

SOURCE WATER ASSESSMENT REPORT

AN EVALUATION OF THE SUSCEPTIBILITY OF PUBLIC DRINKING WATER SOURCES TO POTENTIAL CONTAMINATION

CT0770021

Town Of Manchester Water Department Manchester Reservoir System

The State of Connecticut Department of Public Health (DPH) in cooperation with the Department of Environmental Protection (DEP) recently completed an initial assessment of the Manchester Reservoir System, which is a source of public drinking water that is maintained and operated by the Town Of Manchester Water Department. This one-time assessment is part of a nationwide effort mandated by Congress under the Safe Drinking Water Act Amendments of 1996 to evaluate the susceptibility of all public drinking water sources in Connecticut to potential sources of contamination. DPH began working in partnership with the DEP in 1997 to develop Connecticut's Source Water Assessment Program, which was approved by the U.S. Environmental Protection Agency in 1999. Sources of potential contamination that are of concern to public drinking water supplies here in Connecticut are generally associated with historic waste disposal or commercial, industrial, agricultural and residential properties that store or use hazardous materials like petroleum products, solvents or agricultural chemicals.

The assessment is intended to provide Town Of Manchester Water Department consumers with information about where their public drinking water comes from, sources of potential contamination that could impact it, and what can be done to help protect it. This initial assessment complete will also assist the public water supply system, regional planners, local government, public health officials and state agencies in evaluating the degree to which the Manchester Reservoir System may be at risk from potential sources of contamination. The assessment can be used to target and implement enhanced source water protection measures such as routine inspections, protective land use regulations, acquisition of critical land, proper septic system maintenance, and public education. General sources of contamination with the potential to impact the Manchester Reservoir System include properties with underground fuel storage tanks, improperly maintained on-site septic systems, improper waste disposal, or commercial/industrial sites that store or use chemicals or generate hazardous wastes.

Manchester Reservoir System Source Water Assessment Summary

STRENGTHS

Point source pollution discharge points not present in this watershed area

More than 50% of the watershed area is owned by the public water system

More than 50% of the land in the watershed area exists as preserved open space

POTENTIAL RISK FACTORS

Potential contaminant sources present in the watershed

Susceptibility Rating			
Rating	Environmental Sensitivity	Potential Risk Factors	Source Protection Needs
Low		X	X
Moderate	X		
High			

Overall Susceptibility Rating: Low

This rating indicates susceptibility to potential sources of contamination that may be in the source water area and does not necessarily imply poor water quality.

Detailed information about the specific factors and information used in establishing this rating can be found in Table 2. Information about opportunities to improve protection in the Manchester Reservoir System is also presented in Table 2.



Keeping Connecticut Healthy

State of Connecticut Department of Public Health
Drinking Water Division

410 Capitol Avenue – MS# 51WAT
P.O. Box 340308 Hartford, CT 06134
(860) 509-7333

OVERVIEW - The Manchester Reservoir System watershed encompasses some 6,660 acres of land in Bolton, Glastonbury, Manchester and Vernon. Approximately 51.1% of this watershed is owned by the Town Of Manchester Water Department. Public drinking water sources in this system include Buckingham, Globe Hollow, Howard, Lydall Reservoirs No.1 and No.2, Porter and Risley reservoirs. State-wide satellite imagery developed by the University of Connecticut indicates that undeveloped land and residential properties presently account for approximately 93.1% percent of the land cover in the Manchester Reservoir System. Commercial development at 1.6% and agricultural land use at 5.3% account for the remainder of the land coverage in the source water area. Approximately 51.8% of the land in the watershed area is preserved including all watershed land owned by the Town Of Manchester Water Department, state forest and parklands, and municipally or privately held land designated as open space. Information about drinking water quality and treatment is available in the Town Of Manchester Water Department’s annual Consumer Confidence Report.

ASSESSMENT METHODS.

The drinking water source assessment methods used by the Department of Public Health Drinking Water Division to evaluate the susceptibility of public drinking water sources to contamination are based on criteria individually tailored to surface water and groundwater sources. The criteria are keyed to sanitary conditions in the source water area, the presence of potential or historic sources of contamination, existing land use coverage’s, and the need for additional source protection measures within the source water area. Source-specific data for community and non-community systems were used to determine whether a particular criterion should be rated as low, moderate or high, relative to the risk of potential contamination at the drinking water source. Further, a ranking system was used to compute an average rank for each community drinking water source based on its environmental sensitivity, potential risk of contamination and source protection needs. Watersheds and reservoirs rated as having a low, moderate or high susceptibility to potential sources of contamination generally exhibit the characteristics summarized in Table 1.

Table 1 – General Watershed Area Characteristics and Susceptibility Ratings

Susceptibility Rating	General Characteristics of the Watershed Area*
Low	Low density of potential contaminant sources Lower intensity of land development
Moderate	Low to moderate density of potential contaminant sources Moderate intensity of land development
High	Moderate to high density of potential contaminant sources Higher intensity of land development No local watershed protection regulations Detectable nitrates and/or volatile organic chemicals in the untreated source water during the past three years that are below the maximum contaminant levels allowed by state and federal drinking water regulations

** Note: Not all characteristics may be present for a given susceptibility rating*

Readers of this assessment are encouraged to use the attached glossary to assist in the understanding of the terms and concepts used throughout this report.

Maps representing the location and features of the Manchester Reservoir System source water area have not been included with this assessment report because of homeland security concerns.

MANCHESTER RESERVOIR SYSTEM ASSESSMENT RESULTS.

Based on a combination of current reservoir and watershed area conditions, existing potential contaminant sources, and the level of source protection measures currently in place, the source water assessment for this watershed system indicates that it has an overall Low risk of contamination from any identified potential sources of contamination. The assessment findings for the Manchester Reservoir System are summarized in Table 2, which lists current conditions in the source water area and recommendations or opportunities to enhance protection of this public drinking water source. A listing of potential contaminant source types in the area, if present, can be found in Table 3. A summary of source water area features is shown in Table 4.

The assessment of this and other comparable watershed areas throughout Connecticut generally finds that adopting recommendations similar to those presented in Table 2 could reduce the susceptibility of most surface water sources to potential sources of contamination.

Table 2 Source Water Assessment Findings and Source Protection Opportunities For the Manchester Reservoir System

Assessment Category	Conditions as of June 2002	Recommendations and Source Protection Opportunities
Environmental Sensitivity Factors Contaminants Detected in Untreated Source Water	Predominant watershed topography characterized by moderate slopes Reservoirs have unknown capacity to support excessive growths of algae and plankton None Click here to review EPA’s current drinking water standards	Monitor runoff during heavy precipitation events Determine reservoir trophic status for source waters listed as unknown Encourage homeowners to adopt residential best management practices that minimize the use of hazardous materials or generation of hazardous waste in the watershed.
Potential Risk Factors	Potential contaminant sources present in the watershed More than 50% of land for this source water area is undeveloped, which could present a risk if developed inappropriately. Major state or interstate roadways present in the watershed Known contaminant release points not present in the watershed	Periodically inspect these sites and maintain a water quality monitoring program consistent with the level of potential risk Proactively work with local officials and developers to insure that only low-risk development occurs within the watershed area Monitor road salt and herbicide usage along these roadways and address potential for hazardous material spills resulting from vehicular accidents Encourage residential property owners to inspect and regularly cleanout onsite septic systems and replace underground fuel storage tanks with above ground tanks.
Source Protection Needs Factors	More than 50% of the watershed area is owned by the public water system Point source pollution discharge points not present in this watershed area	Support environmental awareness and education within the community.

Inventoried significant potential contaminant sources present in the Manchester Reservoir System source water area are listed in Table 3. While these facilities, if present, have the potential to cause surface water contamination; there is no indication that they are doing so at this time.

Table 3 – Summary of Significant Potential Contaminant Types in the Manchester Reservoir System Source Water Area

Category	Subcategory	Number of SPCS Types
Waste Storage, Handling, Disposal	Hazardous Waste Facilities	1
	Solid Waste Facilities	0
	Miscellaneous	0
Bulk Chemical, Petroleum Storage	Underground Storage Tanks	6
	Tank Farms	0
	Warehouses	0
Industrial Manufacturing / Processing	Chemical & Allied Production	0
	Chemical Use Processing	0
	Miscellaneous	0
Commercial Trades and Services	Automotive and Related Services	2
	Chemical Use Services	0
	Miscellaneous	0
Miscellaneous	No Identifiable SPCS Type	0
Agricultural Operations	Animal or Livestock Waste Handling	0
	Pesticide Storage or Application	1
Total Number of Contaminant Types		10

Prominent features of the Manchester Reservoir System source water area are summarized in Table 4.

Table 4 - Features of the Manchester Reservoir System

Location of Watershed Area	Bolton, Glastonbury, Manchester and Vernon
Name of Reservoir(s) and Diversion(s)	Buckingham, Globe Hollow, Howard, Lydall Reservoirs No.1 and No.2, Porter and Risley reservoirs
Number and Type of Public Drinking Water Reservoirs or Diversions in the Watershed	1 Distribution and 6 Storage
Trophic Status of Reservoir(s)	7 Unknown
DEP Surface Water Classification	5 AA and 2 B/AA
Watershed Area (total acreage)	6,660 acres
Preserved Land in the Watershed ^a	3,451 acres
Predominant Watershed Topography	moderate slopes
General Land Use and Land Cover in the Watershed ^b	
-Urban - Commercial or Industrial	1.6%
-Urban - Residential	8.1%
-Agricultural	5.3%
-Undeveloped Land	84.9%
Significant Potential Contamination Sources	
-Number of inventoried facilities in source water area ^c	6
-Count of inventoried facilities per square mile	0.58 per sq mile
-Number of contaminant types within inventoried facilities	10
Number of Contaminant Release Points Inventoried by CTDEP ^d	0

^a Preserved land includes any combination of land owned by the public water supply, state forest and parklands, and municipally or privately held land designated as open space.

^b Based on statewide data layer of land use and land cover developed by UCONN Dept of Natural Resource Management Engineering and Connecticut DEP satellite imagery averaged across the entire watershed.

^c Inventoried facilities reflect the actual number of SPCS sites present in the source water area, which may have more than 1 type of contaminant present at the facility.

^d Sites or locations with documented accidental spills, leaks or discharges. While these sources, which are cataloged and tracked by the Connecticut DEP, may fall within a public drinking water supply source water area, they may or may not presently be discharging to the environment or causing contamination of a public drinking water source.

SOURCE WATER ASSESSMENT REPORT

AN EVALUATION OF THE SUSCEPTIBILITY OF PUBLIC DRINKING WATER SOURCES TO POTENTIAL CONTAMINATION

APA 88

Town Of Manchester Water Department Charter Oak Street Wellfield

The State of Connecticut Department of Public Health (DPH) in cooperation with the Department of Environmental Protection (DEP) recently completed an assessment of the Charter Oak Street Wellfield, which is a source of public drinking water that is maintained and operated by the Town Of Manchester Water Department. This one-time assessment is part of a nationwide effort mandated by Congress under the Safe Drinking Water Act Amendments of 1996 to evaluate the susceptibility of all public drinking water sources in Connecticut to potential sources of contamination. DPH began working in partnership with the DEP in 1997 to develop Connecticut's Source Water Assessment Program, which was approved by the U.S. Environmental Protection Agency in 1999. Sources of potential contamination that are of concern to public drinking water supplies here in Connecticut are generally associated with historic waste disposal or commercial, industrial, agricultural and residential properties that store or use hazardous materials like petroleum products, solvents or agricultural chemicals.

The assessment is intended to provide Town Of Manchester Water Department consumers with information about where their public drinking water comes from, sources of potential contamination that could impact it, and what can be done to help protect it. This assessment will also assist the public water supply system, regional planners, local government, public health officials and state agencies in evaluating the degree to which the Charter Oak Street Wellfield may be at risk from potential sources of contamination. The assessment can be used to target and implement enhanced source water protection measures such as routine inspections, protective land use regulations, acquisition of critical land, proper septic system maintenance, and public education. General sources of contamination with the potential to impact the Charter Oak Street Wellfield include properties with underground fuel storage tanks, improperly maintained on-site septic systems, improper waste disposal, or commercial/industrial sites that store or use chemicals or generate hazardous wastes.

Charter Oak Street Wellfield Source Water Assessment Summary

STRENGTHS

Public Water System Source Protection Program

Less than 10% of this source water area is currently developed for commercial or industrial use

POTENTIAL RISK FACTORS

Potential contaminant sources in source water area

No local aquifer protection regulations

Susceptibility Rating

Rating	Environmental Sensitivity	Potential Risk Factors	Source Protection Needs
Low	X		
Moderate		X	
High			X

Overall Susceptibility Rating: High

This rating indicates susceptibility to potential sources of contamination that may be in the wellfield source water area and does not necessarily imply poor water quality.

Detailed information about the specific factors and information used in establishing this rating can be found in Table 1. Information about opportunities to improve protection in the Charter Oak Street Wellfield source water area is also presented in Table 2.



Keeping Connecticut Healthy

State of Connecticut Department of Public Health

Drinking Water Division

410 Capitol Avenue – MS# 51WAT
P.O. Box 340308 Hartford, CT 06134
(860) 509-7333

OVERVIEW - The Charter Oak Street Wellfield is located in an aquifer that is comprised largely of water-bearing sand and gravel deposits. The source water area is delineated by a preliminary Level B aquifer protection mapping area, which encompasses some 2269.3 acres of land in Manchester. Vacant land and residential properties in the Charter Oak Street Wellfield source water area presently account for approximately 85.1 percent of the land cover. Commercial development at 9.1 percent and agricultural land use at 5.8 percent, account for the remainder of the land coverage's in the source water area. Information about drinking water quality and treatment is available in the Town Of Manchester Water Department's annual Consumer Confidence Report.

ASSESSMENT METHODS.

The drinking water source assessment methods used by the Department of Public Health Drinking Water Division to evaluate the susceptibility of public drinking water sources to contamination are based on criteria individually tailored to surface water and groundwater sources. The criteria are keyed to sanitary conditions in the source water area, the presence of potential or historic sources of contamination, existing land use coverage's, and the need for additional source protection measures within the source water area. Source-specific data for community and non-community systems were used to determine whether a particular criterion should be rated as low, moderate or high, relative to the risk of potential contamination at the drinking water source. Further, a ranking system was used to compute an average rank for each community drinking water source based on its environmental sensitivity, potential risk of contamination and source protection needs.

Wellfields rated as having a low, moderate or high susceptibility to potential sources of contamination generally exhibit the characteristics summarized in Table 1.

Table 1 – General Source Water Area Characteristics and Susceptibility Ratings

Susceptibility Rating	General Characteristics of the Source Water Area*
Low	Low density of potential contaminant sources Lower intensity of land development
Moderate	Low to moderate density of potential contaminant sources Moderate intensity of land development
High	Moderate to high density of potential contaminant sources Higher intensity of land development No local aquifer protection regulations Detectable nitrates and/or volatile organic chemicals in the untreated source water during the past three years that are below the maximum contaminant levels allowed by state and federal drinking water regulations

** Note: Not all characteristics may be present for a given susceptibility rating*

Readers of this assessment are encouraged to use the attached glossary to assist in the understanding of the terms and concepts used throughout this report.

Maps representing the location and features of the Charter Oak Street Wellfield source water area have not been included with this assessment report because of homeland security concerns

CHARTER OAK STREET WELLFIELD ASSESSMENT RESULTS.

Based on a combination of current wellfield and source water area conditions, existing potential contaminant sources, and the level of source protection measures currently in place, the source water assessment for this wellfield indicates that it has an overall High risk of contamination from identified potential sources of contamination. It should be noted that this rating does not necessarily imply poor water quality or ongoing violations of the Connecticut Public Health Code. The assessment findings for the Charter Oak Street Wellfield are summarized in Table 2, which lists current conditions in the wellfield source water area and recommendations or opportunities to enhance protection of this public drinking water source. A listing of potential contaminant source types in the area can be found in Table 3. A summary of source water area features is shown in Table 4.

The assessment of this and other comparable wellfields throughout Connecticut generally finds that adopting recommendations similar to those presented in Table 2 could reduce the susceptibility of most groundwater sources to potential sources of contamination.

Table 2

**Source Water Assessment Findings and Source Protection Opportunities
Charter Oak Street Wellfield**

Assessment Category	Conditions Through June 2002	Recommendations and Source Protection Opportunities
<p>Environmental Sensitivity Factors</p> <p>Contaminants Detected in Untreated Source Water</p>	<p>All wells in the Charter Oak Street Wellfield are sited and constructed in accordance with DPH regulations and the most recent DPH sanitary survey of this wellfield indicates that it is free of deficiencies.</p> <p>Nitrate</p> <p>Except where noted above, any detected contaminants listed are below maximum contaminant levels (MCL) established by the federal government or guidance levels established by the Connecticut Department of Public Health. The presence of these contaminants, in general, indicates that this wellfield is sensitive to human activity.</p> <p>Click here to review EPA's current drinking water standardsT</p>	<p>Maintain monitoring levels specified in the Connecticut Public Health Code Section 19-13-B102</p> <p>Encourage homeowners to adopt residential best management practices that minimize the use hazardous materials or generation of hazardous waste.</p>
<p>Potential Risk Factors</p>	<p>Potential contaminant sources in source water area</p> <p>More than 30% of land for this source water area is undeveloped, which could present a risk if developed inappropriately.</p>	<p>Periodically inspect SPCS sites and maintain a water quality monitoring program consistent with the level of potential risk</p> <p>Proactively work with local officials and developers to insure that only low-risk development occurs within the source water area</p> <p>Encourage residential property owners to conduct scheduled inspections and maintenance of underground fuel storage tanks and on-site septic systems.</p>
<p>Source Protection Needs Factors</p>	<p>Level B aquifer mapping completed</p> <p>Portions of the 200 foot sanitary radius around wellheads for this wellfield are not owned or controlled by the public water system.</p> <p>Local aquifer protection regulations have not been adopted for this source water area</p> <p>Less than 10% of the land in the source water area exists as preserved open space</p>	<p>Complete Level A mapping</p> <p>Where feasible, increase ownership or control of 200 foot sanitary radius around all wellheads for this wellfield</p> <p>Develop and adopt local aquifer protection regulations</p> <p>Support and encourage the acquisition of open space land within the source water area</p> <p>Support environmental awareness and education within the community.</p>

Inventoried significant potential contaminant sources in the Charter Oak Street Wellfield source water area are listed in Table 3. While these facilities have the potential to cause groundwater contamination, there is no indication that they are doing so at this time.

Table 3 Summary of Significant Potential Contaminant Types in the Charter Oak Street Wellfield Source Water Area

Category	Subcategory	Number of SPCS Types
Waste Storage, Handling, Disposal	Hazardous Waste Facilities	7
	Solid Waste Facilities	0
	Miscellaneous	0
Bulk Chemical, Petroleum Storage	Underground Storage Tanks	29
	Tank Farms	0
	Warehouses	0
Industrial Manufacturing / Processing	Chemical & Allied Production	1
	Chemical Use Processing	2
	Miscellaneous	7
Commercial Trades and Services	Automotive and Related Services	9
	Chemical Use Services	2
	Miscellaneous	3
Agriculture and Related	Pesticide Storage, Handling or Application	0
Total Number of Contaminant Types		60

Prominent features of the Charter Oak Street Wellfield source water area are summarized in Table 4.

Table 4 Features of the Charter Oak Street Wellfield Source Water Area

Number and Type of Public Drinking Water Supply Wells	3 stratified drift wells
Source Water Area Delineation Method ^a	preliminary Level B
DEP Groundwater Classification	GAA - Groundwater used as a public drinking water supply, presumed to be drinkable without treatment
Size of Source Water Area	2269.3 acres
Location of Source Water Area	Manchester
Predominant Land Use and Land Cover in Source Water Area ^b	
-Urban - Commercial or Industrial	9.1 %
-Urban - Residential	53.1 %
-Agricultural	5.8 %
-Undeveloped Land	32.0 %
Preserved Land In Source Water Area ^d	199.1 acres
Significant Potential Contamination Sources	
-Number of inventoried facilities in source water area	41
-Count of inventoried facilities per square mile	11.56 per sq mile
-Number of contaminant sources within inventoried facilities	60
Number of Contaminant Release Points Inventoried by CTDEP ^c	0

^a Source water delineation method depends on data available for the wellfield

^b Based on statewide data layer of land use and land cover developed by UCONN Dept of Natural Resource Management Engineering and Connecticut DEP satellite imagery.

^c Sites or locations with documented accidental spills, leaks or discharges. While these sources, which are cataloged and tracked by the Connecticut DEP, may fall within a public drinking water supply source water area, they may or may not presently be discharging to the environment or causing contamination of a public drinking water source.

^d Any combination of state forest and parklands and municipally or privately held land designated as open space.

SOURCE WATER ASSESSMENT REPORT

AN EVALUATION OF THE SUSCEPTIBILITY OF PUBLIC DRINKING WATER SOURCES TO POTENTIAL CONTAMINATION

APA 89

Town Of Manchester Water Department Love Lane Wellfield

The State of Connecticut Department of Public Health (DPH) in cooperation with the Department of Environmental Protection (DEP) recently completed an assessment of the Love Lane Wellfield, which is a source of public drinking water that is maintained and operated by the Town Of Manchester Water Department. This one-time assessment is part of a nationwide effort mandated by Congress under the Safe Drinking Water Act Amendments of 1996 to evaluate the susceptibility of all public drinking water sources in Connecticut to potential sources of contamination. DPH began working in partnership with the DEP in 1997 to develop Connecticut's Source Water Assessment Program, which was approved by the U.S. Environmental Protection Agency in 1999. Sources of potential contamination that are of concern to public drinking water supplies here in Connecticut are generally associated with historic waste disposal or commercial, industrial, agricultural and residential properties that store or use hazardous materials like petroleum products, solvents or agricultural chemicals.

The assessment is intended to provide Town Of Manchester Water Department consumers with information about where their public drinking water comes from, sources of potential contamination that could impact it, and what can be done to help protect it. This assessment will also assist the public water supply system, regional planners, local government, public health officials and state agencies in evaluating the degree to which the Love Lane Wellfield may be at risk from potential sources of contamination. The assessment can be used to target and implement enhanced source water protection measures such as routine inspections, protective land use regulations, acquisition of critical land, proper septic system maintenance, and public education. General sources of contamination with the potential to impact the Love Lane Wellfield include properties with underground fuel storage tanks, improperly maintained on-site septic systems, improper waste disposal, or commercial/industrial sites that store or use chemicals or generate hazardous wastes.

Love Lane Wellfield Source Water Assessment Summary

STRENGTHS

Public Water System Source Protection Program

POTENTIAL RISK FACTORS

Potential contaminant sources in source water area

No local aquifer protection regulations

2 contaminant release points in source water area

Susceptibility Rating

Rating	Environmental Sensitivity	Potential Risk Factors	Source Protection Needs
Low	X		
Moderate			
High		X	X

Overall Susceptibility Rating: High

This rating indicates susceptibility to potential sources of contamination that may be in the wellfield source water area and does not necessarily imply poor water quality.

Detailed information about the specific factors and information used in establishing this rating can be found in Table 1. Information about opportunities to improve protection in the Love Lane Wellfield source water area is also presented in Table 2.



Keeping Connecticut Healthy

State of Connecticut Department of Public Health

Drinking Water Division

410 Capitol Avenue – MS# 51WAT
P.O. Box 340308 Hartford, CT 06134
(860) 509-7333

OVERVIEW - The Love Lane Wellfield is located in an aquifer that is comprised largely of water-bearing sand and gravel deposits. The source water area is delineated by a preliminary Level B aquifer protection mapping area, which encompasses some 465.0 acres of land in Manchester. Vacant land and residential properties in the Love Lane Wellfield source water area presently account for approximately 71.9 percent of the land cover. Commercial development at 14.1 percent and agricultural land use at 14.1 percent, account for the remainder of the land coverage's in the source water area. Information about drinking water quality and treatment is available in the Town Of Manchester Water Department's annual Consumer Confidence Report.

ASSESSMENT METHODS.

The drinking water source assessment methods used by the Department of Public Health Drinking Water Division to evaluate the susceptibility of public drinking water sources to contamination are based on criteria individually tailored to surface water and groundwater sources. The criteria are keyed to sanitary conditions in the source water area, the presence of potential or historic sources of contamination, existing land use coverage's, and the need for additional source protection measures within the source water area. Source-specific data for community and non-community systems were used to determine whether a particular criterion should be rated as low, moderate or high, relative to the risk of potential contamination at the drinking water source. Further, a ranking system was used to compute an average rank for each community drinking water source based on its environmental sensitivity, potential risk of contamination and source protection needs.

Wellfields rated as having a low, moderate or high susceptibility to potential sources of contamination generally exhibit the characteristics summarized in Table 1.

Table 1 – General Source Water Area Characteristics and Susceptibility Ratings

Susceptibility Rating	General Characteristics of the Source Water Area*
Low	Low density of potential contaminant sources Lower intensity of land development
Moderate	Low to moderate density of potential contaminant sources Moderate intensity of land development
High	Moderate to high density of potential contaminant sources Higher intensity of land development No local aquifer protection regulations Detectable nitrates and/or volatile organic chemicals in the untreated source water during the past three years that are below the maximum contaminant levels allowed by state and federal drinking water regulations

** Note: Not all characteristics may be present for a given susceptibility rating*

Readers of this assessment are encouraged to use the attached glossary to assist in the understanding of the terms and concepts used throughout this report.

Maps representing the location and features of the Love Lane Wellfield source water area have not been included with this assessment report because of homeland security concerns

LOVE LANE WELLFIELD ASSESSMENT RESULTS.

Based on a combination of current wellfield and source water area conditions, existing potential contaminant sources, and the level of source protection measures currently in place, the source water assessment for this wellfield indicates that it has an overall High risk of contamination from identified potential sources of contamination. It should be noted that this rating does not necessarily imply poor water quality or ongoing violations of the Connecticut Public Health Code. The assessment findings for the Love Lane Wellfield are summarized in Table 2, which lists current conditions in the wellfield source water area and recommendations or opportunities to enhance protection of this public drinking water source. A listing of potential contaminant source types in the area can be found in Table 3. A summary of source water area features is shown in Table 4.

The assessment of this and other comparable wellfields throughout Connecticut generally finds that adopting recommendations similar to those presented in Table 2 could reduce the susceptibility of most groundwater sources to potential sources of contamination.

Table 2

**Source Water Assessment Findings and Source Protection Opportunities
Love Lane Wellfield**

Assessment Category	Conditions Through June 2002	Recommendations and Source Protection Opportunities
<p>Environmental Sensitivity Factors</p> <p>Contaminants Detected in Untreated Source Water</p>	<p>All wells in the Love Lane Wellfield are sited and constructed in accordance with DPH regulations and the most recent DPH sanitary survey of this wellfield indicates that it is free of deficiencies.</p> <p>Nitrate, MTBE</p> <p>Except where noted above, any detected contaminants listed are below maximum contaminant levels (MCL) established by the federal government or guidance levels established by the Connecticut Department of Public Health. The presence of these contaminants, in general, indicates that this wellfield is sensitive to human activity.</p> <p>Click here to review EPA's current drinking water standardsT</p>	<p>Maintain monitoring levels specified in the Connecticut Public Health Code Section 19-13-B102</p> <p>Encourage homeowners to adopt residential best management practices that minimize the use hazardous materials or generation of hazardous waste.</p>
<p>Potential Risk Factors</p>	<p>Potential contaminant sources in source water area</p> <p>2 contaminant release points in source water area</p> <p>More than 30% of land for this source water area is undeveloped, which could present a risk if developed inappropriately.</p> <p>Ten percent or more of the source water area has been developed for commercial or industrial use</p>	<p>Periodically inspect SPCS sites and maintain a water quality monitoring program consistent with the level of potential risk</p> <p>Maintain an adequate level of surveillance around contaminant release point sites to insure that groundwater contamination is not occurring</p> <p>Proactively work with local officials and developers to insure that only low-risk development occurs within the source water area</p> <p>Monitor activities at commercial and industrial facilities to insure that best management practices are being followed</p> <p>Encourage residential property owners to conduct scheduled inspections and maintenance of underground fuel storage tanks and on-site septic systems.</p>
<p>Source Protection Needs Factors</p>	<p>Level B aquifer mapping completed</p> <p>Portions of the 200 foot sanitary radius around wellheads for this wellfield are not owned or controlled by the public water system.</p> <p>Local aquifer protection regulations have not been adopted for this source water area</p> <p>Very little or no public/private preserved open space lands are present in the source water area</p>	<p>Complete Level A mapping</p> <p>Where feasible, increase ownership or control of 200 foot sanitary radius around all wellheads for this wellfield</p> <p>Develop and adopt local aquifer protection regulations</p> <p>Support and encourage the acquisition of open space land within the source water area</p> <p>Support environmental awareness and education within the community.</p>

Inventoried significant potential contaminant sources in the Love Lane Wellfield source water area are listed in Table 3. While these facilities have the potential to cause groundwater contamination, there is no indication that they are doing so at this time.

Table 3 Summary of Significant Potential Contaminant Types in the Love Lane Wellfield Source Water Area

Category	Subcategory	Number of SPCS Types
Waste Storage, Handling, Disposal	Hazardous Waste Facilities	1
	Solid Waste Facilities	4
	Miscellaneous	0
Bulk Chemical, Petroleum Storage	Underground Storage Tanks	9
	Tank Farms	0
	Warehouses	1
Industrial Manufacturing / Processing	Chemical & Allied Production	0
	Chemical Use Processing	1
	Miscellaneous	0
Commercial Trades and Services	Automotive and Related Services	8
	Chemical Use Services	0
	Miscellaneous	2
Agriculture and Related	Pesticide Storage, Handling or Application	0
Total Number of Contaminant Types		26

Prominent features of the Love Lane Wellfield source water area are summarized in Table 4.

Table 4 Features of the Love Lane Wellfield Source Water Area

Number and Type of Public Drinking Water Supply Wells	1 stratified drift well
Source Water Area Delineation Method ^a	preliminary Level B
DEP Groundwater Classification	GAA - Groundwater used as a public drinking water supply, presumed to be drinkable without treatment
Size of Source Water Area	465.0 acres
Location of Source Water Area	Manchester
Predominant Land Use and Land Cover in Source Water Area ^b	
-Urban - Commercial or Industrial	14.1 %
-Urban - Residential	37.3 %
-Agricultural	14.1 %
-Undeveloped Land	34.6 %
Preserved Land In Source Water Area ^d	0.0 acres
Significant Potential Contamination Sources	
-Number of inventoried facilities in source water area	17
-Count of inventoried facilities per square mile	23.40 per sq mile
-Number of contaminant sources within inventoried facilities	26
Number of Contaminant Release Points Inventoried by CTDEP ^c	2

^a Source water delineation method depends on data available for the wellfield

^b Based on statewide data layer of land use and land cover developed by UCONN Dept of Natural Resource Management Engineering and Connecticut DEP satellite imagery.

^c Sites or locations with documented accidental spills, leaks or discharges. While these sources, which are cataloged and tracked by the Connecticut DEP, may fall within a public drinking water supply source water area, they may or may not presently be discharging to the environment or causing contamination of a public drinking water source.

^d Any combination of state forest and parklands and municipally or privately held land designated as open space.

SOURCE WATER ASSESSMENT REPORT

AN EVALUATION OF THE SUSCEPTIBILITY OF PUBLIC DRINKING WATER SOURCES TO POTENTIAL CONTAMINATION

CT0770021

Town Of Manchester Water Department

The State of Connecticut Department of Public Health (DPH) in cooperation with the Department of Environmental Protection (DEP) recently completed an assessment of sources of public drinking water maintained and operated by the Town Of Manchester Water Department. This one-time assessment is part of a nationwide effort mandated by Congress under the Safe Drinking Water Act Amendments of 1996 to evaluate the susceptibility of all public drinking water sources in Connecticut to potential sources of contamination. DPH began working in partnership with the DEP in 1997 to develop Connecticut's Source Water Assessment Program, which was approved by the U.S. Environmental Protection Agency in 1999. Sources of potential contamination that are of concern to public drinking water supplies here in Connecticut are generally associated with historic waste disposal or commercial, industrial, agricultural and residential properties that store or use hazardous materials like petroleum products, solvents or agricultural chemicals.

The assessment is intended to provide Town Of Manchester Water Department consumers with information about where their public drinking water comes from, sources of potential contamination that could impact it, and what can be done to help protect it. This assessment will also assist the public water supply system, regional planners, local government, public health officials and state agencies in evaluating the degree to which the three wells may be at risk from potential sources of contamination. The assessment can be used to target and implement enhanced source water protection measures such as routine inspections, protective land use regulations, acquisition of critical land, proper septic system maintenance, and public education. General sources of contamination with the potential to impact these wells include properties with underground fuel storage tanks, improperly maintained on-site septic systems, improper waste disposal, or commercial/industrial sites that store or use chemicals or generate hazardous wastes.

ASSESSMENT METHODS. The drinking water source assessment methods used by the Department of Public Health Drinking Water Division to evaluate the susceptibility of public drinking water sources to contamination are based on criteria individually tailored to surface water and groundwater sources. The criteria are keyed to sanitary conditions in the source water area, the presence of potential or historic sources of contamination, existing land use coverage's, and the need for additional source protection measures within the source water area. Source-specific data for community and non-community systems were used to determine whether a particular criterion should be rated as low, moderate or high, relative to the risk of potential contamination at the drinking water source. A ranking system was used to compute an average rank for each community drinking water source based on its environmental sensitivity, potential risk of contamination and source protection needs.

ASSESSMENT RESULTS. Individual assessment summaries and recommendations to enhance source protection for the public drinking water source(s) listed below are presented in the attachments.

Location	Name of Drinking water Source(s)	Susceptibility Summary
Manchester	Fern Street Well 1, Parker St Well 10, Progress Drive Well 11	Low to High

Additional information about drinking water quality and treatment for this source(s) is available in the Town Of Manchester Water Department's annual Consumer Confidence Report.

The assessment of this source(s) and other comparable drinking water sources throughout Connecticut generally finds that adopting recommendations similar to those presented in the attachment(s) could reduce the susceptibility of most groundwater sources to potential sources of contamination.



Keeping Connecticut Healthy

State of Connecticut Department of Public Health

Drinking Water Division

410 Capitol Avenue – MS# 51WAT
P.O. Box 340308 Hartford, CT 06134
(860) 509-7333

CT0770021

SOURCE WATER ASSESSMENT SUMMARY

Town Of Manchester Water Department

Well Name	Well Location	Well Type	DEP Groundwater Classification	Source Water Area (acres)
Fern Street Well 1	Manchester	Bedrock	GAA-Well	18

Factor	Source Water Assessment Ratings For This Well	Rating
I	Environmental Sensitivity	Low
II	Potential Risk Factors	Low
III	Source Protection Needs	Low
Overall Susceptibility to Potential Sources of Contamination		Low
This rating is intended to indicate susceptibility to potential sources of contamination that may be in the wellfield source water area and does not necessarily imply poor water quality.		

Assessment Factor		Initial Assessment Findings	Recommendations for Enhanced Source Protection								
I	Contaminants Detected in Source Water	None									
I	General condition of well and related equipment	Good	Maintain well and equipment according to best management practices								
II	DEP-inventoried Contaminant Release Points	There are no DEP-inventoried contaminant release points in the well's source water area									
II	Potential Sources of Contamination	There are no potential sources of contamination present in this well's source water area									
II	Source Water Area Land Use In The Town Of: Manchester <i>(Based on Satellite Imagery developed by University of Conn.)</i>	<table border="0"> <tr> <td>Commercial/Industrial</td> <td>0.0%</td> </tr> <tr> <td>Residential</td> <td>3.3%</td> </tr> <tr> <td>Agricultural</td> <td>0.0%</td> </tr> <tr> <td>Open or Undeveloped</td> <td>96.7%</td> </tr> </table>	Commercial/Industrial	0.0%	Residential	3.3%	Agricultural	0.0%	Open or Undeveloped	96.7%	Proactively work with local officials and developers to insure that only low risk development occurs within the source water area. Support and encourage the acquisition of open space land within the source water area.
Commercial/Industrial	0.0%										
Residential	3.3%										
Agricultural	0.0%										
Open or Undeveloped	96.7%										
III	Land Area Around Wellhead	Level of public water system ownership/control of 200 foot sanitary radius around well is unknown	Verify or increase ownership/control of 200 foot sanitary radius around well								
III	Local Aquifer Protection Regulations	There are no local aquifer protection regulations for this source water area	Support the development of local aquifer protection regulations								
III	Local Government Source Protection Initiatives	Drinking water source protection policies exist at the local governmental level									
III	Water System Source Protection Initiatives	Public water system maintains a comprehensive source protection program									



Keeping Connecticut Healthy

State of Connecticut Department of Public Health
Drinking Water Division

410 Capitol Avenue – MS# 51WAT
P.O. Box 340308 Hartford, CT 06134

(860) 509-7333

CT0770021

SOURCE WATER ASSESSMENT SUMMARY

Town Of Manchester Water Department

Well Name	Well Location	Well Type	DEP Groundwater Classification	Source Water Area (acres)
Parker St Well 10	Manchester	Bedrock	GAA-Well-Impaired	539

Factor	Source Water Assessment Ratings For This Well	Rating
I	Environmental Sensitivity	Moderate
II	Potential Risk Factors	High
III	Source Protection Needs	High
Overall Susceptibility to Potential Sources of Contamination		High
This rating is intended to indicate susceptibility to potential sources of contamination that may be in the wellfield source water area and does not necessarily imply poor water quality.		

Assessment Factor		Initial Assessment Findings	Recommendations for Enhanced Source Protection
I	Contaminants Detected in Source Water	Nitrate, Dieldrin	Maintain monitoring levels specified in the Connecticut Public Health Code Section 19-13-B102
I	General condition of well and related equipment	Good	Maintain well and equipment according to best management practices
II	DEP-inventoried Contaminant Release Points	There are two DEP-inventoried contaminant release points in the well's source water area	Maintain an adequate level of surveillance around contaminant release point sites to insure that groundwater contamination is not occurring
II	Potential Sources of Contamination	There are 18 potential sources of contamination present in this well's source water area	Periodically inspect these sites and maintain a water quality monitoring program consistent with the level of potential risk
II	Source Water Area Land Use In The Town Of: Manchester <i>(Based on Satellite Imagery developed by University of Conn.)</i>	Commercial/Industrial 18.9% Residential 69.4% Agricultural 1.8% Open or Undeveloped 9.8%	Proactively work with local officials and developers to insure that only low risk development occurs within the source water area. Support and encourage the acquisition of open space land within the source water area.
III	Land Area Around Wellhead	Public water system does not own or control entire 200 foot sanitary radius around well	Where feasible, increase ownership or control of 200 foot sanitary radius around the wellhead
III	Local Aquifer Protection Regulations	There are no local aquifer protection regulations for this source water area	Support the development of local aquifer protection regulations
III	Local Government Source Protection Initiatives	Drinking water source protection policies exist at the local governmental level	
III	Water System Source Protection Initiatives	Public water system maintains a comprehensive source protection program	



Keeping Connecticut Healthy

*State of Connecticut Department of Public Health
Drinking Water Division*

410 Capitol Avenue – MS# 51WAT
P.O. Box 340308 Hartford, CT 06134

(860) 509-7333

CT0770021

SOURCE WATER ASSESSMENT SUMMARY

Town Of Manchester Water Department

Well Name	Well Location	Well Type	DEP Groundwater Classification	Source Water Area (acres)
Progress Drive Well 11	Manchester	Bedrock	GAA-Well-Impaired	630

Factor	Source Water Assessment Ratings For This Well	Rating
I	Environmental Sensitivity	Moderate
II	Potential Risk Factors	High
III	Source Protection Needs	High
Overall Susceptibility to Potential Sources of Contamination		High
This rating is intended to indicate susceptibility to potential sources of contamination that may be in the wellfield source water area and does not necessarily imply poor water quality.		

Assessment Factor	Initial Assessment Findings	Recommendations for Enhanced Source Protection
I	Contaminants Detected in Source Water Nitrate >1 mg/L, Volatile organic compounds below MCL	Maintain monitoring levels specified in the Connecticut Public Health Code Section 19-13-B102
I	General condition of well and related equipment Good	Maintain well and equipment according to best management practices
II	DEP-inventoried Contaminant Release Points There are two DEP-inventoried contaminant release points in the well's source water area	Maintain an adequate level of surveillance around contaminant release point sites to insure that groundwater contamination is not occurring
II	Potential Sources of Contamination There are 23 potential sources of contamination present in this well's source water area	Periodically inspect these sites and maintain a water quality monitoring program consistent with the level of potential risk
II	Source Water Area Land Use In The Town Of: Manchester (Based on Satellite Imagery developed by University of Conn.) Commercial/Industrial 29.7% Residential 53.3% Agricultural 7.2% Open or Undeveloped 9.8%	Proactively work with local officials and developers to insure that only low risk development occurs within the source water area. Support and encourage the acquisition of open space land within the source water area.
III	Land Area Around Wellhead Public water system does not own or control entire 200 foot sanitary radius around well	Where feasible, increase ownership or control of 200 foot sanitary radius around the wellhead
III	Local Aquifer Protection Regulations There are no local aquifer protection regulations for this source water area	Support the development of local aquifer protection regulations
III	Local Government Source Protection Initiatives Drinking water source protection policies exist at the local governmental level	
III	Water System Source Protection Initiatives Public water system maintains a comprehensive source protection program	



Keeping Connecticut Healthy

State of Connecticut Department of Public Health
Drinking Water Division

410 Capitol Avenue – MS# 51WAT
P.O. Box 340308 Hartford, CT 06134
(860) 509-7333