chemical and microbiological contamination of source waters. There are many normal day-to-day activities that could have the unintended consequence of compromising the community's drinking water supply. Some of the activities include:

- Improper use and disposal of household chemicals and fuels;
- Excess lawn treatments (fertilizers and pesticides);
- Leaking fuel tanks;
- Improper management of septic systems; and,
- Certain commercial or industrial activities.

In order to maintain quality drinking water, it is important to reduce and/or eliminate hazardous activities.



Septic Tank Schematic

Groundwater can be contaminated by a number of different pathways:

- Infiltration from the surface;
- Leachate from onsite wastewater (septic) systems;
- Introduction of contaminants from the surface through improperly constructed or defective wells;
- Direct contamination through sink holes or other geologic features; or
- Dissolution of naturally-occurring substances in the soil or rock.

Contaminant movement is affected by the properties of the aquifer as well as the overlying soils. Preventing contamination is paramount in keeping groundwater safe.

2.2. Plan Purpose

The purpose of the Source Water Protection Plan (SWPP) is to provide the ways and means to protect groundwater, which serves as the sole source of the public water supply, from the threat of contamination as a result of accidents or unwise practices from nearby residential, industrial, commercial, agricultural, waste management, or transportation activities.

2.3. Plan Goals

The goals of the SWPP are:

- To create an awareness of the Town's drinking water sources for the Town's managers, residents and other stakeholders
- To identify existing problems that can potentially cause contamination of the Town's source water and to provide the Town Council with suggestions for correcting the problems
- To identify future problems that can potentially cause contamination of the Town's source water, such as septic systems or storage tanks, and to provide the Town Council with suggestions for corrective actions
- To protect the groundwater resources through education, i.e., educate members of the Town about State and County regulations for source water protection, etc.

3. Wellhead Protection Advisory Committee (WPAC)

In 2006, the Town Council established a Wellhead Protection Advisory Committee (WPAC), consisting of five members. The purpose of the WPAC is to evaluate the site-specific risks to the source water, develop site-specific recommended actions to mitigate the risks, and ensure that the recommended actions are implemented. The Committee's purpose is accomplished by (1) identifying key issues and challenges to developing and implementing a source water protection plan and providing recommendations to the Town staff and the Town Council; (2) reviewing the options for addressing source water protection issues and providing recommendations to the staff and the Council; (3) reviewing the wellhead protection plan and providing recommendations to the staff and Council; and, (4) assisting in the implementation of the protection plan as directed by the Town Council. Community involvement is a critical element to developing a successful SWPP. The WPAC involves the community in this process by incorporating community members and local officials into its membership and by having all meetings open to local stakeholders.

The WPAC membership typically consists of waterworks employees, town or local government officials, county or regional government representatives, and/or water customers. Extensive knowledge of source water protection or the water system components is not a prerequisite to being a committee member.

The Town of Middleburg WPAC consists of:

Name	**Organization**	**Title**
Morris "Bud" Jacobs	Citizen	Chair
Terry Inboden	Inboden Environmental Services	Vice Chair
Jilann Brunett	Citizen	Member
Bruce Gilbert	Citizen	Member
Edward "Snooks" Swain	Consultant to the Middleburg Fire Department	Member
To be announced	Council Representative	Council Member

In April of 2008, a Wellhead Protection Plan was prepared for the Town of Middleburg by Olver, Inc., utilizing funding provided by the Virginia Department of Health. This plan delineated the source water protection areas, identified the characteristics of the wellhead protection areas, identified both existing and potential sources of contamination, identified the protective measures that were currently in place, and proposed future protective measures. The document also included an emergency response plan.

As the Wellhead Protection Plan Report was being developed, the Town was in negotiations with the Loudoun County Sanitation Authority to operate the Town's utility systems. After a brief trial period, a five-year contract was signed between the two parties. Due to this transfer of responsibilities, the WPAC became inactive; and, Loudoun Water assumed the leadership of addressing the Town's water quality concerns and protecting its water sources.

In 2012, the Town resumed leadership of protecting its water resources and received a Wellhead Protection Implementation Grant to develop and distribute source water protection brochures, as

recommended in the 2008 Wellhead Protection Plan. Those brochures were distributed through a mass mailing to the 20117 and 20118 zip codes. Copies are also available in the Town Office and the brochures are available on the Town's website.

At the same time the Town was developing the brochure, it also received consulting assistance from the Virginia Department of Health to review and update the Wellhead Protection Plan. The Town Council reconstituted the WPAC to address the Town's water concerns and protect its water sources.

In March of 2013, Tetra Tech helped the WPAC develop a new SWPP. The WPAC presented the new plan to the Council and they adopted it. The plan increased the number of recommended action items from the four recommendations in the 2008 plan to thirty-nine. The Committee has been in the process of implementing the action items since that time.

The make-up of the Committee has changed from time to time. Currently, it consists of two retired employees of the U.S. Geological Survey; a consultant to the Middleburg Fire Department; a representative from the Town's utility system operator (Inboden Environmental Services, Inc.); and one other citizen representative, who serves as chair. In addition, a member of the Town Council serves as the Council representative to the Committee and the Town Clerk serves as the administrative support. The Committee meets on a quarterly basis.

The WPAC contributes information to aid the development of the SWPP, reviews draft SWPPs, and ensures the implementation of recommended actions. The recommended actions that the WPAC proposes are presented to the local officials for approval and implementation.

The WPAC solicits information from other local stakeholders, such as emergency response personnel, local health professionals, land or business owners, and other concerned citizens.

After reviewing the available information, characterizing the water source and the Source Water Protection Area, the WPAC develops recommended actions to best protect Town of Middleburg water sources. The recommended actions developed by the WPAC are listed in Section 6.

4. Source Water Assessment & Protection Areas

4.1. Delineation of Source Water Assessment & Protection Areas

VDH delineates two different Source Water Assessment Areas (SWAA) for each waterworks source. These areas are defined for groundwater sources as follows:

- SWAA 1 is a 1000-foot fixed radius around the well and is a priority area for managing potential sources of contamination; and
- SWAA 2 is a one-mile (5,280-feet) fixed radius outside of SWAA 1.

The circular SWAA 1 and SWAA 2 delineations described above assume that the source is withdrawing from a confined aquifer composed of uniform unconsolidated material. For groundwater sources which do not withdraw from a confined aquifer, the VDH recommends further study to delineate SWAA 1 and SWAA 2 assessment areas specific to each source. The SWAA 1 assessment area should be defined as the area most at risk of source water contamination. While typically SWAA 2 assessment area should be defined as the entire recharge area, the extent of the groundwater recharge area is currently unknown. For the purposes of this assessment, it is assumed to be a one-mile radius outside of SWAA-1.

For the purposes of this plan, the Source Water Protection Area (SWPA) is defined as the area encompassing SWAA 1 and 2. A map of the SWPA for each source is provided in Appendices A1 and A2.

The Town of Middleburg operates a community public water system, defined as a system that regularly supplies drinking water from its own sources to at least 15 service connections used by year-round residents of the area or regularly serves 25 or more people throughout the entire year. The Town of Middleburg serves an estimated population of 803 people, directly. In addition to residents, the water system serves many businesses and supplies the Salamander Resort. Resort developers worked closely with the Town of Middleburg to identify additional sources of water and constructed a water treatment plant to increase capacity and improve water quality.

Originally, the Town of Middleburg treated surface water from the Little River at a treatment facility located outside of town in Fauquier County, but has since developed several wells to supply raw water. The first well developed (Well 1) is no longer in use, reportedly taken off line when dry cleaning fluids were detected presumably from a neighboring dry cleaning business. Currently five wells are used. All wells have been designated as highly susceptible to contamination by the VDH because they are not constructed in confined or naturally protected aquifers and/or because there are other conduits (such as other drinking water wells) drilled into the aquifer(s) used as the town's water supply. The wells are:

- Well 1 has been properly closed out.
- Well 2 is located in Fauquier County, is 350 feet deep with a 6.5-inch diameter casing and grout to a depth of 50 feet. When initially drilled in 1971, this well yielded approximately

150 gpm. Current yields are approximately 45 gpm at 130 psi, and the water is treated at an onsite water treatment plant.

- Well 3, drilled in 1986, is located within the town limits, with a yield of 75 gpm. The total well depth is 685 feet, with an 8-inch diameter steel casing and grout to a depth of 56 feet. This well has high levels of iron and manganese. The water is treated onsite, adding chlorine and blended polyphosphate.
- Well 4, drilled in 1994, is located within the town limits. It has a depth of 580 feet, with 8-inch diameter steel casing to 108 feet and grouted to 100 feet. This well yielded 150 gpm during the initial pump test and is now yielding 120 gpm at 55 psi. The water is treated at a nearby water treatment plant equipped to remove radiological contaminants (i.e., Gross Alpha, Gross Beta, and Combined 226/228 Radium) in the source water. These radionucleotides are thought to be naturally occurring. Refer to the Town of Middleburg Annual Drinking Water Report for the most up to date treatment and monitoring data.
- Wells L and P (also referred to in records as Wells 5 and 6) were originally developed on the Salamander Resort property to provide public drinking water to the resort. The Town of Middleburg has accepted ownership and taken on the responsibility of maintaining and operating the wells and water treatment plant to supply water to the resort and to provide increased capacity for the entire water works. In addition, the town limits have been extended through a boundary line adjustment to include the property associated with the resort area and include the SWAA 1 for each of the wells. Wells L and P were drilled in 2003, with current yields of 40 gpm and 45 gpm, respectively. Well L has a depth of 480 feet, with 8-inch steel casing to a depth of 116 feet, and is grouted with cement to 100 feet. Drawdown of Well L indicates an observed maximum drawdown of 80 feet. Well P is 620 feet deep, with 8-inch steel casing to a depth of 126 feet, and grouted with cement to 100 feet. Drawdown of Well P indicates an observed maximum drawdown of 106 feet. The water treatment plant serving Wells L and P is also equipped to remove radiological contaminants. These wells are restricted to 50 gpm when in production and going through the plant.

4.2. Geological Characterization

The Town of Middleburg's source water wells are located in Marshall Metagranite (Appendix B1, Geologic Units Ycm and Ymm), which are part of the Blue Ridge Basement Complex. Ymc is a medium- to coarse-grained monzogranite composed of saussuritized oligoclase, quartz, and to a lesser extent, rod and bleb perthite, microcline, and orthoclase. Ymm is a medium to fine grained biotite metagranite, medium to dark gray, and mostly equigranular (material that is composed chiefly of crystals of similar orders of magnitude to one another). The principle minerals of this formation are bluish gray quartz, oligoclase, microcline and biotite, with lessor amounts of muscovite, opaque minerals, epidote, chlorite, and rare granite.

The feasibility of developing groundwater resources of suitable quantity and quality are controlled by numerous interrelated factors including: the water producing and water quality characteristics of the underlying bedrock formations; the presence of geologic structures favorable to groundwater development such as folds, faults or fracture zones; surface topography and drainage patterns; soil thickness and character; configuration of the groundwater table; the

amount of available groundwater recharge; and, the effects of existing land usage on groundwater recharge and water quality[1].

Because bedrock is generally impermeable, the capacity for bedrock to store and transmit groundwater is highly dependent on the density and interconnectivity of secondary void spaces and bedrock fractures present within the rock. The development of bedrock fractures is typically dependent on the lithology of the rock and the type of stresses exhibited on the rock mass to form the fracture permeability.

Due to the massive, competent and coarse grained nature of the granite rocks, fractures within the Marshall Formation likely have the best water bearing characteristics. In these rocks, fractures will tend to be long and through going, will have greater aperture widths due to the rougher fracture surfaces, and will tend to remain open due to the general absence of clay-forming minerals. Additionally, near horizontal sheet fractures attributed to removal of load stresses by erosion are often well developed in massive granite rocks like the Marshall Formation. Sheet fractures are often less steeply dipping fractures, such as cleavage and foliation partings, which tend to increase the hydraulic interconnections between bedrock fractures and may greatly improve the water-producing characteristics of these rocks. Also, shearing along the contacts between the metagranite and metadiabase units often promotes fracture development.

Marshall metagranite is generally considered a poor water bearer[2]. However, more recent research in a report for Purcellville[3] suggests that the Marshall Formation has a good potential for moving water, but the report also says the Formation has horizontal fissures, which increase the risk for contaminant transport.

Well completing reports from the region indicate varying well depths (approximately 300 to 700 feet below the surface) and water yields up to 246 gallons per minute (gpm). Higher yields are most likely related to the wells' proximity to a fracture or fissure. According to the well completion reports, only Well 2 has natural flow. Well completion reports also indicate one to three water bearing units. Refer to Appendix B for a map of the geology in the SWAA (Figure B-1). Well completion reports are filed with the Loudoun and Fauquier County Health Departments and are provided in Appendix D.

4.3. Land Use

The land surrounding the Town of Middleburg wells is primarily residential with some farmland, commercial businesses, schools, and a vineyard, as well as the Salamander Resort area and

[1] Engineering Concepts, Inc. 2000.Water Resources Study, Purcellville, Virginia. Engineering Concepts, Inc. Fincastle, VA. And HIS Geotrans, Glen Allen, VA

[2] Cady, R.C., 1938. Ground-water Resources of Northern Virginia. Bulletin 50. Commonwealth of Virginia State Commission on Conservation and Development, Virginia Geological Survey, Division of Mineral Resources, Richmond, VA.

[3] Engineering Concepts, Inc. 2000.Water Resources Study, Purcellville, Virginia. Engineering Concepts, Inc. Fincastle, VA. And HIS Geotrans, Glen Allen, VA

conservation easements. WL003 and WL004 are located in town. The SWAA 1 for wells WL003 and WL004 are primarily categorized as Developed, Medium Intensity with some low intensity development, high intensity development and pastureland as well (NLCD 2011[4]). The majority of residences in Middleburg are located in this area. Route 50 passes through town, and is the basis for the development of the land. Salamander Resort and Spa is located in town. Two of the Town's wells (Wells L and P) are located on the Salamander Resort's property. The Well L SWAA 1 land use is split between forest and pasture land. The Well P SWAA 1 land use is primarily split between pasture land and developed land with a lesser amount of forest. WL002 is located the farthest outside of town and is primarily surrounded by forest, which makes up the majority of the well's SWAA 1.

The SWAA 2 areas for all 5 wells are overlapping and consist mostly of pasture land and forests. An existing land use map for the SWPA is presented in Appendix B-2.

[4] U.S. Geological Survey, National Land Cover Dataset, 2011.

5. Potential Sources of Contamination (PSC)

VDH develops an inventory of PSC within the SWPA through its Source Water Assessment Program. This inventory contains information regarding the ownership of the PSC, the types of contaminants produced by the PSC, as well as the distance of the PSC to the water source. This inventory is summarized in the tables in Appendix E (Tables 4, 5, 6, and 7). There are 29 close storage tank releases, three industrial sites, three open storage tank releases, 14 other PSCs, one point discharge, four RCRA, and two underground injection wells within the SWPA. A natural gas pipeline cross through SWAA 2 associated with Well L and Well 003. Loudoun County also maintains its own inventory of potential pollutant sources, and these data were queried in 2018 to identify additional PSCs in the SWPA.

The location maps of PSC within the SWPA are presented in Appendix E (Figures E-1, E-2, and E-3). These PSC include publicly available information from DEQ, VDH, EPA, Loudoun County, a field survey, and other sources. There were no Potential Sources of Contamination identified in SWAA 1 for wells 002 and L. However, since land use in SWAA1 for Well L contains agricultural land, this can be considered a land use of concern.

The risk of each PSC varies depending on proximity to the well and potential pathways to reach groundwater. The highest priority area for protection includes the activities within SWAA 1 of the SWPA. Town of Middleburg should use the inventory of PSCs in SWAA 1 in evaluating the risk posed by each PSC and the need for protection measures.

Identification of existing contamination sources may address immediate concerns about protection of the local water supply. To ensure that the supply remains uncontaminated, continual review of land use activities and identification of potential sources of contamination is necessary.

In addition to Potential Sources of Contaminants, an inventory of potential conduits of contamination was developed. This is included in Appendix F.

5.1. Prioritization of Potential Contaminant Sources & Critical Areas

It may not be feasible to develop management strategies for all of the PSCs within the Town of Middleburg SWPA, depending on the total number identified. The identified PSCs can be prioritized by potential threat to water quality, proximity to the intake or well, and local concern. In addition to identifying and prioritizing PSCs within the SWPA, local source water concerns may also focus on critical areas. For purposes of this source water protection plan, a critical area is defined as an area, identified by local stakeholders, within or outside of the SWPA, that may contain one or more PSC(s), and/or within which immediate response would be necessary to address the incident and to protect the source water.

During a follow-up meeting on January 16, 2018, the Wellhead Protection Advisory Committee reviewed the PSC and critical area lists derived from the VDH Source Water Assessment Report and 2013 Wellhead Protection Plan, new field verified PSCs, regulated points, and local concerns.

Meeting participants identified highest priority concerns at that time (Table 1). The Town of Middleburg protective strategies will focus on these PSCs and critical areas.

Table 1. PSCs and/or Critical Areas Prioritized as Highest Priority and Reason for Local Concern

Highest Priority PSCs/Critical Areas	Why Are They Considered Highest Priority?
Conduits	Because water wells, oil/gas extraction wells, septic systems, vertical geothermal wells, etc. can allow surface water and contaminants a direct route to ground water, these conduits must be properly constructed and maintained. Several conduits were identified in the Town of Middleburg SWPA. The condition of many conduits is not known entirely. In addition, the condition of existing domestic, irrigation, and monitoring wells that are documented will not be inspected by the county health department regularly, if at all. Not only do improperly constructed and/or maintained conduits allow surface contaminants access to ground water, but uses such as septic systems can introduce contaminants.
Water use	In addition to private water wells acting as potential conduits for contamination, they may also represent a different threat to the Town of Middleburg public water works. If used, private water wells can draw contaminants into the public wells; and can draw groundwater resources from the public wells operated by the water works, reducing the wells capacity and the Town's ability to meet water demands. Currently, the Loudoun County Health Department has record of 16 wells on the Salamander Resort property, two of which are noted as "abandoned" on the report. Two of the wells (Wells L and P) are being operated by the Town of Middleburg water works. The remaining 12 wells include 2 wells labeled as water supply or reserve production, 6 monitoring wells, and 4 wells labeled as to be abandoned.
Petroleum storage and spills	Several homes in the Middleburg area are using or have previously used oil burning heating systems. Oil is delivered to these homes and stored in or around the home. For homes that have converted to alternative heat sources, storage facilities may remain on their property. Petroleum releases during delivery or due to leaking storage facilities can contaminate the drinking water source if not addressed.
Gas Stations/ Maintenance Garages	Oils, antifreeze, and other automobile fluids can cause contamination of groundwater sources if not cleaned up and disposed of properly. USTs, particularly those at historic sites, may leak and contaminate groundwater sources.

Highest Priority PSCs/Critical Areas	Why Are They Considered Highest Priority?
Pesticides/fertilizers	Pesticides and fertilizers used for farm operations, including vineyards, can migrate into the water supply. Areas used for disposal of animal waste or burying dead livestock can also cause contamination of the source water. Southern States is in the SWAA 1 for Well 4. The business stores and sells fertilizer and pesticides. If not stored properly or in cases of fire emergencies, these chemicals have been known to leach into the ground.
Municipal Area - Concentrated Residential/Municipal Facilities	Municipal areas have a concentration of homes, businesses, schools, and other facilities that may collectively introduce contaminants into surface water at a concentration to cause concern. Storm water runoff, care of public grounds, maintenance of city and county vehicles at garages, and residents' activities in and outside their homes can contribute to contamination of the surface water including: fertilizers, pesticides, oils, paints, cleaning agents, salts, deicer etc. Washington St (Route 50) and The Plains Road currently have the highest use of salts and deicer in the area.
Public and Private Waste Water	There are private individual septic systems and public waste water systems located in and near the SWPA. Accidental releases may allow untreated waste water to contaminate the water resource. Failing private septic systems can leach into surrounding soils and potentially contaminate the source water.
Highway Traffic and Rights-of-way Maintenance	Highways traverse the SWPA. A hardware/fertilizer store, millworks, vineyard, and residences with oil burning heating systems occur within the SWPA. Each of these may require truck traffic, hauling fertilizers, pesticides, and petroleum products through the SWPA. The source water could become contaminated if an accident was to occur and a spill not addressed. Highway and utility rights of way are typically maintained with herbicides that can migrate into the water supply.
Water Treatment Facilities	Water is treated at separate water treatment plants that are in close proximity to each well. The water treatment plants are considered potential threats to the sources due to the chemicals used to treat the water, as well as the concentration of contaminants removed during the treatment process.

6. Source Water Protection Plan

The SWPP describes the actions necessary to minimize the risk to the quality of the source water utilized by the Town of Middleburg. The goal of the plan is to reduce or eliminate potential threats to drinking water supplies within the SWPA either through existing regulatory or statutory controls, or by using non-regulatory (and often voluntary) measures centered around an involved public.

6.1. Completed Measures and Activities

Table 2 includes the 2013 measures that were put in place for protecting the quality of water within the SWPA. These completed activities come from the Middleburg Wellhead Protection Committee.

Table 2. Summary of current protection measures that have already been completed.

ID #	ACTIVITY	TASK COMPLETE
	SOURCE MANAGEMENT ACTIVITIES	
7-1	Has ordinance that prohibits the construction of private water wells and the use of existing wells for drinking water, when residents have access to the public water works.	Complete
7-3	Consider abandonment of Well 1 and any other known wells on town property or on properties seeking abandonment assistance, prioritizing those wells closest to public drinking water wells.	Well 1 closed. Complete
7-4	Consider seeking grant funding or a capital improvement project to provide for maintenance of physical security at wellheads and treatment facilities.	Complete
7-7	Identify home owners with heating oil tanks within the town limits, prioritizing those homes within the SWAA 1, 1000' foot delineation. Communicate the source water vulnerability to these residents and encourage the removal of unused tanks, particularly those installed underground.	Oil Tank Leak Brochures distributed with January 2015 utility bills.
7-9	Communicate with current gas station owners the need to properly dispose of oil and other automobile products and ask them to follow regulations and institute BMPs to contain and clean up spills.	Complete. Is active monitoring site by DEQ
7-10	Determine if groundwater remediation is ongoing at the Exxon to monitor for contamination. Request monitoring results from the VDEQ in order to understand the depth of contamination and potential for migration of the contaminants into the source water.	Complete.
7-11	Consider adoption of a local ordinance that limits the amount of any substance with a Maximum Contaminant Level in drinking water, including fertilizers and pesticides that can be stored or applied in the SWAA 1.	Complete

ID #	ACTIVITY	TASK COMPLETE
7-12	Consider increasing raw water monitoring for specific contaminants, such as nitrates/nitrites.	Complete
7-13	Work with the owner or operator of the resort, vineyard, and town/county facilities to implement an Integrated Pest Management System (IPM) and ensure the use of BMPs when applying fertilizers.	Complete.
7-16	A large conservation easement with the Potomac Conservancy on the Salamander Resort property prevents industrial development in a portion of the SWPA.	Complete
7-17	Develop a Wellhead Protection brochure to distribute to water customers.	Complete
7-18	Coordinate household hazardous waste collection and pharmaceutical take back events for the area on an annual schedule.	Complete. 2017 collection held in April.
7-23	Contact the utility companies to determine the herbicides and insecticides used within the ROW and any other chemicals used. Communicate the boundaries of the SWPA to raise awareness with utility company to ensure BMPs.	Complete. Letters sent to utility companies on 4/19/16.
7-24	Regularly inspect chemical containment structures, evaluate and update materials handling procedures, and implement a “just-in-time” ordering process for chemicals if possible.	Complete
	EDUCATION AND OUTREACH	
7-27	Include a reference to this wellhead protection plan and how customers can access a copy and potentially contribute to protection activities in the Annual Drinking Water Quality Report	Complete
7-28	Received a Virginia Department of Environmental Quality grant to develop and produce a brochure. This brochure will be distributed to water customers and provided in the town offices.	Complete
7-29	Consider creating a wellhead protection page with links to the wellhead protection plan(s), state and federal sites with protection information such as septic system maintenance, private water well maintenance/construction guidance, water conservation, wellhead protection guidance, kids resources, wellhead brochure, etc.	Complete. Link to 2013 WHP Plan & other sites is currently available.
7-30	Work with the Go Green Committee to integrate source water protection into their efforts and specifically pursue household hazardous waste collection and drug take back projects.	Complete. Take Back Day held 4/29/17.
7-32	Provide links to source water protection related websites from federal and state agencies.	Complete

ID #	ACTIVITY	TASK COMPLETE
7-35	Consider erecting Drinking Water Protection Signs.	Complete.

6.2. Recommended Actions

The following source water protection measures are recommended to prevent potential contamination of the Town of Middleburg water supply (Table 3).

Table 3. Summary of Recommended Implementation Activities

ID #	ACTIVITY	RESPONSIBLE PARTY	DETAILS
	SOURCE MANAGEMENT ACTIVITIES		
7-1	Validate well inventory and pollution source data gathered from Loudoun and Fauquier Counties. Inventory old wells within the source water protection areas and determine whether they are (or should be) properly abandoned.	WPAC	Use Tetra Tech Assistance
7-2	Recommend a Town Ordinance be written requiring proper abandonment of existing wells on properties undergoing changes requiring a site plan.	WPAC	
7-3	Define the recharge area for Middleburg's source water and identify any potential problems to water quantity and quality from activities within that area.	WPAC	Recommend Recharge Study be completed
7-4	Extend sewer lines to eliminate private septic systems	Utility Committee	Included in Town CIP – Increase priority
7-5(a)	Recommend adoption of an ordinance requiring removal of unused tanks on properties undergoing modifications requiring a site plan approval by the Planning Commission.	Town Planner	Subdivision & Site Plan Ordinance
7-5(b)	Recommend adoption of an ordinance requiring inspection reports for heating oil tanks in use.	Town Staff/Town Council	Check with Town Attorney regarding enabling legislation. If allowed, check with County Bldg, & Dev. Dept. to avoid crossover with their duties.
7-6	Develop process for emergency responders to notify the Town when responding to hazardous spills.	IES/Town Staff	Review existing process and ensure that proper notifications are made.

ID #	ACTIVITY	RESPONSIBLE PARTY	DETAILS
7-7	Continue conducting annual operational and administrative briefings with first responders.	IES	Annual tours/briefings already occurring by IES with first responders
7-8	Provide the Wellhead Protection Plan and/or SWPA boundaries to the Town Council for transmittal to Loudoun and Fauquier Counties to be included in County-wide environmental planning documents.	WPAC	Formal request to include plan in County Comp Plans
7-9	Communicate with the Town of Middleburg's maintenance personnel to raise their awareness of the SWPA and ask that they institute BMP's when maintaining grounds and vehicles.	Town Staff	
7-10	Several septic systems remain within the Town limits. Monitor and encourage Loudoun and Fauquier Counties' Health Departments to enforce standards for proper pumping and maintenance of those systems.	WPAC	
7-11	Add backup power for Wells 2 and 3 to handle intermittent power outages.	IES/Town Staff	Generator installation project for Well 3 underway; CIP includes Well 2 generator in FY 20.
7-12	Work with the owners of privately owned roads to identify and make recommendations (i.e. environmentally friendly ice melting methods/products) to avoid contamination from plowing/treating the roads for snow and ice.	WPAC	
7-13	Explore what activities are allowed within proximity to the Town's SWPA. Develop strategies to address potential threats.	WPAC	
7-14	Explore water quality monitoring for streams, including investigating bacterial contamination at upstream sites and determine if there is a future threat to town wells. Consider working with watershed organizations, e.g. Goose Creek Association to implement this action.	WPAC	
7-15	Recommend conducting an analysis to determine if the two streams in the SWPA are gaining or losing stream volume.	WPAC	
7-16	Continually monitor land-use applications and identify potential sources of contamination during the review of land development activities.	Town Staff/WPAC	

ID #	ACTIVITY	RESPONSIBLE PARTY	DETAILS
7-17	Update the Plan	WPAC	Next formal update 2023
	EDUCATION AND OUTREACH		
7-18	Provide educational information about Middleburg's source water and its protection to residences and businesses, i.e., brochures, letters, news releases, etc.; provide actions to be taken for specific threats or in the event of a hazardous spill; extend invitations to volunteers to participate in WPAC or in any WPAC events, or to announce public meetings and ordinances.	Staff/WPAC	Ongoing; Source Water Protection Column included in Town's bi-monthly newsletter
7-19	Provide support to the school systems, both public and private, for incorporating source water activities into the schools' curricula.	WPAC	
7-20	Continue tours of the water plant to interested organizations such as watershed groups, schools, and civic organizations.	IES/Staff	
7-21	Hold quarterly meetings that are open to the public to discuss wellhead protection efforts; to review the Wellhead Protection Plan as necessary and make appropriate updates, and to update the emergency contact information.	WPAC	

Tracking implementation progress is important to ensuring that the necessary steps are being taken to protect the drinking water supplies. Tracking involves identifying responsible parties, identifying any prerequisite steps that must be taken to successfully implement an action item, setting deadlines for completion, determining if there are costs involved and securing funds, logging when steps or full action items are actually complete, identifying potential follow up actions, and noting any specific outcomes as a result of each item's completion. A full list of implementation action items and tracking information is provided in Appendix G.

6.3. Source Water Protection Emergency Response Plan

Town of Middleburg

Water System Emergency Plans

The Town has a comprehensive water system emergency plan in the case of a drinking water shortage that meets and exceeds the requirements of the Virginia Department of Health, Office of Drinking Water. The plan consists of three components:

1. Drinking Water Shortage – Short Term Loss of Water Source
2. Drinking Water Shortage – Long Term Water Supply Planning
3. Drinking Water Shortage – Spill Response

The Town's plans for each of these components are summarized below.

1. Short Term Loss of Water Source. In the case of one or more of the Town's wells going off line, the Town will turn to alternative water sources, if necessary, to supply its customers. The Town has five wells and two water treatment plants, which can produce sufficient water with one or more wells off line. All wells and treatment plants are active and have capacity to increase water production in an emergency.

   In the event sufficient water cannot be supplied to customers, the Town will haul potable water in. The Town has arrangements with sources of potable water for this purpose.

   Both water treatment plants which treat water from 3 Town wells are supplied with generators in case of loss of power.

2. Long-Term Water Supply Planning. Future water supply needs may involve expanding a current water source or developing a new one. The Town plans for long-term water supply through its Utility Committee and the Northern Virginia Regional Water Supply Plan. The Town currently provides water at approximately 35% of pumping capacity and 33% of plant capacity. The Town is projected to maintain a water surplus of approximately 0.21MGD until 2040. This will continue to be monitored and updated through water production and use records.

3. Spill Response. The Town maintains a Spill Response Sheet for all water system employees that outlines the chain-of-command, notification procedures and response actions in the case of a hazardous waste spill that might threaten the water supply.

Emergency Coordination and Public Notification

The Town participates in the Loudoun County Emergency Management System. This system provides support and assistance to the Town for all types of emergencies, from weather-related to terrorism incidents. Town Administrative, Public Safety and Utility staff receive alerts related to emergencies that might impact us and can request assistance from the County and neighboring towns when and where necessary.

In 2016, the Police Department updated the Memoranda of Agreement within the Northern Virginia response area. Loudoun County's dispatch center serves as the Town's dispatch center, which has multiple back up plans. There is a standing partnership between the Police Department and the Loudoun County Sheriff for multi-agency response to critical incidents. The Department also has a strong partnership with the Virginia State Police for coordination in the case of evacuation and/or the need to shutdown major roadways within the region.

Town residents and businesses can sign up to receive alerts from the Loudoun Alert system and the Town's own phone alert system. In case of localized emergencies, such as a water line break, the Town places door hangers on the affected properties.

6.4. Public Education and Outreach

In order for citizens to appreciate the benefits of source water protection, they must first understand what the problems are in providing safe drinking water, and how they can become involved in the process. Public education is the greatest promoter of voluntary action and public support for a community's wellhead source water protection program.

Activities and opportunities should be sought that will increase public awareness that source water protection is a local issue and that each citizen plays a part. The Town of Middleburg previously developed a public education brochure for distribution to residents of the Town. A copy is included in Appendix C. The Town has already completed a number of other public education and outreach activities, including providing information about source water protection on the Town website and in the Annual Water Quality Report; installing signs along roads in high visibility locations near the designated boundary of the SWPA; and installing fences around the wellheads.

6.5. Funding

Numerous funding opportunities are available to aid communities in the implementation of source water protection initiatives. The following is a summary funding sources currently available to support source water protection in Virginia:

Wellhead Protection Implementation Projects Grants – Virginia Department of Health – Office of Drinking Water

Funding type: grant

Description: This program supports the implementation of wellhead protection projects including well abandonment, educational outreach, wellhead fencing, advancing

ordinances, emergency response planning, hazardous waste collection, and protection area delineation. This program requires that the waterworks have a protection strategy in-place (i.e. Source Water Protection Plan) and an active source water protection committee.

Link: http://www.vdh.virginia.gov/drinking-water/source-water-programs/source-water-protection-assistance-funding-opportunities/

Drinking Water State Revolving Fund – Virginia Department of Health – Office of Drinking Water

Funding type: low interest loan with possible principal forgiveness

Description: This program provides planning funding, which could be used to analyze solutions to source water measures or evaluate potential new sources. This program also provides low interest loans with possible principal forgiveness for waterworks construction projects including new wells and intake modifications, and low interest loans for waterworks to acquire land or conservation easements and to establish local voluntary incentive-based source water protection measures. Funding is prioritized for small, financially stressed, community waterworks.

Link: http://www.vdh.virginia.gov/drinking-water/financial-construction-assistance-programs/

Nonpoint Source Management Implementation Grant Program – Virginia Department of Environmental Quality

Funding type: grant

Description: This program provides grants for watershed projects, demonstration and educational programs and nonpoint source pollution control program development.

Link:http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/NonpointSourcePollutionManagement.aspx

Virginia Wastewater Revolving Loan Fund – Virginia Department of Environmental Quality

Funding type: low interest loan

Description: This program provides low interest loans for acquisition of title or other rights to real property to protect or improve water quality, and for storm water runoff control best management practices.

Link:http://www.deq.virginia.gov/Programs/Water/CleanWaterFinancingAssistance/VCWRLFTableofContents.aspx

Virginia Clean Water Revolving Loan Fund – Virginia Department of Environmental Quality

Funding type: low interest loan

Description: This program primarily funds wastewater treatment projects, but also funds agricultural best management practices and non-point Source Pollution Abatement. This program can provide low interest loans to waterworks or localities to provide loans or other incentives to facilitate the implementation of agricultural best management practices.

Links:

Land conservation - http://www.deq.virginia.gov/Programs/Water/CleanWaterFinancingAssistance/LandConservation.aspx

Stormwater - http://www.deq.virginia.gov/Programs/Water/CleanWaterFinancingAssistance/StormwaterFundingPrograms/StormwaterLoans.aspx

Stormwater Local Assistance Fund – Virginia Department of Environmental Quality

Funding type: cost-share

Description: This fund provides matching grants for stormwater projects including new stormwater best management practices, stormwater best management practice retrofits, stream restoration, low impact development projects, buffer restorations, pond retrofits, and wetlands restoration.

Link:http://www.deq.virginia.gov/Programs/Water/CleanWaterFinancingAssistance/StormwaterFundingPrograms/StormwaterLocalAssistanceFund(SLAF).aspx

Virginia Land Conservation Foundation – Virginia Department of Conservation and Recreation

Funding type: grant

Description: Grants are awarded to help fund the purchase of permanent conservation easements, open spaces and parklands, lands of historic or cultural significance, farmlands and forests, and natural areas. This program may allow public waterworks to permanently protect land in the SWPA at little cost to the waterworks.

Link: http://www.dcr.virginia.gov/virginia-land-conservation-foundation/

The Land and Water Conservation Fund State and Local Assistance Program – Virginia Department of Conservation and Recreation

Funding type: cost-share

Description: This program supports the acquisition and/or development of public outdoor recreation areas. This may aid utilities in purchasing land in the SWPA when the source water protection goals do not conflict with the recreational use of the land. It should be noted that all LWCF assisted areas must be maintained and opened, in perpetuity, as public outdoor recreation areas.

Link: http://www.dcr.virginia.gov/recreational-planning/grants

Other Virginia Department of Forestry funding programs –

VDF administers a number of programs aimed at promoting healthy forests and wildlife habitat that may help waterworks to limit erosion on land that they control within the SWPA. Additionally, VDF administers programs aimed at supporting agricultural best management practices. Waterworks can use these programs to promote Best Management Practices within their SWPA.

Link: http://www.dof.virginia.gov/costshare/index.htm

Urban Waters Small Grants Program – US Environmental Protection Agency

Funding type: grant

Description: This program provides small grants to restore their urban waters in ways that also benefit community and economic revitalization. In general, projects should address local water quality issues related to urban runoff pollution, provide additional community benefits, actively engage underserved communities; and foster partnership

Link: https://www.epa.gov/urbanwaters/urban-waters-small-grants

Healthy Watersheds Consortium Grant – U.S. Endowment for Forestry & Communities, Inc.

Funding type: grant

Description: This program provides grants to accelerate strategic protection of healthy, freshwater ecosystems and their watersheds. The primary focus for applicants should be protection and stewardship of the landscape that comprises the watershed, rather than restoration of degraded habitats or projects with a strictly water quality improvement outcome.

Link: http://www.usendowment.org/healthywatersheds.html

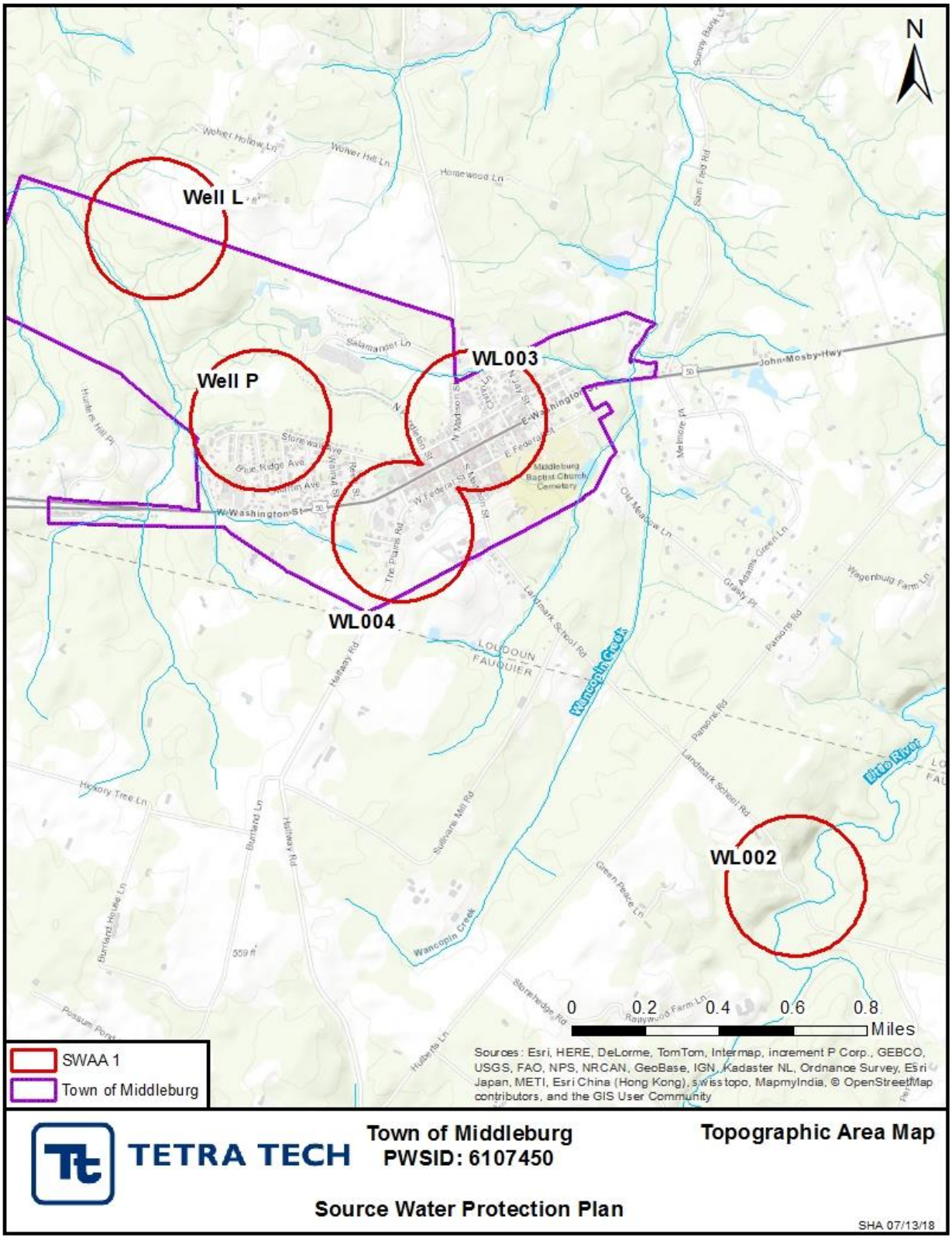
Regional Conservation Partnership Program – U.S. Department of Agriculture

Funding type: cost share

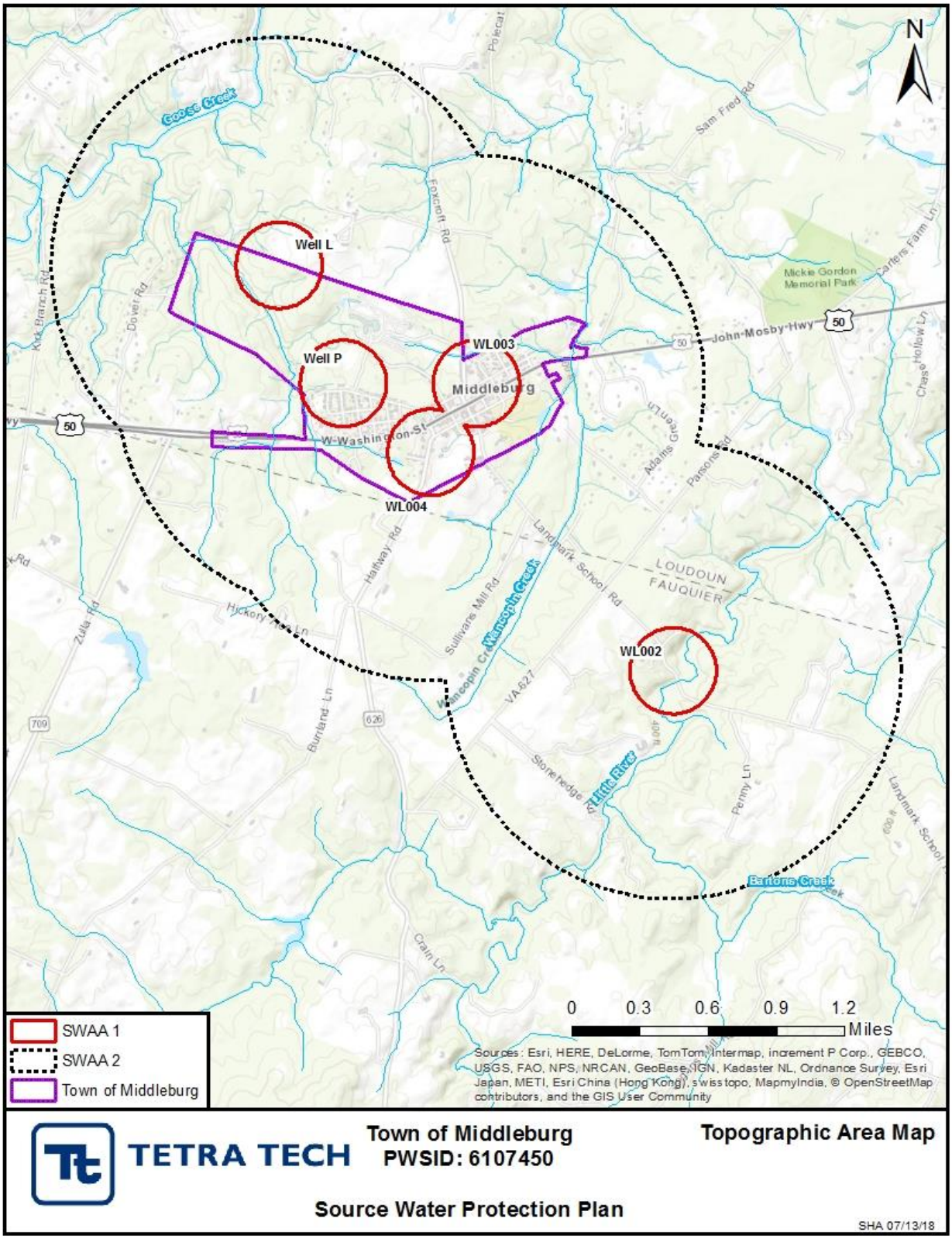
Description: This program provides funding to locally driven, public-private partnerships that improve the nation's water quality, combat drought, enhance soil health, support wildlife habitat and protect agricultural viability. The program connects partners with producers and private landowners to design and implement voluntary conservation solutions that benefit natural resources, agriculture, and the economy. Applicants must match or exceed the federal award with private or local funds.

Link: https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/farmbill/rcpp/

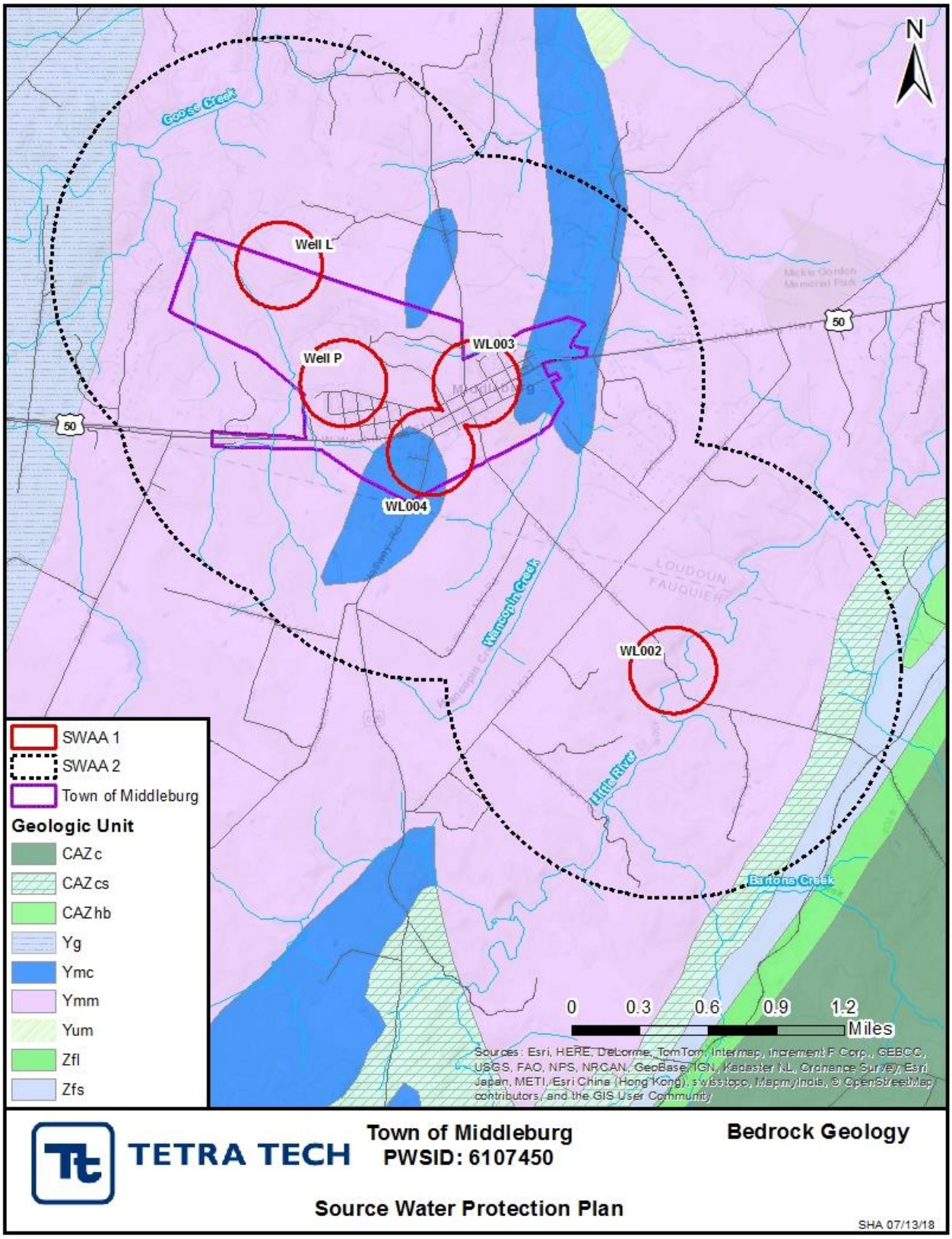
Appendix A-1: Source Water Assessment Area 1 Map



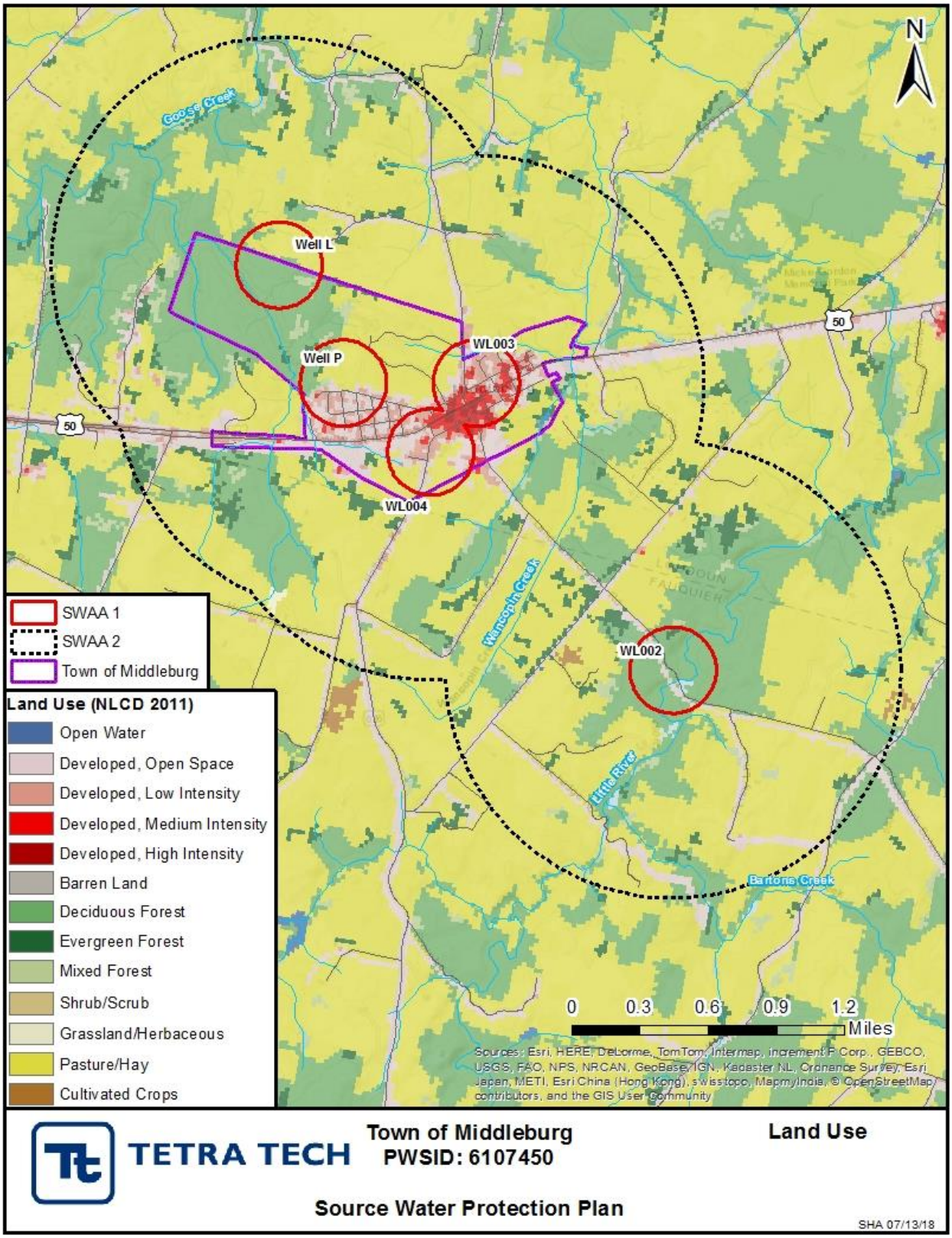
Appendix A-2: Source Water Assessment Area 2 Map



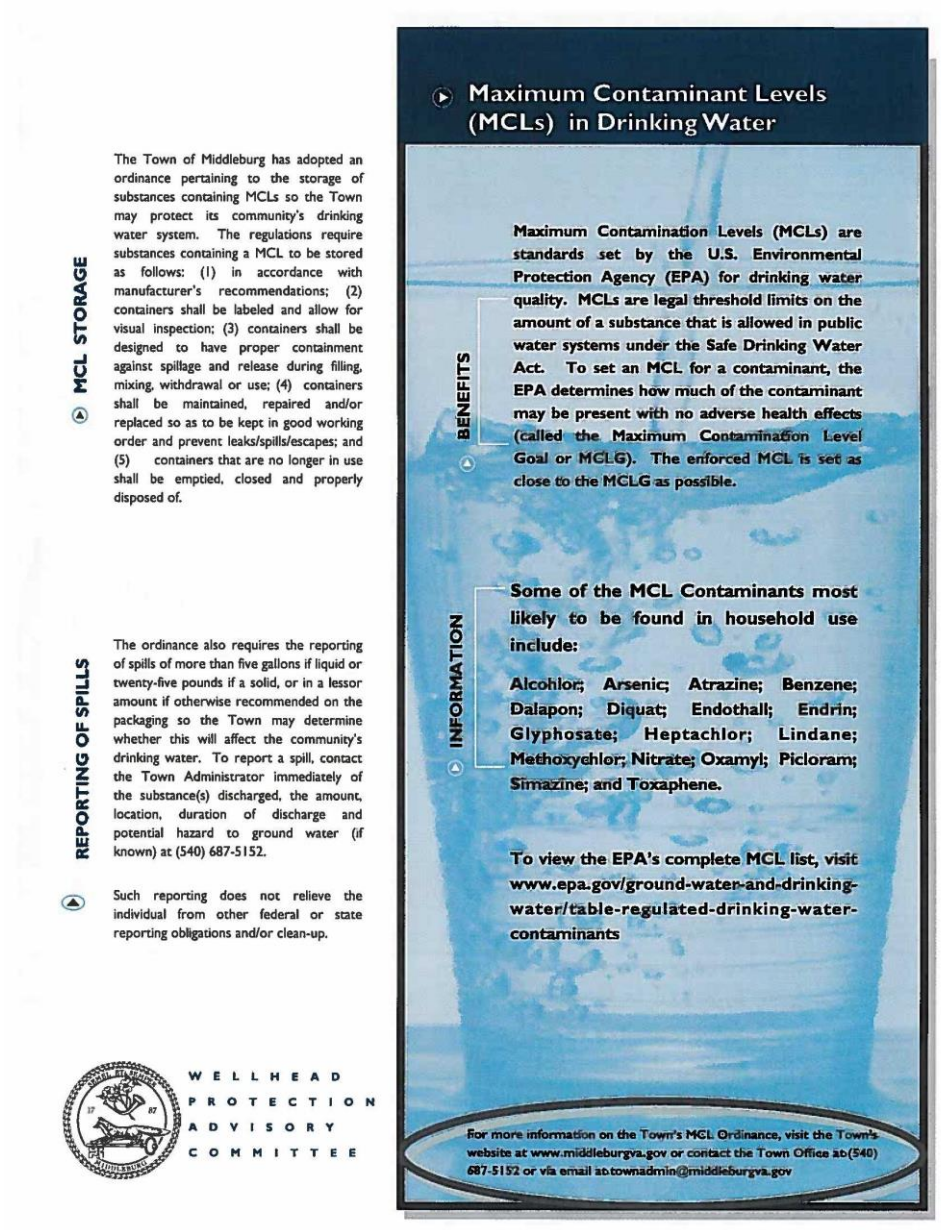
Appendix B-1: Source Water Protection Area Geology Map



Appendix B-2: Source Water Protection Area Land Use Map



Appendix C: Residential Brochures



MCL STORAGE

The Town of Middleburg has adopted an ordinance pertaining to the storage of substances containing MCLs so the Town may protect its community's drinking water system. The regulations require substances containing a MCL to be stored as follows: (1) in accordance with manufacturer's recommendations; (2) containers shall be labeled and allow for visual inspection; (3) containers shall be designed to have proper containment against spillage and release during filling, mixing, withdrawal or use; (4) containers shall be maintained, repaired and/or replaced so as to be kept in good working order and prevent leaks/spills/escapes; and (5) containers that are no longer in use shall be emptied, closed and properly disposed of.

REPORTING OF SPILLS

The ordinance also requires the reporting of spills of more than five gallons if liquid or twenty-five pounds if a solid, or in a lessor amount if otherwise recommended on the packaging so the Town may determine whether this will affect the community's drinking water. To report a spill, contact the Town Administrator immediately of the substance(s) discharged, the amount, location, duration of discharge and potential hazard to ground water (if known) at (540) 687-5152.

Such reporting does not relieve the individual from other federal or state reporting obligations and/or clean-up.

WELLHEAD PROTECTION ADVISORY COMMITTEE

Maximum Contaminant Levels (MCLs) in Drinking Water

BENEFITS

Maximum Contamination Levels (MCLs) are standards set by the U.S. Environmental Protection Agency (EPA) for drinking water quality. MCLs are legal threshold limits on the amount of a substance that is allowed in public water systems under the Safe Drinking Water Act. To set an MCL for a contaminant, the EPA determines how much of the contaminant may be present with no adverse health effects (called the Maximum Contamination Level Goal or MCLG). The enforced MCL is set as close to the MCLG as possible.

INFORMATION

Some of the MCL Contaminants most likely to be found in household use include:

Alcohlor; Arsenic; Atrazine; Benzene; Dalapon; Diquat; Endothall; Endrin; Glyphosate; Heptachlor; Lindane; Methoxychlor; Nitrate; Oxamyl; Picloram; Simazine; and Toxaphene.

To view the EPA's complete MCL list, visit www.epa.gov/ground-water-and-drinking-water/table-regulated-drinking-water-contaminants

For more information on the Town's MCL Ordinance, visit the Town's website at www.middleburgva.gov or contact the Town Office at (540) 687-5152 or via email at townadmin@middleburgva.gov

CLEAN UP PROCESS

You must immediately report evidence of a leak or spill, such as stains on the soil, puddles of oil, petroleum odors, etc., to the Northern Region Virginia Department of Environmental Quality (DEQ) Office. They can be reached at (703)583-3800. DEQ staff will then provide you with the appropriate procedures to follow. If required to implement a clean-up process, the work should be performed by a professional. These contractors are often listed as "Environmental Consultants" in the telephone yellow pages. A list of contractors may also be obtained from the DEQ Office. Work performed more than 24 hours prior to reporting a leak to DEQ is not eligible for reimbursement under DEQ's Virginia Petroleum Storage Tank Fund.

VIRGINIA PETROLEUM STORAGE TANK FUND

DEQ offers a reimbursement fund, the Virginia Petroleum Storage Tank Fund, from which a homeowner may be able to recover some of the cleanup costs associated with a leaking tank. VPSTF does not reimburse for tank removals, repair or replacement costs. It will only cover eligible cleanup costs. Before homeowners may request reimbursement, a financial responsibility requirement of $500/occurrence must be satisfied. This requirement is deducted from the total costs approved before any reimbursement payment is made. The total amount of reimbursement depends on following DEQ's directions, receiving pre-approval for conducting the cleanup and whether the costs you incur are within the usual rates reimbursed by DEQ. For more information, visit DEQs website at www.deq.virginia.gov/Programs/LandProtectionRevitalization/PetroleumProgram.aspx or call the DEQ office at (703) 583-3800.

OIL TANK LEAKS & DRINKING WATER CONTAMINATION

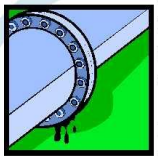
TOWN OF MIDDLEBURG, VIRGINIA

540-687-5152

Drinking Water (Surface & Ground) Contamination

Ground water contamination is nearly always the result of human activity. Almost any activity in which petroleum products are released to the environment, either intentionally or accidently, has the potential to pollute drinking water. When ground water becomes contaminated, it is difficult and expensive to clean up.

Contaminants may reach ground water from activities on the land surfaces and from sources below the land surface but above the water table, such as leaking petroleum storage systems (oil tanks).



Many homes have underground heating oil tanks. If an underground storage tank develops a leak, which commonly occurs as a tank ages and corrodes, its contents can contaminate the ground water. Abandoned underground tanks also pose a problem because their location is often unknown. Aboveground tanks pose a threat if a spill or leak occurs and adequate barriers for containment are not in place.

When an oil spill is discovered, it generally must be reported immediately to the Virginia Department of Environmental Quality's Regional Office. In addition, it must be immediately reported to the Town of Middleburg at (540) 687-5152.

OIL TANK LEAKS

Oil storage tanks are constantly breathing, allowing condensation to form inside the tank. The resulting accumulation of water can cause corrosion from the inside out. Consider having your heating contractor clean the inside of the tank every 5 years to avoid corrosion and leaks.

Most buried oil tanks are made of bare steel. When placed underground, the steel may react negatively to the surrounding soil and over-time will start to corrode. Leaks tend to start out as a very small hole in the tank, which causes its contents to leach into the surrounding soil, sometimes to a depth exceeding ten (10) feet. Faulty or corroded fuel lines can be another cause of an oil leak.

If there is a leak, the tank will need to be removed as leaks in oil tanks cannot be repaired. In addition, the soil will need to be remediated. For new tanks, consider a secondary containment enclosure.

Indoor tanks typically last 20-25 years and outdoor tanks typically last 15 years, at which point, they should be replaced. To replace your tank, contact your oil company. The estimated cost to replace a typical 275 gallon aboveground storage tank is $1,500.

A tank test or soil test are the most reliable methods of determining if your oil tank has a leak. A tank tightness test will evaluate whether the tank structure has a leak but will not identify whether oil has escaped into the surrounding soil. Only a soil test will do so. There are other less reliable methods for determining whether an oil tank leak exists as identified in the Homeowner's Monthly Tank Checklist.

HOMEOWNER'S MONTHLY TANK CHECKLIST

-Check fuel use. An increase may indicate a leak. Watch deliveries to prevent spills/ overfills.
-Check for water in the tank.
-Check oil/water separator drain, if exists.
-Check for signs of unexplained dead or withered vegetation in the area.
-Check to make sure the vent line is clear.
-Check to make sure the fill gauge (if exists) is functioning.
-Check to make sure overfill whistle (if exists) is functioning.
-Check the fill cap. If damaged/missing, replace immediately as oil can overflow if too much water enters the tank.
-If tank is an aboveground one, check the tank support for damage or rust.
-Check all pipeline connections and stoppers.
-Check your floor drain or sump pump for signs of petroleum, including odors.
-Check for signs of oil on your property (odors, sheen on water surfaces, visible puddles).
-Check for problems with the operation of your furnace.
-Check for petroleum vapors in your basement/crawlspace

DO NOT WAIT FOR YOUR TANK TO LEAK TO INSPECT OR PROTECT IT. THE TYPICAL CLEAN-UP COST FOR SPILLS CAN RANGE FROM $10,000-$50,000.

Do Your Part to Conserve Our Drinking Water

✓ Turn off the water when you brush your teeth and take shorter showers.

✓Wash full loads of clothes & dishes.

✓Don't use your toilet to flush trash.

✓Fix leaking faucets, toilets and lines. Consider installing toilets, faucets and appliances designed to save water.

✓Water your lawn and garden in the morning to avoid evaporation of the water. Consider installing a rain barrel at your downspouts to collect rain to water your landscape, instead of using treated water.

✓Use native plants for landscaping that don't need extra watering. Use mulch to hold moisture.

✓Don't let your hose run while washing your car.

✓If you are asked to conserve during a drought, don't panic. The Town responds to water shortages based on normal water use. Running extra water during a drought will make it more difficult to respond to the water shortage.

Source Water Links

-www.epa.gov/safewater/index.html
-www.epa.gov/watersense/
-http://cfpub.epa.gov/owm/septic/index.cfm
-http://orsanco.org/index.php/brochures
-http://www.vdh.state.va.us/odw/SourceWater AssessmentProgram.htm
-http://deq.virginia.gov/Programs/WaterSupplyWaterQuantity/GroundwaterProtectionSteeringCommittee/WellheadProtection.aspx

For Kids

-www.epa.gov/safewater/kids/index.html
-www.epa.gov/watersense/kids/index.html
-www.groundwater.org/kc/kc.html

Contacts

For information about our source water contact:

Town of Middleburg
P. O. Box 187
10 W. Marshall Street
Middleburg, Virginia 20118

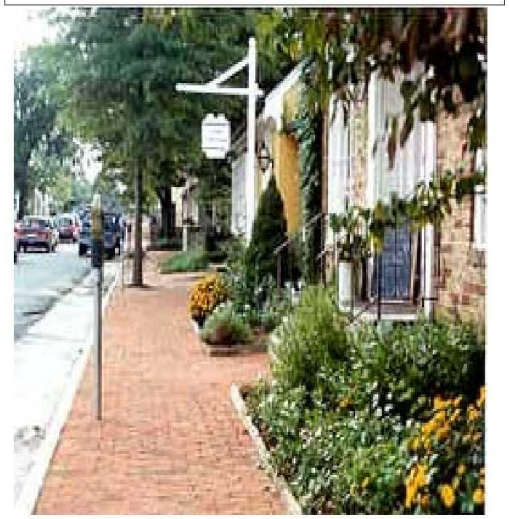
Phone: (540) 687-5152
Fax: (540) 687-3804

E-mail:
townadmin@townofmiddleburg.org

Website:
www.townofmiddleburg.org

Do Your Part!

Protect Our Drinking Water
Protect Your Health



Prepared by:
The Middleburg Wellhead Protection Committee
In cooperation with TetraTech,
Virginia Department of Health and
Virginia Department of Environmental Quality

Drinking water is essential for life.

Learn what you can do to protect our drinking water sources.

The Town of Middleburg provides your drinking water by treating groundwater from wells. This drinking water source is limited and could become contaminated unless we work together to protect it. Contaminated water is more costly to treat and possibly unusable altogether.

Making choices to protect and conserve the source of your drinking water helps keep you, your family and neighbors safe and healthy now and in the future.

What is Source Water Protection?

Source water protection helps safeguard community water supplies by preventing contamination of the public water supply wells. An important aspect of this is effectively managing potential contaminant sources in the areas which contribute water to the wells.

The Town of Middleburg's water system has five wells that supply the Town's drinking water. A reasonable estimate of the source water protection area for each well is a one-mile radius surrounding each well. Thus, your source water protection area includes all of the land within the Town limits and some adjoining land. This means that certain activities on your property could potentially have an adverse impact on your drinking water.

The Town operates two water treatment plants to produce quality drinking water. The Town is proud of its high quality water and is being proactive to preserve the water sources of the Town.

Middleburg developed a Wellhead Protection Plan, but everyone needs to get involved for the plan to be successful!

Do Your Part to Protect Our Water

- ✓ Recycle used oil and automotive products at a service center or the County's Solid Waste Management Facility at 21101 Evergreen Mills Road. Don't pour them on the ground or down storm drains. Storm drains can lead directly to your source water.
- ✓Fix automobile leaks and clean up spills.
- ✓Apply fertilizers and pesticides as directed. Consider natural alternatives to chemicals.

- ✓If you have pets, put their waste into a plastic bag and dispose of it in the trash to prevent bacterial contamination of our ground water.
- ✓ Don't flush pharmaceuticals. Dispose by mixing with coffee grounds or kitty litter, sealing in a container and placing in the trash. To participate in National Prescription Drug Take Back Day, visit the County's website at www.loudoun.gov (under Solid Waste Management Department).
- ✓Take unwanted household chemical waste, such as personal care products, cleaners, oils, and paints to proper waste collection sites. Don't dump down your sink, toilet, or storm drains.
- ✓Check for leaks at heating fuel tanks and install pads to catch accidental leaks or spills.
- ✓Report unused water wells to the Town of Middleburg or Virginia Department of Health.
- ✓Inspect your septic system regularly and pump every 3-5 years.

Conserving water saves money on your next bill.
Protecting our source drinking water will save on treatment costs later.

Appendix D: Source Water Wells Completion reports

Well 2

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

MAILING ADDRESS:
Box 3667
Charlottesville, VA 22903

DIVISION OF MINERAL RESOURCES

JAMES L. CALVER, COMMISSIONER

WATER WELL COMPLETION REPORT

OFFICE ADDRESS:
McCormick Road
Charlottesville, Virginia

OWNER: Town of Middleburg Mailing Address: Middleburg, Virginia

TENANT: _____ Mailing Address: _____

DRILLER: Valley Drilling Corp. H. L. Singhas Mailing Address: Middleburg, Virginia

WELL LOCATION: County Fauquier Approx 2 miles feet miles South (direction) of Middleburg, Va. on Route 626 and _____ feet miles _____ (direction) of _____

(GIVE DIRECTION AND DISTANCE IN FEET OR MILES FROM TWO REFERENCE POINTS - ROADS, TOWNS, RIVERS, ETC. - ON COUNTY HIGHWAY OR OTHER MAP.)

DATE STARTED: July 5, 1971 DATE COMPLETED: July 13, 1971

TYPE OF DRILL RIG USED: Rotary TOTAL DEPTH 350 feet

WATER LEVEL: Stands 40 feet below surface OR

has NATURAL flow of 150 gallons per minute.

YIELD TEST: Method Air

Drawdown 345 feet

Rate 150 gal. per min.

Duration 24 hrs., _____ min

WATER ZONES: from 90 to 100 feet

from 240 to 250 feet

from 340 to 350 feet

WATER: Color Clear Taste good

Odor none Temp 56 °F

WELL TO SUPPLY: (check one) Home _____

Farm _____ Town X School _____

Industry _____ Other _____

WATER ANALYSIS AVAILABLE Yes X No _____

DRILL CUTTINGS SAVED Yes X No _____

(DRILL CUTTINGS SHOULD BE COLLECTED AT 10 FOOT INTERVALS. THESE SAMPLES MAY BE SHIPPED TO THIS OFFICE EXPRESS COLLECT. SAMPLE BAGS ARE FURNISHED FREE OF CHARGE UPON REQUEST.)

HOLE SIZE: ~~12~~ inches from 0 to 55 feet

6½ inches from 55 to 350 feet

_____ inches from _____ to _____ feet

SCREEN SIZE _____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

CASE SIZE: 6½ ID inches from _____ to _____ feet

_____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

GROUTING: Method pump (Force)

Material Cement & Water Depth 50 feet

PUMP: Type diafram

Capacity 150 gal per min

Depth of intake 345 feet

REMARKS: Hard Rock:

(LOG OF WELL) OVER

Received: October 4, 1974 Out: November 21, 197

DIVISION OF CONSOLIDATED LABORATORY SERVICES
BUREAU OF ENVIRONMENTAL SCIENCE

Laboratory #: B.S.E. # : 30526

City/County: Loudoun Collected by: Hugh Eggborn

Date Collected: October 1, 1974 Place: Town of Middleburg

Source: Well #2

Other Information:

FIELD TESTS: Color: Odor: Turbidity:

Temp.: Cl_2: pH: Alkalinity (8.3): (4.5):

Hardness: Ca Hardness: Other:

Acidity (°C.)		Nitrogen-Nitrite	0.01-
Alkalinity (8.3)	0.0	NO_2	0.03-
(Total-4.5)	84.0	Total Kjeldahl	0.10-
Aluminum	0.5-	Organic Contam. (CAE)	
Arsenic (0.01)* (0.05)**	0.003-	(CCE) (0.2)*	
Barium (1.0)*	0.5-	Oxygen (dissolved)	
B.O.D.		Petroleum Contaminants	
Boron		pH	8.3
Cadmium (0.01)**	0.001-	Phenols (0.001)*	0.001-
Calcium	31.3	Phosphate (total)	0.3-
Ca Hardness	78.16	(total-soluble)	0.3-
Carbon - Total Inorganic		(ortho-total)	0.3-
Total Organic		(ortho-soluble)	0.3-
Cl_2 (free)		(condensed-total)	0.3-
C.O.D.		(condensed-soluble)	0.3-
Chloride (250)*	3.5	Potassium	4.1
Pesticides 1.		Residue/Total (185°C)	170
Chlorine		Volatile	52
Chromium (+6) (0.05)**	0.01-	Fixed (550°C)	118
(Total)	0.01-	Residue/Filterable (185°C) (550)*	
Color (pH: 8.3)	5 CU	Volatile	51
Copper (1.0)*	0.01	Fixed (550°C)	118
Cyanide (0.01)* (0.2)**	0.001-	Residue/Nonfilterable (185°C)	1
Fluoride	0.22	Volatile	1
Hardness (EDTA)	107.0	Fixed (550°C)	0
(By Calculation) 2.	99.36	Selenium (0.01)**	0.001-
Iron (Total) (0.3)*	0.30	Silica (as SiO_2)	25.2
Lead (0.05)**	0.01-	Silver (0.05)**	0.01-
Lithium		Sodium	8.3
Magnesium	4.9	Specific Conductance (μ mho/cm)	60
Mg Hardness	20.17	Strontium	0.28
Manganese (0.05)*	0.06	Sulfate (250)*	26.8
Mercury (0.002)**	0.0005-	Sulfide	0.001-
Nickel	0.10-	Sulfite	0.001-
Nitrogen-Ammonia	0.10-	Surfactant (0.5)*	0.01-
NH_3	0.12-	Tannin & Lignin	
NH_4	0.13-	Turbidity (J.T.U.)	0.62
Nitrogen-Nitrate	0.07	Zinc (5.0)*	0.04
NO_3 (45)*	0.31		

(Concentrations in Mg/l unless otherwise noted)

* Recommended Maximum

** Maximum Chemical Limit

1. (Chlorinated & thiophosphate Pesticides)
2. (From Ca,Mg,Sr,Fe,Al,Zn & Mn)

rev 5-1-74

Chemist: ROBERT D. POTTS

Received: November 13 1973 Out: December 3 1973

DIVISION OF CONSOLIDATED LABORATORY SERVICES
BUREAU OF ENVIRONMENTAL SCIENCE

Laboratory No. _____ B.E.S.No. 31459

City or County: Loudoun Collected By: Eggborn Date Collected: 11/13/73

Place: Middleburg

Source: Well # 2 - Inside tap

Other Information: JAN 16 1974

FIELD TESTS: Color: _____ Odor: _____ Turbidity: _____ Temp. _____
Cl_2: _____ - CO_2: _____ pH: _____ Alk. (8.3): _____ (4.5): _____
Hardness: _____ Ca Hardness _____

	mg/l		mg/l
Acidity (°C)		Nitrogen-Nitrate	0.07
Alkalinity (8.3)	0.0	NO3 (45) *	0.31
(Total-4.5)	84.0	Nitrogen-Nitrite	< 0.01
Aluminum	< 0.50	NO2	< 0.03
Arsenic (0.01)* (0.05)**	< 0.001	Total Kjeldahl	< 0.10
Barium (1.0)*	< 0.50	Oil and Grease	
Beryllium		Organic Contam(CCE) (0.2)*	
Boron		Oxygen (dissolved)	
Bromide		Petroleum contaminants	
Cadmium (0.01) **		pH	7.9
Calcium	31.8	Phenols (0.001) *	< 0.001
Ca Hardness	79.40	Phosphate (total)	< 0.31
CO2 (free)		(total-soluble)	< 0.31
C.O.D.		(ortho-total)	< 0.31
Chloride (250) *	3.0	(ortho-soluble)	< 0.31
Chlor.Hydrocarbon Pesticides		(condensed-total)	< 0.31
Chlorine		(condensed-soluble)	< 0.31
Chlorine Demand		Potassium	4.2
Chlorine Dioxide		Residue/Total (185 °C)	185.0
Chromium (+6) (0.05) **	0.01	Volatile	111.0
(total)	0.01	Fixed (550°C)	74.0
Color (pH: 7.9)	< 5CU	Residue/Filterable (185 °C)(500)*	183.0
Copper (1.0) *	< 0.01	Volatile	109.0
Cyanide (0.01)*(0.2)**	< 0.001	Fixed (550 °C)	74.0
Fluoride	0.19	Residue/Nonfilterable (185°C)	2.0
Hardness (EDTA)	103.0	Volatile	2.0
(By Calculation)	100.80	Fixed (550 °C)	0.0
Iodide		Selenium (0.01) **	
Iron (Total) (0.3) *	0.22	Silica (as SiO2)	27.2
Lead (0.05) **	< 0.01	Silver (0.05) **	
Lithium		Sodium	8.5
Magnesium	5.20	Specific Conductance u mho/cm	198.412
Mg Hardness	21.40	Strontium	0.24
Manganese (0.05) *	0.04	Sulfate (250) *	33.2
Mercury	< 0.0005	Sulfide	< 0.001
Nickel	< 0.10	Sulfite	< 0.001
Nitrogen-Albuminoid	< 0.01	Surfactant (0.5) *	< 0.01
Ammonia	< 0.10	Tannin & Lignin	
NH3	< 0.12	Turbidity JTU	0.49
NH4	< 0.13	Zinc (5.0) *	0.04
		Other	

* Recommended Maximum
** Maximum Chemical Limit

CHEMIST: Robert D. Potts

Well 3

Form GW-2
1978-10,000

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT

• BWCM No. _____

(Certification of Completion/County Permit)

State Water Control Board
P. O. Box 11143
2111 North Hamilton St.
Richmond, Va. 23230

SWCB Permit _____
County Permit _____
Certification of inspecting official:
This well does _____ does not _____ meet code/low requirements.
S. _____
Date _____
For Office Use

County/City Loudoun County
County/City Stamp

• Virginia Plane Coordinates
473200 N
2217000 E
Latitude & Longitude
_____ N
_____ W
• Topo. Map No. 215 C
• Elevation _____ ft.
• Formation _____
• Lithology _____
• River Basin _____
• Province _____
• Type Logs Drillers
• Cuttings _____
• Water Analysis _____
• Aquifer Test _____

• Owner Town of Middleburg
• Well Designation or Number Middleburg School Property
Address P. O. Box 187
Middleburg, Va. 22117
Phone 687-5152

• Drilling Contractor Valley Drilling Corp. of Va
Address Rt. 1 Box 6K
Upperville, Va. 22176
Phone 592-3239

Tax Map I.D. No. _____
Subdivision _____
Section _____
Block _____
Lot _____
Class Well: I _____, IIA _____, IIB x, IIIA _____, IIIB _____, IIIC _____ IIID _____ IIIE _____

WELL LOCATION: Rt. 50 East to Middleburg (feet/miles _____ direction) of well located on Middleburg and _____ feet/miles _____ (direction) of School Property
(If possible please include map showing location marked)

Date started 12/9/86 • Date completed 12/12/86 Type rig Rotary

1. WELL DATA: New x Reworked _____ Deepened _____
• Total depth 685 ft.
• Depth to bedrock 32 ft.
• Hole size (Also include reamed zones)
• 10 inches from 0 to 57 ft.
• 8 inches from 57 to 685 ft.
• _____ inches from _____ to _____ ft.
• Casing size (I.D.) and material
• 8" inches from ±1 to 56 ft.
Material Steel
Wt. per foot 28.55 or wall thickness .322 in.
• _____ inches from _____ to _____ ft.
Material _____
Wt. per foot _____ or wall thickness _____ in.
• _____ inches from _____ to _____ ft.
Material _____
Wt. per foot _____ or wall thickness _____ in.
• Screen size and mesh for each zone (where applicable)
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• Gravel pack
• From _____ to _____ ft.
• From _____ to _____ ft.
Grout
• From 0 to 57 ft., Type Cement
• From _____ to _____ ft., Type _____

2. WATER DATA • Water temperature 56 °F
• Static water level (unpumped level-measured) _____ ft.
• Stabilized measured pumping water level 18 ft.
• Stabilized yield 75 gpm after 2½ hours
Natural Flow: Yes _____ No x, flow rate: _____ gpm
Comment on quality Clear
3. WATER ZONES: From _____ To 5 gals. @ 100'
From _____ To _____ From 70gals. To @ 645
From _____ To _____ From _____ To _____
4. USE DATA:
Type of use: Drinking x, Livestock Watering _____, Irrigation _____ Food processing _____, Household _____, Manufacturing _____, Fire safety _____, Cleaning _____, Recreation _____, Aesthetic _____, Cooling or heating _____, Injection _____, Other _____
• Type of facility: Domestic _____, Public water supply x, Public institution x, Farm _____, Industry _____, Commercial _____, Other _____
5. PUMP DATA: Type _____ • Rated H.P. _____
• Intake depth _____ • Capacity _____ at _____ head
6. WELLHEAD: Type well seal _____
Pressure tank _____ gal., Loc. _____
Sample tap _____, Measurement port _____
Well vent _____, Pressure relief valve _____
Gate valve _____, Check valve (when required) _____
Electrical disconnect switch on power supply _____
7. DISINFECTION: Well disinfected _____ yes _____ no
Date _____, Disinfectant used _____
Amount _____, Hours used _____
8. ABANDONMENT (where applicable) • yes _____ no _____
Casing pulled yes _____ no _____ not applicable _____
Plugging grout From _____ to _____ material _____

OVER

Owner _____ BWCM No. _____

9. State law requires submitting to the Virginia State Water Control Board information about groundwater and wells for every well made in the State intended for water, or any other non-exempt well. This information must be submitted whether the well is completed, on standby, or abandoned. Information required includes: an accurately and completely prepared water well completion report, full data from any aquifer pumping tests, drill cuttings taken at ten foot inservals (unless exemption is secured), the results of any chemical analyses, and copies of any geophysical logs. Quarterly pumpage and use reports are required from owners of public supply and industrial wells. County or State permits to drill may be required in some parts of the state. Some counties require submission of a water well completion report. The Virginia State Health Department requires a water well completion report for public supply wells.

10. DRILLERS LOG (use additional Sheets if necessary)

DEPTH (feet) From	DEPTH (feet) To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)	12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)
0	32	Overburden			
32	685	GRanite			

13. Well let dedicated? _____; Size _____ ft. X _____ ft.; Well house? _____
Distance to nearest pollutant source _____ ft., Type _____
Distance to nearest property line _____ ft., Building _____ ft.

14. WATER SERVICE PIPE: Checked under _____ p.s.i. for _____
minutes. Pipe size _____ inches, Material _____
Installer _____
Date _____

15. I certify that the information contained herein is true and correct and that this well and/or system has been installed and constructed in accordance with the requirements for well construction as specified in compliance with appropriate county or independent city ordinances and the laws and rules of the Commonwealth of Virginia.

Signature Peggy L. Dingus (Seal), Date 12/27/86
(Well driller or authorized person)
License No. W-103

State Water Control Board Regional Offices

Valley Reg. Off.
116 North Main Street
P. O. Box 268
Bridgewater, Va. 22812
703-828-2595

Piedmont Reg. Off.
4010 West Broad Street
P. O. Box 6616
Richmond, Va. 23230
804-257-1006

Southwest Reg. Off.
408 East Main Street
P. O. Box 476
Abingdon, Va. 24210
703-628-5183

Tidewater Reg. Off.
287 Pembroke Office Park
Suite 310 Pembroke No. 2
Va. Beach, Va. 23462
804-499-8742

West Central Reg. Off.
Executive Park
5312 Peters Creek Road
Roanoke, Va. 24019
703-982-7432

Northern Virginia Reg. Off.
5515 Cherokee Avenue
Suite 404
Alexandria, Va. 22312
703-750-9111

LAB #: 0 4 4 3 8 7 (1-6)

NAME OF WATER SYSTEM: Town of Middleburg

SOURCE:

OTHER INFORMATION:

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name
Address
City Zip Code

Water Quality Report
5439

INORGANIC

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

REGION: ☐ Abingdon ☐ Culpeper ☐ Danville ☐ Lexington ☐ Richmond ☐ Virginia Beach ☐ Local Health Dept. ☐

PLANNING DISTRICT# 8

SAMPLING LOCATION: New Well #3

COUNTY: Loudoun

CODE: [ ][ ][1] (7-9)

INDEPENDENT CITY:

SOURCE TYPE:
☐ Public-Community
☐ Public-Noncommunity

FIELD TESTS: Temp: Cl2: mg/L CO_2 mg/L
pH: Alk: mg/L Hard.: mg/L

P.W.S.I.D. #: 5 1 0 7 4 5 0 (10-16)

TRANSACTION CODE 0 3 (17-18)

JUL 1987 Culpeper Reg. Office

DATE COLLECTED: Mo 02 Day 05 Yr 87 (19-24)

TIME: (25-28)

COLLECTED BY: T.L.

CONTAINER TYPE:
☐ Glass
☐ Plastic

PRESERVATIVE USED:
☐ None
☐ Ice
☐ Other
☐ Nitric Acid

SAMPLE TYPE:
D ☐ Reg. Dist.
P ☐ Plant Tap
R ☐ Raw Water
C ☐ Check
M ☐ MCL Check
S ☐ Other
(29)

DATE REC: 2-9-87
DATE REP: 2-17-87 (RDP)

CONT. I.D. (30-33)	CONTAMINANT NAME (Maximum Allowable Level)	MTD. (39-41)	S (42)	ANALYSIS RESULTS (43-50)	PRECISION (51-53)	ANALYSIS DATE Mo Day Yr (54-59)	A*
1925	pH (6.5-8.5)	135		ø ø . 7.7 4 ø ø	±	02 09 87	RW
1927	Alkalinity-Total	157		ø 9 5.1 ø ø ø	±	02 09 87	RW
1928	Alkalinity-Bicarbonate Eq pH = 4.46	157		ø 9 5.1 ø ø ø	±	02 09 87	RW
1929	Alkalinity-Carbonate	157		ø 0.0 ø ø ø	±	02 09 87	RW
1915	Hardness-EDTA	141		1 0 ø ø ø ø	±	02 11 87	CDJ
1932	Acidity	157		ø ø ø ø	±		
1910	Corrosion Index	136		ø ø 1 1.7 8 ø ø	±	02 10 87	RDP
1025	Fluoride 1.8	107		ø ø 0.2 2 ø ø	±	02 18 87	FM
1017	Chloride 250.	107		7.8 ø ø ø	±	02 18 87	FM
1905	Color (APHA) 15 CU	129		ø ø 3 ø ø ø ø	±	02 19 87	BSO
0100	Turbidity (FTU) 1.0	001		ø 0.5 9 ø ø	±	02 10 87	RW
1027	Hydrogen Sulfide 0.05	155	<	ø ø ø 0.0 1 ø ø	±	02 10 87	CDJ
1055	Sulfate 250.	137		ø 5 0.4 ø ø ø	±	02 18 87	FM
1040	Nitrogen-Nitrate 10.0	163		ø ø 0.5 3 ø ø	±	02 18 87	FM
1039	Nitrogen-Ammonia	147	<	ø ø 0.0 1 ø ø	±	02 10 87	RDP
1038	Nitrogen-Nitrite	163	<	ø ø 0.0 1 ø ø	±	02 18 87	FM
1041	Nitrogen-Total Kjeldahl	175		ø ø ø ø	±		
1043	Phosphate-Total (As P)	162	<	ø ø 0.0 1 ø ø	±	02 18 87	FM
1044	Phosphate-Ortho (As P)	162	<	ø ø 0.0 1 ø ø	±	02 18 87	FM
1926	Specific Conductance (u mhos/cm)	145		2 9 8 9 ø ø ø	±	02 10 87	RW
1930	Total Dissolved Solids (185°C)	139		2 2 3 ø ø ø ø	±	02 10 87	FP
1058	Volatile (550°C)	139		8 ø ø ø ø	±	02 10 87	FP
1059	Fixed (550°C)	139		2 1 5 ø ø ø ø	±	02 10 87	FP
1049	Silica (as SiO_2)	143		ø 3 2.6 ø ø	±	02 17 87	CDJ
1997	Langlier Index @ 20°C	136	–	ø ø ø 0.1 5 ø	±	02 10 87	RDP
	Bromide		<	0.0 1	±	02 18 87	FM
					±		

LAB I.D. 0 0 0 8 0 (34-38)

PREPARED BY: Robert D. Potts

The results on this report are expressed in mg/L unless otherwise indicated. *A = analyst's initials

LAB #: 304 87

Water Quality Report

32442

ORIGINAL

METALS

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

NAME OF WATER SYSTEM: Town of Middleburg
SOURCE: New Well
OTHER INFORMATION:

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name: Valley Drilling Corp of America
Address: Route 1, Box 6K
City: Upperville, Va Zip Code: 22176

REGION: ☐ Abingdon ☐ Danville ☐ Richmond ☐ Local Health Dept.
☒ Culpeper ☐ Lexington ☐ Virginia Beach ☐

PLANNING DISTRICT#: 8
COUNTY: Loudoun
INDEPENDENT CITY:

SAMPLING LOCATION: New Well #3
CODE: 7-9

SOURCE TYPE:
☒ Public-Community
☐ Public-Noncommunity

FIELD TESTS: Temp: pH: Cl2: mg/L Alk: mg/L CO2 mg/L Hard.: mg/L

P.W.S.I.D. #: 6 1 0 7 4 5 0 (10-16)

TRANSACTION CODE: 0 3 (17-18)

DATE COLLECTED: Mo Day Yr (19-24)

TIME: (25-28)

COLLECTED BY: Valley Drilling

CONTAINER TYPE:
☐ Glass
☒ Plastic

PRESERVATIVE USED:
☐ None
☐ Ice
☐ Other
☒ Nitric Acid

SAMPLE TYPE:
D ☐ Reg. Dist.
P ☐ Plant Tap
R ☒ Raw Water
C ☐ Check
M ☐ MCL Check
S ☐ Other
(29)

DATE REC: JAN. 27 1987
DATE REP: 2-11-87

CONT. I.D. (30-33)	CONTAMINANT NAME (Maximum Allowable Level)		MTD. (39-41)	S (42)	ANALYSIS RESULTS (43-50)	PRECISION (51-53)	ANALYSIS DATE Mo Day Yr (54-59)	A*
1005	Arsenic	0.05	125	<	ØØØØ.ØØ10	±	1 30 87	VA
1010	Barium	1.0	108		ØØØ0.0400	±	01 29 87	JZB
1015	Cadmium	0.010	125	<	ØØØØ.ØØ10	±	1 30 87	VA
1020	Chromium	0.05	125	<	ØØØØ.ØØ10	±	2 2 87	
1030	Lead	0.05	125	<	ØØØØ.ØØ10	±	2 2 87	
1035	Mercury	0.002	106	<	ØØØØ.ØØØ3	±	2 4 87	
1045	Selenium	0.01	125	<	ØØØØ.ØØ10	±	1 30 87	
1050	Silver	0.05	125	<	ØØØØ.ØØ10	±	1 30 87	
1002	Aluminum		108		Ø 0.110ØØ	±	01 29 87	JZB
1016	Calcium		108		Ø 45.70ØØ	±		
1028	Iron	0.30	108		Ø 0.38ØØ	±		
1031	Magnesium		108		Ø 4.64ØØ	±		
1032	Manganese	0.05	108		Ø 0.18ØØ	±		
1051	Strontium		108		Ø 0.33ØØ	±		
1095	Zinc	5.0	108		Ø 0.34ØØ	±		
1022	Copper	1.0	108		Ø 0.01ØØ	±		
1042	Potassium		108		Ø 4.95ØØ	±		
1052	Sodium	20.	108		Ø 8.86ØØ	±		
1036	Nickel		108		ØØØ0.01ØØ	±		
1007	Boron		108		ØØØ0.01ØØ	±		
1919	Calcium Hardness		136		11 4.1ØØØ	±		
1918	Magnesium Hardness		136		1 9.1ØØØ	±		
1913	Ca & Mg Hardness		136		133ØØØØØ	.		
1915	Total Hardness ***		136		136ØØØØØ	±		
1004	Antimony		125	<	0 0.10ØØ	±	1 30 87	VA
						±		
	*** (Al, Ca, Fe, Mg, Mn, Sr, & Zn)					±		

LAB I.D. 0 0 0 8 0 (34-38)

PREPARED BY: Jim Anderson

The results on this report are expressed in mg/L unless otherwise indicated. *A = analyst's initials

LAB #: 003243 JAN 27 87 (1-6)

NAME OF WATER SYSTEM: WELL # 3- TOWN OF MIDDLEBURG
SOURCE: SAMPLE TAP @ WELL
OTHER INFORMATION: NEW SOURCE

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name
Address
City Zip Code

FEB 1987

Water Quality Report

RADIOLOGICAL

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

REGION: ☐ Abingdon ☐ Culpeper ☐ Danville ☐ Lexington ☐ Richmond ☐ Virginia Beach ☐ Local Health Dept. ☐

PLANNING DISTRICT#
COUNTY: LOUDOUN
INDEPENDENT CITY: MIDDLEBURG
SAMPLING LOCATION: @ well
CODE: (7-9)

SOURCE TYPE:
☑ Public-Community
☐ Public-Noncommunity

FIELD TESTS: Temp: pH: Cl2: mg/l Alk: mg/l CO2 mg/l Hard.: mg/l

P.W.S.I.D. #: (10-16)
TRANSACTION CODE: 03 (17-18)

DATE COLLECTED: Mo 1 Day 22 Yr 87 (19-24)
TIME: 0700 (25-28)
COLLECTED BY: DWSingbas
CONTAINER TYPE: ☐ Glass ☒ Plastic
PRESERVATIVE USED: ☒ None ☐ Ice ☐ Other ☒ Nitric Acid
SAMPLE TYPE: D ☐ Reg. Dist. P ☐ Plant Tap R ☒ Raw Water C ☐ Check M ☐ MCL Check S ☐ Other (29)
DATE REC:
DATE REP: JAN 30 1987

CONT. I.D. (30-33)	CONTAMINANT NAME (Maximum Allowable Level)	MTD. (39-41)	S (42)	ANALYSIS RESULTS (43-50)	PRECISION (51-53)	ANALYSIS DATE Mo Day Yr (54-59)	A*
4000	Gross Alpha 15 pCi/L	419		ØØ 2.3 ØØ	± Ø 1.7	01 29 87	DH
4010	Combined Radium 5pCi/L	420		ØØ . ØØ	± Ø		
4020	Radium-226	421		ØØ . ØØ	± Ø		
4030	Radium-228	422		ØØ . ØØ	± Ø		
4100	Gross Beta 50 pCi/L	419		ØØ . ØØ	± Ø		
4006	Uranium			ØØ . ØØ	± Ø		
4102	Tritium				±		

LAB I.D. 00095 (34-38)

PREPARED BY: [signature]

The results on this report are expressed in pCi/L unless otherwise indicated. *A = analyst's initials

THIS BOTTLE CONTAINS THIOSULPHATE

FORM WSE 49

BACTERIOLOGICAL OR TURBIDITY ANALYSIS INPUT FORM (1)

PWS ID	TRANS CODE	CONTAMINANT CODE	CONTAMINANT NAME	ANALYSIS METHOD	ANALYSIS RESULT	ANALYSIS DECIMAL	ANALYSIS DATE MO	DAY	YR
	05			05	00000	0	02	07	87

SAMPLE LOCATION CODE	SAMPLE LOCATION NAME	SAMPLE DATE MO	DAY	YR	SAMPLE TYPE	SAMPLE TIME	SAMPLE COLLECTED BY	SAMPLE ANALYZED BY
	WELL #3	2	7	87		1100	T.L.	(HP)

IS SUPPLY CHLORINATED? YES ☐ NO ☐ RES. CL. _____

PUBLIC WATER SYSTEM NAME AND ADDRESS

Town of Middleburg
Middleburg, VA 22117

SEE REVERSE SIDE FOR COLLECTION INFORMATION.

LAB ID	LABORATORY NAME

☐ CONFLUENT GROWTH PER 100ml. WITH (OR WITHOUT) COLIFORMS - **PLEASE REPEAT** SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ TNTC PER 100ml. WITH (OR WITHOUT) COLIFORMS - **PLEASE REPEAT** SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ FOR REPEAT

THIS BOTTLE CONTAINS THIOSULPHATE

BACTERIOLOGICAL OR TURBIDITY ANALYSIS INPUT FORM (2)

PWS ID	TRANS CODE	CONTAMINANT CODE	CONTAMINANT NAME	ANALYSIS METHOD	ANALYSIS RESULT	ANALYSIS DECIMAL	ANALYSIS DATE MO	DAY	YR
	05			05	00000	0	02	07	87

SAMPLE LOCATION CODE	SAMPLE LOCATION NAME	SAMPLE DATE MO	DAY	YR	SAMPLE TYPE	SAMPLE TIME	SAMPLE COLLECTED BY	SAMPLE ANALYZED BY
	Well #3	2	4	87		1500	T.L.	(HP)

IS SUPPLY CHLORINATED? YES ☐ NO ☑ RES. CL. _____

PUBLIC WATER SYSTEM NAME AND ADDRESS

Town of Middleburg
Middleburg, VA 22117

SEE REVERSE SIDE FOR COLLECTION INFORMATION.

LAB ID	LABORATORY NAME

☐ CONFLUENT GROWTH PER 100ml. WITH (OR WITHOUT) COLIFORMS - **PLEASE REPEAT** SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ TNTC PER 100ml. WITH (OR WITHOUT) COLIFORMS - **PLEASE REPEAT** SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ FOR REPEAT

THIS BOTTLE CONTAINS THIOSULPHATE

BACTERIOLOGICAL OR TURBIDITY ANALYSIS INPUT FORM (3)

PWS ID	TRANS CODE	CONTAMINANT CODE	CONTAMINANT NAME	ANALYSIS METHOD	ANALYSIS RESULT	ANALYSIS DECIMAL	ANALYSIS DATE MO	DAY	YR
	05			05	00000	0	02	07	87

SAMPLE LOCATION CODE	SAMPLE LOCATION NAME	SAMPLE DATE MO	DAY	YR	SAMPLE TYPE	SAMPLE TIME	SAMPLE COLLECTED BY	SAMPLE ANALYZED BY
	Well #3	2	4	87		1100	T.L.	(HP)

FORM WSE 46 — THIS BOTTLE CONTAINS THIOSULPHATE

BACTERIOLOGICAL OR TURBIDITY ANALYSIS INPUT FORM (4)

PWS ID	TRANS CODE	CONTAMINANT CODE	CONTAMINANT NAME	ANALYSIS METHOD	ANALYSIS RESULT	ANALYSIS DECIMAL	ANALYSIS DATE MO	DAY	YR
	05			05	0000		02	07	87

PWS #8140

SAMPLE LOCATION CODE	SAMPLE LOCATION NAME	SAMPLE DATE MO	DAY	YR	SAMPLE TYPE	SAMPLE TIME	SAMPLE COLLECTED BY	SAMPLE ANALYZED BY
	Well #3	2	4	87		1700	T.L.	(illegible)

IS SUPPLY CHLORINATED? YES ☐ NO ☑ RES. CL. _____

PUBLIC WATER SYSTEM NAME AND ADDRESS

Town of Middleburg
Middleburg, VA 22117

SEE REVERSE SIDE FOR COLLECTION INFORMATION

LAB ID	LABORATORY NAME

☐ CONFLUENT GROWTH PER 100ml. WITH (OR WITHOUT) COLIFORMS - PLEASE REPEAT SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ TNTC PER 100ml. WITH (OR WITHOUT) COLIFORMS - PLEASE REPEAT SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ FOR REPEAT

FORM WSE 46 — THIS BOTTLE CONTAINS THIOSULPHATE

BACTERIOLOGICAL OR TURBIDITY ANALYSIS INPUT FORM (5)

PWS ID	TRANS CODE	CONTAMINANT CODE	CONTAMINANT NAME	ANALYSIS METHOD	ANALYSIS RESULT	ANALYSIS DECIMAL	ANALYSIS DATE MO	DAY	YR
	05			05	0000		02	07	87

PWS #8140

SAMPLE LOCATION CODE	SAMPLE LOCATION NAME	SAMPLE DATE MO	DAY	YR	SAMPLE TYPE	SAMPLE TIME	SAMPLE COLLECTED BY	SAMPLE ANALYZED BY
	Well #3	2	4	87		1800	T.L.	(illegible)

IS SUPPLY CHLORINATED? YES ☐ NO ☑ RES. CL. _____

PUBLIC WATER SYSTEM NAME AND ADDRESS

Town of Middleburg
Middleburg, VA 22117

SEE REVERSE SIDE FOR COLLECTION INFORMATION

LAB ID	LABORATORY NAME

☐ CONFLUENT GROWTH PER 100ml. WITH (OR WITHOUT) COLIFORMS - PLEASE REPEAT SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ TNTC PER 100ml. WITH (OR WITHOUT) COLIFORMS - PLEASE REPEAT SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ FOR REPEAT

BACTERIOLOGICAL OR TURBIDITY ANALYSIS INPUT FORM (6)

PWS ID	TRANS CODE	CONTAMINANT CODE	CONTAMINANT NAME	ANALYSIS METHOD	ANALYSIS RESULT	ANALYSIS DECIMAL	ANALYSIS DATE MO	DAY	YR
	05			05	0000		02	07	87

PWS #8140

SAMPLE LOCATION CODE	SAMPLE LOCATION NAME	SAMPLE DATE MO	DAY	YR	SAMPLE TYPE	SAMPLE TIME	SAMPLE COLLECTED BY	SAMPLE ANALYZED BY
	Well #3	3	4	87		1100	T.L.	(illegible)

THIS BOTTLE CONTAINS THIOSULPHATE

BACTERIOLOGICAL OR TURBIDITY ANALYSIS INPUT FORM (7)

PWS ID	TRANS CODE	CONTAMINANT CODE	CONTAMINANT NAME	ANALYSIS METHOD	ANALYSIS RESULT	DECIMAL	ANALYSIS DATE MO	DAY	YR
	05			05	0000		02	07	87

Column numbers: 1–7, 8–9, 10–13, 14–16, 17–20, 21, 22–27

RI # 6114

SAMPLE LOCATION CODE	LOCATION NAME	SAMPLE DATE MO	DAY	YR	SAMPLE TYPE	TIME	SAMPLE COLLECTED BY	SAMPLE ANALYZED BY
	Well #3	2	4	87		2000	T.L.	(signature)

Column numbers: 28, 30, 31–36, 37, 38–41

IS SUPPLY CHLORINATED? YES ☐ NO ☑ RES. CL. ______

PUBLIC WATER SYSTEM NAME AND ADDRESS

Town of Middleburg
Middleburg, VA 22117

LAB ID	LABORATORY NAME
000	

Column numbers: 42–46

☐ CONFLUENT GROWTH PER 100ml. WITH (OR WITHOUT) COLIFORMS - PLEASE REPEAT SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ TNTC PER 100ml. WITH (OR WITHOUT) COLIFORMS - PLEASE REPEAT SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ FOR REPEAT

SEE REVERSE SIDE FOR COLLECTION INFORMATION.

FORM WSE 46

THIS BOTTLE CONTAINS THIOSULPHATE

BACTERIOLOGICAL OR TURBIDITY ANALYSIS INPUT FORM (8)

PWS ID	TRANS CODE	CONTAMINANT CODE	CONTAMINANT NAME	ANALYSIS METHOD	ANALYSIS RESULT	DECIMAL	ANALYSIS DATE MO	DAY	YR
	05			05	0000		02	07	87

Column numbers: 1–7, 8–9, 10–13, 14–16, 17–20, 21, 22–27

RI # 6114

SAMPLE LOCATION CODE	LOCATION NAME	SAMPLE DATE MO	DAY	YR	SAMPLE TYPE	TIME	SAMPLE COLLECTED BY	SAMPLE ANALYZED BY
	Well #3	2	4	87		2100	T.L.	(signature)

Column numbers: 28, 30, 31–36, 37, 38–41

IS SUPPLY CHLORINATED? YES ☐ NO ☑ RES. CL. ______

PUBLIC WATER SYSTEM NAME AND ADDRESS

Town of Middleburg
Middleburg, VA 22117

LAB ID	LABORATORY NAME

Column numbers: 42–46

☐ CONFLUENT GROWTH PER 100ml. WITH (OR WITHOUT) COLIFORMS - PLEASE REPEAT SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ TNTC PER 100ml. WITH (OR WITHOUT) COLIFORMS - PLEASE REPEAT SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ FOR REPEAT

SEE REVERSE SIDE FOR COLLECTION INFORMATION.

FORM WSE 46

THIS BOTTLE CONTAINS THIOSULPHATE

BACTERIOLOGICAL OR TURBIDITY ANALYSIS INPUT FORM (9)

PWS ID	TRANS CODE	CONTAMINANT CODE	CONTAMINANT NAME	ANALYSIS METHOD	ANALYSIS RESULT	DECIMAL	ANALYSIS DATE MO	DAY	YR
	05			05	0000		02	07	87

Column numbers: 1–7, 8–9, 10–13, 14–16, 17–20, 21, 22–27

RI # 6115

SAMPLE LOCATION CODE	LOCATION NAME	SAMPLE DATE MO	DAY	YR	SAMPLE TYPE	TIME	SAMPLE COLLECTED BY	SAMPLE ANALYZED BY
	Well #3	2	4	87		30[illegible]	T.L.	(signature)

BACTERIOLOGICAL OR TURBIDITY ANALYSIS INPUT FORM (11)

PWS ID	TRANS CODE	CONTAMINANT CODE	CONTAMINANT NAME	ANALYSIS METHOD	ANALYSIS RESULT	DECIMAL	ANALYSIS DATE MO.	DAY	YR
	05			05	8000		00	26 7	57

(1–7, 8–9, 10–13, 14–16, 17–20, 21, 22–27)

Pd CL # 8140

SAMPLE LOCATION CODE	LOCATION NAME	SAMPLE DATE MO	DAY	YR	SAMPLE TYPE	TIME	SAMPLE COLLECTED BY	SAMPLE ANALYZED BY
	Well # 3	2	5	87		200	T.L.	(LBW)

(28–30, 31–36, 37, 38–41)

Loudoun

IS SUPPLY CHLORINATED? YES ☐ NO ☑ RES. CL. ______

PUBLIC WATER SYSTEM NAME AND ADDRESS

Town of Middleburg
Middleburg, VA 22117

LAB ID	LABORATORY NAME
0	

(42–46)

☐ CONFLUENT GROWTH PER 100ml. WITH (OR WITHOUT) COLIFORMS - PLEASE REPEAT SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ TNTC PER 100ml. WITH (OR WITHOUT) COLIFORMS - PLEASE REPEAT SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ FOR REPEAT

SEE REVERSE SIDE FOR COLLECTION INFORMATION.

THIS BOTTLE CONTAINS THIOSULPHATE

BACTERIOLOGICAL OR TURBIDITY ANALYSIS INPUT FORM (10)

PWS ID	TRANS CODE	CONTAMINANT CODE	CONTAMINANT NAME	ANALYSIS METHOD	ANALYSIS RESULT	DECIMAL	ANALYSIS DATE MO.	DAY	YR
	05			05	0000		00	20 7	87

(1–7, 8–9, 10–13, 14–16, 17–20, 21, 22–27)

Pd CL # 8140

SAMPLE LOCATION CODE	LOCATION NAME	SAMPLE DATE MO	DAY	YR	SAMPLE TYPE	TIME	SAMPLE COLLECTED BY	SAMPLE ANALYZED BY
	Well # 3	2	4	87		2300	T.L.	(LBW)

(28–30, 31–36, 37, 38–41)

IS SUPPLY CHLORINATED? YES ☐ NO ☑ RES. CL. ______

PUBLIC WATER SYSTEM NAME AND ADDRESS

Town of Middleburg
Middleburg, VA 22117

LAB ID	LABORATORY NAME
0	

(42–46)

☐ CONFLUENT GROWTH PER 100ml. WITH (OR WITHOUT) COLIFORMS - PLEASE REPEAT SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ TNTC PER 100ml. WITH (OR WITHOUT) COLIFORMS - PLEASE REPEAT SAMPLE AND MARK "FOR REPEAT" BLOCK.

☐ FOR REPEAT

SEE REVERSE SIDE FOR COLLECTION INFORMATION.

THIS BOTTLE CONTAINS THIOSULPHATE

Well 4

COMMONWEALTH OF VIRGINIA WATER WELL COMPLETION REPORT

(Certification of Completion/County Permit)

State Water Control Board
P.O. Box 1143
2111 North Hamilton Street
Richmond, VA 23230

BWCM No. 407-FPW-94

SWCB Permit _____
County Permit _____
Certification of inspecting official
This well does _____ does not _____
meet code/law requirements.
S _____
Date _____
For Office Use

County/City Loudoun

City/County Stamp

Virginia Plane Coordinates
N
E
Latitude & Longitude
N
W
Topo Map No.
Elevation Ft.
Formation
Lithology
River Basin
Province
Type Logs Drillers
Cuttings
Water Analysis
Aquifer Test

Owner Town of Middleburg
Well #4
(Revised 5/18/00)
Address P.O. Box 187
Middleburg, VA 20118
Phone 540/687-5152

Drilling Contractor Valley Drilling Corporation of Virginia
Address 9172 John S. Mosby Highway
Upperville, VA 20184-1723
Phone (800) 582-9355

Well Location:

(If possible please include map showing location marked)

Tax Map ID# 87A13/30F
Subdivision
Section
Block
Lot 30F
Class Well IIB

Date Started 8/8/94 Date Completed 8/18/94 Type Rig Rotary

WELL DATA: New
Total Depth 580 Ft.
Depth to Bedrock 15 Ft.
Hole size (Also include reamed zones)
12 Inches from 0 to 100 Ft.
8 Inches from 100 to 540 Ft.
6 Inches from 540 to 580 Ft.
Casing Size (I.D.) and material
8 Inches from +1 to 108 Ft.
Material Steel
Wt. Per foot 28# or wall thickness .322 inches
Inches from to Ft.
Material
Wt. Per foot or wall thickness inches
Inches from to Ft.
Wt. Per foot or wall thickness inches

Screen Size and mesh for each zone (where applicable)
Inches from to ft.
Mesh size Type
Inches from to ft.
Mesh size Type
Inches from to ft.
Mesh size Type
Inches from to ft.
Mesh size Type

Gravel Pack
From to ft.
From to ft.

Grout
From 0 to 100 ft., Type Cement
From to ft., Type

WATER DATA Water Temperature 56° F
Static Water Level (unpumped level measured) 17 Ft.
Stabilized measured pumping water level Ft.
Stabilized yield 150 GPM after 3 Hours
Natural Flow NO
Comment on quality CLEAR
WATER ZONES 25 GPM @ 260 Ft.
25 GPM @ 460 Ft.
100 GPM @ 520 Ft.
GPM @ Ft.
GPM @ Ft.
GPM @ Ft.
GPM @ Ft.
GPM @ Ft.

USE DATA Type of Use Drinking
Type of facility Pubic Water
PUMP DATA: Type Rated HP
MAKE & MODEL PUMP
Intake Depth Capacity GPM @ TDH
WELLHEAD: Type well seal Watrtight Cap
MAKE & MODEL PRESSURE TANK
Pressure Tank Gal. Location
Sample Tap Measurement Port
Well Vent Pressure Relief Valve
Gate Valve Check Valve
Electrical disconnect switch on power supply

DISINFECTION Well disinfected
Date Disinfectant used
Amount lb(s) Hours Used

ABANDONMENT (where applicable)
Casing Pulled
Plugging Grout From to ft.
Material

State law requires submitting to the Virginia State Water Control Board information about groundwater and wells for every well made in the State indended for water, or any other non-exempt well. This information must be submitted whether the well is completed, on standby, or abandoned. Information required includes an accurately and completely prepared water well completion report, full data from any aquifer pumping tests, drill cuttings taken at ten foot intervals, (unless exemption is secured), the results of any chemical analyses, and copies of any geophysical logs. Quarterly pumpage and use reports are required from owners of public supply and industrial wells. County of State permits to drill may be required in some parts of the state. Some counties require submission of a water well completion report. The Virginia State Health Department requires a water well completion report for public supply wells.

Owner Town of Middleburg

BWCM No. 407-FPW-94

DRILLER'S LOG
(Use additional sheets if necessary)

Depth (Feet)		Type of Rock or Soil	Remarks
From	To		
0	15	Overburden	
15	580	Granite	
259	260	Water Bearing	25 GPM @ 260'
459	460	Water Bearing	25 GPM @ 460'
519	520	Water Bearing	100 GPM @ 520'

Well lot dedicated? Size Ft. x Ft. Well House?
Distance to nearest pollutant source Ft., Type
Distance to nearest property line Ft., Building Ft.

WATER SERVICE PIPE: Checked under PSI for minutes
Pipe size inches, Material
Installer
Date

I certify that the information contained herein is true and correct and that this well and/or system has been installed and constructed in accordance with the requirements for well construction as specified in compliance with appropriate county or independent city ordinances and the laws and rules of the Commonwealth of Virginia.

Signature _____ (SEAL) Date 5/18/00
(Well driller or authorized person)

County License No. W0016

Virginia Class A Contractor's License #2705 027957A

LAB #: [| | | | | |] 1-6

Water Quality Report

INORGANIC

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

NAME OF WATER SYSTEM: TOWN OF MIDDLEBURG
SOURCE: WELL # 4
OTHER INFORMATION: New CONSTRUCTION

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name: VALLEY DRILLING CORP
Address: 9772 JOHN MOSBY HWY
City: UPPERVILLE VA Zip Code: 22176

REGION: ☐ Abingdon ☑ Culpeper ☐ Danville ☐ Lexington ☐ Richmond ☐ Virginia Beach ☐ Local Health Dept. ☐

PLANNING DISTRICT# MERCER.
SAMPLING LOCATION: @WELL TAP
SOURCE TYPE: ☑ Public-Community ☐ Public-Noncommunity
COUNTY: LOUDOUN
CODE: [| |] 7-9
INDEPENDENT CITY: MIDDLEBURG.
BB
FIELD TESTS: Temp: pH: Cl_2: mg/L Alk: mg/L CO_2 mg/L Hard.: mg/L

P.W.S.I.D. #: 6 1 0 7 4 5 0 (10-16)
TRANSACTION CODE Ø 3 (17-18)

DATE COLLECTED Mo 9 Day 14 Yr 94 (19-24)

TIME: AM 0900 (25-28)

COLLECTED BY: TS - VALLEY Drilling

CONTAINER TYPE: ☐ Glass ☑ Plastic

PRESERVATIVE USED: ☐ None ☑ Ice ☐ Other

SAMPLE TYPE: D ☐ Reg. Dist. P ☐ Plant Tap R ☑ Raw Water C ☐ Check M ☐ MCL Check S ☐ Other (29)

CONT. I.D.	CONTAMINANT NAME (Maximum Allowable Level)	MTD.	S	ANALYSIS RESULTS	PRECISION	ANALYSIS DATE Mo	Day	Yr	A*
1 9 2 5	pH (6.5-8.5)	1 3 5		Ø Ø 7 3 2 Ø Ø	±	09	15	94	[illegible]
1 9 2 7	Alkalinity-Total	1 5 7		Ø 9 3 2 Ø Ø Ø	±	/	/	/	/
1 9 2 8	Alkalinity-Bicarbonate	1 5 7		Ø 9 3 2 Ø Ø Ø	±	/	/	/	/
1 9 2 9	Alkalinity-Carbonate	1 5 7		Ø 0 0 Ø Ø Ø	±	/	/	/	/
1 9 1 5	Hardness-EDTA	1 4 1		Ø Ø Ø	±				
1 9 3 2	Acidity	1 5 7		Ø Ø Ø Ø	±				
1 9 1 0	Corrosion Index	1 3 6		Ø Ø 1 1 3 7 Ø Ø	±				
1 0 2 5	Fluoride 1.8	1 0 7		Ø Ø 0 2 7 Ø Ø	±	10	21	94	Ch
1 0 1 7	Chloride 250.	1 0 7		8 5 Ø Ø Ø	±	10	07	94	CF
1 9 0 5	Color (APHA) 15 CU	1 2 9		Ø Ø 5 Ø Ø Ø Ø	±	09	15	94	[illegible]
0 1 0 0	Turbidity (FTU) 1.0	0 0 1		Ø 2 0 Ø Ø	±	09	15	94	[illegible]
1 0 2 7	Hydrogen Sulfide 0.05	1 5 5	<	Ø Ø Ø 0 0 3 Ø Ø	±	09	15	94	[illegible]
1 0 5 5	Sulfate 250.	1 3 7		Ø 6 1 4 Ø Ø Ø	±	10	07	94	CF
1 0 4 0	Nitrogen-Nitrate 10.0	1 6 3		Ø Ø Ø Ø	±				
1 0 3 9	Nitrogen-Ammonia	1 4 7	<	Ø Ø 0 0 4 Ø Ø	±	09	16	94	PB
1 0 3 8	Nitrogen-Nitrite	1 6 3		Ø Ø . Ø Ø	±				
1 0 4 1	Nitrogen-Total Kjeldahl	1 7 5		Ø Ø Ø Ø	±				
1 0 4 3	Phosphate-Total (As P)	1 6 2		Ø Ø Ø Ø	±				
1 0 4 4	Phosphate-Ortho (As P)	1 6 2	<	Ø Ø 0 0 5 Ø Ø	±	10	07	94	CF
1 9 2 6	Specific Conductance (umhos/cm)	1 4 5		3 2 6 Ø Ø Ø	±	09	15	94	BG
1 9 3 0	Total Dissolved Solids (185°C)	1 3 9		2 2 8 Ø Ø Ø Ø	±	09	29	94	BG
1 0 5 8	Volatile (550°C)	1 3 9		1 9 Ø Ø Ø Ø	±	/	/	/	/
1 0 5 9	Fixed (550°C)	1 3 9		2 0 9 Ø Ø Ø Ø	±	/	/	/	/
1 0 4 9	Silica (as SiO_2)	1 4 3		Ø 3 5 5 Ø Ø	±	09	16	94	GJ
1 9 9 7	Langlier Index 15°C	1 3 6	–	Ø Ø Ø 6 7 9 Ø	±				
					±				
					±				
30-33	LAB I.D. 0 1 0 0 0 (34-38)	39-41	42	43-50	51-53	54-59			

DATE REC:
DATE REP: 10-28-94

PREPARED BY: B. O'Neal

The results on this report are expressed in mg/L unless otherwise indicated. *A = analyst's initials

457377

94 SEP 15 AM 9:23

BR. OF [illegible] RY

RECEIVED MAY 1994 Office of Water Programs Culpeper

LAB #: 1-8

Water Quality Report

METALS

WSE 50

BB

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

NAME OF WATER SYSTEM: TOWN OF MIDDLEBURG
SOURCE: WELL # 4
OTHER INFORMATION: NEW CONSTRUCTION

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name: VALLEY DRILLING CORP OF VA.
Address: 9172 JOHN MOSBY HWY
City: UPPERVILLE, VA Zip Code: 22176

REGION: ☐ Abingdon ☐ Culpeper ☐ Danville ☐ Lexington ☐ Richmond ☐ Virginia Beach ☐ Local Health Dept. ☐

PLANNING DISTRICT# MERCER
COUNTY: LOUDOUN
INDEPENDENT CITY: MIDDLEBURG.
SAMPLING LOCATION: @WELL TAP
CODE: ☐☐☐ 7-9

SOURCE TYPE:
☑ Public-Community
☐ Public-Noncommunity

FIELD TESTS: Temp: pH: Cl_2: mg/L Alk: mg/L CO_2 mg/L Hard.: mg/L

P.W.S.I.D. #: 6 1 0 7 4 5 0 (10-16)
TRANSACTION CODE Ø 3 (17-18)

DATE COLLECTED
Mo 9 Day 14 Yr 94 (19-24)

TIME: AM 900 (25-28)

COLLECTED BY:

CONTAINER TYPE:
☐ Glass
☑ Plastic

PRESERVATIVE USED:
☐ None
☐ Ice
☐ Other
☑ Nitric Acid

SAMPLE TYPE:
D ☐ Reg. Dist.
P ☐ Plant Tap
R ☑ Raw Water
C ☐ Check
M ☐ MCL Check
☐ Other
29

DATE REC:
DATE REP:

SAMPLE NUMBER : 57379 DCLS : BUREAU OF CHEMISTRY

CONT.I.D.	CONTAMINANT NAME (Maximum Allowable Level)		MTD	S	ANALYSIS RESULTS UG/ML	
1 0 0 5	Arsenic	0.05	1 2 5		<	0.010
1 0 1 0	Barium	1.0	1 0 8			0.07
1 0 1 5	Cadmium	0.010	1 2 5		<	0.0025
1 0 2 0	Chromium	0.05	1 2 5		<	0.010
1 0 3 0	Lead	0.05	1 2 5		<	0.005
1 0 3 5	Mercury	0.002	1 0 6		<	0.0003
1 0 4 5	Selenium	0.01	1 2 5		<	0.005
1 0 5 0	Silver	0.05	1 2 5		<	0.010
1 0 0 2	Aluminum		1 0 8		<	0.1
1 0 1 6	Calcium		1 0 8			48
1 0 2 8	Iron	0.30	1 0 8			0.41
1 0 3 1	Magnesium		1 0 8			5
1 0 3 2	Manganese	0.05	1 0 8			0.32
1 0 5 1	Strontium		1 0 8			0.19
1 0 9 5	Zinc	5.0	1 0 8			0.14
1 0 2 2	Copper	1.0	1 0 8			0.06
1 0 4 2	Potassium		1 0 8			4
1 0 5 2	Sodium	20.	1 0 8			9
1 0 3 6	Nickel		1 0 8		<	0.01
	Thallium		1 2 5		<	0.005
1 9 1 9	Calcium Hardness		1 0 8			120
1 9 1 8	Magnesium Hardness		1 3 6			19
1 0 1 3	Ca & Mg Hardness		1 3 6			140
1 0 1 5	Total Hardness***		1 3 6			150
1 0 0 4	Antimony		1 2 5		<	0.010
1 0 3 6	Beryllium		1 0 8		<	0.005

DATE REPORTED : 05-Oct-94 ANALYST : LOIS THACKER

457380

LAB #: 457380 (1-6)

NAME OF WATER SYSTEM: TOWN OF MIDDLEBURG
SOURCE: WELL #4 - NEW CONSTRUCTION
OTHER INFORMATION:

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name VALLEY DRILLING CO. of VA.
Address 9172 JOHN MOSBY PKWY
City Upperville, VA. Zip Code 22176

Water Quality Report

RADIOLOGICAL

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

REGION: ☐ Abingdon ☐ Danville ☐ Richmond ☐ Local Health Dept
☑ Culpeper ☐ Lexington ☐ Virginia Beach ☐

PLANNING DISTRICT#
COUNTY: LOUDOUN
INDEPENDENT CITY: MIDDLEBURG

SAMPLING LOCATION: @ WELL TAP
CODE: (7-9)

SOURCE TYPE:
☑ Public-Community
☐ Public-Noncommunity

FIELD TESTS: Temp: pH: Cl2: mg/L Alk: mg/L CO_2 mg/L Hard.: mg/L

P.W.S.I.D. #: 6 1 0 7 4 5 0 (10-16)

TRANSACTION CODE: 0 3 (17-18)

fax - 703-592-3259

DATE COLLECTED (19-24): Mo 9 Day 14 Yr 94

TIME: AM 900 (25-28)

COLLECTED BY: T.S.

CONTAINER TYPE:
☐ Glass
☑ Plastic

PRESERVATIVE USED:
☑ None
☐ Ice
☐ Other
☐ Nitric Acid

SAMPLE TYPE:
D ☐ Reg. Dist.
P ☐ Plant Tap
R ☑ Raw Water
C ☐ Check
M ☐ MCL Check
S ☐ Other
(29)

DATE REC: SEP 15 1994
DATE REP: NOV 29 1994

CONT. I.D. (30-33)	CONTAMINANT NAME (Maximum Allowable Level)	MTD. (39-41)	S (42)	ANALYSIS RESULTS (43-50)	PRECISION (51-53)	ANALYSIS DATE Mo Day Yr (54-59)	A*
4000	Gross Alpha 15 pCi/L	419		ØØ20.7 ØØ	± Ø3.Ø	9 25 94	SAD
4010	Combined Radium 5pCi/L	420		ØØ ØØ	± Ø		
4020	Radium-226	421		ØØ4.8 ØØ	± Ø.Ø3	11 10 94	SAD
4030	Radium-228	422		ØØ2.7.8 ØØ	± Ø.25	11 4 94	SAD
4100	Gross Beta 50 pCi/L	419		ØØ4.4.3 ØØ	± Ø.31	9 25 94	SAD
4006	Uranium			ØØ2Ø ØØ	± Ø.Ø5	11 5 94	BH/KF
4012	Tritium						

LAB I.D. 00095 (34-38)

PREPARED BY: S Dugan

The results on this report are expressed in pCi/L unless otherwise indicated. *A = analyst's initials

LAB #: (1-6)

NAME OF WATER SYSTEM: TOWN OF MIDDLEBURG.
SOURCE: WELL 4
OTHER INFORMATION: NEW CONSTRUCTION

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name VALLEY DRILLING CORP OF VA.
Address 9172 JOHN MOSBY HWY
City UPPERVILLE, VA. Zip Code 22176

Water Quality Report

VOLATILE ORGANICS

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

BB

REGION: ☐ Abingdon ☐ Danville ☐ Richmond ☐ Local Health Dept.
☑ Culpeper ☐ Lexington ☐ Virginia Beach ☐

PLANNING DISTRICT#: MERCER
COUNTY: LOUDOUN
INDEPENDENT CITY: MIDDLEBURG
FIELD TESTS: Temp: pH:
SAMPLING LOCATION: @ WELL TAP
CODE: (79)
Cl_2: mg/L Alk: mg/L
CO_2 mg/L Hard.: mg/L
SOURCE TYPE: ☑ Public-Community ☐ Public-Noncommunity
P.W.S.I.D. #: 6 1 0 7 4 5 0 (10-16)
TRANSACTION CODE: C 3 (17-18)

4573382

DATE COLLECTED: Mo 9 Day 14 Yr 94 (19-24)

TIME: 900 (25-28)

COLLECTED BY: VA. Valley Drilling

CONTAINER TYPE: ☑ Glass ☐ Plastic

PRESERVATIVE USED: ☐ None ☑ Ice ☐ Other ☐ Nitric Acid

SAMPLE TYPE: D ☐ Reg. Dist. P ☐ Plant Tap R ☑ Raw Water C ☐ Check M ☐ MCL Check S ☐ Other (29)

DATE REC: 9/16
DATE REP:

CONT. I.D. (30-33)	CONTAMINANT NAME (Maximum Allowable Level)	MTD. (39-41)	S (42)	ANALYSIS RESULTS (43-50)	PRECISION (51-53)	ANALYSIS DATE Mo Day Yr (54-59)	A*
2900	Regulated VOCs	524	<	0000.005	±	9 24 94	ZC
2990	Benzene 0.005	524	|	0000	±		
2976	Vinyl Chloride 0.002	524	|	0000	±		
2982	Carbon Tetrachloride 0.005	524	|	0000	±		
2980	1,2-Dichloroethane 0.005	524	|	0000	±		
2984	Trichloroethylene 0.005	524	|	0000	±		
2977	1,1-Dichloroethylene 0.007	524	|	0000	±		
2981	1,1,1-Trichloroethane 0.20	524	|	0000	±		
2969	p-Dichlorobenzene 0.075	524	|	0000	±		
	c-1,2-dichloroethene 0.07	524	|	0000	±		
	1,2-dichloropropane 0.005	524	|	0000	±		
	ethylbenzene 0.7	524	|	0000	±		
	chlorobenzene 0.1	524	|	0000	±		
	o-dichlorobenzene 0.6	524	|	0000	±		
	styrene 0.1	524	|	0000	±		
	perchloroethene 0.005	524	|	0000	±		
	toluene 1.	524	|	0000	±		
	t-1,2-dichloroethene .1	524	|	0000	±		
	total xylenes 10.	524	↓	0000	±		
2200	UNREGULATED VOCS	524	<	0000.005	±		

pH 2.5

pH>2

LAB I.D. (34-38)

PREPARED BY:

The results on this report are expressed in mg/L unless otherwise indicated. *A = analyst's initials

SEP 15 AM 9:23 BUR OF CHEMISTRY

SEP 1994 RECEIVED Office of Water Programs Culpeper, Office

NOV 1994 RECEIVED Office of Water Programs Culpeper, Office

LAB #: (1-6)

NAME OF WATER SYSTEM: TOWN OF MIDDLEBURG.
SOURCE: WELL # 4
OTHER INFORMATION: NEW CONSTRUCTION

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name: VALLEY DRILLING CORP OF VA.
Address: 9172 JOHN MOSBY HWY
City: UPPERVILLE, VA. Zip Code: 22176

Water Quality Report

NITRATE-N NITRITE-N HARDNESS
WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

BB

REGION: ☐ Abingdon ☐ Danville ☐ Richmond ☐ Local Health Dept.
☑ Culpeper ☐ Lexington ☐ Virginia Beach ☐

PLANNING DISTRICT#: MERCER
SAMPLING LOCATION: @WELL TAP
COUNTY: LOUDOUN
INDEPENDENT CITY: MIDDLEBURG
CODE: (7-9)

SOURCE TYPE:
☑ Public-Community
☐ Public-Noncommunity

FIELD TESTS: Temp: Cl2: mg/L CO2 mg/L
pH: Alk: mg/L Hard.: mg/L

P.W.S.I.D. #: 6 1 0 7 4 5 0 (10-16)

TRANSACTION CODE: Ø 3 (17-18)

4573778

DATE COLLECTED (19-24): Mo 9 Day 14 Yr 94

TIME: AM 900 (25-28)

COLLECTED BY: B. Valley Drilling

CONTAINER TYPE:
☐ Glass
☑ Plastic

SEP 15 AM 8:23 BUR OF DRINKING WATER

PRESERVATIVE USED:
☐ None
☐ Ice
☐ Other
☐ Nitric Acid
☑ Sulfuric Acid

SAMPLE TYPE:
D ☐ Reg. Dist.
P ☐ Plant Tap
R ☑ Raw Water
C ☐ Check
M ☐ MCL Check
☐ Other
(29)

DATE REC:
DATE REP: 10-14-94

CONT. I.D. (30-33)	CONTAMINANT NAME (Maximum Allowable Level)	MTD. (39-41)	S	ANALYSIS RESULTS (43-50)	PRECISION (51-53)	ANALYSIS DATE Mo	Day	Yr	A* (54-59)
	Nitrate-Nitrogen			0.08	±	10	07	94	CF
	Nitrite-Nitrogen		<	0.05	±	/	/	/	/
	Hardness (Total)			150	±				
	Hardness, Calcium			120	±				

LAB I.D. (34-38)

PREPARED BY: Charlene Fuller

The results on this report are expressed in mg/L unless otherwise indicated. *A = analyst's initials

LAB #: (1-6)

NAME OF WATER SYSTEM: TOWN OF MIDDLEBURG
SOURCE: WELL #4
OTHER INFORMATION: NEW CONSTRUCTION

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name VALLEY DRILLING CORP.
Address ~~RFD~~ ~~BOX 146~~ 9172 JOHN MOSBY
City UPPERVILLE, VA Zip Code 22176

Water Quality Report

PESTICIDE

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

REGION: ☐ Abingdon ☐ Danville ☐ Richmond ☐ Local Health Dept.
☑ Culpeper ☐ Lexington ☐ Virginia Beach ☐

PLANNING DISTRICT# MERCER
COUNTY: LOUDOUN
INDEPENDENT CITY: MIDDLEBURG
SAMPLING LOCATION: @WELL TAP
CODE: (79)

SOURCE TYPE:
☑ Public-Community
☐ Public-Noncommunity

FIELD TESTS: Temp: pH: Cl2: mg/L Alk: mg/L CO2 mg/L Hard.: mg/L

P.W.S.I.D. #: 6 1 0 7 4 5 0 (10-16)
TRANSACTION CODE: 0 3 (17-18)

DATE COLLECTED: Mo 9 Day 14 Yr 94 (19-24)
TIME: 900 (25-28)
COLLECTED BY: T.S. VALLEY DRILLING
CONTAINER TYPE: ☑ Glass ☐ Plastic
PRESERVATIVE USED: ☐ None ☑ Ice ☐ Other ☐ Nitric Acid
SAMPLE TYPE: D ☐ Reg. Dist. P ☐ Plant Tap R ☑ Raw Water C ☐ Check M ☐ MCL Check ☐ Other (29)
DATE REC: 9-15
DATE REP: 9-23-94

CONT. I.D. (30-33)	CONTAMINANT NAME (Maximum Allowable Level)		MTD. (39-41)	S	ANALYSIS RESULTS (43-50)	PRECISION (51-53)	ANALYSIS DATE Mo Day Yr (54-59)	A*
2005	Endrin	0.0002	201	<	0.0004	±	09 23 94	HMM
2010	Lindane	0.004	201	<	0.001	±	09 23 94	HMM
2015	Methoxychlor	0.1	201	<	0.003	±	09 23 94	HMM
2020	Toxaphene	0.005	201	<	0.005	±	09 23 94	HMM
						±		
2105	2,4-D	0.1	206	<	0.003	±	09 23 94	HMM
2110	2,4,5-TP (Silvex)	0.01	206	<	0.001	±	09 23 94	HMM

LAB I.D. 0 2 0 0 0 (34-38)

PREPARED BY: Hazel Marshall

The results on this report are expressed in mg/L unless otherwise indicated. *A = analyst's initials

SEP 1994 RECEIVED Office of Water Programs Culpeper Office

94 SEP 15 AM 9:23 BUR. OF CHEMISTRY

457281

Report Total 50

FO - DCLS Bacti Results for 12/16/1998 through 12/16/1999

Run date:12/16/1999

MPN

SampleID	Type	PWS Name/ Loc. Code - Location - Sampler	Req. Samp.	Collect Date	Collect Time	TC	FC	CL2	Reject Reason
6107450	**MIDDLEBURG, TOWN OF**		**1 M**						
L913220	Q	703 WELL 4		09/30/99		30	<2	NO	
L913219	Q	703 WELL 4		09/30/99		4	<2	NO	
L913221	Q	703 WELL 4		09/30/99		4	<2	NO	
L913222	Q	703 WELL 4		09/30/99		23	<2	NO	
L913223	Q	703 WELL 4		09/30/99		8	<2	NO	
L913224	Q	703 WELL 4		09/30/99		2	<2	NO	
L913225	Q	703 WELL 4		09/30/99		< 2		NO	
L913158	Q	703 WELL 4		09/29/99		23	<2	NO	
L913151	Q	703 WELL 4		09/29/99		4	<2	NO	
L913152	Q	703 WELL 4		09/29/99		< 2		NO	
L913153	Q	703 WELL 4		09/29/99		< 2		NO	
L913154	Q	703 WELL 4		09/29/99		< 2		NO	
L913155	Q	703 WELL 4		09/29/99		< 2		NO	
L913159	Q	703 WELL 4		09/29/99		< 2		NO	
L913157	Q	703 WELL 4		09/29/99		8	<2	NO	
L913156	Q	703 WELL 4		09/29/99		< 2		NO	
L913076	Q	703 WELL #4 1300		09/28/99		50	<2	NO	
L913070	Q	703 WELL #4 0600		09/28/99		50	<2		
L913075	Q	703 WELL #4 0800		09/28/99		8	<2	NO	
L913071	Q	703 WELL #4 0700		09/28/99		50	<2		
L913072	Q	703 WELL #4 0900		09/28/99		13		NO	
L913074	Q	703 WELL #4 1000		09/28/99		17	<2	NO	
L913078	Q	703 WELL #4 1400		09/28/99		30	<2	NO	
L913073	Q	703 WELL #4 1100		09/28/99		4	<2	NO	
L913077	Q	703 WELL #4 1200		09/28/99		4	<2	NO	

Well L

Form GW-2

BWCM No. _____

file

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT
(Certification of Completion/County Permit)

Well L

anty/City: Loudoun
County/City Stamp

SWCB Permit _____
County Permit T30162670004

Owner: Salamander Well L
Well Designation or Number: _____
Address: 3074 Zulla Rd
The Plains, Va 20198
Phone: 540-364-3085

Certification of Inspecting Official.
This well does ___ does not ___ meet code/low requirements.
S _____
Date _____
For Office Use

Drilling Contractor: Valley Drilling Corporation
Address: 9172 John S. Mosbly Hwy,
Upperville, VA. 20184
Phone: 540-592-3239

Tax Map ID No. 538-35-1294-001
Subdivision _____
Section 87
Block _____ Lot 18-1
Class Well: I X IIA __ IIB __ IIIA __
IIIB __ IIIC __ IIID __ IIIE __ IV __

Well Location: Rt 50 W to Middleburg, right on Foxcroft rd to site on Left at edge of town. Well L

Date Started: 11/06/03 Date Completed: 12/02/03 Type of Rig: Rotary 3

1. WELL DATA: New X Worked ___ Deepened ___

Total Depth: 480

Depth of Bedrock: 23

HOLE SIZE (Also include reamed zones)
12 inches from 0 to 100 ft.
8 inches from 100 to 480 ft.
___ inches from ___ to ___ ft.

CASING SIZE (I.D.) and material:
8 inches from +1 to 116 ft.
Material: Steel
Wt. Per foot: 28.6 or wall thickness .322 in.
___ inches from ___ to ___ ft.
Material: _____
Wt. Per foot: ___ or wall thickness ___ in.
___ inches from ___ to ___ ft.
Material: _____
Wt. Per foot: ___ or wall thickness ___ in.

SCREEN SIZE and mesh for each zone (where applicable)
___ inches from ___ to ___ ft.
Mesh Size ___ Type _____
___ inches from ___ to ___ ft.
Mesh Size ___ Type _____
___ inches from ___ to ___ ft.
Mesh Size ___ Type _____

GRAVEL PACK
From ___ To ___ ft.
From ___ To ___ ft.

ROUT
From 0 To 100 ft. Type Pressure CEMENT
From ___ To ___ ft. Type Pressure ___

2. WATER DATA: Water Tempature 56 degrees.
Static water level (unpumped level measured) 25 ft.
Stabilized meas. pumping water level ___ ft.
Stabilized yield 246 gpm after 3 hours.
Natural Flow: Yes ___ No X Flow rate ___ gpm.
Comment on Quality: Clear

3. WATER ZONES: From 310 ft. 246 gpm.
From ___ ft. ___ gpm. From ___ ft. ___ gpm.
From ___ ft. ___ gpm. From ___ ft. ___ gpm.

4. USE DATA:
Type of Use: Drinking X Livestock Watering ___
Irrigation ___ Food Processing ___ Household ___
Manufacturing ___ Fire Safety ___ Cleaning ___
Recreation ___ Aesthetic ___ Cooling or Heating ___
Injection ___ Other _____
Type of Facility: Domestic ___ Public Water Supply X
Public Institution ___ Farm ___ Industry ___
Commercial ___ Other _____

5. PUMP DATA: Type _____ Rated HP _____
Intake depth ___ Capacity ___ at ___ head

6. WELLHEAD: Type well sent _____
Pressure Tank ___ gal Loc _____
Sample Tap ___ Measurement Port ___
Well Vent ___ Pressure Relief Valve ___
Gate Valve ___ Check Valve (when required) ___
Electrical Disconnect Switch on Power Supply ___

7. DISINFECTION: Well Disinfected: Yes ___ No ___
Date ___ Disinfectant Used ___

8. ABANDONMENT (where applicable): Yes ___ No ___
Casing Pulled Yes ___ No ___ Not Applicable ___
Plugging Grout From ___ To ___ Material ___
From ___ To ___ Material ___

OWNER *Salamander Well L*

9. State law requires submitting to the Virginia State Water control Board information about groundwater and wells for every well made in the State intended for water, or any other non-exempt well. This information must be submitted whether the well is completed, on standby, or abandoned. Information required includes: an accurately and completely prepared completion report, full data from any aquifer pumping tests, drill cuttings taken at ten foot intervals (unless exemption is secured), the results of any chemical analysis, and copies of any geophysical logs. Quarterly-pumpage and use reports are required from owners of public supply and industrial wells. The Virginia State Health Department requires a water well completion report for public supply wells.

10. **DRILLERS LOG** (use additional sheets if necessary)

DEPTH (feet) From	DEPTH (feet) To	TYPE OF ROCK OR SOIL (color, mineral, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, etc.):
0	23	Overburden	
23	280	Bluestone Quartz	
280	310	Waterbearing	246GPM

DIAGRAM OF CONSTRUCTION (with dimensions)

23 Overburden

310 Waterbearing

480 Bluestone, Quartz

11. Well lot dedicated?_____; Size _____ ft. x _____ ft. Well house?_____; Distance to nearest pollutant source _____ ft.
Type _____. Distance to nearest property line _____ ft., Building _____ ft.

12. **WATER SERVICE PIPE:** Checked under _____ psi for _____ minutes. Pipe size _____ in. Material _____
Installer _____
Date _____

13. I certify that the information contained herein is true and correct and that this well and/or system has been installed and constructed in accordance with the requirements for well construction as specified in compliance with appropriate county or independent city ordinances and the laws and rules of the Commonwealth of Virginia.

SIGNATURE Jerry S. Pelkey
(Well Driller or Authorized Person)

(Seal) Date December 11, 2003

License No. Virginia Class A contractors license #2705 027957A

County License #W0016
save data apply

Well ID: L
Permit #: T30162670004
Project: Salamander
roject #: 4973.001
lient: JM Zell Partners, Ltd.
Location: Middleburg, Loudoun Co.
Tax Map ID: 87/18-1

Driller: ey Drilling Corp.
Drill Method: Air-Rotary
Started: 11/6/03
Completed: 12/2/03
Air-Lift Yield (gpm): 246
Well Depth (ft): 480
Hole Diameter (ft): 8

Casing Depth (ft): 116
Wall Thickness (in): 0.322
Riser Height (ft): 1.5
GS Elev (ft): 454
WL Elev (ft): 378
WL Date: 4/12/2004
Comment:

GeoTrans, Inc.
46010 Manekin Plaza, Suite 100
Sterling, VA 20166
703-444-7000

Easting (ft): 2212880
Northing (ft): 478476
Geologist: WG / RMC

Depth (feet)	Symbol	Yield Info.	Description	WELL DETAIL
0			Ground Surface	
20			***Overburden*** Dark yellowish brown (10YR4/2) to moderate yellowish brown (10YR5/4), silt loam soil	
40			***Metagranite / Greenschist*** Greenish black (5G2/1) schist interbedded with light olive gray (5Y/6/1) to light gray (N7) metagranite	
60				
80			***Metagranite*** Very light gray (N8) to grayish olive (10Y4/2) to pale reddish brown (10YR8/2) to yellowish gray (5Y8/1) metagranite, fine-grainedl	
100				
120			***Metadiabase*** Greenish black (5GY2/1) very fine grained metadiabase	
140				
160			***Metagranite*** Light gray (N7) to dark gray (N3) to pinkish gray (5YR8/1) to dark yellowish orange (10YR7/4) fine grained metagranite	
180				
200			***Metadiabase*** Greenish black (5GY2/1) very fine grained metadiabase	
220				
240				
260				
280				
300		246 GPM @ 310'		
320				
340			***Metagranite*** Predominantly light gray (N7) to medium gray(N5) metagranite with lesser Tinterbedded with greenish black (5GY2/1) very fine grained metadiabase	
360				
380				
400				
420				
440				
460				
480			End of Borehole	
500				

COMMONWEALTH OF VIRGINIA
ROBERT M. COHEN
No. 659
CERTIFIED PROFESSIONAL GEOLOGIST

N[illegible]ONAL TESTING LABORATORIES, LTD.
556 South Mansfield, Ypsilanti, MI 48197-[illegible]
(440) 449-2525 • Fax (440) 449-8585

ANALYTICAL REPORT

Date: 04/28/04 Report #: 618561 Laboratory ID #: 00417

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 17:45
SOURCE: SALAMANDER WELL L
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:00
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our lower reporting limit (LRL).

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
Inorganic chemicals - metals:						
1002	Aluminum	200.7	0.2**	0.05	ND	04/20/04
1074	Antimony	200.8	0.006	0.001	ND	04/20/04
1005	Arsenic	200.8	0.010	0.002	ND	04/20/04
1010	Barium	200.8	2	0.10	ND	04/20/04
1075	Beryllium	200.8	0.004	0.001	ND	04/20/04
1079	Boron	200.7	---	0.10	ND	04/20/04
1015	Cadmium	200.8	0.005	0.001	ND	04/20/04
1016	Calcium	200.7	---	2	65	04/20/04
1020	Chromium	200.8	0.1	0.001	ND	04/20/04
1022	Copper	200.8	1.3**	0.002	ND	04/20/04
1028	Iron	200.7	0.3**	0.020	0.031	04/20/04
1030	Lead	200.8	0.015	0.001	0.002	04/20/04
1031	Magnesium	200.7	---	0.10	8.8	04/20/04
1032	Manganese	200.8	0.05**	0.004	0.14*	04/20/04
1035	Mercury	200.8	0.002	0.0002	ND	04/20/04
1036	Nickel	3113B	---	0.002	ND	04/21/04
1042	Potassium	200.7	---	1.0	5.8	04/20/04
1045	Selenium	200.8	0.05	0.002	ND	04/20/04
1050	Silver	200.8	0.1**	0.002	ND	04/20/04
1052	Sodium	200.7	---	1	10	04/20/04
1085	Thallium	200.8	0.002	0.001	ND	04/20/04
1095	Zinc	200.8	5**	0.004	0.049	04/20/04

NATIONAL TESTING LABORATORIES, LTD.
5[illegible] South Mansfield, Ypsilanti, MI 48197-516[illegible]
(440) 449-2525 • Fax (440) 449-8585

ANALYTICAL REPORT
 SAMPLE CODE: 618561

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
Inorganic chemicals - other, and physical factors:						
1927	Alkalinity (as CaCO3)	2320B	---	20	69	04/21/04
1004	Bromide	300.1	---	2.0	ND	04/15/04
1017	Chloride	300.0	250**	1.0	2.5	04/15/04
1910	Corrosivity	Langlier Ind	---	---	-0.70	04/22/04
1025	Fluoride	300.0	4	0.1	0.5	04/15/04
1055	Sulfate	300.0	250**	5.0	140	04/15/04
1915	Hardness (as CaCO3)	2340C	---	10	190	04/21/04
1930	Total Dissolved Solids	2540C	500**	5	310	04/16/04

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date	Anal Time
Inorganic chemicals - other, and physical factors:							
1040	Nitrate as N	300.0	10	0.05	ND	04/15/04	13:52
1041	Nitrite as N	300.0	1	0.05	ND	04/15/04	13:52
1044	Ortho Phosphate	300.0	---	2.0	ND	04/15/04	13:52
1925	pH (Standard Units)	150.1	6.5-8.5**	---	7.1	04/15/04	13:00
0100	Turbidity (NTU)	2130B	1.0	0.1	0.1	04/15/04	13:10
1905	Color	2120B	15**	3.0	ND	04/15/04	13:20
2905	Foaming Agents	5540C	0.5**	0.1	ND	04/16/04	11:10
1920	Odor Threshold	2150B	3 ton**	---	ND	04/15/04	12:45

** Denotes Secondary Maximum Contaminant Level (SMCL)

NATIONAL TESTING LABORATORIES, LTD.
556 South Mansfield, Ypsilanti, MI 48197-5136
(440) 449-2525 • Fax (440) 449-8585

ANALYTICAL REPORT
 SAMPLE CODE: 618561

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
Organic chemicals - trihalomethanes:						
2942	Bromoform	524.2	---	0.0005	ND	04/16/04
2943	Bromodichloromethane	524.2	---	0.0005	ND	04/16/04
2941	Chloroform	524.2	---	0.0005	ND	04/16/04
2944	Dibromochloromethane	524.2	---	0.0005	ND	04/16/04
2950	Total THMs	524.2	0.080	0.0005	ND	04/16/04
Organic Chemicals-Volatiles:						
2990	Benzene	524.2	0.005	0.0005	ND	04/16/04
2993	Bromobenzene	524.2	---	0.0005	ND	04/16/04
2430	Bromochloromethane	524.2	---	0.0005	ND	04/16/04
2214	Bromomethane	524.2	---	0.0005	ND	04/16/04
2422	n-Butylbenzene	524.2	---	0.0005	ND	04/16/04
2428	sec-Butylbenzene	524.2	---	0.0005	ND	04/16/04
2426	tert-Butylbenzene	524.2	---	0.0005	ND	04/16/04
2982	Carbon Tetrachloride	524.2	0.005	0.0005	ND	04/16/04
2989	Chlorobenzene	524.2	0.1	0.0005	ND	04/16/04
2216	Chloroethane	524.2	---	0.0005	ND	04/16/04
2210	Chloromethane	524.2	---	0.0005	ND	04/16/04
2965	2-Chlorotoluene	524.2	---	0.0005	ND	04/16/04
2966	4-Chlorotoluene	524.2	---	0.0005	ND	04/16/04
2408	Dibromomethane	524.2	---	0.0005	ND	04/16/04
2968	1,2-Dichlorobenzene	524.2	0.6	0.0005	ND	04/16/04
2967	1,3-Dichlorobenzene	524.2	0.6	0.0005	ND	04/16/04
2969	1,4-Dichlorobenzene	524.2	0.075	0.0005	ND	04/16/04
2212	Dichlorodifluoromethane	524.2	---	0.0005	ND	04/16/04
2978	1,1-Dichloroethane	524.2	---	0.0005	ND	04/16/04
2980	1,2-Dichloroethane	524.2	0.005	0.0005	ND	04/16/04
2977	1,1-Dichloroethene	524.2	0.007	0.0005	ND	04/16/04
2380	cis-1,2-Dichloroethene	524.2	0.07	0.0005	ND	04/16/04
2979	trans-1,2-Dichloroethene	524.2	0.1	0.0005	ND	04/16/04
2983	1,2-Dichloropropane	524.2	0.005	0.0005	ND	04/16/04
2412	1,3-Dichloropropane	524.2	---	0.0005	ND	04/16/04
2416	2,2-Dichloropropane	524.2	---	0.0005	ND	04/16/04
2410	1,1-Dichloropropene	524.2	---	0.0005	ND	04/16/04
2228	cis-1,3-Dichloropropene	524.2	---	0.0005	ND	04/16/04
2224	trans-1,3-Dichloropropene	524.2	---	0.0005	ND	04/16/04
2992	Ethylbenzene	524.2	0.7	0.0005	ND	04/16/04

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556 South Mansfield, Ypsilanti, MI 48197-5166
(440) 449-2525 • Fax (440) 449-8585

ANALYTICAL REPORT
 SAMPLE CODE: 618561

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
Organic chemicals - volatiles						
2246	Hexachlorobutadiene	524.2	---	0.0005	ND	04/16/04
2994	Isopropylbenzene	524.2	---	0.0005	ND	04/16/04
2030	4-Isopropyltoluene	524.2	---	0.0005	ND	04/16/04
2964	Dichloromethane	524.2	0.005	0.0005	ND	04/16/04
2248	Naphthalene	524.2	---	0.0005	ND	04/16/04
2998	Propylbenzene	524.2	---	0.0005	ND	04/16/04
2996	Styrene	524.2	0.1	0.0005	ND	04/16/04
2986	1,1,1,2-Tetrachloroethane	524.2	---	0.0005	ND	04/16/04
2988	1,1,2,2-Tetrachloroethane	524.2	---	0.0005	ND	04/16/04
2987	Tetrachloroethene	524.2	0.005	0.0005	ND	04/16/04
2991	Toluene	524.2	1	0.0005	ND	04/16/04
2420	1,2,3-Trichlorobenzene	524.2	---	0.0005	ND	04/16/04
2378	1,2,4-Trichlorobenzene	524.2	0.07	0.0005	ND	04/16/04
2981	1,1,1-Trichloroethane	524.2	0.2	0.0005	ND	04/16/04
2985	1,1,2-Trichloroethane	524.2	0.005	0.0005	ND	04/16/04
2984	Trichloroethene (TCE)	524.2	0.005	0.0005	ND	04/16/04
?218	Trichlorofluoromethane	524.2	---	0.0005	ND	04/16/04
?904	Trichlorotrifluoroethane	524.2	---	0.0005	ND	04/16/04
2414	1,2,3-Trichloropropane	524.2	---	0.0005	ND	04/16/04
2418	1,2,4-Trimethylbenzene	524.2	---	0.0005	ND	04/16/04
2424	1,3,5-Trimethylbenzene	524.2	---	0.0005	ND	04/16/04
2976	Vinyl Chloride	524.2	0.002	0.0005	ND	04/16/04
2251	Methyl-Tert-Butyl-Ether	524.2	---	0.0005	ND	04/16/04
2247	Methyl Ethyl Ketone	524.2	---	0.005	ND	04/16/04
2997	o-Xylene	524.2	---	0.0005	ND	04/16/04
2995	m-Xylene(1)	524.2	---	0.0005	ND	04/16/04
2962	p-Xylene(1)	524.2	---	0.0005	ND	04/16/04

NATIONAL TESTING LABORATORIES, LTD.
[illegible] South Mansfield, Ypsilanti, MI 48197-[illegible]
(440) 449-2525 • Fax (440) 449-8585

ANALYTICAL REPORT

 SAMPLE CODE: 618561

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
Organic chemicals-herbicides, pesticides, & pcb's						
2005	Endrin	505	0.002	0.00001	ND	04/15/04
2010	Lindane	505	0.0002	0.00002	ND	04/15/04
2015	Methoxychlor	505	0.04	0.0001	ND	04/15/04
2383	PCBs	505	0.0005	0.0001	ND	04/15/04
2020	Toxaphene	505	0.003	0.001	ND	04/15/04
2110	Silvex(2,4,5-TP)	515.2	0.05	0.0002	ND	04/20/04
2105	2,4-D	515.2	0.07	0.0001	ND	04/20/04
2051	Alachlor	508.1	0.002	0.0002	ND	04/21/04
2356	Aldrin	505	---	0.00007	ND	04/15/04
2050	Atrazine	508.1	0.003	0.0001	ND	04/21/04
2959	Chlordane	505	0.002	0.0001	ND	04/15/04
2031	Dalapon	515.3	0.2	0.001	ND	04/22/04
2440	Dicamba	515.2	---	0.001	ND	04/20/04
2933	Dichloran	505	---	0.001	ND	04/15/04
2364	Dieldrin	505	---	0.00002	ND	04/15/04
2041	Dinoseb	515.2	0.007	0.0002	ND	04/20/04
2065	Heptachlor	505	0.0004	0.00001	ND	04/15/04
2067	Heptachlor Epoxide	505	0.0002	0.00001	ND	04/15/04
2274	Hexachlorobenzene	505	0.001	0.0001	ND	04/15/04
2042	Hexachlorocyclopentadiene	505	0.05	0.0001	ND	04/15/04
2934	Pentachloronitrobenzene	505	---	0.00010	ND	04/15/04
2326	Pentachlorophenol	515.2	0.001	0.00004	ND	04/20/04
2040	Picloram	515.2	0.5	0.0001	ND	04/20/04
2037	Simazine	508.1	0.004	0.00007	ND	04/21/04
2055	Trifluralin	505	---	0.001	ND	04/15/04

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(440) 449-2525 • Fax (440) 449-8585

ANALYTICAL REPORT

 SAMPLE CODE: 618561

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
Volatile Organic Chemicals - method 504.1						
2931	1,2-Dibromo3chloropropane	504.1	0.0002	0.00001	ND	04/19/04
2946	1,2-Dibromoethane	504.1	0.00005	0.00001	ND	04/19/04

504.1- Date Extracted: 04/19/04
505 - Date Extracted: 04/15/04
508.1- Date Extracted: 04/21/04
515.2- Date Extracted: 04/19/04
515.3- Date Extracted: 04/20/04

These test results may be used for compliance purposes as required.

(1) DUE TO THE LIMITATIONS OF EPA METHOD 524.2, m AND p ISOMERS OF XYLENE ARE REPORTED AS AN AGGREGATE.

James C. Bahen

James C. Bahen, Lab Director

NATIONAL TESTING LABORATORIES, LTD.
556 South Mansfield, Ypsilanti, MI 48197-5766
(440) 449-2525 • Fax (440) 449-8585

ANALYTICAL REPORT

PAGE 1 OF 1 SAMPLE CODE: 618562

Date: 04/23/04 Report #: 618562 Laboratory ID #: 00417

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 17:45
SOURCE: SALAMANDER WELL L
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:00
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our lower reporting limit (LRL).

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
1928	Bicarbonate (as CaCO3)	2320B	---	20	69	04/21/04
1929	Carbonate (as CaCO3)	2320B	---	20	ND	04/21/04
1021	Hydroxide (as CaCO3)	2320B	---	20	ND	04/21/04
1064	Spec Cond (umhos/cm at 25C)	2510B	---	1	440	04/16/04

EPA approved methods were used in all of the analyses.

James C. Bahen

James C. Bahen, Lab Director

BROWARD TESTING LABORATORY LTD.
4416 N.E. 11TH AVE., FORT LAUDERDALE, FLORIDA 33334
(440) 449-2525 FAX (440) 449-8585

ANALYTICAL REPORT

Date: 04/26/04 Report #: 78215 Laboratory ID #: 00022

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 17:40
SOURCE: SALAMANDER WELL L
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:30
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our lower reporting limit (LRL).
"NA" Not Analyzed

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
.028	Iron	200.7	0.3	0.01	0.03	04/20/04
1052	Sodium	200.7	---	0.01	11.2	04/20/04
1067	Alkalinity	2320B	---	5	66.0	04/15/04
1017	Chloride	300.0	250	0.25	2.1	04/16/04

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date	Anal Time
Inorganic Chemicals-other, and physical factors:							
1044	Ortho Phosphate	300.0	---	0.20	ND	04/16/04	12:10
1925	pH (Standard Units)	150.1	6.5-8.5	---	7.37	04/15/04	11:37

**Denotes Secondary Maximum Contaminant Level (SMCL)

Gary J. Meyer

Gary J. Meyer, Lab Director

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(440) 449-2525 FAX (440) 449-8585

ANALYTICAL REPORT

 SAMPLE CODE: 78219

Date: 04/28/04 Report #: 78219 Laboratory ID #: 00022

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 17:40
SOURCE: SALAMANDER WELL L
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:30
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our lower reporting limit (LRL).

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
	Carbamates					
2021	Carbaryl	531.1	---	0.00069	ND	04/21/04
2022	Methomyl	531.1	---	0.00047	ND	04/21/04
2043	Aldicarb sulfoxide	531.1	0.007	0.00045	ND	04/21/04
2044	Aldicarb sulfone	531.1	0.007	0.00065	ND	04/21/04
2047	Aldicarb	531.1	0.007	0.0005	ND	04/21/04
2066	3-Hydroxycarbofuran	531.1	---	0.00077	ND	04/21/04
2036	Oxamyl	531.1	0.2	0.00063	ND	04/21/04
2046	Carbofuran	531.1	0.04	0.00067	ND	04/21/04

These test results may be used for compliance purposes as required.

Gary J. Meyer

Gary Meyer, Lab Director

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(440) 449-2525 FAX (440) 449-8585

ANALYTICAL REPORT
PAGE 1 OF 1 SAMPLE CODE: 78218

Date: 04/21/04 Report #: 78218 Laboratory ID #: 00022

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 17:40
SOURCE: SALAMANDER WELL L
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:30
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our lower reporting limit (LRL).

Fed Id #	Analysis Performed	Method	MCL (ug/l)	LRL	Level Detected	Anal Date
356	Aldrin	525.2	---	0.02	ND	04/16/04
2306	Benzo(A)Pyrene	525.2	0.2	0.02	ND	04/16/04
2077	Butachlor	525.2	---	0.08	ND	04/16/04
2070	Dieldrin	525.2	---	0.03	ND	04/16/04
2035	Di(2-Ethylhexyl)Adipate	525.2	400	0.06	ND	04/16/04
2039	Di2-ethylhexyl)phthalate	525.2	6	0.08	ND	04/16/04
2274	Hexachlorobenzene	525.2	1	0.07	ND	04/16/04
2045	Metolachlor	525.2	---	0.09	ND	04/16/04
2595	Metribuzin	525.2	---	0.12	ND	04/16/04
2077	Propachlor	525.2	---	0.06	ND	04/16/04
2037	Simazine	525.2	4	0.11	ND	04/16/04
525.2 DATE EXTRACTED 04/15/04						

These test results may be used for compliance purposes as required.

Gary J. Meyer

Gary Meyer, Lab Director

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(440) 449-2525 FAX (440) 449-8585

ANALYTICAL REPORT
PAGE 1 OF 1 SAMPLE CODE: 78217

Date: 04/21/04 Report #: 78217 Laboratory ID #: 00022

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 17:40
SOURCE: SALAMANDER WELL L
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:30
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our lower reporting limit (LRL).

Fed Id #	Analysis Performed	Method	MCL (ug/l)	LRL	Level Detected	Anal Date
2032	Diquat	549.2	20	0.40	ND	04/19/04
549.2	DATE EXTRACTED	04/16/04				

These test results may be used for compliance purposes as required.

Gary J. Meyer

Gary Meyer, Lab Director

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(440) 449-2525 FAX (440) 449-8585

ANALYTICAL REPORT

 SAMPLE CODE: 78216

Date: 04/28/04 Report #: 78216 Laboratory ID #: 00022

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 17:40
SOURCE: SALAMANDER WELL L
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:30
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our stated detection limit.

Fed Id #	Analysis Performed	MCL (MG/L)	Sample Number	Analysis Result	Method	MDL	Anal Date
1024	Cyanide	0.2	78216	ND	4500CNF	0.015	04/21/04

These test results may be used for compliance purposes as required.

Gary J. Meyer

Gary Meyer, Lab Director

FREE-COL LABORATORIES

11618 COTTON ROAD
MEADVILLE, PENNSYLVANIA 16335
PHONE: (814 724-6242)
FAX: (814) 333-1466
EMAIL: service@free-col.com

Certificate Of Analysis

04/26/2004

elivery Group ID: 2004:0003621

4 Sample(s) are included in this Delivery Group.

ompany Name: National Testing Lab.

Date Received 4/15/04
Time Received: 09:45
Delivered By: Fed Ex

6555 Wilson Mills Road
Cleveland, OH 44143

roject Name: Geotrans Inc.

mple ID: 2004:0003621-3 Client's Sample ID: Salamander Well L

ate Sampled: 4/14/04 Time Sampled: 18:08 Date Received: 4/15/04

nalyte	Result	Units	Date Analyzed	Time Analyzed	Analyst	Method Source
ilicon (Si)	12.7	mg/L	04/22/04	15:00	Hindle	SM 3120 B
Magnesium Hardness (as CaCO3)	41.2	mg/L	04/19/04	09:30	Hindle	SM 3120 B
Calcium Hardness (as CaCO3)	179	mg/L	04/19/04	09:30	Hindle	SM 3120 B
ilica by Calc.	27.2	mg/L	04/22/04	15:00	Hindle	
Prep: Phosphorus, Total			04/21/04	14:00	Little	SM-4500-P B.5
ulfide, Direct	6.2	mg/L	04/19/04	15:30	McGowan	EPA 376.1
Nitrogen, Ammonia	0.09	mg/L	04/21/04	13:00	McGowan	EPA 350.3
hosphorus, Total	0.04	mg/L	04/22/04	08:00	Little	SM 4500 P E
Nitrogen, Total Kjeldahl	0.4	mg/L	04/21/04	13:00	McGowan	EPA 351.3
olids, Total Dissolved	323	mg/L	04/18/04	07:00	Davis	SM 2540 C

Company Name: Geotrans Inc., Sterling, VA
Source Name: Salamander Well L, Middleburg, VA
Sample Collected By: Robert M. Cohen

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : GEO Trans, Inc.
Address : 46050 Manikin Plaza
Suite 100
Sterling, Virginia 20166
Contact: Bob Cohen
Project: **Ground Water Analysis**

Report Date: February 12, 2004

Client Sample ID: Well L
Sample ID: 106502001
Matrix: Ground Water
Collect Date: 04-FEB-04 09:40
Receive Date: 05-FEB-04
Collector: Client

Project: GEOT00102
Client ID: GEOT001

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Gross A/B, liquid												
Alpha		26.3	+/-3.93	2.02	5.00	pCi/L		ATH1	02/06/04	2044	308150	1
Beta		14.7	+/-2.64	3.72	5.00	pCi/L						
GFPC, Ra228, Liquid												
Radium-228		3.64	+/-0.799	1.24	3.00	pCi/L		BJB1	02/11/04	1308	307851	2
Rad Radium-226												
as Cell, Ra226, liquid												
ium-226		2.27	+/-0.715	0.635	1.00	pCi/L		JS1	02/12/04	0920	308127	3

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 900.0	
2	EPA 904.0 Modified	
3	EPA 903.1 Modified	

Notes:
The Qualifiers in this report are defined as follows :

< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : GEO Trans, Inc.
Address : 46050 Manikin Plaza
Suite 100
Sterling, Virginia 20166
Contact: Bob Cohen
Project: **Ground Water Analysis**

Report Date: February 12, 2004

Client Sample ID: Well L
Sample ID: 106502001

Project: GEOT00102
Client ID: GEOT001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Amy Jamison.

Reviewed by

Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

DATE	June 18, 2004
HRI PROJECT	009-205
HRI SERIES NO.	D282/04
DATE REC'D	04/16/2004
CUST. P.O #	14066

National Testing Laboratories, Inc.
Susan Henderson
6555 Wilson Mills Road, #102
Cleveland, OH 44143

REPORT OF ANALYSIS

SAMPLE NO. D282/04-4

SAMPLE IDENTIFICATION: 1106282
Geotrans Inc.
Sterling, VA
Source Water - Salamander Well L, Middleburg, VA
sampled on 04/14/2004 @ 1730 by Rober M. Cohen

PARAMETER	RESULT	DETECTION LIMIT	METHOD	ANALYSIS DATE	ANALYST
Gross Alpha (+-Precision*), pCi/l (T)	15(+-5)	1.8	EPA 900.0	05/25/2004 @ 0825	JMC
Gross Beta (+-Precision*), pCi/l (T)	17(+-3)	2.1	EPA 900.0	05/25/2004 @ 0825	JMC
Radium-226 (+-Precision*), pCi/l (T)	3.8(+-1.0)	0.1	SM 7500-Ra B	05/25/2004 @ 1400	JMC
Radium-228 (+-Precision*), pCi/l (T)	7.5(+-0.9)	0.4	EPA Ra-05	05/12/2004 @ 0856	JS

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.
Certification ID's: CO/EPA - CO00008; CT - PH-0152; KY - 90076; KS - E-10265; NH - 232803-A;
NY ELAP - 11417; PA DEP 68551; WI - 998376610

CODES:
(T) = Total (D) = Dissolved
(S) = Suspended (R) = Total Recoverable
(PD) = Potentially Dissolved
< = Less Than

By: _____
Robert Rostad
Laboratory Manager

Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 55678

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-1
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1300
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Non Detectable (tested at Lab)

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 55679

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-2
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1400
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 55680

PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-3
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1500
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 55681

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-4
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1600
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 55682

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-5
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1700
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 55683

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-6
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1800
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 55684

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-7
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1900
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 55685

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-8
DATE AND TIME SAMPLE COLLECTED: 4-14-04/2000
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____
Robyn Joiner
Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55686

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-9
DATE AND TIME SAMPLE COLLECTED: 4-14-04/2100
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 55687

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-10
DATE AND TIME SAMPLE COLLECTED: 4-14-04/2200
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 55688

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-11
DATE AND TIME SAMPLE COLLECTED: 4-14-04/2300
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 55689

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-12
DATE AND TIME SAMPLE COLLECTED: 4-14-04/2400
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 55690

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-13
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0100
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 55691

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-14
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0200
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Virginia Certification # 00183

Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 55692

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-15
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0300
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 55693

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-16
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0400
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55694
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-17
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0500
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55695
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-18
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0600
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 55696
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-19
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0700
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 55697
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: L-20
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0800
SAMPLE COLLECTED BY: Henry Corbin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Well P

Form GW-2

SWCM No. _____

file

Well P

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT
(Certification of Completion/County Permit)

County/City: *Loudoun*
County/City Stamp

SWCB Permit _____
County Permit *730162670008*

Owner: *Salamander Well P*
Well Designation or Number: _____
Address: *3074 Zulla Rd*
The Plains, Va 20198
Phone: *540-364-3085*

Certification of Inspecting Official:
This well does ___ does not ___ meet code/low requirements.
S _____
Date _____
For Office Use

Drilling Contractor: Valley Drilling Corporation
Address: 9172 John S. Mosby Hwy,
Upperville, VA. 20184
Phone: 540-592-3239

Tax Map ID No. *538-35-1294-001*
Subdivision _____
Section *87*
Block _____ Lot *18-1*
Class Well: I *X* IIA ___ IIB ___ IIIA ___
IIIB ___ IIIC ___ IIID ___ IIIE ___ IV ___

Well Location: *Rt 50 W to Middleburg, right on Foxcroft rd to site on Left at edge of town. Well P*

Date Started: *08/17/03* Date Completed: *08/25/03* Type of Rig: *Rotary* 3

1. WELL DATA: New *X* Worked ___ Deepened ___

Total Depth: *620*

Depth of Bedrock: *16*

HOLE SIZE (Also include reamed zones)
12 inches from *0* to *100* ft.
8 inches from *100* to *620* ft.
___ inches from ___ to ___ ft.

CASING SIZE (I.D.) and material:
8 inches from *+1* to *126* ft.
Material: *Steel*
Wt. Per foot: *28.6* or wall thickness *.322* in.
___ inches from ___ to ___ ft.
Material: _____
Wt. Per foot: ___ or wall thickness ___ in.
___ inches from ___ to ___ ft.
Material: _____
Wt. Per foot: ___ or wall thickness ___ in.

SCREEN SIZE and mesh for each zone (where applicable)
___ inches from ___ to ___ ft.
Mesh Size ___ Type ___
___ inches from ___ to ___ ft.
Mesh Size ___ Type ___
___ inches from ___ to ___ ft.
Mesh Size ___ Type ___

GRAVEL PACK
From ___ To ___ ft.
From ___ To ___ ft.

GROUT
From *0* To *100* ft. Type Pressure *CEMENT*
From ___ To ___ ft. Type Pressure ___

2. WATER DATA: Water Temperature *56* degrees.
Static water level (unpumped level measured) *18* ft.
Stabilized meas. pumping water level ___ ft.
Stabilized yield *195* gpm after *3* hours.
Natural Flow: Yes ___ No *X* Flow rate ___ gpm.
Comment on Quality: *Clear*

3. WATER ZONES: From *480* ft. *195* gpm.
From ___ ft. ___ gpm. From ___ ft. ___ gpm.
From ___ ft. ___ gpm. From ___ ft. ___ gpm.

4. USE DATA:
Type of Use: Drinking *X* Livestock Watering ___
Irrigation ___ Food Processing ___ Household ___
Manufacturing ___ Fire Safety ___ Cleaning ___
Recreation ___ Aesthetic ___ Cooling or Heating ___
Injection ___ Other ___
Type of Facility: Domestic ___ Public Water Supply *X*
Public Institution ___ Farm ___ Industry ___
Commercial ___ Other ___

5. PUMP DATA: Type ___ Rated HP ___
Intake depth ___ Capacity ___ at ___ head

6. WELLHEAD: Type well seal ___
Pressure Tank ___ gal Loc ___
Sample Tap ___ Measurement Port ___
Well Vent ___ Pressure Relief Valve ___
Gate Valve ___ Check Valve (when required) ___
Electrical Disconnect Switch on Power Supply ___

7. DISINFECTION: Well Disinfected: Yes ___ No ___
Date ___ Disinfectant Used ___

8. ABANDONMENT (where applicable): Yes ___ No ___
Casing Pulled Yes ___ No ___ Not Applicable ___
Plugging Grout From ___ To ___ Material ___
From ___ To ___ Material ___

OWNER *Salamander Well P*

9. State law requires submitting to the Virginia State Water control Board information about groundwater and wells for every well made in the State intended for water; or any other non-exempt well. This information must be submitted whether the well is completed, on standby, or abandoned. Information required includes: an accurately and completely prepared completion report, full data from any aquifer pumping tests, drill cuttings taken at ten foot intervals (unless exemption is secured), the results of any chemical analysis, and copies of any geophysical logs. Quarterly-pumpage and use reports are required from owners of public supply and industrial wells. The Virginia State Health Department requires a water well completion report for public supply wells.

10. **DRILLERS LOG** (use additional sheets if necessary)

DEPTH (feet) From	DEPTH (feet) To	TYPE OF ROCK OR SOIL (color, mineral, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, etc.)
[illegible]	16	Overburden	[illegible]
16	620	Bluestone, Greystone, Quartz	
480	481	Waterbearing	195 GPM
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

DIAGRAM OF CONSTRUCTION (with dimensions)

16 Overburden

480 Waterbearing

620 Bluestone, Greystone, Quartz

11. Well lot dedicated?_____; Size _____ ft. x _____ ft. Well house?_____; Distance to nearest pollutant source _____ ft.
Type _____. Distance to nearest property line _____ ft., Building _____ ft.

12. **WATER SERVICE PIPE:** Checked under _____ psi for _____ minutes. Pipe size _____ in. Material_____
Installer _____
Date _____

13. I certify that the information contained herein is true and correct and that this well and/or system has been installed and constructed in accordance with the requirements for well construction as specified in compliance with appropriate county or independent city ordinances and the laws and rules of the Commonwealth of Virginia.

SIGNATURE Jerry S. Pelkey
(Well Driller or Authorized Person)

(Seal) Date August 27, 2003

License No. Virginia Class A contractors license #2705 027957A

County License #W0016
save data only

Well ID: P
Permit #: T30162670008
Project: Salamander
Project #: 4973.001
Client: JM Zell Partners, Ltd.
Location: Middleburg, Loudoun Co.
Tax Map ID: 87/18-1

Driller: [illegible]y Drilling Corp.
Drill Method: Air-Rotary
Started: 8/17/03
Completed: 8/25/03
Air-Lift Yield (gpm): 195
Well Depth (ft): 620
Hole Diameter (ft): 8

Casing Depth (ft): 126
Wall Thickness (in): 0.322
Riser Height (ft): 1.7
GS Elev (ft): 470
WL Elev (ft): 418
WL Date: 4/12/2004
Comment:

GeoTrans, Inc.
46010 Manekin Plaza, Suite 100
Sterling, VA 20166
703-444-7000

Easting (ft): 2214384
Northing (ft): 475683
Geologist: WG / RMC

Depth (feet)	Symbol	Yield Info.	Description	WELL DETAIL
0			Ground Surface	
			Overburden	
			Metagranite Moderate reddish orange (10R6/6) to moderate reddish brown (10R4/6) wet colors; moderate orange pink (10R7/4) to moderate reddish orange (10R6/6) dry colors; metagranite	
100			***Metagranite*** Light gray (N7) to greenish black (5GY2/1), wet colors; light gray (N7) to dark gray (N3), dry colors; medium grained metagranite	
140			***Metadiabase*** Black (N1) to dark gray (N3) to grayish green (5GY3/2), wet colors; dark gray (N3) to dusky yellow green (5GY5/2), dry colors; very fine grained metadiabase	
280			***Metagranite*** Light gray (N7) to grayish black (N2), wet colors; very light gray (N8) to dark gray (N3), dry colors; metagranite	
400			***Metadiabase*** Light gray (N7) to black (N1), wet colors; light gray (N7) to dark gray (N3), dry colors; very fine grained metadiabase	
480		195 GPM @ 480'		
520			***Metagranite*** Light gray (N6) to medium light gray (N7), wet colors; very light gray (N8) to [illegible] gray (N7), dry colors; medium grained metagranite	
620			End of Borehole	
700				

COMMONWEALTH OF VIRGINIA
ROBERT M. COHEN
No. 659
CERTIFIED PROFESSIONAL GEOLOGIST

NATIONAL TESTING LABORATORIES, LTD.
556 South Mansfield, Ypsilanti, MI 48197-5176
(440) 449-2525 • Fax (440) 449-8585

ANALYTICAL REPORT
PAGE 1 OF 6 SAMPLE CODE: 618563

Date: 04/28/04 Report #: 618563 Laboratory ID #: 00417

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 16:45
SOURCE: SALAMANDER WELL P
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:00
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our lower reporting limit (LRL).

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
Inorganic chemicals - metals:						
1002	Aluminum	200.7	0.2**	0.05	ND	04/20/04
1074	Antimony	200.8	0.006	0.001	ND	04/20/04
1005	Arsenic	200.8	0.010	0.002	0.004	04/20/04
1010	Barium	200.8	2	0.10	ND	04/20/04
1075	Beryllium	200.8	0.004	0.001	ND	04/20/04
1079	Boron	200.7	---	0.10	ND	04/20/04
1015	Cadmium	200.8	0.005	0.001	ND	04/20/04
1016	Calcium	200.7	---	2	52	04/20/04
1020	Chromium	200.8	0.1	0.001	ND	04/20/04
1022	Copper	200.8	1.3**	0.002	ND	04/20/04
1028	Iron	200.7	0.3**	0.020	ND	04/20/04
1030	Lead	200.8	0.015	0.001	ND	04/20/04
1031	Magnesium	200.7	---	0.10	2.5	04/20/04
1032	Manganese	200.8	0.05**	0.004	0.020	04/20/04
1035	Mercury	200.8	0.002	0.0002	ND	04/20/04
1036	Nickel	200.8	---	0.002	ND	04/20/04
1042	Potassium	200.7	---	1.0	4.4	04/20/04
1045	Selenium	200.8	0.05	0.002	ND	04/20/04
1050	Silver	200.8	0.1**	0.002	ND	04/20/04
1052	Sodium	200.7	---	1	9	04/20/04
1085	Thallium	200.8	0.002	0.001	ND	04/20/04
1095	Zinc	200.8	5**	0.004	0.023	04/20/04

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ANALYTICAL REPORT
 SAMPLE CODE: 618563

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
Inorganic chemicals - other, and physical factors:						
1927	Alkalinity (as CaCO3)	2320B	---	20	82	04/21/04
1004	Bromide	300.1	---	2.0	ND	04/15/04
1017	Chloride	300.0	250**	1.0	2.5	04/15/04
1910	Corrosivity	Langlier Ind	---	---	0.09	04/22/04
1025	Fluoride	300.0	4	0.1	0.3	04/15/04
1055	Sulfate	300.0	250**	5.0	74	04/15/04
1915	Hardness (as CaCO3)	2340C	---	10	140	04/21/04
1930	Total Dissolved Solids	2540C	500**	5	230	04/16/04

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date	Anal Time
Inorganic chemicals - other, and physical factors:							
1040	Nitrate as N	300.0	10	0.05	0.09	04/15/04	14:03
1041	Nitrite as N	300.0	1	0.05	ND	04/15/04	14:03
1044	Ortho Phosphate	300.0	---	2.0	ND	04/15/04	14:03
1925	pH (Standard Units)	150.1	6.5-8.5**	---	7.9	04/15/04	13:00
0100	Turbidity (NTU)	2130B	1.0	0.1	ND	04/15/04	13:10
1905	Color	2120B	15**	3.0	ND	04/15/04	13:20
2905	Foaming Agents	5540C	0.5**	0.1	ND	04/16/04	11:10
1920	Odor Threshold	2150B	3 ton**	---	ND	04/15/04	12:45

** Denotes Secondary Maximum Contaminant Level (SMCL)

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ANALYTICAL REPORT
 SAMPLE CODE: 618563

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
Organic chemicals - trihalomethanes:						
2942	Bromoform	524.2	---	0.0005	ND	04/16/04
2943	Bromodichloromethane	524.2	---	0.0005	ND	04/16/04
2941	Chloroform	524.2	---	0.0005	ND	04/16/04
2944	Dibromochloromethane	524.2	---	0.0005	ND	04/16/04
2950	Total THMs	524.2	0.080	0.0005	ND	04/16/04
Organic Chemicals-Volatiles:						
2990	Benzene	524.2	0.005	0.0005	ND	04/16/04
2993	Bromobenzene	524.2	---	0.0005	ND	04/16/04
2430	Bromochloromethane	524.2	---	0.0005	ND	04/16/04
2214	Bromomethane	524.2	---	0.0005	ND	04/16/04
2422	n-Butylbenzene	524.2	---	0.0005	ND	04/16/04
2428	sec-Butylbenzene	524.2	---	0.0005	ND	04/16/04
2426	tert-Butylbenzene	524.2	---	0.0005	ND	04/16/04
2982	Carbon Tetrachloride	524.2	0.005	0.0005	ND	04/16/04
2989	Chlorobenzene	524.2	0.1	0.0005	ND	04/16/04
2216	Chloroethane	524.2	---	0.0005	ND	04/16/04
2210	Chloromethane	524.2	---	0.0005	ND	04/16/04
2965	2-Chlorotoluene	524.2	---	0.0005	ND	04/16/04
2966	4-Chlorotoluene	524.2	---	0.0005	ND	04/16/04
2408	Dibromomethane	524.2	---	0.0005	ND	04/16/04
2968	1,2-Dichlorobenzene	524.2	0.6	0.0005	ND	04/16/04
2967	1,3-Dichlorobenzene	524.2	0.6	0.0005	ND	04/16/04
2969	1,4-Dichlorobenzene	524.2	0.075	0.0005	ND	04/16/04
2212	Dichlorodifluoromethane	524.2	---	0.0005	ND	04/16/04
2978	1,1-Dichloroethane	524.2	---	0.0005	ND	04/16/04
2980	1,2-Dichloroethane	524.2	0.005	0.0005	ND	04/16/04
2977	1,1-Dichloroethene	524.2	0.007	0.0005	ND	04/16/04
2380	cis-1,2-Dichloroethene	524.2	0.07	0.0005	ND	04/16/04
2979	trans-1,2-Dichloroethene	524.2	0.1	0.0005	ND	04/16/04
2983	1,2-Dichloropropane	524.2	0.005	0.0005	ND	04/16/04
2412	1,3-Dichloropropane	524.2	---	0.0005	ND	04/16/04
2416	2,2-Dichloropropane	524.2	---	0.0005	ND	04/16/04
2410	1,1-Dichloropropene	524.2	---	0.0005	ND	04/16/04
2228	cis-1,3-Dichloropropene	524.2	---	0.0005	ND	04/16/04
2224	trans-1,3-Dichloropropene	524.2	---	0.0005	ND	04/16/04
2992	Ethylbenzene	524.2	0.7	0.0005	ND	04/16/04

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ANALYTICAL REPORT

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
Organic chemicals - volatiles						
2246	Hexachlorobutadiene	524.2	---	0.0005	ND	04/16/04
2994	Isopropylbenzene	524.2	---	0.0005	ND	04/16/04
2030	4-Isopropyltoluene	524.2	---	0.0005	ND	04/16/04
2964	Dichloromethane	524.2	0.005	0.0005	ND	04/16/04
2248	Naphthalene	524.2	---	0.0005	ND	04/16/04
2998	Propylbenzene	524.2	---	0.0005	ND	04/16/04
2996	Styrene	524.2	0.1	0.0005	ND	04/16/04
2986	1,1,1,2-Tetrachloroethane	524.2	---	0.0005	ND	04/16/04
2988	1,1,2,2-Tetrachloroethane	524.2	---	0.0005	ND	04/16/04
2987	Tetrachloroethene	524.2	0.005	0.0005	ND	04/16/04
2991	Toluene	524.2	1	0.0005	0.0007	04/16/04
2420	1,2,3-Trichlorobenzene	524.2	---	0.0005	ND	04/16/04
2378	1,2,4-Trichlorobenzene	524.2	0.07	0.0005	ND	04/16/04
2981	1,1,1-Trichloroethane	524.2	0.2	0.0005	ND	04/16/04
2985	1,1,2-Trichloroethane	524.2	0.005	0.0005	ND	04/16/04
2984	Trichloroethene (TCE)	524.2	0.005	0.0005	ND	04/16/04
[illegible]218	Trichlorofluoromethane	524.2	---	0.0005	ND	04/16/04
[illegible]904	Trichlorotrifluoroethane	524.2	---	0.0005	ND	04/16/04
2414	1,2,3-Trichloropropane	524.2	---	0.0005	ND	04/16/04
2418	1,2,4-Trimethylbenzene	524.2	---	0.0005	ND	04/16/04
2424	1,3,5-Trimethylbenzene	524.2	---	0.0005	ND	04/16/04
2976	Vinyl Chloride	524.2	0.002	0.0005	ND	04/16/04
2251	Methyl-Tert-Butyl-Ether	524.2	---	0.0005	ND	04/16/04
2247	Methyl Ethyl Ketone	524.2	---	0.005	ND	04/16/04
2997	o-Xylene	524.2	---	0.0005	ND	04/16/04
2995	m-Xylene(1)	524.2	---	0.0005	ND	04/16/04
2962	p-Xylene(1)	524.2	---	0.0005	ND	04/16/04

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ANALYTICAL REPORT

Organic chemicals-herbicides, pesticides, & pcb's

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
2005	Endrin	505	0.002	0.00001	ND	04/15/04
2010	Lindane	505	0.0002	0.00002	ND	04/15/04
2015	Methoxychlor	505	0.04	0.0001	ND	04/15/04
2383	PCBs	505	0.0005	0.0001	ND	04/15/04
2020	Toxaphene	505	0.003	0.001	ND	04/15/04
2110	Silvex(2,4,5-TP)	515.2	0.05	0.0002	ND	04/20/04
2105	2,4-D	515.2	0.07	0.0001	ND	04/20/04
2051	Alachlor	508.1	0.002	0.0002	ND	04/21/04
2356	Aldrin	505	---	0.00007	ND	04/15/04
2050	Atrazine	508.1	0.003	0.0001	ND	04/21/04
2959	Chlordane	505	0.002	0.0001	ND	04/15/04
2031	Dalapon	515.3	0.2	0.001	ND	04/22/04
2440	Dicamba	515.2	---	0.001	ND	04/20/04
2933	Dichloran	505	---	0.001	ND	04/15/04
2364	Dieldrin	505	---	0.00002	ND	04/15/04
2041	Dinoseb	515.2	0.007	0.0002	ND	04/20/04
2065	Heptachlor	505	0.0004	0.00001	ND	04/15/04
2067	Heptachlor Epoxide	505	0.0002	0.00001	ND	04/15/04
2274	Hexachlorobenzene	505	0.001	0.0001	ND	04/15/04
2042	Hexachlorocyclopentadiene	505	0.05	0.0001	ND	04/15/04
2934	Pentachloronitrobenzene	505	---	0.00010	ND	04/15/04
2326	Pentachlorophenol	515.2	0.001	0.00004	ND	04/20/04
2040	Picloram	515.2	0.5	0.0001	ND	04/20/04
2037	Simazine	508.1	0.004	0.00007	ND	04/21/04
2055	Trifluralin	505	---	0.001	ND	04/15/04

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ANALYTICAL REPORT

 SAMPLE CODE: 618563

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
Volatile Organic Chemicals - method 504.1						
2931	1,2-Dibromo3chloropropane	504.1	0.0002	0.00001	ND	04/19/04
2946	1,2-Dibromoethane	504.1	0.00005	0.00001	ND	04/19/04

504.1- Date Extracted: 04/19/04
505 - Date Extracted: 04/15/04
508.1- Date Extracted: 04/21/04
515.2- Date Extracted: 04/19/04
515.3- Date Extracted: 04/20/04

These test results may be used for compliance purposes as required.

(1) DUE TO THE LIMITATIONS OF EPA METHOD 524.2, m AND p ISOMERS OF XYLENE ARE REPORTED AS AN AGGREGATE.

James C. Bahen

James C. Bahen, Lab Director

NATIONAL TESTING LABORATORIES, LTD.
856 South Mansfield, Ypsilanti, MI 48197-9436
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ANALYTICAL REPORT

PAGE 1 OF 1 SAMPLE CODE: 618564

Date: 04/23/04 Report #: 618564 Laboratory ID #: 00417

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 16:45
SOURCE: SALAMANDER WELL P
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:00
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our lower reporting limit (LRL).

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
1928	Bicarbonate (as CaCO3)	2320B	---	20	82	04/21/04
1929	Carbonate (as CaCO3)	2320B	---	20	ND	04/21/04
1021	Hydroxide (as CaCO3)	2320B	---	20	ND	04/21/04
1064	Spec Cond (umhos/cm at 25C)	2510B	---	1	320	04/16/04

EPA approved methods were used in all of the analyses.

James C. Bahen

James C. Bahen, Lab Director

BROWARD TESTING LABORATORY LTD.
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ANALYTICAL REPORT

ate: 04/26/04 Report #: 78220 Laboratory ID #: 00022

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 16:45
SOURCE: SALAMANDER WELL P
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:30
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our lower reporting limit (LRL).
"NA" Not Analyzed

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
)28	Iron	200.7	0.3	0.01	ND	04/20/04
1052	Sodium	200.7	---	0.01	10.2	04/20/04
1067	Alkalinity	2320B	---	5	80.0	04/15/04
1017	Chloride	300.0	250	0.25	2.6	04/16/04

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date	Anal Time
Inorganic Chemicals-other, and physical factors:							
1044	Ortho Phosphate	300.0	---	0.20	ND	04/16/04	12:25
1925	pH (Standard Units)	150.1	6.5-8.5	---	8.01	04/15/04	12:35

**Denotes Secondary Maximum Contaminant Level (SMCL)

Gary J. Meyer

Gary J. Meyer, Lab Director

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ANALYTICAL REPORT

 SAMPLE CODE: 78224

Date: 04/28/04 Report #: 78224 Laboratory ID #: 00022

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 16:45
SOURCE: SALAMANDER WELL P
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:30
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our lower reporting limit (LRL).

Fed Id #	Analysis Performed	Method	MCL (mg/l)	LRL	Level Detected	Anal Date
	Carbamates					
2021	Carbaryl	531.1	---	0.00069	ND	04/21/04
2022	Methomyl	531.1	---	0.00047	ND	04/21/04
2043	Aldicarb sulfoxide	531.1	0.007	0.00045	ND	04/21/04
2044	Aldicarb sulfone	531.1	0.007	0.00065	ND	04/21/04
2047	Aldicarb	531.1	0.007	0.0005	ND	04/21/04
2066	3-Hydroxycarbofuran	531.1	---	0.00077	ND	04/21/04
2036	Oxamyl	531.1	0.2	0.00063	ND	04/21/04
2046	Carbofuran	531.1	0.04	0.00067	ND	04/21/04

These test results may be used for compliance purposes as required.

Gary J. Meyer

Gary Meyer, Lab Director

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ANALYTICAL REPORT
PAGE 1 OF 1 SAMPLE CODE: 78223

Date: 04/21/04 Report #: 78223 Laboratory ID #: 00022

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 16:45
SOURCE: SALAMANDER WELL P
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:30
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our lower reporting limit (LRL).

Fed Id #	Analysis Performed	Method	MCL (ug/l)	LRL	Level Detected	Anal Date
2356	Aldrin	525.2	---	0.02	ND	04/16/04
2306	Benzo(A)Pyrene	525.2	0.2	0.02	ND	04/16/04
2077	Butachlor	525.2	---	0.08	ND	04/16/04
2070	Dieldrin	525.2	---	0.03	ND	04/16/04
2035	Di(2-Ethylhexyl)Adipate	525.2	400	0.06	ND	04/16/04
2039	Di2-ethylhexyl)phthalate	525.2	6	0.08	ND	04/16/04
2274	Hexachlorobenzene	525.2	1	0.07	ND	04/16/04
2045	Metolachlor	525.2	---	0.09	ND	04/16/04
2595	Metribuzin	525.2	---	0.12	ND	04/16/04
2077	Propachlor	525.2	---	0.06	ND	04/16/04
2037	Simazine	525.2	4	0.11	ND	04/16/04
525.2 DATE EXTRACTED 04/15/04						

These test results may be used for compliance purposes as required.

Gary J. Meyer

Gary Meyer, Lab Director

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ANALYTICAL REPORT
PAGE 1 OF 1 SAMPLE CODE: 78222

Date: 04/21/04 Report #: 78222 Laboratory ID #: 00022

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 16:45
SOURCE: SALAMANDER WELL P
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:30
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our lower reporting limit (LRL).

Fed Id #	Analysis Performed	Method	MCL (ug/l)	LRL	Level Detected	Anal Date
2032	Diquat	549.2	20	0.40	ND	04/19/04
549.2	DATE EXTRACTED	04/16/04				

These test results may be used for compliance purposes as required.

Gary J. Meyer

Gary Meyer, Lab Director

BROWARD TESTING LABORATORY LTD.
4416 N.E. 11TH AVE., FORT LAUDERDALE, FLORIDA 33334
(440) 449-2525 FAX (440) 449-8585

ANALYTICAL REPORT

 SAMPLE CODE: 78221

Date: 04/28/04 Report #: 78221 Laboratory ID #: 00022

Client: GEOTRANS INC
46010 MANEKIN PLAZA
SUITE 100
STERLING, VA 20166-

Date Collected: 04/14/04
Time Collected: 16:45
SOURCE: SALAMANDER WELL P
MIDDLEBURG, VA

Date received at lab: 04/15/04 Time received at lab: 09:30
Collected by : R.COHEN
The results herein conform to NELAC standards, where applicable, unless otherwise narrated in the body of the report. Test results were calculated on a wet weight basis. The uncertainty of the test results are available upon request.

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
"ND" This contaminant was not detected at or above our stated detection limit.

Fed Id #	Analysis Performed	MCL (MG/L)	Sample Number	Analysis Result	Method	MDL	Anal Date
1024	Cyanide	0.2	78221	ND	4500CNF	0.015	04/21/04

These test results may be used for compliance purposes as required.

Gary J. Meyer

Gary Meyer, Lab Director

FREE-COL LABORATORIES

11618 COTTON ROAD
MEADVILLE, PENNSYLVANIA 16335
PHONE: (814 724-6242)
FAX: (814) 333-1466
EMAIL: service@free-col.com

Certificate Of Analysis

04/26/2004

elivery Group ID: 2004:0003621

4 Sample(s) are included in this Delivery Group.

ompany Name: National Testing Lab.

6555 Wilson Mills Road
Cleveland, OH 44143

Date Received 4/15/04
Time Received: 09:45
Delivered By: Fed Ex

roject Name: Geotrans Inc.

mple ID: 2004:0003621-4 **Client's Sample ID:** Salamander Well P

ıte Sampled: 4/14/04 **Time Sampled:** 17:00 **Date Received:** 4/15/04

ıalyte	Result	Units	Date Analyzed	Time Analyzed	Analyst	Method Source
ilicon (Si)	12.0	mg/L	04/22/04	15:00	Hindle	SM 3120 B
lagnesium Hardness (as CaCO3)	11.6	mg/L	04/19/04	09:30	Hindle	SM 3120 B
alcium Hardness (as CaCO3)	142	mg/L	04/19/04	09:30	Hindle	SM 3120 B
ilica by Calc.	25.7	mg/L	04/22/04	15:00	Hindle	
Prep: Phosphorus, Total			04/21/04	14:00	Little	SM-4500-P B.5
itrogen, Ammonia	0.08	mg/L	04/21/04	13:00	McGowan	EPA 350.3
hosphorus, Total	0.01	mg/L	04/22/04	08:00	Little	SM 4500 P E
itrogen, Total Kjeldahl	0.7	mg/L	04/21/04	13:00	McGowan	EPA 351.3
olids, Total Dissolved	226	mg/L	04/18/04	07:00	Davis	SM 2540 C

The sample Well P container for Sulfide was received with the sample container lid off the container. The client was notified that the lab was unable to do the analysis.

Company Name: Geotrans Inc., Sterling, VA
Source Name: Salamander Well P, Middleburg, VA
Sample Collected By: Robert M. Cohen

John R Paraska
QUALITY ASSURANCE SUPERVISOR

GENERAL ENGINEERING LABORATORIES, LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : GEO Trans, Inc.
Address : 46050 Manikin Plaza
Suite 100
Sterling, Virginia 20166
Contact: Bob Cohen
Project: **Ground Water Analysis**

Report Date: February 12, 2004

Client Sample ID: Well P
Sample ID: 106502003
Matrix: Ground Water
Collect Date: 04-FEB-04 14:30
Receive Date: 05-FEB-04
Collector: Client

Project: GEOT00102
Client ID: GEOT001

Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Rad Gas Flow Proportional Counting											
GFPC, Gross A/B, liquid											
Alpha		21.5	+/-3.42	2.06	5.00	pCi/L		ATH1 02/06/04	2044	308150	1
Beta		16.7	+/-2.88	4.29	5.00	pCi/L					
GFPC, Ra228, Liquid											
Radium-228		7.78	+/-1.09	1.35	3.00	pCi/L		BJB1 02/11/04	1308	307851	2
Rad Radium-226											
Lucas Cell, Ra226, liquid											
dium-226		2.72	+/-0.714	0.583	1.00	pCi/L		JS1 02/12/04	0920	308127	3

...e following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 900.0	
2	EPA 904.0 Modified	
3	EPA 903.1 Modified	

Notes:
The Qualifiers in this report are defined as follows :

< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : GEO Trans, Inc.
Address : 46050 Manikin Plaza
Suite 100
Sterling, Virginia 20166
Contact: Bob Cohen
Project: **Ground Water Analysis**

Report Date: February 12, 2004

Client Sample ID: Well P
Sample ID: 106502003

Proiect: GEOT00102
Client ID: GEOT001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Amy Jamison.

Reviewed by

Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

DATE	June 18, 2004
HRI PROJECT	009-205
HRI SERIES NO.	D282/04
DATE REC'D	04/16/2004
CUST. P.O.#	14066

National Testing Laboratories, Inc.
Susan Henderson
6555 Wilson Mills Road, #102
Cleveland, OH 44143

REPORT OF ANALYSIS

SAMPLE NO. D282/04-1

SAMPLE IDENTIFICATION: 1106282
Geotrans Inc.
Sterling, VA
Source Water - Salamander Well P, Middleburg, VA
sampled on 04/14/2004 @ 1645 by Rober M. Cohen

PARAMETER	RESULT	DETECTION LIMIT	METHOD	ANALYSIS DATE	ANALYST
Gross Alpha (+-Precision*), pCi/l (T)	5.9(+-3.0)	1.7	EPA 900.0	05/25/2004 @ 0819	JMC
Gross Beta (+-Precision*), pCi/l (T)	17(+-3)	2.0	EPA 900.0	05/25/2004 @ 0819	JMC
Radium-226 (+-Precision*), pCi/l (T)	2.5(+-0.9)	0.2	SM 7500-Ra B	05/25/2004 @ 1352	JMC
Radium-228 (+-Precision*), pCi/l (T)	8.4(+-1.0)	0.5	EPA Ra-05	05/12/2004 @ 0845	JS

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.
Certification ID's: CO/EPA - CO00008; CT - PH-0152; KY - 90076; KS - E-10265; NH - 232803-A;
NY ELAP - 11417; PA DEP 68551; WI - 998376610

By: _____
Robert Rostad
Laboratory Manager

CODES:
(T) = Total (D) = Dissolved
(S) = Suspended (R) = Total Recoverable
(PD) = Potentially Dissolved
< = Less Than

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CERTIFICATE OF ANALYSIS

LAB ID: # 55718
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-1
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1325
SAMPLE COLLECTED BY: Whitney Goodrich
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Non Detectable (tested at Lab)

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____
Robyn Joiner
Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

LAB ID: # 55719
PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-2
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1425
SAMPLE COLLECTED BY: Whitney Goodrich
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____
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Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55720
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-3
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1525
SAMPLE COLLECTED BY: Whitney Goodrich
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55721
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-4
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1625
SAMPLE COLLECTED BY: Whitney Goodrich
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

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Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55722
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-5
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1725
SAMPLE COLLECTED BY: Whitney Goodrich
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

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Robyn Joiner
Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55723
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-6
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1825
SAMPLE COLLECTED BY: Whitney Goodrich
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

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Robyn Joiner
Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55724
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-7
DATE AND TIME SAMPLE COLLECTED: 4-14-04/1925
SAMPLE COLLECTED BY: Whitney Goodrich
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

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CERTIFICATE OF ANALYSIS

LAB ID: # 55725
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-8
DATE AND TIME SAMPLE COLLECTED: 4-14-04/2025
SAMPLE COLLECTED BY: Whitney Goodrich & Mike Brewin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

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Robyn Joiner
Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55726
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-9
DATE AND TIME SAMPLE COLLECTED: 4-14-04/2125
SAMPLE COLLECTED BY: Whitney Goodrich & Mike Brewin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

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Robyn Joiner
Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55727
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-10
DATE AND TIME SAMPLE COLLECTED: 4-14-04/2225
SAMPLE COLLECTED BY: Whitney Goodrich & Mike Brewin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

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Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55728
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-11
DATE AND TIME SAMPLE COLLECTED: 4-14-04/2325
SAMPLE COLLECTED BY: Whitney Goodrich & Mike Brewin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
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April 19, 2004

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CERTIFICATE OF ANALYSIS

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

LAB ID: # 55729
PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-12
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0025
SAMPLE COLLECTED BY: Whitney Goodrich & Mike Brewin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

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April 19, 2004

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CERTIFICATE OF ANALYSIS

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

LAB ID: # 55730
PROPERTY: Salamander

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-13
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0125
SAMPLE COLLECTED BY: Whitney Goodrich & Mike Brewin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55731
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-14
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0225
SAMPLE COLLECTED BY: Whitney Goodrich & Mike Brewin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____
Robyn Joiner
Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55732
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-15
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0325
SAMPLE COLLECTED BY: Whitney Goodrich & Mike Brewin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55733
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-16
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0425
SAMPLE COLLECTED BY: Whitney Goodrich & Mike Brewin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 55734
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-17
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0525
SAMPLE COLLECTED BY: Whitney Goodrich & Mike Brewin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 55735
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-18
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0625
SAMPLE COLLECTED BY: Whitney Goodrich & Mike Brewin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____
Robyn Joiner
Biologist
April 19, 2004

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CERTIFICATE OF ANALYSIS

LAB ID: # 55736
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-19
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0725
SAMPLE COLLECTED BY: Whitney Goodrich & Mike Brewin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: Robyn Joiner
Robyn Joiner
Biologist
April 19, 2004

Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 55737
PROPERTY: Salamander

NAME: GeoTrans, Incorporated
ADDRESS: 46010 Manekin Plaza, Suite 100
Sterling, VA 20166

SAMPLE SOURCE: Ground Water
SAMPLE LOCATION: P-20
DATE AND TIME SAMPLE COLLECTED: 4-15-04/0825
SAMPLE COLLECTED BY: Whitney Goodrich & Mike Brewin
SAMPLE RECEIVED FROM: JML (Daryl Burton)
DATE AND TIME SAMPLE RECEIVED IN LAB: 4-15-04/1057
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____
Robyn Joiner
Biologist
April 19, 2004

Appendix E: Potential Sources of Contamination Inventory

Table 4. Summary of Potential Sources of Contamination Occurring in or Near the Source Water Protection Area for Wells 002, 003, 004, L, and P.

Facility Type	SWAA 1 Count	SWAA 2 Count	Total
Closed Storage Tank Release	18	11	29
Industrial Site	2	1	3
Open Storage Tank Release	1	2	3
Other PSC	4	13	17
Unknown Pipeline		1	1
Point Discharge		1	1
RCRA	3	1	4
Sewage Disposal System	3	8	11
Sewage Treatment System		1	1
Underground Injection Well		2	2
Wells	8	20	28
Sum	39	61	101

Note: Due to overlapping information between VDH, the field survey data and Loudoun County data the totals above do not equal the totals from Tables 5-7 below.

Table 5. Potential Sources of Contamination Occurring in or Near the Source Water Protection Area for Wells 002, 003, 004, L, and P.

VIRGINIA DEPARTMENT OF HEALTH - OFFICE OF DRINKING WATER

Potential Sources of Contamination Inventory

County/City: LOUDOUN/FAUQUIER Waterworks: MIDDLEBURG, TOWN OF PWSID: 6107450

Source IDs: WL002, WL003, WL004, Well L, Well P Facility: WELLS #002, #003, #004, L, P

Evaluated by: Date: Reviewed By: Date:

MAP ID	Contaminant Type	Facility Type	Property Owner/Business Name	Mailing Address/Location
1	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Middleburg Plaza	7 W Washington St Middleburg VA 20176
2	Inorganics, SOCs, VOCs	Closed Storage Tank Release	The Hill School - Edwards Residence	1755 Halfway Rd Middleburg VA 20117
3	Inorganics, SOCs, VOCs	Closed Storage Tank Release	McSwain Residence - The Hill School	23679 Landmark School Rd Middleburg VA 22117
4	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Exxon Station 24202	208 E Washington St Middleburg VA 20118
5	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Middleburg BP former	207 W Washington St Middleburg VA 20118
6	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Piedmont Petroleum	5 E Federal St Middleburg VA 22117
7	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Piedmont Petroleum	5 E Federal St Middleburg VA 22117

VIRGINIA DEPARTMENT OF HEALTH - OFFICE OF DRINKING WATER

Potential Sources of Contamination Inventory

County/City: LOUDOUN/FAUQUIER Waterworks: MIDDLEBURG, TOWN OF PWSID: 6107450

Source IDs: WL002, WL003, WL004, Well L, Well P Facility: WELLS #002, #003, #004, L, P

Evaluated by: Date: Reviewed By: Date:

MAP ID	Contaminant Type	Facility Type	Property Owner/Business Name	Mailing Address/Location
8	Inorganics, SOCs, VOCs	Closed Storage Tank Release	USPS - Middleburg Main Post Office	113 W Washington St Middleburg VA 22117
9	Inorganics, SOCs, VOCs	Closed Storage Tank Release	George Cindi Residence	804 Blue Ridge Ave Middleburg VA 20117
10	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Courtyard at Middleburg LLC Property	10 N Pendleton St Middleburg VA 20117
11	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Heritage Building	105 W Washington St Middleburg VA 20118
12	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Piedmont Enterprises	5 E Federal St Middleburg VA 22117
13	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Heritage Building	105 W Washington St Middleburg VA 20118
14	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Middleburg Volunteer Fire Department	910 W Washington St Middleburg VA 20119
15	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Shaggy Ram	3 E Washington St Middleburg VA 20117
16*	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Middleburg Sewer Treatment Plant	500 E Washington St Middleburg VA 20118
17	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Piedmont Enterprises Incorporated	5 E Federal St Middleburg VA 22117
18	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Southern States	201 W Washington St Middleburg VA 20117
19	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Windy Hill Pump Station	400 Windy Hill Rd Middleburg VA 20118
20	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Washington Francis Residence	7 Windy Hill Rd Middleburg VA 20118
21	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Luck House Limited Liability Corporation Property	205 E Washington St Middleburg VA 20117
22	Inorganics, SOCs, VOCs	Open Storage Tank Release	Baltimore Stanley and Isabelle Residence	23381 Sam Fred Rd Middleburg VA 20117
23	Inorganics, SOCs, VOCs	Open Storage Tank Release	Exxon Station 24202	208 E Washington St Middleburg VA 20118
24	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Evans Edna R Residence	403 Lincoln Rd Middleburg VA 20117
25	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Kesler Richard W Residence	23499 Melmore Pl Middleburg VA 20117
26	Inorganics, SOCs, VOCs	Open Storage Tank Release	Colandrea Richard Residence	604 W Washington St Middleburg VA 20118
27	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Town of Middleburg Property	14 S Madison St Middleburg VA 20118

VIRGINIA DEPARTMENT OF HEALTH - OFFICE OF DRINKING WATER

Potential Sources of Contamination Inventory

County/City: LOUDOUN/FAUQUIER Waterworks: MIDDLEBURG, TOWN OF PWSID: 6107450

Source IDs: WL002, WL003, WL004, Well L, Well P Facility: WELLS #002, #003, #004, L, P

Evaluated by: Date: Reviewed By: Date:

MAP ID	Contaminant Type	Facility Type	Property Owner/Business Name	Mailing Address/Location
28	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Bower House Limited Liability Corporation	204 Washington St Middleburg VA 20117
29*	Site Specific	RCRA	Exxon Station 24202	208 E Washington St Middleburg VA 20117
30*	Site Specific	RCRA	Middleburg Elementary	101 N Madison St Middleburg VA 20117
31	Site Specific	RCRA	Safeway Store #942	12 W Washington St Middleburg VA 20118
32	Site Specific	Point Discharge	Middleburg Wastewater Treatment Plant	500 E Washington St Middleburg VA 20118
33	Inorganics, Microbial, RADs, SOCs, VOCs	Underground Injection Well	Richard Colandrea	103 Walnut St Middleburg VA 20118
34	Inorganics, Microbial, RADs, SOCs, VOCs	Underground Injection Well	Hunter's Hill Subdivision	US Route 50 Middleburg VA 00000
35	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Virginia Tech Mare Center	5527 Sullivans Mill Rd Middleburg VA 22117
36*	Site Specific	RCRA	VPI & SU Middleburg Arec	5527 Sullivans Mill Rd Middleburg VA 22117
37	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Schall Gerald Residence	23 Dover Rd Middleburg VA 22117
38	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Blackwood Apartments	36001 John Mosby Hwy Middleburg VA 22117
39	Inorganics, SOCs, VOCs	Closed Storage Tank Release	Middleburg Video	36059 John Mosby Hwy Middleburg VA 20117
40	Inorganics, SOCs, VOCs	Other PSC	Virginia Tech Research Center	5527 Sullivans Mill Rd Middleburg VA 22117
41	Inorganics, Microbial, SOCs, VOCs	Industrial Site	Royston Funeral Home	106 E Washington St Middleburg VA 20117
42	Inorganics, SOCs, VOCs	Industrial Site	Exxon Station 24202	208 E Washington St Middleburg VA 20117
43	Inorganics, SOCs, VOCs	Other PSC	Residential Heating Oil Tank	2-98 Walnut St Middleburg VA 20117
44	Inorganics, SOCs, VOCs	Other PSC	Middleburg Fire and Rescue Station	910 W Washington St Middleburg VA 20117

VIRGINIA DEPARTMENT OF HEALTH - OFFICE OF DRINKING WATER

Potential Sources of Contamination Inventory

County/City: LOUDOUN/FAUQUIER Waterworks: MIDDLEBURG, TOWN OF PWSID: 6107450

Source IDs: WL002, WL003, WL004, Well L, Well P Facility: WELLS #002, #003, #004, L, P

Evaluated by: Date: Reviewed By: Date:

MAP ID	Contaminant Type	Facility Type	Property Owner/Business Name	Mailing Address/Location
45	Inorganics, SOCs, VOCs	Other PSC	Residential Heating Oil Tank	21-205 Windy Hill Rd Middleburg VA 20117
46	Inorganics, Microbial, SOCs	Other PSC	Hickory Tree Farm	6039 Hickory Tree Ln Middleburg VA 20117
47	Inorganics, SOCs, VOCs	Other PSC	Residential Heating Oil Tank	5527-5699 Sullivans Mill Rd Middleburg VA 20117
48	Inorganics, SOCs, VOCs	Other PSC	Middleburg Police Station Storage Yard	101-185 S Madison St Middleburg VA 20117
49	Dioxin, SOCs	Other PSC	Dominion Substation	23818 Parsons Rd Middleburg VA 20117
50	Inorganics, Microbial, SOCs	Other PSC	Wagenburg Farm	23558 Parsons Rd Middleburg VA 20117
51	Inorganics, SOCs, VOCs	Other PSC	Best Thai Kitchen Heating Oil Tank	4 E Federal St Middleburg VA 20117
52	Inorganics, SOCs, VOCs	Other PSC	Residential Heating Oil Tank	22876-22998 Polecat Hill Rd Middleburg VA 20117
53	Inorganics, Microbial, SOCs	Other PSC	Unknown Farm	26536-27798 Foxcroft Rd Middleburg VA 20117
54	Site Specific	Other PSC	Middleburg Community Center Pool	300 W Washington St Middleburg VA 20117
55*	Inorganics, Microbial, SOCs	Other PSC	Middleburg Baptist Church Cemetery	209 E Federal St Middleburg VA 20117
56	Inorganics, Microbial, SOCs	Other PSC	Salamander Resort & Spa Equestrian Center	500 N Pendleton St Middleburg VA 20117
57	Site Specific	Natural Gas Pipeline		

*Map ID 16 also represented in Table 7 (R-1)

*Map ID 29 also represented in Table 7 (R-3)

*Map ID 30 also represented in Table 7 (R-2)

*Map ID 36 also represented in Table 7 (R-4)

*Map ID 55 also represented in Table 6 (L-34)

Table 6. Wells and Pollutant Source Data from Loudoun County GIS Occurring within the Town of Middleburg boundaries.

MAP ID	Contaminant Type	Facility Type	ID	Facility Type
L-1	Site Specific	Well	WWCO-2003-0259	Community well
L-2	Site Specific	Well	WWCO-2003-0256	Community well
L-3	Site Specific	Well	WWCO-1955-0079	Community well
L-4	Site Specific	Well	WWCO-2003-0155	Community well
L-5	Site Specific	Well	WWCO-2003-0433	Community well
L-6	Site Specific	Well	WWCO-2003-0153	Community well
L-7	Site Specific	Well	WWCO-2003-0431	Community well
L-8	Site Specific	Well	WWCO-2003-0156	Community well
L-9*	Site Specific	Well	WWCO-1986-0472	Community well
L-10*	Site Specific	Well	WWCO-2003-0432	Community well
L-11*	Site Specific	Well	WWCO-1994-0220	Community well
L-12*	Site Specific	Well	WWCO-2003-0258	Community well
L-13	Site Specific	Well	WWCO-2003-0154	Community well
L-14	Site Specific	Well	WWDH-2003-0436	Dry well
L-15	Site Specific	Well	WWIN-1968-0129	Individual well
L-16	Site Specific	Well	WWIN-1999-0448	Individual well
L-17	Site Specific	Well	WWIN-1959-0125	Individual well
L-18	Site Specific	Well	WWIN-1968-0123	Individual well
L-19	Site Specific	Well	WWIN-1991-0031	Individual well
L-20	Site Specific	Well	WWIN-1984-0210	Individual well
L-21	Site Specific	Well	WWIN-2017-0038	Individual well
L-22	Site Specific	Well	WWIN-1997-0379	Individual well
L-23	Site Specific	Well	WWIN-2008-0003	Individual well
L-24	Site Specific	Well	WWIN-1977-0248	Individual well
L-25	Site Specific	Well	WWIN-1977-0249	Individual well
L-26	Site Specific	Well	WWIN-1959-0124	Individual well
L-27	Site Specific	Well	WWIN-1960-0146	Individual well
L-28	Site Specific	Well	WWIN-1977-0263	Individual well
L-29	Site Specific	Well	WWMN-2003-0434	Monitoring well
L-30	Site Specific	Well	WWMN-2003-0435	Monitoring well
L-31	Site Specific	Well	WWMN-2003-0257	Monitoring well
L-32	Site Specific	Well	WWNC-1980-0289	Non-community well
L-33	Inorganics, Microbial, SOCs	Other PSC	PCEM-1998-0164	Cemetery
L-34*	Inorganics, Microbial, SOCs	Other PSC	PCEM-1998-0124	Cemetery
L-35	Inorganics, Microbial, SOCs	Other PSC	PCEM-1998-0171	Cemetery

MAP ID	Contaminant Type	Facility Type	ID	Facility Type
L-36	Inorganics, Microbial, SOCs	Other PSC	PCEM-1998-0102	Cemetery
L-37	Inorganics, Microbial	Sewage Disposal System	PSSD-1972-0355**	Sewage disposal system
L-38	Inorganics, Microbial	Sewage Disposal System	PSSD-1977-0250	Sewage disposal system
L-39	Inorganics, Microbial	Sewage Disposal System	PSSD-1965-0220	Sewage disposal system
L-41	Inorganics, Microbial	Sewage Disposal System	PSSD-1968-0160	Sewage disposal system
L-42	Inorganics, Microbial	Sewage Disposal System	PSSD-1956-0129	Sewage disposal system
L-44	Inorganics, Microbial	Sewage Disposal System	PSSD-1968-0170	Sewage disposal system
L-46	Inorganics, Microbial	Sewage Disposal System	PSSD-1955-0137**	Sewage disposal system
L-47	Inorganics, Microbial	Sewage Disposal System	PSSD-1966-0211**	Sewage disposal system
L-56	Inorganics, Microbial	Sewage Disposal System	PSSD-1966-0210	Sewage disposal system
L-57	Inorganics, Microbial	Sewage Disposal System	PSSD-1991-0037	Sewage disposal system
L-58	Inorganics, Microbial	Sewage Disposal System	PSSD-1979-0244	Sewage disposal system
L-61	Inorganics, Microbial, SOCs, VOCs	Sewage Treatment System	PSTP-1961-0158	Sewage treatment system

*Map ID L-9 represents Well 003 and is not included in Table 4 or in Figures E-2 and E-3.
*Map ID L-10 represents Well L and is not included in Table 4 or in Figures E-2 and E-3.
*Map ID L-11 represents Well 002 and is not included in Table 4 or in Figures E-2 and E-3.
*Map ID L-12 represents Well P and is not included in Table 4 or in Figures E-2 and E-3.
*Map ID L-34 also represented in Table 5 (55)
**System not included in wastewater records from Loudon County. Should confirm status.

Table 7. Federal and State Regulated Sites Occurring in or Near the Source Water Protection Area for Wells 002, 003, 004, L, and P.

MAP ID	Regulation Database	Facility	Permit Number
R-1*	VPDES	Middleburg Wastewater Treatment Plant	VA0024775
R-2*	RCRA	Middleburg Elementary CERCLIS Site	110021447905
R-3*	RCRA	Middleburg EXXON CERCLIS Site	110006457084
R-4*	RCRA	VPI & SU Middleburg AREC CERCLIS Site	110006457743

*Map ID R-1 also represented in Table 5 (16)
*Map ID R-2 also represented in Table 5 (30)
*Map ID R-3 also represented in Table 5 (29)
*Map ID R-4 also represented in Table 5 (36)

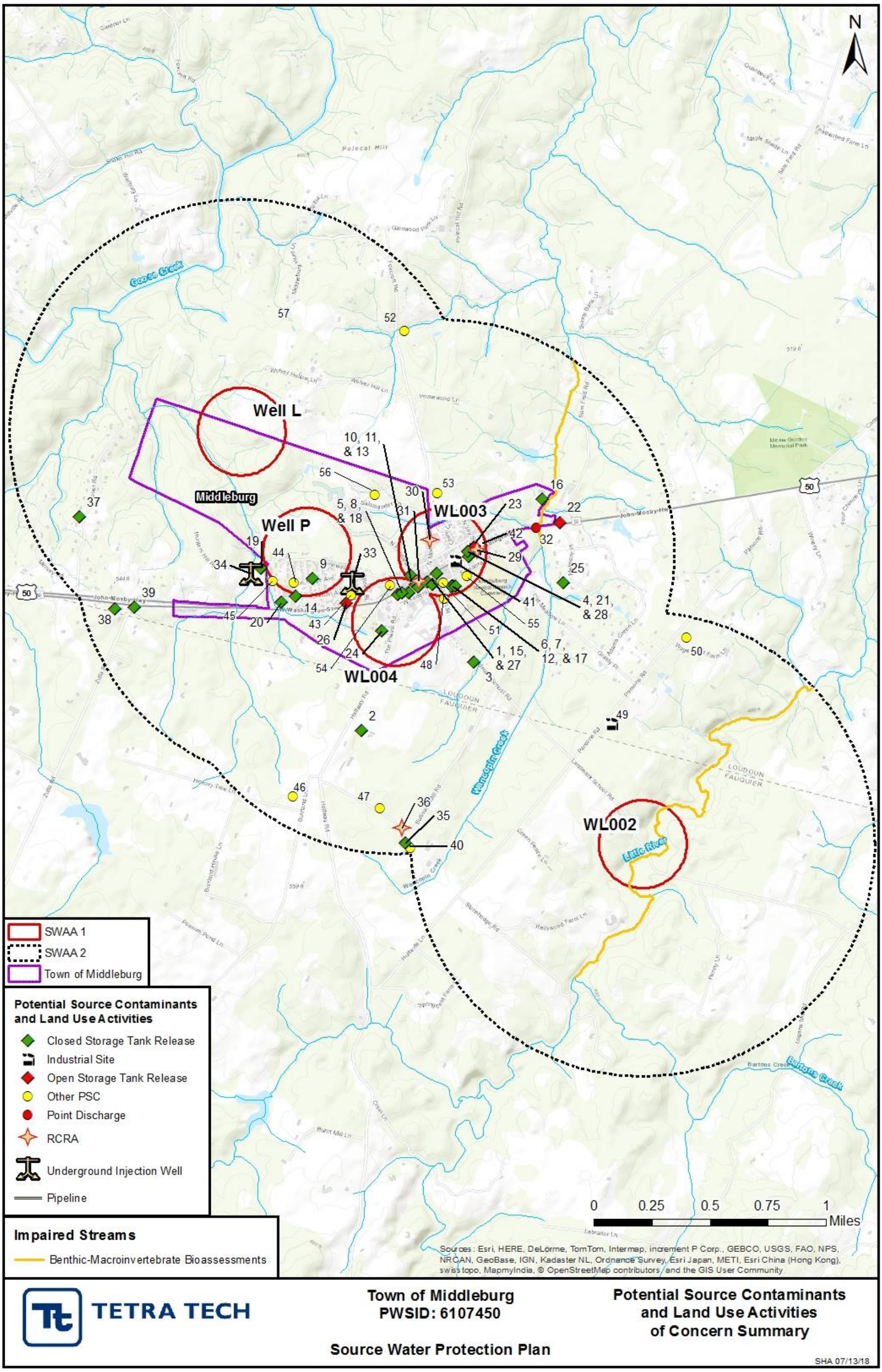
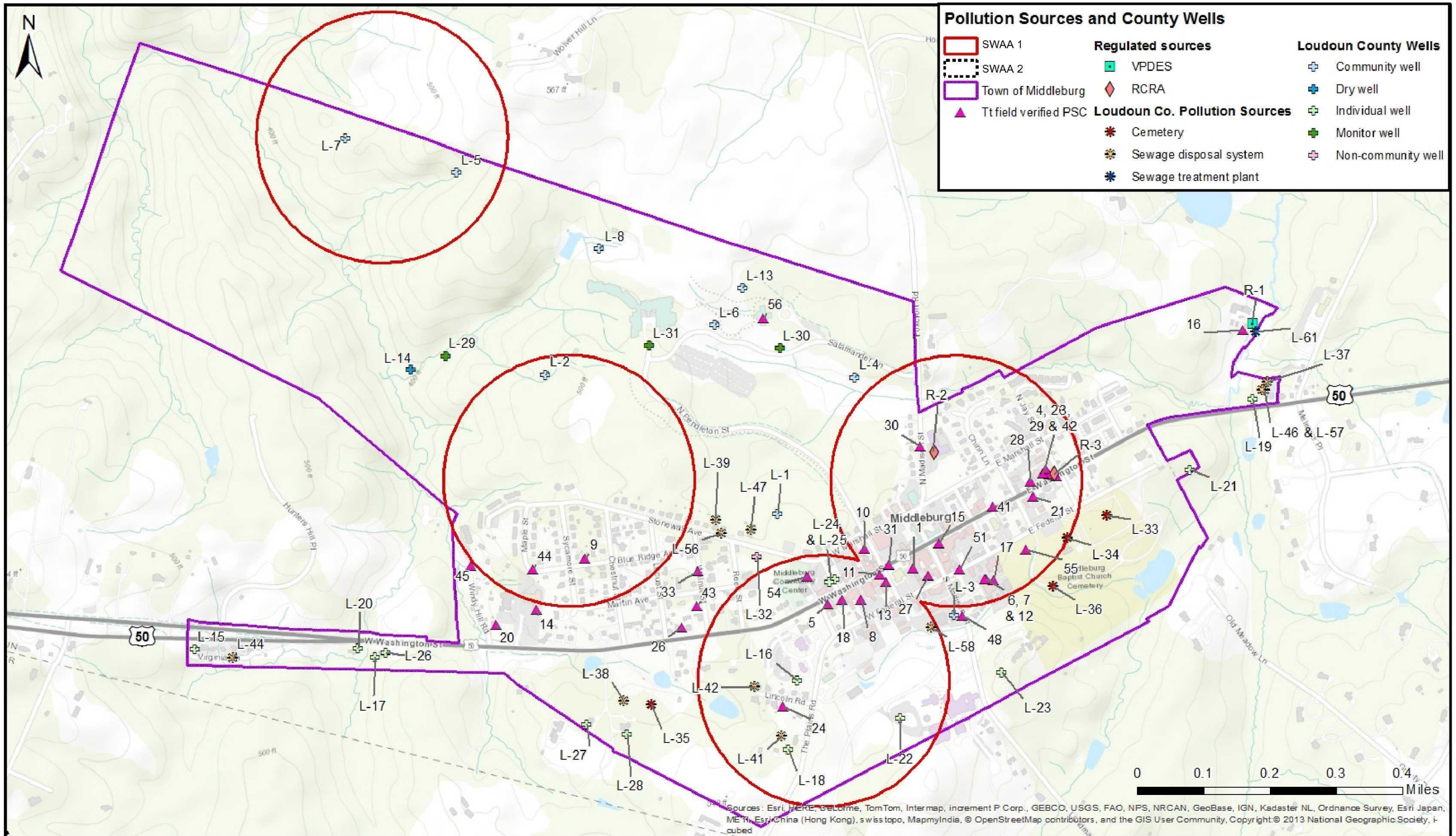


Figure E-1: Locations of potential source contaminants



TETRA TECH

Town of Middleburg
PWSID: 6107450

Source Water Protection Plan

Pollution Sources and County Wells from Loudoun County and Regulatory Databases

SHA 06/27/18

Figure E-2: Locations of pollution sources within town limits

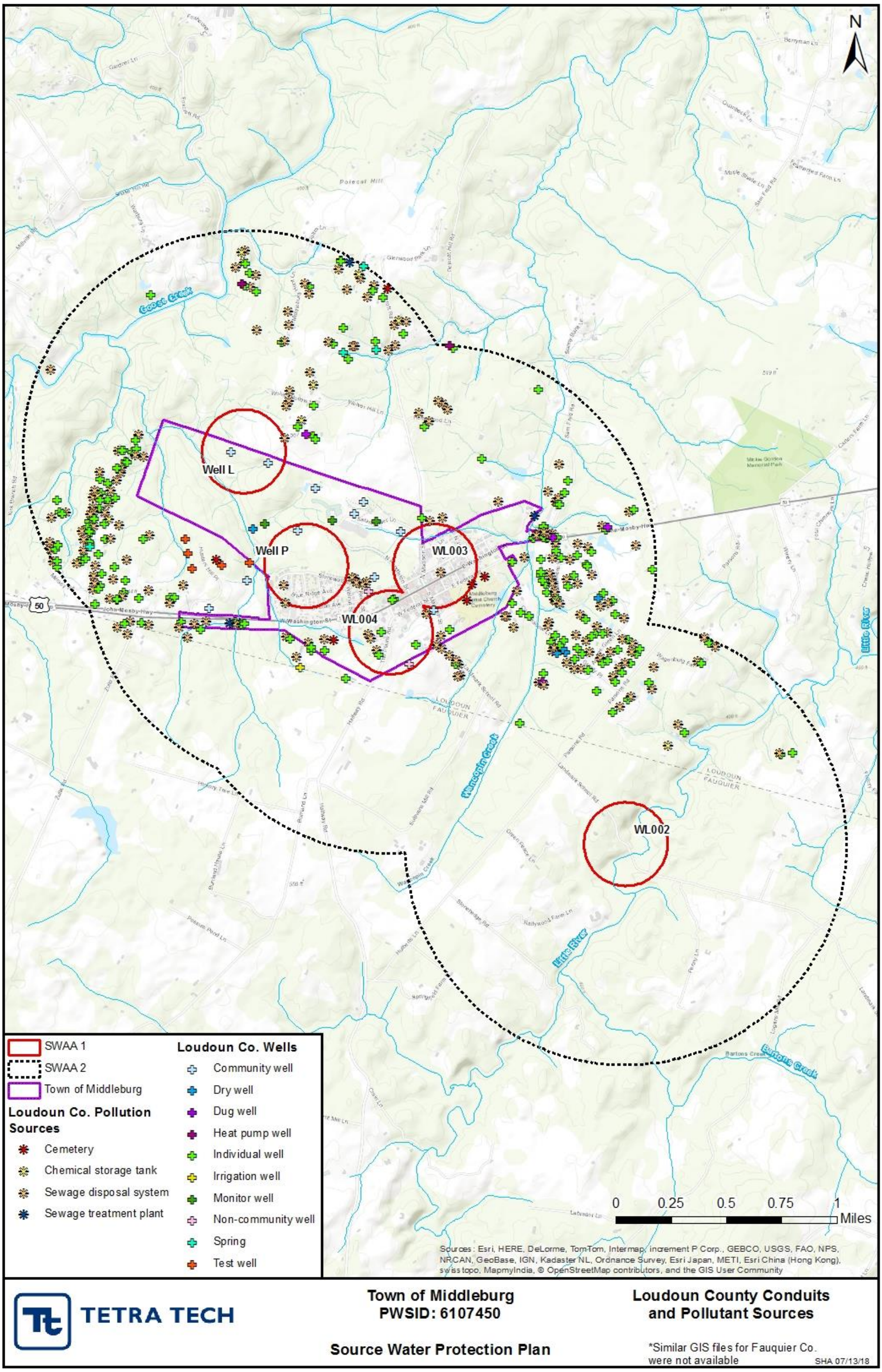


Figure E-3: Loudoun County conduits and pollutant sources

Appendix F: Potential Conduits of Contamination Inventory

Well Name/Site ID	Well Location			Well Owner			Other Information
	Latitude	Longitude	Collection Method	Name	Address	Phone Number	
Cemetery Well	38.96961	-77.731264	GPS	Sharon Cemetery	204 E Federal St. Middleburg, VA 20117	N/A	
Davis House	38.969653	-77.743173	GPS	Betsy Davis	606 Blue Ride Ave Middleburg VA 20117		
Sporting Library	38.966151	-77.739354	GPS	National Sporting Library & Museum	102 The Plains Rd Middleburg VA 20117	(540) 687-6542	
Community Center				Middleburg Community Center	300 W Washington St Middleburg VA 20117	(540) 687-6373	Well location not found during dashboard survey
WWCO-2003-0259	38.9698	-77.7397					L-1, Community well
WWCO-2003-0256	38.97302	-77.746					L-2, Community well
WWCO-1955-0079	38.96745	-77.7348		Subdivision Name: Town of Middleburg			L-3, Community well
WWCO-2003-0155	38.97272	-77.7373					L-4, Community well
WWCO-2003-0433	38.9775	-77.7483					L-5, Community well
WWCO-2003-0153	38.97398	-77.7412					L-6, Community well
WWCO-2003-0431	38.97834	-77.7514					L-7, Community well

Well Name/Site ID	Well Location			Well Owner			Other Information
	Latitude	Longitude	Collection Method	Name	Address	Phone Number	
WWCO-2003-0156	38.97573	-77.7444					L-8, Community well
WWCO-2003-0154	38.97476	-77.7404					L-13, Community well
WWDH-2003-0436	38.97323	-77.7498					L-14, Dry well
WWIN-1968-0129	38.9673	-77.7561		Subdivision: Virginia Lane			L-15, Individual well
WWIN-1999-0448	38.96614	-77.7393		Subdivision: Ohrstrom			L-16, Individual well
WWIN-1959-0125	38.96697	-77.7511					L-17, Individual well
WWIN-1968-0123	38.96465	-77.7396		Original Town Plat of Middleburg			L-18, Individual well
WWIN-1991-0031	38.97194	-77.7262					L-19, Individual well
WWIN-1984-0210	38.96719	-77.7515					L-20, Individual well
WWIN-2017-0038	38.97044	-77.7281					L-21, Individual well
WWIN-1997-0379	38.96523	-77.7364					L-22, Individual well
WWIN-2008-0003	38.96616	-77.7335					L-23, Individual well
WWIN-1977-0248	38.96832	-77.7381		Town of Middleburg			L-24, Individual well
WWIN-1977-0249	38.96826	-77.7383		Town of Middleburg			L-25, Individual well
WWIN-1959-0124	38.96706	-77.7508					L-26, Individual well

Well Name/Site ID	Well Location			Well Owner			Other Information
	Latitude	Longitude	Collection Method	Name	Address	Phone Number	
WWIN-1960-0146	38.96535	-77.7452					L-27, Individual well
WWIN-1977-0263	38.96509	-77.7441		Town of Middleburg			L-28, Individual well
WWMN-2003-0434	38.97351	-77.7488					L-29, Monitor well
WWMN-2003-0435	38.97342	-77.7394					L-30, Monitor well
WWMN-2003-0257	38.97358	-77.7431					L-31, Monitor well
WWNC-1980-0289	38.96888	-77.7403		Town of Middleburg			L-32, Non-community well

Appendix G: Action Item Tracking

ID #	ACTIVITY	RESPONSIBLE PARTY	PRECEEDING STEPS	TARGET FOR COMPLETION/ ACTUAL DATE OF COMPLETION	FOLLOWUP AND OUTCOMES	ANTICIPATED COSTS/ ACTUAL COSTS	DETAILS
	SOURCE MANAGEMENT ACTIVITIES						
7-1	Validate well inventory and pollution source data gathered from Loudoun and Fauquier Counties. Inventory old wells within the source water protection areas and determine whether they are (or should be) properly abandoned.	WPAC					Use Tetra Tech Assistance
7-2	Recommend a Town Ordinance be written requiring proper abandonment of existing wells on properties undergoing changes requiring a site plan.	WPAC					
7-3	Define the recharge area for Middleburg's source water and identify any potential problems to water quantity and quality from activities within that area.	WPAC					Recommend Recharge Study be completed
7-4	Extend sewer lines to eliminate private septic systems	Utility Committee					Included in Town CIP – Increase priority
7-5(a)	Recommend adoption of an ordinance requiring removal of unused tanks on properties undergoing modifications requiring a site plan approval by the Planning Commission.	Town Planner					Subdivision & Site Plan Ordinance
7-5(b)	Recommend adoption of an ordinance requiring inspection reports for heating oil tanks in use.	Town Staff/Town Council					Check with Town Attorney regarding enabling legislation. If allowed, check with County Bldg, & Dev. Dept. to avoid crossover with their duties.
7-6	Develop process for emergency responders to notify the Town when responding to hazardous spills.	IES/Town Staff					Review existing process and ensure that proper notifications are made.
7-7	Continue conducting annual operational and administrative briefings with first responders.	IES					Annual tours/briefings already occurring by IES with first responders

ID #	ACTIVITY	RESPONSIBLE PARTY	PRECEEDING STEPS	TARGET FOR COMPLETION/ ACTUAL DATE OF COMPLETION	FOLLOWUP AND OUTCOMES	ANTICIPATED COSTS/ ACTUAL COSTS	DETAILS
7-8	Provide the Wellhead Protection Plan and/or SWPA boundaries to the Town Council for transmittal to Loudoun and Fauquier Counties to be included in County-wide environmental planning documents.	WPAC					Formal request to include plan in County Comp Plans
7-9	Communicate with the Town of Middleburg's maintenance personnel to raise their awareness of the SWPA and ask that they institute BMP's when maintaining grounds and vehicles.	Town Staff					
7-10	Several septic systems remain within the Town limits. Monitor and encourage Loudoun and Fauquier Counties' Health Departments to enforce standards for proper pumping and maintenance of those systems.	WPAC					
7-11	Add backup power for Wells 2 and 3 to handle intermittent power outages.	IES/Town Staff					Generator installation project for Well 3 underway; CIP includes Well 2 generator in FY 20.
7-12	Work with the owners of privately owned roads to identify and make recommendations (i.e. environmentally friendly ice melting methods/products) to avoid contamination from plowing/treating the roads for snow and ice.	WPAC					
7-13	Explore what activities are allowed within proximity to the Town's SWPA. Develop strategies to address potential threats.	WPAC					
7-14	Explore water quality monitoring for streams, including investigating bacterial contamination at upstream sites and determine if there is a future threat to town wells. Consider working with watershed organizations, e.g. Goose Creek Association to implement this action.	WPAC					
7-15	Recommend conducting an analysis to determine if the two streams in the SWPA are gaining or losing stream volume.	WPAC					

ID #	ACTIVITY	RESPONSIBLE PARTY	PRECEEDING STEPS	TARGET FOR COMPLETION/ ACTUAL DATE OF COMPLETION	FOLLOWUP AND OUTCOMES	ANTICIPATED COSTS/ ACTUAL COSTS	DETAILS
7-16	Continually monitor land-use applications and identify potential sources of contamination during the review of land development activities.	Town Staff/WPAC					
7-17	Update the Plan	WPAC					Next formal update 2023
	EDUCATION AND OUTREACH						
7-18	Provide educational information about Middleburg's source water and its protection to residences and businesses, i.e., brochures, letters, news releases, etc.; provide actions to be taken for specific threats or in the event of a hazardous spill; extend invitations to volunteers to participate in WPAC or in any WPAC events, or to announce public meetings and ordinances.	Staff/WPAC					Ongoing; Source Water Protection Column included in Town's bi-monthly newsletter
7-19	Provide support to the school systems, both public and private, for incorporating source water activities into the schools' curricula.	WPAC					
7-20	Continue tours of the water plant to interested organizations such as watershed groups, schools, and civic organizations.	IES/Staff					
7-21	Hold quarterly meetings that are open to the public to discuss wellhead protection efforts; to review the Wellhead Protection Plan as necessary and make appropriate updates, and to update the emergency contact information.	WPAC					