

December 18, 2003

Dutchess County Board of Health  
Dutchess County Department of Health  
387 Main Street,  
Poughkeepsie, NY 12601

Attn: Mr. Harry Lynch, President

Dear Mr. Lynch:

The Private Well Water Quality Technical Advisory Workgroup has completed its work and presents you with the enclosed report as per the Board's request of March 26, 2003. The report's recommendations address the criteria set forth in the County Executive's 2003 State of the County address.

The workgroup received comments reflecting the complexity of this issue. Some individuals advocated for a law mandating testing and data disclosure of all private wells at the point of sale. Others expressed a desire for public education in lieu of legislation. There was some concern that mandatory testing would present an undue financial burden to the buyer at the point of sale.

In summary, the Workgroup recommends:

- 1) That the Dutchess County Board of Health amends the Dutchess County Sanitary Code to include;
  - Establishing test recommendations for private wells at the time of sale,
  - Establishing recommended contaminant limits for private wells, and
  - Recommending that lending institutions and realtors distribute private well test information to applicable clients at the point of sale.
  
- 2) The expansion of the Department's existing Drinking Water Enhancement Program's indirect oversight of NYS Department of Environmental Conservation's bulk storage regulations. This could be accomplished by authorizing the Dutchess County Department of Consumer Affairs to expand its oversight of retail gasoline storage facilities to include a review of records required by NYSCRR Title 6, Chapter 5 Parts 612, 613 and 614- with emphasis on the test requirements of underground storage facilities addressed by Part 612.
  
- 3) The Board of Health encourages the Dutchess County Legislature and the Office of the County Executive to request the New York State Legislature to strengthen the New York State Real Property Law Article 14. Sections 460 through 467 entitled "Property Condition Disclosure in the Sale of Residential Real Property". This can be accomplished by the adoption of a statewide private well test and disclosure requirement at the point of sale enforceable by civil action.
  
- 4) Posting of well testing recommendations on the County's website for public reference. The testing recommendations would represent a collective judgment of the workgroup and other county agencies.

5) Expanding the public education effort about the importance of testing the well water at the time of sale and then on a periodic basis.

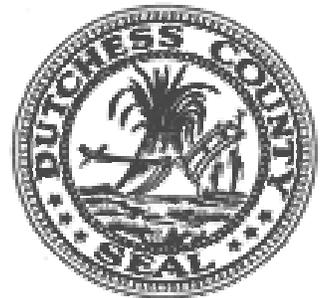
6) Strengthening the public health education effort stressing the continued public use of controlled methods of waste disposal for substances having groundwater polluting characteristics, and identifying existing federal, state and local water quality resources available to the public. It is essential that homeowners have a thorough understanding of individual well water testing and standards in order to properly monitor the quality of their drinking water.

Respectfully submitted,

W. Stephen Capowski,  
Chairman,  
Private Water Quality Technical Advisory Workgroup

**Dutchess County**  
**Private Well Water Quality**  
**Technical Advisory Workgroup**  
*Final Report*

W. Stephen Capowski, Chairman  
December 18, 2003



## **Dutchess County Private Water Quality Technical Advisory Workgroup**

The Dutchess County Private Well Water Technical Advisory Workgroup, chaired by W. Stephen Capowski, is composed of representatives from Dutchess County Departments of Health, Planning, Water and Wastewater, Consumer Affairs, DC Environmental Management Council and from the Office of the County Attorney. The purpose of the Technical Advisory Workgroup is to conduct an analysis of the current status of water quality issues as they relate to private water supplies and to develop recommendations to be presented to the Dutchess County Board of Health for their review and action.

### **Introduction**

The workgroup focused on six major areas to evaluate water quality issues that affect private water supplies in Dutchess County.

- 1) The workgroup completed a review of existing local, state and federal programs that directly or indirectly regulate factors that impact groundwater quality. This program review included NYS Health Department, Dutchess County Health Department, NYS Department of Environmental Conservation, Dutchess County Resource Recovery, NYS Department of State and US Environmental Protection Agency Programs.
- 2) The Workgroup reviewed current real estate disclosure laws including the US Housing and Urban Development lead disclosure law, the water quality disclosure provisions of the New Jersey Private Well Testing Act and the NYS Property Condition Disclosure Act Real Property Law Article 14.
- 3) The Workgroup reviewed current test parameters required by financial institutions for mortgages. These test parameters were evaluated to determine if they were adequate to detect bacterial, inorganic and organic contamination of private drinking water supplies. Test parameters for private wells were also compared with the NYS Sanitary Code Part 5 standards for public water supplies and the requirements for test wells as part of the Realty Subdivision Approval Process.
- 4) The Workgroup evaluated the NJ Private Well Testing Act to determine if a local law with a similar scope could be enacted and enforced at a county level.
- 5) The Workgroup reviewed the proposed Horton, Haas Clearwater Bill, which requires DCHD oversight and enforcement to determine the minimum standards necessary for its implementation. This review includes estimates of additional costs and time delays that would be incurred by the private sector.
- 6) The Workgroup looked at the information, both print and web based, provided by the county to the public about private water supply issues. As part of this process examples of published material and web pages developed by other agencies were also evaluated.

## **Background**

Dutchess County encompasses approximately 825 square miles, or 528,000 acres, located within the Hudson River and the Housatonic drainage basins. There are four primary county watersheds within these drainage basins: the Wappinger Creek, the Fishkill Creek, the Hudson River and the Ten Mile River. These primary watersheds account for 93% of the watershed area in Dutchess County. The remaining 7% is divided amongst the Roeliff Jansen Kill watershed in the north and the Croton watershed in the south. These watersheds overlay the groundwater aquifers in Dutchess County and serve as their recharge areas. These aquifers are replenished by precipitation percolating through the soil overburden. By their nature, aquifers are subject to contamination from a wide variety of sources. Potential sources of contamination include, but are not limited to, road-deicing salts, failing septic systems, leaking underground storage tanks (LUSTs) for petroleum products and/or chemicals, improper disposal of household hazardous wastes, water softener backwash waste, oil spills and seepage from Inactive Hazardous Waste sites.

Four public water supply systems, (Rhinebeck, Hyde Park, and the city and town of Poughkeepsie), supply approximately 30% of Dutchess County 280,000+ residents with drinking water drawn from the Hudson River. The County's remaining 70% of the population relies on private or public water supplies that draw their water from other surface or groundwater sources. Forty percent of Dutchess County residents rely entirely on groundwater from private wells to get their daily drinking water.

The effects of pollution on a private water supply are dependent upon a variety of factors that include, but are not limited to, the precipitation patterns, source supply, aquifer type, well type, construction and use factors, proximity to both point and non-point sources of contamination, and nature of the contaminant and its groundwater plume. Since no two private well supplies have identical characteristics, no single testing protocol can be identified in advance that would apply to all private well supplies. The Private Water Technical Advisory Workgroup will provide several options to the Board of Health for their review.

## Program Review

The workgroup reviewed the following programs, administered at the local, state and federal levels that provide information, assistance, and on occasion water sampling and treatment systems to individual homeowners as part of their regulatory responsibilities. These programs provide information to governmental officials about groundwater quality and its public health implications. This information serves Dutchess County Health Departmental staff when responding to water quality inquiries received from the public.

### Dutchess County Health Department

**Realty Subdivision Approval Process:** For all new realty subdivision projects having individual or community wells, the Dutchess County Health Department requires test wells for drinking water supplies before approval of the plans. Subdivisions of three (3) or more lots require one test well per five (5) lots or fraction thereof. Subdivisions with public water supplies require testing of all water sources. The minimum required parameters for all wells as part of the subdivision approval process are: total coliform and *Escherichia coli* bacteria, twenty-three (23) inorganic chemicals and fifty-three (53) principal organic chemicals analyzed to a detection limit of 0.5 micrograms per liter (0.5 parts per billion).

Public water supplies may require quality testing for additional parameters as determined by the Health Department. Test wells must also be tested for well yield, (in gallons per minute). Public water supplies are tested over a period of eight (8) to seventy-two (72) hours depending on the type of project. Subdivisions with individual wells have the test wells tested by the well driller. If the well driller's tests indicate less than five (5) gallons per minute, additional pumping tests are required to insure adequate quantity.

The Dutchess County Health Department requires this testing to ensure an adequate quantity and quality of safe drinking water for private and public water supplies.

**Community Sanitation:** Health Department staff responds to requests from property owners whose water well samples exceed the maximum contaminant level for bacteriological quality, under the NYS Sanitary Code, Part 5 for public drinking water supplies. This response includes assessment, advice and may include a field visit, if requested, to identify potential sources of contamination. The Community Sanitation staff also responds to complaints from tenants regarding well water supplies that do not meet the definition of public water supplies. These complaints include concerns about tastes and odors, poor bacteriological quality and petroleum contamination of the water.

**Radiological and Environmental Health Assessment Program (REHAP):** Program staff receive copies of the NYS Department of Environmental Conservation (NYSDEC) water sample test results conducted as part of their on-going investigations into oil spills. The staff reviews the test results of both public and private water supplies for the maximum contaminant levels (MCL) violations as outlined by the NYS Sanitary Code, Part 5 standards for public drinking water supplies. Private homeowners whose water supplies exceed the MCL's are advised not to drink the water until NYSDEC installs appropriate filtration treatment. Public Water Supply test results are also forwarded to the staff for follow-up.

REHAP staff works with the NYSDOH –Bureau of Environmental Exposure Investigation Staff and the NYSDEC staff to investigate the potential for human exposure from environmental contamination at inactive hazardous waste (IHW) sites. This includes water sampling around IHW sites, interpretation of results and dissemination of information to the public at town meetings.

**DCHD Water Laboratory:** The water lab is certified by the NYS Environmental Laboratory Approval Program (ELAP # 10189) for bacteriological examination of drinking water. The lab is also approved for secondary inorganic chemical testing. This grouping of inorganic chemicals affect water quality, but with the exception of nitrates, have no known, or minimal health effects. Secondary inorganic testing includes, but is not limited to, fluoride, chloride, sulfate, hardness, pH, turbidity and alkalinity. Laboratory personnel interpret lab results and provide guidance to the public about treatment options for the water supply if necessary. The lab staff conducts approximately 1000 bacteriological examinations of water samples each year. The cost of water sampling ranges from \$5-\$20 per exam, depending on the type of exam performed.

**Well Log Program:** In 1985 the Dutchess County Sanitary Code was amended to include a section, Article 16, on Water Well Construction. The NYS Sanitary Code, Part 5, subpart 5-2, was adopted to extend the minimum requirements prescribing the location, construction and abandonment of water wells to all wells constructed for drinking, culinary and food processing purposes. Every person who constructs or abandons a well must obtain a permit from the Department of Health and provide all information required on the well completion form including depth to water, well yield, and details of well construction and well location. The intention of this amendment is to minimize the potential hazard to public health and safety from improper construction and to protect the aquifer from pollution. Of 801 well permits issued in 2002, approximately 767 were residential wells.

**Water Enhancement Program (WEP):** Staff collects samples from forty-four public water supplies situated in proximity to underground petroleum storage tanks. These samples are analyzed for the presence of organic chemicals, including methyl tertiary-butyl ether (MTBE), a gasoline additive that is highly soluble in water and not readily filtered by passage through soil. Fifteen of these forty-four public water supplies have tested positive for MTBE at concentrations between 0.2 and 5600 parts per billion (ppb). It is recommended that Public Water Supplies with levels of MTBE above 10 ppb filter the water supply, and for levels of MTBE in excess of 50 ppb filtration is required. This program serves as an enhancement to the NYSDEC bulk storage regulations as it identifies violations of the bulk storage regulations

WEP staff is responsible for enforcing Subpart 5-1 of the State Sanitary Code at 750 public water supplies (PWS) in Dutchess County. The staff enforces the sanitary code regulations at approximately 300 PWS by performing annual inspections, collecting required samples, and reviewing operation reports. They are also responsible for data management, (monthly reports, sample results, water quality reports), at approximately 350 PWS that service restaurants, children's camps, hotels/motels, day care centers, and any other facility under permit to the health department. Finally, WEP staff performs fieldwork and sample collection, on an as-needed basis, for approximately 100 large PWS. Many of these PWS's are municipal supplies under the direct responsibility of a public health engineer.

**Freedom of Information Law (FOIL) Requests:** The Dutchess County Health Department's records are available for review as outlined under the provisions of the Freedom of Information Law. The majority of these requests are from the private sector. The information requested includes questions about environmental concerns, such as sewage system inspections and approvals, well test data and locations, and water test results in the vicinity of spills, inactive hazardous waste sites, gas stations and old town dumps. The health department receives approximately twelve FOIL requests every week.

**Website:** The Dutchess County Health Department website contains information, codes, forms, links, and contact information for the Environmental Division.

### **Dutchess County Resource Recovery Agency**

**Household Hazardous Waste Program (HHW):** Dutchess County Resource Recovery Agency (DCRRA) staff routinely operates household hazardous waste clean-up days for Dutchess County residents for the proper disposal of chemicals generated from household activities. In 2003, HHW days were held on the first Saturday of each month from April to November. Chemicals that are accepted include, but are not limited to, solvents, pesticides, some automotive fluids, mercury, and oil based paint. This program is invaluable because it provides an environmentally responsible disposal alternative to homeowners and eliminates a potential source of groundwater contamination.

### **New York State Department of Health (NYSDOH)**

**NYS Department of Health Environmental Laboratory Approval Program (ELAP):** This NYS program provides certification to laboratories that test environmental samples. The evaluation criteria include personnel credentials, onsite inspections and semiannual proficiency testing performance. There are currently two ELAP certified labs for water testing in Dutchess County that are available to the public. Homeowners can insure that their water supply is tested using the same standards for testing public water supplies by using an ELAP certified laboratory

**Bureau of Environmental Exposure Investigation (BEEI):** Bureau staff investigates the potential for human exposure from environmental contamination, primarily at inactive hazardous waste sites. These investigations may include water sampling and treatment, construction activities, spills and emergency events. A bureau specialist is assigned to coordinate health-related activities for every state or federal superfund site.

### **New York State Department of Environmental Conservation**

**Oil Spill Program:** The NYS Department of Environmental Conservation (NYSDEC) is the lead agency, designated by Article 12 of the Navigation Law, to insure prompt clean up of petroleum spills. When the party responsible for the spill is unknown, or cannot or refuses to pay for clean up, then all clean up and removal costs including all direct and indirect damages (i.e. filtration for contaminated wells) are funded through the New York Environmental Protection and Spill Compensation Fund. Homeowners are responsible for all oil releases from their oil tanks and all associated clean-up costs. There are approximately 500 active spill sites in Dutchess County, and of these, 200-250 are spills or leaks from private residences.

**Inactive Hazardous Waste Sites (IHW):** The Department of Environmental Conservation (DEC), along with the Departments of Health (DOH) and Law (DOL), is responsible for ensuring the cleanup of inactive hazardous waste disposal sites throughout the state. The Inactive Hazardous Waste Disposal Site Remedial Program has legal authority to address only those inactive hazardous waste sites that contain hazardous waste. New York State law defines hazardous waste as waste that has certain hazardous characteristics or is produced from a specific industrial process. DEC works with the NYS DOH to ensure that public health concerns, including impacts on private water supplies, are fully investigated. There are approximately 30 IHW sites currently listed in Dutchess County.

## **US Environmental Protection Agency (EPA)**

**Superfund Program:** In 1980, Congress enacted the Comprehensive and Environmental Response, Compensation and Liability Act (CERCLA) known as Superfund. The Federal government is authorized to respond to releases or threatened releases of hazardous substances that may impact the environment or public health. Taxes on the chemical and petroleum industries provide funding for this program.

Under Superfund there are short-term and long-term response actions. Short-term responses require prompt action to mitigate adverse impacts on public health and the environment. Long-term responses may only be conducted at sites listed on the EPA's National Priorities List (NPL). EPA uses a Hazard Ranking System (HRS) to accurately assess the potential risk to human health and the environment. Short and long-term remedial response actions both include determining the extent of the threat by environmental sampling, providing appropriate remediation and treatment, and in some cases extending existing public water systems to serve the affected area.

There are currently less than 6 NPL sites in Dutchess County.

## **Private Water Supply Test Parameters**

Currently there is no regulatory requirement or standard in either Dutchess County or New York State requiring the testing of private water supplies for bacteriological, inorganic or organic contaminants. The New York State Department of Health does not plan to enact a law to regulate the private sector water supplies. Financial institutions may require, at a minimum, a bacteriological examination of well water as part of the mortgage process. Lending institutions do not routinely require inorganic or organic testing of private water supplies. Aside from testing as a mortgage requirement most other testing of private water supplies by the homeowner is usually precipitated by a change in the quality of the water (unusual taste or odor), or an unresolved gastrointestinal illness.

## **Real Estate Disclosure Laws**

### **New York State Department of State**

**Property Condition Disclosure Act Real Property Law Article 14:** Effective March 1, 2002, all sellers of one to four family residential real property are required to provide a completed “ property condition disclosure statement” to a buyer or buyer’s agent prior to the seller’s acceptance of a purchase offer. A section on environmental issues is included in this disclosure form, which contains questions regarding petroleum products, hazardous or toxic substances that have been spilled, leaked, or otherwise released on the property. There is also a note to the buyer on the form recommending soil or water testing if petroleum and/or hazardous substances are a concern to the buyer. There is a \$500 penalty paid from the seller to the buyer in the event the seller does not provide the disclosure statement prior to the buyer signing a binding contract of sale.

**Residential Lead Based Paint Hazard Reduction Act of 1992:** requires that before ratification of a contract for housing that the sellers disclose all known lead-based paint hazards and provide all available reports to buyers. Homebuyers get a 10-day period to conduct a lead based paint inspection or risk assessment at the buyer’s expense. Sales contracts must include specified notification and disclosure language. Sellers and real estate agents share responsibility for ensuring compliance. Remedy is through civil action with monetary penalties that may include damages, court costs, and attorney fees. A person who knowingly violates provisions of this law can be liable for three times the amount of damages incurred by the injured party.

**New Jersey Private Well Testing Act:** does not allow the closing of title on the sale of real property to occur unless both the buyer and the seller have received and reviewed a copy of the water test results. At the closing, the buyer and seller shall both certify in writing that they have received and reviewed the water test results. Enforcement of this regulation is handled as part of the closing process.

## State and Local Legislation Review

### New Jersey State Legislation

**The NJ Private Well Testing Act** regulates the testing of private water supplies when property is sold or rented. Water supplies of rental properties must be tested every five years. The primary purpose of this legislation is to provide specific water quality information solely to prospective buyers or tenants. This law does allow for some generalized mapping of contaminants. This law was promulgated at the state level, which has control and can require compliance from all agencies and private entities that are subject to this regulation. The following agencies/groups have additional regulatory requirements as a result of this legislation:

- NJ Department of Environmental Protection
- NJ Department of Health
- NJ Certified Laboratories
- Landlords
- Buyers and Sellers of Homes
- Lawyers (Contract of sale)

An inquiry to the New York State Department of Health by this Workgroup indicated that NYS is not contemplating the adoption of legislation similar to the NJ Private Well Testing Act. At this time, it is doubtful that the County can adopt legislation similar to that of New Jersey because the County does not have the authority to regulate realtors (NYS Dept. of State), laboratories (NYS Dept. of Health) and out of county analytical facilities.

### Proposed Dutchess County Legislation

**Horton, Haas, Clearwater Bill or Similar Local Legislation:** If the Dutchess County Health Department is charged with enforcement of either the Horton, Haas, Clearwater bill or a similar law requiring DCHD oversight and enforcement of private residential well testing, at a minimum the following standards would have to be met in order to insure compliance with the proposed law and consistency with the Department's policies and procedures. The DCHD would need considerable health department staff to implement this or similar legislation.

A permit process similar to our well permit program would have to be established to track sample results and match them using tax map numbers with applicable properties. The cost of the permit to the public would be approximately \$75 per well.

The DCHD would require that a third party collect the water sample(s) to insure chain of custody and validity of the sample results (\$50/hour plus mileage).

Required initial test parameters would include bacteriological analysis, inorganic testing and organic testing of the water supply utilizing a NYS ELAP approved laboratory (cost \$525 for this series with a two-three week turnaround, double the fee for a 24-48 hour turnaround). There would be additional delays if sample results indicated required treatment of the water supply and retesting.

Prior to signing off on the permit, the well water results would have to meet NYS Sanitary Code Part 5 standards for drinking water as per the proposed Article 28 of the Dutchess County Sanitary Code.

If well water samples did not meet NYS Sanitary Code Part 5 standards then appropriate treatment would have to be installed. Any treatment installed would have to be in accordance with generally accepted standards (i.e. NYSDOH Environmental Health Manual CSFP 530) and certified as such by a resource acceptable to the department. .

Treatment options include ultraviolet disinfection for bacterial contamination (\$1000-\$1500), chlorination for bacterial contamination (\$900-\$1200), reverse osmosis for inorganic contamination (\$900-\$1500) and carbon filtration for organic contamination (\$1500-\$2000).

Resampling of the private water system would be required to demonstrate the effectiveness of the treatment system installed before the Health Department clears the permit.

Failure to comply with the aforesaid requirements could result in subsequent administrative hearings, associated fines and possible liens on property.

In summary, the Workgroup concluded that the enforcement of local legislation requiring DCHD oversight and enforcement of private residential well testing would create increased costs, delays in mortgage closings, and may impact current business practices.

## **Recommendations:**

**The Dutchess County Private Water Technical Advisory Workgroup recommends the adoption of the following initiatives.**

**Web Information:** Provide consumer information on the DCHD web page relative to testing and treatment of individual wells, testing and maintenance of underground petroleum storage tanks, links to useful government and non-profit agencies with information on protecting groundwater and water supplies. The Dutchess County website or the Health Department website could include test recommendations for private wells at the time of sale and test recommendations for private well monitoring tests thereafter. Freedom of Information request (FOIL) procedures and forms could be made available to the public on the DCHD web page.

**Household Hazardous Waste Program-** The Workgroup endorses all efforts that maximize the public use of this important program to protect the ground water of Dutchess County from improper disposal of chemicals and pesticides. Public Education about non-toxic alternatives and the discouragement of bulk buying of chemicals, especially pesticides, is equally important.

**Recommend to the NYS Legislature** that they strengthen the Property Condition Disclosure Law Article 14 by the elimination of the de facto \$500 “buy out”\* and more closely follow the EPA Lead Disclosure Law, which requires the real estate agent to ensure compliance with the law. The enforcement section of the EPA disclosure law allows for civil monetary penalties up to three times the amount of damages incurred by the injured party, to be assessed of anyone, (including the real estate agent,) who knowingly violates the provisions of the law. Additionally, Article 14 should be further strengthened to require the testing of existing private wells, at the time of sale, for bacterial analysis, volatile organics (EPA 502. 2 protocol including MTBE), and inorganic parameters included in the Private Well Test Requirements listed below.

*\*The de facto \$500 “buy out” in Article 14 states “... In the event a seller fails to perform the duty prescribed in this article to deliver a Disclosure Statement prior to the signing by the buyer of a binding contract of sale, the buyer shall receive upon the transfer of title a credit of \$500 against the agreed upon purchase price of the residential real property.”*

**Amendments to the Dutchess County Sanitary Code:** The Workgroup recommends that the Dutchess County Board of Health amends the Dutchess County Sanitary Code by adding Article 28 “Private Well Water Quality”.

- Article 28 Section 1 would state “The Dutchess County Board of Health recommends the disclosure of information of known well water contaminants of wells used for human consumption upon transfer of residential property within Dutchess County.”
- Article 28, Section 2 would recommend that the testing recommendation within section 1 would consist of the attached “Private Well Water Test Requirements”, and conform to NYSSC Part 5-1.52 and the Dutchess County Sanitary Code Article 5, Section 5.4(B). This will establish a recommended testing protocol and guideline that existing private wells should meet as they relate to the Private Well water quality testing recommendations of the Dutchess County Sanitary Code.
- Article 28, Section 3 shall indicate that “The Dutchess County Board of Health recommends that lending institutions and realtors within Dutchess County distribute private well test information to applicable clients at the point of sale” This information

could consist of an expanded version of the pamphlet presently distributed by the Department of Health entitled “Safe Drinking Water... It’s everyone’s responsibility.”

**Bulk Storage Testing** – The Workgroup advises that the Board of Health recommend to the County Executive and to the Legislature expanding of the Department’s existing Drinking Water Enhancement Program’s indirect oversight of NYS Department of Environmental Conservation’s bulk storage regulations. This could be accomplished by authorizing the Dutchess County Department of Consumer Affairs to expand their oversight of retail gasoline storage facilities to include a review of records required by NYSCRR Title 6, Chapter 5 Parts 612, 613 and 614, with emphasis on the test requirements of underground storage facilities addressed by Part 612.

## **Proposed Workgroup Recommendations for Private Water Supplies**

### **Laboratory requirements**

All analysis shall be performed by a Laboratory approved by the New York State Department of Health, "Environmental Laboratory Approval Program".

### **Testing Procedure**

New Wells- The well should be pumped clear and disinfected with chlorine. The sample shall be collected after the disinfectant has cleared from the system.

Existing Wells- Samples should be taken of the raw water after any existing treatment has been bypassed.

Additional testing at point of use may be necessary to determine the efficacy of any installed treatment systems

### **Minimum Parameters**

These are the minimum recommended parameters to determine the bacteriological and chemical quality of water:

#### **Bacteriological Parameters**

Total Coliform, Escherichia coli.

#### **Inorganic Parameters**

Alkalinity	Cyanide	Nitrite
Antimony	Hardness	pH
Arsenic	Iron	Selenium
Barium	Lead	Sodium
Beryllium	Manganese	Sulfate
Cadmium	Mercury	Thallium
Chlorides	Nickel	Turbidity
Chromium	Nitrate	

## Principal Organic Chemicals

Benzene	cis-1,3-dichloropropene
bromobenzene	trans-1,3-dichloropropene
bromochloromethane	ethylbenzene
bromomethane	hexachlorobutadiene
n-butylbenzene	isopropylbenzene
sec-butylbenzene	p-isopropyltoluene
tert-butylbenzene	methylene chloride
carbon tetrachloride	n-propylbenzene
chlorobenzene	styrene
chloroethane	1,1,1,2-tetrachloroethane
chloromethane	1,1,2,2-tetrachloroethane
2-chlorotoluene	tetrachloroethene
4-chlorotoluene	toluene
dibromomethane	1,2,3-trichlorobenzene
1,2-dichlorobenzene	1,2,4-trichlorobenzene
1,3-dichlorobenzene	1,1,1-trichloroethane
1,4-dichlorobenzene	1,1,2-trichloroethane
dichlorodifluoromethane	trichloroethene
1,1-dichloroethane	trichlorofluoromethane
1,2-dichloroethane	1,2,3-trichloropropane
1,1-dichloroethene	1,2,4-trimethylbenzene
cis-1,2-dichloroethene	1,3,5-trimethylbenzene
trans-1,2-dichloroethene	m-xylene
1,2-dichloropropane	o-xylene
1,3-dichloropropane	p-xylene
2,2-dichloropropene	Vinyl chloride
1,1-dichloropropene	methyl tertiary-butyl ether

EPA method 502.2 with a detection limit of 0.5 ug/l or less.

## Glossary

### **Water Testing Parameters**

#### **Bacteriological Testing Parameters:**

Total Coliform, *Escherichia coli* (E. coli) are tests that determine the sanitary quality of the water supply. Coliform bacteria are an indicator of dirt and/or sewage contamination. An E. Coli positive test means that the contamination is fecal in origin. These tests cost approximately \$20.

#### **Chemical Testing Parameters:**

##### **Inorganic Chemicals:**

Inorganic chemicals include heavy metals such as lead and copper, chemicals that contribute to taste and odor problems, and chemicals that indicate contamination from sewage systems or road deicing such as nitrates, nitrites and chlorides. Results are typically reported in parts per million. Test costs can range from \$20 per analyte to approximately \$250 for a whole series.

##### **Organic Chemicals:**

Organic chemicals indicate contamination from petroleum spills and/or contamination from manufacturing processes or the improper disposal of chemicals. Included in this grouping are the benzenes, toluenes, xylenes, dry cleaning chemicals, other organic compounds and their associated breakdown products. Methyl tertiary butyl ether (MTBE), an organic chemical, is a gasoline additive that is soluble in water and not readily filtered by soil. Test results are typically reported as parts per billion. The cost of testing for a group of 50 organic chemicals is between \$150-\$200.

##### **Costs:**

A useful indication of private well water quality can be obtained by the testing of volatile organic chemicals (502.2 series), the testing of specific inorganic chemicals and a bacteriological analysis (see Appendix). This analysis will cost approximately \$525 when tested as a group not including collection costs.

##### **Other Parameters:**

There may be additional chemical, microbiological, bacteriological and physical parameters which may be required to assess the quality of water because of suspected or known environmental hazards and site specific concerns, waste disposal sites, orchards, agricultural land uses, oil and chemical spills.

EPA test methods of the above parameters may include protocols 604, 605, 608, 609, 611, 612, 625.

##### **Units:**

A part per billion (ppb) is the same as microgram per liter (ug/l). A part per billion is approximately one second in 32 years.

A part per million (ppm) is the same as a milligram per liter (mg/l). A part per million is approximately one second in 12 days.

## Appendices

- 1) Proposed Dutchess County Local Law of 2003 A Local Law Requiring Testing of Private Residential Wells to Ensure Safe Drinking Water **Sponsors:** Horton, Haas and Clearwater
- 2) State of New Jersey “Private Well Testing Act” Chapter 40
- 3) NYS Property Condition Disclosure Act Real Property Law Article 14