

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40

REGULATIONS
GOVERNING
WASTEWATER
TREATMENT AND DISPERSAL SYSTEMS
IN
WAKE COUNTY
EFFECTIVE
November 21, 1988
AMENDED
May 23, 2002
January 27, 2011
October 27, 2011
June 25, 2020

TABLE OF CONTENTS		
		Page
41		
42	Preamble	
43		
44	Section I	3
45	Definitions	
46	Section II	6
47	Specific Requirements for Permits to Construct or Repair	
48	Wastewater Treatment and Dispersal Systems	
49	Section III	8
50	Specific Site Evaluation Requirements	
51	Section IV	8
52	Specific Criteria for the Design and Construction of	
53	Wastewater Treatment and Dispersal Systems	
54	Section V	29
55	Minimum Requirements for Installation and Operation of	
56	Wastewater Treatment and Dispersal Systems	
57	Section VI	30
58	Possible Exemptions to Address Selected Site Limitations	
59	Section VII	31
60	Suspension and Revocation of Permits	
61	Section VIII	31
62	Appeal Procedure	
63	Section IX	31
64	Severability	
65	Section X	32
66	Penalties	
67	Section XI	32
68	Administrative Penalties	
69	Section XII	33
70	Effective Date	
71	Appendices:	
72		
73	Appendix A:	35
74	Pump Tank Schematic	
75	Appendix B:	36
76	Wake County Mani-Tee Design	
77	Appendix C:	37
78	Pressure Manifold Design Schematic	
79		
80		
81		

REGULATIONS GOVERNING WASTEWATER
TREATMENT AND DISPERSAL SYSTEMS IN WAKE COUNTY

82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127

WHEREAS, the Wake County Human Services Board finds it necessary to protect and advance the public health and safety of Wake County Citizens, visitors, and other community members by preventing the spread of diseases associated with failing wastewater treatment and dispersal systems; to educate the public about proper operation and maintenance of wastewater treatment and dispersal systems; and to promote water quality by reducing contaminated runoff from failed or poorly maintained wastewater treatment and dispersal systems and by ensuring that wastewater treatment and dispersal systems are properly operated, regularly inspected, and routinely maintained, that said Board regulates the installation of wastewater treatment and dispersal systems, to wit:

1. The relatively high density of wastewater treatment and dispersal systems,
2. The requisite to provide for long-term sustainability of these systems
3. Restrictive soil conditions in areas which serve as watersheds for public water supplies and in areas which are intensively utilized for groundwater supplies, and
4. Areas where population density have adverse impacts on the operations of such systems;

NOW, THEREFORE, BE IT RESOLVED by the Wake County Human Services Board that the Laws and Rules for Sewage Treatment, and Disposal Systems codified at 15A NCAC 18A Section .1900, as amended, are adopted by reference and shall apply to wastewater treatment and dispersal systems throughout Wake County, except as modified by these more stringent local regulations adopted pursuant to GS §§ 130A-39, 130A-43, 130A-335, 130A-336, 130A-337 and 130A-338 of the North Carolina General Statutes which shall also apply to wastewater treatment and dispersal systems throughout Wake County for the protection and promotion of the public health and safety of the citizens of Wake County.

SECTION I: DEFINITIONS

The following definitions shall apply throughout this Section:

- 1) The definitions contained in G.S. § 130A-334, G.S. § 130A-343, and 15A NCAC 18A.1935 are incorporated by reference including any subsequent amendments to those definitions.
- 2) The definitions contained in 15A NCAC 18C .0102 are incorporated by reference including any subsequent amendments to those definitions.
- 3) “Certified Contractor” means a person authorized to construct, install or repair a wastewater treatment and dispersal system in accordance with Article 5 of G.S. § 90A and any applicable rules of the North Carolina On-Site Wastewater Contractors and Inspectors Certification Board.

128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173

- 4) “Certified Inspector” means a person authorized to inspect a wastewater treatment and dispersal system in accordance with Article 5 of G.S. § 90A and who conducts an inspection of an on-site wastewater system at any time after the local health department has issued an Operation Permit pursuant to G.S. 130A-337.
- 5) “Certified Operator” means a person authorized to operate a wastewater treatment and dispersal system in accordance with G.S. § 90A, Article 3 and applicable rules of the Water Pollution Control System Operators Certification Commission.
- 6) “Director” means the administrative head of the Wake County Human Services Agency appointed pursuant to G.S. § 153A-77(e) or the Director’s Authorized Delegate.
- 7) “Individual supply line easement” means the portion(s) of an off-site supply line easement for the sole purpose of installation and housing of the supply line for the lot in which the easement serves.
- 8) “Management Entity” means the person, entity, company, or firm designated by the owner of the wastewater system who has primary responsibility for the operation of the wastewater system in accordance with these regulations, IWWS 2016-1, 15A NCAC 18A .1935(40); .1961; .1969; .1970; , G.S. 90A, Article 3, and applicable rules of the Water Pollution Control System Operators Certification Commission. The Management Entity can be the owner, a public entity managing wastewater systems, a certified operator, a management company, or an entity that employs certified operators. When the wastewater system has a flow greater than 3,000 gallons per day, the Management Entity shall be a company or firm that is incorporated.
- 9) “Off-site area or system” means a ground absorption wastewater treatment and dispersal system (initial installation and/or repair system) that is located in an area/easement that is not contiguous with the lot or tract of land containing the facility that it serves. Also included are the supply lines connecting the facility and the off-site area or system, along with any connective narrow parcels or easements designed for conveyance of the supply lines.
- 10) “Off-site drainfield easement” for the purposes of this provision means the portion of the off-site easement used exclusively for the installation and operation of the off-site drainfield.
- 11) “Off-site supply line” means only the portion(s) of supply line(s) not located in the Building lot itself.
- 12) “Off-site supply line easement” for the purposes of this provision means the portion of the off-site easement used exclusively for the conveyance of effluent, through the supply line, from the exit point of the property it serves to the entry point of the off-site drainfield easement.

174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220

- 13) “Off-site supply line network” means an offsite supply line as defined in North Carolina Department of Health and Human Services Division of Public Health Environmental Health Section Onsite Water Protection Branch Innovative System Approval Number IWWS-2016-01 for Off-Site Systems (IWWS 2016-01); and two or more individual off-site supply lines located wholly or in part within a “common” easement or encroachment in a single phase or section of development.
- 14) “Off-site wastewater system” means a “Wastewater system” any portion of which (initial and/or repair system) is in a separate non-contiguous area/easement than the lot or tract of land containing the facility it served. This also includes individual off-site supply line or supply line network(s), when a dedicated access is required for the purposes of installation of initial/repair, operation, and maintenance of the system. For Off-site system(s) located in common area and/or a common easement, provisions of IWWS 2016-01 shall also be met in addition to these provisions.
- 15) “Owner or Owner’s representative” means a person who holds legal title to the property or a person who is authorized to represent the legal interest of the owner. The owner’s representative shall also mean an agent specifically designated by letter or contract to act on the owner’s behalf to obtain permits.
- 16) “Pretreatment Component” means a device designed to enhance effluent quality such as an RWTS, Sand filter or other approved media. The performance standards and utilization approvals are found in 15A NCAC 18A .1934-.1970, and their specific state approvals.
- 17) “Shell building” means a building with an unfinished interior that can be partitioned without a roofline change such that one (1) or more separate commercial establishments may operate out of said building according to the specific conditions of an Operation Permit.
- 18) “Suitable or provisionally suitable area” means a specific area of soils which are classified or reclassified as suitable or provisionally suitable according to the provisions of 15A NCAC 18A Section .1900. For the purpose of Section V of these regulations the square footage of area suitable or provisionally suitable for the installation of a wastewater treatment and dispersal system shall not include areas where the installation of such system is expressly forbidden (i.e. easements, right-of-ways, area within 100 feet of a Class I or Class II reservoir, area within 50 feet of a stream or other impoundment, designated wetlands, any temporary or permanent erosion or stormwater device, etc.).
- 19) “Supply line” means a watertight pipe used to convey effluent from the septic tank or pump tank to the distribution device or dispersal field.

221 20) "Supply Line Network" means two or more supply lines serving multiple facilities
222 installed in a single easement.

223
224 21) "System" means the wastewater treatment and dispersal system referred to in that
225 section.

226
227 22) "Wastewater system" as defined by NCGS 130A-334(15); means a system of
228 wastewater collection, treatment, and disposal in single or multiple components,
229 including a ground absorption system, privy, septic tank system, public or community
230 wastewater system, wastewater reuse or recycle system, mechanical or biological
231 wastewater treatment system, any other similar system, and any chemical toilet used
232 only for human waste. A wastewater system located on multiple adjoining lots or tracts
233 of land under common ownership or control shall be a single system for purposes of
234 permitting under these Regulations.

235
236 23) "Watershed" means the natural area of drainage to a Class I, Class II or Class III
237 reservoir as established by 15A NCAC 18C .0102 (C) and includes all contributing
238 tributaries.

239
240 24) "Zone Valve" means any hydraulically actuated mechanical device or an electrical
241 device designed to direct the flow of wastewater to an individual zone within a
242 wastewater treatment and dispersal system utilizing multiple zones.

243
244 SECTION II: SPECIFIC REQUIREMENTS FOR PERMITS TO CONSTRUCT OR REPAIR
245 WASTEWATER TREATMENT AND DISPERSAL SYSTEMS

246
247 A) The Authorized Agent may not perform a final inspection nor issue approval of a
248 wastewater treatment and dispersal system installation unless a representative of the
249 contracting firm is present. It shall be the responsibility of the said representative to aid
250 in the inspection and to make such corrections as required by the Authorized Agent
251 pursuant to State and local rules.

252
253 B) The Authorized Agent may prohibit the installation of any wastewater treatment and
254 dispersal system trenches during periods of wet soil conditions that may affect the
255 integrity or performance of the permitted system.

256
257 C) When a property is to be served by an accepted, alternative, conventional, experimental,
258 innovative, pretreatment, or controlled demonstration wastewater treatment and
259 dispersal system, which is required to be maintained by a Certified Operator on a routine
260 basis pursuant to state regulations, the owner, must record a description of the system
261 and a general maintenance schedule at the Wake County Register of Deeds prior to
262 issuance of the Operation Permit for such system

263
264 D) When it is proposed that a property is to be served by a wastewater treatment and
265 dispersal system, other than an accepted wastewater treatment and dispersal system
266 entailing no modification to system design as specified in 15 A NCAC 18A .1969 (i)(2),

267 that receives a reduction in total nitrification trench length or trench bottom area, as
268 compared to the total nitrification trench length or trench bottom area calculated for a 36
269 inch wide conventional wastewater treatment and dispersal system, the owner, or
270 owner's legal representative must submit a letter to the office of the director of
271 Environmental Services requesting the specific system and the reduction.
272

273 E) Wastewater treatment and dispersal systems where the design daily flow exceeds 720
274 gallons must be designed by a professional engineer currently licensed in the State of
275 North Carolina. Long-term acceptance rates, design flow, and location of such systems
276 shall be reviewed and approved by the Authorized Agent. Plans and specifications for
277 such systems, including methods of operation and maintenance, shall be reviewed and
278 approved by the Authorized Agent prior to issuance of the Construction Authorization.
279 An Operation Permit will not be issued until the design engineer certifies that the system
280 has been installed in accordance with the approved plans and specifications.
281

282 F) Site plans submitted with applications must be prepared to scale. Additionally, the site
283 plan must clearly identify all structures, appurtenances and the like, on the property. The
284 site plan shall include, but not be limited to the following:
285

- 286 a. Entire property with dimensions,
- 287 b. Address of the property,
- 288 c. Bar scale,
- 289 d. Structural dimensions of all structures, existing and proposed,
- 290 e. Dimensional location of proposal(s) to at least 3 property lines measured
291 perpendicular to the property lines,
- 292 f. Existing structures,
- 293 g. Driveways,
- 294 h. Easement,
- 295 i. Buffers
- 296 j. North arrow

297
298 G) All individual lots which have failing ground absorption wastewater treatment and
299 dispersal systems shall, upon notice from the Authorized Agent, connect to an available
300 municipal, county or community wastewater collection system when it is determined that
301 300 feet or less of sewer line is required for connection. The property owner shall be
302 required to connect to the wastewater collection system within 90 days of the notice. The
303 Authorized Agent shall evaluate individual lots with failing ground absorption
304 wastewater treatment and dispersal systems upon owner request for a variance from the
305 above requirement. Requests for variances shall be in writing and addressed to the
306 Authorized Agent. The Department may grant a variance upon a finding that an on-site
307 option is available, and compliance with the above requirement is impractical because of
308 conditions beyond the control of the system owner, or results in unreasonable or
309 unnecessary hardship to the system owner.

- 310 1) When a facility is required to be connected to a county, municipal or community
311 wastewater collection system, and the septic and/or pump tank is not being

312 utilized as part of that connection, the septic and/or pump tank shall be properly
313 abandoned.

314

315 SECTION III: SPECIFIC SITE EVALUATION REQUIREMENTS

316

317 A) If laboratory determination of expansive clay mineralogy in accordance with 15A NCAC
318 18A .1941(3) is utilized, it shall NOT be considered decisive in altering the classification
319 of the site with respect to clay mineralogy, unless substantiated by additional testing,
320 which may include but may not be limited to, coefficient of linear extensibility, cation
321 exchange capacity, particle size analysis, and hydraulic conductivity.

322

323 B) Sites classified unsuitable as to soil structure, clay mineralogy, wetness or depth shall
324 NOT be reclassified provisionally suitable using fill according to the provisions of 15A
325 NCAC 18A .1957(b).

326

327 C) Sedimentary parent material may not be classified as saprolite under 15A NCAC 18A
328 .1935 (49).

329

330 SECTION IV: SPECIFIC CRITERIA FOR THE DESIGN AND CONSTRUCTION OF
331 WASTEWATER TREATMENT AND DISPERSAL SYSTEMS

332

333 A) Septic and Pump Tank Construction:

334

335 1) Garbage disposals shall be prohibited for facilities served by ground absorption
336 systems.

337

338 2) No septic tank or pump tank shall be permitted with a minimum liquid capacity of
339 less than 1000 gallons. Minimum liquid capacity of the pump tank shall be at least
340 equal to the required septic tank liquid capacity, and shall provide for emergency
341 storage capacity that equals the design daily flow for the facility. The volume is
342 measured from the high-water alarm activation level to the top of the pump tank.

343

344 3) Minimum liquid capacities for residential septic tanks shall be in accordance
345 with the following:

346

<u>Bedrooms</u>	<u>Minimum Liquid Capacity</u>
3 bedrooms or less	1000 gallons
4 bedrooms	1200 gallons
5 bedrooms	1500 gallons
6 bedrooms	1800 gallons

353

354 For residences with more than 6 bedrooms, the minimum liquid capacity shall be
355 1800 gallons plus 300 gallons for each bedroom in excess of 6 bedrooms. The
356 minimum liquid capacity of a septic tank serving two or more residences shall be

357 1500 gallons or greater as otherwise required based upon total number of bedrooms
358 served and these criteria.

359
360 4) Every septic tank shall be constructed with above ground access risers to provide
361 access to each compartment and the sanitary tee/effluent filter to facilitate periodic
362 inspection, cleaning and pumping. The risers and lids shall be made of concrete,
363 masonry or an equivalent durable material. The risers shall extend at least six (6)
364 inches above the finished grade of the site. Inside dimensions shall be sufficient to
365 allow removal of the lids from the tank openings. The risers and junctures with the
366 tank shall be rendered water-tight.

367
368 5) The backwash water from water softener systems shall not be discharged into either
369 the wastewater treatment and dispersal system or onto the ground in the initial or
370 repair system areas. The State Division of Water Quality views the discharge of
371 minor volumes of wastewater from residential and commercial water softener
372 systems to the ground surface as deemed permitted and eligible for coverage under
373 15A NCAC 02T .0113, provided that the system does not result in any violations of
374 surface water or groundwater standards, and there is no direct discharge to surface
375 water.

376
377 B) Design of Wastewater Treatment and Dispersal Systems:

378
379 1) Where more than one nitrification line is used, an effluent distribution device as
380 specified in 15A NCAC 18A .1955 shall be installed and all lines shall contain
381 equivalent square footage of trench bottom area unless approved by the Authorized
382 Agent.

383
384 2) It shall be the responsibility of the owner to control the elevation and location for
385 the stub out of the building sewer to the septic tank system.

386
387 3) For segments of a line that are utilized for installation and repair, there must be
388 sufficient line length to accommodate a minimum separation of six (6) feet of
389 undisturbed soil between the line segments. This separation also applies to lines for
390 installation and repair that abut one another.

391
392 4) Any conventional, accepted, innovative, control demonstration, or experimental
393 trench as described in 15A NCAC 18A .1955, .1956 and .1969 shall have a
394 minimum length of fifty (50) feet, except as designed using Section IV. B), 5) of
395 these regulations. If low-pressure pipe distribution is utilized, the minimum trench
396 length shall conform to Section IV. D), 7) of these regulations.

397
398 5) As an alternative to the minimum line length requirements to Section IV B) 4), the
399 applicant may submit site-specific data to predict lateral and vertical flow away
400 from the nitrification trenches. The data submitted shall include soil borings to
401 depths greater than 48 inches, permeability and hydraulic conductivity
402 measurements, and other information as determined necessary by the Authorized

403 Agent. The site-specific data must show that the effluent will not become exposed
404 on the ground surface within, or adjacent to, the nitrification field.

405
406 6) The pipe or tubing used between the septic tank, distribution device and the
407 nitrification line shall be a minimum of three-inch nominal size Schedule 40 poly-
408 vinyl chloride (PVC).

409
410 7) Backfill used to cover tanks, supply lines, distribution devices, trenches, or any
411 other component of the wastewater treatment and dispersal system shall be free of
412 building rubble, large rock, or anything other than small rocks, roots and other
413 natural items.

414
415 8) Any wastewater treatment and dispersal system requiring a single effluent pump
416 shall meet these minimum requirements. See Appendix A for pump tank schematic.

- 417
418 a. Minimum Control Panel Requirements Shall Include:
- 419 i. NEMA 4X enclosure located within 2 feet of the pump tank riser unless
420 otherwise specified by the Authorized Agent;
 - 421 ii. The bottom of the enclosure shall be affixed a minimum of 18 inches
422 above final grade;
 - 423 iii. Simplex Control Panel with an HOA (Hand, Off, Auto) switch to control
424 the pump;
 - 425 iv. A motor contactor or approved equivalent device to prevent high voltage
426 electricity in the water at all times;
 - 427 v. An audible and visible alarm;
 - 428 vi. An elapsed time meter and cycle counter; and
 - 429 vii. Two (2) overcurrent devices such that one (1) overcurrent device shall
430 protect the power supply for the pump, and one (1) overcurrent device
431 shall protect the power supply for the alarm, and each overcurrent device
432 shall be supplied by a separate circuit from the electrical panel of the
433 facility. Required circuits shall not utilize a common ground conductor.

- 434
435 b. Pump Controls
- 436 i. Floats shall be attached to a float tree or float bracket constructed of non-
437 corrosive material; and
 - 438 ii. The float controls shall consist of a minimum three (3)-float system.
 - 439 a) On Float
 - 440 b) Off Float
 - 441 c) Alarm Float
 - 442 iii. Other State approved devices may be considered for use by the
443 Department.

- 444
445 c. Pump and Supply Line
- 446 i. Supply line shall be constructed using a minimum of pressure rated
447 SCH 40 PVC, ductile iron or its equivalent;

- 448 ii. Supply line must be sized at a minimum of one and one half inch (1 1/2
- 449 inch) SCH 40 PVC unless otherwise specified by the Authorized Agent.
- 450 iii. Watertight, flexible pipe seals (boots) shall be used for pipe penetrations
- 451 through the pump tank wall
- 452 iv. An accessible ball valve, a union, and a check valve (located in the
- 453 vertical position) shall be provided on the pump discharge piping.
- 454 v. Adequate anti-siphon devices such as a swing check valve that opens to
- 455 atmosphere upon pump shutoff or approved equivalent device shall be
- 456 provided whenever the discharge orifice is at a lower elevation than the
- 457 pump shutoff level.
- 458 vi. The pump size and supply line size shall be selected such that a velocity
- 459 of at least two (2) feet per second (minimum scour velocity) and no more
- 460 than ten (10) feet per second (to minimize water hammering) is achieved.
- 461

462 d. Distribution Devices

- 463 i. A Pressure Distribution Device designed per these rules and Appendix B
- 464 and C of these regulations shall be used except where specified under
- 465 Section IV E) of these rules.
- 466 ii. The Manifold must have a straight connection of a minimum five (5) feet
- 467 in length, from the supply line to the Manifold.
- 468 iii. The taps, pipes for the taps, and ball valves must be of equal internal
- 469 diameter.
- 470 iv. Taps must have a straight connection from the manifold to the lateral
- 471 feeder lines.
- 472 v. A cap or other device approved by the Authorized Agent shall be used to
- 473 prevent “splash back” where the tap enters the supply line. Any device
- 474 not installed in an enclosed protective housing shall have the taps
- 475 installed into the supply line such that there is a solid connection between
- 476 the tap piping and the lateral feeder line.
- 477 vi. The device or its housing shall be installed level on a bed of gravel with a
- 478 minimum thickness of 2 inches. The housing shall be installed such that
- 479 the device is accessible from the ground’s surface.
- 480 vii. When the device is installed in a fully enclosed protective housing, the
- 481 housing shall have a drain hole to allow any liquids that enter the housing
- 482 to drain out. The housing shall be installed such that the device is
- 483 accessible from the ground’s surface. Concrete “Pressure Manifold
- 484 Boxes” shall be installed so the access is above grade.
- 485 viii. Supply lines from the device shall be installed with a viewing port that is
- 486 accessible from the ground’s surface. “Pressure Manifold Boxes” shall
- 487 have the viewing ports located inside the housing. The ports shall be
- 488 capped to prevent the escape of any liquid during normal operation.
- 489 ix. The device shall be designed with a gate valve on the inlet end, and a
- 490 clean-out on the opposite end. Both the gate valve and the cleanout shall
- 491 be accessible from the ground’s surface.
- 492 x. Each device shall be equipped with a fitting for measuring operating
- 493 pressure head. The standpipe shall be removable, and the fitting shall be

494 sealed by means of a ball valve. Minimum sizing for this fitting shall be
 495 ½ inch SCH 40 PVC.

496
 497 9) When it is proposed that a property be served by a wastewater treatment and
 498 dispersal system that receives a reduction in total nitrification trench length or trench
 499 bottom area that exceeds twenty-five percent (25%) as compared to the total
 500 nitrification trench length or trench bottom area calculated for a 36-inch-wide
 501 conventional (gravel aggregate) system, the following shall be required:

502
 503 a. The wastewater treatment and dispersal system footprint area shall be
 504 equal to or greater than 75% of the area required for installation of a 36-
 505 inch-wide conventional system designed to receive untreated septic tank
 506 effluent. The minimum system footprint area shall be calculated by
 507 multiplying 75% of the trench length (in feet) required for a 36-inch-wide
 508 conventional system by 9 feet. Minimum trench spacing for the system
 509 with proposed reduction shall be determined by dividing the footprint
 510 area by the actual proposed trench length. A larger spacing shall be
 511 required if field conditions require portions of trenches to be installed
 512 further apart in order for lines to be on contour. The repair system
 513 footprint area shall likewise be sized to be equal to or greater than 75% of
 514 the area required for a 36-inch-wide conventional system designed to
 515 receive untreated septic tank effluent, with minimum footprint area and
 516 spacing as calculated above. The system footprint and replacement
 517 system areas shall be suitable or provisionally suitable areas as defined in
 518 these Regulations.

519 **Example:** Three bedroom home: design flow 360 GPD and 0.3 GPD/ft² LTAR

520
 521 Required linear footage of gravel trench = $\frac{(360 \text{ GPD})}{(0.3 \text{ GPD/ft}^2)}$
 522 $\frac{3 \text{ ft}^2 / \text{lin. ft}}$
 523 = 400 ft

524
 525 System footprint for conventional system = trench length x trench spacing
 526 = 400 ft x 9 ft = 3,600 ft²

527
 528 Required minimum footprint for any innovative product = 3,600 ft² x 0.75
 529 = 2,700 ft²

530
 531 Required minimum trench spacing, assuming reduction in trench length
 532 by 35% = $\frac{(2700 \text{ ft}^2)}{(400 \times .65)} = 10.4 \text{ ft}$

533 b. The site shall be evaluated by a Licensed Soil Scientist. The Licensed Soil
 534 Scientist shall conduct a detailed assessment of site conditions and provide a
 535 written, signed and sealed report to the Department that includes:
 536 i. Detailed descriptions of landscape position and soil morphological
 537 conditions to a depth of at least three (3) feet below the trench bottom in
 538 the drainfield and repair area.
 539 ii. Field estimates of the depth and thickness of the least permeable horizons,

- 540 iii. Recommended depth for placement of the trench bottoms and the
- 541 recommended LTAR,
- 542 iv. A hydraulic assessment, based on site-specific information, substantiating
- 543 the projected effectiveness of the system performance. This shall include
- 544 documentation that indicates the wastewater at the proposed LTAR will
- 545 not discharge to the surface of the ground within or adjacent to the
- 546 drainfield when the system is installed and operated within design
- 547 parameters, and justification for any proposed drainage system.
- 548 v. Other site-specific requirements for system design, installation, site
- 549 preparation, modifications and final landscaping.
- 550
- 551 c. The system daily design flow shall not exceed 1,500 gallons, and the wastewater
- 552 characteristics shall not exceed those of domestic wastewater.
- 553
- 554 d. System installation shall be only by Certified Contractors trained and certified by
- 555 the manufacturer of the specific product utilized. The manufacturer shall provide
- 556 a current list of certified contractors to this Department as often as necessary.
- 557 Installation of systems by persons not on the current installers list shall not be
- 558 approved and the Operation Permit shall be denied.
- 559
- 560 e. The manufacturer of the product utilized shall provide a performance warranty,
- 561 as set forth in G.S 130A-343, to the owner or purchaser of the wastewater
- 562 treatment and dispersal system which shall require:
- 563 i. Certification by the manufacturer or certified contractor that the
- 564 wastewater system is installed in accordance with the manufacturer's
- 565 specifications, any conditions of regulatory approval and all conditions of
- 566 the Authorization to Construct the wastewater system.
- 567
- 568 ii. Copies of the certified warranty shall be returned to the manufacturer, the
- 569 system owner or purchaser, and the Department, a copy of which shall be
- 570 attached to the Operation Permit. A copy of the certified warranty shall
- 571 also be recorded at the Wake County Register of Deeds prior to issuance
- 572 of the Operation Permit.
- 573

574 10) Zone Valve Use

- 575
- 576 a. If a zone valve is to be used, an approved effluent filter capable of
- 577 removing a 1/32 size particle shall be required after the pump;
- 578
- 579 b. Zones must be designed to be equivalent in size or within 5% variation
- 580 when calculating length and square footage, except as required for
- 581 electrically and independently controlled zone valves;
- 582
- 583 c. Zones must be designed with equal dose volumes, except as required for
- 584 electrically controlled zone valves;
- 585

- 586 d. Zones must be designed with equal flow rates unless designed to
- 587 accommodate the difference, and approved by the Authorized Agent; and
- 588
- 589 e. A contract for operation and maintenance shall be executed between the
- 590 system owner and an Operator in Responsible Charge (ORC) as required
- 591 in accordance with 15A NCAC 18A .1961, .1969, or .1970 and shall be
- 592 in effect as long as the system is in use;
- 593
- 594 f. Any system utilizing a zone valve shall be inspected by the Operator in
- 595 Responsible Charge (ORC) a minimum of once a year, unless a greater
- 596 frequency is required for operation of an individual advanced
- 597 pretreatment or pressure dispersal system pursuant to 15A NCAC 18A
- 598 .1961, .1969, or .1970.
- 599
- 600 11) In addition to flow rates set forth in 15A NCAC 18A .1949, Table No. I shall be used
- 601 to determine the minimum daily design flow for the specific facilities listed.
- 602

Table I

<u>Type of Establishment</u>	<u>Daily Flow for</u>
<u>Design</u>	
607 Day Care Facilities	25 gal/person
608	
609 Food Stands with public access to restrooms	The greater of 250 gal/water
610 in addition to the requirements set forth in	closet or if seating is provided,
611 15A NCAC 18A .1949(b)	daily flow in accordance with
612	15A NCAC 18A.1949, Food
613	Service Facilities
614	
615	
616 Residential Care Facility	120 gal/bed
617	
618 Shell Building	500 gal/day
619	
620	

- 621 12) In addition to setback requirements in 15A NCAC 18A .1950, all Wastewater System
- 622 Components shall be located a minimum horizontal distance from the features
- 623 described in Table II and as required in section IV 13) a-g:
- 624
- 625
- 626
- 627

628

Table II: Setback Requirements

Grave Site or Recorded Grave Yard Boundary	25ft
Drive/Sidewalk	3ft (in all directions)
Off-site Area or System Easement Lines	10ft
Stormwater Devices	Section IV (13) a-g
Permanent Stormwater Retention Device (a)	50ft (flood pool elevation)
Cistern or Storage Tank (b)	15ft
Vertical Cut or Embankment (b)	15ft
Any other non-water tight device (c)	25ft
Special Wastewater Components (g)	
Collection Sewers	10ft
Force Mains	10ft
Supply Lines	10ft

629

630

631

632

633

634

635

636

637

638

639

640

641

642

643

644

645

646

647

648

649

650

651

652

653

654

655

- a. All portions of the wastewater treatment and dispersal system must be at least fifty (50) feet from the flood pool elevation of any permanent stormwater detention pond [Ref. 15A NCAC 18A .1950(a)(8)].
- b. All portions of the wastewater treatment and dispersal system must be at least fifteen (15) feet from any vertical cut or embankment of two feet or more associated with construction of any stormwater management device and any underground cistern or storage tank used to collect and store stormwater. [Ref. 15A NCAC 18A .1950(a)(13)].
- c. All portions of the wastewater treatment and dispersal system must be at least twenty-five (25) feet from any other, non-watertight stormwater management device designed for conveyance, retention and/or infiltration of stormwater [Ref. 15A NCAC 18A 1950(a)(13)&(17)]. Exceptions may be made on a case-by-case basis if adequate substantiating information is provided to demonstrate that interference with the functionality of the wastewater treatment and dispersal system will not be altered. However, the location of stormwater devices must not represent a conflict with any applicable Laws, Rules and Regulations relative to septic systems.
- d. The surface of the wastewater treatment and dispersal field must be shaped to prevent ponding of surface water, and runoff of surface water (stormwater) must be diverted away from the field [Ref. 15A NCAC 18A .1955(i)]. Thus, stormwater devices must be designed and installed so as not to discharge directly onto or spread water over the initial dispersal field and dispersal field repair area. Stormwater runoff that is not treated by a stormwater device, such as sheet flow

656 from driveways or roof leaders, shall not concentrate or pond on the initial septic
657 dispersal field or the dispersal field repair area.

658
659 e. General Statutes [GS 130A-336] also provide for specification of permit
660 conditions with respect to wastewater treatment and dispersal system installation
661 and site modifications. All Authorization for Wastewater System Construction
662 Permits in Wake County include conditions prohibiting site alteration
663 (compaction/trafficking, cutting, filling & grading), underground utilities, water
664 lines, or irrigation sprinkler systems within the original wastewater system
665 installation and repair areas.

666
667 f. If more than one of the foregoing requirements applies, the most restrictive shall
668 prevail.

669
670 g. Collection sewers, force mains and supply line shall maintain 10 feet from
671 stormwater management devices.

672
673 C) Specific Requirements for Design of Modifications to Wastewater Treatment and
674 Dispersal Systems:

675
676 1) Nitrification area for Prefabricated, Permeable, Block Panel systems (PPBPS) shall be
677 determined in accordance with 15 A NCAC 18A.1955 (b) and 15 A NCAC 18A.1955
678 (c), with each linear foot of panel trench considered equivalent to one (1) linear foot
679 of a three-foot wide conventional trench.

680
681 2) Effluent distribution devices (distribution boxes, flow dividers, pressure manifolds,
682 etc.) shall feed lines of equivalent square footage in accordance with Section IV. B)
683 1) of these regulations. System designs that do not have equivalent square footage in
684 the separate line segments may be considered for review and permitting if the
685 designer can demonstrate conformance to the following items:

686
687 a. The flow per linear foot delivered to each separate line segment shall be as equal
688 as possible. Any variation in flow to an individual line segment shall not result in
689 a long-term acceptance rate (LTAR) for that particular line that exceeds the
690 assigned LTAR by more than 5 (five) percent. Additionally, the total square
691 footage of the lines comprising the system shall be such that the assigned LTAR
692 is not exceeded.

693
694 b. Pressure manifolds may use SCH 40 and SCH 80 taps with a minimum of 2 feet
695 of pressure head. The tap sizes may be 1/2in, 3/4in and 1in. Other possible
696 modes of pressure distribution include low pressure pipe and drip.

697
698 c. The minimum pump, run time, for a pressure manifold serving unequal line
699 lengths is five minutes.

700

- 701 3) The slope of sites proposed for “at grade”, shallow placed drainfield systems as
 702 described in 15 A NCAC 18A .1956 (1), shall not exceed five (5) percent.
 703
 704 4) Sand Lined Trench Systems, as described in 15 A NCAC 18A .1956 (7), shall be
 705 installed such that the bottom of the trench enters into the receiving horizon a
 706 minimum of six (6) inches, and the required separation to unsuitable characteristics
 707 shall be maintained from the bottom of the trench.
 708

709 D) Specific Requirements for Design of Alternative (Low Pressure Pipe) Wastewater
 710 Treatment and Dispersal Systems:

- 711 1) LPP nitrification fields shall not be permitted on slopes in excess of seven (7)
 712 percent unless special design procedures to address lateral and vertical flow
 713 away from the trenches and assure proper distribution of effluent over the
 714 nitrification field are approved.
 715
 716 2) Table III shall be used in determining the long-term acceptance rate for low-
 717 pressure pipe (LPP) Systems.
 718
 719
 720

721 Table III

<u>SOIL GROUP</u>	<u>SOIL GROUP CLASSES (USDA CLASSIFICATION)</u>	<u>LONG-TERM ACCEPTANCE RATE gpd/ft²</u>
I	Sands (With S or PS structure and clay mineralogy)	0.4-0.3
II	Coarse Loams (With S or PS structure and clay mineralogy)	0.3-0.2
III	Fine Loams (With S or PS structure and clay mineralogy)	0.2-0.1
IV	Clays (With S or PS structure and Clay mineralogy)	0.15-0.05

- 743
 744
 745 3) The use of LPP systems shall be prohibited for food service facilities, meat markets
 746 and other places of business where accumulation of grease is expected. LPP systems

747 utilizing pretreatment of effluent to remove grease and oil may be considered for food
748 service facilities.

- 749
- 750 4) The maximum elevation difference between the highest and lowest laterals in a field
751 shall not exceed eight (8) feet unless the flow is hydraulically split between subfield
752 segments without requiring simultaneous adjustment of multiple valves.
- 753
- 754 5) The minimum width for LPP nitrification trenches shall be 18 inches. A 12 inch LPP
755 trench width may be permitted by the Authorized Agent to address site specific
756 conditions. All other provisions of these regulations must be met.
- 757
- 758 6) All LPP distribution laterals shall be sleeved within 4 inch corrugated tubing
759 described by 15A NCAC 18A .1955(f). Two holes shall be oriented downward in
760 each lateral at points approximating one third and two thirds of the lateral length.
761 Design flow rate shall be based upon delivering four feet to seven feet of static
762 pressure head at the distal end of all lines.
- 763
- 764 7) The minimum LPP lateral length, measured from the manifold to the distal end, shall
765 be 25 feet for an end fed lateral and 15 feet for a center fed lateral. LPP lateral length
766 within a subfield shall not decrease by more than 20 percent of the length of the
767 nearest lateral established at a higher elevation, unless approved by the Authorized
768 Agent. For a subfield served by an individual manifold and valve, the maximum
769 decreasing line length from the lateral at the highest elevation to the lateral at the
770 lowest elevation shall not exceed 30%, unless approved by the Authorized Agent.
771 LPP lateral lengths may increase across a subfield from the highest elevation to the
772 lowest elevation as dictated by site conditions.
- 773
- 774 8) A maximum of 360 linear feet of LPP lateral shall be controlled by one gate valve for
775 systems with a design unit volume of 480 gpd or less.
- 776
- 777 9) Accepted or Innovative Drainfield Product being dosed by LPP Distribution shall
778 meet the following requirements:
- 779
- 780 a. Minimum line lengths shall conform to lengths, and their allowed variations,
781 under LPP design requirements in Section IV D) 7) of these regulations.
- 782
- 783 b. If system design is based on square footage of product, then the LTAR of each
784 trench must not be exceeded by the LPP distribution design.
- 785
- 786 c. The LPP must be designed using at least a 10% reduction in flow, from top to
787 bottom. Impact on the LTAR of individual trenches must be shown in the
788 design. The Department will review each design on a plan-by-plan basis.
- 789
- 790 E) All wastewater treatment and dispersal systems requiring a pretreatment component for
791 the repair system design in order to conform to these Regulations shall be required to
792 have the initial system inspected and maintained by a Certified Inspector/Certified

Operator at a frequency no less than once every five years or as required in 15A NCAC 18A .1961. A maintenance schedule as required in Section II: C) of these Regulations, must be recorded at the Wake County Register of Deeds.

F) OFF-SITE SYSTEM (S)

1) Permitting:

a. The application procedure for all off-site wastewater system(s) shall be as follows:

i. Improvement Permit (“IP”):

An application for an off-site wastewater treatment and dispersal system shall be submitted to the Wake County Department of Environmental Services pursuant to 15A NCAC 18A .1937(c) and the following conditions shall be met:

1. The proposed use of an off-site wastewater system shall be identified in each IP or Construction Authorization (“CA”) application, as applicable. (IP for off-site supply line and dispersal field, CA only for off-site supply line).
2. The NC Licensed Soil Scientist working with the project must submit a statement of necessity for use of the off-site system with the application.
3. Applications shall be submitted for all proposed off-site wastewater systems for a single phase or section of the development.
4. All applicable provisions of the Wake County Unified Development Ordinance must be met.

ii. Construction Authorization (“CA”):

A separate CA application must be submitted by the Property Owner or their legal representative for each off-site supply line.

The Following provision for a CA must be addressed for Off-site system(s) meeting the definition of Off-Site Supply Line Network:

1. Whenever any portion(s) of two or more off-site systems are in a shared easement, encroachment, or commonly owned area. Provisions shall be established for all such portions to be owned or controlled by a non-profit, incorporated Property Owners Association (POA) or by a Management Entity. This POA or Management Entity shall be jointly named on any Construction Authorization and Operation Permit to be issued for any such shared system.
2. Maps and/or detailed drawings of all locations of easements for all components which are not located on the Building Lot shall be provided.

b. Prior to the issuance of an Improvement Permit for any off-site wastewater system, the following items shall be completed:

- 840 i. Dispersal field lines shall be field flagged by use of an
- 841 engineer's level or laser level to assure conformity with
- 842 natural contours by the owner or owner's representative.
- 843 ii. The proposed dispersal field lines shall be measured, as
- 844 needed, to verify design requirements for sizing, location
- 845 and separation distances. Allowances shall be made for
- 846 additional area, as needed, to accommodate staging of
- 847 materials and maneuvering of construction equipment
- 848 without encroaching on other properties or system areas.
- 849 iii. A site plan shall be prepared that includes:
- 850 1. Initial and repair areas depicting
- 851 i) Line lengths
- 852 ii) Flag colors
- 853 iii) Line elevations
- 854 2. All proposed easement and/or property lines, along with
- 855 the lot and facility served, shall be clearly staked and
- 856 labeled in the field.
- 857 3. All tankage, setbacks, important monuments, supply
- 858 line, and any other appurtenances.
- 859 iv. The Authorized Agent ("AA") shall conduct:
- 860 1. A visual evaluation of the supply line path to determine
- 861 feasibility of installation.
- 862 2. A review of field staked lines, facility, easement
- 863 area/encroachment area.
- 864 3. A review to ensure that the total daily design flow to
- 865 combined off-site dispersal field(s) is consistent with
- 866 the provisions of these Rules, the Wake County Unified
- 867 Development Ordinance, and 15A NCAC 18A
- 868 .1970(p)(2).
- 869 4. A review of stormwater plans and assessment of effects
- 870 of upslope and internal stormwater runoff, proposed
- 871 stormwater management systems, and impacts of any
- 872 other potentially hydraulically-interacting active
- 873 dispersal field or repair area.
- 874 c. Prior to the issuance of a Construction Authorization for any off-site
- 875 wastewater system, the following requirements shall be met:
- 876 i. All easements and property lines shall be surveyed and
- 877 permanently marked in the field.
- 878 ii. Any encroachment agreements shall be obtained, where
- 879 required, and recorded with Wake County Register of
- 880 Deeds.
- 881 iii. A complete wastewater treatment and dispersal system
- 882 design shall be submitted for review and approval.
- 883 iv. Plans, specifications and system design shall be required to
- 884 be prepared by a person or persons who are licensed or
- 885 registered to consult, investigate, evaluate, plan or design

- 886 wastewater systems, soil and rock characteristics, ground
887 water hydrology, or drainage systems if required by G.S.
888 89C, 89E, 89F, and/or 90A Article 4.
- 889 v. Plans shall incorporate best management practices and
890 accepted design standards such as:
- 891 1. Minimizing supply line crossings and lengths
 - 892 2. Accessibility of dispersal lines and other system
893 components
 - 894 3. Facilitation of the installation, operation, repair, and
895 maintenance of the system
 - 896 4. Pump calculations including flow rate, total dynamic
897 head, and velocity in supply lines, hydraulic profile (if
898 needed), and calculations specifying the amount of
899 drain-back to either the pump tank or dispersal field.
 - 900 5. The designer of the supply line network may be
901 required to submit substantiating data, as specified by
902 the EHS, Wake County.
 - 903 6. Plans and specifications shall be prepared by a
904 registered professional engineer if required by G.S. 89C
905 or when one or more of the following conditions are
906 met:
 - 907 i) Utilization of pretreatment components that
908 have not received prior state approval or as
909 required by a pretreatment approval,
 - 910 ii) Daily design flow exceeds 720 gallons per day.
 - 911 iii) Supply lines are longer than 500 feet.
 - 912 iv) When elevation variations in the supply line or
913 lines require(s) use of appurtenances, such as air
914 release valves. An air release valve is usually
915 required when the variation of elevation
916 difference between conjugative high and low
917 points is greater than 5 feet.
 - 918 v) Alternate materials or design specifications are
919 proposed to be used for supply lines, or trenches
 - 920 vi) One or more off-site systems utilize pressure
921 dispersal (Drip irrigation and Low Pressure Pipe
922 (“LPP”) fields) and its supply line is on a net
923 downhill grade or includes a portion that will
924 drain more than 25-percent of the field dose
925 volume to the dispersal fields between doses.
 - 926 vii) A common pressure sewer or supply line is used
927 to convey wastewater or effluent from two or
928 more pump tanks to a common off-site area.
 - 929 viii) Duplex alternating pumps are required (duplex
930 pumps are required if linear footage of
931 nitrification trenches exceeds 2000 feet).

- 932 ix) When a system is otherwise required to be
- 933 designed by a registered professional engineer
- 934 pursuant to 15A NCAC 18A .1938(d) or when
- 935 required as part of a system approval issued
- 936 pursuant to 15A NCAC 18A .1969.
- 937 x) Any system serving more than one facility so
- 938 specified by Wake County.
- 939 xi) If two or more off-site systems are proposed, all
- 940 off-site wastewater supply lines shall be
- 941 designed by a registered professional engineer
- 942 (“P.E.”), and P.E. design shall be required for
- 943 any supply line or system component so
- 944 specified by the AA.
- 945 xii) An all-weather access road is included in the
- 946 design.
- 947 xiii) When specified by the AA.
- 948 d. Construction Authorization (CA) approval for any off-site wastewater
- 949 system shall be issued as follows:
 - 950 i. Any CA issued by the AA shall address each component of
 - 951 the off-site wastewater system (e.g. supply lines, dispersal
 - 952 fields, tanks and appurtenances).
 - 953 ii. If the supply lines are to be installed first, with the dispersal
 - 954 field nitrification lines to be installed later, a CA shall be
 - 955 issued for the supply lines installation only.
 - 956 iii. “AS needed “A separate CA be issued for each supply line
 - 957 and each dispersal field to be installed at this time. A
 - 958 separate CA shall be issued for dispersal fields to be
 - 959 installed after easement recordation.
- 960
- 961 e. Prior to the issuance of the Operation Permit for an off-site wastewater
- 962 treatment and dispersal system, all the following criteria shall be met, as
- 963 applicable:
 - 964 i. An as-built drawing must be submitted showing the
 - 965 location of property lines and all off-site system
 - 966 components, including easements and encroachments.
 - 967 ii. The installation and testing of the offsite system must be
 - 968 inspected and approved by the AA.
 - 969 iii. For systems or system components required to be designed
 - 970 by a P.E. or an individual licensed or registered in
 - 971 accordance with G.S. 89E, 89F or 90A, Article 4, the
 - 972 owner shall submit a written certification sealed, signed
 - 973 and dated by the engineer that the system was installed in
 - 974 accordance with the approved plans and specifications.
 - 975 iv. All easement areas (access, supply line and dispersal fields)
 - 976 shall be surveyed and marked with permanent markers or
 - 977 monuments that are described in Section III: F) 2.a) i) 8 of

978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000
1001
1002
1003
1004
1005
1006
1007
1008
1009
1010
1011
1012
1013
1014
1015
1016
1017
1018
1019
1020
1021
1022
1023

these Regulations.

- v. All documents that are required to be executed, and recorded at the Register of Deeds, shall be so executed and recorded, including, but not limited to:
 - 1. Encroachment agreements,
 - 2. Maintenance agreements, and
 - 3. Easements.
- vi. Any subdivision with an off-site supply line shall have provisions for:
 - 1. A Management Entity for wastewater system components.
 - 2. All documents shall be reviewed and approved by the AA and recorded with the Register of Deeds. The documents shall at a minimum, address the following:
 - i) The use and/or limits of use for supply line Access and Maintenance of Easements and Remote Wastewater Treatment and Dispersal System Areas.
 - ii) Outline a course of action in the event that a repair to an off-site wastewater treatment and dispersal system is necessary, including details of ownership and financial responsibility.
- vii. No other agencies may issue permits for a facility, pursuant to G.S. 130A-338, until all CAs have been issued for the entire wastewater system.
- viii. Each Operation Permit for a completed individual off-site wastewater system shall include as parties to the permit the owner of the individual design unit and system, and the (POA) as applicable, and shall delineate the responsibilities of each party for operation and maintenance of the system.

2) System Sizing and Design Criteria:

a) Supply Lines:

i) Supply Lines Locations:

Supply lines serving off-site wastewater treatment and dispersal systems shall be located either individually in dedicated easements/parcels or within supply line networks in common easement(s). Easements shall extend completely from the building lot to the dispersal field area.

- 1. All supply lines in a supply line network shall be installed concurrently.
- 2. Individual easements/parcels shall be a minimum width of 15 feet. If there is an existing utility easement on the property, a total easement width of 20 feet must be provided, with an

- 1024 exclusive septic easement not less than 12 feet and shall be
1025 located a minimum of 5 feet from any other parallel utility or
1026 greater distance (e.g. 10 feet required from water line.)
- 1027 3. No other utilities shall be installed in the same trench as the
1028 supply lines
 - 1029 4. Any utility crossings over or under the supply lines must meet
1030 the requirements of 15A NCAC 18A .1950(f) and (g), and any
1031 necessary encroachment agreements shall be obtained and
1032 executed.
 - 1033 5. Supply lines crossing a stream must meet the requirements of
1034 15A NCAC 18A .1950(h).
 - 1035 6. Off-site supply line network easements or multiple individual
1036 dedicated easements/parcels installed contiguously shall be
1037 under common ownership or control and provide for
1038 accessibility to all wastewater system components for
1039 installation, operation, maintenance and repair.
 - 1040 7. Both sides of off-site supply line easements shall be
1041 permanently marked at the beginning of the easement where it
1042 leaves the building lot, at the location where it leaves the road
1043 frontage, at least every 300 feet and at every directional
1044 change. Markers shall be visible from the ground surface,
1045 permanent in construction, easily locatable, and shall
1046 permanently identify the easement that is being marked.
1047 Easement field marker or monument locations shall be depicted
1048 on the as-built survey.
 - 1049 8. Easements for the off-site supply line and off-site area or lot
1050 corners shall be marked with permanent ground markers or
1051 monuments clearly labeled as to the easement area and the lot
1052 it serves. For purposes of these Regulations, “permanent
1053 construction” is defined as a marker which requires the use of
1054 mechanical tools to remove; “easily locatable” means no
1055 specialized or mechanical tools are required to locate and
1056 uncover the marker; “visible from the ground surface” means a
1057 marker that is located on the ground surface, or, if located
1058 below ground, a marker that is in a box with its top visible at
1059 the ground surface (e.g. valve box or water meter box).
 - 1060 9. All easements/parcels shall remain free of structures,
1061 landscaping, or any activities that would interfere with the use
1062 of the easement for its intended purpose.
- 1063 ii) Off-site Supply Line Design:
1064 Off-site Supply line design specifications shall meet the requirements
1065 of Section IV B) 8) c) of these Regulations, as well as the following
1066 conditions specific to off-site supply lines:
- 1067 1. All pipe, fittings, joints, installation and testing methods shall
1068 conform to the appropriate ASTM International (ASTM),
1069 American National Standards Institute (ANSI), or American

- 1070 Water Works Association (AWWA) standards. Alternate
1071 materials, proposed by a professional engineer, may be
1072 approved by the AA.
- 1073 2. All pipe segments shall be permanently marked every ten feet
1074 on the crown of the pipe with the corresponding unique lot
1075 number or letter, which shall be visible at the time of
1076 inspection. The printed lot number or letter shall be at least one
1077 inch in height and legible.
- 1078 3. A minimum of five (5) feet of separation is required between
1079 the supply line and the boundary of the supply line parcel or
1080 easement.
- 1081 4. Supply line trench width and depth shall be constructed in
1082 accordance with approved design specifications:
- 1083 i. The pipe shall be uniformly and continuously
1084 supported over its entire length with clean, firm,
1085 and stable backfill material.
- 1086 a) In situ material which does not contain any
1087 large objects, rock, or organics may be used
1088 for fill.
- 1089 b) Proper continuous bedding shall be required
1090 to prevent bridging of pipes.
- 1091 c) Any other backfill method will need AA's
1092 approval.
- 1093 ii. Where rock, restrictive horizon, or boulders are
1094 encountered which cannot be avoided or removed, a
1095 minimum of a four (4) inch bed of compacted washed
1096 gravel or sand shall be placed to form the bottom of that
1097 portion of the trench. Sleeving may also be used.
1098 Backfill material along the pipes (in network) sides and
1099 top of the pipe shall be uniformly hand compacted and
1100 walked-in prior to completing the trench backfilling
1101 process. Alternatively, spacers may be used with
1102 following requirements:
- 1103 a) Spacers shall be of similar strength as of the
1104 pipes during installation with no sharp edges
1105 (wood stakes may be used),
- 1106 b) Spacers shall have a minimum width of one
1107 and one-half the diameter of the supply line
1108 pipe used,
- 1109 c) Spacers Shall be placed at a minimum 10
1110 feet apart at the markings, along the pipe
1111 length. Additional spacers may be used.
- 1112 iii. Thrust blocking at the bends and elbows shall be
1113 installed where specified by the designer.
- 1114 iv. Each individual supply line installed in a common
1115 trench shall be separated horizontally by a minimum

- 1116 distance equal to the diameter of one pipe. Vertical
- 1117 stacking of pipe is prohibited.
- 1118 v. The discharge piping and supply lines shall be a
- 1119 minimum of one and one-half (1 ½) inches in diameter.
- 1120 5. Unless otherwise addressed under 15A NCAC 18A.1955, a
- 1121 minimum burial depth of 30 inches, as measured from the crown
- 1122 of the pipe to the ground surface, shall be provided throughout
- 1123 the length of the supply line. If the 30-inch minimum burial
- 1124 depth cannot be met, or a road crossing is required, the supply
- 1125 lines shall be sleeved in ductile iron, or DOT traffic rated road
- 1126 crossing culvert pipe extending to a minimum of 5 feet beyond
- 1127 the shallowest area on each side. The minimum burial depth to
- 1128 top of sleeving is per the pipe sleeving manufacturer’s
- 1129 recommendation, but in no case less than 6 inches.
- 1130 6. Provisions must be made to address any supply line drainback
- 1131 volume to either the pump tank or dispersal field.
- 1132 7. The pump supply line size and pump capacity shall be sized
- 1133 such that a minimum velocity of two (2) feet per second is
- 1134 achieved in the supply line,
- 1135 8. Air/vacuum relief valves shall be specified at high points as
- 1136 specified by the design engineer to release trapped air from the
- 1137 supply line and maintain system performance.
- 1138 9. Provisions to stabilize the surface of the excavation shall
- 1139 be made upon backfilling in order to prevent erosion.
- 1140

b) Pump Tanks:

The minimum total capacity for pump tanks shall meet all requirements of SECTION IV of these Regulations, as well as the following requirements:

- 1144 i) The size of the dose volume shall also account for the portion of the
- 1145 supply line that drains back into the pump tank or into the dispersal
- 1146 field between doses.
- 1147 ii) Pump tanks that are part of a STEP (septic tank effluent pump) system
- 1148 involving a second pump tank shall meet the minimum sizing
- 1149 requirements of these Regulations.
- 1150 iii) Any pump tank or pretreatment device not located on the building
- 1151 property building-lot shall have its alarm designed for auto-dialer
- 1152 hook up to a 24-hour maintenance service.
- 1153

c) Dispersal Field:

i) Access or Access Road

- 1156 1. An all-weather access to off-site wastewater system area shall
- 1157 be by a properly maintained, publicly accessed road for the
- 1158 passage of equipment normally used to install, inspect, operate,
- 1159 maintain and repair the wastewater system, or via a dedicated
- 1160 access parcel or easement which shall be maintained to prevent
- 1161 any hindrance of free movement through this area and shall be

- 1162 of following width:
- 1163 a) 20 feet for single off-site supply line if the wastewater
- 1164 drainfield easement is not cleared,
- 1165 b) 15 feet for single off-site supply line if drainfield
- 1166 easement is cleared, but drainfield and appurtenances
- 1167 not installed
- 1168 c) 10 feet for individual off-site supply line, if
- 1169 drainfield and appurtenances in drainfield easement
- 1170 installed up front.
- 1171 2. The access area provided shall be either owned or controlled by
- 1172 the owner of the off-site area, or commonly owned or
- 1173 controlled by the POA.
- 1174 3. When an access road is required it shall be designed by a
- 1175 registered professional engineer and per IWWS-2016-01.
- 1176 4. All weather access may be eliminated if the Engineer or
- 1177 Designer stipulates and the CA for each design unit requires
- 1178 that:
- 1179 a) All the adjacent and contiguous offsite wastewater
- 1180 system components within a phase of construction,
- 1181 including any repair/replacement dispersal fields, are
- 1182 installed at the same time (prior to the Operation
- 1183 Permit), or
- 1184 b) All the offsite wastewater system components are
- 1185 installed by hand (without the use of equipment on the
- 1186 site).
- 1187 c) Notwithstanding the exclusions noted in a) and b)
- 1188 above, the design shall ensure effective access to off-site
- 1189 wastewater system components for the system's
- 1190 continued operation, maintenance, and repair.
- 1191 ii) Dispersal fields, supply lines, and all wastewater system components shall be
- 1192 protected from traffic or other unauthorized access.
- 1193 iii) All system and repair areas, within an area of off-site systems, shall be located
- 1194 at least twenty (20) feet from all other system and repair areas.
- 1195 iv) Any surface water runoff, drains, ditch discharges shall be diverted away from
- 1196 the dispersal field.
- 1197 v) Final soil cover shall be provided such that a depth of six inches cover
- 1198 remains after settling.
- 1199 vi) Stabilization of final cover with appropriate vegetation shall be provided.

1200

1201 3) Installation, Inspection, and Testing Procedures:

1202

- 1203 a. A pre-construction conference is required prior to the installation of an
- 1204 off-site wastewater system. The owner or owner's representative, the
- 1205 installer and the AA shall meet on the site to review the approved off-site
- 1206 wastewater system design plan and supply line plan as applicable.
- 1207 b. All off-site wastewater systems shall be installed by an installer certified

- 1208 in accordance with G.S. 90A-72 (Grade III or higher required).
- 1209 c. Leak testing, using water under pressure, shall be performed whenever a
- 1210 supply line exceeds 500 feet in length or two or more supply lines are in
- 1211 common parcels, a dedicated easement or encroachment. Leak testing
- 1212 shall be field-verified by the system designer in the presence of the AA.
- 1213 d. All off-site supply lines shall be installed and approved prior to final plat
- 1214 recordation.
- 1215 e. At the final inspection, the AA shall observe the dispersal field,
- 1216 alternating device(s), other distribution devices, and all other system
- 1217 components, and shall determine them to be functional and accessible
- 1218 from the finished ground surface.
- 1219 f. For individual supply line easements with a minimum width of 30 feet
- 1220 and a maximum length of 100 feet, the supply line shall not be required
- 1221 to be installed prior to the recordation of the easement(s).
- 1222

1223 4) Operation, Maintenance, and Monitoring:

- 1224
- 1225 a. The Owner/POA shall retain a Management Entity to be responsible on
- 1226 its behalf to operate and maintain all components of an off-site
- 1227 wastewater system within a supply line network, within common areas
- 1228 that are owned or controlled by the POA, and all associated subsequent
- 1229 components of the system. An individual owner of an off-site wastewater
- 1230 system will also be responsible for separately contracting with an ME if
- 1231 required based on the system type pursuant to 15A NCAC 18A .1961.
- 1232 b. A Multi-Party agreement, as required in 15A NCAC 18A .1938, shall
- 1233 be in effect. Where applicable, verification shall be provided that a
- 1234 non-profit, incorporated property owners association has been duly
- 1235 established, as indicated by articles of incorporation and bylaws
- 1236 registered with the North Carolina Secretary of State's Office, and a
- 1237 draft agreement (Multi-Party) among the developer/owner and the
- 1238 association has been submitted to the Department. The Multi-Party
- 1239 agreement shall address:
 - 1240 1. Ownership,
 - 1241 2. Transfer of ownership,
 - 1242 3. Maintenance of system and system sites,
 - 1243 4. Drainage,
 - 1244 5. Repairs,
 - 1245 6. Operation, and
 - 1246 7. The necessary funds for the continued satisfactory
 - 1247 performance of common wastewater system components,
 - 1248 including but not limited to supply lines, access areas,
 - 1249 dispersal fields, and other appurtenances.
- 1250 c. Easements, agreements, declarations and subordination documents shall
- 1251 be recorded at the Wake County Register of Deeds, as required,
- 1252 d. System Management shall be required in accordance with 15A NCAC
- 1253 18A .1961 (b), with the minimum classification of a Type IV system.

1254 The off-site system and its components shall be inspected by the ORC a
1255 minimum of once a year, unless a greater frequency is required for
1256 operation of an individual advanced pretreatment or pressure dispersal
1257 system is required in 15A NCAC 18A .1961, .1969, or .1970. Repair
1258 and maintenance responsibilities shall be clearly specified in the ORC
1259 contract.

1260 e. The ORC shall provide monitoring reports to the Wake County
1261 Department of Environmental Services within 30 days of each required
1262 inspection. The ORC shall maintain a log of all malfunction
1263 incidences/notifications, observations and maintenance activities.

1264 Minimum maintenance during each required inspection shall include:

- 1265 1. Visual observation of the dispersal field,
- 1266 2. Visual observation of the supply line and appurtenant valves for
1267 leakage and damage,
- 1268 3. Alternation of dispersal field alternating devices as applicable,
- 1269 4. Measuring of pressure head and flushing of distribution devices
1270 as applicable, and
- 1271 5. Assurance that the ground surface and vegetation over the
1272 dispersal field and supply lines are maintained.

1273 f. Whenever two or more Supply Line Easements are located along a road
1274 right-of-way or encroachment under the ownership, control or
1275 management of an POA, the association shall maintain updated
1276 information with the Register of Deeds office, and, upon notification of
1277 excavation, provide location and marking information pursuant to the
1278 requirements of the Underground Damage Prevention Act, NCGS
1279 Chapter 87.

1280 g. In lieu to membership to locating service such as *811, An alternate
1281 method of locating supply lines e.g. by tracing by means of Tape or
1282 equivalent is acceptable for single off-site supply lines.

1283
1284 SECTION V: MINIMUM REQUIREMENTS FOR PERMITTING AND OPERATION OF
1285 WASTEWATER TREATMENT AND DISPERSAL SYSTEMS
1286

1287 A) No Improvement Permit shall be issued for the installation of a wastewater treatment and
1288 dispersal system designed to serve a single family residence, place of business or place of
1289 public assembly on any lot which contains less than 30,000 square feet of suitable or
1290 provisionally suitable area for the installation of such system, unless exempted under
1291 Section VI of these Regulations.
1292

1293 B) No Improvement Permit shall be issued for the installation of a wastewater treatment and
1294 dispersal system on any lot to be utilized for a multiple family dwelling with two or more
1295 dwelling units unless the lot contains at least 30,000 square feet of suitable or
1296 provisionally suitable area for the initial dwelling unit, and an additional 20,000 square
1297 feet of suitable or provisionally suitable area for each additional dwelling unit in the same
1298 structure, unless exempted under Section VI of these Regulations.
1299

- 1300 C) No improvement permit shall be issued for a wastewater treatment and dispersal system to
- 1301 serve a condominium or other multiple-ownership development where the system will be
- 1302 under common or joint control, including control by any franchised utility, without a
- 1303 showing that necessary funds for continued satisfactory operation, maintenance and
- 1304 replacement of such system will be provided. Provision of such funds through letter of
- 1305 credit, deposit of monies in a custodial account or other approved funding for the life of
- 1306 the system shall be required prior to issuance of an Operation Permit.
- 1307
- 1308 D) No Improvement Permit shall be issued for the installation of a wastewater treatment and
- 1309 dispersal system designed to serve a single family residence, place of business or place of
- 1310 public assembly on any lot located in the watershed of a Class I, II or III reservoir which
- 1311 contains less than 40,000 square feet of suitable or provisionally suitable area except that
- 1312 when such lots are served by a public water system, a minimum of 30,000 square feet
- 1313 shall be suitable or provisionally suitable for the installation of such systems, unless
- 1314 exempted under Section VI of these Regulations. This requirement becomes effective
- 1315 whenever funds have been appropriated either for purchase of land or construction of a
- 1316 Class I, II or III reservoir.
- 1317
- 1318 E) No Improvement Permit shall be issued for the installation of a wastewater treatment and
- 1319 dispersal system unless a minimum of 40,000 square feet of area is provided for each
- 1320 1,250 gallons, or portion thereof, of wastewater anticipated to be generated per day based
- 1321 on 15A NCAC 18A.1949.
- 1322
- 1323 F) The requirements of this Section are minimum requirements. Each lot must contain
- 1324 sufficient available space for the installation of two complete sanitary wastewater
- 1325 treatment and dispersal systems that meet the requirements set out in these Regulations.
- 1326

1327 SECTION VI: POSSIBLE EXEMPTIONS TO ADDRESS SELECTED SITE LIMITATIONS:

1328 Based on site specific conditions, certain lots may be exempted from the provisions of
1329 Section V (A), (B), and (D) of these regulations if so doing does not constitute potential
1330 adverse impact on public health and if all of the following conditions are met:

- 1331
- 1332
- 1333 A) All other requirements set out in these Regulations are met and,
- 1334
- 1335 B) There is sufficient space available for the installation of two complete wastewater
- 1336 treatment and dispersal systems meeting the requirements set out in these Regulations.
- 1337
- 1338 C) The applicant may be required to have a Licensed Soil Scientist, Professional Geologist,
- 1339 Professional Land Surveyor, Professional Engineer, or Registered Environmental Health
- 1340 Specialist if required by G.S. 89C, 89E, 89F and 90A, Article 4, to prepare information
- 1341 that demonstrates conformance to the minimum requirements of these rules. This
- 1342 demonstration may include but not be limited to:
- 1343
- 1344 1) A survey of the lot.
- 1345 2) A proposed site plan.

- 1346 3) Designation of wastewater treatment and dispersal site on site plan.
- 1347 4) Written evaluation of site.
- 1348 5) Written justification of proposed application rate.
- 1349 6) Calculations of drainfield requirements using proposed design unit volume.
- 1350 7) Field staking of location for the structure, tanks, property lines, drainfield lines etc.

1351
 1352 Upon finding the site suitable or provisionally suitable and that a system can be installed in
 1353 accordance with these rules, the Authorized Agent will issue an Improvements Permit in accordance
 1354 with 15A NCAC 18A .1937 (c) or when the permit is denied, the Authorized Agent will prepare a
 1355 written report in accordance with 15A NCAC 18A .1937 (i).

1356
 1357 **SECTION VII: SUSPENSION AND REVOCATION OF PERMITS**

- 1358
 1359 A) The Authorized Agent may suspend or revoke an Improvement Permit, Authorization to
 1360 Construct or Operation Permit previously issued upon finding that a violation of the
 1361 applicable provisions of these rules and regulations or a condition imposed upon the
 1362 permit has occurred. A permit may also be suspended or revoked upon a finding that its
 1363 issuance was based upon incorrect or inadequate information that materially affected the
 1364 decision to issue the permit.
- 1365
 1366 B) The Applicant/Owner shall be given notice that there has been a tentative decision to
 1367 suspend or revoke the permit, at which time the Applicant/Owner may challenge the
 1368 tentative decision as provided in Section VIII of these rules and regulations.
- 1369
 1370 C) If a violation of the regulations presents an imminent hazard, a permit may be suspended
 1371 or revoked immediately. The Authorized Agent shall immediately give notice of the
 1372 revocation to the Applicant/Owner, at which time the Applicant/Owner may challenge the
 1373 decision as provided in Section VIII of these regulations.

1374
 1375 **SECTION VIII: APPEAL PROCEDURE**

1376
 1377 Appeals concerning the interpretation and enforcement of these rules and regulations shall be
 1378 conducted in accordance with the Wake County Human Services - Department of Environmental
 1379 Services Rules of Appeal as amended and in compliance with G.S. 130A-24 as amended.

1380
 1381 **SECTION IX: SEVERABILITY**

1382
 1383 If any provisions of these regulations or the application thereof to any person or circumstances is held
 1384 invalid, the remainder of the regulations and the application of such provisions to other persons or
 1385 circumstances shall not be affected thereby.

1386
 1387 **SECTION X: PENALTIES**

1388
 1389 Any person who violates any of these regulations or shall fail to perform any acts required by these
 1390 regulations shall be guilty of a misdemeanor and shall be subject to punishment as provided in G.S.
 1391 130A-25 as well as civil remedies set forth in Part 2, Article 1 of General Statutes Chapter 130A.

1392 SECTION XI: ADMINISTRATIVE PENALTIES

1393
1394
1395
1396
1397
1398
1399
1400
1401
1402
1403
1404
1405
1406
1407
1408
1409
1410
1411
1412
1413
1414
1415
1416
1417
1418
1419
1420
1421
1422
1423
1424
1425
1426
1427
1428
1429
1430
1431
1432
1433
1434
1435
1436

A) Definitions - as used in this section the term:

- 1) “Delegate” means any person to whom the Director has delegated authority in writing to act in relation to administrative penalties;
- 2) “Hearing Officer” means the Director or Director’s Authorized Representative;
- 3) “Respondent” means the person against whom a penalty has been assessed;

B) Administrative Penalties

The following rules concern the imposition of administrative penalties imposed by the Director pursuant to G.S. 130A-22 (H).

C) Who May Assess Penalties

Administrative penalties may be assessed by the Director or Director’s Delegate.

D) When Penalties May Be Assessed

Administrative penalties may be assessed against any person for violations of Article 11 of G.S. Chapter 130A; or the Regulations Governing Wastewater Treatment and Dispersal Systems in Wake County, and/or any conditions imposed upon a permit issued under these regulations.

E) Amount of Penalty Assessment

- 1) The penalty shall not exceed fifty dollars (\$50.00) per day in the case of a wastewater treatment and dispersal system with a design daily flow of no more than 480 gallons or in the case of any system serving a single one-family dwelling. The penalty shall not exceed three hundred dollars (\$300.00) per day in the case of a wastewater treatment and dispersal system with a design daily flow of more than 480 gallons not serving a single one-family dwelling.
- 2) Each day of a continuing violation shall constitute a separate violation.
- 3) Each violation of a specific provision of Article 11 of G.S. Chapter 130A, or of these Regulations adopted by the Wake County Human Services Board pursuant to Article 11, or a condition imposed upon a permit issued under Article 11, shall be a separate violation.

F) Procedure For Assessment

- 1437 1) A notice of assessment shall be sent to the respondent by registered or certified
- 1438 mail. If the registered or certified notice is refused or unclaimed by the
- 1439 respondent at his last known legal address, first class mail to the respondent at
- 1440 his last known legal address will be lawful and sufficient service under these
- 1441 regulations. The notice shall describe the nature of the violation with
- 1442 reasonable particularity, state the amount of the penalty for each violation,
- 1443 advise that each day of a continuing violation constitutes a separate violation,
- 1444 advise that the penalty is now due or continues to accrue, and advise the
- 1445 respondent of his rights of appeal as specified in SECTION VIII of these
- 1446 Regulations.
- 1447
- 1448 2) The Director may modify a penalty upon finding that additional or different facts
- 1449 should have been considered in determining the amount of the assessment.
- 1450
- 1451

1452 SECTION XII: EFFECTIVE DATE

1453
1454 These amended regulations adopted by the Wake County Human Services Board on June 25,
1455 2020, shall be in full force and effect from and after June 25, 2020 and supersedes all prior
1456 wastewater treatment and dispersal system regulations.
1457

1458 Approved As To Form

DocuSigned by:

Ken Murphy

6/25/2020

1017544B3A8E488...

1461
1462 Wake County Attorney

1463 DocuSigned by:

Angie Welsh

6/25/2020

E59C43CACE4245A...

1467
1468 Chairman
1469 Wake County Human Services Board

1470
1471 Regina Petteway

6/24/2020

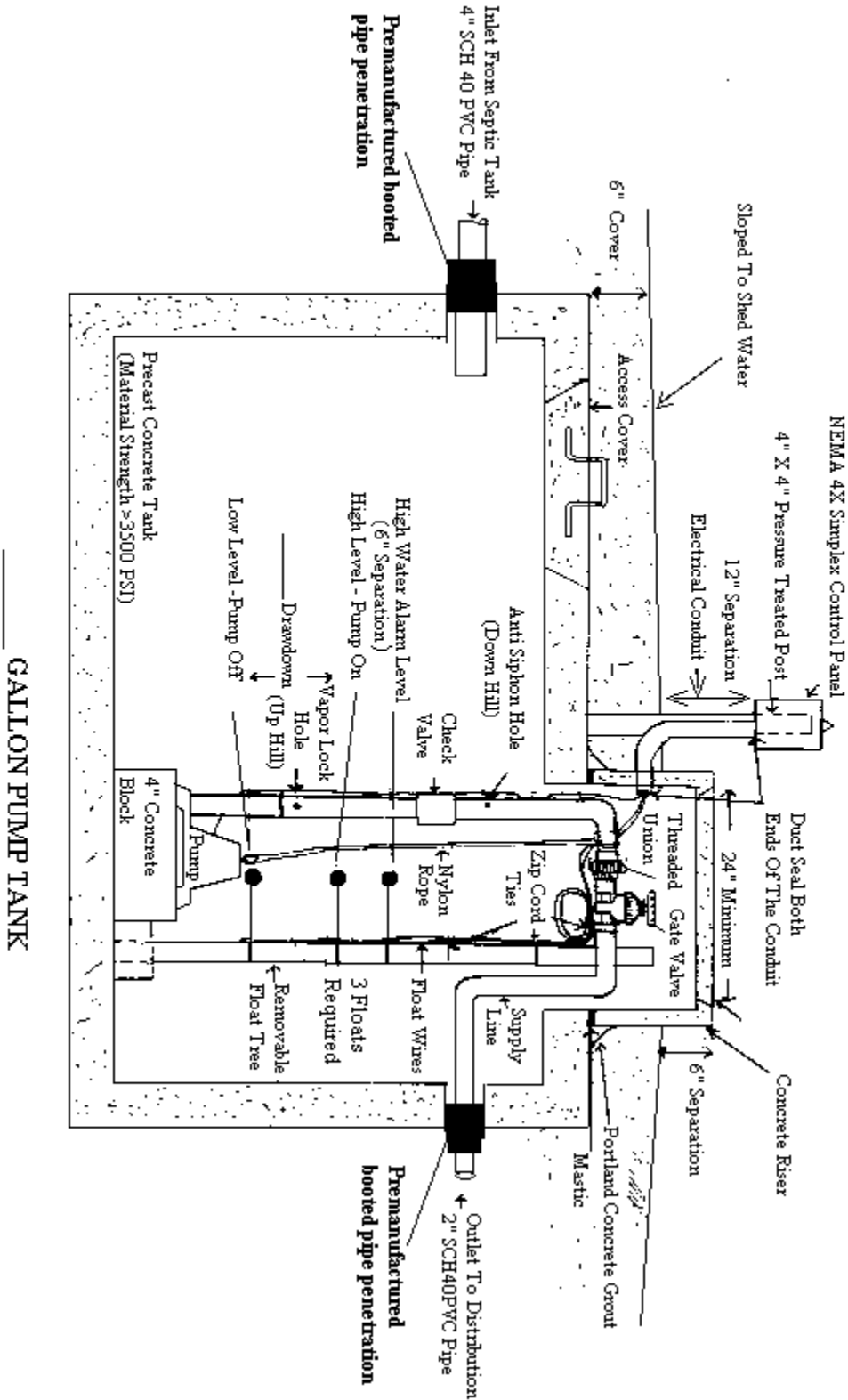
1472
1473 Director
1474 Wake County Human Services Agency
1475
1476

1477
1478
1479

APPENDIX A

Wake County Pump Tank Design :

Wake County Department Of Environmental Services



_____ GALLON PUMP TANK

1480

1481

1482

APPENDIX B

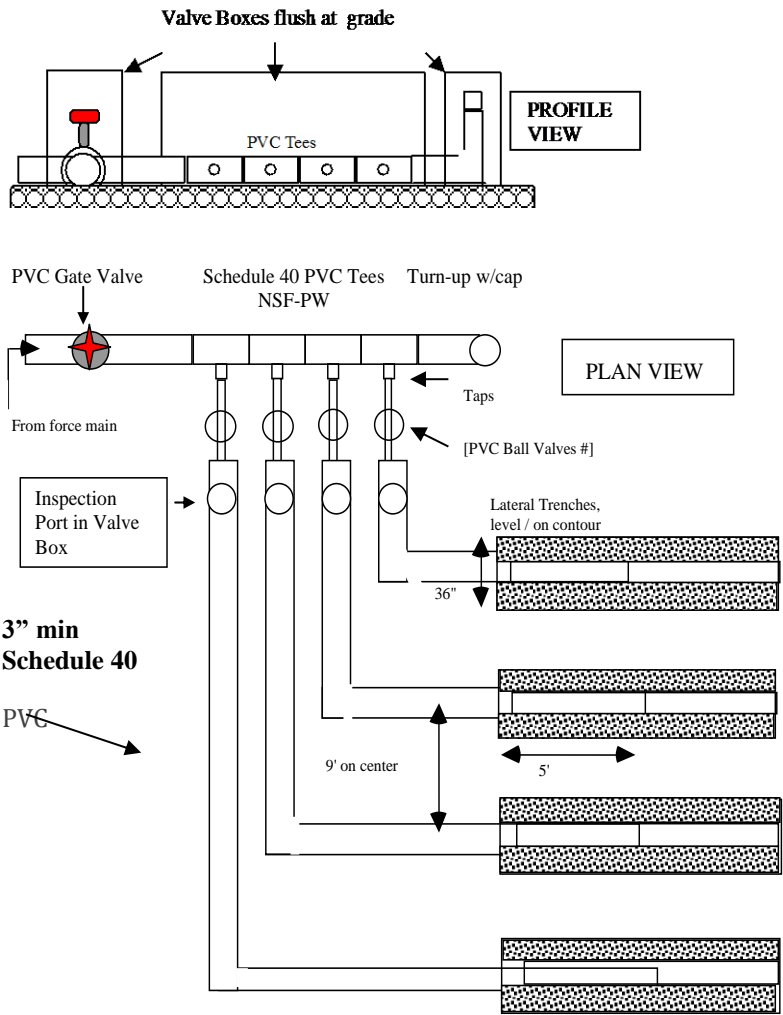
Wake County Mani-Tee Design:

1484

1485

1486

1487



1488

1489

1490

1491

1492

1493

1494

1495

1496

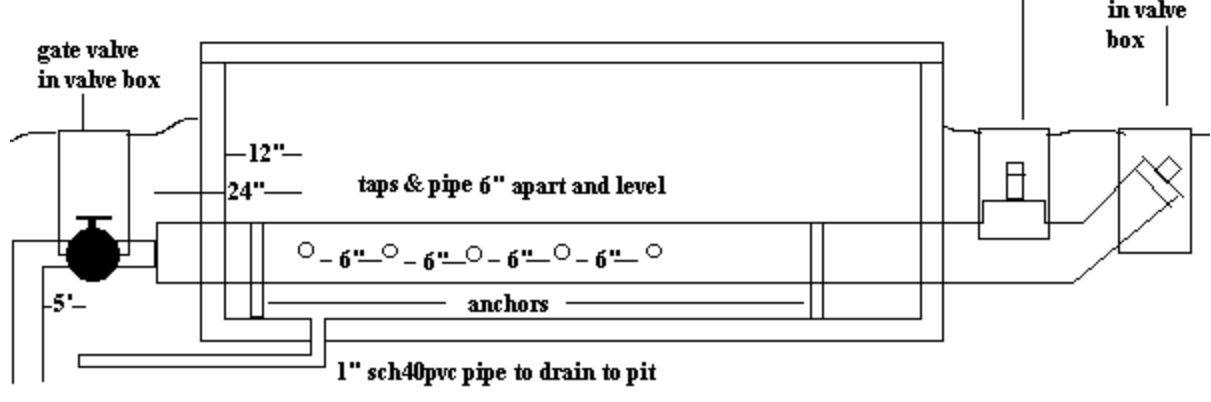
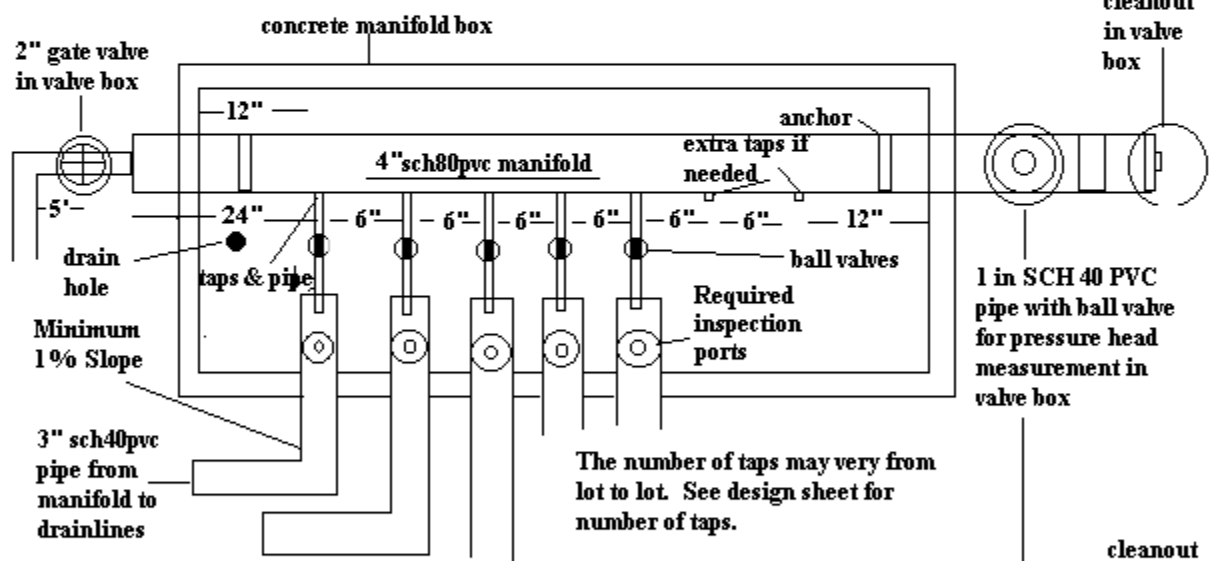
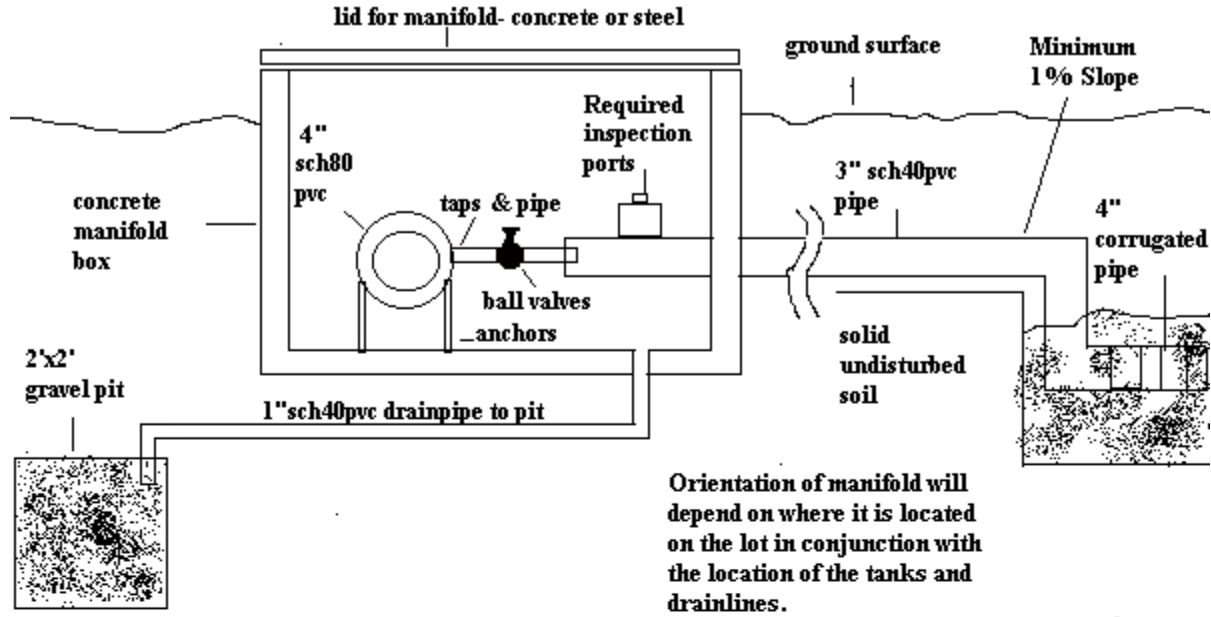
1497

1498

1499
1500

APPENDIX C

Pressure Manifold Design :



1501
1502