

Legend for comment response

Agree and Agree and added to draft - we agree with the comment and it has been addressed in the draft rules

Reject - we do not agree with the comment and provide a reason for our rejection of the comment

Agree with modifications - we agree with the comment, but based on other feedback, have changed the proposed rule modification

Agree but not in current draft - we agree with the comment, but did not make those changes to 18E prior to distribution in May 2016 and those changes will be made and show up in future rule draft

Still under discussion - we have not made a final decision about that particular subject

Address in guidance - guidance will be drafted for this issue that will be distributed at or before the new rules are adopted

1	Rule Number	Page Number	Line Number	Comment	Suggested changes based on comment (Alternate language, suggested definition, etc.)	Suggest Terminology (ADD, CHANGE, or REPLACE)	Rule Review Comments from	Comment Response
2	General							
3	All	All	All	Appreciate the efforts to reorganize NCDEH rules into a more logical format.			CSSC	
4	All	All	All	Need to condense rules as much as possible. 163 pages of rules to regulate, install, and operate septic systems? This is a 91 page increase of rules.	---Portions of the rules and terminology are repetitive as to defining and redefining the same thing. ---Refer to reference standards without repeating the standards in the rules.		CSSC	Agree. Draft document is double spaced for easier review.
5	BODY	1-163			UNLESS THIS IS A LEGAL ISSUE, TAKE THIS BACK TO THE FAMILIAR .1900 RULES. IF IT IS AN ISSUE, PLEASE COPY US ON THE NOTIFICATION FROM THE RULES COMMISSION OR AG.	REPLACE or Explain	NCSTA	It was the Branch's intention to rearrange the rules into a more logical format in order to fulfill the basic mission of simplification and elimination of contradictions.
6	All rules			If the revised rules are more restrictive than existing rules, will there be a grandfather clause for existing recorded lots? What if a lot has an existing permit that expires and then cannot be issued because of more restrictive setback requirements.			CSSC/PP	The same exemptions in the current rules exist in the draft.
7	Various	Multiple	--	The term North Carolina professional engineer is preceded by several descriptors, including licensed, NC, registered, and design.	Make PE references consistent.	Change	Infiltrator	Agree and added to draft
8	15A NCAC 18E			General comment	Reform regulations to minimize text by moving specific criteria to BMP manuals	Replace	Anua	Agree. This is part of our approach, but some BMPs are proposed as rules.

9	15A NCAC 18E			General comment	Adopt an "Outcomes Based Permitting" with measurable approach with three categories: 1. Health protection; 2. Environmental preservation; and 3. Environmental assimilation (receiving environment or in-building reuse). Any system design must address the three from a risk standpoint. System designs should address hydraulic volume and flow rate through each system component. Systems must provide fail-safe effluent by-pass protection. Monitoring plan must include in situ field monitoring parameters. Field monitoring parameters may include COD, TOC, turbidity, DO, pH, alkalinity, ORP, or nitrogen (nitrogen with test strips, see URI studies)	Replace	Anua	Agree in concept and have incorporated in-situ field monitoring parameters.
10	15A NCAC 18E			General comment	The Department should exit the non-proprietary and proprietary product approval business. The Department should focus on a risk matrix to address Outcomes Based Permitting. Designers must design using BMP or standard engineering practice and submit a plan that addresses the health and environmental risks (e.g. higher risk = more fail safes, operational controls, or combos of both), as well as how these are mitigated and monitored, including conventional septic tank/trench technologies. The plan could address biological, chemical, and physical treatment aspects. A corrective action plan must also be submitted to address issues in performance. An example is that the LHD doesn't provide a laundry list of highly prescriptive criteria for a walk-in cooler, but it has to hold temperature for food safety in the restaurant.	Remove	Anua	Agree in concept, however, these rules already represent a paradigm shift in many regards. Perhaps next round NC will be ready for this approach.
11	All	All	All	"Registered" is used with respect to a Professional Engineer when it should be "licensed."	Global search and replace "registered" with "licensed" with respect to a Professional Engineer.	RE	NCBELS	Agree and added to draft
12	All	All	All	"professional engineer" should be capitalized as a title.	Capitalize first letters of "professional engineer" to read "Professional Engineer."	CH	NCBELS	Agree and added to draft
13								
14	Rule .0101							
15	0.0101	5	27	Bedroom Definition - insufficient information. Can't go to Building Inspection to determine if bedroom.	Add actual language from Code Enforcement. Often find them called a "bonus room" instead of bedroom - obviously a bedroom when room has full bath and closet.	Change or Replace	NEEHD	Agree with modifications. Will default to Building code. Applicant's signature and building inspector documentation will confirm number of bedrooms requested.
16	0.0101	7	27	Lateral Water Movement	Not always associated with "less permeable horizon" esp. on coast.	remove this part of definition	NEEHD	Agree with modifications
17	0.0101	8	16	Mean/Normal High Water Mark	Mean high water mark is measurable - surveyable. Normal high water varies and is not defineable.	Change to Mean HW mark only.	NEEHD	Reject. Normal was added because CAMA uses normal, we use mean. Consistency between agencies.

18	0.0101	10	10	Off-site sytem	definition does not include single facility system that are off-site systems. Also property can be owned but not be located on contiguous property.	Change to include any system not located on property owned, controlled and contiguous to facility served.	NEEHD	Agree. Have developed an off-site approval. Will follow that document for what is included in rules.
19	0.0101	13	3	Swales used in conjunction with berms	this is regional; swales are not routinely associated with berms in some areas of the state, i.e. coast.	Remove "associated with berms"	NEEHD	Agree with modifications
20								
21	Rule .0102							
22	definitions			Berms not in definitions	add Berms in definitions		Tim Bannister	Agree and added to draft
23	definitions			Plat not in definitions	add plat in definitions		Tim Bannister	Reject. Term is already defined in G.S. 130A-334(7a).
24	definitions			Site Plan not in definitions	add Site Plan in definitions		Tim Bannister	Reject. Term is already defined in G.S. 130A-334(13a).
25	0102	5	12	The terms "accepted", "innovative", and "provisional" systems are not defined.	Suggest adding a definitions, with reference to G.S. 130A-343.	Add	Infiltrator	Reject. Terms are already defined in G.S. 130A-343(a) and must not repeat what is in law in rule.
26	0102	5	12	Trenches are defined but not beds, with the rules including dedicated sections on both types of dispersal methods.	Consider adding a definition for beds (nitrification area exceeding 3 ft in width).	Add	Infiltrator	Agree and added to draft
27	0102	5	12	The term "wastewater system" is not defined.	Suggest adding a definition, given the large number of references in the rule.	Add	Infiltrator	Reject. Term is already defined in G.S. 130A-343(15)
28	0102	6	16	Clarification	Suggest modifying text as shown: gravel or crushed stone, polystyrene aggregate, polystyrene blocks or beads , chambers, pipe, etc.).	Change	Infiltrator	Agree and added to draft
29	.0102	24	25	What is an "authorized designer"; Does it have any legal meaning or authority?	Better define "authorized designer" as to who qualifies and their credentials. Otherwise delete.		CSSC	Agree and added to draft
30	.0102	24	25	What is an "authorized designer?"	Define "authorized designer" as each of the professions licensed under the specific GS chapter for that profession.	AD	NCBELS	Agree and added to draft
31	0.0102	5		general - there are numerous abreviations in the rules that could be included in the definitions to make identifying them easier	examples would be IPWW, LPP, SWC, USC, STE		Aquapoint	Agree and added to draft
32	.0102	7	3	Need to distinguish between "groundwater" vs. "lateral or perched" water lowering system.	Groundwater lowering system is "below the seasonal high water table indicator level, or measured seasonal high water table depth."		CSSC	Reject. Understand the concept but lateral water movement is addressed in conjunction with interceptor drains.
33	.0102	7	11-12	Would use another term than "infiltrative surface".	Use term like "dispersal field bottom", as a point of reference for what is trying to be conveyed. "Infiltrative surface" could be soil surface, trench sidewall, trench bottom, etc.....		CSSC	Reject. This term is from the nationally vetted CIDWT glossary and is thus legitimate. The definition applies to the examples listed in the comment. It also describes the point of effluent entry into soils for a rull range of technologies.
34	.0102	7	18	Need to distinguish that "interceptor drain" is not a "groundwater lowering system.	"Interceptor drain" is above the seasonal high water table level, or a measured seasonal high water table depth that intercepts and diverts lateral or perched water away from the dispersal field or other system component to an effective outlet.		CSSC	Reject. This distinction is made in the various definitions and references to these terms.

35	.0102	7 / 8	31 / 1-4	How are landscape position and topography used to determine LTAR?	Landscape position and topography are questionable site factors for determining LTAR, and recommend deleting it from definition.		CSSC	Reject. Landscape and topo are used as part of the soil and site evaluation to adjust LTAR based on the specific site constraints.
36	.0102	8	23	"Mottle" should be better defined.	Mottle means a differing Munsell soil color that is <50% the dominant matrix color of a soil horizon.		CSSC	Reject. Defintion used is from CIDWT glossary, nationally vetted. The inclusion of the percentage is in direct conflict with Rule .1942
37	definitions	8	8	Management Entity definition	It should read: "Management Entity means the person or entity, company, or firm" designated by etc.....		Tim Bannister	Agree and added to draft
38		8	12	Management Entity definition	It should read: "or a private certified operato or a private management company or firm that employs certified operators."		Tim Bannister	Agree and added to draft
39	.0102	9	11	"Perched water table" should be better defined.	Perched water table means a saturated layer of soil which is separated from any underlying saturated layers by an unsaturated layer. (SSSA soil glossary)		CSSC	Reject. This term is from the nationally vetted CIDWT glossary and is thus legitimate.
40	0.0102	9	26	Needs line break/new paragraph between definition (49) and "(48) 'public management entity'"	Add line break/new paragraph between two definitions	AD: line break	Presby	Agree and added to draft
41	0.0102	9	26	Public management entity should be (50), not (49)	Re-number in accordance with public management entity's new number 50	CH: numbering of definitions	Presby	Agree and added to draft
42	definitions	9	4	"Owner" does more than just "obtain permits".	Strike "to obtain permits".		Tim Bannister	Agree and added to draft
43	.0102	9 / 10	24-31/1-2	Separate definitions embedded within # 49.	Formatting error, separate definitions.		CSSC	Agree and added to draft
44	0.0102	10/ ongoing	3/ ongoing	Re-number (50) Redoximorphic features to (51) and so on	Re-number all remaining definitions to be in line with "public management entity"'s new number 50	CH: numbering of definitions	Presby	Agree and added to draft
45	.0102	10	13	Repair area should include "... or be massively disturbed."	Repair area should include "... or be massively disturbed."		CSSC	Agree with modifications
46	.0102, 1935	10	13	ADD 53 "REPAIR", RENUMBER "REPAIR AREA" et.al.	<u>"REPAIR" means the extension, alteration replacement, or relocation of existing components of an on-site wastewater system. "Repair" does not include the replacement of a distribution device by a person authorized under Article 5 of Chapter 90A.</u>	ADD	NCSTA	Reject. Term is already defined in G.S. 130A-334(9a).
47	.0102, 1935	11	14	(60) "Septic tank" definition incomplete	Change definition for consistence; watertight <u>structurally sound</u> ...	CHANGE	NCSTA	Agree and added to draft
48	.0102	11	7	Recognized % of saturated hydraulic conductivity can be used to assign LTAR, rather than just to confirm it.	Recognized % of saturated hydraulic conductivity can be used to assign LTAR. Texture, consistence, structure, etc are qualitative estimates, while Ksat is quantitative. Percentage of Ksat (2-4% sandy; 5-7% loamy; 8-10% clayey) can be used to determine an equivalent LTAR for typical domestic wastewater. These %'s of a soil's Ksat fall within the recognized range of LTAR's for wastewater dispersal, depending upon level of pretreatment.		CSSC	Reject. Current available research indicates that KSAT is used to confirm LTAR, not to assign an LTAR.

49	.0102	11	12	"Saturated soils" definition needs a time duration component added, as any site can be temporarily saturated after significant or consecutive rainfall events.	Add to definition ".....in a fresh soil boring or monitoring well for durations of >3 to 14 consecutive days pending ambient rainfall amounts." This aligns with Rule .1942.				Reject. We understand the concern, but even with 14 days of saturation, redox may not be present. We feel as though the current option to capture long-term data would provide for addressing the alternative methods as needed. We also are not certain how to address abnormal rainfall within this method, which can be an issue with being overly conservative during periods of excess rainfall.
50	.0102	12	1 - 8	This is not an accurate definition of soil. Please use the cited NRCS references.	This is not an accurate definition of soil. Please use the cited NRCS references. Soil may contain >50% coarse fragments and rock. "O" horizons and organic soils are "soil". One of the twelve taxonomic soil orders is for organic soils.			CSSC	Reject. Returning to current definition of soil.
51	.0102	12	11	"Soil series" is the lowest category of classification within the U.S. system of soil taxonomy. Use your cited references.	"Soil series" is the lowest category of classification within the U.S. system of soil taxonomy. Use your cited references.			CSSC	Reject. Definition is stand alone. The term is only used in the context of water table monitoring in Rule .0504 and is thus part of the analysis associated with that activity. Rules do not state that soil series must be identified in the course of a soil and site evaluation.
52	.0102	12	15	"Soil textural classes" are not limited to <2 mm diameter mineral particles. Use your cited references.	"Soil textural classes" are not limited to <2 mm diameter mineral particles. Use your cited references.			CSSC	Reject. Left this definition in due to the use of soil series in Drainmod.
53	.0102	12	24	Definition of stream should not include ephemeral.	Streams should only include those water bodies with a defined "ordinary high water mark or line", not erosional rills, ephemeral depressions, etc.			CSSC	Reject. Used DEQ definition since they are responsible for classifying streams.
54	0.0102	13	77/ ongoing	the word "UNSUITABLE" is used throughout - why is it in all caps, and should there be a definition associated with it?	Define unsuitable and perhaps remove it from all caps	CH: un-capitalize, define		Presby	Reject. The term "UNSUITABLE" is defined later in the rules, in Section .0500.
55	15a nacac 18e .0102 Definitions {.1935}	13	10	TIN is the sum of the concentration of ammonium Ion, nitrate and nitrate present but excludes refractory organic nitrogen. Since refractory organic nitrogen is essentially inert it should not be included in standards.	Add Definitions for Total Nitrogen and Total Inorganic Nitrogen.			FR Mahony	Reject. Definitions for these terms are standardized in the industry already.
56									
57	Rule .0201								
58	0.201	13/ ongoing	28/ ongoing	controlling facility containing / First example of other	Review and Correct grammar problems throughout. Makes reviewing difficult!	ADD/CH: Example: add an "a" in the first sentence "any person owning or controlling A facility containing water-using..."		Presby	Agree and added to draft
59		13	31	"Existing System Inspection" Explanation: Who does it, when does it get done, what are the parameters?	Explain or define	EXPLAIN		NCSTA/GH	Agree and added to draft. Will also be addressed in guidance.
60									
61	Rule .0202								

62	.0202	14	17 - 18	Improvement permit only valid for 12 months?? See NCGS 130A-335-f and f-1.	NCGS 130A-335-f states, "Improvement Permits for which a plat is provided shall be valid without expiration. " Part f-1 further states, "...a preconstruction conference...shall be required for authorization with an improvement permit greater than five years old. Following the conference the LHD shall issue a revised authorization for construction..." How can this rule differ so much from the NCGS as to validity and time of prior issued permits?				Reject. The reference is to the validity of a complete application on which no further action is taken.
63	.0202	14	23-28	Are the location and dimension data and location of property lines, property corners and fixed reference points to be relied upon for horizontal and vertical accuracy? If so, the work falls within the definition of land surveying in GS 89C-3(7) and is required to be done by a Professional Land Surveyor (PLS). Definition of "plat" in G.S. 130A-334 is "(7a) "Plat" means a property survey prepared by a registered land surveyor, drawn to a scale of one inch equals no more than 60 feet, that includes: the specific location of the proposed facility and appurtenances, the site for the proposed wastewater system, and the location of water supplies and surface waters. "Plat" also means, for subdivision lots approved by the local planning authority if a local planning authority exists at the time of application for a permit under this Article, a copy of the subdivision plat that has been recorded with the county register of deeds and is accompanied by a site plan that is drawn to scale."	Add requirement for licensed Professional Land Surveyor if the service falls within GS 89C-3(7) and add definition.	AD			Agree with modifications
64	0.0202	15	19	Sentence placement is odd - should it be a (number) or (letter) or refer to (c) in line 11 or (2) in line 20?	Label/indent line so it is clear what subsection the section refers to	CH: move or label sentence	Presby		Agree and added to draft
65									
66	Rule .0203								
67	.0203	16	18 - 20	Same as above as to validity of Improvement Permit and NCGS.	Same as above as to validity of Improvement Permit and NCGS.			CSSC	Reject. The rule is in accordance with G.S. 130A-336(a)(1).
68	0.0203	16	1	the word "SUITABLE" is used throughout - why is it in all caps, and should there be a definition associated with it?	Define suitable and perhaps remove it from all caps	CH: un-capitalize, define	Presby		Reject. The term "SUITABLE" is defined later in the rules, in Section .0500.

69	.0203	16	4-6	Are the location and dimension data and location of property lines, property corners and fixed reference points to be relied upon for horizontal and vertical accuracy? If so, the work falls within the definition of land surveying in GS 89C-3(7) and is required to be done by a Professional Land Surveyor (PLS). Definition of "plat" in G.S. 130A-334 is "(7a) "Plat" means a property survey prepared by a registered land surveyor, drawn to a scale of one inch equals no more than 60 feet, that includes: the specific location of the proposed facility and appurtenances, the site for the proposed wastewater system, and the location of water supplies and surface waters. "Plat" also means, for subdivision lots approved by the local planning authority if a local planning authority exists at the time of application for a permit under this Article, a copy of the subdivision plat that has been recorded with the county register of deeds and is accompanied by a site plan that is drawn to scale."	Add requirement for licensed Professional Land Surveyor if the service falls within GS 89C-3(7) and add definition.	AD		
70							NCBELS	Agree with modifications
71	Rule .0204							
72	.0204	16	31 - 32	Same as above as to validity of Improvement Permit and NCGS.	Same as above as to validity of Improvement Permit and NCGS.		CSSC	Reject. The rule is in accordance with G.S. 130A-335(f) and 130A-336(b).
73	0.0204	18	1 to 6	(2) Off-site System	If an off-site system serves two facilities it either fits the category under (1) or needs an easement. It may not meet the criteria for needing a bi-party agreement.	Remove (2)	NEED	Agree with modifications
74		17	31	"the site is altered." Further detail is needed to limit this phrase.	Limit or explain details of "altered"	CHANGE	NCSTA/GH	Agree and added to draft
75								
76	Rule .0205							
77	.0205	16	27-30	Are the location and dimension data and location of property lines, property corners and fixed reference points to be relied upon for horizontal and vertical accuracy? If so, the work falls within the definition of land surveying in GS 89C-3(7) and is required to be done by a Professional Land Surveyor (PLS).	Add requirement for licensed Professional Land Surveyor if the service falls within GS 89C-3(7) and add definition.	AD		
78	0.0205	20	18	Sentence placement is odd - should it be a (number) or (letter) or refer to (b) in line 14 or (F) in line 9?	Label/indent line so it is clear what subsection the section refers to	CH: move or label sentence	Presby	Agree and added to draft
79	0.0205	18	11	"and the rules."	Omit "and the Rules." The IP was issued by an authorized agent of the LHD. Any other agent of the LHD should only determine if the installation was done in accordance with the IP.	Omit	NCSTA	Reject. System installation must be done in accordance with the conditions of the IP, CA, and the rules.
80	0.0205	18		Adjust (b) and (c) to reflect that the correctness of the installation is determined by the IP and CA	Adjust language. This will effectively place the LHD from issuing second opinions that cost the installer and homeowner after the IP or CA is issued.	Change	NCSTA	Reject. System installation must be done in accordance with the conditions of the IP, CA, and the rules.

81	0.0205	19	31	Operation Permit shall be valid for a period of five years	Omit. Operation Permits should be valid unless the system is not meeting its treatment standards or Operations Reports submittals	Omit	NCSTA	Reject. Type V and VI systems currently have renewable operation permits. These systems are larger and more complex systems that require additional oversight and thus must be subject to renewal.
82								
83	Rule .0206							
84	0.0206	20	3	written authorization for a manufactured home to be connected to an existing system /Why are manufactured homes singled out?	Manufactured homes are considered single family dwellings	CH/RE: Change all language specifically regarding manufactured homes to single family dwellings	Presby	Reject. Makes complete sense, but this rule is based on G.S. 130A-337(c).
85	0.0206 (a)(2) --the first one	20	8	the design daily flow for the proposed manufactured home, residence or facility does not exceed that of the existing system.	Develop procedures for instances when no documentation of the existing system exists. Is that the intent of .0206 (b) to address existing systems without permits.	Add	NCEHD/Orange County HD	Agree. Will be provided in guidance.
86								
87	Rule .0207							
88	.0207	20	25	Is engineer "registered" or should it be "professional".	Is engineer "registered" or should it be "professional". If necessary change here and all other references to engineer in EOP.		CSSC	Agree and added to draft
89	0.0207	20	21	reference numbers are different from Temporary Rules adopted by the Commission and approved by the RRC.	Issue explanation of change and make appropriate notations to account for change	Explanation	NCSTA	Reject. Reference numbers have been modified to reflect the proposed draft rules.
90	0207	20	21	House Bill 765 from the 2015 legislative session states the following: Where the professional engineer's designs, plans, and specifications call for the installation of a conventional wastewater system, such designs, plans, and specifications shall allow for the installation of an accepted system in lieu of a conventional system in accordance with the accepted system approval. The legislative provision for accepted systems was omitted from the rules.	Add the allowance for accepted systems at the end of Rule .0207(e) on line 13 on page 22.	Add	Infiltrator	Agree and added to draft
91	.0207	21	31 - 32	Should type of insurance be specified? i.e. professional liability or error/omission insurance.....vs. general liability, health, disability, workman's comp insurance.	Should type of insurance be specified? i.e. professional liability or error/omission insurance.....vs. general liability, health, disability, workman's comp insurance.		CSSC	Agree with modifications
92	0.0207	22	13	improper grammar - should be a possessive "manufacturer's" instead of a plural "manufacturers"	Change to manufacturer's to indicate possessive use of word	RE: replace "manufacturers" with "manufacturer's"	Presby	Agree and added to draft
93	.0207	22	22	Why are the additional words "design" placed in front of "professional engineer" and "project" in front of "soil scientist?"	Delete "design" as preface to "professional engineer."	CH	NCBELS	Agree and removed from draft
94	.0207	23	22-23	Why are the additional words "design" placed in front of "professional engineer" and "project" in front of "soil scientist?"	Delete "design" as preface to "professional engineer."	CH	NCBELS	Agree and removed from draft
95	0.0207	23	9	Sentence placement is odd - should it be a (number) or (letter) or refer to (2) in line 23 of page 52 or (5) in line 8?	Label/indent line so it is clear what subsection the section refers to	CH: move or label sentence	Presby	Agree with modifications

96	.0207	24	1 - 2	LHD to attend post-construction conference for +3000 gal/day or industrial wastewater system types.	Is the LHD required to attend all post-construction EOP projects, or just for +3000 gal/day and industrial system types?		CSSC	LHD is required to attend all post-construction EOP projects as specified in Session Law.
97	.0207	24	Add	Should there be an added LHD responsibility to notify proper authorities for building permit and electrical connection ??	Should there be an added LHD responsibility to notify proper authorities for building permit and electrical connection ??		CSSC	Agree with concept. NOI serves as the documentation from LHD for building inspections regarding the release of building permits per the statute.
98	.0207	24	15-16	Why are the additional words "design" placed in front of "professional engineer" and "project" in front of "soil scientist?"	Delete "design" as preface to "professional engineer."	CH	NCBELS	Agree and added to draft
99								
100	Rule .0301							
101	.0301	26	14-20	Who is an "authorized designer" if not the Professional Engineer?" It requires affixing a "seal."	Delete or define "authorized designer."	CH	NCBELS	Agree and added to draft
102								
103	Rule .0302							
104	.0302	26	25 - 26	Sentence should specify EOP permit option under Rule .0207, not just NCGS. Confusing.	Sentence should specify EOP permit option under Rule .0207, not just NCGS. Confusing.		CSSC	Agree and added to draft
105	.0302	27	1 - 2	This sentence is confusing as to exceptions from required State reviews.	This sentence is confusing as to exceptions from required State reviews.		CSSC	Agree with modifications
106	0.0302	27	11 to 12	If OP can't be issued	IP/CA also requires suspension or revocation	Add	NEEHD	Agree and added to draft
107								
108	Rule .0303							
109	.0303	27	25	Registered or professional Engineer ?	Registered or professional Engineer ?		CSSC	Agree with modifications
110	.0303	27	26 - 30	This sentence is confusing as to exceptions from required engineered design.	This sentence is confusing as to exceptions from required engineered design. If serving an individual dwelling unit or facility or several individual systems the system can be +3000 g/d and not be engineered design?		CSSC	Agree with modifications
111	.0303	28	23 - 24	Specify this is EOP option with cited rules and law.	Specify this is EOP option with cited rules and law.		CSSC	Reject. This is for all engineered systems, not just EOP.
112	0.0303	28	2-Jan	Wastewater systems shall be designed by a P.E.	Low flow fixture reductions can be done on existing systems which do not require designing or installing. A PE is not necessary to design a conventional system just because it uses low flow fixture reductions.	Change	NEEHD	Reject. S.L. 2014-120 and S.L. 2013-413 specifically reference 'design'. The Engineer must certify the existing design pursuant to the flow reduction sought. They are responsible for all.
113	0.0303	28	12	"structures" means what?	unclear as to what structures (maybe components) would need pre-engineering.	Remove	NEEHD	Agree and added to draft
114								
115	Rule .0304							
116	.0304	29	13	Why is a Professional Engineer not included?	Add "89C" to those who can do Special Site Evaluations. A PE who is competent in those areas can provide that service.	CH	NCBELS	Reject. The activities described for SSE's exist within the realm of the LSS and depending upon the specifics, within the realm of the LG.

117	.0304	29	14	"Infiltrative surface" is confusing as to what is meant.	Would use term "bottom of dispersal system".		CSSC	Reject. This term is from the nationally vetted CIDWT glossary and is thus legitimate. The definition applies to the examples listed in the comment. It also describes the point of effluent entry into soils for a full range of technologies.
118	.0304	29	17 - 18	How can there be <18 inches of naturally occurring soil to fill material ?	How can there be <18 inches of naturally occurring soil to fill material ?		CSSC	Agree and removed from draft
119	.0304	29	19 - 20	In Group-I soils if pressure dispersal is utilized there can be 12" separation to soil wetness, and no need for additional documentation. Ref Rule .1957-b-1-B.	In Group-I soils if pressure dispersal is utilized there can be 12" separation to soil wetness, and no need for additional documentation. Ref Rule .1957-b-1-B.		CSSC	Agree and added to draft
120	.0304	29	21 - 22	"Infiltrative surface" is confusing as to what is meant.	Would use term "bottom of dispersal system".		CSSC	Reject. This term is from the nationally vetted CIDWT glossary and is thus legitimate. The definition applies to the examples listed in the comment. It also describes the point of effluent entry into soils for a full range of technologies.
121	.0304	29	23	Specify that drainage does not include swell or diversion drainage. Also why can't drainage be used on Group I and IV soil types?	Specify that drainage does not include swell or diversion drainage. Also why can't drainage be used on Group I and IV soil types?		CSSC	Agree and added to draft
122	0.0304	29	19	Special site evaluation required	Why require this eval. For wetness less than 18 inches in group I when we can use a LPP and reduce separation to 12 inches now. What is the difference when being able to reduce separation to 12 inches when using fill. We can still use fill on sites with 12 inch water tables in Group I. Why penalize Group I.	Change to less than 12 inches in Group I.	NEEHD	Agree and added to draft
123	0.0304	29	27	Bed System	A bed system must be designed to be laid on contour and maintain required separations to wetness, etc. Where is the value in requiring a SSE?	Remove	NEEHD	Agree with modifications
124	0.304	30	4 and 5	and other information determined to be necessary by the LHD or the State/Be specific/rule is open to a different interpretation from each person reading it	remove arbitrary language that is left open to interpretation of the reader	CH/RE: Change language or replace	Presby	Reject. This allows for non-cookie cutter sites to be approved. Cannot list every single option in the rules.
125								
126	Rule .0305							
127	.0305	30	17	Should this be "professional" engineer, not "design" engineer?	Should this be "professional" engineer, not "design" engineer?		CSSC	Agree with modifications
128	.0305	30	25 - 26	Clear languagesoil borings field in accordance with....?	Clear languagesoil borings field in accordance with....?		CSSC	Agree with modifications
129	.0305	30	17	Should this be "professional" engineer, not "design" engineer?	Should this be "professional" engineer, not "design" engineer?	CH	NCBELS	Agree with modifications
130	.0305	30	25 - 26	Why is a Professional Engineer not included?	Add "89C" to those who can do Special Site Evaluations. A PE who is competent in those areas can provide that service.	AD	NCBELS	Reject. The activities described for SSE's exist within the realm of the LSS and (depending upon the specifics) within the realm of the LG.

131	.0305	31	28	A requirement for a "registered land surveyor" is included, but should be "licensed Professional Land Surveyor." This is consistent with the other comments about land surveying.	Replace "registered land surveyor" is included, but should be "licensed Professional Land Surveyor."	RE		NCBELS	Agree and added to draft
132	0.0305	31	2	KSAT - it is customary to spell out an abbreviation the first time it is used in regulations	Spell out abbreviations the first time they are used. Makes reading difficult otherwise	ADD/CH: Example: "saturated hydraulic conductivity (KSAT)" when first used in regulations		Presby	Agree and added to draft
133	.0305	31	2	"Infiltrative surface" is confusing as to what is meant.	Would use term "bottom of dispersal system".			CSSC	Reject. This term is from the nationally vetted CIDWT glossary and is thus legitimate. The definition applies to the examples listed in the comment. It also describes the point of effluent entry into soils for a full range of technologies.
134	.0305	31	5-6	Need reasonable depth for deep boring parameters, similar to NCDEQ-DWQ rules.	Deep borings to 20 ft or an aquitard, whichever is shallower.			CSSC	Reject. This is site specific and may be shallower or deeper according to the site. Consultant proposes deep boring depth to support proposed design. It is a performance based and site specific determination.
135	.0305	34	7	Specify this is EOP option with cited rules and law.	Specify this is EOP option with cited rules and law.			CSSC	Reject. This is for all engineered systems, not just EOP.
136									
137	Rule .0401								
138	.0401	34	16-21	Is the sentence on line 16 necessary or serve any purpose?	Combine language in rules (a) & (b).			CSSC	Agree with modifications
139	0.0401	34	15	why is a single bedroom unit in a cluster required to be sized at 240 gpd?	The minimum design daily flow from for a system serving a single family dwelling shall be 240 gpd	change		Aquapoint	Agree with modifications
140		35	7	Table 1. Quite a few more Flow estimates. Are these historical reflections, certified information, or "sounds good" requirements.	Justify estimates for flow rates. There will be fiscal impacts with these flow rates	Explanation		NCSTA	Still under discussion
141	0.0401	36	n/a	Table 1. wine tasting areas should also include beer and sprit tasting areas	Tasting areas (wine, beer, sprit); (no process wastewater)	change		Aquapoint	Agree and added to draft
142	0.0401	37	n/a	why are rest homes/assisted living/nursing homes twice the design flow as group homes/drug rehab/mental health/other care facilities?	comment only			Aquapoint	Reject. Much more documentation on flow and one on one care required in nursing homes/rest homes.
143	0.0401	35		Office and Factories	8 hour days is more common for offices	Add design flow for 8hr days		NEEHD	Agree with modifications
144	0.0401	36		Travel trailer/Recreation Vehicles-no holding tank discharge	does this mean no dump station. What about bath house design flow. Define what is intended.	change		NEEHD	Agree with modifications
145	0.0401	38		Outdoor Sports Facility	repeat from page 37	remove		NEEHD	Agree and removed from draft
146	0.0401	38		Church	A church is not an institution. Sizing is convoluted. Adding additional for fellowship hall is double dipping. Fellowship hall is part of church and kitchen area.	Remove Fellowship hall flows.		NEEHD	Agree with modifications
147	0.0401	38		Day Schools	What if gym has no showers. Many church schools have a gym but not showers.	Add gym with no showers - really shouldn't increase flow.		NEEHD	Reject. The school can always request a flow reduction or hire a PE to propose an alternate design flow based on the fixtures.
148	0.0401	38	4	(h) need to add specific information for use of low flow fixture reductions by P.E.		Add		NEEHD	Agree and added to draft
149									
150	Rule .0402								

151	15A NCAC 18E .0402 & 15A NCAC 18E .1504	40 & 142	7 thru 15 & 24	Change parameters to carbon and total suspended solids	Provide correlation (see 2002 USEPA Decentralized Manual, Table 3-7) for TSS = turbidity, CBOD5 = COD and/or TOC. Goal is to have measurable parameters to gauge performance using simple field testing equipment	Change	Anua	Still under discussion
152	.0402	40	10 - 11	Glad to see NCDEH recognizing NCDEQ reclaimed water standards.	Where in NCDEH rules and Table-II is credit given for attaining reclaimed treatment levels, regarding LTAR, dispersal field size, and/or vertical - horizontal buffer requirements?? Otherwise, the public will not pursue this level of pretreatment.		CSSC	Reject. Reclaimed water use standards still recognized. These have always and will continue to receive the same concessions as TS II. They can always be proposed on a site specific project for a system designed by a LSS and PE and reviewed by the State.
153	15a ncac 18e .0402	40	13	Nitrogen removal is critical to avoid eutrophication of the estuaries and bays. TS-I and TS-II standards should reflect nitrogen removal and TS-II should be much more restrictive because there will be little nitrogen removal in well-drained sandy soils.	Change TS-I Standard for Total Nitrogen in Table II from "NA" to be < 30mg/L		FR Mahony	Still under discussion
154	15a ncac 18e .0402	40	13	See previous comment	Change TS-II Standard in Table II for TN from <30mg/L to <14mg/L		FR Mahony	Still under discussion
155	0.0402	40	13	Table II. The column heading "Septic Tank Effluent (maximum)" does not match the reference on page 103 line 7 to "domestic wastewater". The value of 350 for BOD is more a raw sewage value for domestic strength wastewater and not a septic tank effluent value. The other values also appear to be raw sewage values. For comparison, the "High Strength Wastewater" appears to be raw sewage values.	change heading to "Domestic Raw Sewage (maximum)"	change	Aquapoint	Reject. The value for septic tank effluent has been taken from the current rules and matches what we have been using in the past.
156	0.0402	40	13	Table II. Aside from NSF-40, does TS-I or TS-II has similar standards to NSF-350 or other nationally recognized standards. Has the standards been raised, lowered, or remaining the same as current rules	Detail changes. How many of the current approved advanced treatment manufacturers meet these proposed standards; how many of the current treatment manufacturers have historically failed to meet anticipated protocols	Provide information	NCSTA	Still under discussion
157	15A NCAC 18E .0402	40	7 thru 15	Change concentrations to mass loading (kg/yr). Establish annual mass loading per person maximums. Group treatment in a table for multiple parameters but list each parameter separately and independent of each other.	Example is Chesapeake Bay model on nitrogen where the limit is established, not as a concentration, but as 5 kg/yr TN per person. This will especially make nitrogen easier to regulate. Instead of being caught in the concentration/percent reduction game, mass limits can be tied to Environmental Preservation and Environmental Assimilation.	Change	Anua	Still under discussion

158	402	40		Effluent Quality Standards- Fecal lab is unnecessary	If approved UV unit is a required component and unit is required to be kept active at all times, and bulb is required to be changed at a maximum of 16 months, it is EASILY going to keep fecal well under 1,000. Probably more like un-detectable. We have run bulbs for as much as 5 years on RESIDENTIAL (which is very very small flows) and were still getting non-detectable on labs. This is a cost to owners that is not necessary.	Require UV on TS-II, labs only if probably cause is evident	Tim Bannister	Still under discussion
159	402	40		Effluent Quality Standards - CBOD vs BOD5	CBOD is generally used as a process control lab done at a facility to get a "feel" of the strength present since it can be done on-site. Most use BOD5 as the normal lab and analysis of effluent treatment levels. It will be confusing to most to have to keep track of asking the laboratories to run CBOD and BOD and remember which gets what testing. We are not performing rocket science and using one standard is quite adequate and will mean less confusion in the field.	Drop the CBOD and just use BOD5 across the board.	Tim Bannister	Reject. CBOD in line with National Standards that we are required to reference via statute and aligns with our current treatment standards.
160	402	40		Effluent Quality Standards - Septic Tank Effluent BOD5, TSS, FOG	Are these actual "limits"? Or just reference numbers? Why require these three lab testings on septic tank effluent? You have Quality Standards on the final effluent so it doesn't matter what the Septic Tank puts out. If the Standards can't be met then there may be reason to look further to determine reason for the exceedance. Then you can start looking at the organic loading and such. We shouldn't cause everyone to spend for labs where 99% of the residential is going to fall within the "norm" limits. On FOG there are no quality standard even to meet. if you're not requiring effluent quality standards, why make all pay for testing the septic tank unless, again, there is reason to need to go there. The only septic tank effluent test should be TN where there is a Quality Standard to meet afterwards.	Eliminate the Septic Tank and High Strength BOD5, TSS, and FOG limits. You can mention the expected limits of each as a line item this section or in the possibly as a definitions would be more appropriate.	Tim Bannister	Reject. This table provides reference numbers for reference for septic tank effluent maximums and high strength wastewater. This provides a baseline for determination of when wastewater is domestic versus high strength.

161	402	40		Effluent Quality Standards - BOD5 and TSS vs Turbidity	I would like to see Turbidity be an optional test in place of BOD5 and TSS. Give an NTU number that would satisfy the equivalent of BOD and TSS. We use Turbidity everyday in wastewater treatment plants to give us a thumbs up or down if our quality is most likely in limits. It is a great indicator. Peat treatment may have problems with Turbidity but let it be an optional test in place of the cost of BOD and TSS. If an ORC invests in a quality field test unit this can save their customer money by doing this in the field. If "trust" is an issue, then you are going to be fooled regardless. The untrusting people are going to work hard to get around any and all of the lab requirements. However, fraud will result in losing their certifications and lets not penalize the good for the small amount of bad.		Tim Bannister	Still under discussion
162		41	2	Organic loading formula. Please provide basis. Is this scientifically proven, used in other Federal or State rules.	Organic loading has been recognized as being a factor in designing systems, but there should be a basis for substantiating evidence.	Provide information and place in footnotes.	NCSTA	Agree with modifications. This is the current formula used when determining an organic peaking factor. The formula has been used by the State for over 15 years. The reference is "Wastewater Engineering Design for Unsewered Areas", by Rein Lakk, second edition, published in 1986.
163								
164	Rule .0501							
165	.0501	41	25 -26	Need to also include site evaluations under EOP by recognized professionals.	Need to also include site evaluations under EOP by recognized professionals.		CSSC	Reject. The EOP laws and rules require all rules to be followed.
166	.0501	41	25	Who is an "authorized agent" of the LHD? Does 15 NCAC 18E.0302(a) offer the defintion?	Provide under "Definitions" a definition of "authorized agent."	AD	NCBELS	Agree and added to draft
167	.0501	42	20 -21	Need to also include site classification and suitability under EOP by recognized professionals.	Need to also include site classification and suitability under EOP by recognized professionals.		CSSC	Reject. The EOP laws and rules require all rules to be followed.
168	.0501	42	22 - 23	Need to also include determination of LTAR under EOP by recognized professionals.	Need to also include determination of LTAR under EOP by recognized professionals.		CSSC	Reject. The EOP laws and rules require all rules to be followed.
169								
170	Rule .0502							
171	.0502	42	31	Need to include "unless stable grading or landscaping" can be accomplished under .0509	Need to include "unless stable grading or landscaping" can be accomplished under .0509		CSSC	Reject. Included as part of 0509(e).
172	.0502	43	1 - 3	Need to include "unless stable grading or landscaping" can be accomplished under .0509	Need to include "unless stable grading or landscaping" can be accomplished under .0509		CSSC	Reject. Included as part of 0509(e).

173	.0502	43	12 - 18	Site factors are already evaluated for initial & repair area as to soil depth and slope, so why is this an additional requirement?	Site factors are already evaluated for initial & repair area, so why is this an additional requirement? This should not be required. If required, need allowances for a minimum slope of site for this correction factor, and would recommend slopes that are >10 - 15% need to factor-in slope correction.			
174							CSSC	Agree with modifications
175	Rule .0503							
176	.0503	43	21 -22	Need to also include soil characteristics under EOP by recognized professionals.	Need to also include soil characteristics under EOP by recognized professionals.		CSSC	Reject. The EOP laws and rules require all rules to be followed.
177	.0503	43 / 44	23-30/1-9	All soil groups I - IV are "suitable". Why classify them?	All soil groups I - IV are "suitable". Why classify them? Maybe combine texture with structure to determine overall suitability?		CSSC	Agree and removed from draft
178	.0503	44	24	Table-III; Structure size too small, especially 'blocky'. Should be <10 inches "unsuitable". NRCS guidelines recognizes structure up to >20 inches. Qualitative poor structure can be easily accommodated by LTAR factor. Surprised that "prismatic" is allowed as it is typically associated with "shrink/swell" clays? This table needs serious reconsideration.	See Reference NRCS Handbook 2-41 thru 2-48 http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052523.pdf Likely need to consider bulk density and permeability, if structure by Rule is this much of a concern; See reference 7-10 thru 7-13 for qualitative estimates.		CSSC	Reject. Reviewed and increased to two inches for Prismatic. Prismatic structure is not always an indication of expansive mineralogy. Reviewed USDA document. Table is in mm, not inches.
179	0.0503	45	18	CEC7 "or" EPA 9080 not "and"	Implies both tests	Change	NCEHD	Agree and added to draft
180	0.0503	45	19	Organic Carbon per literature not matter	Clarification	Change	NCEHD	Agree and removed from draft
181	0.0503	45	18	CEC7 "or" EPA 9080 not "and". We do question whether commercial labs run these tests. The only labs that run the standard CEC7 testing are University affiliated or NRCS affiliated. All others run pH 8.2 as base.	Implies both tests	Change	Orange County HD	Agree and added to draft
182	0.0503	45	19	Organic Carbon per literature not matter	Clarification	Change	Orange County HD	Agree and removed from draft

183	.0503	45 / 46	2-23/1-13	CEC testing for clay mineralogy is unreliable and inconsistent at best to determine shrink/swell potential and soil / site usability. CEC testing is inconsistent between labs and within labs for similar soil samples. Using an exact CEC number as the sole parameter for site suitability is unacceptable within Table-V. Table-IV for soil consistency as a sole indicator is also a qualified guess and evaluator dependent.	Recognizing the uncertainties of clay mineralogy determinations for site usability, the Rule should consider first a low LTAR (≤ 0.2) when there is large available space for the system area. Secondly a multi-faceted approach should be utilized considering all factors of CEC, COLE or LE, bulk density, soil texture (clay >50%), and consistency (very firm or very sticky/plastic). If unsuitable mixed or expansive mineralogy is still suspected then the Rule should allow +24 hr Ksat testing to determine rate, but more importantly if steady state can be achieved. If Ksat rate steadily slows (i.e. steady state not achieved) after +24 hr testing, then clay mineralogy could be deemed unsuitable, and must be overcome with possible alternative engineered solutions through EOP or special site studies. See various references: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/office/ssr10/tr/?cid=nrcs144p2_074844 ; http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/office/ssr10/tr/?cid=nrcs144p2_074846 ; http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_054223 ; http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1244466.pdf (pg 372-373).				Reject. We have seen no data to support using 24 hour KSAT for mineralogy. We have always been told KSAT is used to confirm LTAR not assign LTAR. LTAR range for a group IV soil is 0.4-0.1 gpd/ft ² , so the ability to use a low LTAR is already being used by LHD's. We can include Atterberg Limits as an option along with Apparent CEC. Currently the consultant has the option of EOP and .1948(d) in which they could use the COLE, LE, and Bulk Density (even X-ray diffracton if they choose).
184	.0503	46	14	Organic soils should have allowance for usage where effective drainage and alternative systems can be achieved. Should "organic soils" be under soil texture section?	Put in statement that organic soils may be considered for usage where effective drainage, treatment, and alternative systems can be achieved through the site specific or EOP rules. NCDEH approved pretreatment "peat systems" are organic soils. Should "organic soils" be under soil texture section??				Reject. We are unaware of any research or study that would suggest that we make changes to the suitability and use of organic soil. The organic material utilized in approved products has been tested and is subject to some degree of quality control. Furthermore, those products can be replaced as needed, while natural soils have no such option.
185									
186	Rule .0504								
187	.0504	46	19	Use term soil wetness "indicators", not "colors".	Use term soil wetness "indicators", not "colors".			CSSC	Agree and added to draft
188	.0504	47	4	Should have qualifier of ".....for >3 to 14 consecutive days after a rainfall event without subsequent rainfall. "	Should have qualifier of ".....for >3 - 14 consecutive days after a rainfall event without subsequent rainfall. " This will follow the established duration of soil saturation within current established Rule, which is quite dependent upon ambient climatic and wetness conditions.			CSSC	Reject. It appears that the comment may be meshing the lateral flow and oxyaquic issue with the overall soil wetness procedures in .1942. We understand the concern, but even with 14 days of saturation, redox may not be present. We feel as though the current option to capture long-term data would provide for addressing the alternative methods as needed. We also are not certain how to address abnormal rainfall within this method, which can be an issue with being overly conservative during periods of excess rainfall.

189	.0504	47	10	Add qualifier to end of sentence ".....unless appropriate alternative pretreatment systems are utilized to maintain a +6 inch separation under Rule .1202".	Add qualifier to end of sentence ".....unless appropriate alternative pretreatment systems are utilized to maintain a +6 inch separation under Rule .1202".			CSSC	Reject. Sites can be reclassified under Rule .0509(e).
190	.0504	48	7	Are individuals under G.S. 90A Article 4 qualified by education, training, experience, and licensing/registration to perform quantitative water table monitoring and modeling?	Are individuals under G.S. 90A Article 4 qualified by education, training, experience, and licensing/registration to perform quantitative water table monitoring and modeling?			CSSC	Agree and removed from draft
191	.0504	48	6-7	Why cite the licensing statutes instead of being consistent in naming the licensed professionals and why is there the addition of GS 90A, Article 4, which is a "Registered environmental health specialist?"	Revise to be consistent with the other rules to use the titles, or if use the GS chapter reference add the professional titles.	CH		NCBELS	Agree with modifications
192	.0504	49 / 50	6-32 / 1-9	For the soil wetness "Direct Monitoring Procedure" the current WRI 60-day weighted rainfall index method for rainfall analysis needs to be deleted from the Rule and replaced. This method has not proven to be reliable or well documented. References for WRI Rule are basic statistics and found here: http://www.wcc.nrcs.usda.gov/ftpref/wntsc/H&H/NEH/hydrology/ch18.pdf and http://www.wcc.nrcs.usda.gov/ftpref/wntsc/H&H/NEH/hydrology/ch4_Sept2015draft.pdf Rainfall analysis was not a mandate from the court case that changed this NCDEH Rule.	Replace the current WRI 60-day weighted rainfall index, with a 30-90 day rolling average or Direct Antecedent Rainfall Evaluation Method (DAREM), or its modified version, which is a standard for Federal Agencies to determine ambient rainfall or wetness conditions. See references here: http://naldc.nal.usda.gov/download/37848/PDF ; and here ftp://ftp.ncdc.noaa.gov/pub/data/normals/1981-2010/documentation/precipitation-methodology.pdf ; and here on how to calculate: http://www.bwsr.state.mn.us/wetlands/wca/antecedent-precip.pdf NOAA normal climatic web site: http://water.weather.gov/precip/index.php ; USACOE-WRAP reference: https://www.oregon.gov/dsl/docs/techstan_watertable_mes.pdf which has been utilized and verified for Federal wetland hydrological determinations ; With the 30-90 day rolling average or DAREM plotted as percentiles of normal rainfall probabilities between 30% - 70% for a locality, the on-site water table data can be plotted and a determination made for water table durations to monitored wetness conditions on a sliding scale of 30-39% 3-days; 40-49% 5 days; 50-59% 7 days; 60-70% 14 days			CSSC	Still under discussion
193	0.0504	53	13	Sentence placement is odd - should it be a (number) or (letter) or refer to (h) in line 29 of page 22 or (5) in line 8?				Presby	Agree and added to draft
194	.0504	54	1	Would use term licensed professional under NCGS 89C, E, F... rather than Engineer, Geologist, Soil Scientist.	Would use term licensed professional under NCGS 89C, E, F... rather than Engineer, Geologist, Soil Scientist.			CSSC	Agree with modifications
195									
196	Rule .0505								
197	.0505	54	14	Need to add ".....or with use of shallow systems, pretreatment systems, and/or site improvement modifications."	Need to add ".....or with use of shallow systems, pretreatment systems, and/or site improvement modifications."			CSSC	Reject. Sites can be reclassified under Rule .0509(e).
198									
199	Rule .0506								

200	.0506	54	19	Where did this rule come from and the cited references for it? Saprolite should be based upon its physical or tested soil characteristics, not some rule of thumb.	Where did this rule come from and the cited references for it? Saprolite should be based upon its physical or tested soil characteristics, not some rule of thumb.				Reject. This is the siting criteria from Rule .1956(6) with clarifications based on NCSU research.
201	.0506	54	20 - 21	"Infiltrative surface" is confusing as to what is meant.	Would use term "bottom of dispersal system".			CSSC	Reject. This term is from the nationally vetted CIDWT glossary and is thus legitimate. The definition applies to the examples listed in the comment. It also describes the point of effluent entry into soils for a full range of technologies.
202									
203	Rule .0507								
204	.0507	55	8 - 9	Would add "...or more in thickness, contiguous in thickness or depth, and <18 inches from the natural ground surface shall.....". Where did the 3 inch thickness come from and its' basis??	Would add "...or more in thickness, contiguous in thickness or depth, and <18 inches from the natural ground surface shall.....". Where did the 3 inch thickness come from and its' basis??			CSSC	Agree and added to draft. The three inches came from the current rules.
205	0.0507	55	8 to 14	Redundant wording on restrictive horizons	Change (a) Soils in which restrictive horizons are greater than 3 inches and less than 18 inches in depth are unsuitable OR totally eliminate (a)	Change or replace		NEEHD	Agree and added to draft
206									
207	Rule .0508								
208	0.0508	55	17	Initial and Repair area requirements. Detail history of 100% repair areas. Since there was no requirement prior to 1983 and the rest of the factors noted in this Section, has there been significant evidence that this additional cost is warranted.	Provide basis for 100% repair area, what other States use it, has it been proven to have cost/benefit for the owner	Provide information for basis		NCSTA	Reject. The requirement for 100% repair area is due to the unknown life expectancies of on-site wastewater systems. Repair areas have allowed many homeowners to be able to repair their system and not have to utilize permanent pump and haul when there is no other repair option available. Can provide numbers from monthly activity reports on number of repair permits issued every year in NC.
209	0.0508	55	20	add in "wastewater systems" after "repair" so that it both mirrors (a) in line 17 and makes it clear that "initial and repair systems can be installed"	incomplete/unclear sentence - need to revise so its consistent and precise	ADD: the word "system" after "repair"		Presby	Agree and added to draft
210	0.508	55	28	design daily flow is no more than 480 gallons for a single family dwelling unit or a single	Simplify the rules by deciding on a single GPD and linear footage limit requirement for all systems-not something different for each system category.	CH/RE: Change language or replace		Presby	Reject. The design criteria in this rule are based on the current rules. Current experience with these systems does not indicate the need to change the rules.
211	0.0508	55	30	Repair areas not exempt when waste strength exceeding Domestic.	Since repair areas are only exempt in certain situations and are limited to 480 gallons it would be unusual to have much more than a very small restaurant or food stand. Repair area exemptions are self limiting. This has never been a problem.	Remove		NEEHD	Still under discussion
212									
213	Rule .0509								

214	.0509	56	12 - 13	Would add to sentence "...most limiting soil or site characteristics that cannot be rectified...."	Would add to sentence "...most limiting soil or site characteristics that cannot be rectified...."		CSSC	Reject. This is addressed in the other rules in Section .0500 based on what is considered to be UNSUITABLE>
215	.0509	56	26 - 27	Do not understand the purpose of this sentence regarding "but not limited to hydraulic conductivities, cannot be used alone...". If permeability, LTAR rate, restrictive horizon, etc are the only unsuitable factors what else would you do??	Let the individual site be best characterized based upon the factors of concern, reviewed by the permitting agency, and if additional concerns are legitimately raised do additional testing or evaluations. Other parts of the rules already dictate this.		CSSC	Reject. Hydraulic conductivities alone cannot show how all site limitations can be overcome. This allows the consultant the ability to not have to run KSATs for every site.
216								
217	Rule .0601							
218	601			Setbacks for tankage	I don't see ST, PT, GT, Raw sewage lift stations, or other tankage listed with setback parameters. I suggest adding them to table IX with Force mains and supply lines. They are contained vessels like the piping and should not be the same as ground absorption areas.		Tim Bannister	Reject. The definition of wastewater system was modified in G.S. 130A-334(15) to include tanks under S.L. 2014-120. This was done so that the horizontal setbacks for advanced pretreatment apply to all parts of the system, not just the dispersal field. It does not make sense to provide different setbacks for different components with that in mind.
219	0.0601	57	11	Horizontal Setback. More setback requirements listed from current rules. Detail changes. These will cause considerable cost increase and hardship to small coastal sites	Keep horizontal setbacks as currently required, unless there is substantiating evidence of damage	Change to prior rule	NCSTA	Agree with modifications
220	.0601	57	Table VII	Surface Waters, term should be "ordinary high water mark".	Surface Waters, term should be "ordinary high water mark".		CSSC	Reject. Same terminology as CAMA to provide consistency among agencies.
221	.0601	57	Table VII	other surface water term should be "ordinary high water mark". Wetlands should not be included unless there is an ordinary high water mark which the majority do not.	other surface water term should be "ordinary high water mark". Wetlands should not be included unless there is an ordinary high water mark which the majority do not.		CSSC	Reject. Same terminology as CAMA to provide consistency among agencies.
222	.0601	57	Table VII	Non-potable well should be 50 ft, not 100 ft.	Non-potable well should be 50 ft, not 100 ft. Makes no sense relative to other non-potable well types, swimming pool, etc.		CSSC	Agree and added to draft
223	0.0601	58	11	5 ft. setback for tanks and dispersal field from sidewalks and driveways not necessary.			CSSC/PP	Agree and removed from draft
224	0.0601	57	11	Does a septic tank that passed a leak test need to be 15 feet from a crawl space foundation drain?	Tanks can be placed into the water table but need to be 15 ft. from a shallow, crawl space foundation drain?		CSSC/PP	Reject. The definition of wastewater system was modified in G.S. 130A-334(15) to include tanks under S.L. 2014-120. This was done so that the horizontal setbacks for advanced pretreatment apply to all parts of the system, not just the dispersal field. It does not make sense to provide different setbacks for different components with that in mind.
225	601	57	11	Setbacks	horizontal setback to NON-POTABLE well should be reduced to 50 feet. The POTABLE well is 100 feet but the NON should be reduced. Risk assessment is very low.		Tim Bannister	Agree and added to draft

226	601	57	11	Setbacks	Any water conveyance line is 10'. I suggest breaking down into two items. The need for distance to irrigation system conveyance lines or other non-potable water conveyance lines. And, the second would be drinking water or other Potable water lines. We have more and more "lines" occupying space in yards now. 5' is adequate for non-potable lines and 10' for potable supply lines.		Tim Bannister	Agree with modifications
227	.0601	58	Table VII	What is purpose of 5 ft from driveway, car path, walkway, etc?	If driving, parking, walking on top of the system is a concern then just require a physical barrier. Impossible to enforce and other parts of rules require no impervious materials on the surface.		CSSC	Agree and removed from draft
228	.0601	58	Table VII	Subsurface groundwater lowering ditch.... Should add that is below soil wetness indicators to differentiate from swell diversion drains. Also where are the different upslope, sideslope, and downslope setback locations ??	Subsurface groundwater lowering ditch.... Should add that is below soil wetness indicators to differentiate from swell diversion drains. Also where are the different upslope, sideslope, and downslope setback locations ??		CSSC	Reject. Removed the different setbacks based on sideslope, upslope, and downslope due to numerous comments about difficulty to enforce prior to the start of facility construction. Clarifying use of terms for stormwater throughout.
229	.0601	58	Table VII	Any stormwater conveyance or ephemeral stream other than above . What is other than above??	stormwater conveyance or ephemeral stream other than above . What is other than above?? Need to specify type of stormwater conveyance, as some are solid pipe, swells, ditches, etc and need separate minimal setback requirements.		CSSC	Still under discussion
230	.0601	58	Table VII	Permanent Stormwater retention basin. Need to specify those with or without an ordinary high water mark or flood pool elevation.	Those stormwater basins without an ordinary high water mark or flood pool elevation should have ≤25 ft setback same as drainage system setback.		CSSC	Still under discussion
231	.0601	58	Table VII	Burial plot or graveyard setback. What is the purpose or public health concern for this setback?	Burial plot or graveyard setback. What is the purpose or public health concern for this setback? We have used pretreated wastewater for re-use irrigation in cemeteries and on golf courses with NCDEQ systems.		CSSC	Reject. Routinely receive questions about setbacks for graveyards from churches. Needs to be added. The burial plot is treated the same as a two foot vertical cut. Our rules do not prevent DEQ from permitting re-use irrigation in cemeteries.
232	0.0601	58		Driveway, car path, walkway or lane setback	Significantly reduces available space on small lots (coastal) making lots unsuitable. This setback has received the most complaints from EHS and Contractors. It is not necessary to have this setback.	Remove PLEASE	NEEHD	Agree and removed from draft
233	0.0601	58		Public Right of Way or easement boundary	This is being treated as a property line. In some cases this will significantly reduce the available space on a property.	Remove	NEEHD	Agree and removed from draft
234	0.0601	58		Any property line or boundary	"boundary" is not definable by a legal instrument.	Remove boundary	NEEHD	Agree and removed from draft
235	0.601	59	3	Dispersal fields and repair areas shall not be located under impervious surfaces, areas subject to vehicular traffic, or areas subject to soil disturbance or compaction	Introduce H-10 and H-20 loading guide language	CH/RE: Change language or replace	Presby	Still under discussion

236	.0601(b)	59	3-5	I am requesting that this section be changed to allow the dispersal of tertiary effluent from treatment facilities with flow less than 3000 gpd and a TN of less than 12 mg/L or a TIN of less than 10 mg/L and otherwise in conformance with NCAC02U.0301 (b) to H2O precast leaching chambers placed under paved parking areas and drives. Treatment systems with flows greater than 3000 gpd shall have a TN concentration of less than 7 mg/L or a TIN of less than 5 mg/L. Chambers used for this purpose must have been approved under Section .1400 of these regulations. TIN is the sum of the concentration of ammonium Ion, nitrate and nitrate present but excludes refractory organic nitrogen. Since refractory organic nitrogen is essentially inert it should not be included in standards.		Add after structures on page 59, line 5: Effluents from tertiary wastewater treatment systems with flow of less than 3000 gpd discharging to H2O precast leaching chambers placed beneath paved parking areas or drives must have a TN of less than 12 mg/L or a TIN of less than 10 mg/L and also meet the Type 1 Reclaimed Water Effluent Standard NCAC 02U.0301 (b). Tertiary wastewater treatment systems with flows greater than 3000 gpd discharging to H2O precast leaching chambers placed beneath paved parking areas or drives must have a TN of less than 7 mg/L or a TIN of less than 5 mg/L and also meet the Type 1 Reclaimed Water Effluent Standard NCAC 02U.0301 (b). NCAC02U.0301 (b) is made part of these regulations by 15A NCAC 18E .0402 located on page 40, line 10 of the draft regulations. H2O leaching chambers used for this purpose must be approved under Section .1400 of these regulations.	Keith Dobie	Still under discussion
237	15a ncac 18e .0601 (b)	59	3,4, & 5	Highly treated wastewater receives little treatment in the soils and produce at the discharge a much higher effluent quality than is achieved within a standard soil treatment system (septic tank effluent). Discharging under pavement will not adversely affect the environment or the quality of the water which is disposed into the ground. Chambers used for this purpose must have been approved under Section .1400 of these regulations.	Add after structures on page 59, line 5: Effluents from tertiary wastewater treatment systems with flow of less than 3000 gpd discharging to H2O precast leaching chambers placed beneath paved parking areas or drives must have a TN of less than 12 mg/L or a TIN of less than 10 mg/L and also meet the Type 1 Reclaimed Water Effluent Standard NCAC 02U.0301 (b). Tertiary wastewater treatment systems with flows greater than 3000 gpd discharging to H2O precast leaching chambers placed beneath paved parking areas or drives must have a TN of less than 7 mg/L or a TIN of less than 5 mg/L and also meet the Type 1 Reclaimed Water Effluent Standard NCAC 02U.0301 (b).	FR Mahony	Still under discussion	
238	.0601	59 - 60	Table VIII	For large collection systems there should be reduced setbacks for pretreated wastewaters. Many times the better soil and sites for treatment are within close proximity to drainage features. Reduced setbacks would encourage pretreatment and keep systems on best sites.	For large collection systems there should be reduced setbacks for pretreated wastewaters. Many times the better soil and sites for treatment are within close proximity to drainage features. Reduced setbacks would encourage pretreatment and keep systems on best sites.	CSSC	Reject. Table IX allows for different horizontal setbacks for collections sewers (which include force mains).	
239	0.0601	60	5	Why does a supply line need to be 5 ft. from drive, walkway, etc. when it is allowed to cross under these.		CSSC/PP	Agree and removed from draft	

240	601	60	5	Setbacks	Same as above for making two rules from the current one. 5' is adequate here as well as a setback from force mains, etc.		Tim Bannister	Reject. The definition of wastewater system was modified in G.S. 130A-334(15) to include tanks under S.L. 2014-120. This was done so that the horizontal setbacks for advanced pretreatment apply to all parts of the system, not just the dispersal field. It does not make sense to provide different setbacks for different components with that in mind.
241	0.0601	61	5	Does a supply line need to be 10 ft. from a foundation drain? The wastewater flows under the home and then crosses the foundation to enter the septic tank.			CSSC/PP	Agree and added to draft
242	0.0601	61	5	Should a 15 ft. setback be required between a stormwater conveyance and a supply line? This is a 5 ft. setback in current rules and proposed rules allow 10 ft. setback for streams and supply line.			CSSC/PP	Agree and added to draft
243								
244	Rule .0701							
245	0.0701	62	32 to33	conflicts with p.59 lines 5-15		change	NEEHD	Agree and added to draft
246		62	22	(C1) Add within 5 feet of building. Anything inside of this is out of authority of LHD.	Add "within 5 feet of building" or "within jurisdiction of plumbing or building codes."	ADD	NCSTA/GH	Reject. Building inspections jurisdiction is from the building to the beginning of the septic tank.
247								
248	Rule .0702							
249	0702	63	22	The requirement that lift stations shall be a "single, prefabricated unit" may in fact unnecessarily restricts the use of watertight structures fabricated from more than one section, which will reduce competitiveness and thereby increase the cost of lift stations.	Singularize the word "chambers", eliminate the words "of" and "single," to read: "Sealed, watertight chamber shall be a prefabricated unit..."	Change	Infiltrator	Agree and added to draft
250	702	63	17	Raw Sewage Lift Station setback	RSLs is not listed as mentioned in setback section		Tim Bannister	Still under discussion

251	702	63	32	Raw Sewage Lift Station capacity	Is this whole section addressing grinder pump stations? Ones used in residential homes that may connect a basement or one bathroom then pump to a septic tank? If so, there will be issues conflicting with building codes for plumbing where the pre-packaged systems are used regularly. They will not meet several of the rules in this section. Capacities run from 95 gallons to 160 gallons with the pre-packaged units. Some of the other rules will not be met either. If On-Site wants to address these units, you should address how the flow is to enter into the septic tank only, as whole solids not ground up, maybe a separate settling tank prior to ST, etc. Maybe just state these "grinder, sewer, or injector pumps are NOT part of the Septic System and ARE part of the plumbing Collection System only. The Septic System starts at the first tank only. On-Site should only specify what type of influent is acceptable entering into a septic tank. Gringer pumps should not be used in Septic Sytems, only solids handling Sewage pumps should be used, 2" spheres.			Tim Bannister	Reject. Not for grinder pump stations. Will define what is meant by a raw sewage lift station and what is meant by a grinder pump lift station.
252		64	13	Add PVC SDR 35 gravity sewer pipe, septic tank to d-box, d-box to dispersal field	Add PVC SDR 35 to list of eligible pipe products	ADD		NCSTA/GH	Still under discussion
253									
254	Rule .0703								
255		65	7	Add ASTM 2729. Some local agencies use this classification as correct for rock-based dispersal instead of ASTM 405	Add ASTM 2729	ADD		NCSTA/GH	Still under discussion
256									
257	Rule .0801								
258	0.0801	66	4	Does not meet ASTM 1227 - 13	Use ASTM 1227 -13 (7.1 Capacity) language	Replace		Orange County HD	Agree with modifications
259	0.0801	67	4	Does not meet 2012 NC Plumbing code 712.4	Allow for (5) Meets NC Plumbing Code	Add		Orange County HD	Reject. What is currently in Plumbing Code was a compromise between OSWP and Plumbing Code. Our goal has always been to require two tanks in series.
260	0.0801	66	4	Table X: Eliminate column for systems with garbage disposals. This has been tried before and defeated. It is practically unenforceable.	Eliminate Garbage Disposal loading factor	Eliminate		NCSTA	Reject. Also adding a requirement in the application for identification of the use of a garbage disposal.
261		66	4	change 1250 gal. min. for 5 bdrm to 1200.	some manufacturers have 1200. Would be inclusive	Change		NCSTA	Reject. Current rules require 1,250 gallon septic tank for five bedroom house. This requirement has been in place for over 15 years.
262	0.0801	66	4	Does not meet ASTM 1227 - 13	Use ASTM 1227 -13 (7.1 Capacity) language	Replace		NCEHD	Agree with modifications

263	0.0801	67	4	Does not meet 2012 NC Plumbing code 712.4	Allow for (5) Meets NC Plumbing Code	Add	NCEHD	Reject. What is currently in Plumbing Code was a compromise between OSWP and Plumbing Code. Our goal has always been to require two tanks in series.
264	0.0801	66	4	Table X - change to: "less than or equal to 4"	redundant - eliminate 4 bedrooms	change	NEEHD	Agree and added to draft
265	801	66	4	Sizing of Tanks	Finally, acknowledging that Garbage Grinders are used, like it or not. Good job on this!!!!!! I do suggest that a 5 bedroom should have a minimum of 1500 gallon ST.	This	Tim Bannister	Thanks, but reject. Keeping tank capacity requirements in line with current rules.
266	801	67	2	Sizing of tanks	The part b of this statement limits another good option of using "two tanks" to achieve the capacity. If you use two tanks that are two compartments each, as long as the total volume requirement is met should be acceptable (should not have to have the first tank meet the 2/3 requirement). We have done this and get very good treatment having four compartments to settle things out in. Actually better than one large tank with one baffle or two compartments.	Give three options: One large tank with two compartments, two tanks with two compartments each, and two single compartment tanks with the first one as 2/3 of the total volume required.	Tim Bannister	Agree with modifications
267								
268	Rule .0802							
269	0.0802	68	15	Table XII: Retain Table to current Rules. Emergency Storage appears to have been changed.	Keep current rules for Pump Tank Sizing	Change	NCSTA	Agree and added to draft
270	802	68	15	Table for emergency storage	If emergency Power is provided that automatically activates upon power outage, they should not have to have 8 hours of storage. There is no disruption or delay in service. If any storage is required it shouldn't be more than 4 hours. The auto dial to a 24/7 service provider is good at 8 hours as long as the owner has a service provider available, and should provide written letter or contract and verification to the LHD of company credentials and be stated that the service provider can provide 2 hour response time. This rule should be two specifications, not one.	Split the Auto stand by power and the auto dialer to 24/7 service provider into two options.	Tim Bannister	Agree with modifications. Went back to current rules.
271								
272	Rule .0803							
273	.0803	69	22	Inconsistent in using "NC licensed Professional Engineer."	Use "licensed Professional Engineer," consistent with the earlier global comments in the first two comments above.	RE	NCBELS	Agree and added to draft
274	0.0803	69	21	Grease Tank formula appears to reduce FOG to < 30 mg/l and this should be stated as the target for "specially designed grease tanks." And "Specially designed grease tanks" that may be reduced in size by 50% should meet this target	Include target standards for FOG	Change	NCSTA	Agree with modifications
275		69	24	This wording places a default requirement of installing a grease tank for places of public assembly. The LHD should determine this in the initial permitting	Change wording	change	NCSTA	Reject. Only requires a grease tank for places of public assembly with a kitchen.

276	0.0803	69	1 to 2	4 compartments on grease traps	makes maintenance more difficult and less likely to be performed. The only practical way to have 4 compartments is with two tanks which takes up precious space especially for small food service facilities. Maybe use 4 compartments for greater than 2000gpd.	change	NEEHD	Agree with modifications
277	0.803	69	21-23	grease interceptors	required to be emptied by certified haulers and don't get maintained as required. Should not allow.	remove	NEEHD	Reject. Sometimes grease interceptors are the only option available.
278	0.0803	69	25 to 26	"unless otherwise determined by the authorized agent"	Not qualified to make this decision - this will pit county against county with customers working across county lines.	remove	NEEHD	Agree and removed from draft
279		69	1	(b) Change minimum size to 1500	Grease traps to 1500, up from 1000	CHANGE	NCSTA/GH	Reject. We have no justification for increasing the minimum grease tank size.
280								
281	Rule .0804							
282								
283	Rule .0805							
284	0805	69	32	If the Branch intends to effectively address septic tank structural and watertightness quality issues, it needs to implement a rigorous quality program with either in-field testing of all installed tanks or unannounced testing of randomly selected tanks by a Branch representative. Unless each tank producer is subject to testing, tank manufacturing quality will not improve. The reason is that there is no incentive for producers to change quality program practices if there is a lack of quality regulation.	Treatment tanks and pump tanks installed in soil wetness currently require a water filling test in the field. The addition of all pump tanks in the second version of the draft rules is a step in the right direction toward improved quality. Expand the requirement by testing all tanks in the field by filling them with water and observing for evidence of leakage to establish a dependable check of tank quality. Neither IAPMO nor CSA allow watertightness testing through vacuum application, and the reason is that the most representative test to ascertain watertightness is by water filling. As an alternative to in-field testing, random unannounced audits of producers can be added to the rule, with testing of tanks in inventory where they are sold performed by the Branch staff or an entity under contract with the Branch to provide independent testing services.	Add	Infiltrator	Agree with modifications
285	0805	70	3	The intent of leak testing in this subsection relates to identifying soil wetness in those areas adjacent to the tank itself. Use of the term "within five feet of the elevation of the top of the tank" is unnecessarily restrictive as it does not take into account the height of the tank. This wording should be changed to identify a condition where soil wetness is present within the soil adjacent to the tank, regardless of the height of the tank.	Change the language from "...within five feet of the elevation of the top of the tank;" to "...above the elevation of the bottom of the tank;"	Change.	Infiltrator	Reject. Kept current language as environmental health field understands the what is meant.

	0805	70	15	<p>A 1,000 gallon tank commonly contains 20 gallons of liquid per vertical inch. The proposed rule allows leakage of 0.5 inches per hour, or 10 gallons per hour if the tank holds 20 gallons per inch. Over the course of a day, a tank leaking at the maximum allowable rate will lose 240 gallons of sewage. Over the course one year, the tank will leak 87,600 gallons of sewage. If 10,000 tanks installed in North Carolina were to leak at the maximum allowable rate, that would equate to 876 million gallons of sewage discharged.</p> <p>A loss of 0.5 inches water level per hour is allowed in sensitive watershed areas and areas where nitrogen treatment is required. Also, considering the vertical profile of the tank, sewage may be discharging directly into the groundwater or soil wetness without first having been treated in the vadose zone.</p>	<p>A watertight tank should not leak when the tank is refilled after the 24-hour period.</p> <p>Consider implementing the criteria used by the Oregon DEQ for many years for its tank water filling requirement, which includes all tanks, as described in 340-073-0025(3):</p> <p>"Watertightness...During the test there may be no more than a one gallon leakage over a 24 hour period..."</p>	Change		
286	0805	70	12	<p>Water filling for 24 hours is required for porous material such as concrete, such that the concrete is allowed to become saturated prior to the watertightness test. This allows the tester to differentiate between loss of water volume due to absorption by the concrete and loss of water volume due to leakage. Non-porous materials, such as thermoplastics and FRP, do not require a pre-test saturation step and can be watertightness tested immediately after being filled.</p>	<p>Incorporate elements from the IAPMO/ANSI Z1000-2013 watertightness testing procedure, which recognizes and provides a methodology for porous and non-porous materials, as follows:</p> <p>9.1.3.1 Test Procedure The water test shall be conducted as follows: (a) Assemble the test specimen (i.e., the septic tank) and seal all openings (i.e., inlet, outlet, and access openings). (b) Fill the test specimen with water to its maximum operating liquid level (i.e., the outlet invert). (c) For test specimens made of materials that absorb water, let them stand for 24 h and refill with water to the outlet invert. (d) Let the test specimen stand for at least 1 h.</p> <p>See Attachment 1 - IAPMO/ANSI Z1000-2013 excerpt.</p>	Change	Infiltrator	Agree with modifications
287	0805	70	12				Infiltrator	Agree with modifications
288	0.0805	70	18	Does not meet ASTM 1227 - 13	Adopt ASTM 1227 -13 (9.2.1 Vacuum Testing)	Change	Orange County HD	Reject. Testing requirements must be applicable to all materials, not just concrete.
289	0.0805	70	18	Does not meet ASTM 1227 - 13	Adopt ASTM 1227 -13 (9.2.1 Vacuum Testing)	Change	NCEHD	Reject. Testing requirements must be applicable to all materials, not just concrete.
290	0.0805	70	1	Leak testing requirements. Proposal requires leak testing at the job site. Prohibits ability for pre-approval by LHD's or third-parties.	Unwarranted restriction	change	NCSTA	Still under discussion

291		70	2	(1) Pump Systems. This changes the requirement to include all pump systems. Unwarranted burden and cost.	Eliminate. Keep the current requirement when there is a soil wetness evident. The requirements for (3) and (4) are evident for all advanced treatment through their Approvals and for PE designs. The cost would include the cost of equipment, especially for vacuum test (\$1000's), and the static water test would require a minimum of 1200 gallons for most likely 30% on the systems installed in NC. Hard to be a proponent of such water waste. The added cost to the contractor for these tests in delays would also be high. There would obviously be added time spent by the LHD at the jobsites, possibly added trips.	Eliminate (1)	NCSTA	Still under discussion
292	0805	70	22	The application of an elevated vacuum pressure to a tank is not necessary to ascertain watertightness. Watertightness testing at comparatively lower pressure is equally effective by adjusting the test duration. The Florida DOH has the most stringent tank testing and approval process in North America. The Florida DOH allows the application of 2.5 inches of mercury for 5 minutes to ascertain tank watertightness. This policy has been in effect for 5 years and used to successfully watertightness test thousands of thermoplastic tanks. If an implosion occurs at a 5-inch mercury vacuum pressure there is a risk that projected debris can injure workers. Infiltrator's IM-Series tank product literature specifically prohibits the application of vacuum pressure greater than 2.5 inches of mercury as a worker safety measure. Infiltrator is concerned that implementation of the required vacuum pressure could result in injuries. Please see Attachment 3 for manufacturer's warning information.	Expand the testing method to allow a low-pressure test with longer duration. This provides an equal opportunity for certain thermoplastic tank designs with small components that may become projectiles at elevated vacuum levels and recognizes worker-safety concerns. This proposal aligns with the Florida Department of Health-approved watertightness test methodology (Attachment 4). Modify text as shown: (B) Using proper calibrated equipment, draw a vacuum on the empty tank to the starting negative pressure of <u>either 2.5 or 5</u> inches of mercury. (C) Hold the vacuum for two minutes <u>when 5 inches of mercury are applied or five minutes when 2.5 inches of mercury are applied</u> and re-measure and record the ending negative pressure inside the tank.	Change	Infiltrator	Agree with modifications
293	0805	70	24	This subsection addresses leak testing, not structural testing. As such, the term "structurally sound" in (D) should be removed and replaced by leak-related language.	Change the words "shall be structurally sound" to "is approved".	Change	Infiltrator	Agree and added to draft
294		70	24	Vacuum test states the tanks shall be considered structurally sound. This would be true, as well as showing leak testing. This language cannot be said for static water testing.	Amend language.	change	NCSTA	Agree and added to draft
295								
296	Rule .0901							

297	Section .0900 – Dispersal Systems	70	31	Add new section "Irish Peat Fiber Pad Dispersal System" with criteria.	Puraflo pad dispersal has been in use in NC for over 20 years. The performance is long-ago proven. A new section should be added to include pad dispersal criteria. Recently, Delaware added Puraflo to the regulations from policy.	Add	Anua	Reject. Sufficient data has not been provided to justify the addition of peat fiber as a dispersal product to the rules.
298	SECTION .0900 – DISPERSAL SYSTEMS	70	31	Add language to allow the use of water mounding models to determine dispersal field geometry and site suitability for conventional and ATS	See Kaplan, Allen, and Poeter models along with Ohio Department of Health language.	Add	Anua	Reject. Adding a requirement to use water mounding models for conventional systems would be an added financial burden to homeowners.
299	.0901	71	21	"Infiltrative surface" is confusing as to what is meant.	Would use term "bottom of dispersal system".		CSSC	Reject. This term is from the nationally vetted CIDWT glossary and is thus legitimate. The definition applies to the examples listed in the comment. It also describes the point of effluent entry into soils for a full range of technologies.
300	0.0901	71	31	Table XIII. Are these the same loading rates for conventional systems as current rule?	Keep language per current rule	change	NCSTA	Yes, the LTARS are the same as in the current rules
301		72	17	Table XIV. Saproliite rates. Keep loading rates as current rule	Keep per current rule	change as necessary	NCSTA	Reject. The rule has been updated to reflect recent legislation (S.L. 2015-147) and experience with saprolite, including the addition of sandy loam saprolite.
302	.0901	72	15	"Infiltrative surface" is confusing as to what is meant.	Would use term "bottom of dispersal system".		CSSC	Reject. This term is from the nationally vetted CIDWT glossary and is thus legitimate. The definition applies to the examples listed in the comment. It also describes the point of effluent entry into soils for a full range of technologies.
303	.0901	72	17	Table XIV, LTAR for saprolite sandy clay loam should have a higher range of at least 0.30 g/d/sf. If in question by qualitative estimates, then allow representative testing of materials. We received several comments on this one subject.	Table XIV, LTAR for saprolite sandy clay loam should have a higher range of at least 0.30 g/d/sf. If in question by qualitative estimates, then allow representative testing of materials. We received several comments on this one subject.		CSSC	Reject. The addition of sandy loam saprolite is an expansion/addition of the current rules. The owner will always have the option of adding advanced pretreatment to increase the LTAR above what is specified for septic tank effluent.
304	0901	72	2	Accepted systems should be addressed in subsection (5).	In sentence three of subsection (5), add the words "(feet) or accepted drainfield media product rating in square feet per linear foot" after the words "by the trench width", to read "The total length of the trench shall be determined by dividing the required area of infiltrative surface by the trench width (feet) or accepted drainfield media product rating in square feet per linear foot."	Add	nfiltrator	Agree with modifications

305	0901	72	9	Accepted systems should be addressed in subsection (5).	In the formula, for the factor titled "Where TL", add the words "or accepted drainfield media product rating in square feet per linear foot" after the words "length of trench (feet)", to read "length of the trench (feet) or accepted drainfield media product rating in square feet per linear foot"	Add		Infiltrator	Agree with modifications
306		73	1	Eliminate (1). These are rules, not an general construction instructions manual. Excavations for septic tanks should not have to be in rules	Eliminate and renumber	Eliminate and renumber		NCSTA	Reject. The rules cover system design and installation.
307		73	3	Improve on requirements of stable base	Increase sentence structure	ADD		NCSTA/GH	Agree and added to draft
308	0901	73	10	The term "cast-in-place" clearly describes a concrete structure. This language is inappropriately restrictive and must be changed. Given the fact that the word "approved" is included in this subsection, removal of the term "cast-in-place" is a most logical resolution.	Remove the words "cast-in-place" to read "The tank outlet pipe shall be inserted through the approved outlet connective sleeve, creating...".	Remove		Infiltrator	Agree and added to draft
309		73	15	Make consistent the requirement of access devices to grade or better	All tanks shall have an access riser device over each chamber or device coming to finished grade or better	MAKE CONSISTENT		NCSTA/GH	Agree and added to draft
310	0901	73	17	It is critical that all tanks be installed on a compacted base. Use of the words "undisturbed soil" may allow for installation on an inadequately-compacted subsurface.	Change the word "undisturbed" to "compacted native" and add the words "compacted fill" before the word "materials", to read: "...shall be installed level in compacted native soil or bedded using appropriate compacted fill materials, and installed...".	Change		Infiltrator	Agree with modifications
311		73	15	(5) Eliminate and return to language found in General Statute (to within 6 inches of finished grade.	Eliminate risers to grade	Eliminate		NCSTA	Reject. Bringing the riser to grade helps the operators and LHD perform their routine inspections. Prevents the owner's yard from being torn up.
312		73	22	(7) and (8). Eliminate (7) backfill requirements as they are general construction methods. Eliminate (8) Mechanical devices for layouts as they are generally used, however not a requisite for a properly sited systems	Eliminate	Eliminate and renumber		NCSTA	Reject. The rules cover system design and installation.
313		74	12	(14) change rock to "aggregate." Use current aggregate size and reference found across NC	Use most current terminology as "aggregate"	CHANGE		NCSTA/GH	Agree and added to draft

	0901	74	17	<p>Installers in some areas of North Carolina verbally report using between 8 and 12 tons of stone to construct 100 feet of 3-foot-long by 1-foot-high trench under current Rule .1955. The depth of these trenches is not being verified during inspection. This equates to a sizing reduction by eliminating available sidewall infiltrative area.</p> <p>Using the widely recognized conversion factor of 1.5 tons/cubic yard of crushed stone, 100 feet of rock trench should require approximately 16.7 tons of stone ($[3'W \times 1'H \times 100' L \times 1.5 \text{ tons/cy}] / [27 \text{ cy/cf}] = 16.7 \text{ tons of stone}$). Use of less stone than 15 to 16.7 tons/100 feet equates to height and volume storage reductions compared to the minimum requirements in Rule .1955 and represents a preventable violation of the rule.</p> <p>Innovative wastewater system approval IWWS-2002-03-R3 requires the following to validate that the quantity of shredded tire chips is verified in the field:</p> <p>"Tire chip aggregate for subsurface sewage effluent absorption systems shipped from approved tire processors shall be accompanied by a freight bill of lading labeled as drainfield aggregate. The bill-of-lading shall certify that the material meets the specifications for drainfield use. Contractors purchasing tire chip coarse aggregate shall retain a copy of the freight bill-of-lading as documentation of the tire chip aggregate size and quality. A copy of the bill of lading shall be provided to the local health department prior to issuance of the operation permit, and shall be retained with the operation permit filed with the local health department."</p> <p>A similar quality and quantity requirement should be applied to stone trenches in order to ensure construction in conformance with the rule.</p>	<p>Modify draft proposed to include a bill-of-lading field check, as follows, to be inserted at the end line 21 on page 73:</p> <p><u>Rock shall be accompanied by a freight bill of lading labeled as drainfield aggregate. The bill of lading shall certify that the material meets the requirements of these rules. The installer shall provide a copy of the freight bill of lading as documentation of the type and quantity of rock installed. The installer shall demonstrate that a minimum of 0.05 tons of rock have been installed per cubic foot of trench volume installed. Examples of minimum rock tonnage for 1-foot-tall by 100-foot-long trenches are as follows: 1 foot wide – 5 tons; 2 feet wide – 10 tons; and 3 feet wide – 15 tons.</u></p>	Add		
314							Infiltrator	Reject. Cover in guidance. Teach LHD to use probe rod to verify gravel depth. Program review will continue to check this with LHDs.
315								
316		74	26	<p>Appropriate vegetation after installation is not the responsibility of the installer, but the general contractor, landscaper or homeowner</p>	Eliminate	Eliminate (17)	NCSTA	Reject. Understand comment, but establishment of cover over the dispersal field for slope stabilization and erosion control is essential to completing the system installation.
317	.0901	74	11 - 13	<p>What is purpose of trench depth not exceeding 36" depth, especially if soil or site have better site conditions at deeper depths (i.e. sand-lined trench, sapolite, restrictive horizon, etc). Should have limit of ~6 - 10 ft depths.</p>	<p>What is purpose of trench depth not exceeding 36" depth, especially if soil or site have better site conditions at deeper depths (i.e. sand-lined trench, sapolite, restrictive horizon, etc). Should have limit of ~6 - 10 ft depths.</p>		CSSC	Agree and added to draft
318	.0901	74	14 - 16	<p>Need statement regarding 18 inch separation in sandy soils, unless pressurized dispersal system used.</p>	<p>Need statement regarding 18 inch separation in sandy soils, unless pressurized dispersal system used.</p>		CSSC	Agree and added to draft

319	0.0901	74	3 to 7	How does this apply to shallow placed trenches - 12 -18 inches.	This means you can't use shallow trenches.	Change or Replace	NEEHD	Agree with modifications
320		74-75	28-31,1	Emphasize d-boxes on a stable base	Put more emphasis on placing d-box on stable base	CHANGE	NCSTA/GH	Agree and added to draft
321								
322	Rule .0902							
	0902	78	63	The draft rules indicate that other artificial drainage devices, including surface diversions and French drains shall comply with NRCS/USDA guidance documents. Its is not clear how a product such as bundled expanded polystyrene can be used in drainage applications. Bundled expanded polystyrene products manufactured in-state at a Salisbury factory are used in drainage applications in North Carolina today. More broadly, this practice has been in use nationally for over a decade.	Expand the allowable products by allowing proprietary devices certified by nationally recognized certification bodies, as shown below. (k) Other artificial drainage devices, including surface diversions and French drains shall comply with NRCS/USDA guidance documents, <u>or be certified for artificial drainage use by a nationally recognized certification body, as defined by G.S. 130A-4 343(a)(6).</u>	Add		
323							Infiltrator	Agree with modifications
324								
325	Rule .0903							
	0.0903	78	7	Shallow Systems. Are these standards typical of other States' design and loading rates. Please detail basis of design and loading rates. Include the basis for artificial restrictions of limiting gpd.	Explanation	Explanation	NCSTA	Reject. The design criteria in this rule are based on the current rules. The design criteria for shallow systems is based on LTARS for conventional systems as provided for in the current rules. Current experience with these systems does not indicate the need to change the rules.
326								
	0903 0904 0905 0906 0909 0910	78 78 82 82 88 89	3 31 2 28 27 11	Accepted systems should be addressed in each of these subsections.		Add		
327							Infiltrator	Agree with modifications
328	0.0903	78	16 to 17	If pressure dispersal is used, the minimum separation distance shall shall be 12 inches	need for consistency	Change	NEEHD	Agree and added to draft
329								
330	Rule .0904							
	0.0904	78	31	Fill Systems. Same questions as Shallow Systems	Explanation	Explanation	NCSTA	Reject. The design criteria in this rule are based on the current rules for fill systems. Current experience with these systems does not indicate the need to change the rules.
331								
	.0904	79	2 - 3	A statement is needed that the usable soil or site area for fill systems should extend 5 ft from perimeter of the dispersal field, and does not include that portion of the fill taper for stability. This has been an inconsistent interpretation and needs to be clarified.	A statement is needed that the usable soil or site area for fill systems should extend 5 ft from perimeter of the dispersal field, and does not include that portion of the fill taper for stability. This has been an inconsistent interpretation and needs to be clarified.			
332							CSSC	Agree and added to draft

333	.0904	79	14, 18	The historic fill law came into effect in 1990 at which time 1977 existing fill was +13 years old. It makes sense to allow usable historic fill materials of +13 yr age to be considered for waste treatment usage. NCGS 130A-341 appears to be written in a way that would allow such as interpretation, "...a site that has existing fill, including one on which fill material was placed prior to July 1, 1977....". There are numerous usable sites where suitable historic fill was put in between 1977 and 1980's, yet cannot be utilized simply because of an arbitrary date.	The historic fill law came into effect in 1990 at which time 1977 existing fill was +13 years old. It makes sense to allow usable historic fill materials of +13 yr age to be considered for waste treatment usage. NCGS 130A-341 appears to be written in a way that would allow such as interpretation, "...a site that has existing fill, including one on which fill material was placed prior to July 1, 1977....". There are numerous usable sites where suitable historic fill was put in between 1977 and 1980's, yet cannot be utilized simply because of an arbitrary date.		CSSC	Agree. If fill was placed on a site between 1977 and the 1980's, the law allows the use of this fill material if it meets all the requirements of the fill rules.
334	0.904	79	1	one or more trenches	Broaden the rule language to incorporate beds and other disposal methods or remove the reference to trenches	CH: remove "one or more trenches" from the language	Presby	Agree and removed from draft
335	0.904	80	12 to 18	If pressure dispersal is used, (Used twice)	Vertical separation distance breaks from restrictive layers should be based on the quality of effluent entering the ground not the method of disposal	CH/RE: remove reference to pressure dispersal and replace with secondary treatment effluent quality standards	Presby	Reject. The design criteria in this rule are based on the current rules for fill systems. Research supports the fact that performance is enhanced with pressure dispersal.
336	0.904	80	19	The rule states that "Fill systems with a design daily flow greater than 480 gallons per day shall use pressure dispersal systems." Pressure distribution is being used to restrict innovative approaches to wastewater disposal.	Broaden the rule language to incorporate other methods of disposal. Why are there so many different and various sizing restrictions for the different categories of systems in the rules? This is not necessary and the rules can be simplified!	CH/RE: remove the "pressure dispersal method" reference and replace with a method of wastewater distribution. The language used should allow for other options beside just pressure dispersal. Simplify the rules by deciding on a single GPD and linear footage limit requirement for all system-not something different for each category of system.	Presby	Reject. The design criteria in this rule are based on the current rules for fill systems. Research supports the fact that performance is enhanced with pressure dispersal.
337	0.904	80	6 to 9	The LTAR shall not exceed 1.0 gallons per day per square foot for gravity distribution or 0.5 gallons per day per square foot for pressure dispersal system	Not consistent - In other cases the LTAR is increased for pressure distribution	CH: Remove different LTAR rates for gravity and pressure and base on soil structure and treatment	Presby	Reject. The design criteria in this rule are based on the current rules for fill systems. Current experience with these systems does not indicate the need to change the rules.
338	0.904	81	17	The design daily flow shall not exceed 480 gallons per day.	Simplify the rules by deciding on a single GPD and linear footage limit requirement for all system-not something different for each system category.	CH/RE: Change language or replace	Presby	Reject. The design criteria in this rule are based on the current rules for fill systems. Current experience with these systems does not indicate the need to change the rules.
339	0.904	81	18 and 19	Pressure dispersal shall be used and shall meet all the requirements of Rule .0910 except Rule .1910(b).	Broaden the rule language to incorporate other methods of disposal.	CH/RE: remove the "pressure dispersal method" reference and replace with a method of wastewater distribution. The language used should allow for other options beside just pressure dispersal.	Presby	Reject. The design criteria in this rule are based on the current rules for fill systems. Research supports the fact that performance is enhanced with pressure dispersal.

340	0.904	81	20	The LTAR shall not exceed 0.5 gallons per day per square foot.	Soil texture is the major soil characteristic that determines the LTAR for any given soil	CH: Remove different LTAR rate for all fill systems and base on soil structure and treatment	Presby	Reject. The design criteria in this rule are based on the current rules for fill systems. Current experience with these systems does not indicate the need to change the rules.
341	0.904	81	21 to 26	Existing fill sites with 48 inches of Group I soils may use conventional trenches with a maximum LTAR of 1.0 gallons per day per square foot in lieu of a pressure dispersal system. The minimum separation distance between the infiltrative surface and any UNSUITABLE soil horizon, characteristic, or material shall be 24 inches for pressure dispersal systems and 48 inches for conventional systems.	Vertical separation distance breaks from restrictive layers should be based on the quality of effluent entering the ground not the method of disposal	CH/RE: Change language or replace	Presby	Reject. The design criteria in this rule are based on the current rules for fill systems. Current experience with these systems does not indicate the need to change the rules.
342	0.0903	81	24 to 25	Missing " and any soil wetness condition or" after "material" on line 25.	need for consistency	Change	NEEHD	Agree and added to draft
343								
344	Rule .0905							
345	0.905	82	4 and 5	Bed systems shall be limited to 600 gallons per day design daily flow. What is the basis for 600 gpd? The flow and linear footage requirements throughout the rules are random and appear to be arbitrary. Simplify the rules by establishing one standard.	Simplify the rules by deciding on a single GPD and linear footage limit requirement for all system-not something different for each system category.	CH/RE: Change language or replace	Presby	Reject. Design flow limitation for beds is based on experience with functioning bed systems.
346	0.0905	82	2	Bed Systems. Same questions as Shallow Systems.	Explanation	Explanation	NCSTA	Reject. The design criteria in this rule are based on the current rules for bed systems. Current experience with these systems does not indicate the need to change the rules.
347	0.905	82	9 to 11	LTAR: Table XIII in Rule .0901(c) shall be used to determine the initial LTAR for a bed system. The number of square feet of bottom area required shall be increased by 50 percent over that required for a trench system. Remove the second sentence.	This rule increases the LTAR of the soil based on the configuration of the disposal field. An increase in LTAR should be based on the quality of effluent entering the soil. The disposal of secondary effluent should decide if the LTAR increases not the disposal field configuration.	CH: Remove the increase by 50 percent language from the rule. If you are going to use LTAR to restrict sizing it must be based on the ability of the soil to accept wastewater not system configuration.	Presby	Reject. The design criteria in this rule are based on the current rules for bed systems. Current experience with these systems does not indicate the need to change the rules.
348	0.905	82	13 to 16	Laterals shall be at least one and a half feet from the side of the bed. Remove	Bed technologies have a history of functioning properly using a different installation standard. These standards are obsolete.	CH: Remove these standards from the rule.	Presby	Reject. The design criteria in this rule are based on the current rules for bed systems. Current experience with these systems does not indicate the need to change the rules.
349	0.905	82	13 to 16	Laterals shall be on three foot centers. Remove	Bed technologies have a history of functioning properly using a different installation standard. These standards are obsolete.	CH: Remove these standards from the rule.	Presby	Reject. The design criteria in this rule are based on the current rules for bed systems. Current experience with these systems does not indicate the need to change the rules.
350	0.905	82	13 to 16	The bottom of the bed shall be excavated level, plus or minus one half inch, in all directions. Remove or modify language.	Bed technologies have a history of functioning properly using a different installation standard. These standards are obsolete.	CH: Remove these standards from the rule.	Presby	Reject. The design criteria in this rule are based on the current rules for bed systems. Current experience with these systems does not indicate the need to change the rules.
351								

352	Rule .0906							
353	0.906	84	3	design flow is greater than 600 gallons per day; or	Simplify the rules by deciding on a single GPD and linear footage limit requirement for all systems-not something different for each system category.	CH/RE: Change language or replace	Presby	Reject. The design criteria in this rule are based on the current rules for sand lined trenches. Current experience with these systems does not indicate the need to change the rules.
354	0.906	82	32	Sand lined trenches are limited to 1,000 gallons per day design daily flow.	Simplify the rules by deciding on a single GPD and linear footage limit requirement for all systems-not something different for each system category.	CH/RE: Change language or replace	Presby	Reject. The design criteria in this rule are based on the current rules for sand lined trenches. Current experience with these systems does not indicate the need to change the rules.
355	0.906	83	20	The 18 inch separation requirement may be reduced to 12 inches when pressure dispersal is used. This rule needs to be changed. Pressure distribution has nothing to do with the quality of effluent and should consequently have nothing to do with setbacks or separation distances.	Separation distance breaks should be based more soil texture and structure and on the quality of effluent entering the ground not the method of disposal	CH/RE: remove reference to pressure dispersal and replace with secondary treatment effluent quality standards	Presby	Reject. The design criteria in this rule are based on the current rules. Research supports the fact that performance is enhanced with pressure dispersal.
356	0.906	84	12	TABLE XV. LTAR for sand line trench systems based on soil group and texture class. Add a category for Advanced treatment products	This table increases the LTAR of the soil based on the configuration of the disposal field. An increase in LTAR should be based on soil texture and the quality of effluent entering the soil. The quality of effluent in relation to LTAR should be given consideration like the disposal field configuration.	AD: add a LTAR category for NSF -40 secondary treatment products	Presby	Reject. The design criteria in this rule are based on the current rules for sand lined trenches. Current experience with these systems does not indicate the need to change the rules. To our knowledge there is no research done directly with NSF 40 for this technology.
357	0.906	85	8 and 9	Pressure distribution shall be used when the total dispersal field line length exceeds 600 linear feet in a single system. Which rule applies?	Broaden the rule language to incorporate other methods of disposal.	CH: remove the "pressure dispersal" reference and open the regulations to other methods of wastewater distribution. The language used should allow for other options beside just pressure dispersal. Simplify the rules by deciding on a single GPD and linear footage limit requirement for all system-not something different for each category.	Presby	Reject. The design criteria in this rule are based on the current rules for sand lined trenches. Research supports the fact that performance is enhanced with pressure dispersal.
358	0.906	85	10 and 11	Pressure dispersal shall be used when the total dispersal field line length exceeds 1,200 linear feet in a single system.	Broaden the rule language to incorporate other methods of disposal.	CH: remove the "pressure dispersal" reference and open the regulations to other methods of wastewater distribution. The language used should allow for other options beside just pressure dispersal. Simplify the rules by deciding on a single GPD and linear footage limit requirement for all system-not something different for each category.	Presby	Reject. The design criteria in this rule are based on the current rules for sand lined trenches. Research supports the fact that performance is enhanced with pressure dispersal.

359	0.0906(f)(4)	85	6	Consider altering sand size from 0.1-1mm to 0.1 to 2mm due to the difficulty of obtaining acceptable sand material outside the coastal plain.	Increase upper limit range sand size from 1.0 mm to 2.0 mm.	change	NCEHD/Orange County HD	Agree and add to draft
360	0.906	84	21	are installed shall be no deeper than 24 inches below finished grade.	This rule restricts system depth on all sites. Some Piedmont soils improve with depth.	CH: Change language or replace/Look at grammar	Presby	Agree with modifications
361								
362	Rule .0907							
363								
364	Rule .0908							
365								
366	Rule .0909							
367	0.0909	89	5	Detain crushing strength basis. Does 500 lb. rating have an established rating and accepted by manufacturers	Explanation	Explanation	NCSTA	Reject. This is what is currently in the rules and has been used by the industry for these systems for years without a problem.
368								
369	Rule .1910							
370	910	91	10	LPP Installation on sloping sites	There should be "swing" check valves on each lateral line on all sloping sites to prevent any backflow. The check valve should be installed on the sloping manifold supply line to insure that the swing check will close by natural head pressure after the pump ends the cycle. Check valves should be installed on all lines except the lowest is not necessary. It should be of equal size to the manifold supply pipe.		Tim Bannister	Still under discussion
371								
372	Rule .0911							
373	0.091	94	4	Is this a new construction and design standard? If so, what basis was it established, who makes the manifold box like this, whose manifold boxes do not meet this design standard	Explanation	Explanation	NCSTA	Reject. Manifold box design has been provided in guidance. The information included in the draft rules is from the guidance that the State has provided for years. Manifold information is in Rule .1105. This information was included in the draft version previously distributed.
374								
375	Rule .0912							
376								
377	15a nca 18e .0913	96	18	In conjunction with changes in .0601, add section defining the requirements for disposal under paved parking areas	Add SECTION .0913 SYSTEMS UNDER PAVED PARKING AREAS Sizing in accordance with Bed or Trench Systems. H-20 Loading - Astm Standard. Free air flow. Open end-to-end for cleaning as approved by NCDEH I/A procedures. Pressure Distribution. Minimum of 1-ft clear air space above soil interface.		FR Mahony	Still under discussion
378								
379	Rule .1001							

380	.1001	96	24	Would use term "...not be considered as an acceptable or permanent means of wastewater treatment..."	Would use term "...not be considered as an acceptable or permanent means of wastewater treatment..."		CSSC	Reject. Pump and haul may be used on a permanent basis for non-repairable sites.
381								
382	Rule .1002							
383								
384	Rule .1101							
385	1101	97	18	The language is ambiguous. The text should be clarified that separate nitrification fields are required only when the criteria in Rule .1972(b)(1) and (2) apply.	(b) Alternating siphons or pumps shall be used <u>and shall discharge to separate nitrification fields</u> for the following: (1) the design daily flow from a single system exceeds 3,000 gallons per day, or (2) the total length of nitrification trench exceeds 2,000 linear feet in a single system. The alternating siphons or pumps shall discharge to separate nitrification fields.	Change	Infiltrator	Agree and added to draft
386								
387	Rule .1102							
388								
389	Rule .1103							
390	0.1103	98	19	Control Panels. Are these design features currently required of control panels. If not, what is the added cost to the control panel	Explanation	Explanation	NCSTA	Reject. Most of these design features are specified in the current rules.
391	1103	98	22	UL listing of the entire panel product will exclude reliable products currently in use in North Carolina. Manufacturers that use UL-listed components may not have the panel UL listed as a whole.	Modify text as shown: Underwriter's Laboratory or an equivalent third party electrical testing and listing agency shall list the panel <u>or the panel components</u> .	Add	Infiltrator	Reject. Does not exclude reliable panels currently in use in North Carolina.
392	1103	98	25	This requirement will exclude reliable products currently in use in North Carolina. A solid state relay can also be used to serve in the role of the required motor contactor.	Modify text as shown: (3) a motor contactor <u>or solid state relay</u> which breaks all current to the pump and controls;	Add	Infiltrator	Agree with modifications
393	1103	98	26	This requirement will exclude reliable products currently in use in North Carolina. There are good reasons to NOT have a latching HOA switch.	Strike the word "latching".	Change	Infiltrator	Agree with modifications
394	1103	98	28	This requirement will exclude reliable products currently in use in North Carolina. Use of a power indicator light serves the same purpose as a pump circuit power light.	Modify text as shown: (6) a pump circuit power <u>indicator</u> light;	Change	Infiltrator	Agree and added to draft
395	1103	98	29	This requirement will exclude reliable products currently in use in North Carolina. Use of visual and audible alarms serve the same purpose as an alarm circuit power light.	Modify text as shown: (7) an alarm circuit power light ; <u>visual and audible alarm</u> .	Change	Infiltrator	Agree with modifications
396		99	3	Change. The requirement of 36 inches (from 12 inches) may be more easily serviable, but will be an aesthctic nightmare.	Change, keep to the current standard	Change	NCSTA	Agree with modifications
397	1103	98	24	Control Panels	there may be more than one breaker	a circuit breaker or breakers	Tim Bannister	Agree with modifications
398	1103	98	25	Control Panels	A motor contactor does not break power on the control side, only the pump.	Eliminate Controls	Tim Bannister	Agree with modifications
399	1103	98	27	Control Panels	run light, be more specific	pump run light	Tim Bannister	Agree with modifications

400	1103	98	28 &29	Control Panels	power lights for pump and alarm circuits? This is really not needed for residential and being considerate of costs. This is nice but things can be tested to see if power is present with HOA and alarm test. This will add significantly to cost of control panels. Should eliminate this requirement.		Tim Bannister	Agree with modifications
401	1103	99	3	Control Panels	Panel should be 48" above finished grade not 36". 36" makes you have to get on your knees or find a stool. It shouldn't be hidden, 48" can still effectively be screened if desired and 12" is not going to matter to anyone but the ORC.	48"	Tim Bannister	Reject. Kept current height requirements with some modifications.
402	1103	99	3 &4	Control Panels	Within 50 feet and in view of the pump tank? 50 feet is not is any electrical code and doesn't mean anything practical. However, it should be "within direct line of site" which does agree with NEC. The distance really shouldn't matter. If you just want it within hearing distance to speak to another worker, then go with 100 or 150.		Tim Bannister	Reject. Electrical code requires within 50 feet.
403	1103	99	4	Control Panels	A junction box is not always needed even with remotely mounting the control panel a distance away attached to the dwelling or building. IF you purchase 50 feet cord length pumps and control switches, you can run "home runs" all the way back to the panel to about a 35' distance. Thus not needing a junction box. It may need to say "if a junction box is used or needed....."		Tim Bannister	Reject. Understand the concept behind the comment. However, not all installers will be able to do this. Need to keep the junction box.
404	1103	99	21	Control Panels	The minimum water level should only refer to the pump manufacturer as the needed minimum water level for the specific pump used. It varies depending on pump make and type.		Tim Bannister	Agree with modifications

405	1103	100	3	Control Panels	The alarm system, the way most panels operate now, is tied with the incoming pilot or control circuit power. If you loose the power "in", you loose alarm and controls. Only if it blows the small in-line fuse for the control circuit do you still have alarm without the controls. The way this reads we will have to spec panels with three distinct circuits, one for controls, one for alarm, and one for motor or pump. I order these type of panels for whole house grinders that we install where there is virtually no storage and risk is very high of back up in house if you loose alarm. I have had counties have different interpretations of our current language already. I would re-work this.	Remove "or pilot circuit " at the very end of the statement.	Tim Bannister	Agree and removed from draft
406	.1103	100	13	How is it to be determined which systems must be "designed by a registered (licensed) professional engineer?" NCBELS considers that control system design is within the practice of engineering and requires a PE.	Revise to reference that the design of control systems may require a licensed Professional Engineer as determined by G.S. 89C-3(6).	CH	NCBELS	Agree and added to draft
407								
408	Rule .1104							
409								
410	Rule .1105							
411	0.1105	101	5	Pressure Manifold Boxes. This is a new section, and since there are no standard designs for pressure manifold boxes, to accept one is to deny the others. Unless the design has obvious failure tendencies, eliminate the standard	Eliminate	Eliminate	NCSTA	Reject. We are not requiring a specific box, just providing a standard for pressure manifold boxes.
412	1105	101	25	Manifold	The at grade inspection port is just an added feature that really should not be mandated. It is not necessary to validate the flow per tap. Added expense that is not necessary.	Remove	Tim Bannister	Reject. Inspection ports are necessary for routine system O&M to verify flow is going to all lines.
413								
414	Rule .1201							
415	Section .1200 – Advanced Treatment Systems Siting and Sizing Criteria {.1970}	102	2	Add new section "Irish Peat Fiber Biofilter" with criteria.	Puraflo has been in use and sampled in NC for over 20 years. The performance is long-ago proven. A new section should be added to include Irish Peat Fiber Biofilters. A precedent has been set with the panel block systems. Recently, Delaware added Puraflo to the regulations from policy. Furthermore, a regulation should be added that if a manufacturer's proprietary system models have been in continuous use in NC for a minimum of 20 years, then the proprietary system will be written into regulation.	Add	Anua	Reject. These rules include a mechanism whereby sampling can be reduced or eliminated. Manufacturers can pursue this status through provisions in Rule .1609.
416	0.1201	102	21	Standards for Advanced Treatment. Are these standards revised, if so, why.	Keep standards current or to nationally recognized standards (NSF 40, NSF 350	Change	NCSTA	Still under discussion

417	0.1201	103	10 and 11	(d) When using advanced treatment systems, one of the following modifications to system siting and sizing criteria may be approved pursuant to Rules of this Section:	Change the word "one" to all	RE: Change "one" to "all"	Presby	Reject. It does not make sense to relax more than one of these parameters as a result of advanced pretreatment.
418	15a ncaac 18e .1201	102	21	Ammonia discharge for TS-I is different not the same as that on Table II (pg. 40)	Change TS-I ammonia level from <15 to <10		FR Mahony	Still under discussion
419	15a ncaac 18e .1201	102	21	Modify Table XXI to match values in Table II.	Change TS-I Standard for Total Nitrogen in Table XXI from "NA" to be < 30mg/L		FR Mahony	Still under discussion
420	15a ncaac 18e .1201	102	21	Modify Table XXI to match values in Table II.	Change TS-II Standard for Total Nitrogen in Table XXI from "NA" to be < 14mg/L		FR Mahony	Still under discussion
421	0.1201	102	21	Table XXI- a Total Nitrogen standard of 30 does not reflect the direction of the industry. With an influent value of 45 that is not much of a reduction and certain not for larger flow systems exceeding 3,000 gpd. The standards established in the .1200 rules become the standards allied across all flows. Where as a higher standard may make sense on small flow systems it does not on larger systems.	≤ 30 mg/l or 50% removal ***; *** systems with flows greater than 3,000 gpd shall meet the higher standard of ≤ 20 mg/l or 60% removal	change	Aquapoint	Still under discussion
422	1201	102	21	Advanced Treatment standards	I refer back to my previous comments on the quality standards. Keep simple please and consistent with other wastewater agencies standards. Why would TS-I and TS-II be different standards one place (wastewater systems) and another (advanced treatment)? TS-I and TS-II should be the standard itself, it shouldn't vary depending on where you read it. If there are different standard then call them something different. Not the same, that is just confusing.		Tim Bannister	Still under discussion
423	0.1201©	103	7	the reference is incorrect, should be Table II of Rule .0401 and the column label is not correct and needs to be corrected [see previous comment]	Table II of Rule .0401	change	Aquapoint	Agree and added to draft
424								
425	Rule .1202							
426	0.1202	103	26	Table XXII. Minimum usable soil depth and vertical separation to SWC* or USC** for systems 1,500 /Gives advantages to LPP over gravity	All advantages given should be based on effluent quality not disposal method	CH/RE: Change language or replace	Presby	Reject. Research supports the fact that performance is enhanced with pressure dispersal.
427	0.1202	104		Table XXIII. Minimum usable soil depth and vertical separation to SWC* or USC** for systems less than or equal to 1500 gallons per day/Gives advantages to LPP over gravity	All advantages given should be based on effluent quality not disposal method	CH/RE: Change language or replace	Presby	Reject. Research supports the fact that performance is enhanced with pressure dispersal.
428	0.1202	104	n/a	the verbage in Table XXII and Table XXIII headings is not consistent. One says "Vertical separation" the other says "Depth".	make Table XXIII consistent with "Vertical separation"	change	Aquapoint	Reject. Two different items are being discussed, usable soil depth and minimum vertical separation.
429								
430	Rule .1203							
431	0.1203	105	20	4) Pressure dispersal shall be utilized.	Broaden the rule language to incorporate other methods of disposal.	CH/AD: remove the "pressure dispersal" reference and broaden the regulations to include other methods of wastewater distribution. The language used should allow for other disposal options beside just pressure dispersal.	Presby	Reject. Dispersal method has been proven to effect performance in soils.

432	0.1203	106	1	Pressure dispersal shall be utilized. Same as above	Broaden the rule language to incorporate other methods of disposal.	CH/AD: remove the "pressure dispersal" reference and broaden the regulations to other methods of wastewater distribution. The language used should allow for other disposal options beside just pressure dispersal.	Presby	Reject. Dispersal method has been proven to effect performance in soils.
433	0.1203	106	13	LTAR shall not be increased when advanced treatment is added to an existing wastewater system.	Rule should be written to encourage the use of advanced treatment	CH/RE: Change language or replace	Presby	Reject. This is a clarification of a current rule interpretation.
434	.1203 (g)	106	13	Why not allow an increase in the LTAR of a system that is not failing or distressed when advanced treatment is added to the system?	comment only		Aquapoint	Reject. This is a clarification of a current rule interpretation.
435	0.1203	106	13	Why is LTAR not modified when Advance Treatment is added to an existing system? It would appear the rules would allow this since there would be a revised permit.	Explanation	Explanation	NCSTA	Reject. This is a clarification of a current rule interpretation.
436								
437	Rule .1204							
438								
439	Rule .1205							
440	0.1205	107	18	15A NCAC 18E .1205 Pressure dispersal shall be utilized.	Pressure dispersal should not be the only option. The rule should be broadened to encourage innovation and the use of other disposal methods.	CH/RE: Change language or replace	Presby	Reject. Dispersal method has been proven to effect performance in soils.
441	0.1205	107	5		Explanation of denying reductions in large systems	Explanation	NCSTA	Reject. This is from the current rules. Clarifying current practice. Still allow LTAR increase. Have increased this limit from 1,000 gpd to 1,500 gpd.
442		108	11	Is this new language? A 50% reduction seems an added reduction	Explanation	Explanation	NCSTA	Reject. This is what is currently allowed in the rules. This also creates a level playing field for all products.
443	0.1205	108	10 and 11	shall not be reduced by more than 50 percent when compared to a conventional wastewater system.	Rule should not limit the reduction limit without knowing what technology is to be used. Rule should not limit innovation.	Change language	Presby	Reject. This is what is currently allowed in the rules. This also creates a level playing field for all products.
444	0.1205	108	12	LTAR shall not be increased when advanced treatment is added to an existing wastewater system.	Rule should be written to encourage the use of advanced treatment	CH/RE: Change language or replace	Presby	Reject. This is a clarification of a current rule interpretation.
445								
446	Rule .1206							
447	0.1206	108	14	Drip Systems with Advanced Treatment. Are these loading rates and design requirements proportional with effluent drip	Confirmation of comparable design and loading rates	Confirmation	NCSTA	Agree. The LTARs and other information is identical to what is in current drip approvals.
448	0.1206	109	30	better define Q	(Q= daily design flow in gpd)	change	Aquapoint	Agree and added to draft
449								
450	Rule .1207							
451	0.1207	114	27 to 29	Pressure dispersal shall be utilized.	Pressure dispersal should not be the only option. The rule should be broadened to encourage innovation and the use of other disposal methods.	CH/RE: Change language or replace	Presby	Reject. Dispersal method has been proven to effect performance in soils.
452								
453	Rule .1208							

454	0.1208	115	16 and 17	on sites with a design flow not to exceed 600 gallons per day design daily flow. What is the basis for 600 gpd? The flow and linear footage requirements throughout the rules are random and appear to be arbitrary. Simplify the rules by establishing one standard.	Bed systems shall be limited to 600 gallons per day design daily flow. What is the basis for 600 gpd? The flow and linear footage requirements throughout the rules are random and appear to be arbitrary. Simplify the rules by establishing one standard.	CH: Simplify the rules by establishing one standard for flow and linear footage requirements	Presby	Reject. The design criteria in this rule are based on the current rules. Current experience with these systems does not indicate the need to change the rules.
455	0.1208	118	9 to 11	15A NCAC 18E .1208 the bed or beds shall not be located directly beneath the treatment components, and a pressure dispersal system is utilized to distribute flow uniformly throughout the bed area;	Change language to allow for combined treatment and disposal	CH/RE: Change language or replace	Presby	Reject. The design criteria in this rule are based on the current rules. Current experience with these systems does not indicate the need to change the rules.
456	0.1208	116	22	In no case shall the slope exceed 10 percent.	Increase the percent slope allowed	CH: 25% slope limit is recommended for a bed utilizing treatment	Presby	Reject. The design criteria in this rule are based on the current rules. Current experience with these systems does not indicate the need to change the rules.
457	0.1208	120	1 to 3	Effluent shall be distributed to the beds by a pressure dispersal system.	Pressure dispersal should not be the only option. The rule should be broadened to encourage innovation and the use of other disposal methods.	CH/RE: Change language or replace	Presby	Reject. Dispersal method has been proven to effect performance in soils.
458	0.1208	120	9	The design daily flow shall not exceed 480 gallons	Establish some consistency with various flow rates	CH: We recommend using 1500 gpd	Presby	Reject. The design criteria in this rule are based on the current rules. Current experience with these systems does not indicate the need to change the rules.
459	0.1208	120	10	pressure dispersal is used.	Pressure dispersal should not be the only option. The rule should be broadened to encourage innovation and the use of other disposal methods.	CH/RE: Change language or replace	Presby	Reject. Dispersal method has been proven to effect performance in soils.
460	0.1208	116	3	15A NCAC 18E .1208 On sites where the soil texture is Group I or II the LTAR may be increased by a factor of 1.125, with no further reduction in bed size allowed	Reference 15A NCAC 18A.1957(c)(5)© The LTAR for ATUs may be increased 25percent for Group I or Group II soils.	CH: Why are the LTAR recommendations from Reference 15A not being adhered to for ATU's like the other products. It appears that ATU's are being held to a stricter standard. Why?	Presby	Reject. The design criteria in this rule are based on the current rules. Current experience with these systems does not indicate the need to change the rules.
461	0.1208	117	32	The LTAR shall not exceed 1.0 gallons per day per square foot.	Soil texture is the major soil characteristic that determines the LTAR for any given soil	CH: Base the LTAR on soil texture or other LTAR criteria. We do not recommend a one size fits all situations standard in this case.	Presby	Reject. The design criteria in this rule are based on the current rules. Current experience with these systems does not indicate the need to change the rules.
462								
463	Rule .1301							
464	15A NCAC 18E .1301 TABLE XXVIII	121	14	This table actually rewards systems that could be considered higher risk.	The table should be replaced with a new table that appropriately identifies risks. See attached	Change	Anua	Reject. Understand the concept behind the comment. However, these rules already represent a paradigm shift in many regards. Perhaps next round NC will be ready for this approach.
465	0.1301	121	15	IIlb what is notification requirement?	Eliminate notification and just have 5 years LHD inspection	Change	Orange County HD	Agree and removed from draft
466	0.1301	121	15	Make Accepted systems IIg to correspond with former classification of IIIg. Formerly these were all classified as IIIg systems prior to accepted system approval. Many counties had to come up with a classification since the I&E approval did not name a system classification. Most adopted IIg. Why not use IIg since guidance was lacking and this corresponded to previous IIIg systems?	Make Accepted systems IIg to correspond with IIIg	Change	NCEHD/Orange County HD	Reject. However, understand the concept behind the comment.

467	0.1301	121	15	IIIb what is notification requirement?	Eliminate notification and just have 5 years	Change	NCEHD	Agree and removed from draft
468	1301	121	15	O & M table	Type IIIb for the ME should be a certified operator, not the owner. The owner will not in 99% of the time not look at anything unless it is backing up or causing an odor that they don't like.	Certified operator should inspect every 5 years	Tim Bannister	Agree and returned to current rules
469	1301	122		O & M table	Type IV a and IV b should only be inspected by the LHD every 5 years. If the ORCs are doing their job twice each year, and the LHD is reading the reports, there is no good reason the LHD should be going out less than 5 years unless there is a problem, complaint, or reason to do so.		Tim Bannister	Agree in concept, but if all operators were as good as Tim Bannister would not need LHD to visit as frequently.
470	1301	122		O & M table	Type IV g, IV h, and Va is too frequent for LHD to have to inspect.	Every 3 years	Tim Bannister	Agree in concept, but if all operators were as good as Tim Bannister would not need LHD to visit as frequently.
471	1301	124	5,20,23	Sampling	Since the branch is mandating once a year field testing of Turbidity, pH, and DO then the lab sampling maybe should only be required once every two years. Those test will give excellent control processes to determine if more is needed. Put parameters on them which would dictate if lab sampling is needed or not. If those test are within certain limits, then free pass that year on further sampling. So, you get some rewards for keeping your system running good. Even if necessary do those three each of the two regular visits and as long as they are inline, allow the lab sampling to go to every 5 years. Of course, these three test should be reported to LHD each visit and signed as truth. Give motivation to keep systems running all the time. Not just when the month comes to sample and that is when most hammer the system hard to get them to perform for the test. It is kinda like our school systems that teach to testing and not to learn continuously.	restructure sampling protocol to 5 years if field testing every six months or quarterly, whatever system is, is kept in compliance limits.	Tim Bannister	Still under discussion
472								
473	Rule .1302							
474	0.1302	123	6	Change. The Owner is responsible for the O & M of the system. The Manufacturer is responsible to provide the O & M program, as approved by the State.	Change	Change	NCSTA	Agree with modifications
475								
476	Rule .1303							

477	1303	126	3	Owner responsibilities	Pumping should require and be specific to the entire tank, both compartments. It should be clear that both ends be opened and both compartments be cleaned out properly leaving ONLY A MAXIMUM of 1-3 inches of sludge remaining in the tank. This is a problem with pumpers not doing a complete job and owners not understanding what needs to be done. They are either not doing the second compartment or they just suck out some of the scum and the water, leaving most of the sludge. This needs more specific language to force pumpers to do the job correctly.		Tim Bannister	Agree and added to draft
478								
479	Rule .1304							
480	1304	126		LHD responsibilities	LHD conflicts of interest. Any LHD employee should not be allowed to be a private contract operator or private certified operator and compete on "off hours" competing with the same persons or firms that they hold jurisdiction over during business hours. They should not be allowed in any adjacent county to their employed county. This should hold until the time of retirement or unemployment from any position within "Environmental Health" area. To do this on "off times" gives a huge advantage to a state employee that can boast of being a "regulator" in the industry of wastewater thus "knowing" or having more knowledge than the private industry. This is not good or fair for relations between private, county, or state.	Add "LHD conflicts of interest" statement or rule.	Tim Bannister	Agree with this in concept. However, OSWP does not have any jurisdiction over this issue. This issue is governed by the REHS Board.
481								
482	Rule .1305							
483	1305	127		Management Entity requirements	Management Entities may well be a company or firm, thus not being able to hold certifications.	Add that the ME may employee certified operators that hold the proper level of certifications required to satisfy the system types as needed.	Tim Bannister	Agree and added to draft
484								
485	Rule .1306							
486	.1306	127	25 - 26	Should the repair recommendations include EOP option here?	Should the repair recommendations include EOP option here?		CSSC	Reject. The EOP laws and rules require all rules to be followed.
487	.1306	127	29	There is no Rule .1507 ??? What rule is referenced here ??	There is no Rule .1507 ??? What rule is referenced here ??		CSSC	Agree and removed from draft
488	0.1306	127	23	Change language. It appears the LHD is responsible for repairing the system			NCSTA	Agree and removed from draft
489								
490	Rule .1307							

491	0.1307	128	2	Abandonment requirements. Omit	Omit current proposal. Abandonment procedures are costly. Change to a less costly alternative	Change	NCSTA	Reject. This allows for a consistent method for abandonment of system components by all LHD. Additionally, confirming abandonment of an out of use septic system protects the public. Open to suggestions for less costly alternatives.
492	.1307	129	15	Is it only the "authorized agent of the LHD" who is responsible for determining a proper abandonment? Who is defined as an "authorized agent of the LHD?"	Require a licensed professional to be responsible for determining a proper abandonment if the wastewater components to be abandoned were designed by a licensed professional.	CH	NCBELS	Agree with modifications
493		130	4	Remove limitation on 3500 gallon tank.	Placing an artificial limit on tank size should not mean that the tank of 3500 gal. should be traffic rated	CHANGE	NCSTA/GH	Reject. There have been documented issued with larger tanks with thinner wall designs that are not traffic rated.
494		130	26	Remove limitation on 3500 gallon tank.	Unless there is clear data of historical failure rates, this limit should be eliminated	OMIT	NCSTA/GH	Reject. There have been documented issued with larger tanks with thinner wall designs that are not traffic rated.
495								
496	Rule .1401							
497	.1401	130	26-28	How was the requirement for a "NC Professional Engineer" (change in global change to "licensed Professional Engineer") determined?	Delete "if required by G.S. 89C" to be consistent with remainder of rules that do not have this language. The 3,500 gallon threshold needs to be approved by the NCBELS, since it determines application of the definition of the practice of engineering. This is being placed on the NCBELS Engineering Committee July 14 agenda for consideration.	CH	NCBELS	Agree and removed from draft
498	0.1401	131	1	Does not meet ASTM 1227 - 13	Adopt ASTM 1227 -13 (9.2.1 Vacuum Testing)	Change	Orange County HD	Reject. Testing requirements must be applicable to all materials, not just concrete.
499	0.1401	131	1	Does not meet ASTM 1227 - 13	Adopt ASTM 1227 -13 (9.2.1 Vacuum Testing)	Change	NCEHD	Reject. Testing requirements must be applicable to all materials, not just concrete.
500	0.1401	131	6	Alternative to proof-testing of design and structure. ELIMINATE option. Find common ground that will produce a 300 psf uniform live load.	Change to eliminate alternate protocols, unless third-party AND State engineer staff confirms the alternate standard produces an equivalent uniform live load.	Change	NCSTA	Agree with modifications

501	1401	131	1	<p>Infiltrator is concerned about worker safety when its thermoplastic tanks are subjected to a vacuum of five inches of mercury for two minutes. If an implosion occurs at a 5-inch mercury vacuum pressure there is a risk that projected debris can injure workers. Infiltrator's IM-Series tank product literature specifically prohibits the application of vacuum pressure greater than 2.5 inches of mercury as a worker-safety measure. Please see Attachment 3 for manufacturer's warning information.</p> <p>Infiltrator is concerned that implementation of the required vacuum pressure could result in injuries. 29 U.S.C. § 654, 5(a)1 requires that each employer "shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."</p>	<p>Including in the Rule an alternative requirement, such as certification to CSA B66 as presently drafted in subsection (2) (line 6), is critical. In addition, the testing methodology could be expanded to allow for a low-pressure test with longer duration. This provides an equal opportunity for certain thermoplastic tank designs with small components that may become projectiles at elevated vacuum levels and recognizes worker-safety concerns. This proposal aligns with the Florida Department of Health-approved watertightness test methodology (Attachment 4). Modify text as shown:</p> <p>(B) Using proper calibrated equipment, draw a vacuum on the empty tank to the starting negative pressure of either 2.5 or 5 inches of mercury.</p> <p>(C) Hold the vacuum for two minutes when 5 inches of mercury are applied or five minutes when 2.5 inches of mercury are applied and re-measure and record the ending negative pressure inside the tank.</p>	Add		
502	1401	131	6	<p>This comment is in support of inclusion of subsection (2), allowing for CSA B66 certification as an alternative to the structural proof-testing requirement in subsection (1).</p> <p>Stringency is increased by requiring CSA B66 certification. The CSA B66 standard covers concrete, fiberglass, and polyethylene tanks. Therefore, adding this requirement to North Carolina's tank rules does not create a separate requirement that is applicable only to a specific material. For example, if a precaster chose to obtain CSA B66 certification, a concrete tank can be certified under the standard.</p> <p>Some of the benefits of incorporating CSA B66 into North Carolina's tank regulations include:</p> <p>- See additional comments below (rows 54-59).</p>	No change.	None	Infiltrator	Agree with modifications
503	1401	131	20	<p>Approval of prefabricated tanks other than those pre-approved under the Rule on an individual basis by the State is an important element to include in the Rule. Allowing for approval only on a site-by-site or permit-by-permit basis would be unnecessarily restrictive and serve to inhibit innovation and increase costs.</p>	No change.	None	Infiltrator	Agree
504							Infiltrator	This is the language in the current rules that has allowed the general approval of tanks made of different materials.
505	Rule .1402							

506	0.1402	132	1	Correct riser elevation language per General Statute	No Change	No Change	NCSTA	Reject. Bringing the riser to grade helps the operators and LHD perform their routine inspections. Prevents the owner's yard from being torn up.
507		132	19	Change. Outlet pipe penetration only. Inlet pipe penetrations are costly with 3 possible inlets, and the approved octagon tanks are unable to be modified	Change	Change	NCSTA	Reject. The inlet pipe penetrations allow a leak proof seal on the inlet side of the tank.
508		132	19	Inlet pipe penetrations on the side-ports of slope-top tanks found mainly in eastern NC cannot be utilized	Eliminate change in rules that require inlet pipe penetrations	OMIT	NCSTA/GH	Reject. The inlet pipe penetrations allow a leak proof seal on the inlet side of the tank.
509		133	8	Change. The baffle wall shall be made monolithic to the tank or post-construction with restrictive tolerances that prohibit solids greater than the spacing for the effluent filter (1/16 inch) from passing from one chamber to the other.	Change	Change	NCSTA	Reject. Many tanks have been previously approved with non-monolithic baffle walls with no problems with tank performance.
510	1402	133	8	The requirement in subsection (B) as written is valid. Infiltrator has been made aware of efforts to require the partition to be sealed to the sides and/or bottom of the tank. This is completely unnecessary and will only increase costs of tanks which utilize inserted partitions while providing absolutely no appreciable benefit.	No change.	None	Infiltrator	Agree
511	1402	133	16	Three 4-inch-diameter openings are required in the baffle wall, which is three times greater than the inlet diameter. No other state in the nation requires a minimum of three holes in the baffle. Modifying current tooling and manufacturing operations to comply with this requirement represents an unnecessary fiscal impact on industry with no useful purpose. Considering the laminar flow conditions in a septic tank, two 4-inch-diameter holes spaced uniformly across the baffle are adequate to promote transfer of clarified liquid from first to second compartment. This configuration will be consistent with the majority of state rules in the U.S.	Modify the text as follows: (E) A minimum of <u>two</u> 4-inch openings, or at least one four inch opening per <u>30</u> linear inches of baffle wall, whichever is greater, may shall be designed into the partition instead of the four inch slot.	Change	Infiltrator	Agree and added to draft
512	1402	133	25	Tank design and construction	Tank access openings. There should be provisions for large tanks that will require more access for maintenance. A large 10,000 gallon tank with only two openings and 14 feet deep is impossible to pump out effectively.	larger tanks than 14 feet in length shall have more than two openings and the openings shall not be more than 5 feet apart.	Tim Bannister	Reject. Larger tanks are included as part of an engineered design and PE is responsible for ensuring design allows for adequate removal of effluent and solids.
513								
514	Rule .1403							
515	0.1403	136	12	These structural requirements must be included for tanks of all materials	Add	Add	NCSTA	Agree and added to draft
516		136	25	Eliminate. Tanks may not need to be traffic rated (implying H-20) when excavation results in more than 36 inches of cover.	Change (Eliminate)	Change(eliminate)	NCSTA	Agree with modifications. Any tank installed deeper than 36 inches must be designed by a PE to verify that the tank design is sufficient for the depth of burial.

517		136	29	Explain the training of LHD in verifying the product, and that the tools described will be available to the LHD.	Explanation	Explanation	NCSTA	Agree with modifications. The description of training and tools will be provided in guidance. Training is provided in CIT and has been provided to the educational districts and state wide conferences.
518		137	7	Change. Insert language on Pg 136, Ln 7. Detail testing equipment and training aquired by LHD for verification per Pg 136, Ln 29	Change	Change	NCSTA	Agree with modifications. The description of training and tools will be provided in guidance.
519		137	9	Change. Insert language on Pg 136, Ln 7. Detail testing equipment and training aquired by LHD for verification			NCSTA	Agree with modifications. The description of training and tools will be provided in guidance.
520	1403	137	8	Typo	Change IAMPO to IAPMO.	Change	Infiltrator	Agree and added to draft
521	1403	137	14	The draft rules mix requirements for thermoplastic tanks between IAPMO/ANSI Z1000 and CSA B66 (certification). Both standards include materials standards, but CSA B66 includes a physical strength test requirement, while IAPMO/ANSI Z1000 does not. Requiring certification under CSA B66 achieves the same end result as requiring conformance with IAPMO and CSA certification.	Modify text to reference only the CSA B66 standard.	Change	Infiltrator	Agree and added to draft
522	1954	110	27	The draft rules do not allow plastic or glass-fiber reinforced access risers to be retrofitted to a new tank. In counties where risers are not required, a homeowner may desire a riser on the tank to allow easy access to an effluent filter. Any tank should be eligible for riser installation.	Modify text as shown below: (C) Plastic or glass-fiber reinforced access risers may be installed on a new tank when provisions can be made to assure a structurally sound and watertight seal. Approved manufacturer recommendations shall be followed.	Change	Infiltrator	Agree and added to draft
523								
524	Rule .1404							
525	1404	137	28	A vacuum of 5 inches of mercury is required on risers "without deformation". Engineered structures are deformable (<i>Mechanics of Materials</i> , Beer and Johnston, 1981), thus when placed under a stress, strain will occur, which can be measured as a deformation. Achieving zero deformation under a 5-inch Hg applied vacuum-induced force, as prescribed in the proposed rule, is impossible for any material of construction and defies the principles of material behavior.	Modify text as shown: Documentation by a third-party of structural testing to five inches of mercury without <u>permanent</u> deformation or failure.	Change	Infiltrator	Agree with modifications
526								
527	Rule .1405							
528								
529	Rule .1501							
530								
531	Rule .1502							
532		140	7	Eliminate	Eliminate change in rules that require inlet pipe penetrations	OMIT	NCSTA/GH	Reject. The inlet pipe penetrations allow a leak proof seal on the inlet side of the tank.
533								
534	Rule .1503							
535								
536	Rule .1504							

537	15A NCAC 18E .0402 & 15A NCAC 18E .1504	40 & 142	7 thru 15 & 24	Change parameters to carbon and total suspended solids	Provide correlation (see 2002 USEPA Decentralized Manual, Table 3-7) for TSS = turbidity, CBOD5 = COD and/or TOC. Goal is to have measurable parameters to gauge performance using simple field testing equipment	Change	Anua	Reject. The Department is highly encouraged to use national standards whenever possible. This is a nationally recognized standard that is in use in numerous states.
538	15A NCAC 18E .1504	143 & 144	24 thru 31 & 1 thru 13	Remove this section or modify regulations to state that only manufacturers can perform maintenance.	This new section is overly burdensome to small businesses from a time, resource, and financial standpoint. Furthermore, the Department is asking manufacturers to perform regulatory oversight roles, which is inappropriate. Furthermore, a system could be arbitrarily and capriciously delisted without cause if the Department deems the five year renewal package to be incomplete or insufficient. Systems should only be delisted if: 1. Manufacturer is no longer in business; 2. Multiple violations of public health nuisance or groundwater degradation have been documented. We suggest the Department develop delisting criteria in a public process that becomes policy, rather than in a regulation.	Remove	Anua	Reject. This Rule requires the manufacturer to ensure that their installers and operators are doing their job. It also protects the public to ensure that the product used meets all current requirements.
539	1504	143	18	Define "data set", without it we have the same problem of not knowing what data must be collected.	Provide a definition of "data set"	ADD	Bio Microbics	Agree and added to draft
540		144	14	Eliminate any formation of the I & E process, or by whatever terminology you wish to use.	By whatever name, this process needs to be gutted or drastically changed. There can be methods of bringing thrid-party results, which should be very adequate for entry into the market.	CHANGE	NCSTA/GH	Reject. The I&E process is already undergoing transformation.
541								
542	Rule .1505							
543								
544	Rule .1601							
545								
546	Rule .1602							
547	1602	145	11	Application	I think a can of worms will be opened by having a " functionaly Equivalent" approval. Everyone states now that their system is just like, the one that is already approved.	Just keep it to the three.	Tim Bannister	Reject. Required by G.S. 130A-343(g1).
548								
549	Rule .1603							
550								
551	Rule .1604							
552	1604 1605	149 151	17 27	Sections referencing AASHTO H-5 and H-10 use inconsistent wording for the same requirement.	Use consistent terms for identical requirements.	Change	Infiltrator	Agree and added to draft

553	1604	151	3	For applications under 15A NCAC 18A .1969 where the system treats and disperses wastewater, the North Carolina Department of Justice opined that such systems need to be approved as both an advanced treatment system and an alternative drainfield system (See Attachment 4 for DOJ decision). Rule .1604 should incorporate this requirement for future applications.	Add language addressing the need for applicants under Rule .1604 to demonstrate adequate performance for both treatment and dispersal where applicable as a new item at the end of Rule .1604: (f) Systems that both treat and disperse wastewater must meet the requirements for both as described in this rule.	Add	Infiltrator	Agree and added to draft
554	.1604	150	7-10	While a national certification body [defined in GS 13A-343(a)(6) as "Nationally recognized certification body" means a third-party certification body for wastewater systems or system components that is accredited by an entity widely recognized in the United States such as the American National Standards Institute, the Standards Council of Canada, or the International Accreditation Service, Inc.], such as UL, is acknowledged, how is the fact that "(4) the system has complied with a comparable evaluation protocol used for system approval in other states." determined and how does it account for any requirements for licensed professionals?	Suggest deleting or revising the "comparable evaluation protocol," unless satisfied that it provides equivalent public protection.	S	NCBELS	Reject. Allows for broad interpretation, including information submitted by licensed professionals. This language is taken directly from G.S. 130A-334(g).
555								
556	Rule .1605							
557	1605	152	6	"Exceed" needs an s at the end of the word	Add s at end of exceed	Add	Infiltrator	Agree and added to draft
558	1605	152	30	For applications under 15A NCAC 18A .1969 where the system treats and disperses wastewater, the North Carolina Department of Justice opined that such systems need to be approved as both an advanced treatment system and an alternative drainfield system (See Attachment 4 for DOJ decision). Rule .1605 should incorporate this requirement for future applications.	Add language addressing the need for applicants under Rule .1605 to demonstrate adequate performance for both treatment and dispersal where applicable as a new item at the end of Rule .1605: (i) Systems that both treat and disperse wastewater must meet the requirements for both as described in this rule.	Add	Infiltrator	Agree and added to draft
559								
560	Rule .1606							
561	1606	153	1	The beginning of the sentence is awkward.	Start sentence with "Functionally equivalent systems" rather than "These".	Change	Infiltrator	Agree and added to draft
562								
563	Rule .1607							
564	1607	155	4	For applications under 15A NCAC 18A .1969 where the system treats and disperses wastewater, the North Carolina Department of Justice opined that such systems need to be approved as both an advanced treatment system and an alternative drainfield system (See Attachment 4 for DOJ decision). Rule .1607 should incorporate this requirement for future applications.	Add language addressing the need for applicants under Rule .1607 to demonstrate adequate performance for both treatment and dispersal where applicable as a new item at the end of Rule .1607: (e) Systems that both treat and disperse wastewater must meet the requirements for both as described in this rule.	Add	Infiltrator	Agree and added to draft
565								
566	Rule .1608							
567								

568	Rule .1609							
569								
570	Rule .1610							
571								
572	Rule .1611							
573	0.1611	158	25	Eliminate expiration of approval. This is a costly and burdensome process.	Eliminate	Eliminate	NCSTA	Reject. This section is intended to ensure that products do not languish at the provisionsal phase. It is our intention that productts all reach innovaitve status and perform well enough to reduce or eliminate sampling.
574								
575	Rule .1612							
576								
577	Rule .1613							
578								
579	Rule .1701							
580	.1701	161 / 162	25-34/1-25	Section .1701 needs to go with horizontal setback Section .0600 or at least be noted within other previous horizonatal setback sections.	Section .1701 needs to go with horizontal setback Section .0600 or at least be noted within other previous horizonatal setback sections.		CSSC	Agree and added to draft
581	0.1701	162	9	Can a reduced basement setback ever be used? Basements require foundation drains which required setbacks greater than 8 ft.	Change foundation drain rule to allow reduced basement setback for pre 1977 lots.		CSSC/PP	Reject. This is what is in the current rules for pre-1977 lots. Does not need to be changed/updated.
582								
583	Rule .1702							
584								
585	Rule .1703							
586								
587	Rule .1704							
588								
589	Rule .1705							
590								
591	Rule .1706							
592								
593	Rule .1707							
594								
595								
596				Off site rules?	I didn't see anything on Off sites. Our subcommittee put an very comprehensive document together and covered everything in very small detail to resolve issues that come with off-site sytems. Sure would be nice to get it into the rules or as a separate innovative approval if we have to go that route.		Tim Bannister	Reject. The minimal information needed in the rules for off-site systems will be provided. The rest of the information will be provided in guidance.
597				EQ rule?	Are we leaving the EQ approval in as a stand alone innovative approval? Wouldn't it be the time to insert it into the rules?		Tim Bannister	Agree with modifications