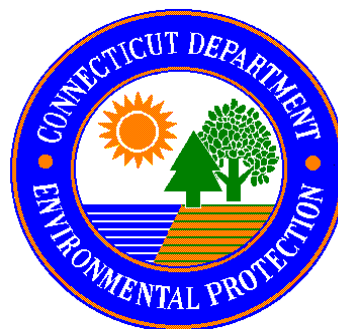


State of Connecticut Guidelines for Monitoring Bathing Water and Closure Protocol



STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH
410 Capitol Avenue
Hartford, CT 06134-0308

J. Robert Galvin, M.D., M.P.H., M.B.A.
Commissioner
www.dph.state.ct.us



STATE OF CONNECTICUT
DEPARTMENT OF
ENVIRONMENTAL PROTECTION
Bureau of Water Management
79 Elm Street
Hartford, CT 06106-5127

Gina McCarthy
Commissioner
www.dep.state.ct.us

December 2008

INTRODUCTION

This is the third major revision of the Guidelines for Monitoring Bathing Waters and Closure Protocol first published in May 1989 and revised in June 1992. Development of the “Guidelines” was one of the primary recommendations contained in the Coastal Sanitation Report also published in May 1989. Both documents were products of the Public Health Workgroup¹, which was a working group of public health professionals convened by the CT DPH and DEP in late 1988 in response to public hysteria and a rash of beach closures during the summer of 1988, mainly in western Long Island Sound. These conditions resulted from the mistaken public perception that incidents involving medical waste, “sewage slicks” and floatable trash (usually attributed to New York City) were common occurrences. The perception was further aggravated by the general lack of standardized beach monitoring and closure practices available to local public health officials. The original “Guidelines” were drafted to:

- Establish guidance for dealing with “medical waste”
- Adopt a better bacterial indicator (Enterococci vs. Total coliform in Beach Guidance and CT Water Quality Standards.)
- Adopt uniform bathing water criteria values (1986 EPA bathing water criteria)
- Standardize bathing water sampling methodology
- Improve interagency and public communication and notification practices
- Initiate an annual meeting on beach sanitation for state and local officials

In addition to the recommendation for development and adoption of these “Guidelines”, the Public Health Workgroup initiated an annual meeting of public health officials to promote the “Guidelines”. This annual beach sanitation meeting continues and has been instrumental in fostering communication between the CT DPH, DEP and local officials in matters related to beach and shoreline sanitation.

On October 10, 2000, the “Beaches Environmental Assessment and Coastal Health Act” (a.k.a. Federal Beach Act) was signed into law and is administered by the US Environmental Protection Agency (USEPA). This act provides considerable financial resources to state and local health agencies through the federal government. The Act is intended to promote comprehensive public beach monitoring and public notification to protect public health at coastal bathing beaches. The CT DPH and DEP have applied for and received funds through the act for FY 2002 through 2009 with the intention of furthering these goals and objectives.

¹Composed of: CT Dept. of Health, CT Dept. of Environmental Protection, Stamford Health Dept., Fairfield Health Dept. representing the CT Environmental Health Association, West Haven Health Dept. representing the CT Association of Directors of Health, Chesprocott Health District.

GUIDELINES FOR MONITORING
BATHING WATERS & CLOSURE PROTOCOL
TABLE OF CONTENTS

TITLE	PAGE NUMBER
Watershed Survey	1
Inspection and Sampling	1, 2
Sanitary Water Quality	3 – 6
Beach Closure	6, 7
Dilution Water for Inland Bathing Areas	7
Medical Debris	7, 8
Safety and Injury Control	8
Notification of Beach Closures	9
Notification of Beach Reopenings	9
Notification of Shellfish Bed Closures	9
Notification of Sewage Treatment Plant Bypass or Mechanical Failure	9
Appendices:	10
Bathing Water Sample Invoice Form	11
Bathing Area Closure Notification	12
Bypass Notification Regulations	13, 14
Clam Digger's/Swimmer's Itch Information	15
Dilution Water Per Bather Per Day	16
Revision History	17

GUIDELINES FOR MONITORING BATHING WATERS & CLOSURE PROTOCOL

WATERSHED SURVEY:

1. Annually prior to the bathing season, the local health department should conduct a sanitary survey of any watershed which drains to a public bathing area. If any source of contamination which may adversely affect the bathing area is observed, the local director of health shall take appropriate action under his/her authority to correct the violation.
2. When conducting a watershed survey for a coastal bathing area special consideration should be given to sewage treatment plant location, pump station location, industrial plant discharge points and other areas that may impact the bathing area waters.
3. Large populations of waterfowl on a watershed can be a contributing factor to elevated bacterial levels in the bathing area. Therefore, this information should be noted on the watershed survey report.

INSPECTION AND SAMPLING:

1. Annually, prior to bathing season, the local health department should inspect each public bathing place and/or establishment within its jurisdiction. The inspection should include but not be limited to the beach, grounds, bathhouses, toilets, drinking water supply, sewage disposal, safety equipment and signage. Refer to Public Health Code Sections 19-13-B34 and 19-12-B36 for specific requirements.
2. All bathing water samples are to be collected under the auspices of the director of health. **The recommended sampling frequency of both inland and tidal public bathing areas is weekly.** Samples shall be collected at fixed sampling stations to provide consistency of data. The recommended number of sampling stations per bathing area is dependent upon the size of the area among other factors.

Normally when an area is relatively small in size (300 linear feet of shoreline or less) only one sampling station will be necessary. The location of single sampling stations should be in the middle of the bathing area. A minimum of two sampling stations should be provided at beaches with shorelines up to 700 linear feet in length. Where beach shorelines exceed 700 linear feet, a minimum of three sampling stations is recommended. Multiple sampling stations should normally be located with approximately equal distances between stations and the boundaries of the beach.

Shorelines with unusual configurations or features may require that additional sampling stations be located to monitor these particular conditions (e.g. storm sewer outfalls, waterways discharging into the bathing area, configurations which disrupt the contiguity of the beach, etc.). Operational conditions such as heavy bather usage in one portion of the bathing area may also influence the selection of sample stations.

3. Sample collection procedure should be as follows:

Samples should be collected at approximately 3 to 4 feet water depth. The 125ml bottle provided by the laboratory for surface water sampling must be used. Remove the cap from the sterile collection bottle, being careful not to contaminate either the inside of the cap or bottle. Grasp the bottle near its base and plunge it in a downward motion into the water to a depth of between 12 and 18 inches, always keeping the mouth of the container ahead of the hand so as not to contaminate the sample. In a sweeping motion invert the bottle to fill. Empty the bottle to approximately one inch from the top (if necessary) to provide air space for laboratory processing and carefully replace the cover. Store the samples on ice for transport to the laboratory.

At the time of sampling, the collector should make a visual observation of the tidal shoreline and tidal waters for any hazardous materials or contamination. If any medical debris is observed it is to be reported immediately to authorized beach personnel and the local health department.

4. Designated beach personnel (e.g. lifeguards) should physically inspect the entire beach shoreline from the high tide mark to the water's edge each morning for any evidence of hazardous debris such as broken glass, needles, wood with nails or debris indicating possible contamination, including but not limited to biomedical waste, medical waste, sewage grease balls, dispensed condoms, tampon applicators, and other floatable trash. The local health department is to be contacted if any biomedical or medical debris are observed. Other appropriate agencies are to be contacted based upon the local health department's evaluation of the situation.

Designated beach personnel who have access to a motorboat should make a daily inspection of the waters surrounding the beach for any signs of slicks, floatable or other debris which could impact the bathing waters at that beach. Any confirmed sightings should be reported to the local health department, for their inspection. Other appropriate agencies are to be contacted by the local health department if follow-up inspection results produce issues of concern.

5. Required information to be indicated on the laboratory sample submission form, titled "Bathing Water Sample Invoice Form" (see Appendix page 11):

BATHING WATER SAMPLE INVOICE FORM

- A. Affix DPH label in space provided.
- B. Complete collection information to include; collected by; town; town identification number; date and telephone number.
- C. Circle **Marine** water or **Fresh** water.
- D. Complete sample information to include: time and collector's number, which will identify exactly where the sample was collected.
- E. Additional Information: should include but not be limited to, amount of rainfall during the past 24 hours, bather load at time of sampling, bird activity near sample site, clarity or turbidity of the water, wind direction, information such as, resample because last sample indicated criteria exceedance.

SANITARY WATER QUALITY (Effective May 20, 2002):

The indicator organisms to be used for monitoring bathing water quality as established by the Connecticut Department of Public Health are:

1. Freshwater

E. coli organism as determined by the membrane filter techniques: Modified EPA Method 1603 (Modified mTEC Medium) and EPA Method 1103.1 (mTEC medium). Also, Colilert 18 Method and any State of Connecticut or EPA approved or recommended method. Bacterial standard to be used for interpretation of laboratory analyses of single or individual samples from freshwater bathing waters are as follows for the *E. coli* organism:

- A. A concentration of *E. coli* organisms less than or equal to 235 per 100 ml is generally considered satisfactory for a single sample from a bathing area.
- B. A single sample with a concentration of *E. coli* organisms greater than 235 per 100 ml is in excess of that which is normally considered acceptable for bathing. A resample is required. A sanitary survey of the surrounding watershed and areas that may impact the bathing area should be conducted immediately to evaluate suitability of the area for bathing if no known sources of contamination have already been identified.
- C. To determine bathing water quality when using the *E. coli* organism as an indicator, a running geometric mean for each sampling station is to be used.

An acceptable running geometric mean for *E. coli* indicator organism density for bathing waters is less than or equal to 126. A running geometric mean is to be used when evaluating the long-term microbiological suitability of recreation water quality. The geometric mean can provide a better indication of water quality over time. This holds especially true when evaluating a proposed bathing area where seasonal or incidental variations may impact on single sample results.

2. Marine Water

Enterococcal organism as determined by the membrane filter techniques: EPA Method 1600 (mEI Medium) and EPA Method 1106.1 (mE Medium). Also, Enterolert Method and any State of Connecticut or EPA approved or recommended method. Bacterial standard to be used for interpretation of laboratory analyses of single or individual samples from marine bathing waters are as follows for the enterococcal organism:

- A. A concentration of enterococcal organisms less than or equal to 104 per 100 ml is generally considered satisfactory for a single sample from a bathing area.
- B. A single sample with a concentration of enterococcal organisms greater than 104 per 100 ml is in excess of that which is normally considered acceptable for bathing. A resample is required. A sanitary survey of the surrounding watershed and areas that may impact the bathing area should be conducted immediately to evaluate suitability of the area for bathing if no known sources of contamination have already been identified.

- C. To determine bathing water quality when using the enterococcal organism as an indicator, a running geometric mean for each sampling station is to be used.

An acceptable running geometric mean for enterococcal indicator organism density for bathing waters is less than or equal to 35. A running geometric mean is to be used when evaluating the long-term microbiological suitability of recreation water quality. The geometric mean can provide a better indication of water quality over time. This holds especially true when evaluating a proposed bathing area where seasonal or incidental variations may impact on single sample results.

3. For the purpose of this document a running geometric mean should be based on at least 5 sample results per 30-day period. Therefore, when 5 sample results have been obtained from a sampling station in a 30-day period, a geometric mean can be performed.

The geometric mean can be defined as the n^{th} root of the product of n numbers:

$$G = \sqrt[n]{(X_1)(X_2)(X_3)\dots(X_n)}$$

4. An example of a running geometric mean is as follows:

<u>Sampling Station #1</u>	<u>Sample Results</u>	<u>Date Collected</u>
	20	06/04/01
	40	06/11/01
	15	06/18/01
	30	06/25/01
	29	07/02/01

Calculating a Geometric Mean

The geometric mean of your samples can be calculated using one of two methods; each one will provide an accurate answer. Taking into consideration that calculators differ and have different function keys, choose the method that is easier for you to follow.

Calculate the geometric mean for the following five samples taken within a 30-day period: 20, 40, 15, 30, and 29.

SOLUTION STEPS

Method 1: Take the n^{th} root of n samples.

Step 1: Multiply all sample values together.

$$20 \times 40 \times 15 \times 30 \times 29 = 10,440,000$$

Step 2: Count the number of samples you are using.

$$= 5$$

Step 3: Make the value of *Step 2* the denominator in a fraction with '1' as the numerator.

$$= 1/5 = 0.2$$

Step 4: Take the answer from *Step 1* and raise it to the power of the answer from *Step 3*.

$$= (10,440,000)^{0.2}$$

This calculation can be performed on a scientific calculator in several ways. For example, enter 10,440,000 into the calculator. Press the "x^y" key and then enter "0.2." This calculation can also be performed by entering 10,440,000, pressing the "^" key, and entering 0.2.

$$\text{Answer: } = 25.336$$

If you have more than five samples collected during a 30-day period, the additional samples should be included in the calculation of the geometric mean (for both methods).

Method 2: Take the antilog of the mean of the logarithm of each sample.

Step 1: Take the log of each sample. (This calculation can be performed on a scientific calculator using the "log" key. For example, enter "20" into the calculator and then press the "log" key.)

$$\log(20) = 1.30$$

$$\log(40) = 1.60$$

$$\log(15) = 1.17$$

$$\log(30) = 1.47$$

$$\log(29) = 1.46$$

Step 2: Take the average, or mean, of the log samples.

$$1.40 = \frac{1.30 + 1.60 + 1.17 + 1.47 + 1.46}{5}$$

Step 3: Take the antilog of the answer from *Step 2*.

$$25.336 = \text{antilog}(1.40374)$$

This calculation can be performed on a scientific calculator in several ways. For example, enter “1.40,” press the “Inv” key, and then press the “log” key. This calculation can also be performed by pressing the “2nd” followed by the “log” key and then typing 1.40.

$$\text{Answer: } = 25.336$$

If the geometric mean of several bacteriological samples exceeds the acceptable limit, the bathing area should be reviewed with DPH.

BEACH CLOSURE:

1. If there is a known waste contamination event such as a sewage bypass or mechanical failure at a sewage treatment plant, pump station failure or ruptured sewer pipe, beach closures may be recommended by the local health department prior to receiving any sample results. Such decisions must be based on currents, tides, wind direction or other factors that would transport or direct the contamination into bathing waters.
2. If sampling was conducted in response to apparent or suspected waste contamination and the results exceed the standards, there may be sufficient justification to close a beach prior to receiving results of a resample.
3. When a single sample result exceeds the standards for bathing water quality established by the commissioner, a resample should be taken and a survey made to determine if raw or partially treated sewage is contributing to the elevated bacterial levels. If the survey reveals discharges of raw or partially treated sewage then the bathing area should be closed by the local director of health.
4. If sample results exceed the standards and a sanitary survey reveals no evidence of sewage contamination, the bathing area should be examined on an individual basis with consultation from DPH before any decision about closure is made. The bathing area may remain open.
5. If the bathing area is impacted by a mass of floating debris, the director of health may close the area to bathing for safety reasons even if the water quality is good. This especially holds true when there is evidence of grease balls or other indications of sewage treatment plant debris.

6. The director of health may also want to consider bathing beach closures established by evaluating rainfall data. This can be accomplished by conducting a season long study where bathing water samples are collected after measurable rainfall events occurring within a 24 hour time period.

If the study data indicates that the bacterial level is elevated above the acceptable single sample standard after measurable rainfall events in a 24-hour period, then the director of health could recommend beach closures after each such rainfall event based on this study data.

If an actual study cannot be performed then the use of historical data at sampling stations may be used to make a determination as to the suitability of the bathing water after rainfall events occurring in a 24-hour period. For this reason it is very important to indicate rainfall information on the laboratory sample submission form.

7. The reopening of any beach after closure will be based on obtaining satisfactory sample results.

DILUTION WATER FOR INLAND BATHING AREAS:

It is generally recognized that inland bathing water quality is dependent on the amount of dilution water available.

Section 19-13-B34(e) of the Connecticut Public Health Code states that a minimum of 1,000 gallons of dilution water per bather per day be available to help maintain bathing water quality. This dilution water may be from inflowing water or from natural circulation in large bodies of impounded water.

The following formula is used to determine the number of bathers per day that should be allowed to utilize a water body: $N = (V/180 + F)/1,000$ [after Theodore C. Willerford, Connecticut Health Bulletin, June Vol 87, No.6, pp 162-163]

where: N = the number of bathers, V = the volume of the water body in gallons and F = the inflow in gallons per day provided by streams or other sources. 180 is an average turnover time in days for a typical lake. You can substitute 180 with a known turnover rate (days).

See Appendix 5 on page 16 for several examples.

MEDICAL DEBRIS:

1. Handling Medical Debris

Syringes with needles or needles alone should be handled so as not to subject the handler to punctures. All such materials and other medical debris should be handled for proper disposal in accordance with OSHA bloodborne pathogen requirements. These are located at federal regulations 29 CFR 1910.1030 and can be found at www.OSHA.gov website. Information can be obtained at Connecticut Department of Labor OSHA at (860) 263-6900.

2. Testing of Medical Debris

Testing of the contents of vials or syringes containing blood for Hepatitis or HIV is not generally recommended. Testing should only be considered in the event that there is a needle stick or other penetrating physical injury involving a person being exposed to the contents of that vial or syringe.

3. Reporting

If medical debris is found, this information is to be immediately reported to the local health department.

SAFETY AND INJURY CONTROL:

1. Lifeguards

When lifeguard service is in effect a minimum of one lifeguard for every 100 yards of beach immediately adjacent to the occupied bathing area is recommended.

Elevated lifeguard stands high enough to provide the lifeguard with a complete and unobstructed view of the bathing and beach area are required.

A first aid kit and lifesaving equipment are to be available at the lifeguard duty station. All lifeguards are required to be certified in cardiopulmonary resuscitation (C.P.R.) by the American Heart Association or the American Red Cross per regulation Section 19a-113a-1. Where lifeguard service is not provided, a warning sign shall be placed in plain view and shall state "WARNING – NO LIFEGUARD ON DUTY" with legible letters at least 4 inches high. Communication devices should be provided to the lifeguards for emergency situations.

2. Signage

A sign or flag indicating when the beach is closed should be posted in a conspicuous location such as the beach entrance.

Signs shall be posted with directions to the nearest public telephone for emergency use. Emergency telephone numbers should also be posted which may simply be the 911 number or the telephone numbers of the closest emergency response service.

3. Injury Control

Each morning before normal hours of operation, beach personnel should clean the beach of any objects which could cause injury to beach patrons. If lifeguards are on duty, a brief but thorough inspection of the bathing area for submerged objects which may have been carried into the area during the night by currents, tides, wave action, wind or other means should be conducted.

No fishing or boat launching should be allowed in the bathing area to prevent the possibility of related accidents.

Inflatable or buoyant devices should not be allowed except for U.S. Coast Guard approved personal floatation devices worn by swimmers.

Glass containers, fires, charcoal or gas grills, ball or Frisbee playing, the possession or drinking of alcoholic beverages should be prohibited on the beach.

4. Notification of Beach Closures

(Refer to “Bathing Area Closure Notification” see Appendix page 12)

If the local director of health deems it necessary to close a bathing beach, the DPH should be advised of such closure by telephone as soon after the closure as possible but not later than 4 hours. During normal business hours contact DPH at (860) 509-7296, and at all other times, (860) 509-7321.

Information to be provided to the DPH concerning the closure should include but not limited to the following:

The reason for such closure, i.e. bacterial water quality results, hazardous or medical debris on the beach, floatables in the bathing water, bypass or mechanical failure at a sewage treatment plant.

The names of the affected areas; name of beaches involved, entire coastline within the town boundaries.

5. Notification of Beach Reopenings

The DPH shall be notified when any bathing beach has reopened and the rationale for reopening such beach. Notice shall be provided by: telephone (860) 509-7296, fax (860) 509-7295 or Email: Raymond.Jarema@ct.gov within 6 hours of reopening.

6. Notification of Shellfish Bed Closures

The local health department should consult with the Connecticut Department of Agriculture, Aquaculture Division at (203) 874-0696 on appropriate action.

7. Notification of Sewage Treatment Plant Bypass or Mechanical Failure: (Refer to DEP bypass notification regulations - see Appendix page 13)

A. When a sewage treatment plant or a sewer collection transport system experiences either a bypass or mechanical failure where partially treated or raw sewage is discharged to the receiving waters, the local health director in that town shall, immediately after being advised of the discharge, notify the health departments in neighboring towns whose waters may be impacted by the discharge.

B. Information which should be transmitted should include but not be limited to the following:

Type of problem at the sewage treatment plant, number of gallons that have been discharged and what type of treatment, if any, that has been applied to the discharged material. Additionally an estimate of the duration of the problem should be provided. The neighboring towns should also be informed when the problem has been resolved.

APPENDICES

1. Bathing Water Sample Invoice Form
2. Bathing Area Closure Notification
3. Sewage Treatment By-Pass Notification
4. Clam Digger's/Swimmer's Itch Information
5. Dilution Water Per Bather Per Day
6. Revision History

Appendix 1
Connecticut Department of Public Health Laboratory
BATHING WATER SAMPLE INVOICE FORM
Telephone (860) 509-8562

Place a DPH Lab submitter address/account label in this space. Call 860-509-8501 for additional labels	Collected By: _____ Town: _____ Town#: _____ Date Collected _____ Phone#(____) _____
--	---

Please Circle One: **MARINE WATER**
 TEST NUMBER 559M
 Enterolert

FRESH WATER
 TEST NUMBER 558M
 Colilert

Time: _____ Collector's No. _____ Additional Info: _____	Accession No. _____ Enterococci Count/100ml: _____ Initials _____ <small>Positive Wells:</small> E. coli Count/100ml: _____ Initials _____ <small>Positive Wells:</small>
Time: _____ Collector's No. _____ Additional Info: _____	Accession No. _____ Enterococci Count/100ml: _____ Initials _____ <small>Positive Wells:</small> E. coli Count/100ml: _____ Initials _____ <small>Positive Wells:</small>
Time: _____ Collector's No. _____ Additional Info: _____	Accession No. _____ Enterococci Count/100ml: _____ Initials _____ <small>Positive Wells:</small> E. coli Count/100ml: _____ Initials _____ <small>Positive Wells:</small>
Time: _____ Collector's No. _____ Additional Info: _____	Accession No. _____ Enterococci Count/100ml: _____ Initials _____ <small>Positive Wells:</small> E. coli Count/100ml: _____ Initials _____ <small>Positive Wells:</small>
Time: _____ Collector's No. _____ Additional Info: _____	Accession No. _____ Enterococci Count/100ml: _____ Initials _____ <small>Positive Wells:</small> E. coli Count/100ml: _____ Initials _____ <small>Positive Wells:</small>

DATE AND TIME ANALYZED:
 ANALYZED BY:
 METHOD:

ENTEROLERT / COLILERT

rev. 3/03

BATHING AREA CLOSURE NOTIFICATION

Connecticut DPH Telephone Number: (860) 509-7296 Fax Number: (860) 509-7295

Date: _____

Time: _____

Town: _____

Health Department _____

Bathing Area(s) Affected by Closure:

1. _____

4. _____

2. _____

5. _____

3. _____

6. _____

Reason for Closure:

Date and Time Closure Effective:

Date and Time Reopened:

Total Number of Days Closed:

Any other local and/or state agencies notified:

Any news/TV media involved:

Information Provided By:

Name:

Title:

Telephone Number:

Appendix 3

Section 22a-430-3
Regulations of Connecticut State Agencies (RCSA)

BYPASS NOTIFICATION

K. Bypass

1. The permittee shall not at any time bypass the collection system or treatment facilities or any part thereof unless (A) (i) such bypass is unanticipated, unavoidable, and necessary to prevent loss of life, personal injury or severe property damage, and (ii) there were no feasible alternatives to the bypass, including but not limited to the use of auxiliary or back-up treatment facilities, retention of untreated wastes, stopping the discharges, or maintenance during normal periods of equipment downtime; or (B) the permittee receives prior written approval of the bypass from the commissioner in order to perform essential maintenance, and the bypass does not cause effluent limitations to be exceeded. The commissioner may impose any conditions on such an approval which he or she deems necessary to protect the waters of the state, including but not limited to requirements for special monitoring or reductions in the release of pollutants and water to the treatment system. Condition (A) (ii) is not satisfied if the permittee, in the exercise of reasonable engineering judgment, should have installed adequate backup equipment to prevent a bypass.
2. In the event such a bypass is necessary, the permittee shall to the extent possible minimize or halt production and/or all discharges until the facility is restored or an alternative method of treatment is provided.
3. In order to prevent a bypass, the permittee may schedule maintenance during periods when no discharge is occurring or employ any other necessary means, including but not limited to duplicate units and systems or alternative collection and treatment or pretreatment schemes. Any such other means shall (A) insure that the effluent limitations specified in the permit are achieved; (B) be approved by the director in writing prior to its use, which approval shall include an alternative schedule for monitoring if appropriate; and (C) be discontinued upon completion of the performance of the essential maintenance. The permittee shall provide notice to the director not less than twenty-four (24) hours prior to the use of any alternative scheme and monitor and record the quality and quantity of the discharge in accordance with permit terms and conditions or an approved alternative schedule. Such monitoring shall be submitted with the next monitoring report required by the permit, and shall not be used to meet routine scheduled monitoring report requirements of the permit.
4. If any bypass occurs or may occur, the permittee shall, within two hours of becoming aware of such condition or need, notify the director during normal business hours, and the CT DEP's Emergency Response Unit at all other times (860) 424-3338 and submit within five days a written report including the cause of the problem, duration including dates and times and corrective action taken or planned to prevent other such occurrences. In addition, if the permittee has reason to believe that any effluent limitation specified in the permit may be violated, the permittee shall immediately take steps to prevent or correct such violation, including but not limited to employing an alternative scheme of collection or treatment, and/or control the production of the wastewater and shall monitor and record the quality and quantity of the discharge in accordance with the permit terms and conditions or an approved alternative schedule. Such monitoring shall

be submitted with the next monitoring report required by the permit, and shall not be used to meet the routine monitoring requirements of the permit.

5. Recording and Reporting of Violations, Additional Testing Requirements

Section 22a-430-3(k) of the RCSA shall apply in all instances of bypass including a bypass of the treatment plant or a component of the sewage collection system planned during required maintenance. The Department of Environmental Protection, Bureau of Water Management, Planning and Standards Division (860) 424-3704, the Department of Public Health, Water Supply Section (860) 509-7333 and Recreation Section (860) 509-7296, and the local Director of Health shall be notified within 2 hours by telephone during normal business hours and a written report submitted to the Department of Environmental Protection, Bureau of Water Management, Planning and Standards Division, Municipal Facilities Section within five days of each occurrence, or potential occurrence, of an emergency diversion or bypass of untreated or partially treated sewage. If the diversion or bypass occurs outside normal working hours (8:30 a.m. to 4:30 p.m. Monday through Friday), within two hours notification shall be made to the CT DEP Emergency Response Unit at (860) 424-3338 and the Department of Public Health at (860) 509-8000.

The written report shall contain:

- 1) the nature and cause of the bypass,
- 2) the time the incident occurred and the anticipated time which it is expected to continue or, if the condition has been corrected, the duration,
- 3) the estimated volume of the bypass or discharge of partially treated sewage,
- 4) the steps being taken to reduce or minimize the effect on the receiving waters, and
- 5) the steps that will be taken to prevent reoccurrence of the condition in the future.

CONNECTICUT DEPARTMENT OF PUBLIC HEALTH

Clam Digger's/Swimmer's Itch (Schistosome Dermatitis)

What is Clam Digger's/Swimmer's Itch?

Clam Digger's/Swimmer's Itch is a skin rash caused by a parasite. This parasite is released from infected snails and migrates through waters including those used for recreational swimming. Clam Digger's Itch is contacted in salt water and Swimmer's Itch in fresh water. Both occur during the summer and may be more common during periods of especially hot weather.

Who gets Clam Digger's/Swimmer's Itch?

People who swim or wade in water infested with the parasite may experience this itchy rash. All age groups and both sexes can be involved, but children are most often affected.

How is Clam Digger's/Swimmer's Itch Spread?

A person may get the skin rash by swimming or wading in infested water and then allowing water on the skin to air dry instead of drying off with a towel. Person to person transmission does not occur.

What are the Symptoms of Clam Digger's/Swimmer's Itch?

When water infested with the parasite is allowed to air dry, an initial tingling sensation may be felt when the parasite enters the skin. A mild itching may occur within one to two hours after exposure and last for around an hour. Ten (10) to fifteen (15) hours later the rash appears along with itching, which may be extremely intense. The rash reaches a peak in 3 to 4 days and usually disappears within a week.

A person's first exposure to infested water may not result in the itchy rash. Repeated exposures increase a person's sensitivity to the parasite and increase the likelihood of getting a rash.

What is the Treatment for Clam Digger's/Swimmer's Itch?

While all cases do not require treatment, some people may seek relief by applying specific skin lotions or creams to minimize the itching.

What can be done to Prevent Clam Digger's/Swimmer's Itch?

Prevention is limited to the protective measures taken by the person. The most practical solution is to avoid bathing in waters known to be infected with the parasite. The use of chemicals to control the snail population is neither feasible nor environmentally sound. Toweling off vigorously immediately after emerging from the water can prevent the rash. Do not air dry.

Cases of Clam Digger's/Swimmer's Itch should be reported to the local health department or the lifeguard on duty. Affected areas should be posted to warn bathers of the presence of the parasites and precautions for preventing the rash.

Appendix 5

DILUTION WATER PER BATHER PER DAY

Willerford argued in the Connecticut Health Bulletin (June Vol 87, No. 6, pp 162-163) that there are two contributors to daily dilution water at an inland bathing area. They are: 1) the natural turnover of a body of water as measured in gallons per day; and 2) any inflow coming from external sources also measured in gallons per day.

If you know the volume of a water body and the annual turnover rate in days, then you can calculate the daily turnover rate in gallons per day. For example: a 1,000 gallon waterbody with a 180 day turnover, would have $1,000/180$ or 5.56 gallons of turnover per day that could be counted toward the total daily dilution water for the waterbody. The daily turnover in gallons can be added to the inflow - also in gallons per day - to find the total gallons of daily dilution water for the water body.

Once you know the daily dilution water (turnover gallons per day plus daily inflow gallons), you can divide the daily dilution water by the recommended 1,000 gallons of dilution water per day per bather to find the allowable bather loading.

Here are several examples based on the formula: $N = (V/180 + F)/1,000$

where: N = the number of bathers, V = the volume of the water body in gallons and F = the inflow in gallons per day provided by streams or other sources. 180 is an average turnover time in days for a typical lake. You can substitute 180 with a known turnover rate (days).

EXAMPLE 1: For a 2000 gallon water body with a 180 day turnover and 1,000 gallons/day inflow.

$$N = (2,000/180 + 1,000)/1,000$$

$$N = (11.11 + 1,000)/1,000 \quad \text{Note: daily turnover is 11.11 gallons per day}$$

$$N = (1,011.11)/1,000$$

$$N = 1.011 \text{ bathers}$$

EXAMPLE 2: For a 180,000 gallon waterbody with 180 day turnover and a 1,000 gallons/day inflow.

$$N = (180,000/180 + 1,000)/1,000$$

$$N = (1,000 + 1,000)/1,000 \quad \text{Note: daily turnover is 1,000 gallons per day}$$

$$N = (2,000)/1,000$$

$$N = 2 \text{ bathers}$$

EXAMPLE 3: For a 180,000 gallon waterbody with a 60 day turnover and a 1,000 gallons/day inflow.

$$N = (180,000/60 + 1,000)/1,000$$

$$N = (3,000 + 1,000)/1,000 \quad \text{Note: daily turnover is 3,000 gallons per day}$$

$$N = (4,000)/1,000$$

$$N = 4 \text{ bathers}$$

Appendix 6

REVISION HISTORY

April 2003 - third major revision

December 2008 - minor update with current contact information