



Presented by:

**Connecticut Department of Public Health
Environmental Engineering Program
410 Capitol Avenue, MS# 12-SEW
P. O. Box 340308
Hartford, CT 06134**

www.ct.gov/dph/subsurfacesewage

Phone: (860) 509-7296

Fax: (860) 509-7295



Contact Information

Main line: 860-509-7296

Amanda Clark 860-509-7368

Amanda.Clark@ct.gov

Sean Merrigan 860-509-7383

Sean.Merrigan@ct.gov

Matt Pawlik 860-509-7384

Matthew.Pawlik@ct.gov

Robert Scully 860-509-7385

Robert.Scully@ct.gov



CONNECTICUT PUBLIC HEALTH CODE

On-site Sewage Disposal Regulations and Technical Standards for Subsurface Sewage Disposal Systems

PHC Section 19-13-B100a (Building Conversions, Changes in Use, Building Additions)

Effective August 3, 1998

PHC Sections 19-13-B103a through 19-13-B103f (Design Flows 5,000 Gallons per Day or Less*)

Effective August 16, 1982

Technical Standards for Subsurface Sewage Disposal Systems

Effective August 16, 1982

Revised January 1, 2018

PHC Sections 19-13-B104a through 19-13-B104d (Design Flows Greater than 5,000 Gallons per Day*)

Effective August 16, 1982

*Note: The 5,000 gallons per day jurisdictional design flow was increased to 7,500 gallons per day by Public Act No. 17-146, Section 30 effective July 1, 2017.

State of Connecticut
Department of Public Health
Environmental Engineering Program
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January 2018



Environmental Engineering Program (EEP)

Public Act No. 17-146, Section 30 raised the jurisdictional design flow from 5,000 GPD to 7,500 GPD effective July 1, 2017.



Environmental Engineering Program (EEP)

- Subsurface Sewage Disposal
- Crematoriums, Mausoleums, Columbarium's, Private Burial
- *Water Treatment Wastewater Discharge*



* DEEP/DPH WTW Delegation Agreement

- July 2017 DEEP/DPH WTW Delegation Agreement that provides the authority for the DOH or licensed sanitarian to approve and permit discharges to a WTW dispersal system, WTW holding tank, or to a SSDS if authorized by DPH.
- Went into effect Jan 1. 2018



DEEP/DPH WTW Delegation Agreement

- WTW discharges shall also be in accordance with any future regulations promulgated by DPH.
- WTW discharges to the ground surface, wetlands or open watercourse are not authorized.



Technical Standards Code Advisory Committee

CADH - Local Health Directors

CEHA - Environmental Health Association

COWRA - Onsite Wastewater Recycling Assoc.

DEEP - Dept of Energy and Environ Protection

DPH - Dept of Public Health

Home Builders and Remodelers Association

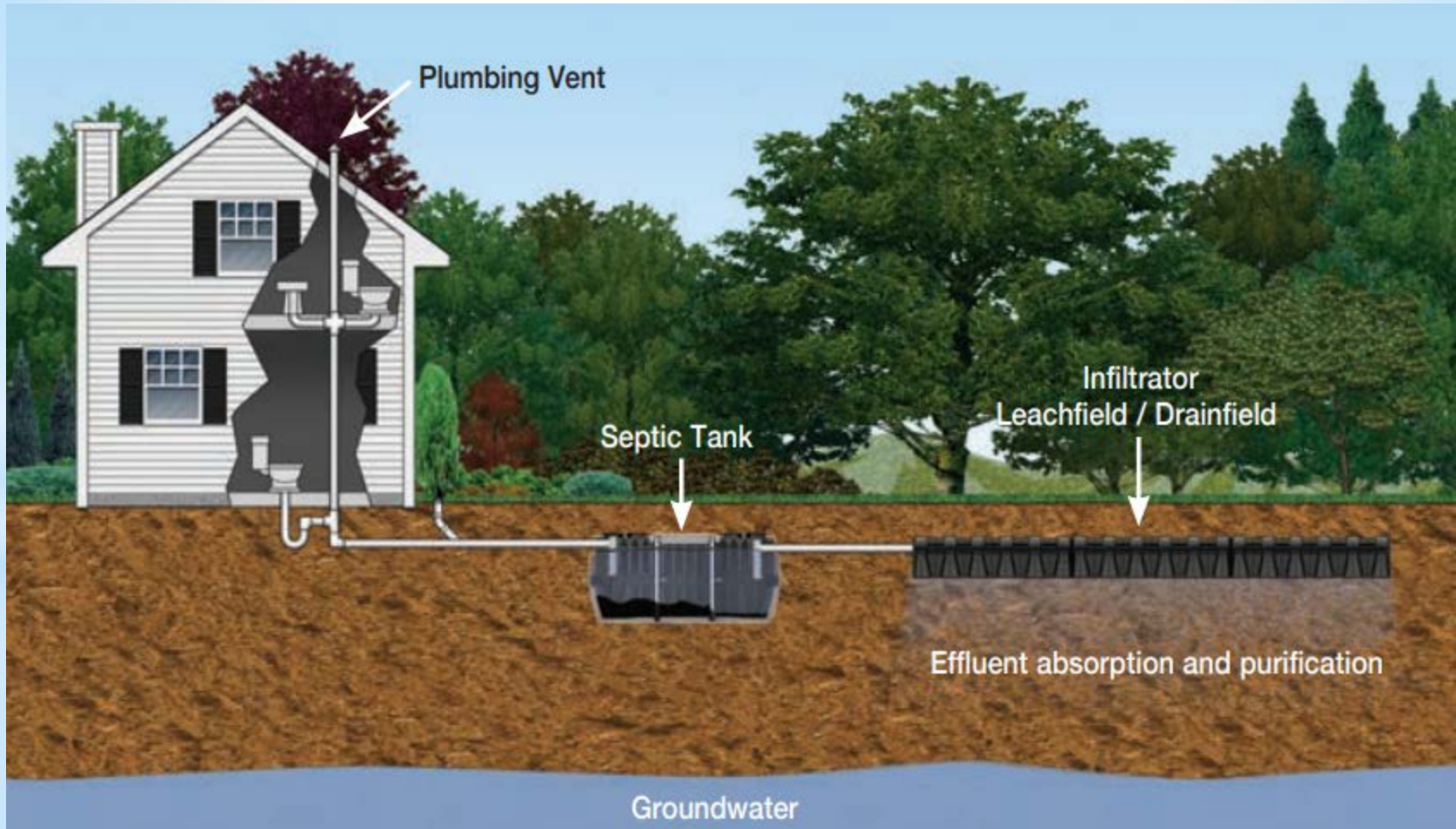
Professional Engineers, Soil Scientist

*CTWWA - CT WELL WATER ASSOCIATION

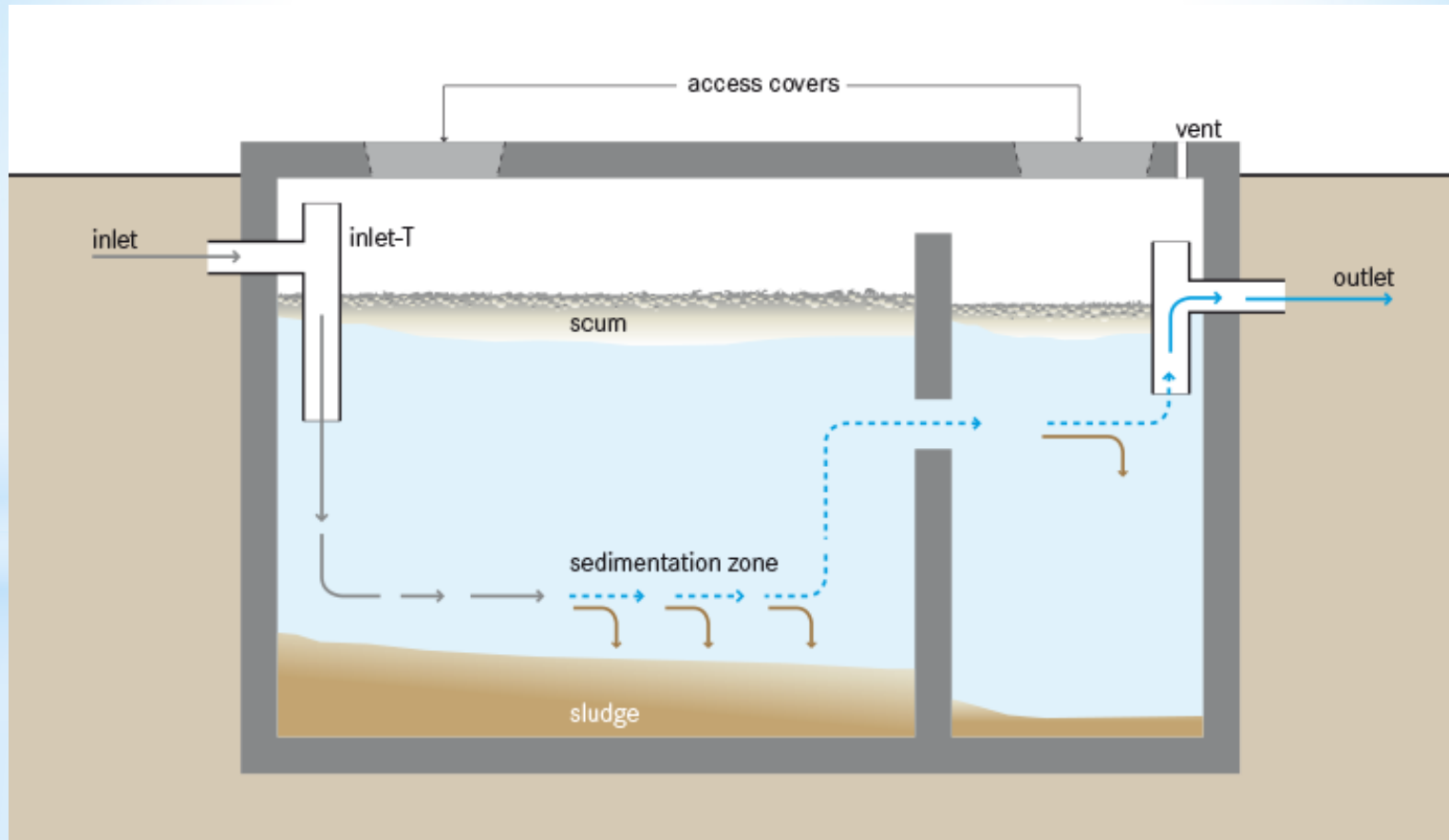
Definition of WTW

Water Treatment Wastewater (WTW):
Wastewater generated by a device used for the treatment of well water that enhances the quality of water and/or provides for the removal of iron, manganese, radionuclides and other substances.

Conventional Septic System



Septic Tank



Septic Tank outlet filter



Leachfield



Septic tank installed



Septic tank opening



Deteriorated septic tank cover







Deterioration

Outlet

Distribution box



Distribution box



Plastic manhole risers and covers



Plastic septic tank



Plastic distribution box



Leachfield failures



Leachfield failures



Woodbridge CT SSDS malfunction



Sewage Disposal System cause?







Raw Water Quality Test

TORRINGTON AREA HEALTH DEPARTMENT

350 Main Street, Suite A, Torrington Connecticut 06790

Phone (860) 489-0436 Fax (860) 496-8243 E-mail info@tahd.org Web Address www.tahd.org

Analysis Report

June 28, 2018

FOR: Attn: M
41 Turn
Woodbridge, CT 06525

Sample Information

Matrix: DRINKING WATER
Location Code: LHWT-DW
Rush Request: Standard
P.O.#:

Custody Information

Collected by:
Received by: B
Analyzed by: see "By" below

Date

06/22/18

Time

7:00

12:57

Laboratory Data

SDG ID: GCA76354
Phoenix ID: CA76354


Project ID:

Client ID: GARAGE FAUCET

Parameter	Result	RL/ PQL	DIL	Units	AL	MCL	MCLG	Date/Time	By	Reference
Calcium	78.6	0.10	10	mg/L				06/27/18	MA	E200.7
Iron	5.90	0.010	1	mg/L			0.3	06/26/18	EK	E200.7
*** Iron exceeds Secondary Goal of 0.3 ***										
Hardness (CaCO3)	308	0.1	1	mg/L				06/28/18		E200.7
Magnesium	27.1	0.01	1	mg/L				06/26/18	EK	E200.7
Manganese	1.01	0.010	10	mg/L			0.05	06/27/18	MA	E200.7
*** Manganese exceeds Secondary Goal of 0.05 ***										
Sodium	40.8	1.0	10	mg/L			28	06/27/18	MA	E200.7
*** Sodium exceeds Secondary Goal ***										
*** For public water systems the goal is 28 mg/L, private water systems the goal is 100 mg/L ***										
*** The conservative goal of 28 is used for this report ***										
Escherichia Coli	Absent	0	1	/100 mls	0			06/22/18 18:30	AJ/KDB	SM9223B-97
Total Coliforms	Absent	0	1	/100 mls	0			06/22/18 18:30	AJ/KDB	SM9223B-04
Chloride	146	6.0	2	mg/L	250			06/23/18	B/E/G	E300.0
Color, Apparent	75.0	5.00	5	Color Units			15	06/22/18 16:59	O	SM2120B-11
*** Color, Apparent exceeds Secondary Goal of 15 ***										
Fluoride	0.12	0.10	1	mg/L	4			06/23/18	B/E/G	E300.0
Nitrite as Nitrogen	< 0.004	0.004	1	mg/L	1			06/23/18 00:54	B/E/G	E300.0
Nitrate as Nitrogen	< 0.01	0.01	1	mg/L	10			06/23/18 00:54	B/E/G	E300.0
Odor at Room Temperature	< 1	1	1	T.O.N.			3	06/22/18 17:00	O	SM2150B-97
pH	7.50	1.00	1	pH Units			6.5-8.5	06/22/18 23:07	RWR/KDB	SM4500-H B-11
Sulfate	21.4	3.0	1	mg/L			250	06/23/18	B/E/G	E300.0-2.1
Turbidity	50.4	0.20	1	NTU			5	06/22/18 21:33	L	SM2130B-11
*** Turbidity exceeds Secondary Goal of 5 ***										

Treated Water Quality Test Results

REVD 18
 20 JUN 14


Aquatek Labs
 3 Research Drive - Woodbridge, CT 06525
WATER ANALYSIS REPORT

TO: HUNGERFORDS PUMP SERVICE
 301 STATE STREET
 NORTH HAVEN, CT 06473-

TEST ID: D05151426
DATE SAMPLED: 5/15/2014
SAMPLE POINT: KITCHEN SINK
AFTER TREATMENT SYSTEM
SAMPLED BY: BEN UIHLEIN

PROPERTY LOCATION: _____

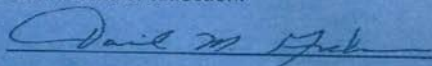
BACTERIA		LIMITS		METHOD
COLIFORM (total)	<input checked="" type="checkbox"/> ABSENT <input type="checkbox"/> PRESENT	ABSENT	P	SM 9223
E. COLI (fecal)	<input checked="" type="checkbox"/> ABSENT <input type="checkbox"/> PRESENT	ABSENT	P	SM 9223
CHLORINE	<input checked="" type="checkbox"/> ABSENT <input type="checkbox"/> PRESENT	ABSENT	-	

PHYSICAL PARAMETERS	RESULT	UNITS	LIMITS	MRL	METHOD
pH	7.4	SU	6.4 - 10	0	SM 4500-H B
TURBIDITY	0.40	NTU	5	0.10	SM 2130 B
COLOR	ND	CU	15	5	SM 2120 B
ODOR	0	TON	2	0	SM 2150

CHEMICALS	RESULT	UNITS	LIMITS	MRL	METHOD
FLUORIDE	ND	mg/L	4	0.3	EPA 300.0
CHLORIDE	77	mg/L	250	3	EPA 300.0
NITRITE NITROGEN	ND	mg/L	1	0.1	EPA 300.0
NITRATE NITROGEN	ND	mg/L	10	1	EPA 300.0
SULFATE	27	mg/L	250	4	SM 3111 B
CALCIUM	ND	mg/L	NONE	0.5	SM 3111 B
MAGNESIUM	ND	mg/L	NONE	0.5	SM 3111 B
HARDNESS	ND	mg/L	200	4	SM 2340 B
* SODIUM	174.0	mg/l	28	0.5	SM 3111 B
COPPER	ND	mg/L	1.3	0.04	SM 3111 B
IRON	ND	mg/L	0.3	0.04	SM 3111 B
MANGANESE	ND	mg/L	0.05	0.04	SM 3111 B

CONCLUSION: Based on the above results, this water was safe for drinking purposes at the time of collection.

P = Primary limit, used to judge potability
 S = Secondary limit, recommended but not required
 MRL = Minimum Reportable Level
 * Limit exceeded
 ND = None Detected
 CT License #PH-0466, Aquatek Labs


 David M. Graham, Ph.D.
 Laboratory Director

Water Quality Test Results

PARAMETER	RAW WATER	TREATED WATER	LIMITS
pH	7.5	7.5	6.4-10
Turbidity	50	0.4	5
Color	75	Non Detect (ND)	15
Calcium	79	ND	N/A
Magnesium	27	ND	N/A
Iron	5.9	ND	0.3
Manganese	1	ND	0.05
Sodium	41	174	28
Chloride	146	77	250
Hardness	308	ND	200
Sulfate	22	27	250

WTW Dispersal System

Water Treatment Wastewater Dispersal System: The system includes solid conveyance piping, intermediate settling or filtration structures if any, and a receiving structure. *Receiving structures* include stone filled excavations, dry wells, galleries, pits, plastic chambers, or other structures approved by DPH.

Setbacks to SSDS

Item Q. Water Treatment Wastewater Dispersal System: Revised special provision relative to setbacks for the three discharge categories. (<150GPD, 150-500GPD and >500GPD)

WHAT IS NOW REQUIRED??

- The applicant shall submit a plan/sketch to the DOH showing the proposed WTW dispersal system or connection to the SSDS.
- The name and contact information of the installer shall be noted.

Section X: Water Treatment Wastewater

- The applicant shall submit information on the water treatment system including WTW backwash volume per cycle and cycle frequency.
- Plans for new SSDSs should designate an area where a WTW dispersal system could be installed.

Section X: Water Treatment Wastewater

Compliance with PHC Section 19-13-B100a (e) may need to be demonstrated. Note: This B100a subsection concerns sewage disposal area preservation and it governs activities that affect soil characteristics or hydraulic conditions that may reduce a potential repair area or eliminate a code complying area.

Section X: Water Treatment Wastewater

- The DOH or licensed sanitarian shall approve the design prior to the installation of WTW dispersal system or WTW holding tank.
- The WTW disposal system installer shall provide twenty-four (24) hour minimum advance notice to the DOH prior to commencement of installation, unless otherwise approved by the DOH.

Section X: Water Treatment Wastewater

- DOHs may request an inspection prior to covering the WTW disposal system.
- Applicable permits (electrical, plumbing) shall be obtained from the local building official.

Section X: Water Treatment Wastewater

- Minimum storage volume of 1.5 times of either the anticipated discharge per cycle or daily average, whichever is greater.
- Stone aggregate used shall be free of silt, dirt and debris and covered with approved filter fabric.

Section X Water Treatment Wastewater

- WTW solid conveyance piping shall be approved by DOH and protected from freezing. Referenced gravity and pressure pipes in Tables 2-A and 2-B as acceptable pipes.
- Conveyance piping shall be 25', 75' and 100' to both public and private wells. DOH can reduce down to 10 feet for *private wells only* on existing sites if compliance cannot be met.

Section X Water Treatment Wastewater

- WTW dispersal systems shall meet the minimum separating distances to sewage systems per Item Q in Table 1.
- WTW holding tanks, including piping, shall be located at least 10' from SSDSs.



Section X: Water Treatment Wastewater

WTW dispersal system receiving structures shall meet the minimum separating distances in Table 9.

Item	Separation Distance (feet)	Special Provisions
Public or private water supply well with required withdrawal rate of: <div style="text-align: right; margin-right: 50px;"> < 10 GPM 10 to 50 GPM > 50 GPM </div>	<div style="text-align: center; margin-top: 100px;"> 75 150 200 </div>	The DOH may allow certain separation distance reductions on existing developed properties if compliance cannot be met due to site limitations. ⁽¹⁾⁽²⁾⁽³⁾
Open watercourse	25	
Public water supply reservoir	100	
Property line	10	
Subsurface sewage disposal system	See Table 1 (Item Q)	

(Table 9 provisions)

DOH can reduce certain distances on existing *developed* properties when warranted based on site limitations; however distance reductions for water supply wells can only be considered for *private wells* and the distance shall not be reduced to less than 25 feet.

Section X: Water Treatment Wastewater

(Table 9 provisions)

- WTW discharges less than 75 feet up-gradient of *private wells* shall be avoided, whenever possible.
- The DOH may not allow a reduced setback to a *private well* if there is a concern the WTW may impact the quality of the groundwater.



Section X Water Treatment Wastewater

Non-discharging WTW disposal system components (WTW holding tanks, WTW settling or filtration structures) and any air gaps/breaks in conveyance piping outside of building foundation shall meet the minimum separating distances in Table 9, unless otherwise authorized by DPH.

WTW Dispersal System Receiving Structures

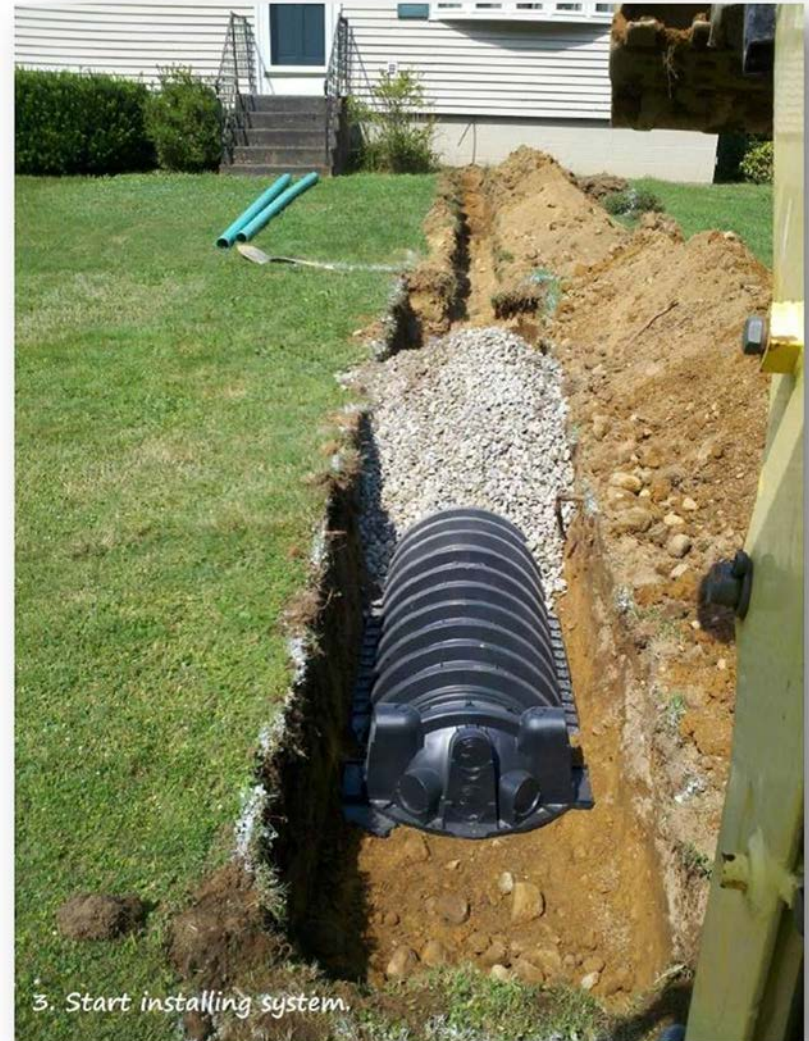
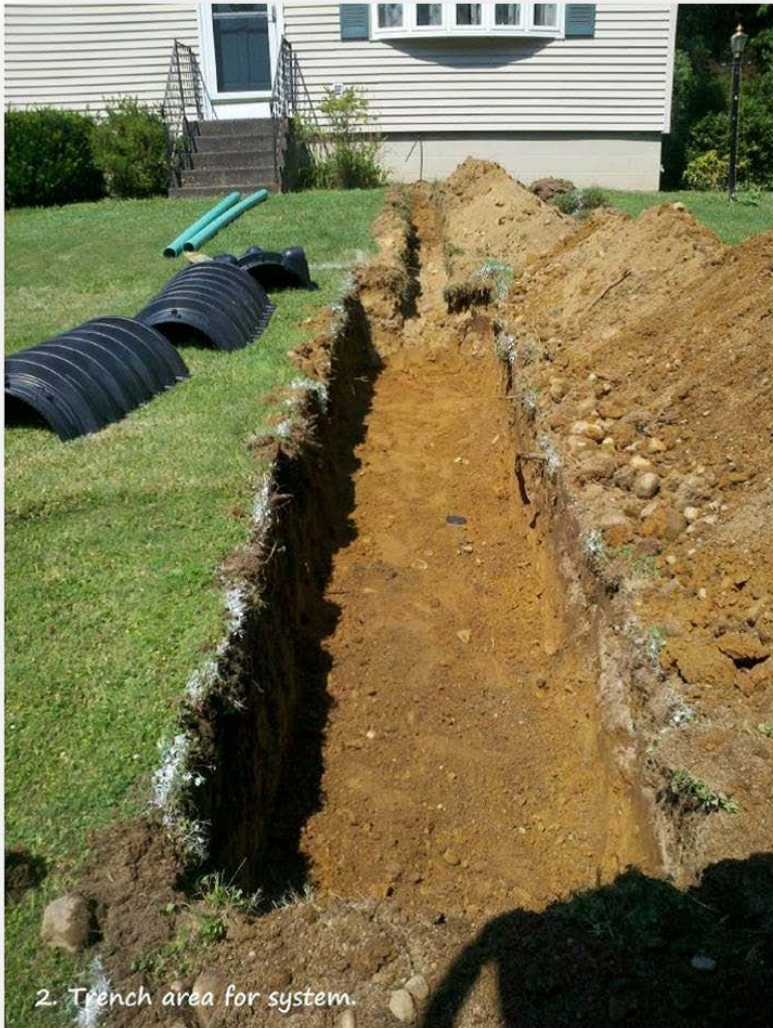
- WTW receiving structure bottoms shall be located a minimum 12 inches above maximum groundwater and 24 inches above ledge rock.
- WTW Holding tanks shall provide an access cleanout to grade and be equipped with a high-level alarm.



WTW Dispersal System Receiving Structures

- WTW dispersal systems and holding tanks in vehicular travel areas shall be H-20 load rated.
- An as-built drawing (swing ties to 2 or more fixed reference points) shall be submitted to the DOH

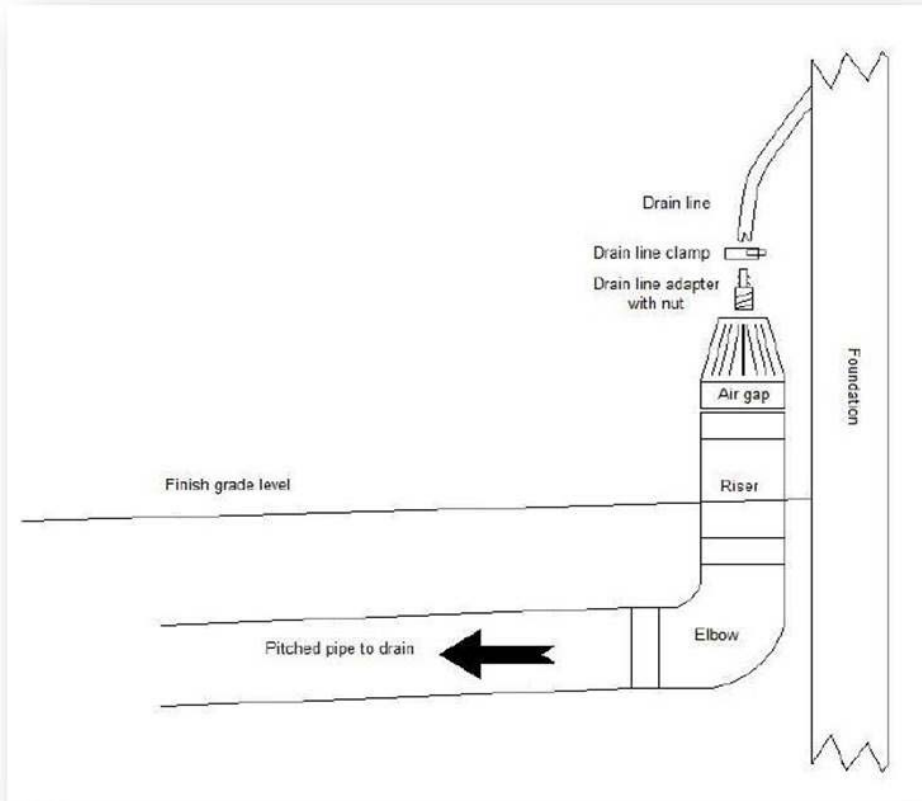
Section X: Water Treatment Wastewater



Section X: Water Treatment Wastewater



External Air Gap



7. Drain is installed outside the home to prevent flooding in the event system ever fails.

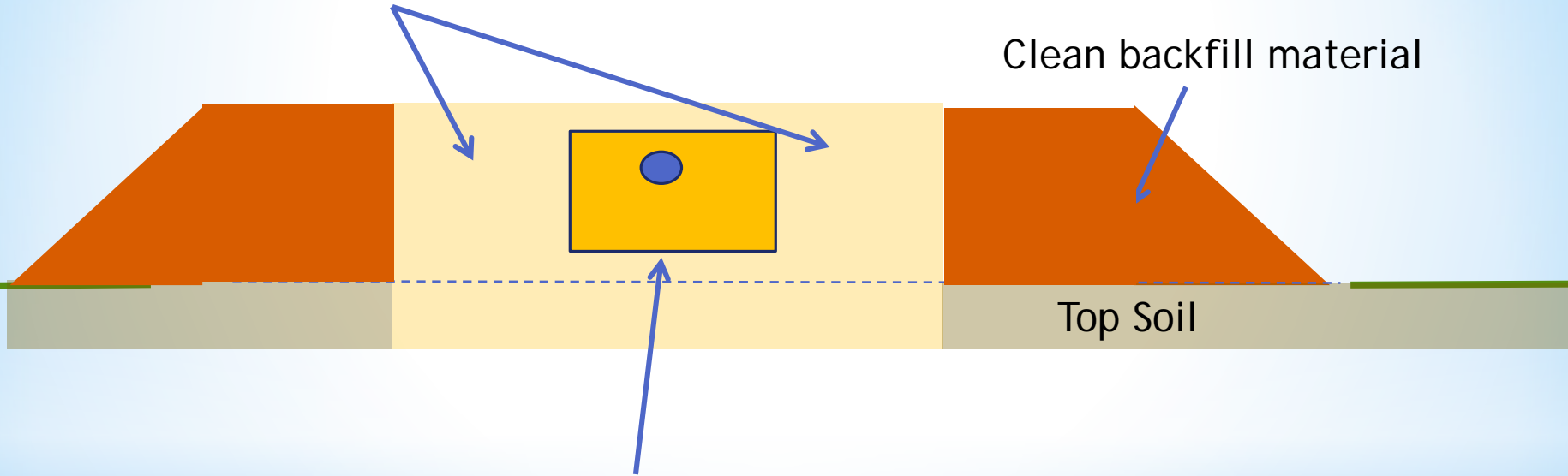
Internal Discharge Air Gap



Septic system installed above grade

Select fill 5'

Clean backfill material

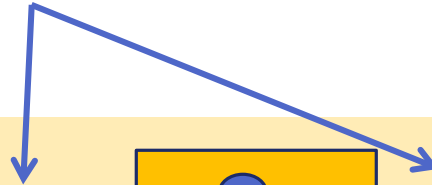


Bottom of leaching system has to be minimum 18 or 24 inches above groundwater and 48 inches above ledge.

WTW dispersal system installed above grade

What type of backfill?

How much backfill material?



Top Soil removed ?

Bottom of leaching system has to be minimum 12 or above groundwater and 24 inches above ledge.



Stone Excavation Storage Calculations

For calculation purposes it can be assumed stone filled excavations provide 40% void space (storage volume).

Cubic feet (ft³) times 7.48 equals gallons.



Stone Excavation Storage Calculations

Example: A WTW Dispersal System that consists of a stone filled excavation (Dimensions: 10 feet long, 3 feet wide, 2 feet deep).

volume of 60 ft³ (10' x 3' x 2' = 60 ft³)

void space of 24 ft³ (60 ft³ x 0.4 = 24 ft³)

24 ft³ x 7.48 gallons/ft³ = 179.5 gallons

Therefore about 180 gallons of WTW storage.

Section X: Water Treatment Wastewater

- DPH may authorize certain WTW to discharge to a SSDS (Appendix E in the TS).
- Ion exchange systems, both cationic (a.k.a., softeners) and anionic (e.g., radionuclide treatment systems), are not be authorized to discharge to a SSDS.
- No WTW is authorized to discharge to a cesspool.

Appendix E: WTW Discharges to SSDSs

Appendix E (new) is referenced in Section X. The appendix cites authorized WTW sources, WTW discharge limits, existing SSDS requirements, and proprietary leaching system considerations.

Appendix E: WTW Discharges to SSDSs

- Authorized WTW Sources: WTW shall only be from a calcite filter, granular activated carbon filter, or a Point of Use (POU) reverse osmosis unit.
- Can't be discharged to a significantly undersized (<50%) leaching system.

Appendix E: WTW Discharges to SSDSs

WTW Discharge Limits:

- Single-family residential buildings: WTW discharge is less than 150 gallons per backwash cycle, and cannot exceed a daily average of 50 GPD.
- Other buildings: WTW discharge is less than 150 gallons per backwash cycle or less than 10 percent of the building's SSDS daily design flow, whichever is greater. Discharges cannot exceed a daily average of 50 GPD or 2 percent of the buildings SSDS daily design, whichever is greater.

Section V: Septic Tanks

- 250 gallons additional capacity required for WTW discharges of 50 to 150 gallons (per Appendix E)
- 500 gallons additional capacity required for WTW discharges greater than 150 gallons.



Discharge to a single family residential SSDS

Max 150 gal/cycle and cannot exceed 50 GPD average.

- WTW system discharge 140 gal/cycle 2 times per week.

280 gal/7 days = 40 GPD daily average < 50 GPD
(OK)

- WTW system discharge 140 gal/cycle 3 times per week

420 gal/7 days = 60 GPD daily average > 50 GPD
(NO)

Discharge to a non-residential SSDS

Max 150 gal/cycle or less than 10% of Daily Design Flow; whichever is greater. AND discharge cannot exceed 50 GPD daily average or 2% of Daily Design Flow; whichever is greater.

Example: 6000 GPD commercial building and
WTW system discharges 300 gal/cycle.

- If WTW cycles 2 times per week, daily average $(600/7) = 85$ GPD average
 1. 10% of 6000 GPD = 600 GPD ($300 < 600$ OK)
 2. 2% of 6000 GPD = 120 GPD ($85 < 120$ OK)
- If WTW cycles 3 times per week, daily average $(900/7) = 128$ GPD average
 1. 10% of 6000 GPD = 600 GPD ($300 < 600$ OK)
 2. 2% of 6000 GPD = 120 GPD ($128 > 120$ NOT OK!)

Appendix E: WTW to SSDSs

Existing SSDS Requirements

- Septic tanks must have two compartments, an effluent filter, and be properly sized for the daily design flow of the building.
- Single compartment tanks can remain if receiving WTW from a POU reverse osmosis unit that discharges less than 50 GPD.
- Septic tanks must have been cleaned and inspected within three years with no reported signs of malfunctioning.

Appendix E: WTW to SSDSs

Proprietary leaching system companies may not support the discharge of WTW into their SSDS products. Therefore the applicant should consult with the proprietary company to determine if use of their leaching system product is suitable with WTW discharge.



Water Treatment Wastewater

QUESTIONS?

Suggested language to use for Sanitary Surveys

“The disposal of water treatment wastewater shall be in accordance with the requirements of either the Department's Technical Standards for Subsurface Sewage Disposal Systems, or the Comprehensive General Permit for Discharges to Surface Water and Groundwater issued by the Department of Energy and Environmental Protection. It is your responsibility to consult with your local health department to determine the applicable requirements for water treatment wastewater disposal.”